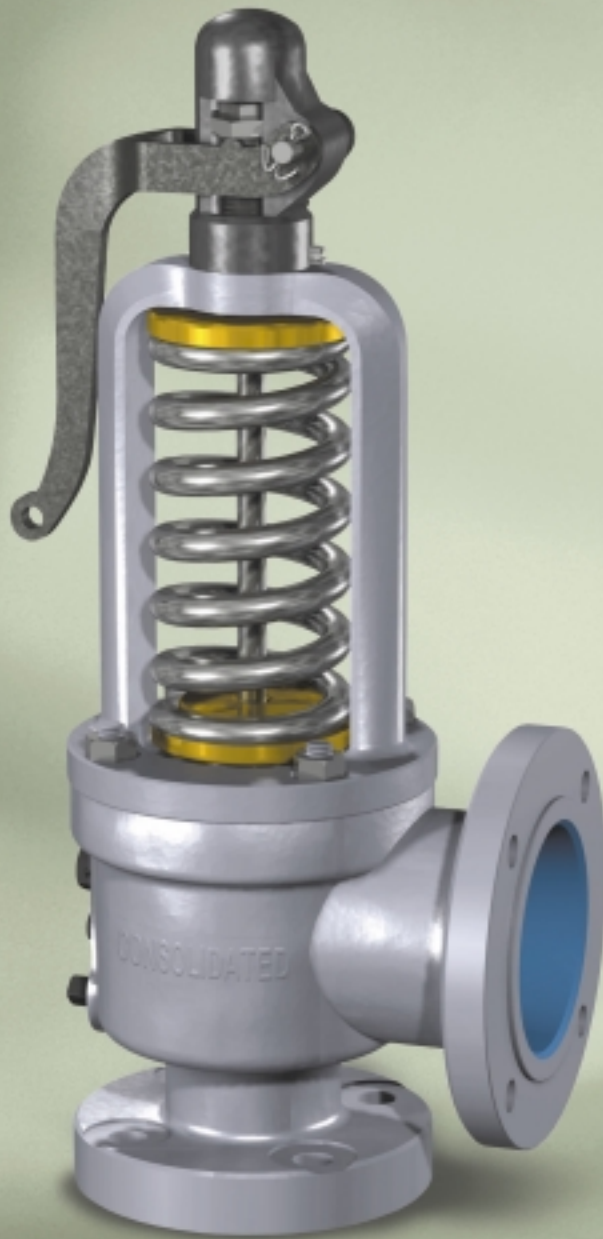


1811

• Safety Valves



Consolidated[®]

CONSOLIDATED Type 1811 safety valve is a cost effective, high capacity, flanged steel safety valve designed for steam service.

1811



INLET SIZES — 1-1/4" through 6" flanged

INLET RATINGS — ANSI Class 300 & 600

OUTLET SIZES — 1-1/2" through 8" flanged

OUTLET RATINGS — ANSI Class 150

ORIFICE SIZES — Ten sizes: F through Q

TEMPERATURE RANGE — -20°F to 1000°F

MATERIALS — Alloy and carbon steel cast body with stainless steel trim is standard.

CERTIFICATION — ASME B&PVC Section I and VIII

BLOWDOWN — 4%

BACK PRESSURE LIMIT — 20% of Set Pressure

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Maximum Set Pressure*

Temperature		Pressure Class	
°F	Valve Temp. Class	600	300
750	1811B	725 psig	320 psig
950	1811D	725 psig	320 psig
1000		430 psig	215 psig

* For intermediate temperatures, interpolation is permitted per ANSI B16.34, 1996 edition, paragraph 2.1.

* For set pressures higher than those listed, factory approval is required.

! CAUTION

Because the 1811 valve is not totally enclosed, upon actuation the system media will escape from the following locations:

- (1) The valve outlet which is the main discharge area.
- (2) The open yoke will also allow a small amount of steam to exhaust vertically.
- (3) The drain hole at the base of the valve.

Flanged Inlet - Type 1811, class 300

Inlet (Note 2) ANSI Std. R.F. Flange		Outlet ANSI Std. R.F. Flange		Type Numbers Maximum Temperature (Note 1)		Orifice Discharge area		Designation
Size	Class	Size	Class	750°F (399°C)	1000°F (538°C)	in ²	cm ²	
1-1/4"	300	1-1/2"	150	1811FB	1811FD	0.307	1.981	F
1-1/4"	300	1-1/2"	150	1811GB	1811GD	0.503	3.245	G
1-1/2"	300	2-1/2"	150	1811HB	1811HD	0.785	5.065	H
1-1/2"	300	2-1/2"	150	1811JB	1811JD	1.287	8.304	J
2"	300	3"	150	1811KB	1811KD	1.840	11.872	K
2-1/2"	300	4"	150	1811LB	1811LD	2.853	18.408	L
3"	300	4"	150	1811MB	1811MD	3.600	23.227	M
4"	300	6"	150	1811NB	1811ND	4.340	28.002	N
4"	300	6"	150	1811PB	1811PD	6.380	41.164	P
6"	300	8"	150	1811QB	1811QD	11.050	71.295	Q

Flanged Inlet - Type 1811, class 600

Inlet (Note 2) ANSI Std. R.F. Flange		Outlet ANSI Std. R.F. Flange		Type Numbers Maximum Temperature (Note 1)		Orifice Discharge area		Designation
Size	Class	Size	Class	750°F (399°C)	1000°F (538°C)	in ²	cm ²	
1-1/4"	600	1-1/2"	150	1811FB	1811FD	0.307	1.981	F
1-1/4"	600	1-1/2"	150	1811GB	1811GD	0.503	3.245	G
1-1/2"	600	2-1/2"	150	1811HB	1811HD	0.785	5.065	H
1-1/2"	600	2-1/2"	150	1811JB	1811JD	1.287	8.304	J
2"	600	3"	150	1811KB	1811KD	1.840	11.872	K
2-1/2"	600	4"	150	1811LB	1811LD	2.853	18.408	L
3"	600	4"	150	1811MB	1811MD	3.600	23.227	M
4"	600	6"	150	1811NB	1811ND	4.340	28.002	N
4"	600	6"	150	1811PB	1811PD	6.380	41.164	P
6"	600	8"	150	1811QB	1811QD	11.050	71.295	Q

Notes:

1. To determine the maximum allowable pressure at a given temperature refer to the appropriate pressure/temperature table.
2. Available with ANSI B16.5 flange facings. See page GI.23 for selections.

Flanged Inlet - Type 1811, class 300

alternate inlet and outlet sizes for replacement valves only

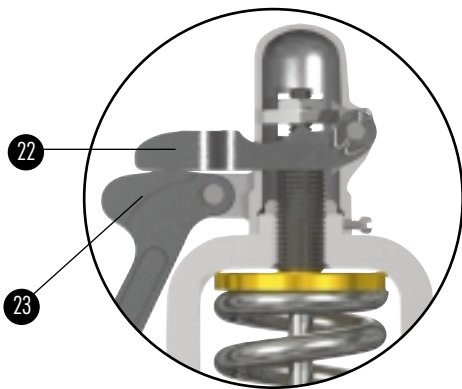
Inlet		Outlet		Type Numbers		Orifice		Designation
ANSI Std. R.F. Flange		ANSI Std. R.F. Flange		Maximum Temperature		Discharge Area		
Size	Class	Size	Class	750°F (399°C)	1000°F (538°C)	in ²	cm ²	
1-1/2"	300	1-1/2"	150	1811FB	1811FD	0.307	1.981	F
2"	300	1-1/2"	150	1811FB	1811FD	0.307	1.985	F
1-1/2"	300	1-1/2"	150	1811GB	1811GD	0.503	3.245	G
2"	300	1-1/2"	150	1811GB	1811GD	0.503	3.245	G
2"	300	2-1/2"	150	1811HB	1811HD	0.785	5.065	H
2-1/2"	300	2-1/2"	150	1811HB	1811HD	0.785	5.065	H
2"	300	2-1/2"	150	1811JB	1811JD	1.287	8.304	J
2-1/2"	300	2-1/2"	150	1811JB	1811JD	1.287	8.304	J
2"	300	4"	150	1811KB	1811KD	1.840	11.872	K
2-1/2"	300	4"	150	1811KB	1811KD	1.840	11.872	K
2-1/2"	300	4"	150	1811KB	1811KD	1.840	11.872	K
3"	300	3"	150	1811KB	1811KD	1.840	11.872	K
3"	300	4"	150	1811KB	1811KD	1.840	11.872	K
2-1/2"	300	6"	150	1811LB	1811LD	2.853	18.408	L
3"	300	6"	150	1811LB	1811LD	2.853	18.408	L
3"	300	6"	150	1811LB	1811LD	2.853	18.408	L
4"	300	6"	150	1811LB	1811LD	2.853	18.408	L
3"	300	6"	150	1811MB	1811MD	3.600	23.227	M

Flanged Inlet - Type 1811, class 600

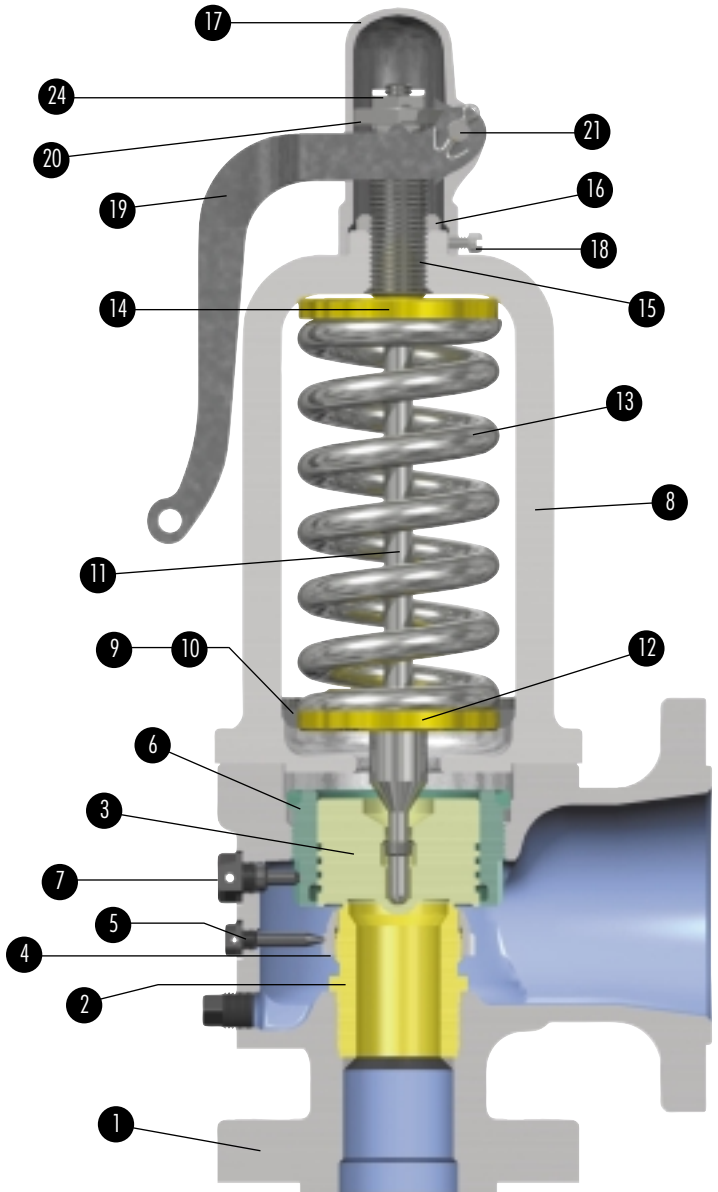
alternate inlet and outlet sizes for replacement valves only

Inlet		Outlet		Type Numbers		Orifice		Designation
ANSI Std. R.F. Flange		ANSI Std. R.F. Flange		Maximum Temperature		Discharge Area		
Size	Class	Size	Class	750°F (399°C)	1000°F (538°C)	in ²	cm ²	
1-1/2"	600	1-1/2"	150	1811FB	1811FD	0.307	1.981	F
2"	600	1-1/2"	150	1811FB	1811FD	0.307	1.985	F
1-1/2"	600	1-1/2"	150	1811GB	1811GD	0.503	3.245	G
2"	600	1-1/2"	150	1811GB	1811GD	0.503	3.245	G
2"	600	2-1/2"	150	1811HB	1811HD	0.785	5.065	H
2-1/2"	600	2-1/2"	150	1811HB	1811HD	0.785	5.065	H
2"	600	2-1/2"	150	1811JB	1811JD	1.287	8.304	J
2-1/2"	600	2-1/2"	150	1811JB	1811JD	1.287	8.304	J
2"	600	4"	150	1811KB	1811KD	1.840	11.872	K
2-1/2"	600	4"	150	1811KB	1811KD	1.840	11.872	K
2-1/2"	600	4"	150	1811KB	1811KD	1.840	11.872	K
3"	600	3"	150	1811KB	1811KD	1.840	11.872	K
3"	600	4"	150	1811KB	1811KD	1.840	11.872	K
2-1/2"	600	6"	150	1811LB	1811LD	2.853	18.408	L
3"	600	6"	150	1811LB	1811LD	2.853	18.408	L
3"	600	6"	150	1811LB	1811LD	2.853	18.408	L
4"	600	6"	150	1811LB	1811LD	2.853	18.408	L
3"	600	6"	150	1811MB	1811MD	3.600	23.227	M

300 & 600 ANSI Class		
Part	Material	
1	Base - 1811B	SA216 WCC Carbon Steel
	Base - 1811D	SA217 WC6 Alloy Steel
2	Seat Bushing	Stainless Steel
3	Disc	Stainless Steel
4	Lower Adj. Ring	Stainless Steel
5	Lower Adj. Ring Pin	Stainless Steel
6	Upper Adj. Ring - 1811B	Leaded Nickel Silver
6	Upper Adj. Ring - 1811D	Monel
7	Upper Adj. Ring Pin	Stainless Steel
8	Yoke	SA216 WCC Carbon Steel
9	Base Stud	B7 Alloy Steel
10	Stud Nut	2H Carbon Steel
11	Spindle	Stainless Steel
12	Bottom Spring Washer	Carbon Steel
13	Spring	Alloy Steel
14	Top Spring Washer	Carbon Steel
15	Compression Screw	Brass
16	Compression Screw Nut	Brass
17	Cap 1811F, G, H & J	Bronze
	Cap 1811K, L, M, N, P & Q	Malleable Iron
18	Cap Set Screw	Carbon Steel
19	Lever	Malleable Iron
20	Release Nut	Carbon Steel
21	Lever Pin	Carbon Steel
22	Top Lever (4" & 6" sizes)	Malleable Iron
23	Drop Lever (4" & 6" sizes)	Malleable Iron
24	Release Lock Nut	Carbon Steel

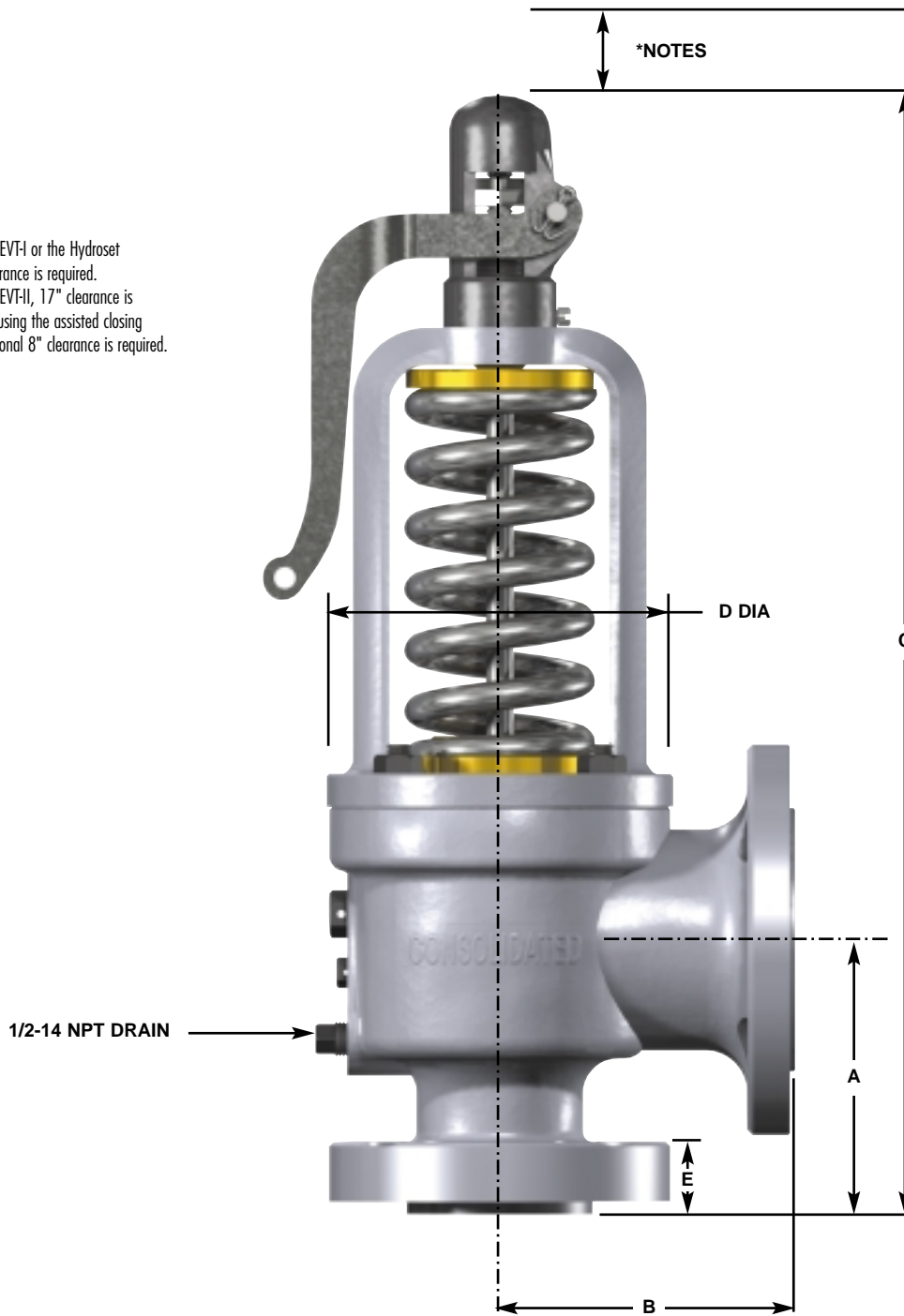


Lifting Lever for 4" x 6" sizes



*Notes:

1. When using the EVT-I or the Hydrosset device, 15" clearance is required.
2. When using the EVT-II, 17" clearance is required. When using the assisted closing device, an additional 8" clearance is required.



300 ANSI Class (USCS units)

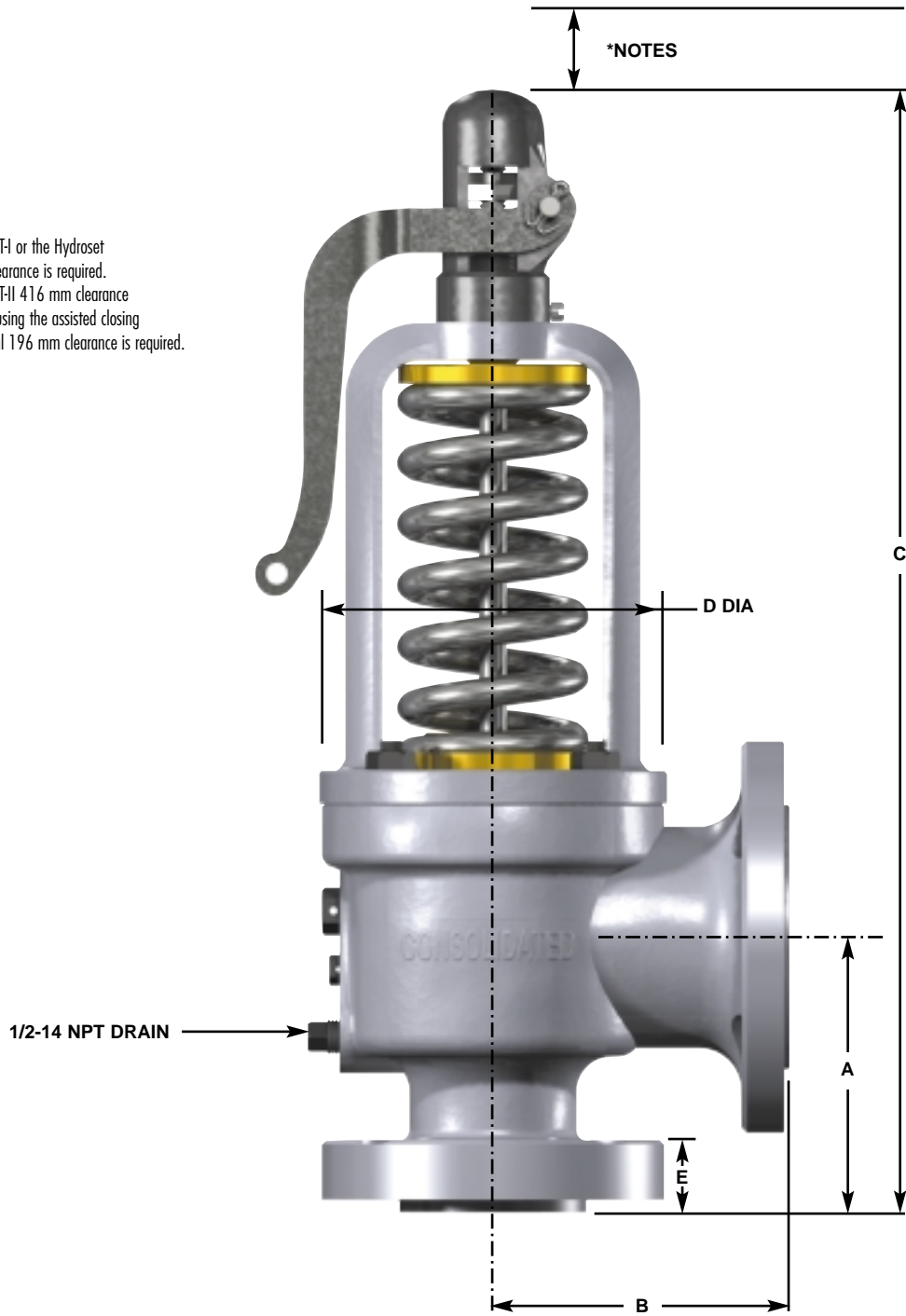
General Dimensions								
Inlet Size	Type No.	General Dimensions					Dismantling	
		A in.	B in.	C in.	D in.	E in.	Height in.	Weight (lbs.)
1-1/4"	1811FB	4-13/32	4-3/16	14-3/8	4-5/8	1-1/16	16-5/8	35
	1811FD	5	4-3/16	15	4-5/8	1-5/16	17	35
1-1/4"	1811GB	4-13/32	4-3/16	14-3/8	4-5/8	1-1/16	16-5/8	35
	1811GD	5	4-3/16	15	4-5/8	1-5/16	17	35
1-1/2"	1811HB	4-3/4	4-7/8	15-7/8	5-13/16	1-1/8	18-1/4	45
	1811HD	5-3/4	4-7/8	16-7/8	5-13/16	1-7/16	19-1/4	45
1-1/2"	1811JB	4-3/4	4-7/8	15-7/8	5-13/16	1-1/8	18-1/4	45
	1811JD	5-3/4	4-7/8	16-7/8	5-13/16	1-7/16	19-1/4	45
2"	1811KB	5-1/4	5-9/16	19-5/8	6-1/2	1-5/16	22-1/2	80
	1811KD	6-1/4	5-9/16	20-5/8	6-1/2	1-9/16	23-1/2	80
2 1/2"	1811LB	6-1/8	6-5/16	21	7-5/8	1-7/16	23-7/8	112
	1811LD	7-1/2	6-5/16	22-5/16	7-5/8	1-13/16	25-1/4	112
3"	1811MB	6-1/2	6-7/16	23-5/8	7-7/8	1-9/16	26-3/4	125
	1811MD	6-1/2	6-7/16	23-5/8	7-7/8	1-9/16	26-3/4	125
4"	1811NB	7-1/4	7-7/16	26	8-3/4	1-9/16	29-1/8	160
	1811ND	7-11/16	7-7/16	26-3/8	8-3/4	1-13/16	29-9/16	160
4"	1811PB	7-7/16	8-3/16	28-3/8	10-1/4	1-9/16	32-1/8	195
	1811PD	7-11/16	8-3/16	28-5/8	10-1/4	1-13/16	32-3/8	195
6"	1811QB	9-7/8	9-3/8	36-1/4	12-3/8	1-3/4	41-3/8	375
	1811QD	10-5/16	9-3/8	36-3/4	12-3/8	2-3/16	41-7/8	375

600 ANSI Class (USCS units)

General Dimensions								
Inlet Size	Type No.	General Dimensions					Dismantling	
		A in.	B in.	C in.	D in.	E in.	Height in.	Weight (lbs.)
1-1/4"	1811FB	4-13/32	4 3/16	14-3/8	4-5/8	1-1/16	16-5/8	35
	1811FD	5	4 3/16	15	4-5/8	1-5/16	17	35
1-1/4"	1811GB	4-13/32	4 3/16	14-3/8	4-5/8	1-1/16	16-5/8	35
	1811GD	5	4 3/16	15	4-5/8	1-5/16	17	35
1-1/2"	1811HB	4-3/4	4-7/8	15-7/8	5-13/16	1-1/8	18-1/4	45
	1811HD	5-3/4	4-7/8	16-7/8	5-13/16	1-7/16	19-1/4	45
1-1/2"	1811JB	4-3/4	4-7/8	17-5/8	5-13/16	1-1/8	20-1/2	45
	1811JD	5-3/4	4-7/8	18-5/8	5-13/16	1-7/16	21-1/2	45
2"	1811KB	5-1/4	5-9/16	21-5/8	6-1/2	1-5/16	24-5/8	80
	1811KD	6-1/4	5-9/16	22-5/8	6-1/2	1-9/16	25-5/8	80
2 1/2"	1811LB	6-1/8	6-5/16	24-1/2	7-5/8	1-7/16	27-1/2	112
	1811LD	7-1/2	6-5/16	25-7/8	7-5/8	1-13/16	28-7/8	112
3"	1811MB	6-1/2	6-7/16	26	7-7/8	1-9/16	29-1/8	125
	1811MD	6-1/2	6-7/16	26	7-7/8	1-9/16	29-1/8	125
4"	1811NB	7-11/16	7-7/16	28-1/2	8-3/4	1-13/16	32-3/8	175
	1811ND	7-11/16	7-7/16	28-1/2	8-3/4	1-13/16	32-3/8	175
4"	1811PB	7-11/16	8-3/16	32-3/4	10-1/4	1-13/16	37-1/4	210
	1811PD	7-11/16	8-3/16	32-3/4	10-1/4	1-13/16	37-1/4	210
6"	1811QB	10-5/16	9-3/8	39-1/8	12-3/8	2-3/16	44-1/8	410
	1811QD	10-5/16	9-3/8	39-1/8	12-3/8	2-3/16	44-1/8	410

*Notes:

1. When using the EVT-I or the Hydroset device 381 mm clearance is required.
2. When using the EVT-II 416 mm clearance is required. When using the assisted closing device an additional 196 mm clearance is required.



300 ANSI Class (metric units)

General Dimensions								
Inlet Size	Type No.	A	B	C	D	E	Dismantling Height	Weight (kg)
		mm	mm	mm	mm	mm	mm	
1-1/4"	1811FB	111.9	106.4	365.1	117.5	27.0	422.3	16
	1811FD	127.0	106.4	381.0	117.5	33.3	431.8	16
1-1/4"	1811GB	111.9	106.4	365.1	117.5	27.0	422.3	16
	1811GD	127.0	106.4	381.0	117.5	33.3	431.8	16
1-1/2"	1811HB	120.7	123.8	403.2	147.6	28.6	463.6	21
	1811HD	146.1	123.8	428.6	147.6	36.5	489.0	21
1-1/2"	1811JB	120.7	123.8	403.2	147.6	28.6	463.6	21
	1811JD	146.1	123.8	428.6	147.6	36.5	489.0	21
2"	1811KB	133.4	141.3	498.5	165.1	33.3	571.5	37
	1811KD	158.8	141.3	523.9	165.1	39.7	596.9	37
2-1/2"	1811LB	155.6	160.3	533.4	193.7	36.5	606.4	52
	1811LD	190.5	160.3	566.7	193.7	46.0	641.4	52
3"	1811MB	165.1	163.5	600.1	200.0	39.7	679.5	58
	1811MD	165.1	163.5	600.1	200.0	39.7	679.5	58
4"	1811NB	184.2	188.9	660.4	222.3	39.7	739.8	74
	1811ND	195.2	188.9	669.9	222.3	46.0	750.9	74
4"	1811PB	188.9	207.9	720.7	260.4	39.7	815.9	89
	1811PD	195.2	207.9	727.1	260.4	46.0	822.3	89
6"	1811QB	250.8	238.1	920.8	314.3	44.5	1050.9	170
	1811QD	261.9	238.1	933.5	314.3	55.5	1063.6	170

600 ANSI Class (metric units)

Inlet Size	Type No.	A mm	B mm	C mm	D mm	E mm	Dismantling Height mm	Weight (kg)
1-1/4"	1811FB	111.9	106.4	365.1	117.5	27.0	422.3	16
	1811FD	127.0	106.4	381.0	117.5	33.3	431.8	16
1-1/4"	1811GB	111.9	106.4	365.1	117.5	27.0	422.3	16
	1811GD	127.0	106.4	381.0	117.5	33.3	431.8	16
1-1/2"	1811HB	120.7	123.8	403.2	147.6	28.6	463.6	21
	1811HD	146.1	123.8	428.6	147.6	36.5	489.0	21
1-1/2"	1811JB	120.7	123.8	447.7	147.6	28.6	520.7	21
	1811JD	146.1	123.8	473.1	147.6	36.5	546.1	21
2"	1811KB	133.4	141.3	549.3	165.1	33.3	625.5	37
	1811KD	158.8	141.3	574.7	165.1	39.7	650.9	37
2-1/2"	1811LB	155.6	160.3	622.3	193.7	36.5	698.5	52
	1811LD	190.5	160.3	657.2	193.7	46.0	733.4	52
3"	1811MB	165.1	163.5	660.4	200.0	39.7	739.8	58
	1811MD	165.1	163.5	660.4	200.0	39.7	739.8	58
4"	1811NB	195.2	188.9	723.9	222.3	46.0	822.3	80
	1811ND	195.2	188.9	723.9	222.3	46.0	822.3	80
4"	1811PB	195.2	207.9	831.9	260.4	46.0	946.2	96
	1811PD	195.2	207.9	831.9	260.4	46.0	946.2	96
6"	1811QB	261.9	238.1	993.8	314.3	55.5	1120.8	186
	1811QD	261.9	238.1	993.8	314.3	55.5	1120.8	186

ASME, B & PVC, Section I rating - 2001 Edition

pounds per hour saturated steam at 3% overpressure or 2 psig,
whichever is greater, 90% of actual capacity

W=51.5KAP

K=.877

A= flow area in sq. in.

P= (1.03 x set pressure) + 14.7 or

P= (2 psig + set pressure) + 14.7

Apply correction factor for capacities on
superheated steam. Correction factor tables
begin on page 1811.15. Review pressure/
temperature limits on page 1811.1.

Orifice Designation & Area - Square Inches

Orifice Designation & Area - Square Inches										
Orifice Designation	F	G	H	J	K	L	M	N	P	Q
Orifice Area (sq. in.)	0.307	0.503	0.785	1.287	1.840	2.853	3.600	4.340	6.380	11.050
Set Pressure (psig)										
15	439	720	1123	1842	2634	4084	5154	6213	9134	15820
20	508	833	1301	2133	3049	4729	5967	7193	10575	18316
25	578	947	1478	2423	3465	5373	6780	8173	12016	20811
30	647	1060	1655	2714	3880	6017	7593	9154	13456	23306
35	716	1174	1833	3005	4296	6661	8406	10134	14897	25802
40	786	1288	2010	3295	4712	7306	9219	11114	16338	28297
45	855	1401	2187	3586	5127	7950	10032	12094	17779	30793
50	924	1515	2364	3877	5543	8594	10845	13074	19219	33288
55	994	1628	2542	4167	5958	9239	11658	14054	20660	35783
60	1063	1742	2719	4458	6374	9883	12471	15034	22101	38279
65	1132	1856	2896	4749	6789	10527	13284	16014	23542	40774
70	1203	1971	3077	5045	7213	11184	14113	17014	25011	43320
75	1274	2088	3260	5344	7641	11848	14950	18023	26495	45890
80	1346	2205	3442	5644	8069	12512	15788	19033	27979	48460
85	1417	2322	3625	5943	8497	13175	16625	20042	29463	51030
90	1489	2439	3807	6242	8925	13839	17462	21052	30947	53601
95	1560	2556	3990	6542	9353	14502	18300	22061	32431	56171
100	1632	2673	4173	6841	9781	15166	19137	23071	33915	58741
105	1703	2790	4355	7141	10209	15830	19974	24080	35399	61311
110	1774	2907	4538	7440	10637	16493	20812	25090	36883	63882
115	1846	3024	4720	7739	11065	17157	21649	26099	38367	66452
120	1917	3141	4903	8039	11493	17820	22486	27109	39851	69022
125	1989	3258	5086	8338	11921	18484	23324	28118	41335	71592
130	2060	3375	5268	8637	12349	19148	24161	29128	42819	74163
135	2131	3492	5451	8937	12777	19811	24999	30137	44303	76733
140	2203	3609	5633	9236	13205	20475	25836	31147	45787	79303
145	2274	3726	5816	9535	13633	21139	26673	32156	47271	81873
150	2346	3843	5998	9835	14061	21802	27511	33166	48755	84444
155	2417	3960	6181	10134	14489	22466	28348	34175	50239	87014
160	2488	4077	6364	10433	14917	23129	29185	35185	51723	89584
165	2560	4194	6546	10733	15345	23793	30023	36194	53207	92154
170	2631	4311	6729	11032	15773	24457	30860	37204	54691	94725
175	2703	4428	6911	11332	16201	25120	31698	38213	56175	97295
180	2774	4545	7094	11631	16629	25784	32535	39223	57659	99865
185	2845	4662	7277	11930	17057	26447	33372	40232	59143	102435
190	2917	4779	7459	12230	17485	27111	34210	41242	60627	105006
195	2988	4896	7642	12529	17913	27775	35047	42251	62112	107576
200	3060	5013	7824	12828	18341	28438	35884	43261	63596	110146
205	3131	5130	8007	13128	18769	29102	36722	44270	65080	112716
210	3203	5247	8190	13427	19197	29766	37559	45280	66564	115287
215	3274	5364	8372	13726	19625	30429	38396	46289	68048	117857
220	3345	5481	8555	14026	20053	31093	39234	47299	69532	120427
225	3417	5598	8737	14325	20481	31756	40071	48308	71016	122997
230	3488	5715	8920	14625	20909	32420	40909	49318	72500	125568
235	3560	5832	9103	14924	21337	33084	41746	50327	73984	128138
240	3631	5949	9285	15223	21765	33747	42583	51337	75468	130708
245	3702	6066	9468	15523	22193	34411	43421	52346	76952	133278
250	3774	6183	9650	15822	22621	35074	44258	53356	78436	135849
255	3845	6300	9833	16121	23049	35738	45095	54365	79920	138419
260	3917	6417	10016	16421	23477	36402	45933	55375	81404	140989

ASME, B & PVC, Section I rating - 2001 Edition

pounds per hour saturated steam at 3% overpressure or 2 psig, whichever is greater, 90% of actual capacity

W=51.5KAP

K=.877

A= flow area in sq. in.

P= (1.03 x set pressure) + 14.7 or

P= (2 psig + set pressure) + 14.7

Apply correction factor for capacities on superheated steam. Correction factor tables begin on page 1811.15. Review pressure/temperature limits on page 1811.1.

Orifice Designation & Area - Square Inches

Orifice Designation	F	G	H	J	K	L	M	N	P	Q
Orifice Area (sq. in.)	0.307	0.503	0.785	1.287	1.840	2.853	3.600	4.340	6.380	11.050
Set Pressure (psig)										
265	3988	6534	10198	16720	23905	37065	46770	56384	82888	143560
270	4059	6651	10381	17019	24333	37729	47608	57394	84372	146130
275	4131	6768	10563	17319	24760	38392	48445	58403	85856	148700
280	4202	6885	10746	17618	25188	39056	49282	59413	87340	151270
285	4274	7002	10928	17917	25616	39720	50120	60422	88824	153841
290	4345	7119	11111	18217	26044	40383	50957	61432	90308	156411
295	4416	7236	11294	18516	26472	41047	51794	62441	91792	158981
300	4488	7353	11476	18816	26900	41711	52632	63451	93276	161551
305	4559	7470	11659	19115	27328	42374	53469	64460	94760	164122
310	4631	7587	11841	19414	27756	43038	54306	65470	96244	166692
315	4702	7704	12024	19714	28184	43701	55144	66479	97728	169262
320	4773	7821	12207	20013	28612	44365	55981	67489	99212	171832
325	4845	7938	12389	20312	29040	45029	56819	68498	100696	174403
330	4916	8055	12572	20612	29468	45692	57656	69508	102180	176973
335	4988	8172	12754	20911	29896	46356	58493	70517	103664	179543
340	5059	8289	12937	21210	30324	47019	59331	71527	105148	182113
345	5131	8406	13120	21510	30752	47683	60168	72536	106632	184684
350	5202	8523	13302	21809	31180	48347	61005	73546	108116	187254
355	5273	8640	13485	22108	31608	49010	61843	74555	109600	189824
360	5345	8757	13667	22408	32036	49674	62680	75565	111084	192394
365	5416	8874	13850	22707	32464	50338	63518	76574	112568	194965
370	5488	8991	14033	23007	32892	51001	64355	77584	114052	197535
375	5559	9108	14215	23306	33320	51665	65192	78593	115536	200105
380	5630	9225	14398	23605	33748	52328	66030	79603	117020	202675
385	5702	9342	14580	23905	34176	52992	66867	80612	118504	205246
390	5773	9459	14763	24204	34604	53656	67704	81622	119988	207816
395	5845	9576	14946	24503	35032	54319	68542	82631	121472	210386
400	5916	9693	15128	24803	35460	54983	69379	83640	122956	212956
405	5987	9810	15311	25102	35888	55646	70216	84650	124440	215527
410	6059	9927	15493	25401	36316	56310	71054	85659	125924	218097
415	6130	10044	15676	25701	36744	56974	71891	86669	127408	220667
420	6202	10161	15858	26000	37172	57637	72729	87678	128892	223237
425	6273	10278	16041	26300	37600	58301	73566	88688	130376	225808
430	6345	10395	16224	26599	38028	58965	74403	89697	131860	228378
435	6416	10512	16406	26898	38456	59628	75241	90707	133344	230948
440	6487	10629	16589	27198	38884	60292	76078	91716	134828	233518
445	6559	10746	16771	27497	39312	60955	76915	92726	136312	236089
450	6630	10863	16954	27796	39740	61619	77753	93735	137796	238659
455	6702	10980	17137	28096	40168	62283	78590	94745	139280	241229
460	6773	11097	17319	28395	40596	62946	79428	95754	140764	243799
465	6845	11214	17502	28694	41024	63610	80265	96764	142248	246370
470	6916	11331	17684	28994	41452	64273	81102	97773	143732	248940
475	6987	11448	17867	29293	41880	64937	81940	98783	145216	251510
480	7059	11565	18050	29592	42308	65601	82777	99792	146700	254081
485	7130	11682	18232	29892	42736	66264	83614	100802	148184	256651
490	7202	11799	18415	30191	43164	66928	84452	101811	149668	259221
495	7273	11916	18597	30491	43592	67592	85289	102821	151152	261791
500	7344	12033	18780	30790	44020	68255	86126	103830	152636	264362
505	7416	12150	18963	31089	44448	68919	86964	104840	154120	266932
510	7487	12267	19145	31389	44876	69582	87801	105849	155604	269502

ASME, B & PVC, Section I rating - 2001 Edition

pounds per hour saturated steam at 3% overpressure or 2 psig,
whichever is greater, 90% of actual capacity

W=51.5KAP

K=.877

A= flow area in sq. in.

P= (1.03 x set pressure) + 14.7 or

P= (2 psig + set pressure) + 14.7

Apply correction factor for capacities on
superheated steam. Correction factor tables
begin on page 1811.15. Review pressure/
temperature limits on page 1811.1.

Orifice Designation & Area - Square Inches

Orifice Designation & Area - Square Inches										
Orifice Designation	F	G	H	J	K	L	M	N	P	Q
Orifice Area (sq. in.)	0.307	0.503	0.785	1.287	1.840	2.853	3.600	4.340	6.380	11.050
Set Pressure (psig)										
515	7558	12384	19328	31688	45304	70246	88639	106859	157088	272072
520	7630	12501	19510	31987	45732	70910	89476	107868	158572	274643
525	7701	12618	19693	32287	46160	71573	90313	108878	160056	277213
530	7773	12735	19876	32586	46588	72237	91151	109887	161540	279783
535	7844	12852	20058	32885	47016	72900	91988	110897	163024	282353
540	7915	12969	20241	33185	47444	73564	92825	111906	164508	284924
545	7987	13086	20423	33484	47872	74228	93663	112916	165992	287494
550	8058	13203	20606	33783	48300	74891	94500	113925	167476	290064
555	8130	13320	20788	34083	48728	75555	95338	114935	168960	292634
560	8201	13437	20971	34382	49156	76219	96175	115944	170444	295205
565	8273	13554	21154	34682	49584	76882	97012	116954	171928	297775
570	8344	13671	21336	34981	50012	77546	97850	117963	173412	300345
575	8415	13788	21519	35280	50440	78209	98687	118973	174896	302915
580	8487	13905	21701	35580	50868	78873	99524	119982	176380	305486
585	8558	14022	21884	35879	51296	79537	100362	120992	177864	308056
590	8630	14139	22067	36178	51724	80200	101199	122001	179348	310626
595	8701	14256	22249	36478	52152	80864	102036	123011	180832	313196
600	8772	14373	22432	36777	52580	81527	102874	124020	182316	315767
605	8844	14490	22614	37076	53008	82191	103711	125030	183800	318337
610	8915	14607	22797	37376	53436	82855	104549	126039	185284	320907
615	8987	14724	22980	37675	53864	83518	105386	127049	186768	323477
620	9058	14841	23162	37975	54292	84182	106223	128058	188252	326048
625	9129	14958	23345	38274	54720	84846	107061	129068	189736	328618
630	9201	15075	23527	38573	55148	85509	107898	130077	191220	331188
635	9272	15192	23710	38873	55576	86173	108735	131087	192704	333758
640	9344	15309	23893	39172	56004	86836	109573	132096	194188	336329
645	9415	15426	24075	39471	56432	87500	110410	133106	195672	338899
650	9486	15543	24258	39771	56860	88164	111248	134115	197156	341469
655	9558	15660	24440	40070	57288	88827	112085	135125	198640	344039
660	9629	15777	24623	40369	57716	89491	112922	136134	200124	346610
665	9701	15894	24806	40669	58144	90154	113760	137144	201608	349180
670	9772	16011	24988	40968	58572	90818	114597	138153	203092	351750
675	9844	16128	25171	41267	59000	91482	115434	139163	204576	354320
680	9915	16245	25353	41567	59428	92145	116272	140172	206060	356891
685	9986	16362	25536	41866	59856	92809	117109	141182	207544	359461
690	10058	16479	25718	42166	60284	93472	117946	142191	209028	362031
695	10129	16596	25901	42465	60712	94136	118784	143201	210512	364601
700	10201	16713	26084	42764	61139	94800	119621	144210	211996	367172
705	10272	16830	26266	43064	61567	95463	120459	145220	213480	369742
710	10343	16947	26449	43363	61995	96127	121296	146229	214964	372312
715	10415	17064	26631	43662	62423	96791	122133	147239	216448	374883
720	10486	17181	26814	43962	62851	97454	122971	148248	217932	377453
725	10558	17298	26997	44261	63279	98118	123808	149258	219416	380023

ASME, B & PVC, Section VIII rating - 2001 Edition

pounds per hour saturated steam at 10% overpressure or 3 psig, whichever is greater, 90% of actual capacity

W=51.5KAP

K=.877

A= flow area in sq. in.

P= (1.10 x set pressure) + 14.7 or

P= (3 psig + set pressure) + 14.7

Apply correction factor for capacities on superheated steam. Correction factor tables begin on page 1811.15. Review pressure/temperature limits on page 1811.1.

Orifice Designation & Area - Square Inches

Orifice Designation	F	G	H	J	K	L	M	N	P	Q
Orifice Area (sq. in.)	0.307	0.503	0.785	1.287	1.840	2.853	3.600	4.340	6.380	11.050
Set Pressure (psig)										
15	453	742	1159	1900	2717	4213	5316	6409	9422	16319
20	522	856	1336	2191	3133	4857	6129	7389	10863	18815
25	592	970	1513	2482	3548	5502	6942	8369	12304	21310
30	661	1083	1691	2772	3964	6146	7755	9350	13745	23806
35	737	1208	1886	3092	4421	6855	8650	10428	15329	26550
40	813	1333	2081	3412	4878	7563	9544	11506	16914	29295
45	890	1458	2276	3731	5335	8272	10438	12584	18499	32040
50	966	1583	2471	4051	5792	8981	11332	13662	20084	34785
55	1042	1708	2666	4371	6249	9690	12227	14740	21669	37530
60	1118	1833	2861	4690	6706	10398	13121	15818	23254	40275
65	1195	1958	3056	5010	7163	11107	14015	16896	24839	43020
70	1271	2083	3251	5330	7620	11816	14910	17974	26423	45765
75	1347	2208	3446	5650	8077	12524	15804	19052	28008	48510
80	1424	2333	3641	5969	8534	13233	16698	20131	29593	51255
85	1500	2458	3836	6289	8991	13942	17592	21209	31178	54000
90	1576	2583	4031	6609	9448	14651	18487	22287	32763	56745
95	1652	2708	4226	6928	9906	15359	19381	23365	34348	59490
100	1729	2832	4421	7248	10363	16068	20275	24443	35933	62235
105	1805	2957	4616	7568	10820	16777	21169	25521	37517	64980
110	1881	3082	4811	7887	11277	17485	22064	26599	39102	67724
115	1957	3207	5006	8207	11734	18194	22958	27677	40687	70469
120	2034	3332	5201	8527	12191	18903	23852	28755	42272	73214
125	2110	3457	5396	8847	12648	19612	24747	29833	43857	75959
130	2186	3582	5591	9166	13105	20320	25641	30912	45442	78704
135	2262	3707	5786	9486	13562	21029	26535	31990	47027	81449
140	2339	3832	5981	9806	14019	21738	27429	33068	48611	84194
145	2415	3957	6176	10125	14476	22446	28324	34146	50196	86939
150	2491	4082	6371	10445	14933	23155	29218	35224	51781	89684
155	2567	4207	6566	10765	15390	23864	30112	36302	53366	92429
160	2644	4332	6761	11085	15848	24573	31007	37380	54951	95174
165	2720	4457	6956	11404	16305	25281	31901	38458	56536	97919
170	2796	4582	7151	11724	16762	25990	32795	39536	58121	100664
175	2872	4707	7346	12044	17219	26699	33689	40614	59705	103409
180	2949	4832	7541	12363	17676	27407	34584	41693	61290	106154
185	3025	4957	7736	12683	18133	28116	35478	42771	62875	108898
190	3101	5082	7931	13003	18590	28825	36372	43849	64460	111643
195	3178	5207	8126	13322	19047	29534	37266	44927	66045	114388
200	3254	5331	8321	13642	19504	30242	38161	46005	67630	117133
205	3330	5456	8516	13962	19961	30951	39055	47083	69215	119878
210	3406	5581	8711	14282	20418	31660	39949	48161	70799	122623
215	3483	5706	8906	14601	20875	32368	40844	49239	72384	125368
220	3559	5831	9101	14921	21332	33077	41738	50317	73969	128113
225	3635	5956	9296	15241	21790	33786	42632	51395	75554	130858
230	3711	6081	9491	15560	22247	34495	43526	52474	77139	133603
235	3788	6206	9686	15880	22704	35203	44421	53552	78724	136348
240	3864	6331	9881	16200	23161	35912	45315	54630	80309	139093
245	3940	6456	10076	16519	23618	36621	46209	55708	81893	141838
250	4016	6581	10271	16839	24075	37329	47104	56786	83478	144583
255	4093	6706	10466	17159	24532	38038	47998	57864	85063	147328
260	4169	6831	10661	17479	24989	38747	48892	58942	86648	150072

ASME, B & PVC, Section VIII rating - 2001 Edition

pounds per hour saturated steam at 10% overpressure or 3 psig,
whichever is greater, 90% of actual capacity

W=51.5KAP

K=.877

A= flow area in sq. in.

P= (1.10 x set pressure) + 14.7 or

P= (3 psig + set pressure) + 14.7

Apply correction factor for capacities on
superheated steam. Correction factor tables
begin on page 1811.15. Review pressure/
temperature limits on page 1811.1.

Orifice Designation & Area - Square Inches

Orifice Designation	F	G	H	J	K	L	M	N	P	Q
Orifice Area (sq. in.)	0.307	0.503	0.785	1.287	1.840	2.853	3.600	4.340	6.380	11.050
Set Pressure (psig)										
265	4245	6956	10856	17798	25446	39456	49786	60020	88233	152817
270	4321	7081	11051	18118	25903	40164	50681	61098	89818	155562
275	4398	7206	11246	18438	26360	40873	51575	62176	91403	158307
280	4474	7331	11441	18757	26817	41582	52469	63255	92987	161052
285	4550	7456	11636	19077	27274	42290	53363	64333	94572	163797
290	4627	7581	11831	19397	27731	42999	54258	65411	96157	166542
295	4703	7706	12026	19717	28189	43708	55152	66489	97742	169287
300	4779	7830	12221	20036	28646	44417	56046	67567	99327	172032
305	4855	7955	12416	20356	29103	45125	56941	68645	100912	174777
310	4932	8080	12611	20676	29560	45834	57835	69723	102497	177522
315	5008	8205	12806	20995	30017	46543	58729	70801	104081	180267
320	5084	8330	13001	21315	30474	47251	59623	71879	105666	183012
325	5160	8455	13196	21635	30931	47960	60518	72958	107251	185757
330	5237	8580	13391	21954	31388	48669	61412	74036	108836	188502
335	5313	8705	13586	22274	31845	49378	62306	75114	110421	191246
340	5389	8830	13781	22594	32302	50086	63200	76192	112006	193991
345	5465	8955	13976	22914	32759	50795	64095	77270	113591	196736
350	5542	9080	14171	23233	33216	51504	64989	78348	115175	199481
355	5618	9205	14366	23553	33673	52212	65883	79426	116760	202226
360	5694	9330	14561	23873	34131	52921	66778	80504	118345	204971
365	5770	9455	14756	24192	34588	53630	67672	81582	119930	207716
370	5847	9580	14951	24512	35045	54339	68566	82660	121515	210461
375	5923	9705	15146	24832	35502	55047	69460	83739	123100	213206
380	5999	9830	15341	25151	35959	55756	70355	84817	124685	215951
385	6075	9955	15536	25471	36416	56465	71249	85895	126269	218696
390	6152	10080	15731	25791	36873	57173	72143	86973	127854	221441
395	6228	10205	15926	26111	37330	57882	73038	88051	129439	224186
400	6304	10329	16121	26430	37787	58591	73932	89129	131024	226931
405	6381	10454	16316	26750	38244	59300	74826	90207	132609	229676
410	6457	10579	16511	27070	38701	60008	75720	91285	134194	232420
415	6533	10704	16706	27389	39158	60717	76615	92363	135779	235165
420	6609	10829	16901	27709	39615	61426	77509	93441	137363	237910
425	6686	10954	17096	28029	40072	62134	78403	94520	138948	240655
430	6762	11079	17291	28349	40530	62843	79297	95598	140533	243400
435	6838	11204	17486	28668	40987	63552	80192	96676	142118	246145
440	6914	11329	17681	28988	41444	64261	81086	97754	143703	248890
445	6991	11454	17876	29308	41901	64969	81980	98832	145288	251635
450	7067	11579	18071	29627	42358	65678	82875	99910	146873	254380
455	7143	11704	18266	29947	42815	66387	83769	100988	148457	257125
460	7219	11829	18461	30267	43272	67095	84663	102066	150042	259870
465	7296	11954	18656	30586	43729	67804	85557	103144	151627	262615
470	7372	12079	18851	30906	44186	68513	86452	104222	153212	265360
475	7448	12204	19046	31226	44643	69222	87346	105300	154797	268105
480	7524	12329	19241	31546	45100	69930	88240	106379	156382	270850
485	7601	12454	19436	31865	45557	70639	89135	107457	157967	273595
490	7677	12579	19631	32185	46014	71348	90029	108535	159551	276339
495	7753	12704	19826	32505	46472	72056	90923	109613	161136	279084
500	7830	12828	20021	32824	46929	72765	91817	110691	162721	281829
505	7906	12953	20216	33144	47386	73474	92712	111769	164306	284574
510	7982	13078	20411	33464	47843	74183	93606	112847	165891	287319
515	8058	13203	20606	33783	48300	74891	94500	113925	167476	290064

ASME, B & PVC, Section VIII rating - 2001 Edition

pounds per hour saturated steam at 10% overpressure or 3 psig, whichever is greater, 90% of actual capacity

W=51.5KAP

K=.877

A= flow area in sq. in.

P= (1.10 x set pressure) + 14.7 or

P= (3 psig + set pressure) + 14.7

Apply correction factor for capacities on superheated steam. Correction factor tables begin on page 1811.15. Review pressure/temperature limits on page 1811.1.

Orifice Designation & Area - Square Inches

Orifice Designation	F	G	H	J	K	L	M	N	P	Q
Orifice Area (sq. in.)	0.307	0.503	0.785	1.287	1.840	2.853	3.600	4.340	6.380	11.050
Set Pressure (psig)										
520	8135	13328	20801	34103	48757	75600	95394	115003	169061	292809
525	8211	13453	20996	34423	49214	76309	96289	116082	170645	295554
530	8287	13578	21191	34743	49671	77017	97183	117160	172230	298299
535	8363	13703	21386	35062	50128	77726	98077	118238	173815	301044
540	8440	13828	21581	35382	50585	78435	98972	119316	175400	303789
545	8516	13953	21776	35702	51042	79144	99866	120394	176985	306534
550	8592	14078	21971	36021	51499	79852	100760	121472	178570	309279
555	8668	14203	22166	36341	51956	80561	101654	122550	180155	312024
560	8745	14328	22361	36661	52414	81270	102549	123628	181739	314768
565	8821	14453	22556	36981	52871	81978	103443	124706	183324	317513
570	8897	14578	22751	37300	53328	82687	104337	125784	184909	320258
575	8973	14703	22946	37620	53785	83396	105232	126863	186494	323003
580	9050	14828	23141	37940	54242	84105	106126	127941	188079	325748
585	9126	14953	23336	38259	54699	84813	107020	129019	189664	328493
590	9202	15078	23531	38579	55156	85522	107914	130097	191249	331238
595	9278	15203	23726	38899	55613	86231	108809	131175	192833	333983
600	9355	15328	23921	39218	56070	86939	109703	132253	194418	336728
605	9431	15452	24116	39538	56527	87648	110597	133331	196003	339473
610	9507	15577	24311	39858	56984	88357	111491	134409	197588	342218
615	9584	15702	24506	40178	57441	89066	112386	135487	199173	344963
620	9660	15827	24701	40497	57898	89774	113280	136565	200758	347708
625	9736	15952	24896	40817	58355	90483	114174	137644	202343	350453
630	9812	16077	25091	41137	58813	91192	115069	138722	203927	353198
635	9889	16202	25286	41456	59270	91900	115963	139800	205512	355942
640	9965	16327	25481	41776	59727	92609	116857	140878	207097	358687
645	10041	16452	25676	42096	60184	93318	117751	141956	208682	361432
650	10117	16577	25871	42416	60641	94027	118646	143034	210267	364177
655	10194	16702	26066	42735	61098	94735	119540	144112	211852	366922
660	10270	16827	26261	43055	61555	95444	120434	145190	213437	369667
665	10346	16952	26456	43375	62012	96153	121328	146268	215021	372412
670	10422	17077	26651	43694	62469	96861	122223	147346	216606	375157
675	10499	17202	26846	44014	62926	97570	123117	148425	218191	377902
680	10575	17327	27041	44334	63383	98279	124011	149503	219776	380647
685	10651	17452	27236	44653	63840	98988	124906	150581	221361	383392
690	10727	17577	27431	44973	64297	99696	125800	151659	222946	386137
695	10804	17702	27626	45293	64755	100405	126694	152737	224531	388882
700	10880	17827	27821	45613	65212	101114	127588	153815	226115	391627
705	10956	17951	28016	45932	65669	101822	128483	154893	227700	394372
710	11033	18076	28211	46252	66126	102531	129377	155971	229285	397116
715	11109	18201	28406	46572	66583	103240	130271	157049	230870	399861
720	11185	18326	28601	46891	67040	103949	131166	158127	232455	402606
725	11261	18451	28796	47211	67497	104657	132060	159206	234040	405351

Superheat Correction Factor

- Notes:
1. For capacity on superheated steam, multiply saturated steam capacity by correction factor.
 2. Convert set pressure from (psig) to (psia) flowing pressure.

*** PSIA flowing =**
[set pressure psig x overpressure] + 14.7

Flowing Pressure* (psia)	Superheat Correction Factor K_{sh} Total Temperature, °F, of Superheated Steam																
	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
50	0.987	0.957	0.930	0.905	0.882	0.861	0.841	0.823	0.805	0.789	0.774	0.759	0.745	0.732	0.719	0.708	0.696
100	0.998	0.963	0.935	0.909	0.885	0.864	0.843	0.825	0.807	0.790	0.775	0.760	0.746	0.733	0.720	0.708	0.697
150	0.984	0.970	0.940	0.913	0.888	0.866	0.846	0.826	0.808	0.792	0.776	0.761	0.747	0.733	0.721	0.709	0.697
200	0.979	0.977	0.945	0.917	0.892	0.869	0.848	0.828	0.810	0.793	0.777	0.762	0.748	0.734	0.721	0.709	0.698
250	-	0.972	0.951	0.921	0.895	0.871	0.850	0.830	0.812	0.794	0.778	0.763	0.749	0.735	0.722	0.710	0.698
300	-	0.968	0.957	0.926	0.898	0.874	0.852	0.832	0.813	0.796	0.780	0.764	0.750	0.736	0.723	0.710	0.699
350	-	0.968	0.963	0.930	0.902	0.877	0.854	0.834	0.815	0.797	0.781	0.765	0.750	0.736	0.723	0.711	0.699
400	-	-	0.963	0.935	0.906	0.880	0.857	0.836	0.816	0.798	0.782	0.766	0.751	0.737	0.724	0.712	0.700
450	-	-	0.961	0.940	0.909	0.883	0.859	0.838	0.818	0.800	0.783	0.767	0.752	0.738	0.725	0.712	0.700
500	-	-	0.961	0.946	0.914	0.886	0.862	0.840	0.820	0.801	0.784	0.768	0.753	0.739	0.725	0.713	0.701
550	-	-	0.962	0.952	0.918	0.889	0.864	0.842	0.822	0.803	0.785	0.769	0.754	0.740	0.726	0.713	0.701
600	-	-	0.964	0.958	0.922	0.892	0.867	0.844	0.823	0.804	0.787	0.770	0.755	0.740	0.727	0.714	0.702
650	-	-	0.968	0.958	0.927	0.896	0.869	0.846	0.825	0.806	0.788	0.771	0.756	0.741	0.728	0.715	0.702
700	-	-	-	0.958	0.931	0.899	0.872	0.848	0.827	0.807	0.789	0.772	0.757	0.742	0.728	0.715	0.703
750	-	-	-	0.958	0.936	0.903	0.875	0.850	0.828	0.809	0.790	0.774	0.758	0.743	0.729	0.716	0.703
800	-	-	-	0.960	0.942	0.906	0.878	0.852	0.830	0.810	0.792	0.774	0.759	0.744	0.730	0.716	0.704
850	-	-	-	0.962	0.947	0.910	0.880	0.855	0.832	0.812	0.793	0.776	0.760	0.744	0.730	0.717	0.704