

Consolidated™ 1811 Series Safety Valve

Cost effective, high-capacity
flanged steel safety valve
designed for steam service

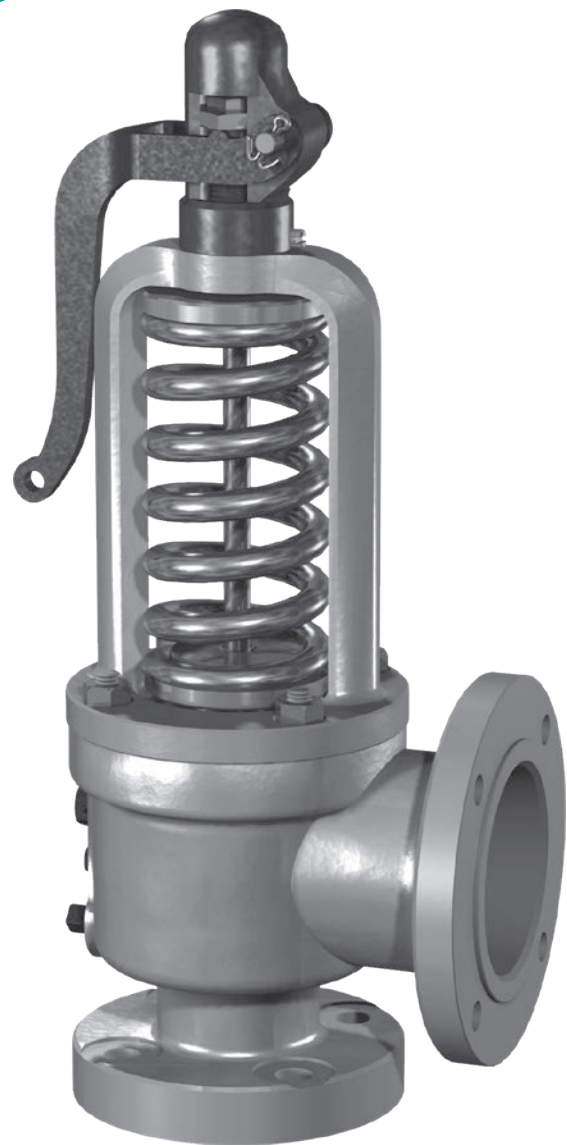


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Conversion Table

All the USCS values are converted to metric values using the following conversion factors:

USCS Unit	Conversion Factor	Metric Unit
in.	25.4	mm
lb.	0.4535924	kg
in ²	6.4516	cm ²
ft ³ /min	0.02831685	m ³ /min
gal/min	3.785412	L/min
lb/hr	0.4535924	kg/hr
psig	0.06894757	barg
ft lb	1.3558181	Nm
°F	5/9 (°F-32)	°C

Scope of Design

Flanged Inlet - Type 1811, class 300										
Inlet ⁽²⁾			Outlet			Type Numbers		Orifice		
ASME Std. R.F. Flange			ASME Std. R.F. Flange			Maximum Temperature ⁽¹⁾		Discharge area		Designation
Size		Class	Size		Class	750°F (399°C)	1000°F (538°C)			
in.	mm		in.	mm						
1.25	31.8	300	1.50	38.1	150	1811FB	1811FD	.307	1.981	F
1.25	31.8	300	1.50	38.1	150	1811GB	1811GD	.503	3.245	G
1.50	38.1	300	2.50	63.5	150	1811HB	1811HD	.785	5.065	H
1.50	38.1	300	2.50	63.5	150	1811JB	1811JD	1.287	8.303	J
2.00	50.8	300	3.00	76.2	150	1811KB	1811KD	1.840	11.871	K
2.50	63.5	300	4.00	101.6	150	1811LB	1811LD	2.853	18.406	L
3.00	76.2	300	4.00	101.6	150	1811MB	1811MD	3.600	23.226	M
4.00	101.6	300	6.00	152.4	150	1811NB	1811ND	4.340	28.000	N
4.00	101.6	300	6.00	152.4	150	1811PB	1811PD	6.380	41.161	P
6.00	152.4	300	8.00	203.2	150	1811QB	1811QD	11.050	71.290	Q

Flanged Inlet - Type 1811, class 600										
Inlet ⁽²⁾			Outlet			Type Numbers		Orifice		
ASME Std. R.F. Flange			ASME Std. R.F. Flange			Maximum Temperature ⁽¹⁾		Discharge area		Designation
Size		Class	Size		Class	750°F (399°C)	1000°F (538°C)			
in.	mm		in.	mm						
1.25	31.8	600	1.50	38.1	150	1811FB	1811FD	.307	1.981	F
1.25	31.8	600	1.50	38.1	150	1811GB	1811GD	.503	3.245	G
1.50	38.1	600	2.50	63.5	150	1811HB	1811HD	.785	5.065	H
1.50	38.1	600	2.50	63.5	150	1811JB	1811JD	1.287	8.303	J
2.00	50.8	600	3.00	76.2	150	1811KB	1811KD	1.840	11.871	K
2.50	63.5	600	4.00	101.6	150	1811LB	1811LD	2.853	18.406	L
3.00	76.2	600	4.00	101.6	150	1811MB	1811MD	3.600	23.226	M
4.00	101.6	600	6.00	152.4	150	1811NB	1811ND	4.340	28.000	N
4.00	101.6	600	6.00	152.4	150	1811PB	1811PD	6.380	41.161	P
6.00	152.4	600	8.00	203.2	150	1811QB	1811QD	11.050	71.290	Q

1. To determine the maximum allowable pressure at a given temperature refer to the appropriate pressure/temperature table.
2. Available with ASME B16.5 flange facings. See page 16 and 17 for selections.

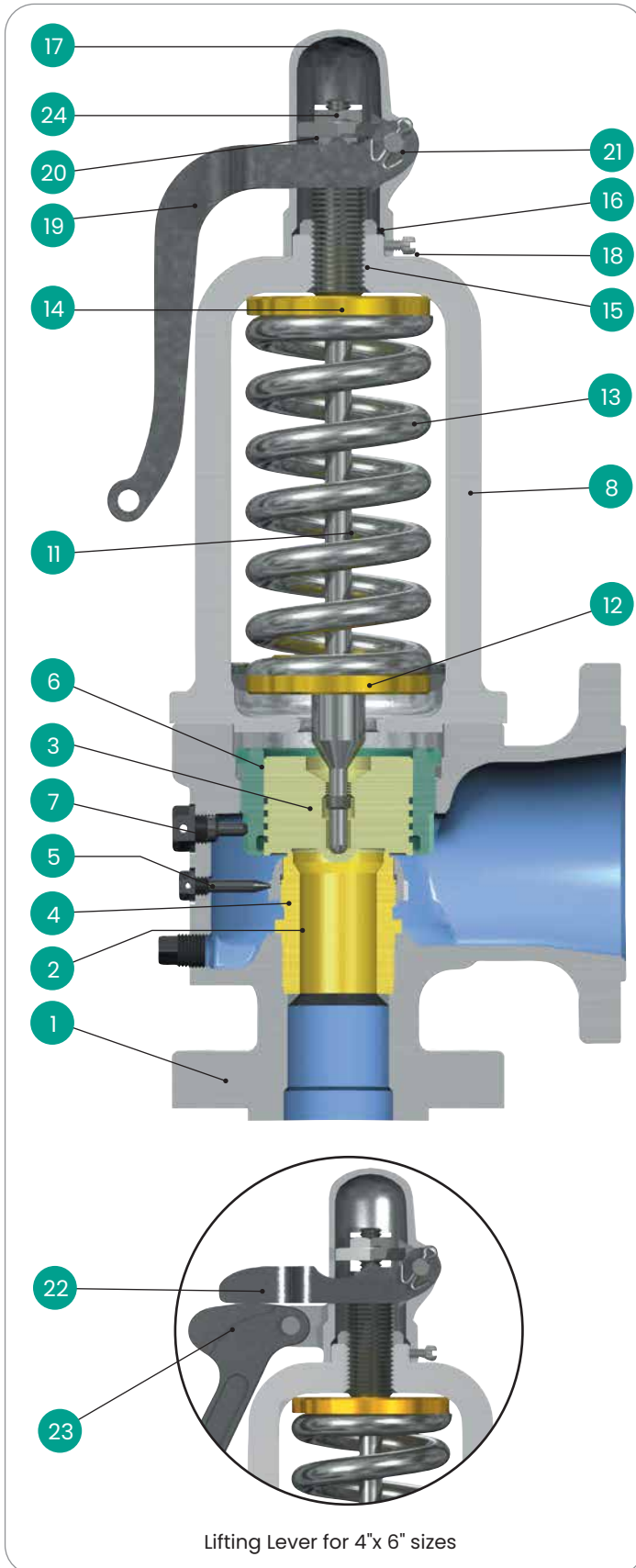
Scope of Design (cont.)

Flanged Inlet - Type 1811, class 300 alternate inlet and outlet sizes for replacement valves only										
Inlet			Outlet			Type Numbers		Orifice		
ASME Std. R.F. Flange			ASME Std. R.F. Flange			Maximum Temperature		Discharge area		Designation
Size		Class	Size		Class	750°F (399°C)	1000°F (538°C)	in ²	cm ²	
in.	mm		in.	mm						
1.50	38.1	300	1.50	38.1	150	1811FB	1811FD	.307	1.981	F
2.00	50.8	300	1.50	38.1	150	1811FB	1811FD	.307	1.981	F
1.50	38.1	300	1.50	38.1	150	1811GB	1811GD	.503	3.245	G
2.00	50.8	300	1.50	38.1	150	1811GB	1811GD	.503	3.245	G
2.00	50.8	300	2.50	63.5	150	1811HB	1811HD	.785	5.065	H
2.50	63.5	300	2.50	63.5	150	1811HB	1811HD	.785	5.065	H
2.00	50.8	300	2.50	63.5	150	1811JB	1811JD	1.287	8.303	J
2.50	63.5	300	2.50	63.5	150	1811JB	1811JD	1.287	8.303	J
2.00	50.8	300	4.00	101.6	150	1811KB	1811KD	1.840	11.871	K
2.50	63.5	300	4.00	101.6	150	1811KB	1811KD	1.840	11.871	K
2.50	63.5	300	4.00	101.6	150	1811KB	1811KD	1.840	11.871	K
3.00	76.2	300	3.00	76.2	150	1811KB	1811KD	1.840	11.871	K
3.00	76.2	300	4.00	101.6	150	1811KB	1811KD	1.840	11.871	K
2.50	63.5	300	6.00	152.4	150	1811LB	1811LD	2.853	18.406	L
3.00	76.2	300	6.00	152.4	150	1811LB	1811LD	2.853	18.406	L
3.00	76.2	300	6.00	152.4	150	1811LB	1811LD	2.853	18.406	L
4.00	101.6	300	6.00	152.4	150	1811LB	1811LD	2.853	18.406	L
3.00	76.2	300	6.00	152.4	150	1811MB	1811MD	3.600	23.226	M

Flanged Inlet - Type 1811, class 600 alternate inlet and outlet sizes for replacement valves only										
Inlet			Outlet			Type Numbers		Orifice		
ASME Std. R.F. Flange			ASME Std. R.F. Flange			Maximum Temperature		Discharge area		Designation
Size		Class	Size		Class	750°F (399°C)	1000°F (538°C)	in ²	cm ²	
in.	mm		in.	mm						
1.50	38.1	600	1.50	38.1	150	1811FB	1811FD	.307	1.981	F
2.00	50.8	600	1.50	38.1	150	1811FB	1811FD	.307	1.981	F
1.50	38.1	600	1.50	38.1	150	1811GB	1811GD	.503	3.245	G
2.00	50.8	600	1.50	38.1	150	1811GB	1811GD	.503	3.245	G
2.00	50.8	600	2.50	63.5	150	1811HB	1811HD	.785	5.065	H
2.50	63.5	600	2.50	63.5	150	1811HB	1811HD	.785	5.065	H
2.00	50.8	600	2.50	63.5	150	1811JB	1811JD	1.287	8.303	J
2.50	63.5	600	2.50	63.5	150	1811JB	1811JD	1.287	8.303	J
2.00	50.8	600	4.00	101.6	150	1811KB	1811KD	1.840	11.871	K
2.50	63.5	600	4.00	101.6	150	1811KB	1811KD	1.840	11.871	K
2.50	63.5	600	4.00	101.6	150	1811KB	1811KD	1.840	11.871	K
3.00	76.2	600	3.00	76.2	150	1811KB	1811KD	1.840	11.871	K
3.00	76.2	600	4.00	101.6	150	1811KB	1811KD	1.840	11.871	K
2.50	63.5	600	6.00	152.4	150	1811LB	1811LD	2.853	18.406	L
3.00	76.2	600	6.00	152.4	150	1811LB	1811LD	2.853	18.406	L
3.00	76.2	600	6.00	152.4	150	1811LB	1811LD	2.853	18.406	L
4.00	101.6	600	6.00	152.4	150	1811LB	1811LD	2.853	18.406	L
3.00	76.2	600	6.00	152.4	150	1811MB	1811MD	3.600	23.226	M

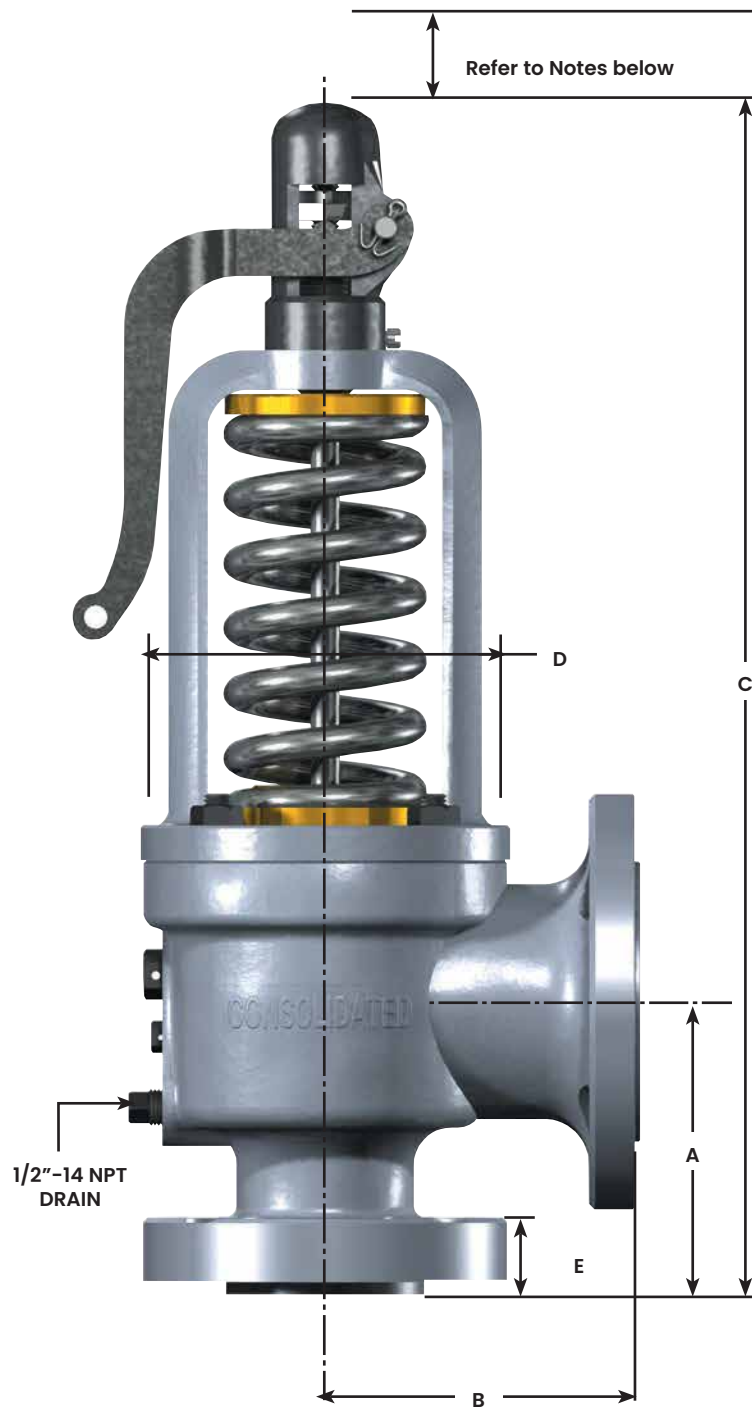
Scope of Design (cont.)

1811 Series Safety Valve



300 and 600 ASME Class		
Ref. No.	Nomenclature	Material
1	Base	
	1811B	ASME SA216 WCC Carbon Steel
	1811D	ASME SA217 WC6 Alloy Steel
2	Seat Bushing	410 Stainless Steel
3	Disc	410 Stainless Steel
4	Lower Adjusting Ring	304 Stainless Steel
5	Lower Adjusting Ring Pin	416 or 410 Stainless Steel
6	Upper Adjusting Ring	
	1811B	Leaded Nickel Silver
	1811D	Monel
7	Upper Adjusting Ring Pin	616 Stainless Steel
8	Yoke	ASME SA216 WCC Carbon Steel
9	Base Stud (Not Shown)	ASME SA193 B7 Alloy Steel
10	Stud Nut (Not Shown)	ASME SA194 2H Carbon Steel
11	Spindle	410 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 Locknut	Brass
17	Cap	
	(F – J Orifice)	Ductile Iron
	(K – Q Orifice)	Malleable Iron
18	Cap Set Screw	Carbon Steel
19	Lever	Malleable Iron
20	Release Nut	Carbon Steel
21	Lever Pin	
	(F – J Orifice)	Stainless Steel
	(K – Q Orifice)	Carbon Steel
22	Top Lever (4" and 6" Sizes)	Malleable Iron
23	Drop Lever (4" and 6" Sizes)	Malleable Iron
24	Release Locknut	Carbon Steel
	Base Pipe Plug (Not Shown)	Carbon Steel
	Cotter Pins (Not Shown)	Brass
	Weather Shield (Not Shown)	Carbon Steel

Dimensions and Weights (cont.)



Notes:

1. When using the EVT-I or the Hydroset device, 15" (381 mm) clearance is required.
2. When using the EVT-II, 17" (431.8 mm) clearance is required. When using the assisted closing device, an additional 8" (203.20 mm) clearance is required.

Dimensions and Weights (cont.)

300 ASME Class																
Inlet Size		Valve Type	A		B		C		D		E		Dismantling Height		Approximate Weight	
in.	mm		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lb.	kg
1.25	31.8	1811FB	4.41	111.9	4.19	106.4	14.38	365.1	4.63	117.5	1.06	27.0	16.63	422.3	35	16
		1811FD	5.00	127.0	4.19	106.4	15.00	381.0	4.63	117.5	1.31	33.4	17.00	431.8	35	16
1.25	31.8	1811GB	4.41	111.9	4.19	106.4	14.38	365.1	4.63	117.5	1.63	41.4	16.63	422.3	35	16
		1811GD	5.00	127.0	4.19	106.4	15.00	381.0	4.63	117.5	1.31	33.4	17.00	431.8	35	16
1.50	38.1	1811HB	4.75	120.7	4.88	123.8	15.88	403.2	5.81	147.6	1.13	28.6	18.25	463.6	45	20
		1811HD	5.75	146.1	4.88	123.8	16.88	428.6	5.81	147.6	1.44	36.5	19.25	489.0	45	20
1.50	38.1	1811JB	4.75	120.7	4.88	123.8	15.88	403.2	5.81	147.6	1.13	28.6	18.25	463.6	45	20
		1811JD	5.75	146.1	4.88	123.8	16.88	428.6	5.81	147.6	1.44	36.5	19.25	489.0	45	20
2.00	50.8	1811KB	5.25	133.4	5.56	141.3	19.63	498.5	6.50	165.1	1.31	33.4	22.50	571.5	80	36
		1811KD	6.25	158.8	5.56	141.3	20.63	523.9	6.50	165.1	1.56	39.7	23.50	596.9	80	36
2.50	63.5	1811LB	6.13	155.6	6.56	166.7	21.00	533.4	7.63	193.7	1.44	36.5	23.88	606.4	112	51
		1811LD	7.50	190.5	6.56	166.7	22.31	566.7	7.63	193.7	1.81	46.1	25.25	641.4	112	51
3.00	76.2	1811MB	6.50	165.1	6.44	163.5	23.63	600.1	7.88	200.0	1.56	39.7	26.75	679.5	125	57
		1811MD	6.50	165.1	6.44	163.5	23.63	600.1	7.88	200.0	1.56	39.7	26.75	679.5	125	57
4.00	101.6	1811NB	7.25	184.2	7.44	188.9	26.00	660.4	8.75	222.3	1.56	39.7	29.13	739.8	160	73
		1811ND	7.69	195.3	7.44	188.9	26.38	669.9	8.75	222.3	1.81	46.1	29.56	750.9	160	73
4.00	101.6	1811PB	7.44	188.9	8.19	208.0	28.38	720.7	10.25	260.4	1.56	39.7	32.13	816.0	195	88
		1811PD	7.69	195.3	8.19	208.0	28.63	727.1	10.25	260.4	1.81	46.1	32.38	822.3	195	88
6.00	152.4	1811QB	9.88	250.8	9.38	238.1	36.25	920.8	12.38	314.3	1.75	44.5	41.38	1050.9	375	170
		1811QD	10.31	262.0	9.38	238.1	36.75	933.5	12.38	314.3	2.19	55.6	41.88	1063.6	375	170

Dimensions and Weights (cont.)

600 ASME Class																
Inlet Size		Valve Type	A		B		C		D		E		Dismantling Height		Approximate Weight	
in.	mm		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lb.	kg
1.25	31.8	1811FB	4.41	111.9	4.19	106.4	14.38	365.1	4.68	118.7	1.06	27.0	16.68	423.5	35	16
		1811FD	5.00	127.0	4.19	106.4	15.00	381.0	4.68	118.7	1.31	33.4	17.00	431.8	35	16
1.25	31.8	1811GB	4.41	111.9	4.19	106.4	14.38	365.1	4.68	118.7	1.06	27.0	16.68	423.5	35	16
		1811GD	5.00	127.0	4.19	106.4	15.00	381.0	4.68	118.7	1.31	33.4	17.00	431.8	35	16
1.50	38.1	1811HB	4.75	120.7	4.88	123.8	15.88	403.2	5.19	131.8	1.13	28.6	18.25	463.6	45	20
		1811HD	5.75	146.1	4.88	123.8	16.88	428.6	5.19	131.8	1.44	36.5	19.25	489.0	45	20
1.50	38.1	1811JB	4.75	120.7	4.88	123.8	17.68	448.9	5.19	131.8	1.13	28.6	20.50	520.7	45	20
		1811JD	5.75	146.1	4.88	123.8	18.68	474.3	5.19	131.8	1.44	36.5	21.50	546.1	45	20
2.00	50.8	1811KB	5.25	133.4	5.56	141.3	21.68	550.5	6.50	165.1	1.31	33.4	24.68	626.7	80	36
		1811KD	6.25	158.8	5.56	141.3	22.68	575.9	6.50	165.1	1.56	39.7	25.68	652.1	80	36
2.50	63.5	1811LB	6.13	155.6	6.31	160.4	24.50	622.3	7.93	201.3	1.44	36.5	27.50	698.5	112	51
		1811LD	7.50	190.5	6.31	160.4	25.88	657.2	7.63	193.7	1.81	46.1	28.88	733.4	112	51
3.00	76.2	1811MB	6.50	165.1	6.44	163.5	26.00	660.4	7.88	200.0	1.56	39.7	29.13	739.8	125	57
		1811MD	6.50	165.1	6.44	163.5	26.00	660.4	7.88	200.0	1.56	39.7	29.13	739.8	125	57
4.00	101.6	1811NB	7.69	195.3	7.44	188.9	28.50	723.9	8.75	222.3	1.81	46.1	32.38	822.3	160	73
		1811ND	7.69	195.3	7.44	188.9	28.50	723.9	8.75	222.3	1.81	46.1	32.38	822.3	160	73
4.00	101.6	1811PB	7.69	195.3	8.19	208.0	32.75	831.9	10.25	260.4	1.81	46.1	37.25	946.2	195	88
		1811PD	7.69	195.3	8.19	208.0	32.75	831.9	10.25	260.4	1.81	46.1	37.25	946.2	195	88
6.00	152.4	1811QB	10.31	262.0	9.38	238.1	39.13	993.8	12.38	314.3	2.19	55.6	44.13	1120.8	375	170
		1811QD	10.31	262.0	9.38	238.1	39.13	993.8	12.38	314.3	2.19	55.6	44.13	1120.8	375	170

Pressure/Temperature

Pressure Temperature Ratings						
Temperature		Valve Temp. Class	Class 300		Class 600	
°F	°C		Pressure		Pressure	
			Psig	barg	Psig	barg
750	398.8	1811B	320	22.06	725	49.98
950	510.0	1811D	320	22.06	640	44.12
1000	537.7	1811D	215	14.82	430	29.64

Orifice Capacities (cont.)

Apply correction factor for capacities on superheated steam. Correction factor tables begin on page 18. Review pressure/ temperature limits on page 11.

W=51.5KAP
 K=.877
 A= flow area in in².
 P= (1.03 x set pressure) + 14.7 or
 P= (2 psig + set pressure) + 14.7

ASME, B and PVC, Section I rating - Latest Edition																					
lb/hr (kg/hr) saturated steam at 3 percent overpressure or 2 psig (0.14 barg), whichever is greater, 90 percent of actual capacity																					
Orifice Designation	F		G		H		J		K		L		M		N		P		Q		
	in ²	cm ²	in ²	cm ²	in ²	cm ²	in ²	cm ²	in ²	cm ²	in ²	cm ²	in ²	cm ²	in ²	cm ²	in ²	cm ²	in ²	cm ²	
Set Pressure	Orifice Capacity																				
	psig	barg	lb/hr	kg/hr	lb/hr	kg/hr	lb/hr	kg/hr	lb/hr	kg/hr	lb/hr	kg/hr	lb/hr	kg/hr	lb/hr	kg/hr	lb/hr	kg/hr	lb/hr	kg/hr	
515	35.50	7558	3428	12384	5617	19328	8767	31688	14373	45304	20549	70246	31863	88639	40205	106859	48470	157088	71253	272072	123409
520	35.85	7630	3460	12501	5670	19510	8849	31987	14509	45732	20743	70910	32164	89476	40585	107868	48928	158572	71927	274643	124575
525	36.19	7701	3493	12618	5723	19693	8932	32287	14645	46160	20937	71573	32464	90313	40965	108878	49386	160056	72600	277213	125741
530	36.54	7773	3525	12735	5776	19876	9015	32586	14780	46588	21131	72237	32766	91151	41345	109887	49843	161540	73273	279783	126907
535	36.88	7844	3557	12852	5829	20058	9098	32885	14916	47016	21326	72900	33066	91988	41725	110897	50302	163024	73946	282353	128073
540	37.23	7915	3590	12969	5882	20241	9181	33185	15052	47444	21520	73564	33368	92825	42104	111906	50759	164508	74619	284924	129239
545	37.57	7987	3622	13086	5935	20423	9263	33484	15188	47872	21714	74228	33669	93663	42484	112916	51217	165992	75292	287494	130405
550	37.92	8058	3655	13203	5988	20606	9346	33783	15323	48300	21908	74891	33969	94500	42864	113925	51675	167476	75965	290064	131570
555	38.26	8130	3687	13320	6041	20788	9429	34083	15459	48728	22102	75555	34271	95338	43244	114935	52133	168960	76638	292634	132736
560	38.61	8201	3719	13437	6094	20971	9512	34382	15595	49156	22296	76219	34572	96175	43624	115944	52591	170444	77312	295205	133902
565	38.95	8273	3752	13554	6147	21154	9595	34682	15731	49584	22490	76882	34873	97012	44003	116954	53049	171928	77985	297775	135068
570	39.30	8344	3784	13671	6201	21336	9677	34981	15867	50012	22685	77546	35174	97850	44384	117963	53507	173412	78658	300345	136234
575	39.64	8415	3816	13788	6254	21519	9760	35280	16002	50440	22879	78209	35475	98687	44763	118973	53965	174896	79331	302915	137399
580	39.98	8487	3849	13905	6307	21701	9843	35580	16138	50868	23073	78873	35776	99524	45143	119982	54422	176380	80004	305486	138566
585	40.33	8558	3881	14022	6360	21884	9926	35879	16274	51296	23267	79537	36077	100362	45523	120992	54881	177864	80677	308056	139731
590	40.67	8630	3914	14139	6413	22067	10009	36178	16410	51724	23461	80200	36378	101199	45903	122001	55338	179348	81350	310626	140897
595	41.02	8701	3946	14256	6466	22249	10091	36478	16546	52152	23655	80864	36679	102036	46282	123011	55796	180832	82024	313196	142063
600	41.36	8772	3978	14373	6519	22432	10174	36777	16681	52580	23849	81527	36980	102874	46662	124020	56254	182316	82697	315767	143229
605	41.71	8844	4011	14490	6572	22614	10257	37076	16817	53008	24044	82191	37281	103711	47042	125030	56712	183800	83370	318337	144395
610	42.05	8915	4043	14607	6625	22797	10340	37376	16953	53436	24238	82855	37582	104549	47422	126039	57170	185284	84043	320907	145560
615	42.40	8987	4076	14724	6678	22980	10423	37675	17089	53864	24432	83518	37883	105386	47802	127049	57628	186768	84716	323477	146726
620	42.74	9058	4108	14841	6731	23162	10506	37975	17225	54292	24626	84182	38184	106223	48181	128058	58086	188252	85389	326048	147892
625	43.09	9129	4140	14958	6784	23345	10589	38274	17360	54720	24820	84846	38485	107061	48562	129068	58544	189736	86062	328618	149058
630	43.43	9201	4173	15075	6837	23527	10671	38573	17496	55148	25014	85509	38786	107898	48941	130077	59001	191220	86735	331188	150224
635	43.78	9272	4205	15192	6890	23710	10754	38873	17632	55576	25208	86173	39087	108735	49321	131087	59460	192704	87409	333758	151390
640	44.12	9344	4238	15309	6944	23893	10837	39172	17768	56004	25402	86836	39388	109573	49701	132096	59917	194188	88082	336329	152556
645	44.47	9415	4270	15426	6997	24075	10920	39471	17903	56432	25597	87500	39689	110410	50081	133106	60375	195672	88755	338899	153722
650	44.81	9486	4302	15543	7050	24258	11003	39771	18039	56860	25791	88164	39990	111248	50461	134115	60833	197156	89428	341469	154887
655	45.16	9558	4335	15660	7103	24440	11085	40070	18175	57288	25985	88827	40291	112085	50840	135125	61291	198640	90101	344039	156053
660	45.50	9629	4367	15777	7156	24623	11168	40369	18311	57716	26179	89491	40592	112922	51220	136134	61749	200124	90774	346610	157219
665	45.85	9701	4400	15894	7209	24806	11251	40669	18447	58144	26373	90154	40893	113760	51600	137144	62207	201608	91447	349180	158385
670	46.19	9772	4432	16011	7262	24988	11334	40968	18582	58572	26567	90818	41194	114597	51980	138153	62665	203092	92120	351750	159551
675	46.53	9844	4465	16128	7315	25171	11417	41267	18718	59000	26761	91482	41495	115434	52359	139163	63123	204576	92794	354320	160716
680	46.88	9915	4497	16245	7368	25353	11499	41567	18854	59428	26956	92145	41796	116272	52740	140172	63580	206060	93467	356891	161883
685	47.22	9986	4529	16362	7421	25536	11582	41866	18990	59856	27150	92809	42097	117109	53119	141182	64039	207544	94140	359461	163048
690	47.57	10058	4562	16479	7474	25718	11665	42166	19126	60284	27344	93472	42398	117946	53499	142191	64496	209028	94813	362031	164214
695	47.91	10129	4594	16596	7527	25901	11748	42465	19261	60712	27538	94136	42699	118784	53879	143201	64954	210512	95486	364601	165380
700	48.26	10201	4627	16713	7580	26084	11831	42764	19397	61139	27732	94800	43000	119621	54259	144210	65412	211996	96159	367172	166546
705	48.60	10272	4659	16830	7633	26266	11914	43064	19533	61567	27926	95463	43301	120459	54639	145220	65870	213480	96832	369742	167712
710	48.95	10343	4691	16947	7687	26449	11997	43363	19669	61995	28120	96127	43602	121296	55018	146229	66328	214964	97506	372312	168877
715	49.29	10415	4724	17064	7740	26631	12079	43662	19804	62423	28314	96791	43903	122133	55398	147239	66786	216448	98179	374883	170044
720	49.64	10486	4756	17181	7793	26814	12162	43962	19940	62851	28508	97454	44204	122971	55778	148248	67244	217932	98852	377453	171209
725	49.98	10558	4789	17298	7846	26997	12245	44261	20076	63279	28702	98118	44505	123808	56158	149258	67702	219416	99525	380023	172375

Orifice Capacities (cont.)

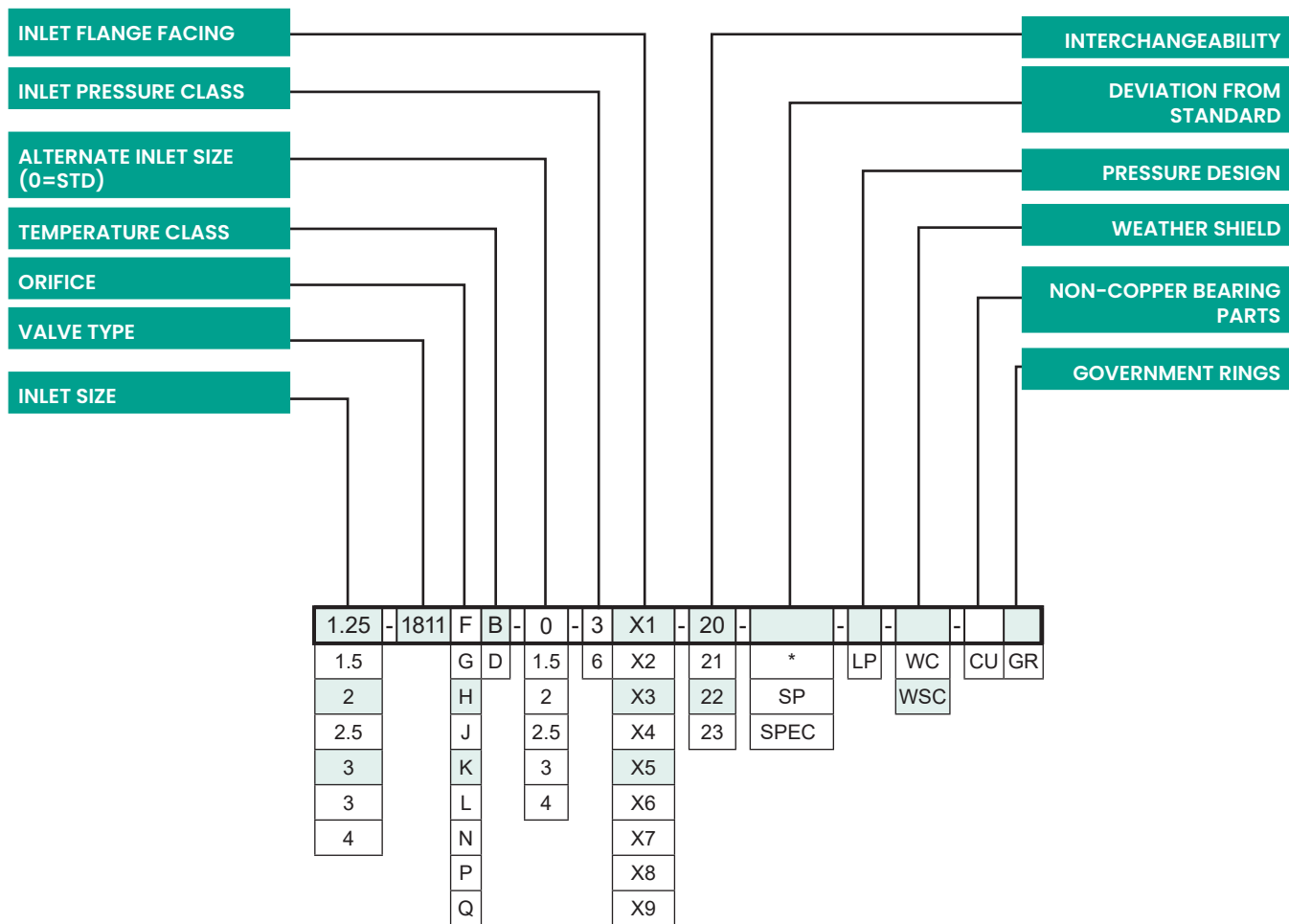
Superheat Correction Factor ⁽¹⁾																	
Total Temperature (°F)	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
Flowing Pressure	Superheat Correction Factor K_{sh}																
psia ²																	
50	0.987	0.957	0.930	0.905	0.882	0.861	0.841	0.823	0.805	0.789	0.774	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

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

$$\text{psia flowing} = [\text{set pressure psig} \times \text{overpressure}] + 14.7$$

Valve Configuration Code

1811 Series Main Valve



Standard Valve Connection				
Inlet Size		Orifice	Area	
in.	mm		in ²	cm ²
1.25	31.7	F	.307	1.981
1.25	31.7	G	.503	3.245
1.50	38.1	H	.785	5.065
1.50	38.1	J	1.287	8.303
2.00	50.8	K	1.840	11.871
2.50	63.5	L	2.853	18.406
3.00	76.2	M	3.600	23.226
4.00	101.6	N	4.340	28.000
4.00	101.6	P	6.380	41.161
6.00	152.4	Q	11.050	71.290

Valve Configuration Code (Cont.)

1811 Series Main Valve

Alternate Inlet Size				
Inlet		Outlet		Orifice
in.	mm	in.	mm	
1.50	38.1	1.50	38.1	F
2.00	50.8	1.50	38.1	F
2.50	63.5	1.50	38.1	G
2.00	50.8	1.50	38.1	G
2.00	50.8	2.50	63.5	H
2.50	63.5	2.50	63.5	H
2.00	50.8	2.50	63.5	J
2.50	63.5	2.50	63.5	J
2.00	50.8	4.00	101.6	K
2.50	63.5	3.00	76.2	K
2.50	63.5	4.00	101.6	K
3.00	76.2	3.00	76.2	K
3.00	76.2	4.00	101.6	K
2.50	63.5	6.00	152.4	L
3.00	76.2	4.00	101.6	L
3.00	76.2	6.00	152.4	L
4.00	101.6	6.00	152.4	L
3.00	76.2	6.00	152.4	M

Note: Highlighted cells indicate standard size connections.

Inlet Flange Facing	
Designation	Facing
X1	Raised Face Serrated
X2	Raised Face Smooth
X3	Ring Joint
X4	Large Tongue
X5	Large Groove
X6	Small Tongue
X7	Small Groove
X8	Large Female
X9	Large Male

Interchangeability Number	
Designation	Description
20	Standard Outlet - Flat Seat
21	Oversize Outlet - Flat Seat
22	Standard Outlet - <i>Thermodisc</i> ™ Seat
23	Oversize Outlet - <i>Thermodisc</i> Seat

Weather Shield	
Designation	Description
WSC	Spring and Lifting Gear Cover
WC	Spring Cover Only

Temperature Class	
Designation	Range
B	To 750°F (398.89°C)
D	To 1000°F (537.78°C)

Pressure Class	
Designation	Class
3	300# ASME
6	600# ASME

Material Trim	
Designation	Trim
	Standard
CU	Non-Copper Bearing Internal Parts

Pressure Design	
Designation	Pressure Range
	Set ≥ 125 psig (86.18 barg) (All Orifice)
LP	5 To 124 psig (0.34 To 8.54 barg) (does not apply to F, G & H)

Ordering a 1811 Series Safety Valve

How to Order a 1811 Safety Valve	
Please Specify:	
Type of Application	
a)	Boiler Drum
b)	Superheater
c)	Reheater
d)	Other _____ (identify)
Applicable ASME Code	
a)	Section I (V Designator) - Power Boiler
b)	Section XIII (UV Designator) - Pressure Vessels
	Single Valve System _____
	Multiple Valve System _____
System Parameters (For drum, superheater, or reheater)	
a)	Design Pressure _____ psig (barg)
b)	Design Temperature _____ °F (°C)
c)	Operating Pressure _____ psig (barg)
d)	Operating Temperature _____ °F (°C)
Valve Specifications	
a)	Valve Set Pressure _____ psig (barg)
b)	Allowable Overpressure on Valve _____ percent
c)	Relieving Capacity _____ lb/hr (kg/hr)
d)	Buttweld Valves
	Inlet Size
	Inlet Specifications
	Outlet Size and Flange Rating
e)	Flanged Valves
	Inlet Size and Flange Rating
	Outlet Size and Flange Rating
f)	Other Type Connections Other Than
	Buttweld or Flange
g)	Special Codes or Standards
Valve Supplemental Data	
a)	Gag Required
b)	Weathershield Required
c)	Hydrostatic Test Plug Required
d)	Special Cleaning
e)	Special Boxing
f)	Export Boxing
g)	Special Painting



CONTROLS SUPPLY CHAIN

VALVES ACTUATORS INSTRUMENTATIONS