

SAFETY & RELIEF VALVES

Bronze Safety Valves For Steam, Air and Gas Service

19 SERIES



A dependable cast bronze high capacity safety valve ideal for use on all types of boilers, piping systems and unfired pressure vessels. This rugged design features top guided alignment for enhanced performance and reliability. Other features include optional metal seating, optional stainless steel wetted trim in all sizes, and a new, more descriptive model numbering system. Flow ratings are National Board certified in accordance with ASME sections I and VIII.

ASME Section I and VIII

Sizes 1/2" through 2-1/2"

Factory set pressures 5 to 300 psig

Maximum temperature is 406°F, 422°F for model 19S



Section I
Power Boilers

APPLICATIONS:

Overpressure protection of steam boilers, sterilizers, distillers, cookers, and pressure reducing stations. Pneumatic conveying equipment, air compressors, receivers and dryers. Steam, air and gas accumulators, pressure vessels and pressure piping systems.



Section VIII
Pressure Vessels

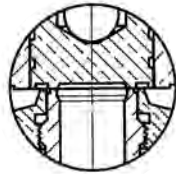
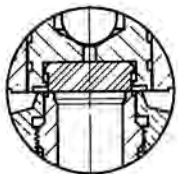
FEATURES:

- Wide wrenching hex for easier, faster installations
- Stainless steel springs are standard
- Choice of Teflon® or metal-to-metal seating
- Teflon® PFA seat resists corrosive boiler chemicals and excessive vibration
- High-capacity full nozzle design available in six orifice sizes
- Two control rings for maximum performance and adjustability
- Short "tuned" blow down minimizes product loss
- Tapped body drain allows piping of condensate safely away from equipment
- Reduced repair costs: soft seat easily replaced
- Registered in all Canadian provinces under CSA B51 CRN OG8547.5C

OPTIONS:

- Choice of Teflon® or metal to metal seating
- Steam set pressures to 300 psi @ 422°F (Model 19S, stainless steel trim)
- 316 stainless steel wetted trim available for all sizes
- Anti-vibration dampened lifting lever
- Oxygen cleaning
- European Pressure Equipment Directive compliant option (CE/PED)

SEAT DETAIL



Soft Seat Design
Model 19K - Brass
Model 19L - Stainless

Metal to Metal Seat Design
Model 19M - Brass
Model 19S - Stainless

4 TRIM STYLES TO CHOOSE FROM

Series	19K	19M	19L	19S
Trim	Brass	Brass	SS	SS
Seat	Teflon®	Metal to Metal	Teflon®	Metal to Metal
Max. Set - Steam	250	250	250	300
Max. Set - Air/Gas	300	300	300	300
Max. Temperature	406°F	406°F	406°F	422°F

* Teflon is a registered trademark of DuPont.

19 SERIES MODEL NUMBERING SYSTEM

19M	D	C	K	165	A
BASE MODEL NUMBER	ORIFICE LETTER	INLET SIZE (IN.) NPT	ASME CODE AND SERVICE	SET PRESSURE IN PSI	SPECIAL OPTIONS
19K = Brass Trim/Teflon Seat	D	C = 1/2	A = Sect. I Steam		A = Anti-vibration trim
19M = Brass Trim/Metal Seat	E	D = 3/4	K = Sect. VIII Air		CE = CE/PED Compliant
19L = Stainless Trim/Teflon Seat	F	E = 1	L = Sect. VIII Steam		Q = Performance (Calibration) test report
19S = Stainless Trim/Metal Seat	G	F = 1-1/4	N = Non-Code Air		X = Oxygen cleaning
	H	G = 1-1/2	P = Non-Code Steam		* Other suffixes - factory issued
	J	H = 2			
		J = 2-1/2			



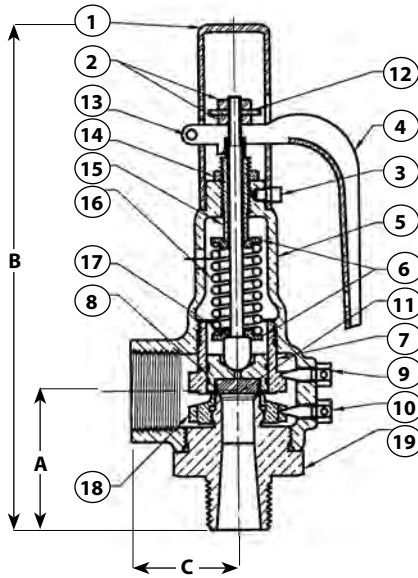
For additional information, submittal sheets and manuals, visit www.apollovalves.com

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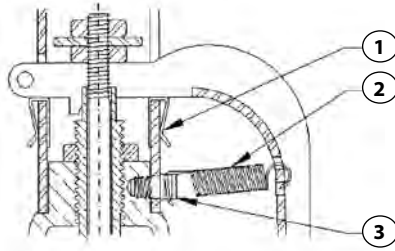
SAFETY & RELIEF VALVES

Bronze Safety Valves

19 SERIES



19 SERIES



MATERIALS 19 SERIES WITH OPTION "A" ANTI-VIBRATION TRIM

Item	Component	Material
1	Friction Clip (4)	Steel Plated
2	Extension Spring	Stainless Steel
3	Cap Lock Screw	Stainless Steel

Note: Preparation includes threadlocking of all internal threaded connections.

MATERIALS

Item	Component	Material 19K, 19M	Material 19L, 19S
1	Cap	Brass	Brass
2	Stem Nut (2)	Steel - Plated	Steel - Plated
3	Cap Lock Screw	Brass	Brass
4	Lift Lever	Steel - Plated	Steel - Plated
5	Body	Bronze	Bronze
6	Spring Washer (2)	Brass	Brass
7	Guide Ring	Brass	Brass
8	Disc	Brass	Stainless Steel
9	Guide Ring Screw	Brass	Brass
10	Nozzle Ring Screw	Brass	Brass
11	Seat Insert-19K & 19L	PFA Teflon®	PFA Teflon®
12	Lift Washer	Steel - Plated	Steel - Plated
13	Lever Pin	Steel - Plated	Steel - Plated
14	Adjusting Screw Lock Nut	Steel - Plated	Steel - Plated
15	Adjusting Screw	Brass	Brass
16	Spring	Stainless Steel	Stainless Steel
17	Stem	Stainless Steel	Stainless Steel
18	Nozzle Ring	Brass	Brass
19	Nozzle	Brass	Stainless Steel
-	Nameplate	Stainless Steel	Stainless Steel
-	Seal and Wire	Lead/SS*	Lead/SS*

* Alum/SS on CE models

DIMENSIONS AND WEIGHTS

Old Model Number	New Model Number	Orifice Letter	Size (in./mm) Inlet x Outlet	Dimensions (in./mm.)			Wt./Ea. (lbs./kg.)
				A	B	C	
19-202	19*DC	D	1/2 X 3/4	2.21	6.52	1.37	1.6
			15 x 20	56	166	35	.73
19-301	19*DD	D	3/4 X 3/4	2.21	6.52	1.37	1.6
			20 x 20	56	166	35	.73
19-302	19*ED	E	3/4 X 1	2.50	7.16	1.75	2.0
			20 x 25	64	182	44	.91
19-401	19*EE	E	1 X 1	2.64	7.30	1.75	2.2
			25 x 25	67	185	44	1.0
19-402	19*FE	F	1 X 1-1/4	2.95	9.34	2.00	4.1
			25 x 32	75	237	51	1.9
19-501	19*FF	F	1-1/4 X 1-1/4	2.95	9.34	2.00	4.3
			32 x 32	75	237	51	2.0
19-502	19*GF	G	1-1/4 X 1-1/2	3.38	11.01	2.37	7.4
			32 x 40	86	280	60	3.4
19-601	19*GG	G	1-1/2 X 1-1/2	3.38	11.01	2.37	7.6
			40 x 40	86	280	60	3.4
19-602	19*HG	H	1-1/2 X 2	3.63	11.96	2.75	11.5
			40 x 50	92	304	70	5.2
19-701	19*HH	H	2 X 2	3.63	11.96	2.75	11.6
			50 x 50	92	304	70	5.3
	19*JG ¹	J	1-1/2F X 2-1/2	3.80	14.00	3.50	20.0
			40 x 65	97	356	89	9.1
19-702	19*JH	J	2 X 2-1/2	4.06	14.25	3.50	19.9
			50 x 65	103	362	89	9.0
19-801	19*JJ	J	2-1/2 X 2-1/2	4.50	14.68	3.50	20.8
			65 x 65	114	373	89	9.4

* Specify trim letter (see previous page):

1: Available in bronze trim only, Model 19KJG & 19MJG.
Connections are 1-1/2" FNPT x 2-1/2" FNPT.

SAFETY & RELIEF VALVES



Bronze Safety Valves

19 SERIES

ASME SECTION I - STEAM

Pounds per hour (Kilograms per hour) saturated steam @ 3% overpressure. National Board Certified. Ratings are 90% of actual.

US Customary Units Lbs./Hr.

Metric Units Kg./Hr.

Orifice Letter Area in. ²	D 0.129	E 0.230	F 0.359	G 0.589	H 0.919	J 1.509	Orifice Letter Area cm. ²	D 0.835	E 1.483	F 2.315	G 3.800	H 5.932	J 9.733
Set Pressure psig							Set Pressure barg						
15	174	310	484	794	1,240	2,035	0.34	-	-	-	-	-	-
20	201	359	561	920	1,435	2,356	0.69	-	-	-	-	-	-
25	229	408	637	1,045	1,631	2,677	1.1	81	145	226	371	579	951
30	256	457	713	1,170	1,826	2,998	1.5	96	171	266	437	682	1,120
35	284	506	790	1,296	2,022	3,319	2	114	203	317	519	811	1,331
40	311	555	866	1,421	2,217	3,641	2.5	132	235	367	602	940	1,542
45	339	604	942	1,546	2,413	3,962	3	150	267	417	684	1,068	1,753
50	366	653	1,019	1,672	2,608	4,283	3.5	168	299	467	767	1,197	1,964
55	394	702	1,095	1,797	2,804	4,604	4	186	331	517	849	1,326	2,175
60	421	751	1,172	1,922	2,999	4,925	4.5	204	364	568	932	1,454	2,386
65	448	800	1,248	2,048	3,195	5,246	5	222	397	619	1,016	1,586	2,602
70	476	849	1,326	2,175	3,394	5,573	5.5	241	430	671	1,101	1,719	2,820
75	505	900	1,405	2,304	3,596	5,904	6	259	463	723	1,186	1,851	3,037
80	533	950	1,483	2,433	3,797	6,234	6.5	278	496	774	1,271	1,984	3,255
85	561	1,001	1,562	2,563	3,998	6,565	7	296	529	826	1,356	2,116	3,472
90	590	1,051	1,641	2,692	4,200	6,896	7.5	315	562	878	1,440	2,249	3,690
95	618	1,101	1,719	2,821	4,401	7,226	8	334	595	929	1,525	2,381	3,907
100	646	1,152	1,798	2,950	4,602	7,557	8.5	352	628	981	1,610	2,514	4,125
105	674	1,202	1,877	3,079	4,804	7,888	9	371	662	1,033	1,695	2,646	4,342
110	703	1,253	1,955	3,208	5,005	8,218	9.5	389	695	1,085	1,780	2,779	4,559
115	731	1,303	2,034	3,337	5,207	8,549	10	408	728	1,136	1,865	2,911	4,777
120	759	1,353	2,113	3,466	5,408	8,880	10.5	426	761	1,188	1,950	3,044	4,994
125	787	1,404	2,191	3,595	5,609	9,210	11	445	794	1,240	2,035	3,176	5,212
130	816	1,454	2,270	3,724	5,811	9,541	11.5	464	827	1,292	2,120	3,309	5,429
135	844	1,505	2,349	3,853	6,012	9,872	12	482	860	1,343	2,204	3,441	5,647
140	872	1,555	2,427	3,982	6,213	10,202	12.5	501	893	1,395	2,289	3,574	5,864
145	900	1,605	2,506	4,111	6,415	10,533	13	519	927	1,447	2,374	3,706	6,082
150	929	1,656	2,585	4,240	6,616	10,864	13.5	538	960	1,498	2,459	3,839	6,299
160	985	1,757	2,742	4,499	7,019	11,525	14	556	993	1,550	2,544	3,971	6,517
170	1,042	1,857	2,899	4,757	7,422	12,186	15	594	1,059	1,654	2,714	4,236	6,951
180	1,098	1,958	3,057	5,015	7,824	12,848	16	631	1,125	1,757	2,884	4,501	7,386
190	1,155	2,059	3,214	5,273	8,227	13,509	17	668	1,192	1,861	3,053	4,767	7,821
200	1,211	2,160	3,371	5,531	8,630	14,170	18	705	1,258	1,964	3,223	5,032	8,256
210	1,268	2,261	3,529	5,789	9,033	14,832	19	742	1,324	2,067	3,393	5,297	8,691
220	1,324	2,361	3,686	6,047	9,436	15,493	20	779	1,390	2,171	3,563	5,562	9,126
230	1,381	2,462	3,843	6,305	9,838	16,154	20.7	805	1,437	2,243	3,682	5,747	9,430
240	1,438	2,563	4,001	6,564	10,241	16,816	Approx. 0.1 barg increments						
250	1,494	2,664	4,158	6,822	10,644	17,477		3.7	6.6	10.3	17.0	26.5	43.5
255	1,522	2,714	4,237	6,951	10,845	17,808							
260	1,551	2,765	4,315	7,080	11,047	18,138							
265	1,579	2,815	4,394	7,209	11,248	18,469							
270	1,607	2,865	4,473	7,338	11,449	18,800							
275	1,635	2,916	4,551	7,467	11,651	19,130							
280	1,664	2,966	4,630	7,596	11,852	19,461							
285	1,692	3,017	4,709	7,725	12,053	19,792							
290	1,720	3,067	4,787	7,854	12,255	20,122							
295	1,748	3,117	4,866	7,983	12,456	20,453							
300	1,777	3,168	4,945	8,112	12,658	20,784							
Approx. 1 psi increments	5.7	10.0	15.6	25.8	40.2	66.0							

Note: Specify model 19S with stainless steel wetted trim for steam settings beyond 250 psig / 17.2 barg.



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19 SERIES

ASME SECTION VIII - STEAM

Pounds per hour (Kilograms per hour) saturated steam at 10% overpressure. National Board Certified. Ratings are 90% of actual.

US Customary Units Lbs./Hr.

Metric Units Kg./Hr.

Orifice Letter Area in. ²	D 0.129	E 0.230	F 0.359	G 0.589	H 0.919	J 1.509	Orifice Letter Area cm. ²	D 0.835	E 1.483	F 2.315	G 3.800	H 5.932	J 9.733
Set Pressure psig							Set Pressure barg						
5*	122	218	340	558	871	1,429	0.34*	55	99	154	253	395	648
10*	167	298	466	765	1,193	1,958	0.69*	76	135	211	347	541	888
15	179	320	499	820	1,279	2,100	1.1	84	149	233	382	597	980
20	207	369	576	945	1,474	2,421	1.5	98	175	273	448	700	1,149
25	234	418	652	1,070	1,670	2,742	2	116	207	323	531	829	1,360
30	262	467	729	1,195	1,865	3,063	2.5	136	242	378	620	968	1,589
35	292	521	813	1,333	2,080	3,416	3	156	277	433	711	1,110	1,821
40	322	574	897	1,471	2,295	3,769	3.5	175	313	489	802	1,251	2,054
45	352	628	981	1,609	2,510	4,122	4	195	348	544	892	1,393	2,286
50	383	682	1,065	1,747	2,725	4,475	4.5	215	384	599	983	1,535	2,518
55	413	736	1,149	1,885	2,941	4,828	5	235	419	654	1,074	1,676	2,750
60	443	790	1,233	2,022	3,156	5,181	5.5	255	454	709	1,164	1,818	2,982
65	473	844	1,317	2,160	3,371	5,535	6	274	490	765	1,255	1,959	3,215
70	503	897	1,401	2,298	3,586	5,888	6.5	294	525	820	1,346	2,101	3,447
75	534	951	1,485	2,436	3,801	6,241	7	314	561	875	1,436	2,242	3,679
80	564	1,005	1,569	2,574	4,016	6,594	7.5	334	596	930	1,527	2,384	3,911
85	594	1,059	1,653	2,712	4,231	6,947	8	354	631	986	1,618	2,525	4,144
90	624	1,113	1,737	2,849	4,446	7,300	8.5	374	667	1,041	1,708	2,667	4,376
95	654	1,167	1,821	2,987	4,661	7,653	9	393	702	1,096	1,799	2,808	4,608
100	684	1,220	1,905	3,125	4,876	8,007	9.5	413	737	1,151	1,890	2,950	4,840
105	715	1,274	1,989	3,263	5,091	8,360	10	433	773	1,207	1,980	3,091	5,072
110	745	1,328	2,073	3,401	5,306	8,713	10.5	453	808	1,262	2,071	3,233	5,305
115	775	1,382	2,157	3,539	5,521	9,066	11	473	844	1,317	2,162	3,374	5,537
120	805	1,436	2,241	3,677	5,736	9,419	11.5	493	879	1,372	2,252	3,516	5,769
125	835	1,489	2,325	3,814	5,951	9,772	12	512	914	1,428	2,343	3,657	6,001
130	866	1,543	2,409	3,952	6,167	10,125	12.5	532	950	1,483	2,434	3,799	6,234
135	896	1,597	2,493	4,090	6,382	10,479	13	552	985	1,538	2,524	3,941	6,466
140	926	1,651	2,577	4,228	6,597	10,832	13.5	572	1,021	1,593	2,615	4,082	6,698
145	956	1,705	2,661	4,366	6,812	11,185	14	592	1,056	1,649	2,706	4,224	6,930
150	986	1,759	2,745	4,504	7,027	11,538	15	631	1,127	1,759	2,887	4,507	7,395
155	1,017	1,812	2,829	4,641	7,242	11,891	16	671	1,197	1,870	3,068	4,790	7,859
160	1,047	1,866	2,913	4,779	7,457	12,244	17	711	1,268	1,980	3,250	5,073	8,324
165	1,077	1,920	2,997	4,917	7,672	12,597	18	750	1,339	2,091	3,431	5,356	8,788
170	1,107	1,974	3,081	5,055	7,887	12,951	19	790	1,410	2,201	3,612	5,639	9,253
180	1,167	2,082	3,249	5,331	8,317	13,657	20	830	1,480	2,312	3,794	5,922	9,717
190	1,228	2,189	3,417	5,606	8,747	14,363	20.7	857	1,530	2,389	3,920	6,120	10,042
200	1,288	2,297	3,585	5,882	9,177	15,069	Approx. 0.1 barg increments						
210	1,349	2,405	3,753	6,158	9,608	15,776							
220	1,409	2,512	3,921	6,433	10,038	16,482							
230	1,469	2,620	4,089	6,709	10,468	17,188							
240	1,530	2,727	4,257	6,985	10,898	17,894							
250	1,590	2,835	4,425	7,260	11,328	18,601							
255	1,620	2,889	4,509	7,398	11,543	18,954							
260	1,651	2,943	4,593	7,536	11,758	19,307							
265	1,681	2,997	4,677	7,674	11,973	19,660							
270	1,711	3,050	4,761	7,812	12,188	20,013							
275	1,741	3,104	4,845	7,950	12,403	20,366							
280	1,771	3,158	4,929	8,087	12,618	20,720							
285	1,801	3,212	5,013	8,225	12,834	21,073							
290	1,832	3,266	5,097	8,363	13,049	21,426							
295	1,862	3,320	5,181	8,501	13,264	21,779							
300	1,892	3,373	5,265	8,639	13,479	22,132							
Approx. 1 psi increments	6.0	10.8	16.8	27.6	43.0	70.6							

Note: Specify model 19S with stainless steel wetted trim for steam settings beyond 250 psig / 17.2 barg.

* Settings below 15 psi (1.1 barg) are non-ASME code.

SAFETY & RELIEF VALVES

Bronze Safety Valves



19 SERIES

ASME SECTION VIII - AIR

Standard cubic feet per minute (Normalized cubic meters per hour) of air at 10% overpressure. National Board Certified. Ratings are 90% of actual.

US Customary Units SCFM

Metric Units Nm³/Hr.

Orifice Letter Area in. ²	D 0.129	E 0.230	F 0.359	G 0.589	H 0.919	J 1.509	Orifice Letter Area cm. ²	D 0.835	E 1.483	F 2.315	G 3.800	H 5.932	J 9.733
Set Pressure psig							Set Pressure barg						
5*	39	69	108	178	277	455	0.34*	66	118	184	302	471	773
10*	54	97	151	248	387	635	0.69*	92	164	256	421	657	1,078
15	64	114	178	292	455	747	1.1	112	199	311	510	796	1,306
20	74	131	205	336	525	862	1.5	131	233	364	598	933	1,531
25	83	149	232	381	594	976	2	155	276	431	708	1,105	1,813
30	93	166	259	426	664	1,090	2.5	181	323	504	827	1,291	2,119
35	104	185	289	475	740	1,216	3	207	370	578	948	1,480	2,428
40	115	204	319	524	817	1,342	3.5	234	417	651	1,069	1,669	2,738
45	125	224	349	573	894	1,467	4	260	464	725	1,190	1,857	3,047
50	136	243	379	622	970	1,593	4.5	287	511	799	1,311	2,046	3,357
55	147	262	409	671	1,047	1,719	5	313	559	872	1,431	2,235	3,667
60	158	281	439	720	1,123	1,844	5.5	340	606	946	1,552	2,423	3,976
65	168	300	469	769	1,200	1,970	6	366	653	1,020	1,673	2,612	4,286
70	179	319	499	818	1,276	2,096	6.5	392	700	1,093	1,794	2,801	4,596
75	190	339	528	867	1,353	2,221	7	419	747	1,167	1,915	2,989	4,905
80	201	358	558	916	1,429	2,347	7.5	445	795	1,241	2,036	3,178	5,215
85	211	377	588	965	1,506	2,473	8	472	842	1,314	2,157	3,367	5,524
90	222	396	618	1,014	1,583	2,598	8.5	498	889	1,388	2,278	3,555	5,834
95	233	415	648	1,063	1,659	2,724	9	525	936	1,461	2,398	3,744	6,144
100	244	434	678	1,112	1,736	2,850	9.5	551	983	1,535	2,519	3,933	6,453
105	254	454	708	1,161	1,812	2,976	10	577	1,030	1,609	2,640	4,122	6,763
110	265	473	738	1,211	1,889	3,101	10.5	604	1,078	1,682	2,761	4,310	7,072
115	276	492	768	1,260	1,965	3,227	11	630	1,125	1,756	2,882	4,499	7,382
120	287	511	798	1,309	2,042	3,353	11.5	657	1,172	1,830	3,003	4,688	7,692
125	297	530	828	1,358	2,118	3,478	12	683	1,219	1,903	3,124	4,876	8,001
130	308	549	857	1,407	2,195	3,604	12.5	710	1,266	1,977	3,245	5,065	8,311
135	319	568	887	1,456	2,271	3,730	13	736	1,313	2,051	3,365	5,254	8,621
140	330	588	917	1,505	2,348	3,855	13.5	763	1,361	2,124	3,486	5,442	8,930
145	340	607	947	1,554	2,425	3,981	14	789	1,408	2,198	3,607	5,631	9,240
150	351	626	977	1,603	2,501	4,107	15	842	1,502	2,345	3,849	6,008	9,859
160	373	664	1,037	1,701	2,654	4,358	16	895	1,596	2,493	4,091	6,386	10,478
165	383	683	1,067	1,750	2,731	4,484	17	948	1,691	2,640	4,332	6,763	11,097
170	394	703	1,097	1,799	2,807	4,610	18	1,000	1,785	2,787	4,574	7,141	11,717
180	416	741	1,156	1,897	2,960	4,861	19	1,053	1,879	2,935	4,816	7,518	12,336
190	437	779	1,216	1,996	3,114	5,112	20	1,106	1,974	3,082	5,058	7,895	12,955
200	459	818	1,276	2,094	3,267	5,364	20.7	1,143	2,040	3,185	5,227	8,160	13,389
210	480	856	1,336	2,192	3,420	5,615	Approx. 0.1 barg increments	5.3 9.4 14.7 24.2 37.7 61.9					
220	502	894	1,396	2,290	3,573	5,867							
230	523	932	1,456	2,388	3,726	6,118							
240	545	971	1,515	2,486	3,879	6,369							
250	566	1,009	1,575	2,584	4,032	6,621							
255	577	1,028	1,605	2,633	4,109	6,746							
260	587	1,047	1,635	2,682	4,185	6,872							
265	598	1,067	1,665	2,731	4,262	6,998							
270	609	1,086	1,695	2,781	4,338	7,124							
275	620	1,105	1,725	2,830	4,415	7,249							
280	630	1,124	1,755	2,879	4,491	7,375							
285	641	1,143	1,784	2,928	4,568	7,501							
290	652	1,162	1,814	2,977	4,645	7,626							
295	663	1,182	1,844	3,026	4,721	7,752							
300	673	1,201	1,874	3,075	4,798	7,878							
Approx. 1 psi increments	2.1	3.8	6.0	9.8	15.3	25.1							

Note: To correct for temperature or specific gravities other than air (=1.0), multiply the SCFM from the capacity tables by factor Ksg (See page 50)

* Settings below 15 psi (1.1 barg) are non-ASME code.



For additional information, submittal sheets and manuals, visit www.apollovalves.com

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