



Sizing Safety Valves

Capacities

1. lb/h steam, 90% of actual capacity at 3% accumulation in accordance with ASME Code, Section I.
2. lb/h steam, 90% of actual capacity at 10% accumulation in accordance with ASME Code, Section VIII.

Steam saturation temperature °F	Orifice Area Sq. In.																					
	F		G		H		J		K		L		M		N		P		Q		R	
	lb/h	10%	lb/h	10%	lb/h	10%	lb/h	10%	lb/h	10%	lb/h	10%	lb/h	10%	lb/h	10%	lb/h	10%	lb/h	10%	lb/h	10%
250	438	716	741	1122	1161	1833	1897	2217	2717	4216	5308	6181	6395	9111	9427	15756	16320	22842	23634			
259	512	833	872	1314	1366	2146	2231	3074	3196	4770	6031	7236	7522	10688	11089	19176	19776	26744	27800			
267	587	961	1003	1505	1570	2459	2566	3475	3675	5466	6883	8292	8649	12224	12751	21139	22050	30046	31966			
274	662	1083	1133	1697	1775	2772	2900	3971	4153	6162	7760	9348	9776	13780	14413	23830	24923	34548	36133			
30	737	1206	1264	1888	1980	3085	3234	4419	4632	6858	8636	10403	10904	15337	16074	26521	27797	38449	40299			
287	811	1328	1395	2080	2184	3398	3569	4868	5111	7554	9513	11459	12031	16893	17736	29213	30671	42351	44465			
292	886	1451	1525	2272	2389	3711	3903	5161	5390	8020	10267	12318	12913	18449	19398	31904	33545	46253	48631			
298	961	1573	1656	2463	2594	4025	4237	5764	6069	8945	11625	13859	14486	20006	21060	34595	36418	50155	52797			
303	1035	1695	1787	2655	2798	4338	4572	6213	6548	9641	12612	15026	15678	22222	23387	37287	39282	52057	55964			
307	1110	1818	1917	2847	3003	4651	4906	6661	7027	10337	13018	15682	16344	23118	24383	39978	42166	57958	61130			
312	1185	1940	2048	3038	3208	4964	5240	7110	7506	11033	13894	16666	17398	24675	26045	42670	45040	61860	65296			
316	1260	2062	2179	3230	3412	5277	5575	7558	7985	11729	14771	17602	18413	26231	27707	45361	47913	65762	69462			
320	1334	2185	2309	3422	3617	5590	5909	8007	8464	12425	15647	18538	19422	27567	29369	48052	50787	69664	73629			
324	1409	2307	2440	3613	3822	5903	6244	8455	8943	13378	16624	19524	20409	29344	31031	50744	53661	73565	77795			
328	1484	2429	2571	3805	4026	6216	6578	8904	9422	13817	17400	20260	21176	30090	32693	53435	56535	77467	81961			
331	1559	2550	2702	3996	4231	6529	6912	9352	9901	14513	18276	21145	22026	32456	34934	56126	59408	81369	86129			
335	1633	2674	2832	4188	4436	6842	7247	9900	10379	15209	19153	22021	22902	34016	36516	58818	62282	85271	90294			
338	1708	2797	2963	4380	4640	7155	7581	10249	10858	15905	20029	22912	23793	35569	37678	61509	65156	89173	94460			
341	1783	2919	3094	4571	4845	7469	7915	10697	11337	16600	20905	23825	24706	37125	39340	64200	68030	93074	98626			
344	1858	3041	3224	4763	5050	7782	8250	11146	11816	17296	22183	25088	25969	38621	40842	66892	70903	96976	102792			
347	1932	3164	3355	4955	5254	8093	8594	11594	12285	17992	23068	26024	26904	40238	42663	69583	73777	100878	106958			
350	2007	3286	3486	5146	5459	8408	8918	12043	12774	18688	23923	26960	27840	41001	43425	72274	76651	104780	111125			
353	2082	3408	3616	5338	5663	8721	9235	12491	13253	19384	24666	27703	28583	41831	44255	74966	79343	108881	115291			
356	2157	3531	3747	5530	5868	9034	9567	12900	13732	20080	25910	28947	29827	42661	45085	76657	81034	110583	117047			
358	2231	3652	3878	5721	6077	9347	9922	13388	14211	20776	27053	26164	27045	43449	45873	78348	82722	112383	118915			
361	2306	3775	4008	5913	6277	9660	10256	13838	14660	21472	27960	26270	27151	44238	46662	80040	84416	120387	127790			
363	2381	3898	4139	6104	6462	9973	10590	14369	15199	22168	29329	27316	28207	45026	47450	81731	86107	122488	131956			
366	2456	4020	4270	6296	6667	10286	10925	14733	15568	22864	29626	27513	28404	45815	48239	82422	86808	124999	135122			
368	2530	4143	4400	6488	6861	10599	11259	15182	16027	23559	25026	28669	29550	46604	49028	84111	88487	127102	137288			
371	2605	4266	4531	6697	7066	10913	11593	15630	16485	24255	25769	30362	31243	47395	49819	84905	89281	129293	140488			
373	2680	4387	4662	6911	7301	11226	11928	16079	17084	24951	26512	31022	31903	48186	50610	85790	90166	131484	142684			
375	2755	4510	4792	7063	7505	11599	12262	16627	17563	25647	27255	32268	33149	49071	51495	86681	91057	133675	144881			
377	2829	4632	4923	7254	7710	11852	12597	17196	18142	26343	27998	33175	34056	50000	52424	87572	91948	135866	147086			
380	2904	4754	5054	7446	7915	12165	12931	17742	18698	27029	28684	34064	34945	50919	53343	88463	92839	138061	149287			
382	2979	4877	5184	7638	8119	12478	13265	18300	19266	27765	29420	34954	35835	51812	54236	89354	93730	140256	151456			
384	3053	5000	5315	7829	8324	12791	13600	18821	19787	28431	30228	35804	36685	52705	55129	90245	94621	142451	153651			
386	3128	5122	5446	8021	8529	13104	13934	19369	20335	29127	30971	36680	37561	53596	56020	91136	95512	144646	155846			
388	3203	5246	5577	8212	8721	13417	14268	19916	20882	30012	31956	37573	38454	54487	56911	92027	96403	146841	158041			
392	3278	5369	5700	8403	8912	13720	14581	20481	21457	30703	32647	38464	39345	55378	57802	92918	97294	149036	160241			
396	3352	5492	5823	8595	9104	14024	14897	21061	22047	31494	33438	39373	40254	56269	58693	93809	98185	151231	162436			
399	3427	5615	5946	8788	9297	14327	15212	21640	22626	32385	34329	40283	41164	57160	59584	94700	99076	153426	164631			
403	3501	5738	6069	8981	9490	14630	15515	22215	23201	33276	35220	41174	42055	58051	60475	95591	99967	155621	166826			
406	3576	5861	6192	9174	9683	14933	15818	22786	23772	34167	36111	42065	42946	58942	61366	96482	100858	157816	169021			
409	3650	5984	6315	9367	9876	15236	16121	23356	24342	35058	37002	42956	43837	59833	62257	97373	101744	160016	171216			
412	3725	6107	6438	9560	10069	15539	16424	23941	24927	35949	37893	43847	44728	60724	63148	98264	102115	162211	173411			
416	3800	6229	6560	9753	10262	15842	16729	24530	25516	36840	38784	44738	45619	61615	64039	99155	103010	164406	175606			
419	3875	6351	6682	9946	10471	16145	17026	25119	26105	37731	39675	45648	46529	62505	64929	100000	103905	166601	177801			
422	3950	6472	6803	10160	10680	16448	17329	25708	26694	38622	40566	46558	47439	63396	65820	100895	104800	168796	180001			

Local regulation may restrict the use of this product below the conditions quoted. Limiting conditions refer to standard connections only. In the interests of development and improvement of the product, we reserve the right to change the specification.

Sizing Safety Valves

Superheated Steam Correction Factors for Safety Valves

For capacities of superheated steam, multiply saturated steam capacity by correction factor below.

Gauge Pressure PSI	Saturated Temp. °F	TOTAL STEAM TEMPERATURE IN DEGREES FAHRENHEIT																							
		340	360	380	400	420	440	460	480	500	520	540	560	580	600	620	640	660	680	700	720	740	760		
15	250	.99	.99	.98	.98	.97	.96	.95	.94	.93	.92	.91	.90	.89	.88	.87	.86	.86	.85	.84	.83	.83	.82		
20	259	.99	.99	.98	.98	.97	.96	.95	.94	.93	.92	.91	.90	.89	.88	.87	.86	.86	.85	.84	.83	.83	.82		
40	287	1.00	.99	.99	.98	.97	.96	.95	.94	.93	.92	.91	.90	.89	.88	.87	.86	.86	.85	.84	.84	.83	.82		
60	308	1.00	.99	.99	.98	.97	.96	.95	.94	.93	.92	.91	.90	.89	.88	.87	.86	.86	.85	.84	.84	.83	.82		
80	324	1.00	1.00	.99	.99	.98	.97	.96	.94	.93	.92	.91	.90	.89	.88	.87	.86	.86	.85	.84	.84	.83	.82		
100	338	-	1.00	1.00	.99	.98	.97	.96	.95	.94	.93	.92	.91	.90	.89	.88	.87	.86	.85	.85	.84	.83	.82		
120	350	-	1.00	1.00	.99	.98	.97	.96	.95	.94	.93	.92	.91	.90	.89	.88	.87	.86	.85	.85	.84	.83	.82		
140	361	-	-	1.00	1.00	.99	.97	.96	.95	.94	.93	.92	.91	.90	.89	.88	.87	.86	.85	.85	.84	.83	.82		
160	371	-	-	-	1.00	.99	.98	.97	.96	.95	.94	.93	.92	.91	.90	.89	.88	.87	.86	.85	.84	.83	.82		
180	380	-	-	-	1.00	.99	.98	.97	.96	.95	.94	.93	.92	.91	.90	.89	.88	.87	.86	.85	.84	.83	.83		
200	388	-	-	-	1.00	.99	.99	.97	.96	.95	.94	.93	.92	.91	.90	.89	.88	.87	.86	.85	.84	.83	.83		
220	395	-	-	-	1.00	1.00	.99	.98	.96	.95	.94	.93	.92	.91	.90	.89	.88	.87	.86	.85	.84	.84	.83		
240	403	-	-	-	-	1.00	.99	.98	.97	.95	.94	.93	.92	.91	.90	.89	.88	.87	.86	.85	.84	.84	.83		
260	409	-	-	-	-	1.00	.99	.98	.97	.96	.94	.93	.92	.91	.90	.89	.88	.87	.86	.85	.85	.84	.83		
280	416	-	-	-	-	1.00	1.00	.99	.97	.96	.95	.93	.92	.91	.90	.89	.88	.87	.86	.85	.85	.84	.83		
300	422	-	-	-	-	-	1.00	.99	.98	.96	.95	.93	.92	.91	.90	.89	.88	.87	.86	.86	.85	.84	.83		
350	436	-	-	-	-	-	1.00	1.00	.99	.97	.96	.94	.93	.92	.91	.90	.89	.88	.87	.86	.85	.84	.83		
400	448	-	-	-	-	-	-	1.00	.99	.98	.96	.95	.93	.92	.91	.90	.89	.88	.87	.86	.85	.84	.84		
450	460	-	-	-	-	-	-	-	1.00	.99	.97	.96	.94	.93	.92	.91	.89	.88	.87	.86	.86	.84	.84		
500	470	-	-	-	-	-	-	-	-	1.00	.99	.98	.96	.94	.93	.92	.91	.90	.89	.88	.87	.86	.85		
550	480	-	-	-	-	-	-	-	-	-	1.00	.99	.97	.95	.94	.92	.91	.90	.89	.88	.87	.86	.85		
600	489	-	-	-	-	-	-	-	-	-	-	1.00	.99	.98	.96	.94	.93	.92	.90	.89	.88	.87	.85		
650	497	-	-	-	-	-	-	-	-	-	-	-	1.00	.99	.97	.95	.94	.92	.91	.90	.89	.87	.86		
700	506	-	-	-	-	-	-	-	-	-	-	-	-	1.00	.99	.97	.96	.94	.93	.91	.90	.89	.88		
750	513	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	1.00	.98	.96	.95	.93	.92	.90	.89		
800	520	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	.99	.97	.95	.94	.92	.91	.90		
850	527	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	.99	.98	.96	.94	.93	.92		
900	533	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	.99	.97	.95	.93	.92		
950	540	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	.99	.97	.95	.94		
1000	546	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	.99	.98	.96		

Sizing Formulas

STEAM – LBS./HR. – SEC. I

$$A = \frac{W_p}{51.45 K_d P F_{sh} F_p}$$

STEAM – LBS./HR. – SEC. VIII

$$A = \frac{W_p}{51.5 K_d P F_{sh} F_p}$$

AIR – SCFM

$$A = \frac{W_c}{18.33 K_d P F_t F_p} \text{ or } A = \frac{W_c \sqrt{T}}{418 K_d P F_p}$$

A = AREA, SQ. IN.

W_p = FLOW, LBS./HR.

W_c = FLOW, SCFM

K_d = Effective coefficient of discharge for use in these formulas. (.859 for SV73 & SV74)

P = Set pressure + Overpressure + 14.7

F_p = Constant back pressure correction factor.

F_{sh} = Superheat correction factor.

T = Absolute temperature, °F + 460.

F_t = $\sqrt{\frac{520}{T}}$

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Sizing Safety Valves

Sizing Safety Valves – SV73 & SV74 Air Capacities (SCFM)

Orifice	F	G	H	J	K	L	M	N	P	Q	R	
Area Sq. In.	0.328	0.537	0.841	1.374	1.968	3.054	3.846	4.633	6.83	11.811	17.123	
Set pressure, psig	Airflow, SCFM @ 10% accumulation psig											
15	169	277	434	709	1 015	1 575	1 983	2 389	3 522	6 091	8 830	
20	195	319	500	817	1 170	1 816	2 287	2 754	4 061	7 022	10 180	
25	221	362	566	925	1 325	2 056	2 590	3 120	4 599	7 953	11 530	
30	247	404	633	1 034	1 480	2 297	2 893	3 485	5 138	8 885	12 880	
35	275	451	706	1 153	1 651	2 562	3 227	3 887	5 730	9 909	14 366	
40	304	497	779	1 272	1 822	2 827	3 560	4 289	6 323	10 933	15 851	
45	332	544	851	1 391	1 993	3 092	3 894	4 691	6 915	11 958	17 336	
50	361	590	924	1 510	2 163	3 357	4 227	5 092	7 507	12 982	18 821	
55	389	637	997	1 629	2 334	3 622	4 561	5 495	8 100	14 007	20 307	
60	417	683	1 070	1 749	2 505	3 887	4 895	5 896	8 692	15 032	21 792	
65	446	730	1 143	1 868	2 675	4 152	5 228	6 298	9 284	16 055	23 726	
70	474	777	1 216	1 987	2 846	4 417	5 562	6 700	9 877	17 080	24 762	
75	503	823	1 289	2 106	3 017	4 681	5 895	7 102	10 470	18 105	26 247	
80	531	870	1 362	2 225	3 187	4 946	6 229	7 504	11 062	19 129	27 732	
85	560	916	1 435	2 345	3 358	5 211	6 563	7 906	11 655	20 154	29 218	
90	588	963	1 508	2 464	3 529	5 476	6 896	8 307	12 247	21 178	30 703	
95	617	1 009	1 581	2 583	3 699	5 741	7 230	8 709	12 839	22 202	32 188	
100	645	1 056	1 654	2 702	3 870	6 006	7 563	9 111	13 431	23 227	33 673	
105	673	1 103	1 727	2 821	4 041	6 271	7 897	9 513	14 024	24 251	35 157	
110	702	1 149	1 800	2 940	4 212	6 536	8 231	9 915	14 617	25 276	36 644	
115	730	1 196	1 873	3 060	4 382	6 801	8 564	10 317	15 209	26 301	38 129	
120	759	1 242	1 946	3 179	4 553	7 065	8 898	10 719	15 801	27 325	39 614	
125	787	1 289	2 019	3 298	4 724	7 330	9 231	11 120	16 394	28 350	41 100	
130	816	1 336	2 092	3 417	4 894	7 595	9 565	11 522	16 986	29 374	42 585	
135	844	1 382	2 165	3 536	5 065	7 860	9 899	11 924	17 579	30 398	44 070	
140	873	1 429	2 237	3 655	5 236	8 125	10 232	12 326	18 171	31 422	45 555	
145	901	1 475	2 310	3 775	5 407	8 390	10 566	12 728	18 764	32 448	47 041	
150	930	1 522	2 383	3 894	5 577	8 655	10 899	13 130	19 356	33 472	48 526	
155	958	1 568	2 456	4 013	5 748	8 920	11 233	13 531	19 948	34 495	50 010	
160	986	1 615	2 529	4 132	5 919	9 185	11 566	13 933	20 541	35 520	51 496	
165	1 015	1 662	2 602	4 251	6 089	9 450	11 900	14 335	21 133	36 545	52 981	
170	1 043	1 708	2 675	4 371	6 260	9 714	12 234	14 737	21 726	37 570	54 466	
175	1 072	1 755	2 748	4 490	6 430	9 979	12 567	15 138	22 317	38 592	55 949	
180	1 100	1 801	2 821	4 609	6 601	10 244	12 900	15 540	22 910	39 617	57 435	
185	1 129	1 848	2 894	4 728	6 772	10 509	13 234	15 943	23 503	40 643	58 922	
190	1 157	1 894	2 967	4 847	6 943	10 774	13 568	16 344	24 095	41 667	60 407	
195	1 186	1 941	3 040	4 966	7 114	11 039	13 902	16 746	24 688	42 692	61 893	
200	1 214	1 988	3 113	5 086	7 284	11 304	14 235	17 148	25 280	43 716	63 377	
210	1 271	2 081	3 259	5 324	7 626	11 834	14 903	17 952	26 465	45 766	66 349	
220	1 328	2 174	3 404	5 562	7 967	12 363	15 569	18 755	27 649	47 813	69 316	
230	1 385	2 267	3 550	5 801	8 308	12 983	16 237	19 559	28 834	49 862	72 288	
240	1 442	2 360	3 696	6 039	8 650	13 423	16 904	20 363	30 019	51 912	75 259	
250	1 499	2 453	3 842	6 277	8 991	13 953	17 571	21 166	31 204	53 960	78 229	
260	1 555	2 546	3 988	6 516	9 332	14 482	18 238	21 970	32 388	56 008	81 198	
270	1 612	2 640	4 134	6 754	9 674	15 012	18 906	22 775	33 574	58 060	84 172	
280	1 669	2 733	4 280	6 992	10 015	15 542	19 572	23 577	34 758	60 106	87 139	
290	1 726	2 826	4 426	7 231	10 357	16 072	20 240	24 382	35 944	62 157	90 112	
300	1 783	2 919	4 572	7 469	10 698	16 601	20 907	25 185	37 128	64 204	93 080	

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