

Valve Sizing Steam Applications

Two Position Applications: The valve is normally sized to be the same as the pipe, using the largest Cv available for a given pipe size.

Modulating Applications: Select the valve to meet the BtuH requirements of the coil. The table assumes an atmospheric return.

Assumptions:

- 1.) The table assumes an atmospheric return.
- 2.) Minimum coil BtuH calculated assuming a pressure drop across the valve of 50% of supply pressure.
- 3.) Maximum coil BtuH calculated assuming a pressure drop across the valve of 80% of supply pressure.

Steam Sizing

VG1000 Series Ball Valve, Cv 1.2 to 7.4

Available Pipe Size NPT	1/2"		1/2"		1/2"		1/2" 3/4"		1/2" 3/4" 1"	
	1.2		1.9		2.9		4.7		7.4	
Steam Supply	Coil BtuH		Coil BtuH		Coil BtuH		Coil BtuH		Coil BtuH	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Pressure Drop psi										
1	10,700	13,600	17,000	21,500	25,900	32,800	42,000	53,200	66,200	83,700
2	15,600	19,800	24,700	31,300	37,800	47,800	61,200	77,400	96,400	121,900
3	19,600	24,800	31,100	39,300	47,500	60,000	76,900	97,300	121,100	153,200
4	23,300	29,500	36,900	46,700	56,300	71,200	91,200	115,400	143,700	181,700
5	26,700	33,700	42,200	53,400	64,400	81,500	104,400	132,100	164,400	208,000
6	29,900	37,900	47,400	59,900	72,300	91,500	117,200	148,300	184,600	233,400
7	33,000	41,800	52,300	66,100	79,800	100,900	129,300	163,600	203,600	257,600
8	36,100	45,600	57,100	72,200	87,200	110,300	141,300	178,700	222,400	281,400
9	39,000	49,400	61,800	78,200	94,300	119,300	152,900	193,300	240,700	304,400
10	42,000	53,100	66,400	84,000	101,400	128,300	164,300	207,900	258,700	327,300
11	44,800	56,700	71,000	89,800	108,300	137,000	175,600	222,100	276,400	349,600
12	47,600	60,300	75,400	95,400	115,100	145,600	186,600	236,000	293,800	371,600
15	56,000	70,900	88,700	112,200	135,400	171,300	219,500	277,600	345,600	437,100

VG1000 Series Ball Valve, Cv 11.7 to 73.7

Available Pipe Size NPT	1/2" 3/4" 1"		1" 1-1/4" 1-1/2"		1-1/4" 1-1/2" 2"		1-1/2" 2"		2"	
	11.7		18.7		29.2		46.8		73.7	
Steam Supply	Coil BtuH		Coil BtuH		Coil BtuH		Coil BtuH		Coil BtuH	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Pressure Drop psi										
1	104,700	132,400	167,300	211,600	261,200	330,400	416,800	527,200	659,200	833,800
2	152,400	192,700	243,500	308,000	380,300	481,000	606,900	767,600	959,800	1,214,100
3	191,500	242,300	306,100	387,200	478,000	604,600	762,800	964,900	1,206,400	1,526,000
4	227,100	287,300	363,000	459,200	566,800	717,000	904,600	1,144,300	1,430,700	1,809,700
5	260,000	328,900	415,600	525,700	648,900	820,800	1,035,600	1,309,900	1,637,800	2,071,700
6	291,800	369,100	466,400	589,900	728,200	921,200	1,162,200	1,470,100	1,838,100	2,325,000
7	322,000	407,300	514,600	650,900	803,500	1,016,400	1,282,400	1,622,100	2,028,100	2,565,400
8	351,700	444,900	562,100	711,000	877,700	1,110,200	1,400,800	1,771,800	2,215,400	2,802,200
9	380,500	481,300	608,200	769,300	949,600	1,201,200	1,515,500	1,917,000	2,396,800	3,031,800
10	409,100	517,500	653,800	827,000	1,021,000	1,291,400	1,629,300	2,061,000	2,576,900	3,259,500
11	437,000	552,800	698,500	883,500	1,090,700	1,379,600	1,740,600	2,201,700	2,752,800	3,482,100
12	464,500	587,500	742,400	939,000	1,159,200	1,466,300	1,850,000	2,340,100	2,925,900	3,700,900
15	546,400	691,100	873,200	1,104,600	1,363,600	1,724,800	2,176,100	2,752,600	3,441,600	4,353,300

Valve Sizing Steam Applications (Continued)

Steam Sizing

VG1000 Series Flanged Ball Valve

Available Pipe Size NPT	2-1/2"		3"		4"		5"		6"	
Cv	47		74		117		176		211	
Steam Supply	Coil BtuH		Coil BtuH		Coil BtuH		Coil BtuH		Coil BtuH	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Pressure Drop psi										
1	420,400	531,800	661,900	837,200	1,046,500	1,323,700	1,574,200	1,991,300	1,887,300	2,387,200
2	612,100	774,200	963,700	1,219,000	1,523,700	1,927,300	2,292,000	2,899,200	2,747,800	3,475,800
3	769,400	973,200	1,211,300	1,532,200	1,915,200	2,422,600	2,881,000	3,644,200	3,454,000	4,368,900
4	912,400	1,154,100	1,436,500	1,817,100	2,271,300	2,873,000	3,416,600	4,321,700	4,096,100	5,181,100
5	1,044,500	1,321,200	1,644,500	2,080,100	2,600,100	3,288,800	3,911,200	4,947,300	4,689,000	5,931,200
6	1,172,200	1,482,700	1,845,600	2,334,500	2,918,000	3,691,000	4,389,400	5,552,200	5,262,300	6,656,400
7	1,293,400	1,636,000	2,036,400	2,575,800	3,219,700	4,072,600	4,843,300	6,126,300	5,806,400	7,344,600
8	1,412,800	1,787,000	2,224,400	2,813,600	3,516,900	4,448,600	5,290,400	6,691,900	6,342,500	8,022,700
9	1,528,500	1,933,400	2,406,600	3,044,100	3,805,000	4,813,000	5,723,800	7,240,100	6,862,000	8,679,900
10	1,643,300	2,078,700	2,587,400	3,272,800	4,090,800	5,174,500	6,153,700	7,783,900	7,377,500	9,331,900
11	1,755,500	2,220,600	2,764,000	3,496,200	4,370,100	5,527,800	6,573,900	8,315,400	7,881,200	9,969,000
12	1,865,900	2,360,200	2,937,800	3,716,000	4,644,800	5,875,300	6,987,100	8,838,100	8,376,600	10,595,600
15	2,194,800	2,776,200	3,455,600	4,371,100	5,463,600	6,911,000	8,218,800	10,396,000	9,853,200	12,463,400
20	2,724,500	3,446,300	4,289,700	5,426,100	6,782,400	8,579,100	10,202,500	12,905,300	12,231,500	15,471,700
25	3,245,700	4,105,500	5,110,300	6,464,000	8,079,700	10,220,200	12,154,100	15,373,900	14,571,200	18,431,200

VG2000 Series Cast Iron Flanged Globe Valve

Available Pipe Size NPT	2-1/2"		3"		4"		5"		6"	
Cv	51		83		150		240		350	
Steam Supply	Coil BtuH		Coil BtuH		Coil BtuH		Coil BtuH		Coil BtuH	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Pressure Drop psi										
1	456,200	577,000	742,400	939,100	1,341,700	1,697,100	2,146,700	2,715,400	3,130,600	3,959,900
2	664,200	840,100	1,080,900	1,367,300	1,953,400	2,470,900	3,125,500	3,953,500	4,558,000	5,765,500
3	834,800	1,056,000	1,358,700	1,718,600	2,455,400	3,105,900	3,928,700	4,969,400	5,729,300	7,247,100
4	990,000	1,252,300	1,611,200	2,038,100	2,911,900	3,683,300	4,659,000	5,893,200	6,794,400	8,594,300
5	1,133,400	1,433,600	1,844,500	2,333,100	3,333,400	4,216,500	5,333,500	6,746,300	7,778,000	9,838,400
6	1,271,900	1,608,900	2,070,000	2,618,400	3,741,000	4,732,000	5,985,600	7,571,200	8,729,000	11,041,400
7	1,403,400	1,775,200	2,284,000	2,889,100	4,127,800	5,221,300	6,604,500	8,354,000	9,631,500	12,183,000
8	1,533,000	1,939,100	2,494,900	3,155,800	4,508,900	5,703,300	7,214,200	9,125,300	10,520,700	13,307,800
9	1,658,600	2,098,000	2,699,300	3,414,300	4,878,200	6,170,500	7,805,100	9,872,800	11,382,500	14,397,900
10	1,783,200	2,255,600	2,902,000	3,670,800	5,244,700	6,634,000	8,391,400	10,614,400	12,237,500	15,479,400
11	1,904,900	2,409,600	3,100,200	3,921,500	5,602,700	7,087,000	8,964,400	11,339,100	13,073,000	16,536,200
12	2,024,700	2,561,000	3,295,100	4,168,000	5,954,900	7,532,400	9,527,900	12,051,900	13,894,800	17,575,700
15	2,381,600	3,012,500	3,875,900	4,902,700	7,004,600	8,860,200	11,207,400	14,176,400	16,344,200	20,673,900
20	2,956,400	3,739,600	4,811,400	6,086,000	8,695,400	10,998,800	13,912,600	17,598,200	20,289,200	25,664,000
25	3,521,900	4,454,900	5,731,800	7,250,200	10,358,600	13,102,800	16,573,800	20,964,400	24,170,200	30,573,100
30	4,077,600	5,157,800	6,636,100	8,394,000	11,992,900	15,170,000	19,188,600	24,271,900	27,983,400	35,396,600
35	4,623,800	5,848,600	7,524,900	9,518,400	13,599,300	17,201,900	21,758,900	27,523,000	31,731,700	40,137,800

Valve Sizing Steam Applications (Continued)
Steam Sizing
VG7000 Series Bronze Globe Valve, Cv 0.73 to 7.3

Available Pipe Size NPT	1/2"		1/2"		1/2"		3/4"	
	0.73		1.8		4.6		7.3	
Cv	0.73		1.8		4.6		7.3	
Steam Supply ¹	Coil BtuH		Coil BtuH		Coil BtuH		Coil BtuH	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Pressure Drop psi								
1	6,500	8,300	16,100	20,400	41,100	52,000	65,300	82,600
2	9,500	12,000	23,400	29,700	59,900	75,800	95,100	120,300
3	11,900	15,100	29,500	37,300	75,300	95,200	119,500	151,200
4	14,200	17,900	34,900	44,200	89,300	113,000	141,700	179,300
5	16,200	20,500	40,000	50,600	102,200	129,300	162,200	205,200
6	18,200	23,000	44,900	56,800	114,700	145,100	182,100	230,300
7	20,100	25,400	49,500	62,700	126,600	160,100	200,900	254,100
8	21,900	27,800	54,100	68,400	138,300	174,900	219,400	277,600
9	23,700	30,000	58,500	74,000	149,600	189,200	237,400	300,300
10	25,500	32,300	62,900	79,600	160,800	203,400	255,200	322,900
11	27,300	34,500	67,200	85,000	171,800	217,300	272,700	344,900
12	29,000	36,700	71,500	90,400	182,600	231,000	289,800	366,600
15	34,100	43,100	84,100	106,300	214,800	271,700	340,900	431,200
20	42,400	53,000	104,600	130,800	267,400	334,200	424,400	530,300
25	50,400	60,300	124,300	148,600	317,700	379,800	504,100	602,700
30	58,400	67,600	143,900	166,700	367,800	425,900	583,700	675,900
35	66,200	74,800	163,200	184,500	417,000	471,500	661,800	748,200
40	69,800	77,400	172,100	190,900	439,800	487,900	698,000	774,400
45	81,900	89,500	201,900	220,600	516,000	563,900	818,900	894,800
50	89,700	96,800	221,100	238,600	565,000	609,700	896,600	967,600
55	97,400	104,000	240,100	256,500	613,700	655,400	973,900	1,040,100
60	105,100	111,200	259,100	274,300	662,200	701,000	1,050,900	1,112,400
65	112,800	118,500	278,100	292,200	710,700	746,600	1,127,900	1,184,800
70	120,500	125,700	297,100	310,000	759,300	792,300	1,204,900	1,257,400
75	128,100	132,900	315,900	327,700	807,200	837,500	1,281,000	1,329,000
80	135,800	140,200	334,800	345,600	855,700	883,200	1,357,900	1,401,600
85	143,400	147,300	353,500	363,200	903,300	928,100	1,433,600	1,472,900
90	151,000	154,500	372,400	381,000	951,700	973,800	1,510,200	1,545,300
95	158,600	161,600	390,900	398,500	999,100	1,018,500	1,585,500	1,616,300
100	166,200	168,900	409,800	416,400	1,047,400	1,064,200	1,662,200	1,688,800

1. For steam pressures greater than 38 PSIG, VG 7243 or VG 7443 (stainless steel trim valves) are required. See Lit. 977140 for ordering information.

Valve Sizing Steam Applications (Continued)

Steam Sizing

VG7000 Series Bronze Globe Valve, Cv 11.6 to 46.2

Available Pipe Size NPT	1"		1 1/4"		1 1/2"		2"	
Cv	11.6		18.5		29.9		46.2	
Steam Supply ¹	Coil BtuH		Coil BtuH		Coil BtuH		Coil BtuH	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Pressure Drop psi								
1	103,800	131,200	165,500	209,300	267,400	338,300	413,200	522,700
2	151,100	191,100	240,900	304,700	389,400	492,500	601,700	761,000
3	189,900	240,200	302,800	383,100	489,400	619,100	756,300	956,600
4	225,200	284,800	359,100	454,300	580,400	734,200	896,900	1,134,400
5	257,800	326,100	411,100	520,000	664,500	840,500	1,026,700	1,298,700
6	289,300	365,900	461,400	583,600	745,700	943,300	1,152,200	1,457,500
7	319,200	403,800	509,100	644,000	822,800	1,040,800	1,271,400	1,608,200
8	348,700	441,100	556,100	703,400	898,800	1,136,900	1,388,700	1,756,600
9	377,200	477,200	601,600	761,000	972,400	1,230,000	1,502,500	1,900,500
10	405,600	513,000	646,800	818,200	1,045,400	1,322,400	1,615,400	2,043,300
11	433,300	548,100	691,000	874,100	1,116,800	1,412,700	1,725,600	2,182,800
12	460,500	582,500	734,400	929,000	1,187,000	1,501,500	1,834,100	2,320,000
15	541,700	685,200	863,900	1,092,800	1,396,300	1,766,100	2,157,400	2,729,000
20	674,400	842,700	1,075,500	1,344,000	1,738,300	2,172,200	2,685,900	3,356,300
25	801,100	957,700	1,277,600	1,527,300	2,064,800	2,468,500	3,190,500	3,814,200
30	927,500	1,074,000	1,479,100	1,712,800	2,390,600	2,768,300	3,693,800	4,277,500
35	1,051,700	1,188,900	1,677,200	1,896,100	2,710,800	3,064,500	4,188,600	4,735,100
40	1,109,100	1,230,500	1,768,900	1,962,400	2,858,900	3,171,700	4,417,500	4,900,700
45	1,301,300	1,421,900	2,075,400	2,267,700	3,354,200	3,665,200	5,182,800	5,663,200
50	1,424,800	1,537,600	2,272,200	2,452,100	3,672,400	3,963,200	5,674,500	6,123,700
55	1,547,600	1,652,800	2,468,100	2,635,900	3,989,000	4,260,100	6,163,600	6,582,500
60	1,669,900	1,767,700	2,663,200	2,819,100	4,304,400	4,556,300	6,650,900	7,040,200
65	1,792,300	1,882,800	2,858,300	3,002,700	4,619,700	4,853,000	7,138,100	7,498,600
70	1,914,700	1,998,100	3,053,600	3,186,600	4,935,200	5,150,200	7,625,700	7,957,800
75	2,035,500	2,111,900	3,246,300	3,368,000	5,246,800	5,443,500	8,107,000	8,411,000
80	2,157,800	2,227,200	3,441,300	3,552,000	5,561,900	5,740,800	8,594,000	8,870,400
85	2,278,000	2,340,500	3,633,000	3,732,700	5,871,800	6,032,900	9,072,800	9,321,800
90	2,399,800	2,455,600	3,827,300	3,916,200	6,185,800	6,329,500	9,558,000	9,780,000
95	2,519,400	2,568,400	4,018,100	4,096,200	6,494,100	6,620,300	10,034,300	10,229,400
100	2,641,300	2,683,600	4,212,300	4,279,800	6,808,100	6,917,100	10,519,500	10,688,000

1. For steam pressures greater than 38 PSIG, VG 7243 or VG 7443 (stainless steel trim valves) are required. See Lit. 977140 for ordering information.

Valve Sizing Steam Applications (Continued)
Steam Sizing
JS Series Two Position On/Off Electric Zone Valve

Available Pipe Size NPT	1/2	1/2 3/4	1/2 3/4	1 1-1/4
Cv	1.0	2.5	3.5	8.0
Steam Supply Pressure Drop psi	Maximum Coil BtuH	Maximum Coil BtuH	Maximum Coil BtuH	Maximum Coil BtuH
1	11,310	28,280	39,600	90,510
2	16,470	41,180	57,660	131,780
3	20,710	51,760	72,470	165,650
4	24,560	61,390	85,940	196,440
5	28,110	70,270	98,380	224,880
6	31,550	78,870	110,410	252,370
7	34,810	87,020	121,830	278,470
8	38,020	95,060	133,080	304,180
9	41,140	102,840	143,980	329,090
10	44,230	110,570	154,790	353,810
11	47,250	118,120	165,360	377,970
12	50,220	125,540	175,760	401,730
15	59,070	147,670	206,740	472,550