

# VG7000 Series Bronze Globe Valves for Assembly in the Field

## Description

The VG7000 Series Bronze Globe Valves accurately regulate the flow of water or steam in response to the demand of a controller in HVAC systems. These valves are available in normally open, normally closed, and three-way mixing configurations. Both electric and pneumatic actuators are available.

Refer to the *VG7000 Series Bronze Control Valves Product Bulletin (LIT-977140)* for important product application information.

- tight shutoff testing ensures occupant comfort and energy conservation
- standard Johnson Controls® Ring Pack Packings provide industry-leading reliability and operating life
- complete actuator interchangeability allows easy field retrofit or mounting using standardized mounting kits
- all valve sizes available with brass trim or stainless steel trim for use in saturated steam applications up to 100 psig



VG7000 Series Bronze Control Valve

## Features

- size ranges of 1/2 in. through 2 in. with several styles of electric and pneumatic actuators offer a broad selection
- American National Standards Institute (ANSI) Class 250 (pressure/temperature) standard compliant

## Repair Information

If the VG7000 Series Globe Valve fails to operate within its specifications, replace the valve body, actuator, or entire assembly. For replacement parts, contact the nearest Johnson Controls representative.

## Selection Charts

### VG7000 Series Valve Bodies

Valve Size, in.	Cv	End Connections <sup>1</sup>						
		National Pipe Thread (NPT)	Union Sweat	Union Sweat (3/8 in. Copper Tubing)	Union Sweat (3/4 in. Copper Tubing)	Union Globe	Union Angle	NPT
<b>Two-Way Push-Down-to-Close</b>								
Brass Trim								Stainless Steel Trim
1/2	0.73	VG7241CT	VG7281CT	VG7271CT	VG7291CT	VG7251CT	VG7551CT	VG7243CT
1/2	1.8	VG7241ET	VG7281ET	VG7271ET	VG7291ET	VG7251ET	VG7551ET	VG7243ET
1/2	4.6	VG7241GT	VG7281GT	VG7271GT	VG7291GT	VG7251GT	VG7551GT	VG7243GT
3/4	7.3	VG7241LT	VG7281LT	—	—	VG7251LT	VG7551LT	VG7243LT
1	11.6	VG7241NT	VG7281NT	—	—	VG7251NT	VG7551NT	VG7243NT
1-1/4	18.5	VG7241PT	VG7281PT	—	—	VG7251PT	VG7551PT	VG7243PT
1-1/2	28.9	VG7241RT	VG7281RT	—	—	VG7251RT	VG7551RT	VG7243RT
2	46.2	VG7241ST	VG7281ST	—	—	—	—	VG7243ST
1-1/2	28.9	3/8 in. M Stem Only Available in 1-1/2 and 2 in. NPT Stainless Steel Trim						VG7243RM
2	46.2							VG7243SM
<b>Two-Way Push-Down-to-Open</b>								
Brass Trim								Stainless Steel Trim
1/2	0.73	VG7441CT	VG7481CT	VG7471CT	VG7491CT	VG7451CT	—	VG7443CT
1/2	1.8	VG7441ET	VG7481ET	VG7471ET	VG7491ET	VG7451ET	—	VG7443ET
1/2	4.6	VG7441GT	VG7481GT	VG7471GT	VG7491GT	VG7451GT	—	VG7443GT
3/4	7.3	VG7441LT	VG7481LT	—	—	—	—	VG7443LT
1	11.6	VG7441NT	VG7481NT	—	—	—	—	VG7443NT
1-1/4	18.5	VG7441PT	VG7481PT	—	—	—	—	VG7443PT
1-1/2	28.9	VG7441RT	VG7481RT	—	—	—	—	VG7443RT
2	46.2	VG7441ST	VG7481ST	—	—	—	—	VG7443ST
1-1/2	28.9	3/8 in. M Stem Only Available in 1-1/2 and 2 in. NPT Stainless Steel Trim						VG7443RM
2	46.2							VG7443SM
<b>Three-Way Mixing</b>								
Brass Trim								Stainless Steel Trim
1/2	0.73	VG7842CT	VG7882CT	VG7872CT	VG7892CT	—	—	VG7844CT
1/2	1.8	VG7842ET	VG7882ET	VG7872ET	VG7892ET	—	—	VG7844ET
1/2	4.6	VG7842GT	VG7882GT	VG7872GT	VG7892GT	—	—	VG7844GT
3/4	7.3	VG7842LT	VG7882LT	—	—	—	—	VG7844LT
1	11.6	VG7842NT	VG7882NT	—	—	—	—	VG7844NT
1-1/4	18.5	VG7842PT	VG7882PT	—	—	—	—	VG7844PT
1-1/2	28.9	VG7842RT	VG7882RT	—	—	—	—	VG7844RT
2	46.2	VG7842ST	VG7882ST	—	—	—	—	VG7844ST
1-1/2	28.9	3/8 in. M Stem Only Available in 1-1/2 and 2 in. NPT Stainless Steel Trim						VG7844RM
2	46.2							VG7844SM

1. All actuators except MP84 Series use the 1/4 in. T stem. MP84 Series pneumatic actuators require the 3/8 in. M stem.

## VG7000 Series Bronze Globe Valves for Assembly in the Field (Continued)

### Pneumatic Actuators for VG7000 Series Brass Trim Valve Bodies

Actuator Code Number	V-3801-8001			V-3000-8012 Exposed Spring			MP822C00 (3 to 7)	1 and 1-1/4 in.		
				V-3000-8003 Enclosed Spring <sup>1</sup>			MP822D00 (4 to 8)			
							MP822E00 (9 to 13)			
							MP823C00 (3 to 7)	1-1/2 and 2 in.		
							MP823D00 (4 to 8)			
							MP823E00 (9 to 13)			
Temperature Range	35 to 248°F (2 to 120°C), 15 psig Saturated Steam			35 to 284°F (2 to 140°C), 38 psig Saturated Steam			35 to 284°F (2 to 140°C), 38 psig Saturated Steam			
Spring Range	3 to 6	4 to 8	9 to 13	3 to 6	4 to 8	9 to 13	3 to 7	4 to 8	9 to 13	
Valve Size	Mounting Kit									
1/2 and 3/4 in.	VG7000-1010	VG7000-1011	VG7000-1012	VG7000-1001	VG7000-1002	VG7000-1003				
1 and 1-1/4 in.				VG7000-1004	VG7000-1005	VG7000-1006	MP8000-6702			
1-1/2 and 2 in.				VG7000-1007	VG7000-1008	VG7000-1009				
Positioner	Not Available			V-9502-90 (V-3000-8012 Only)			V-9502-95			
Size, in.	Cv	Closeoff Pressure, psig								
<b>Two-Way Normally Open</b>										
1/2	0.73	186	157	84	365	339	191			
1/2	1.8	186	157	84	365	339	191			
1/2	4.6	105	89	48	225	192	108			
3/4	7.3	67	56	30	144	122	69			
1	11.6				90	76	42	279	257	148
1-1/4	18.5				55	47	26	170	157	90
1-1/2	28.9				35	30	16	109	100	58
2	46.2				22	19	11	70	64	37
<b>Two-Way Normally Closed</b>										
1/2	0.73	37	57	158	100	142	348			
1/2	1.8	37	57	158	100	142	348			
1/2	4.6	18	28	76	49	68	168			
3/4	7.3	11	16	45	29	41	100			
1	11.6				17	25	65	70	96	223
1-1/4	18.5				10	14	37	40	55	128
1-1/2	28.9				6	9	23	25	34	79
2	46.2				4	6	14	16	21	50
<b>Three-Way Mixing</b>										
1/2	0.73	186/37	157/57	84/158	365/100	339/142	191/348			
1/2	1.8	186/37	157/57	84/158	365/100	339/142	191/348			
1/2	4.6	105/18	89/28	48/76	225/49	192/68	108/168			
3/4	7.3	67/11	56/16	30/45	144/29	122/41	69/100			
1	11.6				90/17	76/25	42/65	279/70	257/96	148/223
1-1/4	18.5				55/10	47/14	26/37	170/40	157/55	90/128
1-1/2	28.9				35/6	30/9	16/23	109/25	100/34	58/79
2	46.2				22/4	19/6	11/14	70/16	64/21	37/50

1. To prevent finger injury, V-3000-8003 actuators with enclosed springs are used in applications where the valve is exposed to the public. Typical applications include control of hot water or steam radiators.

## VG7000 Series Bronze Globe Valves for Assembly in the Field (Continued)

### Pneumatic Actuators for VG7000 Series Stainless Steel Trim Valve Bodies

Actuator Code Number	V-3000-8012 Exposed Spring			MP821C00 (3 to 7)	1/2 and 3/4 in.	MP843C00 (3 to 7)	1-1/2 and 2 in.			
	V-3000-8003 Enclosed Spring <sup>1</sup>			MP821D00 (4 to 8)	1 and 1-1/4 in.	MP843D00 (4 to 8)				
				MP821E00 (9 to 13)		MP843E00 (9 to 13)				
				MP822C00 (3 to 7)	1-1/2 and 2 in.					
				MP822D00 (4 to 8)						
				MP822E00 (9 to 13)						
				MP823C00 (3 to 7)						
				MP823D00 (4 to 8)						
				MP823E00 (9 to 13)						
Temperature Range	35 to 338°F (2 to 170°C), 100 psig Saturated Steam			35 to 338°F (2 to 170°C), 100 psig Saturated Steam			35 to 338°F (2 to 170°C), 100 psig Saturated Steam			
Spring Range	3 to 6	4 to 8	9 to 13	3 to 6	4 to 8	9 to 13	3 to 7	4 to 8	9 to 13	
Valve Size	Mounting Kit									
1/2 and 3/4 in.	VG7000-1001	VG7000-1002	VG7000-1003	MP8000-6701			Not Recommended			
1 and 1-1/4 in.	VG7000-1004	VG7000-1005	VG7000-1006	MP8000-6702						
1-1/2 and 2 in.	VG7000-1007	VG7000-1008	VG7000-1009				MP8000-6703			
Positioner	V-9502-90 (V-3000-8012 Only)			V-9502-95			V-9502-95			
Size, in.	Cv	Closeoff Pressure, psig								
<b>Two-Way Normally Open</b>										
1/2	0.73	299	255	143	308	308	308			
1/2	1.8	299	255	143	308	308	308			
1/2	4.6	169	144	81	308	308	275			
3/4	7.3	108	92	52	304	304	175			
1	11.6	67	57	32	209	193	111			
1-1/4	18.5	41	35	19	128	118	68			
1-1/2	28.9				82	75	43	165	152	88
2	46.2				52	48	28	106	97	56
<b>Two-Way Normally Closed</b>										
1/2	0.73	75	106	261	280	308	308			
1/2	1.8	75	106	261	280	308	308			
1/2	4.6	36	51	126	135	183	308			
3/4	7.3	22	31	75	81	109	252			
1	11.6	13	19	49	53	72	168			
1-1/4	18.5	7	11	28	30	41	96			
1-1/2	28.9				19	25	59	39	53	121
2	46.2				12	16	37	24	33	76
<b>Three-Way Mixing</b>										
1/2	0.73	299/75	255/106	143/261	308/280	308/308	308/308			
1/2	1.8	299/75	255/106	143/261	308/280	308/308	308/308			
1/2	4.6	169/36	144/51	81/126	308/135	308/183	275/308			
3/4	7.3	108/22	92/31	52/75	304/81	304/109	175/252			
1	11.6	67/13	57/19	32/49	209/53	193/72	111/168			
1-1/4	18.5	41/7	35/11	19/28	128/30	118/41	68/96			
1-1/2	28.9				82/19	75/25	43/59	165/39	152/53	88/121
2	46.2				52/12	48/16	28/37	106/24	97/33	56/76

1. To prevent finger injury, V-3000-8003 actuators with enclosed springs are used in applications where the valve is exposed to the public. Typical applications include control of hot water or steam radiators.



## VG7000 Series Bronze Globe Valves for Assembly in the Field (Continued)

### Non-Spring-Return Electric Actuators for VG7000 Series Valve Bodies

Actuator Code Number	VA-7150-1001 On/Off (Floating)		VA-7200-1001 On/Off (Floating)		VA7810-AGA-2 On/Off (Floating Control) VA7810-AGC-2 On/Off (Floating Control) with Two Switches		
	VA-7152-1001 0 to 10 VDC Proportional		VA-7202-1001 0 to 10 VDC Proportional		VA7810-HGA-2 0 to 10 VDC Proportional Control VA7810-HGC-2 0 to 10 VDC Proportional Control with Two Switches		
	VA-7153-1001 On/Off (Floating) with Feedback		VA-7203-1001 On/Off (Floating) with Feedback				
Temperature Range	Brass Trim: 35 to 284°F (2 to 140°C), 38 psig Saturated Steam Stainless Steel: 35 to 338°F (2 to 170°C), 100 psig Saturated Steam						
Linkage	None						
Stem Type	Requires T Stem						
Size, in.	Cv	Closeoff Pressure, psig					
		Brass Trim	Stainless Steel Trim	Brass Trim	Stainless Steel Trim	Brass Trim	Stainless Steel Trim
<b>Two-Way Normally Open</b>							
1/2	0.73	345	239		308		308
1/2	1.8	345	239		308		308
1/2	4.6	216	135		278		283
3/4	7.3	138	86		177		180
1	11.6	86	54	179	112	182	114
1-1/4	18.5	52	33	109	68	111	70
1-1/2	28.9	34	21	70	44	71	45
2	46.2	21	13	45	28	46	28
<b>Two-Way Normally Closed</b>							
1/2	0.73	345	308		308		308
1/2	1.8	345	308		308		308
1/2	4.6	257	161		308		308
3/4	7.3	153	96		197		201
1	11.6	100	63	209	131	213	133
1-1/4	18.5	57	36	120	75	122	76
1-1/2	28.9	36	22	74	46	76	47
2	46.2	22	14	46	29	47	30
<b>Three-Way Mixing</b>							
1/2	0.73	345/345	239/308		308/308		308/308
1/2	1.8	345/345	239/308		308/308		308/308
1/2	4.6	216/257	135/161		278/308		283/308
3/4	7.3	138/153	86/96		177/197		180/201
1	11.6	86/100	54/63	179/209	112/131	182/213	114/133
1-1/4	18.5	52/57	33/36	109/120	68/75	111/122	70/76
1-1/2	28.9	34/36	21/22	70/74	44/46	71/76	45/47
2	46.2	21/22	13/14	45/46	28/29	46/47	28/30

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## VG7000 Series Bronze Globe Valves for Assembly in the Field (Continued)

### Spring-Return Electric Actuators for VG7000 Series Valve Bodies

Actuator Code Number		VA-4233-AGA-2 Floating Control VA-4233-AGC-2 Floating Control with Two Switches		VA7820-HGA-2 <sup>1</sup> 0 to 10 VDC Proportional Control VA7820-HGC-2 <sup>1</sup> 0 to 10 VDC Proportional Control with Two Switches		VA7830-HGA-2 <sup>1</sup> 0 to 10 VDC Proportional Control VA7830-HGC-2 <sup>1</sup> 0 to 10 VDC Proportional Control with Two Switches	
		VA-4233-BGA-2 On/Off Control VA-4233-BGC-2 On/Off Control with Two Switches					
		VA-4233-GGA-2 0 to 10 VDC Proportional Control VA-4233-GGC-2 0 to 10 VDC Proportional Control with Two Switches					
		Spring-Return Valve Stem Up		Spring-Return Valve Stem Up		Spring-Return Valve Stem Down	
Temperature Range		Brass Trim: 35 to 284°F (2 to 140°C), 38 psig Saturated Steam					
		Stainless Steel: 35 to 338°F (2 to 170°C), 100 psig Saturated Steam					
Linkage		None					
Stem Type		Requires T Stem					
Size, in.	Cv	Closeoff Pressure					
		Brass Trim		Stainless Steel Trim		Stainless Steel Trim	
<b>Two-Way Normally Open</b>							
1/2	0.73	345	230	345	308	345	308
1/2	1.8	345	230	345	308	345	308
1/2	4.6	208	130	345	283	345	283
3/4	7.3	132	82	289	180	289	180
1	11.6	63	39	182	114	182	114
1-1/4	18.5	38	24	111	70	111	70
1-1/2	28.9			71	45	71	45
2	46.2			46	28	46	28
<b>Two-Way Normally Closed</b>							
1/2	0.73	345	224	345	308	345	308
1/2	1.8	345	224	345	308	345	308
1/2	4.6	173	108	345	308	345	308
3/4	7.3	103	64	321	201	321	201
1	11.6	66	41	213	133	213	133
1-1/4	18.5	38	24	122	76	122	76
1-1/2	28.9			76	47	76	47
2	46.2			47	30	47	30
<b>Three-Way Mixing</b>							
1/2	0.73	345/345	230/224	345/345	308/308	345/345	308/308
1/2	1.8	345/345	230/224	345/345	308/308	345/345	308/308
1/2	4.6	208/173	130/108	345/345	283/308	345/345	283/308
3/4	7.3	132/103	82/64	289/321	180/201	289/321	180/201
1	11.6	63/66	39/41	182/213	114/133	182/213	114/133
1-1/4	18.5	38/38	24/24	111/122	70/76	111/122	70/76
1-1/2	28.9			71/76	45/47	71/76	45/47
2	46.2			46/47	28/30	46/47	28/30

1. VA7820 and VA7830 spring-return actuators ship from the factory already set for 0-10 VDC proportional control. These actuators have field-selectable switches that allow the actuators to be used for on/off control or three-wire floating control.

## VG7000 Series Bronze Globe Valves for Assembly in the Field (Continued)

### Technical Specifications

VG7000 Series Bronze Globe Valves for Assembly in the Field			
<b>Service<sup>1</sup></b>		Hot Water, and Chilled Water, and Steam with up to 50% Glycol Solution	
		<b>Cv</b>	
<b>Valve Body Sizes Available</b>	1/2 in. (DN15)	0.73, 1.8, 4.6	
	3/4 in. (DN20)	7.3	
	1 in. (DN25)	11.6	
	1-1/4 in. (DN32)	18.5	
	1-1/2 in. (DN40)	28.9	
	2 in. (DN50)	46.2	
<b>Stem Travel</b>	<b>Two-Way and Three-Way</b>	<b>1/2 and 3/4 in. Valves</b>	<b>1 and 1-1/4 in. Valve</b>
		5/16 in.	1/2 in.
		<b>1-1/2 and 2 in. Valves</b>	3/4 in.
		<b>Brass Trim</b>	<b>Stainless Steel Trim</b>
<b>End Connections</b>		NPT, Union Sweat, Globe and Angle	NPT
<b>Materials</b>	<b>Body</b>	Cast Bronze – C84400	Cast Bronze – C83600
	<b>Stem</b>	Stainless Steel	Stainless Steel
	<b>Plug</b>	Brass	Stainless Steel
	<b>Seat</b>	3/4 through 2 in.: Machined from Body 1/2 in.: Brass Seat	Stainless Steel Replaceable Seat
	<b>Disk</b>	Ethylene Propylene Diene Monomer (EPDM)	Stainless Steel
	<b>Packing</b>	Self-Adjusting Ethylene Propylene Terpolymer (EPT) U-Cups	Spring-Loaded Polytetrafluoroethylene (PTFE)
<b>Flow Characteristic</b>	<b>Two-Way</b>	Equal Percentage	Equal Percentage
	<b>Three-Way</b>	Linear	Linear
<b>Ratings</b>	<b>Body</b>	ANSI Class 250 <sup>2</sup>	ANSI Class 250 <sup>3</sup>
	<b>Leakage (Percent of Maximum Flow)</b>	0.01%	0.05%
	<b>Fluid Temperature, Body Only<sup>4</sup></b>	35 to 284°F (2 to 140°C)	35 to 338°F (2 to 170°C)
	<b>Maximum Steam Pressure, Saturated Steam</b>	38 psig (262 kPa)	100 psig (690 kPa)
	<b>Maximum Pressure Drop, Valve Open</b>	35 psig (1/2 through 1-1/4 in.) 30 psig (1-1/2 and 2 in. Valves)	35 psig (1/2 through 1-1/4 in.) 30 psig (1-1/2 and 2 in. Valves)
<b>Compliance</b>	<b>Canada</b>	CRN: 0C1099.9087YTN	

1. Refer to the VDI 2035 Guideline for recommended proper water treatment.

2. 400 psig (2,758 kPa) for fluid temperatures between 35 and 150°F (2 and 66°C); decreasing to 365 psig (2,515 kPa) at 248°F (120°C).

3. 400 psig (2,758 kPa) for fluid temperatures between 35 and 150°F (2 and 66°C); decreasing to 308 psig (2,122 kPa) at 338°F (170°C).

4. Refer to appropriate actuator literature for ambient limitations due to the actuator.