VG7000 Series Bronze Valves
ANSI Class 250 (PN16)
Body Size 1/2 Through 2 in. (DN15 to DN50)

The VG7000 Series electrically and pneumatically operated bronze valves are designed primarily to regulate the flow of water and steam in response to the demand of a controller, in heating, ventilating, and air conditioning systems.

These valves are available in normally open, normally closed, and three-way mixing configurations. Both electric and pneumatic actuators are available.

Table 1: Field Mounting Kits for Actuators

Actuator Style	Valve Size in. (DN)[1]	Spring Range psig (kPa)	Mounting Kit Code Number
T-3x11		3 to 6 (21 to 42)	VG7000-1001[2]
V-3000-8001	1/2 or 3/4 (DN15 or DN20)	4 to 8 (28 to 56)	VG7000-1002[2]
V-3000-8003	5/16 in. stroke (8 mm)	9 to 13 (63 to 91)	VG7000-1003[2]
T-3x11		3 to 6 (21 to 42)	VG7000-1004[2]
V-3000-8001	1 or 1-1/4 (DN25 or DN32)	4 to 8 (28 to 56)	VG7000-1005[2]
V-3000-8003	1/2 in. stroke (13 mm)	9 to 13 (63 to 91)	VG7000-1006[2]
T-3x11		3 to 6 (21 to 42)	VG7000-1007[2]
V-3000-8001	1-1/2 or 2 (DN40 or DN50)	4 to 8 (28 to 56)	VG7000-1008[2]
V-3000-8003	3/4 in. stroke (19 mm)	9 to 13 (63 to 91)	VG7000-1009[2]
		3 to 6 (21 to 42)	VG7000-1010[2]
V-3801-8001	1/2 or 3/4 (DN15 or DN20)	4 to 8 (28 to 56)	VG7000-1011[2]
	5/16 in. stroke (8 mm)	9 to 13 (63 to 91)	VG7000-1012[2]
V-3801-8001	1/2 or 3/4 (DN15 or DN20)	Kit with Three Springs: 3 to 6, 4 to 8, 9 to 13 (Includes hardware to adapt **one** valve only.)	VG7000-1015[2]
MP82xx/MP83xx	1/2 or 3/4 (DN15 or DN20) with stainless steel trim	Not Applicable	MP8000-6701[2]
MP82xx/MP83xx	1 through 2 (DN25 through DN50) with 1/4 in. stem and stainless steel or brass trim	Not Applicable	MP8000-6702[2]
MP84xx/MP85xx	1-1/2 through 2 (DN25 through DN50) with 3/8 in. stem and stainless steel trim	Not Applicable	MP8000-6703[3]

Continued on next page . . .

[1] DN is the European designation for body size in metric units "mm."

[2] The spring kits include: upper spring seat, spring, stem extension, stem locking screw (or set screw), and in addition for the V-3801-8001, a bonnet adaptor.

[2] The mounting kit includes: stem nut (1), stem extender nuts (2), stem extender (1), yoke nut (1).

[3] The mounting kit includes: stem nuts (2), yoke nut (1).

Note: All spring kits are for use with valves with standard threaded stem design only.

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Actuator Style (Cont.)	Valve Size in. (DN)[1]	Spring Range psig (kPa)	Mounting Kit Code Number
M110	1/2 through 2 (DN15 through DN50)	Not Applicable	VG7000-M110
M120/M130	1/2 through 2 (DN15 through DN50)	Not Applicable	VG7000-M130
M140	1/2 through 2 (DN15 through DN50)	Not Applicable	VG7000-M140
M150	1/2 through 2 (DN15 through DN50)	Not Applicable	VG7000-M150
VA-715x	1/2 through 2 (DN15 through DN50)	Not Applicable	None Required
VA-720x	1 through 2 (DN25 through DN50)	Not Applicable	None Required
VA-802x	**Not Available for Field Mounting.**		
VA-805x	**Not Available for Field Mounting.**		
M9x16	1/2 through 2 (DN15 through DN50)	Not Applicable	M9000-500
M100	Valve Linkage Adaptor Kit (adapts Y20EBD-x for mounting on VG7000 valve bodies)	Not Applicable	Y20EBE-11[1]

[1] DN is the European designation for body size in metric units "mm."

[1] Refer to Table 2 for complete code number information.

Note: All spring kits are for use with valves with standard threaded stem design only.

Linkage Kits

The Y20EBE-11 Valve Linkage Adaptor Kits are designed to adapt current Y20EBD-x Linkage Kits to field mount M100 Series Electric Actuators to VG7000 Valve Bodies. Refer to Table 2 for the appropriate mounting kit code number.

Table 2: M100 Linkage Kits*

Linkage Kit	Adaptor Kit	Mounting Kit Code Number
Y20EBD-2	Y20EBE-11	VG7000-M140
Y20EBD-3	Y20EBE-11	VG7000-M150
Y20EBD-5	Y20EBE-11	VG7000-M110
Y20EBD-6	Y20EBE-11	VG7000-M130

* The linkage kit code number plus (+) the adaptor kit code number converts (=) to the VG7000-M1x0 mounting kit code number.

Table 3: V-400 Pneumatic Actuator Reference Data*

VG7000 Series Valve Size in.	Spring Range psig (kPa)	Valve Stroke in. (mm)	Trim Style	Actuator Code Number
1/2 or 3/4	3 to 6 (21 to 42)	5/16 (8)	Stainless Steel	V-400-8001
	4 to 8 (28 to 56)			V-400-8011
	9 to 13 (63 to 91)			V-400-8002
1 or 1-1/4	3 to 6 (21 to 42)	1/2 (13)	Brass/Stainless Steel	V-400-8005
	4 to 8 (28 to 56)			V-400-8012
	9 to 13 (63 to 91)			V-400-8006
1-1/2 or 2	3 to 6 (21 to 42)	3/4 (19)	Brass/Stainless Steel	V-400-8007
	4 to 8 (28 to 56)			V-400-8013
	9 to 13 (63 to 91)			V-400-8008

* Use of V-400 Actuators on 1/2 or 3/4 in. brass trim valves is not recommended because high shutoff forces may cause damage to resilient seats.

Table 4: V-400 Accessories

Description	Code Number
Mounting Kit for V-400 Mounted to 1/2 or 3/4 in. VG7000 Series Valves with Stainless Steel Trim	VG7000-1013
Mounting Kit for V-400 Mounted to 1 Through 2 in. VG7000 Series Valves with Stainless Steel or Brass Trim	VG7000-1014

Installation and Servicing

It is recommended that the VG7000 Series Valves are mounted in an upright position in a conveniently accessible location. Sufficient clearance must be allowed for actuator removal (refer to Figure 1 and Tables 5 through 7). The valve must be piped with the flow in the direction indicated by the arrow, so that the plug seats against the flow.

On electrically actuated valve assemblies, all wiring must be in accordance with applicable electrical code requirements. Input lines to the actuator must be wired correctly for the valve to move in the proper direction.

Note: The actuator must be protected against dripping water, which could enter the housing. The actuator must not be covered with thermal insulating material.

Use of the VG7000 Series Valves with fluids other than specified must be approved by Johnson Controls.

CAUTION: Care should be taken to prevent foreign material such as weld slag, thread burrs, metal chips, and scale from entering the piping system. This debris can damage or severely impede the operation of the valve. This is extremely critical with smaller valves since the debris may be larger than the valve opening and may never pass to downstream filters. Subsequent flushing and filtering of the system with the valve installed will not remedy the problem.

When servicing, ensure:

- The pneumatic or electrical power to the actuator is turned off or isolated. Do not touch or attempt to connect or disconnect wires when electrical power is on.

CAUTION: **Equipment Damage Hazard.** Disconnect the power supply before wiring connections are made to prevent possible damage to the equipment. Make and check all wiring connections before applying power to the system. Short-circuited or improperly connected wires may result in permanent damage to the unit.

- The electrical wiring connections are in accordance with local regulations and national codes.
- Sufficient clearance is allowed for actuator removal from valve.
- No pressure is applied to the piping system when servicing the valve.

Dimensions

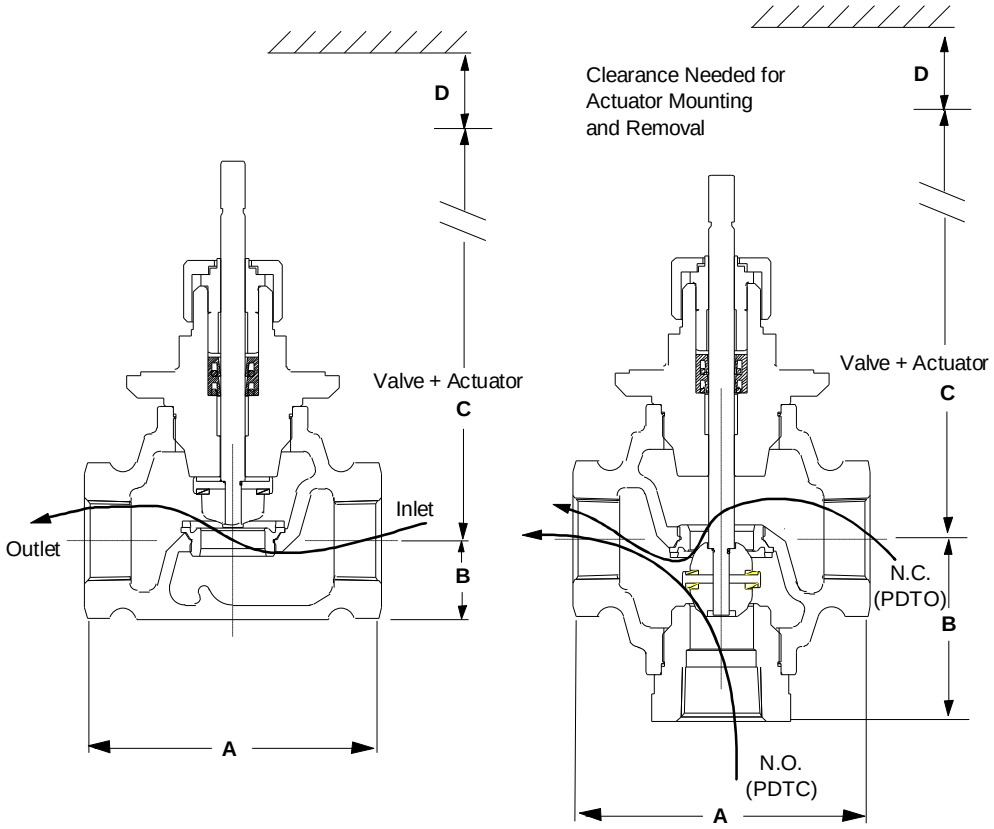


Figure 1: Two-Way and Three-Way Valve Dimensions, Fluid Flow Direction, and Port Designation

Table 5: Valve Dimensions, in. (mm)

Valve Size, in. (DN)	A	B		
	N.O/N.C./Three-Way	N.O.	N.C.	Three-Way
1/2 (DN15)	3 (76)	13/16 (21)	1-9/16 (39)	1-13/16 (46)
3/4 (DN20)	3-7/32 (81)	15/16 (24)	1-5/8 (41)	2-1/8 (54)
1 (DN25)	4-1/8 (104)	1-5/32 (29)	1-3/4 (44)	2-9/16 (65)
1-1/4 (DN32)	4-23/32 (119)	1-11/32 (34)	2 (51)	2-25/32 (70)
1-1/2 (DN40)	5-1/8 (130)	2-5/32 (55)	2-3/4 (70)	3-3/8 (85)
2 (DN50)	5-29/32 (150)	2-1/8 (53)	2-27/32 (72)	3-3/4 (95)

Table 6: Brass Trim Actuator Dimensions, in. (mm)

Actuator Style	C						D
	1/2 in. DN15	3/4 in. DN20	1 in. DN25	1-1/4 in. DN32	1-1/2 in DN40	2 in. DN50	
V-3000-8001	4-3/4 (120)	4-3/4 (120)	5-31/32 (151)	5-7/8 (149)	5-13/16 (147)	6-3/16 (157)	3-9/16 (90)
V-3000-8003	5-11/32 (135)	5-11/32 (135)	6-9/16 (166)	6-19/32 (167)	6-13/32 (162)	6-13/16 (172)	3-9/16 (90)
V-3801-8001	4 (102)	4 (102)	--	--	--	--	2-3/8 (60)
MP82xx/ MP83xx	--	--	12-23/32 (323)	12-27/32 (326)	13-13/32 (341)	13-13/16 (351)	3-1/2 (89)
VA-715x	7-11/16 (195)	7-11/16 (195)	8-5/8 (219)	8-5/8 (219)	9-5/32 (233)	9-5/32 (233)	2-1/2 (64)
VA-720x	--	--	9-19/32 (244)	9-5/8 (244)	9-15/16 (252)	10-3/4 (273)	4-1/2 (114)
VA-802x	6-7/16 (164)	6-7/16 (164)	--	--	--	--	1-1/2 (38)
VA-805x	7-3/16 (183)	7-3/16 (183)	--	--	--	--	2 (51)
M91xx M92xx	14 (356)	14 (356)	15-7/32 (386)	15-7/32 (386)	15-1/16 (382)	15-15/32 (392)	--
M1xx	10-13/16 (274)	10-13/16 (274)	12-1/32 (305)	12-1/32 (305)	11-7/8 (301)	12-1/4 (311)	--

Table 7: Stainless Steel Trim Actuator Dimensions, in. (mm)

Actuator Style	C*						D
	1/2 in. DN15	3/4 in. DN20	1 in. DN25	1-1/4 in. DN32	1-1/2 in. DN40	2 in. DN50	
V-3000-8001	5-7/16 (138)	5-7/16 (138)	6 (152)	6-1/4 (158)	--	--	3-9/16 (90)
V-3000-8003	6-1/16 (153)	6-1/4 (158)	6-19/32 (167)	6-27/32 (173)	--	--	3-9/16 (90)
MP82xx	12-3/4 (324)	13-17/64 (352)	13-39/64 (346)	13-27/32 (352)	14-1/32 (356)	14-15/64 (361)	3-1/2 (89)
MP83xx	12-21/64 (313)	12-35/64 (319)	12-7/8 (327)	13-1/8 (333)	13-19/64 (338)	13-1/2 (343)	3-1/2 (89)
MP84xx	--	--	--	--	17-7/32 (437)	17-27/64 (443)	3-1/2 (89)
MP85xx	--	--	--	--	15-61/64 (405)	16-5/32 (410)	3-1/2 (89)
VA-715x	8-13/32 (214)	8-5/8 (219)	8-31/32 (228)	9-7/32 (234)	9-13/32 (239)	9-5/8 (244)	2-1/2 (64)
VA-720x	9-3/32 (256)	9-5/16 (236)	9-21/32 (245)	9-7/8 (251)	10-3/32 (256)	10-9/32 (261)	4-1/2 (114)
M91xx M92xx	14-11/16 (373)	14-29/32 (378)	15-1/4 (387)	15-1/2 (393)	15-23/32 (399)	15-7/8 (403)	--
M1xx	11-1/2 (292)	11-23/32 (297)	12-1/16 (306)	12-5/16 (312)	12-1/2 (318)	12-11/16 (322)	--

* The extended bonnet is standard for VG7000 Series Valves with stainless steel trim to allow higher fluid temperatures (100 psi saturated steam at 338°F).

Accessory and Maintenance Information

The parts available for the VG7000 Series Valves are listed in Table 8. Refer to Table 9 for a list of available accessories.

For a replacement VG7000 Series Valve, contact the nearest wholesale distributor or Johnson Controls Parts at (800) 482-2778.

Table 8: Maintenance Parts

Description	Code Number
Ring Pack Packing Kits for Brass Trim Valves: **Single Pack for 1/4 in. Stem (1/2 or 3/4 in. Valves)** Kit Includes: Two ring packs (U-cup with installed O-ring), one stem wiper, one insertion/removal tool, one bullet, one grease tube, and one 3 in. strip of crocus cloth.	VG7000-6001
Single Pack for 3/8 in. Stem (1 Through 2 in. Valves) Kit Includes: Two ring packs (U-cup with installed O-ring), one stem wiper, one stem guide, one insertion/removal tool, one sleeve packing installer, one grease tube, and one 3 in. strip of crocus cloth.	VG7000-6002
Ring Pack Packing Kits for Brass Trim Valves: **Ten Pack for 1/4 in. Stem (1/2 or 3/4 in. Valves)** Kit Includes: Twenty ring packs (U-cup with installed O-ring),ten stem guides, one insertion/removal tool, one bullet, two grease tubes, and one 24 in. strip of crocus cloth.	VG7000-6003
Ten Pack for 3/8 in. Stem (1 Through 2 in. Valves) Kit Includes: Twenty ring packs (U-cup with installed O-ring), ten stem wipers, ten stem guides, one insertion/removal tool, one sleeve packing installer, two grease tubes, and one 24 in. strip of crocus cloth.	VG7000-6004
PTFE V-Ring Packing Kits for Stainless Steel Trim Valves: **Single Pack for 1/4 in. Stem, SS Trim (1/2 or 3/4 in. Valves)** Kit Includes: Two Teflon® V-rings, one rubber V-ring, two Teflon stem wipers, one Teflon stem guide, one Teflon bushing, one steel washer, one spring, one insertion/removal tool, one bullet, one grease tube, and one 3 inc.strip of crocus cloth.	VG7000-6011
Single Pack for 3/8 in. Stem, SS Trim (1 Through 2 in. Valve) Kit Includes: Two Teflon V-rings, one rubber V-ring, two Teflon stem wipers, one Teflon stem guide, one Teflon bushing, one steel washer, one spring, one insertion/removal tool, one sleeve packing installer, one grease tube, and one 3 in. strip of crocus cloth.	VG7000-6012

Table 9: Accessories (Order Separately)

Description	Code Number
For specific actuator code numbers, refer to appropriate product bulletins.	--
For spring and linkage kits, refer to Tables 1, 2, and 4 in this bulletin.	--
EP Transducer, Low Volume, 0.5 to 9 VDC	EP-8000-1
EP Transducer, High Volume, 0.25 to 9.5 VDC	EP-8000-2
EP Transducer, Low Volume, 4 to 20 mA DC	EP-8000-3
EP Transducer, High Volume, 4 to 20 mA DC	EP-8000-4
EP-8000 Electro-Pneumatic Transducer Mounting Kit	EP-8000-101
0.007 inch Restrictor (required for low-volume EP-8000 models)	R-3710 Series
Inline Air Filter (required for all EP-8000 models)	A-4000-137
Hypodermic Needle Test Probe Assembly	JC 5361
0 to 30 psig (0 to 210 kPa) Gauge	G-2010 Series
Valve Position Indicator for Electrically Actuated Valves with VA-805x Actuators Only	VA-8000-102
Positioners and Positioner Accessories for V-3000-8001 and V-3000-8011:	
Pneumatic Positioner (Less Spring) for V-3000-8001 Pneumatic Positioner (Less Spring) for V-3000-8011	V-9502-91 V-9502-90
Positioner Feedback Springs for V-3000-8001 and V-3000-8011: 5/16 in. (8 mm) Stroke for 1/2 or 3/4 in. Valve - 3 psi Span 5/16 in. (8 mm) Stroke for 1/2 or 3/4 in. Valve - 8 psi Span	 V-9502-6801 V-9502-6802
1/2 in. (13 mm) Stroke for 1 or 1-1/4 in. Valve - 5 psi Span 1/2 in. (13 mm) Stroke for 1 or 1-1/4 in. Valve - 12 psi Span	V-9502-6801 V-9502-6802
3/4 in. (19 mm) Stroke for 1-1/2 or 2 in. Valve - 10 psi Span 3/4 in. (19 mm) Stroke for 1-1/2 or 2 in. Valve - 4 psi Span	V-9502-6801 V-9502-6803
Positioners and Positioner Accessories for MP8000:	
Pneumatic Positioner (Less Spring and Mounting Hardware)	V-9502-95
V-9502 Pneumatic Positioner Mounting Kit (Includes Six Springs)	MP8000-6002
Positioners and Positioner Accessories for V400/V500	
Pneumatic Positioner (Less Spring)	V-9502-76
Positioner Feedback Springs for V-400/V500: 5/16 in. (8 mm) Stroke for 1/2 or 3/4 in. Valve 1/2 in. (13 mm) Stroke for 1 or 1-1/4 in. Valve 3/4 in. (19 mm) Stroke for 1-1/2 or 2 in. Valve	 V-9502-8100 V-9502-8102 V-9502-8106
Electro-Pneumatic Positioner (Less Mounting Hardware)	EPP-1000-0
EPP-1000 Electro-Pneumatic Positioner Mounting Kit	MP8000-6003

* Positioner Accessory Kits Include: Positioner and All Appropriate Mounting Hardware, Excluding Positioner Feedback Spring, (Must Be Ordered Separately)

Reconditioning Kits and Tools

Table 10: Ordering Data - Reconditioning Kits

V G	**Valve Global**		
1 2 **7**	**Product Family**	7 = Cast Bronze	
3 **4** 4	**Body Type**	2 = Two-Way Normally Open (N.O./PDTC) 4 = Two-Way Normally Closed (N.C./PDTO) 8 = Three-Way Mixing	
K 5	**Reconditioning Kits**	K = Inner Valve Reconditioning Kits (Bonnet, Bonnet Nut, Packing, Stem, Plug, Disk, and Seat*) *A replaceable seat is available in stainless steel trim valves only.	
1 6	**Trim and Flow Characteristic**	1 = Brass Equal % 2 = Brass Linear 3 = Stainless Steel Equal % 4 = Stainless Steel Linear	two-way body style only three-way body style only two-way body style only three-way body style only
R 7	**Size/Cv (Kv)**	C = 1/2 in. / 0.73 (0.63) E = 1/2 in. / 1.8 (1.6) G = 1/2 in. / 4.6 (4.0) L = 3/4 in. / 7.3 (6.3)	N = 1 in. / 11.6 (10) P = 1-1/4 in. / 18.5 (16) R = 1-1/2 in. / 28.9 (25) S = 2 in. / 46.2 (40)
T 8	**Mounting Configuration**	T = Standard threaded stem for all actuators except V-3801 and V-500 S = Slotted stem and small bonnet for V-3801 Actuator only L = Large threaded stem for V-500 Actuator only M = Large threaded stem for MP84xx/MP85xx Actuators only	
+ 9	**Optional Lower Body**	+ = Lower body option (for 1-1/2 and 2 in. bodies only) **Leave Fields 9 and 10 blank for 1/2 through 1-1/4 in. kits and for 1-1/2 and 2 in. kits without lower body.**	

Optional 1-1/2 or 2 in. Reconditioning Kit Bottom Cap/Lower Body

W 10	**N.C. Valve Bottom Cap**	W = Two-Way Bottom Cap	For 1-1/2 and 2 in. valves it is recommended that a new bottom cap is ordered with the Reconditioning Kit.
4 10	**Three Way Lower Body**	4 = NPT	For 1-1/2 and 2 in. valves it is recommended that a lower body with a matching end connection is ordered with the Reconditioning Kit.

1 2 3 4 5 6 7 8 9 10 = Field

V	**G**	**7**	**4**	**K**	**1**	**R**	**T**	**+**	**W**

Reconditioning Kit (type)	+	1-1/2 or 2 in. Bottom Cap/Lower Body

The reconditioning kits for the VG7000 valves include all the components necessary to return a valve to “near-new” condition. These kits are available according to the convenient features and options format shown in Table 10. A descriptive list of the components included in each kit is given below. It is important to note that 1-1/2 and 2 in. two-way normally closed and three-way valves incorporate a stem guide in the bottom body of the valve. For normally closed and three-way valves, this guide is integral to the bottom cap (N.C.) and lower body (three-way). Depending on the wear condition of this part, it may or may not need to be replaced. While replacement is always recommended, these components are available as an optional component included in the kit or ordered separately. The code numbers for these parts are listed in Table 11. Refer to Table 12 for the required stainless steel seat removal tools.

For **normally open** valves with brass trim, the kit contains:

- bonnet, packing, and stem/plug assembly

For **normally closed** and **three-way** valves with brass trim, the kit contains:

- stem and plug assembly
- all packing components
- bonnet
- bottom cap/lower body (optional for 1-1/2 and 2 in. valves only)

For **normally open** valves with stainless steel trim, the kit contains:

- pre-assembled bonnet, packing, and stem/plug assembly
- stainless steel seat

For **normally closed** and **three-way** valves with stainless steel trim, the kit contains:

- stem and plug assembly
- stainless steel seat (quantity of two for three-way valves)
- all packing components
- bonnet
- bottom cap/lower body (optional for 1-1/2 and 2 in. valves only)

Table 11: Lower Body Code Numbers

Code Number	Valve Type	End Connection
VG7000-6101	1-1/2 in. Brass, N.C.	Bottom Cap
VG7000-6105	1-1/2 in. Brass, Three-Way	NPT
VG7000-6106	2 in. Brass, N.C.	Bottom Cap
VG7000-6110	2 in. Brass, Three-Way	NPT
VG7000-6111	1-1/2 in. Stainless Steel, N.C.	Bottom Cap
VG7000-6115	1-1/2 in. Stainless Steel, Three-Way	NPT
VG7000-6116	2 in. Stainless Steel, N.C.	Bottom Cap
VG7000-6120	2 in. Stainless Steel, Three-Way	NPT

Table 12: Stainless Steel Seat Removal Tools*

Valve Size, in.	Tool Code Number
1/2	X-200-8104
3/4	X-200-8106
1	X-200-8107
1-1/4	X-200-8108
1-1/2	X-200-8109
2	X-200-8110

* For stainless steel trim valve seats only (brass trim valves do not have removable seats)

Notes

Notes

Notes

Specifications

Product			VG7000 Series Bronze Valves
Service*			Hot Water, Chilled Water, Glycol Solutions, or Steam for HVAC Systems
Valve Body Size/Cv (Kv)	**1/2 in. (DN15)**		0.73 (0.63), 1.8 (1.6), and 4.6 (4.0)
	3/4 in. (DN20)		7.3 (6.3)
	1 in. (DN25)		11.6 (10)
	1-1/4 in. (DN32)		18.5 (16)
	1-1/2 in. (DN40)		28.9 (25)
	2 in. (DN50)		46.2 (40)
Body Thread			NPT (National Pipe Thread)
Valve Stroke			5/16 in. (8 mm) for 1/2 or 3/4 in. Valve (DN15 and DN20)
			1/2 in. (13 mm) for 1 and 1-1/4 in. Valve (DN25 and DN32)
			3/4 in. (19 mm) for 1-1/2 and 2 in. Valve (DN40 and DN50)
Valve Body Rating			Meets Requirements of ANSI B16.15, Class 250
Valve Assembly Maximum Allowable Pressure/Temperature	**Steam**	**Brass Trim**	35 psig (245 kPa) Saturated (281°F)
		SS Trim	100 psig (690 kPa) Saturated (338°F)
	Water	**Brass Trim**	400 psig (2800 kPa) up to 150°F (66°C), Decreasing to 365 psig (2415 kPa) at 248°F (120°C)
		SS Trim	400 psig (2800 kPa) up to 150°F (66°C), Decreasing to 308 psig (2156 kPa) at 338°F (170°C)
Leakage		**Brass Trim**	0.01% of Maximum Flow per ANSI/FCI 70-2, Class 4
		SS Trim	0.05% of Maximum Flow
Inherent Flow Characteristics			Equal Percentage: Normally Open and Normally Closed Valves Linear: Three-Way Mixing Valves
Rangeability**			25:1 for All Sizes
Spring Range Pneumatic Actuators			3 to 6 psi (21 to 42 kPa) For All Except MP8000 3 to 7 psi (21 to 49 kpa) For MP8000 Only 4 to 8 psi (28 to 55 kPa) 9 to 13 psi (63 to 91 kPa)
Maximum Recommended Operating Pressure Drop	**Steam**	**Brass Trim**	15 psi (100 kPa) for All Valve Sizes
		SS Trim	100 psi (700 kPa) for All Valve Sizes
	Water	**Brass and SS Trim**	35 psi (240 kPa) for 1/2 Through 1-1/4 in. Valves 30 psi (200 kPa) for 1-1/2 and 2 in. Valves
Maximum Actuator Supply Pressure (Pneumatically Actuated Valves Only)			25 psig (175 kPa) For MP8000 Only 30 psig (210 kPa) For All Except MP8000

Continued on next page . . .

* Proper water treatment is recommended (refer to VDI 2035 Standard).

** Rangeability is defined as the ratio of maximum flow to minimum controllable flow.

Specifications (Cont.)

Materials		**Body**	Cast Bronze	
		Bonnet	Brass	
	Brass Trim	**Stem**	Stainless Steel	
		Plug	Brass	
		Seat	Brass Against Molded Elastomeric Disc	
		Packing	Self-Adjusting EPR (Ethylene Propylene Rubber) Ring Pack U-Cups	
	SS Trim	**Stem**	Stainless Steel	
		Plug	Stainless Steel	
		Seat	Stainless Steel	
		Packing	Spring Loaded PTFE and Elastomer V-Rings	
Fluid Operating Temperature Limits	**Brass Trim**		Pneumatic:	**For V-3801-8001 and V-3000-8001/8003/8011 Actuators:** 35 to 248°F (2 to 120°C) for 15 psi (100 kPa) Saturated Steam **For MP82xx or MP83xx Actuators:** 35 to 284°F (2 to 120°C) for 38 psi (267 kPa) Saturated Steam **For V-400 Actuator:** 35 to 284°F (2 to 120°C) for 38 psi (267 kPa) Saturated Steam
			Electric:	**For VA-8020 and VA-8020 Actuators:** Water: 195°F (90°C) Maximum Steam: Actuator is **not** rated for this application. **For All Other Actuators:** 35 to 284°F (2 to 140°C) for 38 psi (267 kPa) Saturated Steam
	SS Trim		Pneumatic: Electric:	35 to 338°F (2 to 170°C) 100 psi (690 kPa) Saturated Steam
Actuator Ambient Operating Temperature Limits			**For M9xx and M92xx Electric Actuators:** The maximum ambient operating temperature is limited to 110°F for fluid operating temperatures greater than 285°F. **For All Other Actuators:** Refer to the appropriate actuator or linkage product bulletin. Ambient operating temperature or other service limitations vary by selected actuator.	
Accessories (Order Separately)			See Table 9.	

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

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