VG1000 Series Three-Way, Plated Brass Trim, NPT End Connections Ball Valves with Spring-Return Electric Actuators without Switches

Description

VG1000 Series Ball Valves are designed to regulate the flow of hot or chilled water and, for some models, low pressure steam in response to the demand of a controller in HVAC systems. Available in sizes 1/2 through 2 in. (DN15 through DN50), this family of two- and three-way forged brass valves is factory or field mounted to Johnson Controls® VA9104, M9106, M9109, and M9100 Series Non-Spring-Return and VA9203 and VA9208 Series Spring-Return Electric Actuators for on/off, floating, or proportional control.

Refer to the *VG1000 Series Forged Brass Ball Valves Product Bulletin (LIT-977132)* for important product application information.

Features

- Forged Brass Body — provides 580 psig static pressure rating.
- Chrome-Plated Brass Ball and Stem Assembly Standard — handles both chilled and hot water applications with a fluid temperature range of 23 to 203°F (-5 to 95°C).
- Graphite-Reinforced Polytetrafluoroethylene (PTFE) Seats — include 15% graphite-reinforced ball seals, providing better wear resistance.
- 500:1 Rangeability — provides accurate control under all load conditions.
- Maintenance-Free Design — performs without failure in excess of 200,000 full stroke cycles in iron-oxide contaminated water.

Repair Information

If the VG1000 Series Ball Valve fails to operate within its specifications, replace the valve body, actuator, or entire assembly. For replacement parts, contact the nearest Johnson Controls representative.

Three-Way, Spring-Return, Plated Brass Ball and Stem Ball Valve Assemblies with End Switches

Selection Chart

Three-Way — Spring Return — without Switches (Part 1 of 2)

Fluid Temperatures: 23 to 203°F (-5 to 95°C)				AC 24 V			AC-85-264V (VA9203) AC 120 V (VA9208)
Valve	Size, in. (mm)	Cv	Closeoff psig	Floating	DC 0 to 10 V Proportional	On/Off	On/Off
				Spring Return Port A Open — Valve Spring Return Counterclockwise			
				VA9203-AGA-2Z	VA9203-GGA-2Z	VA9203-BGA-2	VA9203-BUA-2
VG1841AD	1/2	1.2/0.7[1]	200	VG1841AD+923AGA	VG1841AD+923GGA	VG1841AD+923BGA	VG1841AD+923BUA
VG1841AE		1.9/1.2[1]		VG1841AE+923AGA	VG1841AE+923GGA	VG1841AE+923BGA	VG1841AE+923BUA
VG1841AF		2.9/1.9[1]		VG1841AF+923AGA	VG1841AF+923GGA	VG1841AF+923BGA	VG1841AF+923BUA
VG1841AG		4.7/2.9[1]		VG1841AG+923AGA	VG1841AG+923GGA	VG1841AG+923BGA	VG1841AG+923BUA
VG1841AL		7.4/4.7[1]		VG1841AL+923AGA	VG1841AL+923GGA	VG1841AL+923BGA	VG1841AL+923BUA
VG1841AN		11.7/7.4		VG1841AN+923AGA	VG1841AN+923GGA	VG1841AN+923BGA	VG1841AN+923BUA
VG1841BG	3/4	4.7/2.9[1]	200	VG1841BG+923AGA	VG1841BG+923GGA	VG1841BG+923BGA	VG1841BG+923BUA
VG1841BL		7.4/4.7[1]		VG1841BL+923AGA	VG1841BL+923GGA	VG1841BL+923BGA	VG1841BL+923BUA
VG1841BN		11.7/11.7		VG1841BN+923AGA	VG1841BN+923GGA	VG1841BN+923BGA	VG1841BN+923BUA
VG1841CL	1	7.4/4.7[1]	200	VG1841CL+923AGA	VG1841CL+923GGA	VG1841CL+923BGA	VG1841CL+923BUA
VG1841CN		11.7/7.4[1]		VG1841CN+923AGA	VG1841CN+923GGA	VG1841CN+923BGA	VG1841CN+923BUA
VG1841CP		18.7/11.7		VG1841CP+923AGA	VG1841CP+923GGA	VG1841CP+923BGA	VG1841CP+923BUA
				Spring Return Port A Open — Valve Spring Return Counterclockwise			
				VA9208-AGA-2	VA9208-GGA-2	VA9208-BGA-3	VA9208-BAA-3
VG1841DN	1-1/4	11.7/7.4[1]	200	VG1841DN+928AGA	VG1841DN+928GGA	VG1841DN+938BGA	VG1841DN+938BAA
VG1841DP		18.7/11.7[1]		VG1841DP+928AGA	VG1841DP+928GGA	VG1841DP+938BGA	VG1841DP+938BAA
VG1841DR		29.2/18.7		VG1841DR+928AGA	VG1841DR+928GGA	VG1841DR+938BGA	VG1841DR+938BAA
VG1841EP	1-1/2	18.7/11.7[1]	200	VG1841EP+928AGA	VG1841EP+928GGA	VG1841EP+938BGA	VG1841EP+938BAA
VG1841ER		29.2/18.7[1]		VG1841ER+928AGA	VG1841ER+928GGA	VG1841ER+938BGA	VG1841ER+938BAA
VG1841ES		46.8/29.2		VG1841ES+928AGA	VG1841ES+928GGA	VG1841ES+938BGA	VG1841ES+938BAA
VG1841FR	2	29.2/18.7[1]	200	VG1841FR+928AGA	VG1841FR+928GGA	VG1841FR+938BGA	VG1841FR+938BAA
VG1841FS		46.8/29.2[1]		VG1841FS+928AGA	VG1841FS+928GGA	VG1841FS+938BGA	VG1841FS+938BAA
VG1841FT		73.7/36.8		VG1841FT+928AGA	VG1841FT+928GGA	VG1841FT+938BGA	VG1841FT+938BAA

VG1000 Series Three-Way, Plated Brass Trim, NPT End Connections Ball Valves with Spring-Return Electric Actuators without Switches (Continued)

Three-Way — Spring Return — without Switches (Part 2 of 2)

Fluid Temperatures: 23 to 203°F (-5 to 95°C)				AC 24 V			AC-85-264V (VA9203) AC 120 V (VA9208)
Valve	Size, in. (mm)	Cv	Closeoff psig	Floating	DC 0 to 10 V Proportional	On/Off	On/Off
				Spring Return Port A Closed — Valve Spring Return Clockwise			
				VA9203-AGA-2Z	VA9203-GGA-2Z	VA9203-BGA-2	VA9203-BUA-2
VG1841AD	1/2	1.2/0.7[1]	200	VG1841AD+943AGA	VG1841AD+943GGA	VG1841AD+943BGA	VG1841AD+943BUA
VG1841AE		1.9/1.2[1]		VG1841AE+943AGA	VG1841AE+943GGA	VG1841AE+943BGA	VG1841AE+943BUA
VG1841AF		2.9/1.9[1]		VG1841AF+943AGA	VG1841AF+943GGA	VG1841AF+943BGA	VG1841AF+943BUA
VG1841AG		4.7/2.9[1]		VG1841AG+943AGA	VG1841AG+943GGA	VG1841AG+943BGA	VG1841AG+943BUA
VG1841AL		7.4/4.7[1]		VG1841AL+943AGA	VG1841AL+943GGA	VG1841AL+943BGA	VG1841AL+943BUA
VG1841AN		11.7/7.4[1]		VG1841AN+943AGA	VG1841AN+943GGA	VG1841AN+943BGA	VG1841AN+943BUA
VG1841BG	3/4	4.7/2.9[1]	200	VG1841BG+943AGA	VG1841BG+943GGA	VG1841BG+943BGA	VG1841BG+943BUA
VG1841BL		7.4/4.7[1]		VG1841BL+943AGA	VG1841BL+943GGA	VG1841BL+943BGA	VG1841BL+943BUA
VG1841BN		11.7/7.4[1]		VG1841BN+943AGA	VG1841BN+943GGA	VG1841BN+943BGA	VG1841BN+943BUA
VG1841CL	1	7.4/4.7[1]	200	VG1841CL+943AGA	VG1841CL+943GGA	VG1841CL+943BGA	VG1841CL+943BUA
VG1841CN		11.7/7.4[1]		VG1841CN+943AGA	VG1841CN+943GGA	VG1841CN+943BGA	VG1841CN+943BUA
VG1841CP		18.7/11.7[1]		VG1841CP+943AGA	VG1841CP+943GGA	VG1841CP+943BGA	VG1841CP+943BUA
				Spring Return Port A Closed — Valve Spring Return Clockwise			
				VA9208-AGA-2	VA9208-GGA-2	VA9208-BGA-3	VA9208-BAA-3
VG1841DN	1-1/4	11.7/7.4[1]	200	VG1841DN+948AGA	VG1841DN+948GGA	VG1841DN+958BGA	VG1841DN+958BAA
VG1841DP		18.7/11.7[1]		VG1841DP+948AGA	VG1841DP+948GGA	VG1841DP+958BGA	VG1841DP+958BAA
VG1841DR		29.2/18.7[1]		VG1841DR+948AGA	VG1841DR+948GGA	VG1841DR+958BGA	VG1841DR+958BAA
VG1841EP	1-1/2	18.7/11.7[1]	200	VG1841EP+948AGA	VG1841EP+948GGA	VG1841EP+958BGA	VG1841EP+958BAA
VG1841ER		29.2/18.7[1]		VG1841ER+948AGA	VG1841ER+948GGA	VG1841ER+958BGA	VG1841ER+958BAA
VG1841ES		46.8/29.2[1]		VG1841ES+948AGA	VG1841ES+948GGA	VG1841ES+958BGA	VG1841ES+958BAA
VG1841FR	2	29.2/18.7[1]	200	VG1841FR+948AGA	VG1841FR+948GGA	VG1841FR+958BGA	VG1841FR+958BAA
VG1841FS		46.8/29.2[1]		VG1841FS+948AGA	VG1841FS+948GGA	VG1841FS+958BGA	VG1841FS+958BAA
VG1841FT		73.7/36.8[1]		VG1841FT+948AGA	VG1841FT+948GGA	VG1841FT+958BGA	VG1841FT+958BAA

1. Valve has a characterizing disk.

VG1000 Series Three-Way, Plated Brass Trim, NPT End Connections Ball Valves with Spring-Return Electric Actuators without Switches (Continued)

Technical Specifications

VG1000 Series Three-Way, Plated Brass Trim, NPT End Connections Ball Valves with Spring-Return Electric Actuators without Switches		
Service[1]		Hot Water, Chilled Water, 50/50 Glycol Solutions
Fluid Temperature Limits	**Water**	23 to 203°F (-5 to 95°C)
	Steam	Not Rated for Steam Service
Valve Body Pressure Rating	**Water**	580 psig (4,000 kPa) (PN40)
	Steam	Not Rated for Steam Service
Maximum Closeoff Pressure		200 psid (1,378 kPa)
Maximum Recommended Operating Pressure Drop		50 psid (340 kPa)
Flow Characteristics	**Three-Way**	Equal Percentage Flow Characteristics of In-Line Port A (Coil) and Linear Flow Characteristics of Angle Port B (Bypass)
Rangeability[2]		Greater than 500:1
Minimum Ambient Operating Temperature	**-22°F (-30°C)**	VA9203 Series Spring-Return Actuators
	-40°F (40°C)	VA9208 Series Spring-Return Actuators
Maximum Ambient Operating Temperature[3] **(Limited by the Actuator and Linkage)**	**140°F (60°C)**	Direct Mount: VA9203 or VA9208 Series Spring-Return Actuators
Leakage		0.01% of Maximum Flow per ANSI/FCI 70-2, Class 4
		1% of Maximum Flow for Three-Way Bypass Port
End Connections		National Pipe Thread (NPT)
Materials	**Body**	Forged Brass
	Ball	Chrome Plated Brass
	Blowout-Proof Stem	Nickel Plated Brass
	Seats	Graphite-Reinforced PTFE with Ethylene Propylene Diene Monomer (EPDM) O-Ring Backing
	Stem Seals	EPDM Double O-Rings
	Characterizing Disk	Amodel® AS-1145HS Polyphthalamide Resin

1. Proper water treatment is recommended; refer to the VDI 2035 Guideline.
2. Rangeability is defined as the ratio of maximum controllable flow to minimum controllable flow.
3. In steam applications, install the valve with the stem horizontal to the piping and wrap the valve and piping with insulation.