

# VG1000 Series Two-Way, Plated Brass Trim, NPT End Connections Ball Valves with Spring-Return Electric Actuators with 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.
- 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.



**VG1000 Series Two-Way, Spring-Return, Plated Brass Ball and Stem Ball Valve Assemblies with End Switches**

## 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.

## Selection Charts

### Two-Way — Spring Return Valve Open — Normally Open with Switches

Fluid Temperatures: 23 to 203°F (-5 to 95°C)				AC 24 V			AC 85–264 V (VA9203) AC 120 V (VA9208)
Valve	Size, in.	Cv	Closeoff psig	Floating	DC 0 to 10 V Proportional	On/Off	On/Off
				<b>Spring Return Open — Valve Normally Open — Actuators with One Switch</b>			
				<b>VA9203-AGB-2Z</b>	<b>VA9203-GGB-2Z</b>	<b>VA9203-BGB-2</b>	<b>VA9203-BUB-2</b>
VG1241AD	1/2	1.2 <sup>1</sup>	200	VG1241AD+923AGB	VG1241AD+923GGB	VG1241AD+923BGB	VG1241AD+923BUB
VG1241AE		1.9 <sup>1</sup>		VG1241AE+923AGB	VG1241AE+923GGB	VG1241AE+923BGB	VG1241AE+923BUB
VG1241AF		2.9 <sup>1</sup>		VG1241AF+923AGB	VG1241AF+923GGB	VG1241AF+923BGB	VG1241AF+923BUB
VG1241AG		4.7 <sup>1</sup>		VG1241AG+923AGB	VG1241AG+923GGB	VG1241AG+923BGB	VG1241AG+923BUB
VG1241AL		7.4 <sup>1</sup>		VG1241AL+923AGB	VG1241AL+923GGB	VG1241AL+923BGB	VG1241AL+923BUB
VG1241AN		11.7		VG1241AN+923AGB	VG1241AN+923GGB	VG1241AN+923BGB	VG1241AN+923BUB
VG1241BG	3/4	4.7 <sup>1</sup>	200	VG1241BG+923AGB	VG1241BG+923GGB	VG1241BG+923BGB	VG1241BG+923BUB
VG1241BL		7.4 <sup>1</sup>		VG1241BL+923AGB	VG1241BL+923GGB	VG1241BL+923BGB	VG1241BL+923BUB
VG1241BN		11.7		VG1241BN+923AGB	VG1241BN+923GGB	VG1241BN+923BGB	VG1241BN+923BUB
VG1241CL	1	7.4 <sup>1</sup>	200	VG1241CL+923AGB	VG1241CL+923GGB	VG1241CL+923BGB	VG1241CL+923BUB
VG1241CN		11.7 <sup>1</sup>		VG1241CN+923AGB	VG1241CN+923GGB	VG1241CN+923BGB	VG1241CN+923BUB
VG1241CP		18.7		VG1241CP+923AGB	VG1241CP+923GGB	VG1241CP+923BGB	VG1241CP+923BUB
				<b>Spring Return Open — Valve Normally Open — Actuators with Two Switches</b>			
				<b>VA9208-AGC-3</b>	<b>VA9208-GGC-3</b>	<b>VA9208-BGC-3</b>	<b>VA9208-BAC-3</b>
VG1241DN	1-1/4	11.7 <sup>1</sup>	200	VG1241DN+938AGC	VG1241DN+938GGC	VG1241DN+938BGB	VG1241DN+938BAB
VG1241DP		18.7 <sup>1</sup>		VG1241DP+938AGC	VG1241DP+938GGC	VG1241DP+938BGB	VG1241DP+938BAB
VG1241DR		29.2		VG1241DR+938AGC	VG1241DR+938GGC	VG1241DR+938BGB	VG1241DR+938BAB
VG1241EP	1-1/2	18.7 <sup>1</sup>	200	VG1241EP+938AGC	VG1241EP+938GGC	VG1241EP+938BGB	VG1241EP+938BAB
VG1241ER		29.2 <sup>1</sup>		VG1241ER+938AGC	VG1241ER+938GGC	VG1241ER+938BGB	VG1241ER+938BAB
VG1241ES		46.8		VG1241ES+938AGC	VG1241ES+938GGC	VG1241ES+938BGB	VG1241ES+938BAB
VG1241FR	2	29.2 <sup>1</sup>	200	VG1241FR+938AGC	VG1241FR+938GGC	VG1241FR+938BGC	VG1241FR+938BAC
VG1241FS		46.8 <sup>1</sup>		VG1241FS+938AGC	VG1241FS+938GGC	VG1241FS+938BGC	VG1241FS+938BAC
VG1241FT		73.7		VG1241FT+938AGC	VG1241FT+938GGC	VG1241FT+938BGC	VG1241FT+938BAC

1. Valve has a characterizing disk.



## VG1000 Series Two-Way, Plated Brass Trim, NPT End Connections Ball Valves with Spring-Return Electric Actuators with Switches (Continued)

Two-Way — Spring Return Valve Closed — Normally Closed with End Switches

Fluid Temperatures: 23 to 203°F (-5 to 95°C)				AC 24 V			AC 85–264 V (VA9203) AC 120 V (VA9208)
Valve	Size, in.	Cv	Closeoff psig	Floating	DC 0 to 10 V Proportional	On/Off	On/Off
				<b>Spring Return Closed — Valve Normally Closed — Actuators with One Switch</b>			
				<b>VA9203-AGB-2Z</b>	<b>VA9203-GGB-2Z</b>	<b>VA9203-BGB-2</b>	<b>VA9203-BUB-2</b>
VG1241AD	1/2	1.2 <sup>1</sup>	200	VG1241AD+943AGB	VG1241AD+943GGB	VG1241AD+943BGB	VG1241AD+943BUB
VG1241AE		1.9 <sup>1</sup>		VG1241AE+943AGB	VG1241AE+943GGB	VG1241AE+943BGB	VG1241AE+943BUB
VG1241AF		2.9 <sup>1</sup>		VG1241AF+943AGB	VG1241AF+943GGB	VG1241AF+943BGB	VG1241AF+943BUB
VG1241AG		4.7 <sup>1</sup>		VG1241AG+943AGB	VG1241AG+943GGB	VG1241AG+943BGB	VG1241AG+943BUB
VG1241AL		7.4 <sup>1</sup>		VG1241AL+943AGB	VG1241AL+943GGB	VG1241AL+943BGB	VG1241AL+943BUB
VG1241AN		11.7		VG1241AN+943AGB	VG1241AN+943GGB	VG1241AN+943BGB	VG1241AN+943BUB
VG1241BG	3/4	4.7 <sup>1</sup>	200	VG1241BG+943AGB	VG1241BG+943GGB	VG1241BG+943BGB	VG1241BG+943BUB
VG1241BL		7.4 <sup>1</sup>		VG1241BL+943AGB	VG1241BL+943GGB	VG1241BL+943BGB	VG1241BL+943BUB
VG1241BN		11.7		VG1241BN+943AGB	VG1241BN+943GGB	VG1241BN+943BGB	VG1241BN+943BUB
VG1241CL	1	7.4 <sup>1</sup>	200	VG1241CL+943AGB	VG1241CL+943GGB	VG1241CL+943BGB	VG1241CL+943BUB
VG1241CN		11.7 <sup>1</sup>		VG1241CN+943AGB	VG1241CN+943GGB	VG1241CN+943BGB	VG1241CN+943BUB
VG1241CP		18.7		VG1241CP+943AGB	VG1241CP+943GGB	VG1241CP+943BGB	VG1241CP+943BUB
				<b>Spring Return Closed — Valve Normally Closed — Actuators with Two Switches</b>			
				<b>VA9208-AGC-3</b>	<b>VA9208-GGC-3</b>	<b>VA9208-BGC-3</b>	<b>VA9208-BAC-3</b>
VG1241DN	1-1/4	11.7 <sup>1</sup>	200	VG1241DN+958AGC	VG1241DN+958GGC	VG1241DN+958BGB	VG1241DN+958BAB
VG1241DP		18.7 <sup>1</sup>		VG1241DP+958AGC	VG1241DP+958GGC	VG1241DP+958BGB	VG1241DP+958BAB
VG1241DR		29.2		VG1241DR+958AGC	VG1241DR+958GGC	VG1241DR+958BGB	VG1241DR+958BAB
VG1241EP	1-1/2	18.7 <sup>1</sup>	200	VG1241EP+958AGC	VG1241EP+958GGC	VG1241EP+958BGB	VG1241EP+958BAB
VG1241ER		29.2 <sup>1</sup>		VG1241ER+958AGC	VG1241ER+958GGC	VG1241ER+958BGB	VG1241ER+958BAB
VG1241ES		46.8		VG1241ES+958AGC	VG1241ES+958GGC	VG1241ES+958BGB	VG1241ES+958BAB
VG1241FR	2	29.2 <sup>1</sup>	200	VG1241FR+958AGC	VG1241FR+958GGC	VG1241FR+958BGC	VG1241FR+958BAC
VG1241FS		46.8 <sup>1</sup>		VG1241FS+958AGC	VG1241FS+958GGC	VG1241FS+958BGC	VG1241FS+958BAC
VG1241FT		73.7		VG1241FT+958AGC	VG1241FT+958GGC	VG1241FT+958BGC	VG1241FT+958BAC

1. Valve has a characterizing disk.

## VG1000 Series Two-Way, Plated Brass Trim, NPT End Connections Ball Valves with Spring-Return Electric Actuators with Switches (Continued)

### Technical Specifications

VG1000 Series Two-Way, Plated Brass Trim, NPT End Connections Ball Valves with Spring-Return Electric Actuators with Switches		
<b>Service<sup>1</sup></b>		Hot Water, Chilled Water, 50/50 Glycol Solutions, and 15 psig (103 kPa) Saturated Steam for HVAC Systems
<b>Fluid Temperature Limits</b>	<b>Water</b>	23 to 203°F (-5 to 95°C)
	<b>Steam</b>	Not Rated for Steam Service
<b>Valve Body Pressure Rating</b>	<b>Water</b>	580 psig (4,000 kPa) (PN40)
	<b>Steam</b>	Not Rated for Steam Service
<b>Maximum Closeoff Pressure</b>		200 psid (1,378 kPa)
<b>Maximum Recommended Operating Pressure Drop</b>		50 psid (340 kPa)
<b>Flow Characteristics</b>	<b>Two-Way</b>	Equal Percentage
<b>Rangeability<sup>2</sup></b>		Greater than 500:1
<b>Minimum Ambient Operating Temperature</b>	<b>-22°F (-30°C)</b>	VA9203 Series Spring-Return Actuators
	<b>-40°F (-40°C)</b>	VA9208 Series Spring-Return Actuators
<b>Maximum Ambient Operating Temperature<sup>3</sup> (Limited by the Actuator and Linkage)</b>	<b>Direct Mount</b>	140°F (60°C): VA9208 Series Spring-Return Actuators
<b>Leakage</b>		0.01% of Maximum Flow per ANSI/FCI 70-2, Class 4
<b>End Connections</b>		National Pipe Thread (NPT)
<b>Materials</b>	<b>Body</b>	Forged Brass
	<b>Ball</b>	Chrome Plated Brass
	<b>Blowout-Proof Stem</b>	Nickel Plated Brass
	<b>Seats</b>	Graphite-Reinforced PTFE with Ethylene Propylene Diene Monomer (EPDM) O-Ring Backing
	<b>Stem Seals</b>	EPDM Double O-Rings
	<b>Characterizing Disk</b>	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.