

# VG1000 Series Two-Way, Plated Brass Trim 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 Heating, Ventilating, and Air Conditioning (HVAC) systems. Available in sizes 1/2 through 2 in. (DN15 through DN50), this family of two-way and three-way forged brass valves is factory or field mounted to Johnson Controls® VA9104, M9106, M9109, and M9100 Series Non-Spring Return and VA2202, M9206, and M9216 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 — handles chilled water and hot water with fluid temperature ratings from 23 to 203°F (-5 to 95°C)
- Graphite Reinforced Polytetrafluoroethylene (PTFE) Seats — includes 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



**Two-Way, Spring Return, Plated Brass Ball and Stem Ball Valve Assemblies without End Switches**

## Selection Charts

### Two-Way – Spring Return Valve Open – Normally Open

Valve	Size, in.	Cv	Closeoff psig	AC 24 V			AC 120 V
				Floating	DC 0 to 10 V Proportional	On/Off	On/Off
				VA2202-AGA-2 M9206-AGA-2S M9216-AGA-2	VA2202-GGA-2 M9206-GGA-2S M9216-GGA-2	VA2202-BGA-2 M9206-BGA-2S M9216-BGA-2	VA2202-BAA-2 M9206-BAA-2S M9216-BAA-2
VG1241AD	1/2	1.2 <sup>1</sup>	200	VG1241AD+22TAGA	VG1241AD+22TGGA	VG1241AD+22TBGA	VG1241AD+22TBAA
VG1241AE		1.9 <sup>1</sup>		VG1241AE+22TAGA	VG1241AE+22TGGA	VG1241AE+22TBGA	VG1241AE+22TBAA
VG1241AF		2.9 <sup>1</sup>		VG1241AF+22TAGA	VG1241AF+22TGGA	VG1241AF+22TBGA	VG1241AF+22TBAA
VG1241AG		4.7 <sup>1</sup>		VG1241AG+22TAGA	VG1241AG+22TGGA	VG1241AG+22TBGA	VG1241AG+22TBAA
VG1241AL		7.4 <sup>1</sup>		VG1241AL+22TAGA	VG1241AL+22TGGA	VG1241AL+22TBGA	VG1241AL+22TBAA
VG1241AN		11.7		VG1241AN+22TAGA	VG1241AN+22TGGA	VG1241AN+22TBGA	VG1241AN+22TBAA
VG1241BG	3/4	4.7 <sup>1</sup>	200	VG1241BG+22TAGA	VG1241BG+22TGGA	VG1241BG+22TBGA	VG1241BG+22TBAA
VG1241BL		7.4 <sup>1</sup>		VG1241BL+22TAGA	VG1241BL+22TGGA	VG1241BL+22TBGA	VG1241BL+22TBAA
VG1241BN		11.7		VG1241BN+22TAGA	VG1241BN+22TGGA	VG1241BN+22TBGA	VG1241BN+22TBAA
VG1241CL	1	7.4 <sup>1</sup>	200	VG1241CL+936AGA	VG1241CL+936GGA	VG1241CL+936BGA	VG1241CL+936BAA
VG1241CN		11.7 <sup>1</sup>		VG1241CN+936AGA	VG1241CN+936GGA	VG1241CN+936BGA	VG1241CN+936BAA
VG1241CP		18.7		VG1241CP+936AGA	VG1241CP+936GGA	VG1241CP+936BGA	VG1241CP+936BAA
VG1241DN	1-1/4	11.7 <sup>1</sup>	200	VG1241DN+936AGA	VG1241DN+936GGA	VG1241DN+936BGA	VG1241DN+936BAA
VG1241DP		18.7 <sup>1</sup>		VG1241DP+936AGA	VG1241DP+936GGA	VG1241DP+936BGA	VG1241DP+936BAA
VG1241DR		29.2		VG1241DR+936AGA	VG1241DR+936GGA	VG1241DR+936BGA	VG1241DR+936BAA
VG1241EP	1-1/2	18.7 <sup>1</sup>	200	VG1241EP+936AGA	VG1241EP+936GGA	VG1241EP+936BGA	VG1241EP+936BAA
VG1241ER		29.2 <sup>1</sup>		VG1241ER+936AGA	VG1241ER+936GGA	VG1241ER+936BGA	VG1241ER+936BAA
VG1241ES		46.8		VG1241ES+936AGA	VG1241ES+936GGA	VG1241ES+936BGA	VG1241ES+936BAA
VG1241FR	2	29.2 <sup>1</sup>	200	VG1241FR+926AGA	VG1241FR+926GGA	VG1241FR+926BGA	VG1241FR+926BAA
VG1241FS		46.8 <sup>1</sup>		VG1241FS+926AGA	VG1241FS+926GGA	VG1241FS+926BGA	VG1241FS+926BAA
VG1241FT		73.7		VG1241FT+926AGA	VG1241FT+926GGA	VG1241FT+926BGA	VG1241FT+926BAA

1. Cv has a characterizing disk.

## VG1000 Series Two-Way, Plated Brass Trim Ball Valves with Spring Return Electric Actuators without Switches (Continued)

### Two-Way – Spring Return Valve Closed – Normally Closed

Valve	Size, in.	Cv	Closeoff psig	AC 24 V			AC 120 V
				Floating	DC 0 to 10 V Proportional	On/Off	On/Off
				VA2202-AGA-2 M9206-AGA-2S M9216-AGA-2	VA2202-GGA-2 M9206-GGA-2S M9216-GGA-2	VA2202-BGA-2 M9206-BGA-2S M9216-BGA-2	VA2202-BAA-2 M9206-BAA-2S M9216-BAA-2
VG1241AD	1/2	1.2 <sup>1</sup>	200	VG1241AD+24TAGA	VG1241AD+24TGGA	VG1241AD+24TBGA	VG1241AD+24TBAA
VG1241AE		1.9 <sup>1</sup>		VG1241AE+24TAGA	VG1241AE+24TGGA	VG1241AE+24TBGA	VG1241AE+24TBAA
VG1241AF		2.9 <sup>1</sup>		VG1241AF+24TAGA	VG1241AF+24TGGA	VG1241AF+24TBGA	VG1241AF+24TBAA
VG1241AG		4.7 <sup>1</sup>		VG1241AG+24TAGA	VG1241AG+24TGGA	VG1241AG+24TBGA	VG1241AG+24TBAA
VG1241AL		7.4 <sup>1</sup>		VG1241AL+24TAGA	VG1241AL+24TGGA	VG1241AL+24TBGA	VG1241AL+24TBAA
VG1241AN		11.7		VG1241AN+24TAGA	VG1241AN+24TGGA	VG1241AN+24TBGA	VG1241AN+24TBAA
VG1241BG	3/4	4.7 <sup>1</sup>	200	VG1241BG+24TAGA	VG1241BG+24TGGA	VG1241BG+24TBGA	VG1241BG+24TBAA
VG1241BL		7.4 <sup>1</sup>		VG1241BL+24TAGA	VG1241BL+24TGGA	VG1241BL+24TBGA	VG1241BL+24TBAA
VG1241BN		11.7		VG1241BN+24TAGA	VG1241BN+24TGGA	VG1241BN+24TBGA	VG1241BN+24TBAA
VG1241CL	1	7.4 <sup>1</sup>	200	VG1241CL+956AGA	VG1241CL+956GGA	VG1241CL+956BGA	VG1241CL+956BAA
VG1241CN		11.7 <sup>1</sup>		VG1241CN+956AGA	VG1241CN+956GGA	VG1241CN+956BGA	VG1241CN+956BAA
VG1241CP		18.7		VG1241CP+956AGA	VG1241CP+956GGA	VG1241CP+956BGA	VG1241CP+956BAA
VG1241DN	1-1/4	11.7 <sup>1</sup>	200	VG1241DN+956AGA	VG1241DN+956GGA	VG1241DN+956BGA	VG1241DN+956BAA
VG1241DP		18.7 <sup>1</sup>		VG1241DP+956AGA	VG1241DP+956GGA	VG1241DP+956BGA	VG1241DP+956BAA
VG1241DR		29.2		VG1241DR+956AGA	VG1241DR+956GGA	VG1241DR+956BGA	VG1241DR+956BAA
VG1241EP	1-1/2	18.7 <sup>1</sup>	200	VG1241EP+956AGA	VG1241EP+956GGA	VG1241EP+956BGA	VG1241EP+956BAA
VG1241ER		29.2 <sup>1</sup>		VG1241ER+956AGA	VG1241ER+956GGA	VG1241ER+956BGA	VG1241ER+956BAA
VG1241ES		46.8		VG1241ES+956AGA	VG1241ES+956GGA	VG1241ES+956BGA	VG1241ES+956BAA
VG1241FR	2	29.2 <sup>1</sup>	200	VG1241FR+946AGA	VG1241FR+946GGA	VG1241FR+946BGA	VG1241FR+946BAA
VG1241FS		46.8 <sup>1</sup>		VG1241FS+946AGA	VG1241FS+946GGA	VG1241FS+946BGA	VG1241FS+946BAA
VG1241FT		73.7		VG1241FT+946AGA	VG1241FT+946GGA	VG1241FT+946BGA	VG1241FT+946BAA

1. Cv has a characterizing disk.

## VG1000 Series Two-Way, Plated Brass Trim Ball Valves with Spring Return Electric Actuators without Switches (Continued)

### Technical Specifications

VG1000 Series Two-Way, Plated Brass Trim Ball Valves with Spring Return Electric Actuators without 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/Temperature Rating</b>	<b>Water</b>	580 psig (3,996 kPa) (PN40)
	<b>Steam</b>	15 psig (103 kPa) Saturated Steam
<b>Maximum Closeoff Pressure</b>		200 psig (1,378 kPa)
<b>Maximum Recommended Operating Pressure Drop</b>		Maximum Differential Pressure 50 psi: Valves with Characterized Flow Control Disk 30 psi: Quiet Service Ball Valves
<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>-25°F (-32°C)</b>	M9206 Series Spring Return Actuators
	<b>-22°F (-30°C)</b>	VA2202 and M2202 Series Spring Return Actuators M9216-GGx-2 Series Spring Return Actuators
	<b>-4°F (-20°C)</b>	M9216-AGx-2 and M9216-Bxx-2 Series Spring Return Actuators
<b>Maximum Ambient Operating Temperature<sup>3</sup> (Limited by the Actuator and Linkage)</b>	<b>Direct Mount</b>	122°F (50°C): VA2202 Series Spring Return Actuators
	<b>M2000-500 Linkage</b>	122°F (50°C): M2202 Series Spring Return Actuators
	<b>M9000-520 Linkage</b>	140°F (60°C): M9206 Series Spring Return Actuators
	<b>M9000-51x Series Linkage</b>	For Fluid Temperature below 212°F (100°C) 122°F (50°C): M9216 Series Spring Return Actuators
<b>Leakage</b>		0.01% of Maximum Flow per ANSI/FCI 70-2, Class 4
<b>End Connections</b>		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. Refer to VDI 2035 Standard for recommended proper water treatment.
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.