

VG1000 Two-Way, Stainless Steel 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 Heating, Ventilating, and Air Conditioning (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 VA2202, M9206, and M9210 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
- 200 psi closeoff pressure rating — provides tight shutoff
- graphite-reinforced Polytetrafluoroethylene (PTFE) seats — include 15% graphite-reinforced ball seals, providing better wear resistance
- 300 Series stainless steel ball and stem assembly — tolerates high temperature water or 15 psi saturated steam with fluid temperatures of -22 to 284°F (-30 to 140°C) or where a higher degree of corrosion protection is desired
- 500:1 rangeability — provides accurate control under all load conditions



VG1000 Series Two-Way, Spring Return, Stainless Steel Ball and Stem Ball Valve Assemblies without End Switches

Repair Information

If the VG1000 Series Ball Valve fails to operate within its specifications, replace the unit. For a replacement valve, contact the nearest Johnson Controls representative.

Selection Charts

Two-Way – Spring Return Valve Open – Normally Open

Valve	Size, in.	Cv	Closeoff psig	AC 24 V			AC 120 V
				Floating	0 to 10 VDC Proportional	On/Off	On/Off
				VA2202-AGA-2 ¹ M9206-AGA-2S M9210-AGA-3	VA2202-GGA-2 ¹ M9206-GGA-2S M9210-GGA-3	VA2202-BGA-2 ¹ M9206-BGA-2S M9210-BGA-3	VA2202-BAA-2 ¹ M9206-BAA-2S M9210-BAA-3
VG1245AD	1/2	1.2 ²	200	VG1245AD+22TAGA	VG1245AD+22TGGA	VG1245AD+22TBGA	VG1245AD+22TBAA
VG1245AE		1.9 ²		VG1245AE+22TAGA	VG1245AE+22TGGA	VG1245AE+22TBGA	VG1245AE+22TBAA
VG1245AF		2.9 ²		VG1245AF+22TAGA	VG1245AF+22TGGA	VG1245AF+22TBGA	VG1245AF+22TBAA
VG1245AG		4.7 ²		VG1245AG+22TAGA	VG1245AG+22TGGA	VG1245AG+22TBGA	VG1245AG+22TBAA
VG1245AL		7.4 ²		VG1245AL+22TAGA	VG1245AL+22TGGA	VG1245AL+22TBGA	VG1245AL+22TBAA
VG1245AN		11.7		VG1245AN+22TAGA	VG1245AN+22TGGA	VG1245AN+22TBGA	VG1245AN+22TBAA
VG1245BG	3/4	4.7 ²	200	VG1245BG+22TAGA	VG1245BG+22TGGA	VG1245BG+22TBGA	VG1245BG+22TBAA
VG1245BL		7.4 ²		VG1245BL+22TAGA	VG1245BL+22TGGA	VG1245BL+22TBGA	VG1245BL+22TBAA
VG1245BN		11.7		VG1245BN+22TAGA	VG1245BN+22TGGA	VG1245BN+22TBGA	VG1245BN+22TBAA
VG1245CL	1	7.4 ²	200	VG1245CL+22TAGA	VG1245CL+22TGGA	VG1245CL+22TBGA	VG1245CL+22TBAA
VG1245CN		11.7 ²		VG1245CN+22TAGA	VG1245CN+22TGGA	VG1245CN+22TBGA	VG1245CN+22TBAA
VG1245CP		18.7		VG1245CP+22TAGA	VG1245CP+22TGGA	VG1245CP+22TBGA	VG1245CP+22TBAA
VG1245DN	1-1/4	11.7 ²	200	VG1245DN+936AGA	VG1245DN+936GGA	VG1245DN+936BGA	VG1245DN+936BAA
VG1245DP		18.7 ²		VG1245DP+936AGA	VG1245DP+936GGA	VG1245DP+936BGA	VG1245DP+936BAA
VG1245DR		29.2		VG1245DR+936AGA	VG1245DR+936GGA	VG1245DR+936BGA	VG1245DR+936BAA
VG1245EP	1-1/2	18.7 ²	200	VG1245EP+936AGA	VG1245EP+936GGA	VG1245EP+936BGA	VG1245EP+936BAA
VG1245ER		29.2 ²		VG1245ER+936AGA	VG1245ER+936GGA	VG1245ER+936BGA	VG1245ER+936BAA
VG1245ES		46.8		VG1245ES+936AGA	VG1245ES+936GGA	VG1245ES+936BGA	VG1245ES+936BAA
VG1245FR	2	29.2 ²	200	VG1245FR+92JAGA	VG1245FR+92JGGA	VG1245FR+92JBGA	VG1245FR+92JBAA
VG1245FS		46.8 ²		VG1245FS+92JAGA	VG1245FS+92JGGA	VG1245FS+92JBGA	VG1245FS+92JBAA
VG1245FT		73.7		VG1245FT+92JAGA	VG1245FT+92JGGA	VG1245FT+92JBGA	VG1245FT+92JBAA

1. The VA2202 Series Actuator has a 212°F (100°C) fluid temperature limit. For fluid temperatures higher than 212°F, use an M9206 Series Actuator. For NPT end connection valves, you can specify a factory mount M9206 actuator by changing the 22T or 24T in the code number to 936 or 956. For example, VG1245AD+22TBGA becomes VG1245AD+936BGA.

2. Cv has a characterizing disk.

VG1000 Two-Way, Stainless Steel Trim, NPT End Connections 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	0 to 10 VDC Proportional	On/Off	On/Off
				VA2202-AGA-2 ¹ M9206-AGA-2S M9210-AGA-3	VA2202-GGA-2 ¹ M9206-GGA-2S M9210-GGA-3	VA2202-BGA-2 ¹ M9206-BGA-2S M9210-BGA-3	VA2202-BAA-2 ¹ M9206-BAA-2S M9210-BAA-3
VG1245AD	1/2	1.2 ²	200	VG1245AD+24TAGA	VG1245AD+24TGGA	VG1245AD+24TBGA	VG1245AD+24TBAA
VG1245AE		1.9 ²		VG1245AE+24TAGA	VG1245AE+24TGGA	VG1245AE+24TBGA	VG1245AE+24TBAA
VG1245AF		2.9 ²		VG1245AF+24TAGA	VG1245AF+24TGGA	VG1245AF+24TBGA	VG1245AF+24TBAA
VG1245AG		4.7 ²		VG1245AG+24TAGA	VG1245AG+24TGGA	VG1245AG+24TBGA	VG1245AG+24TBAA
VG1245AL		7.4 ²		VG1245AL+24TAGA	VG1245AL+24TGGA	VG1245AL+24TBGA	VG1245AL+24TBAA
VG1245AN		11.7		VG1245AN+24TAGA	VG1245AN+24TGGA	VG1245AN+24TBGA	VG1245AN+24TBAA
VG1245BG	3/4	4.7 ²	200	VG1245BG+24TAGA	VG1245BG+24TGGA	VG1245BG+24TBGA	VG1245BG+24TBAA
VG1245BL		7.4 ²		VG1245BL+24TAGA	VG1245BL+24TGGA	VG1245BL+24TBGA	VG1245BL+24TBAA
VG1245BN		11.7		VG1245BN+24TAGA	VG1245BN+24TGGA	VG1245BN+24TBGA	VG1245BN+24TBAA
VG1245CL	1	7.4 ²	200	VG1245CL+24TAGA	VG1245CL+24TGGA	VG1245CL+24TBGA	VG1245CL+24TBAA
VG1245CN		11.7 ²		VG1245CN+24TAGA	VG1245CN+24TGGA	VG1245CN+24TBGA	VG1245CN+24TBAA
VG1245CP		18.7		VG1245CP+24TAGA	VG1245CP+24TGGA	VG1245CP+24TBGA	VG1245CP+24TBAA
VG1245DN	1-1/4	11.7 ²	200	VG1245DN+956AGA	VG1245DN+956GGA	VG1245DN+956BGA	VG1245DN+956BAA
VG1245DP		18.7 ²		VG1245DP+956AGA	VG1245DP+956GGA	VG1245DP+956BGA	VG1245DP+956BAA
VG1245DR		29.2		VG1245DR+956AGA	VG1245DR+956GGA	VG1245DR+956BGA	VG1245DR+956BAA
VG1245EP	1-1/2	18.7 ²	200	VG1245EP+956AGA	VG1245EP+956GGA	VG1245EP+956BGA	VG1245EP+956BAA
VG1245ER		29.2 ²		VG1245ER+956AGA	VG1245ER+956GGA	VG1245ER+956BGA	VG1245ER+956BAA
VG1245ES		46.8		VG1245ES+956AGA	VG1245ES+956GGA	VG1245ES+956BGA	VG1245ES+956BAA
VG1245FR	2	29.2 ²	200	VG1245FR+94JAGA	VG1245FR+94JGGA	VG1245FR+94JBGA	VG1245FR+94JBAA
VG1245FS		46.8 ²		VG1245FS+94JAGA	VG1245FS+94JGGA	VG1245FS+94JBGA	VG1245FS+94JBAA
VG1245FT		73.7		VG1245FT+94JAGA	VG1245FT+94JGGA	VG1245FT+94JBGA	VG1245FT+94JBAA

- The VA2202 Series Actuator has a 212°F (100°C) fluid temperature limit. For fluid temperatures higher than 212°F, use an M9206 Series Actuator. For NPT end connection valves, you can specify a factory mount M9206 actuator by changing the 22T or 24T in the code number to 936 or 956. For example, VG1245AD+22TBGA becomes VG1245AD+936BGA. For M9206 actuators on Sweat or Press fitting end connection valves, field assembly is required using a M9000-520 linkage.
- Cv has a characterizing disk.

VG1000 Two-Way, Stainless Steel Trim, NPT End Connections Ball Valves with Spring Return Electric Actuators without Switches (Continued)

Technical Specifications

VG1000 Two-Way, Stainless Steel Trim Ball Valves with Spring Return Electric Actuators without Switches		
Service¹		Hot Water, Chilled Water, 50/50 Glycol Solutions, and 15 psig (103 kPa) Saturated Steam for HVAC Systems
Fluid Temperature Limits	Water	-22 to 284°F (-30 to 140°C)
	Steam	15 psig (103 kPa) at 250°F (121°C)
Maximum Actuator Fluid Temperature Limit	212°F (100°C)	VA2202 M2202 with M9000-500 Linkage
	284°F (140°C)	M9206 with M9000-550 Linkage M9210 with M9000-517 Linkage
Valve Body Pressure Rating	Water	580 psig (3,996 kPa) (PN40)
	Steam	15 psig (103 kPa) Saturated Steam
Maximum Closeoff Pressure		200 psig (1,378 kPa)
Maximum Recommended Operating Pressure Drop		50 psi Maximum Differential Pressure for Valves with Characterized Flow Control Disk and 30 psi Maximum for Quiet Service Ball Valves
Flow Characteristics	Two-Way	Equal Percentage
Rangeability²		Greater than 500:1
Minimum Ambient Operating Temperature	-25°F (-32°C)	M9206 Series Spring Return Actuators
	-22°F (-30°C)	VA2202 and M2202 Series Spring Return Actuators
	-40°F (-40°C)	M9210 Series Spring Return Actuators
Maximum Ambient Operating Temperature³ (Limited by the Actuator and Linkage)	Direct Mount	122°F (50°C): VA2202 Series Spring Return Actuators
	M2000-500 Linkage	122°F (50°C): M2202 Series Spring Return Actuators
	M9000-520 Linkage	140°F (60°C): M9206 Series Spring Return Actuators
	M9000-51x Series Linkage	131°F (55°C): M9210 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	300 Series Stainless Steel
	Blowout-Proof Stem	300 Series Stainless Steel
	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 Standard.

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.