

VG1000 Series

LIT-1900220

Two-Way, Stainless Steel Trim, NPT End Connection Ball Valves with Non-Spring Return Electric Actuators

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 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 manages tight shutoff
- 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

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.



VG1000 Series Two-Way, Non-Spring Return, Stainless Steel Ball and Stem Ball Valve Assemblies

Selection Charts

Two-Way Non-Spring Return without Switches

Valve	Size, in.	Cv	Closeoff psig	AC 24 V		
				On/Off (Floating) without Timeout ¹	On/Off (Floating) with Timeout	DC 0 to 10 V Proportional
				VA9104-AGA-xS M9106-AGA-2 M9109-AGA-2	VA9104-IGA-xS M9106-IGA-2	VA9104-GGA-xS M9106-GGA-2 M9109-GGA-2
VG1245AD	1/2	1.2 ²	200	VG1245AD+9T4AGA ³	VG1245AD+9T4IGA ³	VG1245AD+9T4GGA ³
VG1245AE		1.9 ²		VG1245AE+9T4AGA ³	VG1245AE+9T4IGA ³	VG1245AE+9T4GGA ³
VG1245AF		2.9 ²		VG1245AF+9T4AGA ³	VG1245AF+9T4IGA ³	VG1245AF+9T4GGA ³
VG1245AG		4.7 ²		VG1245AG+9T4AGA ³	VG1245AG+9T4IGA ³	VG1245AG+9T4GGA ³
VG1245AL		7.4 ²		VG1245AL+9T4AGA ³	VG1245AL+9T4IGA ³	VG1245AL+9T4GGA ³
VG1245AN		11.7		VG1245AN+9T4AGA ³	VG1245AN+9T4IGA ³	VG1245AN+9T4GGA ³
VG1245BG	3/4	4.7 ²	200	VG1245BG+9T4AGA ³	VG1245BG+9T4IGA ³	VG1245BG+9T4GGA ³
VG1245BL		7.4 ²		VG1245BL+9T4AGA ³	VG1245BL+9T4IGA ³	VG1245BL+9T4GGA ³
VG1245BN		11.7		VG1245BN+9T4AGA ³	VG1245BN+9T4IGA ³	VG1245BN+9T4GGA ³
VG1245CL	1	7.4 ²	200	VG1245CL+9T4AGA ³	VG1245CL+9T4IGA ³	VG1245CL+9T4GGA ³
VG1245CN		11.7 ²		VG1245CN+9T4AGA ³	VG1245CN+9T4IGA ³	VG1245CN+9T4GGA ³
VG1245CP		18.7		VG1245CP+9T4AGA ³	VG1245CP+9T4IGA ³	VG1245CP+9T4GGA ³
VG1245DN	1-1/4	11.7 ²	200	VG1245DN+906AGA	VG1245DN+906IGA	VG1245DN+906GGA
VG1245DP		18.7 ²		VG1245DP+906AGA	VG1245DP+906IGA	VG1245DP+906GGA
VG1245DR		29.2		VG1245DR+906AGA	VG1245DR+906IGA	VG1245DR+906GGA
VG1245EP	1-1/2	18.7 ²	200	VG1245EP+906AGA	VG1245EP+906IGA	VG1245EP+906GGA
VG1245ER		29.2 ²		VG1245ER+906AGA	VG1245ER+906IGA	VG1245ER+906GGA
VG1245ES		46.8		VG1245ES+906AGA	VG1245ES+906IGA	VG1245ES+906GGA
VG1245FR	2	29.2 ²	200	VG1245FR+909AGA	—	VG1245FR+909GGA
VG1245FS		46.8 ²		VG1245FS+909AGA	—	VG1245FS+909GGA
VG1245FT		73.7		VG1245FT+909AGA	—	VG1245FT+909GGA

1. To avoid excessive wear or drive time on the motor for the AGx models, use a controller or software that provides a timeout function to remove the signal at the end of rotation (stall).
2. Cv has a characterizing disk.
3. Code numbers shown are for a VA9104-AGA-3S actuator with M3 screw terminals. To specify a 48 inch plenum rated cable, change the 9T4 to 9A4 in the code number for a VA9104-AGA-2S actuator. Example: VG1245AD+9T4AGA becomes VG1245AD+9A4AGA. To make a conduit connection or for fluid temperatures greater than 212°F (100°), change the 9T4 to 906 in the code number for an M9106-AGA-2 actuator. Example: VG1245AD+9T4AGA becomes VG1245AD+906AGA.

VG1000 Series Two-Way, Stainless Steel Trim, NPT End Connection Ball Valves with Non-Spring Return Electric Actuators (Continued)

Two-Way Non-Spring Return with Two Switches

Valve	Size, in.	Cv	Closeoff psig	AC 24 V		
				On/Off (Floating) without Timeout ¹	On/Off (Floating) with Timeout	DC 0 to 10 V Proportional
				M9106-AGC-2 M9109-AGC-2	M9106-IGC-2	M9106-GGC-2 M9109-GGC-2
VG1245AD	1/2	1.2 ²	200	VG1245AD+906AGC	VG1245AD+906IGC	VG1245AD+906GGC
VG1245AE		1.9 ²		VG1245AE+906AGC	VG1245AE+906IGC	VG1245AE+906GGC
VG1245AF		2.9 ²		VG1245AF+906AGC	VG1245AF+906IGC	VG1245AF+906GGC
VG1245AG		4.7 ²		VG1245AG+906AGC	VG1245AG+906IGC	VG1245AG+906GGC
VG1245AL		7.4 ²		VG1245AL+906AGC	VG1245AL+906IGC	VG1245AL+906GGC
VG1245AN		11.7		VG1245AN+906AGC	VG1245AN+906IGC	VG1245AN+906GGC
VG1245BG	3/4	4.7 ²	200	VG1245BG+906AGC	VG1245BG+906IGC	VG1245BG+906GGC
VG1245BL		7.4 ²		VG1245BL+906AGC	VG1245BL+906IGC	VG1245BL+906GGC
VG1245BN		11.7		VG1245BN+906AGC	VG1245BN+906IGC	VG1245BN+906GGC
VG1245CL	1	7.4 ²	200	VG1245CL+906AGC	VG1245CL+906IGC	VG1245CL+906GGC
VG1245CN		11.7 ²		VG1245CN+906AGC	VG1245CN+906IGC	VG1245CN+906GGC
VG1245CP		18.7		VG1245CP+906AGC	VG1245CP+906IGC	VG1245CP+906GGC
VG1245DN	1-1/4	11.7 ²	200	VG1245DN+906AGC	VG1245DN+906IGC	VG1245DN+906GGC
VG1245DP		18.7 ²		VG1245DP+906AGC	VG1245DP+906IGC	VG1245DP+906GGC
VG1245DR		29.2		VG1245DR+906AGC	VG1245DR+906IGC	VG1245DR+906GGC
VG1245EP	1-1/2	18.7 ²	200	VG1245EP+906AGC	VG1245EP+906IGC	VG1245EP+906GGC
VG1245ER		29.2 ²		VG1245ER+906AGC	VG1245ER+906IGC	VG1245ER+906GGC
VG1245ES		46.8		VG1245ES+906AGC	VG1245ES+906IGC	VG1245ES+906GGC
VG1245FR	2	29.2 ²	200	VG1245FR+909AGC	---	VG1245FR+909GGC
VG1245FS		46.8 ²		VG1245FS+909AGC	---	VG1245FS+909GGC
VG1245FT		73.7		VG1245FT+909AGC	---	VG1245FT+909GGC

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2. Cv has a characterizing disk.

VG1000 Series Two-Way, Stainless Steel Trim, NPT End Connection Ball Valves with Non-Spring Return Electric Actuators (Continued)

Technical Specifications

VG1000 Two-Way, Stainless Steel Trim Ball Valves with Non-Spring Return Electric Actuators		
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 Limits	212°F (100°C)	VA9104 and M9104 with M9000-550 Linkage
	284°F (140°C)	M9106 or M9109 with M9000-520 Linkage
Valve Body Pressure/ Temperature 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		Maximum Differential Pressure 50 psi: Valves with Characterized Flow Control Disk 30 psi: Quiet Service Ball Valves
Flow Characteristics	Two-Way	Equal Percentage
Rangeability²		Greater than 500:1
Minimum Ambient Operating Temperature		-4°F (-20°C)
Maximum Ambient Operating Temperature³ (Limited by the Actuator and Linkage)	M9000-550 Linkage (M9104 Only)	140°F (60°C): VA9104 and M9104 Series Non-Spring Return Actuators
	M9000-520 Linkage	125°F (52°C): M9106 and M9109 Series Non-Spring Return Actuators
Leakage		0.01% of Maximum Flow per ANSI/FCI 70-2, Class 4
End Connections		NPT
Materials	Body	Forged Brass
	Ball	300 Series Stainless Steel
	Blowout-Proof Stem	300 Series Stainless Steel
	Seats	Graphite-Reinforced Polytetrafluoroethylene (PTFE) with ethylene propylene diene monomer (EPDM) O-Ring Backing
	Stem Seals	EPDM Double O-Rings
	Characterizing Disk	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.