VG1000 Series

LIT-1900226

Two-Way, Plated Brass 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 provides tight shutoff
- Graphite Reinforced Polytetrafluoroethylene (PTFE) Seats includes 15% graphite-reinforced ball seals, providing better wear resistance
- 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)
- 500:1 rangeability provides accurate control under all load conditions

VG1000 Two-Way Non-Spring Return Plated Brass 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
VG1241AD	1/2	1.2[2]	200	VG1241AD+9T4AGA[3]	VG1241AD+9T4IGA[3]	VG1241AD+9T4GGA[3]
VG1241AE		1.9[2]		VG1241AE+9T4AGA[3]	VG1241AE+9T4IGA[3]	VG1241AE+9T4GGA[3]
VG1241AF		2.9[2]		VG1241AF+9T4AGA[3]	VG1241AF+9T4IGA[3]	VG1241AF+9T4GGA[3]
VG1241AG		4.7[2]		VG1241AG+9T4AGA[3]	VG1241AG+9T4IGA[3]	VG1241AG+9T4GGA[3]
VG1241AL		7.4[2]		VG1241AL+9T4AGA[3]	VG1241AL+9T4IGA[3]	VG1241AL+9T4GGA[3]
VG1241AN		11.7		VG1241AN+9T4AGA[3]	VG1241AN+9T4IGA[3]	VG1241AN+9T4GGA[3]
VG1241BG	3/4	4.7[2]	200	VG1241BG+9T4AGA[3]	VG1241BG+9T4IGA[3]	VG1241BG+9T4GGA[3]
VG1241BL		7.4[2]		VG1241BL+9T4AGA[3]	VG1241BL+9T4IGA[3]	VG1241BL+9T4GGA[3]
VG1241BN		11.7		VG1241BN+9T4AGA[3]	VG1241BN+9T4IGA[3]	VG1241BN+9T4GGA[3]
VG1241CL	1	7.4[2]	200	VG1241CL+9T4AGA[3]	VG1241CL+9T4IGA[3]	VG1241CL+9T4GGA[3]
VG1241CN		11.7[2]		VG1241CN+9T4AGA[3]	VG1241CN+9T4IGA[3]	VG1241CN+9T4GGA[3]
VG1241CP		18.7		VG1241CP+9T4AGA[3]	VG1241CP+9T4IGA[3]	VG1241CP+9T4GGA[3]
VG1241DN	1-1/4	11.7[2]	200	VG1241DN+906AGA	VG1241DN+906IGA	VG1241DN+906GGA
VG1241DP		18.7[2]		VG1241DP+906AGA	VG1241DP+906IGA	VG1241DP+906GGA
VG1241DR		29.2		VG1241DR+906AGA	VG1241DR+906IGA	VG1241DR+906GGA
VG1241EP	1-1/2	18.7[2]	200	VG1241EP+906AGA	VG1241EP+906IGA	VG1241EP+906GGA
VG1241ER		29.2[2]		VG1241ER+906AGA	VG1241ER+906IGA	VG1241ER+906GGA
VG1241ES		46.8		VG1241ES+906AGA	VG1241ES+906IGA	VG1241ES+906GGA
VG1241FR	2	29.2[2]	200	VG1241FR+909AGA	—	VG1241FR+909GGA
VG1241FS		46.8[2]		VG1241FS+909AGA	—	VG1241FS+909GGA
VG1241FT		73.7		VG1241FT+909AGA	—	VG1241FT+909GGA

1. To avoid excessive wear or drive time on the motor for the AGA 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: VG1241AD+**9T4**AGA becomes VG1241AD+**9A4**AGA. To specify a conduit connection, change the 9T4 to 906 in the code number for a M9106-AGA-2 actuator. Example: VG1241AD+**9T4**AGA becomes VG1241AD+**906**AGA.

VG1000 Series Two-Way, Plated Brass 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
VG1241AD	1/2	1.2[2]	200	VG1241AD+906AGC	VG1241AD+906IGC	VG1241AD+906GGC
VG1241AE		1.9[2]		VG1241AE+906AGC	VG1241AE+906IGC	VG1241AE+906GGC
VG1241AF		2.9[2]		VG1241AF+906AGC	VG1241AF+906IGC	VG1241AF+906GGC
VG1241AG		4.7[2]		VG1241AG+906AGC	VG1241AG+906IGC	VG1241AG+906GGC
VG1241AL		7.4[2]		VG1241AL+906AGC	VG1241AL+906IGC	VG1241AL+906GGC
VG1241AN		11.7		VG1241AN+906AGC	VG1241AN+906IGC	VG1241AN+906GGC
VG1241BG	3/4	4.7[2]	200	VG1241BG+906AGC	VG1241BG+906IGC	VG1241BG+906GGC
VG1241BL		7.4[2]		VG1241BL+906AGC	VG1241BL+906IGC	VG1241BL+906GGC
VG1241BN		11.7		VG1241BN+906AGC	VG1241BN+906IGC	VG1241BN+906GGC
VG1241CL	1	7.4[2]	200	VG1241CL+906AGC	VG1241CL+906IGC	VG1241CL+906GGC
VG1241CN		11.7[2]		VG1241CN+906AGC	VG1241CN+906IGC	VG1241CN+906GGC
VG1241CP		18.7		VG1241CP+906AGC	VG1241CP+906IGC	VG1241CP+906GGC
VG1241DN	1-1/4	11.7[2]	200	VG1241DN+906AGC	VG1241DN+906IGC	VG1241DN+906GGC
VG1241DP		18.7[2]		VG1241DP+906AGC	VG1241DP+906IGC	VG1241DP+906GGC
VG1241DR		29.2		VG1241DR+906AGC	VG1241DR+906IGC	VG1241DR+906GGC
VG1241EP		18.7[2]		VG1241EP+906AGC	VG1241EP+906IGC	VG1241EP+906GGC
VG1241ER		29.2[2]		VG1241ER+906AGC	VG1241ER+906IGC	VG1241ER+906GGC
VG1241ES		46.8		VG1241ES+906AGC	VG1241ES+906IGC	VG1241ES+906GGC
VG1241FR	2	29.2[2]	200	VG1241FR+909AGC	—	VG1241FR+909GGC
VG1241FS		46.8[2]		VG1241FS+909AGC	—	VG1241FS+909GGC
VG1241FT		73.7		VG1241FT+909AGC	—	VG1241FT+909GGC

1. To avoid excessive wear or drive time on the motor for the AGC 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.

Technical Specifications

VG1000 Two-Way, Plated Brass Trim Ball Valves with Non-Spring Return Electric Actuators		
Service[1]		Hot Water, Chilled Water, or 50/50 Glycol Solutions for HVAC Systems
Fluid Temperature Limits	**Water**	23 to 203°F (-5 to 95°C)
	Steam	Not Rated for Steam Service
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 Maximum Differential Pressure 30 psi: Quiet Service Ball Valves
Flow Characteristics	**Two-Way**	Equal Percentage
Rangeability[2]		Greater than 500:1
Minimum Ambient Operating Temperature		-4°F (-20°C)
Maximum Ambient Operating Temperature[3] (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	Chrome Plated Brass
	Blowout-Proof Stem	Nickel Plated Brass
	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.