

VG1000 Series 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 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.
- 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 valve body, actuator, or entire assembly. For replacement parts, contact the nearest Johnson Controls representative.

Selection Charts

Two-Way — Spring Return Valves — Without Switches (Not Rated for Steam Service) (Part 1 of 2)

Fluid Temperatures: -22 to 212°F (-30 to 100°C) Not Rated for Steam Service				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	
				Spring Return Open — Valve Normally Open				
				VA9203-AGA-2Z	VA9203-GGA-2Z	VA9203-BGA-2	VA9203-BUA-2	
VG1245AD	1/2	1.2 ¹	200	VG1245AD+923AGA	VG1245AD+923GGA	VG1245AD+923BGA	VG1245AD+923BUA	
VG1245AE		1.9 ¹		VG1245AE+923AGA	VG1245AE+923GGA	VG1245AE+923BGA	VG1245AE+923BUA	
VG1245AF		2.9 ¹		VG1245AF+923AGA	VG1245AF+923GGA	VG1245AF+923BGA	VG1245AF+923BUA	
VG1245AG		4.7 ¹		VG1245AG+923AGA	VG1245AG+923GGA	VG1245AG+923BGA	VG1245AG+923BUA	
VG1245AL		7.4 ¹		VG1245AL+923AGA	VG1245AL+923GGA	VG1245AL+923BGA	VG1245AL+923BUA	
VG1245AN		11.7		VG1245AN+923AGA	VG1245AN+923GGA	VG1245AN+923BGA	VG1245AN+923BUA	
VG1245BG	3/4	4.7 ¹	200	VG1245BG+923AGA	VG1245BG+923GGA	VG1245BG+923BGA	VG1245BG+923BUA	
VG1245BL		7.4 ¹		VG1245BL+923AGA	VG1245BL+923GGA	VG1245BL+923BGA	VG1245BL+923BUA	
VG1245BN		11.7		VG1245BN+923AGA	VG1245BN+923GGA	VG1245BN+923BGA	VG1245BN+923BUA	
VG1245CL	1	7.4 ¹	200	VG1245CL+923AGA	VG1245CL+923GGA	VG1245CL+923BGA	VG1245CL+923BUA	
VG1245CN		11.7 ¹		VG1245CN+923AGA	VG1245CN+923GGA	VG1245CN+923BGA	VG1245CN+923BUA	
VG1245CP		18.7		VG1245CP+923AGA	VG1245CP+923GGA	VG1245CP+923BGA	VG1245CP+923BUA	
				Spring Return Open — Valve Normally Open				
				VA9208-AGA-2	VA9208-GGA-2	VA9208-BGA-3	VA9208-BAA-3	
VG1245DN	1-1/4	11.7 ¹	200	VG1245DN+928AGA	VG1245DN+928GGA	VG1245DN+938BGA	VG1245DN+938BAA	
VG1245DP		18.7 ¹		VG1245DP+928AGA	VG1245DP+928GGA	VG1245DP+938BGA	VG1245DP+938BAA	
VG1245DR		29.2		VG1245DR+928AGA	VG1245DR+928GGA	VG1245DR+938BGA	VG1245DR+938BAA	
VG1245EP	1-1/2	18.7 ¹	200	VG1245EP+928AGA	VG1245EP+928GGA	VG1245EP+938BGA	VG1245EP+938BAA	
VG1245ER		29.2 ¹		VG1245ER+928AGA	VG1245ER+928GGA	VG1245ER+938BGA	VG1245ER+938BAA	
VG1245ES		46.8		VG1245ES+928AGA	VG1245ES+928GGA	VG1245ES+938BGA	VG1245ES+938BAA	
VG1245FR	2	29.2 ¹	200	VG1245FR+928AGA	VG1245FR+928GGA	VG1245FR+938BGA	VG1245FR+938BAA	
VG1245FS		46.8 ¹		VG1245FS+928AGA	VG1245FS+928GGA	VG1245FS+938BGA	VG1245FS+938BAA	
VG1245FT		73.7		VG1245FT+928AGA	VG1245FT+928GGA	VG1245FT+938BGA	VG1245FT+938BAA	

The performance specifications are nominal and conform to acceptable industry standards. For applications at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products. © 2015 Johnson Controls, Inc. www.johnsoncontrols.com

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

Two-Way — Spring Return Valves — Without Switches (Not Rated for Steam Service) (Part 2 of 2)

Fluid Temperatures: -22 to 212°F (-30 to 100°C) Not Rated for Steam Service				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	
Spring Return Closed — Valve Normally Closed								
				VA9203-AGA-2Z	VA9203-GGA-2Z	VA9203-BGA-2	VA9203-BUA-2	
VG1245AD	1/2	1.2	200	VG1245AD+943AGA	VG1245AD+943GGA	VG1245AD+943BGA	VG1245AD+943BUA	
VG1245AE		1.9 ¹		VG1245AE+943AGA	VG1245AE+943GGA	VG1245AE+943BGA	VG1245AE+943BUA	
VG1245AF		2.9 ¹		VG1245AF+943AGA	VG1245AF+943GGA	VG1245AF+943BGA	VG1245AF+943BUA	
VG1245AG		4.7 ¹		VG1245AG+943AGA	VG1245AG+943GGA	VG1245AG+943BGA	VG1245AG+943BUA	
VG1245AL		7.4 ¹		VG1245AL+943AGA	VG1245AL+943GGA	VG1245AL+943BGA	VG1245AL+943BUA	
VG1245AN		11.7		VG1245AN+943AGA	VG1245AN+943GGA	VG1245AN+943BGA	VG1245AN+943BUA	
VG1245BG	3/4	4.7 ¹	200	VG1245BG+943AGA	VG1245BG+943GGA	VG1245BG+943BGA	VG1245BG+943BUA	
VG1245BL		7.4 ¹		VG1245BL+943AGA	VG1245BL+943GGA	VG1245BL+943BGA	VG1245BL+943BUA	
VG1245BN		11.7		VG1245BN+943AGA	VG1245BN+943GGA	VG1245BN+943BGA	VG1245BN+943BUA	
VG1245CL	1	7.4 ¹	200	VG1245CL+943AGA	VG1245CL+943GGA	VG1245CL+943BGA	VG1245CL+943BUA	
VG1245CN		11.7 ¹		VG1245CN+943AGA	VG1245CN+943GGA	VG1245CN+943BGA	VG1245CN+943BUA	
VG1245CP		18.7		VG1245CP+943AGA	VG1245CP+943GGA	VG1245CP+943BGA	VG1245CP+943BUA	
Spring Return Closed — Valve Normally Closed								
				VA9208-AGA-2	VA9208-GGA-2	VA9208-BGA-3	VA9208-BAA-3	
VG1245DN	1-1/4	11.7 ¹	200	VG1245DN+948AGA	VG1245DN+948GGA	VG1245DN+958BGA	VG1245DN+958BAA	
VG1245DP		18.7 ¹		VG1245DP+948AGA	VG1245DP+948GGA	VG1245DP+958BGA	VG1245DP+958BAA	
VG1245DR		29.2		VG1245DR+948AGA	VG1245DR+948GGA	VG1245DR+958BGA	VG1245DR+958BAA	
VG1245EP	1-1/2	18.7 ¹	200	VG1245EP+948AGA	VG1245EP+948GGA	VG1245EP+958BGA	VG1245EP+958BAA	
VG1245ER		29.2 ¹		VG1245ER+948AGA	VG1245ER+948GGA	VG1245ER+958BGA	VG1245ER+958BAA	
VG1245ES		46.8		VG1245ES+948AGA	VG1245ES+948GGA	VG1245ES+958BGA	VG1245ES+958BAA	
VG1245FR	2	29.2 ¹	200	VG1245FR+948AGA	VG1245FR+948GGA	VG1245FR+958BGA	VG1245FR+958BAA	
VG1245FS		46.8 ¹		VG1245FS+948AGA	VG1245FS+948GGA	VG1245FS+958BGA	VG1245FS+958BAA	
VG1245FT		73.7		VG1245FT+948AGA	VG1245FT+948GGA	VG1245FT+958BGA	VG1245FT+958BAA	

1. Valve has a characterizing disk.

Valve Assemblies with M9000-561 Thermal Barrier Installed — Rated for High-Temperature Fluid Service Two-Way — Spring Return Valve Open — Normally Open — Without End Switches (Part 1 of 2)

Fluid Temperatures: -22 to 284°F (-30 to 140°C) Water and 15 psi Steam				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	
Spring Return Open — Valve Normally Open								
				VA9203-AGA-2Z	VA9203-GGA-2Z	VA9203-BGA-2	VA9203-BUA-2	
VG1245AD	1/2	1.2 ¹	200	VG1245ADH923AGA	VG1245ADH923GGA	VG1245ADH923BGA	VG1245ADH923BUA	
VG1245AE		1.9 ¹		VG1245AEH923AGA	VG1245AEH923GGA	VG1245AEH923BGA	VG1245AEH923BUA	
VG1245AF		2.9 ¹		VG1245AFH923AGA	VG1245AFH923GGA	VG1245AFH923BGA	VG1245AFH923BUA	
VG1245AG		4.7 ¹		VG1245AGH923AGA	VG1245AGH923GGA	VG1245AGH923BGA	VG1245AGH923BUA	
VG1245AL		7.4 ¹		VG1245ALH923AGA	VG1245ALH923GGA	VG1245ALH923BGA	VG1245ALH923BUA	
VG1245AN		11.7		VG1245ANH923AGA	VG1245ANH923GGA	VG1245ANH923BGA	VG1245ANH923BUA	
VG1245BG	3/4	4.7 ¹	200	VG1245BGH923AGA	VG1245BGH923GGA	VG1245BGH923BGA	VG1245BGH923BUA	
VG1245BL		7.4 ¹		VG1245BLH923AGA	VG1245BLH923GGA	VG1245BLH923BGA	VG1245BLH923BUA	
VG1245BN		11.7		VG1245BNH923AGA	VG1245BNH923GGA	VG1245BNH923BGA	VG1245BNH923BUA	
VG1245CL	1	7.4 ¹	200	VG1245CLH923AGA	VG1245CLH923GGA	VG1245CLH923BGA	VG1245CLH923BUA	
VG1245CN		11.7 ¹		VG1245CNH923AGA	VG1245CNH923GGA	VG1245CNH923BGA	VG1245CNH923BUA	
VG1245CP		18.7		VG1245CPH923AGA	VG1245CPH923GGA	VG1245CPH923BGA	VG1245CPH923BUA	

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

Valve Assemblies with M9000-561 Thermal Barrier Installed — Rated for High-Temperature Fluid Service Two-Way — Spring Return Valve Open — Normally Open — Without End Switches (Part 2 of 2)

Fluid Temperatures: -22 to 284°F (-30 to 140°C) Water and 15 psi Steam				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
Spring Return Open — Valve Normally Open							
				VA9208-AGA-2	VA9208-GGA-2	VA9208-BGA-3	VA9208-BAA-3
VG1245DN	1-1/4	11.7 ¹	200	VG1245DNH928AGA	VG1245DNH928GGA	VG1245DNH938BGA	VG1245DNH938BAA
VG1245DP		18.7 ¹		VG1245DPH928AGA	VG1245DPH928GGA	VG1245DPH938BGA	VG1245DPH938BAA
VG1245DR		29.2		VG1245DRH928AGA	VG1245DRH928GGA	VG1245DRH938BGA	VG1245DRH938BAA
VG1245EP	1-1/2	18.7 ¹	200	VG1245EPH928AGA	VG1245EPH928GGA	VG1245EPH938BGA	VG1245EPH938BAA
VG1245ER		29.2 ¹		VG1245ERH928AGA	VG1245ERH928GGA	VG1245ERH938BGA	VG1245ERH938BAA
VG1245ES		46.8		VG1245ESH928AGA	VG1245ESH928GGA	VG1245ESH938BGA	VG1245ESH938BAA
VG1245FR	2	29.2 ¹	200	VG1245FRH928AGA	VG1245FRH928GGA	VG1245FRH938BGA	VG1245FRH938BAA
VG1245FS		46.8 ¹		VG1245FSH928AGA	VG1245FSH928GGA	VG1245FSH938BGA	VG1245FSH938BAA
VG1245FT		73.7		VG1245FTH928AGA	VG1245FTH928GGA	VG1245FTH938BGA	VG1245FTH938BAA
Spring Return Closed — Valve Normally Closed							
				VA9203-AGA-2Z	VA9203-GGA-2Z	VA9203-BGA-2	VA9203-BUA-2
VG1245AD	1/2	1.2	200	VG1245ADH943AGA	VG1245ADH943GGA	VG1245ADH943BGA	VG1245ADH943BUA
VG1245AE		1.9 ¹		VG1245AEH943AGA	VG1245AEH943GGA	VG1245AEH943BGA	VG1245AEH943BUA
VG1245AF		2.9 ¹		VG1245AFH943AGA	VG1245AFH943GGA	VG1245AFH943BGA	VG1245AFH943BUA
VG1245AG		4.7 ¹		VG1245AGH943AGA	VG1245AGH943GGA	VG1245AGH943BGA	VG1245AGH943BUA
VG1245AL		7.4 ¹		VG1245ALH943AGA	VG1245ALH943GGA	VG1245ALH943BGA	VG1245ALH943BUA
VG1245AN		11.7		VG1245ANH943AGA	VG1245ANH943GGA	VG1245ANH943BGA	VG1245ANH943BUA
VG1245BG	3/4	4.7 ¹	200	VG1245BGH943AGA	VG1245BGH943GGA	VG1245BGH943BGA	VG1245BGH943BUA
VG1245BL		7.4 ¹		VG1245BLH943AGA	VG1245BLH943GGA	VG1245BLH943BGA	VG1245BLH943BUA
VG1245BN		11.7		VG1245BNH943AGA	VG1245BNH943GGA	VG1245BNH943BGA	VG1245BNH943BUA
VG1245CL	1	7.4 ¹	200	VG1245CLH943AGA	VG1245CLH943GGA	VG1245CLH943BGA	VG1245CLH943BUA
VG1245CN		11.7 ¹		VG1245CNH943AGA	VG1245CNH943GGA	VG1245CNH943BGA	VG1245CNH943BUA
VG1245CP		18.7		VG1245CPH943AGA	VG1245CPH943GGA	VG1245CPH943BGA	VG1245CPH943BUA
Spring Return Closed — Valve Normally Closed							
				VA9208-AGA-2	VA9208-GGA-2	VA9208-BGA-3	VA9208-BAA-3
VG1245DN	1-1/4	11.7 ¹	200	VG1245DNH948AGA	VG1245DNH948GGA	VG1245DNH958BGA	VG1245DNH958BAA
VG1245DP		18.7 ¹		VG1245DPH948AGA	VG1245DPH948GGA	VG1245DPH958BGA	VG1245DPH958BAA
VG1245DR		29.2		VG1245DRH948AGA	VG1245DRH948GGA	VG1245DRH958BGA	VG1245DRH958BAA
VG1245EP	1-1/2	18.7 ¹	200	VG1245EPH948AGA	VG1245EPH948GGA	VG1245EPH958BGA	VG1245EPH958BAA
VG1245ER		29.2 ¹		VG1245ERH948AGA	VG1245ERH948GGA	VG1245ERH958BGA	VG1245ERH958BAA
VG1245ES		46.8		VG1245ESH948AGA	VG1245ESH948GGA	VG1245ESH958BGA	VG1245ESH958BAA
VG1245FR	2	29.2 ¹	200	VG1245FRH948AGA	VG1245FRH948GGA	VG1245FRH958BGA	VG1245FRH958BAA
VG1245FS		46.8 ¹		VG1245FSH948AGA	VG1245FSH948GGA	VG1245FSH958BGA	VG1245FSH958BAA
VG1245FT		73.7		VG1245FTH948AGA	VG1245FTH948GGA	VG1245FTH958BGA	VG1245FTH958BAA

1. Valve has a characterizing disk.

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

Technical Specifications

VG1000 Series Two-Way, Stainless Steel Trim, NPT End Connections 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)	VA9203 Series VA9208 Series
	284°F (140°C)	VA9203 Series with M9000-561 Thermal Barrier VA9208 Series with M9000-561 Thermal Barrier
Valve Body Pressure Rating	Water	580 psig (4,000 kPa) at 203°F (95°C) (PN40) 464 psig (3,196 kPa) at 284°F (140°C) (PN40)
	Steam	15 psig (103 kPa) Saturated Steam (Applies to VA9203 Series or VA9208 Series Actuators with M9000-561 Thermal Barrier Installed)
Maximum Closeoff Pressure		200 psid (1,378 kPa)
Maximum Recommended Operating Pressure Drop		50 psid (340 kPa)
Flow Characteristics	Two-Way	Equal Percentage
Rangeability²		Greater than 500:1
Minimum Ambient Operating Temperature	-22°F (-30°C)	VA9203 Series Spring-Return Actuators
	-40°F (-40°C)	VA9208 Series Spring-Return Actuators
Maximum Ambient Operating Temperature³ (Limited by the Actuator and Linkage)	Direct Mount	140°F (60°C): VA9203 or VA9208 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
Compliance CRN		0C16910.5C

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.