

VG1000 Series

Sweat End Connection Plated Brass Trim Ball Valves

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 1 in. (DN15 through DN25), this family of two- and three-way forged brass valves is factory or field mounted to Johnson Controls® VA9104 Series Non-Spring Return and VA2202 Series Spring Return Electric Actuators for on/off, floating, or proportional control. When supplied with an actuator, the actuator is not mounted to the valve to allow access to the end connections.

Refer to the *VG1000 Series Forged Brass Ball Valves Product Bulletin (LIT-977132)* for important product application information.

Features

- forged brass body — provides 300 psig static pressure rating
- Graphite Reinforced Polytetrafluoroethylene (PTFE) seats — include 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

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 Sweat End Connection Valves

Selection Charts

VG1000 Sweat End Connection Valves, Brass Trim, Non-Spring Return Actuators (Part 1 of 2)

| 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 ² | VA9104-IGA-xS ² | VA9104-GGA-xS ² |
| Two-Way | | | | | | |
| VG1271AD | 1/2 | 1.2 ³ | 200 | VG1271AD+9T4AGA | VG1271AD+9T4IGA | VG1271AD+9T4GGA |
| VG1271AE | | 1.9 ³ | | VG1271AE+9T4AGA | VG1271AE+9T4IGA | VG1271AE+9T4GGA |
| VG1271AF | | 2.9 ³ | | VG1271AF+9T4AGA | VG1271AF+9T4IGA | VG1271AF+9T4GGA |
| VG1271AG | | 4.7 ³ | | VG1271AG+9T4AGA | VG1271AG+9T4IGA | VG1271AG+9T4GGA |
| VG1271AL | | 7.4 ³ | | VG1271AL+9T4AGA | VG1271AL+9T4IGA | VG1271AL+9T4GGA |
| VG1271AN | 11.7 | VG1271AN+9T4AGA | VG1271AN+9T4IGA | VG1271AN+9T4GGA | | |
| VG1271BG | 3/4 | 4.7 ³ | 200 | VG1271BG+9T4AGA | VG1271BG+9T4IGA | VG1271BG+9T4GGA |
| VG1271BL | | 7.4 ³ | | VG1271BL+9T4AGA | VG1271BL+9T4IGA | VG1271BL+9T4GGA |
| VG1271BN | | 11.7 | | VG1271BN+9T4AGA | VG1271BN+9T4IGA | VG1271BN+9T4GGA |
| VG1271CL | 1 | 7.4 ³ | 200 | VG1271CL+9T4AGA | VG1271CL+9T4IGA | VG1271CL+9T4GGA |
| VG1271CN | | 11.7 ³ | | VG1271CN+9T4AGA | VG1271CN+9T4IGA | VG1271CN+9T4GGA |
| VG1271CP | | 18.7 | | VG1271CP+9T4AGA | VG1271CP+9T4IGA | VG1271CP+9T4GGA |

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Sweat End Connection Plated Brass Trim Ball Valves (Continued)

VG1000 Sweat End Connection Valves, Brass Trim, Non-Spring Return Actuators (Part 2 of 2)

| 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 ² | VA9104-IGA-xS ² | VA9104-GGA-xS ² |
| Three-Way | | | | | | |
| VG1871AD | 1/2 | 1.2 ³ | 200 | VG1871AD+9T4AGA | VG1871AD+9T4IGA | VG1871AD+9T4GGA |
| VG1871AE | | 1.9 ³ | | VG1871AE+9T4AGA | VG1871AE+9T4IGA | VG1871AE+9T4GGA |
| VG1871AF | | 2.9 ³ | | VG1871AF+9T4AGA | VG1871AF+9T4IGA | VG1871AF+9T4GGA |
| VG1871AG | | 4.7 ³ | | VG1871AG+9T4AGA | VG1871AG+9T4IGA | VG1871AG+9T4GGA |
| VG1871AL | | 7.4 ³ | | VG1871AL+9T4AGA | VG1871AL+9T4IGA | VG1871AL+9T4GGA |
| VG1871AN | | 11.7 | | VG1871AN+9T4AGA | VG1871AN+9T4IGA | VG1871AN+9T4GGA |
| VG1871BG | 3/4 | 4.7 ³ | 200 | VG1871BG+9T4AGA | VG1871BG+9T4IGA | VG1871BG+9T4GGA |
| VG1871BL | | 7.4 ³ | | VG1871BL+9T4AGA | VG1871BL+9T4IGA | VG1871BL+9T4GGA |
| VG1871BN | | 11.7 | | VG1871BN+9T4AGA | VG1871BN+9T4IGA | VG1871BN+9T4GGA |
| VG1871CL | 1 | 7.4 ³ | 200 | VG1871CL+9T4AGA | VG1871CL+9T4IGA | VG1871CL+9T4GGA |
| VG1871CN | | 11.7 ³ | | VG1871CN+9T4AGA | VG1871CN+9T4IGA | VG1871CN+9T4GGA |
| VG1871CP | | 18.7 | | VG1871CP+9T4AGA | VG1871CP+9T4IGA | VG1871CP+9T4GGA |

- 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).
- Code numbers shown are for a VA9104-xGA-3S actuator with M3 screw terminals. To specify a 48-in. plenum-rated cable, change the 9T4 to 9A4 in the code number for a VA9104-xGA-2S actuator. Example: VG1241AD+9T4AGA becomes VG1241AD+9A4AGA.
- Cv has a characterizing disk.

VG1000 Sweat End Connection Valves, Brass Trim, Two-Way Spring Return Actuators

| 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 | VA2202-GGA-2 | VA2202-BGA-2 | VA2202-BAA-2 |
| Two-Way Spring Return Valve Open (Normally Open) | | | | | | | |
| VG1271AD | 1/2 | 1.2 ¹ | 200 | VG1271AD+22TAGA | VG1271AD+22TGGGA | VG1271AD+22TBGA | VG1271AD+22TBAA |
| VG1271AE | | 1.9 ¹ | | VG1271AE+22TAGA | VG1271AE+22TGGGA | VG1271AE+22TBGA | VG1271AE+22TBAA |
| VG1271AF | | 2.9 ¹ | | VG1271AF+22TAGA | VG1271AF+22TGGGA | VG1271AF+22TBGA | VG1271AF+22TBAA |
| VG1271AG | | 4.7 ¹ | | VG1271AG+22TAGA | VG1271AG+22TGGGA | VG1271AG+22TBGA | VG1271AG+22TBAA |
| VG1271AL | | 7.4 ¹ | | VG1271AL+22TAGA | VG1271AL+22TGGGA | VG1271AL+22TBGA | VG1271AL+22TBAA |
| VG1271AN | | 11.7 | | VG1271AN+22TAGA | VG1271AN+22TGGGA | VG1271AN+22TBGA | VG1271AN+22TBAA |
| VG1271BG | 3/4 | 4.7 ¹ | 200 | VG1271BG+22TAGA | VG1271BG+22TGGGA | VG1271BG+22TBGA | VG1271BG+22TBAA |
| VG1271BL | | 7.4 ¹ | | VG1271BL+22TAGA | VG1271BL+22TGGGA | VG1271BL+22TBGA | VG1271BL+22TBAA |
| VG1271BN | | 11.7 | | VG1271BN+22TAGA | VG1271BN+22TGGGA | VG1271BN+22TBGA | VG1271BN+22TBAA |
| VG1271CL | 1 | 7.4 ¹ | 200 | VG1271CL+22TAGA | VG1271CL+22TGGGA | VG1271CL+22TBGA | VG1271CL+22TBAA |
| VG1271CN | | 11.7 ¹ | | VG1271CN+22TAGA | VG1271CN+22TGGGA | VG1271CN+22TBGA | VG1271CN+22TBAA |
| VG1271CP | | 18.7 | | VG1271CP+22TAGA | VG1271CP+22TGGGA | VG1271CP+22TBGA | VG1271CP+22TBAA |
| Two-Way Spring Return Valve Closed (Normally Closed) | | | | | | | |
| VG1271AD | 1/2 | 1.2 ¹ | 200 | VG1271AD+24TAGA | VG1271AD+24TGGGA | VG1271AD+24TBGA | VG1271AD+24TBAA |
| VG1271AE | | 1.9 ¹ | | VG1271AE+24TAGA | VG1271AE+24TGGGA | VG1271AE+24TBGA | VG1271AE+24TBAA |
| VG1271AF | | 2.9 ¹ | | VG1271AF+24TAGA | VG1271AF+24TGGGA | VG1271AF+24TBGA | VG1271AF+24TBAA |
| VG1271AG | | 4.7 ¹ | | VG1271AG+24TAGA | VG1271AG+24TGGGA | VG1271AG+24TBGA | VG1271AG+24TBAA |
| VG1271AL | | 7.4 ¹ | | VG1271AL+24TAGA | VG1271AL+24TGGGA | VG1271AL+24TBGA | VG1271AL+24TBAA |
| VG1271AN | | 11.7 | | VG1271AN+24TAGA | VG1271AN+24TGGGA | VG1271AN+24TBGA | VG1271AN+24TBAA |
| VG1271BG | 3/4 | 4.7 ¹ | 200 | VG1271BG+24TAGA | VG1271BG+24TGGGA | VG1271BG+24TBGA | VG1271BG+24TBAA |
| VG1271BL | | 7.4 ¹ | | VG1271BL+24TAGA | VG1271BL+24TGGGA | VG1271BL+24TBGA | VG1271BL+24TBAA |
| VG1271BN | | 11.7 | | VG1271BN+24TAGA | VG1271BN+24TGGGA | VG1271BN+24TBGA | VG1271BN+24TBAA |
| VG1271CL | 1 | 7.4 ¹ | 200 | VG1271CL+24TAGA | VG1271CL+24TGGGA | VG1271CL+24TBGA | VG1271CL+24TBAA |
| VG1271CN | | 11.7 ¹ | | VG1271CN+24TAGA | VG1271CN+24TGGGA | VG1271CN+24TBGA | VG1271CN+24TBAA |
| VG1271CP | | 18.7 | | VG1271CP+24TAGA | VG1271CP+24TGGGA | VG1271CP+24TBGA | VG1271CP+24TBAA |

- Cv has a characterizing disk.



Sweat End Connection Plated Brass Trim Ball Valves (Continued)

VG1000 Sweat End Connection Valves, Brass Trim, Three-Way Spring Return Actuators

| 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 | VA2202-GGA-2 | VA2202-BGA-2 | VA2202-BAA-2 |
| Three-Way Spring Return Counterclockwise, Port A (Coil) Open | | | | | | | |
| VG1871AD | 1/2 | 1.2 ¹ | 200 | VG1871AD+22TAGA | VG1871AD+22TGGA | VG1871AD+22TBGA | VG1871AD+22TBAA |
| VG1871AE | | 1.9 ¹ | | VG1871AE+22TAGA | VG1871AE+22TGGA | VG1871AE+22TBGA | VG1871AE+22TBAA |
| VG1871AF | | 2.9 ¹ | | VG1871AF+22TAGA | VG1871AF+22TGGA | VG1871AF+22TBGA | VG1871AF+22TBAA |
| VG1871AG | | 4.7 ¹ | | VG1871AG+22TAGA | VG1871AG+22TGGA | VG1871AG+22TBGA | VG1871AG+22TBAA |
| VG1871AL | | 7.4 ¹ | | VG1871AL+22TAGA | VG1871AL+22TGGA | VG1871AL+22TBGA | VG1871AL+22TBAA |
| VG1871AN | | 11.7 | | VG1871AN+22TAGA | VG1871AN+22TGGA | VG1871AN+22TBGA | VG1871AN+22TBAA |
| VG1871BG | 3/4 | 4.7 ¹ | 200 | VG1871BG+22TAGA | VG1871BG+22TGGA | VG1871BG+22TBGA | VG1871BG+22TBAA |
| VG1871BL | | 7.4 ¹ | | VG1871BL+22TAGA | VG1871BL+22TGGA | VG1871BL+22TBGA | VG1871BL+22TBAA |
| VG1871BN | | 11.7 | | VG1871BN+22TAGA | VG1871BN+22TGGA | VG1871BN+22TBGA | VG1871BN+22TBAA |
| VG1871CL | 1 | 7.4 ¹ | 200 | VG1871CL+22TAGA | VG1871CL+22TGGA | VG1871CL+22TBGA | VG1871CL+22TBAA |
| VG1871CN | | 11.7 ¹ | | VG1871CN+22TAGA | VG1871CN+22TGGA | VG1871CN+22TBGA | VG1871CN+22TBAA |
| VG1871CP | | 18.7 | | VG1871CP+22TAGA | VG1871CP+22TGGA | VG1871CP+22TBGA | VG1871CP+22TBAA |
| Three-Way Spring Return Clockwise, Port B (Bypass) Open | | | | | | | |
| VG1871AD | 1/2 | 1.2 ¹ | 200 | VG1871AD+24TAGA | VG1871AD+24TGGA | VG1871AD+24TBGA | VG1871AD+24TBAA |
| VG1871AE | | 1.9 ¹ | | VG1871AE+24TAGA | VG1871AE+24TGGA | VG1871AE+24TBGA | VG1871AE+24TBAA |
| VG1871AF | | 2.9 ¹ | | VG1871AF+24TAGA | VG1871AF+24TGGA | VG1871AF+24TBGA | VG1871AF+24TBAA |
| VG1871AG | | 4.7 ¹ | | VG1871AG+24TAGA | VG1871AG+24TGGA | VG1871AG+24TBGA | VG1871AG+24TBAA |
| VG1871AL | | 7.4 ¹ | | VG1871AL+24TAGA | VG1871AL+24TGGA | VG1871AL+24TBGA | VG1871AL+24TBAA |
| VG1871AN | | 11.7 | | VG1871AN+24TAGA | VG1871AN+24TGGA | VG1871AN+24TBGA | VG1871AN+24TBAA |
| VG1871BG | 3/4 | 4.7 ¹ | 200 | VG1871BG+24TAGA | VG1871BG+24TGGA | VG1871BG+24TBGA | VG1871BG+24TBAA |
| VG1871BL | | 7.4 ¹ | | VG1871BL+24TAGA | VG1871BL+24TGGA | VG1871BL+24TBGA | VG1871BL+24TBAA |
| VG1871BN | | 11.7 | | VG1871BN+24TAGA | VG1871BN+24TGGA | VG1871BN+24TBGA | VG1871BN+24TBAA |
| VG1871CL | 1 | 7.4 ¹ | 200 | VG1871CL+24TAGA | VG1871CL+24TGGA | VG1871CL+24TBGA | VG1871CL+24TBAA |
| VG1871CN | | 11.7 ¹ | | VG1871CN+24TAGA | VG1871CN+24TGGA | VG1871CN+24TBGA | VG1871CN+24TBAA |
| VG1871CP | | 18.7 | | VG1871CP+24TAGA | VG1871CP+24TGGA | VG1871CP+24TBGA | VG1871CP+24TBAA |

1. Cv has a characterizing disk.

Technical Specifications

| VG1000 Series Sweat End Connection Plated Brass Trim Ball Valves (Part 1 of 2) | | |
|--|---|---|
| Service ¹ | Hot Water, Chilled Water, and 50/50 Glycol Solutions for HVAC Systems | |
| Fluid Temperature Limits | 23 to 203°F (-5 to 95°C) | |
| Maximum Actuator Fluid Temperature Limit | 203°F (95°C) | |
| Valve Body Pressure Rating | 300 psig (2,067 kPa) | |
| Maximum Closeoff Pressure | 200 psig (1,378 kPa) | |
| Maximum Recommended Operating Pressure Drop | Valves with Characterized Flow Control Disk | 50 psi |
| | Quiet Service Ball Valves | 30 psi |
| Flow Characteristics | Two-Way | Equal Percentage |
| | Three-Way | Equal Percentage Flow Characteristics on the In-Line Port A (Coil) and Linear Flow Characteristics of the Angle Port B (Bypass) |
| Rangeability ² | Greater than 500:1 | |
| Minimum Ambient Operating Temperature | VA2202 Series Spring Return Actuators | -22°F (-30°C) |
| | VA9104 Series Non-Spring Return Actuators | -4°F (-20°C) |
| Maximum Ambient Operating Temperature ³ (Limited by the Actuator) | VA2202 Series Spring Return Actuators | 122°F (50°C) |
| | VA9104 Series Non-Spring Return Actuators | 140°F (60°C) |
| Leakage | 0.01% of Maximum Flow per ANSI/FCI 70-2, Class 4 | |

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Sweat End Connection Plated Brass Trim Ball Valves (Continued)

| VG1000 Series Sweat End Connection Plated Brass Trim Ball Valves (Part 2 of 2) | | |
|--|---|--|
| End Connections | Sweat: 1/2 to 1 in. (DN15 to DN25) Note: Use a low melting point solder. | |
| Materials | Body | Forged Brass |
| | Ball | Chrome Plated Brass |
| | Blowout Proof Stem | Nickel Plated Brass |
| | 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 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.