

VG1000 Series Two-Way, Stainless Steel Trim, NPT End Connections Ball Valves with Non-Spring Return Electric Actuators

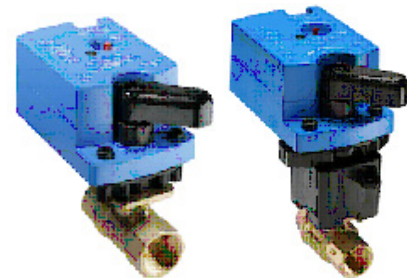
Description

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 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 and VA9300 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 and single point of contact information.

Features

- Forged Brass Body — provides 580 psig static pressure rating.
- 200 psi Closeoff Pressure Rating — provides tight shutoff.
- 300 Series Stainless Steel Ball and Stem Assembly — tolerates high-temperature water or 15 psi saturated steam with fluid temperatures of -22°F to 284°F (-30°C 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, Non-Spring Return, Stainless Steel Ball and Stem Ball Valve Assemblies

Repair Information

If the VG1000 Series Ball Valve Assembly 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 Stainless Steel Trim Ball Valves, Non-Spring Return, VA9104 Series Electric Actuators without Switches

| Fluid Temperatures: -4°F to 212°F (-20°C to 100°C) Not Rated for Steam Service | | | | AC 24 V | | |
|---|-----------|-------------------|---------------|---|-------------------------------------|---------------------------|
| Valve | Size, in. | Cv | Closeoff psig | On/Off and/or Floating without Timeout ¹ | On/Off and/or Floating with Timeout | DC 0 to 10 V Proportional |
| Actuators with M3 Screw Terminals | | | | VA9104-AGA-3S | VA9104-IGA-3S | VA9104-GGA-3S |
| VG1245AD | 1/2 | 1.2 ² | 200 | VG1245AD+9T4AGA | VG1245AD+9T4IGA | VG1245AD+9T4GGA |
| VG1245AE | | 1.9 ² | | VG1245AE+9T4AGA | VG1245AE+9T4IGA | VG1245AE+9T4GGA |
| VG1245AF | | 2.9 ² | | VG1245AF+9T4AGA | VG1245AF+9T4IGA | VG1245AF+9T4GGA |
| VG1245AG | | 4.7 ² | | VG1245AG+9T4AGA | VG1245AG+9T4IGA | VG1245AG+9T4GGA |
| VG1245AL | | 7.4 ² | | VG1245AL+9T4AGA | VG1245AL+9T4IGA | VG1245AL+9T4GGA |
| VG1245AN | | 11.7 | | VG1245AN+9T4AGA | VG1245AN+9T4IGA | VG1245AN+9T4GGA |
| VG1245BG | 3/4 | 4.7 ² | 200 | VG1245BG+9T4AGA | VG1245BG+9T4IGA | VG1245BG+9T4GGA |
| VG1245BL | | 7.4 ² | | VG1245BL+9T4AGA | VG1245BL+9T4IGA | VG1245BL+9T4GGA |
| VG1245BN | | 11.7 | | VG1245BN+9T4AGA | VG1245BN+9T4IGA | VG1245BN+9T4GGA |
| VG1245CL | 1 | 7.4 ² | 200 | VG1245CL+9T4AGA | VG1245CL+9T4IGA | VG1245CL+9T4GGA |
| VG1245CN | | 11.7 ² | | VG1245CN+9T4AGA | VG1245CN+9T4IGA | VG1245CN+9T4GGA |
| VG1245CP | | 18.7 | | VG1245CP+9T4AGA | VG1245CP+9T4IGA | VG1245CP+9T4GGA |
| Actuators with 120 in. (3.05 m) 18 AWG Plenum Cable | | | | VA9104-AGA-2S | VA9104-IGA-2S | VA9104-GGA-2S |
| VG1245AD | 1/2 | 1.2 ² | 200 | VG1245AD+9A4AGA | VG1245AD+9A4IGA | VG1245AD+9A4GGA |
| VG1245AE | | 1.9 ² | | VG1245AE+9A4AGA | VG1245AE+9A4IGA | VG1245AE+9A4GGA |
| VG1245AF | | 2.9 ² | | VG1245AF+9A4AGA | VG1245AF+9A4IGA | VG1245AF+9A4GGA |
| VG1245AG | | 4.7 ² | | VG1245AG+9A4AGA | VG1245AG+9A4IGA | VG1245AG+9A4GGA |
| VG1245AL | | 7.4 ² | | VG1245AL+9A4AGA | VG1245AL+9A4IGA | VG1245AL+9A4GGA |
| VG1245AN | | 11.7 | | VG1245AN+9A4AGA | VG1245AN+9A4IGA | VG1245AN+9A4GGA |
| VG1245BG | 3/4 | 4.7 ² | 200 | VG1245BG+9A4AGA | VG1245BG+9A4IGA | VG1245BG+9A4GGA |
| VG1245BL | | 7.4 ² | | VG1245BL+9A4AGA | VG1245BL+9A4IGA | VG1245BL+9A4GGA |
| VG1245BN | | 11.7 | | VG1245BN+9A4AGA | VG1245BN+9A4IGA | VG1245BN+9A4GGA |
| VG1245CL | 1 | 7.4 ² | 200 | VG1245CL+9A4AGA | VG1245CL+9A4IGA | VG1245CL+9A4GGA |
| VG1245CN | | 11.7 ² | | VG1245CN+9A4AGA | VG1245CN+9A4IGA | VG1245CN+9A4GGA |
| VG1245CP | | 18.7 | | VG1245CP+9A4AGA | VG1245CP+9A4IGA | VG1245CP+9A4GGA |

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. Valve has a characterizing disk.

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

Two-Way Stainless Steel Trim Ball Valves, Non-Spring Return, VA9104 Series Electric Actuators without Switches with Optional M9000-561 Thermal Barrier

| Fluid Temperatures: -22°F to 284°F (-30°C to 140°C) Water and 15 psi Saturated Steam | | | | AC 24 V | | |
|--|-----------|-------------------|------------------|--|--|---------------------------|
| Valve | Size, in. | Cv | Closeoff psig | On/Off and/or Floating without Timeout ¹ | On/Off and/or Floating with Timeout | DC 0 to 10 V Proportional |
| Actuators with M3 Screw Terminals with M9000-561 Thermal Barrier Installed | | | | VA9104-AGA-3S | VA9104-IGA-3S | VA9104-GGA-3S |
| VG1245AD | 1/2 | 1.2 ² | 200 | VG1245ADH9T4AGA | VG1245ADH9T4IGA | VG1245ADH9T4GGA |
| VG1245AE | | 1.9 ² | | VG1245AEH9T4AGA | VG1245AEH9T4IGA | VG1245AEH9T4GGA |
| VG1245AF | | 2.9 ² | | VG1245AFH9T4AGA | VG1245AFH9T4IGA | VG1245AFH9T4GGA |
| VG1245AG | | 4.7 ² | | VG1245AGH9T4AGA | VG1245AGH9T4IGA | VG1245AGH9T4GGA |
| VG1245AL | | 7.4 ² | | VG1245ALH9T4AGA | VG1245ALH9T4IGA | VG1245ALH9T4GGA |
| VG1245AN | | 11.7 | | VG1245ANH9T4AGA | VG1245ANH9T4IGA | VG1245ANH9T4GGA |
| VG1245BG | 3/4 | 4.7 ² | 200 | VG1245BGH9T4AGA | VG1245BGH9T4IGA | VG1245BGH9T4GGA |
| VG1245BL | | 7.4 ² | | VG1245BLH9T4AGA | VG1245BLH9T4IGA | VG1245BLH9T4GGA |
| VG1245BN | | 11.7 | | VG1245BNH9T4AGA | VG1245BNH9T4IGA | VG1245BNH9T4GGA |
| VG1245CL | 1 | 7.4 ² | 200 | VG1245CLH9T4AGA | VG1245CLH9T4IGA | VG1245CLH9T4GGA |
| VG1245CN | | 11.7 ² | | VG1245CNH9T4AGA | VG1245CNH9T4IGA | VG1245CNH9T4GGA |
| VG1245CP | | 18.7 | | VG1245CPH9T4AGA | VG1245CPH9T4IGA | VG1245CPH9T4GGA |
| Actuators with 120 in. (3.05 m) 18 AWG Plenum Cable with M9000-561 Thermal Barrier Installed | | | | VA9104-AGA-2S | VA9104-IGA-2S | VA9104-GGA-2S |
| VG1245AD | 1/2 | 1.2 ² | 200 | VG1245ADH9A4AGA | VG1245ADH9A4IGA | VG1245ADH9A4GGA |
| VG1245AE | | 1.9 ² | | VG1245AEH9A4AGA | VG1245AEH9A4IGA | VG1245AEH9A4GGA |
| VG1245AF | | 2.9 ² | | VG1245AFH9A4AGA | VG1245AFH9A4IGA | VG1245AFH9A4GGA |
| VG1245AG | | 4.7 ² | | VG1245AGH9A4AGA | VG1245AGH9A4IGA | VG1245AGH9A4GGA |
| VG1245AL | | 7.4 ² | | VG1245ALH9A4AGA | VG1245ALH9A4IGA | VG1245ALH9A4GGA |
| VG1245AN | | 11.7 | | VG1245ANH9A4AGA | VG1245ANH9A4IGA | VG1245ANH9A4GGA |
| VG1245BG | 3/4 | 4.7 ² | 200 | VG1245BGH9A4AGA | VG1245BGH9A4IGA | VG1245BGH9A4GGA |
| VG1245BL | | 7.4 ² | | VG1245BLH9A4AGA | VG1245BLH9A4IGA | VG1245BLH9A4GGA |
| VG1245BN | | 11.7 | | VG1245BNH9A4AGA | VG1245BNH9A4IGA | VG1245BNH9A4GGA |
| VG1245CL | 1 | 7.4 ² | 200 | VG1245CLH9A4AGA | VG1245CLH9A4IGA | VG1245CLH9A4GGA |
| VG1245CN | | 11.7 ² | | VG1245CNH9A4AGA | VG1245CNH9A4IGA | VG1245CNH9A4GGA |
| VG1245CP | | 18.7 | | VG1245CPH9A4AGA | VG1245CPH9A4IGA | VG1245CPH9A4GGA |

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. Valve has a characterizing disk.

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

Two-Way Stainless Steel Trim Ball Valves, Non-Spring Return, VA9300 Series Electric Actuators without Switches

| Fluid Temperatures: -4°F to 212°F (-20°C to 100°C) Not Rated for Steam Service | | | | AC/DC 24 V | | |
|--|-----------|-------------------|--------------|-----------------|----------|------------------------------|
| | | | | On/Off | Floating | DC 0(2) to 10 V Proportional |
| Valve | Size, in. | Cv | Closeoff psi | VA9310-HGA-2 | | |
| VG1245DN | 1-1/4 | 11.7 ¹ | 200 | VG1245DN+910HGA | | |
| VG1245DP | | 18.7 ¹ | | VG1245DP+910HGA | | |
| VG1245DR | | 29.2 | | VG1245DR+910HGA | | |
| VG1245EP | 1-1/2 | 18.7 ¹ | 200 | VG1245EP+910HGA | | |
| VG1245ER | | 29.2 ¹ | | VG1245ER+910HGA | | |
| VG1245ES | | 46.8 | | VG1245ES+910HGA | | |
| VG1245FR | 2 | 29.2 ¹ | 200 | VG1245FR+910HGA | | |
| VG1245FS | | 48.8 ¹ | | VG1245FS+910HGA | | |
| VG1245FT | | 73.7 | | VG1245FT+910HGA | | |

Two-Way Stainless Steel Trim Ball Valves, Non-Spring Return, VA9300 Series Electric Actuators with Switches

| Fluid Temperatures: -4°F to 212°F (-20°C to 100°C) Not Rated for Steam Service | | | | AC/DC 24 V | | |
|--|-----------|-------------------|--------------|--|----------|------------------------------|
| | | | | On/Off | Floating | DC 0(2) to 10 V Proportional |
| Valve | Size, in. | Cv | Closeoff psi | VA9310-HGA-2 Actuator with M9300-2 Switch Kit ¹ | | |
| VG1245AD | 1/2 | 1.2 ¹ | 200 | VG1245AD+910HGC | | |
| VG1245AE | | 1.9 ¹ | | VG1245AE+910HGC | | |
| VG1245AF | | 2.9 ¹ | | VG1245AF+910HGC | | |
| VG1245AG | | 4.7 ¹ | | VG1245AG+910HGC | | |
| VG1245AL | | 7.4 ¹ | | VG1245AL+910HGC | | |
| VG1245AN | | 11.7 | | VG1245AN+910HGC | | |
| VG1245BG | 3/4 | 4.7 ¹ | 200 | VG1245BG+910HGC | | |
| VG1245BL | | 7.4 ¹ | | VG1245BL+910HGC | | |
| VG1245BN | | 11.7 | | VG1245BN+910HGC | | |
| VG1245CL | 1 | 7.4 ¹ | 200 | VG1245CL+910HGC | | |
| VG1245CN | | 11.7 ¹ | | VG1245CN+910HGC | | |
| VG1245CP | | 18.7 | | VG1245CP+910HGC | | |
| VG1245DN | 1-1/4 | 11.7 ¹ | 200 | VG1245DN+910HGC | | |
| VG1245DP | | 18.7 ¹ | | VG1245DP+910HGC | | |
| VG1245DR | | 29.2 | | VG1245DR+910HGC | | |
| VG1245EP | 1-1/2 | 18.7 ¹ | 200 | VG1245EP+910HGC | | |
| VG1245ER | | 29.2 ¹ | | VG1245ER+910HGC | | |
| VG1245ES | | 46.8 | | VG1245ES+910HGC | | |
| VG1245FR | 2 | 29.2 ¹ | 200 | VG1245FR+910HGC | | |
| VG1245FS | | 46.8 ¹ | | VG1245FS+910HGC | | |
| VG1245FT | | 73.7 | | VG1245FT+910HGC | | |

1. For field mounting order VA9310-HGA-2 and the M9300-2 Switch Kit separately.

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

Two-Way Stainless Steel Trim Ball Valves, Non-Spring Return, VA9300 Series Electric Actuators without Switches with Optional M9000-561 Thermal Barrier

| Fluid Temperatures: -22°F to 284°F (-30°C to 140°C) Water and 15 psi Saturated Steam | | | | AC/DC 24 V | | |
|--|-----------|-------------------|--------------|---|-----------------------|------------------------------|
| | | | | On/Off with Timeout | Floating with Timeout | DC 0(2) to 10 V Proportional |
| Valve | Size, in. | Cv | Closeoff psi | VA9310-HGA-2 with M9000-561 Thermal Barrier | | |
| VG1245DN | 1-1/4 | 11.7 ¹ | 200 | VG1245DNH910HGA | | |
| VG1245DP | | 18.7 ¹ | | VG1245DPH910HGA | | |
| VG1245DR | | 29.2 | | VG1245DRH910HGA | | |
| VG1245EP | 1-1/2 | 18.7 ¹ | 200 | VG1245EPH910HGA | | |
| VG1245ER | | 29.2 ¹ | | VG1245ERH910HGA | | |
| VG1245ES | | 46.8 | | VG1245ESH910HGA | | |
| VG1245FR | 2 | 29.2 ¹ | 200 | VG1245FRH910HGA | | |
| VG1245FS | | 48.8 ¹ | | VG1245FSH910HGA | | |
| VG1245FT | | 73.7 | | VG1245FTH910HGA | | |

1. Valve has a characterizing disk.

Two-Way Stainless Steel Trim Ball Valves, Non-Spring Return, VA9300 Electric Actuators with Switches with Optional M9000-561 Thermal Barrier

| Fluid Temperatures: -22°F to 284°F (-30°C to 140°C) Water and 15 psi Saturated Steam | | | | AC/DC 24 V | | |
|--|-----------|-------------------|--------------|---|----------|------------------------------|
| | | | | On/Off | Floating | DC 0(2) to 10 V Proportional |
| Valve | Size, in. | Cv | Closeoff psi | VA9310-HGA-2 Actuator with M9300-2 Switch Kit with M9000-561 Thermal Barrier ¹ | | |
| VG1245AD | 1/2 | 1.2 ² | 200 | VG1245ADH910HGC | | |
| VG1245AE | | 1.9 ² | | VG1245AEH910HGC | | |
| VG1245AF | | 2.9 ² | | VG1245AFH910HGC | | |
| VG1245AG | | 4.7 ² | | VG1245AGH910HGC | | |
| VG1245AL | | 7.4 ² | | VG1245ALH910HGC | | |
| VG1245AN | | 11.7 | | VG1245ANH910HGC | | |
| VG1245BG | 3/4 | 4.7 ² | 200 | VG1245BGH910HGC | | |
| VG1245BL | | 7.4 ² | | VG1245BLH910HGC | | |
| VG1245BN | | 11.7 | | VG1245BNH910HGC | | |
| VG1245CL | 1 | 7.4 ² | 200 | VG1245CLH910HGC | | |
| VG1245CN | | 11.7 ² | | VG1245CNH910HGC | | |
| VG1245CP | | 18.7 | | VG1245CPH910HGC | | |
| VG1245DN | 1-1/4 | 11.7 ² | 200 | VG1245DNH910HGC | | |
| VG1245DP | | 18.7 ² | | VG1245DPH910HGC | | |
| VG1245DR | | 29.2 | | VG1245DRH910HGC | | |
| VG1245EP | 1-1/2 | 18.7 ² | 200 | VG1245EPH910HGC | | |
| VG1245ER | | 29.2 ² | | VG1245ERH910HGC | | |
| VG1245ES | | 46.8 | | VG1245ESH910HGC | | |
| VG1245FR | 2 | 29.2 ² | 200 | VG1245FRH910HGC | | |
| VG1245FS | | 46.8 ² | | VG1245FSH910HGC | | |
| VG1245FT | | 73.7 | | VG1245FTH910HGC | | |

1. For field mounting order VA9310-HGA-2, M9300-2 Switch Kit, and M9000-561 Thermal Barrier separately.

2. Valve has a characterizing disk.

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

Technical Specifications

| VG1000 Series Two-Way, Stainless Steel Trim, NPT End Connections Ball Valves with Non-Spring Return Electric Actuators | | |
|--|---------------------|--|
| Service ¹ | | Hot Water, Chilled Water, 50/50 Glycol Solutions, and 15 psig (103 kPa) Saturated Steam for HVAC Systems |
| Fluid Temperature Limits | Water | -22°F to 284°F (-30°C to 140°C) |
| | Steam | 15 psig (103 kPa) at 250°F (121°C) |
| Maximum Fluid Temperature Limits | 212°F (100°C) | VA9104 Series Non-Spring Return Actuators VA9300 Series Non-Spring Return Actuators |
| | 284°F (140°C) | VA9104 Series Non-Spring Return Actuators with M9000-561 Thermal Barrier VA9300 Series Non-Spring Return Actuators with M9000-561 Thermal Barrier |
| Valve Body Pressure/ Temperature Rating | Water | 580 psig (4,000 kPa) at 203°F (95°C) (PN40) 464 psig (3,199 kPa) at 284°F (140°C) (PN40) |
| | Steam | 15 psig (103 kPa) Saturated Steam |
| Maximum Closeoff Pressure | | 200 psig (1,378 kPa) |
| Maximum Recommended Operating Pressure Drop | | 50 psi (340 kPa) |
| Flow Characteristics | Two-Way | Equal Percentage |
| Rangeability ² | | Greater than 500:1 |
| Minimum Ambient Operating Temperature | -4°F (-20°C) | VA9104 Series Non-Spring Return Actuators |
| | -22°F (-30°C) | VA9300 Series Non-Spring Return Actuators |
| Maximum Ambient Operating Temperature ³ | 140°F (60°C) | VA9104 Series Non-Spring Return Actuators VA9300 Series Non-Spring Return Actuators |
| Leakage | | 0.01% of Maximum Flow per ANSI/FCI 70-2, Class 4 |
| 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 Polytetrafluoroethylene (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.



This product is made of copper alloy, which contains lead. The product is therefore not to be used on drinking water.



This product can expose you to chemicals including lead, which is known to the State of California to cause cancer, birth defects, or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

WARNING: BRASS MAY CONTAIN LEAD

To fulfill our obligations towards Article 33, in accordance to the European REACH Regulation No 1907/2006 EC, we hereby inform you that this article contains the following Substances of Very High Concern mentioned on the Candidate list:

- Lead