

# VG1000 Series Flanged Ball Valves Catalog Page

## Description

The VG1000 Series Flanged Ball Valves are primarily designed to regulate the flow of hot water, chilled water, and 50/50 glycol solutions to the demand of a controller in HVAC systems. The valves come in sizes of 2-1/2, 3, 4, 5, and 6 in. These American Society of Mechanical Engineers (ASME) Class 150 flanged valves come in both two- and three-way configurations. Johnson Controls offers valve, linkage, and actuator assemblies for factory or field mounting with either spring return or non-spring return actuators.

Refer to the *VG1000 Series Flanged Ball Valves Product Bulletin (LIT-12011228)* for important product application information and single point of contact information.

## Features

- Closeoff Pressure Rating: 100 psi for Two-Way Valves; 50 psi for Three-Way Valves — provides tight shutoff.
- 300 Stainless Steel Ball and Stem Assembly — applies to systems with high-temperature water (0 to 284°F [-18 to 140°C]) or 25 psi saturated steam.
- 500:1 Rangeability — provides accurate control under all load conditions.
- Amodel® Flow Characterizing Disk —

provides equal percentage flow characteristics for best temperature control; available in a wide array of Cv ranges to cover a broad variety of applications.

- Ethylene Propylene Diene Monomer (EPDM) Double O-Ring Stem Seal — offers tested leak-free operation for 200,000 cycles in iron-oxide contaminated water.
- Graphite-Reinforced Polytetrafluoroethylene (PTFE) Seats — include 15% graphite-reinforced ball seals that last twice as long in iron-oxide contaminated water when compared to virgin Teflon® ball seats.
- PTFE Thermal Spacer — provides thermal isolation between the actuator and the valve.
- Seats Backed with EPDM O-Rings — maintain a constant seating force that compensates for expansion, contraction, and seat wear without increasing operating torque.
- Maintenance-Free Design — performs without failure in excess of 200,000 full stroke cycles in iron-oxide contaminated water.
- Available with Factory-Mounted VA9320 or M9220 Series Electric Actuators — reduces field installation time and cost.

VG1000 Series Ball Valves Shown with Field Mounted VA9320 and M9220 Series Actuators



- Weather Shields Available for Field Installation — protect the actuator from corrosion, rain, freezing rain, sleet, and snow.

## 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

### Flanged Stainless Steel Trim Ball Valves with Non-Spring Return Electric Actuators (Part 1 of 2)

Valve	Size, in.	Cv	Closeoff PSIG	AC and DC 24 V	
				On/Off, Floating, and Proportional	On/Off, Floating, and Proportional
				Without Switches	With Two Auxiliary Switches
				VA9320-HGA-2 Actuator	VA9320-HGA-2 Actuator with M9300-2 Switch Kit
<b>Two-Way</b>					
VG12A5GS	2-1/2	47	100	VG12A5GS+920HGA	VG12A5GS+920HGC
VG12A5KS				VG12A5KS+920HGA	VG12A5KS+920HGC
VG12A5GT		74		VG12A5GT+920HGA	VG12A5GT+920HGC
VG12A5KT				VG12A5KT+920HGA	VG12A5KT+920HGC
VG12A5GU		117		VG12A5GU+920HGA	VG12A5GU+920HGC
VG12A5KU	VG12A5KU+920HGA		VG12A5KU+920HGC		
VG12A5HT	3	74	100	VG12A5HT+920HGA	VG12A5HT+920HGC
VG12A5LT				VG12A5LT+920HGA	VG12A5LT+920HGC
VG12A5HU		117		VG12A5HU+920HGA	VG12A5HU+920HGC
VG12A5LU				VG12A5LU+920HGA	VG12A5LU+920HGC
VG12A5HV		176		VG12A5HV+920HGA	VG12A5HV+920HGC
VG12A5LV				VG12A5LV+920HGA	VG12A5LV+920HGC
VG12A5HW		211		VG12A5HW+920HGA	VG12A5HW+920HGC
VG12A5LW				VG12A5LW+920HGA	VG12A5LW+920HGC

## VG1000 Series Flanged Ball Valves Catalog Page (Continued)

### Flanged Stainless Steel Trim Ball Valves with Non-Spring Return Electric Actuators (Part 2 of 2)

Valve	Size, in.	Cv	Closeoff PSIG	AC and DC 24 V	
				On/Off, Floating, and Proportional	On/Off, Floating, and Proportional
				Without Switches	With Two Auxiliary Switches
				VA9320-HGA-2 Actuator	VA9320-HGA-2 Actuator with M9300-2 Switch Kit
VG12A5JU	4	117	100	VG12A5JU+920HGA	VG12A5JU+920HGC
VG12A5JV		176		VG12A5JV+920HGA	VG12A5JV+920HGC
VG12A5MW		190		VG12A5MW+920HGA	VG12A5MW+920HGC
VG12A5NY	5	290		VG12A5NY+920HGA	VG12A5NY+920HGC
VG12A5PZ	6	350		VG12A5PZ+920HGA	VG12A5PZ+920HGC
<b>Three-Way</b>					
VG18A5GS	2-1/2	47 / 29	50	VG18A5GS+920HGA	VG18A5GS+920HGC
VG18A5KS		74 / 47		VG18A5KS+920HGA	VG18A5KS+920HGC
VG18A5GT				VG18A5GT+920HGA	VG18A5GT+920HGC
VG18A5KT				VG18A5KT+920HGA	VG18A5KT+920HGC
VG18A5GU		117 / 74		VG18A5GU+920HGA	VG18A5GU+920HGC
VG18A5KU		VG18A5KU+920HGA		VG18A5KU+920HGC	
VG18A5HT	3	74 / 47	50	VG18A5HT+920HGA	VG18A5HT+920HGC
VG18A5LT		117 / 74		VG18A5LT+920HGA	VG18A5LT+920HGC
VG18A5HU				VG18A5HU+920HGA	VG18A5HU+920HGC
VG18A5LU				VG18A5LU+920HGA	VG18A5LU+920HGC
VG18A5HV		176 / 88		VG18A5HV+920HGA	VG18A5HV+920HGC
VG18A5LV		211 / 105		VG18A5LV+920HGA	VG18A5LV+920HGC
VG18A5HW				VG18A5HW+920HGA	VG18A5HW+920HGC
VG18A5LW				VG18A5LW+920HGA	VG18A5LW+920HGC
VG18A5JU	4	117 / 74	50	VG18A5JU+920HGA	VG18A5JU+920HGC
VG18A5JV		176 / 88		VG18A5JV+920HGA	VG18A5JV+920HGC
VG18A5MW		190 / 190		VG18A5MW+920HGA	VG18A5MW+920HGC
VG18A5NY	5	290 / 190		VG18A5NY+920HGA	VG18A5NY+920HGC
VG18A5PZ	6	350 / 180		VG18A5PZ+920HGA	VG18A5PZ+920HGC

## VG1000 Series Flanged Ball Valves Catalog Page (Continued)

### Flanged Stainless Steel Trim Ball Valves with Spring Return Electric Actuators without Switches (Part 1 of 2)

Valve	Size, in.	Cv	Closeoff PSIG	AC 24 V			AC 120 V
				Floating	DC 0 to 10 V Prop.	On/Off	On/Off
				M9220-AGA-3	M9220-GGA-3	M9220-BGA-3	M9220-BAA-3
<b>Two-Way – Spring Return – Valve Open (Normally Open) – without Switches</b>							
VG12A5GS	2-1/2	47	100	VG12A5GS+92NAGA	VG12A5GS+92NGGA	VG12A5GS+92NBGA	VG12A5GS+92NBAA
VG12A5KS		74		VG12A5KS+92NAGA	VG12A5KS+92NGGA	VG12A5KS+92NBGA	VG12A5KS+92NBAA
VG12A5GT				VG12A5GT+92NAGA	VG12A5GT+92NGGA	VG12A5GT+92NBGA	VG12A5GT+92NBAA
VG12A5KT		117		VG12A5KT+92NAGA	VG12A5KT+92NGGA	VG12A5KT+92NBGA	VG12A5KT+92NBAA
VG12A5GU				VG12A5GU+92NAGA	VG12A5GU+92NGGA	VG12A5GU+92NBGA	VG12A5GU+92NBAA
VG12A5KU		VG12A5KU+92NAGA		VG12A5KU+92NGGA	VG12A5KU+92NBGA	VG12A5KU+92NBAA	
VG12A5HT	3	74	100	VG12A5HT+92NAGA	VG12A5HT+92NGGA	VG12A5HT+92NBGA	VG12A5HT+92NBAA
VG12A5LT		117		VG12A5LT+92NAGA	VG12A5LT+92NGGA	VG12A5LT+92NBGA	VG12A5LT+92NBAA
VG12A5HU				VG12A5HU+92NAGA	VG12A5HU+92NGGA	VG12A5HU+92NBGA	VG12A5HU+92NBAA
VG12A5LU		176		VG12A5LU+92NAGA	VG12A5LU+92NGGA	VG12A5LU+92NBGA	VG12A5LU+92NBAA
VG12A5HV				VG12A5HV+92NAGA	VG12A5HV+92NGGA	VG12A5HV+92NBGA	VG12A5HV+92NBAA
VG12A5LV		211		VG12A5LV+92NAGA	VG12A5LV+92NGGA	VG12A5LV+92NBGA	VG12A5LV+92NBAA
VG12A5HW				VG12A5HW+92NAGA	VG12A5HW+92NGGA	VG12A5HW+92NBGA	VG12A5HW+92NBAA
VG12A5LW		VG12A5LW+92NAGA		VG12A5LW+92NGGA	VG12A5LW+92NBGA	VG12A5LW+92NBAA	
VG12A5JU	4	117	100	VG12A5JU+92NAGA	VG12A5JU+92NGGA	VG12A5JU+92NBGA	VG12A5JU+92NBAA
VG12A5JV		176		VG12A5JV+92NAGA	VG12A5JV+92NGGA	VG12A5JV+92NBGA	VG12A5JV+92NBAA
VG12A5MW		190		VG12A5MW+92NAGA	VG12A5MW+92NGGA	VG12A5MW+92NBGA	VG12A5MW+92NBAA
VG12A5NY	5	290		VG12A5NY+92NAGA	VG12A5NY+92NGGA	VG12A5NY+92NBGA	VG12A5NY+92NBAA
VG12A5PZ	6	350		VG12A5PZ+92NAGA	VG12A5PZ+92NGGA	VG12A5PZ+92NBGA	VG12A5PZ+92NBAA
<b>Two-Way – Spring Return – Valve Closed (Normally Closed) – without Switches</b>							
VG12A5GS	2-1/2	47	100	VG12A5GS+94NAGA	VG12A5GS+94NGGA	VG12A5GS+94NBGA	VG12A5GS+94NBAA
VG12A5KS		74		VG12A5KS+94NAGA	VG12A5KS+94NGGA	VG12A5KS+94NBGA	VG12A5KS+94NBAA
VG12A5GT				VG12A5GT+94NAGA	VG12A5GT+94NGGA	VG12A5GT+94NBGA	VG12A5GT+94NBAA
VG12A5KT		117		VG12A5KT+94NAGA	VG12A5KT+94NGGA	VG12A5KT+94NBGA	VG12A5KT+94NBAA
VG12A5GU				VG12A5GU+94NAGA	VG12A5GU+94NGGA	VG12A5GU+94NBGA	VG12A5GU+94NBAA
VG12A5KU		VG12A5KU+94NAGA		VG12A5KU+94NGGA	VG12A5KU+94NBGA	VG12A5KU+94NBAA	
VG12A5HT	3	74	100	VG12A5HT+94NAGA	VG12A5HT+94NGGA	VG12A5HT+94NBGA	VG12A5HT+94NBAA
VG12A5LT		117		VG12A5LT+94NAGA	VG12A5LT+94NGGA	VG12A5LT+94NBGA	VG12A5LT+94NBAA
VG12A5HU				VG12A5HU+94NAGA	VG12A5HU+94NGGA	VG12A5HU+94NBGA	VG12A5HU+94NBAA
VG12A5LU		176		VG12A5LU+94NAGA	VG12A5LU+94NGGA	VG12A5LU+94NBGA	VG12A5LU+94NBAA
VG12A5HV				VG12A5HV+94NAGA	VG12A5HV+94NGGA	VG12A5HV+94NBGA	VG12A5HV+94NBAA
VG12A5LV		211		VG12A5LV+94NAGA	VG12A5LV+94NGGA	VG12A5LV+94NBGA	VG12A5LV+94NBAA
VG12A5HW				VG12A5HW+94NAGA	VG12A5HW+94NGGA	VG12A5HW+94NBGA	VG12A5HW+94NBAA
VG12A5LW		VG12A5LW+94NAGA		VG12A5LW+94NGGA	VG12A5LW+94NBGA	VG12A5LW+94NBAA	
VG12A5JU	4	117	100	VG12A5JU+94NAGA	VG12A5JU+94NGGA	VG12A5JU+94NBGA	VG12A5JU+94NBAA
VG12A5JV		176		VG12A5JV+94NAGA	VG12A5JV+94NGGA	VG12A5JV+94NBGA	VG12A5JV+94NBAA
VG12A5MW		190		VG12A5MW+94NAGA	VG12A5MW+94NGGA	VG12A5MW+94NBGA	VG12A5MW+94NBAA
VG12A5NY	5	290		VG12A5NY+94NAGA	VG12A5NY+94NGGA	VG12A5NY+94NBGA	VG12A5NY+94NBAA
VG12A5PZ	6	350		VG12A5PZ+94NAGA	VG12A5PZ+94NGGA	VG12A5PZ+94NBGA	VG12A5PZ+94NBAA

## VG1000 Series Flanged Ball Valves Catalog Page (Continued)

### Flanged Stainless Steel Trim Ball Valves with Spring Return Electric Actuators without Switches (Part 2 of 2)

Valve	Size, in.	Cv	Closeoff PSIG	AC 24 V			AC 120 V
				Floating	DC 0 to 10 V Prop.	On/Off	On/Off
				M9220-AGA-3	M9220-GGA-3	M9220-BGA-3	M9220-BAA-3
<b>Three-Way – Spring Return Counterclockwise – Port A (Coil) Open to Port AB (Common) – without Switches</b>							
VG18A5GS	2-1/2	47 / 29	50	VG18A5GS+92NAGA	VG18A5GS+92NGGA	VG18A5GS+92NBGA	VG18A5GS+92NBAA
VG18A5K				VG18A5KS+92NAGA	VG18A5KS+92NGGA	VG18A5KS+92NBGA	VG18A5KS+92NBAA
VG18A5GT		74 / 47		VG18A5GT+92NAGA	VG18A5GT+92NGGA	VG18A5GT+92NBGA	VG18A5GT+92NBAA
VG18A5KT				VG18A5KT+92NAGA	VG18A5KT+92NGGA	VG18A5KT+92NBGA	VG18A5KT+92NBAA
VG18A5GU		117 / 74		VG18A5GU+92NAGA	VG18A5GU+92NGGA	VG18A5GU+92NBGA	VG18A5GU+92NBAA
VG18A5KU				VG18A5KU+92NAGA	VG18A5KU+92NGGA	VG18A5KU+92NBGA	VG18A5KU+92NBAA
VG18A5HT	3	74 / 47	50	VG18A5HT+92NAGA	VG18A5HT+92NGGA	VG18A5HT+92NBGA	VG18A5HT+92NBAA
VG18A5LT				VG18A5LT+92NAGA	VG18A5LT+92NGGA	VG18A5LT+92NBGA	VG18A5LT+92NBAA
VG18A5HU		117 / 74		VG18A5HU+92NAGA	VG18A5HU+92NGGA	VG18A5HU+92NBGA	VG18A5HU+92NBAA
VG18A5LU				VG18A5LU+92NAGA	VG18A5LU+92NGGA	VG18A5LU+92NBGA	VG18A5LU+92NBAA
VG18A5HV		176 / 88		VG18A5HV+92NAGA	VG18A5HV+92NGGA	VG18A5HV+92NBGA	VG18A5HV+92NBAA
VG18A5LV				VG18A5LV+92NAGA	VG18A5LV+92NGGA	VG18A5LV+92NBGA	VG18A5LV+92NBAA
VG18A5HW		211 / 105		VG18A5HW+92NAGA	VG18A5HW+92NGGA	VG18A5HW+92NBGA	VG18A5HW+92NBAA
VG18A5LW				VG18A5LW+92NAGA	VG18A5LW+92NGGA	VG18A5LW+92NBGA	VG18A5LW+92NBAA
VG18A5JU	4	117 / 74	50	VG18A5JU+92NAGA	VG18A5JU+92NGGA	VG18A5JU+92NBGA	VG18A5JU+92NBAA
VG18A5JV		176 / 88		VG18A5JV+92NAGA	VG18A5JV+92NGGA	VG18A5JV+92NBGA	VG18A5JV+92NBAA
VG18A5MW		190 / 190		VG18A5MW+92NAGA	VG18A5MW+92NGGA	VG18A5MW+92NBGA	VG18A5MW+92NBAA
VG18A5NY		290 / 190		VG18A5NY+92NAGA	VG18A5NY+92NGGA	VG18A5NY+92NBGA	VG18A5NY+92NBAA
VG18A5PZ	6	350 / 180	VG18A5PZ+92NAGA	VG18A5PZ+92NGGA	VG18A5PZ+92NBGA	VG18A5PZ+92NBAA	
<b>Three-Way – Spring Return Clockwise – Port B (Bypass) Open to Port AB (Common) – without Switches</b>							
VG18A5GS	2-1/2	47 / 29	50	VG18A5GS+94NAGA	VG18A5GS+94NGGA	VG18A5GS+94NBGA	VG18A5GS+94NBAA
VG18A5KS				VG18A5KS+94NAGA	VG18A5KS+94NGGA	VG18A5KS+94NBGA	VG18A5KS+94NBAA
VG18A5GT		74 / 47		VG18A5GT+94NAGA	VG18A5GT+94NGGA	VG18A5GT+94NBGA	VG18A5GT+94NBAA
VG18A5KT				VG18A5KT+94NAGA	VG18A5KT+94NGGA	VG18A5KT+94NBGA	VG18A5KT+94NBAA
VG18A5GU		117 / 74		VG18A5GU+94NAGA	VG18A5GU+94NGGA	VG18A5GU+94NBGA	VG18A5GU+94NBAA
VG18A5KU				VG18A5KU+94NAGA	VG18A5KU+94NGGA	VG18A5KU+94NBGA	VG18A5KU+94NBAA
VG18A5HT	3	74 / 47	50	VG18A5HT+94NAGA	VG18A5HT+94NGGA	VG18A5HT+94NBGA	VG18A5HT+94NBAA
VG18A5LT				VG18A5LT+94NAGA	VG18A5LT+94NGGA	VG18A5LT+94NBGA	VG18A5LT+94NBAA
VG18A5HU		117 / 74		VG18A5HU+94NAGA	VG18A5HU+94NGGA	VG18A5HU+94NBGA	VG18A5HU+94NBAA
VG18A5LU				VG18A5LU+94NAGA	VG18A5LU+94NGGA	VG18A5LU+94NBGA	VG18A5LU+94NBAA
VG18A5HV		176 / 88		VG18A5HV+94NAGA	VG18A5HV+94NGGA	VG18A5HV+94NBGA	VG18A5HV+94NBAA
VG18A5LV				VG18A5LV+94NAGA	VG18A5LV+94NGGA	VG18A5LV+94NBGA	VG18A5LV+94NBAA
VG18A5HW		211 / 105		VG18A5HW+94NAGA	VG18A5HW+94NGGA	VG18A5HW+94NBGA	VG18A5HW+94NBAA
VG18A5LW				VG18A5LW+94NAGA	VG18A5LW+94NGGA	VG18A5LW+94NBGA	VG18A5LW+94NBAA
VG18A5JU	4	117 / 74	50	VG18A5JU+94NAGA	VG18A5JU+94NGGA	VG18A5JU+94NBGA	VG18A5JU+94NBAA
VG18A5JV		176 / 88		VG18A5JV+94NAGA	VG18A5JV+94NGGA	VG18A5JV+94NBGA	VG18A5JV+94NBAA
VG18A5MW		190 / 190		VG18A5MW+94NAGA	VG18A5MW+94NGGA	VG18A5MW+94NBGA	VG18A5MW+94NBAA
VG18A5NY		290 / 190		VG18A5NY+94NAGA	VG18A5NY+94NGGA	VG18A5NY+94NBGA	VG18A5NY+94NBAA
VG18A5PZ	6	350 / 180	VG18A5PZ+94NAGA	VG18A5PZ+94NGGA	VG18A5PZ+94NBGA	VG18A5PZ+94NBAA	

## VG1000 Series Flanged Ball Valves Catalog Page (Continued)

### Flanged Stainless Steel Trim Ball Valves with Spring Return Electric Actuators with Two Switches (Part 1 of 2)

Valve	Size, in.	Cv	Closeoff PSIG	AC 24 V			AC 120 V
				Floating	DC 0 to 10 V Prop.	On/Off	On/Off
				M9220-AGC-3	M9220-GGC-3	M9220-BGC-3	M9220-BAC-3
<b>Two-Way – Spring Return – Valve Open (Normally Open) – with Two Auxiliary Switches</b>							
VG12A5GS	2-1/2	47	100	VG12A5GS+92NAGC	VG12A5GS+92NGGC	VG12A5GS+92NBGC	VG12A5GS+92NBAC
VG12A5KS				VG12A5KS+92NAGC	VG12A5KS+92NGGC	VG12A5KS+92NBGC	VG12A5KS+92NBAC
VG12A5GT				VG12A5GT+92NAGC	VG12A5GT+92NGGC	VG12A5GT+92NBGC	VG12A5GT+92NBAC
VG12A5KT		74		VG12A5KT+92NAGC	VG12A5KT+92NGGC	VG12A5KT+92NBGC	VG12A5KT+92NBAC
VG12A5GU				VG12A5GU+92NAGC	VG12A5GU+92NGGC	VG12A5GU+92NBGC	VG12A5GU+92NBAC
VG12A5KU				VG12A5KU+92NAGC	VG12A5KU+92NGGC	VG12A5KU+92NBGC	VG12A5KU+92NBAC
VG12A5HT	3	74	100	VG12A5HT+92NAGC	VG12A5HT+92NGGC	VG12A5HT+92NBGC	VG12A5HT+92NBAC
VG12A5LT				VG12A5LT+92NAGC	VG12A5LT+92NGGC	VG12A5LT+92NBGC	VG12A5LT+92NBAC
VG12A5HU				VG12A5HU+92NAGC	VG12A5HU+92NGGC	VG12A5HU+92NBGC	VG12A5HU+92NBAC
VG12A5LU		117		VG12A5LU+92NAGC	VG12A5LU+92NGGC	VG12A5LU+92NBGC	VG12A5LU+92NBAC
VG12A5HV				VG12A5HV+92NAGC	VG12A5HV+92NGGC	VG12A5HV+92NBGC	VG12A5HV+92NBAC
VG12A5LV				VG12A5LV+92NAGC	VG12A5LV+92NGGC	VG12A5LV+92NBGC	VG12A5LV+92NBAC
VG12A5HW		176		VG12A5HW+92NAGC	VG12A5HW+92NGGC	VG12A5HW+92NBGC	VG12A5HW+92NBAC
VG12A5LW				VG12A5LW+92NAGC	VG12A5LW+92NGGC	VG12A5LW+92NBGC	VG12A5LW+92NBAC
VG12A5JU	4	117	100	VG12A5JU+92NAGC	VG12A5JU+92NGGC	VG12A5JU+92NBGC	VG12A5JU+92NBAC
VG12A5JV				VG12A5JV+92NAGC	VG12A5JV+92NGGC	VG12A5JV+92NBGC	VG12A5JV+92NBAC
VG12A5MW				VG12A5MW+92NAGC	VG12A5MW+92NGGC	VG12A5MW+92NBGC	VG12A5MW+92NBAC
VG12A5NY		290		VG12A5NY+92NAGC	VG12A5NY+92NGGC	VG12A5NY+92NBGC	VG12A5NY+92NBAC
VG12A5PZ	6	350		VG12A5PZ+92NAGC	VG12A5PZ+92NGGC	VG12A5PZ+92NBGC	VG12A5PZ+92NBAC
<b>Two-Way – Spring Return – Valve Closed (Normally Closed) – with Two Auxiliary Switches</b>							
VG12A5GS	2-1/2	47	100	VG12A5GS+94NAGC	VG12A5GS+94NGGC	VG12A5GS+94NBGC	VG12A5GS+94NBAC
VG12A5KS				VG12A5KS+94NAGC	VG12A5KS+94NGGC	VG12A5KS+94NBGC	VG12A5KS+94NBAC
VG12A5GT				VG12A5GT+94NAGC	VG12A5GT+94NGGC	VG12A5GT+94NBGC	VG12A5GT+94NBAC
VG12A5KT		74		VG12A5KT+94NAGC	VG12A5KT+94NGGC	VG12A5KT+94NBGC	VG12A5KT+94NBAC
VG12A5GU				VG12A5GU+94NAGC	VG12A5GU+94NGGC	VG12A5GU+94NBGC	VG12A5GU+94NBAC
VG12A5KU				VG12A5KU+94NAGC	VG12A5KU+94NGGC	VG12A5KU+94NBGC	VG12A5KU+94NBAC
VG12A5HT	3	74	100	VG12A5HT+94NAGC	VG12A5HT+94NGGC	VG12A5HT+94NBGC	VG12A5HT+94NBAC
VG12A5LT				VG12A5LT+94NAGC	VG12A5LT+94NGGC	VG12A5LT+94NBGC	VG12A5LT+94NBAC
VG12A5HU				VG12A5HU+94NAGC	VG12A5HU+94NGGC	VG12A5HU+94NBGC	VG12A5HU+94NBAC
VG12A5LU		117		VG12A5LU+94NAGC	VG12A5LU+94NGGC	VG12A5LU+94NBGC	VG12A5LU+94NBAC
VG12A5HV				VG12A5HV+94NAGC	VG12A5HV+94NGGC	VG12A5HV+94NBGC	VG12A5HV+94NBAC
VG12A5LV				VG12A5LV+94NAGC	VG12A5LV+94NGGC	VG12A5LV+94NBGC	VG12A5LV+94NBAC
VG12A5HW		176		VG12A5HW+94NAGC	VG12A5HW+94NGGC	VG12A5HW+94NBGC	VG12A5HW+94NBAC
VG12A5LW				VG12A5LW+94NAGC	VG12A5LW+94NGGC	VG12A5LW+94NBGC	VG12A5LW+94NBAC
VG12A5JU	4	117	100	VG12A5JU+94NAGC	VG12A5JU+94NGGC	VG12A5JU+94NBGC	VG12A5JU+94NBAC
VG12A5JV				VG12A5JV+94NAGC	VG12A5JV+94NGGC	VG12A5JV+94NBGC	VG12A5JV+94NBAC
VG12A5MW				VG12A5MW+94NAGC	VG12A5MW+94NGGC	VG12A5MW+94NBGC	VG12A5MW+94NBAC
VG12A5NY		290		VG12A5NY+94NAGC	VG12A5NY+94NGGC	VG12A5NY+94NBGC	VG12A5NY+94NBAC
VG12A5PZ	6	350		VG12A5PZ+94NAGC	VG12A5PZ+94NGGC	VG12A5PZ+94NBGC	VG12A5PZ+94NBAC

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### Flanged Stainless Steel Trim Ball Valves with Spring Return Electric Actuators with Two Switches (Part 2 of 2)

Valve	Size, in.	Cv	Closeoff PSIG	AC 24 V			AC 120 V
				Floating	DC 0 to 10 V Prop.	On/Off	On/Off
				M9220-AGC-3	M9220-GGC-3	M9220-BGC-3	M9220-BAC-3
<b>Three-Way – Spring Return Counterclockwise – Port A (Coil) Open to Port AB (Common) – with Two Auxiliary Switches</b>							
VG18A5GS	2-1/2	47 / 29	50	VG18A5GS+92NAGC	VG18A5GS+92NGGC	VG18A5GS+92NBGC	VG18A5GS+92NBAC
VG18A5KS				VG18A5KS+92NAGC	VG18A5KS+92NGGC	VG18A5KS+92NBGC	VG18A5KS+92NBAC
VG18A5GT		74 / 47		VG18A5GT+92NAGC	VG18A5GT+92NGGC	VG18A5GT+92NBGC	VG18A5GT+92NBAC
VG18A5KT				VG18A5KT+92NAGC	VG18A5KT+92NGGC	VG18A5KT+92NBGC	VG18A5KT+92NBAC
VG18A5GU		117 / 74		VG18A5GU+92NAGC	VG18A5GU+92NGGC	VG18A5GU+92NBGC	VG18A5GU+92NBAC
VG18A5KU				VG18A5KU+92NAGC	VG18A5KU+92NGGC	VG18A5KU+92NBGC	VG18A5KU+92NBAC
VG18A5HT	3	74 / 47	50	VG18A5HT+92NAGC	VG18A5HT+92NGGC	VG18A5HT+92NBGC	VG18A5HT+92NBAC
VG18A5LT				VG18A5LT+92NAGC	VG18A5LT+92NGGC	VG18A5LT+92NBGC	VG18A5LT+92NBAC
VG18A5HU		117 / 74		VG18A5HU+92NAGC	VG18A5HU+92NGGC	VG18A5HU+92NBGC	VG18A5HU+92NBAC
VG18A5LU				VG18A5LU+92NAGC	VG18A5LU+92NGGC	VG18A5LU+92NBGC	VG18A5LU+92NBAC
VG18A5HV		176 / 88		VG18A5HV+92NAGC	VG18A5HV+92NGGC	VG18A5HV+92NBGC	VG18A5HV+92NBAC
VG18A5LV				VG18A5LV+92NAGC	VG18A5LV+92NGGC	VG18A5LV+92NBGC	VG18A5LV+92NBAC
VG18A5HW		211 / 105		VG18A5HW+92NAGC	VG18A5HW+92NGGC	VG18A5HW+92NBGC	VG18A5HW+92NBAC
VG18A5LW				VG18A5LW+92NAGC	VG18A5LW+92NGGC	VG18A5LW+92NBGC	VG18A5LW+92NBAC
VG18A5JU	4	117 / 74	50	VG18A5JU+92NAGC	VG18A5JU+92NGGC	VG18A5JU+92NBGC	VG18A5JU+92NBAC
VG18A5JV		176 / 88		VG18A5JV+92NAGC	VG18A5JV+92NGGC	VG18A5JV+92NBGC	VG18A5JV+92NBAC
VG18A5MW		190 / 190		VG18A5MW+92NAGC	VG18A5MW+92NGGC	VG18A5MW+92NBGC	VG18A5MW+92NBAC
VG18A5NY	5	290 / 190		VG18A5NY+92NAGC	VG18A5NY+92NGGC	VG18A5NY+92NBGC	VG18A5NY+92NBAC
VG18A5PZ	6	350 / 180		VG18A5PZ+92NAGC	VG18A5PZ+92NGGC	VG18A5PZ+92NBGC	VG18A5PZ+92NBAC
<b>Three-Way – Spring Return Clockwise – Port B (Bypass) Open to Port AB (Common) – with Two Auxiliary Switches</b>							
VG18A5GS	2-1/2	47 / 29	50	VG18A5GS+94NAGC	VG18A5GS+94NGGC	VG18A5GS+94NBGC	VG18A5GS+94NBAC
VG18A5KS				VG18A5KS+94NAGC	VG18A5KS+94NGGC	VG18A5KS+94NBGC	VG18A5KS+94NBAC
VG18A5GT		74 / 47		VG18A5GT+94NAGC	VG18A5GT+94NGGC	VG18A5GT+94NBGC	VG18A5GT+94NBAC
VG18A5KT				VG18A5KT+94NAGC	VG18A5KT+94NGGC	VG18A5KT+94NBGC	VG18A5KT+94NBAC
VG18A5GU		117 / 74		VG18A5GU+94NAGC	VG18A5GU+94NGGC	VG18A5GU+94NBGC	VG18A5GU+94NBAC
VG18A5KU				VG18A5KU+94NAGC	VG18A5KU+94NGGC	VG18A5KU+94NBGC	VG18A5KU+94NBAC
VG18A5HT	3	74 / 47	50	VG18A5HT+94NAGC	VG18A5HT+94NGGC	VG18A5HT+94NBGC	VG18A5HT+94NBAC
VG18A5LT				VG18A5LT+94NAGC	VG18A5LT+94NGGC	VG18A5LT+94NBGC	VG18A5LT+94NBAC
VG18A5HU		117 / 74		VG18A5HU+94NAGC	VG18A5HU+94NGGC	VG18A5HU+94NBGC	VG18A5HU+94NBAC
VG18A5LU				VG18A5LU+94NAGC	VG18A5LU+94NGGC	VG18A5LU+94NBGC	VG18A5LU+94NBAC
VG18A5HV		176 / 88		VG18A5HV+94NAGC	VG18A5HV+94NGGC	VG18A5HV+94NBGC	VG18A5HV+94NBAC
VG18A5LV				VG18A5LV+94NAGC	VG18A5LV+94NGGC	VG18A5LV+94NBGC	VG18A5LV+94NBAC
VG18A5HW		211 / 105		VG18A5HW+94NAGC	VG18A5HW+94NGGC	VG18A5HW+94NBGC	VG18A5HW+94NBAC
VG18A5LW				VG18A5LW+94NAGC	VG18A5LW+94NGGC	VG18A5LW+94NBGC	VG18A5LW+94NBAC
VG18A5JU	4	117 / 74	50	VG18A5JU+94NAGC	VG18A5JU+94NGGC	VG18A5JU+94NBGC	VG18A5JU+94NBAC
VG18A5JV		176 / 88		VG18A5JV+94NAGC	VG18A5JV+94NGGC	VG18A5JV+94NBGC	VG18A5JV+94NBAC
VG18A5MW		190 / 190		VG18A5MW+94NAGC	VG18A5MW+94NGGC	VG18A5MW+94NBGC	VG18A5MW+94NBAC
VG18A5NY	5	290 / 190		VG18A5NY+94NAGC	VG18A5NY+94NGGC	VG18A5NY+94NBGC	VG18A5NY+94NBAC
VG18A5PZ	6	350 / 180		VG18A5PZ+94NAGC	VG18A5PZ+94NGGC	VG18A5PZ+94NBGC	VG18A5PZ+94NBAC

## VG1000 Series Flanged Ball Valves Catalog Page (Continued)

### Technical Specifications

VG1000 Series Flanged Ball Valves		
<b>Service<sup>1</sup></b>		Hot water, chilled water, 50/50 Glycol solutions, and 25 psig (172 kPa) saturated steam for HVAC systems
<b>Valve Fluid Temperature Limits</b>		0 to 284°F (-18 to 140°C)
<b>Valve Body Pressure/Temperature Rating</b>	<b>Water</b>	ASME Class 150 250 psi at -20 to 100°F (29 to 38°C) 235 psi at 200°F(93°C) 218 psi at 284°F(140°C)
	<b>Steam</b>	25 psig (172 kPa) saturated steam for HVAC systems
<b>Maximum Closeoff Pressure</b>	<b>Two-Way</b>	100 psi (689 kPa)
	<b>Three-Way</b>	50 psi (345 kPa)
<b>Maximum Recommended Operating Pressure Drop</b>		30 psi (207 kPa) for quiet service
<b>Flow Characteristics</b>	<b>Two-Way</b>	Equal Percentage
	<b>Three-Way</b>	Equal Percentage Flow Characteristics of In-Line Port or Linear Percentage Flow Characteristics of Angle Port
<b>Rangeability<sup>2</sup></b>		Greater than 500:1
<b>Minimum Ambient Operating Temperature</b>	<b>-4°F (-20°C)</b>	VA9320 Series Non-Spring Return Actuators
	<b>-40°F (-40°C)</b>	M9220 Series Spring Return Actuators
<b>Maximum Ambient Operating Temperature<sup>3</sup></b>	<b>122°F (50°C)</b>	VA9320 Series Non-Spring Return Actuators
	<b>131°F (55°C)</b>	M9220 Series Spring Return Actuators
<b>Leakage</b>	<b>Two- or Three-Way</b>	0.01% of Maximum Flow, Control Port, ANSI/FCI 70-2, Class 4
	<b>Three-Way</b>	1% of Maximum Flow, Bypass Port
<b>End Connections</b>		ASME Class 150 Flange
<b>Materials</b>	<b>Body</b>	Brass
	<b>Flanges</b>	Ductile Iron
	<b>Ball</b>	300 Series Stainless Steel
	<b>Stem</b>	300 Series Stainless Steel
	<b>Seats</b>	Graphite Reinforced PTFE with EPDM O-Ring Backing
	<b>Stem Seals</b>	EPDM O-Rings
	<b>Flow Control Disk</b>	Amodel AS-1145HS Polyphthalamide Resin
<b>Compliance</b>  CE	<b>Europe</b>	CE Mark - Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the Pressure Equipment Directive (PED).

1. Refer to the VDI 2035 Guideline for 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.