

VG2000 Series

Cast Iron Flanged Globe Valves

Description

VG2000 Series Cast Iron Flanged Globe Valves are designed primarily to regulate the flow of water and steam in response to the demand of a controller in Heating, Ventilating, and Air Conditioning (HVAC) systems. Available in sizes 2-1/2 through 6 in., these ANSI Class 125 valves are available in Normally Open (N.O.), Normally Closed (N.C.), and three-way mixing configurations. Both electric and pneumatic actuators are available for factory or field mounting.

Refer to the *VG2000 Series Cast Iron Flanged Globe Valves Product Bulletin (LIT-977133)* for important product application information.

Repair Information

If the VG2000 Series Cast Iron Flanged Globe Valve fails to operate within its specifications, refer to the *VG2000 Series Cast Iron Flanged Globe Valves Product Bulletin (LIT-977133)* for a list of repair parts available.

Features

- complete family of 2-1/2 through 6 in. cast iron flanged globe valves, brass trim, with several styles of electric and pneumatic actuators — offers a broad selection from which to choose
- flexible features and options ordering matrix — allow engineering to suit your specific application from thousands of easy-to-select, factory-assembled combinations
- standard Johnson Controls® Ring Pack Packings — provide industry-leading reliability and operating life
- every valve tested for leakage — provides energy conservation and ensures occupant comfort



VG2000 Series Cast Iron Flanged Globe Valves

Selection Charts

VG2x31 Valves with M91xx-xGx-2 Actuators – Non-Spring Return

			On/Off Floating without Switches	Proportional without Switches	On/Off Floating with Two Switches	Proportional with Two Switches
Size	Cv	Closeoff psig	M9116-AGA-2 M9124-AGA-2	M9116-GGA-2 M9124-GGA-2	M9116-AGC-2 M9124-AGC-2	M9116-GGC-2 M9124-GGC-2
Two-Way, Push-Down-to-Close						
2-1/2	51	62	VG2231TM+916AGA	VG2231TM+916GGA	VG2231TM+916AGC	VG2231TM+916GGC
2-1/2	51	101	VG2231TM+924AGA	VG2231TM+924GGA	VG2231TM+924AGC	VG2231TM+924GGC
3	83	27	VG2231UM+916AGA	VG2231UM+916GGA	VG2231UM+916AGC	VG2231UM+916GGC
3	83	43	VG2231UM+924AGA	VG2231UM+924GGA	VG2231UM+924AGC	VG2231UM+924GGC
3	83	88	VG2231UM2924AGA ¹	VG2231UM2924GGA ¹	VG2231UM2924AGC ¹	VG2231UM2924GGC ¹
4	150	24	VG2231VM+924AGA	VG2231VM+924GGA	VG2231VM+924AGC	VG2231VM+924GGC
4	150	49	VG2231VM2924AGA ¹	VG2231VM2924GGA ¹	VG2231VM2924AGC ¹	VG2231VM2924GGC ¹
5	240	26	VG2231WN2924AGA ¹	VG2231WN2924GGA ¹	VG2231WN2924AGC ¹	VG2231WN2924GGC ¹
6	350	16	VG2231YN2924AGA ¹	VG2231YN2924GGA ¹	VG2231YN2924AGC ¹	VG2231YN2924GGC ¹
Three-Way, Mixing						
2-1/2	54	37	VG2831TM+916AGA	VG2831TM+916GGA	VG2831TM+916AGC	VG2831TM+916GGC
2-1/2	54	60	VG2831TM+924AGA	VG2831TM+924GGA	VG2831TM+924AGC	VG2831TM+924GGC
3	80	16	VG2831UM+916AGA	VG2831UM+916GGA	VG2831UM+916AGC	VG2831UM+916GGC
3	80	26	VG2831UM+924AGA	VG2831UM+924GGA	VG2831UM+924AGC	VG2831UM+924GGC
3	80	53	VG2831UM2924AGA ¹	VG2831UM2924GGA ¹	VG2831UM2924AGC ¹	VG2831UM2924GGC ¹
4	157	9	VG2831VM+916AGA	VG2831VM+916GGA	VG2831VM+916AGC	VG2831VM+916GGC
4	157	14	VG2831VM+924AGA	VG2831VM+924GGA	VG2831VM+924AGC	VG2831VM+924GGC
4	157	30	VG2831VM2924AGA ¹	VG2831VM2924GGA ¹	VG2831VM2924AGC ¹	VG2831VM2924GGC ¹
5	238	7	VG2831WN+924AGA	VG2831WN+924GGA	VG2831WN+924AGC	VG2831WN+924GGC
5	238	15	VG2831WN2924AGA ¹	VG2831WN2924GGA ¹	VG2831WN2924AGC ¹	VG2831WN2924GGC ¹
6	347	4	VG2831YN+924AGA	VG2831YN+924GGA	VG2831YN+924AGC	VG2831YN+924GGC
6	347	9	VG2831YN2924AGA ¹	VG2831YN2924GGA ¹	VG2831YN2924AGC ¹	VG2831YN2924GGC ¹

1. Valve assemblies have two actuators mounted in tandem. On tandem actuator assemblies with switches, only one actuator is provided with auxiliary switches. M9116-AGx-2 actuators are not designed for tandem operation.

Cast Iron Flanged Globe Valves (Continued)



VG2x31 Valves with M9220 Series Non-Spring Return Electric Valve Actuators

VG2x31 Valves with M9220-xGx-3 Actuators – Spring Return – Floating and On/Off

Size in.	Cv	Closeoff psig	Floating		On/Off	
			Without Switches	With Two Switches	Without Switches	With Two Switches
			M9220-AGA-3	M9220-AGC-3	M9220-BGA-3	M9220-BGC-3
Two-Way – Spring Return Normally Open – Valve Stem Up						
2-1/2	51	76	VG2231TM+92NAGA	VG2231TM+92NAGC	VG2231TM+92NBGA	VG2231TM+92NBGC
3	83	33	VG2231UM+92NAGA	VG2231UM+92NAGC	VG2231UM+92NBGA	VG2231UM+92NBGC
3	83	66	VG2231UM292NAGA ¹	VG2231UM292NAGC ¹	VG2231UM292NBGA ¹	VG2231UM292NBGC ¹
4	150	37	VG2231VM292NAGA ¹	VG2231VM292NAGC ¹	VG2231VM292NBGA ¹	VG2231VM292NBGC ¹
5	240	20	VG2231WM292NAGA ¹	VG2231WM292NAGC ¹	VG2231WM292NBGA ¹	VG2231WM292NBGC ¹
Two-Way – Spring Return Normally Closed – Valve Stem Down						
2-1/2	51	76	VG2231TM+94NAGA	VG2231TM+94NAGC	VG2231TM+94NBGA	VG2231TM+94NBGC
3	83	33	VG2231UM+94NAGA	VG2231UM+94NAGC	VG2231UM+94NBGA	VG2231UM+94NBGC
3	83	66	VG2231UM294NAGA ¹	VG2231UM294NAGC ¹	VG2231UM294NBGA ¹	VG2231UM294NBGC ¹
4	150	37	VG2231VM294NAGA ¹	VG2231VM294NAGC ¹	VG2231VM294NBGA ¹	VG2231VM294NBGC ¹
5	240	20	VG2231WM294NAGA ¹	VG2231WM294NAGC ¹	VG2231WM294NBGA ¹	VG2231WM294NBGC ¹
Three-Way Mixing – Spring Return – Valve Stem Up – Side Inlet Port Closed						
2-1/2	54	45	VG2831TM+92NAGA	VG2831TM+92NAGC	VG2831TM+92NBGA	VG2831TM+92NBGC
3	80	20	VG2831UM+92NAGA	VG2831UM+92NAGC	VG2831UM+92NBGA	VG2831UM+92NBGC
3	80	40	VG2831UM292NAGA ¹	VG2831UM292NAGC ¹	VG2831UM292NBGA ¹	VG2831UM292NBGC ¹
4	157	11	VG2831VM+92NAGA	VG2831VM+92NAGC	VG2831VM+92NBGA	VG2831VM+92NBGC
4	157	22	VG2831VM292NAGA ¹	VG2831VM292NAGC ¹	VG2831VM292NBGA ¹	VG2831VM292NBGC ¹
5	238	12	VG2831WN292NAGA ¹	VG2831WN292NAGC ¹	VG2831WN292NBGA ¹	VG2831WN292NBGC ¹
6	347	7	VG2831YN292NAGA ¹	VG2831YN292NAGC ¹	VG2831YN292NBGA ¹	VG2831YN292NBGC ¹
Three-Way Mixing – Spring Return – Valve Stem Down – Side Inlet Port Open						
2-1/2	54	45	VG2831TM+94NAGA	VG2831TM+94NAGC	VG2831TM+94NBGA	VG2831TM+94NBGC
3	80	20	VG2831UM+94NAGA	VG2831UM+94NAGC	VG2831UM+94NBGA	VG2831UM+94NBGC
3	80	40	VG2831UM294NAGA ¹	VG2831UM294NAGC ¹	VG2831UM294NBGA ¹	VG2831UM294NBGC ¹
4	157	11	VG2831VM+94NAGA	VG2831VM+94NAGC	VG2831VM+94NBGA	VG2831VM+94NBGC
4	157	22	VG2831VM294NAGA ¹	VG2831VM294NAGC ¹	VG2831VM294NBGA ¹	VG2831VM294NBGC ¹
5	238	12	VG2831WN294NAGA ¹	VG2831WN294NAGC ¹	VG2831WN294NBGA ¹	VG2831WN294NBGC ¹
6	347	7	VG2831YN294NAGA ¹	VG2831YN294NAGC ¹	VG2831YN294NBGA ¹	VG2831YN294NBGC ¹

1. Valve assemblies have two actuators mounted in tandem. On tandem actuator assemblies with switches, only one actuator is provided with auxiliary switches.

Cast Iron Flanged Globe Valves (Continued)

VG2x31 Valves with M9220-xGx-3 Actuators – Proportional

Proportional				
Size in.	Cv	Closeoff psig	Without Switches	With Two Switches
			M9220-GGA-3	M9220-GGC-3
Two-Way – Spring Return Normally Open – Valve Stem Up				
2-1/2	51	76	VG2231TM+92NGGA	VG2231TM+92NGGC
3	83	33	VG2231UM+92NGGA	VG2231UM+92NGGC
3	83	66	VG2231UM292NGGA ¹	VG2231UM292NGGC ¹
4	150	37	VG2231VM292NGGA ¹	VG2231VM292NGGC ¹
5	240	20	VG2231WM292NGGA ¹	VG2231WM292NGGC ¹
Two-Way – Spring Return Normally Closed – Valve Stem Down				
2-1/2	51	76	VG2231TM+94NGGA	VG2231TM+94NGGC
3	83	33	VG2231UM+94NGGA	VG2231UM+94NGGC
3	83	66	VG2231UM294NGGA ¹	VG2231UM294NGGC ¹
4	150	37	VG2231VM294NGGA ¹	VG2231VM294NGGC ¹
5	240	20	VG2231WM294NGGA ¹	VG2231WM294NGGC ¹
Three-Way Mixing – Spring Return – Valve Stem Up – Side Inlet Port Closed				
2-1/2	54	45	VG2831TM+92NGGA	VG2831TM+92NGGC
3	80	20	VG2831UM+92NGGA	VG2831UM+92NGGC
3	80	40	VG2831UM292NGGA ¹	VG2831UM292NGGC ¹
4	157	11	VG2831VM+92NGGA	VG2831VM+92NGGC
4	157	22	VG2831VM292NGGA ¹	VG2831VM292NGGC ¹
5	238	12	VG2831WN292NGGA ¹	VG2831WN292NGGC ¹
6	347	7	VG2831YN292NGGA ¹	VG2831YN292NGGC ¹
Three-Way Mixing – Spring Return – Valve Stem Down – Side Inlet Port Open				
2-1/2	54	45	VG2831TM+94NGGA	VG2831TM+94NGGC
3	80	20	VG2831UM+94NGGA	VG2831UM+94NGGC
3	80	40	VG2831UM294NGGA ¹	VG2831UM294NGGC ¹
4	157	11	VG2831VM+94NGGA	VG2831VM+94NGGC
4	157	22	VG2831VM294NGGA ¹	VG2831VM294NGGC ¹
5	238	12	VG2831WN294NGGA ¹	VG2831WN294NGGC ¹
6	347	7	VG2831YN294NGGA ¹	VG2831YN294NGGC ¹

1. Valve assemblies have two actuators mounted in tandem. On tandem actuator assemblies with switches, only one actuator is provided with auxiliary switches.

Cast Iron Flanged Globe Valves (Continued)



VG2x31 Valves with VA-3100 Series Non-Spring Return Electric Valve Actuators

VG2x31 Valves with VA-6100 Series Non-Spring Return Electric Valve Actuators

VG2x31 Valves with VA-3100-xGx Series Non-Spring Return Actuators

			Floating without Switches	Floating with Feedback and Two Switches	0 to 10 VDC Proportional with Two Switches
Size	Cv	Closeoff psig	VA-3100-AGA	VA-3100-AGC	VA-3100-HGC
Two-Way, Push-Down-to-Close					
2-1/2	51	115	VG2231TM+300AGA	VG2231TM+300AGC	VG2231TM+300HGC
3	83	79	VG2231UM+301AGA	VG2231UM+301AGC	VG2231UM+301HGC
4	150	45	VG2231VM+301AGA	VG2231VM+301AGC	VG2231VM+301HGC
5	240	29	VG2231WN+302AGA	VG2231WN+302AGC	VG2231WN+302HGC
6	350	20	VG2231YN+302AGA	VG2231YN+302AGC	VG2231YN+302HGC
Three-Way Mixing					
2-1/2	54	69	VG2831TM+300AGA	VG2831TM+300AGC	VG2831TM+300HGC
3	80	48	VG2831UM+301AGA	VG2831UM+301AGC	VG2831UM+301HGC
4	157	27	VG2831VM+301AGA	VG2831VM+301AGC	VG2831VM+301HGC
5	238	17	VG2831WN+302AGA	VG2831WN+302AGC	VG2831WN+302HGC
6	347	12	VG2831YN+302AGA	VG2831YN+302AGC	VG2831YN+302HGC

VG2x31 Valves with VA-6100-xGx Series Non-Spring Return Actuators

			Floating with Two Switches	0 to 10 VDC Proportional with Two Switches
Size	Cv	Closeoff psig	VA-6100-AGC	VA-6100-HGC
Two-Way Push-Down-to-Close				
4	150	89	VG2231VM+602AGC	VG2231VM+602HGC
5	240	57	VG2231WN+602AGC	VG2231WN+602HGC
6	350	40	VG2231YN+602AGC	VG2231YN+602HGC
Three-Way Mixing				
4	157	54	VG2831VM+602AGC	VG2831VM+602HGC
5	238	34	VG2831WN+602AGC	VG2831WN+602HGC
6	347	24	VG2831YN+602AGC	VG2831YN+602HGC

Cast Iron Flanged Globe Valves (Continued)

Technical Specifications

VG2000 Series Cast Iron Flanged Globe Valves		
Service ¹		Hot Water, Chilled Water, 50% Glycol Solutions or Steam for HVAC Systems
Valve Stroke	2-1/2 and 3 in. Valves	3/4 in. (19 mm)
	3 and 4 in. Valves	1-1/8 in. (29 mm)
	5 in. Valves	1-3/8 in. (35 mm)
	6 in. Valves	1-1/2 in. (38 mm)
Valve Body Rating		Meets Requirements of ASME B16.1, Class 125.
Valve Assembly Maximum Allowable Pressure/Temperature	Steam	35 psig (241 kPa) at 281°F (138°C)
	Water	175 psig (1,206 kPa) up to 150°F (66°C), Decreasing to 125 psig (861 kPa) at 281°F (138°C)
Leakage		0.1% of Maximum Flow
Inherent Flow Characteristics		Modified Linear
Rangeability ²	2-1/2 in. Valves	6.5:1
	3 in. Valves	7.7:1
	4 in. Valves	9.3:1
	5 in. Valves	10.7:1
	6 in. Valves	10.4:1
Spring Ranges (MP8000 Series Actuators)		3 to 7, 4 to 8, and 9 to 13 psig (21 to 48, 28 to 55, and 62 to 90 kPa)
Maximum Recommended Operating Pressure Drop		35 psig (241 kPa) for All Valve Sizes
Maximum Actuator Supply Pressure (Pneumatically Actuated Valves Only)		25 psig (172 kPa) Maximum
Materials	Body	Cast Iron with Black Lacquer Finish
	Stem	316 Stainless Steel
	Plug	Brass
	Packing	Ethylene Propylene Terpolymer (EPT) Ring Packs
Valve Fluid Operating Temperature Limits		35 to 281°F (2 to 138°C), 35 psig (241 kPa) Saturated Steam
Actuator Ambient Operating Temperature Limits		Refer to the appropriate actuator product bulletin.

1. Proper water treatment is recommended; refer to VDI 2035 Standard.

2. Rangeability is defined as the ratio of maximum flow to minimum controllable flow.