

VG2000 Series

Cast Iron Flanged Globe Valves for Assembly in the Field



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.

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 to choose from
- uses standard Johnson Controls ring pack packings providing industry-leading reliability and operating life
- every valve tested for leakage, providing energy conservation and ensuring occupant comfort

To Order

Specify the code number from the selection charts on the following pages.

Specifications

VG2000 Series Cast Iron Flanged Globe Valves	
Service (a)	Hot Water, Chilled Water, 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 ANSI B16.1, Class 125
Valve Assembly	Steam 35 psig (241 kPa) at 281°F (138°C)
Maximum Allowable Pressure/Temperature	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 (b)	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	35 to 281°F (2 to 138°C),
Operating Temperature Limits	35 psig (241 kPa) Saturated Steam

(a) Proper water treatment is recommended; refer to VDI 2035 Standard.

(b) Rangeability is defined as the ratio of maximum flow to minimum controllable flow.

VG2000 Series Cast Iron Flanged Globe Valves for Assembly in the Field (Continued)

Selection Chart: VG2000 Series Valve Bodies/MP8000 Series Pneumatic Actuators

Spring Range:			3 to 7 psig		4 to 8 psig		9 to 13 psig	
Valve Body Code Number	Valve Size	Cv	Closeoff	Actuator Code Number	Closeoff	Actuator Code Number	Closeoff	Actuator Code Number
Two-Way Normally Open with MP82 Series								
VG2231TL	2-1/2"	51	53	MP823C001E	49	MP823D001E	28	MP823E001E
VG2231UL	3"	83	37	MP823C001E	34	MP823D001E	19	MP823E001E
Two-Way Normally Open with MP84 Series								
VG2231TM	2-1/2"	51	109	MP843C001F	100	MP843D001F	58	MP843E001F
VG2231UM	3"	83	75	MP845C001F	70	MP845D001F	40	MP845E001F
VG2231VM	4"	150	42	MP845C001F	39	MP845D001F	23	MP845E001F
Two-Way Normally Open with MP86 Series								
VG2231UN	3"	83	152	MP865C001G	140	MP865D001G	81	MP865E001G
VG2231VN	4"	150	86	MP865C001G	79	MP865D001G	46	MP865E001G
VG2231WN	5"	240	55	MP867C001G	51	MP867D001G	29	MP867E001G
VG2231YN	6"	350	38	MP867C001G	35	MP867D001G	20	MP867E001G
Two-Way Normally Closed with MP84 Series								
VG2431TM	2-1/2"	54	24	MP843C001F	32	MP843D001F	75	MP843E001F
VG2431UM	3"	83	17	MP845C001F	22	MP845D001F	52	MP845E001F
VG2431VM	4"	150	9	MP845C001F	13	MP845D001F	29	MP845E001F
Two-Way Normally Closed with MP86 Series								
VG2431UN	3"	83	34	MP865C001G	46	MP865D001G	105	MP865E001G
VG2431VN	4"	150	19	MP865C001G	26	MP865D001G	59	MP865E001G
VG2431WN	5"	237	12	MP867C001G	17	MP867D001G	38	MP867E001G
VG2431YN	6"	344	9	MP867C001G	11	MP867D001G	26	MP867E001G
Three-Way Mixing with MP84 Series								
VG2831TM	2-1/2"	54	65 / 14	MP843C001F	60 / 19	MP843D001F	35 / 45	MP843E001F
VG2831UM	3"	80	45 / 10	MP845C001F	42 / 13	MP845D001F	24 / 31	MP845E001F
VG2831VM	4"	157	25 / 6	MP845C001F	23 / 8	MP845D001F	14 / 18	MP845E001F
Three-Way Mixing with MP86 Series								
VG2831UN	3"	80	91 / 21	MP865C001G	84 / 28	MP865D001G	49 / 63	MP865E001G
VG2831VN	4"	157	51 / 12	MP865C001G	47 / 16	MP865D001G	27 / 35	MP865E001G
VG2831WN	5"	238	33 / 7	MP867C001G	30 / 10	MP867D001G	18 / 23	MP867E001G
VG2831YN	6"	347	23 / 5	MP867C001G	21 / 7	MP867D001G	12 / 16	MP867E001G

Selection Chart: VG2000 Series Valve Bodies for use with M100 Series Electric Actuators

Valve Body Code Number	Valve Size	Cv	Closeoff Pressure (psig)				
			M120 or M130 with Y20EBD-1 Linkage Kit	M120 or M130 with Y20EBD-6 Linkage Kit	M140 with Y20EBD-2 Linkage Kit	M150 with Y20EBD-3 Linkage Kit	M150 with Y20EBD-4 Linkage Kit ^(a)
Two-Way Push-Down-to-Close							
VG2231TM	2-1/2"	51	7	12	22	46	28
VG2231UM	3"	83	---	7	14	32	18
VG2231VM	4"	150	---	---	6	18	9
Three-Way Mixing							
VG2831TM	2-1/2"	54	7	12	22	28	26
VG2831UM	3"	80	---	7	14	19	18
VG2831VM	4"	157	---	---	6	11	9

(a) The special Y20EBD-4 Linkage Kit is available to enable an M150 Series Electric Actuator to operate S91 Series Auxiliary Switches for automatic heating/cooling changeover applications. The Y20EBD-4 Linkage Kit allows additional overtravel after valve closeoff for switch operation.

VG2000 Series Cast Iron Flanged Globe Valves for Assembly in the Field (Continued)

Selection Chart: VG2000 Series Valve Bodies/M9216 Series Electric Spring Return Actuators

Valve Body	Valve Size	Cv	Closeoff	Mounting Kit Code Number	Actuator Codes Numbers					
					Spring Return Without Auxiliary Switches			Spring Return With Two Auxiliary Switches		
					Floating	On/Off	0 to 10 VDC Proportional	Floating	On/Off	0 to 10 VDC Proportional
TWO-WAY PUSH-DOWN-TO-CLOSE										
VG2231TM	2-1/2	51	47	M9000-530	M9216-AGA-2	M9216-BGA-2	M9216-GGA-2	M9216-AGC-2	M9216-BGC-2	M9216-GGC-2
VG2231UM	3	83	20	M9000-531						
VG2231UM	3	83	41	M9000-532	---	M9216-BGA-2 (a)	M9216-GGA-2 (a)	---	M9216-BGC-2 (a)	M9216-GGC-2 (a)
VG2231VM	4	150	23	M9000-532						
VG2231WN	5	240	12	M9000-534						
THREE-WAY MIXING										
VG2831TM	2-1/2	54	28	M9000-530	M9216-AGA-2	M9216-BGA-2	M9216-GGA-2	M9216-AGC-2	M9216-BGC-2	M9216-GGC-2
VG2831UM	3	80	12	M9000-531						
VG2831UM	3	80	24	M9000-532	---	M9216-BGA-2 (a)	M9216-GGA-2 (a)	---	M9216-BGC-2 (a)	M9216-GGC-2 (a)
VG2831VM	4	157	6	M9000-531						
VG2831VM	4	157	14	M9000-532	---	M9216-BGA-2 (a)	M9216-GGA-2 (a)	---	M9216-BGC-2 (a)	M9216-GGC-2 (a)
VG2831WN	5	238	7	M9000-534						
VG2831YN	6	347	4	M9000-536						

(a) Valve assemblies require two actuators mounted in tandem. On tandem assemblies with switches only one actuator is required to have auxiliary switches.

Selection Chart: VG2000 Series Valve Bodies/M9100 Series Electric Non-Spring Return Actuators

Valve Body	Valve Size	Cv	Closeoff	Mounting Kit Code Number	Actuator Codes Numbers			
					Spring Return without Auxiliary Switches			
					Floating		0 to 10 VDC Proportional	
					Without Switches	With Two Switches	Without Switches	With Two Switches
TWO-WAY PUSH-DOWN-TO-CLOSE								
VG2231TM	2-1/2	51	62	M9000-530	M9116-AGA-2	M9116-AGC-2	M9116-GGA-2	M9116-GGC-2
VG2231TM	2-1/2	51	101		M9124-AGA-2	M9124-AGC-2	M9124-GGA-2	M9124-GGC-2
VG2231UM	3	83	27	M9000-531	M9116-AGA-2	M9116-AGC-2	M9116-GGA-2	M9116-GGC-2
VG2231UM	3	83	43		M9124-AGA-2	M9124-AGC-2	M9124-GGA-2	M9124-GGC-2
VG2231UM	3	83	88	M9000-532	M9124-AGA-2 (a)	M9124-AGC-2 (a)	M9124-GGA-2 (a)	M9124-GGC-2 (a)
VG2231VM	4	150	24	M9000-531	M9124-AGA-2	M9124-AGC-2	M9124-GGA-2	M9124-GGC-2
VG2231VM	4	150	49	M9000-532	M9124-AGA-2 (a)	M9124-AGC-2 (a)	M9124-GGA-2 (a)	M9124-GGC-2 (a)
VG2231WN	5	240	26	M9000-534	M9124-AGA-2 (a)	M9124-AGC-2 (a)	M9124-GGA-2 (a)	M9124-GGC-2 (a)
VG2231YN	6	350	16	M9000-536	M9124-AGA-2 (a)	M9124-AGC-2 (a)	M9124-GGA-2 (a)	M9124-GGC-2 (a)
THREE-WAY MIXING								
VG2831TM	2-1/2	54	37	M9000-530	M9116-AGA-2	M9116-AGC-2	M9116-GGA-2	M9116-GGC-2
VG2831TM	2-1/2	54	60		M9124-AGA-2	M9124-AGC-2	M9124-GGA-2	M9124-GGC-2
VG2831UM	3	80	16	M9000-531	M9116-AGA-2	M9116-AGC-2	M9116-GGA-2	M9116-GGC-2
VG2831UM	3	80	26		M9124-AGA-2	M9124-AGC-2	M9124-GGA-2	M9124-GGC-2
VG2831UM	3	80	53	M9000-532	M9124-AGA-2 (a)	M9124-AGC-2 (a)	M9124-GGA-2 (a)	M9124-GGC-2 (a)
VG2831VM	4	157	9	M9000-531	M9116-AGA-2	M9116-AGC-2	M9116-GGA-2	M9116-GGC-2
VG2831VM	4	157	14	M9000-531	M9124-AGA-2	M9124-AGC-2	M9124-GGA-2	M9124-GGC-2
VG2831VM	4	157	30	M9000-532	M9124-AGA-2 (a)	M9124-AGC-2 (a)	M9124-GGA-2 (a)	M9124-GGC-2 (a)
VG2831WN	5	238	7	M9000-533	M9124-AGA-2	M9124-AGC-2	M9124-GGA-2	M9124-GGC-2
VG2831WN	5	238	15	M9000-534	M9124-AGA-2 (a)	M9124-AGC-2 (a)	M9124-GGA-2 (a)	M9124-GGC-2 (a)
VG2831YN	6	347	4	M9000-535	M9124-AGA-2	M9124-AGC-2	M9124-GGA-2	M9124-GGC-2
VG2831YN	6	347	9	M9000-536	M9124-AGA-2 (a)	M9124-AGC-2 (a)	M9124-GGA-2 (a)	M9124-GGC-2 (a)

(a) Valve assemblies require two actuators mounted in tandem. On tandem assemblies with switches only one actuator is required to have auxiliary switches.

VG2000 Series Cast Iron Flanged Globe Valves for Assembly in the Field (Continued)

Selection Chart: M100 Series Electric Actuators

Actuator Code Number	Description	Actuator Code Number	Description	Actuator Code Number	Description
Non-Spring Return				Spring Return	
M120AAA-1	On/Off (Floating) Control, 120 VAC, Adjustable Travel	M140JAA-1	Proportional, Potentiometer Input (R81JAA-1), 120 VAC, Adjustable Travel	M130AAB-1	On/Off (Floating) Control, 120 VAC, Adjustable Travel, One Auxiliary Switch
M120AAC-1	On/Off (Floating) Control, 120 VAC, Adjustable Travel, Two Auxiliary Switches	M140JGA-1	Proportional, Potentiometer Input (R81JAA-1), 24 VAC, Adjustable Travel	M130AGA-1	On/Off (Floating) Control, 24 VAC, Adjustable Travel
M120AGA-1	On/Off (Floating) Control, 24 VAC, Adjustable Travel	M150AGA-1	On/Off (Floating) Control, 24 VAC, Adjustable Travel	M130AGB-1	On/Off (Floating) Control, 24 VAC, Adjustable Travel, One Auxiliary Switch
M120CGA-2	Proportional Control, Digital Input (R81CAA-2), 24 VAC, Adjustable Travel	M150AGB-1	On/Off (Floating) Control, 24 VAC, Adjustable Travel, One Auxiliary Switch	M130CGA-2	Proportional Control, Digital Input (R81CAA-2), 24 VAC, Adjustable Travel
M120GGA-3	DA/RA Analog DC Input (R81GAA-2), 24 VAC, Adjustable Travel	M150CGA-2	Proportional Control, Digital Input (R81CAA-2), 24 VAC, Adjustable Travel	M130GGA-1	DA/RA Analog DC Input (R81GAA-2), 24 VAC, Adjustable Travel
M120JAA-1	Proportional, Potentiometer Input (R81JAA-1), 120 VAC, Adjustable Travel	M150GGA-3	DA/RA Analog DC Input (R81GAA-2), 24 VAC, Adjustable Travel	M130JGA-1	Proportional, Potentiometer Input (R81JAA-1), 24 VAC, Adjustable Travel
M120JAC-1	Proportional, Potentiometer Input (R81JAA-1), 120 VAC, Adjustable Travel, Two Auxiliary Switches	M150JGA-1	Proportional, Potentiometer Input (R81JAA-1), 24 VAC, Adjustable Travel	M130JGB-1	Proportional, Potentiometer Input (R81JAA-1), 24 VAC, Adjustable Travel, One Auxiliary Switch
M120JGA-1	Proportional, Potentiometer Input (R81JAA-1), 24 VAC, Adjustable Travel	M150JGB-1	Proportional, Potentiometer Input (R81JAA-1), 24 VAC, Adjustable Travel, One Auxiliary Switch	M130JGC-1	Proportional, Potentiometer Input (R81JAA-1), 24 VAC, Adjustable Travel, Two Auxiliary Switches
M140AAA-1	On/Off (Floating) Control, 120 VAC, Adjustable Travel	M150JGC-1	Proportional, Potentiometer Input (R81JAA-1), 24 VAC, Adjustable Travel, Two Auxiliary Switches	M130QGA-1	Thermistor Input (R81QAA-1), 40 to 90° Set Point Range, 24 VAC, Adjustable Travel
M140AGA-1	On/Off (Floating) Control, 24 VAC, Adjustable Travel	M150QGA-1	Thermistor Input (R81QAA-1), 40 to 90° Set Point Range, 24 VAC, Adjustable Travel		
M140CGA-2	Proportional Control, Digital Input (R81CAA-2), 24 VAC, Adjustable Travel	M150QGB-1	Thermistor Input (R81QAA-1), 40 to 90° Set Point Range, 24 VAC, Adjustable Travel, One Auxiliary Switch		
M140GGA-3	DA/RA Analog DC Input (R81GAA-2), 24 VAC, Adjustable Travel				

Selection Chart: VG2000 Series Valve Bodies/VA-3100 Series Electric Actuators

Valve Body Code Number	Valve Size	Cv	Closeoff	Mounting Kit Code Number	Non-Spring Return Actuator Code Number		
					Floating without Switches	Floating with Two Switches	0 to 10 VDC Proportional with Two Switches
Two-Way Push-Down-to-Close							
VG2231TM	2-1/2"	51	115	VA-3100-500	VA-3100-AGA	VA-3100-AGC	VA-3100-HGC
VG2231UM	3"	83	79				
VG2231VM	4"	150	45				
VG2231WN	5"	240	29	VA-3100-501			
VG2231YN	6"	350	20				
Three-Way Mixing							
VG2831TM	2-1/2"	54	69	VA-3100-500	VA-3100-AGA	VA-3100-AGC	VA-3100-HGC
VG2831UM	3"	80	48				
VG2831VM	4"	157	27				
VG2831WN	5"	238	17	VA-3100-501			
VG2831YN	6"	347	12				

Selection Chart: VG2000 Series Valve Bodies/VA-6100 Series Electric Actuators

Valve Body Code Number	Valve Size	Cv	Closeoff	Mounting Kit Code Number	Non-Spring Return Actuator Code Number	
					Floating with Two Switches	0 to 10 VDC Proportional with Two Switches
Two-Way Push-Down-to-Close						
VG2231VN	4"	150	89	VA-3100-501	VA-6100-AGC	VA-6100-HGC
VG2231WN	5"	240	57			
VG2231YN	6"	350	40			
Three-Way Mixing						
VG2831VN	4"	157	54	VA-3100-501	VA-6100-AGC	VA-6100-HGC
VG2831WN	5"	238	34			
VG2831YN	6"	347	24			

VG2000 Series Cast Iron Flanged Globe Valves for Assembly in the Field (Continued)

Mounting Kits for Field Mounting

MP8000 Series Pneumatic Valve Actuators

Mounting Kit Code Number	Actuator Style	Valve Size	Stem Type (Diameter)
MP8000-6201	MP82/MP83/MP84/MP85	2-1/2 through 4 in.	"L" Stem (3/8 in.) or "M" Stem (3/8 in.)
MP8000-6203	MP86/MP87	3 through 6 in.	"N" Stem (1/2 in.)

Linkage Kits for Field Mounting

M100 Series Electric Valve Actuators

Linkage Kit Code Number	Valve Size	Output Force lb (N)	Spring Return Actuator	Non-Spring Return Actuator
Y20EBD-1	2-1/2 in.	75 (334)	M130	M120
Y20EBD-2	2-1/2 through 4 in.	150 (668)	---	M140
Y20EBD-3	2-1/2 through 4 in.	270 (1,202)	---	M150
Y20EBD-4	2-1/2 through 4 in.	179 (797)	---	M150
Y20EBD-6	2-1/2 and 3 in.	100 (445)	M130	M120

Mounting Kits for Field Mounting

VA-3100 Series Electric Valve Actuators

Mounting Kit Code Number	Valve Size	Stem Type (Diameter)
VA-3100-500	2-1/2 through 4 in.	"M" Stem (3/8 in.)
VA-3100-501	5 and 6 in.	"N" Stem (1/2 in.)

Tool Kit for VA-3100 Series Electric Actuators (Order Separately)

Code Number	Description
VA-3100-101	Auxiliary Switch Cam Adjusting Wrench (Used on VA-3100 Series Electric Actuators – One Wrench is Supplied with Each Actuator)

Mounting Kits for Field Mounting

VA-6100 Series Electric Valve Actuators

Mounting Kit Code Number	Valve Size	Stem Type (Diameter)
VA-3100-501	4 through 6 in.	"N" Stem (1/2 in.)

Positioners and Positioner Mounting Kits for

MP8000 Series Pneumatic Valve Actuators

(Order Separately)

Code Number	Description	Ship Wt. lb (a)
V-9502-95	Pneumatic Valve Actuator Positioner (Less Spring and Mounting Hardware)	0.9
MP8000-6002	Mounting Kit for V-9502-95 Pneumatic Valve Actuator Positioner (Kit Includes All Necessary Mounting Hardware and Six Springs)	1.3
EPP-1000-8	Electro-Pneumatic Valve Actuator Positioner (Less Mounting Hardware)	1.6
MP8000-6003	Mounting Kit for EPP-1000-8 Electro-Pneumatic Valve Actuator Positioner (Kit Includes All Necessary Mounting Hardware)	1.5

(a) lb x 0.454 = kg.

Mounting Kits for Field Mounting

M9000 and M9216 Series Electric Actuators

Mounting Kit Code Number	Number of Actuator(s)	Valve	Valve Size	Valve Stroke	Stem Type (Diameter)
M9000-530	Single	VG2x31TM	2-1/2 in.	7/8 in.	"M" Stem (3/8 in.)
M9000-531		VG2x31UM and VG2x31VM	3 and 4 in.	1-1/8 in.	
M9000-532	Dual				
M9000-533	Single	VG2x31WN	5 in.	1-3/8 in.	"N" Stem (1/2 in.)
M9000-534					
M9000-535	Single	VG2x31YN	6 in.	1-1/2 in.	
M9000-536					
M9000-537	Dual	VG2x31UN and VG2x31VN	3 and 4 in.	1-1/8 in.	

Accessories for M150 Series Electric Actuators

(Order Separately)

Code Number	Description	Ship Wt. lb (a)
S91DJ-1	Auxiliary Switch Kit with One Single-Pole, Double-Throw Switch	1.8
S91EJ-1	Auxiliary Switch Kit with Two Single-Pole, Double-Throw Switches	1.9
S91PT-1	Auxiliary Potentiometer Switch Kit (1,000 Ohms, 1/3 Watt)	1.8
CVR83A-600R	Weather Resistant Cover	0.4
Y68AA-1	Cover Mounted Transformer (120 VAC Primary Power Supply, 40 VA Transformer Capacity)	1.9
Y68DA-1	Cover Mounted Transformer (240 VAC Primary Power Supply, 40 VA Transformer Capacity)	1.9
Y68HA-1	Cover Mounted Transformer (24 VAC Primary Power Supply, 40 VA Transformer Capacity – Used when an Isolation Transformer is Needed)	1.9

(a) lb x 0.454 = kg.