

CONTROL VALVES

FLANGED GLOBE VALVES VG2000 SERIES



DESCRIPTION

The Johnson Controls VG2000 Series flanged globe valves are designed to control the flow of water and steam in HVAC systems. Available in 2-1/2" through 6" pipe sizes, these ANSI Class 125 valves are available in normally open (N.O.), normally closed (N.C.) and 3-way mixing configurations.

FEATURES

- 2-1/2" through 6" flanged cast iron valves
- Several choices in electric and pneumatic actuation
- Every valve factory tested to assure tight close-off
- Order valve body alone for field assembly, or pre-assembled with actuator to fit the application



3-way VG2000 Series
(Pneumatic)



2-way VG2000 Series
(Electric)

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SPECIFICATIONS	
Service*	Hot water, chilled water, 50% glycol solutions, or steam for HVAC systems
Valve Stroke	
2-1/2" and 3" Valves	3/4" (19 mm)
3" and 4" Valves	1-1/8" (29 mm)
5" Valves	1-3/8" (35 mm)
6" Valves	1-1/2" (38 mm)
Valve Body Rating	Meets requirements of ASME B16.1, Class 125.
Valve Assembly	Steam 35 psig (241 kPa) at 281°F (138°C)
Maximum Allowable	Water 175 psig (1,206 kPa) up to 150°F (66°C)
Pressure/Temperature	Decreasing to 125 psig (861 kPa) at 281°F (138°C)
Leakage	0.1% of maximum flow
Inherent Flow Characteristics	Modified linear
Rangeability**	
2-1/2" Valves	6.5:1
3" Valves	7.7:1
4" Valves	9.3:1
5" Valves	10.7:1
6" 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
Maximum Closeoff Pressures	Dependent on valve size and actuator used
Materials of construction	
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
Warranty	1 year
	* Proper water treatment is recommended; refer to VDI 2035 Standard.
	** Rangeability is defined as the ratio of maximum flow to minimum controllable flow.
	The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult Johnson Controls, Inc. Neither Kele, Inc., nor Johnson Controls, Inc., shall be liable for damages resulting from misapplication or misuse of its products.



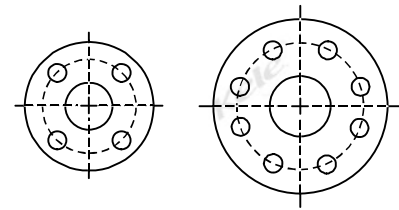
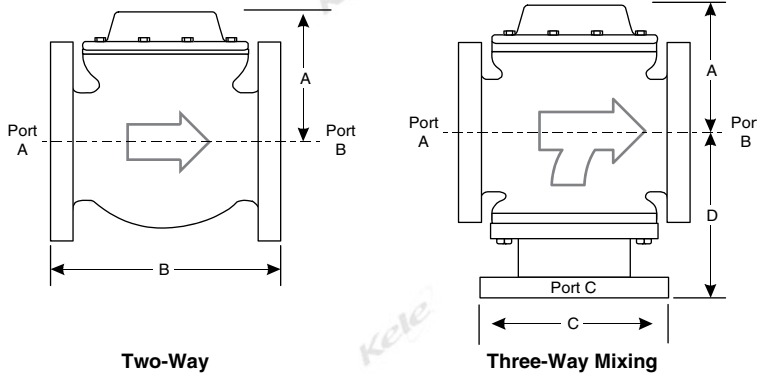
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DIMENSIONS



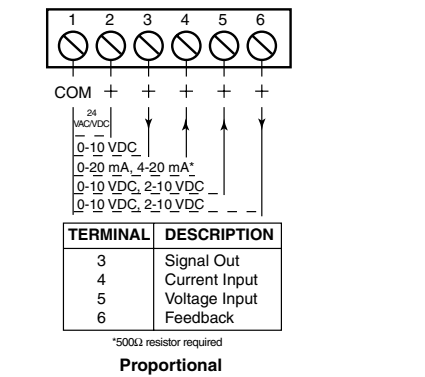
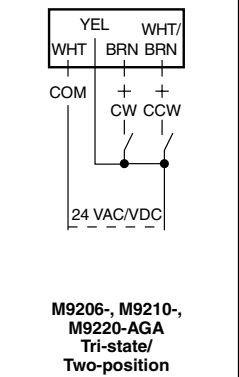
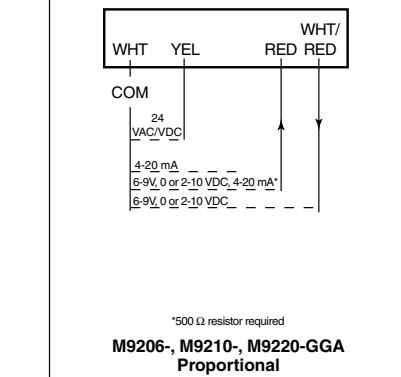
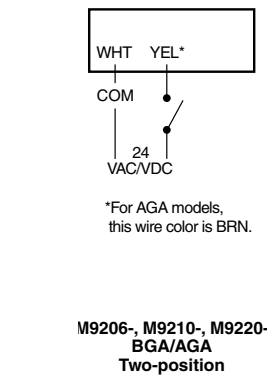
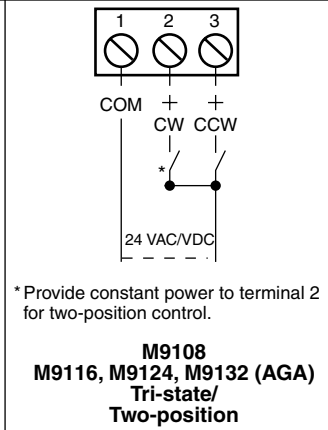
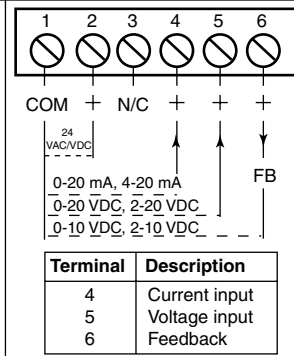
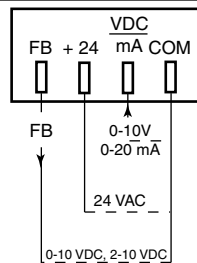
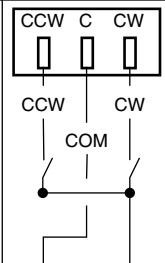
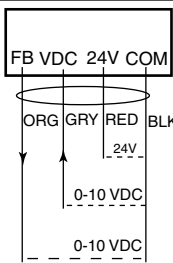
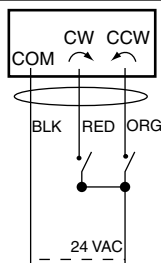
Flange and Bolt Circle

Valve Body Size	A	B	C	D
2-1/2"	4-21/32" (118 mm)	7-1/4" (184 mm)	7" (178 mm)	6-25/32" (172 mm)
3"	5-5/16" (135 mm)	8-5/8" (219 mm)	7-1/2" (191 mm)	6-13/16" (175 mm)
4"	6-7/16" (164 mm)	10-1/2" (267 mm)	9" (229 mm)	8-1/16" (205 mm)
5"	6-7/8" (175 mm)	12-1/2" (318 mm)	10" (254 mm)	9-5/32" (233 mm)
6"	8-3/16" (208 mm)	14-1/2" (368 mm)	11" (279 mm)	9-15/16" (252 mm)

Valve Body Size	WEIGHTS	
	2-WAY	3-WAY
2-1/2"	40 lb (18.14 kg)	60 lb (27.22 kg)
3"	60 lb (27.22 kg)	85 lb (38.56 kg)
4"	90 lb (40.82 kg)	115 lb (52.16 kg)
5"	135 lb (61.24 kg)	180 lb (81.65 kg)
6"	140 lb (65.50 kg)	220 lb (99.79 kg)

Valve Size	Flange Diameter	Flange Thickness	Bolt Circle Diameter	Bolt Hole Diameter	Bolt Holes
2-1/2"	7" (178 mm)	11/16" (17 mm)	5-1/2" (140 mm)	3/4" (19 mm)	4
3"	7-1/2" (191 mm)	3/4" (19 mm)	6" (152 mm)	3/4" (19 mm)	4
4"	9" (229 mm)	1" (25 mm)	7-1/2" (191 mm)	3/4" (19 mm)	8
5"	10" (254 mm)	1" (25 mm)	8-1/2" (216 mm)	7/8" (22 mm)	8
6"	11" (279 mm)	1" (25 mm)	9-1/2" (241 mm)	7/8" (22 mm)	8

WIRING



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VG2231 TWO-WAY NORMALLY OPEN VALVES WITH PNEUMATIC ACTUATORS							
Spring Range		3 to 7 psig		4 to 8 psig		9 to 13 psig	
Size	Cv	Closeoff psig	Model Number	Closeoff psig	Model Number	Closeoff psig	Model Number
MP82 Series Actuators – 25 sq. in. Effective Diaphragm Area							
2-1/2"	51	53	VG2231TL-823C00	49	VG2231TL-823D00	28	VG2231TL-823E00
3"	83	37	VG2231UL-823C00	34	VG2231UL-823D00	19	VG2231UL-823E00
MP84 Series Actuators – 50 sq. in. Effective Diaphragm Area							
2-1/2"	51	109	VG2231TM-843C00	100	VG2231TM-843D00	58	VG2231TM-843E00
3"	83	75	VG2231UM-845C00	70	VG2231UM-845D00	40	VG2231UM-845E00
4"	150	42	VG2231VM-845C00	39	VG2231VM-845D00	23	VG2231VM-845E00
MP86 Series Actuators – 100 sq. in. Effective Diaphragm Area							
3"	83	152	VG2231UN-865C00	140	VG2231UN-865D00	81	VG2231UN-865E00
4"	150	86	VG2231VN-865C00	79	VG2231VN-865D00	46	VG2231VN-865E00
5"	240	55	VG2231WN-867C00	51	VG2231WN-867D00	29	VG2231WN-867E00
6"	350	38	VG2231YN-867C00	35	VG2231YN-867D00	20	VG2231YN-867E00

VG2431 TWO-WAY NORMALLY CLOSED VALVES WITH PNEUMATIC ACTUATORS							
Spring Range		3 to 7 psig		4 to 8 psig		9 to 13 psig	
Size	Cv	Closeoff psig	Model Number	Closeoff psig	Model Number	Closeoff psig	Model Number
MP84 Series Actuators – 50 sq. in. Effective Diaphragm Area							
2-1/2"	54	24	VG2431TM-843C00	32	VG2431TM-843D00	75	VG2431TM-843E00
3"	83	17	VG2431UM-845C00	22	VG2431UM-845D00	52	VG2431UM-845E00
4"	150	9	VG2431VM-845C00	13	VG2431VM-845D00	29	VG2431VM-845E00
MP86 Series Actuators – 100 sq. in. Effective Diaphragm Area							
3"	83	34	VG2431UN-865C00	46	VG2431UN-865D00	105	VG2431UN-865E00
4"	150	19	VG2431VN-865C00	26	VG2431VN-865D00	59	VG2431VN-865E00
5"	237	12	VG2431WN-867C00	17	VG2431WN-867D00	38	VG2431WN-867E00
6"	344	9	VG2431YN-867C00	11	VG2431YN-867D00	26	VG2431YN-867E00

VG2831 THREE-WAY MIXING VALVES WITH PNEUMATIC ACTUATORS							
Spring Range		3 to 7 psig		4 to 8 psig		9 to 13 psig	
Size	Cv	Closeoff psig	Model Number	Closeoff psig	Model Number	Closeoff psig	Model Number
MP84 Series Actuators – 50 sq. in. Effective Diaphragm Area							
2-1/2"	54	65/14	VG2831TM-843C00	60/19	VG2831TM-843D00	35/45	VG2831TM-843E00
3"	83	45/10	VG2831UM-845C00	42/13	VG2831UM-845D00	24/31	VG2831UM-845E00
4"	150	25/6	VG2831VM-845C00	23/8	VG2831VM-845D00	14/18	VG2831VM-845E00
MP86 Series Actuators – 100 sq. in. Effective Diaphragm Area							
3	83	91/21	VG2831UN-865C00	84/28	VG2831UN-865D00	49/63	VG2831UN-865E00
4	150	51/12	VG2831VN-865C00	47/16	VG2831VN-865D00	27/35	VG2831VN-865E00
5	237	33/7	VG2831WN-867C00	30/10	VG2831WN-867D00	18/23	VG2831WN-867E00
6	344	23/5	VG2831YN-867C00	21/7	VG2831YN-867D00	12/16	VG2831YN-867E00

To add an optional positioner to the valve assembly, change the 00 at the end of the code number to 01 for a V-9502-95 pneumatic positioner or to 02 for an EPP-1000-8 Electro-pneumatic positioner.



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ORDERING INFORMATION — ELECTRIC SPRNG RETURN						
VG2X31 VALVES WITH M9220-XGX-3 ACTUATORS						
				Spring Return		
				Floating	On/Off	Proportional
Valve	Size	Cv	Closeoff psig	M9220-AGA-3 (w/switches) M9220-AGC-3 (w/o switches)	M9220-BGA-3 (w/switches) M9220-BGC-3 (w/o switches)	M9220-GGA-3 (w/switches) M9220-GGC-3 (w/o switches)
Two-Way – Spring Return Normally Open – Valve Stem Up						
VG2231TM	2-1/2"	51	76	VG2231TM-92NAGx*	VG2231TM-92NBGx*	VG2231TM-92NGGx*
VG2231UM	3"	83	33	VG2231UM-92NAGx*	VG2231UM-92NBGx*	VG2231UM-92NGGx*
VG2231UM	3"	83	66	VG2231TM292NAGx*	VG2231UM292NBGx*	VG2231UM292NGGx*
VG2231VM	4"	150	37	VG2231UM292NAGx*	VG2231VM292NBGx*	VG2231VM292NGGx*
VG2231WN	5"	240	20	VG2231WN292NAGx*	VG2231WN292NBGx*	VG2231WN292NGGx*
Two-Way – Spring Return Normally Closed – Valve Stem Down						
VG2231TM	2-1/2"	51	76	VG2231TM-94NAGx*	VG2231TM-94NBGx*	VG2231TM-94NGGx*
VG2231UM	3"	83	33	VG2231UM-94NAGx*	VG2231UM-94NBGx*	VG2231UM-94NGGx*
VG2231UM	3"	83	66	VG2231TM294NAGx*	VG2231UM294NBGx*	VG2231UM294NGGx*
VG2231VM	4"	150	37	VG2231UM294NAGx*	VG2231VM294NBGx*	VG2231VM294NGGx*
VG2231WN	5"	240	20	VG2231WN294NAGx*	VG2231WN294NBGx*	VG2231WN294NGGx*
Three-Way Mixing – Spring Return – Valve Stem Up – Side Inlet Port Closed						
VG2831TM	2-1/2"	54	45	VG2831TM-92NAGx*	VG2831TM-92NBGx*	VG2831TM-92NGGx*
VG2831UM	3"	80	20	VG2831UM-92NAGx*	VG2831UM-92NBGx*	VG2831UM-92NGGx*
VG2831UM	3"	80	40	VG2831UM292NAGx*	VG2831UM292NBGx*	VG2831UM292NGGx*
VG2831VM	4"	157	11	VG2831VM-92NAGx*	VG2831VM-92NBGx*	VG2831VM-92NGGx*
VG2831VM	4"	157	22	VG2831VM292NAGx*	VG2831VM292NBGx*	VG2831VM292NGGx*
VG2831WN	5"	238	12	VG2831WM292NAGx*	VG2831WN292NBGx*	VG2831WN292NGGx*
VG2831YN	6"	347	7	VG2831YN292NAGx*	VG2831YN292NBGx*	VG2831YN292NGGx*
Three-Way Mixing – Spring Return – Valve Stem Down – Side Inlet Port Open						
VG2831TM	2-1/2"	54	45	VG2831TM-94NAGx*	VG2831TM-94NBGx*	VG2831TM-94NGGx*
VG2831UM	3"	80	20	VG2831UM-94NAGx*	VG2831UM-94NBGx*	VG2831UM-94NGGx*
VG2831UM	3"	80	40	VG2831UM294NAGx*	VG2831UM294NBGx*	VG2831UM294NGGx*
VG2831VM	4"	157	11	VG2831VM-94NAGx*	VG2831VM-94NBGx*	VG2831VM-94NGGx*
VG2831VM	4"	157	22	VG2831VM294NAGx*	VG2831VM294NBGx*	VG2831VM294NGGx*
VG2831WN	5"	238	12	VG2831WM294NAGx*	VG2831WN294NBGx*	VG2831WN294NGGx*
VG2831YN	6"	347	7	VG2831YN294NAGx*	VG2831YN294NBGx*	VG2831YN294NGGx*

* Replace x with **A** for End Switches or **C** for No-Switches.

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ORDERING INFORMATION — ELECTRIC NON-SPRNG RETURN						
VG2X31 VALVES WITH M91XX-XGX-2 ACTUATORS – NON-SPRING RETURN						
			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*	VG2231UM2924GGA*	VG2231UM2924AGC*	VG2231UM2924GGC*
4"	150	24	VG2231VM+924AGA	VG2231VM+924GGA	VG2231VM+924AGC	VG2231VM+924GGC
4"	150	49	VG2231VM2924AGA*	VG2231VM2924GGA*	VG2231VM2924AGC*	VG2231VM2924GGC*
5"	240	26	VG2231WN2924AGA*	VG2231WN2924GGA*	VG2231WN2924AGC*	VG2231WN2924GGC*
6"	350	16	VG2231YN2924AGA*	VG2231YN2924GGA*	VG2231YN2924AGC*	VG2231YN2924GGC*
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*	VG2831UM2924GGA*	VG2831UM2924AGC*	VG2831UM2924GGC*
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*	VG2831VM2924GGA*	VG2831VM2924AGC*	VG2831VM2924GGC*
5"	238	7	VG2831WN+924AGA	VG2831WN+924GGA	VG2831WN+924AGC	VG2831WN+924GGC
5"	238	15	VG2831WN2924AGA*	VG2831WN2924GGA*	VG2831WN2924AGC*	VG2831WN2924GGC*
6"	347	4	VG2831YN+924AGA	VG2831YN+924GGA	VG2831YN+924AGC	VG2831YN+924GGC
6"	347	9	VG2831YN2924AGA*	VG2831YN2924GGA*	VG2831YN2924AGC*	VG2831YN2924GGC*

*Valve assemblies require two actuators mounted in tandem. On tandem assemblies with switches, only one actuator is required to have switches. M9116-AGx-2 actuators are not designed for tandem operation.

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ORDERING INFORMATION — ELECTRIC NON-SPRNG RETURN						
VG2x31 Valves with VA-3100-xGx Series Non-Spring Return Actuators						
				Non-Spring Return		
				On/Off Floating without Switches	On/Off Floating with Two Switches	Proportional with Two Switches
Valve	Size	Cv	Closeoff psig	VA-3100-AGA	VA-3100-AGC	VA-3100-HGC
Two-Way Push-Down-To-Close						
VG2231TM	2-1/2	51	115	VG2231TM+300AGA	VG2231TM+300AGC	VG2231TM+300HGC
VG2231UM	3	83	79	VG2231UM+301AGA	VG2231UM+301AGC	VG2231UM+301HGC
VG2231VM	4	150	45	VG2231VM+301AGA	VG2231VM+301AGC	VG2231VM+301HGC
VG2231WN	5	240	29	VG2231WN+302AGA	VG2231WN+302AGC	VG2231WN+302HGC
VG2231YN	6	350	20	VG2231YN+302AGA	VG2231YN+302AGC	VG2231YN+302HGC
Three-Way Mixing						
VG2831TM	2-1/2	54	69	VG2831TM+300AGA	VG2831TM+300AGC	VG2831TM+300HGC
VG2831UM	3	80	48	VG2831UM+301AGA	VG2831UM+301AGC	VG2831UM+301HGC
VG2831VM	4	157	27	VG2831VM+301AGA	VG2831VM+301AGC	VG2831VM+301HGC
VG2831WN	5	238	17	VG2831WN+302AGA	VG2831WN+302AGC	VG2831WN+302HGC
VG2831YN	6	347	12	VG2831YN+302AGA	VG2831YN+302AGC	VG2831YN+302HGC