

VG1000 Series Forged Brass Ball Valves

Product Bulletin

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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 Heating, Ventilating, and Air Conditioning (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, M9106, M9109, and M9100 Series Non-Spring Return and VA2202, M9206, and M9210 Series Spring Return Electric Actuators for on/off, floating, or proportional control. For sweat and press end connection valves supplied with an actuator, the actuator is not mounted to the valve to allow access to the end connections.

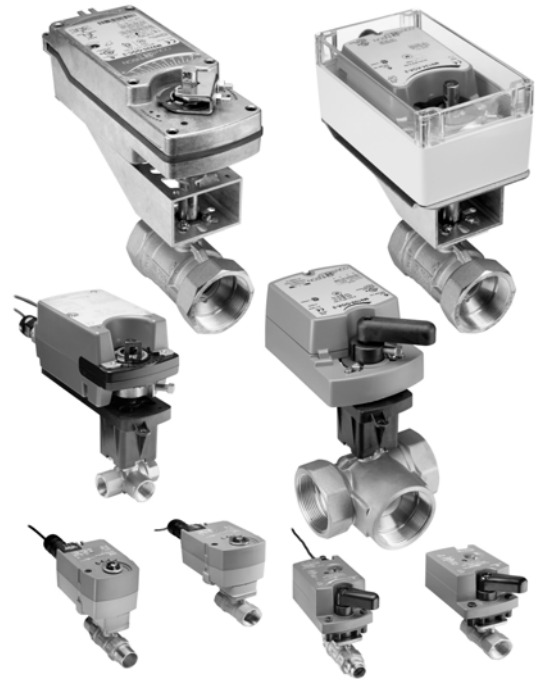


Figure 1: VG1000 Series Ball Valves Shown with Factory-Mounted M9000 Series Electric Actuators

Table 1: Features and Benefits (Part 1 of 2)

Features	Benefits
National Pipe Thread (NPT), Sweat, and Press End Connections	Provide the right valve for a broad range of applications, reduce installation time while reducing the need for adapters, and increase system reliability.
Forged Brass Body	Provides 580 psig static pressure rating.
Amodel® Flow Characterizing Disk	Maintains equal percentage flow characteristics for best temperature control, available in a wide variety of Cvs to cover a broad range of applications.
200 psi Closeoff Pressure Rating	Provides tight shutoff.
Chrome-Plated Brass Ball and Stem Assembly Standard	Handles both chilled and hot water applications with a fluid temperature range of 23 to 203°F (-5 to 95°C).
300 Series Stainless Steel Ball and Stem Assembly	Tolerates high temperature water or 15 psi saturated steam with fluid temperatures of -22 to 284°F (-30 to 140°C) or where a higher degree of corrosion protection is desired.
500:1 Rangeability	Provides accurate control under all load conditions.
Ethylene Propylene Diene Monomer (EPDM) Double O-Ring Stem Seal	Provides a leak-free seal; the packing has been tested and is leak-free after 200,000 cycles in iron-oxide contaminated water.

Table 1: Features and Benefits (Part 2 of 2)

Features	Benefits
Graphite-Reinforced Polytetrafluoroethylene (PTFE) Seats	Include 15% graphite-reinforced ball seals, providing better wear resistance.
Blowout-Proof Stem	Protects the user from the risk of injury.
Maintenance-Free Design	Performs without failure in excess of 200,000 full stroke cycles in iron-oxide contaminated water.
Wide Selection of Styles for a Variety of Applications	Offers various valve configurations including two- and three-way full port and reduced port models in chrome-plated brass and stainless steel trim.
Factory-Mounted VA9104, M9106, M9109, VA2202, M9206, or M9210 Series Electric Actuators	Reduce installation time, thus reducing overall installation cost.
M9000-520 Linkage Kit Available for Field Mounting to M9106, M9109, or M9206 Series Electric Actuators	Reduces installation time, thus reducing overall installation cost; and provides superior thermal isolation between the valve and actuator.
M9000-550 Linkage Kit Available for Field Mounting to M9104 Series Electric Actuators	Lowers both space requirements and total cost by providing high thermal isolation in a compact size.

Ordering Information

Table 2: Ordering Data¹

V	G	Valve Global													
1	2	1	Product		1 = Forged Brass Ball Valve										
		3	Family												
		2	Body Type and Flow Characteristic		2 = Two-Way, with Equal Percentage Flow Characteristics										
		4			8 = Three-Way Mixing, with Equal Percentage Flow Characteristics of In-line Port and Linear Flow Characteristics of Angle-Port										
		4	End Connection		4 = Threaded - NPT Taper										
		5			7 = Sweat (1/2 to 1 in. Sizes)										
					9 = Press (ProPress® Fitting Compatible, 1/2 to 1 in. Sizes) Press End Connections are designed to work with RIDGID® Pressing Tools.										
		1	Trim		1 = Chrome-Plated Brass Ball and Nickel-Plated Brass Stem										
		6			5 = Stainless Steel Ball and Stem, 300 Series										
		A	E	Size and Maximum Cv	Size	Control Disk	Control Port Cv (kv)	Bypass Port Cv (kv) (Three-Way Only)							
		7	8	(kv = Cv x 0.857)	AD = 1/2 in. (DN15)	Yes	1.2 (1.0)	0.7 (0.6)							
					AE = 1/2 in. (DN15)	Yes	1.9 (1.6)	1.2 (1.0)							
					AF = 1/2 in. (DN15)	Yes	2.9 (2.5)	1.9 (1.6)							
					AG = 1/2 in. (DN15)	Yes	4.7 (4.0)	2.9 (2.5)							
					AL = 1/2 in. (DN15)	Yes	7.4 (6.3)	4.7 (4.0)							
					AN = 1/2 in. (DN15) ²	No	11.7 (10.0)	5.8 (5.0)							
					BG = 3/4 in. (DN20)	Yes	4.7 (4.0)	2.9 (2.5)							
					BL = 3/4 in. (DN20)	Yes	7.4 (6.3)	4.7 (4.0)							
					BN = 3/4 in. (DN20) ²	No	11.7 (10.0)	5.8 (5.0)							
					CL = 1 in. (DN25)	Yes	7.4 (6.3)	4.7 (4.0)							
					CN = 1 in. (DN25)	Yes	11.7 (10.0)	7.4 (6.3)							
					CP = 1 in. (DN25) ²	No	18.7 (16.0)	9.4 (8.0)							
					DN = 1-1/4 in. (DN32)	Yes	11.7 (10.0)	7.4 (6.3)							
					DP = 1-1/4 in. (DN32)	Yes	18.7 (16.0)	11.7 (10.0)							
					DR = 1-1/4 in. (DN32) ²	No	29.2 (25.0)	14.6 (12.5)							
					EP = 1-1/2 in. (DN40)	Yes	18.7 (16.0)	11.7 (10.0)							
					ER = 1-1/2 in. (DN40)	Yes	29.2 (25.0)	18.7 (16.0)							
					ES = 1-1/2 in. (DN40) ²	No	46.8 (40.0)	23.4 (20.0)							
					FR = 2 in. (DN50)	Yes	29.2 (25.0)	18.7 (16.0)							
					FS = 2 in. (DN50)	Yes	46.8 (40.0)	29.2 (25.0)							
					FT = 2 in. (DN50) ²	No	73.7 (63.0)	36.8 (31.5)							
		+	Actuator		+ = Factory-Mounted Actuator										
		9	Mounting		(Leave Fields 9 through 15 blank for valve without factory-mounted actuator.)										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	= Field
V	G	1	2	4	1	A	E	+							
Valve								+	Actuator						

Example: Forged brass ball valve, two-way, threaded (NPT), brass trim, equal %, 1/2 in. (DN15) 1.9 Cv.

1. Before retrofitting older valves with VA9104, M9104, VA2202, or M2202 actuators, be sure that the valves have a tapped hole in the center of the valve stem and no threads in the flange holes. These direct mount actuators do not fit older valves designed without a tapped center stem hole or with threaded flange mounting holes.
2. Indicates model without characterizing disk.

See Table 3 to determine the correct factory-mounted actuator, where needed.

Table 3: Ordering Data – Adding a Factory-Mounted Electric Actuator¹

V	G	1	2	4	1	A	E	+						
									9			Actuator	+ = Factory-Mounted Actuator	
									9			Mounting	(Leave Fields 9 through 15 blank for valve without factory-mounted actuator.)	
									9			Actuator	9 = Direct Acting M9000 or VA9000 Series Actuator	
									10			Direction	2 = Direct Acting VA2000 Series Actuator	
									0	6			Actuator Size ²	06 = M9106-xGx-2 (1/2, 3/4, 1, 1-1/4, and 1-1/2 in. NPT Valves)
									11	12				09 = M9109-xGx-2 (2 in. Valves Only)
													36 = M9206-xGx-2x Spring Opens (1/2, 3/4, 1, 1-1/4, and 1-1/2 in. NPT Valves)	
													56 = M9206-xGx-2x Spring Closes (1/2, 3/4, 1, 1-1/4, and 1-1/2 in. NPT Valves)	
													2J = M9210-xGx-2 Spring Opens (All 2 in. Valves)	
													4J = M9210-xGx-2 Spring Closes (All 2 in. Valves)	
													2T = VA2202-xxx-2 Spring Opens (All 1/2, 3/4, and 1 in. Valves)	
													4T = VA2202-xxx-2 Spring Closes (All 1/2, 3/4, and 1 in. Valves)	
													A4 = VA9104-xGA-2S, Non-Spring Return, 48 in. Cable (All 1/2, 3/4, and 1 in. Valves)	
													T4 = VA9104-xGA-3S, Non-Spring Return, Screw Terminals (All 1/2, 3/4, and 1 in. Valves)	
									G			Control Type	A = Floating, AC/DC 24 V Input (VA9104, VA2202, M9106, M9109, M9206, M9116, M9210, and M9124)	
									13				B = On/Off (VA2202, M9206, and M9210 Only)	
													G = Prop. DC 0 (2) to 10 V or 0 (4) to 20 mA (M9106, M9109, M9116, M9124, M9206, M9210, and VA9104); DC 2 to 10 V or 4 to 20 mA (VA2202)	
													I = On/Off Floating with Timeout (VA9104, M9106, and M9109)	
									G			Supply	A = AC 120 V (VA2202, M9206BAx, and M9210BAx Only) (VA2202 Is Rated AC 100 to 240 V, 50/60 Hz)	
									14			Voltage	G = 24 VAC (All Models)	
									C			Feedback	A = No Auxiliary Switch (All models); Feedback: DC 0 (2) to 10 V (M9xxx-GGA and VA9104-GGA-2S Models Only)	
									15				B = One Auxiliary Switch, No Feedback (Factory Assembled with Sweat and Press End Connection Not Available)	
													C = Two Auxiliary Switches (M9106, M9206-AGC, M9206-GGC, M9210 Models Only); Feedback: DC 0 (2) to 10 V (M9xxx-GGC Models Only)	

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 = Field

V	G	1	2	4	1	E	+	9	0	6	G	G	C	
Valve								+	Actuator					

Example: Forged brass ball valve, two-way, threaded (NPT), brass trim, equal %, 1/2 in. (DN15) 1.9 Cv, factory-mounted direct acting M9106-GGC-2 Actuator, non-spring return, proportional control, AC 24 V supply (with feedback), and two-way auxiliary switches

1. Before retrofitting older valves with VA9104, M9104, VA2202, or M2202 actuators be sure that the valves have a tapped hole in the center of the valve stem and no threads in the flange holes. These direct mount actuators do not fit older valves designed without a tapped center stem hole or with threaded flange mounting holes.
2. Refer to actuator product bulletin for detailed information.

Table 4: Two-Way Plated Brass Trim Ball Valves, Electric Actuators without Switches, Spring Return Open

Closeoff: 200 psig				AC 24 V			AC 120 V
End Connection	Valve	Size, in.	Cv	Floating	DC 0 to 10 V Proportional	On/Off	On/Off
				VA2202-AGA-2 M9206-AGA-2S M9210-AGA-3	VA2202-GGA-2 M9206-GGA-2S M9210-GGA-3	VA2202-BGA-2 M9206-BGA-2S M9210-BGA-3	VA2202-BAA-2 M9206-BAA-2S M9210-BAA-3
NPT	VG1241AD	1/2	1.2 ¹	VG1241AD+22TAGA	VG1241AD+22TGGA	VG1241AD+22TBGA	VG1241AD+22TBAA
	VG1241AE		1.9 ¹	VG1241AE+22TAGA	VG1241AE+22TGGA	VG1241AE+22TBGA	VG1241AE+22TBAA
	VG1241AF		2.9 ¹	VG1241AF+22TAGA	VG1241AF+22TGGA	VG1241AF+22TBGA	VG1241AF+22TBAA
	VG1241AG		4.7 ¹	VG1241AG+22TAGA	VG1241AG+22TGGA	VG1241AG+22TBGA	VG1241AG+22TBAA
	VG1241AL		7.4 ¹	VG1241AL+22TAGA	VG1241AL+22TGGA	VG1241AL+22TBGA	VG1241AL+22TBAA
	VG1241AN		11.7	VG1241AN+22TAGA	VG1241AN+22TGGA	VG1241AN+22TBGA	VG1241AN+22TBAA
	VG1241BG	3/4	4.7 ¹	VG1241BG+22TAGA	VG1241BG+22TGGA	VG1241BG+22TBGA	VG1241BG+22TBAA
	VG1241BL		7.4 ¹	VG1241BL+22TAGA	VG1241BL+22TGGA	VG1241BL+22TBGA	VG1241BL+22TBAA
	VG1241BN		11.7	VG1241BN+22TAGA	VG1241BN+22TGGA	VG1241BN+22TBGA	VG1241BN+22TBAA
	VG1241CL	1	7.4 ¹	VG1241CL+22TAGA	VG1241CL+22TGGA	VG1241CL+22TBGA	VG1241CL+22TBAA
	VG1241CN		11.7 ¹	VG1241CN+22TAGA	VG1241CN+22TGGA	VG1241CN+22TBGA	VG1241CN+22TBAA
	VG1241CP		18.7	VG1241CP+22TAGA	VG1241CP+22TGGA	VG1241CP+22TBGA	VG1241CP+22TBAA
	VG1241DN	1-1/4	11.7 ¹	VG1241DN+936AGA	VG1241DN+936GGA	VG1241DN+936BGA	VG1241DN+936BAA
	VG1241DP		18.7 ¹	VG1241DP+936AGA	VG1241DP+936GGA	VG1241DP+936BGA	VG1241DP+936BAA
	VG1241DR		29.2	VG1241DR+936AGA	VG1241DR+936GGA	VG1241DR+936BGA	VG1241DR+936BAA
	VG1241EP	1-1/2	18.7 ¹	VG1241EP+936AGA	VG1241EP+936GGA	VG1241EP+936BGA	VG1241EP+936BAA
	VG1241ER		29.2 ¹	VG1241ER+936AGA	VG1241ER+936GGA	VG1241ER+936BGA	VG1241ER+936BAA
	VG1241ES		46.8	VG1241ES+936AGA	VG1241ES+936GGA	VG1241ES+936BGA	VG1241ES+936BAA
	VG1241FR	2	29.2 ¹	VG1241FR+92JAGA	VG1241FR+92JGGA	VG1241FR+92JBGA	VG1241FR+92JBAA
	VG1241FS		46.8 ¹	VG1241FS+92JAGA	VG1241FS+92JGGA	VG1241FS+92JBGA	VG1241FS+92JBAA
VG1241FT	73.7		VG1241FT+92JAGA	VG1241FT+92JGGA	VG1241FT+92JBGA	VG1241FT+92JBAA	
Sweat	VG1271AD	1/2	1.2 ¹	VG1271AD+22TAGA	VG1271AD+22TGGA	VG1271AD+22TBGA	VG1271AD+22TBAA
	VG1271AE		1.9 ¹	VG1271AE+22TAGA	VG1271AE+22TGGA	VG1271AE+22TBGA	VG1271AE+22TBAA
	VG1271AF		2.9 ¹	VG1271AF+22TAGA	VG1271AF+22TGGA	VG1271AF+22TBGA	VG1271AF+22TBAA
	VG1271AG		4.7 ¹	VG1271AG+22TAGA	VG1271AG+22TGGA	VG1271AG+22TBGA	VG1271AG+22TBAA
	VG1271AL		7.4 ¹	VG1271AL+22TAGA	VG1271AL+22TGGA	VG1271AL+22TBGA	VG1271AL+22TBAA
	VG1271AN		11.7	VG1271AN+22TAGA	VG1271AN+22TGGA	VG1271AN+22TBGA	VG1271AN+22TBAA
	VG1271BG	3/4	4.7 ¹	VG1271BG+22TAGA	VG1271BG+22TGGA	VG1271BG+22TBGA	VG1271BG+22TBAA
	VG1271BL		7.4 ¹	VG1271BL+22TAGA	VG1271BL+22TGGA	VG1271BL+22TBGA	VG1271BL+22TBAA
	VG1271BN		11.7	VG1271BN+22TAGA	VG1271BN+22TGGA	VG1271BN+22TBGA	VG1271BN+22TBAA
	VG1271CL	1	7.4 ¹	VG1271CL+22TAGA	VG1271CL+22TGGA	VG1271CL+22TBGA	VG1271CL+22TBAA
	VG1271CN		11.7 ¹	VG1271CN+22TAGA	VG1271CN+22TGGA	VG1271CN+22TBGA	VG1271CN+22TBAA
	VG1271CP		18.7	VG1271CP+22TAGA	VG1271CP+22TGGA	VG1271CP+22TBGA	VG1271CP+22TBAA
	Press	VG1291AD	1/2	1.2 ¹	VG1291AD+22TAGA	VG1291AD+22TGGA	VG1291AD+22TBGA
VG1291AE		1.9 ¹		VG1291AE+22TAGA	VG1291AE+22TGGA	VG1291AE+22TBGA	VG1291AE+22TBAA
VG1291AF		2.9 ¹		VG1291AF+22TAGA	VG1291AF+22TGGA	VG1291AF+22TBGA	VG1291AF+22TBAA
VG1291AG		4.7 ¹		VG1291AG+22TAGA	VG1291AG+22TGGA	VG1291AG+22TBGA	VG1291AG+22TBAA
VG1291AL		7.4 ¹		VG1291AL+22TAGA	VG1291AL+22TGGA	VG1291AL+22TBGA	VG1291AL+22TBAA
VG1291AN		11.7		VG1291AN+22TAGA	VG1291AN+22TGGA	VG1291AN+22TBGA	VG1291AN+22TBAA
VG1291BG		3/4	4.7 ¹	VG1291BG+22TAGA	VG1291BG+22TGGA	VG1291BG+22TBGA	VG1291BG+22TBAA
VG1291BL			7.4 ¹	VG1291BL+22TAGA	VG1291BL+22TGGA	VG1291BL+22TBGA	VG1291BL+22TBAA
VG1291BN			11.7	VG1291BN+22TAGA	VG1291BN+22TGGA	VG1291BN+22TBGA	VG1291BN+22TBAA
VG1291CL		1	7.4 ¹	VG1291CL+22TAGA	VG1291CL+22TGGA	VG1291CL+22TBGA	VG1291CL+22TBAA
VG1291CN			11.7 ¹	VG1291CN+22TAGA	VG1291CN+22TGGA	VG1291CN+22TBGA	VG1291CN+22TBAA
VG1291CP			18.7	VG1291CP+22TAGA	VG1291CP+22TGGA	VG1291CP+22TBGA	VG1291CP+22TBAA

1. Cv has a characterizing disk.

Table 5: Two-Way Plated Brass Trim Ball Valves, Electric Actuators without Switches, Spring Return Closed

Closeoff: 200 psig				AC 24 V			AC 120 V
End Connection	Valve	Size, in.	Cv	Floating	DC 0 to 10 V Prop.	On/Off	On/Off
				VA2202-AGA-2 M9206-AGA-2S M9210-AGA-3	VA2202-GGA-2 M9206-GGA-2S M9210-GGA-3	VA2202-BGA-2 M9206-BGA-2S M9210-BGA-3	VA2202-BAA-2 M9206-BAA-2S M9210-BAA-3
NPT	VG1241AD	1/2	1.2 ¹	VG1241AD+24TAGA	VG1241AD+24TGGA	VG1241AD+24TBGA	VG1241AD+24TBAA
	VG1241AE		1.9 ¹	VG1241AE+24TAGA	VG1241AE+24TGGA	VG1241AE+24TBGA	VG1241AE+24TBAA
	VG1241AF		2.9 ¹	VG1241AF+24TAGA	VG1241AF+24TGGA	VG1241AF+24TBGA	VG1241AF+24TBAA
	VG1241AG		4.7 ¹	VG1241AG+24TAGA	VG1241AG+24TGGA	VG1241AG+24TBGA	VG1241AG+24TBAA
	VG1241AL		7.4 ¹	VG1241AL+24TAGA	VG1241AL+24TGGA	VG1241AL+24TBGA	VG1241AL+24TBAA
	VG1241AN		11.7	VG1241AN+24TAGA	VG1241AN+24TGGA	VG1241AN+24TBGA	VG1241AN+24TBAA
	VG1241BG	3/4	4.7 ¹	VG1241BG+24TAGA	VG1241BG+24TGGA	VG1241BG+24TBGA	VG1241BG+24TBAA
	VG1241BL		7.4 ¹	VG1241BL+24TAGA	VG1241BL+24TGGA	VG1241BL+24TBGA	VG1241BL+24TBAA
	VG1241BN		11.7	VG1241BN+24TAGA	VG1241BN+24TGGA	VG1241BN+24TBGA	VG1241BN+24TBAA
	VG1241CL	1	7.4 ¹	VG1241CL+24TAGA	VG1241CL+24TGGA	VG1241CL+24TBGA	VG1241CL+24TBAA
	VG1241CN		11.7 ¹	VG1241CN+24TAGA	VG1241CN+24TGGA	VG1241CN+24TBGA	VG1241CN+24TBAA
	VG1241CP		18.7	VG1241CP+24TAGA	VG1241CP+24TGGA	VG1241CP+24TBGA	VG1241CP+24TBAA
	VG1241DN	1-1/4	11.7 ¹	VG1241DN+956AGA	VG1241DN+956GGA	VG1241DN+956BGA	VG1241DN+956BAA
	VG1241DP		18.7 ¹	VG1241DP+956AGA	VG1241DP+956GGA	VG1241DP+956BGA	VG1241DP+956BAA
	VG1241DR		29.2	VG1241DR+956AGA	VG1241DR+956GGA	VG1241DR+956BGA	VG1241DR+956BAA
	VG1241EP	1-1/2	18.7 ¹	VG1241EP+956AGA	VG1241EP+956GGA	VG1241EP+956BGA	VG1241EP+956BAA
	VG1241ER		29.2 ¹	VG1241ER+956AGA	VG1241ER+956GGA	VG1241ER+956BGA	VG1241ER+956BAA
	VG1241ES		46.8	VG1241ES+956AGA	VG1241ES+956GGA	VG1241ES+956BGA	VG1241ES+956BAA
	VG1241FR	2	29.2 ¹	VG1241FR+94JAGA	VG1241FR+94JGGA	VG1241FR+94JBGA	VG1241FR+94JBAA
	VG1241FS		46.8 ¹	VG1241FS+94JAGA	VG1241FS+94JGGA	VG1241FS+94JBGA	VG1241FS+94JBAA
VG1241FT	73.7		VG1241FT+94JAGA	VG1241FT+94JGGA	VG1241FT+94JBGA	VG1241FT+94JBAA	
Sweat	VG1271AD	1/2	1.2 ¹	VG1271AD+24TAGA	VG1271AD+24TGGA	VG1271AD+24TBGA	VG1271AD+24TBAA
	VG1271AE		1.9 ¹	VG1271AE+24TAGA	VG1271AE+24TGGA	VG1271AE+24TBGA	VG1271AE+24TBAA
	VG1271AF		2.9 ¹	VG1271AF+24TAGA	VG1271AF+24TGGA	VG1271AF+24TBGA	VG1271AF+24TBAA
	VG1271AG		4.7 ¹	VG1271AG+24TAGA	VG1271AG+24TGGA	VG1271AG+24TBGA	VG1271AG+24TBAA
	VG1271AL		7.4 ¹	VG1271AL+24TAGA	VG1271AL+24TGGA	VG1271AL+24TBGA	VG1271AL+24TBAA
	VG1271AN		11.7	VG1271AN+24TAGA	VG1271AN+24TGGA	VG1271AN+24TBGA	VG1271AN+24TBAA
	VG1271BG	3/4	4.7 ¹	VG1271BG+24TAGA	VG1271BG+24TGGA	VG1271BG+24TBGA	VG1271BG+24TBAA
	VG1271BL		7.4 ¹	VG1271BL+24TAGA	VG1271BL+24TGGA	VG1271BL+24TBGA	VG1271BL+24TBAA
	VG1271BN		11.7	VG1271BN+24TAGA	VG1271BN+24TGGA	VG1271BN+24TBGA	VG1271BN+24TBAA
	VG1271CL	1	7.4 ¹	VG1271CL+24TAGA	VG1271CL+24TGGA	VG1271CL+24TBGA	VG1271CL+24TBAA
	VG1271CN		11.7 ¹	VG1271CN+24TAGA	VG1271CN+24TGGA	VG1271CN+24TBGA	VG1271CN+24TBAA
	VG1271CP		18.7	VG1271CP+24TAGA	VG1271CP+24TGGA	VG1271CP+24TBGA	VG1271CP+24TBAA
	Press	VG1291AD	1/2	1.2 ¹	VG1291AD+24TAGA	VG1291AD+24TGGA	VG1291AD+24TBGA
VG1291AE		1.9 ¹		VG1291AE+24TAGA	VG1291AE+24TGGA	VG1291AE+24TBGA	VG1291AE+24TBAA
VG1291AF		2.9 ¹		VG1291AF+24TAGA	VG1291AF+24TGGA	VG1291AF+24TBGA	VG1291AF+24TBAA
VG1291AG		4.7 ¹		VG1291AG+24TAGA	VG1291AG+24TGGA	VG1291AG+24TBGA	VG1291AG+24TBAA
VG1291AL		7.4 ¹		VG1291AL+24TAGA	VG1291AL+24TGGA	VG1291AL+24TBGA	VG1291AL+24TBAA
VG1291AN		11.7		VG1291AN+24TAGA	VG1291AN+24TGGA	VG1291AN+24TBGA	VG1291AN+24TBAA
VG1291BG		3/4	4.7 ¹	VG1291BG+24TAGA	VG1291BG+24TGGA	VG1291BG+24TBGA	VG1291BG+24TBAA
VG1291BL			7.4 ¹	VG1291BL+24TAGA	VG1291BL+24TGGA	VG1291BL+24TBGA	VG1291BL+24TBAA
VG1291BN			11.7	VG1291BN+24TAGA	VG1291BN+24TGGA	VG1291BN+24TBGA	VG1291BN+24TBAA
VG1291CL		1	7.4 ¹	VG1291CL+24TAGA	VG1291CL+24TGGA	VG1291CL+24TBGA	VG1291CL+24TBAA
VG1291CN			11.7 ¹	VG1291CN+24TAGA	VG1291CN+24TGGA	VG1291CN+24TBGA	VG1291CN+24TBAA
VG1291CP			18.7	VG1291CP+24TAGA	VG1291CP+24TGGA	VG1291CP+24TBGA	VG1291CP+24TBAA

1. Cv has a characterizing disk.

Table 6: Two-Way Plated Brass Trim Ball Valves, Electric Actuators with Switches

Closeoff: 200 psig				AC 24 V			AC 120 V
End Connection	Valve	Size, in.	Cv	Floating	DC 0 to 10 V Proportional	On/Off	On/Off
				VA2202-AGB-2 M9206-AGC-2 M9210-AGC-3	VA2202-GGB-2 M9206-GGC-2 M9210-GGC-3	VA2202-BGB-2 M9206-BGB-2S M9210-BGC-3	VA2202-BAB-2 M9206-BAB-2S M9210-BAC-3
Spring Return Open – Valve Normally Open							
NPT	VG1241AD	1/2	1.2 ¹	VG1241AD+22TAGB	VG1241AD+22TGGB	VG1241AD+22TBGB	VG1241AD+22TBAB
	VG1241AE		1.9 ¹	VG1241AE+22TAGB	VG1241AE+22TGGB	VG1241AE+22TBGB	VG1241AE+22TBAB
	VG1241AF		2.9 ¹	VG1241AF+22TAGB	VG1241AF+22TGGB	VG1241AF+22TBGB	VG1241AF+22TBAB
	VG1241AG		4.7 ¹	VG1241AG+22TAGB	VG1241AG+22TGGB	VG1241AG+22TBGB	VG1241AG+22TBAB
	VG1241AL		7.4 ¹	VG1241AL+22TAGB	VG1241AL+22TGGB	VG1241AL+22TBGB	VG1241AL+22TBAB
	VG1241AN		11.7	VG1241AN+22TAGB	VG1241AN+22TGGB	VG1241AN+22TBGB	VG1241AN+22TBAB
	VG1241BG	3/4	4.7 ¹	VG1241BG+22TAGB	VG1241BG+22TGGB	VG1241BG+22TBGB	VG1241BG+22TBAB
	VG1241BL		7.4 ¹	VG1241BL+22TAGB	VG1241BL+22TGGB	VG1241BL+22TBGB	VG1241BL+22TBAB
	VG1241BN		11.7	VG1241BN+22TAGB	VG1241BN+22TGGB	VG1241BN+22TBGB	VG1241BN+22TBAB
	VG1241CL	1	7.4 ¹	VG1241CL+22TAGB	VG1241CL+22TGGB	VG1241CL+22TBGB	VG1241CL+22TBAB
	VG1241CN		11.7 ¹	VG1241CN+22TAGB	VG1241CN+22TGGB	VG1241CN+22TBGB	VG1241CN+22TBAB
	VG1241CP		18.7	VG1241CP+22TAGB	VG1241CP+22TGGB	VG1241CP+22TBGB	VG1241CP+22TBAB
	VG1241DN	1-1/4	11.7 ¹	VG1241DN+936AGC	VG1241DN+936GGC	VG1241DN+936BGB	VG1241DN+936BAB
	VG1241DP		18.7 ¹	VG1241DP+936AGC	VG1241DP+936GGC	VG1241DP+936BGB	VG1241DP+936BAB
	VG1241DR		29.2	VG1241DR+936AGC	VG1241DR+936GGC	VG1241DR+936BGB	VG1241DR+936BAB
	VG1241EP	1-1/2	18.7 ¹	VG1241EP+936AGC	VG1241EP+936GGC	VG1241EP+936BGB	VG1241EP+936BAB
	VG1241ER		29.2 ¹	VG1241ER+936AGC	VG1241ER+936GGC	VG1241ER+936BGB	VG1241ER+936BAB
	VG1241ES		46.8	VG1241ES+936AGC	VG1241ES+936GGC	VG1241ES+936BGB	VG1241ES+936BAB
	VG1241FR	2	29.2 ¹	VG1241FR+92JAGC	VG1241FR+92JGGC	VG1241FR+92JBGC	VG1241FR+92JBAC
	VG1241FS		46.8 ¹	VG1241FS+92JAGC	VG1241FS+92JGGC	VG1241FS+92JBGC	VG1241FS+92JBAC
VG1241FT	73.7		VG1241FT+92JAGC	VG1241FT+92JGGC	VG1241FT+92JBGC	VG1241FT+92JBAC	
Spring Return Valve Closed – Valve Normally Closed							
NPT	VG1241AD	1/2	1.2 ¹	VG1241AD+24TAGB	VG1241AD+24TGGB	VG1241AD+24TBGB	VG1241AD+24TBAB
	VG1241AE		1.9 ¹	VG1241AE+24TAGB	VG1241AE+24TGGB	VG1241AE+24TBGB	VG1241AE+24TBAB
	VG1241AF		2.9 ¹	VG1241AF+24TAGB	VG1241AF+24TGGB	VG1241AF+24TBGB	VG1241AF+24TBAB
	VG1241AG		4.7 ¹	VG1241AG+24TAGB	VG1241AG+24TGGB	VG1241AG+24TBGB	VG1241AG+24TBAB
	VG1241AL		7.4 ¹	VG1241AL+24TAGB	VG1241AL+24TGGB	VG1241AL+24TBGB	VG1241AL+24TBAB
	VG1241AN		11.7	VG1241AN+24TAGB	VG1241AN+24TGGB	VG1241AN+24TBGB	VG1241AN+24TBAB
	VG1241BG	3/4	4.7 ¹	VG1241BG+24TAGB	VG1241BG+24TGGB	VG1241BG+24TBGB	VG1241BG+24TBAB
	VG1241BL		7.4 ¹	VG1241BL+24TAGB	VG1241BL+24TGGB	VG1241BL+24TBGB	VG1241BL+24TBAB
	VG1241BN		11.7	VG1241BN+24TAGB	VG1241BN+24TGGB	VG1241BN+24TBGB	VG1241BN+24TBAB
	VG1241CL	1	7.4 ¹	VG1241CL+24TAGB	VG1241CL+24TGGB	VG1241CL+24TBGB	VG1241CL+24TBAB
	VG1241CN		11.7 ¹	VG1241CN+24TAGB	VG1241CN+24TGGB	VG1241CN+24TBGB	VG1241CN+24TBAB
	VG1241CP		18.7	VG1241CP+24TAGB	VG1241CP+24TGGB	VG1241CP+24TBGB	VG1241CP+24TBAB
	VG1241DN	1-1/4	11.7 ¹	VG1241DN+956AGC	VG1241DN+956GGC	VG1241DN+956BGB	VG1241DN+956BAB
	VG1241DP		18.7 ¹	VG1241DP+956AGC	VG1241DP+956GGC	VG1241DP+956BGB	VG1241DP+956BAB
	VG1241DR		29.2	VG1241DR+956AGC	VG1241DR+956GGC	VG1241DR+956BGB	VG1241DR+956BAB
	VG1241EP	1-1/2	18.7 ¹	VG1241EP+956AGC	VG1241EP+956GGC	VG1241EP+956BGB	VG1241EP+956BAB
	VG1241ER		29.2 ¹	VG1241ER+956AGC	VG1241ER+956GGC	VG1241ER+956BGB	VG1241ER+956BAB
	VG1241ES		46.8	VG1241ES+956AGC	VG1241ES+956GGC	VG1241ES+956BGB	VG1241ES+956BAB
	VG1241FR	2	29.2 ¹	VG1241FR+94JAGC	VG1241FR+94JGGC	VG1241FR+94JBGC	VG1241FR+94JBAC
	VG1241FS		46.8 ¹	VG1241FS+94JAGC	VG1241FS+94JGGC	VG1241FS+94JBGC	VG1241FS+94JBAC
VG1241FT	73.7		VG1241FT+94JAGC	VG1241FT+94JGGC	VG1241FT+94JBGC	VG1241FT+94JBAC	

1. Cv has a characterizing disk.

Table 7: Two-Way Plated Brass Trim Ball Valves, Non-Spring Return Electric Actuators without Switches

Closeoff: 200 psig				AC 24 V			
End Connection	Valve	Size, in.	Cv	On/Off (Floating) without Timeout ¹	On/Off (Floating) with Timeout	DC 0 to 10 V Proportional	
				VA9104-AGA-xS M9106-AGx-2 M9109-AGx-2	VA9104-IGA-xS M9106-IGx-2 M9109-IGx-2	VA9104-GGA-xS M9106-GGx-2 M9109-GGx-2	
NPT	VG1241AD	1/2	1.2 ²	VG1241AD+9T4AGA ³	VG1241AD+9T4IGA ³	VG1241AD+9T4GGA ³	
	VG1241AE		1.9 ²	VG1241AE+9T4AGA ³	VG1241AE+9T4IGA ³	VG1241AE+9T4GGA ³	
	VG1241AF		2.9 ²	VG1241AF+9T4AGA ³	VG1241AF+9T4IGA ³	VG1241AF+9T4GGA ³	
	VG1241AG		4.7 ²	VG1241AG+9T4AGA ³	VG1241AG+9T4IGA ³	VG1241AG+9T4GGA ³	
	VG1241AL		7.4 ²	VG1241AL+9T4AGA ³	VG1241AL+9T4IGA ³	VG1241AL+9T4GGA ³	
	VG1241AN		11.7	VG1241AN+9T4AGA ³	VG1241AN+9T4IGA ³	VG1241AN+9T4GGA ³	
	VG1241BG	3/4	4.7 ²	VG1241BG+9T4AGA ³	VG1241BG+9T4IGA ³	VG1241BG+9T4GGA ³	
	VG1241BL		7.4 ²	VG1241BL+9T4AGA ³	VG1241BL+9T4IGA ³	VG1241BL+9T4GGA ³	
	VG1241BN		11.7	VG1241BN+9T4AGA ³	VG1241BN+9T4IGA ³	VG1241BN+9T4GGA ³	
	VG1241CL	1	7.4 ²	VG1241CL+9T4AGA ³	VG1241CL+9T4IGA ³	VG1241CL+9T4GGA ³	
	VG1241CN		11.7 ²	VG1241CN+9T4AGA ³	VG1241CN+9T4IGA ³	VG1241CN+9T4GGA ³	
	VG1241CP		18.7	VG1241CP+9T4AGA ³	VG1241CP+9T4IGA ³	VG1241CP+9T4GGA ³	
	VG1241DN	1-1/4	11.7 ²	VG1241DN+906AGA	VG1241DN+906IGA	VG1241DN+906GGA	
	VG1241DP		18.7 ²	VG1241DP+906AGA	VG1241DP+906IGA	VG1241DP+906GGA	
	VG1241DR		29.2	VG1241DR+906AGA	VG1241DR+906IGA	VG1241DR+906GGA	
	VG1241EP	1-1/2	18.7 ²	VG1241EP+906AGA	VG1241EP+906IGA	VG1241EP+906GGA	
	VG1241ER		29.2 ²	VG1241ER+906AGA	VG1241ER+906IGA	VG1241ER+906GGA	
	VG1241ES		46.8	VG1241ES+906AGA	VG1241ES+906IGA	VG1241ES+906GGA	
	VG1241FR	2	29.2 ²	VG1241FR+909AGA	—	VG1241FR+909GGA	
	VG1241FS		46.8 ²	VG1241FS+909AGA	—	VG1241FS+909GGA	
VG1241FT	73.7		VG1241FT+909AGA	—	VG1241FT+909GGA		
Sweat	VG1271AD	1/2	1.2 ²	VG1271AD+9T4AGA ³	VG1271AD+9T4IGA ³	VG1271AD+9T4GGA ³	
	VG1271AE		1.9 ²	VG1271AE+9T4AGA ³	VG1271AE+9T4IGA ³	VG1271AE+9T4GGA ³	
	VG1271AF		2.9 ²	VG1271AF+9T4AGA ³	VG1271AF+9T4IGA ³	VG1271AF+9T4GGA ³	
	VG1271AG		4.7 ²	VG1271AG+9T4AGA ³	VG1271AG+9T4IGA ³	VG1271AG+9T4GGA ³	
	VG1271AL		7.4 ²	VG1271AL+9T4AGA ³	VG1271AL+9T4IGA ³	VG1271AL+9T4GGA ³	
	VG1271AN		11.7 ²	VG1271AN+9T4AGA ³	VG1271AN+9T4IGA ³	VG1271AN+9T4GGA ³	
	VG1271BG	3/4	4.7 ²	VG1271BG+9T4AGA ³	VG1271BG+9T4IGA ³	VG1271BG+9T4GGA ³	
	VG1271BL		7.4 ²	VG1271BL+9T4AGA ³	VG1271BL+9T4IGA ³	VG1271BL+9T4GGA ³	
	VG1271BN		11.7	VG1271BN+9T4AGA ³	VG1271BN+9T4IGA ³	VG1271BN+9T4GGA ³	
	VG1271CL	1	7.4 ²	VG1271CL+9T4AGA ³	VG1271CL+9T4IGA ³	VG1271CL+9T4GGA ³	
	VG1271CN		11.7 ²	VG1271CN+9T4AGA ³	VG1271CN+9T4IGA ³	VG1271CN+9T4GGA ³	
	VG1271CP		18.7	VG1271CP+9T4AGA ³	VG1271CP+9T4IGA ³	VG1271CP+9T4GGA ³	
	Press	VG1291AD	1/2	1.2 ²	VG1291AD+9T4AGA ³	VG1291AD+9T4IGA ³	VG1291AD+9T4GGA ³
		VG1291AE		1.9 ²	VG1291AE+9T4AGA ³	VG1291AE+9T4IGA ³	VG1291AE+9T4GGA ³
VG1291AF		2.9 ²		VG1291AF+9T4AGA ³	VG1291AF+9T4IGA ³	VG1291AF+9T4GGA ³	
VG1291AG		4.7 ²		VG1291AG+9T4AGA ³	VG1291AG+9T4IGA ³	VG1291AG+9T4GGA ³	
VG1291AL		7.4 ²		VG1291AL+9T4AGA ³	VG1291AL+9T4IGA ³	VG1291AL+9T4GGA ³	
VG1291AN		11.7 ²		VG1291AN+9T4AGA ³	VG1291AN+9T4IGA ³	VG1291AN+9T4GGA ³	
VG1291BG		3/4	4.7 ²	VG1291BG+9T4AGA ³	VG1291BG+9T4IGA ³	VG1291BG+9T4GGA ³	
VG1291BL			7.4 ²	VG1291BL+9T4AGA ³	VG1291BL+9T4IGA ³	VG1291BL+9T4GGA ³	
VG1291BN			11.7	VG1291BN+9T4AGA ³	VG1291BN+9T4IGA ³	VG1291BN+9T4GGA ³	
VG1291CL		1	7.4 ²	VG1291CL+9T4AGA ³	VG1291CL+9T4IGA ³	VG1291CL+9T4GGA ³	
VG1291CN			11.7 ²	VG1291CN+9T4AGA ³	VG1291CN+9T4IGA ³	VG1291CN+9T4GGA ³	
VG1291CP			18.7	VG1291CP+9T4AGA ³	VG1291CP+9T4IGA ³	VG1291CP+9T4GGA ³	

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. Cv has a characterizing disk.
3. Code numbers shown are for a VA9104-xGA-3S actuator with M3 screw terminals. To specify a 48-in. plenum-rated cable, change the 9T4 to 9A4 in the code number for a VA9104-xGA-2S actuator. Example: VG1241AD+9T4AGA becomes VG1241AD+9A4AGA.

Table 8: Two-Way Plated Brass Trim Ball Valves, Electric Actuators with Switches, Non-Spring Return

Closeoff: 200 psig				AC 24 V		
End Connection	Valve	Size, in.	Cv	On/Off (Floating) without Timeout ¹	On/Off (Floating) with Timeout	DC 0 to 10 V Proportional
				M9106-AGC-2 M9109-AGC-2	M9106-IGC-2	M9106-GGC-2 M9109-GGC-2
NPT	VG1241AD	1/2	1.2 ²	VG1241AD+906AGC	VG1241AD+906IGC	VG1241AD+906GGC
	VG1241AE		1.9 ²	VG1241AE+906AGC	VG1241AE+906IGC	VG1241AE+906GGC
	VG1241AF		2.9 ²	VG1241AF+906AGC	VG1241AF+906IGC	VG1241AF+906GGC
	VG1241AG		4.7 ²	VG1241AG+906AGC	VG1241AG+906IGC	VG1241AG+906GGC
	VG1241AL		7.4 ²	VG1241AL+906AGC	VG1241AL+906IGC	VG1241AL+906GGC
	VG1241AN		11.7	VG1241AN+906AGC	VG1241AN+906IGC	VG1241AN+906GGC
	VG1241BG	3/4	4.7 ²	VG1241BG+906AGC	VG1241BG+906IGC	VG1241BG+906GGC
	VG1241BL		7.4 ²	VG1241BL+906AGC	VG1241BL+906IGC	VG1241BL+906GGC
	VG1241BN		11.7	VG1241BN+906AGC	VG1241BN+906IGC	VG1241BN+906GGC
	VG1241CL	1	7.4 ²	VG1241CL+906AGC	VG1241CL+906IGC	VG1241CL+906GGC
	VG1241CN		11.7 ²	VG1241CN+906AGC	VG1241CN+906IGC	VG1241CN+906GGC
	VG1241CP		18.7	VG1241CP+906AGC	VG1241CP+906IGC	VG1241CP+906GGC
	VG1241DN	1-1/4	11.7 ²	VG1241DN+906AGC	VG1241DN+906IGC	VG1241DN+906GGC
	VG1241DP		18.7 ²	VG1241DP+906AGC	VG1241DP+906IGC	VG1241DP+906GGC
	VG1241DR		29.2	VG1241DR+906AGC	VG1241DR+906IGC	VG1241DR+906GGC
	VG1241EP	1-1/2	18.7 ²	VG1241EP+906AGC	VG1241EP+906IGC	VG1241EP+906GGC
	VG1241ER		29.2 ²	VG1241ER+906AGC	VG1241ER+906IGC	VG1241ER+906GGC
	VG1241ES		46.8	VG1241ES+906AGC	VG1241ES+906IGC	VG1241ES+906GGC
	VG1241FR	2	29.2 ²	VG1241FR+909AGC	—	VG1241FR+909GGC
	VG1241FS		46.8 ²	VG1241FS+909AGC	—	VG1241FS+909GGC
VG1241FT	73.7		VG1241FT+909AGC	—	VG1241FT+909GGC	

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.
2. Cv has a characterizing disk.

Table 9: Three-Way Plated Brass Trim Ball Valves, Electric Actuators without Switches, Spring Return Counterclockwise, Port A (Coil) Open

Closeoff: 200 psig				AC 24 V			AC 120 V
End Connection	Valve	Size, in.	Cv	Floating	0 to 10 VDC Proportional	On/Off	On/Off
				VA2202-AGA-2 M9206-AGA-2S M9210-AGA-3	VA2202-GGA-2 M9206-GGA-2S M9210-GGA-3	VA2202-BGA-2 M9206-BGA-2S M9210-BGA-3	VA2202-BAA-2 M9206-BAA-2S M9210-BAA-3
NPT	VG1841AD	1/2	1.2 ¹	VG1841AD+22TAGA	VG1841AD+22TGGA	VG1841AD+22TBGA	VG1841AD+22TBAA
	VG1841AE		1.9 ¹	VG1841AE+22TAGA	VG1841AE+22TGGA	VG1841AE+22TBGA	VG1841AE+22TBAA
	VG1841AF		2.9 ¹	VG1841AF+22TAGA	VG1841AF+22TGGA	VG1841AF+22TBGA	VG1841AF+22TBAA
	VG1841AG		4.7 ¹	VG1841AG+22TAGA	VG1841AG+22TGGA	VG1841AG+22TBGA	VG1841AG+22TBAA
	VG1841AL		7.4 ¹	VG1841AL+22TAGA	VG1841AL+22TGGA	VG1841AL+22TBGA	VG1841AL+22TBAA
	VG1841AN		11.7	VG1841AN+22TAGA	VG1841AN+22TGGA	VG1841AN+22TBGA	VG1841AN+22TBAA
	VG1841BG	3/4	4.7 ¹	VG1841BG+22TAGA	VG1841BG+22TGGA	VG1841BG+22TBGA	VG1841BG+22TBAA
	VG1841BL		7.4 ¹	VG1841BL+22TAGA	VG1841BL+22TGGA	VG1841BL+22TBGA	VG1841BL+22TBAA
	VG1841BN		11.7	VG1841BN+22TAGA	VG1841BN+22TGGA	VG1841BN+22TBGA	VG1841BN+22TBAA
	VG1841CL	1	7.4 ¹	VG1841CL+22TAGA	VG1841CL+22TGGA	VG1841CL+22TBGA	VG1841CL+22TBAA
	VG1841CN		11.7 ¹	VG1841CN+22TAGA	VG1841CN+22TGGA	VG1841CN+22TBGA	VG1841CN+22TBAA
	VG1841CP		18.7	VG1841CP+22TAGA	VG1841CP+22TGGA	VG1841CP+22TBGA	VG1841CP+22TBAA
	VG1841DN	1-1/4	11.7 ¹	VG1841DN+936AGA	VG1841DN+936GGA	VG1841DN+936BGA	VG1841DN+936BAA
	VG1841DP		18.7 ¹	VG1841DP+936AGA	VG1841DP+936GGA	VG1841DP+936BGA	VG1841DP+936BAA
	VG1841DR		29.2	VG1841DR+936AGA	VG1841DR+936GGA	VG1841DR+936BGA	VG1841DR+936BAA
	VG1841EP	1-1/2	18.7 ¹	VG1841EP+936AGA	VG1841EP+936GGA	VG1841EP+936BGA	VG1841EP+936BAA
	VG1841ER		29.2 ¹	VG1841ER+936AGA	VG1841ER+936GGA	VG1841ER+936BGA	VG1841ER+936BAA
	VG1841ES		46.8	VG1841ES+936AGA	VG1841ES+936GGA	VG1841ES+936BGA	VG1841ES+936BAA
	VG1841FR	2	29.2 ¹	VG1841FR+92JAGA	VG1841FR+92JGGA	VG1841FR+92JBGA	VG1841FR+92JBAA
	VG1841FS		46.8 ¹	VG1841FS+92JAGA	VG1841FS+92JGGA	VG1841FS+92JBGA	VG1841FS+92JBAA
VG1841FT	73.7		VG1841FT+92JAGA	VG1841FT+92JGGA	VG1841FT+92JBGA	VG1841FT+92JBAA	
Sweat	VG1871AD	1/2	1.2 ¹	VG1871AD+22TAGA	VG1871AD+22TGGA	VG1871AD+22TBGA	VG1871AD+22TBAA
	VG1871AE		1.9 ¹	VG1871AE+22TAGA	VG1871AE+22TGGA	VG1871AE+22TBGA	VG1871AE+22TBAA
	VG1871AF		2.9 ¹	VG1871AF+22TAGA	VG1871AF+22TGGA	VG1871AF+22TBGA	VG1871AF+22TBAA
	VG1871AG		4.7 ¹	VG1871AG+22TAGA	VG1871AG+22TGGA	VG1871AG+22TBGA	VG1871AG+22TBAA
	VG1871AL		7.4 ¹	VG1871AL+22TAGA	VG1871AL+22TGGA	VG1871AL+22TBGA	VG1871AL+22TBAA
	VG1871AN		11.7	VG1871AN+22TAGA	VG1871AN+22TGGA	VG1871AN+22TBGA	VG1871AN+22TBAA
	VG1871BG	3/4	4.7 ¹	VG1871BG+22TAGA	VG1871BG+22TGGA	VG1871BG+22TBGA	VG1871BG+22TBAA
	VG1871BL		7.4 ¹	VG1871BL+22TAGA	VG1871BL+22TGGA	VG1871BL+22TBGA	VG1871BL+22TBAA
	VG1871BN		11.7	VG1871BN+22TAGA	VG1871BN+22TGGA	VG1871BN+22TBGA	VG1871BN+22TBAA
	VG1871CL	1	7.4 ¹	VG1871CL+22TAGA	VG1871CL+22TGGA	VG1871CL+22TBGA	VG1871CL+22TBAA
	VG1871CN		11.7	VG1871CN+22TAGA	VG1871CN+22TGGA	VG1871CN+22TBGA	VG1871CN+22TBAA
	VG1871CP		18.7	VG1871CP+22TAGA	VG1871CP+22TGGA	VG1871CP+22TBGA	VG1871CP+22TBAA
Press	VG1891AD	1/2	1.2 ¹	VG1891AD+22TAGA	VG1891AD+22TGGA	VG1891AD+22TBGA	VG1891AD+22TBAA
	VG1891AE		1.9 ¹	VG1891AE+22TAGA	VG1891AE+22TGGA	VG1891AE+22TBGA	VG1891AE+22TBAA
	VG1891AF		2.9 ¹	VG1891AF+22TAGA	VG1891AF+22TGGA	VG1891AF+22TBGA	VG1891AF+22TBAA
	VG1891AG		4.7 ¹	VG1891AG+22TAGA	VG1891AG+22TGGA	VG1891AG+22TBGA	VG1891AG+22TBAA
	VG1891AL		7.4 ¹	VG1891AL+22TAGA	VG1891AL+22TGGA	VG1891AL+22TBGA	VG1891AL+22TBAA
	VG1891AN		11.7	VG1891AN+22TAGA	VG1891AN+22TGGA	VG1891AN+22TBGA	VG1891AN+22TBAA
	VG1891BG	3/4	4.7 ¹	VG1891BG+22TAGA	VG1891BG+22TGGA	VG1891BG+22TBGA	VG1891BG+22TBAA
	VG1891BL		7.4 ¹	VG1891BL+22TAGA	VG1891BL+22TGGA	VG1891BL+22TBGA	VG1891BL+22TBAA
	VG1891BN		11.7	VG1891BN+22TAGA	VG1891BN+22TGGA	VG1891BN+22TBGA	VG1891BN+22TBAA
	VG1891CL	1	7.4 ¹	VG1891CL+22TAGA	VG1891CL+22TGGA	VG1891CL+22TBGA	VG1891CL+22TBAA
	VG1891CN		11.7 ¹	VG1891CN+22TAGA	VG1891CN+22TGGA	VG1891CN+22TBGA	VG1891CN+22TBAA
	VG1891CP		18.7	VG1891CP+22TAGA	VG1891CP+22TGGA	VG1891CP+22TBGA	VG1891CP+22TBAA

1. Cv has a characterizing disk.

Table 10: Three-Way Plated Brass Trim Ball Valves, Electric Actuators without Switches, Spring Return Clockwise, Port B (Bypass) Open

Closeoff: 200 psig				AC 24 V			AC 120 V
End Connection	Valve	Size, in.	Cv	Floating	0 to 10 VDC Proportional	On/Off	On/Off
				VA2202-AGA-2 M9206-AGA-2S M9210-AGA-3	VA2202-GGA-2 M9206-GGA-2S M9210-GGA-3	VA2202-BGA-2 M9206-BGA-2S M9210-BGA-3	VA2202-BAA-2 M9206-BAA-2S M9210-BAA-3
NPT	VG1841AD	1/2	1.2 ¹	VG1841AD+24TAGA	VG1841AD+24TGGA	VG1841AD+24TBGA	VG1841AD+24TBAA
	VG1841AE		1.9 ¹	VG1841AE+24TAGA	VG1841AE+24TGGA	VG1841AE+24TBGA	VG1841AE+24TBAA
	VG1841AF		2.9 ¹	VG1841AF+24TAGA	VG1841AF+24TGGA	VG1841AF+24TBGA	VG1841AF+24TBAA
	VG1841AG		4.7 ¹	VG1841AG+24TAGA	VG1841AG+24TGGA	VG1841AG+24TBGA	VG1841AG+24TBAA
	VG1841AL		7.4 ¹	VG1841AL+24TAGA	VG1841AL+24TGGA	VG1841AL+24TBGA	VG1841AL+24TBAA
	VG1841AN		11.7	VG1841AN+24TAGA	VG1841AN+24TGGA	VG1841AN+24TBGA	VG1841AN+24TBAA
	VG1841BG	3/4	4.7 ¹	VG1841BG+24TAGA	VG1841BG+24TGGA	VG1841BG+24TBGA	VG1841BG+24TBAA
	VG1841BL		7.4 ¹	VG1841BL+24TAGA	VG1841BL+24TGGA	VG1841BL+24TBGA	VG1841BL+24TBAA
	VG1841BN		11.7	VG1841BN+24TAGA	VG1841BN+24TGGA	VG1841BN+24TBGA	VG1841BN+24TBAA
	VG1841CL	1	7.4 ¹	VG1841CL+24TAGA	VG1841CL+24TGGA	VG1841CL+24TBGA	VG1841CL+24TBAA
	VG1841CN		11.7 ¹	VG1841CN+24TAGA	VG1841CN+24TGGA	VG1841CN+24TBGA	VG1841CN+24TBAA
	VG1841CP		18.7	VG1841CP+24TAGA	VG1841CP+24TGGA	VG1841CP+24TBGA	VG1841CP+24TBAA
	VG1841DN	1-1/4	11.7 ¹	VG1841DN+956AGA	VG1841DN+956GGA	VG1841DN+956BGA	VG1841DN+956BAA
	VG1841DP		18.7 ¹	VG1841DP+956AGA	VG1841DP+956GGA	VG1841DP+956BGA	VG1841DP+956BAA
	VG1841DR		29.2	VG1841DR+956AGA	VG1841DR+956GGA	VG1841DR+956BGA	VG1841DR+956BAA
	VG1841EP	1-1/2	18.7 ¹	VG1841EP+956AGA	VG1841EP+956GGA	VG1841EP+956BGA	VG1841EP+956BAA
	VG1841ER		29.2 ¹	VG1841ER+956AGA	VG1841ER+956GGA	VG1841ER+956BGA	VG1841ER+956BAA
	VG1841ES		46.8	VG1841ES+956AGA	VG1841ES+956GGA	VG1841ES+956BGA	VG1841ES+956BAA
	VG1841FR	2	29.2 ¹	VG1841FR+94JAGA	VG1841FR+94JGGA	VG1841FR+94JBGA	VG1841FR+94JBAA
	VG1841FS		46.8 ¹	VG1841FS+94JAGA	VG1841FS+94JGGA	VG1841FS+94JBGA	VG1841FS+94JBAA
VG1841FT	73.7		VG1841FT+94JAGA	VG1841FT+94JGGA	VG1841FT+94JBGA	VG1841FT+94JBAA	
Sweat	VG1871AD	1/2	1.2 ¹	VG1871AD+24TAGA	VG1891AD+24TGGA	VG1871AD+24TBGA	VG1871AD+24TBAA
	VG1871AE		1.9 ¹	VG1871AE+24TAGA	VG1871AE+24TGGA	VG1871AE+24TBGA	VG1871AE+24TBAA
	VG1871AF		2.9 ¹	VG1871AF+24TAGA	VG1871AF+24TGGA	VG1871AF+24TBGA	VG1871AF+24TBAA
	VG1871AG		4.7 ¹	VG1871AG+24TAGA	VG1871AG+24TGGA	VG1871AG+24TBGA	VG1871AG+24TBAA
	VG1871AL		7.4 ¹	VG1871AL+24TAGA	VG1871AL+24TGGA	VG1871AL+24TBGA	VG1871AL+24TBAA
	VG1871AN		11.7	VG1871AN+24TAGA	VG1871AN+24TGGA	VG1871AN+24TBGA	VG1871AN+24TBAA
	VG1871BG	3/4	4.7 ¹	VG1871BG+24TAGA	VG1871BG+24TGGA	VG1871BG+24TBGA	VG1871BG+24TBAA
	VG1871BL		7.4 ¹	VG1871BL+24TAGA	VG1871BL+24TGGA	VG1871BL+24TBGA	VG1871BL+24TBAA
	VG1871BN		11.7	VG1871BN+24TAGA	VG1871BN+24TGGA	VG1871BN+24TBGA	VG1871BN+24TBAA
	VG1871CL	1	7.4 ¹	VG1871CL+24TAGA	VG1871CL+24TGGA	VG1871CL+24TBGA	VG1871CL+24TBAA
	VG1871CN		11.7 ¹	VG1871CN+24TAGA	VG1871CN+24TGGA	VG1871CN+24TBGA	VG1871CN+24TBAA
	VG1871CP		18.7	VG1871CP+24TAGA	VG1871CP+24TGGA	VG1871CP+24TBGA	VG1871CP+24TBAA
Press	VG1891AD	1/2	1.2 ¹	VG1891AD+24TAGA	VG1891AD+24TGGA	VG1891AD+24TBGA	VG1891AD+24TBAA
	VG1891AE		1.9 ¹	VG1891AE+24TAGA	VG1891AE+24TGGA	VG1891AE+24TBGA	VG1891AE+24TBAA
	VG1891AF		2.9 ¹	VG1891AF+24TAGA	VG1891AF+24TGGA	VG1891AF+24TBGA	VG1891AF+24TBAA
	VG1891AG		4.7 ¹	VG1891AG+24TAGA	VG1891AG+24TGGA	VG1891AG+24TBGA	VG1891AG+24TBAA
	VG1891AL		7.4 ¹	VG1891AL+24TAGA	VG1891AL+24TGGA	VG1891AL+24TBGA	VG1891AL+24TBAA
	VG1891AN		11.7	VG1891AN+24TAGA	VG1891AN+24TGGA	VG1891AN+24TBGA	VG1891AN+24TBAA
	VG1891BG	3/4	4.7 ¹	VG1891BG+24TAGA	VG1891BG+24TGGA	VG1891BG+24TBGA	VG1891BG+24TBAA
	VG1891BL		7.4 ¹	VG1891BL+24TAGA	VG1891BL+24TGGA	VG1891BL+24TBGA	VG1891BL+24TBAA
	VG1891BN		11.7	VG1891BN+24TAGA	VG1891BN+24TGGA	VG1891BN+24TBGA	VG1891BN+24TBAA
	VG1891CL	1	7.4 ¹	VG1891CL+24TAGA	VG1891CL+24TGGA	VG1891CL+24TBGA	VG1891CL+24TBAA
	VG1891CN		11.7 ¹	VG1891CN+24TAGA	VG1891CN+24TGGA	VG1891CN+24TBGA	VG1891CN+24TBAA
	VG1891CP		18.7	VG1891CP+24TAGA	VG1891CP+24TGGA	VG1891CP+24TBGA	VG1891CP+24TBAA

1. Cv has a characterizing disk.

Table 11: Three-Way Plated Brass Trim Ball Valves, Spring Return Electric Actuators with Switches¹

Closeoff: 200 psig				AC 24 V			AC 120 V
End Connection	Valve	Size, in.	Cv	Floating	0 to 10 VDC Proportional	On/Off	On/Off
				VA2202-AGB-2 M9206-AGC-2S M9210-AGC-3	VA2202-GGB-2 M9206-GGC-2S M9210-GGC-3	VA2202-BGB-2 M9206-BGB-2S M9210-BGC-3	VA2202-BAB-2 M9206-BAB-2S M9210-BAC-3
Spring Return Counterclockwise – Port A (Coil) Open							
NPT	VG1841AD	1/2	1.2/0.7 ²	VG1841AD+22TAGB	VG1841AD+22TGGB	VG1841AD+22TBGB	VG1841AD+22TBAB
	VG1841AE		1.9/1.2 ²	VG1841AE+22TAGB	VG1841AE+22TGGB	VG1841AE+22TBGB	VG1841AE+22TBAB
	VG1841AF		2.9/1.9 ²	VG1841AF+22TAGB	VG1841AF+22TGGB	VG1841AF+22TBGB	VG1841AF+22TBAB
	VG1841AG		4.7/2.9 ²	VG1841AG+22TAGB	VG1841AG+22TGGB	VG1841AG+22TBGB	VG1841AG+22TBAB
	VG1841AL		7.4/4.7 ²	VG1841AL+22TAGB	VG1841AL+22TGGB	VG1841AL+22TBGB	VG1841AL+22TBAB
	VG1841AN		11.7/5.8	VG1841AN+22TAGB	VG1841AN+22TGGB	VG1841AN+22TBGB	VG1841AN+22TBAB
	VG1841BG	3/4	4.7/2.9 ²	VG1841BG+22TAGB	VG1841BG+22TGGB	VG1841BG+22TBGB	VG1841BG+22TBAB
	VG1841BL		7.4/4.7 ²	VG1841BL+22TAGB	VG1841BL+22TGGB	VG1841BL+22TBGB	VG1841BL+22TBAB
	VG1841BN		11.7/5.8	VG1841BN+22TAGB	VG1841BN+22TGGB	VG1841BN+22TBGB	VG1841BN+22TBAB
	VG1841CL	1	7.4/4.7 ²	VG1841CL+22TAGB	VG1841CL+22TGGB	VG1841CL+22TBGB	VG1841CL+22TBAB
	VG1841CN		11.7/7.4 ²	VG1841CN+22TAGB	VG1841CN+22TGGB	VG1841CN+22TBGB	VG1841CN+22TBAB
	VG1841CP		18.7/9.4	VG1841CP+22TAGB	VG1841CP+22TGGB	VG1841CP+22TBGB	VG1841CP+22TBAB
	VG1841DN	1-1/4	11.7/7.4 ²	VG1841DN+936AGC	VG1841DN+936GGC	VG1841DN+936BGB	VG1841DN+936BAB
	VG1841DP		18.7/11.7 ²	VG1841DP+936AGC	VG1841DP+936GGC	VG1841DP+936BGB	VG1841DP+936BAB
	VG1841DR		29.2/14.6	VG1841DR+936AGC	VG1841DR+936GGC	VG1841DR+936BGB	VG1841DR+936BAB
	VG1841EP	1-1/2	18.7/11.7 ²	VG1841EP+936AGC	VG1841EP+936GGC	VG1841EP+936BGB	VG1841EP+936BAB
	VG1841ER		29.2/18.7 ²	VG1841ER+936AGC	VG1841ER+936GGC	VG1841ER+936BGB	VG1841ER+936BAB
	VG1841ES		46.8/23.4	VG1841ES+936AGC	VG1841ES+936GGC	VG1841ES+936BGB	VG1841ES+936BAB
	VG1841FR	2	29.2/18.7 ²	VG1841FR+92JAGC	VG1841FR+92JGGC	VG1841FR+92JBGC	VG1841FR+92JBAC
	VG1841FS		46.8/29.2 ²	VG1841FS+92JAGC	VG1841FS+92JGGC	VG1841FS+92JBGC	VG1841FS+92JBAC
VG1841FT	73.7/36.8		VG1841FT+92JAGC	VG1841FT+92JGGC	VG1841FT+92JBGC	VG1841FT+92JBAC	
Spring Return Clockwise – Port B (Bypass) Open							
NPT	VG1841AD	1/2	1.2/0.7 ²	VG1841AD+24TAGB	VG1841AD+24TGGB	VG1841AD+24TBGB	VG1841AD+24TBAB
	VG1841AE		1.9/1.2 ²	VG1841AE+24TAGB	VG1841AE+24TGGB	VG1841AE+24TBGB	VG1841AE+24TBAB
	VG1841AF		2.9/1.9 ²	VG1841AF+24TAGB	VG1841AF+24TGGB	VG1841AF+24TBGB	VG1841AF+24TBAB
	VG1841AG		4.7/2.9 ²	VG1841AG+24TAGB	VG1841AG+24TGGB	VG1841AG+24TBGB	VG1841AG+24TBAB
	VG1841AL		7.4/4.7 ²	VG1841AL+24TAGB	VG1841AL+24TGGB	VG1841AL+24TBGB	VG1841AL+24TBAB
	VG1841AN		11.7/5.8	VG1841AN+24TAGB	VG1841AN+24TGGB	VG1841AN+24TBGB	VG1841AN+24TBAB
	VG1841BG	3/4	4.7/2.9 ²	VG1841BG+24TAGB	VG1841BG+24TGGB	VG1841BG+24TBGB	VG1841BG+24TBAB
	VG1841BL		7.4/4.7 ²	VG1841BL+24TAGB	VG1841BL+24TGGB	VG1841BL+24TBGB	VG1841BL+24TBAB
	VG1841BN		11.7/5.8	VG1841BN+24TAGB	VG1841BN+24TGGB	VG1841BN+24TBGB	VG1841BN+24TBAB
	VG1841CL	1	7.4/4.7 ²	VG1841CL+24TAGB	VG1841CL+24TGGB	VG1841CL+24TBGB	VG1841CL+24TBAB
	VG1841CN		11.7/7.4 ²	VG1841CN+24TAGB	VG1841CN+24TGGB	VG1841CN+24TBGB	VG1841CN+24TBAB
	VG1841CP		18.7/9.4	VG1841CP+24TAGB	VG1841CP+24TGGB	VG1841CP+24TBGB	VG1841CP+24TBAB
	VG1841DN	1-1/4	11.7/7.4 ²	VG1841DN+956AGC	VG1841DN+956GGC	VG1841DN+956BGB	VG1841DN+956BAB
	VG1841DP		18.7/11.7 ²	VG1841DP+956AGC	VG1841DP+956GGC	VG1841DP+956BGB	VG1841DP+956BAB
	VG1841DR		29.2/14.6	VG1841DR+956AGC	VG1841DR+956GGC	VG1841DR+956BGB	VG1841DR+956BAB
	VG1841EP	1-1/2	18.7/11.7 ²	VG1841EP+956AGC	VG1841EP+956GGC	VG1841EP+956BGB	VG1841EP+956BAB
	VG1841ER		29.2/18.7 ²	VG1841ER+956AGC	VG1841ER+956GGC	VG1841ER+956BGB	VG1841ER+956BAB
	VG1841ES		46.8/23.4	VG1841ES+956AGC	VG1841ES+956GGC	VG1841ES+956BGB	VG1841ES+956BAB
	VG1841FR	2	29.2/18.7 ²	VG1841FR+94JAGC	VG1841FR+94JGGC	VG1841FR+94JBGC	VG1841FR+94JBAC
	VG1841FS		46.8/29.2 ²	VG1841FS+94JAGC	VG1841FS+94JGGC	VG1841FS+94JBGC	VG1841FS+94JBAC
VG1841FT	73.7/36.8		VG1841FT+94JAGC	VG1841FT+94JGGC	VG1841FT+94JBGC	VG1841FT+94JBAC	

1. VA2202-xxB and M9206-BxB have a single end switch. M9206-xGC and M9210-xGC-3 have two end switches.
2. Cv has a characterizing disk.

Table 12: Three-Way Plated Brass Trim Ball Valves, Non-Spring Return Electric Actuators without Switches

Closeoff: 200 psig				AC 24 V			
End Connection	Valve	Size, in.	Cv	On/Off (Floating) without Timeout ¹	On/Off (Floating) with Timeout	0 to 10 VDC Proportional	
				VA9104-AGA-xS M9106-AGA-2 M9109-AGA-2	VA9104-IGA-xS M9106-IGA-2	VA9104-GGA-xS M9106-GGA-2 M9109-GGA-2	
NPT	VG1841AD	1/2	1.2/0.7 ²	VG1841AD+9T4AGA ³	VG1841AD+9T4IGA ³	VG1841AD+9T4GGA ³	
	VG1841AE		1.9/1.2 ²	VG1841AE+9T4AGA ³	VG1841AE+9T4IGA ³	VG1841AE+9T4GGA ³	
	VG1841AF		2.9/1.9 ²	VG1841AF+9T4AGA ³	VG1841AF+9T4IGA ³	VG1841AF+9T4GGA ³	
	VG1841AG		4.7/2.9 ²	VG1841AG+9T4AGA ³	VG1841AG+9T4IGA ³	VG1841AG+9T4GGA ³	
	VG1841AL		7.4/4.7 ²	VG1841AL+9T4AGA ³	VG1841AL+9T4IGA ³	VG1841AL+9T4GGA ³	
	VG1841AN		11.7/5.8	VG1841AN+9T4AGA ³	VG1841AN+9T4IGA ³	VG1841AN+9T4GGA ³	
	VG1841BG	3/4	4.7/2.9 ²	VG1841BG+9T4AGA ³	VG1841BG+9T4IGA ³	VG1841BG+9T4GGA ³	
	VG1841BL		7.4/4.7 ²	VG1841BL+9T4AGA ³	VG1841BL+9T4IGA ³	VG1841BL+9T4GGA ³	
	VG1841BN		11.7/5.8	VG1841BN+9T4AGA ³	VG1841BN+9T4IGA ³	VG1841BN+9T4GGA ³	
	VG1841CL	1	7.4/4.7 ²	VG1841CL+9T4AGA ³	VG1841CL+9T4IGA ³	VG1841CL+9T4GGA ³	
	VG1841CN		11.7/7.4 ²	VG1841CN+9T4AGA ³	VG1841CN+9T4IGA ³	VG1841CN+9T4GGA ³	
	VG1841CP		18.7/9.4	VG1841CP+9T4AGA ³	VG1841CP+9T4IGA ³	VG1841CP+9T4GGA ³	
	VG1841DN	1-1/4	11.7/7.4 ²	VG1841DN+906AGA	VG1841DN+906IGA	VG1841DN+906GGA	
	VG1841DP		18.7/11.7 ²	VG1841DP+906AGA	VG1841DP+906IGA	VG1841DP+906GGA	
	VG1841DR		29.2/14.6	VG1841DR+906AGA	VG1841DR+906IGA	VG1841DR+906GGA	
	VG1841EP	1-1/2	18.7/11.7 ²	VG1841EP+906AGA	VG1841EP+906IGA	VG1841EP+906GGA	
	VG1841ER		29.2/18.7 ²	VG1841ER+906AGA	VG1841ER+906IGA	VG1841ER+906GGA	
	VG1841ES		46.8/23.4	VG1841ES+906AGA	VG1841ES+906IGA	VG1841ES+906GGA	
	VG1841FR	2	29.2/18.7 ²	VG1841FR+906AGA	—	VG1841FR+906GGA	
	VG1841FS		46.8/29.2 ²	VG1841FS+906AGA	—	VG1841FS+906GGA	
VG1841FT	73.7/36.8		VG1841FT+906AGA	—	VG1841FT+906GGA		
Sweat	VG1871AD	1/2	1.2/0.7 ²	VG1871AD+9T4AGA ³	VG1871AD+9T4IGA ³	VG1871AD+9T4GGA ³	
	VG1871AE		1.9/1.2 ²	VG1871AE+9T4AGA ³	VG1871AE+9T4IGA ³	VG1871AE+9T4GGA ³	
	VG1871AF		2.9/1.9 ²	VG1871AF+9T4AGA ³	VG1871AF+9T4IGA ³	VG1871AF+9T4GGA ³	
	VG1871AG		4.7/2.9 ²	VG1871AG+9T4AGA ³	VG1871AG+9T4IGA ³	VG1871AG+9T4GGA ³	
	VG1871AL		7.4/4.7 ²	VG1871AL+9T4AGA ³	VG1871AL+9T4IGA ³	VG1871AL+9T4GGA ³	
	VG1871AN		11.7/5.8	VG1871AN+9T4AGA ³	VG1871AN+9T4IGA ³	VG1871AN+9T4GGA ³	
	VG1871BG	3/4	4.7/2.9 ²	VG1871BG+9T4AGA ³	VG1871BG+9T4IGA ³	VG1871BG+9T4GGA ³	
	VG1871BL		7.4/4.7 ²	VG1871BL+9T4AGA ³	VG1871BL+9T4IGA ³	VG1871BL+9T4GGA ³	
	VG1871BN		11.7/5.8	VG1871BN+9T4AGA ³	VG1871BN+9T4IGA ³	VG1871BN+9T4GGA ³	
	VG1871CL	1	7.4/4.7 ²	VG1871CL+9T4AGA ³	VG1871CL+9T4IGA ³	VG1871CL+9T4GGA ³	
	VG1871CN		11.7/7.4 ²	VG1871CN+9T4AGA ³	VG1871CN+9T4IGA ³	VG1871CN+9T4GGA ³	
	VG1871CP		18.7/9.4	VG1871CP+9T4AGA ³	VG1871CP+9T4IGA ³	VG1871CP+9T4GGA ³	
	Press	VG1891AD	1/2	1.2/0.7	VG1891AD+9T4AGA ³	VG1891AD+9T4IGA ³	VG1891AD+9T4GGA ³
		VG1891AE		1.9/1.2 ²	VG1891AE+9T4AGA ³	VG1891AE+9T4IGA ³	VG1891AE+9T4GGA ³
VG1891AF		2.9/1.9 ²		VG1891AF+9T4AGA ³	VG1891AF+9T4IGA ³	VG1891AF+9T4GGA ³	
VG1891AG		4.7/2.9 ²		VG1891AG+9T4AGA ³	VG1891AG+9T4IGA ³	VG1891AG+9T4GGA ³	
VG1891AL		7.4/4.7 ²		VG1891AL+9T4AGA ³	VG1891AL+9T4IGA ³	VG1891AL+9T4GGA ³	
VG1891AN		11.7/5.8		VG1891AN+9T4AGA ³	VG1891AN+9T4IGA ³	VG1891AN+9T4GGA ³	
VG1891BG		3/4	4.7/2.9 ²	VG1891BG+9T4AGA ³	VG1891BG+9T4IGA ³	VG1891BG+9T4GGA ³	
VG1891BL			7.4/4.7 ²	VG1891BL+9T4AGA ³	VG1891BL+9T4IGA ³	VG1891BL+9T4GGA ³	
VG1891BN			11.7/5.8	VG1891BN+9T4AGA ³	VG1891BN+9T4IGA ³	VG1891BN+9T4GGA ³	
VG1891CL		1	7.4/4.7 ²	VG1891CL+9T4AGA ³	VG1891CL+9T4IGA ³	VG1891CL+9T4GGA ³	
VG1891CN			11.7/7.4 ²	VG1891CN+9T4AGA ³	VG1891CN+9T4IGA ³	VG1891CN+9T4GGA ³	
VG1891CP			18.7/9.4	VG1891CP+9T4AGA ³	VG1891CP+9T4IGA ³	VG1891CP+9T4GGA ³	

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. Cv has a characterizing disk.

3. Code numbers shown are for a VA9104-xGA-3S actuator with M3 screw terminals. To specify a 48-in. plenum-rated cable, change the 9T4 to 9A4 in the code number for a VA9104-xGA-2S actuator. For example, VG1841AD+9T4AGA becomes VG1841AD+9A4AGA.

Table 13: Three-Way Plated Brass Trim Ball Valves, Non-Spring Return Electric Actuators with Switches

Closeoff: 200 psig				AC 24 V		
End Connection	Valve	Size, in.	Cv	On/Off (Floating) without Timeout ¹	On/Off (Floating) with Timeout	0 to 10 VDC Proportional
				M9106-AGC-2 M9109-AGC-2	M9106-IGC-2	M9106-GGC-2 M9109-GGC-2
NPT	VG1841AD	1/2	1.2/0.7 ²	VG1841AD+906AGC	VG1841AD+906IGC	VG1841AD+906GGC
	VG1841AE		1.9/1.2 ²	VG1841AE+906AGC	VG1841AE+906IGC	VG1841AE+906GGC
	VG1841AF		2.9/1.9 ²	VG1841AF+906AGC	VG1841AF+906IGC	VG1841AF+906GGC
	VG1841AG		4.7/2.9 ²	VG1841AG+906AGC	VG1841AG+906IGC	VG1841AG+906GGC
	VG1841AL		7.4/4.7 ²	VG1841AL+906AGC	VG1841AL+906IGC	VG1841AL+906GGC
	VG1841AN		11.7/5.8	VG1841AN+906AGC	VG1841AN+906IGC	VG1841AN+906GGC
	VG1841BG	3/4	4.7/2.9 ²	VG1841BG+906AGC	VG1841BG+906IGC	VG1841BG+906GGC
	VG1841BL		7.4/4.7 ²	VG1841BL+906AGC	VG1841BL+906IGC	VG1841BL+906GGC
	VG1841BN		11.7/5.8	VG1841BN+906AGC	VG1841BN+906IGC	VG1841BN+906GGC
	VG1841CL	1	7.4/4.7 ²	VG1841CL+906AGC	VG1841CL+906IGC	VG1841CL+906GGC
	VG1841CN		11.7/7.4 ²	VG1841CN+906AGC	VG1841CN+906IGC	VG1841CN+906GGC
	VG1841CP		18.7/9.4	VG1841CP+906AGC	VG1841CP+906IGC	VG1841CP+906GGC
	VG1841DN	1-1/4	11.7/7.4 ²	VG1841DN+906AGC	VG1841DN+906IGC	VG1841DN+906GGC
	VG1841DP		18.7/11.7 ²	VG1841DP+906AGC	VG1841DP+906IGC	VG1841DP+906GGC
	VG1841DR		29.2/14.6	VG1841DR+906AGC	VG1841DR+906IGC	VG1841DR+906GGC
	VG1841EP	1-1/2	18.7/11.7 ²	VG1841EP+906AGC	VG1841EP+906IGC	VG1841EP+906GGC
	VG1841ER		29.2/18.7 ²	VG1841ER+906AGC	VG1841ER+906IGC	VG1841ER+906GGC
	VG1841ES		46.8/23.4	VG1841ES+906AGC	VG1841ES+906IGC	VG1841ES+906GGC
	VG1841FR	2	29.2/18.7 ²	VG1841FR+909AGC	—	VG1841FR+909GGC
	VG1841FS		46.8/29.2 ²	VG1841FS+909AGC	—	VG1841FS+909GGC
VG1841FT	73.7/36.8		VG1841FT+909AGC	—	VG1841FT+909GGC	

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. Cv has a characterizing disk.

Table 14: Two-Way Stainless Steel Trim Ball Valves, Electric Actuators without Switches, Spring Return Open

Closeoff: 200 psig				AC 24 V			AC 120 V	
End Connection	Valve	Size, in.	Cv	Floating	0 to 10 VDC Proportional	On/Off	On/Off	
				VA2202-AGA-2 ¹ M9206-AGA-2S M9210-AGA-3	VA2202-GGA-2 ¹ M9206-GGA-2S M9210-GGA-3	VA2202-BGA-2 ¹ M9206-BGA-2S M9210-BGA-3	VA2202-BAA-2 ¹ M9206-BAA-2S M9210-BAA-3	
NPT	VG1245AD	1/2	1.2 ²	VG1245AD+22TAGA	VG1245AD+22TGGA	VG1245AD+22TBGA	VG1245AD+22TBAA	
	VG1245AE		1.9 ²	VG1245AE+22TAGA	VG1245AE+22TGGA	VG1245AE+22TBGA	VG1245AE+22TBAA	
	VG1245AF		2.9 ²	VG1245AF+22TAGA	VG1245AF+22TGGA	VG1245AF+22TBGA	VG1245AF+22TBAA	
	VG1245AG		4.7 ²	VG1245AG+22TAGA	VG1245AG+22TGGA	VG1245AG+22TBGA	VG1245AG+22TBAA	
	VG1245AL		7.4 ²	VG1245AL+22TAGA	VG1245AL+22TGGA	VG1245AL+22TBGA	VG1245AL+22TBAA	
	VG1245AN	3/4	11.7	VG1245AN+22TAGA	VG1245AN+22TGGA	VG1245AN+22TBGA	VG1245AN+22TBAA	
	VG1245BG		4.7 ²	VG1245BG+22TAGA	VG1245BG+22TGGA	VG1245BG+22TBGA	VG1245BG+22TBAA	
	VG1245BL		7.4 ²	VG1245BL+22TAGA	VG1245BL+22TGGA	VG1245BL+22TBGA	VG1245BL+22TBAA	
	VG1245BN	1	11.7	VG1245BN+22TAGA	VG1245BN+22TGGA	VG1245BN+22TBGA	VG1245BN+22TBAA	
	VG1245CL		7.4 ²	VG1245CL+22TAGA	VG1245CL+22TGGA	VG1245CL+22TBGA	VG1245CL+22TBAA	
	VG1245CN		11.7 ²	VG1245CN+22TAGA	VG1245CN+22TGGA	VG1245CN+22TBGA	VG1245CN+22TBAA	
	VG1245CP	1-1/4	18.7	VG1245CP+22TAGA	VG1245CP+22TGGA	VG1245CP+22TBGA	VG1245CP+22TBAA	
	VG1245DN		11.7 ²	VG1245DN+936AGA	VG1245DN+936GGA	VG1245DN+936BGA	VG1245DN+936BAA	
	VG1245DP		18.7 ²	VG1245DP+936AGA	VG1245DP+936GGA	VG1245DP+936BGA	VG1245DP+936BAA	
	VG1245DR	1-1/2	29.2	VG1245DR+936AGA	VG1245DR+936GGA	VG1245DR+936BGA	VG1245DR+936BAA	
	VG1245EP		18.7 ²	VG1245EP+936AGA	VG1245EP+936GGA	VG1245EP+936BGA	VG1245EP+936BAA	
	VG1245ER		29.2 ²	VG1245ER+936AGA	VG1245ER+936GGA	VG1245ER+936BGA	VG1245ER+936BAA	
	VG1245ES	2	46.8	VG1245ES+936AGA	VG1245ES+936GGA	VG1245ES+936BGA	VG1245ES+936BAA	
	VG1245FR		29.2 ²	VG1245FR+92JAGA	VG1245FR+92JGGA	VG1245FR+92JBGA	VG1245FR+92JBAA	
	VG1245FS		46.8 ²	VG1245FS+92JAGA	VG1245FS+92JGGA	VG1245FS+92JBGA	VG1245FS+92JBAA	
VG1245FT		73.7	VG1245FT+92JAGA	VG1245FT+92JGGA	VG1245FT+92JBGA	VG1245FT+92JBAA		
Sweat	VG1275AD	1/2	1.2 ²	VG1275AD+22TAGA	VG1275AD+22TGGA	VG1275AD+22TBGA	VG1275AD+22TBAA	
	VG1275AE		1.9 ²	VG1275AE+22TAGA	VG1275AE+22TGGA	VG1275AE+22TBGA	VG1275AE+22TBAA	
	VG1275AF		2.9 ²	VG1275AF+22TAGA	VG1275AF+22TGGA	VG1275AF+22TBGA	VG1275AF+22TBAA	
	VG1275AG		4.7 ²	VG1275AG+22TAGA	VG1275AG+22TGGA	VG1275AG+22TBGA	VG1275AG+22TBAA	
	VG1275AL		7.4 ²	VG1275AL+22TAGA	VG1275AL+22TGGA	VG1275AL+22TBGA	VG1275AL+22TBAA	
	VG1275AN	3/4	11.7	VG1275AN+22TAGA	VG1275AN+22TGGA	VG1275AN+22TBGA	VG1275AN+22TBAA	
	VG1275BG		4.7 ²	VG1275BG+22TAGA	VG1275BG+22TGGA	VG1275BG+22TBGA	VG1275BG+22TBAA	
	VG1275BL		7.4 ²	VG1275BL+22TAGA	VG1275BL+22TGGA	VG1275BL+22TBGA	VG1275BL+22TBAA	
	VG1275BN	1	11.7	VG1275BN+22TAGA	VG1275BN+22TGGA	VG1275BN+22TBGA	VG1275BN+22TBAA	
	VG1275CL		7.4 ²	VG1275CL+22TAGA	VG1275CL+22TGGA	VG1275CL+22TBGA	VG1275CL+22TBAA	
	VG1275CN		11.7 ²	VG1275CN+22TAGA	VG1275CN+22TGGA	VG1275CN+22TBGA	VG1275CN+22TBAA	
	VG1275CP		18.7	VG1275CP+22TAGA	VG1275CP+22TGGA	VG1275CP+22TBGA	VG1275CP+22TBAA	
	Press	VG1295AD	1/2	1.2 ²	VG1295AD+22TAGA	VG1295AD+22TGGA	VG1295AD+22TBGA	VG1295AD+22TBAA
		VG1295AE		1.9 ²	VG1295AE+22TAGA	VG1295AE+22TGGA	VG1295AE+22TBGA	VG1295AE+22TBAA
VG1295AF		2.9 ²		VG1295AF+22TAGA	VG1295AF+22TGGA	VG1295AF+22TBGA	VG1295AF+22TBAA	
VG1295AG		4.7 ²		VG1295AG+22TAGA	VG1295AG+22TGGA	VG1295AG+22TBGA	VG1295AG+22TBAA	
VG1295AL		7.4 ²		VG1295AL+22TAGA	VG1295AL+22TGGA	VG1295AL+22TBGA	VG1295AL+22TBAA	
VG1295AN		3/4	11.7	VG1295AN+22TAGA	VG1295AN+22TGGA	VG1295AN+22TBGA	VG1295AN+22TBAA	
VG1295BG			4.7 ²	VG1295BG+22TAGA	VG1295BG+22TGGA	VG1295BG+22TBGA	VG1295BG+22TBAA	
VG1295BL			7.4 ²	VG1295BL+22TAGA	VG1295BL+22TGGA	VG1295BL+22TBGA	VG1295BL+22TBAA	
VG1295BN		1	11.7	VG1295BN+22TAGA	VG1295BN+22TGGA	VG1295BN+22TBGA	VG1295BN+22TBAA	
VG1295CL			7.4 ²	VG1295CL+22TAGA	VG1295CL+22TGGA	VG1295CL+22TBGA	VG1295CL+22TBAA	
VG1295CN			11.7 ²	VG1295CN+22TAGA	VG1295CN+22TGGA	VG1295CN+22TBGA	VG1295CN+22TBAA	
VG1295CP			18.7	VG1295CP+22TAGA	VG1295CP+22TGGA	VG1295CP+22TBGA	VG1295CP+22TBAA	

1. The VA2202 Series Actuator has a 212°F (100°C) fluid temperature limit. For fluid temperatures higher than 212°F, use an M9206 Series Actuator. For NPT end connection valves, you can specify a factory-mounted M9206 actuator by changing the 22T or 24T in the code number to 936 or 956. For example, VG1245AD+22TBGA becomes VG1245AD+936BGA.
2. Cv has a characterizing disk.

Table 15: Two-Way Stainless Steel Trim Ball Valves, Electric Actuators without Switches, Spring Return Closed

Closeoff: 200 psig				AC 24 V			AC 120 V	
End Connection	Valve	Size, in.	Cv	Floating	0 to 10 VDC Proportional	On/Off	On/Off	
				VA2202-AGA-2 ¹ M9206-AGA-2S M9210-AGA-3	VA2202-GGA-2 ¹ M9206-GGA-2S M9210-GGA-3	VA2202-BGA-2 ¹ M9206-BGA-2S M9210-BGA-3	VA2202-BAA-2 ¹ M9206-BAA-2S M9210-BAA-3	
NPT	VG1245AD	1/2	1.2 ²	VG1245AD+24TAGA	VG1245AD+24TGGA	VG1245AD+24TBGA	VG1245AD+24TBAA	
	VG1245AE		1.9 ²	VG1245AE+24TAGA	VG1245AE+24TGGA	VG1245AE+24TBGA	VG1245AE+24TBAA	
	VG1245AF		2.9 ²	VG1245AF+24TAGA	VG1245AF+24TGGA	VG1245AF+24TBGA	VG1245AF+24TBAA	
	VG1245AG		4.7 ²	VG1245AG+24TAGA	VG1245AG+24TGGA	VG1245AG+24TBGA	VG1245AG+24TBAA	
	VG1245AL		7.4 ²	VG1245AL+24TAGA	VG1245AL+24TGGA	VG1245AL+24TBGA	VG1245AL+24TBAA	
	VG1245AN	11.7	VG1245AN+24TAGA	VG1245AN+24TGGA	VG1245AN+24TBGA	VG1245AN+24TBAA		
	VG1245BG	3/4	4.7 ²	VG1245BG+24TAGA	VG1245BG+24TGGA	VG1245BG+24TBGA	VG1245BG+24TBAA	
	VG1245BL		7.4 ²	VG1245BL+24TAGA	VG1245BL+24TGGA	VG1245BL+24TBGA	VG1245BL+24TBAA	
	VG1245BN		11.7	VG1245BN+24TAGA	VG1245BN+24TGGA	VG1245BN+24TBGA	VG1245BN+24TBAA	
	VG1245CL	1	7.4 ²	VG1245CL+24TAGA	VG1245CL+24TGGA	VG1245CL+24TBGA	VG1245CL+24TBAA	
	VG1245CN		11.7 ²	VG1245CN+24TAGA	VG1245CN+24TGGA	VG1245CN+24TBGA	VG1245CN+24TBAA	
	VG1245CP		18.7	VG1245CP+24TAGA	VG1245CP+24TGGA	VG1245CP+24TBGA	VG1245CP+24TBAA	
	VG1245DN	1-1/4	11.7 ²	VG1245DN+956AGA	VG1245DN+956GGA	VG1245DN+956BGA	VG1245DN+956BAA	
	VG1245DP		18.7 ²	VG1245DP+956AGA	VG1245DP+956GGA	VG1245DP+956BGA	VG1245DP+956BAA	
	VG1245DR		29.2	VG1245DR+956AGA	VG1245DR+956GGA	VG1245DR+956BGA	VG1245DR+956BAA	
	VG1245EP	1-1/2	18.7 ²	VG1245EP+956AGA	VG1245EP+956GGA	VG1245EP+956BGA	VG1245EP+956BAA	
	VG1245ER		29.2 ²	VG1245ER+956AGA	VG1245ER+956GGA	VG1245ER+956BGA	VG1245ER+956BAA	
	VG1245ES		46.8	VG1245ES+956AGA	VG1245ES+956GGA	VG1245ES+956BGA	VG1245ES+956BAA	
	VG1245FR	2	29.2 ²	VG1245FR+94JAGA	VG1245FR+94JGGA	VG1245FR+94JBGA	VG1245FR+94JBAA	
	VG1245FS		46.8 ²	VG1245FS+94JAGA	VG1245FS+94JGGA	VG1245FS+94JBGA	VG1245FS+94JBAA	
VG1245FT	73.7		VG1245FT+94JAGA	VG1245FT+94JGGA	VG1245FT+94JBGA	VG1245FT+94JBAA		
Sweat	VG1275AD	1/2	1.2 ²	VG1275AD+24TAGA	VG1275AD+24TGGA	VG1275AD+24TBGA	VG1275AD+24TBAA	
	VG1275AE		1.9 ²	VG1275AE+24TAGA	VG1275AE+24TGGA	VG1275AE+24TBGA	VG1275AE+24TBAA	
	VG1275AF		2.9 ²	VG1275AF+24TAGA	VG1275AF+24TGGA	VG1275AF+24TBGA	VG1275AF+24TBAA	
	VG1275AG		4.7 ²	VG1275AG+24TAGA	VG1275AG+24TGGA	VG1275AG+24TBGA	VG1275AG+24TBAA	
	VG1275AL		7.4 ²	VG1275AL+24TAGA	VG1275AL+24TGGA	VG1275AL+24TBGA	VG1275AL+24TBAA	
	VG1275AN	11.7	VG1275AN+24TAGA	VG1275AN+24TGGA	VG1275AN+24TBGA	VG1275AN+24TBAA		
	VG1275BG	3/4	4.7 ²	VG1275BG+24TAGA	VG1275BG+24TGGA	VG1275BG+24TBGA	VG1275BG+24TBAA	
	VG1275BL		7.4 ²	VG1275BL+24TAGA	VG1275BL+24TGGA	VG1275BL+24TBGA	VG1275BL+24TBAA	
	VG1275BN		11.7	VG1275BN+24TAGA	VG1275BN+24TGGA	VG1275BN+24TBGA	VG1275BN+24TBAA	
	VG1275CL	1	7.4 ²	VG1275CL+24TAGA	VG1275CL+24TGGA	VG1275CL+24TBGA	VG1275CL+24TBAA	
	VG1275CN		11.7 ²	VG1275CN+24TAGA	VG1275CN+24TGGA	VG1275CN+24TBGA	VG1275CN+24TBAA	
	VG1275CP		18.7	VG1275CP+24TAGA	VG1275CP+24TGGA	VG1275CP+24TBGA	VG1275CP+24TBAA	
	Press	VG1295AD	1/2	1.2 ²	VG1295AD+24TAGA	VG1295AD+24TGGA	VG1295AD+24TBGA	VG1295AD+24TBAA
		VG1295AE		1.9 ²	VG1295AE+24TAGA	VG1295AE+24TGGA	VG1295AE+24TBGA	VG1295AE+24TBAA
VG1295AF		2.9 ²		VG1295AF+24TAGA	VG1295AF+24TGGA	VG1295AF+24TBGA	VG1295AF+24TBAA	
VG1295AG		4.7 ²		VG1295AG+24TAGA	VG1295AG+24TGGA	VG1295AG+24TBGA	VG1295AG+24TBAA	
VG1295AL		7.4 ²		VG1295AL+24TAGA	VG1295AL+24TGGA	VG1295AL+24TBGA	VG1295AL+24TBAA	
VG1295AN		11.7	VG1295AN+24TAGA	VG1295AN+24TGGA	VG1295AN+24TBGA	VG1295AN+24TBAA		
VG1295BG		3/4	4.7 ²	VG1295BG+24TAGA	VG1295BG+24TGGA	VG1295BG+24TBGA	VG1295BG+24TBAA	
VG1295BL			7.4 ²	VG1295BL+24TAGA	VG1295BL+24TGGA	VG1295BL+24TBGA	VG1295BL+24TBAA	
VG1295BN			11.7	VG1295BN+24TAGA	VG1295BN+24TGGA	VG1295BN+24TBGA	VG1295BN+24TBAA	
VG1295CL		1	7.4 ²	VG1295CL+24TAGA	VG1295CL+24TGGA	VG1295CL+24TBGA	VG1295CL+24TBAA	
VG1295CN			11.7 ²	VG1295CN+24TAGA	VG1295CN+24TGGA	VG1295CN+24TBGA	VG1295CN+24TBAA	
VG1295CP			18.7	VG1295CP+24TAGA	VG1295CP+24TGGA	VG1295CP+24TBGA	VG1295CP+24TBAA	

1. The VA2202 Series Actuator has a 212°F (100°C) fluid temperature limit. For fluid temperatures higher than 212°F, use an M9206 Series Actuator. For NPT end connection valves, you can specify a factory-mounted M9206 actuator by changing the 22T or 24T in the code number to 936 or 956. For example, VG1245AD+22TBGA becomes VG1245AD+936BGA. For M9206 actuators on Sweat or Press fitting end connection valves, field assembly is required using a M9000-520 linkage.
2. Cv has a characterizing disk.

Table 16: Two-Way Stainless Steel Trim Ball Valves, Electric Actuators with Switches¹

Closeoff: 200 psig				AC 24 V			AC 120 V
End Connection	Valve	Size, in.	Cv	Floating	0 to 10 VDC Proportional	On/Off	On/Off
				VA2202-AGB-2 ² M9206-AGC-2 M9210-AGC-3	VA2202-GGB-2 ² M9206-GGC-2S M9210-GGC-3	VA2202-BGB-2 ² M9206-BGB-2S M9210-BGC-3	VA2202-BAB-2 ² M9206-BAB-2S M9210-BAC-3
Spring Return Open – Valve Normally Open							
NPT	VG1245AD	1/2	1.2 ³	VG1245AD+22TAGB	VG1245AD+22TGGB	VG1245AD+22TBGB	VG1245AD+22TBAB
	VG1245AE		1.9 ³	VG1245AE+22TAGB	VG1245AE+22TGGB	VG1245AE+22TBGB	VG1245AE+22TBAB
	VG1245AF		2.9 ³	VG1245AF+22TAGB	VG1245AF+22TGGB	VG1245AF+22TBGB	VG1245AF+22TBAB
	VG1245AG		4.7 ³	VG1245AG+22TAGB	VG1245AG+22TGGB	VG1245AG+22TBGB	VG1245AG+22TBAB
	VG1245AL		7.4 ³	VG1245AL+22TAGB	VG1245AL+22TGGB	VG1245AL+22TBGB	VG1245AL+22TBAB
	VG1245AN		11.7	VG1245AN+22TAGB	VG1245AN+22TGGB	VG1245AN+22TBGB	VG1245AN+22TBAB
	VG1245BG	3/4	4.7 ³	VG1245BG+22TAGB	VG1245BG+22TGGB	VG1245BG+22TBGB	VG1245BG+22TBAB
	VG1245BL		7.4 ³	VG1245BL+22TAGB	VG1245BL+22TGGB	VG1245BL+22TBGB	VG1245BL+22TBAB
	VG1245BN		11.7	VG1245BN+22TAGB	VG1245BN+22TGGB	VG1245BN+22TBGB	VG1245BN+22TBAB
	VG1245CL	1	7.4 ³	VG1245CL+22TAGB	VG1245CL+22TGGB	VG1245CL+22TBGB	VG1245CL+22TBAB
	VG1245CN		11.7 ³	VG1245CN+22TAGB	VG1245CN+22TGGB	VG1245CN+22TBGB	VG1245CN+22TBAB
	VG1245CP		18.7	VG1245CP+22TAGB	VG1245CP+22TGGB	VG1245CP+22TBGB	VG1245CP+22TBAB
	VG1245DN	1-1/4	11.7 ³	VG1245DN+936AGC	VG1245DN+936GGC	VG1245DN+936BGB	VG1245DN+936BAB
	VG1245DP		18.7 ³	VG1245DP+936AGC	VG1245DP+936GGC	VG1245DP+936BGB	VG1245DP+936BAB
	VG1245DR		29.2	VG1245DR+936AGC	VG1245DR+936GGC	VG1245DR+936BGB	VG1245DR+936BAB
	VG1245EP	1-1/2	18.7 ³	VG1245EP+936AGC	VG1245EP+936GGC	VG1245EP+936BGB	VG1245EP+936BAB
	VG1245ER		29.2 ³	VG1245ER+936AGC	VG1245ER+936GGC	VG1245ER+936BGB	VG1245ER+936BAB
	VG1245ES		46.8	VG1245ES+936AGC	VG1245ES+936GGC	VG1245ES+936BGB	VG1245ES+936BAB
	VG1245FR	2	29.2 ³	VG1245FR+92JAGC	VG1245FR+92JGGC	VG1245FR+92JBGC	VG1245FR+92JBAC
	VG1245FS		46.8 ³	VG1245FS+92JAGC	VG1245FS+92JGGC	VG1245FS+92JBGC	VG1245FS+92JBAC
	VG1245FT		73.7	VG1245FT+92JAGC	VG1245FT+92JGGC	VG1245FT+92JBGC	VG1245FT+92JBAC
Spring Return Closed – Valve Normally Closed							
NPT	VG1245AD	1/2	1.2 ³	VG1245AD+24TAGB	VG1245AD+24TGGB	VG1245AD+24TBGB	VG1245AD+24TBAB
	VG1245AE		1.9 ³	VG1245AE+24TAGB	VG1245AE+24TGGB	VG1245AE+24TBGB	VG1245AE+24TBAB
	VG1245AF		2.9 ³	VG1245AF+24TAGB	VG1245AF+24TGGB	VG1245AF+24TBGB	VG1245AF+24TBAB
	VG1245AG		4.7 ³	VG1245AG+24TAGB	VG1245AG+24TGGB	VG1245AG+24TBGB	VG1245AG+24TBAB
	VG1245AL		7.4 ³	VG1245AL+24TAGB	VG1245AL+24TGGB	VG1245AL+24TBGB	VG1245AL+24TBAB
	VG1245AN		11.7	VG1245AN+24TAGB	VG1245AN+24TGGB	VG1245AN+24TBGB	VG1245AN+24TBAB
	VG1245BG	3/4	4.7 ³	VG1245BG+24TAGB	VG1245BG+24TGGB	VG1245BG+24TBGB	VG1245BG+24TBAB
	VG1245BL		7.4 ³	VG1245BL+24TAGB	VG1245BL+24TGGB	VG1245BL+24TBGB	VG1245BL+24TBAB
	VG1245BN		11.7	VG1245BN+24TAGB	VG1245BN+24TGGB	VG1245BN+24TBGB	VG1245BN+24TBAB
	VG1245CL	1	7.4 ³	VG1245CL+24TAGB	VG1245CL+24TGGB	VG1245CL+24TBGB	VG1245CL+24TBAB
	VG1245CN		11.7 ³	VG1245CN+24TAGB	VG1245CN+24TGGB	VG1245CN+24TBGB	VG1245CN+24TBAB
	VG1245CP		18.7	VG1245CP+24TAGB	VG1245CP+24TGGB	VG1245CP+24TBGB	VG1245CP+24TBAB
	VG1245DN	1-1/4	11.7 ³	VG1245DN+956AGC	VG1245DN+956GGC	VG1245DN+956BGB	VG1245DN+956BAB
	VG1245DP		18.7 ³	VG1245DP+956AGC	VG1245DP+956GGC	VG1245DP+956BGB	VG1245DP+956BAB
	VG1245DR		29.2	VG1245DR+956AGC	VG1245DR+956GGC	VG1245DR+956BGB	VG1245DR+956BAB
	VG1245EP	1-1/2	18.7 ³	VG1245EP+956AGC	VG1245EP+956GGC	VG1245EP+956BGB	VG1245EP+956BAB
	VG1245ER		29.2 ³	VG1245ER+956AGC	VG1245ER+956GGC	VG1245ER+956BGB	VG1245ER+956BAB
	VG1245ES		46.8	VG1245ES+956AGC	VG1245ES+956GGC	VG1245ES+956BGB	VG1245ES+956BAB
	VG1245FR	2	29.2 ³	VG1245FR+94JAGC	VG1245FR+94JGGC	VG1245FR+94JBGC	VG1245FR+94JBAC
	VG1245FS		46.8 ³	VG1245FS+94JAGC	VG1245FS+94JGGC	VG1245FS+94JBGC	VG1245FS+94JBAC
	VG1245FT		73.7	VG1245FT+94JAGC	VG1245FT+94JGGC	VG1245FT+94JBGC	VG1245FT+94JBAC

1. VA2202-xxB and M9206-xxB have a single end switch. M9210-xGC-3 has two end switches.
2. The VA2202 Series Actuator has a 212°F (100°C) fluid temperature limit. For fluid temperatures higher than 212°F, use an M9206 Series Actuator. For NPT end connection valves, you can specify a factory-mounted M9206 actuator by changing 22T or 24T in the code number to 936 or 956. For example, VG1245AD+22TBGB becomes VG1245AD+936BGB. For M9206 actuators on Sweat or Press fitting end connection valves, field assembly is required using a M9000-520 linkage.
3. Cv has a characterizing disk.

Table 17: Two-Way Stainless Steel Trim Ball Valves, Electric Actuators without Switches, Non-Spring Return (Part 1 of 2)

Closeoff: 200 psig				AC 24 V		
End Connection	Valve	Size, in.	Cv	On/Off (Floating) without Timeout ¹	On/Off (Floating) with Timeout	0 to 10 VDC Proportional
				VA9104-AGA-xS ² M9106-AGA-2 M9109-AGA-2	VA9104-IGA-xS ² M9106-IGA-2	VA9104-GGA-xS ² M9106-GGA-2 M9109-GGA-2
NPT	VG1245AD	1/2	1.2 ³	VG1245AD+9T4AGA ⁴	VG1245AD+9T4IGA ⁴	VG1245AD+9T4GGA ⁴
	VG1245AE		1.9 ³	VG1245AE+9T4AGA ⁴	VG1245AE+9T4IGA ⁴	VG1245AE+9T4GGA ⁴
	VG1245AF		2.9 ³	VG1245AF+9T4AGA ⁴	VG1245AF+9T4IGA ⁴	VG1245AF+9T4GGA ⁴
	VG1245AG		4.7 ³	VG1245AG+9T4AGA ⁴	VG1245AG+9T4IGA ⁴	VG1245AG+9T4GGA ⁴
	VG1245AL		7.4 ³	VG1245AL+9T4AGA ⁴	VG1245AL+9T4IGA ⁴	VG1245AL+9T4GGA ⁴
	VG1245AN		11.7	VG1245AN+9T4AGA ⁴	VG1245AN+9T4IGA ⁴	VG1245AN+9T4GGA ⁴
	VG1245BG	3/4	4.7 ³	VG1245BG+9T4AGA ⁴	VG1245BG+9T4IGA ⁴	VG1245BG+9T4GGA ⁴
	VG1245BL		7.4 ³	VG1245BL+9T4AGA ⁴	VG1245BL+9T4IGA ⁴	VG1245BL+9T4GGA ⁴
	VG1245BN		11.7	VG1245BN+9T4AGA ⁴	VG1245BN+9T4IGA ⁴	VG1245BN+9T4GGA ⁴
	VG1245CL	1	7.4 ³	VG1245CL+9T4AGA ⁴	VG1245CL+9T4IGA ⁴	VG1245CL+9T4GGA ⁴
	VG1245CN		11.7 ³	VG1245CN+9T4AGA ⁴	VG1245CN+9T4IGA ⁴	VG1245CN+9T4GGA ⁴
	VG1245CP		18.7	VG1245CP+9T4AGA ⁴	VG1245CP+9T4IGA ⁴	VG1245CP+9T4GGA ⁴
	VG1245DN	1-1/4	11.7 ³	VG1245DN+906AGA	VG1245DN+906IGA	VG1245DN+906GGA
	VG1245DP		18.7 ³	VG1245DP+906AGA	VG1245DP+906IGA	VG1245DP+906GGA
	VG1245DR		29.2	VG1245DR+906AGA	VG1245DR+906IGA	VG1245DR+906GGA
	VG1245EP	1-1/2	18.7 ³	VG1245EP+906AGA	VG1245EP+906IGA	VG1245EP+906GGA
	VG1245ER		29.2 ³	VG1245ER+906AGA	VG1245ER+906IGA	VG1245ER+906GGA
	VG1245ES		46.8	VG1245ES+906AGA	VG1245ES+906IGA	VG1245ES+906GGA
	VG1245FR	2	29.2 ³	VG1245FR+909AGA	—	VG1245FR+909GGA
	VG1245FS		46.8 ³	VG1245FS+909AGA	—	VG1245FS+909GGA
	VG1245FT		73.7	VG1245FT+909AGA	—	VG1245FT+909GGA
Sweat	VG1275AD	1/2	1.2 ³	VG1275AD+9T4AGA ⁴	VG1275AD+9T4IGA ⁴	VG1275AD+9T4GGA ⁴
	VG1275AE		1.9 ³	VG1275AE+9T4AGA ⁴	VG1275AE+9T4IGA ⁴	VG1275AE+9T4GGA ⁴
	VG1275AF		2.9 ³	VG1275AF+9T4AGA ⁴	VG1275AF+9T4IGA ⁴	VG1275AF+9T4GGA ⁴
	VG1275AG		4.7 ³	VG1275AG+9T4AGA ⁴	VG1275AG+9T4IGA ⁴	VG1275AG+9T4GGA ⁴
	VG1275AL		7.4 ³	VG1275AL+9T4AGA ⁴	VG1275AL+9T4IGA ⁴	VG1275AL+9T4GGA ⁴
	VG1275AN		11.7	VG1275AN+9T4AGA ⁴	VG1275AN+9T4IGA ⁴	VG1275AN+9T4GGA ⁴
	VG1275BG	3/4	4.7 ³	VG1275BG+9T4AGA ⁴	VG1275BG+9T4IGA ⁴	VG1275BG+9T4GGA ⁴
	VG1275BL		7.4 ³	VG1275BL+9T4AGA ⁴	VG1275BL+9T4IGA ⁴	VG1275BL+9T4GGA ⁴
	VG1275BN		11.7	VG1275BN+9T4AGA ⁴	VG1275BN+9T4IGA ⁴	VG1275BN+9T4GGA ⁴
	VG1275CL	1	7.4 ³	VG1275CL+9T4AGA ⁴	VG1275CL+9T4IGA ⁴	VG1275CL+9T4GGA ⁴
	VG1275CN		11.7 ³	VG1275CN+9T4AGA ⁴	VG1275CN+9T4IGA ⁴	VG1275CN+9T4GGA ⁴
	VG1275CP		18.7	VG1275CP+9T4AGA ⁴	VG1275CP+9T4IGA ⁴	VG1275CP+9T4GGA ⁴

Table 17: Two-Way Stainless Steel Trim Ball Valves, Electric Actuators without Switches, Non-Spring Return (Part 2 of 2)

Closeoff: 200 psig				AC 24 V		
End Connection	Valve	Size, in.	Cv	On/Off (Floating) without Timeout ¹	On/Off (Floating) with Timeout	0 to 10 VDC Proportional
				VA9104-AGA-xS ² M9106-AGA-2 M9109-AGA-2	VA9104-IGA-xS ² M9106-IGA-2	VA9104-GGA-xS ² M9106-GGA-2 M9109-GGA-2
Press	VG1295AD	1/2	1.2 ³	VG1295AD+9T4AGA ⁴	VG1295AD+9T4IGA ⁴	VG1295AD+9T4GGA ⁴
	VG1295AE		1.9 ³	VG1295AE+9T4AGA ⁴	VG1295AE+9T4IGA ⁴	VG1295AE+9T4GGA ⁴
	VG1295AF		2.9 ³	VG1295AF+9T4AGA ⁴	VG1295AF+9T4IGA ⁴	VG1295AF+9T4GGA ⁴
	VG1295AG		4.7 ³	VG1295AG+9T4AGA ⁴	VG1295AG+9T4IGA ⁴	VG1295AG+9T4GGA ⁴
	VG1295AL		7.4 ³	VG1295AL+9T4AGA ⁴	VG1295AL+9T4IGA ⁴	VG1295AL+9T4GGA ⁴
	VG1295AN		11.7	VG1295AN+9T4AGA ⁴	VG1295AN+9T4IGA ⁴	VG1295AN+9T4GGA ⁴
	VG1295BG	3/4	4.7 ³	VG1295BG+9T4AGA ⁴	VG1295BG+9T4IGA ⁴	VG1295BG+9T4GGA ⁴
	VG1295BL		7.4 ³	VG1295BL+9T4AGA ⁴	VG1295BL+9T4IGA ⁴	VG1295BL+9T4GGA ⁴
	VG1295BN		11.7	VG1295BN+9T4AGA ⁴	VG1295BN+9T4IGA ⁴	VG1295BN+9T4GGA ⁴
	VG1295CL	1	7.4 ³	VG1295CL+9T4AGA ⁴	VG1295CL+9T4IGA ⁴	VG1295CL+9T4GGA ⁴
	VG1295CN		11.7 ³	VG1295CN+9T4AGA ⁴	VG1295CN+9T4IGA ⁴	VG1295CN+9T4GGA ⁴
	VG1295CP		18.7	VG1295CP+9T4AGA ⁴	VG1295CP+9T4IGA ⁴	VG1295CP+9T4GGA ⁴

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. The VA9104 Series Actuator has a 212°F (100°C) fluid temperature limit. For fluid temperatures higher than 212°F, use an M9206 Series Actuator. For NPT end connection valves, you can specify a factory-mounted M9206 actuator by changing 9T4 in the code number to 906. For example, VG1245AD+9T4IGA becomes VG1245AD+906IGA. For M9206 actuators on Sweat or Press fitting end connection valves, field assembly is required using a M9000-520 linkage.
3. Cv has a characterizing disk.
4. Code numbers shown are for a VA9104-xGA-3S actuator with M3 screw terminals. To specify a 48-in. plenum-rated cable, change 9T4 to 9A4 in the code number for a VA9104-xGA-2S actuator. For example, VG1241AD+9T4AGA becomes VG1241AD+9A4AGA.

Table 18: Two-Way Stainless Steel Trim Ball Valves, Electric Actuators with Switches, Non-Spring Return

Closeoff: 200 psig				AC 24 V		
End Connection	Valve	Size, in.	Cv	On/Off (Floating) without Timeout ¹	On/Off (Floating) with Timeout	0 to 10 VDC Proportional
				M9106-AGC-2 M9109-AGC-2	M9106-IGC-2	M9106-GGC-2 M9109-GGC-2
NPT	VG1245AD	1/2	1.2 ²	VG1245AD+906AGC	VG1245AD+906IGC	VG1245AD+906GGC
	VG1245AE		1.9 ²	VG1245AE+906AGC	VG1245AE+906IGC	VG1245AE+906GGC
	VG1245AF		2.9 ²	VG1245AF+906AGC	VG1245AF+906IGC	VG1245AF+906GGC
	VG1245AG		4.7 ²	VG1245AG+906AGC	VG1245AG+906IGC	VG1245AG+906GGC
	VG1245AL		7.4 ²	VG1245AL+906AGC	VG1245AL+906IGC	VG1245AL+906GGC
	VG1245AN		11.7	VG1245AN+906AGC	VG1245AN+906IGC	VG1245AN+906GGC
	VG1245BG	3/4	4.7 ²	VG1245BG+906AGC	VG1245BG+906IGC	VG1245BG+906GGC
	VG1245BL		7.4 ²	VG1245BL+906AGC	VG1245BL+906IGC	VG1245BL+906GGC
	VG1245BN		11.7	VG1245BN+906AGC	VG1245BN+906IGC	VG1245BN+906GGC
	VG1245CL	1	7.4 ²	VG1245CL+906AGC	VG1245CL+906IGC	VG1245CL+906GGC
	VG1245CN		11.7 ²	VG1245CN+906AGC	VG1245CN+906IGC	VG1245CN+906GGC
	VG1245CP		18.7	VG1245CP+906AGC	VG1245CP+906IGC	VG1245CP+906GGC
	VG1245DN	1-1/4	11.7 ²	VG1245DN+906AGC	VG1245DN+906IGC	VG1245DN+906GGC
	VG1245DP		18.7 ²	VG1245DP+906AGC	VG1245DP+906IGC	VG1245DP+906GGC
	VG1245DR		29.2	VG1245DR+906AGC	VG1245DR+906IGC	VG1245DR+906GGC
	VG1245EP	1-1/2	18.7 ²	VG1245EP+906AGC	VG1245EP+906IGC	VG1245EP+906GGC
	VG1245ER		29.2 ²	VG1245ER+906AGC	VG1245ER+906IGC	VG1245ER+906GGC
	VG1245ES		46.8	VG1245ES+906AGC	VG1245ES+906IGC	VG1245ES+906GGC
	VG1245FR	2	29.2 ²	VG1245FR+909AGC	—	VG1245FR+909GGC
	VG1245FS		46.8 ²	VG1245FS+909AGC	—	VG1245FS+909GGC
	VG1245FT		73.7	VG1245FT+909AGC	—	VG1245FT+909GGC

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. Cv has a characterizing disk.

Table 19: Three-Way Stainless Steel Trim Ball Valves, Electric Actuators without Switches, Spring Return Counterclockwise, Port A (Coil) Open

Closeoff: 200 psig				AC 24 V			AC 120 V	
End Connection	Valve	Size, in.	Cv	Floating	0 to 10 VDC Proportional	On/Off	On/Off	
				VA2202-AGA-2 ¹ M9206-AGC-2 M9209-AGC-2	VA2202-GGA-2 ¹ M9206-GGA-2S M9210-GGA-3	VA2202-BGA-2 ¹ M9206-BGA-2S M9210-BGA-3	VA2202-BAA-2 ¹ M9206-BAA-2S M9210-BAA-3	
NPT	VG1845AD	1/2	1.2 ²	VG1845AD+22TAGA	VG1845AD+22TGGA	VG1845AD+22TBGA	VG1845AD+22TBAA	
	VG1845AE		1.9 ²	VG1845AE+22TAGA	VG1845AE+22TGGA	VG1845AE+22TBGA	VG1845AE+22TBAA	
	VG1845AF		2.9 ²	VG1845AF+22TAGA	VG1845AF+22TGGA	VG1845AF+22TBGA	VG1845AF+22TBAA	
	VG1845AG		4.7 ²	VG1845AG+22TAGA	VG1845AG+22TGGA	VG1845AG+22TBGA	VG1845AG+22TBAA	
	VG1845AL		7.4 ²	VG1845AL+22TAGA	VG1845AL+22TGGA	VG1845AL+22TBGA	VG1845AL+22TBAA	
	VG1845AN		11.7	VG1845AN+22TAGA	VG1845AN+22TGGA	VG1845AN+22TBGA	VG1845AN+22TBAA	
	VG1845BG	3/4	4.7 ²	VG1845BG+22TAGA	VG1845BG+22TGGA	VG1845BG+22TBGA	VG1845BG+22TBAA	
	VG1845BL		7.4 ²	VG1845BL+22TAGA	VG1845BL+22TGGA	VG1845BL+22TBGA	VG1845BL+22TBAA	
	VG1845BN		11.7	VG1845BN+22TAGA	VG1845BN+22TGGA	VG1845BN+22TBGA	VG1845BN+22TBAA	
	VG1845CL	1	7.4 ²	VG1845CL+22TAGA	VG1845CL+22TGGA	VG1845CL+22TBGA	VG1845CL+22TBAA	
	VG1845CN		11.7 ²	VG1845CN+22TAGA	VG1845CN+22TGGA	VG1845CN+22TBGA	VG1845CN+22TBAA	
	VG1845CP		18.7	VG1845CP+22TAGA	VG1845CP+22TGGA	VG1845CP+22TBGA	VG1845CP+22TBAA	
	VG1845DN	1-1/4	11.7 ²	VG1845DN+936AGA	VG1845DN+936GGA	VG1845DN+936BGA	VG1845DN+936BAA	
	VG1845DP		18.7 ²	VG1845DP+936AGA	VG1845DP+936GGA	VG1845DP+936BGA	VG1845DP+936BAA	
	VG1845DR		29.2	VG1845DR+936AGA	VG1845DR+936GGA	VG1845DR+936BGA	VG1845DR+936BAA	
	VG1845EP	1-1/2	18.7 ²	VG1845EP+936AGA	VG1845EP+936GGA	VG1845EP+936BGA	VG1845EP+936BAA	
	VG1845ER		29.2 ²	VG1845ER+936AGA	VG1845ER+936GGA	VG1845ER+936BGA	VG1845ER+936BAA	
	VG1845ES		46.8	VG1845ES+936AGA	VG1845ES+936GGA	VG1845ES+936BGA	VG1845ES+936BAA	
	VG1845FR	2	29.2 ²	VG1845FR+92JAGA	VG1845FR+92JGGA	VG1845FR+92JBGA	VG1845FR+92JBAA	
	VG1845FS		46.8 ²	VG1845FS+92JAGA	VG1845FS+92JGGA	VG1845FS+92JBGA	VG1845FS+92JBAA	
VG1845FT	73.7		VG1845FT+92JAGA	VG1845FT+92JGGA	VG1845FT+92JBGA	VG1845FT+92JBAA		
Sweat	VG1875AD	1/2	1.2 ²	VG1875AD+22TAGA	VG1875AD+22TGGA	VG1875AD+22TBGA	VG1875AD+22TBAA	
	VG1875AE		1.9 ²	VG1875AE+22TAGA	VG1875AE+22TGGA	VG1875AE+22TBGA	VG1875AE+22TBAA	
	VG1875AF		2.9 ²	VG1875AF+22TAGA	VG1875AF+22TGGA	VG1875AF+22TBGA	VG1875AF+22TBAA	
	VG1875AG		4.7 ²	VG1875AG+22TAGA	VG1875AG+22TGGA	VG1875AG+22TBGA	VG1875AG+22TBAA	
	VG1875AL		7.4 ²	VG1875AL+22TAGA	VG1875AL+22TGGA	VG1875AL+22TBGA	VG1875AL+22TBAA	
	VG1875AN		11.7	VG1875AN+22TAGA	VG1875AN+22TGGA	VG1875AN+22TBGA	VG1875AN+22TBAA	
	VG1875BG	3/4	4.7 ²	VG1875BG+22TAGA	VG1875BG+22TGGA	VG1875BG+22TBGA	VG1875BG+22TBAA	
	VG1875BL		7.4 ²	VG1875BL+22TAGA	VG1875BL+22TGGA	VG1875BL+22TBGA	VG1875BL+22TBAA	
	VG1875BN		11.7	VG1875BN+22TAGA	VG1875BN+22TGGA	VG1875BN+22TBGA	VG1875BN+22TBAA	
	VG1875CL	1	7.4 ²	VG1875CL+22TAGA	VG1875CL+22TGGA	VG1875CL+22TBGA	VG1875CL+22TBAA	
	VG1875CN		11.7 ²	VG1875CN+22TAGA	VG1875CN+22TGGA	VG1875CN+22TBGA	VG1875CN+22TBAA	
	VG1875CP		18.7	VG1875CP+22TAGA	VG1875CP+22TGGA	VG1875CP+22TBGA	VG1875CP+22TBAA	
	Press	VG1895AD	1/2	1.2 ²	VG1895AD+22TAGA	VG1895AD+22TGGA	VG1895AD+22TBGA	VG1895AD+22TBAA
		VG1895AE		1.9 ²	VG1895AE+22TAGA	VG1895AE+22TGGA	VG1895AE+22TBGA	VG1895AE+22TBAA
VG1895AF		2.9 ²		VG1895AF+22TAGA	VG1895AF+22TGGA	VG1895AF+22TBGA	VG1895AF+22TBAA	
VG1895AG		4.7 ²		VG1895AG+22TAGA	VG1895AG+22TGGA	VG1895AG+22TBGA	VG1895AG+22TBAA	
VG1895AL		7.4 ²		VG1895AL+22TAGA	VG1895AL+22TGGA	VG1895AL+22TBGA	VG1895AL+22TBAA	
VG1895AN			11.7	VG1895AN+22TAGA	VG1895AN+22TGGA	VG1895AN+22TBGA	VG1895AN+22TBAA	
VG1895BG		3/4	4.7 ²	VG1895BG+22TAGA	VG1895BG+22TGGA	VG1895BG+22TBGA	VG1895BG+22TBAA	
VG1895BL			7.4 ²	VG1895BL+22TAGA	VG1895BL+22TGGA	VG1895BL+22TBGA	VG1895BL+22TBAA	
VG1895BN			11.7	VG1895BN+22TAGA	VG1895BN+22TGGA	VG1895BN+22TBGA	VG1895BN+22TBAA	
VG1895CL		1	7.4 ²	VG1895CL+22TAGA	VG1895CL+22TGGA	VG1895CL+22TBGA	VG1895CL+22TBAA	
VG1895CN			11.7 ²	VG1895CN+22TAGA	VG1895CN+22TGGA	VG1895CN+22TBGA	VG1895CN+22TBAA	
VG1895CP			18.7	VG1895CP+22TAGA	VG1895CP+22TGGA	VG1895CP+22TBGA	VG1895CP+22TBAA	

1. The VA2202 Series Actuator has a 212°F (100°C) fluid temperature limit. For fluid temperatures higher than 212°F, use an M9206 Series Actuator. For NPT end connection valves, you can specify a factory-mounted M9206 actuator by changing 22T or 24T in the code number to 936 or 956. For example, VG1845AD+22TBGA becomes VG1845AD+936BGA.
2. Cv has a characterizing disk.

Table 20: Three-Way Stainless Steel Trim Ball Valves, Electric Actuators without Switches, Spring Return Clockwise, Port B (Bypass) Open

Closeoff: 200 psig				AC 24 V			AC 120 V	
End Connection	Valve	Size, in.	Cv	Floating	0 to 10 VDC Proportional	On/Off	On/Off	
				VA2202-AGA-2 ¹ M9206-AGC-2 M9209-AGC-2	VA2202-GGA-2 ¹ M9206-GGA-2S M9210-GGA-3	VA2202-BGA-2 ¹ M9206-BGA-2S M9210-BGA-3	VA2202-BAA-2 ¹ M9206-BAA-2S M9210-BAA-3	
NPT	VG1845AD	1/2	1.2 ²	VG1845AD+24TAGA	VG1845AD+24TGGA	VG1845AD+24TBGA	VG1845AD+24TBAA	
	VG1845AE		1.9 ²	VG1845AE+24TAGA	VG1845AE+24TGGA	VG1845AE+24TBGA	VG1845AE+24TBAA	
	VG1845AF		2.9 ²	VG1845AF+24TAGA	VG1845AF+24TGGA	VG1845AF+24TBGA	VG1845AF+24TBAA	
	VG1845AG		4.7 ²	VG1845AG+24TAGA	VG1845AG+24TGGA	VG1845AG+24TBGA	VG1845AG+24TBAA	
	VG1845AL		7.4 ²	VG1845AL+24TAGA	VG1845AL+24TGGA	VG1845AL+24TBGA	VG1845AL+24TBAA	
	VG1845AN		11.7	VG1845AN+24TAGA	VG1845AN+24TGGA	VG1845AN+24TBGA	VG1845AN+24TBAA	
	VG1845BG	3/4	4.7 ²	VG1845BG+24TAGA	VG1845BG+24TGGA	VG1845BG+24TBGA	VG1845BG+24TBAA	
	VG1845BL		7.4 ²	VG1845BL+24TAGA	VG1845BL+24TGGA	VG1845BL+24TBGA	VG1845BL+24TBAA	
	VG1845BN		11.7	VG1845BN+24TAGA	VG1845BN+24TGGA	VG1845BN+24TBGA	VG1845BN+24TBAA	
	VG1845CL	1	7.4 ²	VG1845CL+24TAGA	VG1845CL+24TGGA	VG1845CL+24TBGA	VG1845CL+24TBAA	
	VG1845CN		11.7 ²	VG1845CN+24TAGA	VG1845CN+24TGGA	VG1845CN+24TBGA	VG1845CN+24TBAA	
	VG1845CP		18.7	VG1845CP+24TAGA	VG1845CP+24TGGA	VG1845CP+24TBGA	VG1845CP+24TBAA	
	VG1845DN	1-1/4	11.7 ²	VG1845DN+956AGA	VG1845DN+956GGA	VG1845DN+956BGA	VG1845DN+956BAA	
	VG1845DP		18.7 ²	VG1845DP+956AGA	VG1845DP+956GGA	VG1845DP+956BGA	VG1845DP+956BAA	
	VG1845DR		29.2	VG1845DR+956AGA	VG1845DR+956GGA	VG1845DR+956BGA	VG1845DR+956BAA	
	VG1845EP	1-1/2	18.7 ²	VG1845EP+956AGA	VG1845EP+956GGA	VG1845EP+956BGA	VG1845EP+956BAA	
	VG1845ER		29.2 ²	VG1845ER+956AGA	VG1845ER+956GGA	VG1845ER+956BGA	VG1845ER+956BAA	
	VG1845ES		46.8	VG1845ES+956AGA	VG1845ES+956GGA	VG1845ES+956BGA	VG1845ES+956BAA	
	VG1845FR	2	29.2 ²	VG1845FR+94JAGA	VG1845FR+94JGGA	VG1845FR+94JBGA	VG1845FR+94JBAA	
	VG1845FS		46.8 ²	VG1845FS+94JAGA	VG1845FS+94JGGA	VG1845FS+94JBGA	VG1845FS+94JBAA	
VG1845FT	73.7		VG1845FT+94JAGA	VG1845FT+94JGGA	VG1845FT+94JBGA	VG1845FT+94JBAA		
Sweat	VG1875AD	1/2	1.2 ²	VG1875AD+24TAGA	VG1875AD+24TGGA	VG1875AD+24TBGA	VG1875AD+24TBAA	
	VG1875AE		1.9 ²	VG1875AE+24TAGA	VG1875AE+24TGGA	VG1875AE+24TBGA	VG1875AE+24TBAA	
	VG1875AF		2.9 ²	VG1875AF+24TAGA	VG1875AF+24TGGA	VG1875AF+24TBGA	VG1875AF+24TBAA	
	VG1875AG		4.7 ²	VG1875AG+24TAGA	VG1875AG+24TGGA	VG1875AG+24TBGA	VG1875AG+24TBAA	
	VG1875AL		7.4 ²	VG1875AL+24TAGA	VG1875AL+24TGGA	VG1875AL+24TBGA	VG1875AL+24TBAA	
	VG1875AN		11.7	VG1875AN+24TAGA	VG1875AN+24TGGA	VG1875AN+24TBGA	VG1875AN+24TBAA	
	VG1875BG	3/4	4.7 ²	VG1875BG+24TAGA	VG1875BG+24TGGA	VG1875BG+24TBGA	VG1875BG+24TBAA	
	VG1875BL		7.4 ²	VG1875BL+24TAGA	VG1875BL+24TGGA	VG1875BL+24TBGA	VG1875BL+24TBAA	
	VG1875BN		11.7	VG1875BN+24TAGA	VG1875BN+24TGGA	VG1875BN+24TBGA	VG1875BN+24TBAA	
	VG1875CL	1	7.4 ²	VG1875CL+24TAGA	VG1875CL+24TGGA	VG1875CL+24TBGA	VG1875CL+24TBAA	
	VG1875CN		11.7 ²	VG1875CN+24TAGA	VG1875CN+24TGGA	VG1875CN+24TBGA	VG1875CN+24TBAA	
	VG1875CP		18.7	VG1875CP+24TAGA	VG1875CP+24TGGA	VG1875CP+24TBGA	VG1875CP+24TBAA	
	Press	VG1895AD	1/2	1.2 ²	VG1895AD+24TAGA	VG1895AD+24TGGA	VG1895AD+24TBGA	VG1895AD+24TBAA
		VG1895AE		1.9 ²	VG1895AE+24TAGA	VG1895AE+24TGGA	VG1895AE+24TBGA	VG1895AE+24TBAA
		VG1895AF		2.9 ²	VG1895AF+24TAGA	VG1895AF+24TGGA	VG1895AF+24TBGA	VG1895AF+24TBAA
VG1895AG		4.7 ²		VG1895AG+24TAGA	VG1895AG+24TGGA	VG1895AG+24TBGA	VG1895AG+24TBAA	
VG1895AL		7.4 ²		VG1895AL+24TAGA	VG1895AL+24TGGA	VG1895AL+24TBGA	VG1895AL+24TBAA	
VG1895AN		11.7		VG1895AN+24TAGA	VG1895AN+24TGGA	VG1895AN+24TBGA	VG1895AN+24TBAA	
VG1895BG		3/4	4.7 ²	VG1895BG+24TAGA	VG1895BG+24TGGA	VG1895BG+24TBGA	VG1895BG+24TBAA	
VG1895BL			7.4 ²	VG1895BL+24TAGA	VG1895BL+24TGGA	VG1895BL+24TBGA	VG1895BL+24TBAA	
VG1895BN			11.7	VG1895BN+24TAGA	VG1895BN+24TGGA	VG1895BN+24TBGA	VG1895BN+24TBAA	
VG1895CL		1	7.4 ²	VG1895CL+24TAGA	VG1895CL+24TGGA	VG1895CL+24TBGA	VG1895CL+24TBAA	
VG1895CN			11.7 ²	VG1895CN+24TAGA	VG1895CN+24TGGA	VG1895CN+24TBGA	VG1895CN+24TBAA	
VG1895CP			18.7	VG1895CP+24TAGA	VG1895CP+24TGGA	VG1895CP+24TBGA	VG1895CP+24TBAA	

1. The VA2202 Series Actuator has a 212°F (100°C) fluid temperature limit. For fluid temperatures higher than 212°F, use an M9206 Series Actuator. For NPT end connection valves, you can specify a factory-mounted M9206 actuator by changing 22T or 24T in the code number to 936 or 956. For example, VG1845AD+22TBGA becomes VG1845AD+936BGA.
2. Cv has a characterizing disk.

Table 21: Three-Way Stainless Steel Trim Ball Valves, Electric Actuators with Switches, Spring Return¹

Closeoff: 200 psig				AC 24 V			AC 120 V
End Connection	Valve	Size, in.	Cv	Floating	0 to 10 VDC Proportional	On/Off	On/Off
				VA2202-AGB-2 ² M9206-AGC-2 M9210-AGC-3	VA2202-GGB-2 ² M9206-GGC-2S M9210-GGC-2	VA2202-BGB-2 ² M9206-BGB-2S M9210-BGC-2	VA2202-BAB-2 ² M9206-BAB-2S M9210-BAC-2
Spring Return Counterclockwise – Port A (Coil) Open							
NPT	VG1845AD	1/2	1.2/0.7 ³	VG1845AD+22TAGB	VG1845AD+22TGGB	VG1845AD+22TBGB	VG1845AD+22TBAB
	VG1845AE		1.9/1.2 ³	VG1845AE+22TAGB	VG1845AE+22TGGB	VG1845AE+22TBGB	VG1845AE+22TBAB
	VG1845AF		2.9/1.9 ³	VG1845AF+22TAGB	VG1845AF+22TGGB	VG1845AF+22TBGB	VG1845AF+22TBAB
	VG1845AG		4.7/2.9 ³	VG1845AG+22TAGB	VG1845AG+22TGGB	VG1845AG+22TBGB	VG1845AG+22TBAB
	VG1845AL		7.4/4.7 ³	VG1845AL+22TAGB	VG1845AL+22TGGB	VG1845AL+22TBGB	VG1845AL+22TBAB
	VG1845AN		11.7/5.8	VG1845AN+22TAGB	VG1845AN+22TGGB	VG1845AN+22TBGB	VG1845AN+22TBAB
	VG1845BG	3/4	4.7/2.9 ³	VG1845BG+22TAGB	VG1845BG+22TGGB	VG1845BG+22TBGB	VG1845BG+22TBAB
	VG1845BL		7.4/4.7 ³	VG1845BL+22TAGB	VG1845BL+22TGGB	VG1845BL+22TBGB	VG1845BL+22TBAB
	VG1845BN		11.7/5.8	VG1845BN+22TAGB	VG1845BN+22TGGB	VG1845BN+22TBGB	VG1845BN+22TBAB
	VG1845CL	1	7.4/4.7 ³	VG1845CL+22TAGB	VG1845CL+22TGGB	VG1845CL+22TBGB	VG1845CL+22TBAB
	VG1845CN		11.7/7.4 ³	VG1845CN+22TAGB	VG1845CN+22TGGB	VG1845CN+22TBGB	VG1845CN+22TBAB
	VG1845CP		18.7/9.4	VG1845CP+22TAGB	VG1845CP+22TGGB	VG1845CP+22TBGB	VG1845CP+22TBAB
	VG1845DN	1-1/4	11.7/7.4 ³	VG1845DN+936AGC	VG1845DN+936GGC	VG1845DN+936BGB	VG1845DN+936BAB
	VG1845DP		18.7/11.7 ³	VG1845DP+936AGC	VG1845DP+936GGC	VG1845DP+936BGB	VG1845DP+936BAB
	VG1845DR		29.2/14.6	VG1845DR+936AGC	VG1845DR+936GGC	VG1845DR+936BGB	VG1845DR+936BAB
	VG1845EP	1-1/2	18.7/11.7 ³	VG1845EP+936AGC	VG1845EP+936GGC	VG1845EP+936BGB	VG1845EP+936BAB
	VG1845ER		29.2/18.7 ³	VG1845ER+936AGC	VG1845ER+936GGC	VG1845ER+936BGB	VG1845ER+936BAB
	VG1845ES		46.8/23.4	VG1845ES+936AGC	VG1845ES+936GGC	VG1845ES+936BGB	VG1845ES+936BAB
	VG1845FR	2	29.2/18.7 ³	VG1845FR+92JAGC	VG1845FR+92JGGC	VG1845FR+92JBGC	VG1845FR+92JBAC
	VG1845FS		46.8/29.2 ³	VG1845FS+92JAGC	VG1845FS+92JGGC	VG1845FS+92JBGC	VG1845FS+92JBAC
VG1845FT	73.7/36.8		VG1845FT+92JAGC	VG1845FT+92JGGC	VG1845FT+92JBGC	VG1845FT+92JBAC	
Spring Return Clockwise – Port B (Bypass) Open							
NPT	VG1845AD	1/2	1.2/0.7 ³	VG1845AD+24TAGB	VG1845AD+24TGGB	VG1845AD+24TBGB	VG1845AD+24TBAB
	VG1845AE		1.9/1.2 ³	VG1845AE+24TAGB	VG1845AE+24TGGB	VG1845AE+24TBGB	VG1845AE+24TBAB
	VG1845AF		2.9/1.9 ³	VG1845AF+24TAGB	VG1845AF+24TGGB	VG1845AF+24TBGB	VG1845AF+24TBAB
	VG1845AG		4.7/2.9 ³	VG1845AG+24TAGB	VG1845AG+24TGGB	VG1845AG+24TBGB	VG1845AG+24TBAB
	VG1845AL		7.4/4.7 ³	VG1845AL+24TAGB	VG1845AL+24TGGB	VG1845AL+24TBGB	VG1845AL+24TBAB
	VG1845AN		11.7/5.8	VG1845AN+24TAGB	VG1845AN+24TGGB	VG1845AN+24TBGB	VG1845AN+24TBAB
	VG1845BG	3/4	4.7/2.9 ³	VG1845BG+24TAGB	VG1845BG+24TGGB	VG1845BG+24TBGB	VG1845BG+24TBAB
	VG1845BL		7.4/4.7 ³	VG1845BL+24TAGB	VG1845BL+24TGGB	VG1845BL+24TBGB	VG1845BL+24TBAB
	VG1845BN		11.7/5.8	VG1845BN+24TAGB	VG1845BN+24TGGB	VG1845BN+24TBGB	VG1845BN+24TBAB
	VG1845CL	1	7.4/4.7 ³	VG1845CL+24TAGB	VG1845CL+24TGGB	VG1845CL+24TBGB	VG1845CL+24TBAB
	VG1845CN		11.7/7.4 ³	VG1845CN+24TAGB	VG1845CN+24TGGB	VG1845CN+24TBGB	VG1845CN+24TBAB
	VG1845CP		18.7/9.4	VG1845CP+24TAGB	VG1845CP+24TGGB	VG1845CP+24TBGB	VG1845CP+24TBAB
	VG1845DN	1-1/4	11.7/7.4 ³	VG1845DN+956AGC	VG1845DN+956GGC	VG1845DN+956BGB	VG1845DN+956BAB
	VG1845DP		18.7/11.7 ³	VG1845DP+956AGC	VG1845DP+956GGC	VG1845DP+956BGB	VG1845DP+956BAB
	VG1845DR		29.2/14.6	VG1845DR+956AGC	VG1845DR+956GGC	VG1845DR+956BGB	VG1845DR+956BAB
	VG1845EP	1-1/2	18.7/11.7 ³	VG1845EP+956AGC	VG1845EP+956GGC	VG1845EP+956BGB	VG1845EP+956BAB
	VG1845ER		29.2/18.7 ³	VG1845ER+956AGC	VG1845ER+956GGC	VG1845ER+956BGB	VG1845ER+956BAB
	VG1845ES		46.8/23.4	VG1845ES+956AGC	VG1845ES+956GGC	VG1845ES+956BGB	VG1845ES+956BAB
	VG1845FR	2	29.2/18.7 ³	VG1845FR+94JAGC	VG1845FR+94JGGC	VG1845FR+94JBGC	VG1845FR+94JBAC
	VG1845FS		46.8/29.2 ³	VG1845FS+94JAGC	VG1845FS+94JGGC	VG1845FS+94JBGC	VG1845FS+94JBAC
VG1845FT	73.7/36.8		VG1845FT+94JAGC	VG1845FT+94JGGC	VG1845FT+94JBGC	VG1845FT+94JBAC	

1. VA2202-xxB and M9206-xxB have a single end switch. M9210-xGC-3 has two end switches.
2. The VA9104 Series Actuator has a 212°F (100°C) fluid temperature limit. For fluid temperatures higher than 212°F, use an M9206 Series Actuator. For NPT end connection valves, you can specify a factory-mounted M9206 actuator by changing 9T4 in the code number to 906. For example, VG1245AD+9T4IGA becomes VG1245AD+906IGA. For M9206 actuators on Sweat or Press fitting end connection valves, field assembly is required using a M9000-520 linkage.

3. Cv has a characterizing disk.

Table 22: Three-Way Stainless Steel Trim Ball Valves, Electric Actuators without Switches, Non-Spring Return

Closeoff: 200 psig				AC 24 V			
End Connection	Valve	Size, in.	Cv	On/Off (Floating) without Timeout ¹	On/Off (Floating) with Timeout	0 to 10 VDC Proportional	
				VA9104-AGA-xS ² M9106-AGA-2 M9109-AGA-3	VA9104-IGA-xS ² M9106-IGA-2	VA9104-GGA-xS ² M9106-GGA-2 M9109-GGA-2	
Spring Return Counterclockwise – Port A (Coil) Open							
NPT	VG1845AD	1/2	1.2/0.7 ³	VG1845AD+9T4AGA ⁴	VG1845AD+9T4IGA ⁴	VG1845AD+9T4GGA ⁴	
	VG1845AE		1.9/1.2 ³	VG1845AE+9T4AGA ⁴	VG1845AE+9T4IGA ⁴	VG1845AE+9T4GGA ⁴	
	VG1845AF		2.9/1.9 ³	VG1845AF+9T4AGA ⁴	VG1845AF+9T4IGA ⁴	VG1845AF+9T4GGA ⁴	
	VG1845AG		4.7/2.9 ³	VG1845AG+9T4AGA ⁴	VG1845AG+9T4IGA ⁴	VG1845AG+9T4GGA ⁴	
	VG1845AL		7.4/4.7 ³	VG1845AL+9T4AGA ⁴	VG1845AL+9T4IGA ⁴	VG1845AL+9T4GGA ⁴	
	VG1845AN		11.7/5.8	VG1845AN+9T4AGA ⁴	VG1845AN+9T4IGA ⁴	VG1845AN+9T4GGA ⁴	
	VG1845BG	3/4	4.7/2.9 ³	VG1845BG+9T4AGA ⁴	VG1845BG+9T4IGA ⁴	VG1845BG+9T4GGA ⁴	
	VG1845BL		7.4/4.7 ³	VG1845BL+9T4AGA ⁴	VG1845BL+9T4IGA ⁴	VG1845BL+9T4GGA ⁴	
	VG1845BN		11.7/5.8	VG1845BN+9T4AGA ⁴	VG1845BN+9T4IGA ⁴	VG1845BN+9T4GGA ⁴	
	VG1845CL	1	7.4/4.7 ³	VG1845CL+9T4AGA ⁴	VG1845CL+9T4IGA ⁴	VG1845CL+9T4GGA ⁴	
	VG1845CN		11.7/7.4 ³	VG1845CN+9T4AGA ⁴	VG1845CN+9T4IGA ⁴	VG1845CN+9T4GGA ⁴	
	VG1845CP		18.7/9.4	VG1845CP+9T4AGA ⁴	VG1845CP+9T4IGA ⁴	VG1845CP+9T4GGA ⁴	
	VG1845DN	1-1/4	11.7/7.4 ³	VG1845DN+906AGA	VG1845DN+906IGA	VG1845DN+906GGA	
	VG1845DP		18.7/11.7 ³	VG1845DP+906AGA	VG1845DP+906IGA	VG1845DP+906GGA	
	VG1845DR		29.2/14.6	VG1845DR+906AGA	VG1845DR+906IGA	VG1845DR+906GGA	
	VG1845EP	1-1/2	18.7/11.7 ³	VG1845EP+906AGA	VG1845EP+906IGA	VG1845EP+906GGA	
	VG1845ER		29.2/18.7 ³	VG1845ER+906AGA	VG1845ER+906IGA	VG1845ER+906GGA	
	VG1845ES		46.8/23.4	VG1845ES+906AGA	VG1845ES+906IGA	VG1845ES+906GGA	
	VG1845FR	2	29.2/18.7 ³	VG1845FR+909AGA	—	VG1845FR+909GGA	
	VG1845FS		46.8/29.2 ³	VG1845FS+909AGA	—	VG1845FS+909GGA	
VG1845FT	73.7/36.8		VG1845FT+909AGA	—	VG1845FT+909GGA		
Sweat	VG1875AD	1/2	1.2/0.7 ³	VG1875AD+9T4AGA ⁴	VG1875AD+9T4IGA ⁴	VG1875AD+9T4GGA ⁴	
	VG1875AE		1.9/1.2 ³	VG1875AE+9T4AGA ⁴	VG1875AE+9T4IGA ⁴	VG1875AE+9T4GGA ⁴	
	VG1875AF		2.9/1.9 ³	VG1875AF+9T4AGA ⁴	VG1875AF+9T4IGA ⁴	VG1875AF+9T4GGA ⁴	
	VG1875AG		4.7/2.9 ³	VG1875AG+9T4AGA ⁴	VG1875AG+9T4IGA ⁴	VG1875AG+9T4GGA ⁴	
	VG1875AL		7.4/4.7 ³	VG1875AL+9T4AGA ⁴	VG1875AL+9T4IGA ⁴	VG1875AL+9T4GGA ⁴	
	VG1875AN		11.7/5.8	VG1875AN+9T4AGA ⁴	VG1875AN+9T4IGA ⁴	VG1875AN+9T4GGA ⁴	
	VG1875BG	3/4	4.7/2.9 ³	VG1875BG+9T4AGA ⁴	VG1875BG+9T4IGA ⁴	VG1875BG+9T4GGA ⁴	
	VG1875BL		7.4/4.7 ³	VG1875BL+9T4AGA ⁴	VG1875BL+9T4IGA ⁴	VG1875BL+9T4GGA ⁴	
	VG1875BN		11.7/5.8	VG1875BN+9T4AGA ⁴	VG1875BN+9T4IGA ⁴	VG1875BN+9T4GGA ⁴	
	VG1875CL	1	7.4/4.7 ³	VG1875CL+9T4AGA ⁴	VG1875CL+9T4IGA ⁴	VG1875CL+9T4GGA ⁴	
	VG1875CN		11.7/7.4 ³	VG1875CN+9T4AGA ⁴	VG1875CN+9T4IGA ⁴	VG1875CN+9T4GGA ⁴	
	VG1875CP		18.7/9.4	VG1875CP+9T4AGA ⁴	VG1875CP+9T4IGA ⁴	VG1875CP+9T4GGA ⁴	
	Press	VG1895AD	1/2	1.2/0.7 ³	VG1895AD+9T4AGA ⁴	VG1895AD+9T4IGA ⁴	VG1895AD+9T4GGA ⁴
		VG1895AE		1.9/1.2 ³	VG1895AE+9T4AGA ⁴	VG1895AE+9T4IGA ⁴	VG1895AE+9T4GGA ⁴
		VG1895AF		2.9/1.9 ³	VG1895AF+9T4AGA ⁴	VG1895AF+9T4IGA ⁴	VG1895AF+9T4GGA ⁴
VG1895AG		4.7/2.9 ³		VG1895AG+9T4AGA ⁴	VG1895AG+9T4IGA ⁴	VG1895AG+9T4GGA ⁴	
VG1895AL		7.4/4.7 ³		VG1895AL+9T4AGA ⁴	VG1895AL+9T4IGA ⁴	VG1895AL+9T4GGA ⁴	
VG1895AN		11.7/5.8		VG1895AN+9T4AGA ⁴	VG1895AN+9T4IGA ⁴	VG1895AN+9T4GGA ⁴	
VG1895BG		3/4	4.7/2.9 ³	VG1895BG+9T4AGA ⁴	VG1895BG+9T4IGA ⁴	VG1895BG+9T4GGA ⁴	
VG1895BL			7.4/4.7 ³	VG1895BL+9T4AGA ⁴	VG1895BL+9T4IGA ⁴	VG1895BL+9T4GGA ⁴	
VG1895BN			11.7/5.8	VG1895BN+9T4AGA ⁴	VG1895BN+9T4IGA ⁴	VG1895BN+9T4GGA ⁴	
VG1895CL		1	7.4/4.7 ³	VG1895CL+9T4AGA ⁴	VG1895CL+9T4IGA ⁴	VG1895CL+9T4GGA ⁴	
VG1895CN			11.7/7.4 ³	VG1895CN+9T4AGA ⁴	VG1895CN+9T4IGA ⁴	VG1895CN+9T4GGA ⁴	
VG1895CP			18.7/9.4	VG1895CP+9T4AGA ⁴	VG1895CP+9T4IGA ⁴	VG1895CP+9T4GGA ⁴	

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. The VA9104 Series Actuator has a 212°F (100°C) fluid temperature limit. For fluid temperatures higher than 212°F, use an M9206 Series Actuator. For NPT end connection valves, you can specify a factory-mounted M9206 actuator by changing 9T4 in the code number to 906. For example, VG1245AD+9T4IGA becomes VG1245AD+906IGA. For M9206 actuators on Sweat or Press fitting end connection valves, field assembly is required using a M9000-520 linkage.
3. Cv has a characterizing disk.
4. Code numbers shown are for a VA9104-xGA-3S actuator with M3 screw terminals. To specify a 48-in. plenum-rated cable, change 9T4 to 9A4 in the code number for a VA9104-xGA-2S actuator. For example, VG1845AD+9T4AGA becomes VG1845AD+9A4AGA.

Table 23: Three-Way Stainless Steel Trim Ball Valves, Electric Actuators with Switches, Non-Spring Return

Closeoff: 200 psig				AC 24 V		
End Connection	Valve	Size, in.	Cv	On/Off (Floating) without Timeout ¹	On/Off (Floating) with Timeout	0 to 10 VDC Proportional
				M9106-AGC-2 M9109-AGC-2	M9106-IGC-2	M9106-GGC-2 M9109-GGC-2
Spring Return Counterclockwise – Port A (Coil) Open						
NPT	VG1845AD	1/2	1.2/0.7 ²	VG1845AD+906AGC	VG1845AD+906IGC	VG1845AD+906GGC
	VG1845AE		1.9/1.2 ²	VG1845AE+906AGC	VG1845AE+906IGC	VG1845AE+906GGC
	VG1845AF		2.9/1.9 ²	VG1845AF+906AGC	VG1845AF+906IGC	VG1845AF+906GGC
	VG1845AG		4.7/2.9 ²	VG1845AG+906AGC	VG1845AG+906IGC	VG1845AG+906GGC
	VG1845AL		7.4/4.7 ²	VG1845AL+906AGC	VG1845AL+906IGC	VG1845AL+906GGC
	VG1845AN		11.7/5.8	VG1845AN+906AGC	VG1845AN+906IGC	VG1845AN+906GGC
	VG1845BG	3/4	4.7/2.9 ²	VG1845BG+906AGC	VG1845BG+906IGC	VG1845BG+906GGC
	VG1845BL		7.4/4.7 ²	VG1845BL+906AGC	VG1845BL+906IGC	VG1845BL+906GGC
	VG1845BN		11.7/5.8	VG1845BN+906AGC	VG1845BN+906IGC	VG1845BN+906GGC
	VG1845CL	1	7.4/4.7 ²	VG1845CL+906AGC	VG1845CL+906IGC	VG1845CL+906GGC
	VG1845CN		11.7/7.4 ²	VG1845CN+906AGC	VG1845CN+906IGC	VG1845CN+906GGC
	VG1845CP		18.7/9.4	VG1845CP+906AGC	VG1845CP+906IGC	VG1845CP+906GGC
	VG1845DN	1-1/4	11.7/7.4 ²	VG1845DN+906AGC	VG1845DN+906IGC	VG1845DN+906GGC
	VG1845DP		18.7/11.7 ²	VG1845DP+906AGC	VG1845DP+906IGC	VG1845DP+906GGC
	VG1845DR		29.2/14.6	VG1845DR+906AGC	VG1845DR+906IGC	VG1845DR+906GGC
	VG1845EP	1-1/2	18.7/11.7 ²	VG1845EP+906AGC	VG1845EP+906IGC	VG1845EP+906GGC
	VG1845ER		29.2/18.7 ²	VG1845ER+906AGC	VG1845ER+906IGC	VG1845ER+906GGC
	VG1845ES		46.8/23.4	VG1845ES+906AGC	VG1845ES+906IGC	VG1845ES+906GGC
	VG1845FR	2	29.2/18.7 ²	VG1845FR+909AGC	—	VG1845FR+909GGC
	VG1845FS		46.8/29.2 ²	VG1845FS+909AGC	—	VG1845FS+909GGC
	VG1845FT		73.7/36.8	VG1845FT+909AGC	—	VG1845FT+909GGC

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. Cv has a characterizing disk.

Table 24: Shipping Weights, lb (kg)¹

Valve Code Number	Description	Shipping Weight, lb (kg)
VG12xxAx	1/2 in. (DN15) Two-Way Forged Brass Ball Valve, Threaded (NPT) End Connections	0.8 (0.36)
VG12xxBx	3/4 in. (DN20) Two-Way Forged Brass Ball Valve, Threaded (NPT) End Connections	1.0 (0.45)
VG12xxCx	1 in. (DN25) Two-Way Forged Brass Ball Valve, Threaded (NPT) End Connections	0.8 (0.36)
VG12xxDx	1-1/4 in. (DN32) Two-Way Forged Brass Ball Valve, Threaded (NPT) End Connections	2.3 (1.04)
VG12xxEx	1-1/2 in. (DN40) Two-Way Forged Brass Ball Valve, Threaded (NPT) End Connections	3.8 (1.73)
VG12xxFx	2 in. (DN50) Two-Way Forged Brass Ball Valve, Threaded (NPT) End Connections	5.0 (2.3)
VG18xxAx	1/2 in. (DN15) Three-Way Forged Brass Ball Valve, Threaded (NPT) End Connections	1.25 (0.57)
VG18xxBx	3/4 in. (DN20) Three-Way Forged Brass Ball Valve, Threaded (NPT) End Connections	1.5 (0.68)
VG18xxCx	1 in. (DN25) Three-Way Forged Brass Ball Valve, Threaded (NPT) End Connections	2.75 (1.25)
VG18xxDx	1-1/4 in. (DN32) Three-Way Forged Brass Ball Valve, Threaded (NPT) End Connections	4.25 (1.93)
VG18xxEx	1-1/2 in. (DN40) Three-Way Forged Brass Ball Valve, Threaded (NPT) End Connections	6.25 (2.84)
VG18xxFx	2 in. (DN50) Three-Way Forged Brass Ball Valve, Threaded (NPT) End Connections	8.2 (3.7)

1. For VA9104 Series Actuated Non-Spring Return Valve Assemblies, add 2.0 lb (0.9 kg); for M9106 and M9109 Series Actuated Non-Spring Return Valve Assemblies, add 3.4 lb (1.5 kg); for VA2202 Series Actuated Spring Return Valve Assemblies, add 2.0 lb (0.9 kg); for M9206 Series Actuated Spring Return Valve Assemblies, add 4.5 lb (2.0 kg); for M9100 Series Actuated Non-Spring Return Valve Assemblies, add 4.4 lb (2.0 kg); for M9210 Series Actuated Valve Assemblies, add 7.9 lb (3.6 kg).

Table 25: Repair Parts

Linkage	Replacement Description	Replacement Part Code Number
M9000-51x	Unit replacement	—
M9000-520	Anti-rotation slider, includes carriage screw, washers, and wing nut	M9000-600
	M5 Mounting Screws and Nuts	M9000-601
	Drive Shaft	M9000-602
	Manual Handle and Mounting Screw	M9000-603
M9000-550	Unit replacement	—
M2000-500	Unit replacement	—

Application Overview

Available in sizes 1/2 through 2 in. (DN15 through DN50), VG1000 Series Ball Valves are designed specifically for automated commercial HVAC service. These valves feature a forged brass body with either a chrome-plated brass ball for water or glycol solutions to 203°F (95°C), or a 300 Series stainless steel ball for high temperature water to 284°F (140°C) and saturated steam to 15 psi. The Amodel Flow Characterizing Disk maintains equal percentage Flow Characteristics for optimum temperature control, as shown in Figure 2.

The blowout-proof stem and mounting flange, combined with an innovative double O-ring stem seal and self-centering stem bushing design (shown in Figure 7) provide quick and easy electric actuator field mounting while ensuring long life and leak-free valve performance. The specially engineered, graphite-reinforced PTFE seat with flexible PTFE seat design (backed with EPDM O-rings) significantly reduces the operating torque, allowing the smallest possible electric actuator available to provide the force required for the specific application. All valve and actuator assemblies provide 200 psig (1,379 kPa) closeoff pressure while ensuring operation after long idle periods.

VG1000 Series Ball Valves are designed for factory or field mounting to Johnson Controls VA9104, M9104 (field mounting only), M9106, M9109, M9116, and M9124 Series Non-Spring Return Electric Actuators and VA2202, M2202 (field mounting only), M9206, and M9210 Series Spring Return Electric Actuators. All of these actuators are ideally suited for on/off, floating, or proportional HVAC service. Field actuator-to-valve coupling requires an M9000-5xx or M2000-500 Valve Linkage Kit. See Table 26 for valid valve, actuator, and linkage combinations for assembly in the field. Because of their cost-effective, reliable design, VG1000 Series Ball Valves are maintenance free.

Valve End Connection

VG1000 Series 1/2, 3/4, and 1 in. valves are available in one of three end connections: NPT pipe connections, sweat end connections for use with copper tubing, and press end connections for use with copper tubing. These valves are designed for installation using RIDGID Pressing Tool Technology manufactured by the Ridge Tool Corporation for use with the ProPress fitting system. Press end connections afford significant installation savings. Additional information on these tools can be found at www.ridgid.com.

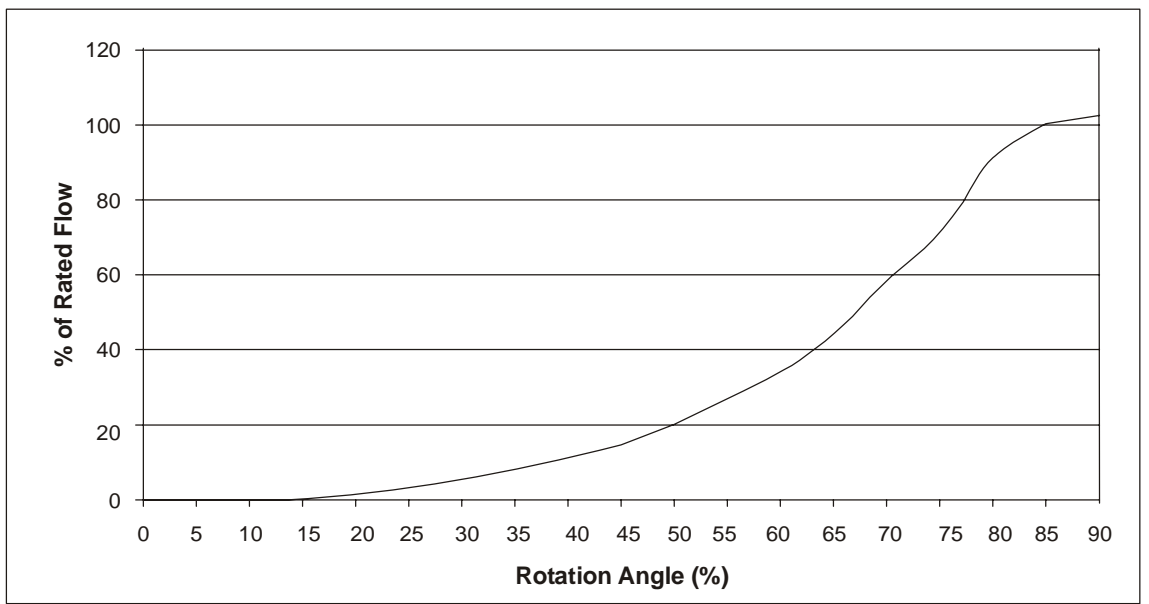


Figure 2: Typical Two-Way VG1000 Series Ball Valve with Characterizing Disk Flow

See Figure 3 for typical VG1000 internal composition.

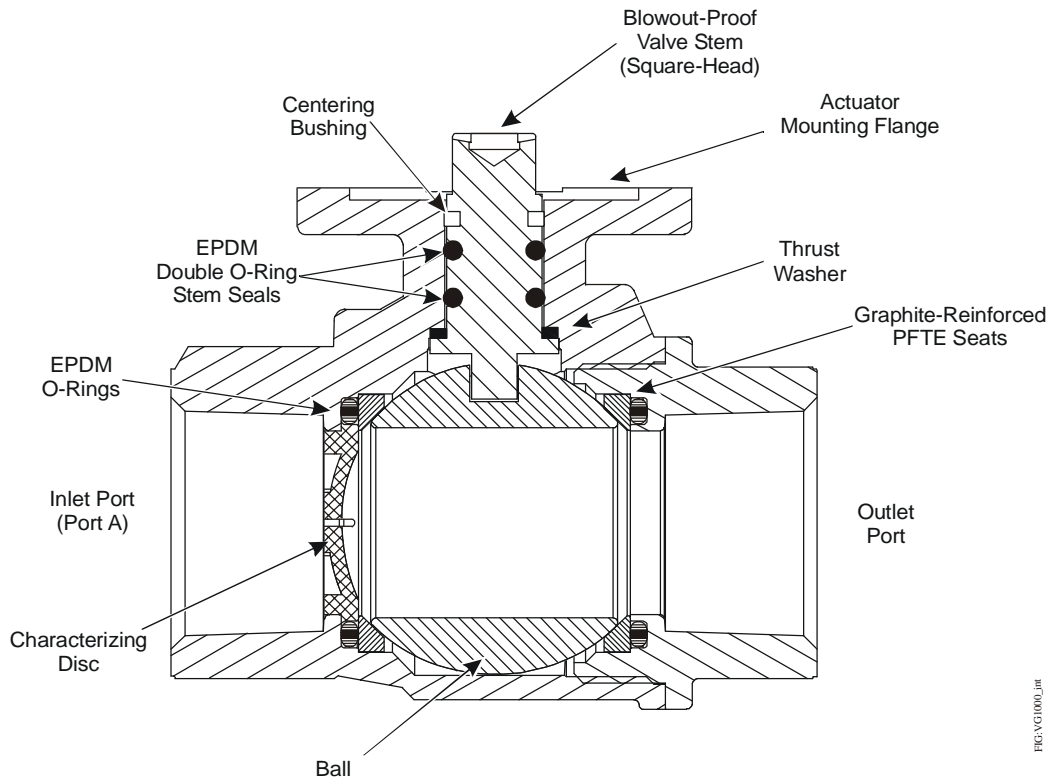
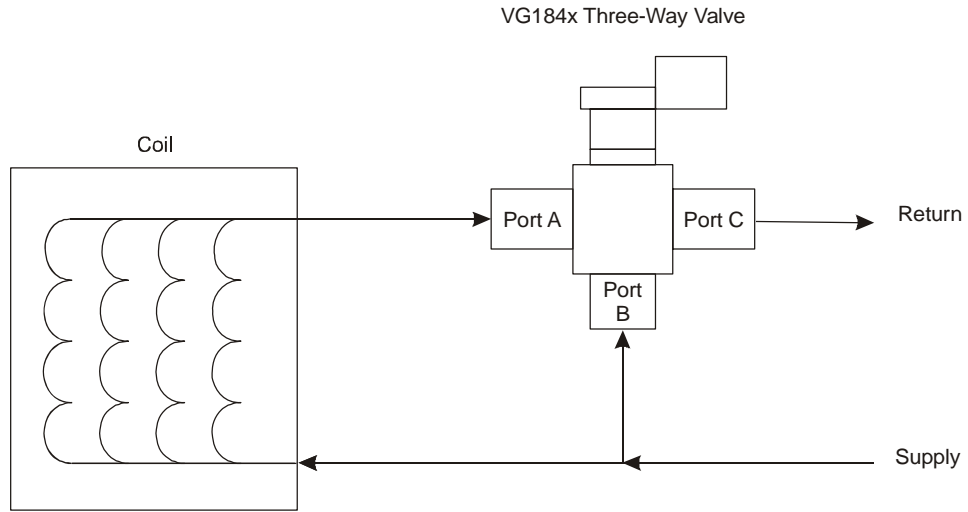
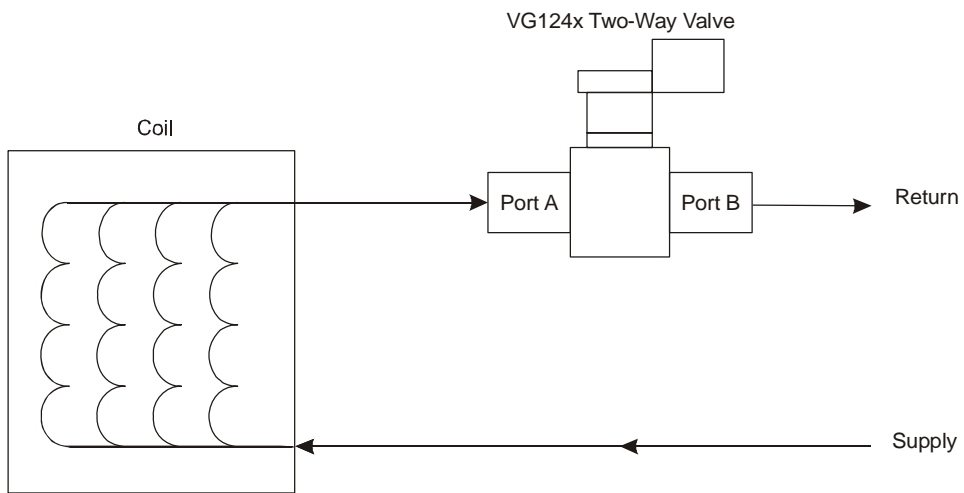


Figure 3: Internal View of a Typical VG1000 Series Ball Valve

See Figure 4 for typical piping applications.



Typical Three-Way Ball Valve Application



Typical Two-Way Ball Valve Application

Note: Mount the valve downstream from the coil to minimize heat transfer to the actuator.

Figure 4: Typical VG1000 Piping

FIG.VG1000_17ppp

IMPORTANT: The VG1000 Series Valves are intended to control saturated steam, hot water, and chilled water flow under normal equipment operating conditions. Where failure or malfunction of the VG1000 Series Valve could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the system. Incorporate and maintain other devices such as supervisory or alarm systems or safety or limit controls, intended to warn of or protect against failure or malfunction of the VG1000 Series Valve.

Electric Actuator Control Signal Action

Two-way VG1000 Series Ball Valves are fully open when the electric actuator is fully Counterclockwise (CCW) and fully closed when the electric actuator is fully Clockwise (CW). For three-way valves, the Port A and common port are fully open when the electric actuator is fully CCW, as shown in Figure 5. Port B and common port are fully open when the actuator is fully CW, as shown in Figure 6.

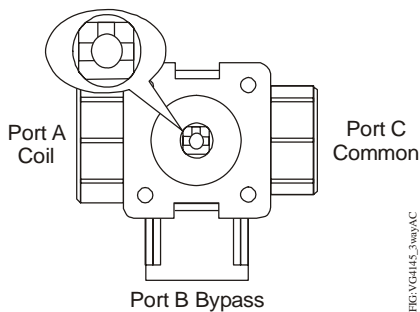


Figure 5: VG1841 or VG1845 Series Three-Way Ball Valve (Port A Connected to Port C)

Note: VG1841 and VG1845 three-way ball valves have a different port configuration (as shown in Figure 5 and Figure 6) from the older VG1644 Series three-way ball valves (Figure 7), and you must change the piping to convert them to the new series of valves.

For non-spring return and spring-to-open proportional control models in the direct-acting mode, a minimum control signal drives the electric actuator to the fully CCW position, whereas a maximum control signal drives the electric actuator to the fully CW position.

For spring-to-close proportional control models in the direct-acting mode, a minimum control signal drives the electric actuator to the fully CW position, whereas a maximum control signal drives the electric actuator to the fully CCW position.

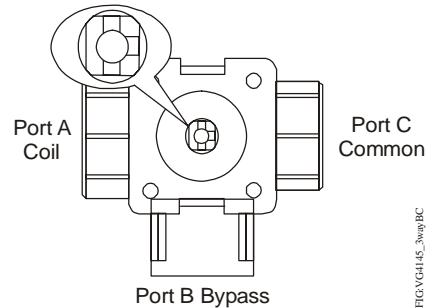


Figure 6: VG1841 or VG1845 Series Three-Way Ball Valve (Port B Connected to Port C)

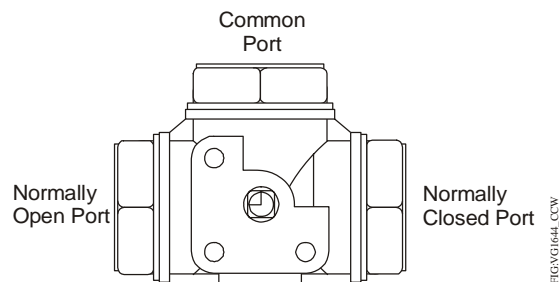


Figure 7: Top View of VG1644 Series Three-Way Ball Valve (Actuator Fully CCW)

For non-spring return floating or on/off (floating) control models, a control signal to Terminal 2 (or wire 2) of a VA9104 or an M91xx Series Actuator drives the electric actuator to the fully CW position. Likewise, a control signal to Terminal 3 (or wire 3) of a VA9104 or an M91xx Series Actuator drives the electric actuator to the fully CCW position.

For spring return floating control VA2202 models that have the actuator mounted with the blue housing facing away from the valve (actuator spring returns fully CCW) and the direction of the rotation switch in the CW position, a control signal to the Orange Wire drives the electric actuator to the fully CW position. Likewise, a control signal to the White Wire drives the valve to the fully CCW position.

If the VA2202 actuator is reversed so the gray housing is away from the valve (actuator spring returns fully CW) and the direction of the rotation switch is in the CCW position, then a control signal to the Orange Wire drives the electric actuator to the fully CCW position. Likewise, a control signal to the White Wire drives the valve to the fully CW position.

A control signal to Wire 3 of a CCW-face (mounted away from the valve) M9206 Series or M9210 Series actuated spring-to-open valve assembly drives the electric actuator to the fully CW position. Likewise, a control signal to Wire 4 of a floating CCW-face M9206 Series or M9210 Series Actuator, or removal of the control signal from Wire 3 of an on/off CCW-face M9206 Series or M9210 Series actuated spring-to-open valve assembly, drives the electric actuator to the fully CCW position.

A control signal to Wire 3 of a CW-face (mounted away from the valve) M9206 Series or M9210 Series actuated spring-to-close valve assembly drives the electric actuator to the fully CCW position. Likewise, a control signal to Wire 4 of a floating CW-face M9206 Series or M9210 Series Actuator, or removal of the control signal from Wire 3 of an on/off CW-face M9206 Series or M9210 Series actuated spring-to-close valve assembly, drives the electric actuator to the fully CW position.

Electric Actuator Selection

VG1000 Series Ball Valves are designed for factory or field mounting to Johnson Controls VA9104, M9104 (field mounting only), M9106, M9109, and M9100 Series Non-Spring Return Electric Actuators; and VA2202, M2202, M9206, and M9210 (field mounting only) Series Spring Return Electric Actuators. Field actuator-to-valve coupling requires an M2000-500, M9000-51x, M9000-520, or M9000-550 Valve Linkage Kit except for the direct mount VA9104 and VA2202 actuators. See Table 26 for valid valve, actuator, and linkage combinations.

Note: To avoid excessive wear or drive time on the motor for VA9104, M9104, M9106, and M9109 AGx models, use a controller and/or software that provides a timeout function to remove the signal at the end of rotation (stall). The IGx and GGx models have an auto shutoff to avoid excessive wear or drive time on the motor.

For more information on these electric actuator series as well as details on models available, refer to the following documents:

- *VA9104-xGA-2S, -3S Series Electric Non-Spring Return Valve Actuators Product Bulletin (LIT-12011050)*
- *M9102-AGA-2S, -3S and M9104-xGA-2S, -3S Series Electric Non-Spring Return Actuators Product Bulletin (LIT-1201742)*
- *VA2202-xxx-2 Series Electric Spring Return Valve Actuators Product Bulletin (LIT-12011160)*
- *M2202-xxx-2 Series Electric Spring Return Actuators Product Bulletin (LIT-12011159)*
- *M9106-xGx-2 Series Electric Non-spring Return Actuators Product Bulletin (LIT-2681123)*
- *M9109 Series Electric Non-spring Return Actuators Product Bulletin (LIT-120112)*
- *M9206 Series Electric Spring Return Actuators Product Bulletin (LIT-2681118)*
- *M9206-xxx-2S Series Electric Spring Return Actuators Product Bulletin (LIT-1201791)*
- *M9108, M9116, M9124, and M9132 Series Electric Non-Spring Return Actuators Product Bulletin (LIT-2681058)*
- *M9210-xxx-3 Electric Spring Return Actuators Product Bulletin (LIT-12011056)*

Linkage Kit and Weather Shield Selection

The M9000-51x, M9000-520, M9000-550, and M2000-500 Valve Linkage Kits and M9000-330 and M9000-340 Weather Shields are designed specifically for field mounting Johnson Controls M9104, M9106, M9109, and M9100 Series Non-Spring Return, and M2202, M9206, and M9210 Series Spring Return Electric Actuators to VG1000 Series Ball Valves. See Table 26 for valid valve, actuator, linkage, and weather shield combinations.

For more information on the M9000-520 Linkage Kit, refer to the *M9000-520 Ball Valve Linkage Kit Product Bulletin (LIT-1201547)* or the *M9000-520 Ball Valve Linkage Kit Installation Instructions (Part No. 14-1297-5)*.

For more information on the M9000-51x Valve Linkage Kits, refer to the *M9000-51x Series Valve Linkage Kits Product Bulletin (LIT-977354)* or the *M9000-51x Series Valve Linkage Kits Installation Instructions (Part No. 14-1201-13)*.

For more information on the M9000-550 Linkage Kit, refer to the *M9000-550 Ball Valve Linkage Kit Installation Instructions (Part No. 34-636-1816)*.

For more information on the M2000-500 Linkage Kit, refer to the *M2000-500 Ball Valve Linkage Kit Installation Instructions (Part No. 14-1343-7)*.

For more information on the M9000-330 and M9000-340 Weather Shields, refer to the *M9000-330 and M9000-340 Series Weather Shield Enclosures Installation Instructions (Part No. 14-1330-26)*.

Table 26: Valid Ball Valve, Electric Actuator, Linkage Kit, and Weather Shield Combinations (for Assembly in the Field)

Valve Size, in. (DN)	Valve Code Numbers			Actuator Base Number ¹	Linkage Kit Code Number	Weather Shield
	NPT End Connection	Sweat End Connection	Press End Connection			
1/2 (DN15)	VG1241Ax VG1245Ax VG1841Ax VG1845Ax	VG1271Ax VG1275Ax VG1871Ax VG1875Ax	VG1291Ax VG1295Ax VG1891Ax VG1895Ax	VA9104 ²	None Required	
				M9104 ²	M9000-550	
				VA2202	None Required	
				M2202	M2000-500	
				M9106 ² M9206	M9000-520	
				M9108	M9000-516	M9000-330
				M9210	M9000-517	M9000-340
3/4 (DN20)	VG1241Bx VG1245Bx VG1841Bx VG1845Bx	VG1271Bx VG1275Bx VG1871Bx VG1875Bx	VG1291Bx VG1295Bx VG1891Bx VG1895Bx	VA9104 ²	None Required	
				M9104 ²	M9000-550	
				VA2202	None Required	
				M2202	M2000-500	
				M9106 ² M9206	M9000-520	
				M9108	M9000-516	M9000-330
				M9210	M9000-517	M9000-340
1 (DN25)	VG1241Cx VG1245Cx VG1841Cx VG1845Cx	VG1271Cx VG1275Cx VG1871Cx VG1875Cx	VG1291Cx VG1295Cx VG1891Cx VG1895Cx	VA9104 ²	None Required	
				M9104 ²	M9000-550	
				VA2202	None Required	
				M9106 ² M9206	M9000-520	
				M9108	M9000-516	M9000-330
				M9210	M9000-517	M9000-340
				1-1/4 (DN32)	VG1241Dx VG1245Dx VG1841Dx VG1845Dx	
M9108	M9000-516	M9000-330				
M9210	M9000-517	M9000-340				
1-1/2 (DN40)	VG1241Ex VG1245Ex VG1841Ex VG1845Ex			M9106 ² M9206	M9000-520	
				M9108	M9000-516	M9000-330
				M9210	M9000-517	M9000-340
2 (DN50)	VG1241Fx VG1245Fx VG1841Fx VG1845Fx			M9109 ²	M9000-520	
				M9116	M9000-516	M9000-330
				M9210	M9000-517	M9000-340

1. VA9104, M9104, M9106, M9109 and M9100 Series Actuators are non-spring return; and VA2202, M2202, M9206 and M9210 Series Actuators are spring return. Note: VA9104, M9104, VA2202, and M2202 have a maximum fluid temperature limit of 212°F (100°C).
2. To avoid excessive wear or drive time on the motor for VA9104, M9104, M9106, and M9109 AGx models, use a controller and/or software that provides a timeout function to remove the signal at the end of rotation (stall). The IGx and GGx models have an automatic shutoff to avoid excessive wear or drive time on the motor.

See Figure 8 for dimension drawings of the Non-Spring Return VA9104 Series Actuated VG1241, VG1245, VG1841, and VG1845 Series NPT End Connection Ball Valves. See Table 27 for specific model linkage dimensions.

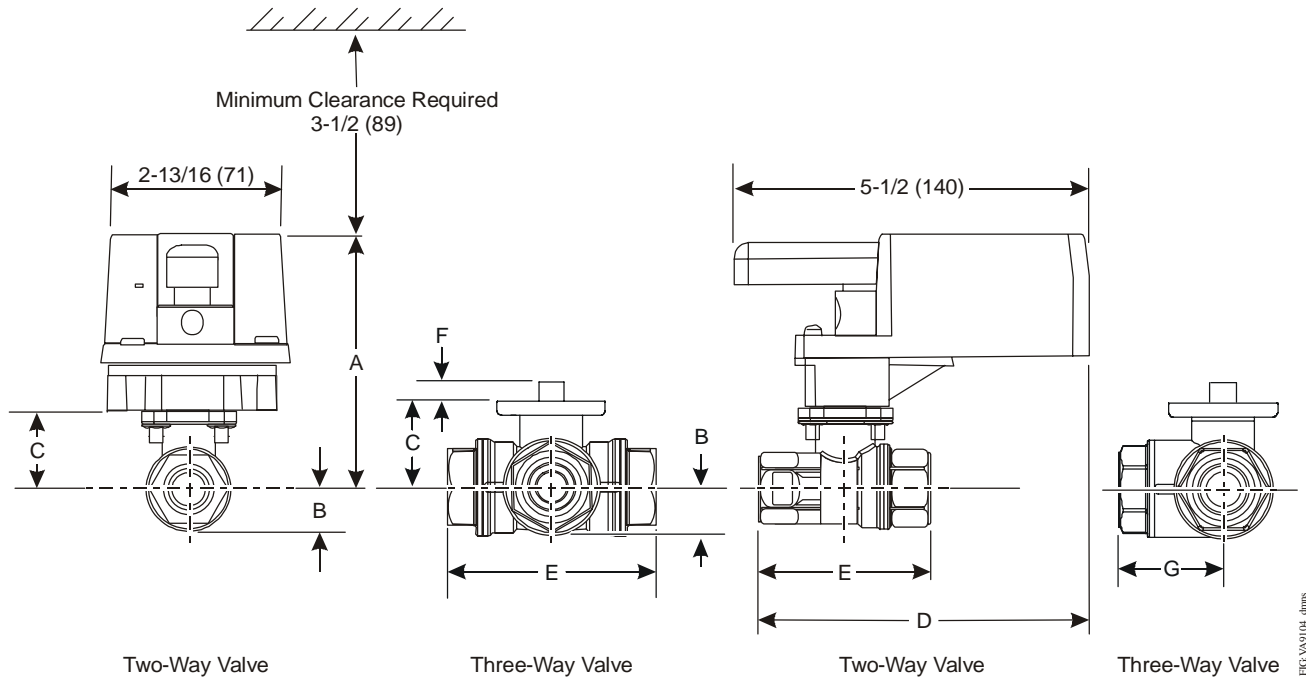


Figure 8: VA9104 Actuated VG1241, VG1245, VG1841, and VG1845 Series Ball Valve with NPT End Connections Dimensions, in. (mm)

Table 27: VA9104 Actuated VG1241, VG1245, VG1841, and VG1845 Series Ball Valve with NPT End Connections Dimensions, in. (mm)

Valve Size, in. (DN) ¹	A	B	C	D	E	F	G
1/2 (DN15)	3-7/8 (98)	21/32 (17)	1-7/32 (31)	5-7/64 (129)	2-33/64 (64)	11/32 (9)	1-1/4 (32)
3/4 (DN20)	3-7/8 (98)	21/32 (17)	1-7/32 (31)	5-7/32 (133)	2-51/64 (71)	11/32 (9)	1-13/32 (36)
1 (DN25)	3-11/16 (100)	3/4 (19)	1-19/64 (33)	5-9/16 (141)	3-13/32 (87)	11/32 (9)	1-11/16 (43)

1. On models with the flow-characterizing disk, the disk is located in Port A. Port A must be the inlet.

See Figure 9 for dimensions of the Non-Spring Return VA9104 Series Actuated VG1271, VG1275, VG1871, and VG1875 Series Sweat End Connection Ball Valves. See Table 28 for specific model dimensions.

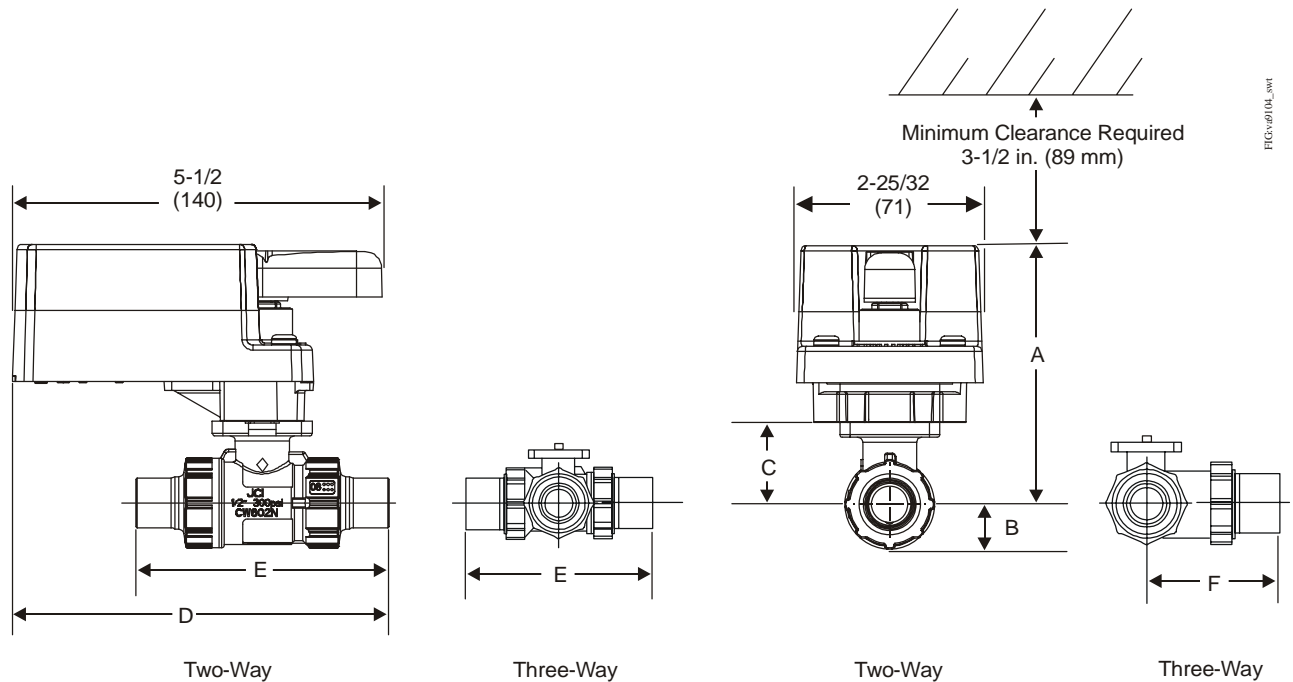


Figure 9: VA9104 Actuated VG1271, VG1275, VG1871, and VG1875 Series Ball Valve with Sweat End Connections Dimensions, in. (mm)

Table 28: VA9104 Actuated VG1271, VG1275, VG1871, and VG1875 Series Ball Valve with Sweat End Connections Dimensions, in. (mm)

Valve Size, in. (DN) ¹	A	B	C	D	E	F
1/2 (DN15)	3-7/8 (98)	21/32 (17)	1-7/32 (31)	5-45/64 (145)	3-25/32 (96)	2-13/16 (55)
3/4 (DN20)	3-7/8 (98)	21/32 (17)	1-7/32 (31)	5-57/64 (150)	4-3/32 (104)	2-15/32 (62)
1 (DN25)	3-15/16 (100)	3/4 (19)	1-19/64 (33)	6-1/8 (156)	4-41/64 (118)	2-27/32 (72)

1. On models with the flow-characterizing disk, the disk is located in Port A. Port A must be the inlet.

See Figure 10 for dimensions of the Non-Spring Return VA9104 Series Actuated VG1291, VG1295, VG1891, and VG1895 Series Press End Connection Ball Valves. See Table 29 for specific model dimensions.

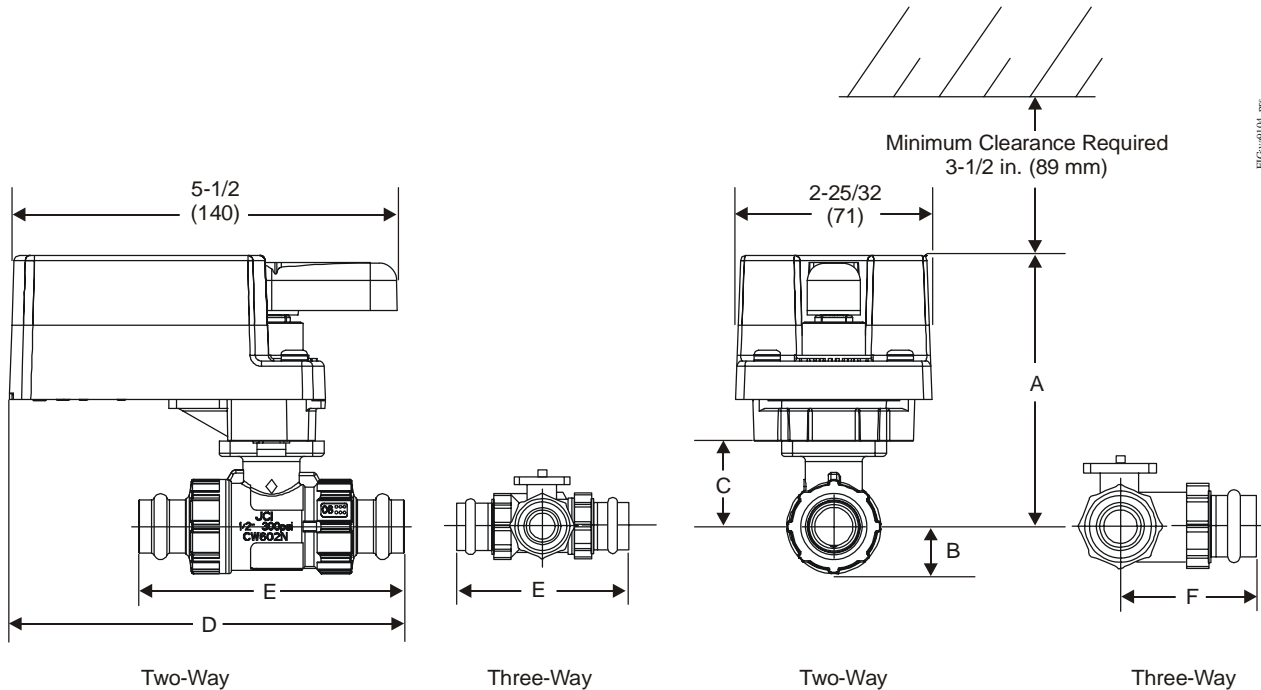


Figure 10: VA9104 Actuated VG1291, VG1295, VG1891, and VG1895 Series Ball Valve with Press End Connections Dimensions, in. (mm)

Table 29: VA9104 Actuated VG1291, VG1295, VG1891, and VG1895 Series Ball Valve with Press End Connections Dimensions, in. (mm)

Valve Size, in. (DN) ¹	A	B	C	D	E	F
1/2 (DN15)	3-7/8 (98)	21/32 (17)	1-7/32 (31)	5-45/64 (145)	3-25/32 (96)	2-13/16 (55)
3/4 (DN20)	3-7/8 (98)	21/32 (17)	1-7/32 (31)	5-57/64 (150)	4-3/32 (104)	2-15/32 (62)
1 (DN25)	3-11/16 (100)	3/4 (19)	1-19/64 (33)	6-1/8 (156)	4-41/64 (118)	2-27/32 (72)

1. On models with the flow-characterizing disk, the disk is located in Port A. Port A must be the inlet.

See Figure 11 for dimension drawings of the Spring Return VA2202 Actuated VG1241, VG1245, VG1841, and VG1845 Series NPT End Connection Ball Valve. See Table 30 for specific model linkage dimensions.

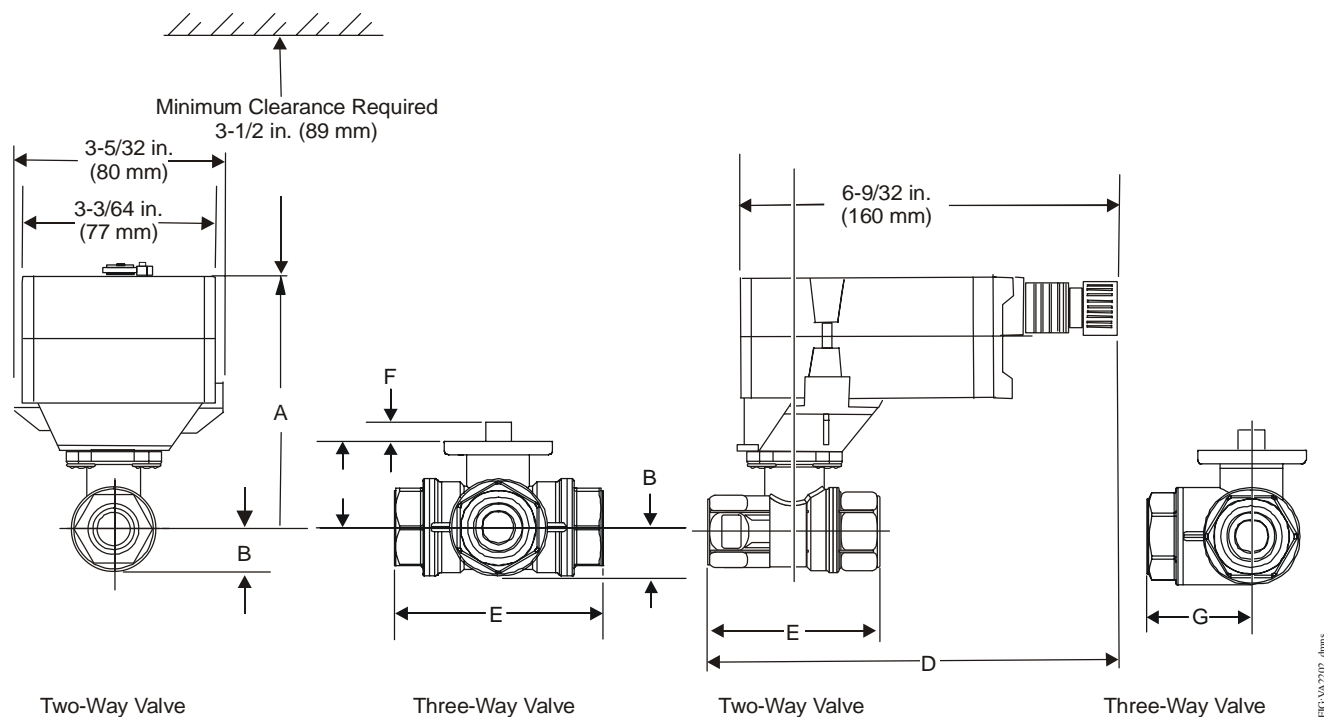


Figure 11: VA2202 Actuated VG1241, VG1245, VG1841, and VG1845 Series Ball Valve with NPT End Connections Dimensions, in. (mm)

Table 30: VA2202 Actuated VG1241, VG1245, VG1841, and VG1845 Series Ball Valve with NPT End Connections Dimensions, in. (mm)

Valve Size, in. (DN) ¹	A	B	C	D	E	F	G
1/2 (DN15)	4-1/4 (108)	21/32 (17)	1-7/32 (31)	6-23/32 (171)	2-33/64 (64)	11/32 (9)	1-1/4 (32)
3/4 (DN20)	4-1/4 (108)	21/32 (17)	1-7/32 (31)	6-7/8 (175)	2-51/64 (71)	11/32 (9)	1-13/32 (36)
1 (DN25)	4-9/32 (109)	3/4 (19)	1-19/64 (33)	7-7/64 (180)	3-13/32 (87)	11/32 (9)	1-45/64 (43)

1. On models with the flow-characterizing disk, the disk is located in Port A. Port A must be the inlet.

See Figure 12 for dimensions of the Spring Return VA2202 Series Actuated VG1271, VG1275, VG1871, and VG1875 Series Sweat End Connection Ball Valves. See Table 31 for specific model dimensions.

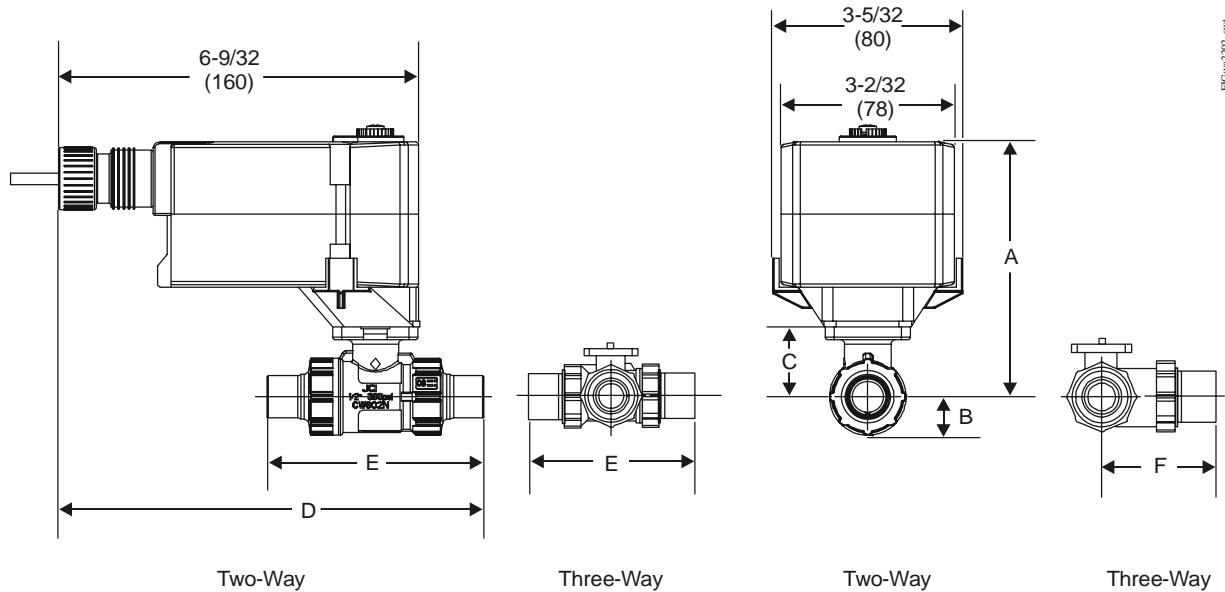


Figure 12: VA2202 Actuated VG1271, VG1275, VG1871, and VG1875 Series Ball Valve with Sweat End Connections Dimensions, in. (mm)

Table 31: VA2202 Actuated VG1271, VG1275, VG1871, and VG1875 Series Ball Valve with Sweat End Connections Dimensions, in. (mm)

Valve Size, in. (DN) ¹	A	B	C	D	E	F
1/2 (DN15)	4-1/4 (108)	21/32 (17)	1-7/32 (31)	7-23/64 (187)	3-25/32 (96)	2-13/16 (55)
3/4 (DN20)	4-1/4 (108)	21/32 (17)	1-7/32 (31)	7-33/64 (191)	4-3/32 (104)	2-15/32 (62)
1 (DN25)	4-21/64 (110)	3/4 (19)	1-19/64 (33)	7-51/64 (198)	4-41/64 (118)	2-27/32 (72)

1. On models with the flow-characterizing disk, the disk is located in Port A. Port A must be the inlet.

See Figure 13 for dimensions of the Spring Return VA2202 Series Actuated VG1291, VG1295, VG1891, and VG1895 Series Press End Connection Ball Valves. See Table 32 for specific model dimensions.

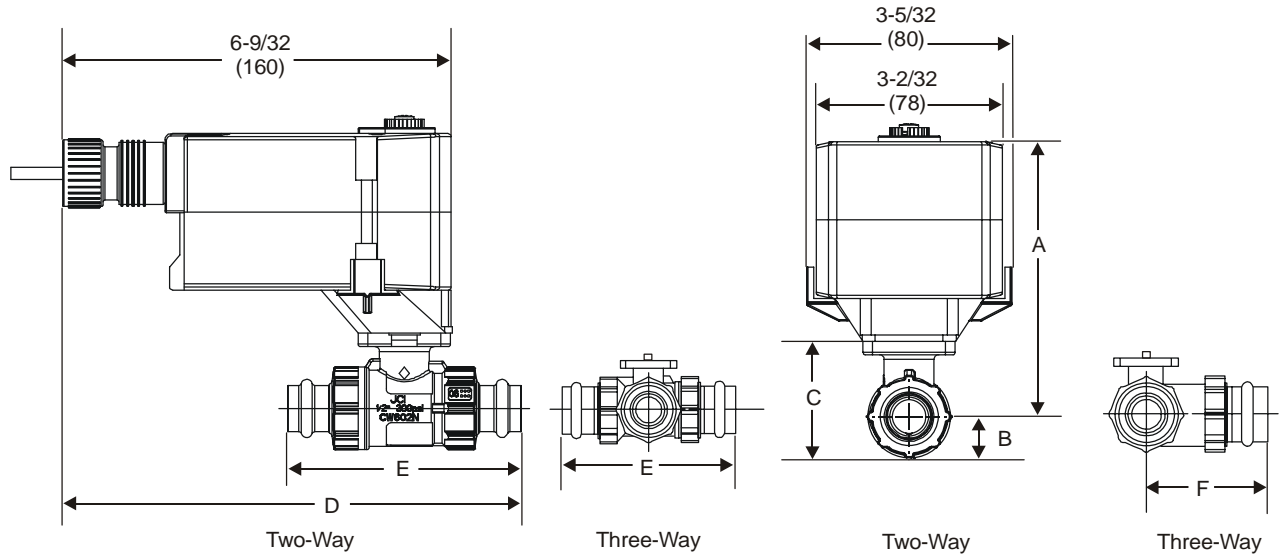


Figure 13: VA2202 Actuated VG1291, VG1295, VG1891, and VG1895 Series Ball Valve with Press End Connection Dimensions, in. (mm)

Table 32: VA2202 Actuated VG1291, VG1295, VG1891, and VG1895 Series Ball Valve with Press End Connections Dimensions, in. (mm)

Valve Size, in. (DN) ¹	A	B	C	D	E	F
1/2 (DN15)	4-1/4 (108)	21/32 (17)	1-7/32 (31)	7-23/64 (187)	3-25/32 (96)	2-13/16 (55)
3/4 (DN20)	4-1/4 (108)	21/32 (17)	1-7/32 (31)	7-33/64 (191)	4-3/32 (104)	2-15/32 (62)
1 (DN25)	4-21/64 (110)	3/4 (19)	1-19/64 (33)	7-26/32 (198)	4-41/64 (118)	2-27/32 (72)

1. On models with the flow-characterizing disk, the disk is located in Port A. Port A must be the inlet.

See Figure 14 for dimensions of the Non-Spring Return M9106 or M9109 Actuated VG1241, VG1245, VG1841, and VG1845 Series Ball Valve with M9000-520 Linkage. See Table 33 for specific model linkage dimensions.

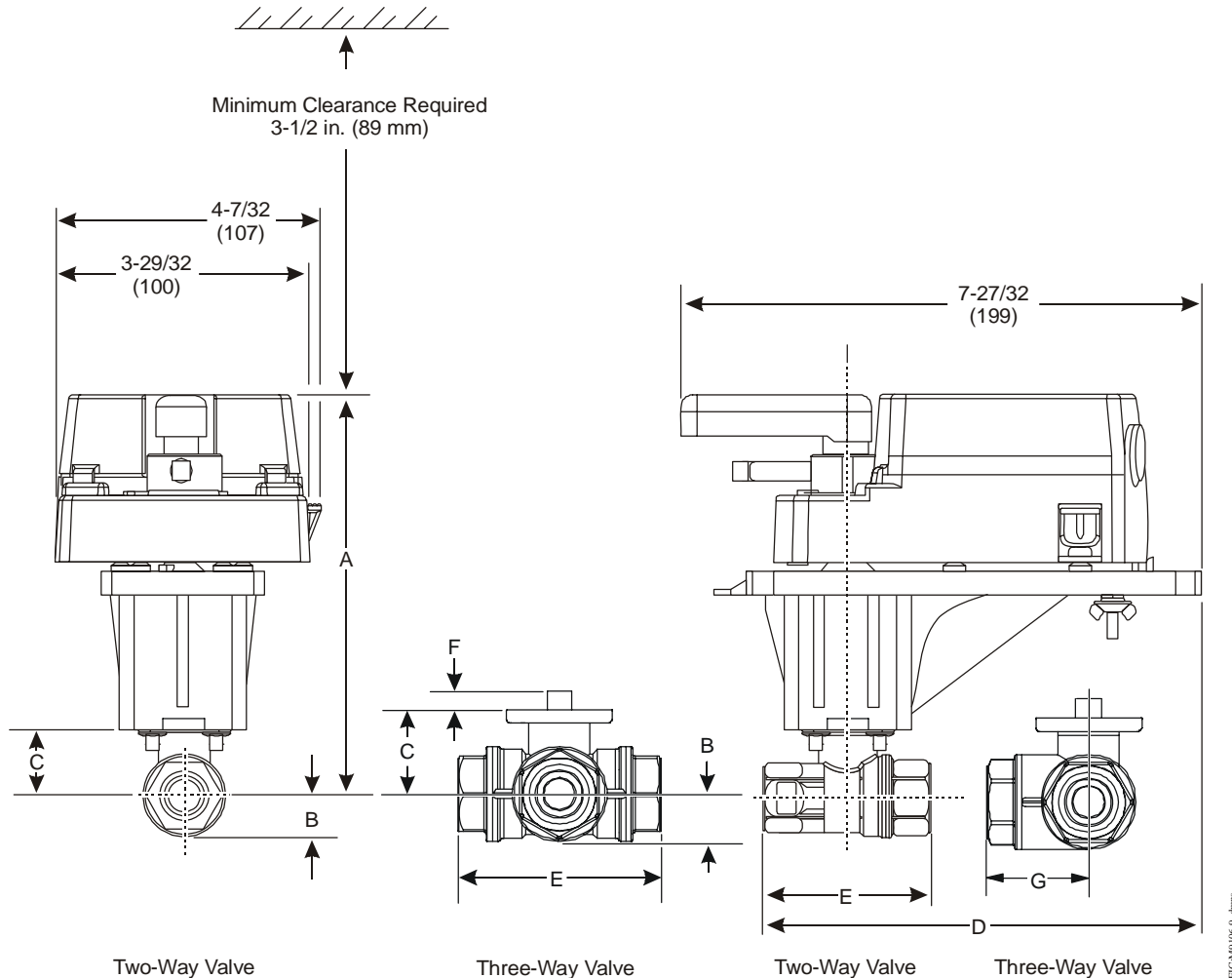


Figure 14: Non-Spring Return M9106 or M9109 Actuated VG1241, VG1245, VG1841, and VG1845 Series Ball Valve with M9000-520 Linkage Dimensions, in. (mm)

Table 33: M9106 and M9109 Actuated VG1241, VG1245, VG1841, and VG1845 Series Ball Valve with M9000-520 Linkage Dimensions, in. (mm)

Valve Size, in. (DN) ¹	A	B	C	D	E	F	G
1/2 (DN15)	6-19/64 (160)	21/32 (17)	1-7/32 (31)	6-49/64 (172)	2-33/64 (64)	11/32 (9)	1-1/4 (32)
3/4 (DN20)	6-19/64 (160)	21/32 (17)	1-7/32 (31)	6-29/32 (175)	2-51/64 (71)	11/32 (9)	1-13/32 (36)
1 (DN25)	6-3/8 (162)	3/4 (19)	1-19/64 (33)	7-13/64 (183)	3-13/32 (87)	11/32 (9)	1-11/16 (43)
1-1/4 (DN32)	6-13/16 (173)	1-1/32 (26)	1-23/32 (44)	7-15/32 (190)	3-15/16 (100)	11/32 (9)	2 (51)
1-1/2 (DN40)	6-31/32 (177)	1-9/64 (29)	1-57/64 (48)	7-43/64 (195)	4-21/64 (110)	11/32 (9)	2-1/8 (54)
2 (DN50)	7-11/64 (182)	1-15/32 (37)	2-1/16 (53)	7-59/64 (201)	4-27/32 (123)	11/32 (9)	2-9/16 (65)

1. On models with the flow-characterizing disk, the disk is located in Port A. Port A must be the inlet.

See Figure 15 for dimensions of the Spring Return M9206 Actuated VG1241, VG1245, VG1841, and VG1845 Series Ball Valve with M9000-520 Linkage. See Table 34 for specific model linkage dimensions.

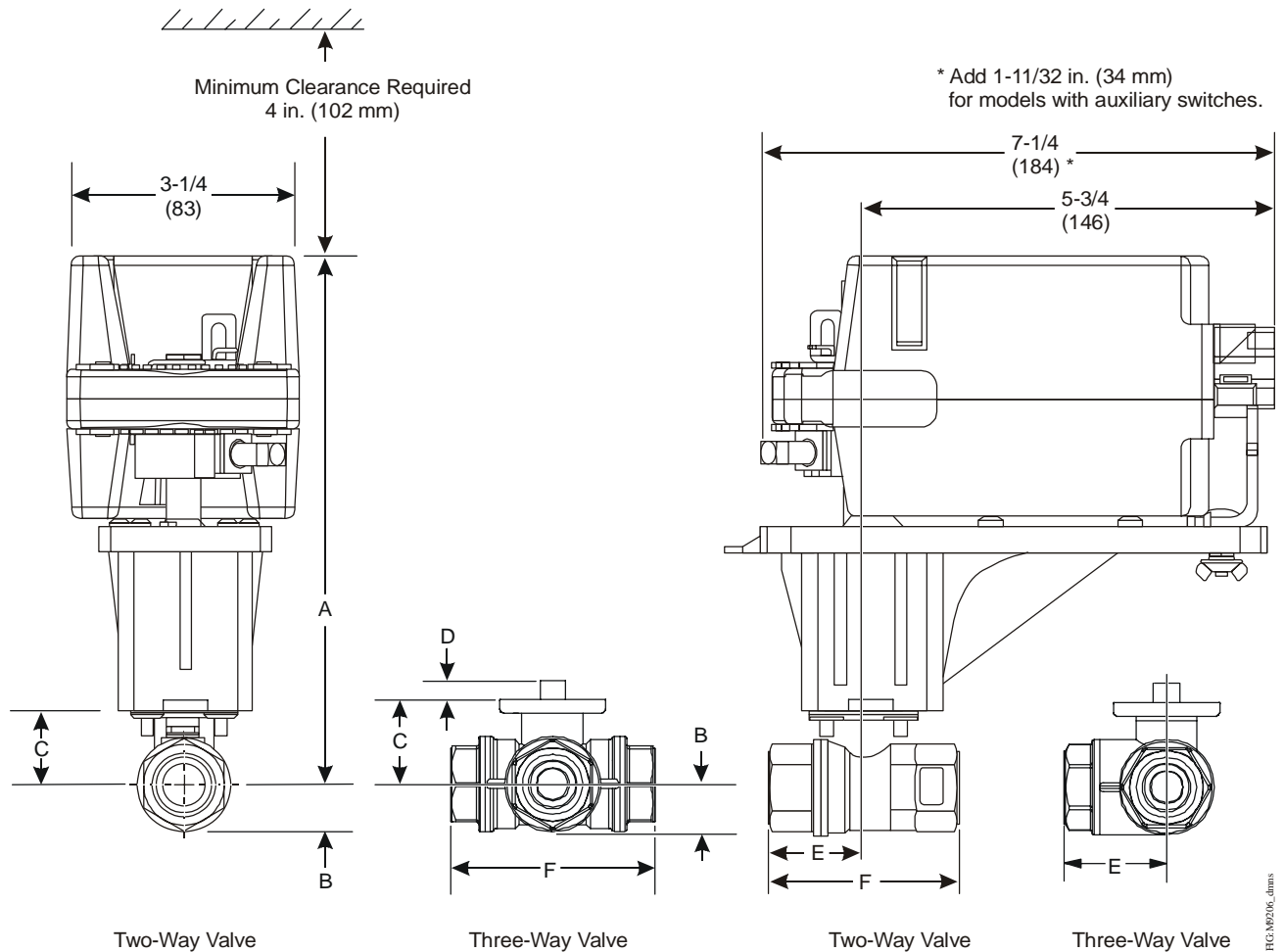


Figure 15: Spring Return M9206 Actuated VG1241, VG1245, VG1841, and VG1845 Series Ball Valve with M9000-520 Linkage Dimensions, in. (mm)

Table 34: M9206 Actuated VG1241, VG1245, VG1841, and VG1845 Series Ball Valve with M9000-520 Linkage Dimensions, in. (mm)

Valve Size, in. (DN) ¹	A ²	B	C	D	E	F
1/2 (DN15)	7-13/64 (183)	21/32 (17)	1-7/32 (31)	11/32 (9)	1-1/4 (32)	2-33/64 (64)
3/4 (DN20)	7-13/64 (183)	21/32 (17)	1-7/32 (31)	11/32 (9)	1-13/32 (36)	2-51/64 (71)
1 (DN25)	7-9/32 (185)	3/4 (19)	1-19/64 (33)	11/32 (9)	1-45/64 (43)	3-13/32 (87)
1-1/4 (DN32)	7-11/16 (195)	1-1/32 (26)	1-23/32 (44)	11/32 (9)	1-31/32 (50)	3-15/16 (100)
1-1/2 (DN40)	7-7/8 (200)	1-9/64 (29)	1-57/64 (48)	11/32 (9)	2-11/64 (55)	4-21/64 (110)

1. On models with the flow-characterizing disk, the disk is located in Port A. Port A must be the inlet.
2. For valve assemblies with M9206-xxx-2S Series Actuators, subtract 19/32 in. (15 mm) from Dimension A (column A).

See Figure 17 for dimensions of the Non-Spring Return M91xx Series Actuated VG1241, VG1245, VG1841, and VG1845 Series Ball Valve with M9000-516 Linkage and Field Installed M9000-330 Weather Shield Dimensions.

See Figure 18 for dimensions of the Spring Return M9210 Series Actuated VG1241, VG1245, VG1841, and VG1845 Series Ball Valve with M9000-517 Linkage and Field Installed M9000-340 Weather Shield. See Table 36 for specific model linkage dimensions.

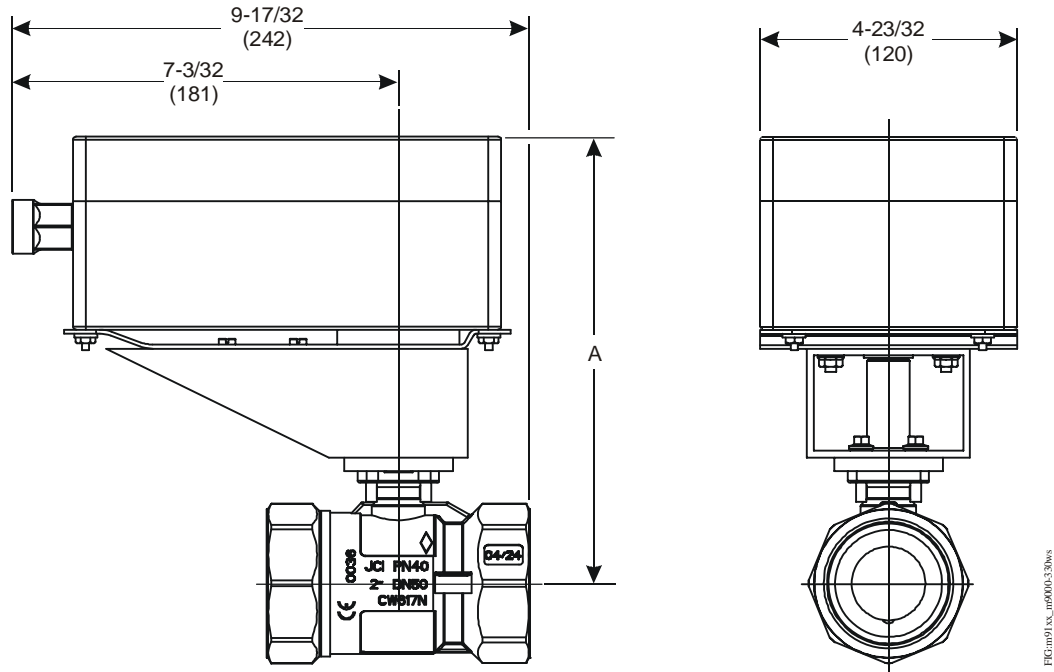


Figure 17: Non-Spring Return M91xx Series Actuated VG1241, VG1245, VG1841, and VG1845 Series Ball Valve with M9000-516 Linkage and Field Installed M9000-330 Weather Shield Dimensions, in. (mm)

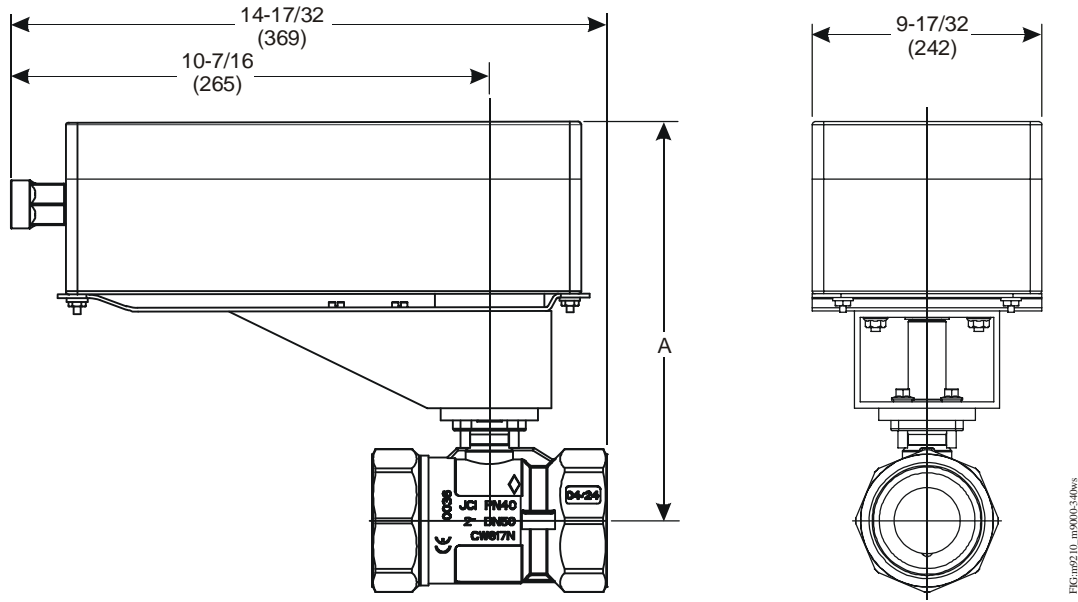


Figure 18: Spring Return M9210 Series Actuated VG1241, VG1245, VG1841, and VG1845 Series Ball Valve with M9000-517 Linkage and Field Installed M9000-340 Weather Shield Dimensions, in. (mm)

Table 36: M9000 Series Actuated VG1241, VG1245, VG1841, and VG1845 Series Ball Valve with Weather Shield Dimensions, in. (mm)

Valve Size, in. (DN)	A	
	M91xx	M9210
1/2 (DN15)	7-3/8 (187)	8-17/32 (217)
3/4 (DN20)	7-3/8 (187)	8-17/32 (217)
1 (DN25)	7-7/16 (189)	8-5/8 (219)
1-1/4 (DN32)	7-7/8 (200)	9-1/16 (230)
1-1/2 (DN40)	8-1/32 (204)	9-7/32 (234)
2 (DN50)	8-7/32 (209)	9-13/32 (239)

Technical Specifications

VG1000 Series Forged Brass Ball Valves (Part 1 of 2)

Service¹		Hot Water, Chilled Water, 50/50 Glycol Solutions, and 15 psig (103 kPa) Saturated Steam for HVAC Systems
Fluid Temperature Limits	Water	VG12x1 and VG18x1 Series: 23 to 203°F (-5 to 95°C) VG12x5 and VG18x5 Series: -22 to 284°F (-30 to 140°C)
	Steam	VG12x5 Series: 15 psig (103 kPa) at 250°F (121°C) VG12x1 Series: Not Rated for Steam Service
Maximum Actuator Fluid Temperature Limits	212°F (100°C)	VA2202
		VA9104
		M9104 with M9000-550 Linkage
		M2202 with M2000-500 Linkage
	284°F (140°C)	M9106 or M9109 with M9000-520 Linkage
		M9206 with M9000-520 Linkage M9210 with M9000-517 Linkage
Valve Body Pressure/Temperature Rating	Water	VG1241, VG1245, VG1841, and VG1845 Series: 580 psig (3,996 kPa) at 203°F (95°C) (PN40) 464 psig (3,196 kPa) at 284°F (140°C) (PN40)
		VG1271, VG1275, VG1871, and VG1875 Series: 300 psig (2,067 kPa)
		VG1291, VG1295, VG1891, and VG1895 Series: 300 psig (2,067 kPa)
	Steam	15 psig (103 kPa) Saturated Steam
Maximum Closeoff Pressure		200 psig (1,378 kPa)
Maximum Recommended Operating Pressure Drop		50 psi Maximum Differential Pressure for Valves with Characterized Flow Control Disk and 30 psi Maximum for Quiet Service Ball Valves
Flow Characteristics	Two-Way	Equal Percentage
	Three-Way	Equal Percentage Flow Characteristics of In-line Port A (Coil) and Linear Flow Characteristics of Angle Port B (Bypass)
Rangeability²		Greater than 500:1
Minimum Ambient Operating Temperature	-4°F (-20°C)	VA9104 and M9104 Series Non-Spring Return Actuators
	-22°F (-30°C)	VA2202 and M2202 Series Spring Return Actuators
	-4°F (-20°C)	M9106 and M9109 Series Non-Spring Return Actuators
	-25°F (-32°C)	M9206 Series Spring Return Actuators
	-40°F (-40°C)	M9210 and M9220 Series Spring Return Actuators
Maximum Ambient Operating Temperature³ (Limited by the Actuator and Linkage)	Direct Mount	140°F (60°C): VA9104 Series Non-Spring Return Actuators 122°F (50°C): VA2202 Series Spring Return Actuators
	M9000-550 Linkage	140°F (60°C): M9104 Series Non-Spring Return Actuators
	M2000-500 Linkage	122°F (50°C): M2202 Series Spring Return Actuators
	M9000-520 Linkage	125°F (52°C): M9106 and M9109 Series Non-Spring Return Actuators 140°F (60°C): M9206 Series Spring Return Actuators
	M9000-51x Series Linkage	125°F (52°C): M9106 Series Non-Spring Return Actuators 122°F (50°C): M9100 Series Non-Spring Return Actuators 140°F (60°C): M9206 Series Spring Return Actuators 131°F (55°C): M9210 Series Spring Return Actuators

VG1000 Series Forged Brass Ball Valves (Part 2 of 2)

Leakage		0.01% of Maximum Flow per ANSI/FCI 70-2, Class 4 (Two- and Three-Way Control Port) 1% of Maximum Flow for Three-Way Bypass Port
End Connections		National Pipe Thread (NPT): 1/2 to 2 in. (DN15 to DN50) Sweat: 1/2 to 1 in. (DN15 to DN25) Use a low melting point solder. Press (ProPress compatible): 1/2 to 1 in. (DN15 to DN25) (Press end connections are designed to work with RIDGID pressing tools.)
Materials	Body	Forged Brass
	Ball	VG12x1 and VG18x1 Series: Chrome Plated Brass VG12x5 and VG18x5 Series: 300 Series Stainless Steel
	Blowout-Proof Stem	VG12x1 and VG18x1 Series: Nickel Plated Brass VG12x5 and VG18x5 Series: 300 Series Stainless Steel
	Seats	Graphite-Reinforced PTFE with Ethylene Propylene Diene Monomer (EPDM) O-Ring Backing
	Stem Seals	EPDM Double O-Rings
	Characterizing Disk	Amodel AS-1145HS Polyphthalamide Resin

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

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.



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