

VA9104-xGA-2S, -3S Series Electric Non-Spring Return Valve Actuators

Product Bulletin

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The VA9104 Series Actuators are direct-mount, non-spring return electric valve actuators that operate on AC 24 V power. Use these synchronous motor-driven actuators to provide accurate positioning on Johnson Controls® VG1000 Series DN15, DN20, and DN25 (1/2, 3/4, and 1 in.) ball valves in Heating, Ventilating, and Air Conditioning (HVAC) applications.

The VA9104 Series Electric Non-Spring Return Actuators provide a running torque of 35 lb-in (4 N-m). The nominal travel time is 60 seconds at 60 Hz (72 seconds at 50 Hz) for 90° of rotation.



Figure 1: VA9104 Series Electric Non-Spring Return Actuator on VG1000 Series Ball Valve

Table 1: Features and Benefits

Features	Benefits
35 dBA Nominal Audible Noise Rating	Meets the audible noise requirements for open ceiling environments: whisper quiet operation will not disturb building occupants.
Synchronous Drive	Provides a constant rotation time that is independent of the load.
100,000 Cycle Rating	Provides years of trouble-free service.
Direct Mounting with Single Screw	Reduces installation time and cost.
Manual Override	Allows for manual positioning of the valve, independent of a power supply.
Plenum Cable or Screw Terminal Electrical Connections	Make wiring quick and easy while allowing for ceiling plenum applications.
3/8 in. Flexible Metal Conduit Connector on VA9104-xGA-2S Models	Simplifies installation and field wiring.

IMPORTANT: Use this VA9104 Series Electric Non-Spring Return Actuator only to control equipment under normal operating conditions. Where failure or malfunction of the electric actuator could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control 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 electric actuator.

IMPORTANT: Do not install or use this VA9104 Series Electric Non-Spring Return Actuator in or near environments where corrosive substances or vapors could be present. Exposure of the electric actuator to corrosive environments may damage the internal components of the device, and will void the warranty.

IMPORTANT: Before specifying VA9104 Series Electric Non-Spring Return Actuators for plenum applications, verify acceptance of exposed plastic materials in plenum areas with the local building authority. Building codes for plenum requirements vary by location. Some local building authorities accept compliance to UL 1995, Heating and Cooling Equipment, while others use different acceptance criteria.

Operation

When combined with a controller, the VA9104 Series Electric Non-Spring Return Actuator provides reliable, integrated ball valve control. An AC 24 V (AGx or IGx models) or DC 0 (2) to 10 V (GGx models) input signal from the controller to electric actuator causes the motor to rotate in the proper direction and moves the ball open or closed. When the controller stops sending the input signal, the electric actuator remains in place.

Note: To avoid excessive wear or drive time on the motor for the AGx models, use a controller and/or software that provides a timeout function at the end of rotation (stall).

Repair Information

If the VA9104 Series Electric Non-Spring Return Valve Actuator fails to operate within its specifications, replace the unit. For a replacement electric actuator, contact the nearest Johnson Controls representative.

Ordering Information

Table 2: Electric Non-Spring Return Actuator Models

Code Number	Control Type	Input Signal	Power Requirements	Electrical Connections
VA9104-AGA-2S	Floating without timeout	AC 19.2 to 30 V, 50/60 Hz	AC 24 V at 50/60 Hz, 2.3 VA	48 in. (1.2 m) UL 444 Type CMP Plenum Rated cable with 19 AWG (0.75 mm ²) conductors and .25 in. (6 mm) ferrule ends
VA9104-AGA-3S	Floating without timeout	AC 19.2 to 30 V, 50/60 Hz	AC 24 V at 50/60 Hz, 2.3 VA	M3 Screw Terminals
VA9104-GGA-2S	Proportional	DC 0 (2) to 10 V, or (0) 4 to 20 mA ¹	AC 24 V at 50/60 Hz, 3.6 VA	48 in. (1.2 m) UL 444 Type CMP Plenum Rated cable with 19 AWG (0.75 mm ²) conductors and .25 in. (6 mm) ferrule ends
VA9104-GGA-3S	Proportional	DC 0 (2) to 10 V, or (0) 4 to 20 mA ¹	AC 24 V at 50/60 Hz, 3.6 VA	M3 Screw Terminals
VA9104-IGA-2S	Floating or On/Off with timeout	AC 19.2 to 30 V, 50/60 Hz	AC 24 V at 50/60 Hz, 3.0 VA	48 in. (1.2 m) UL 444 Type CMP Plenum Rated cable with 19 AWG (0.75 mm ²) conductors and .25 in. (6 mm) ferrule ends
VA9104-IGA-3S	Floating or On/Off with timeout	AC 19.2 to 30 V, 50/60 Hz	AC 24 V at 50/60 Hz, 3.0 VA	M3 Screw Terminals

1. Milliamp input requires field furnished 500 ohm resistor.

Table 3: Accessories (Order Separately)

Code Number	Description
M9000-200	Commissioning Tool that Provides a Control Signal to Drive 24 V On/Off, Floating, Proportional, and/or Resistive Electric Actuators
M9000-550	Mounting Hardware Replacement kit

Dimensions

See Figure 2 for dimensions of the VA9104 Series Actuated VG1241, VG1245, VG1841, and VG1845 Series Ball Valve. See Table 4 for specific model linkage dimensions.

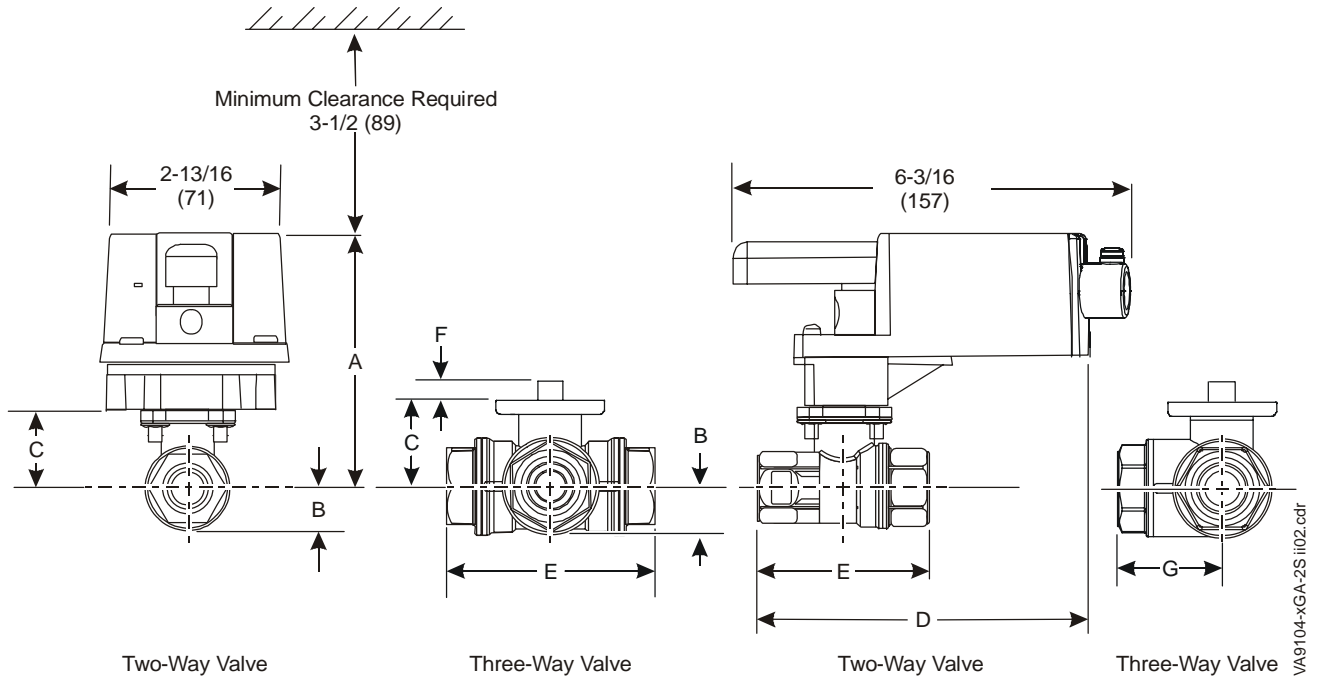


Figure 2: Actuated Ball Valve Dimensions, in. (mm)

Table 4: VA9104-xGx-xS Actuated VG1241, VG1245, VG1841, and VG1845 Series Ball Valve 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)	3-15/16 (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.

Technical Specifications

VA9104-xGA-2S, -3S Series Electric Non-Spring Return Valve Actuators (Part 1 of 2)

Power Requirements		AC 24 V +25%/-20% at 50/60 Hz, 2.1 VA Supply, Class 2 or Safety Extra-Low Voltage (SELV)
Control Type	VA9104-AGA-xS	Floating Control without Timeout
	VA9104-GGA-xS	Proportional Control
	VA9104-IGA-xS	Floating or On/Off Control with Timeout

VA9104-xGA-2S, -3S Series Electric Non-Spring Return Valve Actuators (Part 2 of 2)

Input Signal	VA9104-AGA-xS	AC 24 V +25%/-20% at 50/60 Hz, Class 2 or SELV without Timeout
	VA9104-GGA-xS	DC 0 (2) to 10 V or 0 (4) to 20 mA with Field Furnished 500 ohm Resistor
	VA9104-IGA-xS	AC 24 V +25%/-20% at 50/60 Hz, Class 2 or SELV with Timeout
Motor Input Impedance	VA9104-AGA-xS	200 ohms Nominal
Control Input Impedance	VA9104-GGA-xS	Voltage Input: 200,000 ohms Current Input: 500 ohms with Field Furnished 500 ohm Resistor
Running Torque		35 lb-in (4 N-m)
Travel Time		60 Seconds at 60 Hz (72 Seconds at 50 Hz) for 90° of Rotation
Rotation Range		93° ±3°, CW or CCW
Cycles		100,000 Full Stroke Cycles; 2,500,000 Repositions at Rated Running Torque
Audible Noise Rating		35 dBA Nominal at 39-13/32 in. (1 m)
Electrical Connections	VA9104-xGA-2S	48 in. (1.2 m) UL 444 Type CMP Plenum Rated cable with 19 AWG (0.75 mm ²) conductors and .25 in. (6 mm) ferrule ends and connector for 3/8 in. (9.5 mm) flexible metal conduit
	VA9104-xGA-3S	M3 Screw Terminals
Enclosure	VA9104-xGA-2S	NEMA 2, IP42
	VA9104-xGA-3S	NEMA 1, IP40
Ambient Conditions	Operating	-4 to 140°F (-20 to 60°C); 90% RH Maximum, Noncondensing
	Storage	-20 to 150°F (-29 to 66°C); 90% RH Maximum, Noncondensing
Fluid Temperature Limits (Actuator and Valve Assembly)	Water	VG1241 and VG1841 Series Valves: 23 to 203°F (-5 to 95°C) VG1245 and VG1845 Series Valves: -22 to 212°F (-30 to 100°C)
	Steam	Not Rated for Steam Service
Compliance	North America	UL Listed, File E27734, CCN XAPX (United States) and XAPX7 (Canada)
		Actuator Housing is Plenum Rated per CSA C22.2 No. 236/UL 1995, Heating and Cooling Equipment.
	European Union	CE Mark, EMC Directive 89/336/EEC
	Australia and New Zealand	C-Tick Mark, Australia/NZ Emissions Compliant
Shipping Weight		1.25 lb (0.55 kg)

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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