

VA9203-AGx-2Z, VA9203-Bxx-2, VA9203-GGx-2Z

VA9203-xxx-xx Series Electric Spring Return Actuators

Description

The VA9203-xxx-xx Series Electric Spring Return Ball Valve Actuators are direct-mount valve actuators that operate on AC/DC 24 V power. These bidirectional actuators are used to provide accurate positioning on Johnson Controls® VG1000 Series 1/2, 3/4, and 1 in. (DN15, DN20, and DN25) ball valves in Heating, Ventilating, and Air Conditioning (HVAC) applications. A mechanical spring return system provides rated torque with or without power applied to the actuator. The series includes the following control options:

- On/Off, 24 V, or 85 to 264 VAC power
- On/Off and Floating Point, 24 V power
- Proportional, 24 V power, for 0(2) to 10 VDC or 0(4) to 20 mA Control Signal

An accessory crankarm and remote mounting kit are available for applications where the actuator cannot be direct-coupled to the damper shaft. An optional line voltage auxiliary switch indicates an end-stop position or performs switching functions within the selected rotation range.

Refer to the *VA9203-xxx-xx Series Electric Spring Return Actuators Product Bulletin (LIT-12011702)* for important product application information.

Features

- direct mounting with a single screw
- electronic stall detection
- double-insulated construction
- microprocessor-controlled brushless DC motor (-AGx and -GGx types)
- external mode selection switch (-AGx and -GGx types)
- integral cables with colored and numbered conductors
- integral connectors for 1/2 in. (13 mm) threaded conduit connector(s)
- optional integrated auxiliary switch
- plenum rated models
- optional thermal barrier
- available weather shield for field mounting
- override control (Proportional Models only)
- Underwriters Laboratories (UL), CE Mark, and C-Tick Compliance
- manufactured under International Standards Organization (ISO) 9001 Quality Control Standards
- 5-year warranty



VA9203 Series Spring Return Electric Valve Actuator

Repair Information

If the VA9203-xxx-xx Series Electric Spring Return Actuator fails to operate within its specifications, replace the unit. For a replacement VA9203-xxx-xx actuator, contact the nearest Johnson Controls® representative.

Accessories and Replacement Parts (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
M9000-560	Ball Valve Linkage Kit for Applying M9203 and M9208 Series Actuators to VG1000 Series Valves (Quantity 1)
M9000-561	Thermal Barrier Extends M(VA)9104, M(VA)9203, and M(VA)9208 Series Electric Spring Return Actuator Applications to Include Low Pressure Steam (Quantity 1)
M9000-341	Weathershield Kit for VG1000 Series Ball Valve Application of M(VA)9104, M(VA)9203, and M(VA)9208 Series Electric Spring Return Actuators (Quantity 1)
M9000-607	Position Indicator for VG1000 Series Ball Valve Applications (Quantity 5)

VA9203-xxx-xx Series Electric Spring Return Actuators (Continued)

Selection Chart

VA9203-xxx-xx Series Electric Spring Return Valve Actuator Models

Code Number	Rotation Time For 90°		Power Requirement		Power Consumption			Input Signal			Position Feedback	Auxiliary Switch	Electrical Connection		
	Power On – Running (Seconds)	Power Off – Spring Return (Seconds)	24 VAC +/- 20% VDC +20%/-10%	85 to 264 VAC +/- 10%	VA Rating, Transformer Sizing	VA: Running (Holding)	Amperage: Running (Holding)	On/Off	On/Off and Floating Point	0(2) to 10 VDC 0(4) to 20 mA (with 500 ohm Resistor)	0(2) to 10 VDC	SPDT, 5.0 A (2.9 A Inductive) at 240 V	48 in. (1.2 m) 18 AWG Appliance Cable	120 in. (3.05 m) 19 AWG Plenum Cable	Integral 3/8 in. FMC Connectors
VA9203-AGA-2Z	90	<25	X	X	6	5.1 (2.8)	–		X					X	X
VA9203-AGB-2Z	90	<25	X	X	6	5.1 (2.8)	–		X			X	X		X
VA9203-BGA-2	<75	<75	X	X	6	5.0 (2.5)	–	X					X		X
VA9203-BGB-2	<75	<75	X		6	5.0 (2.5)	–	X				X	X		X
VA9203-BUA-2	<75	<75		X	–	–	0.06 (0.02)	X					X		X
VA9203-BUB-2	<75	<75		X	–	–	0.06 (0.02)	X				X	X		X
VA9203-GGA-2Z	90	<25	X		6	5.1 (2.8)	–			X	X			X	X
VA9203-GGB-2Z	90	<25	X		6	5.1 (2.8)	–			X	X	X	X		X

Technical Specifications

VA9203-GGx-2Z Series Proportional Electric Spring Return Actuator (Part 1 of 2)		
Power Requirements		AC 24 V (AC 19.2 V to 28.8 V) at 50/60 Hz: Class 2 (North America) or Safety Extra-Low Voltage (SELV) (Europe), 4.7 VA Running, 2.7 VA Holding Position DC 24 V (DC 21.6 V to 28.8 V): Class 2 (North America) or SELV (Europe) 1.8 W Running, 1 W Holding Position Minimum Transformer Size: 6 VA per Actuator
Input Signal/Adjustments		Factory Set at DC 0 to 10 V, CW Rotation with Signal Increase Selectable DC 0 (2) to 10 V or 0 (4) to 20 mA with Field -Furnished 500 ohm 0.25 W Minimum Resistor Switch Selectable Direct or Reverse Action with Signal Increase
Control Input Impedance		Voltage Input: 100,000 ohm Current Input: 500 ohm with Field-Furnished 500 ohm Resistor
Feedback Signal		DC 0 (2) to 10 V for Desired Rotation Range up to 95° Corresponds to Rotation Limits, 0.5 mA at 10 V Maximum
Auxiliary Switch Rating	-xxB Models	One Single-Pole, Double-Throw (SPDT), Double-Insulated Switch with Silver Contacts: AC 24 V, 50 VA Pilot Duty AC 120 V, 5.8 A Resistive, 1/4 hp, 275 VA Pilot Duty AC 240 V, 5.0 A Resistive, 1/4 hp, 275 VA Pilot Duty
Spring Return		Direction is Selectable with Mounting Position of Actuator: Actuator Face Labeled A is Away from Valve: CCW Spring Return Actuator Face Labeled B is Away from Valve: CW Spring Return
Rated Torque	Power On (Running)	27 lb.-in (3 N-m) All Operating Temperatures
	Power Off (Spring Returning)	27 lb.-in (3 N-m) All Operating Temperatures
Rotation Range		Maximum Full Stroke: 95° Adjustable Stop: 35° to 95° Maximum Position

VA9203-xxx-xx Series Electric Spring Return Actuators (Continued)

VA9203-GGx-2Z Series Proportional Electric Spring Return Actuator (Part 2 of 2)		
Rotation Time for 90 Degrees of Travel	Power On (Running)	90 Seconds Constant for 0 to 27 lb-in. (3 N-m) Load, at all Operating Conditions
	Power Off (Spring Returning)	12 to 17 Seconds for 0 to 27 lb-in. (3 N-m) Load, at Room Temperature 16 Seconds Nominal at Full Rated Load 22 Seconds Maximum with 27 lb-in. (3 N-m) Load, at -22°F (-30°C)
Life Cycles		60,000 Full Stroke Cycles with 27 lb-in. (3 N-m) Load 1,500,000 Repositions with 27 lb-in. (3 N-m) Load
Audible Noise Rating	Power On (Running)	<37 dBA at 27 lb-in. (3 N-m) Load, at a Distance of 39-13/32 in. (1 m)
	Power On (Holding)	<20 dBA at a Distance of 39-13/32 in. (1 m)
	Power Off (Spring Returning)	<56 dBA at 27 lb-in. (3 N-m) Load, at a Distance of 39-13/32 in. (1 m)
Electrical Connections	-GGA-2Z Models	120 in. (3.05 m) UL 444 Type CMP Plenum Rated Cable with 19 AWG (0.75 mm ²) Conductors and 1/4 in. (6 mm) Ferrule Ends
	-GGB-2Z Models	48 in. (1.2 m) UL 758 Type AWM Halogen Free Cable with 18 AWG (0.85 mm ²) Conductors and 1/4 in. (6 mm) Ferrule Ends
Conduit Connections		Integral 1/2 in. (13 mm) Threaded Conduit Connector(s)
Fluid Temperature Limits	VG12x1 and VG18x1 Series	23 to 203°F (-5 to 95°C), Not Rated for Steam Service
	VG12x5 and VG18x5 Series	-22 to 212°F (-30 to 100°C), Not Rated for Steam Service
	VG12x5 and VG18x5 Series with M9000-561 Thermal Barrier Installed	-22 to 284°F (-30 to 140°C) water; 15 psig (103 kPa) at 250°F (121°C) Saturated Steam
Ambient Conditions	Standard Operating	-22 to 140°F (-30 to 60°C); 90% RH Maximum, Noncondensing
	Storage	-40 to 185°F (-40 to 85°C); 95% RH Maximum, Noncondensing
Enclosure Rating		NEMA 2 (IP54) for all Mounting Directions
Compliance	United States	UL Listed, CCN XAPX, File E27734; to UL 60730-1A: 2003-08, Ed. 3.1, Automatic Electrical Controls for Household and Similar Use; and UL 60730-2-14: 2002-02, Ed. 1, Part 2 Particular Requirements for Electric Actuators Plenum Rated (UL 2043). Suitable for use in other environmental air space (plenums) in accordance with Section 300.22 (C) of the National Electric Code
	Canada	UL Listed, CCN XAPX7, File E27734; to UL 60730-1:02-CAN/CSA: July 2002, 3rd Ed., Automatic Electrical Controls for Household and Similar Use; and CSA C22.2 No. 24-93 Temperature Indicating and Regulating Equipment
	Europe	CE Mark – Johnson Controls, Inc., declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC and Low Voltage Directive 2006/95/EC
	Australia and New Zealand	C-Tick Mark, Australia/NZ Emissions Compliant
Shipping Weight	-GGA Models	2.0 lb (0.9 kg)
	-GGB Models	2.4 lb (1.1 kg)

VA9203-AGx-2Z Series On/Off and Floating Point Electric Spring Return Actuators (Part 1 of 2)		
Power Requirements		AC 24 V (AC 19.2 V to 28.8 V) at 50/60 Hz: Class 2 (North America) or Safety Extra-Low Voltage (SELV) (Europe), 5.1 VA Running, 2.8 VA Holding Position DC 24 V (DC 21.6 V to 28.8 V): Class 2 (North America) or SELV (Europe) 1.9 W Running, 1.1 W Holding Holding Position Minimum Transformer Size: 6 VA per Actuator
Input Signal/Adjustments		AC 19.2 to 28.8 V at 50/60 Hz or DC 24 V +20%/-10% Class 2 (North America) or SELV (Europe) Minimum Pulse Width: 500 msec
Control Input Impedance		4,700 ohm Control Inputs
Auxiliary Switch Rating	-xxB Models	One Single-Pole, Double-Throw (SPDT), Double-Insulated Switch with Silver Contacts: AC 24 V, 50 VA Pilot Duty AC 120 V, 5.8 A Resistive, 1/4 hp, 275 VA Pilot Duty AC 240 V, 5.0 A Resistive, 1/4 hp, 275 VA Pilot Duty
Spring Return		Direction is Selectable with Mounting Position of Actuator: Actuator Face Labeled A is Away from Valve: CCW Spring Return Actuator Face Labeled B is Away from Valve: CW Spring Return
Rated Torque	Power On (Running)	27 lb-in. (3 N-m) All Operating Temperatures
	Power Off (Spring Returning)	27 lb-in. (3 N-m) All Operating Temperatures

VA9203-xxx-xx Series Electric Spring Return Actuators (Continued)

VA9203-AGx-2Z Series On/Off and Floating Point Electric Spring Return Actuators (Part 2 of 2)		
Rotation Range		Maximum Full Stroke: 95°
Rotation Time for 90 Degrees of Travel	Power On (Running)	90 Seconds Constant for 0 to 27 lb-in. (3 N-m) Load, at all Operating Conditions
	Power Off (Spring Returning)	12 to 17 Seconds for 0 to 27 lb-in. (3 N-m) Load, at Room Temperature 16 Seconds Nominal at Full Rated Load 22 Seconds Maximum with 27 lb-in. (3 N-m) Load, at -22°F (-30°C)
Life Cycles		60,000 Full Stroke Cycles with 27 lb-in. (3 N-m) Load 1,500,000 Repositions with 27 lb-in. (3 N-m) Load
Audible Noise Rating	Power On (Running)	<37 dBA at 27 lb-in. (3 N-m) Load, at a Distance of 39-13/32 in. (1 m)
	Power On (Holding)	<20 dBA at a Distance of 39-13/32 in. (1 m)
	Power Off (Spring Returning)	<56 dBA at 27 lb-in. (3 N-m) Load, at a Distance of 39-13/32 in. (1 m)
Electrical Connections	-AGA-2Z Models	120 in. (3.05 m) UL 444 Type CMP Plenum Rated Cable with 19 AWG (0.75 mm ²) Conductors and 1/4 in. (6 mm) Ferrule Ends
	-AGB-2Z Models	48 in. (1.2 m) UL 758 Type AWM Halogen Free Cable with 18 AWG (0.85 mm ²) Conductors and 1/4 in. (6 mm) Ferrule Ends
Conduit Connections		Integral 1/2 in. (13 mm) Threaded Conduit Connectors
Fluid Temperature Limits	VG12x1 and VG18x1 Series	23 to 203°F (-5 to 95°C), Not Rated for Steam Service
	VG12x5 and VG18x5 Series	-22 to 212°F (-30 to 100°C), Not Rated for Steam Service
	VG12x5 and VG18x5 Series with M9000-561 Thermal Barrier Installed	-22 to 284°F (-30 to 140°C) water; 15 psig (103 kPa) at 250°F (121°C) Saturated Steam
Ambient Conditions	Standard Operating	-22 to 140°F (-30 to 60°C); 90% RH Maximum, Noncondensing
	Storage	-40 to 185°F (-40 to 85°C); 95% RH Maximum, Noncondensing
Enclosure Rating		NEMA 2 (IP54) for all Mounting Directions
Compliance	United States	UL Listed, CCN XAPX, File E27734; to UL 60730-1A: 2003-08, Ed. 3.1, Automatic Electrical Controls for Household and Similar Use; and UL 60730-2-14: 2002-02, Ed. 1, Part 2 Particular Requirements for Electric Actuators Plenum Rated (UL 2043). Suitable for use in other environmental air space (plenums) in accordance with Section 300.22 (C) of the National Electric Code
	Canada	UL Listed, CCN XAPX7, File E27734; to UL 60730-1:02-CAN/CSA: July 2002, 3rd Ed., Automatic Electrical Controls for Household and Similar Use; and CSA C22.2 No. 24-93 Temperature Indicating and Regulating Equipment
	Europe	CE Mark – Johnson Controls, Inc., declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC and the Low Voltage Directive 2006/95/EC.
	Australia and New Zealand	C-Tick Mark, Australia/NZ Emissions Compliant
Shipping Weight	-AGA Models	2.0 lb (0.9 kg)
	-AGB Models	2.4 lb (1.1 kg)

VA9203-Bxx-x Series On/Off Electric Spring Return Actuator (Part 1 of 2)		
Power Requirements	-BGx-2 Models	AC 24 V (AC 19.2 V to 28.8 V) at 50/60 Hz: Class 2 (North America) or Safety Extra-Low Voltage (SELV) (Europe), 5 VA Running, 1.6 VA Holding Position DC 24 V (DC 21.6 V to 28.8 V): Class 2 (North America) or SELV (Europe) 2.8 W Running, 0.8 W Holding Position Minimum Transformer Size: 6 VA per Actuator
	-BUx-2 Models	AC 100 V to 240 V (AC 85 V to 264 V) at 50/60 Hz: 0.06 A Running, 0.02 A Holding Position
Auxiliary Switch Rating	-xxB-2 Models	One Single-Pole, Double-Throw (SPDT), Double-Insulated Switch with Silver Contacts: AC 24 V, 50 VA Pilot Duty AC 120 V, 5.8 A Resistive, 1/4 hp, 275 VA Pilot Duty AC 240 V, 5.0 A Resistive, 1/4 hp, 275 VA Pilot Duty
Spring Return		Direction is Selectable with Mounting Position of Actuator: Actuator Face Labeled A is Away from Valve: CCW Spring Return Actuator Face Labeled B is Away from Valve: CW Spring Return
Rated Torque	Power On (Running)	27 lb-in. (3 N-m) All Operating Temperatures
	Power Off (Spring Returning)	27 lb-in. (3 N-m) All Operating Temperatures
Rotation Range		Maximum Full Stroke: 95°

VA9203-xxx-xx Series Electric Spring Return Actuators (Continued)

VA9203-Bxx-x Series On/Off Electric Spring Return Actuator (Part 2 of 2)		
Rotation Time for 90 Degrees of Travel	Power On (Running) Bxx-2 Models	53 to 71 Seconds Constant for 0 to 27 lb-in. (3 N-m) Load, at Room Temperature 60 Seconds Nominal at Full Rated Load (0.25 rpm)
	Power Off (Spring Returning)	37 to 46 Seconds for 0 to 27 lb-in. (3 N-m) Load, at Room Temperature 44 Seconds Nominal at Full Rated Load 75 Seconds Maximum with 27 lb-in. (3 N-m) Load at -22°F (-30°C)
Life Cycles		60,000 Full Stroke Cycles with 27 lb-in. (3 N-m) Load
Audible Noise Rating	Power On (Running)	<36 dBA at 27 lb-in. (3 N-m) Load, at a Distance of 39-13/32 in. (1 m)
	Power On (Holding)	<20 dBA at a Distance of 39-13/32 in. (1 m)
	Power Off (Spring Returning)	<35 dBA at 27 lb-in. (3 N-m) Load, at a Distance of 39-13/32 in. (1 m)
Electrical Connections	Actuator (All Models)	48 in. (1.2 m) UL 758 Type AWM Halogen Free Cable with 18 AWG (0.85 mm ²) Conductors and 0.25 in. (6 mm) Ferrule Ends
	Auxiliary Switches (-xxB-2 Models)	48 in. (1.2 m) UL 758 Type AWM Halogen Free Cable with 18 AWG (0.85 mm ²) Conductors and 0.25 in. (6 mm) Ferrule Ends
Conduit Connections		Integral 1/2 in. (13 mm) Threaded Conduit Connectors
Fluid Temperature Limits	VG12x1 and VG18x1 Series	23 to 203°F (-5 to 95°C), Not Rated for Steam Service
	VG12x5 and VG18x5 Series	-22 to 212°F (-30 to 100°C), Not Rated for Steam Service
	VG12x5 and VG18x5 Series with M9000-561 Thermal Barrier Installed	-22 to 284°F (-30 to 140°C) water; 15 psig (103 kPa) at 250°F (121°C) Saturated Steam
Ambient Conditions	Standard Operating	-22 to 140°F (-30 to 60°C); 90% RH Maximum, Noncondensing
	Storage	-40 to 185°F (-40 to 85°C); 95% RH Maximum, Noncondensing
Enclosure Rating		NEMA 2 (IP54) for all Mounting Directions
<div>CE</div> Compliance	United States	UL Listed, CCN XAPX, File E27734; to UL 60730-1A: 2003-08, Ed. 3.1, Automatic Electrical Controls for Household and Similar Use; and UL 60730-2-14: 2002-02, Ed. 1, Part 2 Particular Requirements for Electric Actuators Plenum Rated (UL 2043). Suitable for use in other environmental air space (plenums) in accordance with Section 300.22 (C) of the National Electric Code
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	Australia and New Zealand	C-Tick Mark, Australia/NZ Emissions Compliant
Shipping Weight	-xxA Models	2.0 lb (0.9 kg)
	-xxB Models	2.4 lb (1.1 kg)