Code No. LIT-1900648
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VA9208-AGx-x, VA9208-Bxx-3, VA9208-GGx-x

VA9208-xxx-xx Series Electric Spring Return Actuators

Description

The VA9208-xxx-xx Series Electric Spring Return Valve Actuators are direct-mount valve actuators. These bidirectional actuators are used to provide accurate positioning on Johnson Controls® VG1000 Series 1-1/4, 1-1/2, and 2 in. (DN32, DN40, and DN50) ball valves in Heating, Ventilating, and Air Conditioning (HVAC) applications. A mechanical spring return system provides rated torque with and without power applied to the actuator. The series includes the following control responses:

- On/Off, 24 V, 120 VAC, 230 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

Optional line voltage auxiliary switches indicate an end-stop position or perform switching functions within the selected rotation range.

Refer to the *VA9208-xxx-x Series Electric Spring Return Actuators Product Bulletin (LIT-12011622)* 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 Models)
- external mode selection switch (-AGx and -GGx Models)
- integral cables with colored and numbered conductors
- integral connectors for 3/8 in. (10 mm) Flexible Metal Conduit (FMC)
- optional integrated auxiliary switches
- plenum rated models
- optional thermal barrier
- override control (proportional models only)
- available weather shield for field mounting
- 5-year warranty

VA9208 Series Spring Return Electric Valve Actuator

Repair Information

If the VA9208-xxx-xx Series Electric Spring Return Actuator fails to operate within its specifications, replace the unit. For a replacement VA9208-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)
M9208-604	Replacement Manual Override Cranks with Long Crank Radius: 2.83 in. (72 mm) (Quantity 5)
M9208-605	Replacement Manual Override Cranks with Short Crank Radius: 1.83 in. (46.5 mm) (Quantity 5)

VA9208-xxx-xx Series Electric Spring Return Actuators (Continued)

Selection Chart

VA9208-xxx-x Series Electric Spring Return Valve Actuator Models

Code Number	Rotation Time (sec)	For 90°	Power Requirement				Power Consumption			Input Signal			Position Feedback	Auxiliary Switches	Electrical Connection		
	Power On (Running)	Power Off (Spring Return)	24 VAC +/- 25% VDC +20%/-10%	24 VAC +/- 20% VDC +20%/-10%	120 VAC +/- 10%	230 VAC +/- 10%	VA Rating, Transformer Sizing	VA: Running (Holding)	Amperage: Running (Holding)	On/Off	Floating Point	0(2) to 10 VDC 0(4) to 20 mA (with 500 ohm resistor)	0(2) to 10 VDC	2 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
VA9208-AGA-2	150	17 to 25[1]		X			8	7.9 (5.5)		X	X					X	X
VA9208-AGA-3	150	17 to 25[1]		X			8	7.9 (5.5)		X	X				X		X
VA9208-AGC-3	150	17 to 25[1]		X			8	7.9 (5.5)		X	X			X	X		X
VA9208-BGA-3	55 to 71	13 to 26[2]	X				7	6.1 (1.2)		X					X		X
VA9208-BGC-3	55 to 71	13 to 26[2]	X				7	6.1 (1.2)		X				X	X		X
VA9208-BAA-3	55 to 71	13 to 26[2]			X				0.05 (0.03)	X					X		X
VA9208-BAC-3	55 to 71	13 to 26[2]			X				0.05 (0.03)	X				X	X		X
VA9208-BDA-3	55 to 71	13 to 26[2]				X			0.04 (0.03)	X					X		X
VA9208-BDC-3	55 to 71	13 to 26[2]				X			0.04 (0.03)	X				X	X		X
VA9208-GGA-2	150	17 to 25[1]		X			8	7.9 (5.5)				X	X			X	X
VA9208-GGA-3	150	17 to 25[1]		X			8	7.9 (5.5)				X	X		X		X
VA9208-GGC-3	150	17 to 25[1]		X			8	7.9 (5.5)				X	X	X	X		X

1. 22 seconds nominal at room temperature and rated load, 94 seconds maximum at rated load and -40°F (-40°C).
2. 21 seconds nominal at room temperature and rated load, 39 seconds maximum at rated load and -4°F (-20°C), 108 seconds maximum at 53 lb·in (6 N·m) and -40°F (-40°C).

Technical Specifications

VA9208-xxx-xx Series Electric Spring Return Actuators (Continued)

VA9208-GGx-xx Series On/Off and Floating Electric Spring Return Actuators		
Power Requirements	**-GGx 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), 7.9 VA Running, 5.5 VA Holding Position DC 24 V (DC 21.6 V to 28.8 V): Class 2 (North America) or SELV (Europe) 3.5 W Running, 1.9 W Holding Position Minimum Transformer Size: 8 VA per Actuator
Input Signal/ Adjustments	**-GGx Models**	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	**-GGx Models**	Voltage Input: 100,000 ohm Current Input: 500 ohm with Field-Furnished 500 ohm Resistor
Feedback Signal	**-GGx Models**	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	**-xxC Models**	Two Single-Pole, Double-Throw (SPDT), Double-Insulated Switches with Gold over 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)**	70 lb·in. (8 N·m) All Operating Temperatures
	Power Off (Spring Returning)	70 lb·in. (8 N·m) All Operating Temperatures
Rotation Range		Maximum Full Stroke: 95° Adjustable Stop: 35° to 95° Maximum Position
Rotation Time for 90 Degrees of Travel	**Power On (Running)**	150 Seconds Constant for 0 to 70 lb·in. (8 N·m) Load, at all Operating Conditions 90 Seconds for 0 to 70 lb·in. (8 N·m) in Calibration Mode or Override Mode
	Power Off (Spring Returning)	17 to 25 Seconds for 0 to 70 lb·in. (8 N·m) Load, at Room Temperature 22 Seconds Nominal at Full Rated Load 94 Seconds Maximum with 70 lb·in. (8 N·m) Load, at -40°F (-40°C)
Life Cycles		60,000 Full Stroke Cycles with 70 lb·in. (8 N·m) Load 1,500,000 Repositions with 70 lb·in. (8 N·m) Load
Audible Noise Rating	**Power On (Running)**	<35 dBA at 70 lb·in. (8 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)	<52 dBA at 70 lb·in. (8 N·m) Load, at a Distance of 39-13/32 in. (1 m)
Electrical Connections	**-GGx-3 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
	-GGx-2 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
	Auxiliary Switches (-xxC 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 Connectors for 3/8 in. (10 mm) Flexible Metal Conduit
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**	-40 to 140°F (-40 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
	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
CE	**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	**-GGA Models**	3.5 lb (1.6 kg)
	-GGC Models	3.9 lb (1.8 kg)

VA9208-xxx-xx Series Electric Spring Return Actuators (Continued)

VA9208-AGx-x Series On/Off and Floating Point Electric Spring Return Actuators		
Power Requirements	**-AGx 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), 7.9 VA Running, 5.5 VA Holding Position DC 24 V (DC 21.6 V to 28.8 V): Class 2 (North America) or SELV (Europe) 3.5 W Running, 1.9 W Holding Position Minimum Transformer Size: 8 VA per Actuator
Input Signal/ Adjustments	**-AGx Models**	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 ms
Control Input Impedance	**-AGx Models**	3,000 ohm Control Inputs
Auxiliary Switch Rating	**-xxC Models**	Two Single-Pole, Double-Throw (SPDT), Double-Insulated Switches with Gold over 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)**	70 lb·in. (8 N·m) All Operating Temperatures
	Power Off (Spring Returning)	70 lb·in. (8 N·m) All Operating Temperatures
Rotation Range		Maximum Full Stroke: 95°
Rotation Time for 90 Degrees of Travel	**Power On (Running)**	150 Seconds for 0 to 70 lb·in. (8 N·m) Load, at all Operating Conditions
	Power Off (Spring Returning)	17 to 25 Seconds for 0 to 70 lb·in. (8 N·m) Load, at Room Temperature 22 Seconds Nominal at Full Rated Load 94 Seconds Maximum with 70 lb·in. (8 N·m) Load, at -40°F (-40°C)
Life Cycles		60,000 Full Stroke Cycles with 70 lb·in. (8 N·m) Load 1,500,000 Repositions with 70 lb·in. (8 N·m) Load
Audible Noise Rating	**Power On (Running)**	<35 dBA at 70 lb·in. (8 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)	<52 dBA at 70 lb·in. (8 N·m) Load, at a Distance of 39-13/32 in. (1 m)
Electrical Connections	**-AGx-3 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
	-AGx-2 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
	Auxiliary Switches (-xxC 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 Connectors for 3/8 in. (10 mm) Flexible Metal Conduit
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**	-40 to 140°F (-40 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
	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
CE	**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**	3.5 lb (1.6 kg)
	-AGC Models	3.9 lb (1.8 kg)

VA9208-xxx-xx Series Electric Spring Return Actuators (Continued)

VA9208-Bxx-x Series On/Off Electric Spring Return Actuator		
Power Requirements	**-BGx Models**	AC 24 V (AC 18 V to 30 V) at 50/60 Hz: Class 2 (North America) or Safety Extra-Low Voltage (SELV) (Europe), 6.1 VA Running, 1.2 VA Holding Position DC 24 V (DC 21.6 V to 28.8 V): Class 2 (North America) or SELV (Europe) 3.5 W Running, 0.5 W Holding Position Minimum Transformer Size: 7 VA per Actuator
	-BAx Models	AC 120 V (AC 102 V to 132 V) at 60 Hz: 0.05 A Running, 0.03 A Holding Position
	-BDx Models	AC 230 V (AC 198 V to 264 V) at 50/60 Hz: 0.04 A Running, 0.03 A Holding Position
Auxiliary Switch Rating	**-xxC Models**	Two Single-Pole, Double-Throw (SPDT), Double-Insulated Switches with Gold over 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)**	70 lb·in. (8 N·m) All Operating Temperatures
	Power Off (Spring Returning)	70 lb·in. (8 N·m) at Standard Operating Temperatures 53 lb·in. (6 N·m) at Extended Operating Temperatures
Rotation Range		Maximum Full Stroke: 95°
Rotation Time for 90 Degrees of Travel	**Power On (Running)**	55 to 71 Seconds for 0 to 70 lb·in. (8 N·m) Load, at all Operating Conditions 60 Seconds Nominal at Full Rated Load (0.25 rpm)
	Power Off (Spring Returning)	13 to 26 Seconds for 0 to 70 lb·in. (8 N·m) Load, at Room Temperature 21 Seconds Nominal at Full Rated Load 39 Seconds Maximum with 70 lb·in. (8 N·m) Load, at -4°F (-20°C) 108 Seconds Maximum with 53 lb·in. (6 N·m) Load at -40°F (-40°C)
Life Cycles		60,000 Full Stroke Cycles with 70 lb·in. (8 N·m) Load
Audible Noise Rating	**Power On (Running)**	<47 dBA at 70 lb·in. (8 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)	<52 dBA at 70 lb·in. (8 N·m) Load, at a Distance of 39-13/32 in. (1 m)
Electrical Connections	**-Bxx-3 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
	Auxiliary Switches (-xxC 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 Connectors for 3/8 in. (10 mm) Flexible Metal Conduit
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**	-4 to 140°F (-20 to 60°C); 90% RH Maximum, Noncondensing
	Extended Operating	-40 to 4°F (-40 to -20°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
	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.
CE	**Australia and New Zealand**	C-Tick Mark, Australia/NZ Emissions Compliant
Shipping Weight	**-BGC Models**	3.8 lb (1.7 kg)
	-BAC and -BDC Models	4.2 lb (1.9 kg)
	-BGA Models	3.4 lb (1.5 kg)
	-BAA and -BDA Models	3.8 lb (1.7 kg)

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