VA9208-xxx-xx Series Electric Spring Return Actuators Catalog Page

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LIT-1900648

Description

Figure 1: VA9208 Series electric spring return valve actuator



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 in., 1 1/2 in., and 2 in. (DN32, DN40, and DN50) ball valves in 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) VDC to 10 VDC or 0(4) mA 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

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Accessories and replacement parts

Code number	Description
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)
M9000-342	Weather shield kit for M(VA)9104, M(VA)9203, M(VA)9208, M(VA)9308, and M(VA)9310 Series electric actuators (quantity: 1)
M9220-604	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)

Selection chart

Table 1: VA9208-xxx-xx Series electric spring return actuators

Code number	Rotation time (seconds) 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) VDC to 10 VDC 0(4) mA to 20 mA	0(2) VDC 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		■			8	7.9 (5.5)		■	■					■	■
VA9208-AGA-3				■						■	■				■		■
VA9208-AGC-3				■						■	■			■	■		■
VA9208-BGA-3	55 to 71	13 to 26	■				7	6.1 (1.2)		■					■		■
VA9208-BGC-3			■							■				■	■		■
VA9208-BAA-3					■				0.05 (0.03)	■					■		■
VA9208-BAC-3					■					■				■	■		■
VA9208-BDA-3						■			0.04 (0.03)	■					■		■
VA9208-BDC-3						■				■				■	■		■
VA9208-GGA-2	150	17 to 25		■			8	7.9 (5.5)				■	■			■	■
VA9208-GGA-3				■								■	■		■		■
VA9208-GGC-3				■								■	■	■	■		■

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Technical specifications

Table 2: VA9208-GGx-xx Series on/off and floating point electric spring return actuators

Specification		Description
Power requirements	-GGx models	24 VAC (19.2 VAC to 28.8 VAC) at 50/60 Hz: Class 2 (North America) or Safety Extra-Low Voltage (SELV) (Europe), 7.9 VA Running, 5.5 VA holding position 24 VDC (21.6 VDC to 28.8 VDC): Class 2 (North America) or SELV (Europe) 3.5 W running, 1.9 W holding position Minimum transformer size: 8 VA for each actuator
Input signal/adjustments	-GGx models	Factory-set at 0 VDC to 10 VDC, CW rotation with signal increase selectable 0(2) VDC to 10 VDC or 0(4) mA to 20 mA with field-furnished 500 ohm, 0.25 W minimum resistor. Switch-selectable direct action or reverse action with signal increase
Control input impedance	-GGx models	Voltage input: 100,000 ohms Current input: 500 ohms with field furnished 500 ohm resistor
Feedback signal	-GGx models	0(2) VDC to 10 VDC for a rotation range of 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: 24 VAC, 50 VA pilot duty 120 VAC, 5.8 A resistive, 1/4 hp, 275 VA pilot duty 240 VAC, 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 s constant for 0 lb·in to 70 lb·in (0 N·m to 8 N·m) load, at all operating conditions 90 s for 0 lb·in to 70 lb·in (0 N·m to 8 N·m) in calibration mode or override mode
	Power off (spring returning)	17 s to 25 s for 0 lb·in to 70 lb·in (0 N·m to 8 N·m) load, at room temperature 22 s nominal at full rated load 94 s 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

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Table 2: VA9208-GGx-xx Series on/off and floating point electric spring return actuators

Specification		Description
Fluid temperature limits	VG12x1 and VG18x1 Series	23°F to 203°F (-5°C to 95°C), not rated for steam service
	VG12x5 and VG18x5 Series	-22°F to 212°F (-30°C to 100°C), not rated for steam service
	VG12x5 and VG18x5 Series with M9000-561 Thermal Barrier installed	-22°F to 284°F (-30°C to 140°C) water, 15 psig (103 kPa) at 250°F (121°C) saturated steam
Ambient conditions	Standard operating	-40°F to 140°F (-40°C to 60°C), 90% RH maximum, non-condensing
	Storage	-40°F to 185°F (-40°C to 85°C), 95% RH maximum, non-condensing
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 UKCA	Europe	Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive and Low Voltage Directive, and equivalent UK regulations.
	Australia and New Zealand	RCM Mark, Australia/NZ Emissions Compliant
Shipping weight	-GGA models	3.5 lb (1.6 kg)
	-GGC models	3.9 lb (1.8 kg)

Table 3: VA9208-AGx-x Series on/off and floating point electric spring return actuators

Specification		Description
Power requirements	-AGx models	24 VAC (19.2 VAC to 28.8 VAC) at 50/60 Hz: Class 2 (North America) or Safety Extra-Low Voltage (SELV) (Europe), 7.9 VA Running, 5.5 VA holding position 24 VDC (21.6 VDC to 28.8 VDC): Class 2 (North America) or SELV (Europe) 3.5 W running, 1.9 W holding position Minimum transformer size: 8 VA for each actuator
Input signal/adjustments	-AGx models	19.2 VAC to 28.8 VAC at 50/60 Hz or 24 VDC +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: 24 VAC, 50 VA pilot duty 120 VAC, 5.8 A resistive, 1/4 hp, 275 VA pilot duty 240 VAC, 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°

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Table 3: VA9208-AGx-x Series on/off and floating point electric spring return actuators

Specification		Description
Rotation time for 90 degrees of travel	Power on (running)	150 s for 0 lb·in to 70 lb·in (0 N·m to 8 N·m) load, at all operating conditions
	Power off (spring returning)	17 s to 25 s for 0 lb·in to 70 lb·in (0 N·m to 8 N·m) load, at room temperature 22 s nominal at full rated load 94 s 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 and1/4 in. (6 mm) ferrule ends
	Auxiliary awitches (-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°F to 203°F (-5°C to 95°C), not rated for steam service
	VG12x5 and VG18x5 Series	-22°F to 212°F (-30°C to 100°C), not rated for steam service
	VG12x5 and VG18x5 Series with M9000-561 Thermal Barrier installed	-22°F to 284°F (-30°C to 140°C) water, 15 psig (103 kPa) at 250°F (121°C) saturated steam
Ambient conditions	Standard operating	-40°F to 140°F (-40°C to 60°C), 90% RH maximum, non-condensing
	Storage	-40°F to 185°F (-40°C to 85°C), 95% RH maximum, non-condensing
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 UK CA	Europe	Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive and Low Voltage Directive, and equivalent UK regulations.
	Australia and New Zealand	RCM Mark, Australia/NZ Emissions Compliant
Shipping weight	-AGA models	3.5 lb (1.6 kg)
	-AGC models	3.9 lb (1.8 kg)

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Table 4: VA9208-Bxx-x Series on/off electric spring return actuators

Specification		Desciption
Power requirements	-BGx models	24 VAC (18 VAC to 30 VAC) at 50/60 Hz: Class 2 (North America) or Safety Extra-Low Voltage (SELV) (Europe), 6.1 VA running, 1.2 VA holding position 24 VDC (21.6 VDC to 28.8 VDC): Class 2 (North America) or SELV (Europe) 3.5 W running, 0.5 W holding position Minimum transformer size: 7 VA for each actuator
	-BAx models	120 VAC (102 VAC to 132 VAC) at 60 Hz: 0.05 A running, 0.03 A holding position
	-BDx models	230 VAC (198 VAC to 264 VAC) 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: 24 VAC, 50 VA pilot duty 120 VAC, 5.8 A resistive, 1/4 hp, 275 VA pilot duty 240 VAC, 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 s to 71 s for 0 lb·in to 70 lb·in (0 N·m to 8 N·m) load, at all operating conditions 60 s nominal at full rated load (0.25 rpm)
	Power off (spring returning)	13 s to 26 s for 0 lb·in to 70 lb·in (0 N·m to 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°F to 203°F (-5°C to 95°C), not rated for steam service
	VG12x5 and VG18x5 Series	-22°F to 212°F (-30°C to 100°C), not rated for steam service
	VG12x5 and VG18x5 Series with M9000-561 Thermal Barrier installed	-22°F to 284°F (-30°C to 140°C) water, 15 psig (103 kPa) at 250°F (121°C) saturated steam
Ambient conditions	Standard operating	-4°F to 140°F (-20°C to 60°C), 90% RH maximum, noncondensing
	Extended operating	-40°F to 4°F (-40°C to -20°C), 90% RH maximum, noncondensing
	Storage	-40°F to 185°F (-40°C to 85°C), 95% RH maximum, noncondensing
Enclosure rating		NEMA 2 (IP54) for all mounting directions

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Table 4: VA9208-Bxx-x Series on/off electric spring return actuators

Specification		Desciption
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 UKCA	Europe	Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive and Low Voltage Directive, and equivalent UK regulations.
	Australia and New Zealand	RCM 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)

Patents

Patents: https://jcipat.com

Product warranty

This product is covered by a limited warranty, details of which can be found at www.johnsoncontrols.com/buildingswarranty.

Single point of contact

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