

M9206-xxx-2S Series

Electric Spring Return Actuators

Description

The M9206-xxx-2S Series Actuators are direct-mount, spring return electric actuators intended for use with on/off, floating, or proportional controllers. BGx models operate on AC 24 V power, AGx and GGx models operate on AC/DC 24 V power, and BAx models operate on AC 120 V power. These bidirectional actuators do not require a damper linkage, and are easily installed on a damper with a round shaft up to 1/2 in. (13 mm) in diameter, or a square shaft up to 3/8 in. (10 mm). They may also be mounted onto Johnson Controls® VG1000 Series Forged Brass Ball Valves using the M9000-513 or M9000-520 Ball Valve Linkage Kit.

The M9206-xxx-2S Series Electric Spring Return Actuators provide a running torque of 53 lb-in (6 N-m). The rotation range is mechanically adjustable. An integral line voltage auxiliary switch is available on the xxB models to indicate end-stop position, or to perform switching functions within the selected rotation range. Position feedback is provided on proportional control models through a proportional DC voltage signal.

Features

- slim profile simplifies installation and provides application flexibility in confined locations
- 1/2 in. conduit connector with 48 in. (1.2 m) 18 AWG UL CMP plenum cable(s) meets local code requirements for wiring in air plenums, and simplifies field wiring for retrofit jobs

- automatic stroke calibration at installation reduces installation time and costs, since the actuator self adjusts
- reversible mounting design provides Clockwise (CW) or Counterclockwise (CCW) return-to-normal positioning if a power loss occurs
- removable coupler enables actuator stroke adjustment, and/or adapts to a shorter damper shaft
- integral auxiliary switch (xxB models) provides an adjustable switch point with AC 120/240 V capability

Product Details

The M9206-xxx-2S Series Electric Spring Return Actuators are designed to position air dampers and valves in Heating, Ventilating, and Air Conditioning (HVAC) systems. Applications include:

- positioning return air, exhaust air, or outside air dampers
- positioning face and bypass dampers
- positioning VG1000 Series Forged Brass Ball Valves using the M9000-513 or M9000-520 Ball Valve Linkage Kit

Refer to the manufacturer's information to properly size the damper, ball valve, and/or electric actuator.

Repairs and Replacement

If the M9206-xxx-2S Series Electric Spring Return Actuator fails to operate within its specifications, replace the unit. For a replacement electric actuator, contact the nearest Johnson Controls representative.



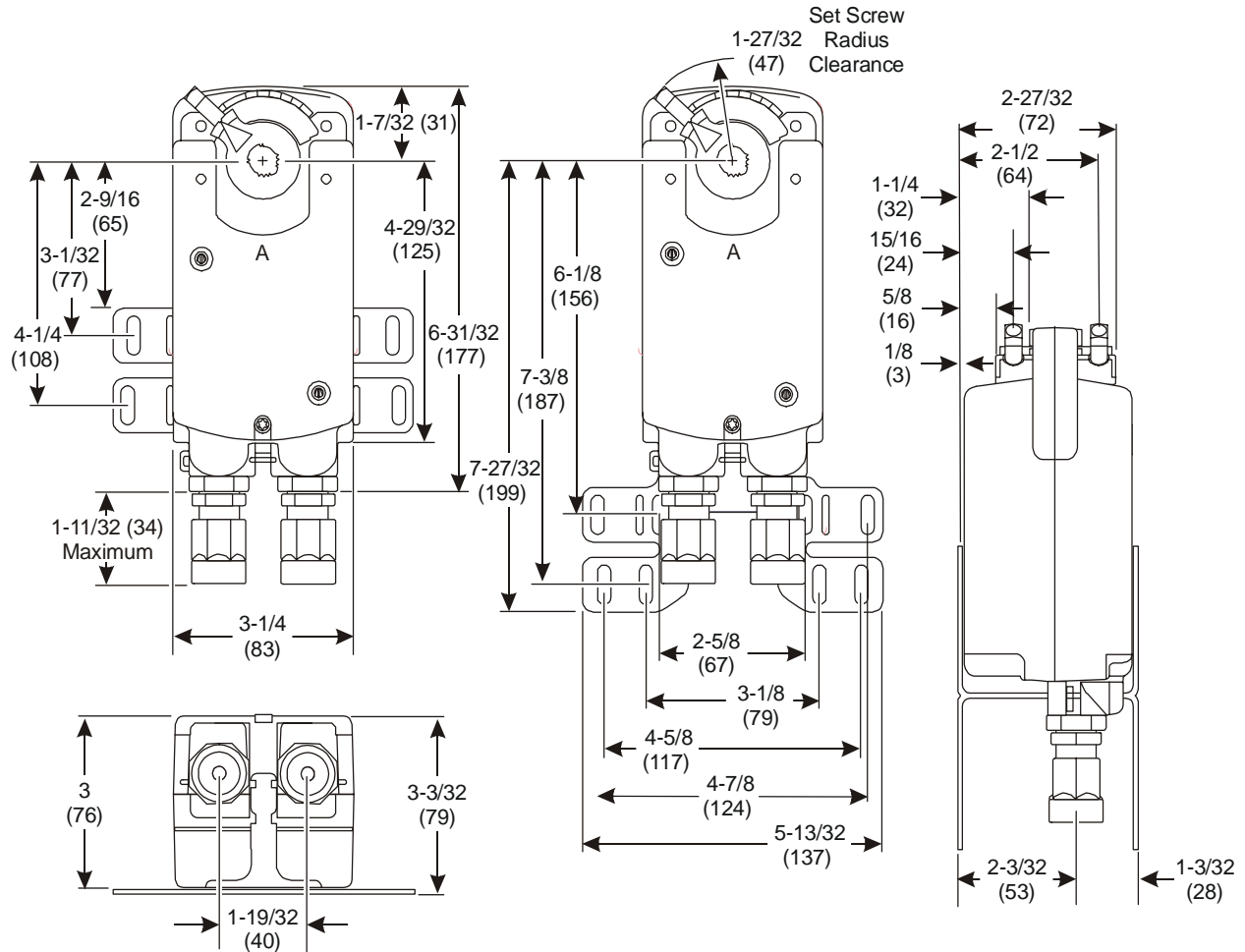
**M9206-xxx-2S Series
Electric Spring Return Actuator**

Electric Spring Return Actuator Models

Code Number	Control Type	Input Signal	Feedback Signal	Auxiliary Switch	Power Requirements
M9206-AGA-2S	Floating or On/Off	AC 18 to 30 V at 50/60 Hz or DC 24 V	N/A	N/A	AC 24 V at 50/60 Hz or DC 24 V
M9206-AGB-2S	Floating or On/Off	AC 18 to 30 V at 50/60 Hz or DC 24 V	N/A	One	AC 24 V at 50/60 Hz or DC 24 V
M9206-BAA-2S	On/Off	AC 102 to 132 V at 60 Hz	N/A	N/A	AC 120 V at 60 Hz
M9206-BAB-2S	On/Off	AC 102 to 132 V at 60 Hz	N/A	One	AC 120 V at 60 Hz
M9206-BGA-2S	On/Off	AC 18 to 30 V at 50/60 Hz	N/A	N/A	AC 24 V at 50/60 Hz
M9206-BGB-2S	On/Off	AC 18 to 30 V at 50/60 Hz	N/A	One	AC 24 V at 50/60 Hz
M9206-GGA-2S	Proportional	DC 0 (2) to 10 V or 0 (4) to 20 mA ¹	DC 0 (2) to 10 V	N/A	AC 24 V at 50/60 Hz or DC 24 V
M9206-GGB-2S	Proportional	DC 0 (2) to 10 V or 0 (4) to 20 mA ¹	DC 0 (2) to 10 V	One	AC 24 V at 50/60 Hz or DC 24 V

1. Milliamp input signal requires field furnished 500 ohm resistor.

Electric Spring Return Actuators (Continued)



M9206-xxx-2S Series Electric Spring Return Actuator Dimensions, in. (mm)

Accessories and Replacement Parts (Order Separately)

Code Number	Description
DMPR-KC003 ¹	7 in. (178 mm) Blade Pin Extension without Bracket for Johnson Controls Direct-Mount Damper Applications
DMPR-KR003 ¹	Sleeve Pin Kit for Johnson Controls Round Dampers with a 5/16 in. (8 mm) Diameter Shaft
M9000-161	Replacement Anti-Rotation Bracket for M9206-xxx-2S Series Electric Spring Return Actuators
M9000-165	Mounting Kit Used to Mount M9206-xxx-2S Series Electric Spring Return Actuators in Remote-Mount, Linkage-Driven Applications
M9000-200	Commissioning Tool that Provides a Control Signal to Drive 24 V On/Off, Floating, Proportional, and/or Resistive Electric Actuators
M9000-513	Linkage Kit Used to Mount M9206-xxx-2S Series Electric Spring Return Actuators to Johnson Controls 1/2 and 3/4 in. (DN15 and DN20) VG1243 Series, and 1/2 in. (DN15) VG1644 Series Forged Brass Ball Valves
M9000-520	Linkage Kit Used to Mount M9206-xxx-2S Series Electric Spring Return Actuators to Johnson Controls 1/2 through 1-1/2 in. (DN15 through DN40) VG12x1, VG12x5, VG18x1, and VG18x5 Series Forged Brass Ball Valves
M9206-600	Replacement Coupler, Set Screw, and Locking Clip Kit for Mounting M9206-xxx-2S Series Electric Spring Return Actuators to a Round Shaft Up to 1/2 in. (13 mm) or a Square Shaft Up to 3/8 in. (10 mm)
M9206-601	Replacement Coupler, Set Screw, and Locking Clip Kit for Mounting M9206-xxx-2S Series Electric Spring Return Actuators to a Round Shaft Up to 5/8 in. (16 mm) or a Square Shaft Up to 9/16 in. (14 mm)
M9206-602	Replacement Locking Clips for M9206-xxx-2S Series Electric Spring Return Actuators (Five per Bag)
Y65A13-0	40 VA Transformer, AC 120/24 V, 60 Hz, Class 2
Y65S13-0	40 VA Transformer, AC 240/24 V, 60 Hz, Class 2

1. Furnished with the damper and may be ordered separately.

Electric Spring Return Actuators (Continued)

Technical Specifications

Product		M9206-xxx-2S Series Electric Spring Return Actuators
Power Requirements	AGx Models	Nominal AC 24 V $\pm 25\%$ at 50/60 Hz, Class 2, Typical 8.0 VA Running, 6.0 VA Holding Position; DC 24 V $\pm 10\%$, Class 2, Typical 5.6 W Running, 2.2 W Holding Position
	BGx Models	Nominal AC 24 V $\pm 25\%$ at 50/60 Hz, Class 2, Typical 9.8 VA Running, 5.8 VA Holding Position
	BAX Models	Nominal AC 120 V $\pm 10\%$ at 60 Hz, Typical 11.0 VA Running, 9.2 VA Holding Position
	GGx Models	Nominal AC 24 V $\pm 25\%$ at 50/60 Hz, Class 2, Typical 12.0 VA Running, 5.0 VA Holding Position; DC 24 V $\pm 10\%$, Class 2, Typical 5.6 W Running, 2.2 W Holding Position
Transformer Sizing Requirements		14 VA Minimum per Actuator
Input Signal	AGx Models	AC 18 to 30 V at 50/60 Hz or DC 24 V $\pm 10\%$, Class 2
	BGx Models	AC 18 to 30 V at 50/60 Hz, Class 2
	BAX Models	AC 102 to 132 V at 60 Hz
	GGx Models	DC 0 (2) to 10 V or 0 (4) to 20 mA with Field Furnished 500 ohm Resistor
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: 200,000 ohms; Current Input: 500 ohms with Field Furnished 500 ohm Resistor
Feedback Signal	GGx Models	DC 0 (2) to 10 V for Desired Rotation Range Up to 90°; Corresponds to Rotation Limits
Auxiliary Switch Rating	xxB Models	One Single-Pole, Double-Throw (SPDT), Double-Insulated Switch; AC 24 V, 50 VA Pilot Duty; AC 120 V, 5.8 A Resistive, 1/4 hp, 275 VA Pilot Duty; AC 240 V, 2.9 A Inductive, 5.0 A Resistive, 1/4 hp, 275 VA Pilot Duty
Spring Return		Direction is Selectable with Mounting Position of Actuator: CCW Actuator Face Away from Damper/Valve for CCW Spring Return; CW Actuator Face Away from Damper/Valve for CW Spring Return
Running Torque		53 lb-in (6 N-m)
Rotation Range		Adjustable from 34.5 to 90° CW or CCW; Mechanically Limited to 93°
Rotation Time	AGx Models	Selectable 60 or 90 Seconds $\pm 10\%$ at Nominal Conditions, Load Independent; Factory Set at 90 Seconds
	Bxx Models	10 to 40 Seconds for 0 to 53 lb-in (6 N-m) at All Operating Conditions
	GGx Models	25 to 40 Seconds for 0 to 53 lb-in (6 N-m) at All Operating Conditions
Spring Return Time No Power (Off)	AGx and GGx Models	Nominal 35 Seconds; 90 Seconds Maximum
	Bxx Models	Nominal 35 Seconds; 70 Seconds Maximum
Cycles		60,000 Full Stroke Cycles
	AGx and GGx Models	1,500,000 Repositions Rated at 53 lb-in (6 N-m)
Audible Noise Rating	AGx and GGx Models	51 dBA Nominal at 39-13/32 in. (1 m)
	Bxx Models	55 dBA Nominal at 39-13/32 in. (1 m)
Electrical Connections		48 in. (1.2 m) 18 AWG UL CMP Plenum Cable(s) with 1/4 in. (6 mm) Stripped Wire Leads
Conduit Exit	xxA Models	One 1/2 in. National Pipe Straight Loose (NPSL) Exit
	xxB Models	Two 1/2 in. National Pipe Straight Loose (NPSL) Exits
Mechanical Connections	Damper Applications	3/8 to 1/2 in. 18 AWG (10 to 13 mm) Diameter Round Shaft or 3/8 in. (10 mm) Square Shaft
	Valve Applications	Mounted onto Johnson Controls 1/2 and 3/4 in. (DN15 and DN20) VG1243 Series, and 1/2 in. (DN15) VG1644 Series Forged Brass Ball Valves using M9000-513 Ball Valve Linkage Kit; Mounted onto Johnson Controls 1/2 through 1-1/2 in. (DN15 through DN40) VG12x1, VG12x5, VG18x1, and VG18x5 Series Forged Brass Ball Valves using M9000-520 Ball Valve Linkage Kit
Enclosure		NEMA 2, IP42
Ambient Conditions	Operating	-25 to 140°F (-32 to 60°C); 90% RH Maximum, Noncondensing
	Storage	-40 to 185°F (-40 to 85°C); 95% RH Maximum, Noncondensing
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 CE Mark, Low Voltage Directive 73/23/EEC (xAX and xxB Models)
	Australia and New Zealand	C-Tick Mark, Australia/NZ Emmissions Compliant
Shipping Weight		3.5 lb (1.6 kg)