

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

- simple direct coupling reduces installation and commissioning time while improving reliability by eliminating damper linkages. Single screw coupling provides three-point shaft gripping.
- reversible mounting design enables the actuator to spring return in either direction
- removable coupler adapts to a shorter damper shaft
- electronic stall detection throughout entire rotation range extends the life of the actuator by deactivating the actuator motor when an overload condition is detected
- integral 48 in. (1.2 m) halogen-free cables with colored and numbered conductors simplify field wiring
- integral auxiliary switches (xxB Models) provide one adjustable switch point with line voltage capability
- automatic stroke calibration at installation reduces installation time and costs

Applications

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, and 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.



**M9206 Series
Electric Spring Return Actuator**

Selection Charts

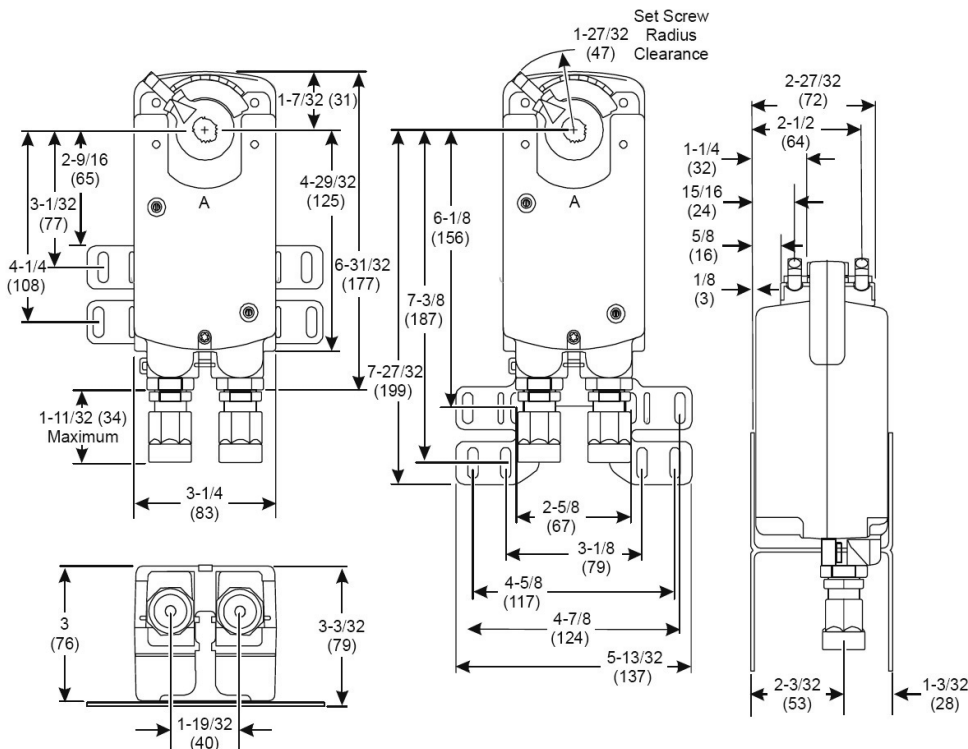
M9206 Series Electric Spring Actuators

Code Number	Control Type	Torque / Voltage / Timing	Auxiliary Switches	Comments
M9206-AGA-2S	On-Off, Floating	53 lb-in (6 Nm)	None	48 in. (1.2 m) 18 AWG Plenum Rated UL CMP Cable
M9206-AGB-2S		AC/DC 24 V 50/60 Hz 60 or 90 Seconds	1-SPDT	48 in. (1.2 m) 18 AWG Plenum Rated UL CMP Cable Aux Switch 48in. (1.2m)18 AWG H.F. AWM Cable
M9206-BAA-2S	On-Off	53 lb-in (6 Nm)	None	48in. (1.2m)18 AWG H.F. AWM Cable
M9206-BAB-2S		AC 120 V 60 Hz 10 to 40 Seconds	1-SPDT	48in. (1.2m)18 AWG H.F. AWM Cable(s)
M9206-BGA-2S		53 lb-in (6 Nm)	None	48in. (1.2m)18 AWG H.F. AWM Cable
M9206-BGB-2S		AC 24 V 50/60 Hz 10 to 40 Seconds	1-SPDT	48in. (1.2m)18 AWG H.F. AWM Cable(s)
M9206-GGA-2S	DC 0(2)...10 V Proportional	53 lb-in (6 Nm)	None	48 in. (1.2 m) 18 AWG UL CMP Plenum Cable(s) with 1/4 in. (6 mm) Stripped Wire Leads
M9206-GGB-2S		AC/DC 24 V 50/60 Hz 25 to 40 Seconds	1-SPDT	48 in. (1.2 m) 18 AWG Plenum Rated UL CMP Cable Aux Switch 48in. (1.2m)18 AWG H.F. AWM Cable

M9206 Series Electric Spring Return Actuators (Continued)

Accessories for M9206 Series Electric Actuators

Code Number	Description
DMPR-KR003	Sleeve Pin Kit for Johnson Controls round dampers with a 5/16 in. (8 mm) diameter shaft
DMPR-KC003	Square Head Blade Pin Extension without Bracket for Johnson Controls CD-1300 direct-mount applications
DMPR-KC011	Hex Head Blade Pin Extension without Bracket
DMPR-KC012	Hex Head Blade Pin Extension with Bracket
DMPR-KC213	Damper Jackshaft 1/2" Diameter, 1 Panel
DMPR-KC214	Damper Jackshaft 1/2" Diameter, 2 Panel
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



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

Repair Information

If the M2202 Electric Actuator fails to operate within its specifications, replace the unit. For a replacement actuator, contact the nearest Johnson Controls® representative.

M9206 Series Electric Spring Return Actuators (Continued)

Technical Specifications

M9206 Series Electric Spring Return Actuators		
Power Requirement	AGx:	AC 24 V ±25% at 50/60 Hz, Class 2, Typical 12.0 VA Running, 6.0 VA Holding Position; DC 24 V ±10%, Class 2, Typical 5.6 W Running, 2.2 W Holding Position
	BGx:	AC 24 V ±25% at 50/60 Hz, Class 2, Typical 9.8 VA Running, 5.8 VA Holding Position
	BAx:	AC 120 V ±10% at 60 Hz, Typical 10.0 VA Running, 9.2 VA Holding Position
	GGx:	AC 24 V ±25% at 50/60 Hz, Class 2, Typical 12.0 VA Running, 5.0 VA Holding Position; DC 24 V ±10%, Class 2, Typical 5.6 W Running, 2.2 W Holding Position
Transformer Sizing Requirements	AGx, BGx, and GGx:	14 VA Minimum per Actuator
Control Type	AGx:	On-Off, Floating
	Bxx:	Floating
	GGx:	DC 0(2)...10 V Proportional
Input Signal	AGx:	AC 18...30 V at 50/60 Hz or DC 24 V ±10%, Class 2
	BAx:	AC 102...132 V at 60 Hz
	BGx:	AC 18...30 V at 50/60 Hz, Class 2
	GGx:	DC 0(2)...10 V or DC 0(4)...20 mA with Field Furnished 500 ohm Resistor
Input Signal Adjustments	GGx:	Factory Set at DC 0...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
Input Impedance	GGx:	Voltage Input: 200,000 ohms; Current Input: 500 ohms with Field Furnished 500 ohm Resistor
Feedback Signal	GGx:	DC 0(2)...10 V for Desired Rotation Range Up to 90°; Corresponds to Rotation Limits
Auxiliary Switch Rating	xxB:	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
Torque Rating	All Models	53 lb-in (6 N·m)
Cycle Life	AGx and GGx:	60,000 Full Stroke Cycles, 1,500,000 Repositions Rated at 53 lb-in (6 N·m)
	BGx:	60,000 Full Stroke Cycles at 53 lb-in (6 N·m)
Audible Noise Rating	AGx, GGx, HGx:	51 dBA Nominal at 39-13/32 in. (1 m)
	BBx:	55 dBA Nominal at 39-13/32 in. (1 m)
Rotation Range	All Models	Adjustable from 34.5 to 90° CW or CCW; Mechanically Limited to 93°
Rotation Time Running	AGx:	Selectable 60 or 90 Seconds ±10% at Nominal Conditions, Load Independent; Factory Set at 90 Seconds
	BGx:	10 to 40 Seconds for 0 to 53 lb-in (6 N·m) at All Operating Conditions
	GGx:	25 to 40 Seconds for 0 to 53 lb-in (6 N·m) at All Operating Conditions
Rotation Time Spring Return	AGx, GGx:	Nominal 35 Seconds; 90 Seconds Maximum
	BGx:	Nominal 35 Seconds; 70 Seconds Maximum
Electrical Connection	Actuator AGx and GGx:	48 in. (1.2 m) 18 AWG Plenum Rated UL CMP Cable
	Actuator Bxx:	48in. (1.2m)18 AWG Halogen Free AWM Cable
	Aux Switch	48in. (1.2m)18 AWG Halogen Free AWM Cable
Conduit Connectors	AGA, BGA, and GGA:	1/2 in. National Pipe Straight Loose (NPSL) – Internal Thread
	AGA, BGA, and GGA:	Two - 1/2 in. National Pipe Straight Loose (NPSL) – Internal Thread
Mechanical Connection		3/8 to 1/2 in. (10 to 13 mm) Diameter Round Shaft or 3/8 in. (10 mm) Square Shaft
Enclosure Rating		NEMA 2, IP42
Ambient Operating Rating		-25 to 140°F (-32 to 60°C); 90% RH Maximum, Noncondensing
Ambient Storage Rating		-40 to 185°F (-40 to 85°C); 95% RH Maximum, Noncondensing
Shipping Weight		3.5 lb (1.6 kg)
Agency 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
	xxA: European Union	CE Mark, EMC Directive 89/336/EEC
	xxB: European Union	CE Mark, Low Voltage Directive 73/23/EEC
	Australia	C-Tick Mark, Australia/NZ Emmissions Compliant