

Smaller M9206-Bxx-2S Series On/Off Control Electric Spring Return Actuators

The M9206-Bxx-2S Series direct-mount, spring return electric actuators are intended for use with on/off controllers. The M9206-BGx-2S models operate at 24 VAC and the M9206-BAx-2S models operate at 120 VAC 60 Hz. These actuators do not require a damper linkage, and are easily installed on a round shaft up to 1/2 in. (12.7 mm) diameter or a square shaft up to 3/8 in. (10 mm). They also may be mounted to VG1000 Series ball valves using the M9000-513 linkage kit.

The M9206-Bxx-2S on/off models deliver 53 lb-in (6 N·m) of torque. The angle of rotation is mechanically adjustable. An integral line voltage auxiliary switch is available on the M9206-BxB-2S models to indicate end-stop position or to perform switching functions.



**Figure 1: M9206-BAB-2S Electric
Spring Return Actuator**

Features and Benefits	
☐ Line Voltage or 24 VAC Input Signal Option	Allows for easier installation
☐ Smaller Size	Offers more flexibility for applications in tight spots
☐ Extended Temperature Range (-25 to 140°F/ -32 to 60°C)	Meets the needs of outdoor air applications
☐ Reversible Mounting Design	Provides Clockwise (CW) or Counterclockwise (CCW) return-to-normal positioning if a power loss occurs
☐ Electronic Stall Detection Throughout Entire Range	Increases actuator life by deactivating the actuator motor when an overload is detected
☐ Removable Coupler	Allows actuator stroke adjustment and/or adapts to a shorter damper shaft
☐ 1/2 in. Conduit Connections	Meets local code requirements for wiring and allows easy field wiring on retrofit jobs
☐ Auxiliary Switch (Optional)	Provides adjustable switch point with line voltage (24/120/240 VAC) capability

Application

IMPORTANT: This device is not designed or intended to be used in or near environments where explosive vapors or gases could be present, or environments where substances corrosive to the device's internal components could be present.

M9206-Bxx-2S actuators are designed to position air dampers and valves in Heating, Ventilating, and Air Conditioning (HVAC) systems. Applications include:

- positioning return air, exhaust, or outdoor air dampers
- controlling face and bypass dampers
- positioning valves when used with a ball valve linkage

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

Operation

IMPORTANT: The M9206-Bxx-2S Series actuators are intended to control equipment under normal operating conditions. Where failure or malfunction of an M9206-Bxx-2S actuator could lead to an abnormal operating condition that could cause personal injury or damage to the equipment or other property, other devices (limit or safety controls) or systems (alarm or supervisory) intended to warn of, or protect against, failure or a malfunction of the M9206-Bxx-2S actuator must be incorporated into and maintained as part of the control system.

The BGA and BGB models operate on 24 VAC at 50/60 Hz, and the BAA and BAB models operate at 120 VAC at 60 Hz. Mechanical limitation restricts rotation to 93° by integral end-stops. An anti-rotation mounting bracket prevents lateral movement of the actuator.

Dimensions

Refer to Figure 2 for actuator dimensions.

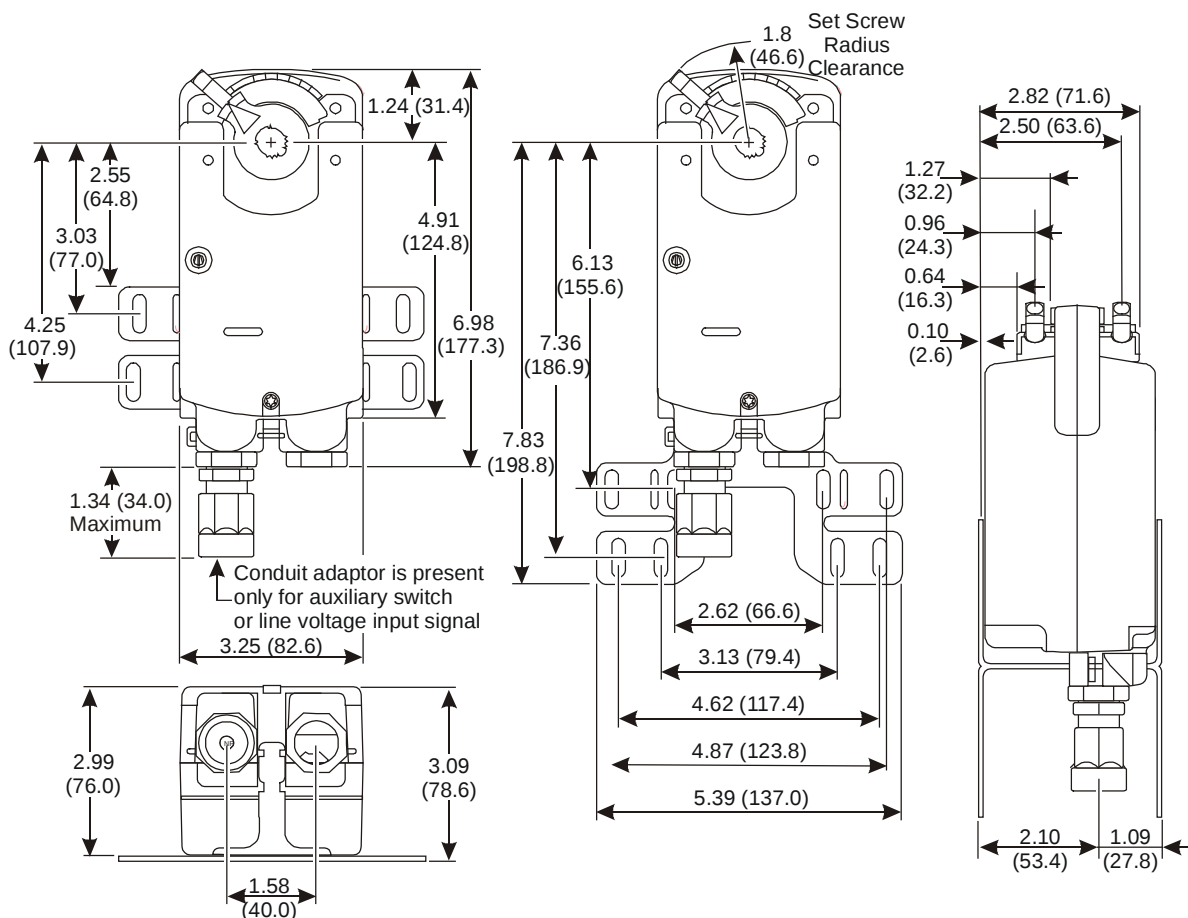


Figure 2: Actuator and Anti-Rotation Bracket Dimensions, in. (mm)

Ordering Information

Table 1: Actuators

Product Code Number	Description
M9206-BGA-2S	Spring return actuator with on/off (two position) control, 24 VAC at 50/60 Hz
M9206-BGB-2S	Spring return actuator with on/off (two position) control, 24 VAC at 50/60 Hz and one auxiliary switch
M9206-BAA-2S	Spring return actuator with on/off (two position) control, 120 VAC at 60 Hz
M9206-BAB-2S	Spring return actuator with on/off (two position) control, 120 VAC at 60 Hz and one auxiliary switch

Table 2: Accessories

Product Code Number	Description
DMPR-KC003*	Blade Pin Extension without Bracket for Johnson Controls D-1300 direct-mount applications
DMPR-KR003*	Sleeve Pin Kit for Johnson Controls round dampers with a 5/16 in. diameter shaft
M9000-161	Replacement anti-rotation bracket for an M9204 or M9206 actuator mounted on a damper
M9000-165	Mounting Kit used to mount M9206-Bxx-2S actuators in remote mount, linkage-driven applications
M9000-200	Commissioning Tool provides a 24 VAC control signal to drive on/off, floating, proportional, or resistive actuators
M9000-513	Valve Linkage Kit for field mounting an M9206 actuator to either 1/2 in. or 3/4 in. two-way and 1/2 in. three-way VG1000 Series Ball Valve
M9206-600	Repair Kit includes a coupler, set screw, and locking clip for mounting an M9206 actuator to a 3/8 to 1/2 in. (10.0 to 12.7 mm) round shaft or a 3/8 in. (10 mm) square shaft
M9206-601	Repair Kit includes a coupler, set screw, and locking clip for mounting an M9206 actuator to a 3/8 to 5/8 in. (10 to 16 mm) round shaft or a 3/8 to 9/16 in. (10 to 14 mm) square shaft
M9206-602	Locking clip for an M9206 actuator coupler (bag of 5)

* Furnished with the damper and may be ordered separately.

Technical Specifications

Product	M9206-Bxx-2S Series On/Off Control Electric Spring Return Actuators	
Power Requirements	Typically:	
	BGx:	Nominal 9.8 VA running; 5.8 VA holding position
	BAX:	Nominal 120 V 60 Hz 0.08 A running; 0.05 A holding position
Input Signal	BGx:	20 to 30 VAC at 50/60 Hz Class 2
	BAX:	102 to 132 VAC at 60 Hz
Auxiliary Switch Rating	BxB Models:	One Single-Pole, Double-Throw switch
	Rating:	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 the mounting position of the actuator: CCW actuator face away from the damper for CCW spring return; CW actuator face away from the damper for CW spring return	
Mechanical Output	Running Torque:	53 lb-in (6 N·m)
Rotation Range	Adjustable from 34.5 to 90°, mechanically limited to 93°	
Rotation Time	Powered (On):	10 to 40 seconds for 0 to 53 lb-in (0 to 6 N·m) at all operating conditions. 25 seconds nominal for 50% rated load
	Unpowered (Off):	Spring return time is 35 seconds nominal, 70 seconds maximum
Cycles	60,000 full stroke cycles; rated at 53 lb-in (6 N·m)	
Electrical Connection	Actuator:	48 in. (1.2 m) cable with 20 AWG wire leads
	Auxiliary Switches:	48 in. (1.2 m) cable with 18 AWG wire leads
Mechanical Connection	3/8 to 1/2 in. (10.0 to 12.7 mm) diameter round shaft 3/8 in. (10 mm) square shaft	
Enclosure	NEMA 2, IP42	
Ambient Conditions	Operating:	-40 to 140°F (-40 to 60°C); 10 to 90% RH, noncondensing
	Storage:	-85 to 185°F (-65 to 86°C); 5 to 95% RH, noncondensing
Dimensions (H x W x D)	BGA:	6.98 x 3.25 x 2.99 in. (177.29 x 82.55 x 75.95 mm)
	All Other Models:	8.32 x 3.25 x 2.99 in. (211.33 x 82.55 x 75.95 mm) with conduit adaptor
Shipping Weight	3.45 lb (1.56 kg)	
Agency Compliance	UL Listed, File E27734, CCN XAPX (US) and XAPX7 (Canada)	

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.



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