

M9206 Series

# Electric Spring Return Actuators



**M9206**

## Description

The M9206 Series direct-mount, spring return electric actuators operate on 24 VAC or VDC power and are available for use with on/off, floating, or proportional controllers. 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. (12.7 mm) in diameter or a square shaft up to 3/8 in. (10 mm). They may also be mounted to ball valves using an M9000-51x Valve Linkage Kit.

The M9206 models deliver 53 lb-in (6 N·m) of torque. The angle of rotation is mechanically adjustable. Integral line voltage auxiliary switches are available to indicate end-stop

position or to perform switching functions within the selected rotation range. Position feedback is provided on proportional models through a proportional DC voltage signal.

## Features

- automatic stroke calibration at installation reduces field installation time and cost due to self adjustment
- 0 (2) to 10 VDC, 6 to 9 VDC, or 0 (4) to 20 mA input eliminates the need for an externally wired, 500 ohm resistor
- 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 connector with 48 in. wire leads meets local code requirements for wiring and allows easy field wiring on retrofit jobs
- optional auxiliary switches provide adjustable switch points with line voltage capability
- optional 20 VDC at 25 mA power supply output provides power for external devices, making the actuator an ideal replacement for many competing products

## Specifications

M9206 Series Electric Spring Return Actuators	
<b>Power Requirements</b>	20 to 30 VAC at 50/60 Hz or 24 VDC $\pm 10\%$ , Class 2, 16 VA minimum at 32 to 140°F (0 to 60°C) 22 VA minimum at -22 to 32°F (-30 to 0°C) 25 VA minimum at -40 to -22°F (-40 to -30°C)
<b>Input Signal</b>	AGx: 20 to 30 VAC at 50/60 Hz or 24 VDC $\pm 10\%$ , 4.8 mA AGx and BGx (On/Off): 20 to 30 VAC at 50/60 Hz or 24 VDC $\pm 10\%$ , 533 mA at 32 to 140°F (0 to 60°C) 733 mA at -22 to 32°F (-30 to 0°C) 833 mA at -40 to -22°F (-40 to -30°C) GGx: 0 (2) to 10 VDC, 6 to 9 VDC, or 0 (4) to 20 mA
<b>Input Signal Adjustments</b>	GGx (Voltage Input or Current Input): Factory Setting: 0 to 10 VDC, CW rotation with signal increase Switch Selectable: 0 (2) to 10 VDC, 6 to 9 VDC, or 0 (4) to 20 mA Direction of Action: Switch selectable direct or reverse with signal increase
<b>Input Impedance</b>	GGx: Voltage Input, 200,000 ohms; Current Input, 500 ohms
<b>Feedback Signal</b>	GGx: 0 (2) to 10 VDC for 90° (10 VDC at 2mA) or 6 to 9 VDC Corresponds to input signal selection and also rotation limits.
<b>Power Supply Output</b>	17 to 22 VDC at 25 mA (-2MP models)
<b>Auxiliary Switch Rating</b>	xGC Models: Two Single-Pole, Double-Throw (SPDT), double insulated switches Rating per Switch: 24 VAC, 50 VA pilot duty 120 VAC, 5.8 A resistive, 1/4 hp, 275 VA pilot duty 240 VAC, 2.9 A resistive, 1/4 hp, 275 VA pilot duty
<b>Spring Return</b>	Direction is selectable with the mounting position of the actuator: CCW face of the actuator away from the damper for CCW spring return; CW face of the actuator away from the damper for CW spring return
<b>Mechanical Output</b>	Running Torque: 53 lb-in (6 N·m)
<b>Rotation Range</b>	Adjustable from 34.5 to 90°, mechanically limited to 93°
<b>Rotation Time</b>	90 seconds for 93° with 0 to 53 lb-in (0 to 6 N·m)
<b>Cycles</b>	60,000 full stroke cycles; 1,500,000 Repositions rated at 53 lb-in (6 N·m)
<b>Electrical Connection</b>	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
<b>Mechanical Connection</b>	3/8 to 1/2 in. (10.0 to 12.7mm) diameter round shaft 3/8 in. (10 mm) square shaft
<b>Enclosure</b>	NEMA 2, IP42
<b>Ambient Conditions</b>	Operating: -40 to 140°F (-40 to 60°C); 10 to 90% RH, non-condensing Storage: -85 to 185°F (-65 to 85°C); 5 to 95% RH, non-condensing
<b>Dimensions (H x W x D)</b>	xGC Models: 8.32 x 3.25 x 3.58 in. (211.3 x 82.6 x 91.0 mm) with conduit adaptor All Other Models: 6.98 x 3.25 x 3.58 in. (177.3 x 82.6 x 91.0 mm)
<b>Shipping Weight</b>	3.45 lb (1.56 kg)
<b>Agency Compliance</b>	UL 873 Listed, File E27734, CCN XAPX CSA C22.2 No. 139 Certified, File LR85083, Class 3221 02 CE Mark, EMC Directive 89/336/EEC, Low Voltage Directive 73/23/EEC

## Applications

The M9206 actuators are designed to position air dampers and valves in HVAC systems.

Applications include:

- positioning of 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.

M9206 actuators operate on 24 VAC at 50/60 Hz or 24 VDC. They use a stepper motor with stall detection circuitry that operates throughout the entire stroke. The proportional actuators employ noise-filtering techniques on the control signal to eliminate repositioning due to line noise.

Rotation is mechanically limited to 93° by integral end-stops. An anti-rotation bracket prevents lateral movement of the actuator.

For more information, refer to the *M9206 Series Electric Spring Return Actuators Product Bulletin, LIT-2681118* or the *M9206 Series Electric Spring Return Actuators Installation Instructions, Part No. 34-1280-9*.

## To Order

Specify the code number from the selection chart on the following page.

## M9206 Series Electric Spring Return Actuators (Continued)

### Selection Chart

M9206 Series Electric Spring Return Actuators	53 lb-in (6 Nm)									
	M9206-AGA-2	M9206-AGA-2MP	M9206-AGC-2	M9206-AGC-2MP	M9206-BGA-2	M9206-BGC-2	M9206-GGA-2	M9206-GGA-2MP	M9206-GGC-2	M9206-GGC-2MP
On/Off Control	(a)	(a)	(a)	(a)	■	■				
Floating Control	■	■	■	■						
Proportional Control							■	■	■	■
Feedback										
0 (2) to 10 or 6 to 9 VDC							■	■	■	■
2 Auxiliary Switches			■	■		■			■	■
Power Supply Outlet										
20 VDC at 25 mA		■		■					■	■

(a) May be wired for two wire, on/off control

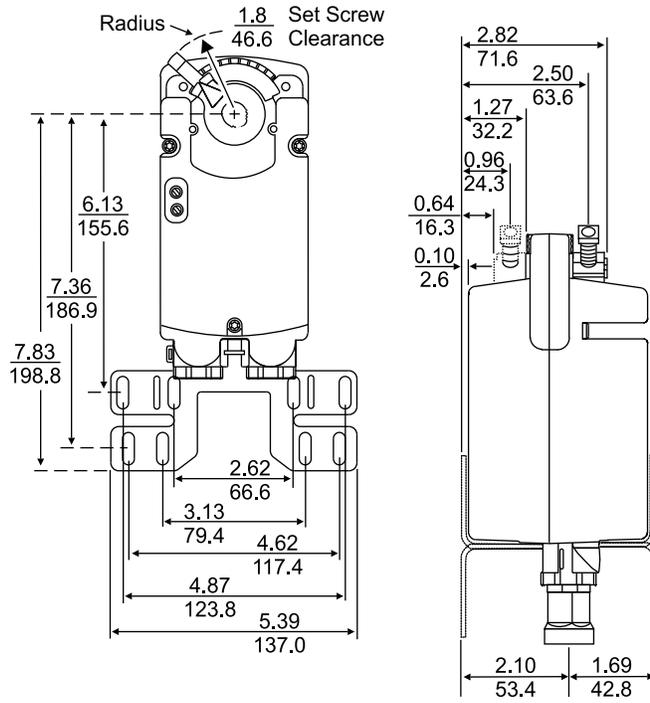
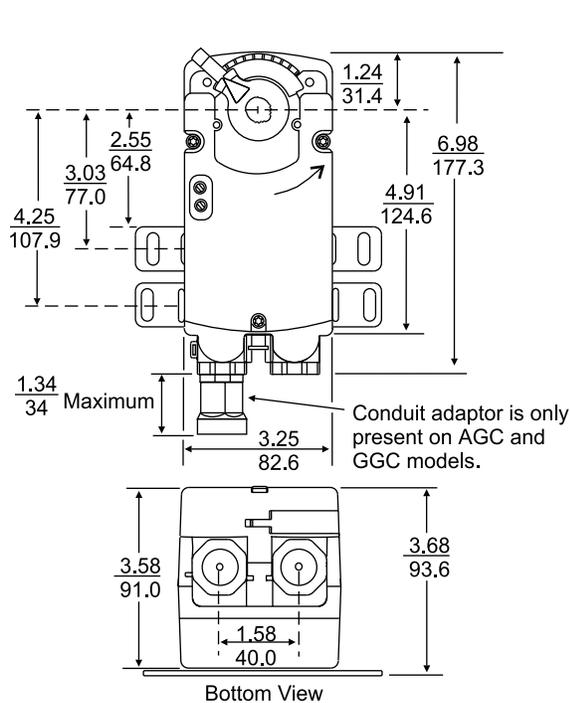
### Repair Parts

Replace the unit.

### Accessories

Code Number	Description
DMPR-KR003 (a)	Sleeve Pin Kit for Johnson Controls round dampers with a 5/16 in. (8 mm) diameter shaft
DMPR-KC003 (a)	Blade Pin Extension without Bracket for Johnson Controls CD-1300 direct-mount applications
M9000-156	Mounting Kit for retrofitting a number of Honeywell® economizer damper actuator installations; provides for remote mount, linkage-driven application of M9204 and M9206 actuators with existing linkages
M9000-157	Universal Mounting Kit provides for remote mount, linkage-driven application of M9204 and M9206 actuators in a new or retrofit damper and actuator assembly
M9000-161	Replacement anti-rotation bracket for M9206 Series actuators
M9000-200	Commissioning Tool provides a control signal to drive on/off, floating, proportional, or restrictive actuators
M9000-513	Valve Linkage Kit for field mounting an M9206 actuator to 1/2 and 3/4 in. 2-way and 1/2 in. 3-way VG1000 Series ball valves.
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 the M9206 actuator coupler (bag of 5)
Y65A13-0	40 VA Transformer, 120/24 VAC, 60 Hz
Y65S13-0	40 VA Transformer, 120/24 VAC, 60 Hz

(a) Furnished with the damper and may be ordered separately.



Actuator and Anti-rotation Bracket dimension, in./mm