

# M9102-AGA-2S, -3S and M9104-xxA-2S, -3S Series Electric Non-Spring Return Actuators Catalog Page

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## Description

The M9102 and M9104 Series Actuators are direct-mount, non-spring return electric actuators that operate on AC 24 V or 100 to 240 VAC power. These motor-driven actuators provide floating control (AGA), floating control with automatic shutoff (IGA), proportional control with selectable 0-10 or 2-10 VDC (GGA), and line voltage power supply (IUA). The -2S models are equipped with plenum cables, and the -3S models are equipped with terminal blocks.

All models are compact in size and are easily installed on VAV boxes, Variable Air Volume and Temperature (VVT) two-position zone applications, or small- to medium-sized dampers with a round shaft up to 1/2 in. (13 mm) in diameter or a 3/8 in. (10 mm) square shaft.

The M9102 Series Electric Non-Spring Return Actuators provide a running torque of 18 lb·in (2 N·m), and the nominal travel time is 30 seconds at 60 Hz (36 seconds at 50 Hz) for 90° of rotation. The M9104 Series Electric Non-Spring Return Actuators provide a running torque of 35 lb·in (4 N·m), and the nominal travel time is 60 seconds at 60 Hz for 90° of rotation.

Refer to the *M9102-AGA-2S, -3S and M9104-xGA-2S, -3S Series Electric Non-Spring-Return Actuators Product Bulletin (LIT-1201742)* for important product application information.



## Features

- two torques available: 18 and 35 lb-in (2 and 4 N·m)
- short 30-second travel time available
- 35 dBA maximum audible noise rating at 1 meter
- synchronous drive (AGA, IGA, GGA models)
- 100,000 cycle rating
- direct shaft mounting with single-screw coupler
- magnetic clutch
- manual gear release
- plenum cable or screw terminal electric connections
- floating, floating with timeout, and proportional 0(4) to 10 VDC control inputs available
- small, compact design

## Applications

The M9102 and M9104 Series Electric Non-Spring Return Actuators are designed to position balancing, control, round, and zone dampers in HVAC systems. These electric actuators are also designed to position blades in a VAV box, or they can be used in VVT two-position zone applications.

Each actuator mounts directly to the surface in any convenient orientation using a single No. 10 standard sheet metal screw (included with the actuator). No additional linkages or couplers are required. Electrical connections on the actuator are clearly labeled to simplify installation.

## Repair Information

If the M9102 or M9104 Series Electric Non-Spring Return Actuator fails to operate within its specifications, replace the unit. For a replacement electric actuator, contact the nearest Johnson Controls® representative.

## Selection Chart

**Table 1: Selection chart**

Code number	Control type	Running torque	Travel time	Power supply (VA rating)	Electrical connections
M9102-AGA-2S	Floating	18 lb·in (2 N·m)	30 seconds at 60 Hz 36 seconds at 50 Hz	2.5	48 in. (1.2 m) UL 444 Type CMP Plenum Rated cable with 19 AWG (0.75 mm <sup>2</sup> ) conductors and .25 in. (6 mm) ferrule ends
M9102-AGA-3S	Floating	18 lb·in (2 N·m)	30 seconds at 60 Hz 36 seconds at 50 Hz	2.5	M3 Screw Terminals
M9104-AGA-2S	Floating	35 lb·in (4 N·m)	60 seconds at 60 Hz 72 seconds at 50 Hz	2.1	48 in. (1.2 m) UL 444 Type CMP Plenum Rated cable with 19 AWG (0.75 mm <sup>2</sup> ) conductors and .25 in. (6 mm) ferrule ends
M9104-AGA-3S	Floating	35 lb·in (4 N·m)	60 seconds at 60 Hz 72 seconds at 50 Hz	2.1	M3 Screw Terminals
M9104-IGA-2S	Floating or On/Off	35 lb·in (4 N·m)	60 seconds at 60 Hz 72 seconds at 50 Hz	3.0	48 in. (1.2 m) UL 444 Type CMP Plenum Rated cable with 19 AWG (0.75 mm <sup>2</sup> ) conductors and .25 in. (6 mm) ferrule ends
M9104-IGA-3S	Floating or On/Off	35 lb·in (4 N·m)	60 seconds at 60 Hz 72 seconds at 50 Hz	3.0	M3 Screw Terminals
M9104-GGA-2S	Proportional	35 lb·in (4 N·m)	60 seconds at 60 Hz 72 seconds at 50 Hz	2.9	48 in. (1.2 m) UL 444 Type CMP Plenum Rated cable with 19 AWG (0.75 mm <sup>2</sup> ) conductors and .25 in. (6 mm) ferrule ends
M9104-GGA-3S	Proportional	35 lb·in (4 N·m)	60 seconds at 60 Hz 72 seconds at 50 Hz	2.9	M3 Screw Terminals
M9104-IUA-2S	Floating or On/Off	35 lb·in (4 N·m)	60 seconds at 50/60 Hz	7.5(0.07A)	48 in. (1.2 m) UL 444 Type CMP Plenum Rated cable with 18 AWG (1.02 mm <sup>2</sup> ) conductors for 3/8 in. (10 mm) flexible metal conduit

## Accessories

**Table 2: Accessories**

Code number	Description
DMPR-KC003 <sup>1</sup>	7 in. (178 mm) blade pin extension without bracket for Johnson Controls direct-mount damper applications
DMPR-KR003	Sleeve pin kit for Johnson Controls round dampers with a 5/16 in. (8 mm) diameter shaft
M9000-200	Commissioning tool that provides a control signal to drive 24 V on/off, floating, proportional, and/or resistive electric actuators
M9104-100	Connector for 3/8 in. (10 mm) flexible metal conduit

<sup>1</sup> Furnished with the damper and may be ordered separately.

## Technical Specifications

**Table 3: Technical Specifications**

Power requirements	M910x-AGA-xS	AC 24 V +25%/-20% at 50/60 Hz, 2.1 VA, Class 2, Safety Extra-Low Voltage (SELV)
	M9104-IGA-xS	AC 24 V +25%/-20% at 50/60 Hz, 3.0 VA, Class 2, SELV
	M9104-GGA-xS	AC 24 V +25%/-20% at 50/60 Hz, 2.9 VA, Class 2, SELV
	M9104-IUA-2S	AC 100 to 240 V (-15%+10%) at 60 Hz, 0.07A, and 7.5 VA Supply
Control type	M910x-AGA-xS	Floating control without timeout
	M9104-IGA-xS	Floating or on/off control with timeout
	M9104-GGA-xS	Proportional control
	M9104-IUA-2S	Floating or on/off control with timeout
Input signal	M910x-AGA-xS	AC 24 V +25%/-20% at 50/60 Hz, Class 2, SELV without timeout
	M9104-IGA-xS	AC 24 V +25%/-20% at 50/60 Hz, Class 2, SELV with timeout
	M9104-GGA-xS	0(2) to 10 VDC or 0(4) to 20 mA with field-furnished 500 ohm resistor
	M9104-IUA-2S	AC 100 to 240 V (-15%+10%) at 50/60 Hz, and 7.5 VA supply
Feedback signal	M9104-GGA-2S	0 VDC to 10 VDC or 2 VDC to 10 VDC for 90° (10 VDC at 1 mA) corresponds to input signal span selection
Motor input impedance		200 ohms nominal
Running torque	M9102 Series	18 lb·in (2 N·m)
	M9104 Series	35 lb·in (4 N·m)
Travel time	M9102 Series	30 seconds at 60 Hz (36 seconds at 50 Hz) for 90° of rotation
	M9104 Series	60 seconds at 60 Hz (72 seconds at 50 Hz) for 90° of rotation
	M9104 (IUA)	60 seconds at 50/60 Hz for 90° of rotation
Rotation range		93° ±3°, CW or CCW
Cycles		100,000 full stroke cycles; 2,500,00 repositions at rated running torque
Audible noise rating		35 dBA at 39-13/32 in. (1 m) Maximum
Electrical connections	M9102-AGA-2S	48 in. (1.02 m) UL 444 Type CMP plenum rated cable with 18 AWG (1.02 mm) conductors and 1/4 in. (6 mm) ferrule ends
	M9104-xxA-2S	
	M9102-AGA-3S	M3 screw terminals
	M9104-xGA-3S	
	M9104-IUA-2S	48 in. (1.2 mm) with 18 AWG (1.02 mm <sup>2</sup> ) conductors and connector for 3/8 in. (10 mm) flexible metal conduit
Mechanical connections		Up to 1/2 in. (13 mm) diameter round damper shaft or 3/8 in. (10 mm) square damper shaft
Enclosure	M9102-AGA-2S	NEMA 1, IP42
	M9104-xxA-2S	
	M9102-AGA-3S	NEMA 1, IP40
	M9104-xxA-3S	
Ambient conditions	Operating	-4°F to 140°F (-20°C to 60°C); 90% RH maximum, noncondensing
	Storage	-20°F to 150°F (-29°C to 66°C); 90% RH maximum, noncondensing

**Table 3: Technical Specifications**

Compliance	United States	UL Listed, CCN XAPX, File 27734 Plenum rated, UL2043, suitable for use in other environmental spaces (plenums) in accordance with section 300.22.(c) of the National Electrical Code
	Canada	cUL Listed, CCN XAPX7, File 27734 Plenum Rated Per CSA 22.2 No. 236/UL 1995, Heating and Cooling Equipment
	Europe	Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC and the Low Voltage Directive 2006/95/EC.
	Australia and New Zealand	C-Tick Mark, Australia/NZ Emissions Compliant
Shipping weight		1.0 lb (0.5 kg)

## Product warranty

This product is covered by a limited warranty, details of which can be found at [www.johnsoncontrols.com/buildingswarranty](http://www.johnsoncontrols.com/buildingswarranty).

## Single point of contact

APAC	Europe	NA/SA
JOHNSON CONTROLS C/O CONTROLS PRODUCT MANAGEMENT NO. 32 CHANGJIJANG RD NEW DISTRICT WUXI JIANGSU PROVINCE 214028 CHINA	JOHNSON CONTROLS WESTENDHOF 3 45143 ESSEN GERMANY	JOHNSON CONTROLS 507 E MICHIGAN ST MILWAUKEE WI 53202 USA