

Electric Non-spring Return Actuators

Description

The M9109 Series direct-mount electric actuators operate on AC 24 V power and are available for use with floating or proportional controllers. These non-spring return actuators are easily installed on a Variable Air Volume (VAV) box, a round damper shaft up to 1/2 inch (13 mm) in diameter, or a 3/8 inch (10 mm) square shaft. The M9109 with a M9000-520 linkage can be used to control 2" (DN50) VG1000 series ball valves.

The M9109 models have 80 lb-in (9 N·m) running torque. They have a nominal 60-second travel time for 90° of rotation at 60 Hz (72 seconds at 50 Hz) with a load-independent rotation time. The M9109-xGC-2 models are available with integral auxiliary switches to perform switching functions at any angle within the selected rotation range.

Applications

The M9109 is used to position balancing, control, round, and zone dampers in typical HVAC applications. It can also be used with a M9000-520 linkage to control VG1000 series ball valves. The M9109 mounts directly on the duct surface, round damper, or small rectangular damper with an anti-rotation bracket and two sheet metal screws (included). Additional linkages or couplers are not required. For more information, refer to the *M9109 Series Electric Non-spring Return Actuators Product Bulletin, LIT-120112* or the *M9109 Series Electric Non-spring Return Actuators Installation Instructions, Part No. 34-636-1190*.

Features

- simple direct coupling reduces installation and commissioning time and improves reliability by eliminating damper linkages. Single screw coupling provides three-point shaft gripping.
- designed for zone damper and ball valve actuator applications
- small, compact design — allows installation in tight-fitting locations
- designed for zone damper and ball valve actuator applications
- floating and proportional control inputs
- 60 second running time at 60 Hz
- long life brushless synchronous drive motor technology – provides constant running time independent of load
- robust 80 lb-in (9 Nm) torque rating
- whisper quiet 35 dBA noise rating
- magnetic clutch – provides over torque protection over the entire range of rotation
- -4 to 125 °F (-20 to 52 °C) ambient temperature rating
- 100,000 full stroke cycle , 2,500,000 reposition rating
- manual gear release simplifies setup and field adjustments
- 1/2" NPT threaded conduit opening meets electrical code requirements and allows the use of flexible armored cable
- position feedback (GGX models) provides simple, closed-loop control with accurate position sensing.
- adjustable rotation stops allow application versatility with 30 to 90° clockwise or counterclockwise rotation



M9109-xGx-2 Series Electric Non-spring Return Actuator

Repair Information

If the M9109-xGx-2 Electric Actuator fails to operate within its specifications, replace the unit. For a replacement actuator, contact the nearest Johnson Controls® representative.

Selection Charts

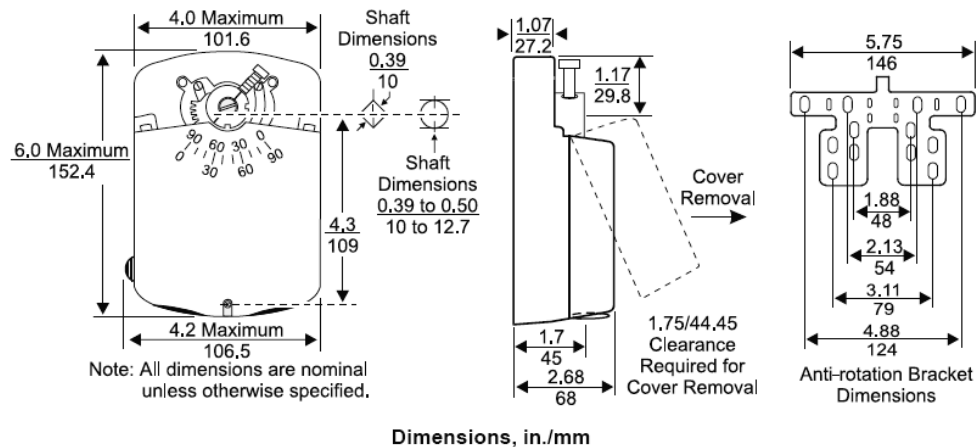
M9109-xGx-2 Series Electric Non-spring Return Actuators

Code Number	Control Type	Torque / Timing / Voltage	Auxiliary Switches	Comments
M9109-AGA-2	Floating	80 lb-in (9 Nm)	None	
M9109-AGC-2		60 second timing at 60 Hz	2-SPDT	
M9109-GGA-2	DC 0(2)...10 V	AC 24 V 50/60 Hz	None	DC 0(2)...10 V Feedback
M9109-GGC-2	DC 0(4)...20 mA proportional		2-SPDT	

M9109-xGx-2 Series Electric Non-spring Return Actuators (Continued)

Accessories for M9109-xGx-2 Series Electric Non-spring Return Actuators

Code Number	Description
DMPR-KC003	Square Head Blade Pin Extension without Bracket
DMPR-KC010	Adjustable Blade Position Indicator Switch Kit with total switching load limited to 2000 VA for the following applications: Pilot Duty: AC 24 V, 50 VA; AC 125/250/277 V, 125 VA Motor Load: AC 125/250/277 V, 1/3 hp Resistive Load: AC 125 V, 11 A; AC 250 V, 8 A; AC 277 V, 7 A (all maximum values)
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
DMPR-KR003	Sleeve Pin Kit for use with Johnson Controls round dampers with a 5/16 in. (8 mm) shaft; furnished with the damper and may be ordered separately
M9000-105	Pluggable 3-Terminal Block
M9000-106	Pluggable 4-Terminal Block
M9000-160	Replacement anti-rotation bracket for M9106 and M9109 Series actuators
M9000-200	Commissioning Tool provides a control signal to drive on/off, floating, proportional, or resistive actuators
M9000-520	Valve Linkage Kit for field mounting an M9106 actuator to a 1/2 in. (DN15) to 1-1/2" (DN40) VG1000 Series ball valve



M9109-xGx-2 Series Electric Non-spring Return Actuators (Continued)

Technical Specifications

M9109-xGx-2 Series Electric Non-spring Return Actuators	
Power Requirement	AGx: AC 20...30 V at 50/60 Hz, 2.5 VA supply, Class 2 GGx: AC 20...30 V at 50/60 Hz, 3.2 VA supply, Class 2
Control Type	AGx: Floating GGx: DC 0(2)...10 V or DC 0(4)...20 mA proportional
Input Signal	AGx: AC 20...30 V at 50/60 Hz GGx: DC 0(2)...10 V or DC 0(4)...20 mA
Input Signal Adjustments:	AGx: CW and COM Terminals, CW rotation; CCW and COM Terminals, CCW rotation GGx (Voltage Input or Current Input): Jumper Selectable: DC 0(2)...10 V or DC 0(4)...20 mA Factory Setting: DC 0...10 V, CW rotation with signal increase Action is jumper selectable Direct (CW) or Reverse (CCW) with signal increase.
Input Impedance	AGx: 200 ohms, nominal GGx: Voltage Input, 150,000 ohms; Current Input, 500 ohms
Feedback Signal	AGF: 10,000 ohm potentiometer, 1 W GGx: DC 0...10 V or DC 2...10 V for 90° (10 VDC at 1 mA); Corresponds to input signal span selection
Auxiliary Switch Rating	xGC: Two Single-Pole, Double-Throw (SPDT) switches rated at AC 24 V, 1.5 A inductive, 3.0 A resistive, 35 VA maximum per switch, Class 2
Torque Rating	80 lb-in (9 N·m)
Cycle Life	100,000 full cycles; 2,500,000 repositions rated at 80 lb-in (9 N·m)
Audible Noise Rating	35 dBA maximum at 39.4 in. (1 m)
Rotation Range	Adjustable from 30 to 90°, CW or CCW
Rotation Time	60 seconds at 60 Hz and 72 seconds at 50 Hz for 90°
Electrical Connection	1/4 in. spade terminals (To order optional pluggable terminal blocks, see Accessories chart.)
Mechanical Connection	3/8 to 1/2 in. (10 to 12.7 mm) round shaft or 3/8 in. (10 mm) square shaft
Enclosure Rating	NEMA 2, IP32
Ambient Operating Rating	-4 to 125°F (-20 to 52°C); 90% RH maximum, non-condensing
Ambient Storage Rating	-40 to 176°F (-40 to 80°C); 90% RH maximum, non-condensing
Shipping Weight	2.4 lb (1.08 kg)
Agency Compliance	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