

# Electric Spring Return Actuators

## Description

The M2202-xxx-2 Series electric spring return actuators are designed for On-Off, Floating, or Proportional control of dampers in Heating, Ventilating, and Air Conditioning (HVAC) systems. The actuator is mounted directly to a damper shaft (up to 1/2 in. diameter) by means of a removable coupler. An optional crank arm, mounting brackets, and weather shields are available to meet various installation requirements.

## Features

- simple direct coupling reduces installation and commissioning time while improving reliability by eliminating damper linkages
- 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 39 in. (1 m) cables with colored conductors simplify field wiring
- integral auxiliary switch (xxB Models) provide one adjustable switch point with line voltage capability

## 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.

## Applications

The M2202-xxx-2 Series Electric Spring Return Actuators provide reliable control of dampers in Heating, Ventilating, and Air Conditioning (HVAC) Systems. The M2202-xxx-3 Series Actuators are available for use with on/off, floating, and proportional controllers.



**M2202-xxx-2 Series Electric Spring Return Actuator**

## Selection Charts

### M2202-xxx-2 Series Electric Spring Return Actuators

Code Number	Control Type	Torque / Voltage / Timing	Auxiliary Switches	Comments
M2202-AGA-2	On-Off, Floating	18 lb-in (2 Nm)	None	36" (.9 m) cable with colored conductors
M2202-AGB-2		AC/DC 24 V 50/60 Hz 95 Seconds Running <25 Seconds Spring	1-SPDT	2 - 36" (.9 m) cable with colored conductors
M2202-BAA-2	On-Off	18 lb-in (2 Nm)	None	36" (.9 m) cable with colored conductors
M2202-BAB-2		AC 100...240 V 50/60 Hz <75 Seconds Running <25 Seconds Spring	1-SPDT	2 - 36" (.9 m) cable with colored conductors
M2202-BGA-2		18 lb-in (2 Nm)	None	36" (.9 m) cable with colored conductors
M2202-BGB-2		AC/DC 24 V 50/60 Hz <75 Seconds Running <25 Seconds Spring	1-SPDT	2 - 36" (.9 m) cable with colored conductors
M2202-GGA-2	DC 2...10 V Proportional	18 lb-in (2 Nm)	None	36" (.9 m) cable with colored conductors
M2202-GGB-2		AC/DC 24 V 50/60 Hz 95 Seconds Running <25 Seconds Spring	1-SPDT	2 - 36" (.9 m) cable with colored conductors

**M2202 Series Electric Spring Return Actuators (Continued)**

**Accessories for M2202-xxx-2 Series Actuators**

Code Number	Description
M2202-502	Anti-rotation bracket
M2202-503	Crank arm for 1/2" round shaft
M2202-504	Universal mounting kit, hollow pillars and hardware
M2202-505	Weather shield, metal
M2202-506	Weather shield, polycarbonate
M2202-510	Universal mounting kit without crank arm
M2202-511	L bracket for foot mounting

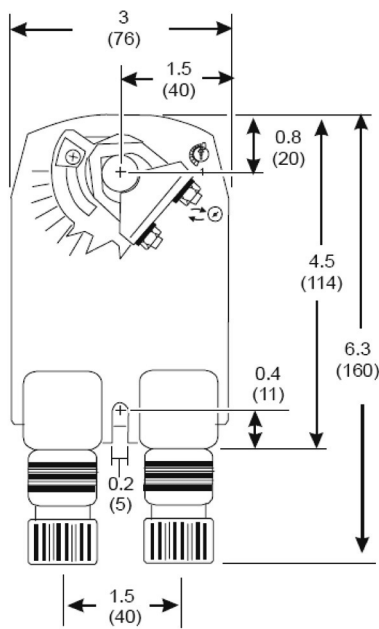


FIG. M2202\_dimensions

**M2202-xxx-2 Series Actuators  
Mounting Dimensions, in. (mm)**

**M2202 Series Electric Spring Return Actuators (Continued)**
**Technical Specifications**

M2202-xxx-2 Series Electric Spring Return Actuators		
Power Requirement	AGx: BAx: BGx: GGx:	AC 24 V, ±20% 50/60 Hz, 2.5 Watt Running, 1 Watt Holding, AC 100...240 V 50/60Hz, +10%, -15%, 2.5 Watt Running, 1.3 Watt Holding AC 24 V, ±20% 50/60 Hz, DC 24 V ±10%, 2.5 Watt Running, 1.3 Watt Holding, AC 24 V, ±20% 50/60 Hz, DC 24 V ±10%, 2.5 Watt Running, 1 Watt Holding,
Transformer Sizing Requirements	AGx and GGx: BGx:	4 VA (Class 2 Power Source) 5 VA (Class 2 Power Source)
Control Type	AGx: Bxx: GGx:	On-Off, Floating On-Off DC 2...10 V Proportional, DC 4...20 mA with field furnished 500 Ohm resistor
Input Signal	AGx: BAx: BGx: GGx	AC 24 V, ±20% 50/60 Hz AC 85...265 V 50/60Hz AC 24 V, ±20% 50/60 Hz, DC 24 V ±10% AC 24 V, ±20% 50/60 Hz, DC 24 V ±10%
Input Signal Adjustments	AGx and GGx:	Direct Acting / Reverse Acting Switch
Input Impedance	AGx: GGx:	1000 Ohms 100,000 Ohms
Feedback Signal	GGx:	DC 2...10 V
Auxiliary Switch Rating	xxC:	One SPDT, 3A @ 250 VAC, adjustable 0 to 95°
Spring Return	All Models	Reversible with CW/CCW Mounting
Torque Rating	All Models	18 lb-in (2 Nm)
Cycle Life	AGx, GGx, and HGx: BGx:	60,000 full stroke cycles; 1,500,000 repositions rated at 18 lb-in (2 N·m) 60,000 full stroke cycles
Audible Noise Rating AGx, GGx	Running	< 35 db (A)
	Holding	< 35 db (A)
	Spring Return	<62 dB (A)
Audible Noise Rating Bxx	Running	< 50 db (A)
	Holding	< 35 db (A)
	Spring Return	< 62 db (A)
Rotation Range	All Models	Adjustable from 37 to 100%, mechanically limited to 95°
Rotation Time Running	AGx and GGx: BGx:	95 Seconds <75 Seconds
Rotation Time Spring Return	AGx, BGx, and GGx:	< 25 sec @-4°F to +122°F [-20°C to +50°C] < 60 sec @-22°F [-30°C]
Electrical Connection	Actuators AGx and GGx:	36" (.9 m) Plenum Rated Cable
	Actuator Bxx:	36" (.9 m) Appliance Cable
	Aux Switch	36" (.9 m) Appliance Cable
Conduit Connectors	All Models	1/2 in. National Pipe Straight Loose (NPSL) – Internal Thread
Mechanical Connection	Standard Shaft Clamp Included with Actuator	1/4 to 1/2 in. (10 to 12.7 mm) diameter round shaft 1/4 to 5/16 in. (10 mm) square shaft
Enclosure Rating		NEMA 2, IP42
Ambient Operating Rating		-22 to 122°F (-30 to 50°C); 5 to 90% RH, noncondensing
Ambient Storage Rating		-40 to 176°F (-40 to 80°C); 5 to 95% RH, noncondensing
Shipping Weight	xxA:	1.4 lb (0.65 kg)
	xxB:	1.5 lb (0.7 kg)
Agency Compliance	USA	UL listed according to UL 60730-1, UL 60730-2-14 (XAPX)
	European Union	CE Mark, Low Voltage Directive (73/23/EEC), -xAx and -xB models only CE Mark, EMC Directive (89/336/EEC), all models
	Canada	cUL listed according to CAN/CSA C22.2 No.24 (XAPX7)