

M9116 Series Proportional Control Electric Non-spring Return Actuators

The M9116-GGx-2 and M9116-HGx-2 Series direct-mount electric actuators operate on 24 VAC or VDC power. These actuators are available for use with proportional controllers. These bidirectional actuators do not require a damper linkage, and are easily installed on a damper with a round shaft up to 3/4 in. (19 mm) in diameter or a square shaft up to 5/8 in. (16 mm). They may be direct- or remote-mounted to a damper.

A single M9116-GGx-2 or M9116-HGx-2 model delivers 140 lb·in (16 N·m) of torque. Two HGx models in tandem deliver twice the torque, 280 lb·in (32 N·m). The angle of rotation is mechanically adjustable from 0 to 90° in 5-degree increments. Integral auxiliary switches are available to indicate end-stop position or to perform switching functions at any angle within the selected rotation range. Jumpers on the actuator allow users to select the direction of action, range of control input, and calibration (fixed or adjustable). Position feedback is available through a 0 to 10 VDC signal.



Figure 1: M9116 Series Actuator

Features and Benefits	
☐ Output Position Feedback	Provides simple, closed-loop control with accurate position sensing
☐ Electronic Stall Detection	Ensures higher reliability by deactivating the actuator motor when a stall condition is detected
☐ Zero and Span Adjustment (HGx Models)	Allows sequential operation of dampers from a single input signal of 0 (2) to 10 VDC, 0 (4) to 20 VDC, or 0 (4) to 20 mA
☐ Removable Coupler	Allows adjustment of the rotation range from 0 to 90°
☐ Steel U-bolt Clamp	Provides four-point damper shaft gripping
☐ Combination of Actuator, Linkage and Ball-style Valve	Regulates the flow of hot or chilled water, 50% glycol solution, and low pressure steam
☐ Jumper-selectable Rotation Direction and Manual Gear Release	Simplifies installation, setup, and field adjustments
☐ Noise Filter	Eliminates repositioning due to line noise
☐ National Pipe Thread (NPT) Threaded Housing	Provides easy connection for electrical fittings

Ordering Information

Table 1: Actuator Models and Accessories

Product Code Number	Description
M9116-GGA-2	140 lb·in (16 N·m) electric non-spring return actuator with proportional control and 0 to 10 VDC feedback
M9116-GGC-2	140 lb·in (16 N·m) electric non-spring return actuator with proportional control, 0 to 10 VDC feedback input, and two SPDT 24 VAC auxiliary switches
M9116-HGA-2	140 lb·in (16 N·m) or 280 lb·in (32 N m) in tandem, electric non-spring return actuator with proportional control, 0 to 10 VDC feedback input, adjustable zero and span
M9116-HGC-2	140 lb·in (16 N·m) or 280 lb·in (32 N m) in tandem, electric non-spring return actuator with proportional control, 0 to 10 VDC feedback input, adjustable zero and span, and two SPDT 24 VAC auxiliary switches
DMPR-KR003*	Sleeve Pin Kit for Johnson Controls round dampers with a 5/16 in. (8 mm) diameter shaft
DMPR-KC003*	Blade Pin Extension without Bracket for Johnson Controls D-1300 direct-mount applications
DMPR-KC254	Inside Frame Mounting Kit for damper applications requiring the actuator within the airstream
M9000-103	14 VA Transformer, 120/24 VAC, 60 Hz, Class 2
M9000-104	14 VA Transformer, 230/24 VAC, 60 Hz, Class 2
M9000-105	Pluggable 3-terminal block
M9000-150	Damper Mount Linkage Kit for remote inside duct mounting an M9116 actuator to a 3-blade to larger damper (not intended for a Johnson Controls damper)
M9000-151	Base Mount Linkage Kit for remote inside duct mounting (not intended for tandem application)
M9000-153	Crank Arm Kit for remote mounting (not intended for tandem application)
M9000-154	1 in. Jackshaft Coupler Kit for mounting on a 1 in. diameter damper shaft
M9000-155	Manual Handle for positioning a damper or valve when power is removed from an M91xx actuator
M9000-158	Mounting Kit to tandem mount two M9116 GGx or HGx models on a damper.
M9000-160	Replacement anti-rotation bracket for M91xx Series actuators

* Furnished with the damper and may be ordered separately.

Technical Specifications

Product	M9116 Series Proportional Control Electric Non-spring Return Actuators	
Power Requirements	20 to 30 VAC at 50/60 Hz or 24 VDC $\pm 10\%$; 7.5 VA supply, Class 2	
Input Signal	0 (2) to 10 VDC, 0 (4) to 20 VDC, or 0 (4) to 20 mA	
Input Signal Adjustments	(Voltage Input or Current Input): Jumper selectable: 0 (2) to 10 VDC, 0 (4) to 20 VDC, or 0 (4) to 20 mA Adjustable: Zero, 0 to 6 VDC, 0 to 12 VDC, or 0 to 12 mA Span, 2 to 10 VDC, 4 to 20 VDC, or 4 to 20 mA Factory Setting: 0 to 10 VDC, 0 to 20 mA, CW rotation with signal increase Action is jumper selectable Direct (CW) or Reverse (CCW) with signal increase.	
Input Impedance	Voltage Input, 205,000 ohms for 0 (2) to 10 V and 410,000 ohms for 0 (4) to 20 V Current Input, 500 ohms	
Feedback Signal	0 to 10 VDC or 2 to 10 VDC 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 24 VAC 1.5 A inductive, 3.0 A resistive; 35 VA maximum per switch, Class 2
Mechanical Output (Running Torque)	140 lb·in (16 N·m) for one unit, 280 lb·in (32 N·m) for two in tandem (HGx)	
Audible Noise Rating	45 dBA at 1 m	
Rotation Range	0 to 90° in 5-degree increments, mechanically limited to 93°	
Rotation Time	80 seconds at 50% rated load, 70 to 115 seconds for 0 to 140 lb·in (0 to 16 N·m)	
Electrical Connection	Screw terminals for 22 to 14 AWG; maximum of two 18, 20, or 22 AWG per terminal	
Mechanical Connection	3/8 to 3/4 in. (10 to 20 mm) diameter round shaft or 3/8 to 5/8 in. (10 to 16 mm) square shaft	
Enclosure	NEMA 2, IP42	
Ambient Conditions	Operating:	-4 to 122°F (-20 to 50°C); 0 to 95% RH, noncondensing
	Storage:	-40 to 186°F (-40 to 86°C); 0 to 95% RH, noncondensing
Dimensions (H x W x D)	7.09 x 3.94 x 2.54 in. (180 x 100 x 64.5 mm)	
Shipping Weight	2.9 lb (1.3 kg)	
Agency Compliance	United States: UL Listed, CCN XAPX, File E27734; to UL 873, the Standard for Temperature Indicating and Regulating Equipment, Eleventh Edition	
	Canada: UL Listed, CCN XAPX7, File E27734; Canadian Standard C22.2 NO. 24-93, Standard for Temperature Indicating and Regulating Equipment, Eighth Edition	



Europe:
 CE Mark – 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 Low Voltage Directive 2006/95/EC.

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 shall not be liable for damages resulting from misapplication or misuse of its products.



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