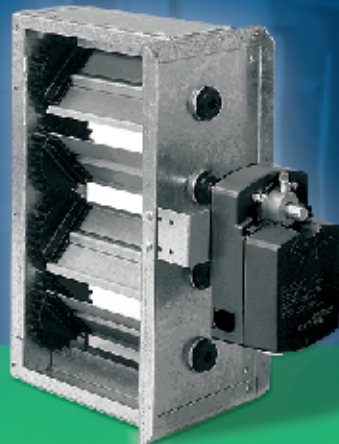


JOHNSON
CONTROLS

Direct-Mount Electric Actuator

Improving Life in the Great Indoors



M9000 Family of Direct Mount Actuators —

A robust & versatile line designed for superior reliability & application flexibility

Our Commitment to You

Johnson Controls Electric Actuators give you something money can't buy – confidence. We back our products by ensuring the highest quality and greatest reliability. Your satisfaction is our goal, and our commitment to you is unconditional.



Certified to ISO 9001 quality processes and backed by a three-year warranty to the end user, we are 100% confident in the quality of our actuators.

Table of Contents

Product Overview	1
Features and Benefits	2
Ordering Information	3
Sizing Actuators to Dampers	4
Product Descriptions	5-19
Accessories	20-23
Competitor Reference	24-25

Why Johnson Controls Actuators?

- 👍 **ROBOTIC / AUTOMATED assembly** provides consistently high quality & dependable products.
- 👍 **SINGLE-SOURCE** provider of damper and valve actuators in addition to other HVAC products.
- 👍 **CONSISTENT** features designed for fast and easy installation to save you time and money.
- 👍 **INTEGRAL FEATURES** give you more control – without field add-ons.
- 👍 **ISO 9001 CERTIFIED** to ensure the highest quality and greatest reliability.

Features and Benefits —

Johnson Controls Direct-Mount Electric Actuators

NON-SPRING RETURN M9100	BENEFITS	SPRING RETURN M9200
Direct-Mount, No Linkages Required	Saves installation time and cost. Fewer moving parts to adjust and replace.	Direct-Mount, No Linkages Required
Available in 9 Torque Ratings: 10, 35, 53, 70, 140, 210, 280 lb-in Torque with single unit; 280, 420, 560 lb-in Torque with two units in tandem	Positions a wide array of dampers and valves to meet the needs of most applications.	Available in 3 Torque Ratings: 53, 140 lb-in Torque with single unit; 280 lb-in Torque with two units in tandem
Electronic Circuitry or Magnetic Clutch Protection for Torque Limiting	Improved accuracy and higher reliability than equivalent mechanical controls. Prevents over-torque damage to actuators and equipment.	Electronic Circuitry for Torque Limiting
User-Selectable Drive Direction	Makes reversing CW/CCW direction and spring return direction fast and easy.	User Selectable Drive Direction; Reversible Fail-Safe Direction
Proportional Versions Allow User to Select 0(2) to 10 VDC, 0(4) to 20 VDC, or 0(4) to 20 mA Input Signals	Reduces inventory by providing the most universally accepted controller input ranges in one proportional model. An integral 500 ohm resistor eliminates the need for field add-ons.	Proportional Versions Allow User to Select 0(2) to 10 VDC, 6 to 9 VDC or 0(4) to 20 mA Input Signals
Proportional Versions Include 0 to 10 VDC or 2 to 10 VDC Feedback Signal	No additional cost to provide actual actuator position signal for monitoring or closed-loop control.	Proportional Versions Include 0 to 10 VDC or 2 to 10 VDC Feedback Signal
Integral End-Stop Limit Switches	No additional assembly or time-consuming wiring required.	Integral End-Stop Limit Switches
Universal Collar Design	Accommodates a variety of round and square shaft sizes.	Universal Collar Design
1/2 in. Threaded NPT Housing	Meets all municipal electrical code requirements.	1/2 in. NPT Conduit Adaptor(s) Included

M9000 Actuator Ordering Template —

Johnson Controls has simplified the entire process

Build your actuator from this template —

Ordering Code	Example	M	9	1	0	6	-	A	G	A	-	2	N	0	1
Motor Actuator Product Family		M	9												
Operation	<ul style="list-style-type: none"> 1 Non-Spring Return 2 Spring Return 			1											
Torque Rating	<ul style="list-style-type: none"> 01 10 lb-in (1 Nm) 04 35 lb-in (4 Nm) 06 53 lb-in (6 Nm) 08 70 lb-in (8 Nm) 09 80 lb-in (9 Nm) 16 140 lb-in (16 Nm) single, 280 lb-in (32 Nm) tandem 24 210 lb-in (24 Nm) single, 420 lb-in (48 Nm) tandem 32 280 lb-in (32 Nm) single, 560 lb-in (64 Nm) tandem 				0	6									
Control Signal	<ul style="list-style-type: none"> A Floating 24 VAC/VDC B On/Off 24 VAC/VDC G Proportional 0(2)-10 VDC, 0(4)-20 mA H Proportional with Adjustable Zero & Span 0(2)-10 VDC, 0(4)-20 mA I On/Off or Floating with Adjustable Rotation Time J Three-Wire Resistive 								A						
Voltage Supply	<ul style="list-style-type: none"> A 120 VAC (M9216-BAx-2 models only) G 24 VAC 									G					
Options	<ul style="list-style-type: none"> A Basic Model B 1 SPDT Auxiliary Switch C 2 SPDT Auxiliary Switches D 135 ohm Feedback Potentiometer (available with Floating models) E 1k ohm Feedback Potentiometer (available with Floating models) F 10k ohm Feedback Potentiometer (available with Floating models) S Differential Pressure Transmitter (1.5 in. W.C. for M9104 and M9106 models) 										A				
	<ul style="list-style-type: none"> 1 European Version 2 US Version 												2		
	<ul style="list-style-type: none"> MP 20 VDC, 25 mA Output (available with M9206) N VAV Model without Cover S Slimmer Profile Model M9206 													N	
	<ul style="list-style-type: none"> 01 1 Minute Rotation (M9106-AGx-2N01 models) 02 2 Minute Rotation (M9106-AGx-2N02 models) 														0 1

Some combinations are not available. See pages 5-21 for available models.

Sizing Actuators to Dampers —

M9100 and M9200 Series Actuators



How to Calculate

The square feet an actuator can operate is found by the formula:

$$\frac{\text{Actuator Torque (lb-in)}}{\text{Damper Torque (lb-in/sq ft)}}$$

Model	Actuator Torque	Maximum Damper Area			
		when Static Pressure = 1/2 in. W.C. (125 Pa) and Velocity = 100 fpm (.51 m/sec)		when Static Pressure = 1 in. W.C. (250 Pa) and Velocity = 1000 fpm (5.1 m/sec)	
		<i>With Seals</i> Tested Damper Torque 4.6 lb-in/sq ft (5.6 Nm/sq m)	<i>Without Seals</i> Tested Damper Torque 3.1 lb-in/sq ft (3.8 Nm/sq m)	<i>With Seals</i> Tested Damper Torque 6.0 lb-in/sq ft (7.3 Nm/sq m)	<i>Without Seals</i> Tested Damper Torque 3.5 lb-in/sq ft (4.3 Nm/sq m)

Non-Spring Return

M9101	10 lb-in (1 Nm)	2.2 sq ft (0.2 sq m)	3.2 sq ft (0.3 sq m)	1.7 sq ft (0.16 sq m)	2.9 sq ft (0.27 sq m)
M9104	35 lb-in (4 Nm)	7.6 sq ft (0.71 sq m)	11.3 sq ft (1.05 sq m)	5.9 sq ft (0.55 sq m)	10.0 sq ft (0.93 sq m)
M9106	53 lb-in (6 Nm)	11.5 sq ft (1.07 sq m)	17.1 sq ft (1.59 sq m)	8.8 sq ft (.82 sq m)	15.2 sq ft (1.41 sq m)
M9108	70 lb-in (8 Nm)	15.2 sq ft (1.41 sq m)	22.6 sq ft (2.10 sq m)	11.7 sq ft (1.09 sq m)	20.0 sq ft (1.88 sq m)
M9109	80 lb-in (9 Nm)	17.4 sq ft (1.61 sq m)	25.4 sq ft (2.36 sq m)	13.2 sq ft (1.23 sq m)	22.5 sq ft (2.12 sq m)
M9116	140 lb-in (16 Nm)	30.4 sq ft (2.82 sq m)	45.2 sq ft (4.20 sq m)	23.4 sq ft (2.17 sq m)	40.0 sq ft (3.72 sq m)
M9124	210 lb-in (24 Nm)	45.7 sq ft (4.25 sq m)	67.7 sq ft (6.29 sq m)	35.0 sq ft (3.25 sq m)	60.0 sq ft (5.57 sq m)
M9132	280 lb-in (32 Nm)	60.8 sq ft (5.65 sq m)	90.3 sq ft (8.39 sq m)	46.6 sq ft (4.33 sq m)	80.0 sq ft (7.43 sq m)
M9116 Tandem	280 lb-in (32 Nm)	60.8 sq ft (5.65 sq m)	90.3 sq ft (8.39 sq m)	46.6 sq ft (4.34 sq m)	80.0 sq ft (7.43 sq m)
M9124 Tandem	420 lb-in (48 Nm)	91.3 sq ft (8.48 sq m)	135.4 sq ft (12.58 sq m)	70.0 sq ft (6.50 sq m)	120.0 sq ft (11.15 sq m)
M9132 Tandem	560 lb-in (64 Nm)	123.9 sq ft (11.51 sq m)	183.8 sq ft (17.08 sq m)	93.2 sq ft (8.66 sq m)	160.0 sq ft (14.86 sq m)

Spring Return

M9206	53 lb-in (6 Nm)	11.5 sq ft (1.07 sq m)	17.1 sq ft (1.59 sq m)	8.8 sq ft (0.82 sq m)	15.1 sq ft (1.40 sq m)
M9216	140 lb-in (16 Nm)	30.4 sq ft (2.82 sq m)	45.2 sq ft (4.20 sq m)	23.3 sq ft (2.16 sq m)	40.0 sq ft (3.72 sq m)
M9216 Tandem	280 lb-in (32 Nm)	60.8 sq ft (5.65 sq m)	90.3 sq ft (8.39 sq m)	46.6 sq ft (4.33 sq m)	80.0 sq ft (7.43 sq m)

The above information is valid when dampers are installed square and plumb.

M9000 Family of Actuators and Accessories —

A complete listing of products

M9100 Series *Non-Spring Return* Actuators

M9101-AGA-2N1

NEW



<i>Torque:</i>	10 lb-in (1 Nm) running
<i>Input Signal, Floating:</i>	20 to 30 VAC at 50/60 Hz
<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz; 2.5 VA supply, Class 2
<i>Input Impedance:</i>	200 ohms, nominal
<i>Rotation Time:</i>	Nominal 15 seconds at 60 Hz and 18 seconds at 50 Hz for 90°
<i>Rotation:</i>	Adjustable from 30 to 90°, clockwise (CW) or counter-clockwise (CCW), manual override
<i>Torque Protection:</i>	Magnetic clutch
<i>Enclosure:</i>	NEMA 1, IP30

M9101-AGA-2N2

NEW

M9101-AGA-2N2 has the same features as the M9101-AGA-2N1, but has a nonadjustable rotation range of $93 \pm 3^\circ$.

M9104-AGA-2N



<i>Torque:</i>	35 lb-in (4 Nm) running
<i>Input Signal, Floating:</i>	20 to 30 VAC at 50/60 Hz
<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz; 2.1 VA supply, Class 2
<i>Input Impedance:</i>	250 ohms, nominal
<i>Rotation Time:</i>	90 seconds at 60 Hz and 108 seconds at 50 Hz for 90°
<i>Rotation:</i>	Adjustable from 30 to 90°, CW or CCW, manual override
<i>Torque Protection:</i>	Magnetic clutch
<i>Enclosure:</i>	NEMA 1, IP30

M9104-AGS-2N

M9104-AGS-2N has the same features as the M9104-AGA-2N, *but includes* the DPT-2015-0 *Differential Pressure Transmitter* and the CBL-2000-1 *Wiring Harness*.

DPT-2015-0

<i>Input Signal, Floating:</i>	15 VDC (14.5 to 17 VDC unregulated); 15 mA, maximum
<i>Pressure Range:</i>	0 to 1.5 in. W.C. (0 to 374 Pa), maximum
<i>Output Voltage:</i>	0.5 to 4.5 VDC with 25,000 ohm minimum load impedance

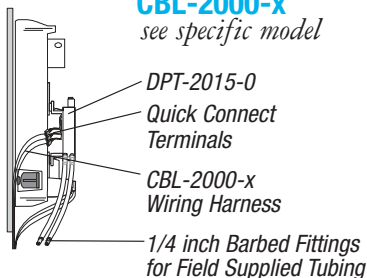
CBL-2000-x see specific model

Wiring Harness connects a DPT-2015-0 and an M9101 or M9104 to a VAV controller

CBL-2000-1: 20 in. (0.5 m) Wiring Harness (UL accepted for plenum use) is included with the M9104-AGS-2N

CBL-2000-2: 20 in. (0.5 m) Plenum-Rated Wiring Harness

CBL-2000-3: 72 in. (1.8 m) Plenum-Rated Wiring Harness



M9100 Series *Non-Spring Return* Actuators, *cont.*

M9106-AGA-2



<i>Torque:</i>	53 lb-in (6 Nm) running
<i>Input Signal, Floating:</i>	20 to 30 VAC at 50/60 Hz
<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz, 2.5 VA supply, Class 2
<i>Input Impedance:</i>	200 ohms, nominal
<i>Rotation Time:</i>	60 seconds at 60 Hz or 72 seconds at 50 Hz for 90°
<i>Rotation:</i>	Adjustable from 30 to 90°, CW or CCW
<i>Torque Protection:</i>	Magnetic clutch
<i>Enclosure:</i>	NEMA 2, IP32

M9106-AGA-2N01



<i>Torque:</i>	53 lb-in (6 Nm) running
<i>Input Signal, Floating:</i>	20 to 30 VAC at 50/60 Hz
<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz; 2.5 VA supply, Class 2
<i>Input Impedance:</i>	200 ohms, nominal
<i>Rotation Time:</i>	60 seconds at 60 Hz or 72 seconds at 50 Hz for 90°
<i>Rotation:</i>	Adjustable from 30 to 90°, CW or CCW
<i>Torque Protection:</i>	Magnetic clutch
<i>Enclosure:</i>	NEMA 1, IP30 (not for outdoor use without a protective cover)

M9106-AGA-2N02

<i>Torque:</i>	53 lb-in (6 Nm) running
<i>Input Signal, Floating:</i>	20 to 30 VAC at 50/60 Hz
<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz; 2.1 VA supply, Class 2
<i>Input Impedance:</i>	250 ohms, nominal
<i>Rotation Time:</i>	120 seconds at 60 Hz or 144 seconds at 50 Hz for 90°
<i>Rotation:</i>	Adjustable from 30 to 90°, CW or CCW
<i>Torque Protection:</i>	Magnetic clutch
<i>Enclosure:</i>	NEMA 1, IP30 (not for outdoor use without a protective cover)

M9106-AGC-2

M9106-AGC-2 has the same features as M9106-AGA-2, but includes two auxiliary switches.
Auxiliary Switch Rating: Two SPDT rated at 24 VAC 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2

M9106-AGF-2

M9106-AGF-2 has the same features as M9106-AGA-2, but includes a feedback signal.
Feedback Signal: 10k ohms potentiometer, 1W

M9100 Series *Non-Spring Return Actuators, cont.*

M9106-AGS-2N02 M9106-AGS-2N02 has the same features as M9106-AGA-2N02, but includes the *DPT-2015-0 Differential Pressure Transmitter* and the *CBL-2000-1 Wiring Harness*.



DPT-2015-0

Input Signal: 15 VDC (14.5 to 17 VDC unregulated); 15 mA, maximum
Pressure Range: 0 to 1.5 in. W.C. (0 to 374 Pa), maximum
Output Voltage: 0.5 to 4.5 VDC with 25,000 ohm minimum load impedance

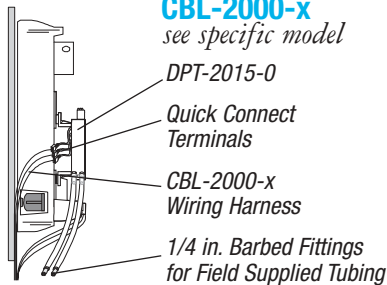
CBL-2000-x see specific model

Wiring Harness connects a DPT-2015-0 and an M9101 or M9104 to a VAV controller

CBL-2000-1: 20 in. (0.5 m) Wiring Harness (UL accepted for plenum use) is included with the M9106-AGS-2N02

CBL-2000-2: 20 in. (0.5 m) Plenum-Rated Wiring Harness

CBL-2000-3: 72 in. (1.8 m) Plenum-Rated Wiring Harness



M9106-GGA-2



Torque: 53 lb-in (6 Nm) running
Input Signal, Proportional: 0 to 10 VDC or 0 to 20 mA
Power Requirement: 20 to 30 VAC at 50/60 Hz; 3.2 VA supply, Class 2
Input Impedance: Voltage Input, 150k ohms;
Current Input, 500 ohms
Feedback Signal: 0 to 10 VDC or 2 to 10 VDC for 90°
Rotation Time: Nominal 60 seconds at 60 Hz, 72 seconds at 50 Hz for 90°
Rotation: Adjustable from 30 to 90° CW or CCW
Torque Protection: Magnetic clutch
Enclosure: NEMA 2, IP32

M9106-GGC-2

M9106-GGC-2 has the same features as M9106-GGA-2, but includes two auxiliary switches.
Auxiliary Switch Rating: Two SPDT rated at 24 VAC 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2


M9106-IGA-2

Torque: Min. in. Settings:
 1, 1.5 and 2: 53 lb-in (6 Nm) running
 5.5 and 11: 35 lb-in (4 Nm) running
Input Signal, Floating or On/Off: 20 to 30 VAC at 50/60 Hz
Power Requirement: 20 to 30 VAC at 50/60 Hz, 2.8 VA supply, Class 2
Input Impedance: 160 ohms, nominal
Rotation Time: Adjustable to 60, 90, 120, 330, or 660 seconds (1, 1.5, 2, 5.5, or 11 minutes) at 60 Hz and 72, 108, 144, 396, or 792 seconds at 50 Hz for 90°
Rotation: Adjustable from 30 to 90° CW or CCW
Torque Protection: Magnetic clutch
Enclosure: NEMA 2, IP32

M9100 Series *Non-Spring Return* Actuators, *cont.*

M9106-IGC-2 M9106-IGC-2 has the same features as M9106-IGA-2, but includes two auxiliary switches.
Auxiliary Switch Rating: Two SPDT rated at 24 VAC 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2

M9108-AGA-2



Torque: 70 lb-in (8 Nm) running
Input Signal, Floating or On/Off: 20 to 30 VAC at 50/60 Hz or 24 VDC $\pm 10\%$
Power Requirement: 20 to 30 VAC at 50/60 Hz or 24 VDC $\pm 10\%$; 6.5 VA supply minimum, Class 2
Input Impedance: 400 ohms
Rotation Time: 30 seconds at 50% rated load, 25 to 50 seconds for 0 to 70 lb-in (0 to 8 Nm)
Rotation: 0 to 90°, adjustable in 5° increments, mechanically limited to 93°
Torque Protection: Electronic stall detection throughout full range of 0 to 90°
Enclosure: NEMA 2, IP42

M9108-AGC-2 M9108-AGC-2 has the same features as M9108-AGA-2, but includes two auxiliary switches.
Auxiliary Switch Rating: Two SPDT rated at 24 VAC 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2

M9108-AGD-2 M9108-AGD-2 has the same features as M9108-AGA-2, but includes a feedback signal.
Feedback Signal: 135 ohms potentiometer

M9108-AGE-2 M9108-AGE-2 has the same features as M9108-AGA-2, but includes a feedback signal.
Feedback Signal: 1k ohms potentiometer

M9108-GGA-2

Torque: 70 lb-in (8 Nm) running
Input Signal, Proportional: 0 to 10 VDC, 0 to 20 VDC, or 0 to 20 mA; Action is Direct (CW) or Reverse (CCW) with signal increase (jumper selectable)
Power Requirement: 20 to 30 VAC at 50/60 Hz or 24 VDC $\pm 10\%$; 7.5 VA supply minimum, Class 2
Input Impedance: Voltage Input, 205k ohms for 0(2) to 10 VDC and 410k ohms for 0(4) to 20 VDC; Current Input, 500 ohms
Feedback Signal: 0 to 10 VDC
Rotation Time: 30 seconds at 50% rated load, 25 to 50 seconds for 0 to 70 lb-in (0 to 8 Nm)
Rotation: 0 to 90°, adjustable in 5° increments, mechanically limited to 93°
Torque Protection: Electronic stall detection throughout full range of 0 to 90°
Enclosure: NEMA 2, IP42

M9100 Series *Non-Spring Return* Actuators, *cont.*

M9108-GGC-2 M9108-GGC-2 has the same features as M9108-GGA-2, but includes two auxiliary switches.
Auxiliary Switch Rating: Two SPDT rated at 24 VAC 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2

M9108-HGA-2

Torque: 70 lb-in (8 Nm) running

Input Signal, Proportional: 0(2) to 10 VDC, 0(4) to 20 VDC, or 0(4) to 20 mA; Action is Direct (CW) or Reverse (CCW) with signal increase (jumper selectable)

Jumper Selectable: 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

Power Requirement: 20 to 30 VAC at 50/60 Hz or 24 VDC \pm 10%;
7.5 VA supply minimum, Class 2

Input Impedance: Voltage Input, 205k ohms for 0(2) to 10 VDC and
410k ohms for 0(4) to 20 VDC;
Current Input, 500 ohms, nominal

Feedback Signal: 0 to 10 VDC or 2 to 10 VDC for 90° (10 VDC at 1 mA)
Corresponds to input signal span selection

Rotation Time: 30 seconds at 50% rated load,
25 to 50 seconds for 0 to 70 lb-in (0 to 8 Nm)

Rotation: 0 to 90°, adjustable in 5° increments, mechanically limited to 93°

Torque Protection: Electronic stall detection throughout full range of 0 to 90°

Enclosure: NEMA 2, IP42

M9108-HGC-2 M9108-HGC-2 has the same features as M9108-HGA-2, but includes two auxiliary switches.
Auxiliary Switch Rating: Two SPDT rated at 24 VAC, 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2

M9108-JGA-2

Torque: 70 lb-in (8 Nm) running

Input Signal, Resistive: 100 to 10k ohms; Action is Direct (CW) or Reverse (CCW) with signal increase (jumper selectable)

Power Requirement: 20 to 30 VAC at 50/60 Hz or 24 VDC \pm 10%;
7.5 VA supply minimum, Class 2

Input Impedance: 1.8 Megohms

Feedback Signal: 0 to 10 VDC for 90° (10 VDC at 1 mA)

Rotation Time: 30 seconds at 50% rated load, 25 to 50 seconds for
0 to 70 lb-in (0 to 8 Nm)


Rotation: 0 to 90°, adjustable in 5° increments, mechanically limited to 93°

Torque Protection: Electronic stall detection throughout full range of 0 to 90°

Enclosure: NEMA 2, IP42

M9108-JGC-2 M9108-JGC-2 has the same features as M9108-JGA-2, but includes two auxiliary switches.
Auxiliary Switch Rating: Two SPDT rated at 24 VAC 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2


M9100 Series *Non-Spring Return* Actuators, *cont.*

	M9109-AGA-2 <i>Torque:</i>	80 lb-in (9 Nm) running
	<i>Input Signal, Floating:</i>	20 to 30 VAC at 50/60 Hz
	<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz; 2.5 VA supply, Class 2
	<i>Rotation Time:</i>	Nominal 60 seconds at 60 Hz and 72 seconds at 50 Hz for 90°
	<i>Rotation:</i>	Adjustable from 30 to 90°, CW or CCW
	<i>Torque Protection:</i>	Magnetic clutch
	<i>Enclosure:</i>	NEMA 2, IP42
	<i>Wiring Harness:</i>	48 in. (1.2 m) cable with 18 AWG wire leads

M9109-AGC-2	M9109-AGC-2 has the same features as M9109-AGA-2, but includes two auxiliary switches.
<i>Auxiliary Switch Rating:</i>	Two SPDT rated at 24 VAC 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2

M9109-GGA-2	<i>Torque:</i>	80 lb-in (9 Nm) running
	<i>Input Signal, Proportional:</i>	0 to 10 VDC or 0 to 20 mA
	<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz; 3.2 VA supply, Class 2
	<i>Rotation Time:</i>	Nominal 60 seconds at 60 Hz and 72 seconds at 50 Hz for 90°
	<i>Rotation:</i>	Adjustable from 30 to 90°, CW or CCW
	<i>Torque Protection:</i>	Magnetic clutch
	<i>Enclosure:</i>	NEMA 2, IP42
	<i>Wiring Harness:</i>	48 in. (1.2 m) cable with 18 AWG wire leads

M9109-GGC-2	M9109-GGC-2 has the same features as M9109-GGA-2, but includes two auxiliary switches.
<i>Auxiliary Switch Rating:</i>	Two SPDT rated at 24 VAC 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2

	M9116-AGA-2 <i>Torque:</i>	140 lb-in (16 Nm) running
	<i>Input Signal, Floating or On/Off:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC $\pm 10\%$
	<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC $\pm 10\%$; 6.5 VA supply minimum, Class 2
	<i>Input Impedance:</i>	400 ohms
	<i>Rotation Time:</i>	80 seconds at 50% rated load, 70 to 115 seconds for 0 to 140 lb-in (0 to 16 Nm)
	<i>Rotation:</i>	0 to 90°, adjustable in 5° increments, mechanically limited to 93°
	<i>Torque Protection:</i>	Electronic stall detection throughout full range of 0 to 90°
	<i>Enclosure:</i>	NEMA 2, IP42

M9100 Series *Non-Spring Return Actuators, cont.*

M9116-AGC-2	M9116-AGC-2 has the same features as M9116-AGA-2, but includes two auxiliary switches. <i>Auxiliary Switch Rating:</i> Two SPDT rated at 24 VAC 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2
M9116-AGD-2	M9116-AGD-2 has the same features as M9116-AGA-2, but includes a feedback signal. <i>Feedback Signal:</i> 135 ohms potentiometer
M9116-AGE-2	M9116-AGE-2 has the same features as M9116-AGA-2, but includes a feedback signal. <i>Feedback Signal:</i> 1k ohms potentiometer
M9116-GGA-2	<i>Torque:</i> 140 lb-in (16 Nm) running with single unit, 280 lb-in (32 Nm) running with two units in tandem <i>Input Signal, Proportional:</i> 0(2) to 10 VDC, 0(4) to 20 VDC, or 0(4) to 20 mA; Action is Direct (CW) or Reverse (CCW) with signal increase (jumper selectable) <i>Power Requirement:</i> 20 to 30 VAC at 50/60 Hz or 24 VDC \pm 10%; 7.5 VA supply minimum, Class 2 <i>Input Impedance:</i> Voltage Input, 205k ohms for 0(2) to 10 VDC or 410k ohms for 0(4) to 20 VDC; Current Input, 500 ohms, nominal <i>Feedback Signal:</i> 0 to 10 VDC <i>Rotation Time:</i> 80 seconds at 50% rated load, 70 to 115 seconds for 0 to 140 lb-in (0 to 16 Nm) <i>Rotation:</i> 0 to 90°, adjustable in 5° increments, mechanically limited to 93° <i>Torque Protection:</i> Electronic stall detection throughout full range of 0 to 90° <i>Enclosure:</i> NEMA 2, IP42
M9116-GGC-2	M9116-GGC-2 has the same features as M9116-GGA-2, but includes two auxiliary switches. <i>Auxiliary Switch Rating:</i> Two SPDT rated at 24 VAC 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2

M9100 Series *Non-Spring Return* Actuators, *cont.*


M9116-HGA-2	<i>Torque:</i>	140 lb-in (16 Nm) running with single unit, 280 lb-in (32 Nm) running with two units in tandem
	<i>Input Signal, Proportional:</i>	0(2) to 10 VDC, 0(4) to 20 VDC, or 0(4) to 20 mA; Action is Direct (CW) or Reverse (CCW) with signal increase (jumper selectable)
	<i>Jumper Selectable:</i>	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
	<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC \pm 10%; 7.5 VA supply minimum, Class 2
	<i>Input Impedance:</i>	Voltage Input, 205k ohms for 0(2) to 10 VDC or 410k ohms for 0(4) to 20 VDC; Current Input, 500 ohms
	<i>Feedback Signal:</i>	0 to 10 VDC or 2 to 10 VDC for 90° (10 VDC at 1 mA) Corresponds to input signal span selection
	<i>Rotation Time:</i>	80 seconds at 50% rated load, 70 to 115 seconds for 0 to 140 lb-in (0 to 16 Nm)
	<i>Rotation:</i>	0 to 90°, adjustable in 5° increments, mechanically limited to 93°
	<i>Torque Protection:</i>	Electronic stall detection throughout full range of 0 to 90°
	<i>Enclosure:</i>	NEMA 2, IP42

M9116-HGC-2	M9116-HGC-2 has the same features as M9116-HGA-2, but includes two auxiliary switches.
	<i>Auxiliary Switch Rating:</i> Two SPDT rated at 24 VAC 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2

M9116-JGA-2	<i>Torque:</i>	140 lb-in (16 Nm) running
	<i>Input Signal, Resistive:</i>	100 to 10k ohms; Action is Direct (CW) or Reverse (CCW) with signal increase (jumper selectable)
	<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC \pm 10%; 7.5 VA supply minimum, Class 2
	<i>Input Impedance:</i>	1.8 megohms
	<i>Feedback Signal:</i>	0 to 10 VDC for 90°
	<i>Rotation Time:</i>	80 seconds at 50% rated load, 70 to 115 seconds for 0 to 140 lb-in (0 to 16 Nm)
	<i>Rotation:</i>	0 to 90°, adjustable in 5° increments, mechanically limited to 93°
	<i>Torque Protection:</i>	Electronic stall detection throughout full range of 0 to 90°
	<i>Enclosure:</i>	NEMA 2, IP42

M9116-JGC-2	M9116-JGC-2 has the same features as M9116-JGA-2, but includes two auxiliary switches.
	<i>Auxiliary Switch Rating:</i> Two SPDT rated at 24 VAC 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2


M9100 Series *Non-Spring Return* Actuators, *cont.*

	M9124-AGA-2	<i>Torque:</i>	210 lb-in (24 Nm) running
		<i>Input Signal, Floating or On/Off:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC $\pm 10\%$
		<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC $\pm 10\%$; 6.5 VA supply minimum, Class 2
		<i>Input Impedance:</i>	400 ohms
		<i>Rotation Time:</i>	130 seconds at 50% rated load, 115 to 175 seconds for 0 to 210 lb-in (0 to 24 Nm)
		<i>Rotation:</i>	0 to 90°, adjustable in 5° increments, mechanically limited to 93°
		<i>Torque Protection:</i>	Electronic stall detection throughout full range of 0 to 90°
		<i>Enclosure:</i>	NEMA 2, IP42

M9124-AGC-2	M9124-AGC-2 has the same features as M9124-AGA-2, but includes two auxiliary switches. <i>Auxiliary Switch Rating:</i> Two SPDT rated at 24 VAC 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2
--------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

M9124-AGD-2	M9124-AGD-2 has the same features as M9124-AGA-2, but includes a feedback signal. <i>Feedback Signal:</i> 135 ohms, three-wire potentiometer
--------------------	-------------------------------------------------------------------------------------------------------------------------------------------------

M9124-AGE-2	M9124-AGE-2 has the same features as M9124-AGA-2, but includes a feedback signal. <i>Feedback Signal:</i> 1k ohms potentiometer
--------------------	------------------------------------------------------------------------------------------------------------------------------------

	M9124-GGA-2	<i>Torque:</i>	210 lb-in (24 Nm) running with 1 unit, 420 lb-in (48 Nm) running with 2 units in tandem
		<i>Input Signal, Proportional:</i>	0(2) to 10 VDC, 0(4) to 20 VDC, or 0(4) to 20 mA; Action is Direct (CW) or Reverse (CCW) with signal increase (jumper selectable)
		<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC $\pm 10\%$; 7.5 VA supply minimum, Class 2
		<i>Input Impedance:</i>	Voltage Input, 205k ohms for 0(2) to 10 VDC or 410k ohms for 0(4) to 20 VDC; Current Input, 500 ohms
		<i>Feedback Signal:</i>	0 to 10 VDC
		<i>Rotation Time:</i>	130 seconds at 50% rated load, 115 to 175 seconds for 0 to 210 lb-in (0 to 24 Nm)
		<i>Rotation:</i>	0 to 90°, adjustable in 5° increments, mechanically limited to 93°
		<i>Torque Protection:</i>	Electronic stall detection throughout full range of 0 to 90°
	<i>Enclosure:</i>	NEMA 2, IP42	

M9124-GGC-2	M9124-GGC-2 has the same features as M9124-GGA-2, but includes two auxiliary switches. <i>Auxiliary Switch Rating:</i> Two SPDT rated at 24 VAC 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2
--------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

M9100 Series *Non-Spring Return* Actuators, *cont.*

M9124-HGA-2	<i>Torque:</i>	210 lb-in (24 Nm) running with 1 unit, 420 lb-in (48 Nm) running with 2 units in tandem
	<i>Input Signal, Proportional:</i>	0(2) to 10 VDC, 0(4) to 20 VDC or 0(4) to 20 mA; Action is Direct (CW) or Reverse (CCW) with signal increase (jumper selectable)
	<i>Jumper Selectable:</i>	Adjustable: Zero, 0 to 6 VDC, 0 to 12 VDC, or 0 to 20 mA Span, 2 to 10 VDC, 4 to 20 VDC, or 4 to 20 mA
	<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC \pm 10%; 7.5 VA supply minimum, Class 2
	<i>Input Impedance:</i>	Voltage Input, 205k ohms for 0(2) to 10 VDC or 410k ohms for 0(4) to 20 VDC; Current Input, 500 ohms
	<i>Feedback Signal:</i>	0 to 10 VDC or 2 to 10 VDC for 90° (10 VDC at 1 mA) Corresponds to input signal span selection
	<i>Rotation Time:</i>	130 seconds at 50% rated load, 115 to 175 seconds for 0 to 210 lb-in (0 to 24 Nm)
	<i>Rotation:</i>	0 to 90°, adjustable in 5° increments, mechanically limited to 93°
	<i>Torque Protection:</i>	Electronic stall detection throughout full range of 0 to 90°
	<i>Enclosure:</i>	NEMA 2, IP42

M9124-HGC-2	M9124-HGC-2 has the same features as M9124-HGA-2, but includes two auxiliary switches.
	<i>Auxiliary Switch Rating:</i> Two SPDT rated at 24 VAC 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2

M9124-JGA-2	<i>Torque:</i>	210 lb-in (24 Nm) running
	<i>Input Signal, Resistive:</i>	100 to 10k ohms; Action is Direct (CW) or Reverse (CCW) with signal increase (jumper selectable)
	<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC \pm 10%; 7.5 VA supply minimum, Class 2
	<i>Input Impedance:</i>	1.8 megohms
	<i>Feedback Signal:</i>	0 to 10 VDC (1 mA at 10 VDC)
	<i>Rotation Time:</i>	130 seconds at 50% rated load, 115 to 175 seconds for 0 to 210 lb-in (0 to 24 Nm)
	<i>Rotation:</i>	0 to 90°, adjustable in 5° increments, mechanically limited to 93°
	<i>Torque Protection:</i>	Electronic stall detection throughout full range of 0 to 90°
	<i>Enclosure:</i>	NEMA 2, IP42

M9124-JGC-2	M9124-JGC-2 has the same features as M9124-JGA-2, but includes two auxiliary switches.
	<i>Auxiliary Switch Rating:</i> Two SPDT rated at 24 VAC 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2

M9100 Series *Non-Spring Return* Actuators, *cont.*

M9132-AGA-2



<i>Torque:</i>	280 lb-in (32 Nm) running
<i>Input Signal, Floating or On/Off:</i>	24 VAC at 50/60 Hz or 24 VDC
<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC $\pm 10\%$ 6.5 VA supply minimum, Class 2
<i>Input Impedance:</i>	400 ohms
<i>Rotation Time:</i>	140 seconds at 50% rated load, 115 to 205 seconds for 0 to 280 lb-in (0 to 32 Nm)
<i>Rotation:</i>	0 to 90°, adjustable in 5° increments, mechanically limited to 93°
<i>Torque Protection:</i>	Electronic stall detection throughout full range of 0 to 90°
<i>Enclosure:</i>	NEMA 2, IP42

M9132-AGC-2

M9132-AGC-2 has the same features as M9132-AGA-2, but includes two auxiliary switches.	
<i>Auxiliary Switch Rating:</i>	Two SPDT rated at 24 VAC 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2

M9132-AGE-2

M9132-AGE-2 has the same features as M9132-AGA-2, but includes a feedback signal.	
<i>Feedback Signal:</i>	1k ohms potentiometer

M9132-GGA-2

<i>Torque:</i>	280 lb-in (32 Nm) running with one unit, 560 lb-in (64 Nm) running with two units in tandem
<i>Input signal, Proportional:</i>	0(2) to 10 VDC, 0(4) to 20 VDC, or 0(4) to 20 mA; Action is Direct (CW) or Reverse (CCW) with signal increase (jumper selectable)
<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC $\pm 10\%$ 7.5 VA supply minimum, Class 2
<i>Input Impedance:</i>	Voltage Input, 205k ohms for 0(2) to 10 VDC or 410k ohms for 0(4) to 20 VDC; Current Input, 500 ohms
<i>Feedback Signal:</i>	0 to 10 VDC
<i>Rotation Time:</i>	140 seconds at 50% rated load, 115 to 185 seconds for 0 to 280 lb-in (0 to 32 Nm)
<i>Rotation:</i>	0 to 90°, adjustable in 5° increments, mechanically limited to 93°
<i>Torque Protection:</i>	Electronic stall detection throughout full range of 0 to 90°
<i>Enclosure:</i>	NEMA 2, IP42

M9132-GGC-2

M9132-GGC-2 has the same features as M9132-GGA-2, but includes two auxiliary switches.	
<i>Auxiliary Switch Rating:</i>	Two SPDT rated at 24 VAC 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2

M9200 Series *Spring Return* Actuators

M9206-AGA-2



<i>Torque:</i>	53 lb-in (6 Nm) running
<i>Input Signal, Floating:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC \pm 10%, 4.8 mA
<i>Input Signal, On/Off:</i>	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)
<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC \pm 10%, Class 2 16 VA at 32 to 140°F (0 to 60°C) 22 VA at -22 to 32°F (-30 to 0°C) 25 VA at -40 to -22°F (-40 to -30°C)
<i>Rotation Time:</i>	90 seconds for 0 to 53 lb-in (0 to 6 Nm); less than 17 seconds return-to-normal at normal operating temperature
<i>Rotation:</i>	Adjustable from 34.5 to 90° CW or CCW, mechanically limited to 93°
<i>Torque Protection:</i>	Electronic stall detection throughout full range of 0 to 90°
<i>Enclosure:</i>	NEMA 2, IP42
<i>Wiring Harness:</i>	48 in. (1.2 m) cable

M9206-AGA-2MP

<i>Torque:</i>	53 lb-in (6 Nm) running
<i>Input Signal, Floating:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC \pm 10%, 4.8 mA
<i>Input Signal, On/Off:</i>	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)
<i>Power Requirement:</i>	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)
<i>Power Supply Output:</i>	17 to 22 VDC at 25 mA
<i>Rotation Time:</i>	90 seconds for 0 to 53 lb-in (0 to 6 Nm); less than 17 seconds return-to-normal at normal operating temperature
<i>Rotation:</i>	Adjustable from 34.5 to 90° CW or CCW, mechanically limited to 93°
<i>Torque Protection:</i>	Electronic stall detection throughout full range of 0 to 90°
<i>Enclosure:</i>	NEMA 2, IP42
<i>Wiring Harness:</i>	48 in. (1.2 m) cable

M9206-AGC-2

M9206-AGC-2 has the same features as M9206-AGA-2, but includes two auxiliary switches.

Auxiliary Switch Rating: Two SPDT rated at 24 VAC, 50 VA pilot duty and 120/240 VAC 5.8/2.9A resistive, 1/4 hp per switch, double insulated, 275 VA pilot duty

M9200 Series *Spring Return Actuators, cont.*

M9206-AGC-2MP M9206-AGC-2MP has the same features as M9206-AGA-2MP, but includes two auxiliary switches.

Auxiliary Switch Rating: Two SPDT rated at 24 VAC, 50 VA pilot duty and 120/240 VAC 5.8/2.9A resistive, 1/4 hp per switch, double insulated, 275 VA pilot duty

M9206-BAA-2S



NEW

Torque: 53 lb-in (6 Nm) running
Input Signal, On/Off: 102 to 132 VAC at 60 Hz
Power Requirement: Nominal 120 V at 60 Hz, 0.08 A running; 0.05 A holding position
Rotation Time: 10 to 40 seconds for 0 to 53 lb-in (0 to 6 Nm) at all operating conditions. 25 seconds nominal for 50% rated load; less than 70 seconds return-to-normal at normal operating temperatures
Rotation: Adjustable from 34.5 to 90° CW or CCW; mechanically limited to 93°
Torque Protection: Electronic stall detection throughout full range of 0 to 90°
Enclosure: NEMA 2, IP42
Wiring Harness: 48 in. (1.2 m) cable with 18 AWG wire leads

M9206-BAB-2S

NEW

M9206-BAB-2S has the same features as M9206-BAA-2S, but includes one auxiliary switch.
Auxiliary Switch Rating: One SPDT double-insulated switch:
24 VAC: 50 VA pilot duty
120 VAC: 5.8 A resistive, 1/4 hp, 275 VA pilot duty
240 VAC: 5.0 A resistive, 1/4 hp, 275 VA pilot duty

M9206-BGA-2S

NEW

Torque: 53 lb-in (6 Nm) running
Input Signal, On/Off: 20 to 30 VAC at 50/60 Hz, Class 2
Power Requirement: Nominal 9.8 VA running; 5.8 VA holding position
Rotation Time: 10 to 40 seconds for 0 to 53 lb-in (0 to 6 Nm) at all operating conditions. 25 seconds nominal for 50% rated load; less than 70 seconds return-to-normal at normal operating temperatures
Rotation: Adjustable from 34.5 to 90° CW or CCW; mechanically limited to 93°
Torque Protection: Electronic stall detection throughout full range of 0 to 90°
Enclosure: NEMA 2, IP42
Wiring Harness: 48 in. (1.2 m) cable with 18 AWG wire leads

M9206-BGB-2S

NEW

M9206-BGB-2S has the same features as M9206-BGA-2S, but includes one auxiliary switch.
Auxiliary Switch Rating: One SPDT double-insulated switch:
24 VAC: 50 VA pilot duty
120 VAC: 5.8 A resistive, 1/4 hp, 275 VA pilot duty
240 VAC: 5.0 A resistive, 1/4 hp, 275 VA pilot duty

M9200 Series *Spring Return* Actuators, *cont.*

M9206-GGA-2	<i>Torque:</i>	53 lb-in (6 Nm) running
	<i>Input Signal, Proportional:</i>	0(2) to 10 VDC, 6 to 9 VDC, or 0(4) to 20 mA; Action is Direct (CW) or Reverse (CCW) with signal increase (switch selectable)
	<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC \pm 10%, Class 2 16 VA at 32 to 140°F (0 to 60°C) 22 VA at -22 to 32°F (-30 to 0°C) 25 VA at -40 to -22°F (-40 to -30°C)
	<i>Input Impedance:</i>	Voltage Input, 200k ohms; Current Input, 500 ohms
	<i>Calibration:</i>	Auto commissioning
	<i>Rotation Time:</i>	90 seconds for 0 to 53 lb-in (0 to 6 Nm); less than 17 seconds return-to-normal at normal operating temperature
	<i>Rotation:</i>	Adjustable from 34.5 to 90° CW or CCW, mechanically limited to 93°
	<i>Torque Protection:</i>	Electronic stall detection throughout full range of 0 to 90°
	<i>Enclosure:</i>	NEMA 2, IP42
	<i>Wiring Harness:</i>	48 in. (1.2 m) cable

M9206-GGA-2MP	<i>Torque:</i>	53 lb-in (6 Nm) running
	<i>Input Signal, Proportional:</i>	0(2) to 10 VDC, 6 to 9 VDC, or 0(4) to 20 mA; Action is Direct (CW) or Reverse (CCW) with signal increase (switch selectable)
	<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC \pm 10%, Class 2 16 VA at 32 to 140°F (0 to 60°C) 22 VA at -22 to 32°F (-30 to 0°C) 25 VA at -40 to -22°F (-40 to -30°C)
	<i>Power Supply Output:</i>	17 to 22 VDC at 25 mA
	<i>Input Impedance:</i>	Voltage Input, 200k ohms; Current Input, 500 ohms
	<i>Feedback Signal:</i>	0 to 10 VDC, 6 to 9 VDC
	<i>Calibration:</i>	Auto commissioning
	<i>Rotation Time:</i>	90 seconds for 0 to 53 lb-in (0 to 6 Nm); less than 17 seconds return-to-normal at normal operating temperature
	<i>Rotation:</i>	Adjustable from 34.5 to 90° CW or CCW mechanically limited to 93°
	<i>Torque Protection:</i>	Electronic stall detection throughout full range of 0 to 90°
	<i>Enclosure:</i>	NEMA 2, IP42
	<i>Wiring Harness:</i>	48 in. (1.2 m) cable

M9206-GGC-2 M9206-GGC-2 has the same features as M9206-GGA-2, but includes two auxiliary switches.

Auxiliary Switch Rating: Two SPDT rated at 24 VAC, 50 VA pilot duty and 120/240 VAC, 5.8/2.9A resistive, 1/4 hp per switch, double insulated, 275 VA pilot duty

M9206-GGC-2MP M9206-GGC-2MP has the same features as M9206-GGA-2MP, but includes two auxiliary switches.

Auxiliary Switch Rating: Two SPDT rated at 24 VAC, 50 VA pilot duty and 120/240 VAC, 5.8/2.9A resistive, 1/4 hp per switch, double insulated, 275 VA pilot duty

M9200 Series *Spring Return Actuators, cont.*

M9216-AGA-2



<i>Torque:</i>	140 lb-in (16 Nm) running
<i>Input Signal, Floating:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC $\pm 10\%$, 4.8 mA
<i>Input Signal, On/Off:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC $\pm 10\%$, 500 mA
<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC $\pm 10\%$; 12 VA supply minimum, Class 2
<i>Rotation Time:</i>	70 to 130 seconds for 0 to 140 lb-in (0 to 16 Nm); 90 seconds at 50% rated load; less than 15 seconds return-to-normal at normal operating temperature
<i>Rotation:</i>	Adjustable from 30 to 90° CW or CCW, mechanically limited to 93°, manual positioning
<i>Torque Protection:</i>	Electronic stall detection throughout full range of 0 to 90°
<i>Enclosure:</i>	NEMA 2, IP42

M9216-AGC-2 M9216-AGC-2 has the same features as M9216-AGA-2, but includes two auxiliary switches.

Auxiliary Switch Rating: Two SPDT rated at 24 VAC, 1.5A inductive, 3A resistive,
35 VA maximum per switch, Class 2

M9216-AGD-2 M9216-AGD-2 has the same features as M9216-AGA-2, but includes a feedback signal.

Feedback Signal: 135 ohms potentiometer

M9216-AGE-2 M9216-AGE-2 has the same features as M9216-AGA-2, but includes a feedback signal.

Feedback Signal: 1k ohms potentiometer

M9216-BAA-2 M9216-BAA-2 includes the M9216-BGA-2 actuator assembled with a M9000-103
120/24 VAC, 60 Hz, 14 VA Transformer; and one M9000-100 Conduit Adaptor.

M9216-BAC-2 M9216-BAC-2 includes the M9216-BGC-2 actuator assembled with a M9000-103
120/24 VAC, 60 Hz, 14 VA Transformer, and one M9000-100 Conduit Adaptor. This
model also includes two auxiliary switches.

Auxiliary Switch Rating: Two SPDT rated at 24 VAC, 1.5A inductive, 3A resistive,
35 VA maximum per switch

M9200 Series *Spring Return* Actuators, *cont.*

M9216-BGA-2	<i>Torque:</i>	140 lb-in (16 Nm) running with single unit, 280 lb-in (32 Nm) running with two units in tandem
	<i>Input Signal, On/Off:</i>	24 VAC at 50/60 Hz or 24 VDC, 420 mA maximum
	<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC, $\pm 10\%$; 10 VA supply minimum, Class 2
	<i>Rotation Time:</i>	70 to 130 seconds for 0 to 140 lb-in (0 to 16 Nm); 90 seconds at 50% rated load; less than 15 seconds return-to-normal at normal operating temperature
	<i>Rotation:</i>	Adjustable from 30 to 90° CW or CCW, mechanically limited to 93°, manual positioning
	<i>Torque Protection:</i>	Electronic stall detection throughout full range of 0 to 90°
	<i>Enclosure:</i>	NEMA 2, IP42

M9216-BGC-2	M9216-BGC-2 has the same features as M9216-BGA-2, but includes two auxiliary switches.	
	<i>Auxiliary Switch Rating:</i>	Two SPDT rated at 24 VAC, 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2

M9216-GGA-2	<i>Torque:</i>	140 lb-in (16 Nm) running with single unit, 280 lb-in (32 Nm) running with two units in tandem
	<i>Input Signal, Proportional:</i>	0 to 10 VDC or 0 to 20 mA
	<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC $\pm 10\%$, Class 2 18 VA supply from -22 to 32°F (-30 to 0°C) minimum, Class 2 14 VA supply from 32 to 126°F (0 to 52°C) minimum, Class 2
	<i>Input Impedance:</i>	Voltage Input, 200k ohms; Current Input, 500 ohms
	<i>Calibration:</i>	Auto commissioning
	<i>Feedback Signal:</i>	0(2) to 10 VDC for 90° (1 mA at 10 VDC)
	<i>Rotation Time:</i>	70 to 130 seconds for 0 to 140 lb-in (0 to 16 Nm); 90 seconds at 50% rated load; less than 15 seconds return-to-normal at normal operating temperature
	<i>Rotation:</i>	Adjustable from 30 to 90° CW or CCW mechanically limited to 93°
	<i>Torque Protection:</i>	Electronic stall detection throughout full range of 0 to 90°
	<i>Enclosure:</i>	NEMA 2, IP42

M9216-GGC-2	M9216-GGC-2 has the same features as M9216-GGA-2, but includes two auxiliary switches.	
	<i>Auxiliary Switch Rating:</i>	Two SPDT rated at 24 VAC, 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2

M9200 Series *Spring Return Actuators, cont.*

M9216-HGA-2	<i>Torque:</i>	140 lb-in (16 Nm) running with single unit, 280 lb-in (32 Nm) running with two units in tandem
	<i>Input Signal, Proportional:</i>	0 to 10 VDC or 0 to 20 mA; Action is Direct (CW) or Reverse (CCW) with signal increase (jumper selectable)
	<i>Jumper Selectable:</i>	Adjustable: Zero, 0 to 6 VDC or 0 to 12 mA Span, 2 to 10 VDC or 4 to 20 mA
	<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC \pm 10%; 12 VA supply minimum, Class 2
	<i>Input Impedance:</i>	Voltage Input, 200k ohms; Current Input, 500 ohms
	<i>Feedback Signal:</i>	0(2) to 10 VDC for 90° (1 mA at 10 VDC) corresponds to input signal span selection and rotation limits
	<i>Rotation Time:</i>	70 to 130 seconds for 0 to 140 lb-in (0 to 16 Nm); 90 seconds at 50% rated load; less than 15 seconds return-to-normal at normal operating temperature
	<i>Rotation:</i>	Adjustable from 30 to 90° CW or CCW, mechanically limited to 93°, manual positioning
	<i>Torque Protection:</i>	Electronic stall detection throughout full range of 0 to 90°
	<i>Enclosure:</i>	NEMA 2, IP42

M9216-HGC-2 M9216-HGC-2 has the same features as M9216-HGA-2, but includes two auxiliary switches.
Auxiliary Switch Rating: Two SPDT rated at 24 VAC, 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2

M9216-JGA-2	<i>Torque:</i>	140 lb-in (16 Nm) running
	<i>Input Signal, Resistive:</i>	100 to 10k ohms; Action is Direct (CW) or Reverse (CCW) with signal increase (jumper selectable)
	<i>Power Requirement:</i>	20 to 30 VAC at 50/60 Hz or 24 VDC \pm 10%; 12 VA supply minimum, Class 2
	<i>Input Impedance:</i>	1.8 megohms
	<i>Feedback Signal:</i>	0 to 10 VDC for 90° (1 mA at 10 VDC)
	<i>Rotation Time:</i>	70 to 130 seconds for 0 to 140 lb-in (0 to 16 Nm); 90 seconds at 50% rated load; less than 15 seconds return-to-normal at normal operating temperature
	<i>Rotation:</i>	Adjustable from 30 to 90° CW or CCW, mechanically limited to 93°, manual positioning
	<i>Torque Protection:</i>	Electronic stall detection throughout full range of 0 to 90°
	<i>Enclosure:</i>	NEMA 2, IP42

M9216-JGC-2 M9216-JGC-2 has the same features as M9216-JGA-2, but includes two auxiliary switches.
Auxiliary Switch Rating: Two SPDT rated at 24 VAC, 1.5A inductive, 3A resistive, 35 VA maximum per switch, Class 2

M9000 Series Accessories



DPT-2015-0

The DPT-2015-0 is used to measure differential pressure to determine the air velocity for calculating airflow. The DPT-2015-0 is available factory mounted to an M9104 or M9106 Series non-spring return actuator for reliable damper positioning in closed-loop applications.

CBL-2000-1

20 in. (0.5 m) wiring harness, UL accepted for plenum use, supplied with the M9104-AGS-2N and may be ordered separately. Connects the M9104 and DPT-2015-0 to the VAV controller.

CBL-2000-2

20 in. (0.5 m) plenum-rated wiring harness connects the DPT-2015-0 and M9104-AGS-2N or M9106-AGS-2N02 to the VAV controller.

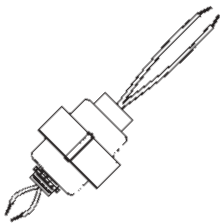
CBL-2000-3

72 in. (1.8 m) plenum-rated wiring harness connects the DPT-2015-0 and M9104-AGS-2N or M9106-AGS-2N02 to the VAV controller.



M9000-100

Conduit Adapter Kit is used with all M9216 Series actuators in applications where codes or contractor requirements call for the use of conduit for wiring. The kit provides the ability to connect the actuator to 1/2 in. flexible metallic tubing (i.e., flexible conduit, Greenfield™, armored cable, etc.). Some applications may require two kits.

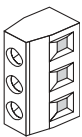


M9000-103

Transformer accommodates 120 VAC/24 VAC, 14 VA, 50/60 Hz power requirements. The 24 VAC side of this Class 2 transformer has internal NPT threading.

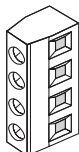
M9000-104

Transformer accommodates 230 VAC/24 VAC, 14 VA, 50/60 Hz power requirements. The 24 VAC side of this Class 2 transformer has internal NPT threading.



M9000-105

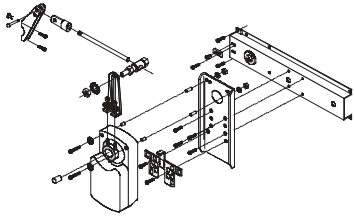
Pluggable Three-Terminal Block is used with M9106, M9109, M9124-Axx, and M9216-Gxx Series actuators.



M9000-106

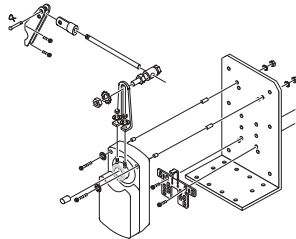
Pluggable Four-Terminal Block is used with M9106, M9109, and M9216-Gxx Series actuators.

M9000 Series Accessories



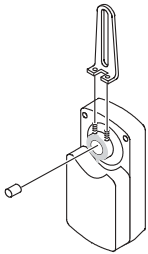
M9000-150

Damper-Mount Linkage Kit provides remote inside duct mounting for M9108, M9116, M9124, and M9216 Series actuators to a three-blade or larger damper. Nominal spring return torque is 100 lb-in at the damper pin.



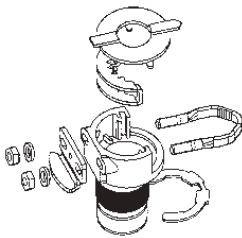
M9000-151

Base-Mount Linkage Kit provides inside duct mounting for M9108, M9116, M9124, and M9216 Series actuators. Nominal torque is 71% of the actuator-rated torque at the damper pin. The M9000-151 is for use on a three-blade or larger damper. (Not for use with M9132 Series actuators or any tandem applications.)



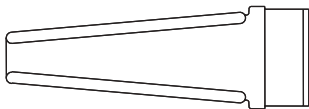
M9000-153

The M9000-153 Crankarm Kit is included in the M9000-150 Damper-Mount Linkage Kit and the M9000-151 Base-Mount Linkage Kit and can be ordered separately. It includes the crankarm and shaft clamp plug for remote mounting M9108, M9116, M9124, and M9216 Series actuators to a three-blade or larger damper.



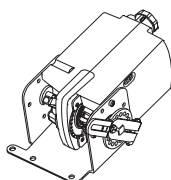
M9000-154

Jackshaft Coupler Kit for use with the M9108, M9116, M9124, M9132, and M9216 series actuators. The jackshaft coupler is sized for 1.05 in. (26.7 mm) diameter, galvanized rigid conduit which is widely used as a damper jackshaft.



M9000-155

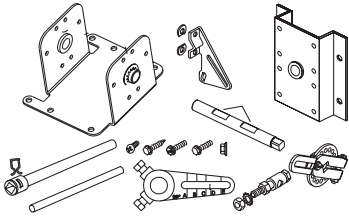
Manual Handle is used to manually move M9108, M9116, M9124, and M9132 Series non-spring return actuators when mounted onto valves. Attaches to the U-bolt coupler of the actuators.



M9000-156 and M9000-165

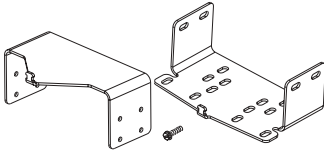
Remote Mounting Kits are used to mount actuators in remote mount, linkage-driven applications. Ideal for retrofitting M9204 and M9206 Series actuators in a number of Honeywell® economizer actuator applications. Use the M9000-156 Mounting Kit for M9204 and M9206-xGx-2 Series actuators and M9000-165 Mounting Kit for M9206-DNx and M9206-Bxx-2S Series actuators.

M9000 Series Accessories



M9000-157

Universal Mounting Kit provides for remote mount, linkage-driven application of the M9204 Series electric spring return economizer damper actuator or the M9206-xGx-2 Series electric spring return actuator. The M9000-157 can be mounted internally or externally on a duct, damper, or air handling unit, and is intended for new or retrofit applications.



M9000-158

Tandem Mounting Kit is used to mount two M9116-GGx or HGx; M9124-AGx, GGx, or HGx; M9132-AGx or GGx Series actuators on large dampers, rotary valves, and inlet guide vanes, providing twice the torque of a single actuator. The M9000-158 is mounted on the inside or outside of a duct, damper frame, or air handling unit. The M9000-158 can be used in valve applications only if a flat mounting surface is available.



M9000-160

Anti-Rotation Bracket (Replacement) is for M9106, M9108, M9109, M9116, M9124, M9132, and M9216 Series actuators.



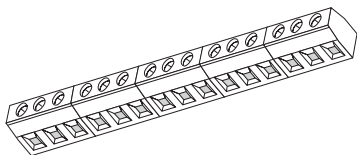
M9000-161

Anti-Rotation Bracket (Replacement) is for M9204 or M9206 Series actuators.



M9000-200

Universal Commissioning Tool works with any brand of electric actuator. It provides a control signal to drive proportional (voltage, current, resistive), floating, or on/off actuators. LEDs display DC feedback voltages, and indicate mode selection and auxiliary switch contact closure. The commissioning tool may also be used to provide 24 VAC for powering an actuator. It includes a set of three pluggable terminal blocks, a 120 VAC/24VAC transformer, plus a carrying case and strap.



M9000-210

Terminal Block Kit (set of five) can be ordered separately for the M9000-200 Commissioning Tool to set up extra lead sets.

M9000 Series Accessories



M9000-300

Rugged Weather Shield designed to protect M9000 Series actuators in outdoor applications. It is designed to NEMA 4 specifications and does not allow any moisture to penetrate the custom-designed seals.

M9000-301

Damper Enclosure Bracket (steel, zinc coated) measuring 14 x 0.75 x 0.08 in. (356 x 19 x 2 mm).

M9000-302

Standard Enclosure Heater/Thermostat, 12 to 36 VAC/VDC, 10 W, operates at 41°F (5°C) and shuts off at 59°F (15°C). Intended for applications in areas with expected dew point of 39°F (4°C) or lower.

M9000-303

Standard Enclosure Heater/Thermostat, 12 to 36 VAC/VDC, 10 W, operates at 86°F (30°C) and shuts off at 104°F (40°C). Intended for applications in areas with expected dew point of 81°F (27°C) or lower.



M9000-500

Valve Linkage provides for field mounting of the M9116 and M9216 Series actuators to Johnson Controls 1/2 through 2-in. globe-style valve bodies. Easily adapts to the V-3000 bonnet.



M9000-510, M9000-511, M9000-512, and M9000-513

These sturdy *Valve Linkage Kits* assure stable actuator mounting while preventing loading on the valve stem and stem seals, ensuring long life and leak-free valve performance. The M9000-510 Valve Linkage Kit is designed for field-mounting M9116 and M9216 Series actuators to VG1000 Series Ball Valves in sizes 1/2, 3/4, 1, and 1-1/4 in. (DN15, DN20, DN25, and DN32). The M9000-511 Valve Linkage Kit is designed for field-mounting M9124 Series actuators to the 1-1/2 in. (DN40) VG1000 Series Ball Valves. The M9000-512 Valve Linkage Kit is designed for field-mounting M9106 Series actuators to 1/2 and 3/4 in. two-way and 1/2 in. three-way VG1000 Series Ball Valves. The M9000-513 Valve Linkage Kit is designed for field-mounting M9206 Series actuators to 1/2 and 3/4 in. two-way and 1/2 in. three-way VG1000 Series Ball Valves.

M9000 Series Accessories



M9000-520

This *Valve Linkage Kit* is designed specifically for field mounting Johnson Controls M9106 Series Non-Spring Return and M9206 Series Spring Return Electric Actuators to Johnson Controls VG1241, VG1245, VG1841, and VG1845 Series Ball Valves. The use of glass-reinforced thermoplastic resin provides superior thermal isolation between the valve and actuator; minimizing heat transfer in higher fluid temperature applications and preventing condensation in chilled water applications.



M9000-53x

Valve Linkages provide field mounting of the M9116, M9124, and M9216 Series actuators to the Johnson Controls VG2000 Series Cast Iron Flanged Valves in sizes 2-1/2 through 6 in. Kits are available to fit older Johnson Controls valves for easy conversion from pneumatic or older electric actuator installations.



M9206-600

Coupler Kit is used to mount M9206 Series actuators to a 3/8 through 1/2 in. (10 through 13 mm) round shaft or a 3/8 in. (10 mm) square shaft.



M9206-601

Coupler Kit is used to mount M9206 Series actuators to a 3/8 through 5/8 in. (10 through 16 mm) round shaft or a 3/8 through 9/16 in. (10 through 14 mm) square shaft.

M9206-602

Locking Clips consist of a bag of five replacement clips for M9206 Series actuators.



V-9999-BC1

Mounting Kit is used to mount electric actuators with the V-3000 bonnet or the M9000-500 Valve Linkage to 1/2 through 1-1/4 in. Invensys® VB-7xxx and VB-9xxx Series valves.

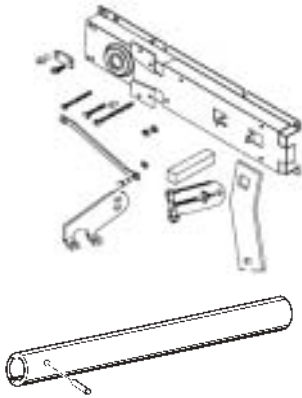


V-9999-HW1

Mounting Kit is used to mount electric actuators with the V-3000 bonnet or the M9000-500 Valve Linkage to Honeywell® V5011 A, F, and G 1/2 through 3 in. single-seated and V5013F three-way valves.

M9000 Series Accessories

ALSO AVAILABLE



DMPR-KC254

Inside Frame Mounting Kit is designed to mount M9108, M9116, M9124, and M9216 Series actuators to dampers in applications requiring the actuator within the air stream.

DMPR-KR003

2-3/4 in. Long Sleeve Pin Kit is used to mount M9000 Series actuators to D-1300 Series direct-mount dampers with a 5/16 in. (8 mm) shaft.



VIDT-033

Quality and Consistency; Automating Actuator Manufacturing Video illustrates Johnson Controls unique robotics manufacturing facility in Watertown, Wisconsin. Running time: 5 minutes.



VIDT-050

M9100/M9200 Direct-Mount Actuator Installation Video with M9000-200 Commissioning Tool and M9000-500 Valve Linkage. Running time: 30 minutes.

NOTES

NOTES



Johnson Controls

*offers a comprehensive,
versatile line of
high quality,
competitively priced
actuators for
dampers
and valves.*

**What you need,
when you need it.**



M9000 Direct-Mount Electric Actuators

Non-Spring Return Actuators



M9101
10 lb-in (1 Nm)



M9104
35 lb-in (4 Nm)



M9106-xGx-2NOx
53 lb-in (6 Nm)



M9106-xGx-2
53 lb-in (6 Nm)



M9108
70 lb-in (8 Nm)



M9109
80 lb-in (9 Nm)



M9116
140 lb-in (16 Nm)



M9124
210 lb-in (24 Nm)



M9132
280 lb-in (32 Nm)



**Two M9124
in Tandem**
420 lb-in (48 Nm)



**Two M9132
in Tandem**
560 lb-in (64 Nm)

Our Guarantee to You

Certified to ISO 9001 quality processes and backed by a **three-year warranty**.

Shipping

Our M9000 Series Actuators are built-to-order with a **standard lead time of three business days**. **Next day, fast track service** is available for a 5% premium charge.

Ordering Information

Contact your local Johnson Controls representative or contact Customer Service:

1-800-ASK-JNSN (1-800-275-5676)

Spring Return Actuators



M9206
53 lb-in (6 Nm)



M9216
140 lb-in (16 Nm)



**Two M9216
in Tandem**
280 lb-in (32 Nm)

JOHNSON
CONTROLS