

ACTUATORS & DAMPERS

DIRECT COUPLED ACTUATORS SPRING RETURN M9200 SERIES



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DESCRIPTION

The Johnson Controls M9200 Series spring return actuators are designed to position return air, exhaust air, or outside air dampers. Torques range from 27 to 177 in-lbs and available control signals are two-position (on/off), tri-state (floating), and proportional.

FEATURES

- Reversible mounting design
- Electronic stall detection
- Models with auxiliary switches available (i.e. -AGC, -GGC, etc.)
- Minimum 60,000 cycles life expectancy



COMMON SPECIFICATIONS	
Input Impedance	200 kΩ @ 0/2-10 VDC; 500Ω @ 4-20 mA
Motor	Brushless DC
Wiring	18 AWG, 120" (3m), plenum leads or 18 AWG, 48" (1.2m), appliance cable
Conduit Connection	1/2" conduit connectors (M9203 only); Integral 3/8" flex connectors (all others)
Action	Select by wiring (2-pos./floating); Switch or hub re-position (proportional)
Rotation	95° (M9203, M9208); 93° (M9220)
Manual Override	Manual crank (M9220 only)
Noise	<55 db (M9203); <52 db (M9208); <40 db (M9220 2-pos.); <66 db (M9220 floating/prop.)
Resolution	120 steps
Life Expectancy	60,000 cycles, 1.5 million repositions
Operating Temperature	-40° to 140°F (-40° to 60°C) (M9203, M9208); -40° to 131°F (-40° to 55°C) (M9220)
Operating Humidity	0 to 95% RH
Enclosure Rating	NEMA 2 (IP54)
Approvals	CE, UL File #E22734, CSA C-tick (models vaires) (M9203, M9208); (M9220)
Warranty	5 years

INDIVIDUAL SPECIFICATIONS							
Model	Torque	Supply Voltage	Supply VA	Control Signal	Feedback	Drive Time	Spring Return Time
M9203-AGA-2Z	27 in-lb (3 Nm)	24 VAC ± 20%, 50/60 Hz, 24 VDC ± 10%	4.7 VA	Tri-state, two-position	None	90 seconds	25 seconds
M9203-BGA-2	27 in-lb (3 Nm)	24 VAC ± 20%, 50/60 Hz, 24 VDC ± 10%	5.0 VA	Two-position	None	75 seconds	25 seconds
M9203-GGA-2Z	27 in-lb (3 Nm)	24 VAC ± 20%, 50/60 Hz, 24 VDC ± 10%	5.1 VA	Prop. 2-10 VDC, 4-20 mA	0/2-10 VDC	150 seconds	25 seconds
M9208-AGA-x	70 in-lb (80 Nm)	24 VAC ± 20%, 50/60 Hz, 4 VDC ± 10%	7.9 VA	Two-position, floating	None	150 seconds	18 to 24 seconds
M9208-BGA-x	70 in-lb (80 Nm)	24 VAC ± 25%, 50/60 Hz, 24 VDC ± 10%	6.1 VA	Two-position	None	75 seconds	13 to 26 seconds
M9208-GGA-x	70 in-lb (80 Nm)	24 VAC ± 20%, 50/60 Hz, 24 VDC ± 10%	7.9 VA	Prop. 2-10 VDC, 4-20 mA	0/2-10 VDC	150 seconds	18 to 24 seconds
M9220-AGA-3	177 in-lb (20 Nm)	24 VAC ± 20%, 50/60 Hz, 24 VDC ± 10%	15.5 VA	Two-position, floating	None	150 seconds	20 seconds
M9220-BAA-3	177 in-lb (20 Nm)	120 VAC, +10%/-15%, 60 Hz	25 VA	Two-position	None	24 to 57 seconds	11 to 15 seconds
M9220-BGA-3	177 in-lb (20 Nm)	24 VAC ± 20%, 50/60 Hz, 24 VDC ± 10%	24.6 VA	Two-position	None	24 to 57 seconds	11 to 15 seconds
M9220-GGA-3	177 in-lb (20 Nm)	24 VAC ± 20%, 50/60 Hz, 24 VDC ± 10%	15.5 VA	Prop. 0/2-10 VDC, 4-20 mA	0/2-10 VDC	150 seconds	20 seconds
M9220-HGA-3	177 in-lb (20 Nm)	24 VAC ± 20%, 50/60 Hz, 24 VDC ± 10%	15.5 VA	Adj. Prop. 0/2-10 VDC, 4-20 mA	0/2-10 VDC	150 seconds	20 seconds



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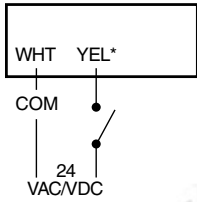
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DIMENSIONS

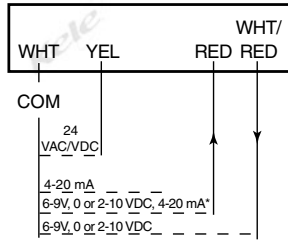
Model	Dimensions	Maximum Shaft Diameter	Minimum Shaft Length	Weight
M9203	3.2"H x 3.2"W x 6.4"L (7.6 x 3.3 x 21.1 cm)	0.63" (1.6 cm)	1.7" (5.2 cm)	4.2 lb (1.9 kg)
M9208	3.2"H x 3.2"W x 6.4"L (7.6 x 3.3 x 21.1 cm)	0.63" (1.6 cm)	1.7" (5.2 cm)	4.2 lb (1.9 kg)
M9220, 24V	3.3"H x 4.0"W x 10.3"L (8.4 x 10.2 x 26.2 cm)	0.75" (1.9 cm)	1.2" (3.0 cm)	6.4 lb (2.9 kg)
M9220, 120V	3.3"H x 4.0"W x 10.3"L (8.4 x 10.2 x 26.2 cm)	0.75" (1.9 cm)	1.2" (3.0 cm)	7.6 lb (3.5 kg)

WIRING



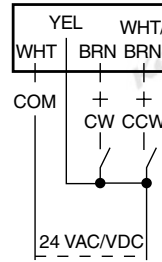
*For AGA models, this wire color is BRN.

M9220-BGA/AGA
Two-position

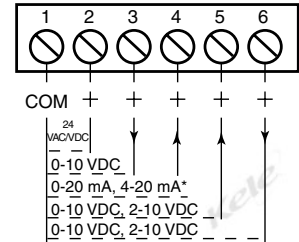


*500 Ω resistor required

M9220-GGA
Proportional



M9220-AGA
Tri-state/
Two-position



TERMINAL	DESCRIPTION
3	Signal Out
4	Current Input
5	Voltage Input
6	Feedback

*500Ω resistor required

Proportional

ORDERING INFORMATION

Model	Description
M9203-AGA-2Z	Spring return 27 in-lb (3 Nm), two-position and tri-state control, 10 ft. plenum cable
M9203-BGA-2	Spring return 27 in-lb (3 Nm), two-position control, 4 ft. cable
M9203-GGA-2Z	Spring return 27 in-lb (3 Nm), 0/2-10 VDC proportional control, 10 ft. plenum cable
M9208-AGA-2	Spring return 70 in-lb (8 Nm), two-position and tri-state control, 10 ft. plenum cable
M9208-AGA-3	Spring return 70 in-lb (8 Nm), two-position and tri-state control, 4 ft. cable
M9208-BGA-2	Spring return 70 in-lb (8 Nm), two-position control, 10 ft. plenum cable
M9208-BGA-3	Spring return 70 in-lb (8 Nm), two-position control, 4 ft. cable
M9208-GGA-2	Spring return 70 in-lb (8 Nm), 0/2-10 VDC proportional control, 10 ft. plenum cable
M9208-GGA-3	Spring return 70 in-lb (8 Nm), 0/2-10 VDC proportional control, 4 ft. cable
M9220-AGA-3	Spring return 177 in-lb (20 Nm), two-position and tri-state control, 4 ft. cable
M9220-BAA-3	Spring return 177 in-lb (20 Nm), 120 VAC two-position, two-wire control, 4 ft. cable
M9220-BGA-3	Spring return 177 in-lb (20 Nm), 24 VAC/VDC two-position, two-wire control, 4 ft. cable
M9220-GGA-3	Spring return 177 in-lb (20 Nm), 0/2-10 VDC proportional control, 4 ft. cable
M9220-HGA-3	Spring return 177 in-lb (20 Nm), adjustable 0/2-10 VDC control, 4 ft. cable

ACCESSORIES

M9000-115	Universal mounting kit for M9203 includes crankarm
M9000-153	Crankarm Kit
M9000-158	Tandem mount kit for M9132/M9220 actuators
M9000-171	Floor mount linkage kit for M9220 actuators
M9000-321	Weathershield kit for M9203 and M9208 actuators on damper applications
M9220-600	Jackshaft coupler, 1", for M9220
M9220-603	Adjustable stop kit for M9220 proportional control actuators