

# ACTUATORS & DAMPERS

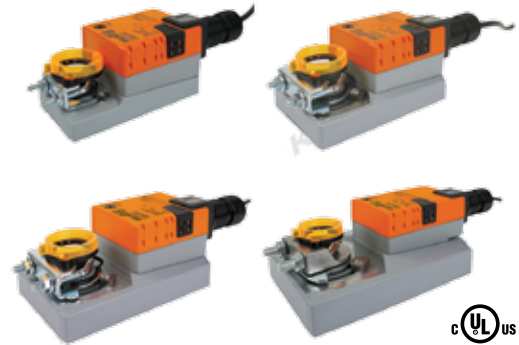
## DIRECT COUPLED ACTUATORS NON-SPRING RETURN AXX, CXX, GXX, LXX, NXX SERIES



### DESCRIPTION

The Belimo LMB, NMB, AMB, GMB Series Direct Coupled Actuators provide control of dampers and valves for non-spring return applications. They come in two-position, tri-state (floating), proportional, and Multi-Function Technology (MFT) models. These actuators include a manual release mechanism for manual override.

**BELIMO**



Axx, Cxx, Gxx, Lxx, Nxx Series

### FEATURES

- Manual override for testing and verification
- Reversing switch for control flexibility
- CSA and CE approved for worldwide application
- Plenum-rated housing and cable connections
- NEMA 4 models available for outdoor locations

### COMMON SPECIFICATIONS

<b>Supply Voltage</b>	24 VAC ±20% 50/60 Hz, 24 VDC ±10%, 100 VAC, 240 VAC	<b>Resolution</b>	100 steps
<b>Motor</b>	Brushless DC	<b>Life Expectancy</b>	100,000 cycles, 1 million repositions
<b>Wiring</b>	3' (0.9 m) plenum cable, 18 AWG, terminals	<b>Operating Temperature</b>	-22° to 122°F (-30° to 50°C)
<b>Action</b>	Non-spring return	<b>Operating Humidity</b>	5 to 95% RH
<b>Rotation</b>	95 degrees, Rev. with switch	<b>Approvals</b>	<attrib a="58" l="10" o="1201" p="21525" s="11" status="2" type="2"/>, UL94-5VA
<b>Manual Override</b>	Pushbutton disengage	<b>Warranty</b>	5 years
<b>Noise</b>	<45 db @ 3' (1m); <35 db @ 3' (1m) (LMB models)		

### INDIVIDUAL SPECIFICATIONS

Model	Torque	Supply VA	Control Signal	Feedback	Input Impedance	Auxiliary Switch	Drive Time
LMB24-3	45 in-lb (5 Nm)	2 VA	Two-position, floating	P1000A (1 kΩ option)	100 kΩ @ 0/2-10 VDC	S1A or S2A (option)	95 seconds
LMB24-3-S	45 in-lb, (5 Nm)	2 VA	Two-position, floating	P1000A (1 kΩ option)	100 kΩ @ 0/2-10 VDC	1 SPDT, 3A @ 250V	95 seconds
LMB24-SR	45 in-lb (5 Nm)	3 VA	Prop. 2-10 VDC, 4-20 mA	2-10 VDC	100 kΩ @ 0/2-10 VDC; 500Ω @ 4-20 mA	S1A or S2A (option)	95 seconds
LMB24-MFT	45 in-lb, (5 Nm)	5 VA	Prop. (default 2-10 VDC)	2-10 VDC	100 kΩ @ 0/2-10 VDC; 500Ω @ 4-20 mA	S1A or S2A (option)	150 seconds
NMB24-3	90 in-lb (10 Nm)	4 VA	Two-position, floating	P1000A (1 kΩ option)	100 kΩ @ 0/2-10 VDC	S1A or S2A (option)	95 seconds
NMB24-SR	90 in-lb (10 Nm)	5 VA	Prop. 2-10 VDC, 4-20 mA	2-10 VDC	100 kΩ @ 0/2-10 VDC; 500Ω @ 4-20 mA	S1A or S2A (option)	95 seconds
NMB24-MFT	90 in-lb (10 Nm)	6 VA	Prop. (default 2-10 VDC)	2-10 VDC	100 kΩ @ 0/2-10 VDC; 500Ω @ 4-20 mA	S1A or S2A (option)	150 seconds
AMB24-3	180 in-lb (20 Nm)	5.5 VA	Two-position, floating	P1000A (1 kΩ option)	100 kΩ @ 0/2-10 VDC	S1A or S2A (option)	95 seconds
AMB24-3-S	180 in-lb (20 Nm)	5.5 VA	Two-position, floating	P1000A (1 kΩ option)	100 kΩ @ 0/2-10 VDC	1 SPDT, 3A @ 250V	95 seconds
AMB24-SR	180 in-lb (20 Nm)	5 VA	Prop. 2-10 VDC, 4-20 mA	2-10 VDC	100 kΩ @ 0/2-10 VDC; 500Ω @ 4-20 mA	S1A or S2A (option)	95 seconds
AMB24-MFT	180 in-lb (20 Nm)	6 VA	Prop. 2-10 VDC, 4-20 mA	2-10 VDC	100 kΩ @ 0/2-10 VDC; 500Ω @ 4-20 mA	S1A or S2A (option)	150 seconds
GMB24-3	360 in-lb (40 Nm)	6 VA	Two-position, floating	P1000A (1 kΩ option)	100 kΩ @ 0/2-10 VDC	S1A or S2A (option)	95 seconds
GMB24-SR	360 in-lb (40 Nm)	6.5 VA	Prop. 2-10 VDC, 4-20 mA	2-10 VDC	100 kΩ @ 0/2-10 VDC; 500Ω @ 4-20 mA	S1A or S2A (option)	95 seconds
GMB24-MFT	360 in-lb (40 Nm)	7 VA	Prop. (default 2-10 VDC)	2-10 VDC	100 kΩ @ 0/2-10 VDC	S1A or S2A (option)	150 seconds

# ACTUATORS & DAMPERS

## DIRECT COUPLED ACTUATORS NON-SPRING RETURN

AXX, CXX, GXX, LXX, NXX SERIES

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ACTUATORS & DAMPERS

### DIMENSIONS

Model	Torque	Dimensions	Max. Shaft Diameter	Min. Shaft Length	Enclosure Rating	Weight
<b>LMB</b>	45 in-lb (5 Nm)	2.3"H x 2.6"W x 7.4"L (5.9 x 6.6 x 18.9 cm)	0.75 in (1.9 cm)	1.8" (4.5 cm)	NEMA 2 (IP54) UL94-5V	1.0 lb (0.5 kg)
<b>NMB</b>	90 in-lb (10 Nm)	2.4"H x 3.2"W x 7.7"L (6.1 x 8.0 x 19.6 cm)	1.05" (2.7 cm)	2.4" (6.0 cm)	NEMA 2 (IP54) UL94-5V	1.65 lb (.75 kg)
<b>NMB-N4</b>	70 in-lb (8 Nm)	4.9"H x 5.3"W x 10.7"L (12.4 x 13.4 x 27.1 cm)	1.05" (2.7 cm)	2.4" (6.0 cm)	NEMA 4/4X (IP66/IP67)	3.8 lb (1.7 kg)
<b>AMB</b>	180 in-lb (20 Nm)	2.5"H x 3.5"W x 8.3"L (6.3 x 8.8 x 21.1 cm)	1.05" (2.7 cm)	2.2" (5.6 cm)	NEMA 2 (IP54) UL94-5V	2.2 lb (1.0 kg)
<b>AMB-N4</b>	160 in-lb (18 Nm)	4.9"H x 5.3"W x 10.7"L (12.4 x 13.4 x 27.1 cm)	1.05" (2.7 cm)	2.2" (5.6 cm)	NEMA 4/4X (IP66/IP67)	4.4 lb (2.0 kg)
<b>GMB</b>	360 in-lb (40 Nm)	2.9"H x 4.6"W x 9.0"L (7.3 x 11.9 x 23.0 cm)	1.05" (2.7 cm)	2.4" (6.0 cm)	NEMA 2 (IP54) UL94-5V	3.0 lb (1.1 kg)

### WIRING

24 VAC Transformer

Line voltage

4-20 mA control signal (-) (+)

2-10 VDC feedback signal (-) (+)

\*Resistor is 500Ω, 1/4 watt  
ZG-R01, required for 4-20 mA, leave out for 2-10 VDC

**LMB24-SR, NMB24-SR, AMB24-SR, GMB24-SR**  
4-20 mA, 2-10 VDC

24 VAC/VDC or 120 VAC

Control switch

Wire number

**LMB24-3, AMB24-3, GMB24-3**  
Two-position

24 VAC/VDC or 120 VAC

Tri-state control

Wire number

**LMB24-3, AMB24-3, GMB24-3**  
Tri-state

24 VAC/VDC

Signal common

2-10 VDC signal

Wire number

COM - Y

Slave

Parallel connection of four motors is possible. No more than 2 GMB motors on the same shaft.

**AMB24-SR, GMB24-SR**  
Modulating (2-10 VDC) with slave actuator

Code	Signal	Feedback
A01	2-10 VDC	2-10 VDC
A02	0-10 VDC	0-10 VDC
A07	0-5 VDC	2-10 VDC
A09	5-10 VDC	2-10 VDC
A16	2-6 VDC	2-10 VDC
A17	6-10 VDC	2-10 VDC
W01	PWM 0.59 - 2.95 sec	2-10 VDC
W02	PWM 0.02 - 5.00 sec	2-10 VDC
F01	Floating	2-10 VDC
J2	Two-position	2-10 VDC

**MFT Function Codes**

P1 P2 P3

1 kΩ  
1 W  
potentiometer

**P1000A**

S1 S2 S3 S4 S5 S6

N.C. N.O.

S1A and S2A  
S2A only  
S1A/S2A

Meets cULus and CSA requirements without the need of an electrical ground connection.

**P1000A/S1A/S2A**  
for GM, AM, NM, and LM Motors (add-on auxiliary functions)

### ORDERING INFORMATION

MODEL	DESCRIPTION
<b>LMB24-3</b>	Non-spring return 45 in-lb (5 Nm), 24 VAC/VDC two-position/tri-state control
<b>LMB24-3-S</b>	Non-spring return 45 in-lb (5 Nm), 24 VAC/VDC two-position/tri-state control, aux. switch
<b>LMB24-3-T</b>	Non-spring return 45 in-lb (5 Nm), 24 VAC/VDC two-position/tri-state control, terminals
<b>LMB24-MFT</b>	Non-spring return 45 in-lb (5 Nm), configurable control
<b>LMB24-MFT-C</b>	Non-spring return 45 in-lb (5 Nm), configurable control, pre-configured
<b>LMB24-SR</b>	Non-spring return 45 in-lb (5 Nm), 2-10 VDC proportional control
<b>LMB24-SR-T</b>	Non-spring return 45 in-lb (5 Nm), 2-10 VDC proportional control, terminals
<b>NMB24-3</b>	Non-spring return 90 in-lb (10 Nm), 24 VAC/VDC two-position/tri-state control
<b>NMB24-3-T-N4</b>	Non-spring return 70 in-lb (8 Nm), 24 VAC/VDC two-position/tri-state control, NEMA 4x Enclosure
<b>NMB24-MFT</b>	Non-spring return 90 in-lb (10 Nm), configurable control
<b>NMB24-MFT-C</b>	Non-spring return 90 in-lb (10 Nm), configurable control, pre-configured
<b>NMB24-SR</b>	Non-spring return 90 in-lb (10 Nm), 2-10 VDC proportional control
<b>NMB24-SR-T-N4</b>	Non-spring return 70 in-lb (8 Nm), 2-10 VDC proportional, terminals, NEMA 4x enclosure
<b>AMB24-3</b>	Non-spring return 180 in-lb (20 Nm), 24 VAC/VDC two-position/tri-state control
<b>AMB24-3-S</b>	Non-spring return 180 in-lb (20 Nm), 24 VAC/VDC two-position/tri-state control, aux. switch
<b>AMB24-3-T-N4</b>	Non-spring return 160 in-lb (18 Nm), 24 VAC/VDC two-pos./tri-state, NEMA 4x enclosure
<b>AMB24-3-T-N4H</b>	Non-spring return 160 in-lb (18 Nm), 24 VAC/VDC two-pos./tri-state, NEMA 4x encl. w/heater
<b>AMB24-MFT</b>	Non-spring return 180 in-lb (20 Nm), configurable control
<b>AMB24-MFT-C</b>	Non-spring return 180 in-lb (20 Nm), configurable control, pre-configured
<b>AMB24-SR</b>	Non-spring return 180 in-lb (20 Nm), 2-10 VDC proportional control
<b>AMB24-SR-T-N4</b>	Non-spring return 160 in-lb (18 Nm), 2-10 VDC proportional control, NEMA 4x enclosure
<b>AMB24-SR-T-N4H</b>	Non-spring return 160 in-lb (18 Nm), 2-10 VDC proportional control, NEMA 4x encl. w/heater
<b>GMB24-3</b>	Non-spring return 360 in-lb (40 Nm), 24 VAC/VDC two-position/tri-state control
<b>GMB24-MFT</b>	Non-spring return 360 in-lb (40 Nm), configurable control
<b>GMB24-MFT-C</b>	Non-spring return 360 in-lb (40 Nm), configurable control, pre-configured
<b>GMB24-SR</b>	Non-spring return 360 in-lb (40 Nm), 2-10 VDC proportional control