

Versatile and Powerful

- Minimum 45 in-lb torque in a compact package.

For damper areas up to 11 sq-ft*



LM Series - At A Glance

		LMB24-3	LMCB24-3	LMX24-3	LMB24-3-T	LMCB24-3-T	LMX24-3-T	LMB24-3-P5-T	LMB24-3-P10-T	LMB24-3-S	LMX120-3	LMB24-SR	LMCB24-SR	LMX24-SR	LMB24-SR-T	LMCB24-SR-T	LMX24-SR-T	LMX120-SR	LMB(X)24-MFT	LMX24-MFT95	LMB24-PC
Pages		200	202	204	200	202	204	200	200	200	206	208	210	212	208	210	212	214	216	218	220
Basic Product		●	●		●	●		●	●	●		●	●		●	●			●		
Flexible Product				●			●			●				●			●	●	●	●	●
Torque	45 in-lb [5 Nm]	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Angle of Rotation	95 degrees	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Power Supply	24 VAC/DC	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●		●	●	●
	100 to 240 VAC									●								●			
Control Input	On/Off, Floating Point	●	●	●	●	●	●	●	●	●											
	2 to 10 VDC (4 to 20mA)										●	●	●	●	●	●	●	●			
	Multi-Function Technology																		●		
	0 to 135Ω																			●	
	0 to 20V Phasecut																				●
Feedback	None	●	●	●	●	●	●			●	●	●			●	●	●				
	5 kΩ Potentiometer							●													
	10 kΩ Potentiometer								●												
	2 to 10 VDC												●	●					●		●
	Variable (0 to 10 VDC)																		●	●	
Running Time	95 seconds	●			●			●	●	●		●			●						●
	35 seconds		●			●						●				●					
	Adj. 35 to 150 seconds			●			●			●			●				●	●	●	●	●
Wiring	Plenum Rated Cable	●	●	●								●	●	●					●	●	●
	Appliance Rated Cable									●	●								●		
	Terminal Strip				●	●	●	●	●						●	●	●				
	Conduit Fitting	●	●	●						●	●	●	●	●					●	●	●
Auxiliary Switch	Built-In									●											
	Add-On	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Installation and Operation... (page 265).

*Based on 4 in-lb/ft² damper torque loading. Parallel blade. No edge seals.

LMB24-3 (-S)(-T)



On/Off-Floating Point Control, Non-Spring Return, Direct Coupled, 24 V



Torque min. 45 in-lb for control of damper surfaces up to 11 sq ft.

LMB24-3	LMB24-3.1 (bulk)	LMB24-3-P10-T
LMB24-3-T	LMB24-3-T.1 (bulk)	LMB24-3-S
LMB24-3-P5-T	LMB24-3-P5-T.1 (bulk)	

Application

For on-off and floating point control of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications.

The actuator is mounted directly to a damper shaft from 1/4" up to 5/8" in diameter by means of its standard universal clamp. Shafts up to 3/4" diameter can be accommodated by an accessory clamp.

Operation

The actuator is not provided with and does not require any limit switches, but is electronically protected against overload. The anti-rotation strap supplied with the actuator will prevent lateral movement.

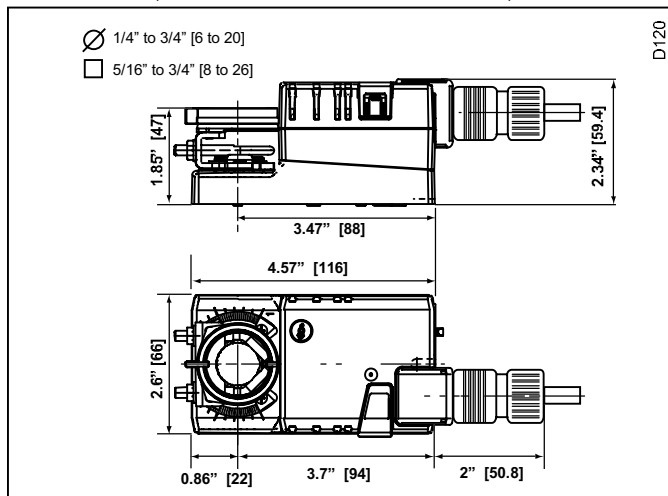
The LMB series provides 95° of rotation and a visual indicator which indicates position of the actuator. When reaching the damper or actuator end position, the actuator automatically stops. The gears can be disengaged with manual release on the actuator cover.

The LMB24-3... actuators use a sensorless Brushless DC motor, which is controlled by an Application Specific Integrated Circuit (ASIC). The ASIC monitors and controls the actuator's rotation and provides a digital rotation sensing (DRS) function to prevent damage to the actuator in a stall condition. Power consumption is reduced in holding mode.

The LMB24-3-S version is provided with 1 built-in auxiliary switch. This SPDT switch is provided for safety interfacing or signaling, for example, for fan start-up. The switching function is adjustable 0 to 95°. The auxiliary switch is double insulated so an electrical ground connection is not necessary.

Add on auxiliary switches or feedback potentiometers are easily fastened directly onto the actuator body for signaling and switching functions.

Dimensions (All numbers in brackets are in millimeters.)



Technical Data	LMB24-3... on/off-floating
Power Supply	24 VAC ± 20% 50/60 Hz 24 VDC ± 10%
Power Consumption	1.5 W (0.2 W)
Transformer Sizing	3 VA (Class 2 power source)
Electrical Connection	3 ft, 18 GA plenum rated cable 3 ft, 18 GA appliance rated cable (-S) 1/2" conduit connector
Overload Protection	electronic throughout 0 to 95° rotation
Control	on/off, floating point
Input Impedance	600Ω
Angle of Rotation	max. 95°, adjust. with mechanical stop
Torque	45 in-lb [5 Nm]
Direction of Rotation	reversible with switch
Position Indication	reflective visual indicator (snap-on)
Manual Override	external push button
Running Time	95 seconds, constant independent of load
Humidity	5 to 95% RH non condensing (EN 60730-1)
Ambient Temperature	-22°F to +122°F [-30°C to +50°C]
Storage Temperature	-40°F to +176°F [-40°C to +80°C]
Housing	NEMA 2/IP54
Housing Material	UL94-5VA
Agency Listings†	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1, CSA C22.2 No. 24-93, CE acc. to 89/336/EEC (and 2006/95/EC for -S versions)

Noise Level	<35dB(A)
Servicing	maintenance free
Quality Standard	ISO 9001
Weight	1.1lbs [0.5 Kg],

LMB24-3-S	
Auxiliary switch	Adj. 0° to 100°, SPDT 3 A (0.5A) @ 250 VAC
Weight	1.4lbs [0.6 Kg]

LMB24-3-P10-T	
Electrical connection	Screw terminal (for 26 to 14 GA wire)
Feedback	10 kΩ, 1W potentiometer

LMB24-3-P5-T bulk pack only	
Feedback	5 kΩ, 1W potentiometer
Housing	NEMA 1/IP20

LMB24-3-T	
Electrical connection	Screw terminal (for 26 to 14 GA wire)
Housing	NEMA 1/IP20

†Rated Impulse Voltage 800V, Type of action 1, (1.B for -S version), Control Pollution Degree 3.

Accessories

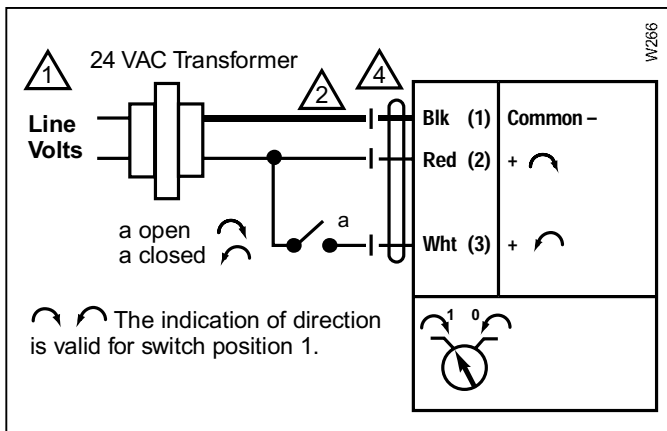
K-LM20	3/4" [20 mm] Shaft Clamp
AV6-20	Shaft Extension
ZG-LMSA	Shaft Adaptor for 1/2" Diameter Shafts
ZG-LMSA-1	Shaft Adaptor for 3/8" Diameter Shafts
ZS-T	Terminal Cover for NEMA 2
ZS-100	Weather Shield - Steel
ZS-150	Weather Shield - Polycarbonate
Tool-06	8 mm & 10 mm Wrench
S1A, S2A	Auxiliary Switch (es)
P370	Shaft Mount Auxiliary Switch
P...A	Feedback Potentiometers

Note: When using LMB24-3... actuators, only use accessories listed on this page.

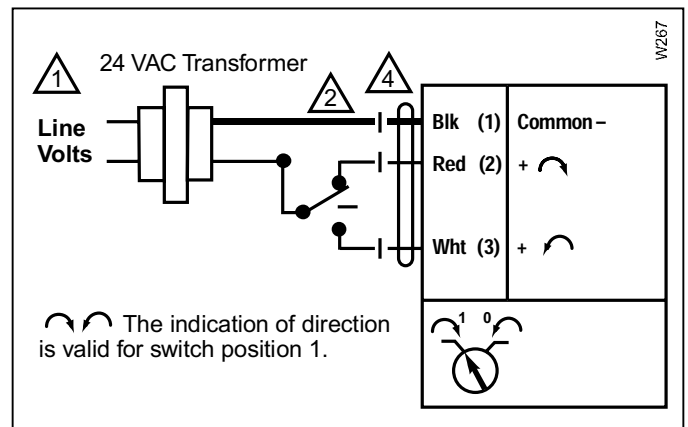
LMB24-3 - Typical Specification:

Floating point, on/off control damper actuators shall be electronic direct-coupled type, which require no crankarm and linkage and be capable of direct mounting to a shaft from 1/4" to 5/8". Shafts up to 3/4" diameter can be accommodate with an accessory clamp. Actuators shall have Brushless DC motor technology and be protected from overload at all angles of rotation. Actuators shall have reversing switch and manual override on the cover. If required, actuator will be provided with screw terminal strip for electrical connections (LMB24-3-T). If required, actuators shall be provided with one adjustable SPDT auxiliary switch. Actuators with auxiliary switches must be constructed to meet the requirements for double insulation so an electrical ground is not required to meet agency listings. Run time shall be constant and independent of torque. Actuators shall be cULus listed, have a 5-year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.

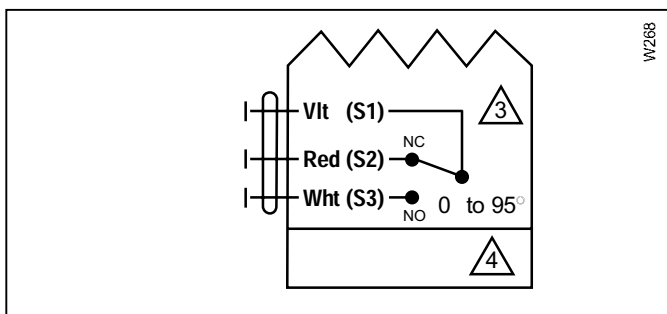
Wiring Diagrams



On/Off



Floating Point or On/Off control



Auxiliary Switch of LMB24-3-S

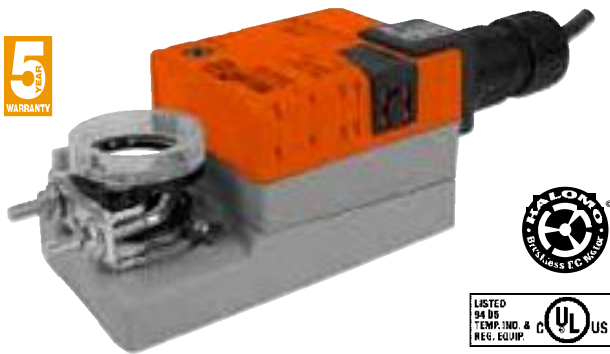
Notes:

- 1 Provide overload protection and disconnect as required.
- 2 Actuators may also be powered by 24 VDC.
- 3 For end position indication, interlock control, fan startup, etc., xMB24-3-S incorporates one built-in auxiliary switches: 1 x SPDT, 3A (0.5A) @250 VAC, UL listed, adjustable 0 to 95°.
- 4 Meets cULus requirements without the need of an electrical ground connection.

LMB24-SR (-T)



Proportional Control, Non-Spring Return, Direct Coupled, 24V, for 2 to 10 VDC and 4 to 20 mA



Torque min. 45 in-lb for control of damper surfaces up to 11 sq ft.

LMB24-SR LMB24-SR.1 (bulk)
LMB24-SR-T LMB24-SR-T.1 (bulk)

Application

For proportional modulation of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications.

The actuator is mounted directly to a damper shaft from 1/4" up to 5/8" in diameter by means of its universal clamp. Shafts up to 3/4" diameter can be accommodated by an accessory clamp.

The actuator operates in response to a 2 to 10 VDC, or with the addition of a 500Ω resistor, a 4 to 20 mA control input from an electronic controller or positioner. A 2 to 10 VDC feedback signal is provided for position indication or master-slave applications.

Operation

The actuator is not provided with and does not require any limit switches, but is electronically protected against overload. The anti-rotation strap supplied with the actuator will prevent lateral movement.

The LMB series provides 95° of rotation and a visual indicator indicates position of the actuator. When reaching the damper or actuator end position, the actuator automatically stops. The gears can be manually disengaged with a button on the actuator cover.

The LMB24-SR... actuators use a sensorless Brushless DC motor, which is controlled by an Application Specific Integrated Circuit (ASIC). The ASIC monitors and controls the actuator's rotation and provides a digital rotation sensing (DRS) function to prevent damage to the actuator in a stall condition. Power consumption is reduced in holding mode.

Add on auxiliary switches or feedback potentiometers are easily fastened directly onto the actuator body for signaling and switching functions

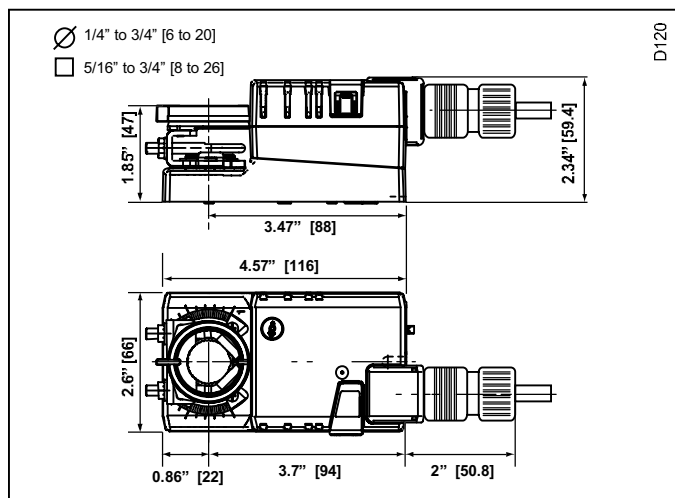
Technical Data	LMB24-SR
Power Supply	24 VAC ± 20% 50/60 Hz 24 VDC ± 10%
Power Consumption	1.5 W (0.4 W)
Transformer Sizing	3 VA (Class 2 power source)
Electrical Connection	3 ft, 18 GA plenum rated cable 1/2" conduit connector
Overload Protection	electronic throughout 0 to 95° rotation
Operating Range Y	2 to 10 VDC, 4 to 20 mA
Input Impedance	100 k (0.1 mA), 500Ω
Feedback Output U	2 to 10 VDC (max 0.5 mA)
Angle of Rotation	max. 95°, adjust. with mechanical stop
Torque	45 in-lb [5 Nm]
Direction of Rotation	reversible with switch. Actuator will move: =CCW with decreasing control signal (10 → 2V) =CW with decreasing control signal (10 → 2V)
Position Indication	reflective visual Indicator (snap-on)
Manual Override	external push button
Running Time	95 seconds, constant independent of load
Humidity	5 to 95% RH non condensing (EN 60730-1)
Ambient Temperature	-22°F to +122°F [-30°C to +50°C]
Storage Temperature	-40°F to +176°F [-40°C to +80°C]
Housing	NEMA 2/IP54
Housing Material	UL94-5VA
Agency Listings†	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1, CSA C22.2 No. 24-93, CE acc. to 89/336/EEC
Noise Level	<35dB(A)
Servicing	maintenance free
Quality Standard	ISO 9001
Weight	1.1 lbs [0.5 Kg]

LMB24-SR-T

Electrical connection	Screw terminal (for 26 to 14 GA wire)
Housing	NEMA 1/IP20

†Rated Impulse Voltage 800V, Type of action 1, Control Pollution Degree 3.

Dimensions (All numbers in brackets are in millimeters.)



Accessories

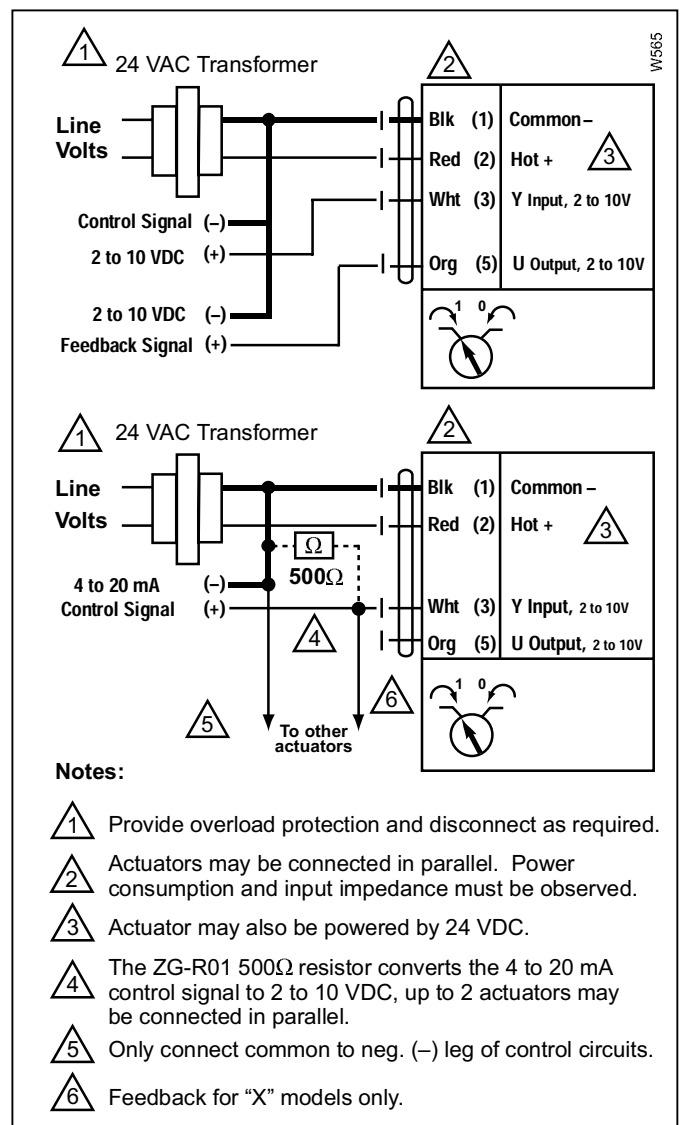
K-LM20	3/4" [20 mm] Shaft Clamp
AV6-20	Shaft Extension
ZG-LMSA	Shaft Adaptor for 1/2" Diameter Shafts
ZG-LMSA-1	Shaft Adaptor for 3/8" Diameter Shafts
ZS-T	Terminal Cover for NEMA 2
ZS-100	Weather Shield - Steel
ZS-150	Weather Shield - Polycarbonate
Tool-06	8 mm & 10 mm Wrench
S1A, S2A	Auxiliary Switch (es)
P370	Shaft Mount Auxiliary Switch
P...A	Feedback Potentiometers
SGA24	Min positioners in NEMA 4 housing
SGF24	Min positioners for flush panel mounting
PTA-250	Pulse Width Modulation Interface
IRM-100	Input Rescaling Module
ADS-100	Analog to Digital Switch
ZG-R01	Resistor for 4 to 20 mA Conversion
NSV24 US	Battery Back-Up Module
ZG-X40	Transformer

Note: When using LMB24-SR... actuators, only use accessories listed on this page.

LMB24-SR... - Typical Specification:

Proportional control damper actuators shall be electronic direct-coupled type, which require no crankarm and linkage and be capable of direct mounting to a shaft from 1/4" to 5/8". Shafts up to 3/4" diameter can be accommodate with an accessory clamp. Actuators must provide proportional damper control in response to a 2 to 10 VDC or, with the addition of a 500Ω resistor, a 4 to 20 mA control input from an electronic controller or positioner. Actuators shall have Brushless DC motor technology and be protected from overload at all angles of rotation. Actuators shall have reversing switch and manual override on the cover. If required, actuator will be provided with screw terminal strip for electrical connections (LMB24-SR-T). Run time shall be constant and independent of torque. A 2 to 10 VDC feedback signal shall be provided for position indication. Actuators shall be cULus listed, have a 5-year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.

Wiring Diagram



2 to 10 VDC and 4 to 20 mA control of LMB24-SR