

LMB(X)24-3(-S)(-P5)(-P10)(-T)

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



Technical Data	LMB(X)24-3(-S)(-P5)(-P10)(-T)
Power supply	24 VAC ± 20% 50/60 Hz 24 VDC ± 10%
Power consumption	1.5 W (0.2 W)
Transformer sizing	2.5 VA (Class 2 power source)
Electrical connection	18 GA plenum rated cable ½" conduit connector, protected NEMA 2 (IP54) 3 ft [1m] 10 ft [3m] 16 ft [5m]
Overload protection	electronic throughout 0 to 95° rotation
Control	on/off, floating point
Input impedance	600 Ω
Angle of rotation	max. 95°, adjustable 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	150, 95, 60, 45, or 35 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, UL enclosure type 2
Housing material	UL94-5VA
Agency listings†	cULus acc. to UL 60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EEC and 2006/95/EC
Noise level	<35dB(A)
Servicing	maintenance free
Quality standard	ISO 9001
Weight	1.1 lbs [0.5 kg]

LMB24-3-S	
Electrical connection	3 ft, 18 GA appliance rated cable 1/2" conduit connector
Auxiliary switch	adj. 0° to 100°, SPDT 3 A (0.5A) @ 250 VAC
Weight	1.4 lbs [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.

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

Models

LMB(X)24-3	LMB24-3.1 (bulk)	LMB24-3-P10-T
LMB(X)24-3-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

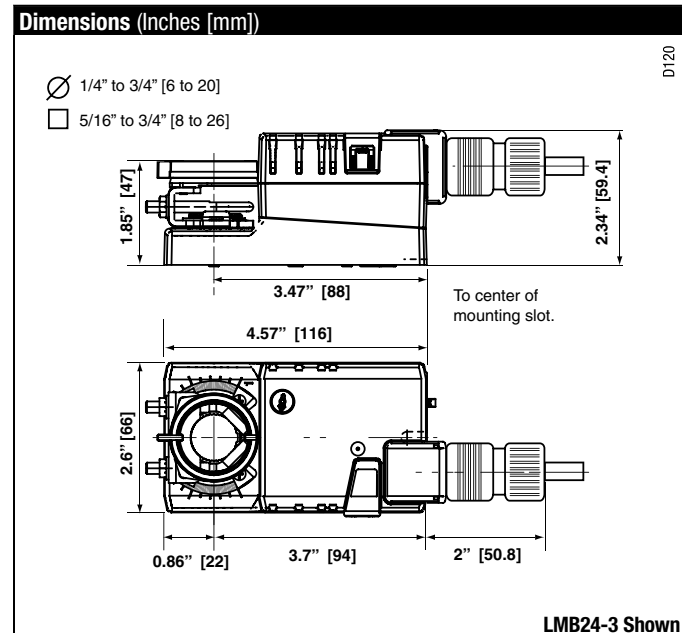
The actuator is not provided with and does not require any limit switches, but is electronically protected against overload. The anti-rotation strap supplied with the actuator will prevent lateral movement.

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 one 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.



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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 LMB(X)24-3... actuators, only use accessories listed on this page.

Typical Specification

Floating point, on/off control damper actuators shall be electronic direct-coupled type, which require no crank arm 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 [LMB(X)24-3-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

✂️ INSTALLATION NOTES

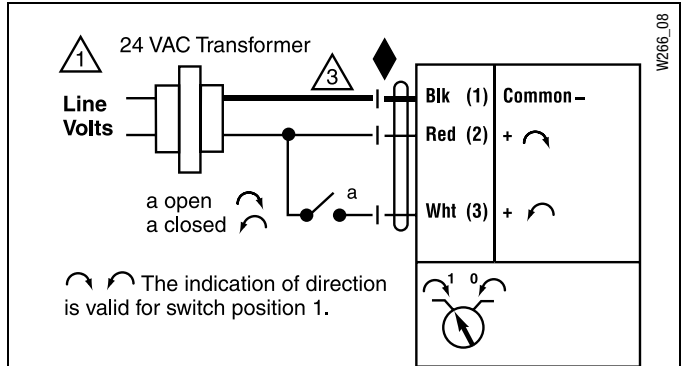
- 1 Provide overload protection and disconnect as required.
- 3 Actuators may also be powered by 24 VDC.
- 4 For end position indication, interlock control, fan startup, etc., xMB24-3-S incorporates one built-in auxiliary switches: 1 x SPDT, 3A (0.5A) @250 VAC, UL Approved, adjustable 0 to 95.

📄 APPLICATION NOTES

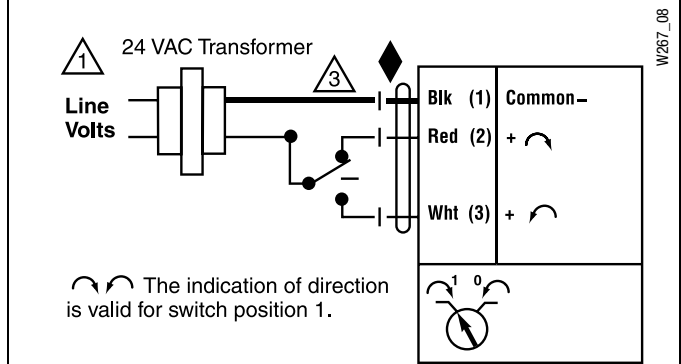
- ◆ Meets cULus or UL and CSA Standard requirements without the need of an electrical ground connection.

⚠️ WARNING Live Electrical Components!

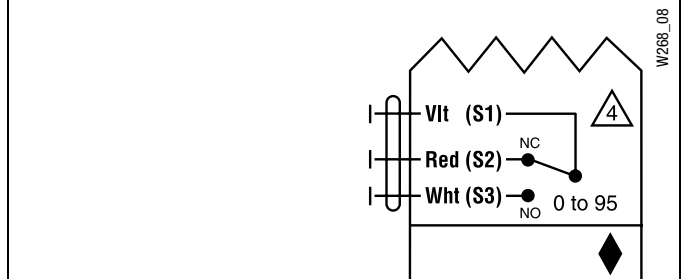
During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.



On/Off control



Floating Point or On/Off control



LMQB(X)24-1

On/Off, Non-Spring Return, 24 V



Technical Data	LMQB(X)24-1
Power supply	24 VAC \pm 20% 50/60 Hz 24 VDC \pm 10%
Power consumption	13 W (1.5 W)
Transformer sizing	23 VA (Class 2 power source) (I max 20A@5ms)
Electrical connection	18 GA plenum rated cable protected NEMA 2 (IP54) 3 ft [1m] 10 ft [3m] 16 ft [5m]
Overload protection	electronic throughout 0 to 95° rotation
Control	on/off
Input impedance	1000 Ω
Angle of rotation	min. 30°, max. 95°, adjust. with mechanical stop
Torque	35 in-lb [4 Nm]
Direction of rotation	reversible with switch
Position indication	reflective visual indicator (snap-on)
Manual override	external push button
Running time	2.5, 5 or 10 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, UL enclosure type 2
Housing material	UL94-5VA
Agency listings	cULus acc. to UL 60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EEC and 2006/95/EC
Noise level	<52 dB(A)
Servicing	maintenance free
Quality standard	ISO 9001
Weight	1.8 lbs [0.85 kg]

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

Torque min. 35 in-lb for control of damper surfaces up to 11 sq ft.

Application

For On/Off 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 ½" up to 1.05" in diameter by means of its standard universal clamp.

Operation

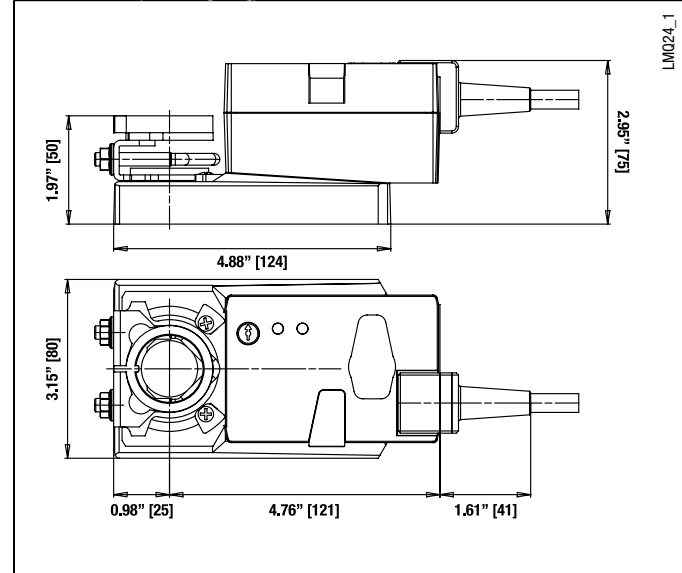
The actuator is not provided with and does not require any limit switches, but is electronically protected against overload. The anti-rotation strap supplied with the actuator will prevent lateral movement.

The LMQB(X) 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 LMQB(X)24-1 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.

Dimensions (Inches [mm])



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Accessories

K-NA	Reversible Clamp
ZG-101	Universal Mounting Bracket
ZG-104	Universal Mounting Bracket
ZG-NMA	Crank arm Adapter Kit
AU8-25	Universal Shaft Extension
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 LMQB(X)24-1 actuators, only use accessories listed on this page.

Typical Specification

On/Off control damper actuators shall be electronic direct-coupled type, which require no crank arm and linkage and be capable of direct mounting to a shaft from 1/2" to 1.05". 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. 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 Diagram
INSTALLATION NOTES

- Provide overload protection and disconnect as required.
- Actuators may also be powered by 24 VDC.

APPLICATION NOTES

- Meets cULus or UL and CSA Standard requirements without the need of an electrical ground connection.

WARNING Live Electrical Components!

During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

