

# LMB24-3 Technical Data Sheet

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



| Technical Data                     |   |
|------------------------------------|---|
| Power Supply                       | 24 VAC, ±20%, 50/60 Hz, 24 VDC, ±10%  |
| Power consumption in operation     | 1.5 W   |
| Power consumption in rest position | 0.2 W   |
| Transformer sizing                 | 2.5 VA (class 2 power source)   |
| Shaft Diameter                     | 1/4...5/8" round, centers on 5/8", 3/4" clamp available   |
| Electrical Connection              | 18 GA plenum cable with 1/2" conduit connector, degree of protection NEMA 2 / IP54, 3 ft [1 m] 10 ft [3 m] and 16ft [5 m] |
| Overload Protection                | electronic throughout 0...95° rotation  |
| Input Impedance                    | 600 Ω   |
| Angle of rotation                  | Max. 95°, adjustable with mechanical stop   |
| Torque motor                       | 45 in-lb [5 Nm]   |
| Direction of motion motor          | selectable with switch 0/1  |
| Position indication                | Mechanically, 30...65 mm stroke   |
| Manual override                    | external push button  |
| Running Time (Motor)               | default 95 s, variable 35, 45, 60, 150 s, constant, independent of load   |
| Ambient humidity                   | max. 95% r.H., non-condensing   |
| Ambient temperature                | -22...122°F [-30...50°C]  |
| Storage temperature                | -40...176°F [-40...80°C]  |
| Degree of Protection               | IP54, NEMA 2, UL Enclosure Type 2   |
| Housing material                   | UL94-5VA  |
| Agency Listing                     | cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU                                 |
| Noise level, motor                 | 35 dB(A)  |
| Servicing                          | maintenance-free  |
| Quality Standard                   | ISO 9001  |
| Weight                             | 1.2 lb [0.53 kg]  |

†Rated Impulse Voltage 800V, Type of Action 1.AA.B, Control Pollution Degree 3.

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

## 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

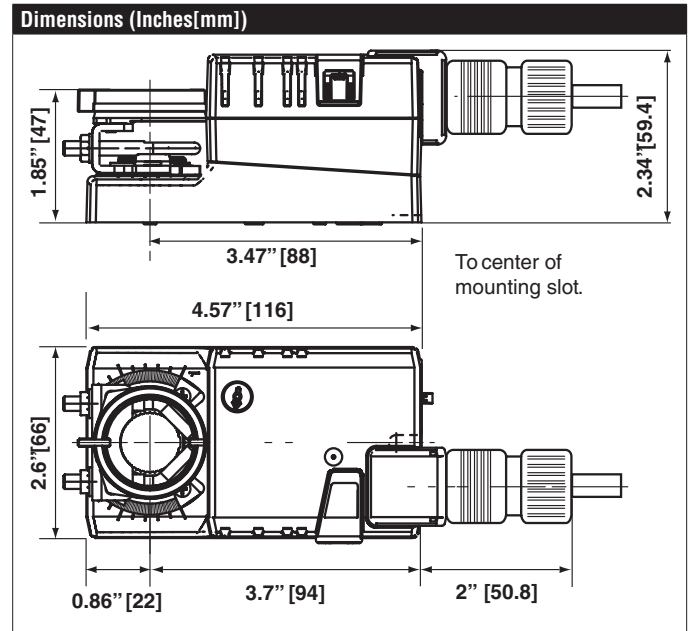
The actuator is not provided with and does not require any limit switches, but is electronically protected against overload. The anti-rotation strap supplied with the actuator will prevent lateral movement.

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.

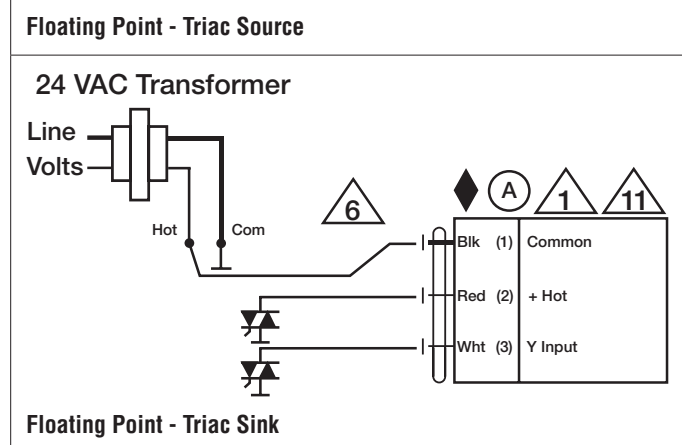
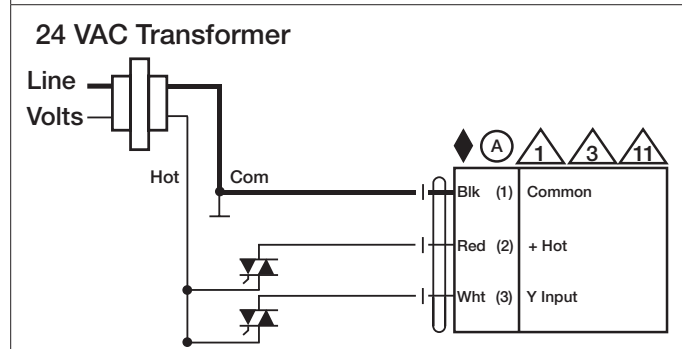
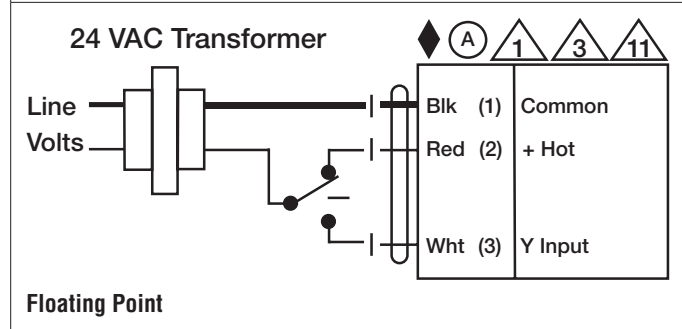
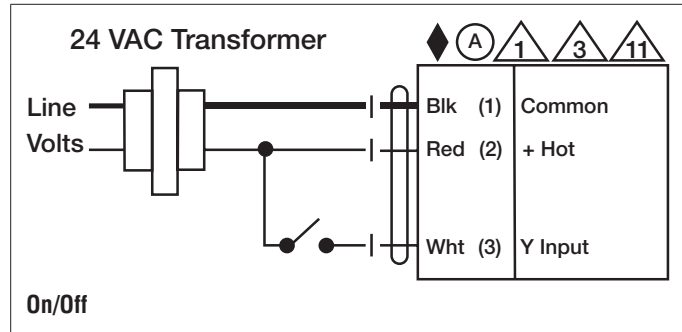
The LMB24-3-S version is provided with one built-in auxiliary switch. This SPDT switch is provided for safety interfacing or signaling, for example, for fan start-up. The switching function is adjustable 0 to 95°. The auxiliary switch is double insulated so an electrical ground connection is not necessary.

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   |  |
|---------------|--|
| KH8           | Damper crank arm   |
| KH10          | Damper crank arm   |
| KG8           | Ball joint   |
| KG10A         | Ball joint   |
| SH8           | Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameter).      |
| SH10          | Push rod for KG10A ball joint (36" L, 3/8" diameter).            |
| ZG-DC1        | Damper clip for damper blade, 3.5" width.                        |
| ZG-DC2        | Damper clip for damper blade, 6" width.                          |
| ZS-100        | Weather shield - galvaneal 13x8x6" (LxWxD).                      |
| ZS-101        | Base plate for ZS-100.   |
| ZS-150        | Weather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).            |
| AV8-25        | Shaft extension  |
| TF-P          | Anti-rotation bracket TF/NKQ/AM/NM/LM.                           |
| ZG-100        | Univ. right angle bracket 17"x11-1/8"x6" (HxWxbase).             |
| ZG-101        | Univ. right angle bracket 13x11x7-7/16" (HxWxbase).              |
| TOOL-06       | 8 mm and 10 mm wrench.   |
| Z-SPA         | Adapter  |
| PS-100        | Low voltage and control signal simulator.                        |
| K-LM10        | LMB(X) clamp (3/8").   |
| K-LM12        | LMB(X) clamp (1/2").   |
| K-LM16        | Standard LMB(X) clamp (5/8").                                    |
| K-LM20        | LMB(X) clamp (3/4").   |
| ZG-LMSA       | Shaft extension for 1/2" diameter shafts (3" L).                 |
| ZG-LMSA-1     | Shaft extension for 3/8" diameter shafts (4" L).                 |
| ZG-LMSA-1/2-5 | Shaft extension for 1/2" diameter shafts (5" L).                 |
| AV6-20        | Shaft extension  |
| S1A           | Auxiliary switch for damper actuators and rotary actuators       |
| S2A           | Auxiliary switch for damper actuators and rotary actuators       |
| P475          | Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.       |
| P475-1        | Shaft mount, non-Mercury aux. switch for 1" dia. shafts.         |
| P140A GR      | Feedback potentiometer for damper actuators and rotary actuators |
| P500A GR      | Feedback potentiometer for damper actuators and rotary actuators |
| P1000A GR     | Feedback potentiometer for damper actuators and rotary actuators |
| P2800A GR     | Feedback potentiometer for damper actuators and rotary actuators |
| P5000A GR     | Feedback potentiometer for damper actuators and rotary actuators |
| P10000A GR    | Feedback potentiometer for damper actuators and rotary actuators |
| NSV24 US      | Battery back-up module for non-spring return actuators.          |
| NSV-BAT       | 12V 1.2AH battery (two required for NSV24 US).                   |
| ZG-X40        | 120 to 24 VAC, 40 VA transformer.                                |
| TF-CC US      | Cable conduit connector, 1/2".                                   |
| 43442-00001   | Cable gland (for NEMA 4 models).                                 |



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

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### 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

-  Actuators with appliance cables are numbered.
-  Provide overload protection and disconnect as required.
-  Actuators may be connected in parallel. Power consumption and input impedance must be observed.
-  Actuators may also be powered by 24 VDC.
-  Two built-in auxiliary switches (2x SPDT), for end position indication, interlock control, fan startup, etc.
-  Only connect common to negative (-) leg of control circuits.
-  Actuators Hot wire must be connected to the control board common. Only connect common to neg. (-) leg of control circuits. Terminal models (-T) have no-feedback.
-  A 500  $\Omega$  resistor (ZG-R01) converts the 4 to 20 mA control signal to 2 to 10 VDC.
-  Actuators may be connected in parallel if not mechanically linked. Power consumption and input impedance must be observed.