

## Belimo LMB24-3-T

# Belimo LMB24-3-T Damper Actuator Instruction Manual

Non-Spring Return, Floating Signal, 24VAC/DC

## 1. INTRODUCTION

This manual provides comprehensive instructions for the installation, operation, and maintenance of the Belimo LMB24-3-T non-spring return damper actuator. Designed for precise control in HVAC systems, this actuator offers reliable performance for various damper applications. Please read this manual thoroughly before installation and operation to ensure safe and efficient use.

## 2. SAFETY INFORMATION

Always observe the following safety precautions to prevent personal injury and damage to the equipment:

- Installation and wiring must be performed by qualified personnel in accordance with all local and national electrical codes.
- Disconnect power before installing, servicing, or removing the actuator.
- Do not operate the actuator beyond its specified voltage and torque limits.
- Ensure proper grounding to prevent electrical shock.
- Protect the actuator from moisture and extreme temperatures outside its operating range.

## 3. PRODUCT OVERVIEW

The Belimo LMB24-3-T is a direct-mount, non-spring return damper actuator designed for modulating control of air dampers in HVAC systems. It operates on 24VAC/DC power and provides a 0-95 degree rotation with a 45 in-lb (5 Nm) torque output. Its floating signal input allows for precise positioning.



**Figure 1:** Belimo LMB24-SR Damper Actuator. This image displays the Belimo LMB24-SR non-spring return damper actuator. The actuator is orange and grey, showing its direct mount mechanism and electrical connection block. Visible text on the actuator includes 'BELIMO', 'Made in Switzerland', 'LMB24-SR', '5Nm 45in-lb', '24VAC/DC', '150s', '2VA 1W', 'Input 2... 10V', 'NEMA2 IP54', and certification marks like UL and CE. A wiring diagram is clearly visible on the black connection block, detailing connections for COM I, RD, WH Y, OG U, PK C1, and GY C2.

### Key Features:

- **Model:** LMB24-3-T (Image shows LMB24-SR, which is a similar model)
- **Torque:** 45 in-lb (5 Nm)
- **Power Supply:** 24VAC/DC
- **Rotation Angle:** 0-95 Degrees
- **Signal Type:** Floating
- **Return Type:** Non-Spring Return
- **Protection Class:** NEMA2 IP54
- **Run Time:** 150 seconds (for 90 degrees)
- **Power Consumption:** 2VA / 1W
- **Certifications:** UL Listed, CE

## 4. SETUP AND INSTALLATION

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Follow these general steps for proper installation. Refer to specific wiring diagrams for your application.

### 4.1 Mounting

1. Ensure the damper shaft is clean and free of obstructions.
2. Slide the actuator onto the damper shaft. The direct mount design allows for easy attachment.
3. Secure the actuator firmly to the damper shaft using the provided hardware. Ensure the actuator is aligned correctly with the damper blade's movement.

### 4.2 Wiring

The actuator requires a 24VAC/DC power supply. The floating signal input allows for control based on the duration of the control signal. Refer to the wiring diagram on the actuator (as shown in Figure 1) for specific terminal connections.

**Typical Wiring (refer to actuator label for exact pinout):**

- 1 BK (Black):** COM I (Common Input)
- 2 RD (Red):** ~+ (Power Supply +)
- 3 WH (White):** Y ~+ (Control Signal Input)
- 5 OG (Orange):** U (Feedback Signal Output)
- 6 PK (Pink):** C1 (Auxiliary Contact 1)
- 7 GY (Grey):** C2 (Auxiliary Contact 2)

Ensure all connections are secure and insulated. Verify correct voltage before applying power.

## 5. OPERATING INSTRUCTIONS

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The LMB24-3-T operates with a floating control signal. This means the actuator's position is determined by the duration of the control signal applied to the 'Y' input (White wire) relative to the common. The actuator

will rotate to its fully open or closed position based on the signal direction and duration.

- Applying a signal to 'Y' will cause the actuator to rotate in one direction.
- Reversing the polarity of the signal (or applying a signal to an alternative input if available) will cause rotation in the opposite direction.
- Removing the signal will cause the actuator to hold its last position.
- The actuator has a mechanical stop for setting the minimum and maximum rotation limits within the 0-95 degree range.

## 6. MAINTENANCE

The Belimo LMB24-3-T actuator is designed for maintenance-free operation. However, periodic inspection is recommended to ensure optimal performance:

- **Annual Inspection:** Check for any loose connections or signs of wear on the wiring.
- **Cleaning:** Keep the exterior of the actuator clean and free of dust or debris. Do not use abrasive cleaners or solvents.
- **Damper Operation:** Periodically verify that the damper operates smoothly and without excessive resistance, which could strain the actuator.

## 7. TROUBLESHOOTING

If the actuator is not functioning as expected, refer to the following troubleshooting guide:

Problem	Possible Cause	Solution
Actuator does not move	No power supply Incorrect wiring Damper jammed	Check power connections and voltage Verify wiring against diagram Inspect damper for obstructions
Actuator moves in wrong direction	Incorrect control signal polarity	Reverse control signal polarity (if applicable) or check control logic
Actuator does not reach full travel	Mechanical stops incorrectly set Damper obstruction Insufficient control signal duration	Adjust mechanical stops Clear damper obstruction Ensure control signal is applied for sufficient time
Actuator makes unusual noise	Damper binding Internal damage	Check damper for smooth operation Contact Belimo support if noise persists

## 8. SPECIFICATIONS

Parameter	Value
Model	LMB24-3-T
Power Supply	24 VAC/DC
Torque	45 in-lb (5 Nm)

Parameter	Value
Rotation Angle	0-95 Degrees
Control Signal	Floating
Run Time (for 90°)	150 seconds
Power Consumption	2 VA / 1 W
Protection Class	NEMA2 / IP54
Product Dimensions	2.28 x 2.64 x 2.28 inches
Weight	1 Pound
Certifications	UL Listed, CE

## 9. WARRANTY

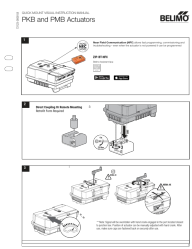
The Belimo LMB24-3-T Damper Actuator comes with a **5-year warranty** from the date of purchase, covering defects in materials and workmanship under normal use. For detailed warranty terms and conditions, please refer to the official Belimo warranty statement or contact Belimo customer support.

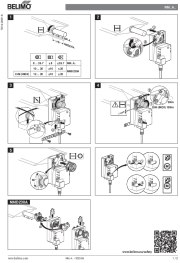
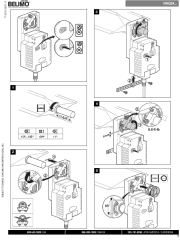
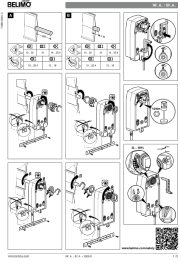
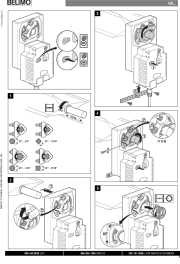
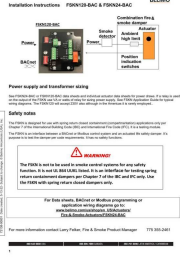
## 10. SUPPORT

For technical assistance, product inquiries, or warranty claims, please contact Belimo customer support. Have your product model number and serial number ready when contacting support to expedite the process.

You can find contact information on the official Belimo website or through your local distributor.

### Related Documents - LMB24-3-T

	<p><a href="#">Belimo PKB and PMB Actuators Quick Mount Visual Instruction Manual</a></p> <p>Visual installation guide for Belimo PKB and PMB actuators, detailing quick mounting, wiring diagrams, NFC features, and manual override procedures. Includes safety warnings and technical notes.</p>
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	<p><a href="#">Belimo NM..A.. Series Actuator Installation Guide</a></p> <p>Comprehensive installation instructions for Belimo NM..A.. series damper actuators, detailing mounting procedures, dimensional specifications, torque requirements, manual override operation, and electrical wiring diagrams for various models.</p>
	<p><a href="#">Belimo NKQ24... Damper Actuator Installation Instructions</a></p> <p>Comprehensive installation guide for the Belimo NKQ24... series damper actuator, covering wiring, mounting, dimensions, and setup procedures.</p>
	<p><a href="#">BELIMO NF..A.. / SF..A.. Actuator Installation and Wiring Guide</a></p> <p>Comprehensive guide for BELIMO NF..A.. and SF..A.. series control actuators, covering installation, wiring diagrams, and technical specifications for various voltage and communication protocols.</p>
	<p><a href="#">Belimo GK Damper Actuator Installation and Operation Guide</a></p> <p>Comprehensive guide for installing and operating Belimo GK series damper actuators, covering wiring, fail-safe settings, and typical pre-charging times.</p>
	<p><a href="#">Belimo FSKN120-BAC &amp; FSKN24-BAC Installation Instructions</a></p> <p>Installation guide for Belimo FSKN120-BAC and FSKN24-BAC fire and smoke damper actuator controllers. Covers wiring, setup, safety warnings, LED indicators, dip switch settings, and operational procedures for BACnet and Modbus networks.</p>