Belimo 90 Second

Belimo 90 Second, 45 in-lb Actuator Instruction Manual

Introduction

This manual provides essential information for the safe and efficient installation, operation, and maintenance of the Belimo 90 Second, 45 in-lb Actuator. Please read this manual thoroughly before using the product to ensure proper function and longevity.

Safety Information

General Safety: Always follow local codes and regulations. Disconnect all power to the system before performing any installation, wiring, or maintenance. Only qualified personnel should install and service this device.

Electrical Safety: Ensure proper wiring and grounding. Avoid contact with live electrical components. Incorrect wiring can lead to electric shock or damage to the actuator and connected equipment.

Mechanical Safety: Be aware of moving parts during operation. Do not attempt to force the actuator manually unless a specific manual override function is provided and power is disconnected. Keep hands and tools clear of the shaft and linkage during operation.

Product Overview

The Belimo 90 Second, 45 in-lb Actuator is a robust and reliable device designed for precise control in various industrial and HVAC applications, such as operating dampers or valves. It provides a nominal torque of 45 in-lb (approximately 5 Nm) and completes its full stroke in approximately 90 seconds.

Key Features:

- 45 in-lb (5 Nm) torque output
- 90-second run time for full stroke
- AC/DC 24V 50/60 Hz power supply
- NEMA 1 enclosure type for indoor use
- Screw mount installation

Actuator Components:

This image displays the front view of the Belimo actuator. Visible components include the main housing, the shaft connection mechanism (yellow ring), and the electrical connection points. The product label clearly indicates specifications such as AC/DC 24V power supply, 5 Nm torque, and 90-second run time.

This image shows a side view of the actuator, highlighting the robust casing and the mechanical linkage for shaft rotation. The mounting bracket area is also visible, demonstrating the design for secure attachment.

Setup and Installation

Mounting: The actuator is designed for screw mount installation. Ensure the mounting surface is stable, flat, and capable of securely supporting the actuator's weight and operational forces. Use appropriate fasteners for the mounting surface material.

Shaft Connection: Securely attach the actuator to the damper shaft or other controlled mechanism. Ensure proper alignment to prevent undue stress on the actuator or the controlled device. The shaft connection should be firm to avoid slippage during operation.

Electrical Wiring:

1. **Disconnect Power:** Always disconnect all power to the system before performing any wiring.

2. **Connect Power Supply:** Connect the AC/DC 24V power supply to the designated terminals. Refer to the wiring diagram printed on the actuator label for specific connections. The label indicates terminals for '1 Comm', '2 Close', and '3 Open', suggesting a 3-wire control scheme.
3. **Secure Connections:** Ensure all electrical connections are tight and secure. The connector type is screw terminals. Verify that wiring complies with all local electrical codes and standards.

This image provides another side perspective of the actuator, specifically highlighting the electrical terminal block and the NEMA 1 enclosure details. This view is crucial for identifying the correct wiring points.

Operating Instructions

Once the actuator is correctly installed and wired, it will respond to control signals to move its shaft, thereby operating the connected damper or valve.

Initial Power-Up: Upon initial application of power, the actuator may perform a self-calibration cycle. Observe its movement to ensure it operates smoothly and without obstruction throughout its full range of motion.

Control Signals: The actuator operates based on electrical control signals. For this model, the '1 Comm', '2 Close', and '3 Open' terminals suggest a control method where applying power to '2 Close' or '3 Open' (relative to '1 Comm') will drive the actuator to the respective position. Consult your system's control diagram for specific signal requirements.

Manual Override: If your specific actuator model is equipped with a manual override lever or button, refer to the markings on the device for its operation. Always ensure power is disconnected before attempting any manual override to prevent injury or damage.

Maintenance

The Belimo 90 Second, 45 in-lb Actuator is designed for long-term, maintenance-free operation under normal environmental conditions. However, periodic inspection is recommended to ensure optimal performance and longevity.

Periodic Inspection:

- Annually inspect the actuator for any signs of physical damage, corrosion, or excessive wear.
- Check all electrical connections for tightness and ensure there are no signs of corrosion or

overheating.

- Verify the smooth operation of the shaft and the connected mechanism. Ensure there are no obstructions preventing full travel.
- Confirm that all mounting screws are secure and the actuator is firmly attached.

Important: Do not attempt to lubricate internal components or disassemble the actuator. Doing so may void the warranty and cause damage to the unit.

Troubleshooting

This section provides solutions to common operational issues. For problems not listed or if issues persist, contact qualified service personnel or Belimo technical support.

Problem	Possible Cause	Solution
Actuator does not move	No power supply; incorrect wiring; faulty control signal; internal fault	Check power supply voltage and connections; verify wiring against diagram; test control signal source; if all checks fail, contact support
Actuator moves erratically or not to full stroke	Loose electrical connections; unstable control signal; mechanical obstruction; incorrect end-stop settings (if applicable)	Secure all connections; check control signal stability; inspect for physical obstructions; verify end-stop adjustments
Actuator makes unusual noise	Mechanical obstruction; worn gears; internal damage	Inspect for external obstructions; if noise persists and is internal, contact service personnel
Actuator is hot to the touch	Overload; continuous operation without rest; incorrect voltage	Check for mechanical binding or overload; ensure proper duty cycle; verify correct supply voltage

Specifications

Feature	Detail
Brand	Belimo
Model Number	90 Second
Torque	45 in-lb (5 Nm)
Run Time	90 seconds
Voltage	AC/DC 24V 50/60 Hz (as per product label)
Power Consumption	2.0 VA / 1.5 W
Connector Type	Screw

Feature	Detail
Number of Contacts	2 (Control: 1 Comm, 2 Close, 3 Open)
Mounting Type	Screw Mount
Enclosure Type	NEMA 1
Manufacturer	Belimo
Date First Available	June 22, 2018

Warranty and Support

Warranty information for this specific product is not detailed in the provided data. For comprehensive warranty terms, conditions, and duration, please refer to the official Belimo website or contact your authorized Belimo dealer or distributor.

For technical assistance, troubleshooting beyond this manual, or to inquire about service, please contact Belimo customer service or a certified technician. Ensure you have your product model number and any relevant purchase information available when seeking support.