M9104

Generic M9104 24V Floating Non-Spring Return Actuator (35 lb-in) Instruction Manual

1. Introduction

This manual provides essential information for the installation, operation, and maintenance of the Generic M9104 Series 24V Floating Non-Spring Return Actuator. This direct-mount electric actuator is designed for precise control in various HVAC applications, including Variable Air Volume (VAV) boxes, Variable Volume and Temperature (VVT) two-position zone applications, and small to medium-sized dampers.

The M9104 Series operates on AC 24V power and provides floating control. It delivers a running torque of 35 lb·in (4 N·m) with a nominal travel time of 60 seconds at 60 Hz (72 seconds at 50 Hz) for 90 degrees of rotation. Its compact size facilitates easy installation on round shafts up to 1/2 inch (13 mm) in diameter or 3/8 inch (10 mm) square shafts.

2. Safety Information

Read all instructions carefully before installing or operating this device. Failure to follow these instructions may result in product damage, property damage, or personal injury.

- **Electrical Hazard:** Disconnect power before installation or servicing to prevent electrical shock or equipment damage.
- **Qualified Personnel:** Installation and servicing must be performed by trained, qualified personnel.
- **Environmental Conditions:** Ensure the operating environment is within the specified temperature and humidity ranges.
- **Proper Mounting:** Mount the actuator securely to prevent vibration and ensure proper operation.
- **Wiring:** Follow all local and national electrical codes. Ensure correct wiring connections for 24V AC power.

3. Specifications

Model Number	M9104-AGA-2S
Actuator Type	Floating Point, Non-Spring Return
Voltage	24V AC
Running Torque	35 lb·in (4 N·m)
Nominal Travel Time (90°)	60 seconds (60 Hz), 72 seconds (50 Hz)
Shaft Compatibility	Round shaft up to 1/2 in. (13 mm), Square shaft 3/8 in. (10 mm)

Dimensions (L x W x H)	1 x 1 x 1 inches

4. Setup and Installation

The M9104 actuator is designed for direct mounting. Ensure the damper shaft is clean and free of obstructions before installation.

4.1 Mounting the Actuator

1. Position the actuator on the damper shaft. The actuator is compatible with round shafts up to 1/2 inch (13 mm) or 3/8 inch (10 mm) square shafts.
2. Secure the actuator to the shaft using the provided mounting hardware. Ensure a tight fit to prevent slippage.
3. Verify that the actuator can rotate freely through its full range of motion without obstruction.

Figure 1: Rear view of the M9104 actuator, illustrating the mounting plate and shaft coupling mechanism. This view is crucial for understanding how the actuator attaches to a damper shaft.

4.2 Wiring

WARNING: Disconnect all power before performing any wiring connections. Incorrect wiring can damage the actuator or connected equipment.

- The M9104-AGA-2S model is equipped with plenum cables for wiring.
- Connect the actuator to a 24V AC power source according to the wiring diagram provided with your specific unit (refer to product documentation for detailed diagrams).
- Ensure all connections are secure and insulated.
- The actuator utilizes floating control, typically requiring three wires: common, open, and close signals.

Figure 2: Side view of the M9104 actuator, showing the integrated plenum cable for electrical connections. This image helps identify the wiring entry point and overall compact design.

5. Operating Instructions

The M9104 actuator provides floating control, meaning its position is determined by the duration of power applied to its 'open' or 'close' terminals. It does not have a spring return function, so it will remain in its last commanded position upon power loss.

- **Floating Control:** The actuator moves to an open or closed position based on a continuous 24V AC signal to the respective control input.
- **Positioning:** To move the damper, apply 24V AC to the 'open' terminal to drive it towards the open position, or to the 'close' terminal to drive it towards the closed position. Remove power from both control terminals to stop the actuator at its current position.
- **Travel Time:** A full 90-degree rotation takes approximately 60 seconds (at 60 Hz). Adjust the duration of the control signal to achieve desired intermediate positions.

6. Maintenance

The M9104 actuator is designed for reliable, maintenance-free operation under normal conditions. However, periodic checks can help ensure optimal performance.

- **Visual Inspection:** Periodically inspect the actuator for any signs of physical damage, loose connections, or excessive dust accumulation.
- **Mounting Security:** Ensure the actuator remains securely mounted to the damper shaft. Tighten any loose mounting hardware if necessary.
- **Wiring Integrity:** Check wiring connections for corrosion or damage. Ensure insulation is intact.
- **Operation Check:** Verify that the actuator moves smoothly through its full range of motion without binding or unusual noises.

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; Damaged actuator.	Check 24V AC power supply; Verify wiring connections; Replace actuator if damaged.
Actuator moves in the wrong direction.	Incorrect wiring of open/close signals.	Reverse the open and close control wires.
Actuator makes unusual noises or binds.	Damper shaft obstruction; Loose mounting; Internal damage.	Inspect damper for obstructions; Tighten mounting hardware; Replace actuator if internal damage is suspected.
Actuator does not reach full open/close position.	Damper mechanical stops; Insufficient control signal duration.	Check damper for mechanical limits; Ensure control signal is applied for the full travel time (approx. 60 seconds for 90°).

8. Warranty and Support

For specific warranty information, please refer to the documentation provided at the time of purchase or contact your supplier. For technical support, please reach out to the manufacturer or authorized distributor.