

VA(M)-35 Series —35 lb-in (4 Nm) Electric Actuator

IOM Manual



Table of Contents

VA(M)-35 Series - Installation, Operation and Maintenance Manual

Technical Specifications	2
Application/Warnings	3
Installation/Mounting	4, 5
Wiring/Dimensions	6

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VA(M)-35 Series - Installation, Operation & Maintenance Manual

Technical Specifications - VA(M)24-35 Series Actuator				
Type	Actuator Models	VA24-35-P	VA24-35-PTO	VAM24-35-P
		Non-Spring Return - Floating & On/Off (relay required)	Non-Spring Return - Floating with Time-Out & On/Off (relay required)	Non-Spring Return - Modulating
Electrical	Torque	35 lb-in. (4 Nm)		
	Operating Voltage	24 VAC +25%/-20% at 50/60 Hz		
	Power Consumption	2.3 VA	3.0 VA	2.9 VA
	Input Signal	24 VAC +25%/-20% at 50/60 Hz	24 VAC +25%/-20% at 50/60 Hz, with Time-Out	0(2) to 10 VDC or 0(4) to 20 mA with field-furnished 500 ohm resistor
	Input Impedance	N/A		200k Ohms
	Equipment Rating	Class 2 or Safety Extra-Low Voltage (SELV)		
	Feedback Signal	N/A		0 to 10 VDC or 2 to 10 VDC for 90° (10 VDC at 1 mA), Corresponds to input signal span selection
	Electrical Connection	48 in. (1.2 m) UL 444 Type CMP Plenum Rated cable with 19 AWG (0.75 mm²) conductors and 1/4 in. (6 mm) ferrule ends and Connector for 3/8 in. (9.5 mm) Flexible Metal Conduit.		
Operation	Manual Override	External Push Button		
	Time Out feature	N/A	Electronic stall detection ensures higher reliability by deactivating the actuator motor when a stall condition is detected	N/A
	Runtime for 90° of Rotation	60 Seconds at 60 Hz / 72 Seconds at 50 Hz		
	Rotation Range	93° ±3°, CW or CCW		
	Cycle Life	100,000 Full Stroke Cycles; 2,500,000 repositions at rated running torque		
	Mechanical Connections	Round Shafts - Up to 1/2 in. (13 mm) Square Shafts - Up to 3/8 in. (10 mm)		
Environmental	Enclosure	NEMA 2 (IP42)		
	Ambient Conditions (Non-Condensing)	Operating — -4 to 140°F (-20 to 60°C); 90% RH Max. Storage — -20 to 150°F (-29 to 66°C); 90% RH Max.		
	Audible Noise Rating	35 dBA Nominal at 39-13/32 in. (1 meter)		
	Dimensions	5.16 x 2.81 x 2.06 in. (131 x 71 x 52 mm)		
	Weight	1.25 lb (0.55 kg)		
Conditions	Agency Certifications	United States/Canada – United States UL Listed, File E27734, CCN XAPX (United States) and XAPX7 (Canada) Actuator Housing is Plenum Rated per CSA C22.2 No. 236/UL 1995, Heating and Cooling Equipment		
		Europe – CE Mark - Product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC and the Low Voltage Directive 2006/95/EC		
		Australia/New Zealand – C-Tick Mark Australia/NZ Emissions Compliant		
Warranty	5 Years limited from time of shipment.			

Warning - These actuators are designed for use only in conjunction with operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add safety devices or alarm systems that protect against, and/or warn of, control failure.

To avoid excessive wear or drive time on the motor, use a controller and/or software that provides a time-out function to remove the signal at the end of rotation (stall).

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

Applications

The VA(M)24-35 Series Actuators are direct mount, non-spring return electric valve actuators that operate on AC 24 V power. These synchronous, motor-driven actuators are used to provide accurate positioning on Bray Ball Valves in Heating, Ventilating, and Air Conditioning (HVAC) applications.

The VA(M)24-35 Series Electric Non-Spring Return Actuators provide a running torque of 35 lb.in (4 Nm). The nominal travel time is 60 seconds at 60 Hz (72 seconds at 50 Hz) for 90° of rotation.

Parts Included

- One electric non-spring return actuator with 48 in. (1.2 m) UL 444 Type CMP Plenum Rated cable with 19 AWG (0.75 mm²) conductors and 1/4 in. (6 mm) ferrule ends and Connector for 3/8 in. (9.5 mm) Flexible Metal Conduit.

Special Tools Needed

- Digital voltmeter or Commissioning Tool

Installation

Install the ball valve with the actuator at or above the centerline of the horizontal piping (see Figure 1).

IMPORTANT:

Use this VA(M)24-35 Series Actuator only to control equipment under normal operating conditions. Where failure or malfunction of the VA(M)24-35 Series Actuator could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices, such as supervisory or alarm systems or safety or limit controls, intended to warn of or protect against failure or malfunction of the VA(M)24-35 Series Actuator.

IMPORTANT:

Before specifying VA(M)24-35 Series Electric Non-Spring Return Valve Actuators for plenum applications, verify acceptance of exposed plastic materials in plenum areas with the local building authority. Building codes for plenum requirements vary by location. Some local building authorities accept compliance to UL 1995, Heating and Cooling Equipment, while others use different acceptance criteria.

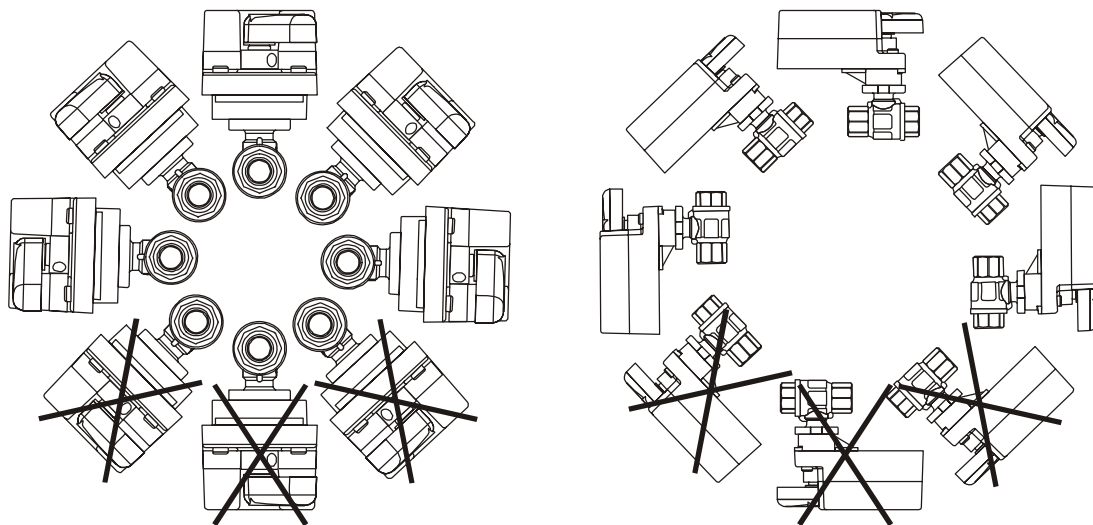


Figure 1: Mounting Positions for Chilled Water and Condensing Atmosphere Applications

Mounting

To mount the actuator to a valve:

1. Turn valve stem to position below.

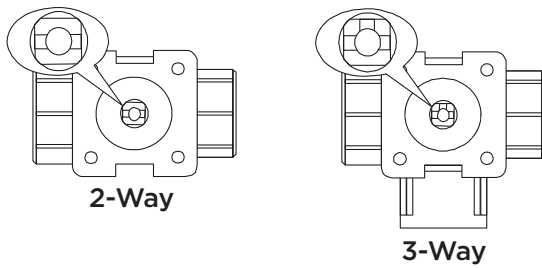


Figure 2: Positioning the Valve Stem

2. Mount optional -HT Thermal Barrier to the valve if fluid temperature exceeds 212°F (100°C). See the Mounting the Thermal Barrier section for more information.
3. Place the handle to the top of the drive shaft (Figure 3). The handle is keyed on and can only be mounted in one orientation.

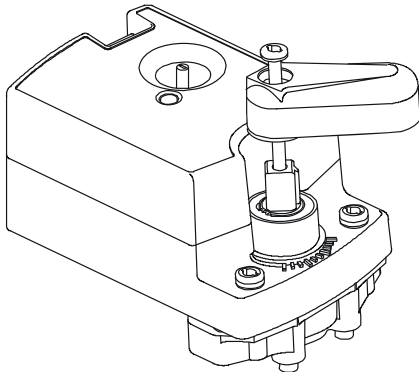


Figure 3: Installing the Handle

4. Check that the actuator coupler and handle are in the fully counterclockwise position as viewed from the top of the actuator. If not, press the actuator gear release and rotate the handle until the actuator coupler is fully counterclockwise.
5. Install the valve actuator over the ball valve mounting flange. Depending on the installation, position the assembly in any one of four 90° increments on the valve.

NOTE:

For proper operation, the actuator must drive the valve counterclockwise to open Port A when viewed from above the valve.

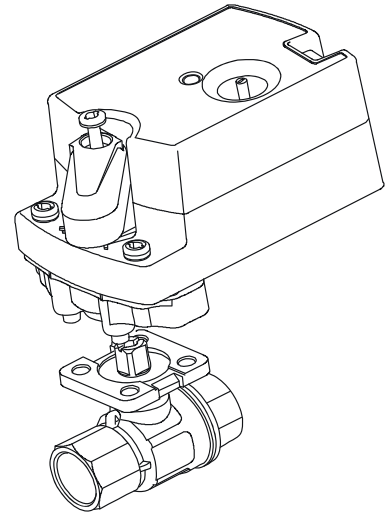


Figure 4: Coupling the Actuator to the Valve

6. To secure the actuator to the valve, use a 1/4 in. (6 mm) flat blade screwdriver. Recommended torque is 8 to 12 lb-in (0.9 to 1.4 N-m).

IMPORTANT:

Do not overtighten the manual handle mounting screw. Overtightening may strip the threads resulting in damage to the valve stem threads.

Mounting the Thermal Barrier

Figure 7 shows the optional -HT Thermal Barrier.

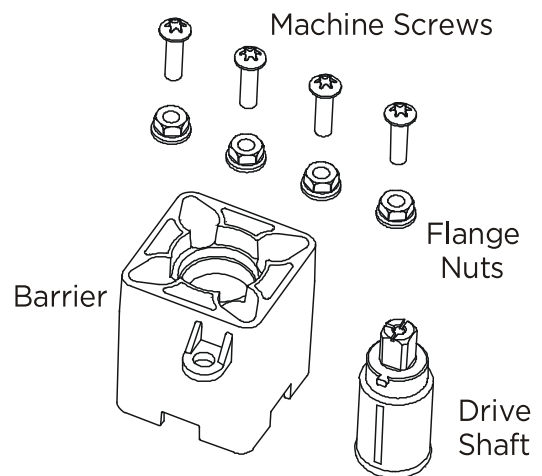


Figure 5: Optional -HT Thermal Barrier

Mounting the Thermal Barrier - Continued

To mount the optional thermal barrier:

1. Install the thermal barrier drive shaft into the thermal barrier by aligning the tab on the drive shaft with the slot on the thermal barrier (Figure 6).

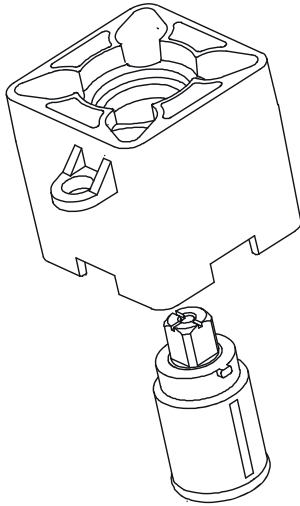


Figure 6: Installing the Drive Shaft into the Thermal Barrier

2. Rotate the drive shaft to align marks on the top of the thermal drive shaft with matching marks on the valve stem.
3. Mount the thermal barrier onto the valve using the four included M5x16 mm machine screws and four M5 flange nuts. Tighten the screws to a recommended torque of 21 to 25 lb·in. (2.4 to 2.8 N·m) (Figure 7).

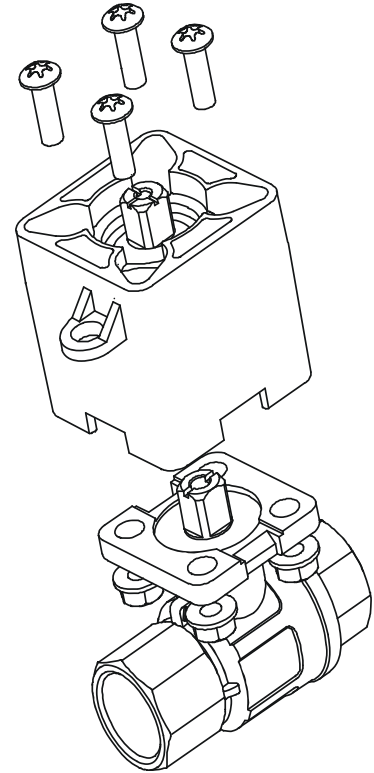


Figure 7: Installing the Barrier

4. Proceed to Mounting the Actuator. Follow the same steps as mounting directly to the valve when mounting the actuator to the thermal barrier.

Setup and Adjustments

Commissioning

After wiring is complete, apply power to the Variable Air Volume (VAV) or Variable Air Volume and Temperature (VVT) controller and provide input signals to the actuator to drive it at least one complete cycle open and closed.

NOTE:

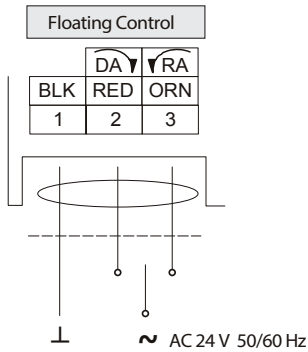
For all VA24-35-P Series actuators, use a controller and/or software that provides a timeout function at the end of rotation (stall) to avoid excessive wear or drive time on the actuator motor.

Troubleshooting

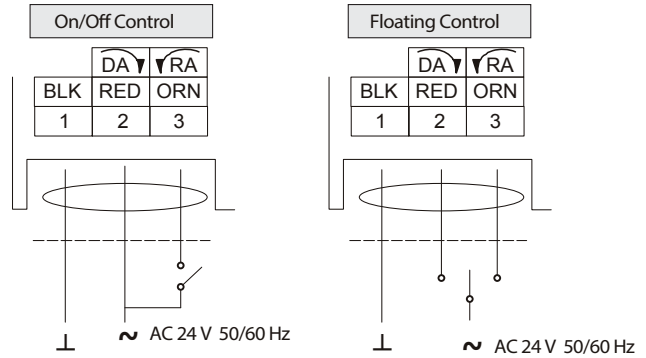
If the VA(M)24-35 Series Electric Non-Spring Return Valve Actuator is not responding or working properly:

- verify that the actuator assembly is properly secured to the valve.
- check that all electrical connections are complete and that power is applied.
- verify that the valve fully opens and closes, using the gear release button on the actuator and the manual override handle, shown in Figure 3.

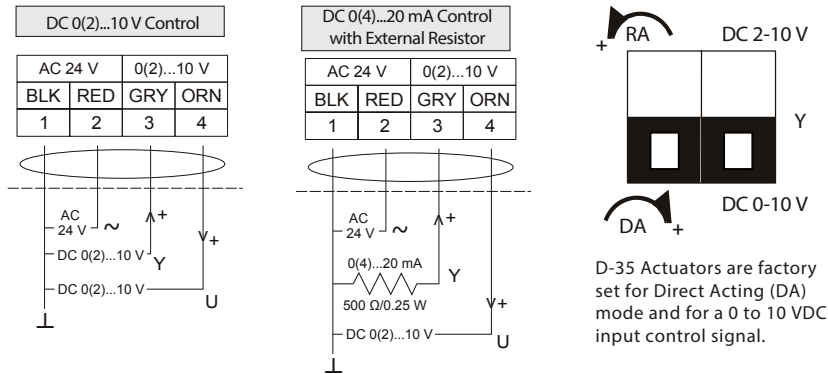
VA24-35-P
PLENUM CABLE



VA24-35-PTO
PLENUM CABLE



VAM24-35-P
PLENUM CABLE



NOTE - To avoid excessive wear or drive time on the motor, use a controller and/or software that provides a time-out function to remove the signal at the end of rotation (stall).

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Dimensions

