

Installation, Operation and Maintenance

VA(M)24-35-P-T Series Actuator

SUPERSEDES: New

EFFECTIVE: September 30, 2016

Plant ID No. 001-4269

Application:

The VA(M)24-35-P-T 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 ST2 Series DN15, DN20, and DN25 (1/2, 3/4, and 1 in.) ball valves in Heating, Ventilating, and Air Conditioning (HVAC) applications.

The VA(M)24-35-P-T 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.

IMPORTANT: Use this VA(M)24-35-P-T Series Actuator only to control equipment under normal operating conditions. Where failure or malfunction of the VA(M)24-35-P-T 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-P-T Series Actuator.

Installation:

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

IMPORTANT: Before specifying VA(M)24-35-P-T 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.

IMPORTANT: Do not install or use this VA(M)24-35-P-T Series Electric Non-Spring Return Valve Actuator in or near environments where corrosive substances or vapors could be present. Exposure of the electric actuator to corrosive environments may damage the internal components of the device, and will void the warranty.

Special Tool Needed

To install the actuator, use a digital voltmeter or a Commissioning Tool.

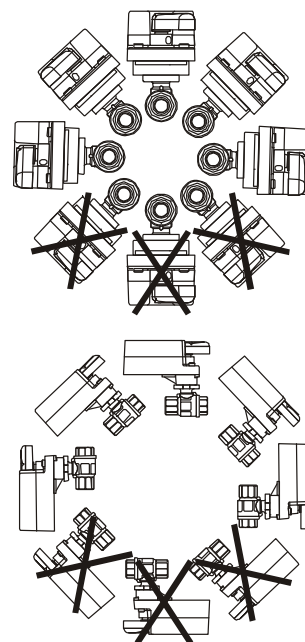


Figure 1: Mounting Positions for Chilled Water and Condensing Atmosphere Applications

Dimensions

See Figure 2 for dimensions of the Non-Spring Return VA(M)24-35-P-T Series Actuated ST2 Series Ball Valve with linkage
See Table 1 for specific model linkage dimensions.

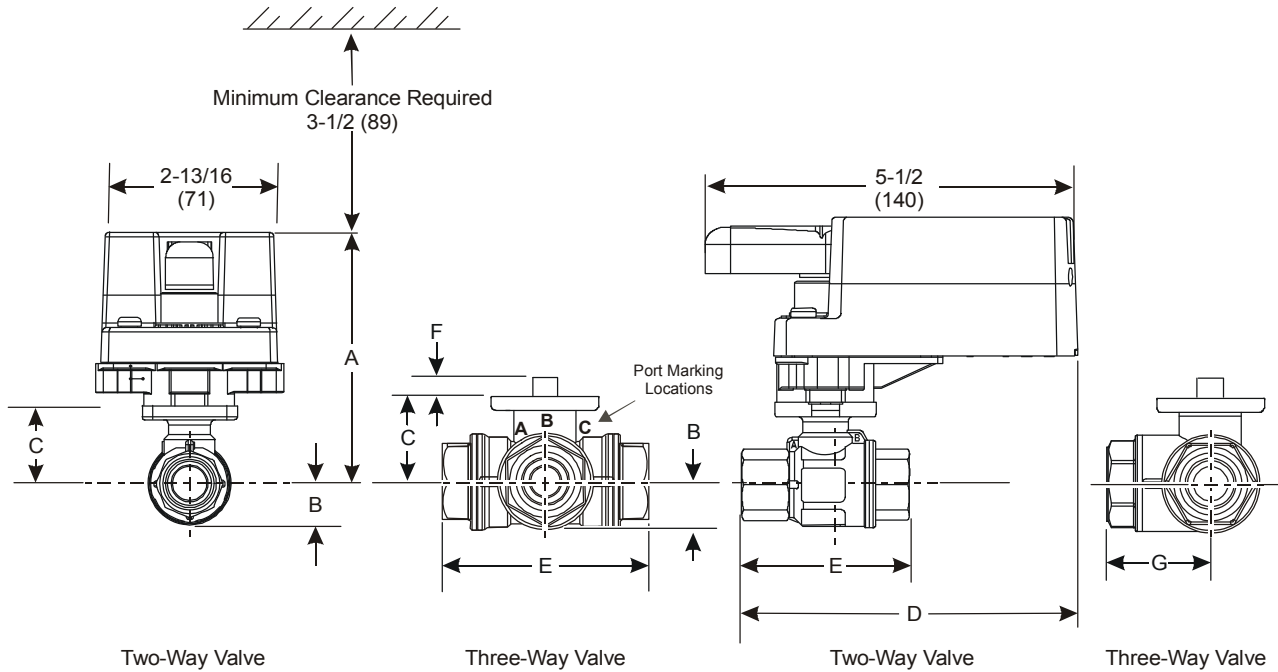


Figure 2: Non-Spring Return VA(M)24-35-P-T Series Actuated ST2 Series Ball Valve with linkage - in.(mm)

Table 1: VA(M)24-35-P-T Series Actuated ST2 Series Ball Valve with linkage - in.(mm)

Valve Size, in. (DN) ¹	A	B	C	D	E	F	G
1/2 (DN15)	3-7/8 (98)	21/32 (17)	1-7/32 (31)	5-7/64 (129)	2-33/64 (64)	11/32 (9)	1-1/4 (32)
3/4 (DN20)	3-7/8 (98)	21/32 (17)	1-7/32 (31)	5-7/32 (133)	2-51/64 (71)	11/32 (9)	1-13/32 (36)
1 (DN25)	3-11/16 (100)	3/4 (19)	1-19/64 (33)	5-9/16 (141)	3-13/32 (87)	11/32 (9)	1-11/16 (43)

1. Port A must always be connected to the coil (Figure 2).

Mounting

To mount the actuator:

1. Turn valve stem to position below.

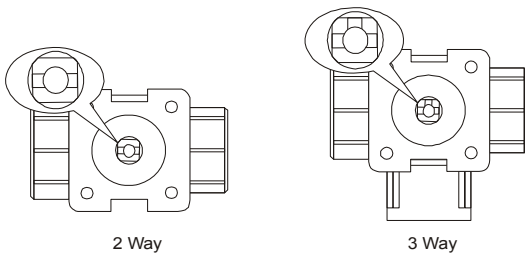


Figure 4: Positioning the Valve Stem

2. Place the handle to the top of the drive shaft (Figure 5). The handle is keyed on and can only be mounted in one orientation.

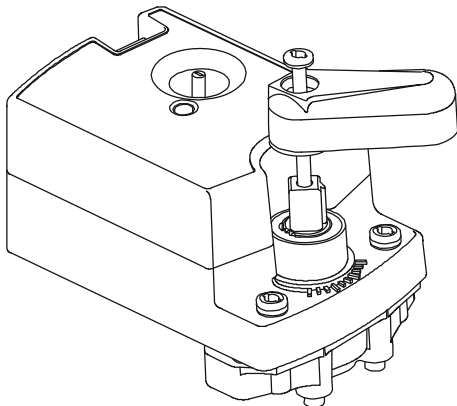


Figure 5: Installing the Handle

3. 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.
4. 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.

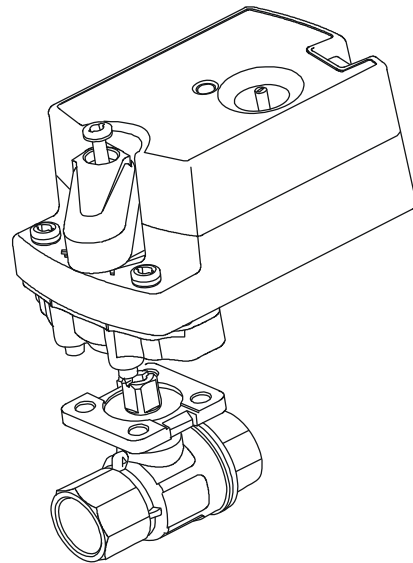


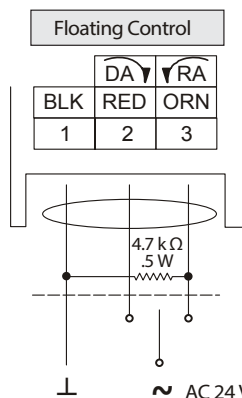
Figure 6: Coupling the Actuator to the Valve

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.

Wiring Continued - (Plenum Cable)

VA24-35-P-T w/ triac



VA24-35-P-T

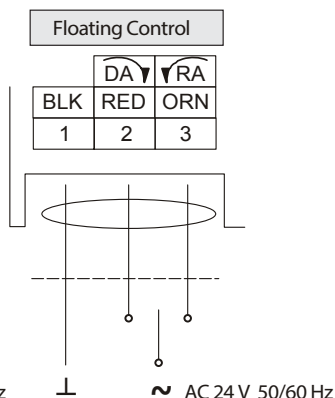


Figure 10: VA24-35-P-T Control Wiring Diagram

The VA24-35-P-T Series Electric Non-Spring Return valve actuators require an AC 24 V input signal and work with a variety of controllers. These electric actuators include an integrated 120 in. (3.05 m) long cable.

VAM24-35-P-T

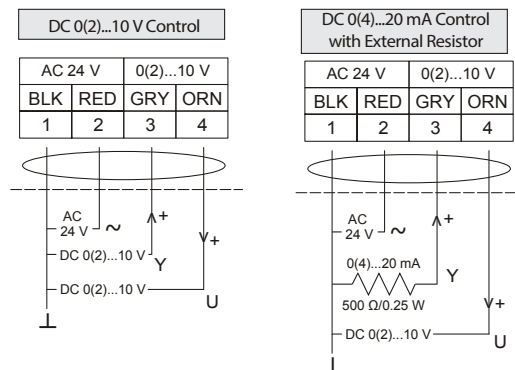


Figure 11: VAM24-35-P-T Control Wiring Diagram

The VAM24-35-P-T Series Electric Non-Spring Return valve actuators require AC 24 V power and a DC 0(2) to 10 V or 0(4) to 20 mA controller input signal. These electric actuators include an integrated 120 in. (3.05 m) long cable; see Figure 11 for proper wiring.

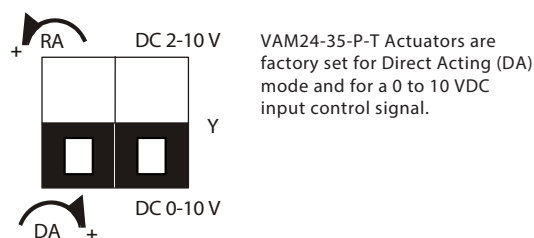


Figure 12: VAM24-35-P-T Factory Switch Setting

For Reverse Acting (RA) operation, a minimum control signal drives the actuator to the full CW position and a maximum signal drives the actuator to the full CCW position. To change the factory settings, remove the actuator cover and adjust the switches on the circuit board as shown in Figure 12.

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.

Troubleshooting

If the VA(M)24-35-P-T 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 5.



CAUTION: Risk of Electric Shock.
Disconnect the power supply before making electrical connections to avoid electric shock.



CAUTION: Risk of Property Damage.
Do not apply power to the system before checking all wiring connections. Short circuited or improperly connected wires may result in permanent damage to the equipment.

IMPORTANT: Make all wiring connections in accordance with local, national, and regional regulations. Do not exceed the electrical ratings of the VA(M)24-35-P-T Series Electric Non-Spring Return Valve Actuator.

LIMITED WARRANTY STATEMENT

Taco, Inc. will repair or replace without charge (at the company's option) any product or part which is proven defective under normal use within five (5) years from the date of manufacture.

In order to obtain service under this warranty, it is the responsibility of the purchaser to promptly notify the local Taco stocking distributor or Taco in writing and promptly deliver the subject product or part, delivery prepaid, to the stocking distributor. For assistance on warranty returns, the purchaser may either contact the local Taco stocking distributor or Taco. If the subject product or part contains no defect as covered in this warranty, the purchaser will be billed for parts and labor charges in effect at time of factory examination and repair.

Any Taco product or part not installed or operated in conformity with Taco instructions or which has been subject to misuse, misapplication, the addition of petroleum-based fluids or certain chemical additives to the systems, or other abuse, will not be covered by this warranty.

If in doubt as to whether a particular substance is suitable for use with a Taco product or part, or for any application restrictions, consult the applicable Taco instruction sheets or contact Taco at [401-942-8000].

Taco reserves the right to provide replacement products and parts which are substantially similar in design and functionally

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