

Installation, Operation and Maintenance

VA(M)S24-27 (T)-T Series Actuator

SUPERSEDES: New

EFFECTIVE: September 30, 2016

Plant ID No. 001-4268

Applications

The VA(M)S24-27-(T)-T Series On/Off Electric Spring Return Actuators are direct-mount valve actuators that operate on AC 24 V power at 50/60 Hz, DC 24 V power, or AC 85 to 264 V power at 50/60 Hz. These bidirectional actuators are used for on/off control on the ST2 Series ball valves 1/2, 3/4, and 1 in. (DN15, DN20, and DN25) ball valves in Heating, Ventilating, and Air Conditioning (HVAC) applications.

IMPORTANT: Use this VA(M)S24-27-(T)-T Series Valve Actuator only to control equipment under normal operating conditions. Where failure or malfunction of the VA(M)S24-27-(T)-T Series Valve 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)S24-27-(T)-T Series Actuator.

Installation

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

Special Tool Needed

- Commissioning Tool or digital voltmeter
- T-20 TORX® driver

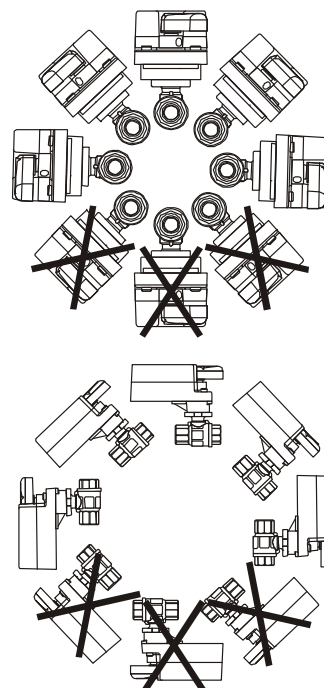


Figure 1: Mounting Positions for Chilled Water and Condensing Atmosphere Applications

IMPORTANT: Before specifying VA(M)S24-27-(T)-T Series 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)S24-27-(T)-T Series Valve Actuator in or near environments where corrosive substances or vapors could be present. Exposure of the actuator to corrosive environments may damage the device's internal components, and will void the warranty.

Dimensions

Valve Actuator

See Figure 2, Table 1, and Table 2 for dimensions of Spring Return VA(M)S24-27-(T)-T Series Actuated Ball Valves.

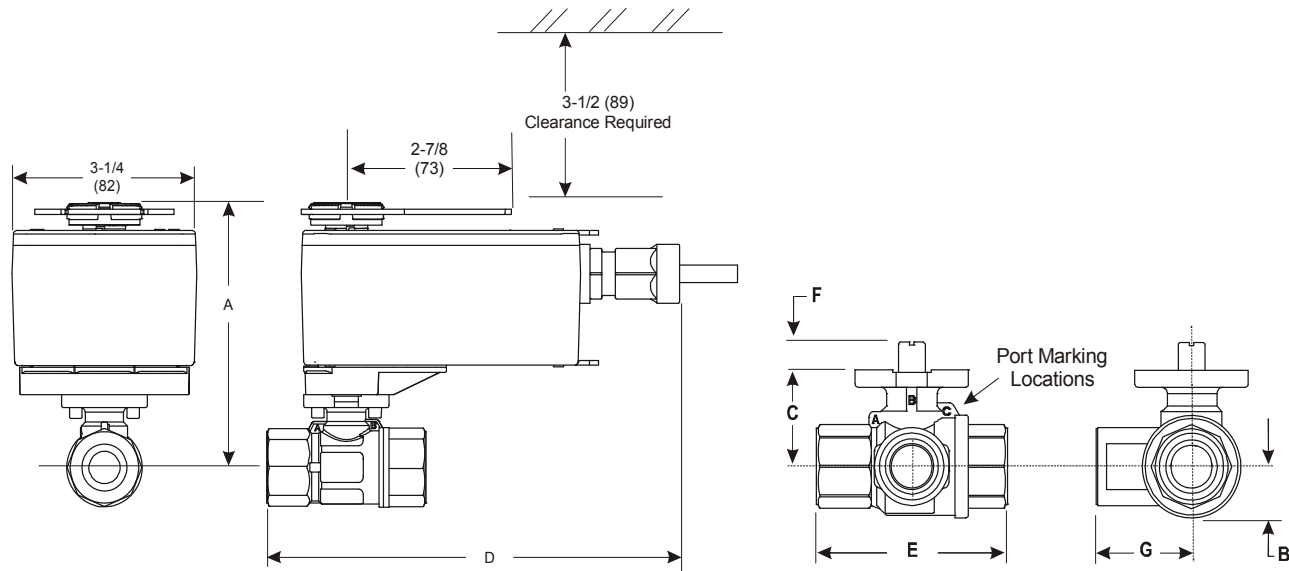


Figure 2: Spring Return VA(M)S24-27-(T)-T Actuated ST2 Series Ball Valve Dimensions, in. (mm)

Table 1: VA(M)S24-27-(T)-T Series Actuated ST2 Series NPT Ball Valve, Dimensions, in. (mm)

Valve Size, in. (DN) ¹	A	B	C	D	E	F	G
1/2 (DN15)	4-5/8 (117)	21/32 (17)	1-7/32 (31)	6-31/32 (177)	2-33/64 (64)	11/32 (9)	1-1/4 (32)
3/4 (DN20)	4-5/8 (117)	21/32 (17)	1-7/32 (31)	7-1/8 (181)	2-51/64 (71)	11/32 (9)	1-13/32 (36)
1 (DN25)	4-11/16 (119)	3/4 (19)	1-19/64 (33)	7-31/64 (190)	3-13/32 (87)	11/32 (9)	1-45/64 (43)

1. Port A must always be connected to the coil.

Table 2: VA(M)S24-27-(T)-T Series Actuated ST2 Series Sweat Ball Valve, Dimensions, in. (mm)

Valve Size, in. (DN) ¹	A	B	C	D	E	F	G
1/2 (DN15)	4-5/8 (117)	21/32 (17)	1-7/32 (31)	7-13/64 (183)	3-25/32 (96)	11/32 (9)	1-1/4 (32)
3/4 (DN20)	4-5/8 (117)	21/32 (17)	1-7/32 (31)	7-3/4 (197)	4-3/32 (104)	11/32 (9)	1-13/32 (36)
1 (DN25)	4-23/32 (120)	3/4 (19)	1-19/64 (33)	8-3/16 (208)	4-41/64 (118)	11/32 (9)	1-45/64 (43)

1. Port A must always be connected to the coil.

Mounting the Actuator to Spring Return Port A (Coil) Open

To mount the actuator to spring return Port A (coil) open:

1. Turn the valve stem to the position outlined in Figure 4.

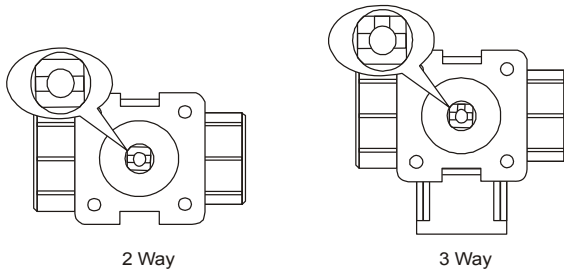


Figure 4: Positioning the Valve Stem

Note: Proceed to Step 7 if the ball valve linkage is on actuator Side B.

2. Remove the linkage from Side A (Figure 5).

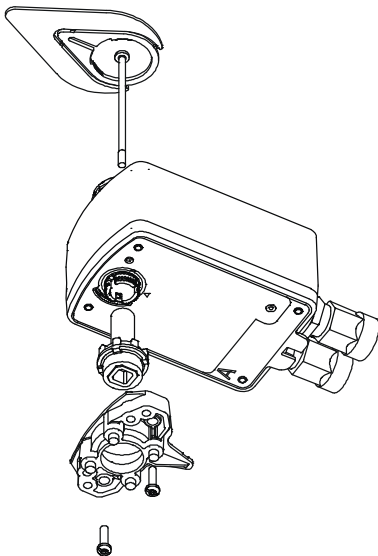


Figure 5: Removing the Linkage

3. Insert the drive shaft into Side B (Figure 6). The drive shaft is keyed for one-way assembly. With gentle pressure applied, rotate the drive shaft until the key aligns and the drive shaft falls into place.

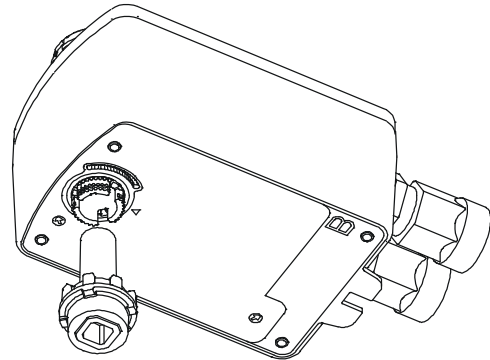


Figure 6: Inserting the Drive Shaft

4. Install linkage base on Side B using the two #8-32 x 0.625 in. long screws (Figure 7). The recommended torque is 29 to 33 lb-in. (3.3 to 3.7 N·m).

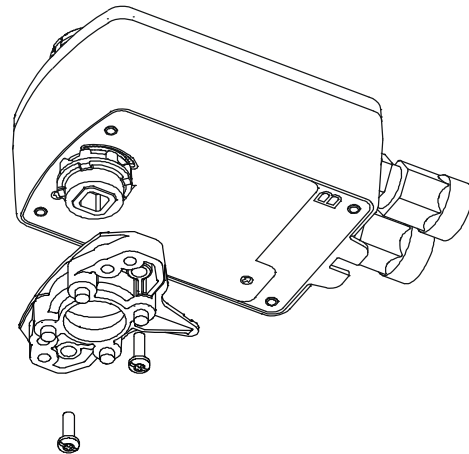


Figure 7: Installing the Linkage

5. Insert fixed pointer and M4x0.7x83 mm long screw into the Side A actuator hub (Figure 8). Direct the arrow on the pointer to 100%.

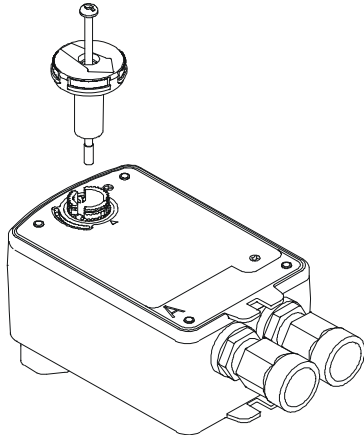


Figure 8: Installing the Fixed Pointer

6. Install the actuator on the ball valve (Figure 9). Tighten the actuator mounting screw to a torque of 10 to 12 lb-in. (1.1 to 1.4 N·m) and snap the large adjustable pointer into place.

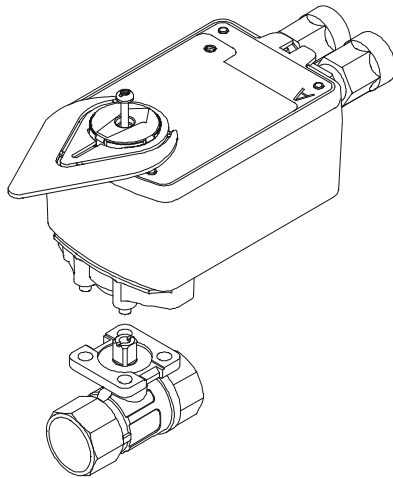


Figure 9: Mount the Actuator

Mounting the Actuator to Spring Return Port A (Coil) Closed

To mount the actuator to spring return Port A (coil) closed:

1. Turn the valve stem to the position outlined in Figure 10.

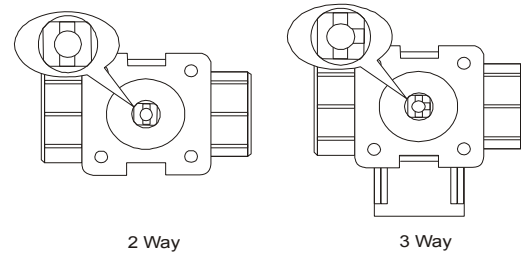


Figure 10: Positioning the Valve Stem

Note: Proceed to Step 7 if the ball valve linkage is on actuator Side A.

2. Remove the linkage from Side B (Figure 13).

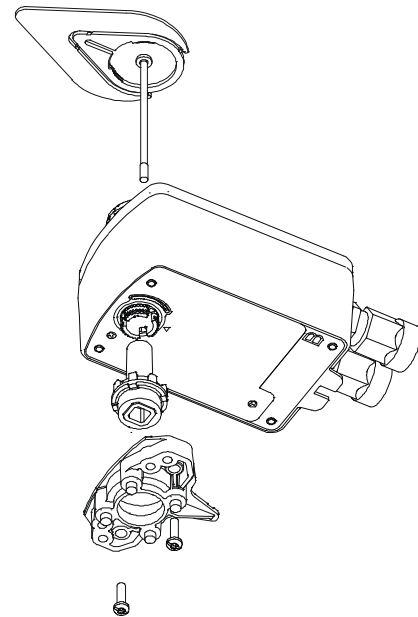


Figure 11: Removing the Linkage

3. Insert the drive shaft into Side A (Figure 12). The drive shaft is keyed for one-way assembly. With gentle pressure applied, rotate the drive shaft until the key aligns and the drive shaft falls into place.

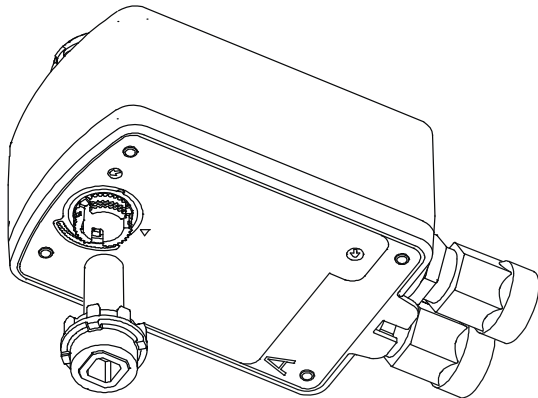


Figure 12: Inserting the Drive Shaft

4. Install linkage base on Side A using the two #8-32 x 0.625 in. long screws (Figure 13). The recommended torque is 29 to 33 lb-in. (3.3 to 3.7 N·m).

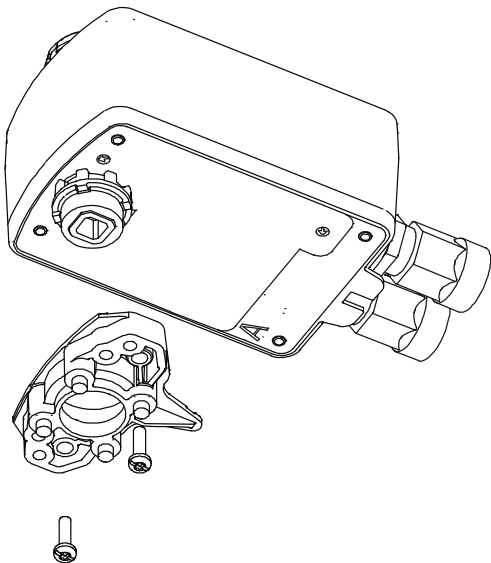


Figure 13: Installing the Linkage

5. Insert fixed pointer and M4x0.7x83 mm long screw into the Side B actuator hub (Figure 14). Direct the arrow on the pointer to 0%.

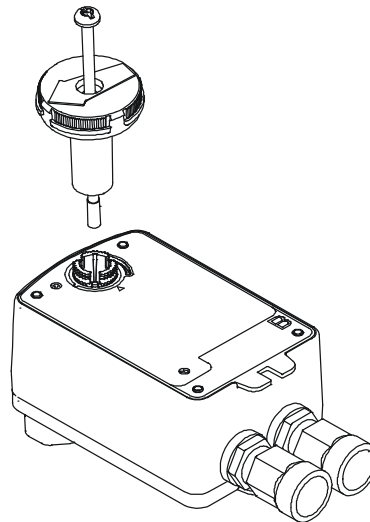


Figure 14: Installing the Fixed Pointer

6. Install the actuator on the ball valve (Figure 15). Tighten the actuator mounting screw to a torque of 10 to 12 lb-in. (1.1 to 1.4 N·m) and snap the large adjustable pointer into place.

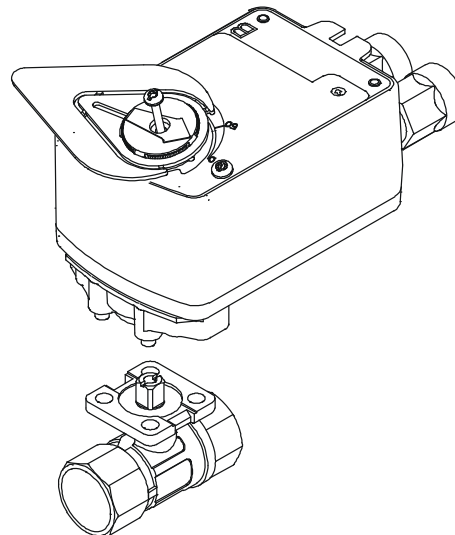


Figure 15: Mount the Actuator

Using Conduit

All VA(M)S24-27-(T)-T-T Series Actuators accept 1/2 in. threaded electrician's fittings (Figure 21).

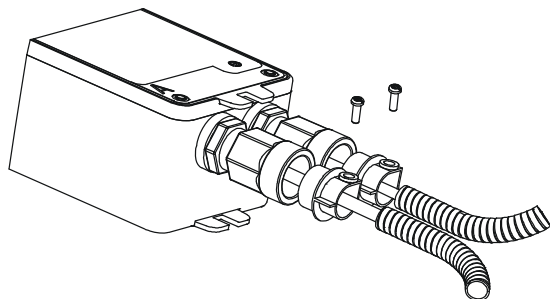


Figure 21: Adding Flexible Metal Conduit

1. Feed the actuator cables through the field-supplied electrician's fitting and conduit.
2. Thread the electrician's fitting into the actuator and secure the conduit to the fitting in accordance with local building code requirements.



WARNING: Risk of Electric Shock and Property Damage.

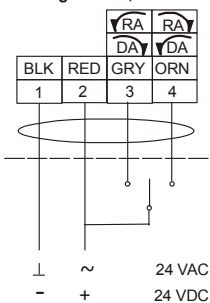
Insulate and secure each unused wire lead before applying power to the actuator. Failure to insulate and secure each unused wire lead may result in property damage, electric shock, and severe personal injury or death.

Wiring

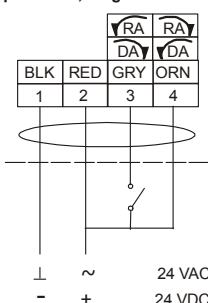
VAS24-27-T-T

On/Off and Floating

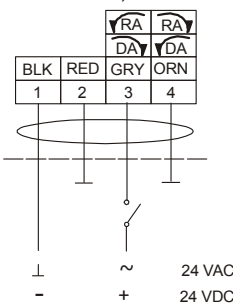
Floating Control, Four Wire



Open/Close, Single Wire Control



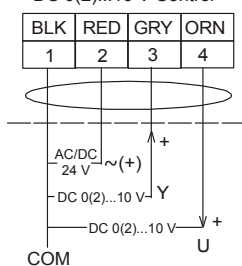
On/Off Control, Two Wire



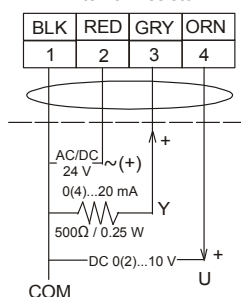
VAMS24-27-T

Modulating

DC 0(2)...10 V Control



0(4)...20 mA Control with External Resistor



NOTE: **WARNING:** All VA(M)S-27-(T)-T Series 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).

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

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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TACO WILL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF ITS PRODUCTS OR ANY INCIDENTAL COSTS OF REMOVING OR REPLACING DEFECTIVE PRODUCTS.

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