

Installation Guide

Mounting Valve Body

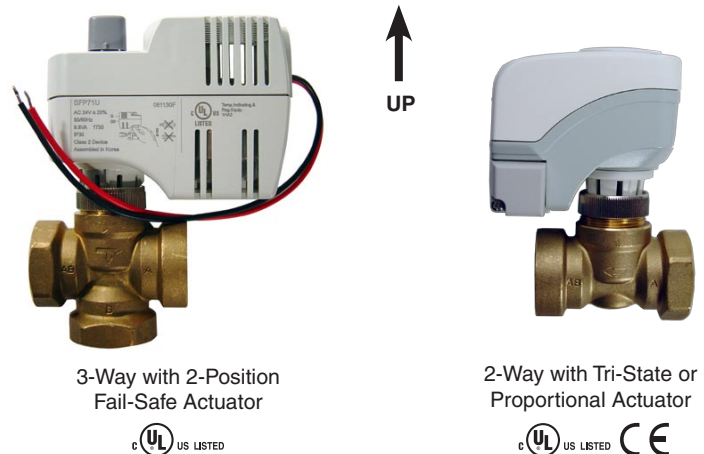
1. Clean the lines upstream from the valve. Remove any debris larger than 0.06" (0.015 mm).
2. Align the valve's flow indicator with the system flow (see page 4 for 3-way **mixing or diverting** applications).
3. Mount the valve so the actuator is positioned over valve.

⚠ CAUTION

To prevent condensation from dripping onto the actuator housing, mount the valve with the actuator in the upright position or, at most, at a 45° angle.

4. Seal valves with approved pipe sealant.
5. Using two wrenches, secure the valve to the pipe. Torque should not exceed 75 ft-lbs. (102 N•m).
6. Eliminate air from the system to keep the valves full of fluid during operation.

NOTE: If the system experiences large amounts of debris, steps should be taken to keep the system clean.



3-Way with 2-Position Fail-Safe Actuator

2-Way with Tri-State or Proportional Actuator

⚠ CAUTION

Using mineral oil lubricants or other incompatible substances in system fluids may damage EPDM rubber seals in valves. Before using any lubricant or additive in a water or ethylene glycol base, consult the substance manufacturer for compatibility with EPDM (Ethylene Propylene Diene Monomer).

Mounting Actuator on Valve Body

⚠ CAUTION

If mounting the actuator to a valve already in-line, close the shut-off valves in the piping (upstream first, then downstream) or switch off the pump to allow the differential pressure in the valve to drop.

1. To remove an existing actuator, disconnect the wiring, turn the ring nut (coupling piece) counterclockwise until it is loose, and pull off the actuator.

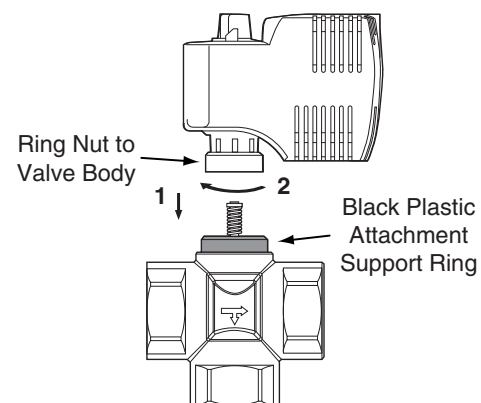
⚠ CAUTION

The black plastic actuator attachment support ring must be in place on top of the valve bonnet before mounting the actuator or damage to the actuator connection may result.

- 2a. For NO actuators ("A," "M," and "P"), place the actuator on top of the valve body and firmly hand-tighten (only) the ring nut.

NOTE: The last digit of valve model number represents the type of actuator.

- 2b. For NC actuators ("B," "E," "N," and "Q"), manually rotate and latch open the actuator (or proper valve close-off may be affected). See the Manual Override section on page 3. Then place the actuator on top of the valve body, firmly hand-tighten (only) the ring nut, and return the actuator to its normal position.



Mounting Actuator on Valve Body

Wiring

See the appropriate diagram.

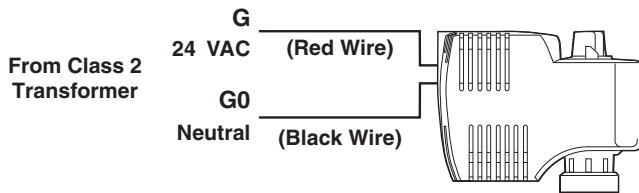
NOTE: All wiring must conform to NEC and local codes and regulations.

NOTE: For 120 VAC spring return actuators, the wiring connection requires a junction box and flex conduit.

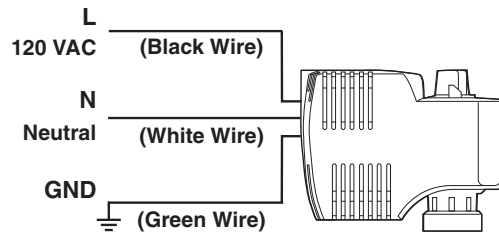
NOTE: For 24 VAC actuators, use Class 2 transformers. For 24 VAC spring return actuators, connections to the wire leads can be made inside the housing (remove the two screws and pull the housing off to access the interior).

Two-Position Spring Return

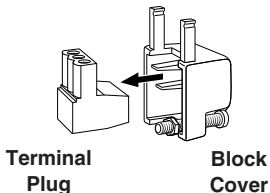
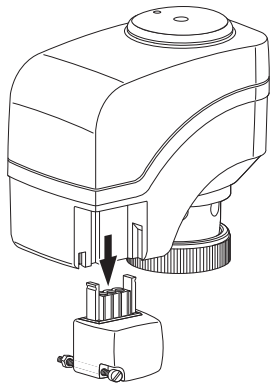
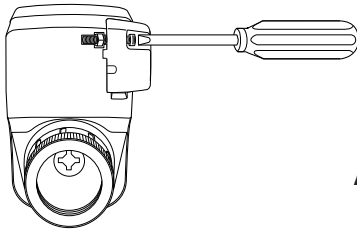
24 VAC Fail-Safe (Spring Return)
 Actuator "M" MEP-3503 (NO or Fail AB-A)
 Actuator "N" MEP-3501 (NC or Fail AB-B)



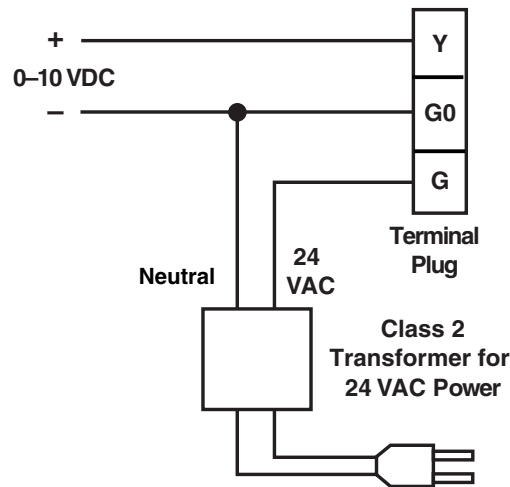
120 VAC Fail-Safe (Spring Return)
 Actuator "P" MEP-3504 (NO or Fail AB-A)
 Actuator "Q" MEP-3502 (NC or Fail AB-B)



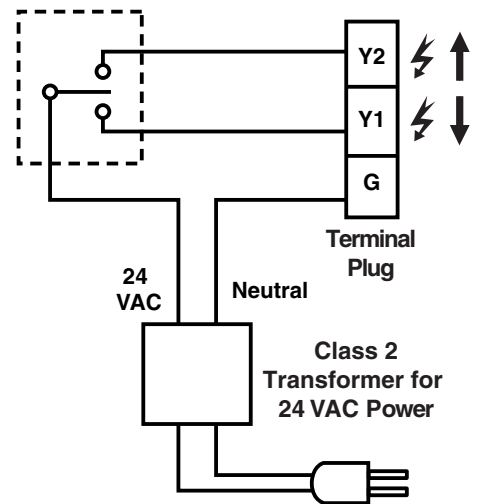
Proportional and Tri-State



Proportional (Fail-In-Place)
 Actuator "A" MEP-3516 (NO or 0 VDC = AB-A)
 Actuator "B" MEP-3511 (NC or 0 VDC = AB-B)



Tri-State (Fail-In-Place)
 Actuator "F" MEP-3510



⚠ CAUTION

For proportional actuators, wire connection on G is 24 VAC HOT, not ground! G0 and G must be properly wired for correct function and full life of the actuator.

Manual Override

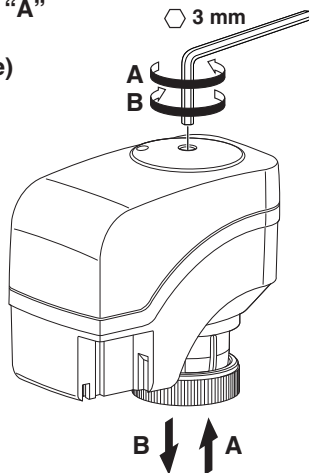
Proportional and Tri-State

For manual positioning, **turn off power to the actuator** and use a 3 mm hex wrench to rotate the actuator. The actuator will maintain its position until power is restored and a control signal is applied.

Cycling the power off and then back on recalibrates the actuator.

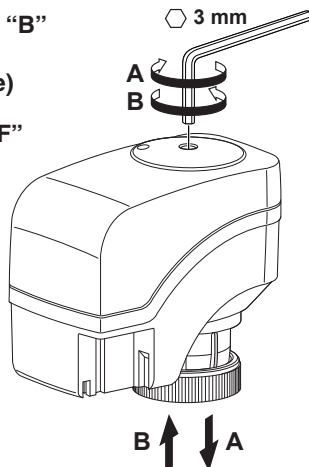
The “0” and “1” positions on the housing are for reference only and are not for stroke measurement.

Proportional Actuator “A”
MEP-3516
(NO or Fail-in-Place)



- (A) Turn the hex wrench **counterclockwise** and the spindle retracts (2-way valve opens).
- (B) Turn the hex wrench **clockwise** and the spindle extends (2-way valve closes).

Proportional Actuator “B”
MEP-3511
(NC or Fail-in-Place)
Tri-State Actuator “F”
MEP-3510



- (A) Turn the hex wrench **clockwise** and the spindle extends (2-way valve closes).
- (B) Turn the hex wrench **counterclockwise** and the spindle retracts (2-way valve opens).

Two-Position Spring Return

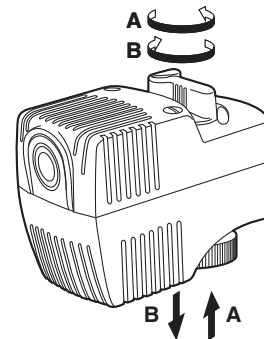
For manual positioning, **turn off power to the actuator**, rotate the manual override handle clockwise 180°, and squeeze the handle to latch it around the protruding stop. (The actuator will automatically unlatch when power is applied.)

The “0” and “1” positions on the housing are for reference only and are not for stroke measurement.

▲ CAUTION

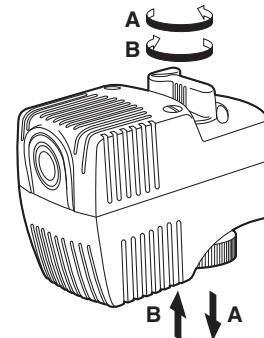
To avoid damaging the actuator, do not manually assist the spring return as it returns to its home position.

Fail-Safe (Spring Return)
Actuator “M” MEP-3503 (NO or Fail AB-A)
Actuator “P” MEP-3504 (NO or Fail AB-A)



- (A) Allow handle to turn counterclockwise to retract spindle and open valve (AB-A).
- (B) Turn handle clockwise to extend spindle and close valve (AB-B).

Fail-Safe (Spring Return)
Actuator “N” MEP-3501 (NC or Fail AB-B)
Actuator “Q” MEP-3502 (NC or Fail AB-B)

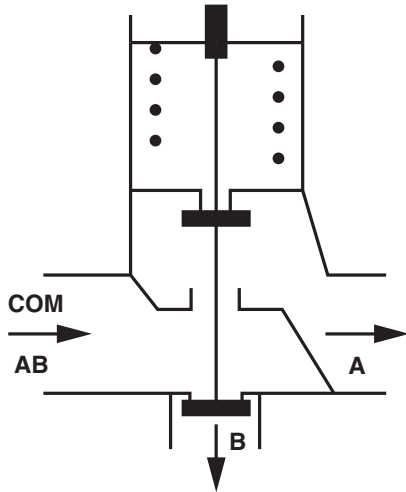


- (A) Allow handle to turn counterclockwise to extend spindle and close valve (AB-B).
- (B) Turn handle clockwise to retract spindle and open valve (AB-A).

3-Way Valve Applications

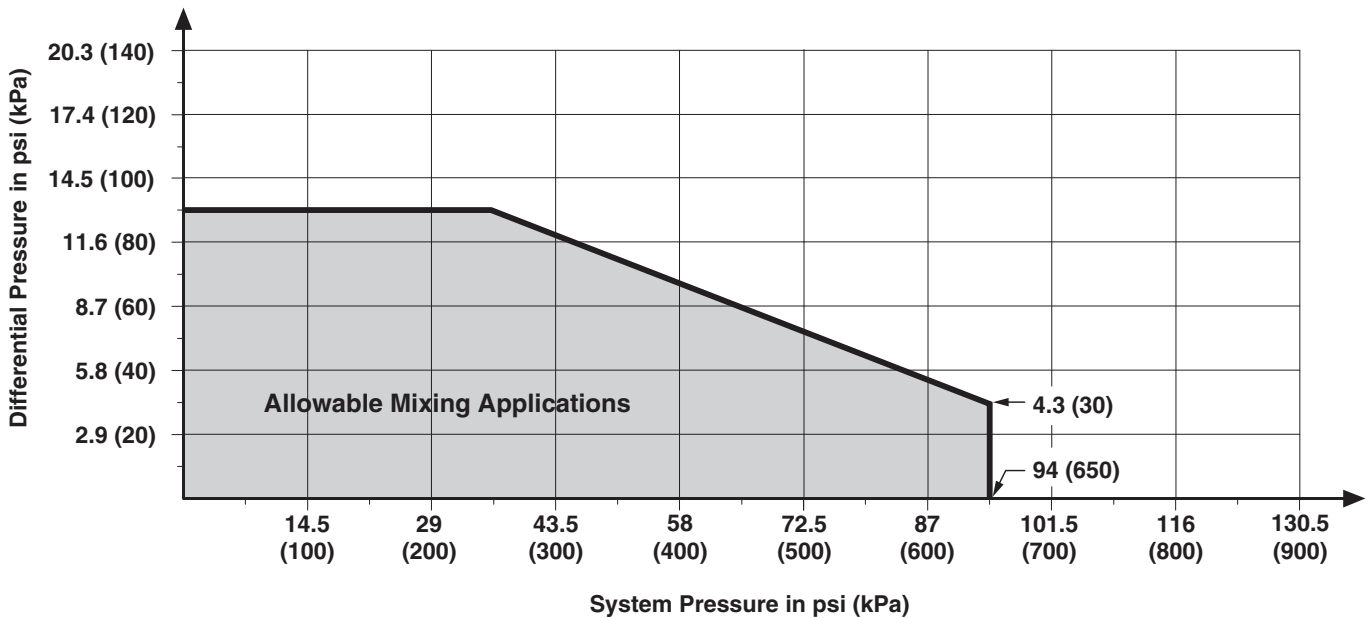
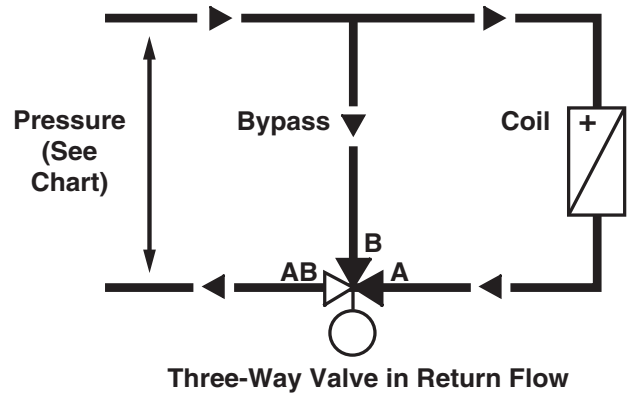
Diverting

As the VEZ-44 series valve stem moves downward, the flow through ports AB-A decreases and the flow through ports AB-B increases. As the valve stem moves upward, the flow through ports AB-A increases and the flow through ports AB-B decreases. If power fails, a spring-return actuator determines whether the valve fails with flow to port A or port B.



Mixing

These three-way VEZ-44 series valves are diverting valves. However, they may be used as mixing valves when connected in the return flow as shown in the diagram at the right **and** if system and differential pressures are within the gray area of the chart below.



Operation

After the mechanical and electrical installations have been completed, cycle the actuator to verify the direction of rotation for normal operation and fail-safe if so equipped.

Maintenance

No routine maintenance is required. Each component is designed for dependable, long-term reliability, and performance. Careful installation will also ensure long-term reliability and performance.

Accessories/Repair Parts

NOTE: The last digit of valve model number represents the type of actuator.

Replacement Block Cover and Terminal Plug

HPO-5062	For proportional actuator "A/B"
HPO-5061	For tri-state actuator "F"

Replacement Actuators

MEP-3501	"N" (NC, 2-position, 24 VAC, spring return)
MEP-3502	"Q" (NC, 2-position, 120 VAC, spring return)
MEP-3503	"M" (NO, 2-position, 24 VAC, spring return)
MEP-3504	"P" (NO, 2-position, 120 VAC, spring return)
MEP-3510	"F" (Tri-State, 24 VAC, floating)
MEP-3511	"B" (0-10 VDC proportional)
MEP-3516	"A" (10-0 VDC proportional)

Replacement Valve Bodies

VFZ-4102AM	2-way, 1/2", 1.0 Cv
VFZ-4102BM	2-way, 1/2", 2.5 Cv
VFZ-4102CM	2-way, 1/2", 4.0 Cv
VFZ-4103AM	2-way, 3/4", 4.1 Cv
VFZ-4104AM	2-way, 1", 7.0 Cv
VFZ-4402AM	3-way, 1/2", 1.0 Cv
VFZ-4402BM	3-way, 1/2", 2.5 Cv
VFZ-4402CM	3-way, 1/2", 4.0 Cv
VFZ-4403AM	3-way, 3/4", 4.1 Cv
VFZ-4404AM	3-way, 1", 7.0 Cv

Select Specifications

(See the data sheets for additional specifications.)

Valve Body

Service	Hot or chilled water, up to 50% glycol
Connections	Female NPT
Seat Style	Metal to metal
Valve Body Rating	ANSI Class 125
Max. Inlet Pressure	125 psig (862 kPa)
Max. Close-Off	(AB-A) 1/2 to 3/4" = 44 psi (303 kPa); 1" = 22 psi (152 kPa)
Close-Off Ratings	According to ANSI/FCI 70-2 (AB-A)
Leakage Rating	ANSI Class III (AB-A)
Flow Characteristics	Linear

Actuators

All	24 in-lbs. (105 N•m) torque
Proportional	24 VAC Power, 50/60 Hz, 2.5 VA, 34 sec. running time, 9 oz. (0.25 kg)
Tri-State	24 VAC, 50/60 Hz, 0.8 VA, 150 sec. running time, 9 oz. (0.25 kg)
2-Position	24 VAC or 120 VAC, 60 Hz, 9.8 VA, 35 sec. running time, 1.18 lb. (0.54 kg)

General

Mounting Location	NEMA 1 (interior only)
Temperature Limits	
Medium	34 to 230° F (1 to 110° C)
Ambient	41 to 122° F (5 to 50° C) @ 0 to 90% RH (non-condensing)
Shipping	-13 to 158° F (-25 to 70° C)

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