

Installation Guide

Mounting Valve Body

1. Clean the lines upstream from the valve. Remove any debris larger than 1/16 inch (1.6 mm).
2. Align the valve's flow indicator with the system flow (see page 2 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, such as a 20 mesh strainer installed upstream of the valve.



Two-Way VCZ-41 Series



Three-Way VCZ-44 Series

⚠ CAUTION

Pneumatic devices must be supplied with clean, dry control air. Any other medium (e.g., oil or moisture contamination) may cause the device to fail.

⚠ 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

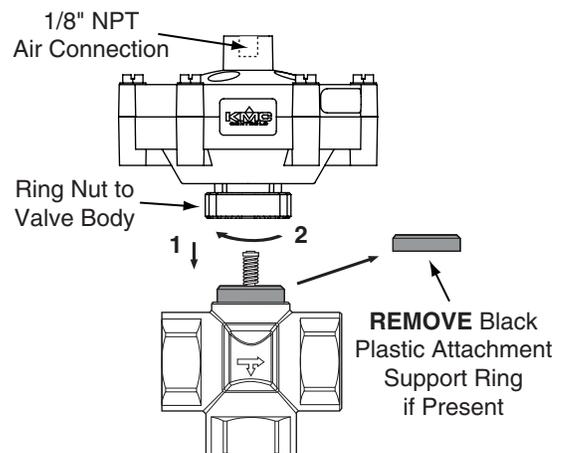
If mounting the actuator to a valve already in-line, close the shut-off valves in the piping (upstream first, then downstream) or switch off the pump to allow the differential pressure in the valve to drop.

- 1a. To remove an existing actuator, disconnect the air supply, turn the ring nut (coupling piece) counterclockwise until it is loose, and pull off the actuator.
- 1b. For a new assembly, **REMOVE** the black plastic attachment support ring from the valve body using a screwdriver or pliers. (It is only used with electronic actuators.)

⚠ CAUTION

For proper function, the black plastic actuator attachment support ring must be **REMOVED** from the top of the valve bonnet before mounting the actuator.

2. Place the actuator on top of the valve body and firmly hand-tighten (only) the ring nut.

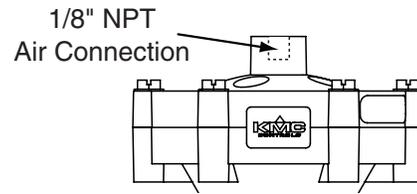


Mounting Actuator on Valve Body

NOTE: Only MCP-6101/6102 actuators are compatible with these valve bodies. Older MCP-6001/6002 actuators are not.

Connection

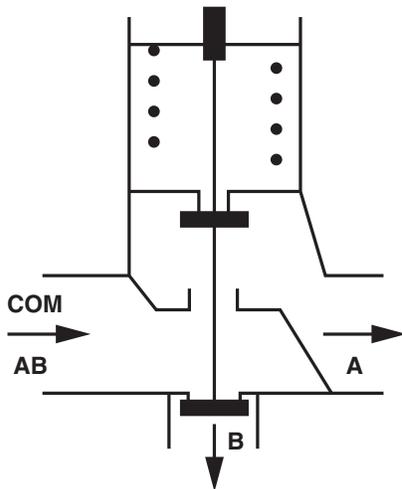
Connect the main air supply (30 psi max.) to the 1/8" NPT port on the top of the actuator.



3-Way Valve Applications

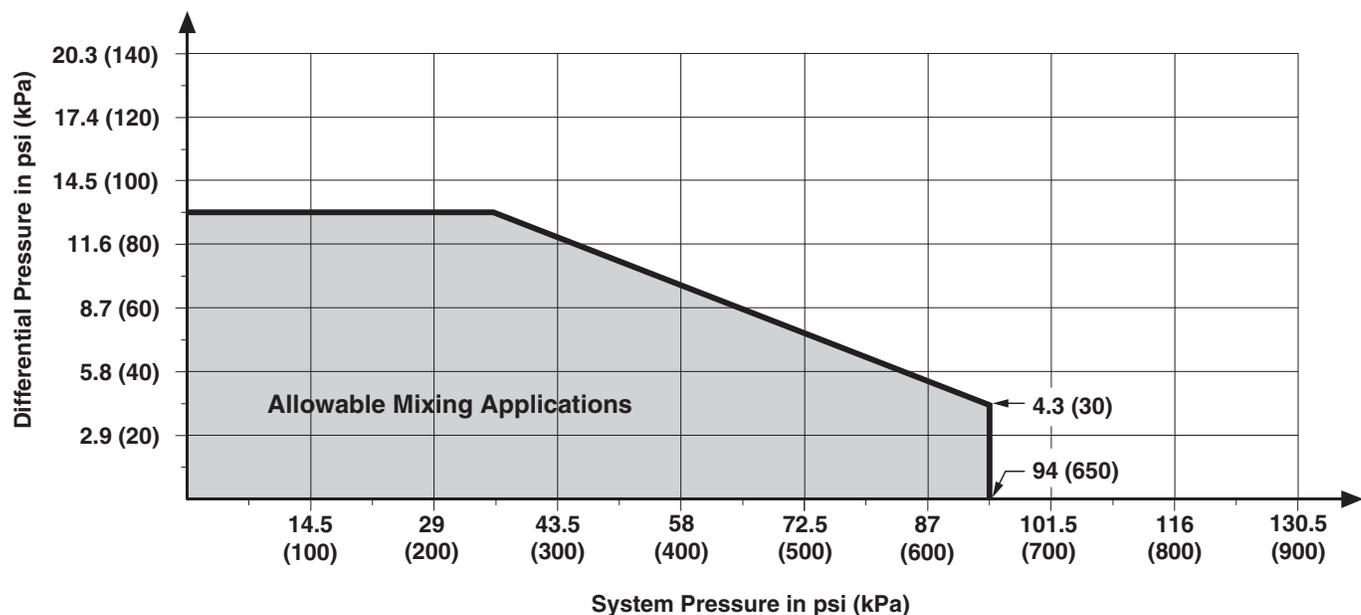
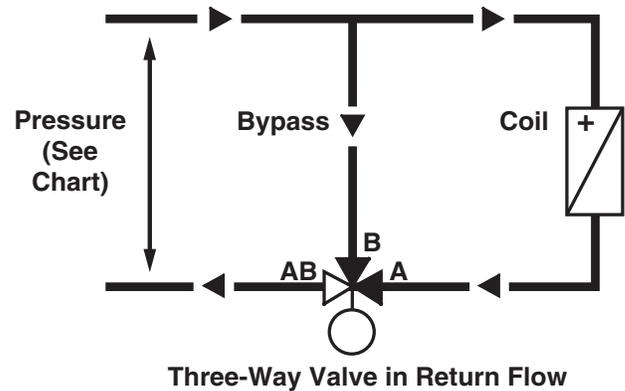
Diverting

As the valve stem moves downward, the flow through VCZ-44 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 there is a loss of signal pressure, the actuator returns the valve to its normal position—the valve fails with flow to port A.



Mixing

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



Operation

After the mechanical and pneumatic installations have been completed, cycle the actuator to verify proper operation.

Troubleshooting

If the actuator does not fit properly on the valve body during installation or the valve performs improperly (e.g., never fully closes) after installation, check that the black plastic attachment support ring has been removed from the valve body top. See the Mounting Actuators on Valve Body section.

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: Older MCP-6001/6002 actuators are not compatible with these valve bodies.

NOTE: The last digit ("D" or "E") of the valve model number represents the type of actuator.

Replacement Actuators

HPO-5114	Replacement actuator diaphragm
MCP-6101	"D" actuator, 3–8 psi
MCP-6102	"E" actuator, 8–13 psi

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 sheet for additional specifications.)

General

Mounting Location NEMA 1 (interior only)

Temperature Limits

Medium	34 to 230° F (1 to 110° C)
Ambient	40 to 180° F (4.4 to 82° C)
Shipping	–40 to 180° F (–40 to 82° C)

Actuators

Operating Range	3–8 or 8–13 psi
Max. Air Pressure	30 psi (207 kPa)

Valve Body

Service Hot or chilled water, up to 50% glycol

Flow Characteristics Linear

Max. Inlet Pressure 125 psig (862 kPa)

Max. Close-Off (AB-A in 3-way)

Valve Size (inches)	Cv	Max. Close-Off Ratings (psi)**			
		8–13 psi Actuator		3–8 psi Actuator	
		15 psi*	20 psi*	15 psi*	20 psi*
0.5	1.0	30	125	125	125
0.5	2.5/4.0	13	89	112	125
0.75	4.1	13	89	112	125
1.00	7.0	4.4	53	68	116

*Pressure applied to actuator
**Not to exceed body rating

KMC Controls, Inc.

19476 Industrial Drive
New Paris, IN 46553
574.831.5250

www.kmcccontrols.com
info@kmcccontrols.com