

### Description

These pneumatic globe zone control valves are designed to regulate the flow of hot or chilled water to such applications as VAV terminal unit reheat coils, fan coil units, induction units, finned tube convectors, and cast iron radiators. The compact design of these units allows easy installation within small enclosures.

The rugged, precision pneumatic actuators have a glass-filled nylon housing and a neoprene diaphragm. Replacement actuators can be installed on the valve bodies without tools.



Two-Way  
VCZ-41  
Series

Three-Way  
VCZ-44  
Series

### Models

Use this chart to select the desired model of valve:

**VCZ-4 X YYY MB Z**

#### Actuator

D: 3–8 psi (MCP-6101)

E: 8–13 psi (MCP-6102)

#### Size/Cv

02A: 1/2"; 1.0 Cv

02B: 1/2"; 2.5 Cv

02C: 1/2"; 4.0 Cv

03A: 3/4"; 4.1 Cv

04A: 1"; 7.0 Cv

#### Control Type

1: Two-Way (Fail Open)

4: Three Way (Fail AB-A)

### Accessories/Repair Parts

HPO-5114	Replacement actuator diaphragm
MCP-6101	"D" actuator, 3–8 psi
MCP-6102	"E" actuator, 8–13 psi
VFZ-4102AM	2-way, 1/2", 1.0 Cv valve body
VFZ-4102BM	2-way, 1/2", 2.5 Cv valve body
VFZ-4102CM	2-way, 1/2", 4.0 Cv valve body
VFZ-4103AM	2-way, 3/4", 4.1 Cv valve body
VFZ-4104AM	2-way, 1", 7.0 Cv valve body
VFZ-4402AM	3-way, 1/2", 1.0 Cv valve body
VFZ-4402BM	3-way, 1/2", 2.5 Cv valve body
VFZ-4402CM	3-way, 1/2", 4.0 Cv valve body
VFZ-4403AM	3-way, 3/4", 4.1 Cv valve body
VFZ-4404AM	3-way, 1", 7.0 Cv valve body

#### ⚠ 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).

### Features

- ◆ Compact size, ideal for small enclosures
- ◆ Actuator field-replaceable without tools
- ◆ Choice of 3–8 or 8–13 psi actuators
- ◆ Two-way or three-way valve bodies, with multiple sizes and Cvs

## Specifications

### Valve Body

**Service** Hot or chilled water, up to 50% glycol

**Connections** Female NPT

**Seat Style** Metal to metal

**Flow Characteristics** Linear

**Leakage Rating** ANSI Class III (AB-A in 3-way)

**Valve Body Rating** ANSI Class 125

**Max. Inlet Pressure** 125 psig (862 kPa)

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

**Close-Off Ratings** According to ANSI/FCI 70-2 (AB-A in 3-way)

### Material

Body Brass

Body Trim Brass

Stem Stainless steel ASTM A582 Type 303

Packing Ethylene propylene O ring

### Actuators

#### Material

Housing Glass-filled nylon

Diaphragm Neoprene

**Operating Range** 3–8 or 8–13 psi

**Max. Air Pressure** 30 psi (207 kPa)

### General

**Mounting Location** NEMA 1 (interior only)

### Temperature Limits

Medium 34 to 230° F (1 to 110° C)

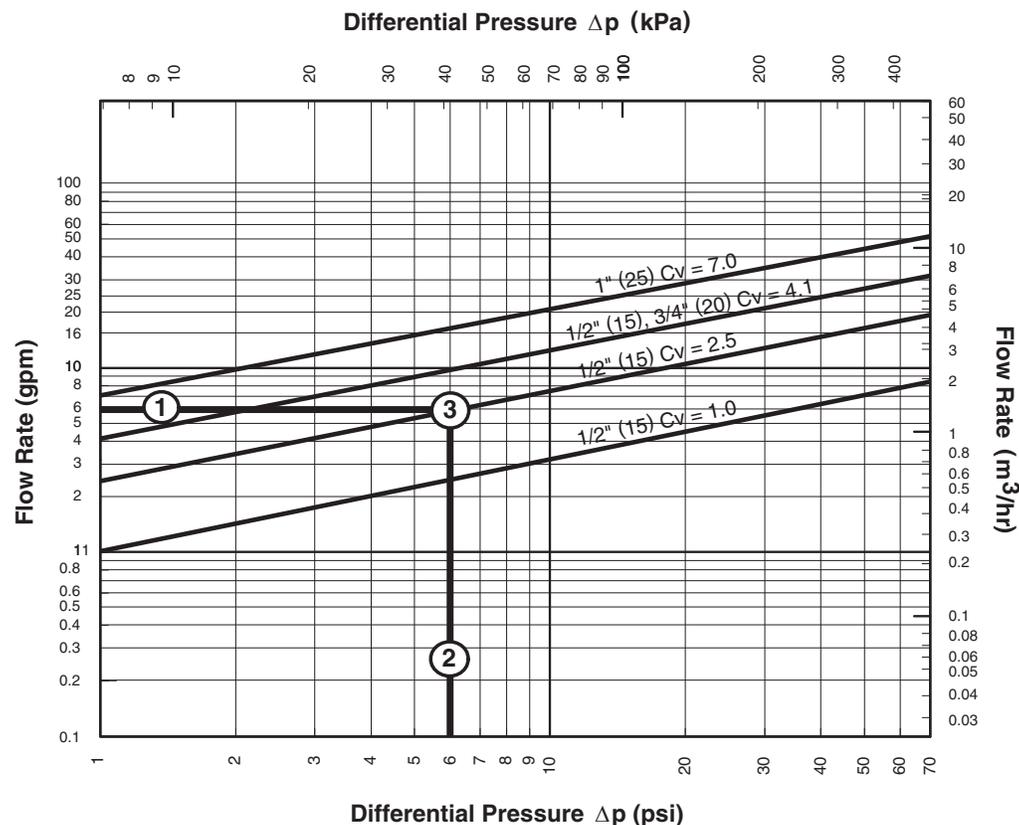
Ambient 40 to 180° F (4.4 to 82° C)

Shipping –40 to 180° F (–40 to 82° C)

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

(Diverting for 3-Way) Water Capacity Graph



**(Diverting for 3-Way) Maximum Water Capacity—U.S. Gallons per Minute**

Valve Size (inches)	Pressure Differential (psi)																psi
	Cv/1	2	3	4	5	6	8	10	15	20	25	30	40	50	60	75	
0.5	1.0	1.4	1.7	2.0	2.2	2.4	2.8	3.2	3.9	4.4	5.0	5.5	6.3	4.1	7.7	8.7	gpm
0.5	2.5	3.5	4.3	5.0	5.6	6.1	7.1	7.9	9.7	11.2	12.5	13.7	15.8	17.7	19.4	21.7	
0.5/0.75	4.1	5.8	7.1	8.2	9.2	10.0	11.6	13.0	15.9	18.3	20.5	22.5	25.9	29.0	31.8	35.5	
1.00	7.0	9.9	12.1	14.0	15.7	17.1	19.8	22.1	27.1	31.3	35.0	38.3	44.3	49.5	54.2	60.6	

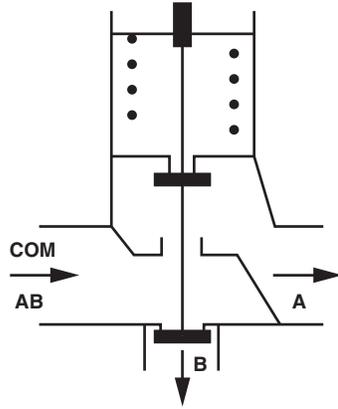
**(Diverting for 3-Way) Maximum Water Capacity—Cubic Meters per Hour (m<sup>3</sup>/hr)**

Valve Size (mm)	Pressure Differential (kPa)															kPa
	1	10	20	30	40	50	60	80	Kvs/100	150	200	300	400	500		
15	0.9	0.27	0.38	0.47	0.54	0.60	0.66	0.76	0.85	1.04	1.20	1.47	1.70	1.90	m <sup>3</sup> /hr	
15	0.21	0.68	0.96	1.17	1.35	1.51	1.66	1.91	2.15	2.60	3.00	3.70	4.30	4.80		
15/20	0.35	1.12	1.59	1.94	2.24	2.51	2.75	3.17	3.50	4.34	5.01	6.14	7.09	7.93		
25	0.60	1.91	2.71	3.32	3.83	4.28	4.69	5.41	6.00	7.41	8.56	10.48	12.11	13.54		

### Three-Way Valve Applications

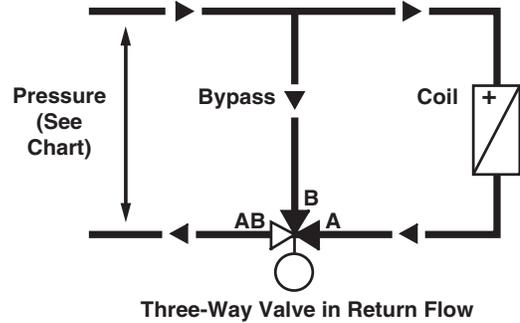
#### Diverting

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.

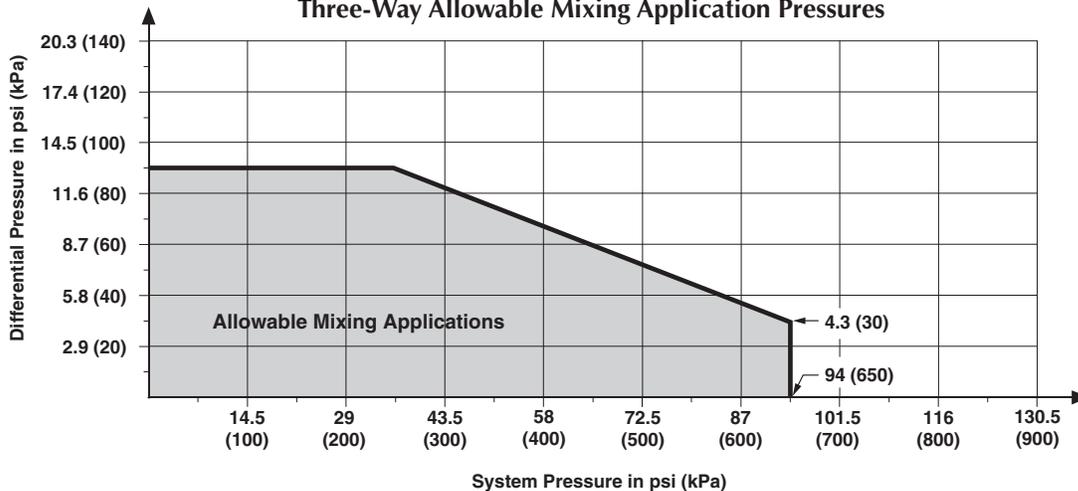


#### Mixing

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.

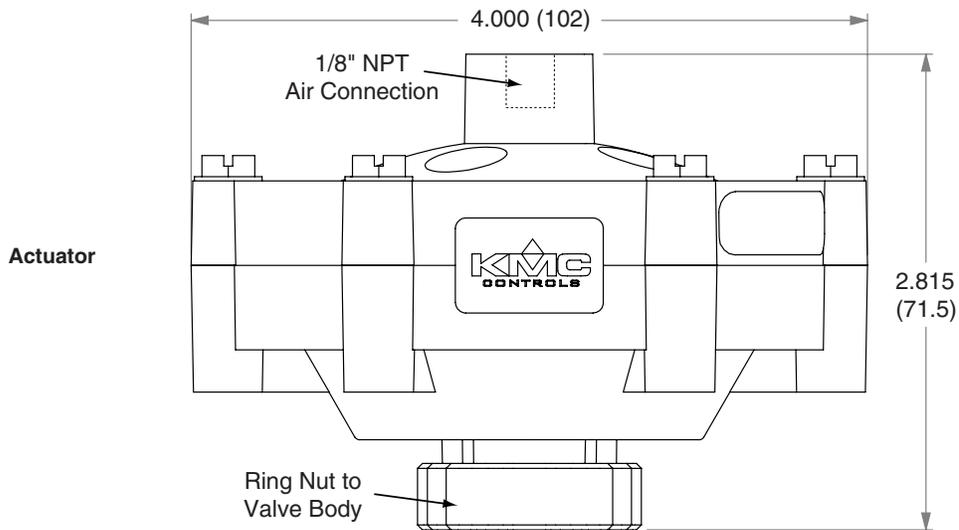


**Three-Way Allowable Mixing Application Pressures**

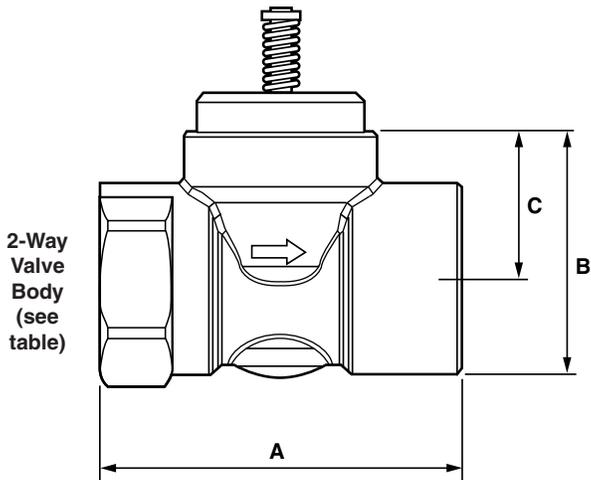


# Dimensions

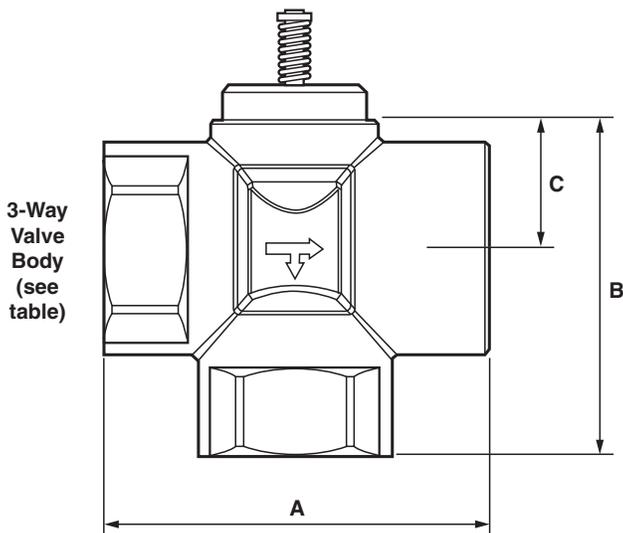
Dimensions in inches (mm) and weight in pounds (kg)



<b>Actuator Weight lbs. (kg)</b>
0.50 (0.23)



2-Way Valve Body Size Inches (mm)	A	B	C	Weight lbs. (kg)
0.5 (15)	2.76 (70)	1.63 (41.5)	1.00 (25.4)	0.82 (0.37)
0.75 (20)	2.76 (70)	1.77 (45)	1.00 (25.4)	0.99 (0.45)
1.0 (25)	3.50 (89)	2.10 (54)	1.00 (25.4)	1.68 (0.76)



3-Way Valve Size Inches (mm)	A	B	C	Weight lbs. (kg)
0.5 (15)	2.76 (70)	2.34 (59.5)	1.00 (25.4)	1.08 (0.49)
0.75 (20)	2.76 (70)	2.34 (59.5)	1.00 (25.4)	1.26 (0.57)
1.0 (25)	3.50 (89)	2.85 (67.3)	1.00 (25.4)	2.14 (0.97)

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