Description

These three-way, diverting, globe zone valves are available in 1/2” through 1” line sizes. They are designed to regulate hot or chilled water in VAV terminal unit reheat coils, fan coil units, and induction units. For limited pressures, the valves can also be used in mixing applications. The compact size allows easy installation in small enclosures.

The actuator determines the fail position. Actuators have position indication and manual override. Replacement actuators can be installed on the valve bodies without tools.

Models

Use this chart to select the desired model of valve:

VEZ-44 YYY MB Z

Actuator

- A: 10–0 VDC (0 V = AB-A) Proportional (MEP-3516)
- B: 0–10 VDC (0 V = AB-B) Proportional (MEP-3511)
- F: Tri-State, 24 VAC, Floating (MEP-3510)
- M: Fail AB-A, 2-position, 24 VAC, (MEP-3503)
- N: Fail AB-B, 2-position, 24 VAC, (MEP-3501)
- P: Fail AB-A, 2-position, 120 VAC, (MEP-3504)
- Q: Fail AB-B, 2-position, 120 VAC, (MEP-3502)

(Note: 2-position actuators are spring return fail-safe, and others are fail-in-place)

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

Features

- Choice of tri-state/floating or proportional fail-in-place or two-position (NO or NC) spring-return fail-safe
- Compact size
- Spring-return actuators feature easy manual override, visual position indication, UL listing for plenum installations, and heat-resistant lead wires
- Non-fail-safe actuators feature manual override (with 3 mm hex wrench), visual position indication, and are CE compliant and UL listed

⚠️ 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).

Specifications and design subject to change without notice.
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

Material
Body
Brass
Body Trim
Brass
Stem
Stainless steel ASTM A582 Type 303
Packing
Ethylene propylene O ring

Actuators
All
24 in-lb. (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)

Approvals
UL 873
cUL certified to Canadian Standard C22.2 No. 24-93
CE compliant (non-spring return actuators)

Accessories/Repair Parts

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

Conduit Connector
HPO-5063 For actuators “F/B/A”

Replacement Block Cover and Terminal Plug
HPO-5062 For proportional actuators “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-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

Applications

Diverting
As the 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 zone 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.

(See also the VEZ-41/42/43 Series Data Sheet for an additional pressure vs. flow rate vs. valve size chart.)

### Mixing Applications

<table>
<thead>
<tr>
<th>Valve Size (inches)</th>
<th>Pressure Differential (psi)</th>
<th>1.0</th>
<th>2.0</th>
<th>3.0</th>
<th>4.0</th>
<th>5.0</th>
<th>6.0</th>
<th>8.0</th>
<th>10.0</th>
<th>15.0</th>
<th>20.0</th>
<th>25.0</th>
<th>30.0</th>
<th>40.0</th>
<th>50.0</th>
<th>60.0</th>
<th>75.0</th>
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<tbody>
<tr>
<td>0.5</td>
<td></td>
<td>1.4</td>
<td>1.7</td>
<td>2.0</td>
<td>2.2</td>
<td>2.4</td>
<td>2.8</td>
<td>3.2</td>
<td>3.9</td>
<td>4.4</td>
<td>5.0</td>
<td>5.5</td>
<td>6.3</td>
<td>4.1</td>
<td>7.7</td>
<td>8.7</td>
<td></td>
</tr>
<tr>
<td>0.5/0.75</td>
<td></td>
<td>5.8</td>
<td>7.1</td>
<td>8.2</td>
<td>9.2</td>
<td>10.0</td>
<td>11.6</td>
<td>13.0</td>
<td>15.9</td>
<td>18.3</td>
<td>20.5</td>
<td>22.5</td>
<td>25.9</td>
<td>29.0</td>
<td>31.8</td>
<td>35.5</td>
<td></td>
</tr>
<tr>
<td>1.00</td>
<td></td>
<td>9.9</td>
<td>12.1</td>
<td>14.0</td>
<td>15.7</td>
<td>17.1</td>
<td>19.8</td>
<td>22.1</td>
<td>27.1</td>
<td>31.3</td>
<td>35.0</td>
<td>38.3</td>
<td>44.3</td>
<td>49.5</td>
<td>54.2</td>
<td>60.6</td>
<td></td>
</tr>
</tbody>
</table>

### Additional Pressure vs. Flow Rate vs. Valve Size Chart

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

### Conversion Chart

- **System Pressure in psi (kPa)**
- **Differential Pressure in psi (kPa)**
- **Allowable Mixing Applications**
- **Bypass Coil**
- **Three-Way Valve in Return Flow**
# Dimensions

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

## Two-Position Fail-Safe Actuator

<table>
<thead>
<tr>
<th>Valve Size</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>C (mm)</th>
<th>Weight (lb, kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 (15)</td>
<td>2.76 (70)</td>
<td>2.34 (59.5)</td>
<td>1.00 (25.4)</td>
<td>1.08 (0.49)</td>
</tr>
<tr>
<td>0.75 (20)</td>
<td>2.76 (70)</td>
<td>2.34 (59.5)</td>
<td>1.00 (25.4)</td>
<td>1.26 (0.57)</td>
</tr>
<tr>
<td>1.0 (25)</td>
<td>3.50 (89)</td>
<td>2.85 (67.3)</td>
<td>1.00 (25.4)</td>
<td>2.14 (0.97)</td>
</tr>
</tbody>
</table>

## Tri-State or Proportional Actuator

<table>
<thead>
<tr>
<th>Valve Size</th>
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<th>B (mm)</th>
<th>C (mm)</th>
<th>Weight (lb, kg)</th>
</tr>
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<tbody>
<tr>
<td>0.5 (15)</td>
<td>2.76 (70)</td>
<td>2.34 (59.5)</td>
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<tr>
<td>1.0 (25)</td>
<td>3.50 (89)</td>
<td>2.85 (67.3)</td>
<td>1.00 (25.4)</td>
<td>2.14 (0.97)</td>
</tr>
</tbody>
</table>

NOTE: Minimum access space recommended is 8-inches (200 mm) above the actuator and beside the terminal plug.

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<thead>
<tr>
<th>Valve Size</th>
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<th>B (mm)</th>
<th>C (mm)</th>
<th>Weight (lb, kg)</th>
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