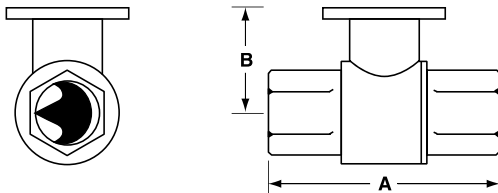




| Technical Data                     |                                      |
|------------------------------------|--------------------------------------|
| Service                            | chilled or hot water, 60% glycol     |
| Flow characteristic                | A-port equal percentage              |
| Action                             | 90° rotation                         |
| Sizes                              | ½", ¾", 1", 1¼", 1½", 2", 2½", 3"    |
| Type of end fitting                | NPT female ends                      |
| Materials:                         |                                      |
| Body                               | forged brass, nickel plated          |
| Ball                               | stainless steel                      |
| Stem                               | stainless steel                      |
| Seats                              | PTFE                                 |
| Characterizing disc                | Tefzel®                              |
| Packing                            | 2 EPDM O-rings, lubricated           |
| Body pressure rating               |                                      |
| 600 psi                            | ½" - 1¼" (B230)                      |
| 400 psi                            | 1¼" (B231) - 3"                      |
| Media temp. range                  | 0°F to 212°F [-18°C to 100°C]        |
| Close off pressure                 |                                      |
| 200 psi                            | ½" - 2" (B250)                       |
| 100 psi                            | 2" (B251) - 3"                       |
| Maximum differential pressure (ΔP) | 30 psi for typical applications      |
| Leakage                            | 0% for A to AB                       |
| External leakage                   | according to EN 12266-1:2003         |
| C <sub>v</sub> rating              | A-port: see product chart for values |

Tefzel® is a registered trademark of DuPont

### Dimensions



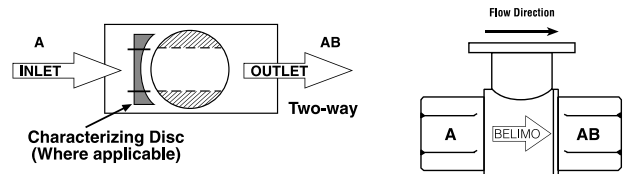
2WayValve-B207-B220

| Valve Body | Valve Nominal Size |         | Dimensions (Inches [mm]) |              |
|------------|--------------------|---------|--------------------------|--------------|
|            | Inches             | DN [mm] | A                        | B            |
| B207-B211  | ½"                 | 15      | 2.41" [61.1]             | 1.39" [35.2] |
| B212-B215  | ½"                 | 15      | 2.38" [60.4]             | 1.78" [45.2] |
| B217-B220  | ¾"                 | 20      | 2.73" [69.3]             | 1.87" [47.4] |
| B222-B225  | 1"                 | 25      | 3.09" [78.4]             | 1.87" [47.4] |
| B229-B230  | 1¼"                | 32      | 3.72" [94.6]             | 1.87" [47.4] |
| B231-B232  | 1¼"                | 32      | 3.72" [94.6]             | 2.04" [51.9] |
| B238-B240  | 1½"                | 40      | 3.88" [98.5]             | 2.04" [51.9] |
| B248-B250  | 2"                 | 50      | 4.21" [107.0]            | 2.27" [57.7] |
| B251-B254  | 2"                 | 50      | 4.93" [125.2]            | 2.73" [69.5] |
| B261-B265  | 2½"                | 65      | 5.55" [140.9]            | 2.73" [69.5] |
| B277-B280  | 3"                 | 80      | 5.82" [147.9]            | 2.73" [69.5] |

| C <sub>v</sub> | Valve Nominal Size |         | Type      | Suitable Actuators |        |
|----------------|--------------------|---------|-----------|--------------------|--------|
|                | Inches             | DN [mm] | 2-Way NPT | Non-Spring         | Spring |
| 0.3            | ½"                 | 15      | B207      | TR Series          |        |
| 0.46           | ½"                 | 15      | B208      |                    |        |
| 0.8            | ½"                 | 15      | B209      |                    |        |
| 1.2            | ½"                 | 15      | B210      |                    |        |
| 1.9            | ½"                 | 15      | B211      |                    |        |
| 3              | ½"                 | 15      | B212      |                    |        |
| 4.7            | ½"                 | 15      | B213      |                    |        |
| 7.4            | ½"                 | 15      | B214      |                    |        |
| 10             | ½"                 | 15      | B215*     |                    |        |
| 4.7            | ¾"                 | 20      | B217      |                    |        |
| 7.4            | ¾"                 | 20      | B218      |                    |        |
| 10             | ¾"                 | 20      | B219      |                    |        |
| 24             | ¾"                 | 20      | B220*     |                    |        |
| 7.4            | 1"                 | 25      | B222      |                    |        |
| 10             | 1"                 | 25      | B223      |                    |        |
| 19             | 1"                 | 25      | B224      |                    |        |
| 30             | 1"                 | 25      | B225*     |                    |        |
| 10             | 1¼"                | 32      | B229      |                    |        |
| 19             | 1¼"                | 32      | B230*     |                    |        |
| 25             | 1¼"                | 32      | B231      |                    |        |
| 37             | 1¼"                | 32      | B232*     |                    |        |
| 19             | 1½"                | 40      | B238      |                    |        |
| 29             | 1½"                | 40      | B239      |                    |        |
| 37             | 1½"                | 40      | B240*     |                    |        |
| 29             | 2"                 | 50      | B248      |                    |        |
| 46             | 2"                 | 50      | B249      |                    |        |
| 57             | 2"                 | 50      | B250*     |                    |        |
| 65             | 2"                 | 50      | B251      |                    |        |
| 85             | 2"                 | 50      | B252      |                    |        |
| 120            | 2"                 | 50      | B253      |                    |        |
| 240            | 2"                 | 50      | B254*     |                    |        |
| 60             | 2½"                | 65      | B261      |                    |        |
| 75             | 2½"                | 65      | B262      |                    |        |
| 110            | 2½"                | 65      | B263      |                    |        |
| 150            | 2½"                | 65      | B264      |                    |        |
| 210            | 2½"                | 65      | B265*     |                    |        |
| 70             | 3"                 | 80      | B277      |                    |        |
| 130            | 3"                 | 80      | B278      |                    |        |
| 170            | 3"                 | 80      | B280*     |                    |        |

\*Models without characterizing disc

### Flow Patterns



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**MFT**



## Models

- AFRX24-MFT
- AFRX24-MFT-S
- AFRX24-MFT-5-14
- AFRX24-MFT-S-5-14

| Technical Data         |   |
|------------------------|---|
| Control                | MFT   |
| Control signal         | 2 to 10 VDC, 4 to 20 mA (default) variable (VDC, PWM, floating point, on/off)   |
| Power supply           | 24 VAC, +/- 20%, 50/60 Hz<br>24 VDC, +20% / -10%  |
| Power consumption†     | running 7.5 W<br>holding 3 W  |
| Transformer sizing†    | 10 VA (Class 2 power source)  |
| Electrical connection  | 3 ft. [1m], 10 ft. [3m] or 16 ft. [5m] 18 GA appliance or plenum cables, with or without 1/2" conduit connector<br>-S models: two 3 ft. [1m], 10 ft. [3m] or 16 ft. [5m] appliance cables with or without 1/2" conduit connectors |
| Overload protection    | electronic throughout 0 to 90° rotation   |
| Feedback output*       | 2 to 10 VDC, 0.5 mA max (variable)  |
| Input impedance        | 100 kΩ for 2 to 10 VDC (0.1 mA)<br>500 Ω for 4 to 20 mA<br>1500 Ω for on/off and floating point   |
| Angle of rotation      | 95°   |
| Direction of rotation* | spring reversible with CW/CCW mounting<br>motor reversible with built-in ↻ switch   |
| Position indication    | visual indicator 0° to 95° (0° is spring return position)   |
| Manual override        | 5 mm hex crank (3/16" Allen), supplied  |
| Running time           | motor* 150 seconds (default), variable (70 to 220 seconds)<br>spring <20 sec @ -4°F to 122°F [-20°C to 50°C]  |
| Ambient temperature    | -22° F to 122° F [-30° C to 50° C]  |
| Housing                | NEMA 2, IP54, Enclosure Type 2  |
| Agency listings        | cULus according. To UL60730-1A/-2-14, CAN/CSA E60730- 1:02, CE according. To 2004/108/EC & 2006/95/EC   |
| Noise level            | ≤40dB(A) motor @ 150 seconds, run time dependent<br>≤62dB(A) spring return  |
| Quality standard       | ISO 9001  |

† Programmed for 70 sec motor runtime. At 150 sec motor run time, transformer sizing is 8.5 VA and power consumption is 6 W running/3 W holding.

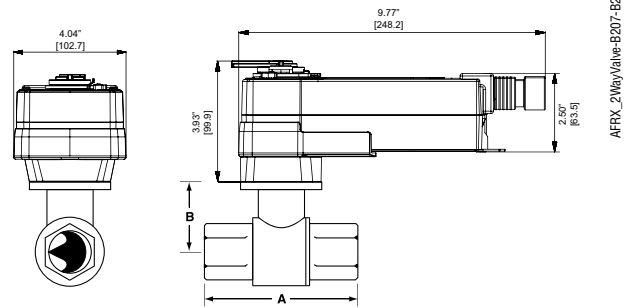
\* Variable when configured with MFT options

‡ Rated Impulse Voltage 800V, Type of action 1.AA (1.AA.B for -S version), Control Pollution Degree 3.

## AFRX24-MFT-S, AFRX24-MFT-S-5-14

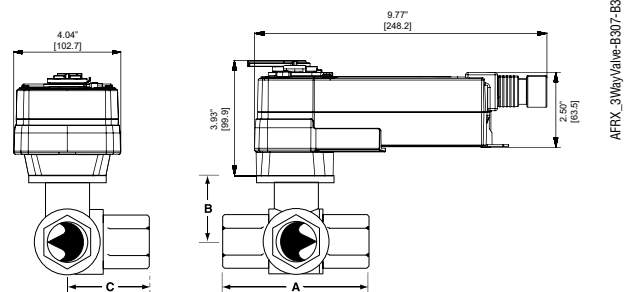
|                    |  |
|--------------------|--|
| Auxiliary switches | 2 x SPDT 3A (0.5A) @ 250 VAC, UL approved one set at +10° to 90° |
|--------------------|--|

## Dimensions



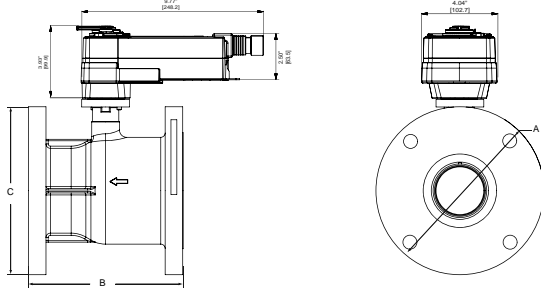
| Valve Body | Valve Nominal Size |         | Dimensions (Inches [mm]) |              |
|------------|--------------------|---------|--------------------------|--------------|
|            | Inches             | DN [mm] | A                        | B            |
| B212-B215  | ½"                 | 15      | 2.38" [60.4]             | 1.72" [43.7] |
| B217-B220  | ¾"                 | 20      | 2.73" [69.3]             | 1.81" [45.9] |
| B222-B225  | 1"                 | 25      | 3.09" [78.4]             | 1.81" [45.9] |
| B229-B230  | 1¼"                | 32      | 3.72" [94.6]             | 1.81" [45.9] |
| B231-B232  | 1¼"                | 32      | 3.72" [94.6]             | 1.98" [50.4] |
| B238-B240  | 1½"                | 40      | 3.88" [98.5]             | 1.98" [50.4] |
| B248-B250  | 2"                 | 50      | 4.21" [107.0]            | 2.21" [56.2] |
| B251-B254  | 2"                 | 50      | 4.93" [125.2]            | 2.68" [68.0] |
| B261-B265  | 2½"                | 65      | 5.55" [140.9]            | 2.68" [68.0] |
| B277-B280  | 3"                 | 80      | 5.82" [147.9]            | 2.68" [68.0] |

## Dimensions



| Valve Body | Valve Nominal Size |         | Dimensions (Inches [mm]) |              |              |
|------------|--------------------|---------|--------------------------|--------------|--------------|
|            | Inches             | DN [mm] | A                        | B            | C            |
| B312-B315  | ½"                 | 15      | 2.38" [60.4]             | 1.72" [43.7] | 1.26" [32.1] |
| B317-B320  | ¾"                 | 20      | 2.73" [69.3]             | 1.81" [45.9] | 1.45" [36.8] |
| B322-B325  | 1"                 | 25      | 3.09" [78.4]             | 1.81" [45.9] | 1.56" [39.8] |
| B329-B331  | 1¼"                | 32      | 3.96" [100.6]            | 2.21" [56.2] | 2.14" [54.3] |
| B338-B341  | 1½"                | 40      | 4.39" [111.6]            | 2.45" [62.2] | 2.33" [59.1] |
| B347-B352  | 2"                 | 50      | 4.90" [124.5]            | 2.68" [68.0] | 2.60" [66.0] |

### Dimensions



AFR\_L66CV

| Valve Body | Nominal Pipe Size | Top Flange Design | Flange Diameter | Face-to-Face Length | Height        |
|------------|-------------------|-------------------|-----------------|---------------------|---------------|
|            |                   |                   | A               | B                   | C             |
| B6250      | 2½" [65]          | F05               | 7.50" [190.5]   | 5.50" [139.7]       | 8.10" [205.4] |
| B6300      | 3" [80]           |                   | 8.00" [203.2]   | 6.60" [167.6]       | 8.40" [213.1] |
| B6400      | 4" [100]          |                   | 9.00" [228.6]   | 8.30" [210.8]       | 9.30" [235.9] |

### Wiring Diagrams

#### INSTALLATION NOTES

- 1 Provide overload protection and disconnect as required.
- 2 **CAUTION Equipment Damage!** Actuators may be connected in parallel if not mechanically mounted to the same shaft. Power consumption and input impedance must be observed.
- 3 Actuators may also be powered by 24 VDC.
- 4 Position feedback cannot be used with Triac sink controller. The actuator internal common reference is not compatible.
- 5 Control signal may be pulsed from either the Hot (source) or the Common (sink) 24 VAC line.
- 8 Contact closures A & B also can be triacs.
- 8 A & B should both be closed for triac source and open for triac sink.
- 9 For triac sink the common connection from the actuator must be connected to the hot connection of the controller.

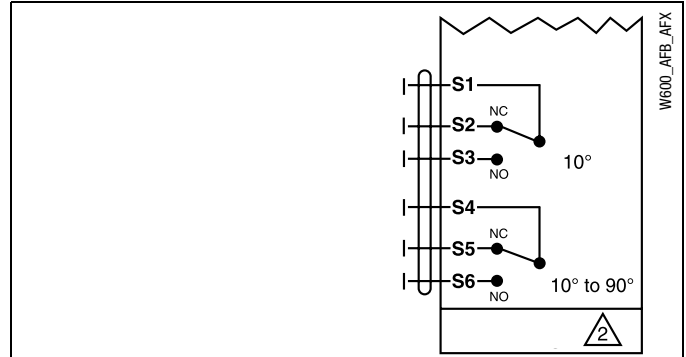
#### APPLICATION NOTES

- ◆ Meets UL requirements without the need of an electrical ground connection.
- ◆ The ZG-R01 500 Ω resistor may be used.

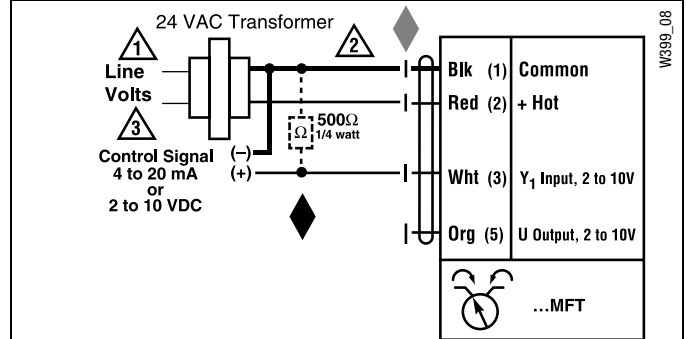
#### WARNING Live Electrical Components!

During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

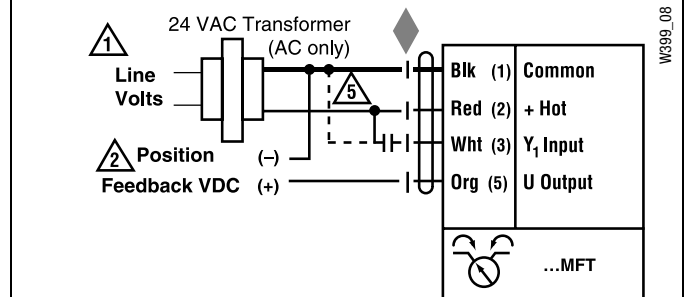
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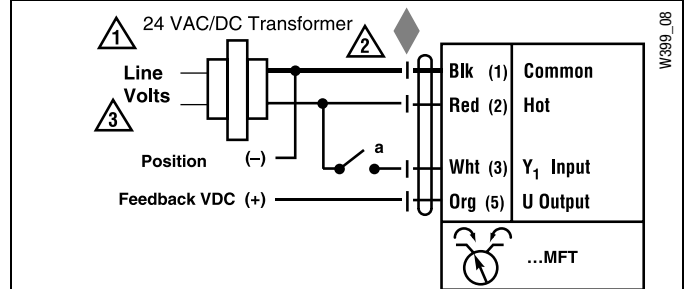
### Auxiliary Switches for AFRX24-MFT



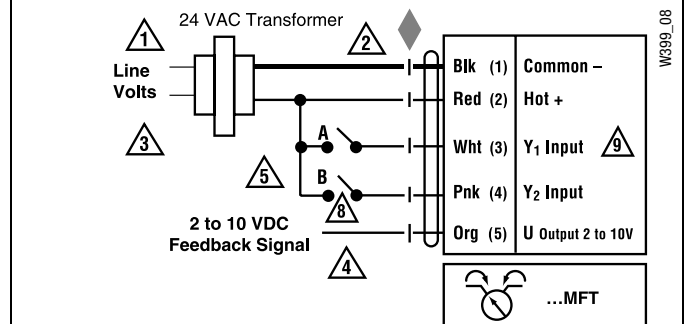
### VDC/4-20 mA



### PWM



### On/Off control



### Floating Point control