

# B2...VS Series, 2-way, Ball Valve

## Bronze Body, Stainless Steel Ball and Stem



- Live-load packing set
- Stainless steel ball & stem
- Blow-out proof stem design

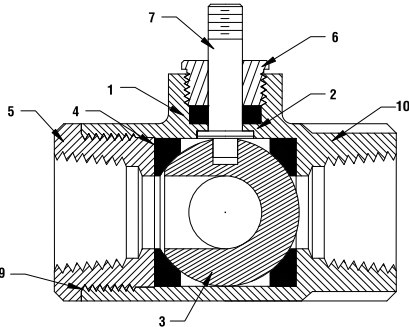
### Application

This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV Box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable flow.

This valve is designed with MFT functionality which facilitates the use of various control input.

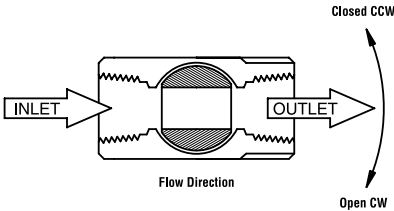
- Up to 35 psi steam
  - ½" - 600 PSIG WOG, Cold Non-Shock.
  - Federal Specification: WW-V-35C, Type II
- Composition: BZ  
Style: 3

| Technical Data      |  |
|---------------------|--|
| Media               | chilled or hot water, glycol, 35# steam                          |
| Flow characteristic | modified equal percentage  |
| Action              | 90° rotation<br>valve open CW, valve closed CCW                  |
| Sizes               | ½", ¾", 1", 1¼", 1½", 2"   |
| Type of end fitting | SAE NPT (female connections)                                     |
| Materials:          |  |
| 1 Stem packing      | reinforced PTFE  |
| 2 Stem bearing      | reinforced PTFE  |
| 3 Ball              | 316 stainless steel  |
| 4 Seat (x2)         | reinforced PTFE w/ Durafill                                      |
| 5 Retainer          | B16 (¾" - 1") stainless steel<br>B584 (1¼" - 2") stainless steel |
| 6 Gland             | B16 brass  |
| 7 Stem              | 316 stainless steel  |
| 8 Jam nut           | stainless steel  |
| 9 Body seal         | PTFE (1-1/4" to 2")  |
| 10 Body             | B584-C84400 bronze   |



|                                    |                                   |
|------------------------------------|-----------------------------------|
| Pressure rating                    | 600 psig WOG                      |
| Media temp. range                  | -22°F to +280°F (-30°C to +138°C) |
| Close-off pressure                 | 600 psig @ 100°F                  |
| Maximum differential pressure (ΔP) | <600 psig                         |

### Flow Patterns



| Valve Nominal Size |        |         | Type       | Suitable Actuators |                   |
|--------------------|--------|---------|------------|--------------------|-------------------|
| C <sub>v</sub>     | Inches | DN [mm] | 2-way NPT  | Spring Return      | Non-Spring Return |
| 1                  | ½      | 15      | B2050VS-01 | LF Series          | LM Series         |
| 2                  | ½      | 15      | B2050VS-02 |                    |                   |
| 4                  | ½      | 15      | B2050VS-04 |                    |                   |
| 15                 | ½      | 15      | B2050VS-15 | NF                 | NM                |
| 30                 | ¾      | 20      | B219VS     |                    |                   |
| 51                 | ¾      | 20      | B220VS     |                    |                   |
| 43                 | 1      | 25      | B224VS     | AF Series          | AM Series         |
| 68                 | 1      | 25      | B225VS     |                    |                   |
| 48                 | 1¼     | 32      | B232VS     |                    |                   |
| 84                 | 1½     | 40      | B239VS     |                    |                   |
| 177                | 1½     | 40      | B240VS     |                    |                   |
| 108                | 2      | 50      | B249VS     | GM Series          | SY Series         |

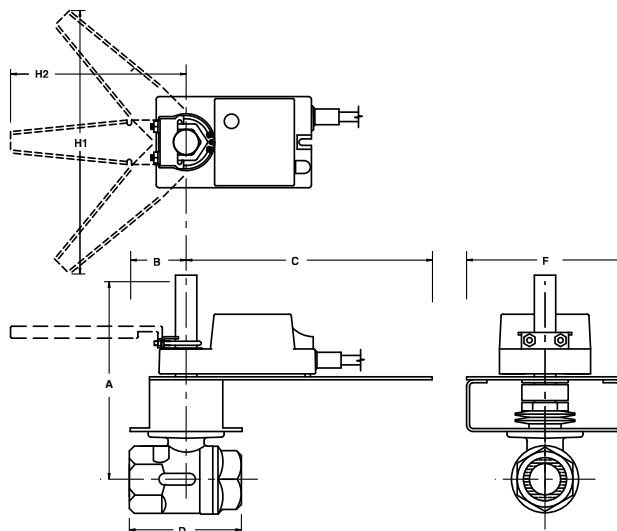


## Models

NMB24-3-X1  
NMX24-3-X1  
NRB24-3

| Technical Data        |  |
|-----------------------|--|
| Control               | on/off, floating point   |
| Power supply          | 24 VAC $\pm$ 20% 50/60 Hz<br>24 VDC $\pm$ 10%  |
| Power consumption     | running 2.0 W<br>holding 0.2 W   |
| Transformer sizing    | 4 VA (class 2 power source)  |
| Electrical connection | 3 ft., 18 GA plenum rated cable<br>NMB24-3-X1 ½" conduit connector   |
| Overload protection   | electronic throughout 0° to 95° rotation   |
| Input impedance       | 600 $\Omega$   |
| Angle of rotation     | max 95°, adjustable with mechanical stop   |
| Torque                | 90 in-lbs [10 Nm]  |
| Direction of rotation | reversible with  switch<br>=CCW with decreasing control signal (10-2V)<br>=CW with decreasing control signal (10-2V) |
| Position indication   | reflective visual indicator (snap-on)  |
| Manual override       | external push button   |
| Running time          | 95 seconds, constant independent of load   |
| Humidity              | 5 to 95% RH non-condensing (EN 60730-1)  |
| Ambient temperature   | -22°F to +122°F [-30°C to +50°C]   |
| Storage temperature   | -40°F to +176°F [-40°C to +80°C]   |
| Housing               | NEMA type 2/IP54   |
| Housing material      | UL94-5VA   |
| Agency listings       | cULus acc. to UL 60730-1/-2-14,<br>CAN/CSA C22.2 No. 24 certified,<br>CE acc. to 73/23/EEC                           |
| Noise level           | <45 db(A)  |
| Servicing             | maintenance free   |
| Quality standard      | ISO 9001   |

## Dimensions with 2-Way Valve



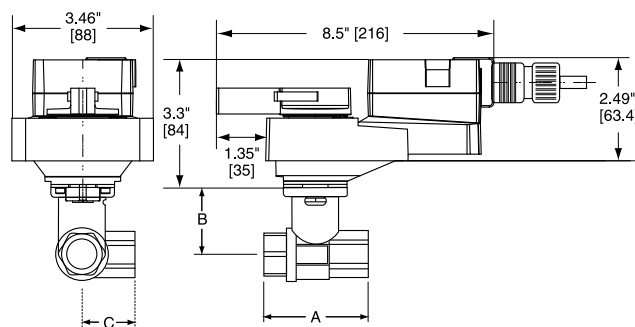
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### Valve Nominal Size

### Dimensions (Inches)

| Valve Body  | COP  | Inches | DN [mm] | A    | B    | C    | D    | F    | H1   | H2   |
|-------------|------|--------|---------|------|------|------|------|------|------|------|
| B219VS      | 400  | ¾      | 20      | 6.70 | 2.00 | 8.00 | 3.00 | 6.25 | 9.75 | 8.50 |
| B220VS      | 400  | ¾      | 20      | 6.70 | 2.00 | 8.00 | 3.12 | 6.25 | 9.75 | 8.50 |
| B2050VSS-15 | 1000 | ½      | 15      | 6.70 | 2.00 | 8.00 | 2.25 | 6.25 | 9.75 | 8.50 |
| B219VSS     | 1000 | ¾      | 20      | 6.70 | 2.00 | 8.00 | 3.00 | 6.25 | 9.75 | 8.50 |

## Dimensions with 3-Way Valve



### Valve Nominal Size

### Dimensions (mm)

| Valve Body | COP | Inches | DN [mm] | A           | B          | C          |
|------------|-----|--------|---------|-------------|------------|------------|
| B332L      | 200 | 1¼     | 32      | 4.13" [105] | 2.00" [51] | 2.19" [56] |

## Wiring Diagrams



## INSTALLATION NOTES



Provide overload protection and disconnect as required.



Actuators may also be powered by 24 VDC.




## APPLICATION NOTES

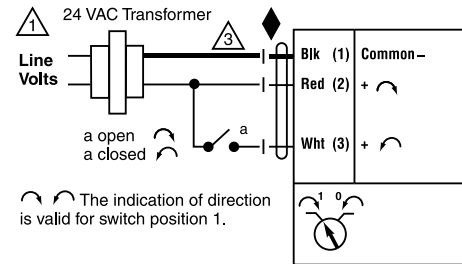


Meets cULus or UL and CSA requirements without the need of an electrical ground connection.

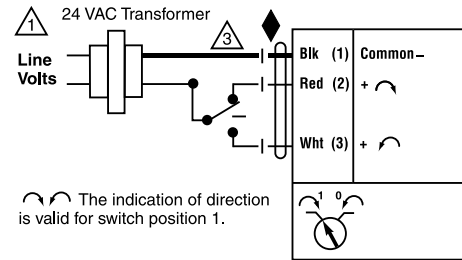


**WARNING** *Live Electrical Components!*

 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.



### On/Off control



### Floating Point or On/Off control

## Piping

The valve should be mounted in a weather-protected area in a location that is within the ambient limits of the actuator. Allow sufficient room for valve with actuator and for service. Allow 6" for cover removal and 12" for complete actuator removal. The assembly can be mounted with the actuator vertical or horizontal in relation to the pipe. The actuators should never be mounted underneath the valve, as condensation can build up and result in a failure of the actuators. Do not reverse flow direction.