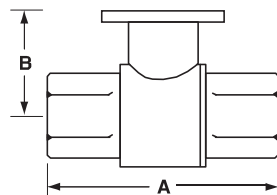




| Technical Data                             |                                                |
|--------------------------------------------|------------------------------------------------|
| Service                                    | chilled or hot water, 60% glycol               |
| Flow characteristic                        | A-port equal percentage                        |
| Controllable Flow Range                    | 75°                                            |
| Sizes                                      | 1/2", 3/4", 1", 1 1/4", 1 1/2", 2", 2 1/2", 3" |
| Type of end fitting                        | NPT female ends                                |
| Materials                                  |                                                |
| Body                                       | forged brass, nickel plated                    |
| Bal                                        | stainless steel                                |
| Stem                                       | stainless steel                                |
| Seats                                      | PTFE                                           |
| Characterizing disc                        | Tefzel®                                        |
| Packing                                    | 2 EPDM O-rings, lubricated                     |
| Body pressure rating                       |                                                |
| 600 psi                                    | 1/2" - 1 1/4" (B230)                           |
| 400psi                                     | 1 1/4" (B231) - 3"                             |
| Media temp. range                          | 0°F to 250°F [-18°C to 120°C]                  |
| Close off pressure                         |                                                |
| 200 psi                                    | 1/2" - 2" (B250)                               |
| 100psi                                     | 2" (B251) - 3"                                 |
| Maximum differential pressure (ΔP)         | 50 psi for typical applications                |
| Leakage                                    | 0% for A to AB                                 |
| External leakage                           | according to EN 12266-1:2003                   |
| C rating                                   | A-port: see product chart for values           |
| Tefze® is a registered trademark of DuPont |                                                |

## Dimensions



2WayValve-B207-B220

| Valve Body | Valve Nominal Size |         | Dimensions (Inches [mm]) |              |
|------------|--------------------|---------|--------------------------|--------------|
|            | nches              | DN [mm] | A                        |              |
| B207-B211  | 1/2"               | 15      | 2.41" [61.1]             | 1.39" [35.2] |
| B212-B216  | 1/2"               | 15      | 2.38" [60.4]             | 1.78" [45.2] |
| B217-B221  | 3/4"               | 20      | 2.73" [69.3]             | 1.87" [47.4] |
| B222-B225  | 1"                 | 25      | 3.09" [78.4]             | 1.87" [47.4] |
| B229-B230  | 1 1/4"             | 32      | 3.72" [94.6]             | 1.87" [47.4] |
| B231-B232  | 1 1/4"             | 32      | 3.72" [94.6]             | 2.04" [51.9] |
| B238-B240  | 1 1/2"             | 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  | 2 1/2"             | 65      | 5.55" [140.9]            | 2.73" [69.5] |
| B277-B280  | 3"                 | 80      | 5.82" [147.9]            | 2.73" [69.5] |

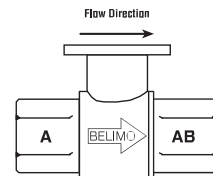
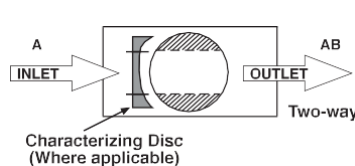
## Application

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.

| Valve Nominal Size |        |         |          | Type      |                | Suitable Actuators |           |
|--------------------|--------|---------|----------|-----------|----------------|--------------------|-----------|
| C <sub>v</sub>     | Inches | DN [mm] | 2-WayNPT |           |                | Non-Spring         | Spring    |
| 0.3                | 1/2"   | 15      | B207     | TR Series | LR Series      | NR...N4 Series     | TF Series |
| 0.46               | 1/2"   | 15      | B208     |           |                |                    |           |
| 0.8                | 1/2"   | 15      | B209     |           |                |                    |           |
| 1.2                | 1/2"   | 15      | B210     |           |                |                    |           |
| 1.9                | 1/2"   | 15      | B211     |           |                |                    |           |
| 3                  | 1/2"   | 15      | B212     |           |                |                    |           |
| 4.7                | 1/2"   | 15      | B213     |           |                |                    |           |
| 7.4                | 1/2"   | 15      | B214     |           |                |                    |           |
| 10                 | 1/2"   | 15      | B215     |           |                |                    |           |
| 16                 | 1/2"   | 15      | B216     |           |                |                    |           |
| 4.7                | 3/4"   | 20      | B217     | AR Series | AR...N4 Series | AF Series          | LF Series |
| 7.4                | 3/4"   | 20      | B218     |           |                |                    |           |
| 10                 | 3/4"   | 20      | B219     |           |                |                    |           |
| 14                 | 3/4"   | 20      | B220     |           |                |                    |           |
| 24                 | 3/4"   | 20      | B221*    |           |                |                    |           |
| 7.4                | 1"     | 25      | B222     |           |                |                    |           |
| 10                 | 1"     | 25      | B223     |           |                |                    |           |
| 19                 | 1"     | 25      | B224     |           |                |                    |           |
| 30                 | 1"     | 25      | B225*    |           |                |                    |           |
| 10                 | 1 1/4" | 32      | B229     |           |                |                    |           |
| 19                 | 1 1/4" | 32      | B230*    |           |                |                    |           |
| 25                 | 1 1/4" | 32      | B231     |           |                |                    |           |
| 37                 | 1 1/4" | 32      | B232*    |           |                |                    |           |
| 19                 | 1 1/2" | 40      | B238     |           |                |                    |           |
| 29                 | 1 1/2" | 40      | B239     |           |                |                    |           |
| 37                 | 1 1/2" | 40      | B240*    |           |                |                    |           |
| 29                 |        | 50      | B248     |           |                |                    |           |
| 46                 |        | 50      | B249     |           |                |                    |           |
| 57                 |        | 50      | B250*    |           |                |                    |           |
| 65                 |        | 50      | B251     |           |                |                    |           |
| 85                 | 2"     | 50      | B252     |           |                |                    |           |
| 120                |        | 50      | B253     |           |                |                    |           |
| 240                |        | 50      | B254*    |           |                |                    |           |
| 60                 | 2 1/2" | 65      | B261     |           |                |                    |           |
| 75                 | 2 1/2" | 65      | B262     |           |                |                    |           |
| 110                | 2 1/2" | 65      | B263     |           |                |                    |           |
| 150                | 2 1/2" | 65      | B264     |           |                |                    |           |
| 210                | 2 1/2" | 65      | B265*    |           |                |                    |           |
| 70                 | 3"     | 80      | B277     |           |                |                    |           |
| 130                | 3"     | 80      | B278     |           |                |                    |           |
| 170                | 3"     | 80      | B280*    |           |                |                    |           |

\*Models without characterizing disc

## Flow Patterns





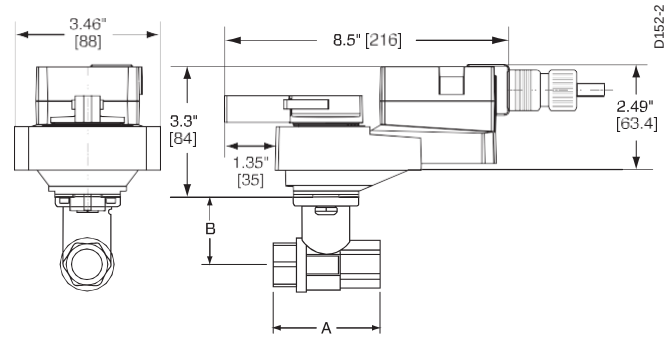
## Models

ARB24-SR  
ARX24-SR Flexible Version

| Technical Data        |                                                                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Power supply          | 24 VAC $\pm$ 20% 50/60 Hz<br>24 VDC $\pm$ 10%                                                                                                      |
| Power consumption     | running 2.5 W<br>holding 0.4 W                                                                                                                     |
| Transformer sizing    | 5 VA (class 2 power source)                                                                                                                        |
| Electrical connection | 1/2" conduit connector<br>18 GA plenum rated cable<br>3 ft [1m], 10 ft [3m], 16 ft [5m]                                                            |
| Overload protection   | electronic throughout 0° to 95° rotation                                                                                                           |
| Operating range Y     | 2 to 10 VDC, 4 to 20 mA                                                                                                                            |
| Feedback output U     | 1 to 10 VDC, max 0.5 mA                                                                                                                            |
| Input impedance       | 100 k (0.1 mA), 500 $\Omega$                                                                                                                       |
| Angle of rotation     | 90°, adjustable with mechanical stop                                                                                                               |
| Torque                | 180 in-lb [20 Nm]                                                                                                                                  |
| Direction of rotation | reversible with protected switch                                                                                                                   |
| Position indication   | handle                                                                                                                                             |
| Manual override       | external push button                                                                                                                               |
| Running time          | ARB24-SR... 90 seconds<br>ARX24-SR... 300, 150, 90 seconds,<br>constant independent of load                                                        |
| Humidity              | 5 to 95% RH non-condensing<br>(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 2/IP54                                                                                                                                        |
| Housing material      | UL94-5VA                                                                                                                                           |
| Agency listings†      | cULus according to UL 60730-1A/-2-14,<br>CAN/CSA E60730-1:02, CE according to<br>2004/108/EC and 2006/95/EC for line voltage<br>and/or -S versions |
| Noise level           | <45 dB(A)                                                                                                                                          |
| Quality standard      | ISO 9001                                                                                                                                           |

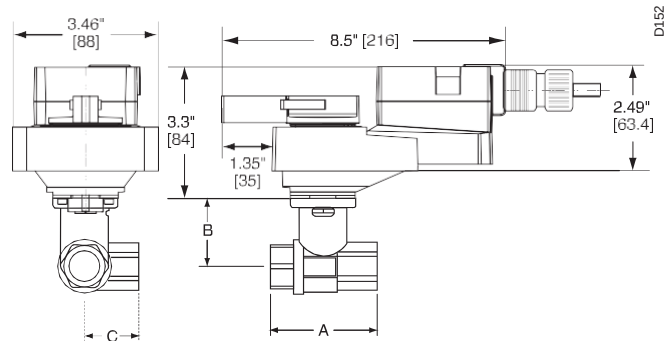
† Rated impulse voltage 800V, Control pollution degree 3, Type of action  
(1.B for -S models)

## Dimensions with 2-Way Valve



| Valve Body | Valve Nominal Size |         | Dimensions (Inches [mm]) |              |
|------------|--------------------|---------|--------------------------|--------------|
|            | Inches             | DN [mm] | A                        |              |
| B231-B232  | 1 1/4"             | 32      | 3.72" [94.6]             | 2.04" [51.9] |
| B238-B240  | 1 1/2"             | 40      | 3.88" [98.5]             | 2.04" [51.9] |
| B248-B250  | 2"                 | 50      | 4.21" [107.0]            | 2.27" [57.7] |

## Dimensions with 3-Way Valve



| Valve Body | Valve Nominal Size |         | Dimensions (Inches [mm]) |              |              |
|------------|--------------------|---------|--------------------------|--------------|--------------|
|            | Inches             | DN [mm] | A                        | B            | C            |
| B329-B331  | 1 1/4"             | 32      | 3.96" [100.6]            | 2.27" [57.7] | 2.14" [54.3] |
| B338-B341  | 1 1/2"             | 40      | 4.39" [111.6]            | 2.51" [63.7] | 2.40" [61.1] |
| B347-B352  | 2"                 | 50      | 4.90" [124.5]            | 2.73" [69.5] | 2.74" [69.7] |

### Wiring Diagrams

#### INSTALLATION NOTES

**CAUTION Equipment damage!**  
Actuators may be connected in parallel.  
Power consumption and input impedance must be observed.

Actuators may also be powered by 24 VDC.

Only connect common to neg. (–) leg of control circuits.

#### APPLICATION NOTES

The ZG-R01 500  $\Omega$  resistor converts the 4 to 20 mA control signal to 2 to 10 VDC, up to 2 actuators may be connected in parallel.

**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.

