

2-way, Characterized Control Valve, Stainless Steel Ball and Stem



5-year warranty



Type overview

| Type | DN |
|------|----|
| B251 | 50 |

Technical data

| | | |
|--------------------|--------------------------|--|
| Functional data | Valve size [mm] | 2" [50] |
| | Fluid | chilled or hot water, up to 60% glycol |
| | Fluid Temp Range (water) | 0...250°F [-18...120°C] |
| | Body Pressure Rating | 400 psi |
| | Close-off pressure Δps | 200 psi |
| | Flow characteristic | equal percentage |
| | Leakage rate | 0% for A – AB |
| | Pipe connection | Internal thread NPT (female) |
| | Servicing | maintenance-free |
| | Flow Pattern | 2-way |
| | Controllable flow range | 75° |
| | Cv | 65 |
| Materials | Valve body | Nickel-plated brass body |
| | Stem | stainless steel |
| | Stem seal | EPDM (lubricated) |
| | Seat | PTFE |
| | Characterized disc | stainless steel |
| | O-ring | EPDM (lubricated) |
| | Ball | stainless steel |
| Suitable actuators | Non Fail-Safe | ARB(X) ARQB(X) ARB(X) N4 |
| | Spring | AFRB(X) |

Safety notes



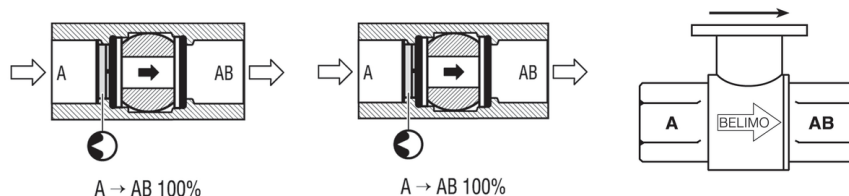
- WARNING: This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to www.p65warnings.ca.gov

Product features

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.

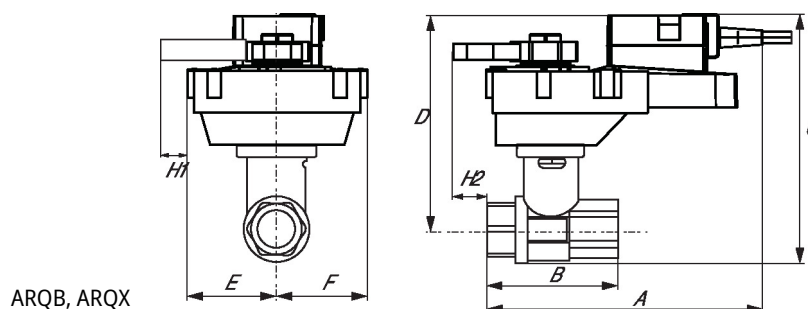
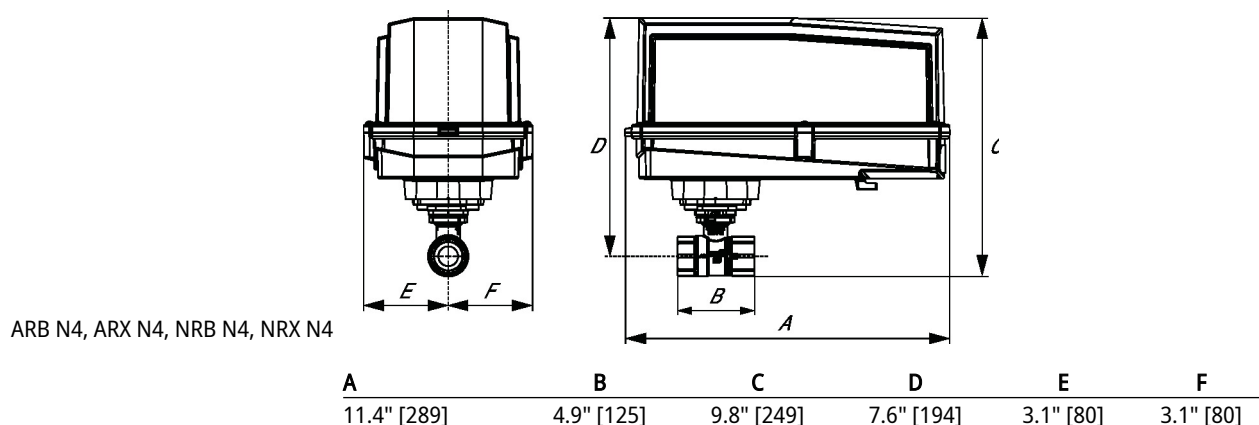
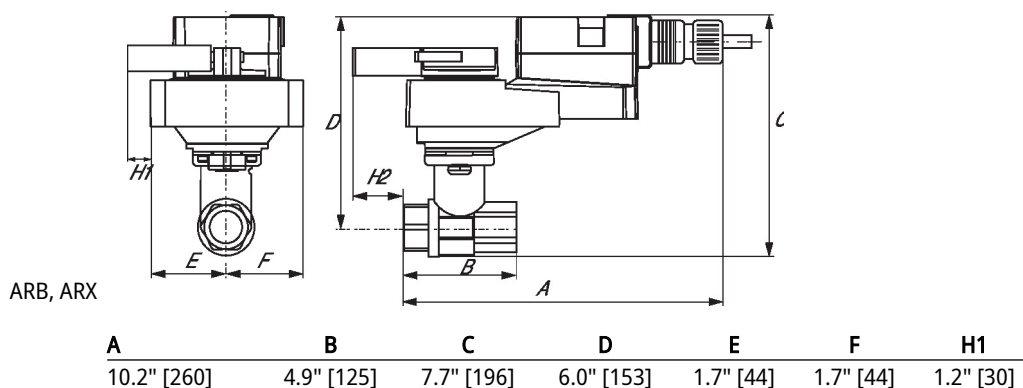
Flow/Mounting details

Two-way valves should be installed with the disc upstream.



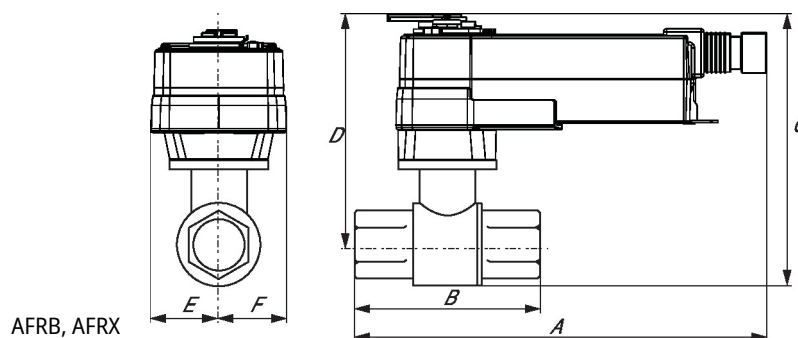
Dimensions

| Type | DN | Weight |
|------|----|-----------------|
| B251 | 50 | 5.4 lb [2.4 kg] |

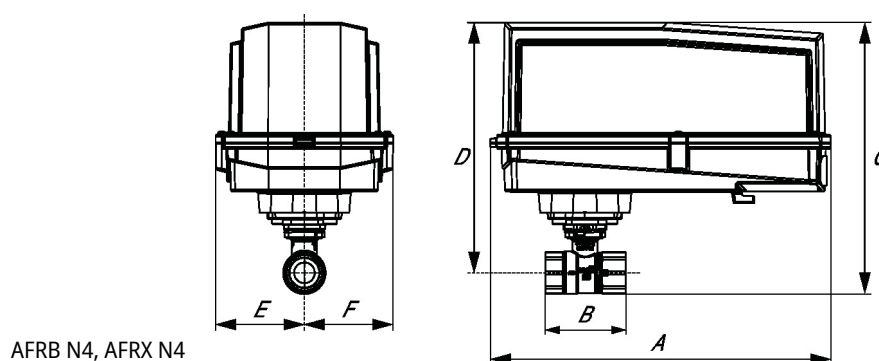


Dimensions

| A | B | C | D | E | F | H1 | H2 |
|------------|------------|------------|------------|-----------|-----------|-----------|-----------|
| 9.9" [251] | 4.9" [125] | 7.5" [191] | 6.1" [155] | 2.3" [58] | 2.3" [58] | 0.8" [20] | 0.6" [15] |



| A | B | C | D | E | F |
|-------------|------------|-------------|------------|-----------|-----------|
| 11.3" [286] | 4.9" [125] | 10.6" [268] | 8.9" [225] | 2.0" [51] | 2.0" [51] |



| A | B | C | D | E | F |
|-------------|------------|-------------|------------|-----------|-----------|
| 13.0" [330] | 4.9" [125] | 10.3" [262] | 9.3" [235] | 3.4" [86] | 3.4" [86] |



5-year warranty



Technical data

| | | |
|------------------------|------------------------------------|---|
| Electrical data | Nominal voltage | AC/DC 24 V |
| | Nominal voltage frequency | 50/60 Hz |
| | Nominal voltage range | AC 19.2...28.8 V / DC 21.6...28.8 V |
| | Power consumption in operation | 15 W |
| | Power consumption in rest position | 1.5 W |
| | Transformer sizing | 26 VA |
| | Electrical Connection | 18 GA plenum cable, 1 m, with 1/2" NPT conduit connector |
| | Overload Protection | electronic throughout 0...90° rotation |
| Functional data | Operating range Y | 2...10 V |
| | Operating range Y note | 4...20 mA w/ ZG-R01 (500 Ω, 1/4 W resistor) |
| | Input impedance | 100 kΩ for 2...10 V (0.1 mA), 500 Ω for 4...20 mA, 1500 Ω for On/Off |
| | Operating range Y variable | Start point 0.5...30 V End point 2.5...32 V |
| | Operating modes optional | variable (VDC, on/off) |
| | Position feedback U | 2...10 V |
| | Position feedback U note | Max. 0.5 mA |
| | Position feedback U variable | VDC variable |
| | Direction of motion motor | selectable with switch 0/1 |
| | Manual override | external push button |
| | Angle of rotation | 90° |
| | Angle of rotation note | adjustable with mechanical stop |
| | Running Time (Motor) | 10 s / 90° |
| | Running time motor variable | 7...35 s |
| | Noise level, motor | 52 dB(A) |
| | Position indication | Mechanical, pluggable |
| Safety data | Power source UL | Class 2 Supply |
| | Degree of protection IEC/EN | IP54 |
| | Degree of protection NEMA/UL | NEMA 2 |
| | Enclosure | UL Enclosure Type 2 |
| | Agency Listing | cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02 CE acc. to 2014/30/EU and 2014/35/EU |
| | Quality Standard | ISO 9001 |
| | UL 2043 Compliant | Suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC |
| | Ambient humidity | Max. 95% RH, non-condensing |
| | Ambient temperature | -22...122°F [-30...50°C] |

| | | |
|-------------|--|--------------------------------------|
| Safety data | Storage temperature | -40...176°F [-40...80°C] |
| | Servicing | maintenance-free |
| Weight | Weight | 3.1 lb [1.4 kg] |
| Materials | Housing material | Galvanized steel and plastic housing |
| Footnotes | †Rated Impulse Voltage 800 V, Type action 1, Control Pollution Degree 3. | |

Accessories

| | | |
|------------------------|---|----------|
| Gateways | Description | Type |
| | Gateway MP to BACnet MS/TP | UK24BAC |
| Electrical accessories | Gateway MP to Modbus RTU | UK24MOD |
| | Gateway MP to LonWorks | UK24LON |
| Electrical accessories | Description | Type |
| | Battery backup system, for non-spring return models | NSV24 US |
| Tools | Battery, 12 V, 1.2 Ah (two required) | NSV-BAT |
| | Service tool, with ZIP-USB function, for programmable and communicative Belimo actuators, VAV controller and HVAC performance devices | ZTH US |
| Tools | Description | Type |
| | Connecting cable 10 ft [3 m], A: RJ11 6/4 ZTH EU, B: 3-pin Weidmüller and supply connection | ZK4-GEN |
| Tools | Service tool, with ZIP-USB function, for programmable and communicative Belimo actuators, VAV controller and HVAC performance devices | ZTH US |

Electrical installation

⚡ INSTALLATION NOTES

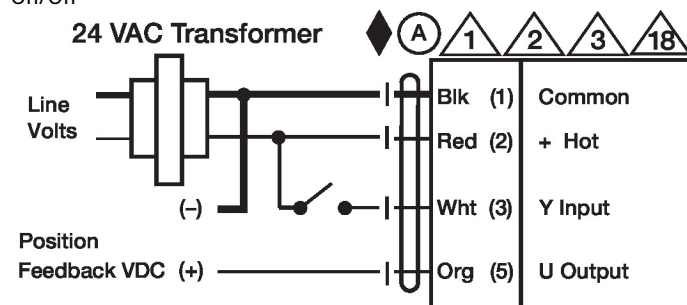
- 1 Provide overload protection and disconnect as required.
- 2 Actuators may be connected in parallel. Power consumption and input impedance must be observed.
- 3 Actuators may also be powered by DC 24 V.
- 5 Only connect common to negative (-) leg of control circuits.
- 7 A 500 Ω resistor (ZG-R01) converts the 4...20 mA control signal to 2...10 V.
- 12 IN4004 or IN4007 diode. (IN4007 supplied, Belimo part number 40155).
- 18 Actuators with plenum cable do not have numbers; use color codes instead.
- Meets cULus requirements without the need of an electrical ground connection.

⚠ Warning! Live electrical components!

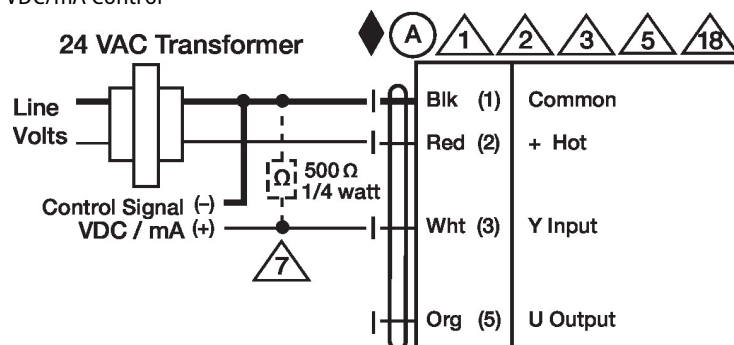
During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow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

Wiring diagrams

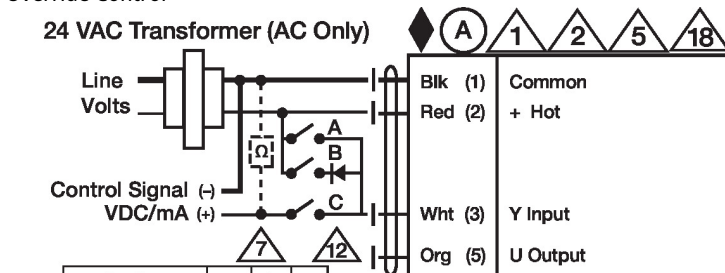
On/Off



VDC/mA Control



Override Control



| | Functions | a | b | c |
|--------|------------------------|---|---|---|
| Min | 0% | | | |
| Mid | 50% | | | |
| Max | 100% | | | |
| Normal | Control mode acc. to Y | | | |