



5-year warranty



## Type overview

|      |    |
|------|----|
| Type | DN |
| B278 | 80 |

## Technical data

|                    |                          |  |
|--------------------|--------------------------|--|
| Functional data    | Valve size [mm]          | 3" [80]                                |
|                    | Fluid                    | chilled or hot water, up to 60% glycol |
|                    | Fluid Temp Range (water) | 0...212°F [-18...100°C]                |
|                    | Body Pressure Rating     | 400 psi                                |
|                    | Close-off pressure Δps   | 100 psi                                |
|                    | Flow characteristic      | equal percentage                       |
|                    | Pipe connection type     | Internal thread<br>NPT (female)        |
|                    | Servicing                | maintenance-free                       |
|                    | Flow Pattern             | 2-way                                  |
|                    | Leakage rate             | 0% for A – AB                          |
|                    | Controllable flow range  | 75°                                    |
|                    | Cv                       | 130                                    |
| Materials          | Valve body               | Nickel-plated brass body               |
|                    | Stem                     | stainless steel                        |
|                    | Stem seal                | EPDM (lubricated)                      |
|                    | Seat                     | PTFE                                   |
|                    | Characterized disc       | TEFZEL®                                |
|                    | O-ring                   | EPDM (lubricated)                      |
|                    | Ball                     | stainless steel                        |
| Suitable actuators | Non-Spring               | ARB(X)                                 |
|                    | 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](http://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.

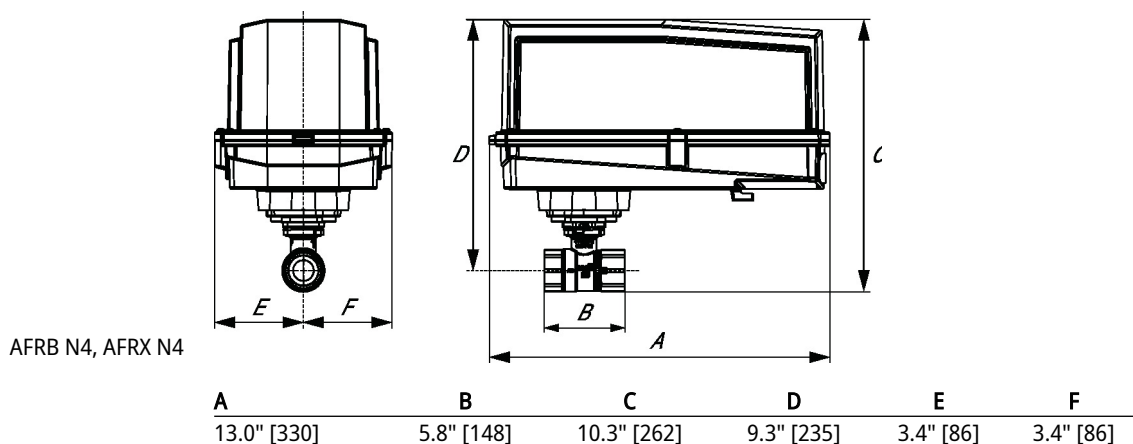
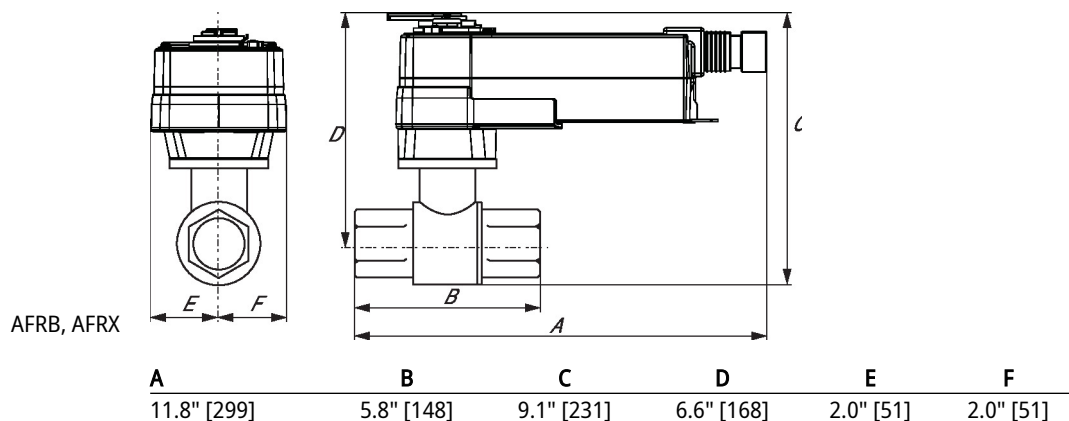
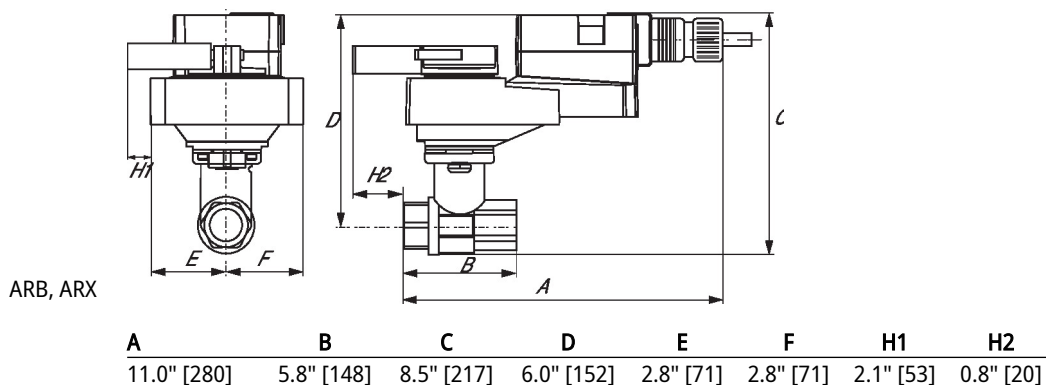
## Flow/Mounting details

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

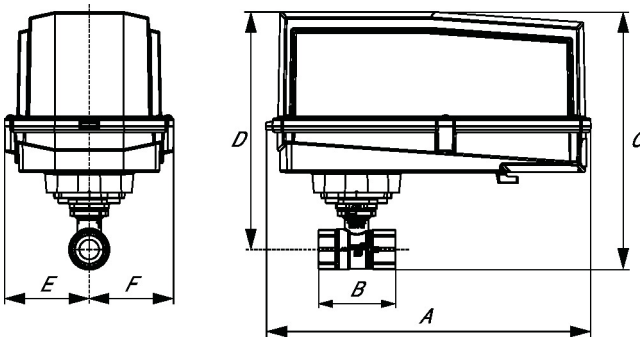


## Dimensions

| Type | DN | Weight          |
|------|----|-----------------|
| B278 | 80 | 9.0 lb [4.1 kg] |

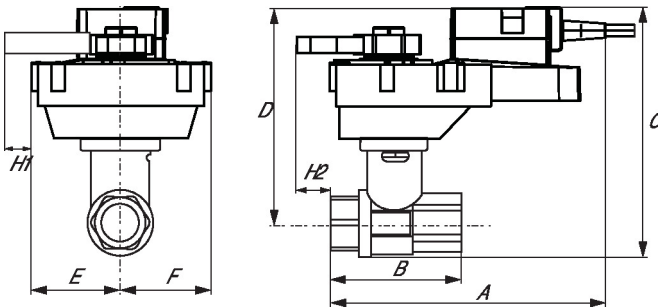


ARB N4, ARX N4, NRB N4, NRX N4



| A           | B          | D          | E         | F         |
|-------------|------------|------------|-----------|-----------|
| 11.4" [289] | 5.8" [148] | 8.0" [203] | 3.1" [80] | 3.1" [80] |

ARQB, ARQX



| A          | B          | C          | D          | E         | F         | H1        | H2        |
|------------|------------|------------|------------|-----------|-----------|-----------|-----------|
| 9.9" [251] | 4.2" [107] | 8.6" [219] | 6.1" [155] | 2.3" [58] | 2.3" [58] | 0.8" [20] | 0.6" [15] |



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## 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     | 3.5 W   |
|                 | Power consumption in rest position | 1.3 W   |
|                 | Transformer sizing                 | 6 VA  |
|                 | Electrical Connection              | 18 GA plenum cable with 1/2" NPT conduit connector, degree of protection NEMA 2 / IP54, 1 m 3 m and 5 m |
|                 | Overload Protection                | electronic throughout 0...90° rotation  |
| Functional data | Operating range Y                  | 0...135 Ω   |
|                 | Operating range Y note             | Honeywell Electronic Series 90, input 0...135 Ω   |
|                 | Input impedance                    | 100 kΩ  |
|                 | 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)               | 150 s / 90°   |
|                 | Running time motor variable        | 90...150 s  |
|                 | Noise level, motor                 | 45 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<br>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]  |
|                 | Storage temperature                | -40...176°F [-40...80°C]  |
|                 | Servicing                          | maintenance-free  |

|           |  |                                      |
|-----------|--|--------------------------------------|
| Weight    | Weight   | 2.1 lb [0.97 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  |
|                        | 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 |
|                        | 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  |
|                        | Service tool, with ZIP-USB function, for programmable and communicative Belimo actuators, VAV controller and HVAC performance devices | ZTH US   |

## Electrical installation

### ⚡ INSTALLATION NOTES

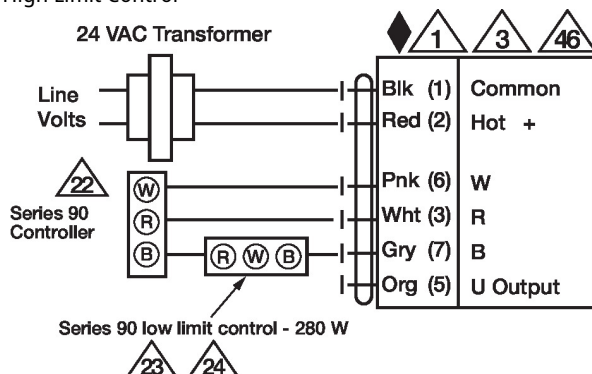
- 1 Provide overload protection and disconnect as required.
- 3 Actuators may also be powered by DC 24 V.
- 18 Actuators with plenum cable do not have numbers; use color codes instead.
- 22 Actuators and controller must have separate transformers.
- 23 Consult controller instruction data for more detailed information.
- 24 Resistor value depends on the type of controller and the number of actuators. No resistor is used for one actuator. Honeywell® resistor kits may also be used.
- 25 To reverse control rotation, use the reversing switch.
- 46 Actuators may be controlled in parallel. Current draw and input impedance must be observed.
- ◆ Meets cULus requirements without the need of an electrical ground connection.

### ⚠ Warning! Live electrical components!

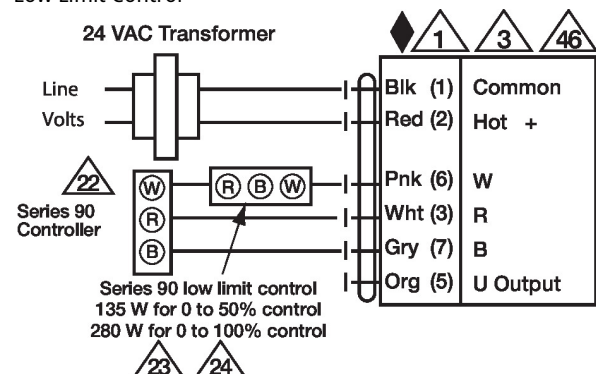
During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow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

### Wiring diagrams

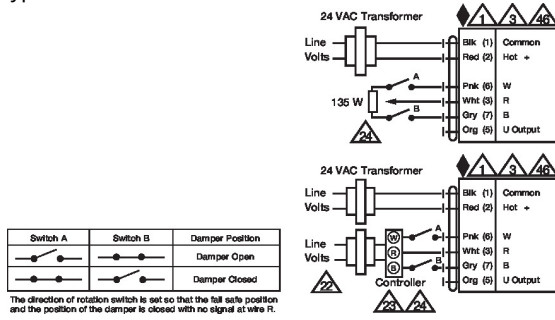
#### High Limit Control



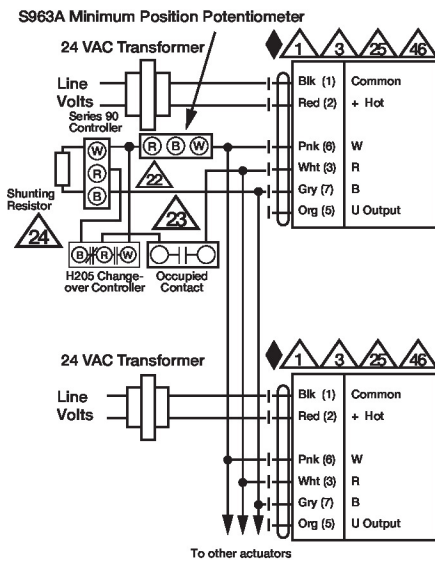
#### Low Limit Control



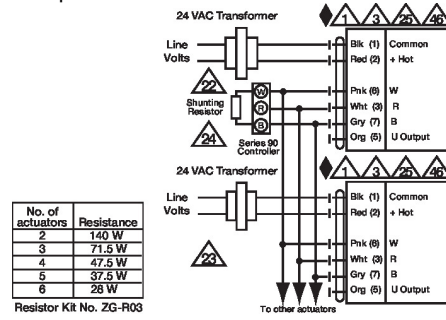
## Typical and Override Control



## Multiple Actuators with Minimum Position Potentiometer



## Multiple Actuators



## Multiple Actuators Used with W973, W7100 and T775

