

3-way Mixing/Diverting, Characterized Control Valve, Stainless Steel Ball and Stem



5-year warranty



## Type overview

| Type | DN |
|------|----|
| B311 | 15 |

## Technical data

|                    |                          |  |
|--------------------|--------------------------|--|
| Functional data    | Valve size [mm]          | 0.5" [15]  |
|                    | Fluid                    | chilled or hot water, up to 60% glycol                                 |
|                    | Fluid Temp Range (water) | 0...250°F [-18...120°C]  |
|                    | Body Pressure Rating     | 600 psi  |
|                    | Close-off pressure Δps   | 200 psi  |
|                    | Flow                     | A-port: as stated in chart B-port: 70% of A – AB<br>Cv                 |
|                    | Flow characteristic      | A-port equal percentage, B-port modified for constant common port flow |
|                    | Leakage rate             | 0% for A – AB, <2.0% for B – AB  |
|                    | Pipe connection          | Internal thread<br>NPT (female)  |
|                    | Servicing                | maintenance-free   |
|                    | Flow Pattern             | 3-way Mixing/Diverting   |
|                    | Controllable flow range  | 75°  |
|                    | Cv                       | 1.9  |
| 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 Fail-Safe            | TR<br>LRB(X)<br>LRQB(X)<br>NRB(X) N4                                   |
|                    | Spring                   | TFRB(X)<br>LF  |

## 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

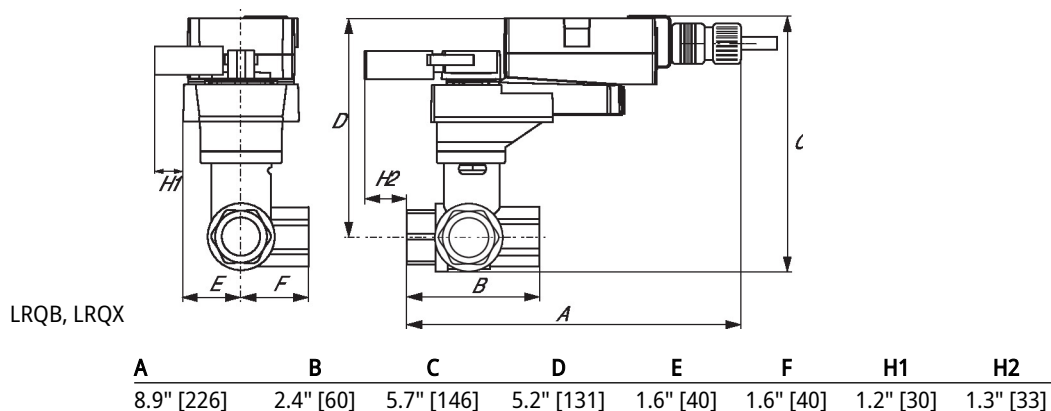
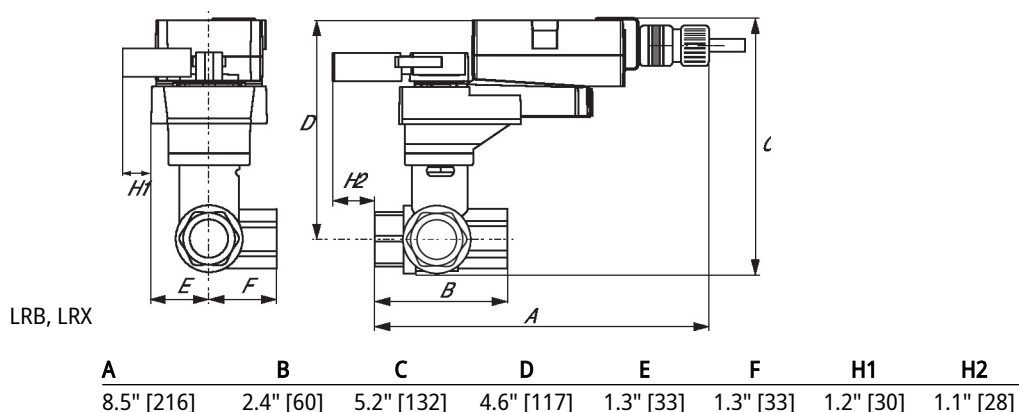
**Application** This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable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

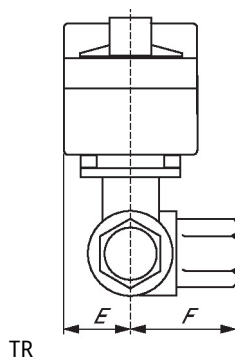
## Flow/Mounting details



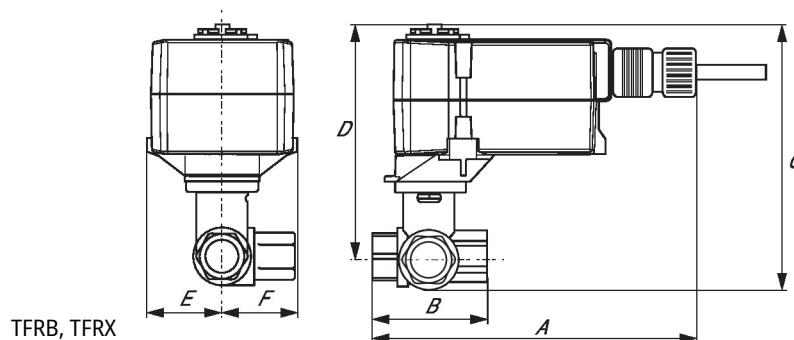
## Dimensions

| Type | DN | Weight            |
|------|----|-------------------|
| B311 | 15 | 0.59 lb [0.27 kg] |

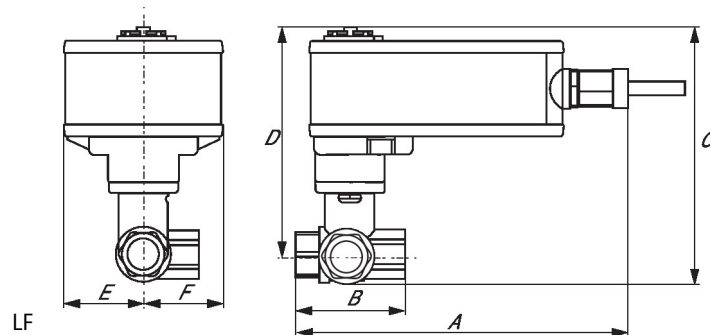


**Dimensions**


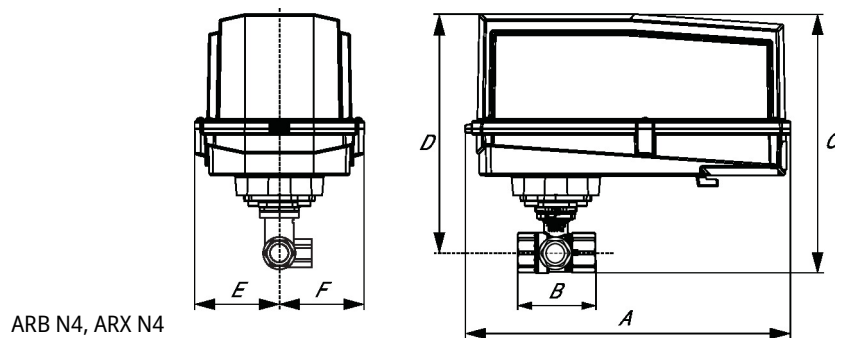
| A         | B         | C          | D          | E         | F         |
|-----------|-----------|------------|------------|-----------|-----------|
| 3.7" [95] | 2.4" [60] | 4.8" [122] | 4.2" [107] | 1.3" [33] | 1.2" [31] |



| A          | B         | C          | D          | E         | F         |
|------------|-----------|------------|------------|-----------|-----------|
| 6.6" [167] | 2.4" [60] | 4.9" [124] | 4.3" [110] | 1.5" [39] | 1.5" [39] |



| A           | B         | C          | D          | E         | F         |
|-------------|-----------|------------|------------|-----------|-----------|
| 7.91" [200] | 2.4" [60] | 5.7" [146] | 5.1" [129] | 1.8" [46] | 1.8" [46] |



| A           | B         | C          | D          | E         | F         |
|-------------|-----------|------------|------------|-----------|-----------|
| 11.4" [289] | 2.4" [60] | 7.2" [184] | 6.7" [169] | 3.1" [80] | 3.1" [80] |

Modulating, Non fail-safe, 24 V



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     | 1.5 W   |
|                 | Power consumption in rest position | 0.2 W   |
|                 | Transformer sizing                 | 3 VA  |
|                 | Electrical Connection              | Screw terminal (for 26 to 14 GA wire)   |
|                 | Overload Protection                | electronic throughout 0...90° rotation  |
|                 | Electrical Protection              | actuators are double insulated  |
| 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   |
|                 | Position feedback U                | 2...10 V  |
|                 | Position feedback U note           | Max. 1 mA   |
|                 | 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)               | 90 s / 90°  |
|                 | Noise level, motor                 | 35 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                  |
|                 | 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  |

## Technical data

|           |  |                                      |
|-----------|--|--------------------------------------|
| Weight    | Weight   | 0.91 lb [0.41 kg]                    |
| Materials | Housing material   | Galvanized steel and plastic housing |
| Footnotes | †Rated Impulse Voltage 800V, Type of Action 1, Control Pollution Degree 2. |                                      |

## Accessories

| Electrical accessories | Description   | Type       |
|------------------------|---|------------|
|                        | Battery backup system, for non-spring return models | NSV24 US   |
|                        | Battery, 12 V, 1.2 Ah (two required)                | NSV-BAT    |
|                        | Auxiliary switch 1x SPDT add-on                     | S1A        |
|                        | Auxiliary switch 2x SPDT add-on                     | S2A        |
|                        | Feedback potentiometer 140 $\Omega$ add-on, grey    | P140A GR   |
|                        | Feedback potentiometer 1 k $\Omega$ add-on, grey    | P1000A GR  |
|                        | Feedback potentiometer 10 k $\Omega$ add-on, grey   | P10000A GR |
|                        | Feedback potentiometer 2.8 k $\Omega$ add-on, grey  | P2800A GR  |
|                        | Feedback potentiometer 500 $\Omega$ add-on, grey    | P500A GR   |
|                        | Feedback potentiometer 5 k $\Omega$ add-on, grey    | P5000A GR  |

## 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  $\Omega$  resistor (ZG-R01) converts the 4...20 mA control signal to 2...10 V.
- 16 Actuators are provided with a numbered screw terminal strip instead of a cable.
- ◆ Meets cULus requirements without the need of an electrical ground connection.
- 1 **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

2...10 V / 4...20 mA Control

