

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









	Picture may differ from product	
Type overview		
<b>Type</b> B312		<b>DN</b> 1/2" [15]
<u> </u>		1/2 [13]
Technical data		
Functional data	Valve size [mm]	0.5" [15]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	0250°F [-18120°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 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 NPT (female)
	Servicing	maintenance-free
	Flow Pattern	3-way Mixing/Diverting
	Controllable flow range	75°
	Cv	3
Materials	Valve body	Nickel-plated brass body

# Suitable actuators

Stem

Stem seal Seat

TEFZEL®	
EPDM (lubricated)	
stainless steel	
TR LRB(X) LRQB(X) NRB(X) N4	
TFRB(X) LF	

stainless steel EPDM (lubricated)

PTFE

# 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



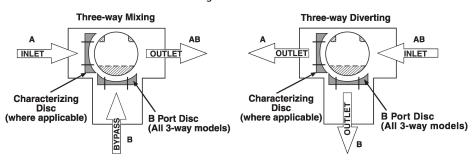
#### **Product features**

# 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 or constant flow.

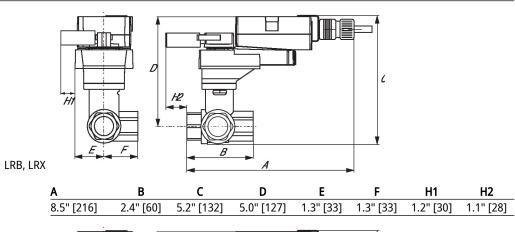
#### Flow/Mounting details

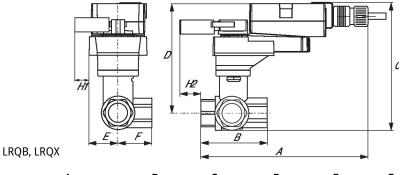
This valve is not suitable for use as a change over valve.



### **Dimensions**

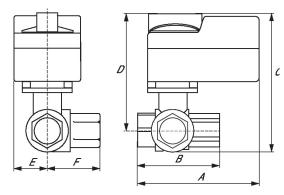






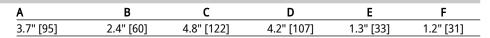
 A
 B
 C
 D
 E
 F
 H1
 H2

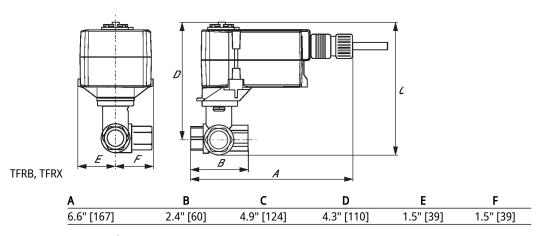
 8.9" [226]
 2.4" [60]
 5.7" [146]
 5.2" [131]
 1.6" [40]
 1.6" [40]
 1.2" [30]
 1.3" [33]

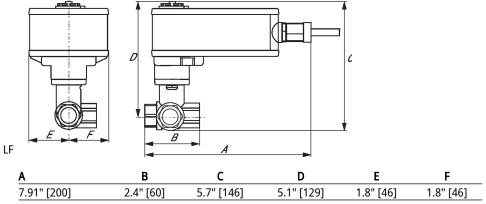


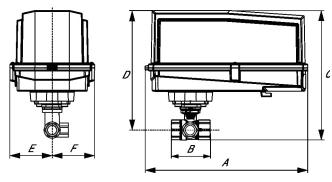


# **Dimensions**









ARB N4, ARX N4

Α	В	С	D	E	F
11.4" [289]	2.4" [60]	7.2" [184]	6.7" [169]	3.1" [80]	3.1" [80]



# MFT/programmable, Spring return, 24 V



Technical data		
Electrical data	Nominal voltage	AC/DC 24 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 19.228.8 V / DC 21.628.8 V
	Power consumption in operation	2.5 W
	Power consumption in rest position	1 W
	Transformer sizing	5 VA
	Electrical Connection	18 GA appliance cable, 3 ft [1 m], with 1/2" NPT conduit connector
	Overload Protection	electronic throughout 095° rotation
Functional data	Operating range Y	210 V
	Operating range Y note	420 mA w/ ZG-R01 (500 Ω, 1/4 W resistor)
	Input impedance	100 k $\Omega$ for 210 V (0.1 mA), 500 $\Omega$ for 420 mA, 1500 $\Omega$ for PWM, On/Off and Floating point
	Operating range Y variable	Start point 0.530 V End point 2.532 V
	Operating modes optional	variable (VDC, on/off, floating point)
	Position feedback U	210 V
	Position feedback U note	Max. 0.5 mA
	Position feedback U variable	VDC variable
	Direction of motion motor	selectable with switch 0/1
	Direction of motion fail-safe	reversible with cw/ccw mounting
	Angle of rotation	90°
	Running Time (Motor)	150 s / 90°
	Running time motor variable	75300 s
	Running time fail-safe	<25 s @ -4122°F [-2050°C], <60 s @ -22°F [-30°C]
	Noise level, motor	50 dB(A)
	Noise level, fail-safe	62 dB(A)
	Position indication	Mechanical
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 UL 873 and CAN/CSA C22.2 No. 24-93

ISO 9001

**Quality Standard** 

Technical data			
Safety data	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	-22122°F [-3050°C]	
	Storage temperature	-40176°F [-4080°C]	
	Servicing	maintenance-free	
Weight	Weight	0	
Materials	Housing material	galvanized steel	

**Footnotes** \*Variable when configured with MFT options.

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Electrical accessories	Description	Туре
	Service tool, with ZIP-USB function, for programmable and	ZTH US
	communicative Belimo actuators, VAV controller and HVAC performance	
	devices	

#### **Electrical installation**



Actuators with appliance cables are numbered.

\ Provide overload protection and disconnect as required.

Actuators may be connected in parallel. Power consumption and input impedance must be observed.

Apply only AC line voltage or only UL-Class 2 voltage to the terminals of auxiliary switches. Mixed or combined operation of line voltage/safety extra low voltage is not allowed.

Actuators may also be powered by DC 24 V.

Two built-in auxiliary switches (2x SPDT), for end position indication, interlock control, fan startup, etc.

6 Only connect common to negative (-) leg of control circuits.

 $\Lambda$  A 500  $\Omega$  resistor (ZG-R01) converts the 4...20 mA control signal to 2...10 V.

Control signal may be pulsed from either the Hot (Source) or Common (Sink) 24 V line.

For triac sink the Common connection from the actuator must be connected to the Hot

connection of the controller. Position feedback cannot be used with a triac sink controller: the

connection of the controller. Position feedback cannot be used with a triac sink controller; the actuator internal common reference is not compatible.

Actuators may be connected in parallel if not mechanically linked. Power consumption and input impedance must be observed.

IN4004 or IN4007 diode. (IN4007 supplied, Belimo part number 40155).

Meets cULus requirements without the need of an electrical ground connection.

Actuators are provided with color coded wires. Wire numbers are provided for reference.

### Warning! Live electrical components!

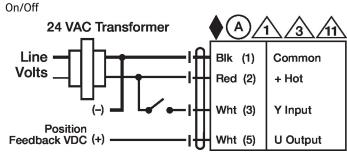
During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow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

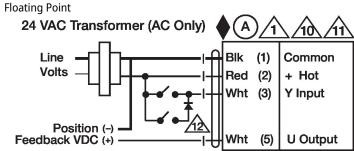
**PWM Control** 



### **Electrical installation**







VDC/mA Control (A) 24 VAC Transformer Blk (1) Common Line Volts Red (2) + Hot  $\begin{array}{ccc} & 500 \, \Omega \\ \Omega & 1/4 \, \text{watt} \end{array}$ Control Signal (-) VDC / mA (+) Wht (3) Y Input Wht (5) **U** Output

