

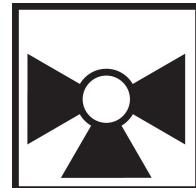
3-way Mixing/Diverting, Characterized Control Valve, Chrome Plated Brass Ball and Nickel Plated Brass Stem



Picture may differ from product



5-year warranty



## Type overview

Type	DN
B310B	1/2" [15]

## Technical data

<b>Functional data</b>	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 $\Delta p_s$	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	1.2	
<b>Materials</b>	Valve body	Nickel-plated brass body
	Stem	nickel-plated brass
	Stem seal	EPDM (lubricated)
	Seat	PTFE
	Characterized disc	TEFZEL®
	O-ring	EPDM (lubricated)
	Ball	chrome plated brass
<b>Suitable actuators</b>	Non Fail-Safe	TR LRB(X)
	Spring	TFRB(X) 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)

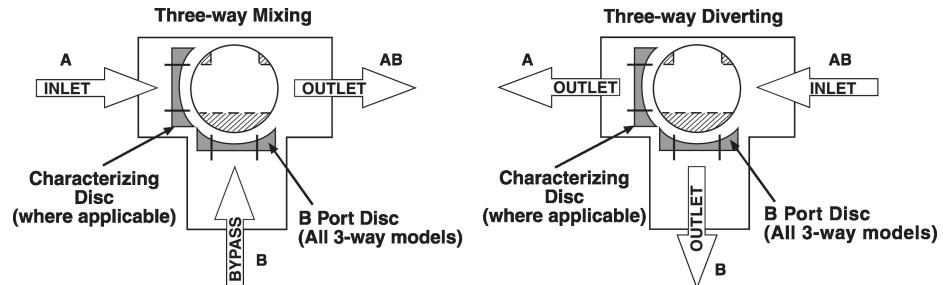
## Product features

## 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.

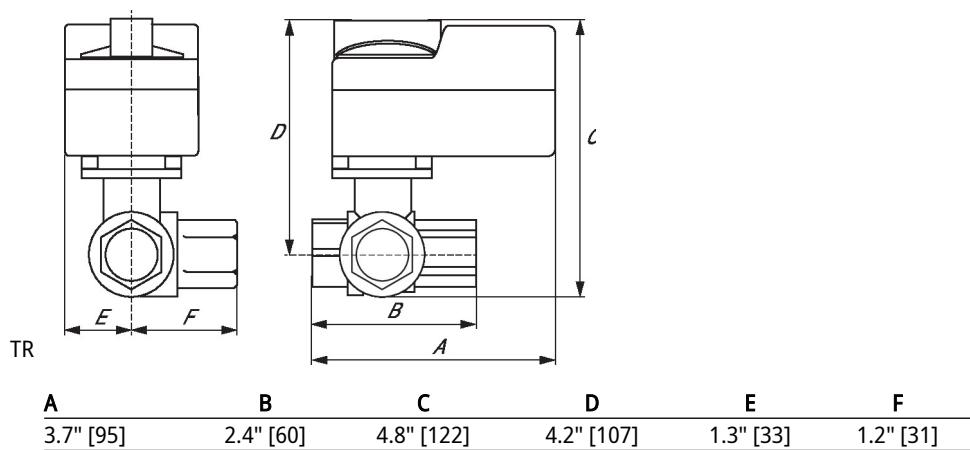
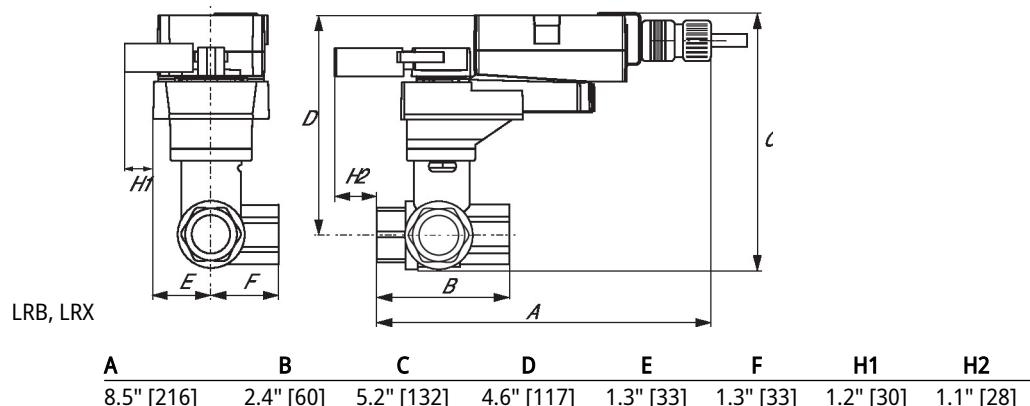
## Flow/Mounting details

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

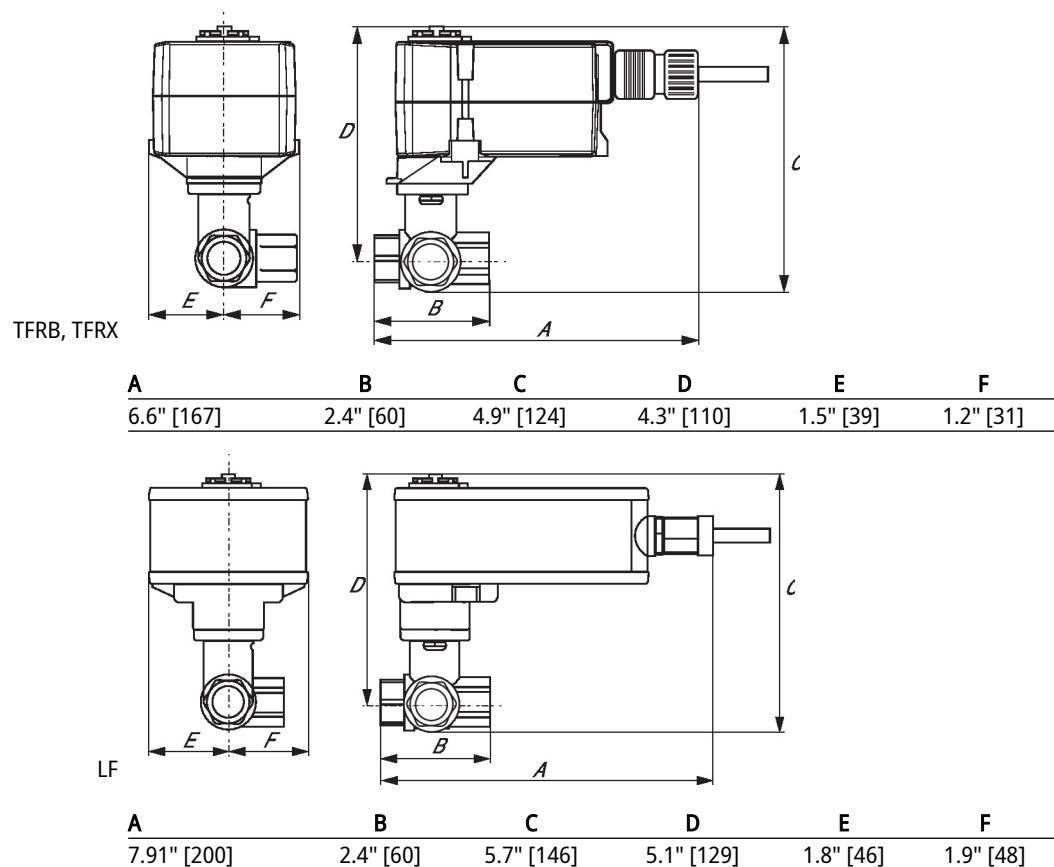


## Dimensions

Type	DN	Weight
B310B	1/2" [15]	0.59 lb [0.27 kg]



## Dimensions



TFRB, TFRX					
A	B	C	D	E	F
6.6" [167]	2.4" [60]	4.9" [124]	4.3" [110]	1.5" [39]	1.2" [31]
LF					
A	B	C	D	E	F
7.91" [200]	2.4" [60]	5.7" [146]	5.1" [129]	1.8" [46]	1.9" [48]

Modulating, Spring return, 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	2.5 W
	Power consumption in rest position	1 W
	Transformer sizing	5 VA
	Auxiliary switch	1x SPDT, 1 mA...3 A (0.5 A inductive), DC 5 V...AC 250 V, adjustable 0...95°
	Switching capacity auxiliary switch	1 mA...3 A (0.5 A inductive), DC 5 V...AC 250 V
	Electrical Connection	(2) 18 GA appliance cables, 3 ft [1 m], with 1/2" NPT conduit connectors
	Overload Protection	electronic throughout 0...95° 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
	Position feedback U	2...10 V
	Position feedback U note	Max. 0.7 mA
	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 note	constant, independent of load
	Running time fail-safe	<25 s @ -4...122°F [-20...50°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

## Technical data

<b>Safety data</b>	Agency Listing	cULus acc. To UL 873 and CAN/CSA C22.2 No. 24-93
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	
<b>Weight</b>	Weight	□
<b>Materials</b>	Housing material	galvanized steel

**Footnotes** †Rated Impulse Voltage 800V, Type of action 1.AA, Control Pollution Degree 3

## Electrical installation

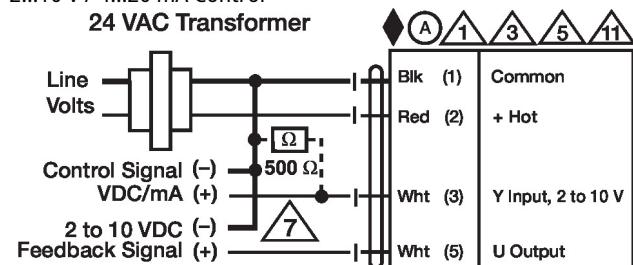
 **INSTALLATION NOTES**

- Ⓐ Actuators with appliance cables are numbered.
- Ⓑ Provide overload protection and disconnect as required.
- Ⓒ Actuators may also be powered by DC 24 V.
- Ⓓ Only connect common to negative (-) leg of control circuits.
- Ⓔ A 500 Ω resistor (ZG-R01) converts the 4...20 mA control signal to 2...10 V.
- Ⓕ Actuators may be connected in parallel if not mechanically linked. Power consumption and input impedance must be observed.
- Ⓖ One built-in auxiliary switch (1x SPDT), for end position indication, interlock control, fan startup, etc.
- Ⓗ 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.
- Ⓘ Meets cULus requirements without the need of an electrical ground connection.
- 警惕 **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

## 24 VAC Transformer



## Auxiliary Switches

