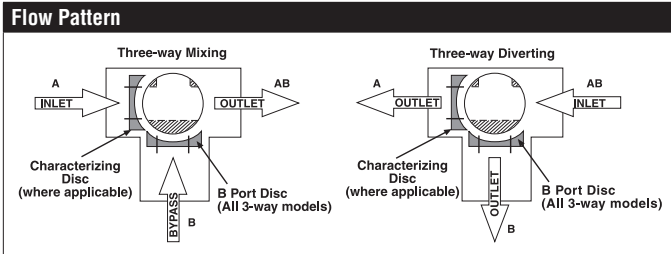


# B312B, 3-Way, Characterized Control Valve

## Chrome Plated Brass Ball and Nickel Plated Brass Stem



Technical Data	
Service	chilled, hot water, up to 60% glycol
Flow Characteristic	A-port Equal percentage; B-port modified linear for constant flow
Controllable Flow Range	75°
Size [mm]	0.5" [15]
End Fitting	NPT female ends
Body	forged brass, nickel plated
Ball	chrome plated brass
Stem	nickel plated brass
Stem Packing	EPDM (lubricated)
Seat	Teflon® PTFE
Seat O-ring	EPDM (lubricated)
Characterized Disc	TEFZEL®
Body Pressure Rating [psi]	600
Media Temperature Range (Water)	0°F to 250°F [-18°C to 120°C]
Max Differential Pressure (Water)	50 psi (345 kPa)
Close-Off Pressure	200 psi
Cv	3
Weight	0.7 lb [0.3 kg]
Leakage	0% for A to AB, <2.0% for B to AB
Servicing	maintenance free



### 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.

### Suitable Actuators

	Non-Spring	Spring
B312B	TR, LR	TFB(X), LF

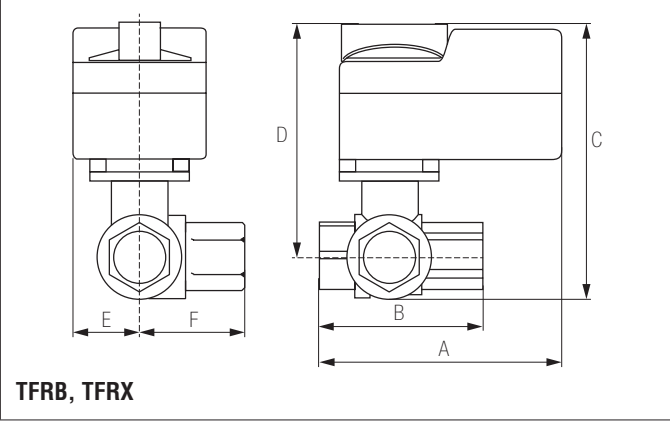
### Dimensions (Inches [mm])



A	B	C	D	E	F	H1	H2
8.5" [216]	2.38" [60]	5.19" [132]	5" [127]	1.3" [33]		1.18" [30]	1.1" [28]

Date created, 09/01/2016 - Subject to change. © Belimo Aircontrols (USA), Inc.

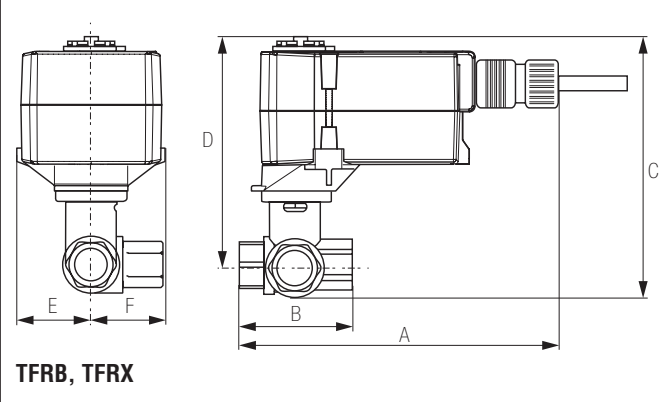
**Dimensions (Inches [mm])**



TFRB, TFRX

A	B	C	D	E	F
3.72" [95]	2.38" [60]	5.19" [132]	4.61" [117]	1.25" [32]	1.29" [33]

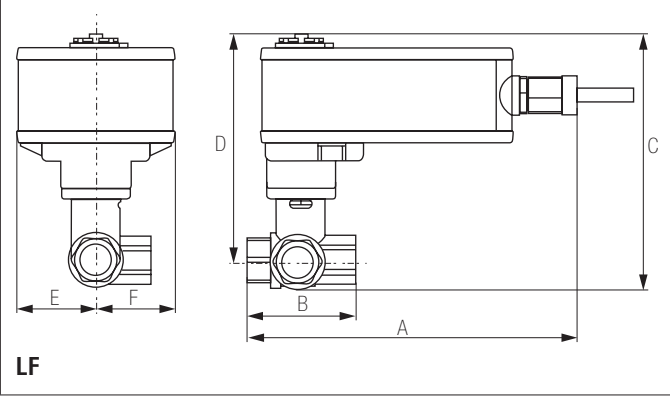
**Dimensions (Inches [mm])**



TFRB, TFRX

A	B	C	D	E	F
6.59" [167]	2.38" [60]	4.9" [124]	4.71" [120]	1.53" [38]	1.29" [33]

**Dimensions (Inches [mm])**



LF

A	B	C	D	E	F
7.92" [201]	2.38" [60]	6.06" [154]	5.48" [139]	1.82" [46]	1.89" [48]

# TFRX24-3-S

## Floating Point, Spring Return, 24 V



Technical Data	
Power Supply	24 VAC $\pm$ 20%, 50/60 Hz, 24 VDC $\pm$ 10%
Power Consumption Running	2.5 W
Power Consumption Holding	1 W
Transformer Sizing	4 VA (class 2 power source)
Electrical Connection	(2) 3ft [1m], 10ft [3m] or 16ft [5m] 18 GA appliance cables, with 1/2" conduit connectors
Overload Protection	electronic throughout 0° to 95° rotation
Input Impedance	1000 $\Omega$ (0.6 W)
Feedback Output U	No Feedback
Angle of Rotation	Max. 95°, adjustable with mechanical stop
Direction of Rotation (Motor)	reversible with built-in switch
Direction of Rotation (Fail-Safe)	reversible with CW/CCW mounting
Position Indication	visual indicator, 0° to 95° (0° is full spring return position)
Manual Override	No
Running Time (Motor)	95 sec
Running Time (Fail-Safe)	<25 sec
Humidity	max. 95% RH non-condensing
Ambient Temperature Range	-22°F to 122°F [-30°C to 50°C]
Storage Temperature Range	-40°F to 176°F [-40°C to 80°C]
Housing	NEMA 2, IP42, UL enclosure type 2
Housing Material	UL94-5VA
Agency Listings†	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EC and 2006/95/EC
Noise Level (Motor)	<35 dB (A)
Noise Level (Fail-Safe)	<62 dB (A)
Servicing	maintenance free
Quality Standard	ISO 9001
Weight	1.8 lb [0.8 kg]
Auxiliary Switch	1 x SPDT, 3A resistive (0.5A inductive) @ 250 VAC, adjustable 0° to 95°

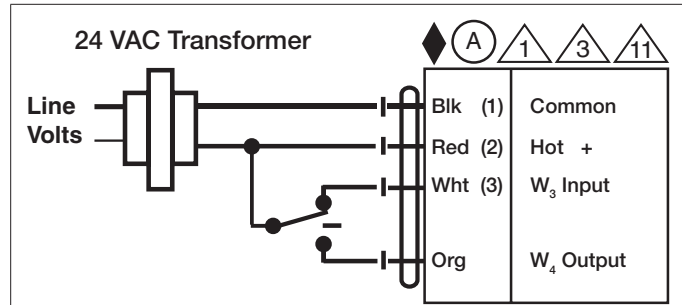
†Rated Impulse Voltage 800V, Type of action 1.AA, Control Pollution Degree 3

**Wiring Diagrams**

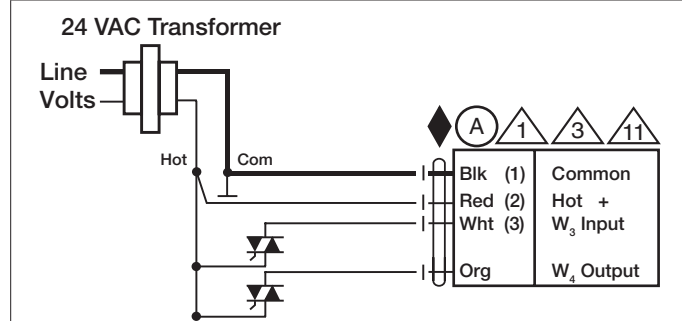
**INSTALLATION NOTES**

- Actuators with appliance cables are numbered.
- Provide overload protection and disconnect as required.
- Actuators may also be powered by 24 VDC.
- Actuators Hot wire must be connected to the control board common. Only connect common to neg. (-) leg of control circuits. Terminal models (-T) have no-feedback.
- 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.
- Meets cULus requirements without the need of an electrical ground connection.

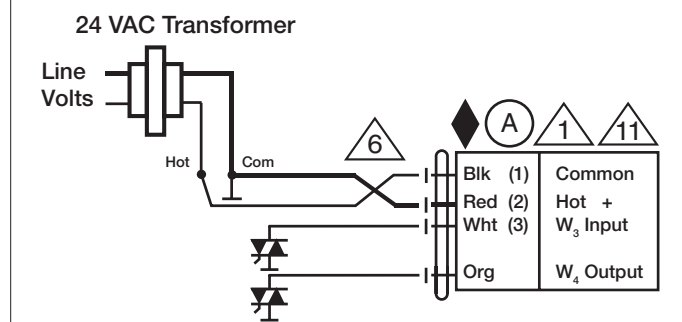
**WARNING! LIVE ELECTRICAL COMPONENTS!**  
During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components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



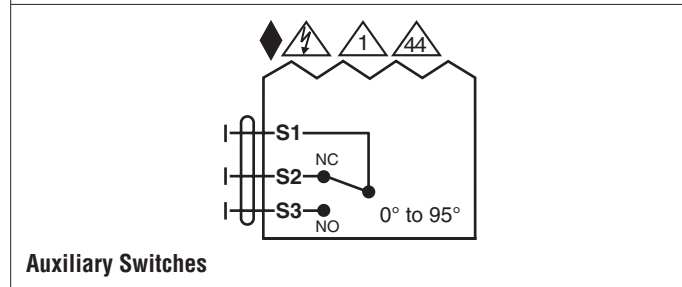
**Floating Point**



**Floating Point - Triac Source**



**Floating Point - Triac Sink**



**Auxiliary Switches**