

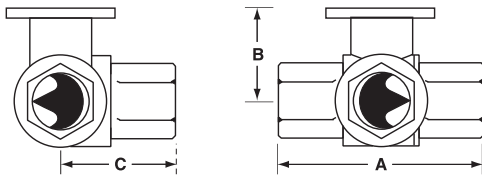
B3 Series, Three Way, Characterized Control Valve Stainless Steel Ball and Stem



Technical Data	
Service	chilled or hot water, 60% glycol
Flow characteristic	A-port equal percentage B-port modified for constant common port flow
Controllable Flow Range	75°
Sizes	½", ¾", 1", 1¼", 1½", 2"
Type of end fitting	NPT female ends
Materials:	
Body	forged brass, nickel plated
Ball	stainless steel
Stem	stainless steel
Seats	PTFE
Characterizing disc	Tefzel®
Packing	2 EPDM O-rings, lubricated
Body pressure rating	
600 psi	½" - 1"
400 psi	1¼" - 2"
Media temp. range	0°F to 250°F [-18°C to 120°C]
Close off pressure	
200 psi	½" - 2"
Maximum differential pressure (ΔP)	50 psi for typical applications
Leakage	0% for A to AB <2.0% for B to AB
External leakage	according to EN 12266-1:2003
C _v rating	A-port: see product chart for values B-port: 70% of A to AB C _v

Tefzel® is a registered trademark of DuPont

Dimensions



3Way Valve-B307-B320

Valve Body	Valve Nominal Size		Dimensions (Inches [mm])		
	Inches	DN [mm]	A	B	C
B307-B311	½"	15	2.41" [61.1]	1.39" [35.2]	1.20" [30.6]
B312-B316	½"	15	2.38" [60.4]	1.78" [45.2]	1.29" [32.8]
B317-B321	¾"	20	2.73" [69.3]	1.87" [47.4]	1.47" [37.3]
B322-B325	1"	25	3.09" [78.4]	1.87" [47.4]	1.59" [40.3]
B329-B331	1¼"	32	3.96" [100.6]	2.27" [57.7]	2.14" [54.3]
B338-B341	1½"	40	4.39" [111.6]	2.51" [63.7]	2.40" [61.1]
B347-B352	2"	50	4.90" [124.5]	2.73" [69.5]	2.74" [69.7]

Application

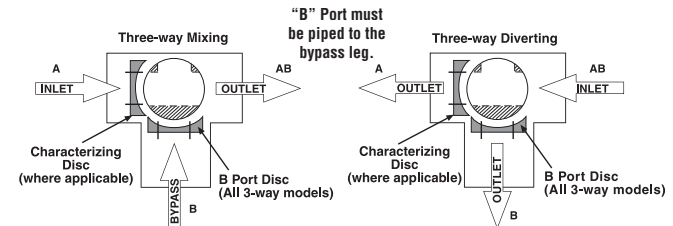
This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable or constant flow.

* (Not for use in change over applications)

C _v	Valve Nominal Size		Type	Suitable Actuators			
	Inches	DN [mm]		Non-Spring	Spring		
0.3	½"	15	B307	TR Series	TF Series		
0.46	½"	15	B308				
0.8	½"	15	B309				
1.2	½"	15	B310				
1.9	½"	15	B311				
3	½"	15	B312				
4.7	½"	15	B313				
10	½"	15	B315				
16	½"	15	B316				
4.7	¾"	20	B317			LR Series	MR...M4 Series
7.4	¾"	20	B318				
14	¾"	20	B320				
24	¾"	20	B321				
7.4	1"	25	B322				
10	1"	25	B323				
30	1"	25	B325*	AR Series	AR...M4 Series		
10	1¼"	32	B329				
19	1¼"	32	B330				
25	1¼"	32	B331				
19	1½"	40	B338				
29	1½"	40	B339				
37	1½"	40	B340				
46	1½"	40	B341				
29	2"	50	B347				
37	2"	50	B348				
46	2"	50	B349				
57	2"	50	B350				
68	2"	50	B351				
83	2"	50	B352	AF Series			

*Models without characterizing disc

Flow Patterns



P10419 - 09/13 - Subject to change. © Belimo Aircontrols (USA), Inc.

TFRB(X) Actuators, On/Off



Models

TFRB(X)24 TFRB(X)120
 TFRB(X)24-S TFRB(X)120-S w/built-in Aux. Switch

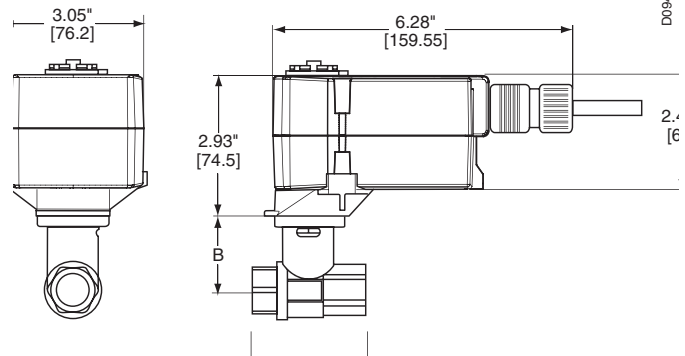
Technical Data	
Control	on/off
Power supply	
TFRB(X)24(-S)	24VAC ± 20%, 50/60Hz 24VDC ± 10%
TFRB(X)120(-S)	(nominal) 100 to 240 VAC, 50/60 Hz (tolerance) 85 to 265 VAC, 50/60 Hz
Power consumption	running 2.5 W holding 1.3 W
Transformer sizing	
TFRB(X)24(-S)	5 VA (class 2 power source)
TFRB(X)120(-S)	5 VA (class 2 power source)
Electrical connection	1/2" conduit connector 18 GA appliance cable 3 ft [1m] 10 ft [3m] 16 ft [5m]
Overload protection	electronic throughout 0° to 95° rotation
Angle of rotation	95°
Direction of rotation	reversible with protected mounting
Position indication	visual indicator, 0° to 95°
Running time	motor <75 seconds (0 to 18 in-lb) spring <75 sec @ -22°F to 122°F [-20°C to 50°C]
Humidity	5 to 95% RH non-condensing
Ambient temperature	-22°F to 122°F [-30°C to 50°C]
Storage temperature	-40°F to 176°F [-40°C to 80°C]
Housing	NEMA type 2/IP42
Housing material	UL94 - 5VA
Agency listings†	cULus according to UL 60730-1A/-2-14, CAN/CSA E60730-1:02, CE according to 2004/108/EC and 2006/95/EC for line voltage and/or -S versions
Noise level (max)	running <40 db (A) spring return <40 dB (A)
Quality standard	ISO 9001

TFRB(X)...-S

Auxiliary switch 1 x SPDT, 3A (0.5A) @ 250 VAC, UL Listed adjustable 0° to 95°

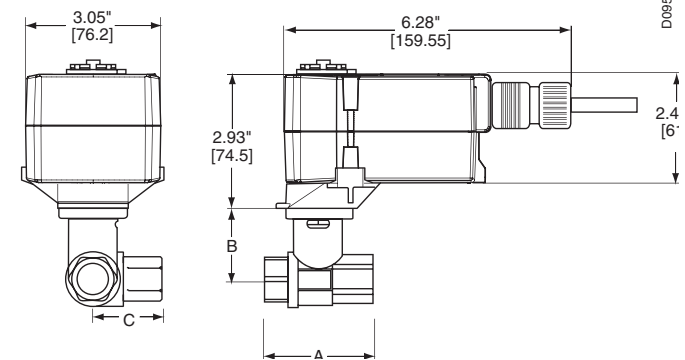
† Rated impulse voltage 800V (4kV for 120V model), Control pollution degree 3, Type of action 1.AA (1.AA.B for -S models)

Dimensions with 2-Way Valve



Valve Body	Valve Nominal Size		Dimensions (Inches [mm])	
	Inches	DN [mm]	A	B
B207(B)-B211(B)	1/2"	15	2.41" [61.1]	1.39" [35.2]
B212(B)-B215(B)	1/2"	15	2.38" [60.4]	1.78" [45.2]
B217(B)-B221(B)	3/4"	20	2.73" [69.3]	1.87" [47.4]

Dimensions with 3-Way Valve



Valve Body	Valve Nominal Size		Dimensions (Inches [mm])		
	Inches	DN [mm]	A	B	C
B307(B)-B311(B)	1/2"	15	2.41" [61.1]	1.39" [35.2]	1.20" [30.6]
B312(B)-B315(B)	1/2"	15	2.38" [60.4]	1.78" [45.2]	1.29" [32.8]
B317(B)-B321(B)	3/4"	20	2.73" [69.3]	1.87" [47.4]	1.47" [37.3]

Wiring Diagrams

✂️ **INSTALLATION NOTES**



CAUTION Equipment damage!

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



Actuators may also be powered by 24 VDC.



APPLICATION NOTES



Meets cULus or UL and CSA 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.

