

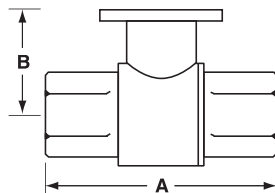


Technical Data

Service	chilled or hot water, 60% glycol
Flow characteristic	A-port equal percentage
Controllable Flow Range	75°
Sizes	½", ¾", 1", 1¼", 1½", 2", 2½", 3"
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" - 1¼" (B230)
400 psi	1¼" (B231) - 3"
Media temp. range	0°F to 250°F [-18°C to 120°C]
Close off pressure	
200 psi	½" - 2" (B250)
100 psi	2" (B251) - 3"
Maximum differential pressure (ΔP)	50 psi for typical applications
Leakage	0% for A to AB
External leakage	according to EN 12266-1:2003
C _v rating	A-port: see product chart for values

Tefzel® is a registered trademark of DuPont

Dimensions



2WayValve-B207-B220

Valve Body	Valve Nominal Size		Dimensions (Inches [mm])	
	Inches	DN [mm]	A	B
B207-B211	½"	15	2.41" [61.1]	1.39" [35.2]
B212-B216	½"	15	2.38" [60.4]	1.78" [45.2]
B217-B221	¾"	20	2.73" [69.3]	1.87" [47.4]
B222-B225	1"	25	3.09" [78.4]	1.87" [47.4]
B229-B230	1¼"	32	3.72" [94.6]	1.87" [47.4]
B231-B232	1¼"	32	3.72" [94.6]	2.04" [51.9]
B238-B240	1½"	40	3.88" [98.5]	2.04" [51.9]
B248-B250	2"	50	4.21" [107.0]	2.27" [57.7]
B251-B254	2"	50	4.93" [125.2]	2.73" [69.5]
B261-B265	2½"	65	5.55" [140.9]	2.73" [69.5]
B277-B280	3"	80	5.82" [147.9]	2.73" [69.5]

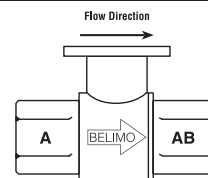
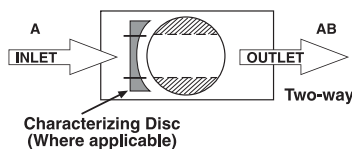
Application

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 flow.

Valve Nominal Size			Type	Suitable Actuators		
C _v	Inches	DN [mm]	2-Way NPT	Non-Spring	Spring	
0.3	½"	15	B207	TR Series	LR Series	TF Series
0.46	½"	15	B208			
0.8	½"	15	B209			
1.2	½"	15	B210			
1.9	½"	15	B211			
3	½"	15	B212			
4.7	½"	15	B213			
7.4	½"	15	B214			
10	½"	15	B215			
16	½"	15	B216			
4.7	¾"	20	B217	NR...N4 Series	LF Series	TF Series
7.4	¾"	20	B218			
10	¾"	20	B219			
14	¾"	20	B220			
24	¾"	20	B221*			
7.4	1"	25	B222			
10	1"	25	B223			
19	1"	25	B224			
30	1"	25	B225*			
10	1¼"	32	B229	AR Series	AF Series	TF Series
19	1¼"	32	B230*			
25	1¼"	32	B231			
37	1¼"	32	B232*			
19	1½"	40	B238			
29	1½"	40	B239			
37	1½"	40	B240*			
29	2"	50	B248			
46	2"	50	B249			
57	2"	50	B250*			
65	2"	50	B251	AR...N4 Series	AF Series	TF Series
85	2"	50	B252			
120	2"	50	B253			
240	2"	50	B254*			
60	2½"	65	B261			
75	2½"	65	B262			
110	2½"	65	B263			
150	2½"	65	B264			
210	2½"	65	B265*			
70	3"	80	B277			
130	3"	80	B278			
170	3"	80	B280*			

*Models without characterizing disc

Flow Patterns



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

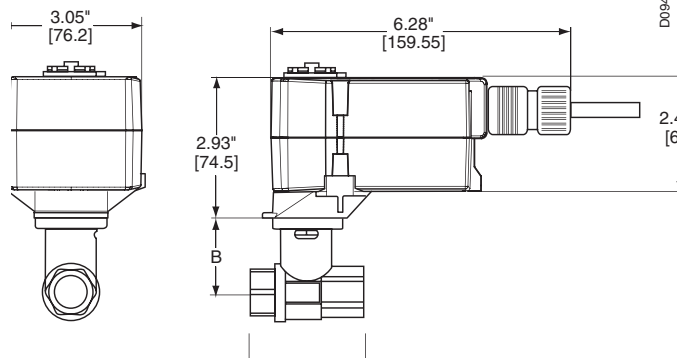
Technical Data	
Control	on/off
Power supply	
TFRB(X)24(-S)	24VAC $\pm$ 20%, 50/60Hz
TFRB(X)120(-S)	24VDC $\pm$ 10%
	(nominal) 100 to 240 VAC, 50/60 Hz
	(tolerance) 85 to 265 VAC, 50/60 Hz
Power consumption	running 2.5 W
	holding 1.3 W
Transformer sizing	
TFRB(X)24(-S)	5 VA (class 2 power source)
TFRB(X)120(-S)	5 VA (class 2 power source)
Electrical connection	1/2" conduit connector
(-S models have 2 cables)	18 GA appliance cable
TFRB(X)24...	3 ft [1m]
TFRB(X)120	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°
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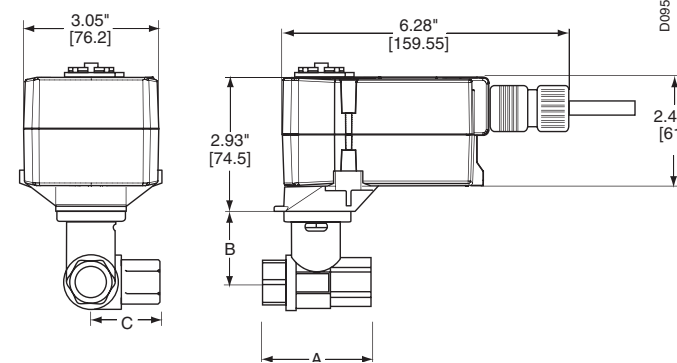
† Rated impulse voltage 800V (4kV for 120V model), Control pollution degree 3, Type of action 1.AA (1.AA.B for -S models)

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.

