

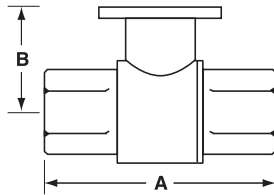
# B2 Series, 2-Way, Characterized Control Valve Stainless Steel Ball and Stem



Technical Data	
Service	chilled or hot water, 60% glycol
Flow characteristic	A-port equal percentage
Action	90° rotation
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 212°F [-18°C to 100°C]
Close off pressure	
200 psi	½" - 2" (B250)
100 psi	2" (B251) - 3"
Maximum differential pressure (ΔP)	30 psi for typical applications
Leakage	0% for A to AB
C <sub>v</sub> rating	A-port: see product chart for values

Tefzel® is a registered trademark of DuPont

## Dimensions



2Way Valve-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-B215	½"	15	2.38" [60.4]	1.72" [43.7]
B217-B220	¾"	20	2.73" [69.3]	1.81" [45.9]
B222-B225	1"	25	3.09" [78.4]	1.81" [45.9]
B229-B230	1¼"	32	3.72" [94.6]	1.81" [45.9]
B231-B232	1¼"	32	3.72" [94.6]	1.98" [50.4]
B238-B240	1½"	40	3.88" [98.5]	1.98" [50.4]
B248-B250	2"	50	4.21" [107.0]	2.21" [56.2]
B251-B254	2"	50	4.93" [125.2]	2.68" [68.0]
B261-B265	2½"	65	5.55" [140.9]	2.68" [68.0]
B277-B280	3"	80	5.82" [147.9]	2.68" [68.0]

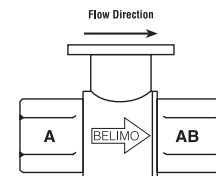
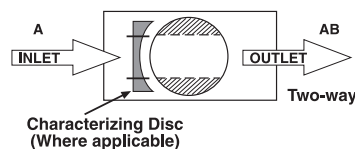
## Application

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.

C <sub>v</sub>	Valve Nominal Size		Type	Suitable Return Actuators		
	Inches	DN [mm]	2-Way NPT	Non-Spring	Spring	
0.3	½"	15	B207	TR Series	LR Series	NR...M4 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*			
4.7	¾"	20	B217			
7.4	¾"	20	B218			
10	¾"	20	B219			
24	¾"	20	B220*			
7.4	1"	25	B222			
10	1"	25	B223			
19	1"	25	B224			
30	1"	25	B225*			
10	1¼"	32	B229			
19	1¼"	32	B230*	AR Series	AR...M4 Series	
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			AF 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



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**Models**

TFX24 US      TFX120 US  
 TFX24-S US    TFX120-S US    w/built-in Aux. Switch

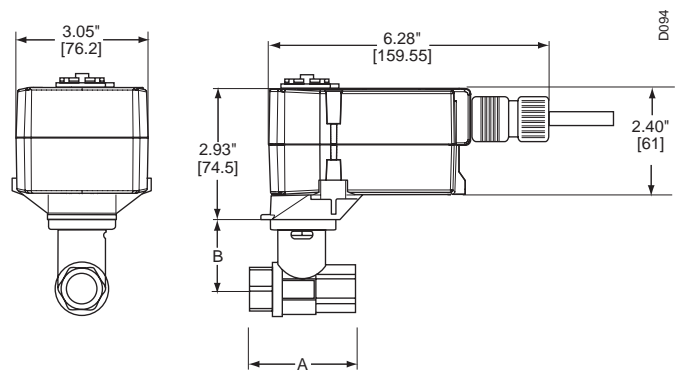
Technical Data	
Control	On/Off
Power supply	
TFX24(-S) US	24VAC ± 20%, 50/60Hz 24VDC ± 10%
TFX120(-S) US	(nominal) 100 to 240 VAC, 50/60 Hz (tolerance) 85 to 265 VAC, 50/60 Hz
Power consumption	running 2.5 W holding 1.3 W
Transformer sizing	
TFX24(-S) US	4 VA (class 2 power source)
TFX120(-S) US	5 VA (class 2 power source)
Electrical connection	1/2" conduit connector 18 GA appliance cable
(-S models have 2 cables)	
TFX... US	3 ft [1m]
TFX... /300 US	10 ft [3m]
TFX... /500 US	16 ft [5m]
Overload protection	electronic throughout 0° to 95° rotation
Angle of rotation	95°
Torque	min. 18 in-lb [2 Nm]
Direction of rotation	reversible with protected  mounting
Position indication	visual indicator, 0° to 95°
Running time	motor <75 sec (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 acc. to UL 60730-1A/-2-14, CAN/CSA E60730-1, CSA C22.2 No. 24-93, CE acc. to 89/336/EEC (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

**TFX...-S**

Auxiliary switch	1 x SPDT, 3A (0.5A) @ 250 VAC, UL Listed adjustable 0° to 95°
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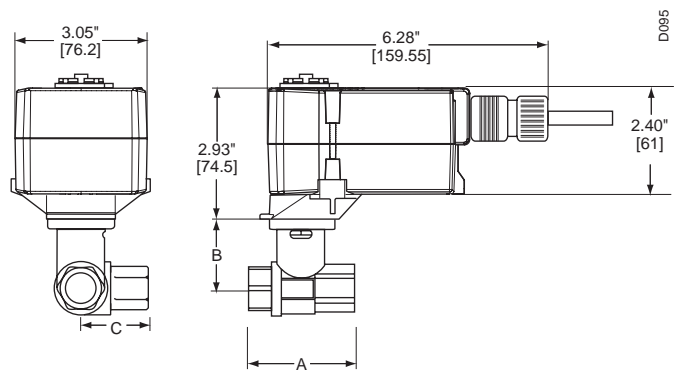
† Rated impulse voltage 800V (4kV for 120V model), Control pollution degree 3, Type of action 1.AA (1.AA.B for -S models)

**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]	1.72" [43.7]
B217(B)-B220(B)	3/4"	20	2.73" [69.3]	1.81" [45.9]

**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]	1.72" [43.7]	1.26" [32.1]
B317(B)-B320(B)	3/4"	20	2.73" [69.3]	1.81" [45.9]	1.45" [36.8]

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### 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.

