

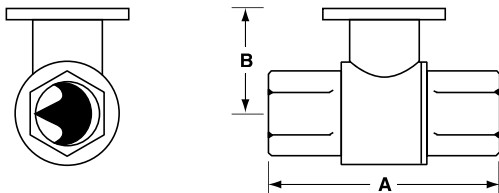
# B2 Series, 2-Way, Characterized Control Valve Stainless Steel Ball and Stem



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  
\*Per EN 12266-1:2003

## 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-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]

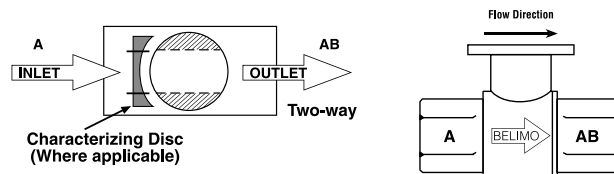
## Application

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.

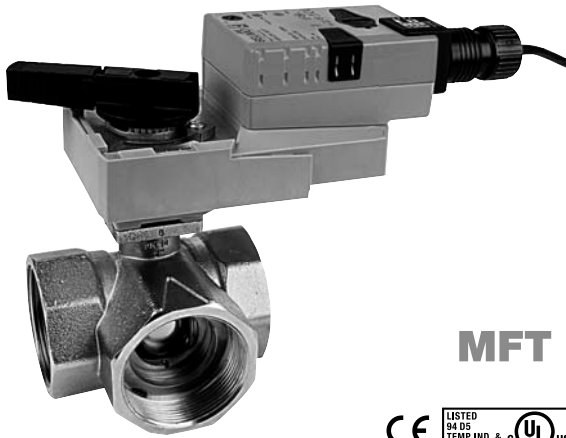
C <sub>v</sub>	Valve Nominal Size		Type	Suitable Actuators				
	Inches	DN [mm]	2-Way NPT	Non-Spring	Spring			
0.3	½"	15	B207	TR Series	LR Series	NR...M4 Series	TF Series	LF Series
0.46	½"	15	B208					
0.8	½"	15	B209					
1.2	½"	15	B210					
1.9	½"	15	B211					
3	½"	15	B212					
4.7	½"	15	B213					
7.4	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*					
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					
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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**MFT**



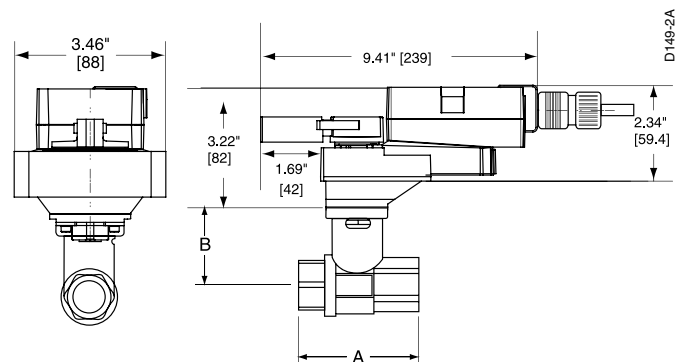
## Models

ARB24-MFT  
ARX24-MFT

Technical Data	
Power supply	24 VAC ± 20% 50/60 Hz 24 VDC ± 10%
Power consumption	running 4 W holding 1.25 W
Transformer sizing	6 VA (class 2 power source)
Electrical connection	½" conduit connector 18 GA plenum rated cable 3 ft [1m] ARB24-MFT ARX24-MFT □ 3 ft [1m] □ 10 ft [3m] □ 16 ft [5m]
Overload protection	electronic throughout 0° to 95° rotation
Operating range Y	2 to 10 VDC, 4 to 20 mA (default) Variable (VDC, PWM, Floating Point, On/Off)
Feedback output U	2 to 10 VDC, 0.5 mA max VDC Variable
Input impedance	100 kΩ (0.1 mA), 500 Ω 1500 Ω (PWM, Floating Point, On/Off)
Angle of rotation	95° electronically variable
Direction of rotation	reversible with protected  switch
Position indication	handle
Manual override	external push button
Running time	ARB24-MFT 150 seconds ARX24-MFT Variable (90 to 350 seconds)
Humidity	5 to 95% RH non-condensing (EN 60730-1)
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 2/IP54
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 volt- age and/or -S versions
Noise level	<45 dB(A)
Quality standard	ISO 9001

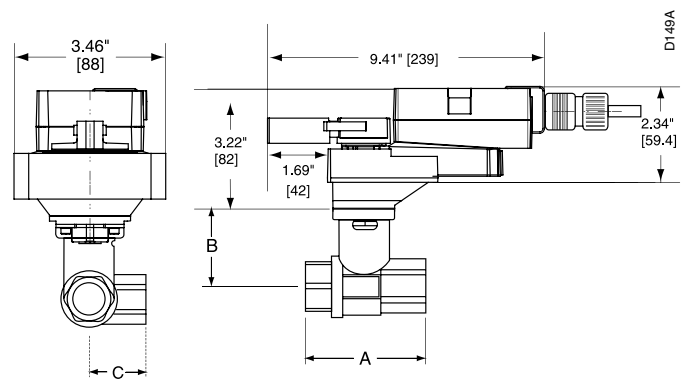
† Rated impulse voltage 4kV, Control pollution degree 3, Type of action 1

## Dimensions with 2-Way Valve



Valve Body	Valve Nominal Size		Dimensions (Inches [mm])	
	Inches	DN [mm]	A	B
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]

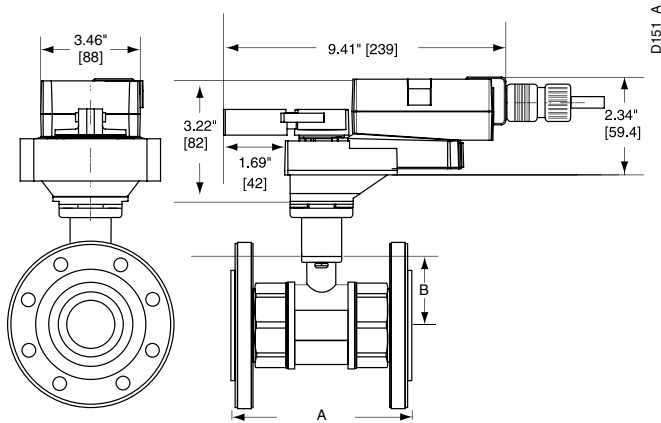
## Dimensions with 3-Way Valve



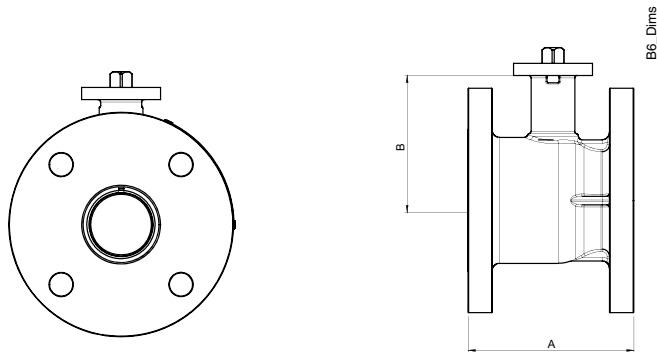
Valve Body	Valve Nominal Size		Dimensions (Inches [mm])		
	Inches	DN [mm]	A	B	C
B329-B331	1¼"	32	3.96" [100.6]	2.21" [56.2]	2.14" [54.3]
B338-B341	1½"	40	4.39" [111.6]	2.45" [62.2]	2.33" [59.1]
B347-B352	2"	50	4.90" [124.5]	2.68" [68.0]	2.60" [66.0]

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### Dimensions with 2-Way Flanged Valve



Valve Nominal Size			Dimensions (Inches [mm])		
Valve Body	Inches	DN [mm]	A	B	CCV-EXT
B661-B665	2½"	65	7.54" [192]	3.50" [89]	2.00" [50]
B677-B680	3"	80	7.93" [202]	3.75" [96]	2.00" [50]



Valve Nominal Size			Dimensions (Inches [mm])	
Valve Body	Inches	DN [mm]	A	B
B6250	2½"	65	5.37" [136.5]	4.45" [113]
B6300	3"	80	6.61" [168]	4.45" [113]

### Wiring Diagrams

#### INSTALLATION NOTES

- 2** **CAUTION** Equipment damage!  
Actuators may be connected in parallel.  
Power consumption and input impedance must be observed.
- 3** Actuators may also be powered by 24 VDC.
- 4** Position feedback cannot be used with Triac sink controller.  
The actuator internal common reference is not compatible.
- 6** Control signal may be pulsed from either the Hot (source) or the Common (sink) 24 VAC line.
- 8** Contact closures A & B also can be triacs.  
A & B should both be closed for triac source and open for triac sink.  
For triac sink the common connection from the actuator must be connected to the hot connection.
- 9**

#### APPLICATION NOTES

◆ The ZG-R01 500 Ω resistor converts the 4 to 20 mA control signal to 2 to 10 VDC, up to 2 actuators may be connected in parallel.

**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.

W538

**On/Off control**

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W538

**Floating Point**

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W538

**VDC/4-20 mA**

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W538

**PWM**