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

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)**

	Valve Nominal Size		Type	Suitable Actuators				
C_v	Inches	DN [mm]	3-Way NPT	Non-Spring			Spring	
0.3	½	15	B307	TR Series	LR Series	NR...N4 Series	TF Series	LF 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					
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*					
10	1¼	32	B329		AR Series	AR...N4 Series		AF Series
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					

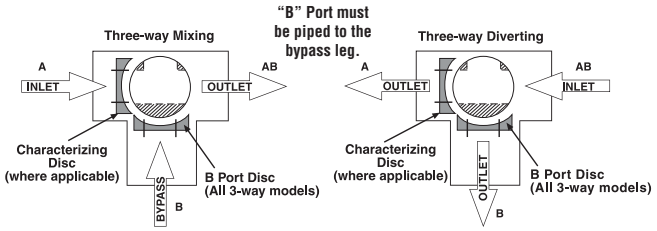
*Models without characterizing disc

Technical Data

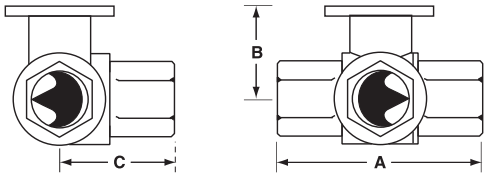
Service	chilled or hot water, 60% glycol
Flow characteristic	A-port equal percentage B-port modified for constant common port flow
Controllable Flow Range	75°
Sizes	½", ¾", 1", 1¼", 1½", 2"
Type of end fitting	NPT female ends
Materials:	
Body	forged brass, nickel plated
Ball	stainless steel
Stem	stainless 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

Flow Patterns



Dimensions



3WayValve-B307-B320

	Valve Nominal Size		Dimensions (Inches [mm])		
Valve Body	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]

BELIMO

MFT

5 YEAR WARRANTY

CE LISTED 94 D5 TEMP.IND. & REG.EQUIP. c UL us

BRUSHLESS DC. motor

Models

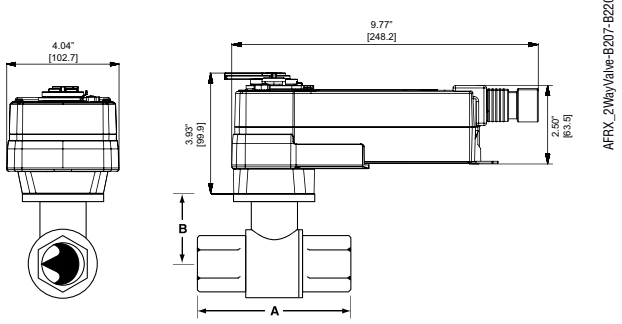
AFRX24-MFT
AFRX24-MFT-S

Technical Data		
Control		MFT
Control signal		2 to 10 VDC, 4 to 20 mA (default) variable (VDC, PWM, floating point, on/off)
Power supply		24 VAC, +/- 20%, 50/60 Hz 24 VDC, +20% / -10%
Power consumption†	running	7.5 W
	holding	3 W
Transformer sizing†		10 VA (Class 2 power source)
Electrical connection		3 ft. [1m], 10 ft. [3m] or 16 ft. [5m] 18 GA appliance or plenum cables, with or without 1/2" conduit connector -S models: two 3 ft. [1m], 10 ft. [3m] or 16 ft. [5m] appliance cables with or without 1/2" conduit connectors
Overload protection		electronic throughout 0 to 90° rotation
Feedback output*		2 to 10 VDC, 0.5 mA max (variable)
Input impedance		100 kΩ for 2 to 10 VDC (0.1 mA) 500 Ω for 4 to 20 mA 1500 Ω for on/off and floating point
Angle of rotation		95°
Direction of Rotation*	spring	reversible with CW/CCW mounting
	motor	reversible with built-in ↷/↶ switch
Position indication		visual indicator 0° to 95°(0° is spring return position)
Manual override		5 mm hex crank (3/16" Allen), supplied
Running time	motor*	150 seconds (default), variable (70 to 220 seconds)
	spring	<20 sec @ -4°F to 122°F [-20°C to 50°C]
Ambient temperature		-22° F to 122° F [-30° C to 50° C]
Housing		NEMA 2, IP54, Enclosure Type 2
Agency listings		cULus according. To UL60730-1A/-2-14, CAN/CSA E60730- 1:02, CE according. To 2004/108/EC & 2006/95/EC
Noise level		≤40dB(A) motor @ 150 seconds, run time dependent ≤62dB(A) spring return
Quality standard		ISO 9001

† Programmed for 70 sec motor runtime. At 150 sec motor run time, transformer sizing is 8.5 VA and power consumption is 6 W running/3 W holding.
* Variable when configured with MFT options
‡ Rated Impulse Voltage 800V, Type of action 1.AA (1.AA.B for -S version), Control Pollution Degree 3.

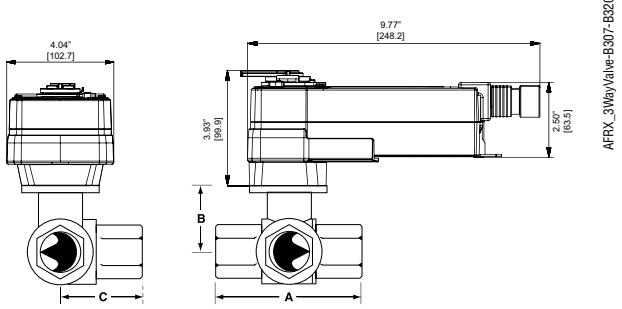
AFRX24-MFT-S, AFRX24-MFT-S-5-14	
Auxiliary switches	2 x SPDT 3A (0.5A) @ 250 VAC, UL approved one set at +10° to 90°

Dimensions



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

Dimensions



	Valve Nominal Size		Dimensions (Inches [mm])		
Valve Body	Inches	DN [mm]	A	B	C
B312-B315	½"	15	2.38" [60.4]	1.72" [43.7]	1.26" [32.1]
B317-B320	¾"	20	2.73" [69.3]	1.81" [45.9]	1.45" [36.8]
B322-B325	1"	25	3.09" [78.4]	1.81" [45.9]	1.56" [39.8]
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]
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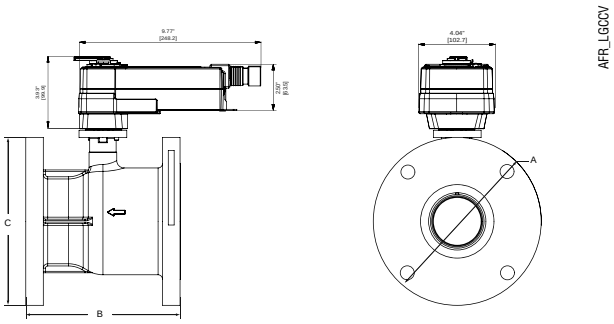
Dimensions



Valve Body	Nominal Pipe Size	Top Flange Design	Flange Diameter	Face-to-Face Length	Height
			A	B	C
B6250	2½" [65]	F05	7.50" [190.5]	5.50" [139.7]	8.10" [205.4]
B6300	3" [80]		8.00" [203.2]	6.60" [167.6]	8.40" [213.1]
B6400	4" [100]		9.00" [228.6]	8.30" [210.8]	9.30" [235.9]

Wiring Diagrams

INSTALLATION NOTES

1 Provide overload protection and disconnect as required.

2 ***CAUTION** Equipment Damage!*
Actuators may be connected in parallel if not mechanically mounted to the same shaft. 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.

5 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.

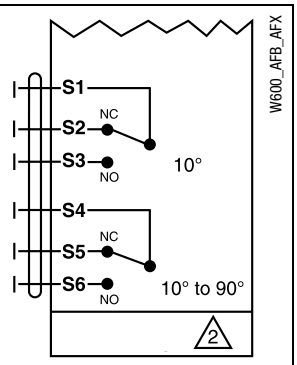
9 For triac sink the common connection from the actuator must be connected to the hot connection of the controller.

APPLICATION NOTES

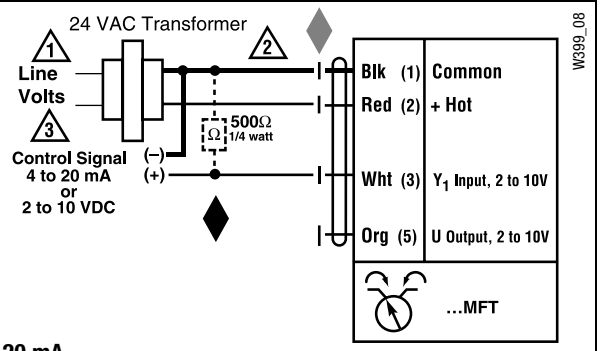
◆ Meets UL requirements without the need of an electrical ground connection.

◆ The ZG-R01 500 Ω resistor may be used.

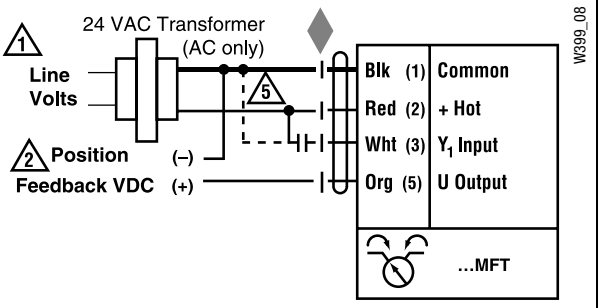
⚠ ***WARNING** Live Electrical Components!*
During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components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



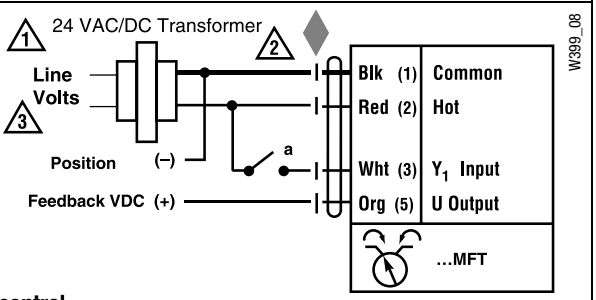
Auxiliary Switches for AFRX24-MFT



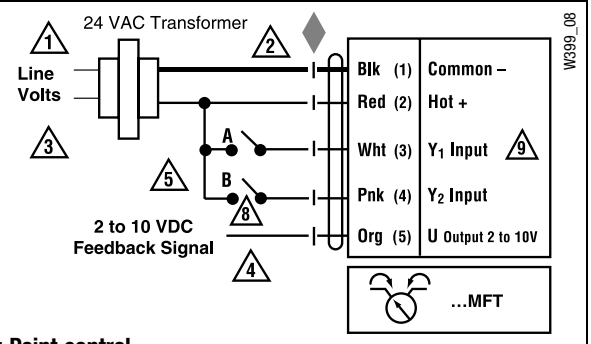
VDC/4-20 mA



PWM



On/Off control



Floating Point control