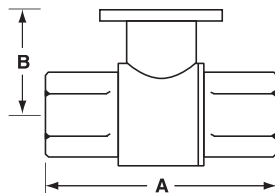




Technical Data	
Service	chilled or hot water, 60% glycol
Flow characteristic	A-port equal percentage
Controllable Flow Range	75°
Sizes	½", ¾", 1", 1¼", 1½", 2", 2½", 3"
Type of end fitting	NPT female ends
Materials:	
Body	forged brass, nickel plated
Ball	stainless steel
Stem	stainless steel
Seats	PTFE
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]

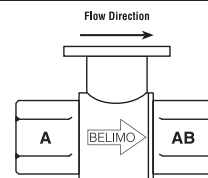
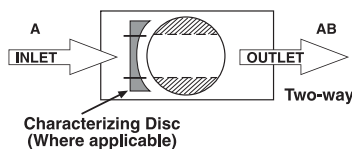
Application

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	AF 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...N4 Series	AF Series	AF 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	AF Series	AF Series	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





Models

AFRBUP N4	Basic Version
AFRBUP-S N4	Basic Version w/built-in aux. switch
AFRBUP N4H	Basic Version w/built in heater
AFRBUP-S N4H	Basic Version w/built-in aux. switch & heater
AFRXUP N4	Flexible Version
AFRXUP-S N4	Flexible Version w/built-in aux. switch
AFRXUP N4H	Flexible Version w/built in heater
AFRXUP-S N4H	Flexible Version w/built-in aux. switch & heater

Technical Data

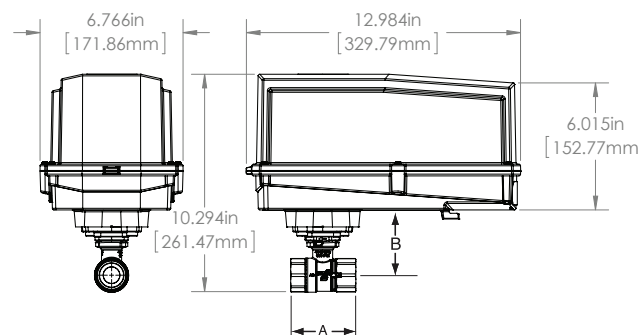
Power supply	24...240 VAC -20% / +10%, 50/60 Hz 24...125 VDC ±10%
Power consumption	running 7 W / heater 25 W holding 3.5 W
Transformer sizing	7 VA @ 24 VAC (class 2 power source) 8.5 VA @ 120 VAC / heater 25 VA @120 VAC 18 VA @ 240 VAC
Electrical connection	AFRBUP... N4 3 ft [1m], 10 ft [3m] or 16 ft [5m] 18 GA appliance cable, with or without 1/2" conduit connector AFRXUP... N4 -S models: Two 3 ft [1m], 10 ft [3m] or 16 ft [5m] appliance cables with or without 1/2" conduit connectors
heater (N4H)	terminal block, 18-16 GA
Overload protection	electronic throughout 0 to 95° rotation
Control	on/off
Torque	180 in-lb [20 Nm] minimum
Direction of rotation	spring reversible with CW/CCW mounting inside housing
Mechanical angle of rotation	95° (adjustable with mechanical end stop, 35° to 95°)
Running time	motor < 75 sec spring 20 sec @ -4°F to 122°F [-20°C to 50°C]; < 60 sec @ -22°F [-30°C] spring (with heater) 20 sec @ -4°F to 122°F [-20°C to 50°C]; < 60 sec @ -49°F [-45°C]
Position indication	visual indicator, 0° to 95° (0° is full spring return position)
Manual override	5 mm hex crank (3/16" Allen), supplied
Humidity	max. 95% RH non-condensing
Ambient temperature	-22°F to 122°F [-30°C to 50°C] with heater -49°F to 122°F [-45°C to 50°C]
Storage temperature	-40°F to 176°F [-40°C to 80°C]
Housing	UL Type 4, NEMA 4, IP66
Housing material	polycarbonate
Agency listings †	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EC & 2006/95/EC
Noise level	<50dB(A) motor @ 75 seconds <62dB(A) spring return
Servicing	maintenance free
Quality standard	ISO 9001
Weight	9.7 lbs (4.4 kg), 10 lbs (4.5 kg) with switches 10.5 lbs (4.8 kg) with heater

† Rated Impulse Voltage 4kV, Type of action 1.AA (1.AA.B for -S version), Control Pollution Degree 4.

AFRBUP-S N4, AFRBUP-S N4H, AFRXUP-S N4, AFRXUP-S N4H

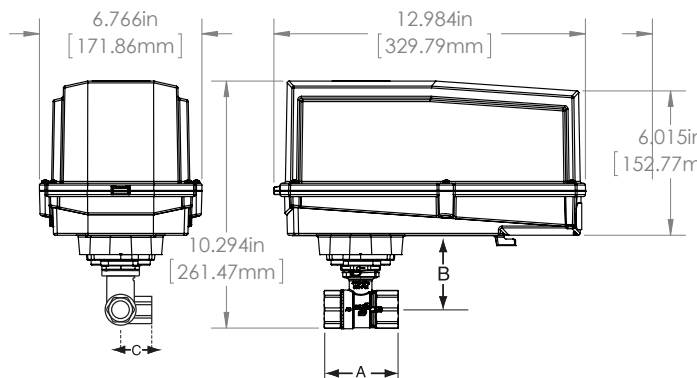
Auxiliary switches	2 x SPDT 3A (0.5A) @ 250 VAC, UL Approved one set at +10°, one adjustable 10° to 90°
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Dimensions with 2-Way Valve



Valve Body	Valve Nominal Size		Dimensions (Inches [mm])	
	Inches	DN [mm]	A	B
B231-B232	1 1/4"	32	3.72" [94.6]	1.84" [47.4]
B238-B240	1 1/2"	40	3.88" [98.5]	2.04" [51.9]
B248-B254	2"	50	4.93" [125.2]	2.73" [69.5]
B261-B265	2 1/2"	65	5.55" [140.9]	2.73" [69.5]
B277-B280	3"	80	5.82" [147.9]	2.73" [69.5]

Dimensions with 3-Way Valve



Valve Body	Valve Nominal Size		Dimensions (Inches [mm])		
	Inches	DN [mm]	A	B	C
B329-B331	1 1/4"	32	3.96" [100.6]	2.27" [57.7]	2.14" [54.3]
B338-B341	1 1/2"	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]

AFRBUP N4, AFRBUP-S N4, AFRBUP N4H, AFRBUP-S N4H,
AFRXUP N4, AFRXUP-S N4, AFRXUP N4H, AFRXUP-S N4H



NEMA 4, On/Off, Spring Return, 24 to 240 VAC

Accessories	
Tool-06	8mm and 10 mm wrench
43442-00001	Gland (needed for additional wires)
11097-00001	Gasket for Gland (needed for additional wires)

NOTE: When using AFRBUP N4, AFRBUP-S N4, AFRBUP N4H, AFRBUP-S N4H, AFRXUP N4, AFRXUP-S N4, AFRXUP N4H, AFRXUP-S N4H actuators, only use accessories listed on this page. For actuator wiring information and diagrams, refer to Belimo Wiring Guide.

Typical Specification

On/Off spring return damper actuators shall be direct coupled type which require no crank arm and linkage and be capable of direct mounting to a jackshaft up to a 1.05" diameter. The actuators must be designed so that they may be used for either clockwise or counterclockwise fail-safe operation. Actuators shall be protected from overload at all angles of rotation. If required, two SPDT auxiliary switch shall be provided having the capability of one being adjustable. Actuators with auxiliary switches must be constructed to meet the requirements for Double Insulation so an electrical ground is not required to meet agency listings. Actuators shall be cULus Approved and have a 5 year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.

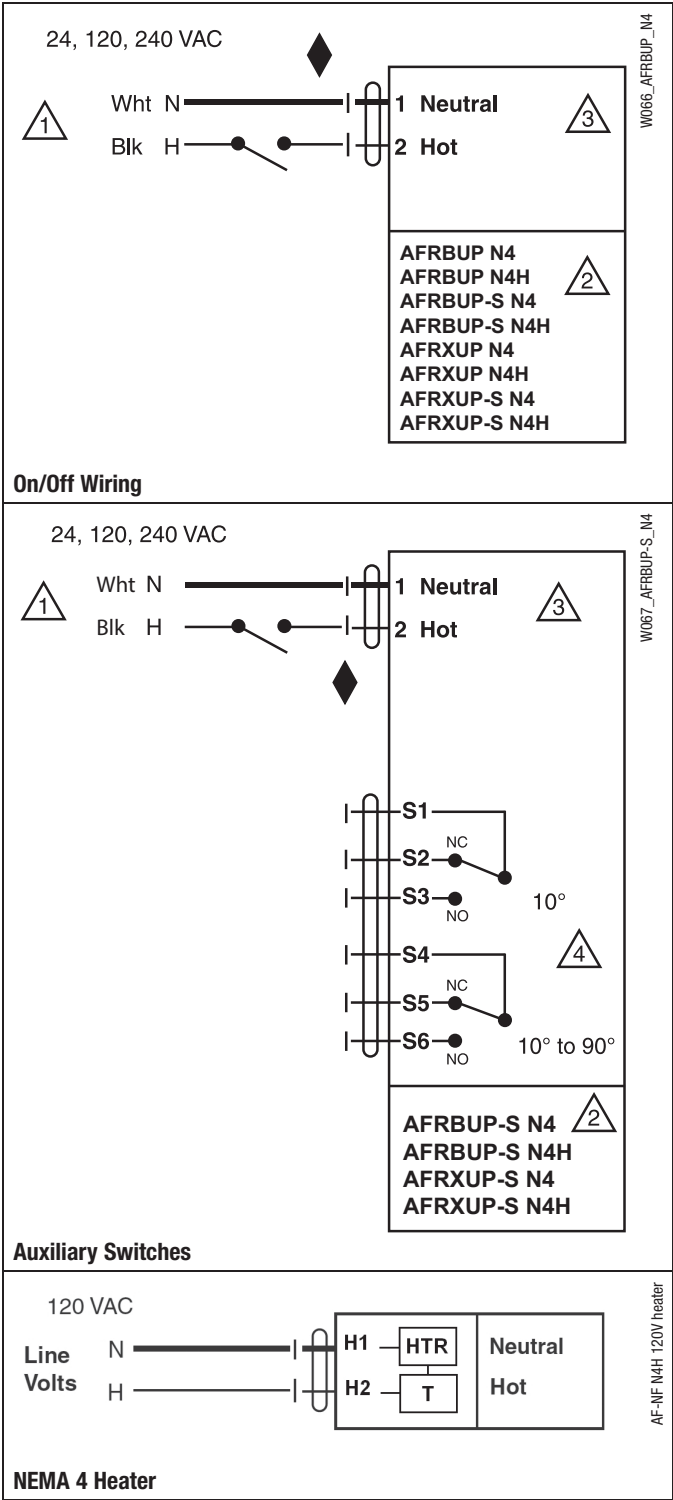
Wiring Diagrams

INSTALLATION NOTES

- 1 Provide overload protection and disconnect as required.
- 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 For end position indication, interlock control, fan startup, etc., AFRB24-S N4, AFRB24-S N4H, AFRX24-S N4, AFRX24-S N4H incorporates two built-in auxiliary switches: 2 x SPDT, 3A (0.5A) @250 VAC, UL Approved, one switch is fixed at +10°, one is adjustable 10° to 90°.

APPLICATION NOTES

- Meets cULus 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.



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