# **B2...VS Series, 2-way, Ball Valve Bronze Body, Stainless Steel Ball and Stem**

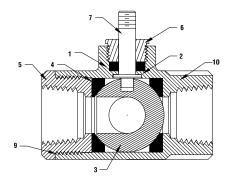






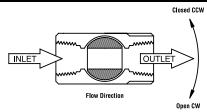


Data	
	chilled or hot water, glycol, 35# steam
acteristic	modified equal percentage
	90° rotation
	valve open CW, valve closed CCW
	1/2", 3/4", 1", 11/4", 11/2", 2"
d fitting	SAE NPT (female connections)
n packing	reinforced PTFE
bearing	reinforced PTFE
	316 stainless steel
(x2)	reinforced PTFE w/ Durafill
iner	B16 (¾" - 1") stainless steel
	B584 (1¼" - 2") stainless steel
d	B16 brass
)	316 stainless steel
nut	stainless steel
seal	PTFE (1-1/4" to 2")
1	B584-C84400 bronze
	d fitting  n packing n bearing  (x2) iner  d nut



Pressure rating	600 psig WOG
Media temp. range	-22°F to +280°F (-30°C to +138°C)
Close-off pressure	600 psig @ 100°F
Maximum differential	<600 psig
pressure ( $\Delta P$ )	

#### Flow Patterns



- Live-load packing set
- · Stainless steel ball & stem
- Blow-out proof stem design

#### **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.

This valve is designed with MFT functionality which facilitates the use of various control input.

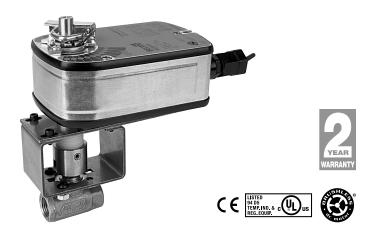
- Up to 35 psi steam
- 1/2" 600 PSIG WOG, Cold Non-Shock.
- Federal Specification: WW-V-35C,Type II Composition: BZ

Style: 3

	Valve No	ninal Size	Туре	Suitable	Actuato	rs
Cv	Inches	DN [mm]	2-way NPT	Spring Return	Non-S Ret	
1	1/2	15	B2050VS-01	လွ	Si	
2	1/2	15	B2050VS-02	LF Series	Series	
4	1/2	15	B2050VS-04	N N	S W	
15	1/2	15	B2050VS-15	_	5	
30	3/4	20	B219VS	불	ΣN	S
51	3/4	20	B220VS	Z	Z	Series
43	1	25	B224VS			S Y
68	1	25	B225VS	တ္ဆ		SY
48	11/4	32	B232VS	AF Series		
84	1½	40	B239VS	Š	S	
177	1½	40	B240VS	₹	GM Series	
108	2	50	B249VS		Š	

## LF Actuators, On/Off





### Models

LF24 US LF24-S US LF120 US

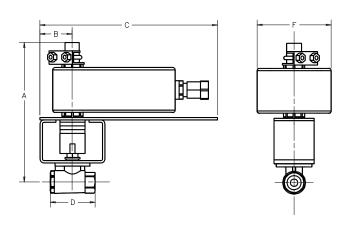
w/built-in Aux. Switch

LF120-S US w/built-in Aux. Switch

Control  Power supply LF24(-S) US  LF120(-S) US  24 VAC ± 20% 50/60 Hz 24 VDC ± 10%  120 VAC ± 10% 50/60 Hz  Power consumption LF24(-S) US  running holding LF120(-S) US  Transformer sizing  Transformer sizing  Transformer sizing  Transformer sizing  Flectrical connection (-S models have 2 cables)  Electrical protection  Overload protection Angle of rotation  Spring return direction Position indication  Running time  Spring  Ambient temperature  Agency listings†  UL 873, CSA C22.2 No. 24 certified, CE Quality standard  Noise level  NEMA 2  VAC ± 20% 50/60 Hz  24 VAC ± 20% 50/60 Hz  25 W  120 VAC ± 10% 50/60 Hz  5 W  25 W  25 W  25 W  25 W  26 VA c ass 2 power source  Electrical connection (-S models have 2 cables) 3 ft. [1m], 18 GA appliance cable electronic throughout rotation  Angle of rotation  95°  Spring return direction  reversible with CW/CCW mounting visual indicator 0° to 90°  40 to 75 sec. (on/off)  25 sec. @ -4°F to +122°F [-20°C to +50°C]  40 sec. @ -22°F [-30°C]  Ambient temperature  -22° F to +122° F [-30° C to +50° C]  NEMA 2  Agency listings† UL 873, CSA C22.2 No. 24 certified, CE  Quality standard  Noise level			
Power supply LF24(-S) US 24 VAC ± 20% 50/60 Hz 24 VDC ± 10%  LF120(-S) US 120 VAC ± 10% 50/60 Hz  Power consumption LF24(-S) US running holding LF120(-S) US running S.5 W  Transformer sizing Transformer sizing Flectrical connection (-S models have 2 cables) Flectrical protection 120V actuators double insulated Overload protection Angle of rotation Position indication Running time Spring Ambient temperature Fleutrical protection  Angle of rotation Position indication Running time Ambient temperature Fleutrical protection Position indication Running NEMA 2 Agency listings† UL 873, CSA C22.2 No. 24 certified, CE Quality standard  120 VAC ± 10% 50/60 Hz  VAC ± 20% 50/60 Hz  24 VAC ± 20% 50/60 Hz 24 VAC ± 20% 50/60 Hz 24 VAC ± 20% 50/60 Hz 24 VAC ± 20% 50/60 Hz 24 VAC ± 20% 50/60 Hz 24 VAC ± 20% 50/60 Hz 25 W 2.5 W 3.5 W 3.5 W 3.6 W 3.5 W 3.6 W 3.6 A appliance cable Flectrical protection Flectr	Technical Data		
LF24(-S) US	Control		on/off, floating point
LF120(-S) US  Power consumption LF24(-S) US  running holding LF120(-S) US  running F120(-S) US  running holding LF120(-S) US  running S.5 W  Transformer sizing  Transformer sizing  F120(-S) US  Transformer sizing  Transformer sizing  Transformer sizing  F120(-S) US  Transformer sizing  Transformer sizing  Transformer sizing  F120(-S) US  Transformer sizing  Transformer sizing  F120(-S) US  Transformer sizing  Transformer sizing  F120(-S) US  Transformer sizing  TvA, class 2 power source  F120(-S) US  Secunduit connector  120V actuators double insulated  Overload protection  Position protection  Angle of rotation  Position indication  F120(-S) US  Spring return direction  F120(-S) US  F120(-S) US  Secunduit CW/CCW mounting  F120(-S) US	Power supply		
LF120(-S) US  Power consumption LF24(-S) US  running holding LF120(-S) US  running F120(-S) US  running holding LF120(-S) US  running S.5 W  Transformer sizing  Transformer sizing  Electrical connection (-S models have 2 cables)  Electrical protection 120V actuators double insulated Overload protection Angle of rotation Position indication  Running time  Spring Sp	LF24(-S) US		24 VAC ± 20% 50/60 Hz
Power consumption LF24(-S) US running 5 W holding LF120(-S) US running 5.5 W Transformer sizing 7 VA, class 2 power source Electrical connection (-S models have 2 cables) 3 ft. [1m], 18 GA appliance cable Electrical protection 120V actuators double insulated Overload protection electronic throughout rotation Angle of rotation 95° Spring return direction reversible with CW/CCW mounting Position indication visual indicator 0° to 90° Running time 40 to 75 sec. (on/off) Spring 60 sec. @ -22°F [-30°C] Ambient temperature -22° F to +122° F [-30°C to +50°C] Housing NEMA 2 Agency listings† UL 873, CSA C22.2 No. 24 certified, CE Quality standard ISO 9001			24 VDC ± 10%
LF24(-S) US running 5 W holding 2.5 W  LF120(-S) US running 5.5 W running 5.5 W  Transformer sizing 7 VA, class 2 power source  Electrical connection 4.2 conduit connector (-S models have 2 cables) 3 ft. [1m], 18 GA appliance cable  Electrical protection 120V actuators double insulated  Overload protection electronic throughout rotation  Angle of rotation 95°  Spring return direction reversible with CW/CCW mounting  Position indication visual indicator 0° to 90°  Running time 40 to 75 sec. (on/off)  Spring -22° F to +122° F [-20°C to +50°C]  Ambient temperature -22° F to +122° F [-30° C]  Housing NEMA 2  Agency listings† UL 873, CSA C22.2 No. 24 certified, CE  Quality standard ISO 9001	LF120(-S) US		120 VAC ± 10% 50/60 Hz
holding 2.5 W running 5.5 W holding 3.5 W  Transformer sizing 7 VA, class 2 power source  Electrical connection (-S models have 2 cables) 3 ft. [1m], 18 GA appliance cable  Electrical protection 120V actuators double insulated  Overload protection electronic throughout rotation  Angle of rotation 95°  Spring return direction reversible with CW/CCW mounting  Position indication visual indicator 0° to 90°  Running time 40 to 75 sec. (on/off)  Spring c25 sec. @ -4°F to +122°F [-20°C to +50°C]  -60 sec. @ -22°F [-30°C]  Ambient temperature -22° F to +122° F [-30° C to +50° C]  Housing NEMA 2  Agency listings† UL 873, CSA C22.2 No. 24 certified, CE  Quality standard ISO 9001	Power consumption		
LF120(-S) US running holding 3.5 W  Transformer sizing 7 VA, class 2 power source  Electrical connection (-S models have 2 cables) 3 ft. [1m], 18 GA appliance cable  Electrical protection 120V actuators double insulated  Overload protection electronic throughout rotation  Angle of rotation 95°  Spring return direction reversible with CW/CCW mounting  Position indication visual indicator 0° to 90°  Running time <40 to 75 sec. (on/off)  spring <25 sec. @ -4°F to +122°F [-20°C to +50°C] <60 sec. @ -22°F [-30°C]  Ambient temperature -22° F to +122° F [-30° C to +50° C]  Housing NEMA 2  Agency listings† UL 873, CSA C22.2 No. 24 certified, CE  Quality standard ISO 9001	LF24(-S) US	running	5 W
holding 3.5 W  Transformer sizing 7 VA, class 2 power source  Electrical connection (-S models have 2 cables) 3 ft. [1m], 18 GA appliance cable  Electrical protection 120V actuators double insulated  Overload protection electronic throughout rotation  Angle of rotation 95°  Spring return direction reversible with CW/CCW mounting  Position indication visual indicator 0° to 90°  Running time <40 to 75 sec. (on/off)  spring <25 sec. @ -4°F to +122°F [-20°C to +50°C] <60 sec. @ -22°F [-30°C]  Ambient temperature -22° F to +122° F [-30° C to +50° C]  Housing NEMA 2  Agency listings† UL 873, CSA C22.2 No. 24 certified, CE  Quality standard ISO 9001		holding	2.5 W
Transformer sizing 7 VA, class 2 power source  Electrical connection 1/2" conduit connector  (-S models have 2 cables) 3 ft. [1m], 18 GA appliance cable  Electrical protection 120V actuators double insulated  Overload protection electronic throughout rotation  Angle of rotation 95°  Spring return direction reversible with CW/CCW mounting  Position indication visual indicator 0" to 90°  Running time 40 to 75 sec. (on/off)  spring 25 sec. 20 -4°F to +122°F [-20°C to +50°C] -60 sec. 22°F [-30°C]  Ambient temperature -22°F to +122°F [-30°C to +50°C]  Housing NEMA 2  Agency listings† UL 873, CSA C22.2 No. 24 certified, CE  Quality standard ISO 9001	LF120(-S) US	running	5.5 W
Electrical connection (-S models have 2 cables) Electrical protection Overload protection Angle of rotation Position indication  Running time Spring		holding	3.5 W
C-S models have 2 cables   3 ft. [1m], 18 GA appliance cable	Transformer sizing		7 VA, class 2 power source
Electrical protection         120V actuators double insulated           Overload protection         electronic throughout rotation           Angle of rotation         95°           Spring return direction         reversible with CW/CCW mounting           Position indication         visual indicator 0° to 90°           Running time         <40 to 75 sec. (on/off)	Electrical connection		½" conduit connector
Overload protection         electronic throughout rotation           Angle of rotation         95°           Spring return direction         reversible with CW/CCW mounting           Position indication         visual indicator 0° to 90°           Running time         <40 to 75 sec. (on/off)	(-S models have 2 cab	es)	3 ft. [1m], 18 GA appliance cable
Angle of rotation         95°           Spring return direction         reversible with CW/CCW mounting           Position indication         visual indicator 0° to 90°           Running time         <40 to 75 sec. (on/off)	Electrical protection		120V actuators double insulated
Spring return direction   reversible with CW/CCW mounting	Overload protection		electronic throughout rotation
Position indication   visual indicator 0° to 90°	Angle of rotation		95°
Running time	Spring return direction		reversible with CW/CCW mounting
Spring   <25 sec. @ -4°F to +122°F [-20°C to +50°C]   <60 sec. @ -22°F [-30°C]     Ambient temperature   -22°F to +122°F [-30° C to +50° C]     Housing   NEMA 2     Agency listings†   UL 873, CSA C22.2 No. 24 certified, CE     Quality standard   ISO 9001	Position indication		visual indicator 0° to 90°
<60 sec. @ -22°F [-30°C]	Running time		<40 to 75 sec. (on/off)
Ambient temperature -22° F to +122° F [-30° C to +50° C] Housing NEMA 2 Agency listings† UL 873, CSA C22.2 No. 24 certified, CE Quality standard ISO 9001		spring	<25 sec. @ -4°F to +122°F [-20°C to +50°C]
Housing NEMA 2 Agency listings† UL 873, CSA C22.2 No. 24 certified, CE Quality standard ISO 9001			<60 sec. @ -22°F [-30°C]
Agency listings† UL 873, CSA C22.2 No. 24 certified, CE Quality standard ISO 9001	Ambient temperature		-22° F to +122° F [-30° C to +50° C]
Quality standard ISO 9001	Housing		NEMA 2
			UL 873, CSA C22.2 No. 24 certified, CE
Noise level max. 62 dB(A)	Quality standard		ISO 9001
	Noise level		max. 62 dB(A)

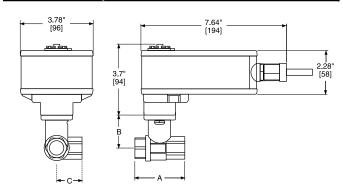
LFS US					
Auxiliary switch	1 x SPDT, 6A (1.5A) @ 250 VAC, UL Listed,				
	adjustable 0° to 95° (double insulated)				
† Rated impulse voltage 800V (4kV for 120V model), Control pollution degree 3,					

#### **Dimensions with 2-Way Valve**



		Valve No	I	Dimens	sions (	Inches	)	
Valve Body	COP	Inches	DN [mm]	Α	В	C	D	F
B2050VS-01	50	1/2	15	6.75	2.00	6.75	2.25	4.00
B2050VS-02	50	1/2	15	6.75	2.00	6.75	2.25	4.00
B2050VS-04	50	1/2	15	6.75	2.00	6.75	2.25	4.00
B2050VS-15	50	1/2	15	6.70	2.00	8.00	2.25	6.25

#### **Dimensions with 3-Way Valve**



		Valve N Siz		Dimensions (mm)		
Valve Body	СОР	Inches	DN [mm]	A	В	C
B315L	50	1/2	15	2.63" [67]	1.73" [44]	1.42" [36]
B320L	50	3/4	20	3.01" [78]	1.81" [46]	1.63" [42]
B325I	50	1	25	3 42" [87]	1 81" [46]	1 77" [45]

Type of action 1.AA (1.AA.B for -S models)



#### **Wiring Diagrams**



#### INSTALLATION NOTES



Provide overload protection and disconnect as required.



#### **CAUTION** Equipment damage!

Actuators may be connected in parallel. Power consumption must be observed.



Actuator may also be powered by 24 VDC.



For end position indication, interlock control, fan startup, etc., LF24-S US and LF120-S US incorporates a built-in auxiliary switch: 1 x SPDT, 6A (1.5A) @ 250 VAC, UL listed, adjustable 0° to 95°.



#### **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.

