

2-way, Characterized Control Valve, Chrome Plated Brass Ball and Nickel Plated Brass Stem



5-year warranty



## Type overview

Type	DN
B221B	20

## Technical data

Functional data	Valve size [mm]	0.75" [20]
Fluid		chilled or hot water, up to 60% glycol
Fluid Temp Range (water)		0...250°F [-18...120°C]
Body Pressure Rating		600 psi
Close-off pressure Δps		200 psi
Flow characteristic		equal percentage
Leakage rate		0% for A – AB
Pipe connection		Internal thread NPT (female)
Servicing		maintenance-free
Flow Pattern		2-way
Controllable flow range		75°
Cv		24
No Characterized Disc		TRUE
Materials	Valve body	Nickel-plated brass body
Stem		nickel-plated brass
Stem seal		EPDM (lubricated)
Seat		PTFE
Characterized disc		TEFZEL®
O-ring		EPDM (lubricated)
Ball		chrome plated brass
Suitable actuators	Non Fail-Safe	LRB(X)
	Spring	LF

## Safety notes



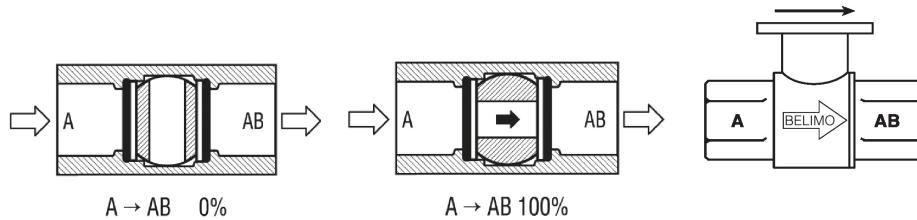
- WARNING: This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

## Product features

**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.

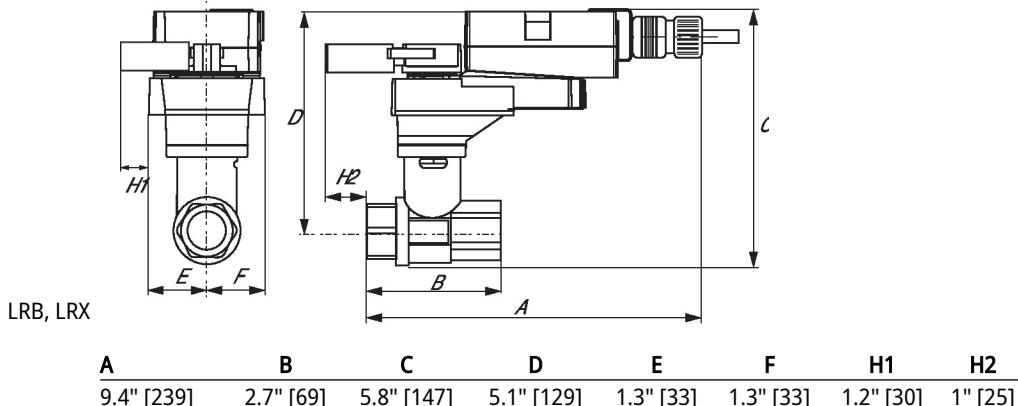
## Flow/Mounting details

Two-way valves should be installed with the disc upstream.

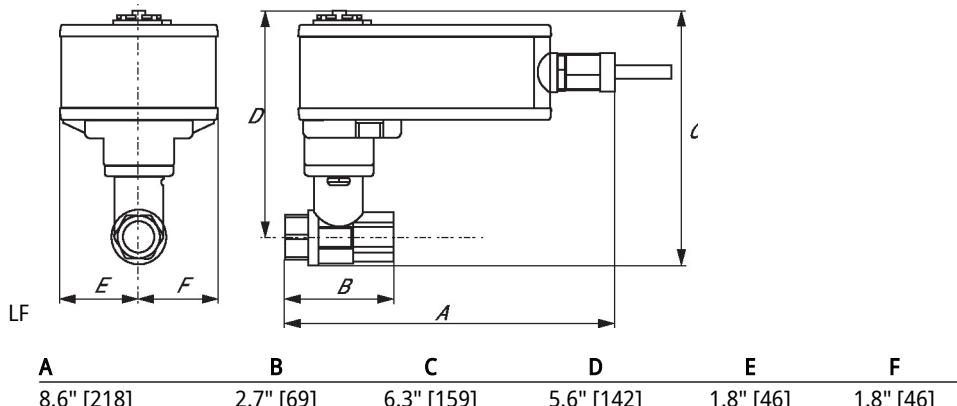


## Dimensions

Type	DN	Weight
B221B	20	0.91 lb [0.41 kg]



A	B	C	D	E	F	H1	H2
9.4" [239]	2.7" [69]	5.8" [147]	5.1" [129]	1.3" [33]	1.3" [33]	1.2" [30]	1" [25]



A	B	C	D	E	F
8.6" [218]	2.7" [69]	6.3" [159]	5.6" [142]	1.8" [46]	1.8" [46]

On/Off, Floating point, Non fail-safe, 24 V



## Technical data

Electrical data		
	Nominal voltage	AC/DC 24 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 19.2...28.8 V / DC 21.6...28.8 V
	Power consumption in operation	1.5 W
	Power consumption in rest position	0.2 W
	Transformer sizing	2.5 VA
	Electrical Connection	Screw terminal (for 26 to 14 GA wire)
	Overload Protection	electronic throughout 0...90° rotation
	Electrical Protection	actuators are double insulated
Functional data		
	Direction of motion motor	selectable with switch 0/1
	Manual override	external push button
	Angle of rotation	90°
	Angle of rotation note	adjustable with mechanical stop
	Running Time (Motor)	90 s / 90°
	Noise level, motor	35 dB(A)
	Position indication	Mechanical, pluggable
Safety data		
	Power source UL	Class 2 Supply
	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 1
	Enclosure	UL Enclosure Type 1
	Agency Listing	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU
	Quality Standard	ISO 9001
	UL 2043 Compliant	Suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC
	Ambient humidity	Max. 95% RH, non-condensing
	Ambient temperature	-22...122°F [-30...50°C]
	Storage temperature	-40...176°F [-40...80°C]
	Servicing	maintenance-free
Weight		
	Weight	1.6 lb [0.71 kg]
Materials		
	Housing material	Galvanized steel and plastic housing

**Footnotes** †Rated Impulse Voltage 800V, Type of Action 1, Control Pollution Degree 2.

## Accessories

Electrical accessories	Description	Type
	Battery backup system, for non-spring return models	NSV24 US
	Battery, 12 V, 1.2 Ah (two required)	NSV-BAT
	Auxiliary switch 1x SPDT add-on	S1A
	Auxiliary switch 2x SPDT add-on	S2A
	Feedback potentiometer 140 $\Omega$ add-on, grey	P140A GR
	Feedback potentiometer 1 k $\Omega$ add-on, grey	P1000A GR
	Feedback potentiometer 10 k $\Omega$ add-on, grey	P10000A GR
	Feedback potentiometer 2.8 k $\Omega$ add-on, grey	P2800A GR
	Feedback potentiometer 500 $\Omega$ add-on, grey	P500A GR
	Feedback potentiometer 5 k $\Omega$ add-on, grey	P5000A GR

## Electrical installation

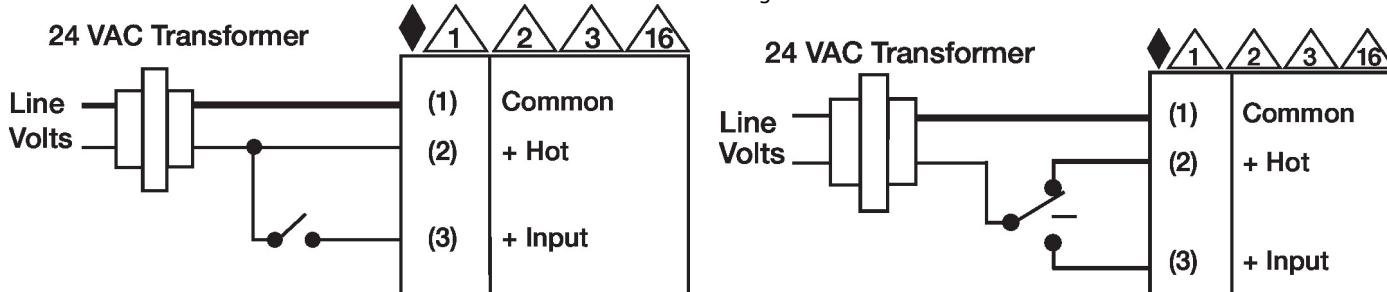
## ☒ INSTALLATION NOTES

- ⚠ 1 Provide overload protection and disconnect as required.
- ⚠ 2 Actuators may be connected in parallel. Power consumption and input impedance must be observed.
- ⚠ 3 Actuators may also be powered by DC 24 V.
- ⚠ 6 Actuators Hot wire must be connected to the control board common. Only connect common to neg. (-) leg of control circuits. Terminal models (-T) have no-feedback.
- ⚠ 16 Actuators are provided with a numbered screw terminal strip instead of a cable.
- ⚠ Meets cULus requirements without the need of an electrical ground connection.
- ⚠ Warning! Live electrical components!

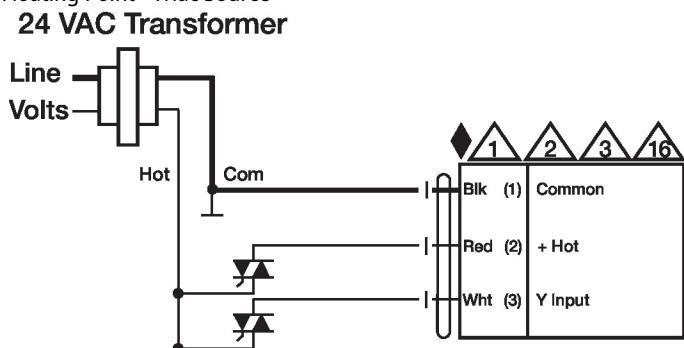
During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow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

## Wiring diagrams

On/Off



## Floating Point - Triac Source



## Floating Point - Triac Sink

