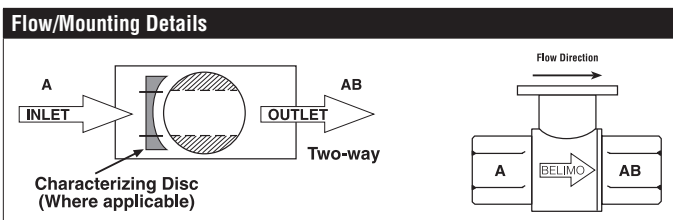


B220B Technical Data Sheet

Chrome Plated Brass Ball and Nickel Plated Brass Stem



Technical Data	
Fluid	chilled, hot water, up to 60% glycol
Flow characteristic	equal percentage
Controllable flow range	75°
Valve Size [mm]	0.75" [20]
Pipe connection	NPT female ends
Housing	Nickel-plated brass body
Ball	chrome plated brass
Stem	nickel-plated brass
Stem seal	EPDM (lubricated)
Seat	PTFE
O-ring	EPDM (lubricated)
Characterized disc	No Disc (full flow)
Body Pressure Rating	600 psi
Close-off pressure Δ ps	200 psi
Cv	14
Weight	0.66 lb [0.30 kg]
Fluid Temp Range (water)	0...250°F [-18...120°C]
Leakage rate	0% for A – AB
Servicing	maintenance-free



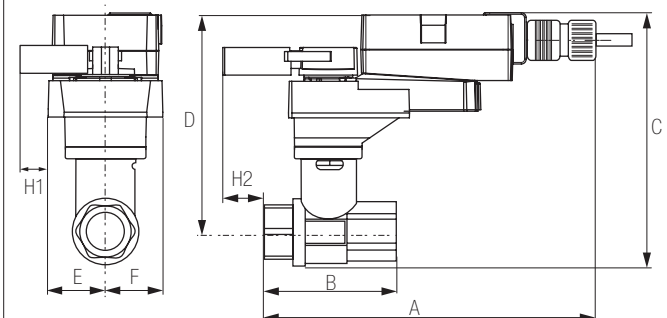
Application

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.

Suitable Actuators

	Non-Spring	Spring
B220B	TR, LRB(X)	TFRB(X), LF

Dimensions (Inches [mm])



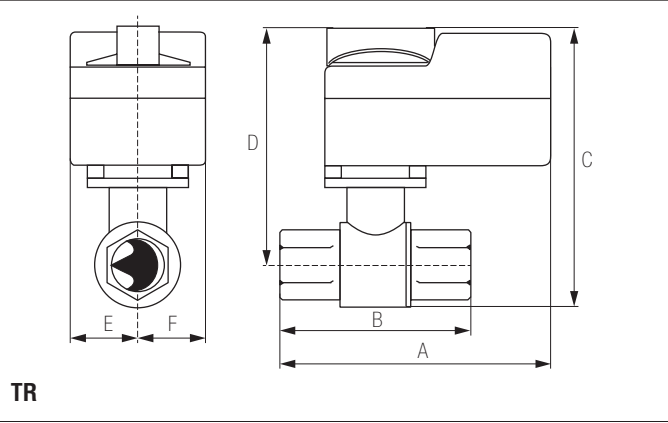
LRB, LRX

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

Safety Notes

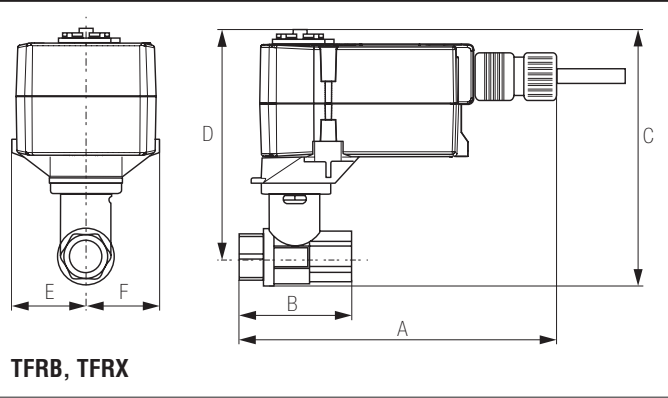
WARNING: This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to www.p65warnings.ca.gov

Dimensions (Inches [mm])



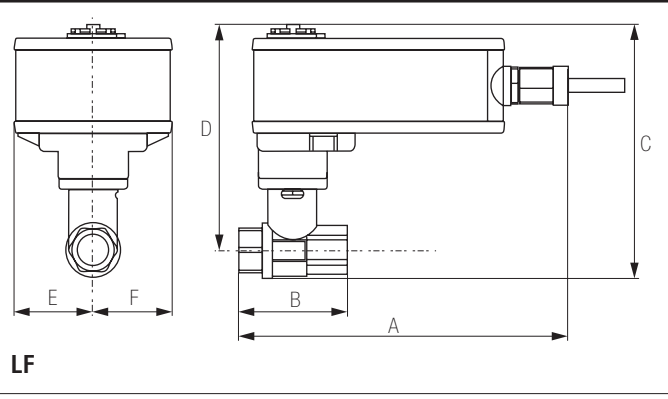
A	B	C	D	E	F
4.0" [102]	2.7" [69]	5.4" [137]	5.1" [129]	1.3" [33]	

Dimensions (Inches [mm])



A	B	C	D	E	F
7.0" [178]	2.7" [69]	5.5" [139]	4.8" [122]	1.5" [39]	

Dimensions (Inches [mm])



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

TFRB24-S Technical Data Sheet

On/Off, Spring Return, AC/DC 24 V



5-year warranty



Technical Data

Power Supply	24 VAC, $\pm 20\%$, 50/60 Hz, 24 VDC, $\pm 10\%$
Power consumption in operation	2 W
Power consumption in rest position	1.3 W
Transformer sizing	5 VA (class 2 power source)
Electrical Connection	(2) 18 GA appliance cables with 1/2" conduit connectors, 3 ft [1 m].
Overload Protection	electronic throughout 0...95° rotation
Position Feedback	No Feedback
Angle of rotation	Max. 95°, 90°
Torque motor	22 in-lb [2.5 Nm]
Direction of rotation motor	reversible with cw/ccw mounting
Direction of motion fail-safe	reversible with cw/ccw mounting
Position indication	Mechanical
Running Time (Motor)	<75 s
Running time fail-safe	<75 s
Ambient humidity	max. 95% r.H., non-condensing
Ambient temperature	-22...122°F [-30...50°C]
Storage temperature	-40...176°F [-40...80°C]
Degree of Protection	IP42, NEMA 2, UL Enclosure Type 2
Housing material	UL94-5VA
Agency Listing	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EC
Noise level, motor	50 dB(A)
Noise level, fail-safe	50 dB(A)
Servicing	maintenance-free
Quality Standard	ISO 9001
Weight	1.8 lb [0.80 kg]
Auxiliary switch	1 x SPDT, 3 A resistive (0.5 A inductive) @ AC 250 V, adjustable 0...95°









†Rated Impulse Voltage 800V, Type of action 1.AA, Control Pollution Degree 3

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

Wiring Diagrams

✂️ INSTALLATION NOTES

-  Actuators with appliance cables are numbered.
-  Provide overload protection and disconnect as required.
-  Actuators may be connected in parallel. Power consumption and input impedance must be observed.
-  Actuators may also be powered by 24 VDC.
-  One built-in auxiliary switch (1x SPDT), for end position indication, interlock control, fan startup, etc.
-  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.
-  Apply only AC line voltage or only UL-Class 2 voltage to the terminals of auxiliary switches. Mixed or combined operation of line voltage/safety extra low voltage is not allowed.

