



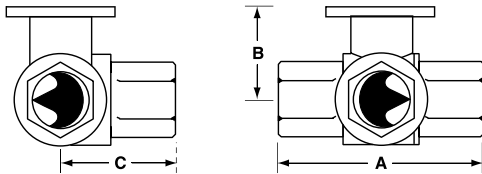
## Application

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.

Technical Data	
Service	chilled or hot water, 60% glycol
Flow characteristic	A-port equal percentage B-port modified for constant common port flow
Action	90° rotation
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 212°F [-18°C to 100°C]
Close off pressure	
200 psi	½" - 2"
Maximum differential pressure (ΔP)	30 psi for typical applications
Leakage	0% for A to AB <2.0% for B to AB
C <sub>v</sub> rating	A-port: see product chart for values B-port: 70% of A to AB C <sub>v</sub>

Tefzel® is a registered trademark of DuPont  
\*Per EN 12266-1:2003

## Dimensions

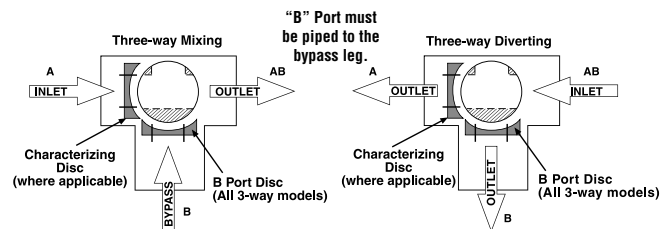


Valve Body	Valve Nominal Size		Dimensions (Inches [mm])		
	Inches	DN [mm]	A	B	C
B307-B311	½"	15	2.41" [61.1]	1.39" [35.2]	1.20" [30.6]
B312-B315	½"	15	2.38" [60.4]	1.72" [43.7]	1.26" [32.1]
B317-B320	¾"	20	2.73" [69.3]	1.81" [45.9]	1.45" [36.8]
B322-B325	1"	25	3.09" [78.4]	1.81" [45.9]	1.56" [39.8]
B329-B331	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]
B347-B352	2"	50	4.90" [124.5]	2.68" [68.0]	2.60" [66.0]

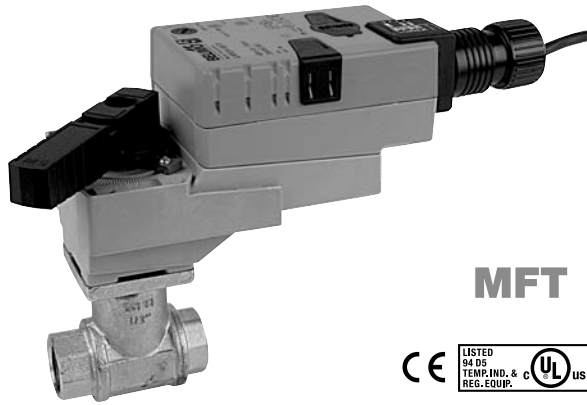
C <sub>v</sub>	Valve Nominal Size		Type	Suitable Actuators				
	Inches	DN [mm]		3-Way NPT	Non-Spring	Spring		
0.3	½"	15	B307	TR Series	LR Series	NR...N4 Series	TF Series	LF Series
0.46	½"	15	B308					
0.8	½"	15	B309					
1.2	½"	15	B310					
1.9	½"	15	B311					
3	½"	15	B312					
4.7	½"	15	B313					
10	½"	15	B315*					
4.7	¾"	20	B317					
7.4	¾"	20	B318					
24	¾"	20	B320*	AR Series	AR...N4 Series	AF Series		
7.4	1"	25	B322					
10	1"	25	B323					
30	1"	25	B325*					
10	1¼"	32	B329					
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

## Flow Patterns



# LR...24-MFT Actuators, Multi-Function Technology



**MFT**



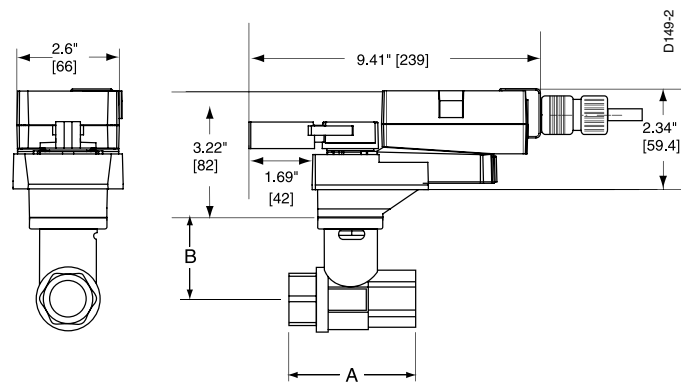
## Models

LRB24-MFT Basic Version  
LRX24-MFT Flexible Version

Technical Data	
Power supply	24 VAC ± 20% 50/60 Hz 24 VDC ± 10%
Power consumption	running 2 W holding 1.2 W
Transformer sizing	6 VA (class 2 power source)
Electrical connection	1/2" conduit connector 18 GA, plenum rated cable 3 ft [1m] LRB24-MFT LRX24-MFT □ 3 ft [1m] (default) □ 10 ft [3m] □ 16 ft [5m]
Overload protection	electronic throughout 0° to 95° rotation
Operating range Y	2 to 10 VDC (default) 4 to 20 mA Variable (VDC, PWM, Floating Point, On/Off)
Feedback output U	2 to 10 Vdc, 0.5mA max VDC Variable
Input impedance	100 kΩ (0.1 mA), 500 Ω 1500 Ω (PWM, Floating Point, On/Off)
Angle of rotation	90° electronically variable adjustable with mechanical stop
Direction of rotation	reversible with protected  switch
Position indication	handle
Manual override	external push button
Running time	150 seconds (default) Variable (35 to 150 secs)
Humidity	5 to 95% RH non-condensing (EN 60730-1)
Ambient temperature	-22°F to 122°F [-30°C to 50°C]
Storage temperature	-40°F to 176°F [-40°C to 80°C]
Housing	NEMA 2/IP54
Housing material	UL94-5VA
Agency listings†	cULus according to UL 60730-1A/-2-14, CAN/CSA E60730-1:02, CE according to 2004/108/EC and 2006/95/EC for line voltage and/or -S versions
Noise level	<35 dB(A)
Quality standard	ISO 9001

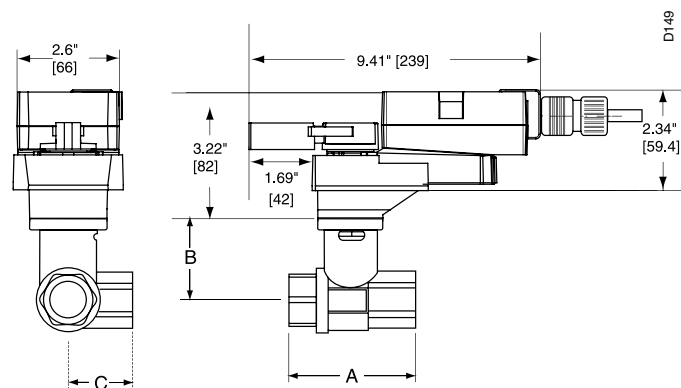
† Rated impulse voltage 800V, Control pollution degree 3,  
Type of action 1 (1.B for -S models)

## Dimensions with 2-Way Valve



Valve Body	Valve Nominal Size		Dimensions (Inches [mm])	
	Inches	DN [mm]	A	B
B207-B211	1/2"	15	2.41" [61.1]	1.39" [35.2]
B212-B215	1/2"	15	2.38" [60.4]	1.72" [43.7]
B217-B220	3/4"	20	2.73" [69.3]	1.81" [45.9]
B222-B225	1"	25	3.09" [78.4]	1.81" [45.9]
B229-B230	1 1/4"	32	3.72" [94.6]	1.81" [45.9]

## Dimensions with 3-Way Valve



Valve Body	Valve Nominal Size		Dimensions (Inches [mm])		
	Inches	DN [mm]	A	B	C
B307-B311	1/2"	15	2.41" [61.1]	1.39" [35.2]	1.20" [30.6]
B312-B315	1/2"	15	2.38" [60.4]	1.72" [43.7]	1.26" [32.1]
B317-B320	3/4"	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]

L30034 - 07/09 - Subject to change. © Belimo Aircontrols (USA), Inc.

### Wiring Diagrams

#### ✂ INSTALLATION NOTES

**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** Position feedback cannot be used with Triac sink controller.  
The actuator internal common reference is not compatible.

**6** 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.

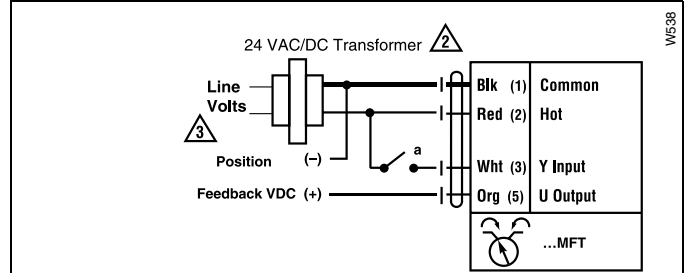
A & B should both be closed for triac source and open for triac sink.

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

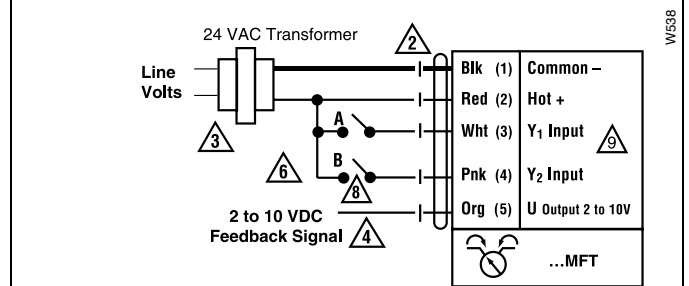
#### 📄 APPLICATION NOTES

◆ The ZG-R01 500 Ω resistor converts the 4 to 20 mA control signal to 2 to 10 VDC, up to 2 actuators may be connected in parallel.

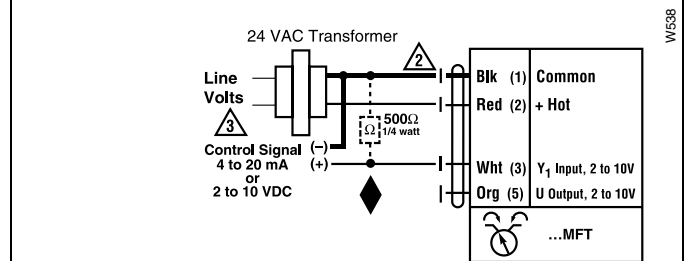
**⚠ WARNING Live Electrical Components!**  
During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components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



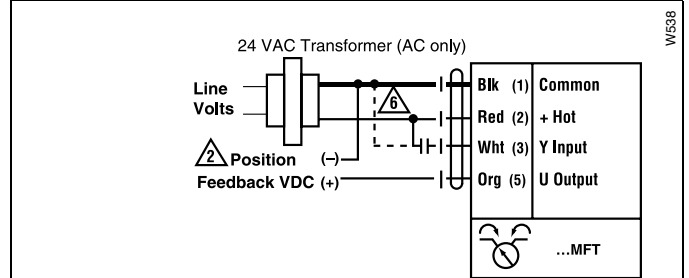
On/Off control



Floating Point



VDC/4-20 mA



PWM