

Factory Set P2... Series Pressure Independent Characterized Control Valves (PICCV) Chrome Plated Brass Ball and Brass Stem, NPT Female Ends



Application

The Pressure Independent Characterized Control Valve is typically used in air handling units on heating and cooling coils, and fan coil unit heating or cooling coils. Some other common applications include unit ventilators and VAV re-heat coils. This valve is suitable for use in a hydronic system with constant or variable flow.

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

Technical Data	
Service	chilled or hot water, 60% glycol
Flow characteristic	equal percentage
Size	½", ¾", 1"
Type of end fitting	female, NPT
Materials	
Body	forged brass, nickel plated
Ball	chrome plated brass
Stem	chrome plated brass
Seat O-rings	Viton
Seat	fiberglass reinforced Teflon® PTFE
Characterizing disc	½" & ¾" Brass 1" TEFZEL®
Packing	2 EPDM O-rings, lubricated
Diaphragm	½" & ¾" silicone and Nomex 1" polyester reinforced silicone
Regulator components	stainless steel/brass/Nitrile
Spring	stainless steel
Body pressure rating	600 PSI
Media temp. range	0°F to 212°F [-18°C to +100°C]
Close off pressure	200 PSI
Leakage	ANSI Class IV (0.01% of rated valve capacity at 50 psi differential)
Rangeability	100 : 1
Differential pressure	5 to 50 PSI operating range
Valve accuracy	± 5%*
Weight of valve body	½" = 2.52 lbs ¾" = 2.52 lbs 1" = 4.98 lbs

½" body has three discs with different flow capabilities (.50 GPM to 1 GPM), (1.5 GPM to 2.5 GPM), (3 GPM to 5.5 GPM)

1" body has two discs with different flow capabilities (11 GPM to 16 GPM), (17 GPM to 19 GPM)

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* See page 3 of the PICCV Technical Documentation for more details.

Valve Model	Flow Rate		Valve Nominal Size		Suitable Actuators		
	GPM	Liter/sec	Inches	DN mm	Close-off PSI	Spring Return	Non-Spring Return
P2050B005(-P)	0.5	0.03	½	15	200	TFR24-MFT US	LRB(X)24-3 LRX24-MFT
P2050B010(-P)	1	0.06	½	15	200		
P2050B015(-P)	1.5	0.09	½	15	200		
P2050B020(-P)	2	0.13	½	15	200		
P2050B025(-P)	2.5	0.16	½	15	200		
P2050B030(-P)	3	0.19	½	15	200		
P2050B035(-P)	3.5	0.22	½	15	200		
P2050B040(-P)	4	0.25	½	15	200		
P2050B045(-P)	4.5	0.28	½	15	200		
P2050B050(-P)	5	0.32	½	15	200		
P2050B055(-P)	5.5	0.35	½	15	200		
P2075B060(-P)	6	0.38	¾	20	200		
P2075B065(-P)	6.5	0.41	¾	20	200		
P2075B070(-P)	7	0.44	¾	20	200		
P2075B075(-P)	7.5	0.47	¾	20	200		
P2075B080(-P)	8	0.50	¾	20	200		
P2075B085(-P)	8.5	0.54	¾	20	200		
P2075B090(-P)	9	0.57	¾	20	200		
P2075B095(-P)	9.5	0.60	¾	20	200		
P2075B100(-P)	10	0.63	¾	20	200		
PICCV-25-011(-P)	11	0.69	1	25	200	LF24-MFT US	LRB(X)24-3 LRX24-MFT
PICCV-25-012(-P)	12	0.76	1	25	200		
PICCV-25-013(-P)	13	0.82	1	25	200		
PICCV-25-014(-P)	14	0.88	1	25	200		
PICCV-25-015(-P)	15	0.95	1	25	200		
PICCV-25-016(-P)	16	1.01	1	25	200		
PICCV-25-017(-P)	17	1.07	1	25	200		
PICCV-25-018(-P)	18	1.14	1	25	200		
PICCV-25-019(-P)	19	1.20	1	25	200		

(-P) optional, ΔP verification across valve using PT ports

LF24-MFT Actuators, Multi-Function Technology



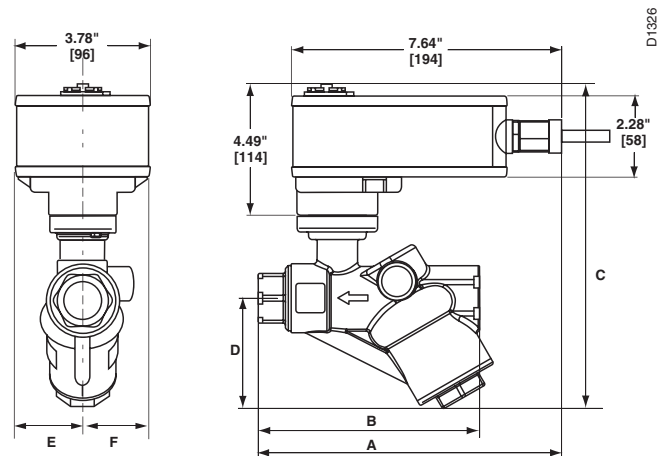
Models

LF24-MFT
LF24-MFT-S w/built-in aux. switch

Technical Data		
Control	MFT	
Control signal	2 to 10 VDC	
Power consumption	running	2.5 W
	holding	1 W
Transformer sizing	5 VA (class 2 power source)	
Electrical connection	3 ft., 18 GA appliance cables (-S model has 2 cables) ½" conduit connector	
Overload protection	electronic throughout 0° to 95° rotation	
Input impedance	100 kΩ for 2 to 10 VDC (0.1 mA)	
	500 Ω for 4 to 20mA	
	750 Ω for PWM	
	500 Ω for on/off and floating point	
Feedback	2 to 10 VDC, 0.5 mA max	
Angle of rotation	95°	
Direction of rotation	spring	reversible with CW/CCW mounting
	motor	reversible with built-in switch
Position indication	visual indicator	
Running time		<40 to 75 seconds (on-off)
		100 seconds
	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	
Noise level	max. 62 dB(A)	
Quality standard	ISO 9001	

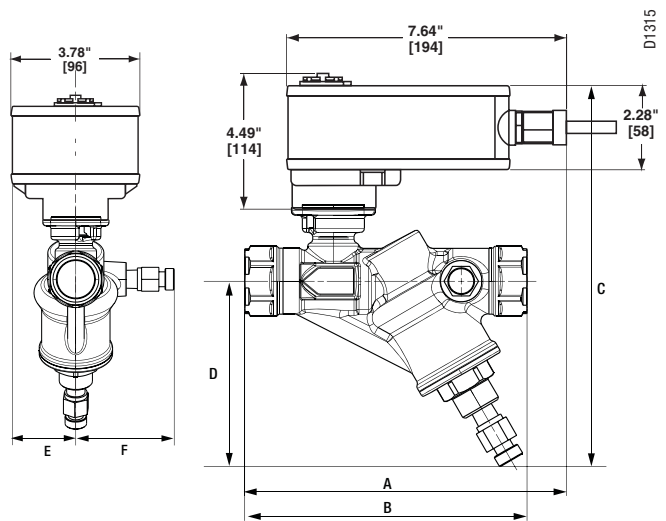
LF24-MFT-S US	
Auxiliary switch	1 x SPDT, 6A (1.5A) @ 250 VAC, UL Listed, adjustable 0° to 95° (double insulated)

Dimensions (Inches [mm])



Valve Nominal Size		Dimensions (Inches [mm])					
In.	DN [mm]	A	B	C	D	E	F
½"	15	8.1" [206]	4.47" [114]	8.54" [217]	2.34" [59]	1.89" [48]	1.89" [48]
¾"	20	8.3" [211]	5.4" [137]	8.54" [217]	2.34" [59]	1.89" [48]	1.89" [48]
1"	25	9.1" [231]	6.85" [174]	9.29" [236]	3.23" [82]	1.89" [48]	1.89" [48]

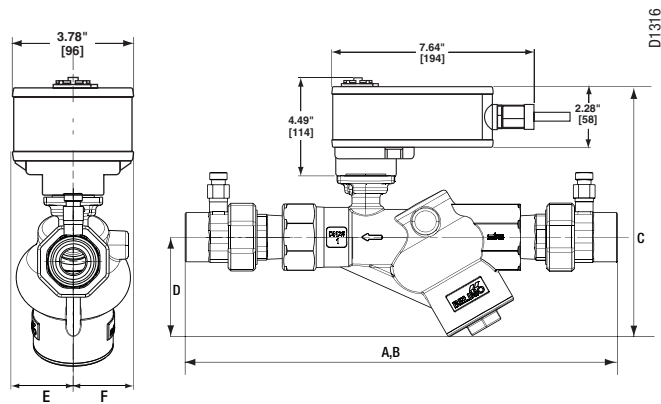
Dimensions with PT Port (Inches [mm])



Valve Nominal Size		Dimensions (Inches [mm])					
In.	DN [mm]	A	B	C	D	E	F
½"	15	8.1" [206]	4.47" [114]	9.57" [243]	3.54" [90]	1.89" [48]	2.4" [61]
¾"	20	8.3" [211]	5.4" [137]	9.57" [243]	3.54" [90]	1.89" [48]	2.4" [61]

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Dimensions with PT Port (Inches [mm])



Valve
Nominal Size Dimensions (Inches [mm])

In.	DN [mm]	A	B	C	D	E	F
1"	25	12.6" [320]	12.6" [320]	9.25" [235]	2.95" [75]	1.89" [48]	1.89" [48]

Wiring Diagrams

INSTALLATION NOTES

- 2 **CAUTION Equipment damage!**
Actuators may be connected in parallel if not mechanically mounted to the same shaft. Power consumption and input impedance must be observed.
- 3 Actuators may also be powered by 24 VDC.
- 4 IN4004 or IN4007 diode (IN4007 supplied, Belimo part number 40155).
- 5 Triac A and B can also be contact closures.
- 6 Control signal may be pulsed from either the Hot (Source) or Common (Sink) 24 VAC line.
- 7 Position feedback cannot be used with Triac sink controller. The actuators internal common reference is not compatible.

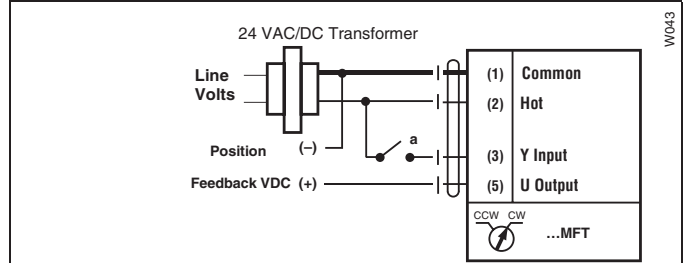
APPLICATION NOTES

- ◆ 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.

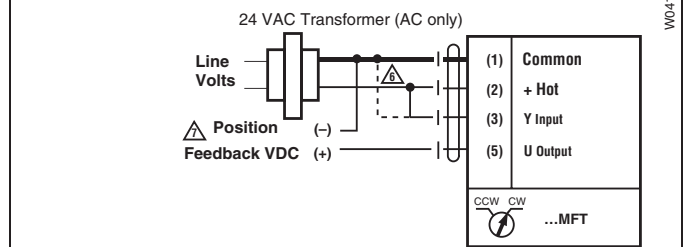
WARNING Live Electrical Components!

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.

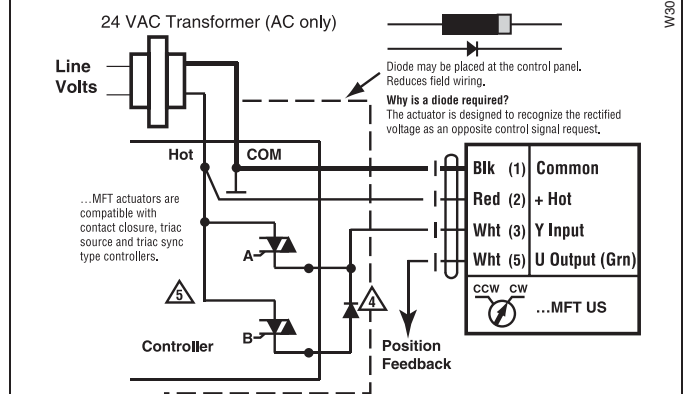
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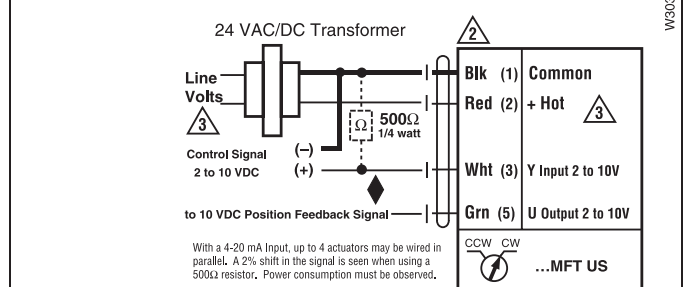
On/Off Control



PWM, Triac Source and Sink



Floating Point Control



Proportional 2 to 10 or 4 to 20 mA Control Signal