

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	1¼", 1½", 2"
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	TEFZEL®
Packing	2 EPDM O-rings, lubricated
Diaphragm	polyester reinforced silicone
Regulator components	stainless steel/brass/Nitrile
Spring	stainless steel
Body pressure rating	400 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	1¼" = 8.31 lbs 1½" = 7.70 lbs 2" = 9.38 lbs 2" large = 29.10 lbs

2" body has two different flow capacities (44 GPM to 80 GPM) (90 GPM & 100 GPM)
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*See page 3 of the PICCV Technical Documentation for more details.

Valve Model	Flow Rate		Valve Nominal Size		Close-off PSI	Suitable Actuators	
	GPM	Liter/sec	Inches	DN mm		Spring Return	Non-Spring Return
PICCV-32-018(-P)	18	1.14	1¼	32	200	AFRX24-MFT US	ARX24-MFT
PICCV-32-019(-P)	19	1.20	1¼	32	200		
PICCV-32-020(-P)	20	1.26	1¼	32	200		
PICCV-32-021(-P)	21	1.32	1¼	32	200		
PICCV-32-022(-P)	22	1.39	1¼	32	200		
PICCV-32-023(-P)	23	1.45	1¼	32	200		
PICCV-32-024(-P)	24	1.51	1¼	32	200		
PICCV-32-025(-P)	25	1.58	1¼	32	200		
PICCV-32-026(-P)	26	1.64	1¼	32	200		
PICCV-40-026(-P)	26	1.64	1½	40	200		
PICCV-40-027(-P)	27	1.70	1½	40	200		
PICCV-40-028(-P)	28	1.77	1½	40	200		
PICCV-40-029(-P)	29	1.83	1½	40	200		
PICCV-40-030(-P)	30	1.89	1½	40	200		
PICCV-40-031(-P)	31	1.96	1½	40	200		
PICCV-40-032(-P)	32	2.01	1½	40	200		
PICCV-40-033(-P)	33	2.08	1½	40	200		
PICCV-50-033(-P)	33	2.08	2	50	200		
PICCV-50-034(-P)	34	2.15	2	50	200		
PICCV-50-035(-P)	35	2.21	2	50	200		
PICCV-50-036(-P)	36	2.27	2	50	200		
PICCV-50-037(-P)	37	2.33	2	50	200		
PICCV-50-038(-P)	38	2.40	2	50	200		
PICCV-50-039(-P)	39	2.46	2	50	200		
PICCV-50-040(-P)	40	2.52	2	50	200		
PICCV-50-044(-P)	44	2.78	2	50	200		
PICCV-50-048(-P)	48	3.03	2	50	200		
PICCV-50-052(-P)	52	3.28	2	50	200		
PICCV-50-056(-P)	56	3.53	2	50	200		
PICCV-50-060(-P)	60	3.79	2	50	200		
PICCV-50-065(-P)	65	4.10	2	50	200		
PICCV-50-070(-P)	70	4.42	2	50	200		
PICCV-50-075(-P)	75	4.73	2	50	200		
PICCV-50-080(-P)	80	5.05	2	50	200		
PICCV-50-090(-P)	90	5.68	2	50	200		
PICCV-50-100(-P)	100	6.31	2	50	200		

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

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MFT



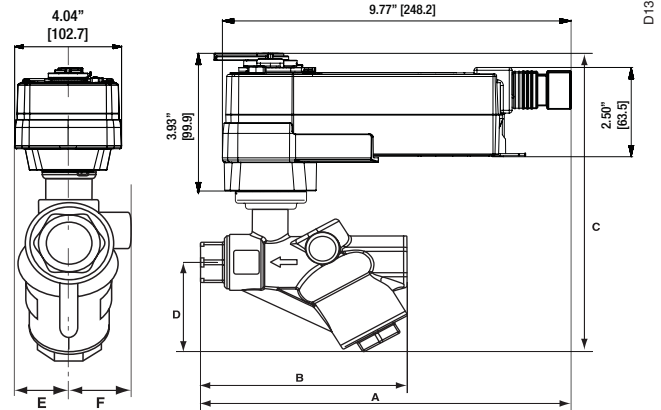
Models

AFRX24-MFT
AFRX24-MFT-S w/built-in aux. switches



Technical Data	
Control	MFT
Control signal	24 VAC, +/- 20%, 50/60 Hz 24 VDC, +20% / -10%
Power supply	7.5 W
Power consumption	running 3 W holding 10 VA (class 2 power source)
Transformer sizing	10 VA (class 2 power source)
Electrical connection	3 ft. [1m], 10 ft. [3m] or 16 ft. [5m] 18 GA appliance or plenum cables, with or without 1/2" conduit connector -S models: two 3 ft. [1m], 10 ft. [3m] or 16 ft. [5m] appliance cables with or without 1/2" conduit connectors
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 20 mA 1500 Ω for PWM, floating point and on/off control
Feedback output	2 to 10 VDC, 0.5 mA max
Angle of rotation	95°
Direction of rotation	spring motor reversible with CW/CCW mounting reversible with built-in switch
Position indication	visual indicator
Manual override	hex crank
Running time	spring <20 sec @ -4°F to +122°F [-20°C to +50°C]; <60 sec @ -22°F [-30°C] motor 150 seconds (default), variable (70 to 220 seconds)
Ambient temperature	-22°F to +122°F (-30°C to +50°C)
Housing	NEMA 2, IP54, Enclosure Type 2
Agency listings	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EC & 2006/95/EC
Noise level	≤40dB(A) motor @ 150 seconds, run time dependent ≤62dB(A) spring return
AFRX24-MFT-S US	
Auxiliary switches	2 x SPDT, 7A (2.5A) @ 250 VAC, UL listed, one switch is fixed at +5°, one is adjustable 25° to 85° (double insulated)

Dimensions (Inches [mm])



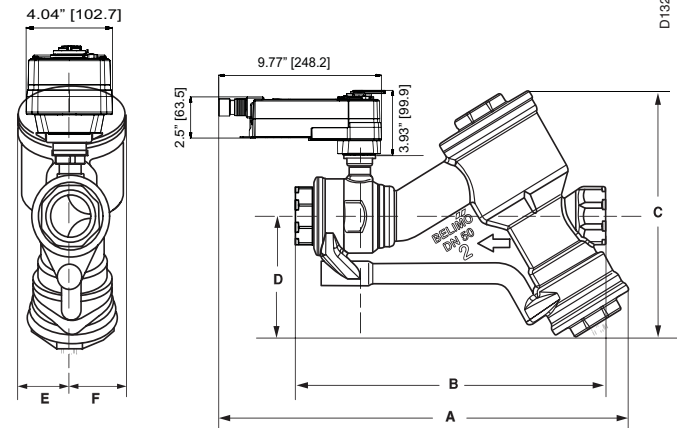
Valve Nominal Size

Dimensions (Inches [mm])

In.	DN [mm]	A	B	C	D	E	F
1 1/4"	32	10.92" [277]	8.19" [208]	9.6" [244]	3.66" [93]	2.02" [51]	2.02" [51]
1 1/2"	40	11.24" [285]	8.03" [204]	9.6" [244]	3.66" [93]	2.02" [51]	2.02" [51]
2"	50	11.2" [284]	8.5" [216]	9.84" [250]	3.66" [93]	2.02" [51]	2.02" [51]

2" NPT with flows to 40 GPM

Dimensions (Inches [mm])



Valve Nominal Size

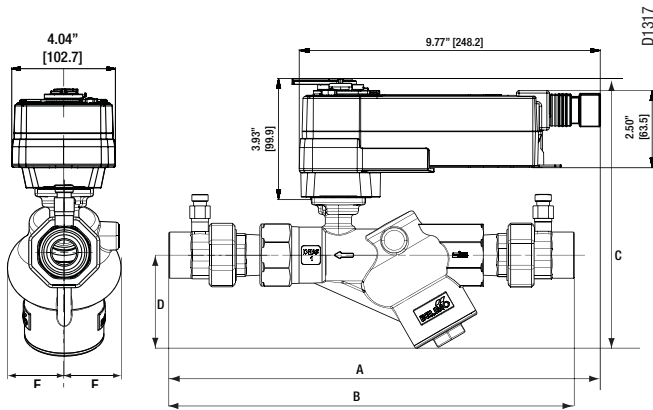
Dimensions (Inches [mm])

In.	DN [mm]	A	B	C	D	E	F
2"	50	22" [559]	15.6" [396]	12.87" [327]	5.87" [149]	2.64" [67]	2.64" [67]

2" NPT with larger flows from 44 GPM to 100 GPM



Dimensions with PT Port (Inches [mm])



Valve Nominal Size		Dimensions (Inches [mm])					
In.	DN [mm]	A	B	C	D	E	F
1¼"	32	15.9 [403]	15.9 [403]	9.44 [240]	3.5 [89]	2.05 [52]	2.05 [52]
1½"	40	15.43 [392]	15.43 [392]	9.44 [240]	3.5 [89]	2.05 [52]	2.05 [52]
2"	50	16.13 [410]	16.13 [410]	9.68 [246]	3.5 [89]	2.05 [52]	2.05 [52]

Wiring Diagrams

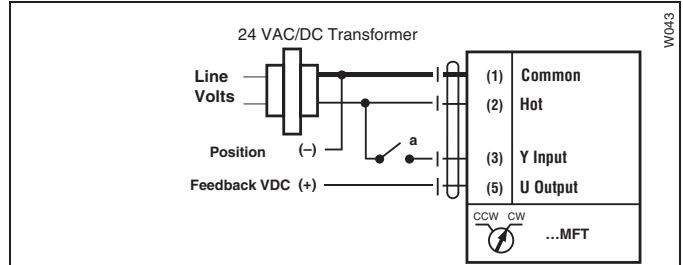
INSTALLATION NOTES

- 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.
- 8 Contact closures A & B also can be triacs. A & B should both be closed for triac source and open for triac sink.

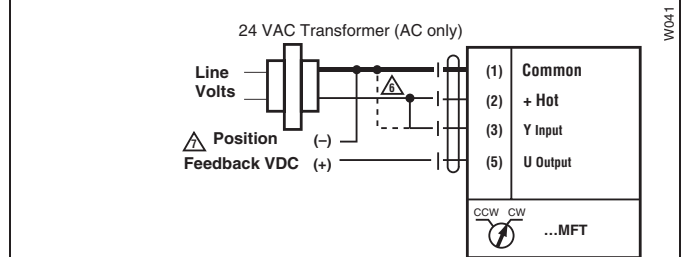
APPLICATION NOTES

- ◆ Meets cULus or UL and CSA requirements without the need of an electrical ground connection.

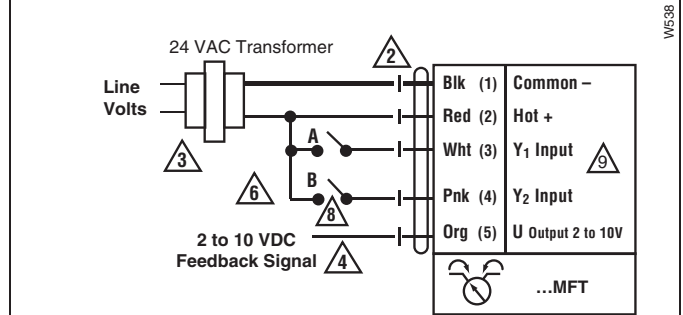
- ⚠ **WARNING Live Electrical Components!**
During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components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



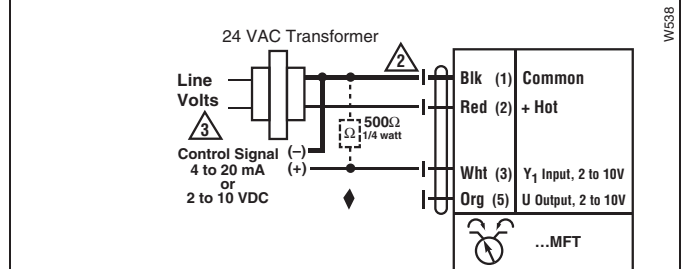
On/Off Control



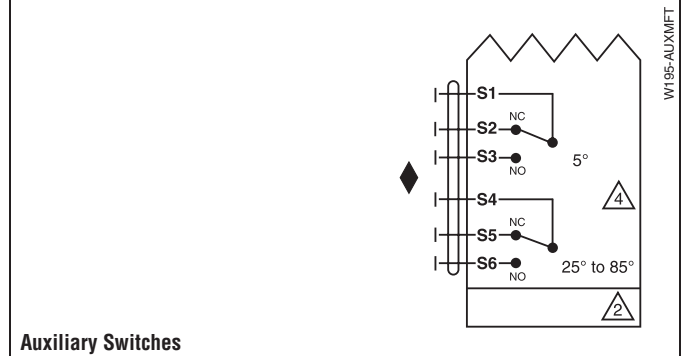
PWM, Triac Source and Sink



Floating Point Control



Proportional 2 to 10 or 4 to 20 mA Control Signal



Auxiliary Switches