

F6 Series 2-Way, Victaulic Butterfly Valve



Technical Data	
Service	chilled, hot water, 60% glycol
Flow characteristic	modified equal percentage
Controllable flow range	82°
Sizes	2" to 12"
Type of end fitting	grooved ANSI/AWWA (C606)
Valve materials*	
Body	ductile iron ASTM A536, grade 65-45-12
Body finish	black alkyd enamel
Disc	electroless nickel coated ductile iron
Seat	EPDM
Shaft	416 stainless steel
Bearing	fiberglass with TFE lining
Body pressure rating	300 psi
Media temperature range	-30°F to 250°F [-34°C to 120°C]
Rangeability	100:1
Maximum close-off pressure	200 psi
Maximum velocity	20 FPS

*VIC®300 Masterseal™ as manufactured by Victaulic Company

- 200 psi (2" to 12") bubble tight shut-off
- Long stem design allows for 2" insulation
- Completely assembled and tested, ready for installation

Application

These valves are designed to meet the needs of HVAC and commercial applications requiring bubble tight shut-off for liquids. Typical applications include chiller isolation, cooling tower isolation, change-over systems, large air handler coil control, bypass and process control applications. The large C_v values provide for an economical control valve solution for larger flow applications.

Jobsite Note

Valves should be stored in a weather protected area prior to construction.

		2-way		Suitable Actuators	
		Valve Nominal Size		Type	
		Spring Return	Non-Spring Return		
C _v 90°	C _v 60°	IN	DN [mm]	2-way	
115	36	2"	50	F650VIC	AF Series
260	80	2½"	65	F665VIC	
440	140	3"	80	F680VIC	AM Series
820	250	4"	100	F6100VIC	
1200	370	5"	125	F6125VIC	GM Series
1800	560	6"	150	F6150VIC	
3400	1050	8"	200	F6200VIC	SY Series
5800	1800	10"	250	F6250VIC	
9000	2790	12"	300	F6300VIC	

Valve	Size	C _v	30°	40°	50°	60°	70°	90°
F650VIC	2"	115	7	14	23	36	60	115
F665VIC	2-1/2"	260	16	30	50	80	140	260
F680VIC	3"	440	26	50	90	140	230	440
F6100VIC	4"	820	50	100	160	250	430	820
F6125VIC	5"	1200	70	140	240	370	620	1200
F6150VIC	6"	1800	110	220	360	560	940	1800
F6200VIC	8"	3400	200	410	670	1050	1770	3400
F6250VIC	10"	5800	350	700	1150	1800	3020	5800
F6300VIC	12"	9000	540	1080	1780	2790	4680	9000

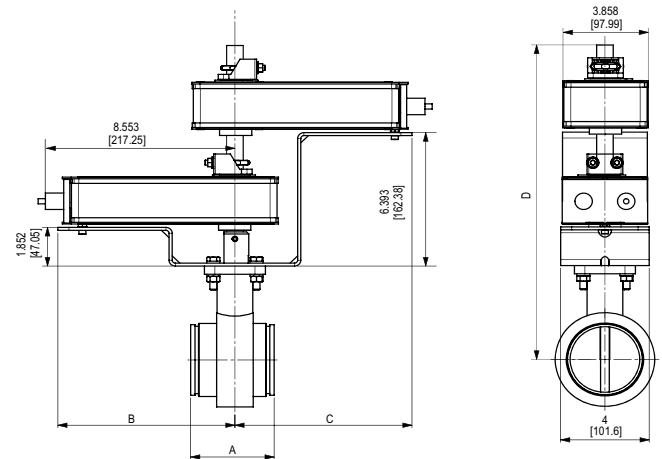
Maximum Dimensions (Inches)								
Valve	Size	C _v 90°	A(Max)	B (Max)	C (Max)	D(Max)	Actuator	Close-Off (PSI)
F650VIC	2"	115	3.21	2.00	8.60	14.00	AF...	200
F665VIC	2½"	260	3.77	2.00	8.60	14.50		50
F665VIC	2½"	260	3.77	8.60	8.60	18.70	2*AF...	200
F680VIC	3"	440	3.77	8.60	8.60	18.70		50
F650VIC	2"	115	3.21	4.70	8.00	13.20	AM...	200
F665VIC	2½"	260	3.77	4.70	8.00	13.60		50
F665VIC	2½"	260	3.77	7.00	8.00	14.00	GM...	200
F680VIC	3"	440	3.77	7.00	8.00	14.30		50
F6100VIC	4"	820	4.63	8.60	8.00	19.60	2*GM	200
F650VIC	2"	115	3.21	3.20	2.40	15.70	SY1...	200
F665VIC	2½"	260	3.77	3.20	2.40	16.20		200
F680VIC	3"	440	3.77	3.20	2.40	16.40		50
F680VIC	3"	440	3.77	4.60	9.20	26.00	SY2...	200
F6100VIC	4"	820	4.63	4.60	9.20	26.70		200
F6125VIC	5"	1200	5.88	4.60	9.20	27.70	SY2.../ SY3...	50/200
F6150VIC	6"	1800	5.88	4.60	9.20	28.20		50/200
F6200VIC	8"	3400	5.33	7.30	10.90	33.30	SY4...	200
F6250VIC	10"	5800	6.40	7.30	10.90	35.00	SY4.../ SY5...	50/200
F6300VIC	12"	9000	6.50	7.30	10.90	36.00	SY6...	200

†SY6 and larger available in 110/220 VAC versions only.
SY... maximum actuator ambient temperature is 150°F.

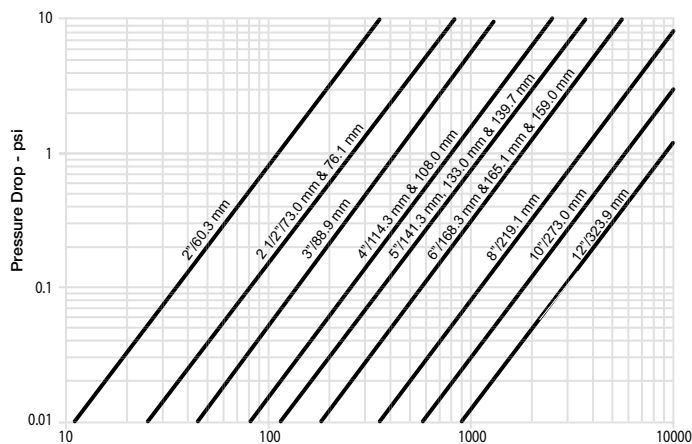
Application Notes

1. Valves are rated at 200 psi differential pressure in the closed position
2. 2-way assemblies are furnished assembled and tested, ready for installation.
3. Dimension "D" allows for actuator removal without the need to remove the valve from the pipe.
4. Belimo SY Series actuators are NEMA 4X rated.
5. Provide support for the actuator if it is mounted at any angle other than 90° vertical.
6. Installer is to use rigid type couplings for connecting the valve to the piping.

Dimensions



Flow Rate (GPM)



AF Actuators, Multi-Function Technology



MFT CE



Models

AFX24-MFT-X1

AFX24-MFT-S-X1 w/built-in Aux. Switches

2*AFX24-MFT-X1

2*AFX24-MFT-S-X1

Technical Data

Power supply	24 VAC, +/- 20%, 50/60 Hz 24 VDC, +20% / -10%
Power running	7.5 W
consumption♦ holding	3 W
Transformer sizing	10 VA (Class 2 power source)
Electrical connection AFX...	3 ft [1m] default, 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] default, 10 ft [3m] or 16 ft [5m] appliance cables with or without 1/2" conduit connectors
Overload protection	electronic throughout 0 to 95° rotation
Operating range Y*	2 to 10 VDC, 4 to 20 mA (default) variable (VDC, PWM, floating point, on/off)
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 U*	2 to 10 VDC, 0.5 mA max
Torque	minimum 180 in-lb (20 Nm)
Direction of rotation*	spring reversible with cw/ccw mounting motor reversible with built-in switch
Mechanical angle of rotation*	95° (adjustable with mechanical end stop, 35° to 95°)
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)
Angle of rotation adaptation	off (default)
Override control*	min position = 0% mid. position = 50% max. position = 100%
Position indication	visual indicator, 0° to 95° (0° is spring return position)
Manual override	5 mm hex crank (3/16" Allen), supplied
Humidity	max. 95% RH, non-condensing
Ambient temperature	-22 to 122° F (-30 to 50° C)
Storage temperature	-40 to 176° F (-40 to 80° C)
Housing	NEMA 2, IP54, Enclosure Type 2
Housing material	zinc coated metal and plastic casing
Noise level	≤40dB(A) motor @ 150 seconds, run time dependent ≤62dB(A) spring return
Agency listings †	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EC & 2006/95/EC
Quality standard	ISO 9001
Servicing	maintenance free
Weight	4.6 lbs. (1.9 kg), 4.9 lbs. (2 kg) with switch

* Variable when configured with MFT options

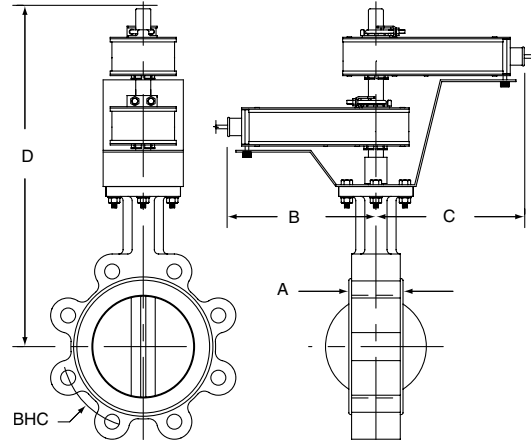
† Rated Impulse Voltage 800V, Type of action 1.AA (1.AA.B for -S version), Control Pollution Degree 3.

♦ Programmed for 70 sec motor run time. At 150 sec motor run time, transformer sizing is 8.5 VA and power consumption is 6 W running / 3 W holding.

AFX24-MFT-S-X1

Auxiliary switches 2 x SPDT 3A (0.5A) @ 250 VAC, UL approved
one set at +10°, one adjustable 10° to 90°

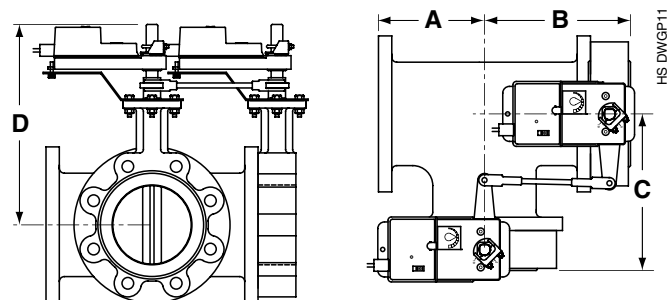
Dimensions with 2-Way Valve



BF2WUDIM_A

Dimensions (Inches)						Fail Safe (psi)	
Valve	Size	A	B	C	D(Max)	BHC	AF 2*AF
F650HD	2"	1.65	9.00	9.00	19.50	4.75	200
F650HDU	2"	1.65	9.00	9.00	19.50	4.75	50
F665HD	2½"	1.76	9.00	9.00	20.00	5.50	200
F665HDU	2½"	1.76	9.00	9.00	20.00	5.50	50
F680HD	3"	1.78	9.00	9.00	20.50	6.00	500
F680HDU	3"	1.78	9.00	9.00	20.50	6.00	50
F6100HDU	4"	2.05	9.00	9.00	21.00	7.50	50
F6125HDU	5"	2.14	9.00	9.00	22.00	8.50	50
F650-150SHP	2"	1.75	9.00	9.00	19.50	4.75	150
F665-150SHP	2½"	1.88	9.00	9.00	20.00	5.50	150
F680-150SHP	3"	1.92	9.00	9.00	20.50	6.00	150
F6100-150SHP	4"	2.13	9.00	9.00	21.00	7.50	150
F650-300SHP	2"	1.75	9.00	9.00	19.50	5.00	150
F665-300SHP	2½"	1.88	9.00	9.00	20.00	5.88	150
F680-300SHP	3"	1.92	9.00	9.00	20.50	6.63	150
F6100-300SHP	4"	2.13	9.00	9.00	21.00	7.88	150
F665VIC	2½"	3.77	8.60	8.60	18.70	-	200
F680VIC	3"	3.77	8.60	8.60	18.70	-	50

Dimensions with 3-Way Valve



HS DWGP11

Dimensions (Inches)						Fail Safe (psi)	
Valve	Size	A	B	C	D(Max)	BHC	AF 2*AF
F750HD	2"	4.50	6.15	6.15	15.50	4.75	200
F750HDU	2"	4.50	6.15	6.15	15.50	4.75	50
F765HD	2½"	5.00	6.76	6.76	16.00	5.50	200
F765HDU	2½"	5.00	6.76	6.76	16.00	5.50	50
F780HDU	3"	5.50	7.28	7.28	16.25	6.00	50

050904 - 02/12 - Subject to change. © Belimo Aircontrols (USA), Inc.

Wiring Diagrams

INSTALLATION NOTES

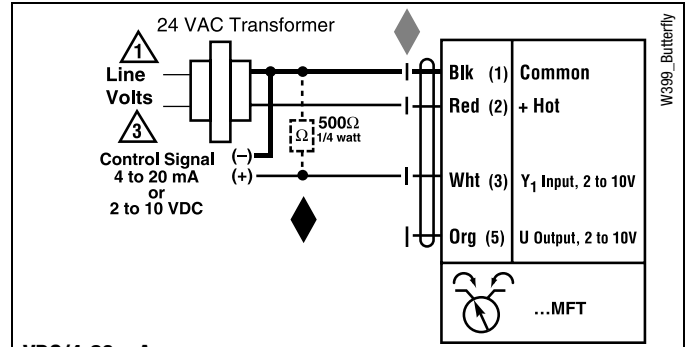
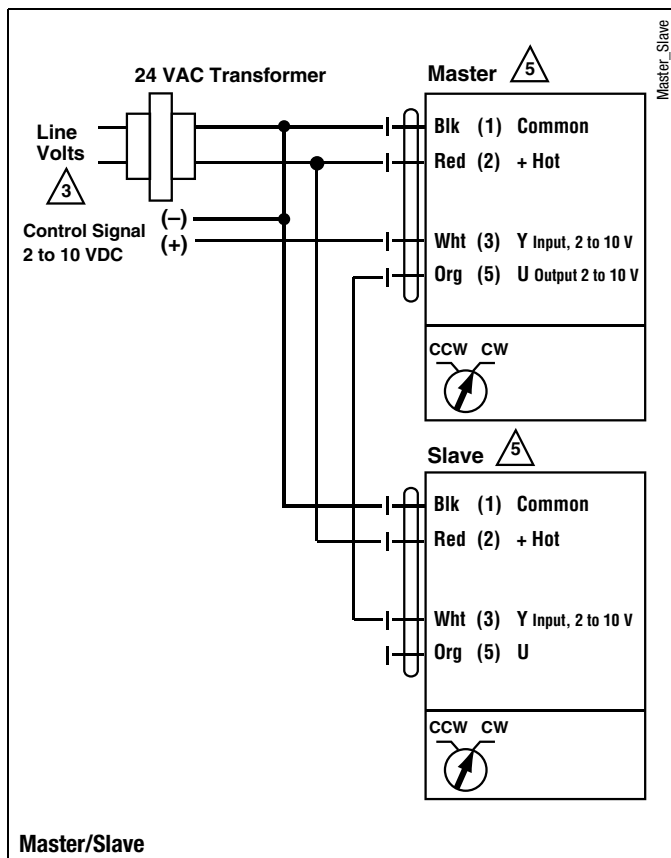
- 3 Actuators may also be powered by 24 VDC.
- 4 IN4004 or IN4007 diode (IN4007 supplied, Belimo part number 40155).
- 5 Triac A and B can also be contact closures.
- 6 Control signal may be pulsed from either the Hot (Source) or Common (Sink) 24 VAC line.
- 7 Position feedback cannot be used with Triac sink controller. The actuators internal common reference is not compatible.

APPLICATION NOTES

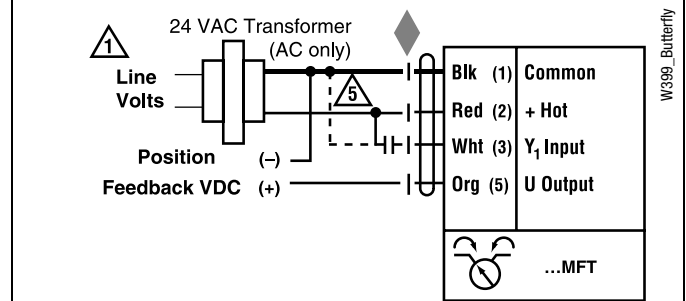
- The ZG-R01 500 Ω resistor converts the 4 to 20 mA control signal to 2 to 10 VDC, up to 2 actuators may be connected in parallel.
- Meets cULus or UL and CSA requirements without the need of an electrical ground connection.

WARNING Live Electrical Components!

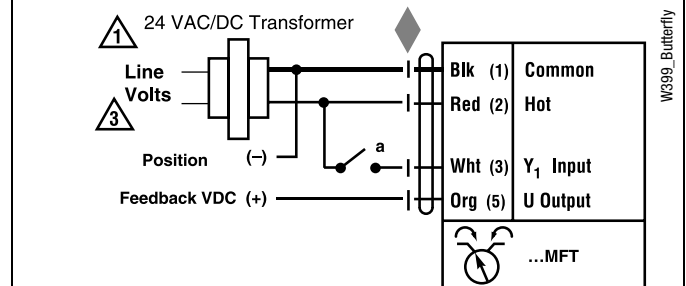
During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow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



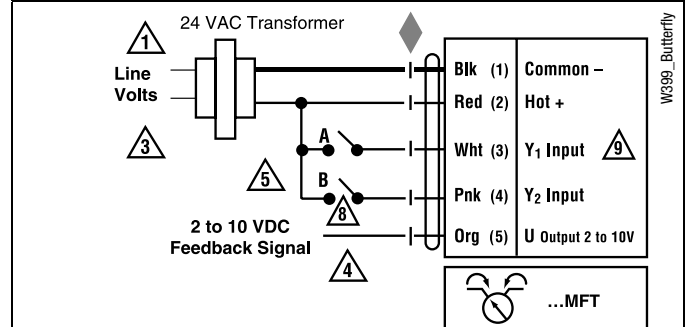
VDC/4-20 mA



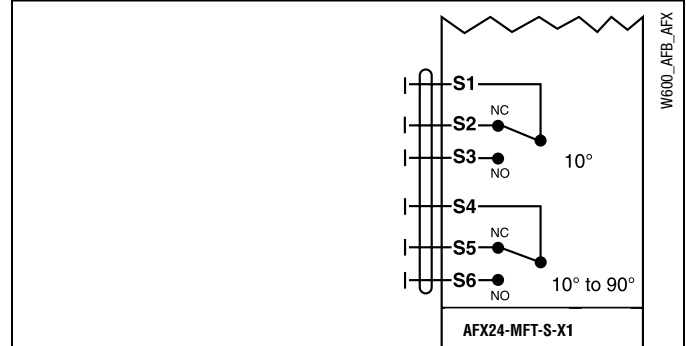
PWM



On/Off control



Floating Point control



Auxiliary Switches for AFX24-MFT-S-X1