



- 50 psi bubble tight shut-off
- Long stem design allows for 2" insulation
- Valve face-to-face dimensions comply with API 609 & MSS-SP-67
- 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. Designed for use in Victaulic piping systems when mated to Victaulic 41 series flange nipples.

Jobsite Note

Valves should be stored in a weather protected area prior to construction. Complete installation recommendations can be found in Belimo's Installation and Maintenance Instructions for F6...HDU Butterfly Valves.

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	for use with ANSI Class 125/150 flanges
Materials	
Body	ductile iron ASTM A536
Body finish	epoxy powder coated
Disc	304 stainless steel
Seat	EPDM
Shaft	416 stainless steel
O-ring	EPDM
Bushings	RPTFE
Media temperature range	-22°F to 250°F [-30°C to 120°C]
Body pressure rating	ASME/ANSI Class 125
Close-off pressure	50 psi
Rangeability	10:1 (for 30° to 70° range)
Maximum velocity	12 FPS
Leakage	bubble tight

C_v 90°	C_v 60°	Valve Nominal Size		Type	Suitable Actuators						
		IN	DN [mm]		2-way	Spring	Non-Spring		Electronic Fail-Safe		
115	44	2"	50	F650HDU	AF Series	AM Series					
196	75	2½"	65	F665HDU							
302	116	3"	80	F680HDU							
600	230	4"	100	F6100HDU			GM Series	DR	SY Series	DKR	GK Series
1022	392	5"	125	F6125HDU							
1579	605	6"	150	F6150HDU							
3136	1202	8"	200	F6200HDU							
5340	2047	10"	250	F6250HDU							
8250	3062	12"	300	F6300HDU							

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Valve	Size	C_v	MOD								ON/OFF	
			10°	20°	30°	40°	50°	60°	70°	80°	90°	
F650HDU	2"	115	.06	3	7	15	27	44	70	105	115	
F665HDU	2½"	196	.10	6	12	25	45	75	119	178	196	
F680HDU	3"	302	.20	9	18	39	70	116	183	275	302	
F6100HDU	4"	600	.30	17	36	78	139	230	364	546	600	
F6125HDU	5"	1022	.50	29	61	133	237	392	620	930	1022	
F6150HDU	6"	1579	.80	45	95	205	366	605	958	1437	1579	
F6200HDU	8"	3136	2	89	188	408	727	1202	1903	2854	3136	
F6250HDU	10"	5340	3	151	320	694	1237	2047	3240	4859	5340	
F6300HDU	12"	8250	4	234	495	1072	1911	3062	5005	7507	8250	

F6 Series, 2-Way, HDU Butterfly Valve Resilient Seat, 304 Stainless Disc



Maximum Dimensions (Inches)

Valve	Size	C _v 90°	C _v 60°	A	B	C	D(Max)	BHC	No. of Holes	Lug Bolt	Actuator	Close-Off (PSI)	
F650HDU	2"	115	44	1.65	9.00	9.00	19.50	4.75	4	5/8-11 UNC	AF	50	Spring Return
F665HDU	2½"	196	75	1.81	9.00	9.00	20.00	5.50	4	5/8-11 UNC		50	
F680HDU	3"	302	116	1.81	9.00	9.00	20.50	6.00	4	5/8-11 UNC		50	
F6100HDU	4"	600	230	2.05	9.00	9.00	21.00	7.50	8	5/8-11 UNC	2*AF	50	
F6125HDU	5"	1022	392	2.19	9.00	9.00	22.00	8.50	8	3/4-10 UNC		50	
F6100HDU	4"	600	230	2.05	8.00	8.00	17.00	7.50	8	5/8-11 UNC	GK	50	Electronic Fail-Safe
F6125HDU	5"	1022	392	2.19	8.00	8.00	17.50	8.50	8	3/4-10 UNC		50	
F6150HDU	6"	1579	605	2.19	8.00	8.00	22.50	9.50	8	3/4-10 UNC	2*GK	50	
F650HDU	2"	115	44	1.65	7.00	7.00	15.00	4.75	4	5/8-11 UNC	AM	50	
F665HDU	2½"	196	75	1.81	7.00	7.00	15.50	5.50	4	5/8-11 UNC		50	
F680HDU	3"	302	116	1.81	7.00	7.00	16.00	6.00	4	5/8-11 UNC		50	
F6100HDU	4"	600	230	2.05	8.00	8.00	17.00	7.50	8	5/8-11 UNC	GM	50	
F6125HDU	5"	1022	392	2.19	8.00	8.00	17.50	8.50	8	3/4-10 UNC		50	
F6150HDU	6"	1579	605	2.19	8.00	8.00	22.50	9.50	8	3/4-10 UNC	2*GM/GK	50	Non-Spring Return
F6150HDU	6"	1579	605	2.19	6.00	4.00	18.00	9.50	8	3/4-10 UNC	DR/DKR	50	
F650HDU	2"	115	44	1.65	4.25	4.25	15.50	4.75	4	5/8-11 UNC	SY1...	50	
F665HDU	2½"	196	75	1.76	4.25	4.25	16.00	5.50	4	5/8-11 UNC		50	
F680HDU	3"	302	116	1.78	4.25	4.25	16.25	6.00	4	5/8-11 UNC		50	
F6100HDU	4"	600	230	2.05	8.00	13.00	22.00	7.50	8	5/8-11 UNC	SY2...	50	
F6125HDU	5"	1022	392	2.19	8.00	13.00	22.50	8.50	8	3/4-10 UNC		50	
F6150HDU	6"	1579	605	2.19	8.00	13.00	23.00	9.50	8	3/4-10 UNC		50	
F6200HDU	8"	3136	1202	2.37	8.00	13.00	24.25	11.75	8	3/4-10 UNC	SY3...	50	
F6250HDU	10"	5340	2047	2.67	8.00	13.00	25.50	14.25	12	7/8-9 UNC		50	
F6300HDU	12"	8250	3062	3.01	8.00	13.00	27.25	17.00	12	7/8-9 UNC	SY4...	50	

Dimension "A" is compressed, add .125" for relaxed state.

AF, AM and GM maximum actuator ambient temperature is 122°F.

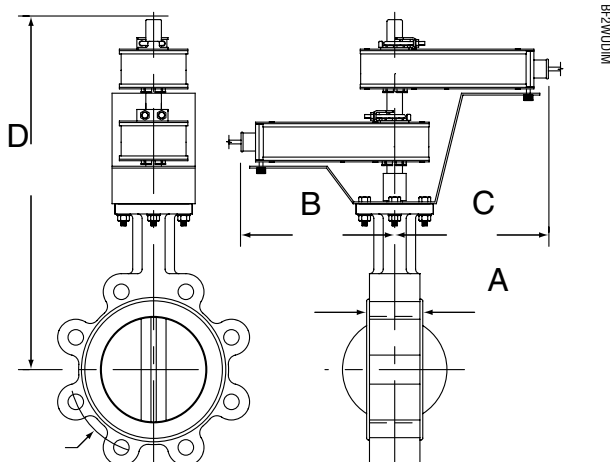
SY maximum actuator ambient temperature is 150°F.

Model SY1... does not have handwheel - override is via 8mm wrench on bottom side of actuator.

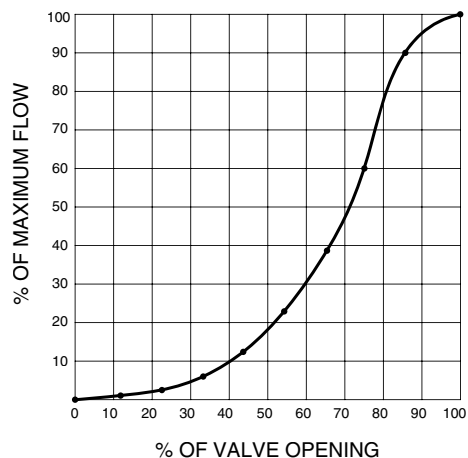
Application Notes

1. Valves are rated at 50 psi differential pressure in the closed position.
2. Valves are furnished with lugs tapped for use with ANSI Class 125/150 flanges. Installation flanges and hardware are not included.
3. 2-way assemblies are furnished assembled and tested, ready for installation.
4. Dimension "D" allows for actuator removal without the need to remove the valve from the pipe.
5. Weather shields are available, dimensional data upon request.
6. Dual actuated valves have actuators mounted on a common valve shaft.
7. Belimo SY Series actuators are NEMA 4X rated.

Dimensions



Flow Pattern



AFBUP(-S)-X1, AFXUP(-S)-X1, AFRBUP(-S), AFRXUP(-S) Actuators, On/Off



Models

AFBUP-X1	AFRBUP-5
AFBUP-S-X1	AFRXUP
AFXUP-X1	AFRBUP-S-5
AFXUP-S-X1	AFRXUP-S

Technical Data

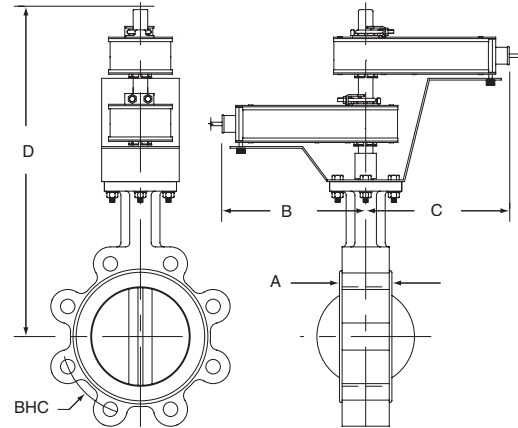
Power supply	24...240 VAC -20% / +10%, 50/60 Hz 24...125 VDC ±10%
Power consumption	running 7 W holding 3.5 W
Transformer sizing	7 VA @ 24 VAC (class 2 power source) 8.5 VA @ 120 VAC 18 VA @ 240 VAC
Electrical connection	AFBUP.../ AFRBUP... 3 ft, 18 GA appliance cable, 1/2" conduit connector -S models: Two 3 ft, 18 gauge appliance cables with 1/2" conduit connectors AFXUP.../ AFRXUP... 3 ft [1m], 10 ft [3m] or 16 ft [5m] 18 GA appliance cable, 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
Control	On/Off
Torque	180 in-lb [20 Nm] minimum
Direction of rotation	spring reversible with CW/CCW mounting
Mechanical angle of rotation	95° (adjustable with mechanical end stop, 35° to 95°)
Running time	motor < 75 sec spring 20 sec @ -4°F to 122°F [-20°C to 50°C]; < 60 sec @ -22°F [-30°C]
Position indication	visual indicator, 0° to 95° (0° is full spring return position)
Manual override	5 mm hex crank (3/16" Allen), supplied
Humidity	max. 95% RH non-condensing
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, Enclosure Type2
Housing material	Zinc coated metal and plastic casing
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	<50dB(A) motor @ 75 seconds ≤62dB(A) spring return
Servicing	maintenance free
Quality standard	ISO 9001
Weight	4.6 lbs (2.1 kg), 4.9 lbs (2.25 kg) with switches

† Rated Impulse Voltage 4kV, Type of action 1.AA (1.AA.B for -S version), Control Pollution Degree 3.

AFBUP-S-X1, AFXUP-S-X1, AFRBUP-S-5, AFRXUP-S

Auxiliary switches	2 x SPDT 3A (0.5A) @ 250 VAC, UL Approved one set at +10°, one adjustable 10° to 90°
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Dimensions with 2-Way Valve

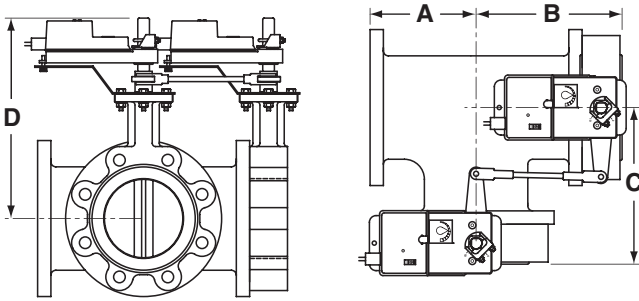


BF2WUDIM_A

Valve	Size	Dimensions (Inches)				Fail Safe (psi)		
		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		200
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
F650VIC	2"	3.21	9.00	9.00	18.50	-	200	
F665VIC	2½"	3.77	9.00	9.00	19.75	-	50	
F665VIC	2½"	3.77	9.00	9.00	20.50	-		200
F680VIC	3"	3.77	9.00	9.00	20.50	-		50

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Dimensions with 3-Way Valve



Valve	Size	Dimensions (Inches)				Fail Safe (psi)		
		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
F750VIC	2"	4.50	6.85	6.85	15.00	-	50	
F750VIC	2"	4.50	6.85	6.85	15.00	-		200
F765VIC	2½"	5.00	7.46	7.46	15.50	-		50

Typical Specification

On/Off spring return damper actuators shall be direct coupled type which require no crank arm and linkage and be capable of direct mounting to a jackshaft up to a 1.05" diameter. The actuators must be designed so that they may be used for either clockwise or counterclockwise fail-safe operation. Actuators shall be protected from overload at all angles of rotation. If required, two SPDT auxiliary switch shall be provided having the capability of one being adjustable. Actuators with auxiliary switches must be constructed to meet the requirements for Double Insulation so an electrical ground is not required to meet agency listings. Actuators shall be cULus approved and have a 5 year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.

Wiring Diagrams

INSTALLATION NOTES

- 1 Provide overload protection and disconnect as required.
- 2 **CAUTION Equipment Damage!**
Actuators may be connected in parallel. Power consumption and input impedance must be observed.
- 3 No ground connection is required.
- 4 For end position indication, interlock control, fan startup, etc., AFBUP-S-X1 and AFXUP-S-X1 incorporates two built-in auxiliary switches: 2 x SPDT, 3A (0.5A) @250 VAC, UL Approved, one switch is fixed at +10°, one is adjustable 10° to 90°.

APPLICATION NOTES

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.

