



- 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
- Tees comply with ASME/ANSI B16.1 Class 125 flanges

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/F7...HD/HDU Butterfly Valves.

Technical Data	
Service	chilled, hot water, 60% glycol
Flow characteristic	modified linear
Action	90° rotation
Sizes	2" to 12"
Type of end fitting	for use with ANSI 125/150 flanges
Materials	
Body	ductile iron ASTM A536
Body finish	epoxy powder finish
Disc	304 stainless steel
Seat	EPDM standard
Shaft	416 stainless steel
O-ring	EPDM
Upper bushing	RPTFE
Middle bushings	RPTFE
Lower bushing	RPTFE
Media temperature range	-22°F to 250°F [-30°C to 120°C]
Operation ambient temperature range	-22°F to 122°F [-30°C to 50°C]
Body pressure rating	ASME/ANSI Class 125/150 (200 psi at -30°F to 275°F)
Close-off pressure	50 psi
Rangeability	10:1 (for 30° to 70° range)
Maximum velocity	12 FPS

C _v 90°	C _v 60°	Valve Nominal Size		Type	Suitable Actuators			
		IN	DN [mm]		3-way	Spring	Non-Spring	
115	44	2"	50	F750HDU	AF Series	AM	GM Series	SY Series
196	75	2½"	65	F765HDU				
302	116	3"	80	F780HDU				
600	230	4"	100	F7100HDU				
1022	392	5"	125	F7125HDU				
1579	605	6"	150	F7150HDU				
3136	1202	8"	200	F7200HDU				
5340	2047	10"	250	F7250HDU				
8250	3062	12"	300	F7300HDU				

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Valve	Size	C _v	MOD									ON/OFF
			10°	20°	30°	40°	50°	60°	70°	80°	90°	
F750HDU	2"	115	.06	3	7	15	27	44	70	105	115	
F765HDU	2½"	196	.10	6	12	25	45	75	119	178	196	
F780HDU	3"	302	.20	9	18	39	70	116	183	275	302	
F7100HDU	4"	600	.30	17	36	78	139	230	364	546	600	
F7125HDU	5"	1022	.50	29	61	133	237	392	620	930	1022	
F7150HDU	6"	1579	.80	45	95	205	366	605	958	1437	1579	
F7200HDU	8"	3136	2	89	188	408	727	1202	1903	2854	3136	
F7250HDU	10"	5340	3	151	320	694	1237	2047	3240	4859	5340	
F7300HDU	12"	8250	4	234	495	1072	1911	3062	5005	7507	8250	

F7...HDU Butterfly Valves 2"-12" Ductile Iron Lug Body Resilient Seat, 304 Stainless Disc



Maximum Dimensions (Inches)

Valve	Size	C _v 90°	A	B	C	D(Max)	BHC	No. of Holes	Lug Bolt	Actuator	Close-Off (PSI)	
F750HDU	2"	115	4.50	6.15	6.15	15.50	4.75	4	5/8-11UNC	AF	50	Fail Safe
F765HDU	2½"	196	5.00	6.76	6.76	16.00	5.50	4	5/8-11UNC	2*AF	50	
F780HDU	3"	302	5.50	7.28	7.28	16.25	6.00	4	5/8-11UNC		50	
F750HDU	2"	115	4.50	6.15	6.15	15.50	4.75	4	5/8-11UNC	SY1...	50	Non-Fail Safe
F765HDU	2½"	196	5.00	6.76	6.76	16.00	5.50	4	5/8-11UNC		50	
F780HDU	3"	302	5.50	7.28	7.28	21.00	6.00	4	5/8-11UNC		50	
F7100HDU	4"	600	6.50	8.55	8.55	21.75	7.50	8	5/8-11UNC	SY2...	50	
F7125HDU	5"	1022	7.50	9.64	9.64	22.25	8.50	8	3/4-10UNC		50	
F7150HDU	6"	1579	8.00	10.19	10.19	22.75	9.50	8	3/4-10UNC		50	
F7200HDU	8"	3136	9.00	11.37	11.37	24.25	11.75	8	3/4-10UNC	SY3...	50	
F7250HDU	10"	5340	11.00	13.58	13.58	30.00	14.25	12	7/8-9UNC	SY4...	50	
F7300HDU	12"	8250	12.00	15.01	15.01	32.00	17.00	12	7/8-9UNC		50	

AF maximum actuator ambient temperature is 122°F.

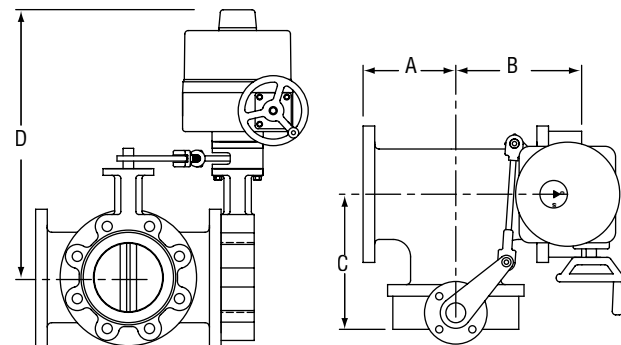
SY... maximum actuator ambient temperature is 150°F.

Model SY1... does not have hand wheel-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. 3-way assemblies are furnished assembled and tested, ready for installation.
All 3-way assemblies require the customer to specify the 3-way configuration prior to order entry to guarantee correct placement of valves and actuators on the assembly.
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 single actuators mounted on each valve shaft.
7. Bolts supplied are for shipping purposes only. Upon installation replace with an appropriate SAE grade 5 or better hardware.
8. Belimo SY Series actuators are NEMA 4X rated.

Dimensions



HS DWG#P15

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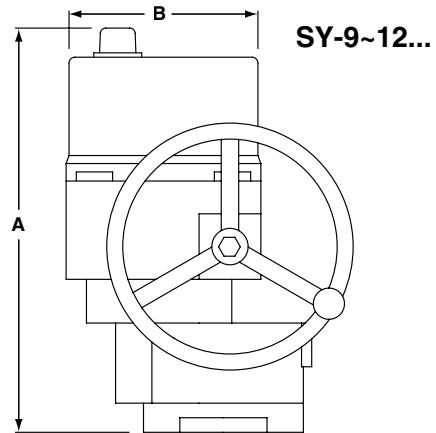
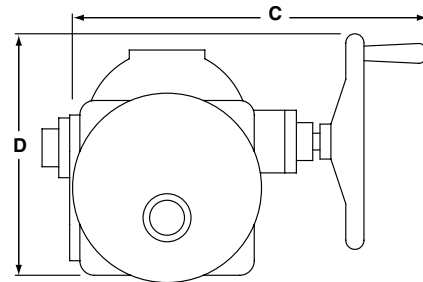
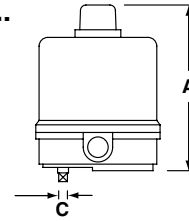
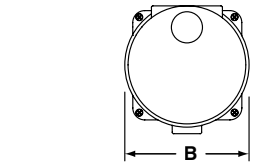
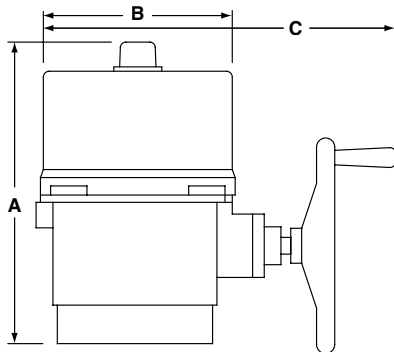
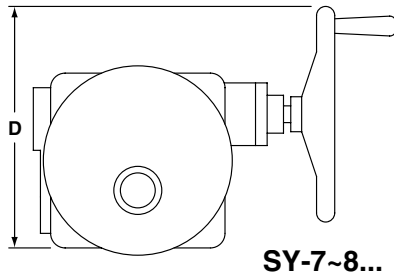
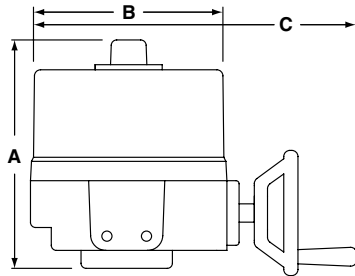
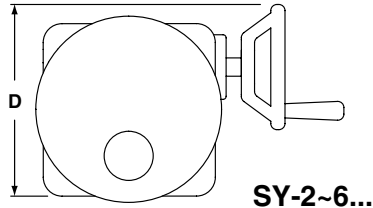
Application:

The SY actuators are NEMA 4X rated and designed to meet the needs of HVAC and Commercial applications. Offered on Belimo standard and high performance valve series, these actuators are available for on/off and modulating applications. Depending on the application, they are available in 24 VAC/ VDC, 120 VAC and 230 VAC.

Technical Data	
Electrical connection	½" conduit connector, screw terminals
Overload protection	thermally protected 135°C cut-out
Motor protection	H Class insulation (SY-1), F Class (SY-2...12)
Gear train	high alloy steel gear sets, self locking
Operating range	(SY...-110) on/off, floating point (SY...120MFT) 2-10 VDC, 4-20mA, 0-10 VDC
Sensitivity	(SY...120MFT) 0.4mA/200mV
Reversal hysteresis	(SY...120MFT) 1.0mA/500mV
Feedback	(SY...120MFT) 2-10 VDC
Angle of rotation	90°
Direction of rotation	reversible
Position indication	top mounted domed indicator
Internal humidity control	resistive heating element
Auxiliary switches	(2) SPDT, 5A 250 VAC factory set for 5° and 85° change of state
Ambient temperature	-22°F to +150°F [-30°C to +65°C]
Humidity range	up to 95%
Housing type	IP67, NEMA 4X
Housing material	die cast aluminum alloy
Agency listings	ISO, CE, cCSAus

Power Supply 120 VAC 50/60Hz, single phase

Model	Torque	Speed 60Hz	Speed 50Hz	Power Consumption	Duty Cycle			Weight
					On/Off	Proportional	Override	
SY1-110(P)	35Nm/310 in-lbs	12s	13s	0.5A	30%	75%	8mm Wrench	2.0kg/4.9 lb.
SY2-120(MFT)	90Nm/801 in-lbs	15s	17s	1.0A	30%	75%	Hand Wheel	11kg/24.5 lb.
SY3-120(MFT)	150Nm/1335 in-lbs	22s	26s	1.0A	30%	75%	Hand Wheel	11kg/24.5 lb.
SY4-120(MFT)	400Nm/3560 in-lbs	16s	18s	1.3A	30%	75%	Hand Wheel	22kg/48.5 lb.
SY5-120(MFT)	500Nm/4450 in-lbs	22s	25s	1.5A	30%	75%	Hand Wheel	22kg/48.5 lb.
SY6-120(MFT)	650Nm/5785 in-lbs	28s	31s	1.8A	30%	75%	Hand Wheel	22kg/48.5 lb.
SY7-120(MFT)	1000Nm/8900 in-lbs	46s	55s	3.2A	30%	75%	Hand Wheel	36kg/79.5 lb.
SY8-120(MFT)	1500Nm/13350 in-lbs	46s	55s	4.0A	30%	75%	Hand Wheel	36kg/79.5 lb.
SY9-120(MFT)	2000Nm/17800 in-lbs	58s	70s	3.2A	30%	50%	Hand Wheel	56kg/123.5 lb.
SY10-120(MFT)	2500Nm/22250 in-lbs	58s	70s	4.0A	30%	50%	Hand Wheel	56kg/123.5 lb.
SY11-120(MFT)	3000Nm/26700 in-lbs	58s	70s	3.0A	30%	50%	Hand Wheel	56kg/123.5 lb.
SY12-120(MFT)	3500Nm/31150 in-lbs	58s	70s	4.0A	30%	50%	Hand Wheel	56kg/123.5 lb.



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MODEL	DIM A (MAX)	Add to Dim A for cover removal	DIM B	DIM C (MAX)	DIM D
	Inches [mm]	Inches [mm]	Inches [mm]	Inches [mm]	Inches [mm]
SY1	6.10 [155]	3.94 [100]	4.25 [108]	8mm	-
SY2~3	10.04 [255]	7.48 [190]	7.87 [200]	12.99 [330]	7.87 [200]
SY4~6	12.40 [315]	8.86 [225]	9.21 [234]	14.96 [380]	11.81 [300]
SY7~8	16.54 [420]	8.86 [225]	9.21 [234]	17.72 [450]	13.39 [340]
SY9~12	23.23 [590]	8.86 [225]	10.24 [260]	18.50 [470]	13.78 [350]

Note: ~ indicates range of actuator i.e., SY2~3 = SY-2 and SY-3