



- Bubble tight shut-off to ANSI Class 300 Standards
- Long stem design allows for 2" insulation minimum
- Valve Face-to-face dimensions comply with API 609 & MSS-SP-68
- Designed to be installed between ASME/ANSI B16.5 Flanges
- Completely assembled and tested, ready for installation

### Application

These valves are designed to meet the needs of HVAC and Commercial applications requiring positive shut-off for liquids at higher pressures and temperatures. Typical applications include chiller isolation, cooling tower isolation, change-over systems, large air handler coil control, bypass and process control applications. The large C<sub>v</sub> values provide for an economical control valve solution for larger flow applications.

Technical Data	
Media service	chilled, hot water, 60% glycol, steam to 50 psi
Valve service	double dead end service
Flow characteristic	modified equal percentage, unidirectional
Recommended install	SUS (Seat Up Stream)
Action	quarter turn, mechanically limited
Sizes	2" to 24"
Type of end fitting	for use with ASME/ANSI B16.5 flanges
Materials	
Body	carbon steel full lug
Disc	316 stainless steel
Seat	RPTFE
Shaft	17-4 PH stainless
Gland seal	PTFE
Bushings	glass backed PTFE
Media temperature range	ANSI Class 300 limitations
Operation ambient temperature range	-22°F to 122°F [-30°C to 50°C]
Body pressure rating	ASME/ANSI Class 300 limitations
Close-off pressure	ANSI Class 300 to 725 psi @ 100°F
Rangeability	10:1 (for 30 deg to 70 deg range)
Maximum velocity	32 FPS

C <sub>v</sub> 90°	C <sub>v</sub> 60°	Valve Nominal Size	Type	Suitable Actuators	
				Spring	Non-Spring
100	52	2"	F650-300SHP	AF Series	GM Series
143	75	2½"	F665-300SHP		
223	117	3"	F680-300SHP		
435	228	4"	F6100-300SHP	SY Series	
688	361	5"	F6125-300SHP		
1041	546	6"	F6150-300SHP		
1911	1001	8"	F6200-300SHP		
3194	1673	10"	F6250-300SHP		
4428	2319	12"	F6300-300SHP		
5702	2986	14"	F6350-300SHP		
8243	3988	16"	F6400-300SHP		
9712	5088	18"	F6450-300SHP		
10658	5775	20"	F6500-300SHP		
16205	8855	24"	F6600-300SHP		

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Valve	Size	C <sub>v</sub>	MOD									ON/OFF
			10°	20°	30°	40°	50°	60°	70°	80°	90°	
F650-300SHP	2"	100	1.40	6.00	13	24	36	52	71	95	100	
F665-300SHP	2.5"	143	2.10	8.00	19	34	52	75	102	136	143	
F680-300SHP	3"	223	3.20	13	30	53	81	117	159	212	223	
F6100-300SHP	4"	435	6.20	25	58	104	157	228	310	414	435	
F6125-300SHP	5"	688	10	40	92	165	248	361	491	655	688	
F6150-300SHP	6"	1041	15	60	139	250	377	546	744	992	1041	
F6200-300SHP	8"	1911	27	109	255	459	692	1001	1365	1820	1911	
F6250-300SHP	10"	3194	46	183	426	767	1156	1673	2282	3042	3194	
F6300-300SHP	12"	4428	63	253	590	1063	1602	2319	3163	4217	4428	
F6350-300SHP	14"	5702	81	326	760	1368	2063	2986	4072	5430	5702	
F6400-300SHP	16"	8243	109	435	1015	1827	2755	3988	5438	7850	8243	
F6450-300SHP	18"	9712	139	555	1295	2331	3515	5088	6938	9250	9712	
F6500-300SHP	20"	10658	158	630	1470	2646	3990	5775	7875	10150	10658	
F6600-300SHP	24"	16205	242	966	2254	4057	6118	8855	12075	16100	16205	

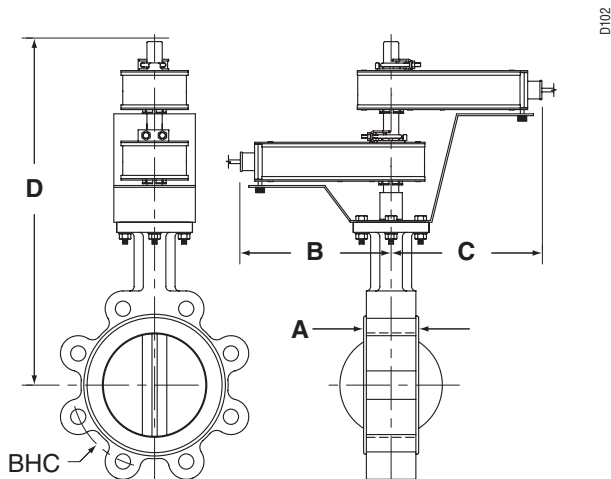
# F6 ANSI Class 300 Reinforced Teflon Seat, 316 Stainless Disc



## Maximum Dimensions (Inches)

Valve	Size	C <sub>v</sub> 90°	A	B	C	D(Max)	BHC	No. of Holes	Lug Bolt	Actuator	Close-Off (PSI)	
F650-300SHP	2"	100	1.75	9.00	9.00	19.50	5.00	8	5/8-11 UNC	2*AF	150	Fail Safe
F665-300SHP	2.5"	143	1.88	9.00	9.00	20.00	5.88	8	3/4-10 UNC		150	
F680-300SHP	3"	223	1.92	9.00	9.00	20.50	6.63	8	3/4-10 UNC		150	
F6100-300SHP	4"	435	2.13	9.00	9.00	21.00	7.88	8	3/4-10 UNC		150	
F650-300SHP	2"	100	1.75	9.00	9.00	19.50	5.00	8	5/8-11 UNC	GMB(X)	285	
F665-300SHP	2.5"	143	1.88	9.00	9.00	20.00	5.88	8	3/4-10 UNC		285	
F680-300SHP	3"	223	1.92	9.00	9.00	20.50	6.63	8	3/4-10 UNC		285	
F6100-300SHP	4"	435	2.13	9.00	9.00	21.00	7.88	8	3/4-10 UNC		150	
F650-300SHP	2"	100	1.75	9.00	9.00	19.50	5.00	8	5/8-11 UNC	2*GMB(X)	600	
F665-300SHP	2.5"	143	1.88	9.00	9.00	20.00	5.88	8	3/4-10 UNC		600	
F680-300SHP	3"	223	1.92	9.00	9.00	20.50	6.63	8	3/4-10 UNC		600	
F6100-300SHP	4"	435	2.13	9.00	9.00	21.00	7.88	8	3/4-10 UNC		400	
F650-300SHP	2"	100	1.75	8.00	8.00	22.25	4.75	8	5/8-11 UNC	SY2...	600	
F665-300SHP	2.5"	143	1.88	8.00	8.00	22.75	5.50	8	3/4-10 UNC		600	
F680-300SHP	3"	223	1.92	8.00	8.00	23.00	6.00	8	3/4-10 UNC		600	
F6100-300SHP	4"	435	2.13	8.00	8.00	23.75	7.50	8	3/4-10 UNC		600	
F6125-300SHP	5"	688	2.25	8.00	8.00	24.25	8.50	8	3/4-10 UNC	SY2...	285	Non-Fail Safe
										SY3...	600	
F6150-300SHP	6"	1041	2.29	8.00	8.00	24.75	9.50	12	3/4-10 UNC	SY2...	285	
										SY3...	600	
F6200-300SHP	8"	1911	2.88	12.00	12.00	32.00	11.75	12	7/8-9 UNC	SY3...	150	
										SY4...	600	
										SY4...	285	
F6250-300SHP	10"	3194	3.25	12.00	12.00	33.00	14.25	16	1-8 UNC	SY5...	400	
										SY7...	600	
										SY4...	150	
F6300-300SHP	12"	4428	3.62	12.00	12.00	35.00	17.00	16	1 1/8-8 UNC	SY5...	285	
										SY7...	600	
										SY5...	150	
F6350-300SHP	14"	5702	4.62	14.00	14.00	36.00	18.75	20	1 1/8-8 UNC	SY7...	400	
										SY8...	600	
										SY7...	150	
F6400-300SHP	16"	8243	5.25	14.00	14.00	37.50	21.25	20	1 1/4-8 UNC	SY8...	285	
										SY9...	400	
										SY10...	600	
										SY7...	150	
F6450-300SHP	18"	9712	5.88	14.00	14.00	42.25	22.75	24	1 1/4-8 UNC	SY8...	285	
										SY9...	400	
										SY11...	600	
										SY8...	150	
F6500-300SHP	20"	10658	6.31	14.00	14.00	49.50	25.00	24	1 1/4-8 UNC	SY10...	285	
										SY11...	400	
F6600-300SHP	24"	16205	7.19	14.00	14.00	56.25	29.50	24	1 1/2-8 UNC	SY10...	150	

## Dimensions



Dimension "A" does not include flange gaskets. (2 required per valve)

## Application Notes

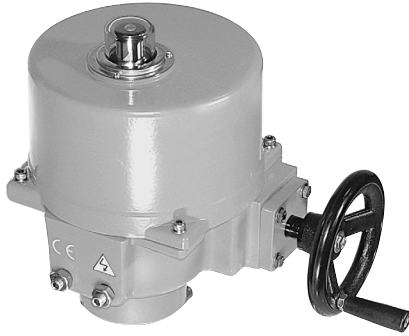
1. Valves are rated at 725 psi differential pressure in the closed position @ 100°F media temperature.
2. Valves are furnished with lugs tapped for use between ANSI Class 250/300 flanges conforming to ANSI B16.5 Standards.
3. 2-way assemblies are furnished assembled, calibrated and tested, ready for installation.
4. Dimension "D" allows for actuator(s) removal without the need to remove the valve from the pipe.
5. Weather shields are available, dimensional data furnished upon request.
6. Dual actuated valves have actuators mounted on a single common shaft.
7. Flange gaskets (2 required, not provided with valve) MUST be used between valve and ANSI flange.
8. Flange bolts are not included with the valve. These are furnished by others.

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# SY...230 Series Non-Spring Return Actuator



## Technical Data - 230 VAC



### 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...-220) on/off, floating point (SY...230MFT) 2-10 VDC, 4-20mA, 0-10 VDC
Sensitivity	(SY...230MFT) 0.4mA/200mV
Reversal hysteresis	(SY...230MFT) 1.0mA/500mV
Feedback	(SY...230MFT) 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

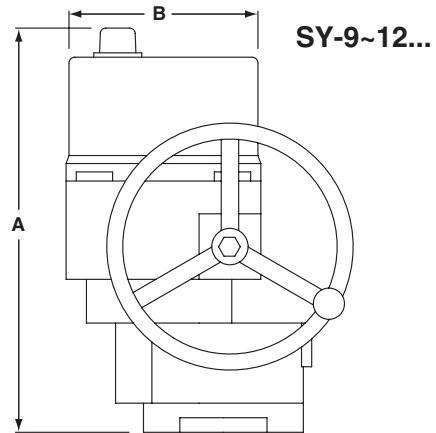
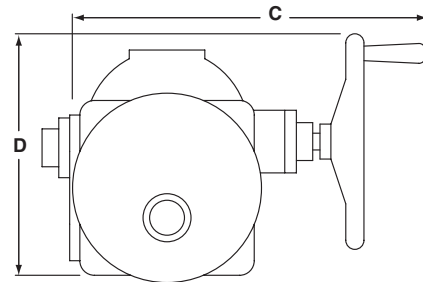
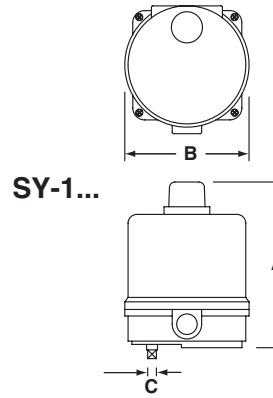
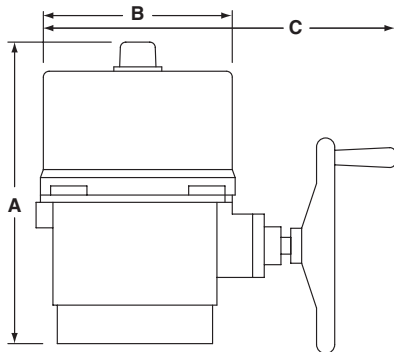
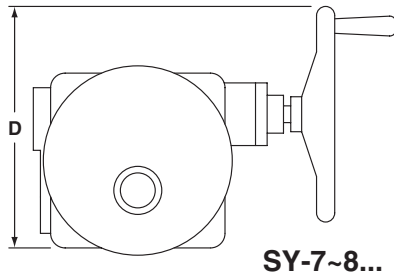
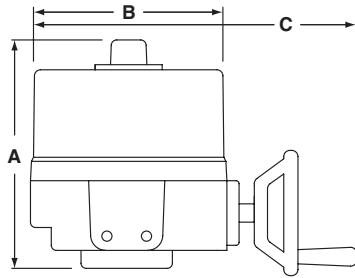
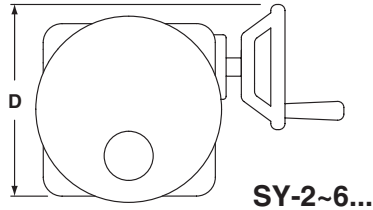
230 VAC 50/60Hz, single phase

Model	Torque	Speed 60Hz	Speed 50Hz	Power Consumption	Duty Cycle		Override	Weight
					On/Off	MFT		
SY1-220(P)	35Nm/310 in-lbs	12s	13s	0.3A	30%	75%	8mm Wrench	2.0kg/4.9 lb.
SY2-230(MFT)	90Nm/801 in-lbs	15s	17s	0.5A	30%	75%	Hand Wheel	11kg/24.5 lb.
SY3-230(MFT)	150Nm/1335 in-lbs	22s	26s	0.5A	30%	75%	Hand Wheel	11kg/24.5 lb.
SY4-230(MFT)	400Nm/3560 in-lbs	16s	18s	0.6A	30%	75%	Hand Wheel	22kg/48.5 lb.
SY5-230(MFT)	500Nm/4450 in-lbs	22s	25s	0.7A	30%	75%	Hand Wheel	22kg/48.5 lb.
SY6-230(MFT)	650Nm/5785 in-lbs	28s	31s	0.8A	30%	75%	Hand Wheel	22kg/48.5 lb.
SY7-230(MFT)	1000Nm/8900 in-lbs	46s	55s	1.6A	30%	75%	Hand Wheel	36kg/79.5 lb.
SY8-230(MFT)	1500Nm/13350 in-lbs	46s	55s	2.0A	30%	75%	Hand Wheel	36kg/79.5 lb.
SY9-230(MFT)	2000Nm/17800 in-lbs	58s	70s	1.6A	30%	50%	Hand Wheel	56kg/123.5 lb.
SY10-230(MFT)	2500Nm/22250 in-lbs	58s	70s	2.0A	30%	50%	Hand Wheel	56kg/123.5 lb.
SY11-230(MFT)	3000Nm/26700 in-lbs	58s	70s	1.6A	30%	50%	Hand Wheel	56kg/123.5 lb.
SY12-230(MFT)	3500Nm/31150 in-lbs	58s	70s	2.2A	30%	50%	Hand Wheel	56kg/123.5 lb.

800-543-9038 USA

866-805-7089 CANADA

203-791-8396 LATIN AMERICA



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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