

- Bubble tight shut-off to ANSI Class 150 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
- 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 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 linear, 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 150 limitations
Operation ambient temperature range	-22°F to 122°F [-30°C to 50°C]
Body pressure rating	ASME/ANSI Class 150 limitations
Close-off pressure	ANSI Class 150 to 285 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
102	56	2"	F750-150SHP	AF Series	GM Series
146	80	2½"	F765-150SHP		
228	125	3"	F780-150SHP		
451	248	4"	F7100-150SHP		
714	392	5"	F7125-150SHP		
1103	607	6"	F7150-150SHP		
2064	1135	8"	F7200-150SHP		
3517	1934	10"	F7250-150SHP		
4837	2660	12"	F7300-150SHP		
6857	3592	14"	F7350-150SHP		
9287	4865	16"	F7400-150SHP		
11500	3270	18"	F7450-150SHP		
14420	7590	20"	F7500-150SHP		
22050	11550	24"	F7600-150SHP		

Valve	Size	C <sub>v</sub>	MOD									ON/OFF
			10°	20°	30°	40°	50°	60°	70°	80°	90°	
F750-150SHP	2"	102	1.50	6.10	14	26	39	56	77	99	102	
F765-150SHP	2.5"	146	2.20	8.80	20	37	55	80	110	142	146	
F780-150SHP	3"	228	3.40	14	32	57	87	125	171	221	228	
F7100-150SHP	4"	451	6.80	27	63	114	171	248	338	437	451	
F7125-150SHP	5"	714	11	43	100	180	271	393	536	693	714	
F7150-150SHP	6"	1103	17	66	154	278	419	607	827	1070	1103	
F7200-150SHP	8"	2064	31	124	289	520	784	1135	1548	2002	2064	
F7250-150SHP	10"	3517	53	211	492	886	1336	1934	2638	3411	3517	
F7300-150SHP	12"	4837	73	290	677	1219	1838	2660	3628	4692	4837	
F7350-150SHP	14"	6857	103	411	960	1728	2606	3771	5143	6651	6857	
F7400-150SHP	16"	9287	139	557	1300	2340	3529	5108	6965	9008	9287	
F7450-150SHP	18"	11400	171	684	1596	2873	4332	6270	8550	11058	11400	
F7500-150SHP	20"	14420	216	865	2019	3634	5480	7931	10815	13987	14420	
F7600-150SHP	24"	22050	331	1323	3087	5557	8379	12128	16538	21389	22050	

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# F7 ANSI Class 150 Reinforced Teflon Seat, 316 Stainless Disc

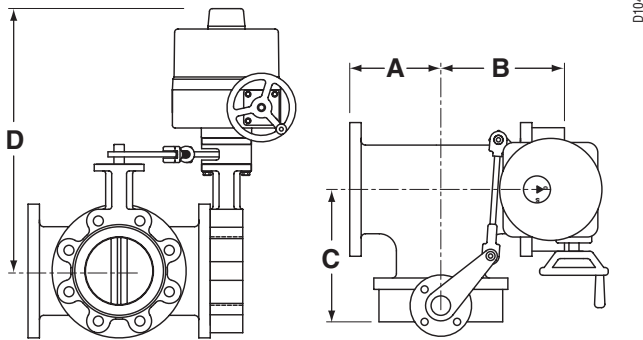


## Maximum Dimensions (Inches)

Valve	Size	C <sub>v</sub> 90°	A	B	C	D(Max)	BHC	No. of Holes	Lug Bolt	Actuator	Close-Off (PSI)
F750-150SHP	2"	102	4.50	6.38	6.38	16.50	4.75	4	5/8-11	GMB(X)	150
F765-150SHP	2.5"	146	5.00	6.88	6.88	17.00	5.50	4	5/8-11		150
F780-150SHP	3"	228	5.50	7.56	7.56	17.50	6.00	4	5/8-11		150
F7100-150SHP	4"	451	6.50	8.63	8.63	18.00	7.50	8	5/8-11	2*GMB(X)	150
F750-150SHP	2"	102	4.50	6.38	6.38	16.50	4.75	4	5/8-11		285
F765-150SHP	2.5"	146	5.00	6.88	6.88	17.00	5.50	4	5/8-11		285
F780-150SHP	3"	228	5.50	7.56	7.56	17.50	6.00	4	5/8-11	285	
F750-150SHP	2"	102	4.50	6.38	6.38	22.25	4.75	4	5/8-11 UNC	SY2...	285
F765-150SHP	2.5"	146	5.00	6.88	6.88	22.75	5.50	4	5/8-11 UNC		285
F780-150SHP	3"	228	5.50	7.56	7.56	23.00	6.00	4	5/8-11 UNC		285
F7100-150SHP	4"	451	6.50	8.63	8.63	23.75	7.50	8	5/8-11 UNC	SY3...	285
F7125-150SHP	5"	714	7.50	9.75	9.75	24.25	8.50	8	3/4-10 UNC		285
F7150-150SHP	6"	1103	8.00	10.25	10.25	24.75	9.50	8	3/4-10 UNC		285
F7200-150SHP	8"	2064	9.00	11.50	11.50	32.00	11.75	8	3/4-10 UNC	SY4...	150
F7250-150SHP	10"	3517	11.00	13.81	13.81	33.00	14.25	12	7/8-9 UNC		285
F7300-150SHP	12"	4837	12.00	15.81	15.81	35.00	17.00	12	7/8-9 UNC		150
F7350-150SHP	14"	6857	14.00	17.62	17.62	36.00	18.75	12	1-8 UNC	SY7...	285
F7400-150SHP	16"	9287	15.00	19.00	19.00	37.50	21.25	16	1-8 UNC		150
F7450-150SHP	18"	11400	16.50	21.00	21.00	42.25	22.75	16	1 1/8-8 UNC		285
F7500-150SHP	20"	14420	18.00	23.00	23.00	49.50	25.00	20	1 1/8-8 UNC	SY8...	150
F7600-150SHP	24"	22050	22.00	28.06	28.06	56.25	29.50	20	1 1/4-8 UNC		285
											SY9...
										SY10...	285
										SY11...	150
										SY12...	285

Non-Fail Safe

## Dimensions



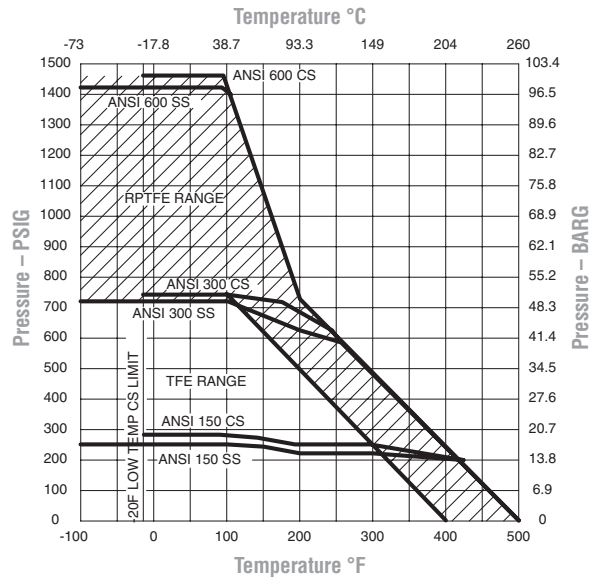
Dimensions "A, B and C" do not include flange gaskets. (3 required per valve)

## Application Notes

- Valves are rated at 285 psi differential pressure in the closed position @ 100°F media temperature.
- Valves are furnished with lugs tapped for use between ANSI Class 125/150 flanges conforming to ANSI B16.5 Standards.
- 3-way assemblies are furnished assembled with Tee, calibrated and tested, ready for installation. All 3-way assemblies require the customer to specify the 3-way configuration code prior to order entry to guarantee correct placement of valves and actuator(s) on the assembly.
- Dimension "D" allows for actuator(s) removal without the need to remove the valve from the pipe.
- Weather shields are available, dimensional data furnished upon request.
- Dual actuated valves have single actuators mounted on each valve shaft.
- Flange gaskets (3 required, not provided with valve) MUST be used between valve and ANSI flange.
- Flange bolts are not included with the valve. These are furnished by others.

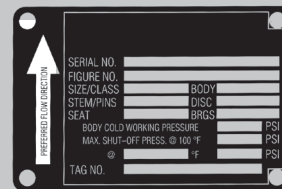
**⚠ Note:** For tee configuration, please refer to page 5.

## Pressure/temperature chart for ANSI class butterfly valves.



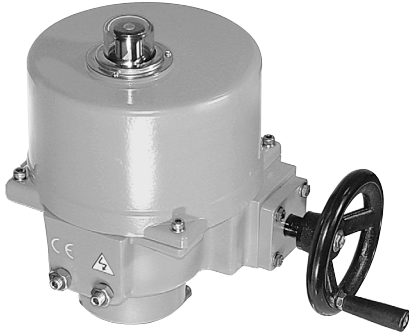
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**SHP series valves have a preferred flow direction.**



PreferredFlowrate

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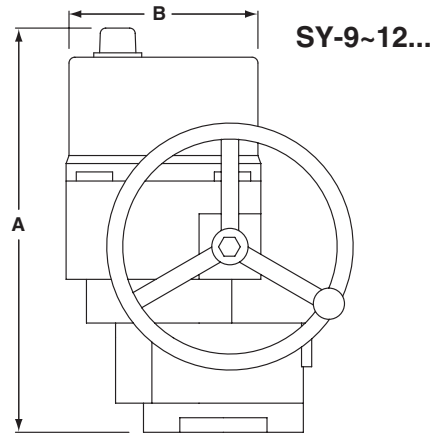
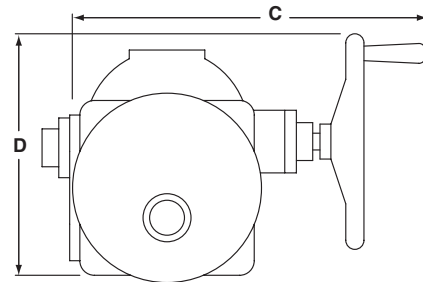
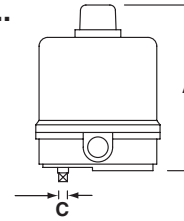
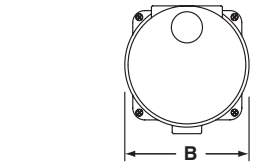
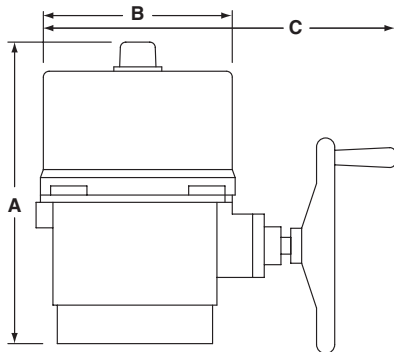
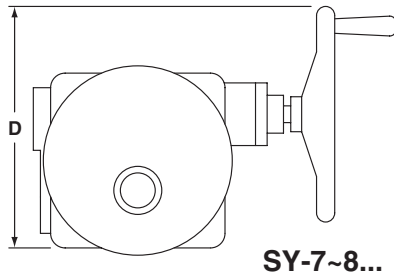
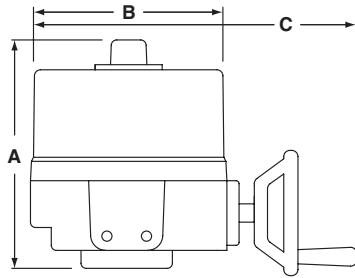
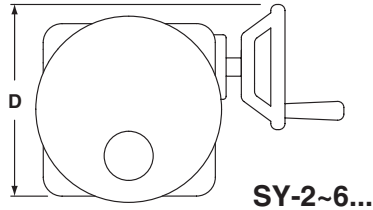
### Application:

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