



- 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

### 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 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"	F650-150SHP	AF Series	GM Series
146	80	2½"	F665-150SHP		
228	125	3"	F680-150SHP		
451	248	4"	F6100-150SHP	SY Series	
714	392	5"	F6125-150SHP		
1103	607	6"	F6150-150SHP		
2064	1135	8"	F6200-150SHP		
3517	1934	10"	F6250-150SHP		
4837	2660	12"	F6300-150SHP		
6857	3592	14"	F6350-150SHP		
9287	4865	16"	F6400-150SHP		
11500	3270	18"	F6450-150SHP		
14420	7590	20"	F6500-150SHP		
22050	11550	24"	F6600-150SHP		
34388	18012	30"	F6750-150SHP		

Valve	Size	C <sub>v</sub>	MOD									ON/OFF
			10°	20°	30°	40°	50°	60°	70°	80°	90°	
F650-150SHP	2"	102	1.50	6.10	14	26	39	56	77	99	102	
F665-150SHP	2.5"	146	2.20	8.80	20	37	55	80	110	142	146	
F680-150SHP	3"	228	3.40	14	32	57	87	125	171	221	228	
F6100-150SHP	4"	451	6.80	27	63	114	171	248	338	437	451	
F6125-150SHP	5"	714	11	43	100	180	271	393	536	693	714	
F6150-150SHP	6"	1103	17	66	154	278	419	607	827	1070	1103	
F6200-150SHP	8"	2064	31	124	289	520	784	1135	1548	2002	2064	
F6250-150SHP	10"	3517	53	211	492	886	1336	1934	2638	3411	3517	
F6300-150SHP	12"	4837	73	290	677	1219	1838	2660	3628	4692	4837	
F6350-150SHP	14"	6857	103	411	960	1728	2606	3771	5143	6651	6857	
F6400-150SHP	16"	9287	139	557	1300	2340	3529	5108	6965	9008	9287	
F6450-150SHP	18"	11400	171	684	1596	2873	4332	6270	8550	11058	11400	
F6500-150SHP	20"	14420	216	865	2019	3634	5480	7931	10815	13987	14420	
F6600-150SHP	24"	22050	331	1323	3087	5557	8379	12128	16538	21389	22050	
F6750-150SHP	30"	34388	491	1965	4585	8253	12445	18012	24563	32750	34388	

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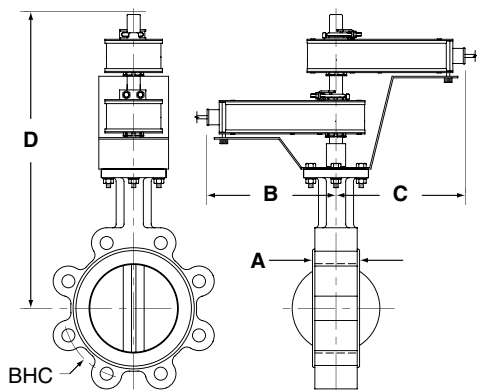
# F6 ANSI Class 150 Reinforced Teflon Seat, 316 Stainless Disc



## 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)	
F650-150SHP	2"	102	1.75	9.00	9.00	19.50	4.75	4	5/8-11	2*AF	150	Fail Safe
F665-150SHP	2.5"	146	1.88	9.00	9.00	20.00	5.50	4	5/8-11		150	
F680-150SHP	3"	228	1.92	9.00	9.00	20.50	6.00	4	5/8-11		150	
F6100-150SHP	4"	451	2.13	9.00	9.00	21.00	7.50	8	5/8-11	GM	150	
F650-150SHP	2"	102	1.75	9.00	9.00	19.50	4.75	4	5/8-11		285	
F665-150SHP	2.5"	146	1.88	9.00	9.00	20.00	5.50	4	5/8-11		285	
F680-150SHP	3"	228	1.92	9.00	9.00	20.50	6.00	4	5/8-11	285	2*GM	
F6100-150SHP	4"	451	2.13	9.00	9.00	21.00	7.50	8	5/8-11	150		
F6100-150SHP	4"	451	2.13	9.00	9.00	21.00	7.50	8	5/8-11	285		
F650-150SHP	2"	102	1.75	8.00	8.00	22.25	4.75	4	5/8-11 UNC	SY2...	285	
F665-150SHP	2.5"	146	1.88	8.00	8.00	22.75	5.50	4	5/8-11 UNC		285	
F680-150SHP	3"	228	1.92	8.00	8.00	23.00	6.00	4	5/8-11 UNC		285	
F6100-150SHP	4"	451	2.13	8.00	8.00	23.75	7.50	8	5/8-11 UNC	SY3...	285	
F6125-150SHP	5"	714	2.25	8.00	8.00	24.25	8.50	8	3/4-10 UNC		285	
F6150-150SHP	6"	1103	2.29	8.00	8.00	24.75	9.50	8	3/4-10 UNC		285	
F6200-150SHP	8"	2064	2.50	12.00	12.00	32.00	11.75	8	3/4-10 UNC	SY4...	150	Non-Fail Safe
F6250-150SHP	10"	3517	2.81	12.00	12.00	33.00	14.25	12	7/8-9 UNC	285		
F6300-150SHP	12"	4837	3.23	12.00	12.00	35.00	17.00	12	7/8-9 UNC	285		
F6350-150SHP	14"	6857	3.62	14.00	14.00	36.00	18.75	12	1-8 UNC	SY5...	150	
										SY7...	285	
										SY7...	150	
F6400-150SHP	16"	9287	4.00	14.00	14.00	37.50	21.25	16	1-8 UNC	SY8...	285	
F6450-150SHP	18"	11400	4.50	14.00	14.00	42.25	22.75	16	1 1/8-8 UNC	285		
F6500-150SHP	20"	14420	5.00	14.00	14.00	49.50	25.00	20	1 1/8-8 UNC	285		
F6600-150SHP	24"	22050	6.06	14.00	14.00	56.25	29.50	20	1 1/4-8 UNC	SY10...	150	
F6750-150SHP	30"	34388	6.75	14.00	14.00	66.58	36.00	28	1 1/4-8 UNC	285		

## Dimensions

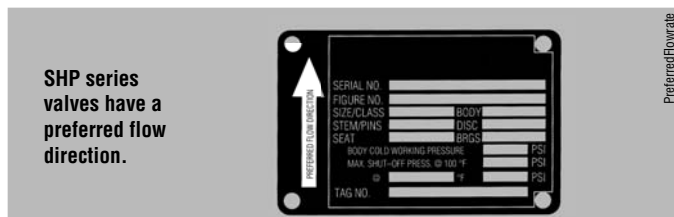
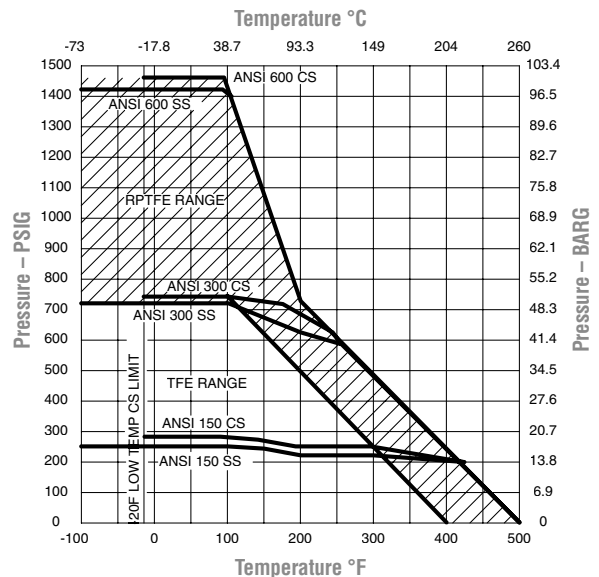


Dimension "A" does not include flange gaskets. (2 required per valve)

## 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.
- 2-way assemblies are furnished assembled, calibrated and tested, ready for installation.
- 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.
- Flange gaskets (2 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.

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



SHP series valves have a preferred flow direction.



- 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

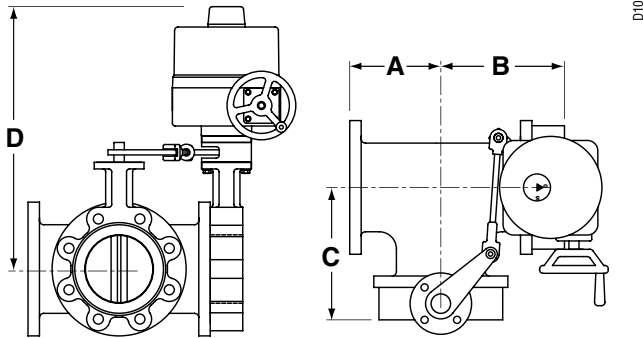


## Maximum Dimensions (Inches)

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	285	
F7125-150SHP	5"	714	7.50	9.75	9.75	24.25	8.50	8	3/4-10 UNC	SY3...	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	SY4...	150
										SY5...	285
										SY5...	150
F7300-150SHP	12"	4837	12.00	15.81	15.81	35.00	17.00	12	7/8-9 UNC	SY7...	285
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	SY7...	150
										SY9...	285
F7450-150SHP	18"	11400	16.50	21.00	21.00	42.25	22.75	16	1 1/8-8 UNC	SY8...	150
										SY10...	285
F7500-150SHP	20"	14420	18.00	23.00	23.00	49.50	25.00	20	1 1/8-8 UNC	SY9...	150
										SY11...	285
F7600-150SHP	24"	22050	22.00	28.06	28.06	56.25	29.50	20	1 1/4-8 UNC	SY12...	150

Non-Fail Safe

## Dimensions



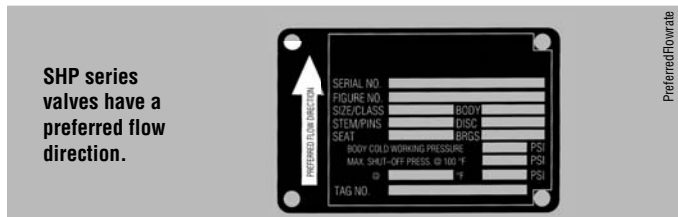
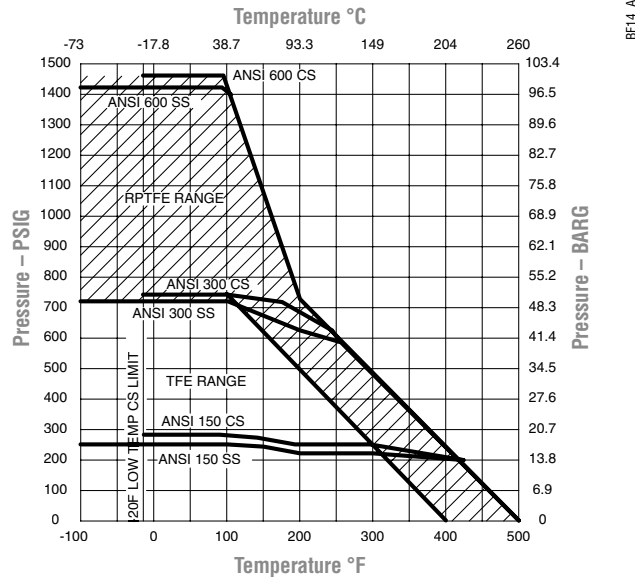
Dimensions "A, B and C" do not include flange gaskets. (3 required per valve)

## 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.



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

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- 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  $C_v$  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

$C_v$ 90°	$C_v$ 60°	Valve Nominal Size IN	Type ANSI 300 2-way	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	$C_v$	MOD									ON/OFF 90°
			10°	20°	30°	40°	50°	60°	70°	80°		
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	

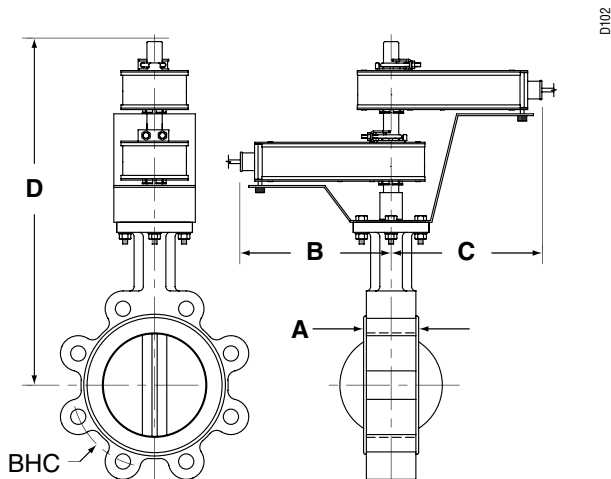
# F6 ANSI Class 300 Reinforced Teflon Seat, 316 Stainless Disc



## 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	
										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	Non-Fail Safe
										SY4...	600	
										SY4...	285	
										SY5...	400	
F6250-300SHP	10"	3194	3.25	12.00	12.00	33.00	14.25	16	1-8 UNC	SY7...	600	
										SY4...	150	
										SY5...	285	
										SY7...	600	
F6300-300SHP	12"	4428	3.62	12.00	12.00	35.00	17.00	16	1 1/8-8 UNC	SY5...	150	
										SY7...	600	
										SY5...	150	
										SY7...	400	
F6350-300SHP	14"	5702	4.62	14.00	14.00	36.00	18.75	20	1 1/8-8 UNC	SY8...	600	
										SY7...	150	
										SY8...	285	
										SY9...	400	
F6400-300SHP	16"	8243	5.25	14.00	14.00	37.50	21.25	20	1 1/4-8 UNC	SY10...	600	
										SY7...	150	
										SY8...	285	
										SY9...	400	
F6450-300SHP	18"	9712	5.88	14.00	14.00	42.25	22.75	24	1 1/4-8 UNC	SY11...	600	
										SY8...	150	
										SY9...	400	
										SY10...	285	
F6500-300SHP	20"	10658	6.31	14.00	14.00	49.50	25.00	24	1 1/4-8 UNC	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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- 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 16.5 Flanges
- Completely assembled and tested, ready for installation
- Tees comply with ASME/ANSI 16.5 Class 250/300 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  $C_v$  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 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

$C_v$ 90°	$C_v$ 60°	Valve Nominal Size	Type	Suitable Actuators	
				Spring	Non-Spring
100	52	2"	F750-300SHP	AF Series	GM Series
143	75	2½"	F765-300SHP		
223	117	3"	F780-300SHP		
435	228	4"	F7100-300SHP		
688	361	5"	F7125-300SHP		
1041	546	6"	F7150-300SHP		
1911	1001	8"	F7200-300SHP		
3194	1673	10"	F6250-300SHP		
4428	2319	12"	F7300-300SHP		
5702	2986	14"	F7350-300SHP		
8243	3988	16"	F7400-300SHP		
9712	5088	18"	F7450-300SHP		
10658	5775	20"	F7500-300SHP		
16205	8855	24"	F7600-300SHP		

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Valve	Size	$C_v$	MOD									ON/OFF 90°
			10°	20°	30°	40°	50°	60°	70°	80°		
F750-300SHP	2"	100	1.40	6.00	13	24	36	52	71	95	100	
F765-300SHP	2.5"	143	2.10	8.00	19	34	52	75	102	136	143	
F780-300SHP	3"	223	3.20	13	30	53	81	117	159	212	223	
F7100-300SHP	4"	435	6.20	25	58	104	157	228	310	414	435	
F7125-300SHP	5"	688	10	40	92	165	248	361	491	655	688	
F7150-300SHP	6"	1041	15	60	139	250	377	546	744	992	1041	
F7200-300SHP	8"	1911	27	109	255	459	692	1001	1365	1820	1911	
F7250-300SHP	10"	3194	46	183	426	767	1156	1673	2282	3042	3194	
F7300-300SHP	12"	4428	63	253	590	1063	1602	2319	3163	4217	4428	
F7350-300SHP	14"	5702	81	326	760	1368	2063	2986	4072	5430	5702	
F7400-300SHP	16"	8243	109	435	1015	1827	2755	3988	5438	7850	8243	
F7450-300SHP	18"	9712	139	555	1295	2331	3515	5088	6938	9250	9712	
F7500-300SHP	20"	10658	158	630	1470	2646	3990	5775	7875	10150	10658	
F7600-300SHP	24"	16205	242	966	2254	4057	6118	8855	12075	16100	16205	

# F7 ANSI Class 300 Reinforced Teflon Seat, 316 Stainless Disc

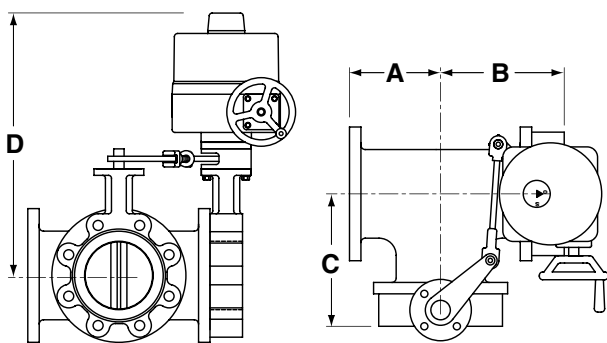


## Maximum Dimensions (Inches)

Valve	Size	C <sub>v</sub> 90°	A	B	C	D(Max)	BHC	No. of Holes	Lug Bolt	Actuator	Close-Off (PSI)
F750-300SHP	2"	100	5.00	6.75	6.75	15.50	5.00	8	5/8-11 UNC	2*GMB(X)	285
F765-300SHP	2.5"	143	5.50	7.38	7.38	16.00	5.88	8	3/4-10 UNC		285
F780-300SHP	3"	223	6.00	7.92	7.92	16.25	6.63	8	3/4-10 UNC		285
F7100-300SHP	4"	435	7.00	9.13	9.13	18.00	7.88	8	3/4-10 UNC		150
F750-300SHP	2"	100	5.00	6.75	6.75	22.25	4.75	8	5/8-11 UNC	SY2...	400
										SY3...	600
F765-300SHP	2.5"	143	5.50	7.38	7.38	22.75	5.50	8	3/4-10 UNC	SY2...	400
										SY3...	600
F780-300SHP	3"	223	6.00	7.92	7.92	23.00	6.00	8	3/4-10 UNC	SY2...	400
										SY3...	600
F7100-300SHP	4"	435	7.00	9.13	9.13	23.75	7.50	8	3/4-10 UNC	SY2...	285
										SY3...	600
F7125-300SHP	5"	688	8.00	10.25	10.25	24.25	8.50	8	3/4-10 UNC	SY3...	285
										SY4...	600
F7150-300SHP	6"	1041	8.50	10.79	10.79	24.75	9.50	12	3/4-10 UNC	SY3...	285
										SY4...	600
F7200-300SHP	8"	1911	10.00	12.88	12.88	32.00	11.75	12	7/8-9 UNC	SY4...	400
										SY5...	600
										SY4...	150
										SY5...	285
F7250-300SHP	10"	3194	11.50	14.75	14.75	33.00	14.25	16	1-8 UNC	SY7...	600
										SY5...	150
										SY7...	400
F7300-300SHP	12"	4428	13.00	16.62	16.62	35.00	17.00	16	1 1/8-8 UNC	SY8...	600
										SY7...	150
										SY8...	400
F7350-300SHP	14"	5200	15.00	19.62	19.62	36.00	18.75	20	1 1/8-8 UNC	SY10...	600
										SY7...	150
										SY9...	285
F7400-300SHP	16"	8243	16.50	21.75	21.75	37.50	21.25	20	1 1/4-8 UNC	SY10...	400
										SY12...	600
										SY8...	150
F7450-300SHP	18"	9712	18.00	23.88	23.88	42.25	22.75	24	1 1/4-8 UNC	SY10...	285
										SY11...	400
F7500-300SHP	20"	10568	19.50	25.81	25.81	49.50	25.00	24	1 1/4-8 UNC	SY9...	150
										SY12...	285
F7600-300SHP	24"	16205	22.5	29.69	29.69	56.25	29.50	24	1 1/2-8 UNC	SY12...	150

Non-Fail Safe

## Dimensions



D104

Dimensions "A, B and C" do not include flange gaskets. (3 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. 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.
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 single actuators mounted on each valve shaft.
7. Flange gaskets (3 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.

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

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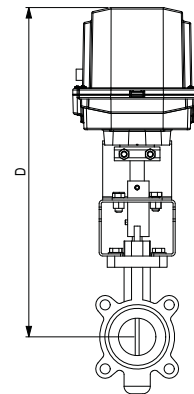
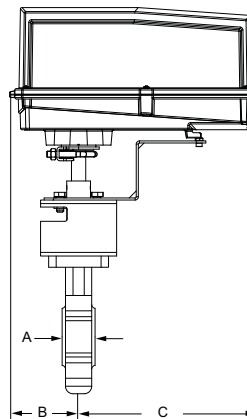
### Models

GMCX24-3-T-X1 N4 w/terminal block

#### Technical Data

Control	on/off, floating point
Power supply	24 VAC ± 20% 50/60 Hz 24 VDC ± 10%
Power consumption	running 8W holding 2.5W
Transformer sizing	11 VA (class 2 power source)
Electrical connection	screw terminal (for 22 to 12 AWG wire)
Overload protection	electronic throughout 0° to 95° rotation
Input impedance	1000 Ω at control input
Angle of rotation	95°, adjustable with mechanical stop electronically variable
Direction of rotation	reversible with  switch
Position indication	visual pointer
Manual override	internal push button (UL Type 4)
Running time	35 seconds (default)
Humidity	5 to 100% RH (UL Type 4)
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 type	UL Type 4/NEMA 4/IP66
Housing material	Polycarbonate
Agency listings	cULus according to UL 60730-1A, UL 60730-2-14 and CAN/CSA E60730-1; Certified to IEC/EN 60730-1 and IEC/EN 60730-2-14
EMC	CE according to 2004/108/EC
Quality standard	ISO 9001

#### Dimensions with 2-Way Valve

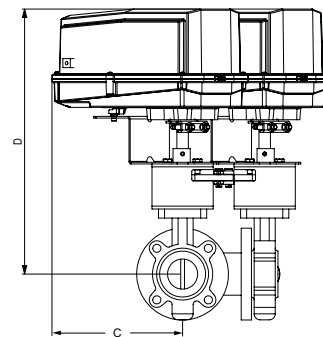
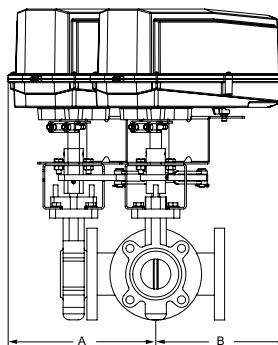


ZM0825

Valve Nominal Size      Dimensions (Inches [mm])

Valve Body	Inches	DN [mm]	A	B	C	D
F650-150SHP	2"	50	1.75 [44.5]	3.62 [92]	10.49 [266]	17.32 [440]
F665-150SHP	2.5"	65	1.88 [47.8]	3.62 [92]	10.49 [266]	17.32 [440]
F680-150SHP	3"	80	1.92 [48.8]	3.62 [92]	10.49 [266]	18.07 [459]
F6100-150SHP	4"	100	2.13 [54.1]	3.62 [92]	10.49 [266]	18.80 [478]
F650-300SHP	2"	50	1.75 [44.5]	3.62 [92]	10.49 [266]	17.32 [440]
F665-300SHP	2.5"	65	1.88 [47.8]	3.62 [92]	10.49 [266]	17.32 [440]
F680-300SHP	3"	80	1.92 [48.8]	3.62 [92]	10.49 [266]	18.07 [459]
F6100-300SHP	4"	100	2.13 [54.1]	3.62 [92]	10.49 [266]	18.80 [478]

#### Dimensions with 3-Way Valve



ZM0824

Valve Nominal Size      Dimensions (Inches [mm])

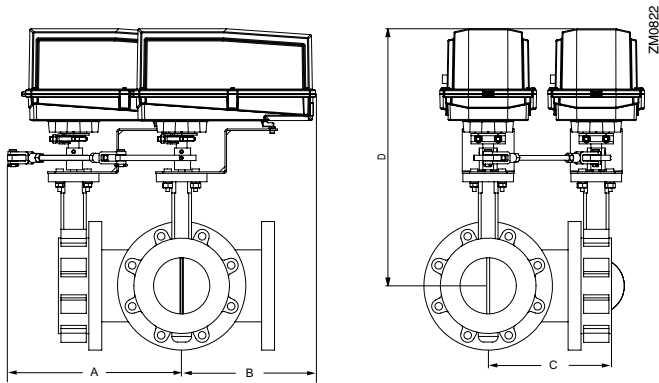
Valve Body	Inches	DN [mm]	A	B	C	D
F750-150SHP	2"	50	1.75 [44.5]	3.62 [92]	10.49 [266]	17.32 [440]
F765-150SHP	2.5"	65	1.88 [47.8]	3.62 [92]	10.49 [266]	17.32 [440]
F780-150SHP	3"	80	1.92 [48.8]	3.62 [92]	10.49 [266]	18.07 [459]
F7100-150SHP	4"	100	2.13 [54.1]	3.62 [92]	10.49 [266]	18.80 [478]
F750-300SHP	2"	50	1.75 [44.5]	3.62 [92]	10.49 [266]	17.32 [440]
F765-300SHP	2.5"	65	1.88 [47.8]	3.62 [92]	10.49 [266]	17.32 [440]
F780-300SHP	3"	80	1.92 [48.8]	3.62 [92]	10.49 [266]	18.07 [459]
F7100-300SHP	4"	100	2.13 [54.1]	3.62 [92]	10.49 [266]	18.80 [478]

Note: Most F7 versions use dual actuators.

# GMCX24-3-T-X1 N4 NEMA 4 Actuators, On/Off, Floating Point



## Dimensions with 3-Way Valve



Valve Nominal Size Dimensions (Inches [mm])

Valve Body	Inches	DN [mm]	A	B	C	D	FLG
F750HD/HDU	2"	50	1.65 [41.9]	10.49 [266]	3.62 [92]	18.94 [481]	F05
F765HD/HDU	2.5"	65	1.76 [44.7]	10.49 [266]	3.62 [92]	19.49 [495]	F05
F780HD/HDU	3"	80	1.78 [45.2]	10.49 [266]	3.62 [92]	19.73 [501]	F05
F7100HDU	4"	100	2.05 [52.1]	10.49 [266]	3.62 [92]	20.47 [520]	F07
F7125HDU	5"	125	2.14 [54.4]	10.49 [266]	3.62 [92]	20.99 [533]	F07
F7150HDU	6"	150	2.19 [55.6]	10.49 [266]	3.62 [92]	21.53 [547]	F07

Note: Most F7 versions use 2 actuators.

## Wiring Diagrams

### INSTALLATION NOTES

**2** **CAUTION** Equipment damage!  
Actuators may be connected in parallel. Power consumption and input impedance must be observed.

**3** Actuators may also be powered by 24 VDC.

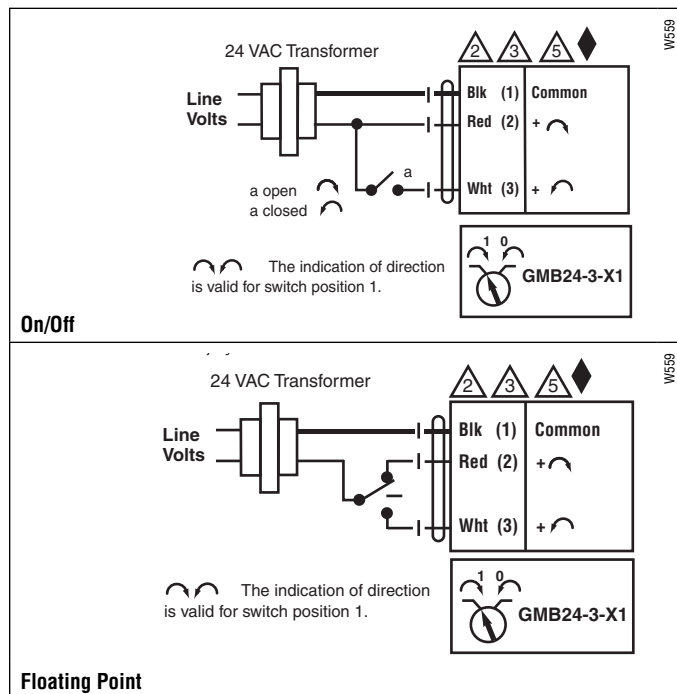
**5** Actuators with plenum rated cable do not have numbers on wires; use color codes instead. Actuators with appliance cables are numbered.

### APPLICATION NOTES

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.



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