

F7 Series 3-Way, ANSI Class 150 Butterfly Valve Reinforced Teflon Seat, 316 Stainless Disc



- 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_v values provide for an economical control valve solution for larger flow applications.

Dead End Service

Follow all described pre-installation and installation procedures. Valves are capable of bubble tight, dead end closure with either the upstream or downstream flange removed.

Technical Data	
Service	chilled, hot water, 60% glycol, steam to 50 psi
Flow characteristic	modified equal percentage, unidirectional
Controllable flow range	82°
Sizes	2" to 24"
Type of end fitting	for use with ASME/class 125/150 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	-20°F to 400°F [-30°C to 204°C]
Body pressure rating	ANSI Class 150
Close-off pressure	285 psi
Rangeability	100:1 (for 30 deg to 70 deg range)
Maximum velocity	32 FPS
Leakage	bubble tight

C _v 90°	C _v 60°	Valve Nominal Size IN	Type 3-way	Suitable Actuators			Electronic Fail-Safe
				Spring	Non-Spring		
102	56	2"	F750-150SHP	AF Series	GM Series	SY Series	GK 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 _v	MOD									ON/OFF	
			10°	20°	30°	40°	50°	60°	70°	80°	90°	90°	90°
F750-150SHP	2"	102	1.50	6.10	14	26	39	56	77	99	102		
F765-150SHP	2½"	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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Maximum Dimensions (Inches)

Valve	Size	C _v 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 UNC	GK	150	Electronic Fail-Safe
F765-150SHP	2½"	146	5.00	6.88	6.88	17.00	5.50	4	5/8-11 UNC		150	
F780-150SHP	3"	228	5.50	7.56	7.56	17.50	6.00	4	5/8-11 UNC		150	
F750-150SHP	2"	102	4.50	6.38	6.38	16.50	4.75	4	5/8-11 UNC	2*GK	285	
F765-150SHP	2½"	146	5.00	6.88	6.88	17.00	5.50	4	5/8-11 UNC		285	
F780-150SHP	3"	228	5.50	7.56	7.56	17.50	6.00	4	5/8-11 UNC		285	
F750-150SHP	2"	102	4.50	6.38	6.38	16.50	4.75	4	5/8-11 UNC	GM	150	
F765-150SHP	2½"	146	5.00	6.88	6.88	17.00	5.50	4	5/8-11 UNC		150	
F780-150SHP	3"	228	5.50	7.56	7.56	17.50	6.00	4	5/8-11 UNC		150	
F7100-150SHP	4"	451	6.50	8.63	8.63	18.00	7.50	8	5/8-11 UNC		150	
F750-150SHP	2"	102	4.50	6.38	6.38	16.50	4.75	4	5/8-11 UNC	2*GM	285	
F765-150SHP	2½"	146	5.00	6.88	6.88	17.00	5.50	4	5/8-11 UNC		285	
F780-150SHP	3"	228	5.50	7.56	7.56	17.50	6.00	4	5/8-11 UNC		285	
F750-150SHP	2"	102	4.50	6.38	6.38	22.25	4.75	4	5/8-11 UNC	SY2...	285	Non-Spring Return
F765-150SHP	2½"	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	
										SY7...	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	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	

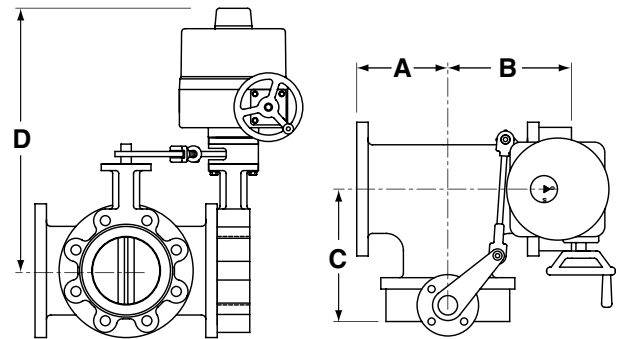
Dimensions "A, B and C" do not include flange gaskets. (3 required per valve)

Application Notes

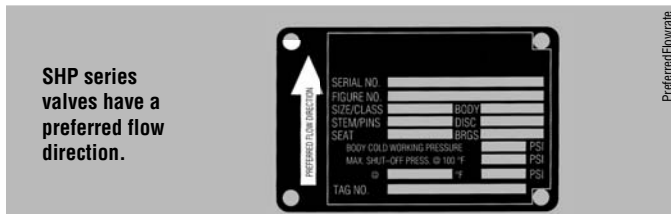
- Valves are rated at 285 psi differential pressure in the closed position @ 100°F media temperature.
- Valves are furnished with lugs tapped for use between ANSI Class 125/150 flanges conforming to ANSI B16.5 Standards.
- 3-way assemblies are furnished assembled with Tee, calibrated and tested, ready 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.

Dimensions



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GMCX24-3-T-X1 N4(H) NEMA 4 Actuators, On/Off, Floating Point

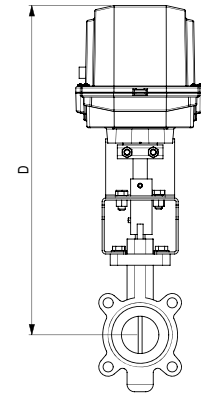
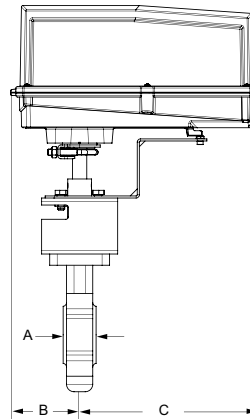


Models

GMCX24-3-T-X1 N4 w/terminal block
 GMCX24-3-T-X1 N4H w/heater

Technical Data	
Control	on/off, floating point
Power supply	24 VAC \pm 20% 50/60 Hz 24 VDC \pm 10%
Power consumption	running 8W / heater 28W holding 2.5W
Transformer sizing	11 VA (class 2 power source) / heater 26 VA
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

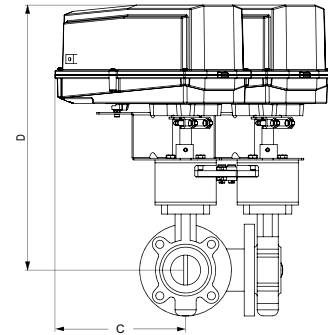
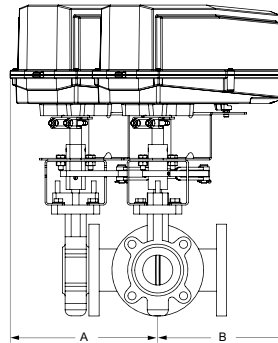


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Valve Nominal Size Dimensions (Inches [mm])

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



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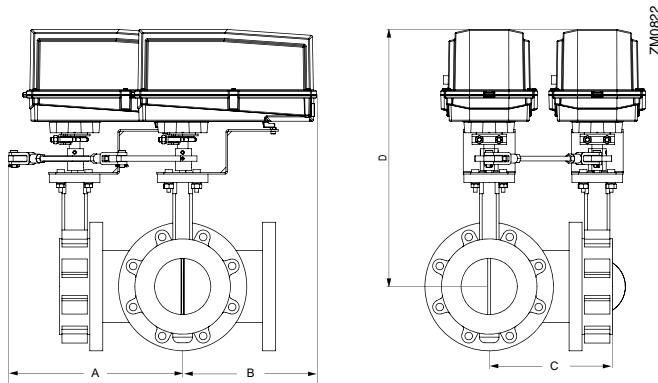
Valve Nominal Size Dimensions (Inches [mm])

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.

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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
F7100H DU	4"	100	2.05 [52.1]	10.49 [266]	3.62 [92]	20.47 [520]	F07
F7125H DU	5"	125	2.14 [54.4]	10.49 [266]	3.62 [92]	20.99 [533]	F07
F7150H DU	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.

