

F7 Series 3-Way, ANSI Class 300 Butterfly Valve Reinforced Teflon Seat, 316 Stainless Disc



- 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.

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	ANSI 300 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 300
Close-off pressure	740 psi
Rangeability	100:1 (for 30 deg to 70 deg range)
Maximum velocity	32 FPS
Leakage	bubble tight

Valve Nominal Size		Type	Suitable Actuators			Electronic Fail-Safe
C _v 90°	C _v 60°	IN	ANSI 150 3-way	Spring	Non-Spring	
100	52	2"	F750-300SHP	AF Series	GM Series	GK 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	SY Series		
9712	5088	18"	F7450-300SHP			
10658	5775	20"	F7500-300SHP			
16205	8855	24"	F7600-300SHP			

Valve	Size	C _v	MOD									ON/OFF
			10°	20°	30°	40°	50°	60°	70°	80°	90°	
F750-300SHP	2"	100	1.40	6.00	13	24	36	52	71	95	100	
F765-300SHP	2½"	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	

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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)	
F750-300SHP	2"	100	5.00	6.75	6.75	15.50	5.00	8	5/8-11 UNC	2*GK	285	Electronic Fail-Safe
F765-300SHP	2½"	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	15.50	5.00	8	5/8-11 UNC	2*GM	285	
F765-300SHP	2½"	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	Non-Spring Return
										SY3...	600	
F765-300SHP	2½"	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	

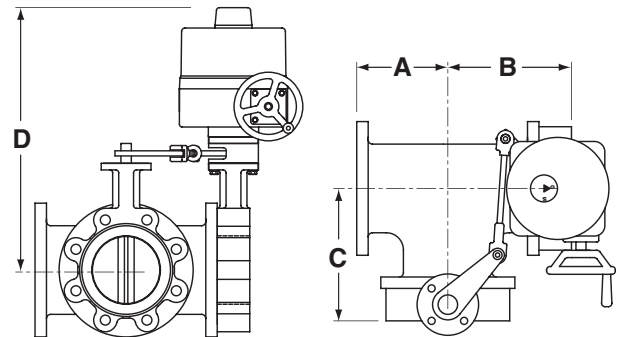
Dimensions "A, B and C" do not include flange gaskets. (3 required per valve)

Application Notes

- Valves are rated at 725 psi differential pressure in the closed position @ 100°F media temperature.
- Valves are furnished with lugs tapped for use between ANSI Class 250/300 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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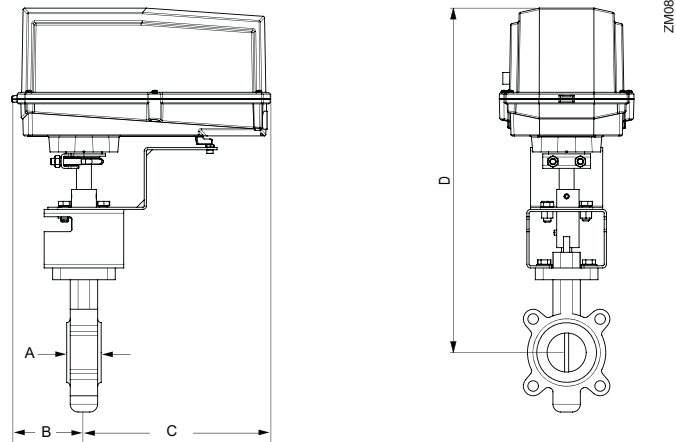


Models

GMX24-MFT-T-X1 N4 w/terminal block
 GMB24-MFT-T-X1 N4H w/heater

Technical Data	
Control	2 to 10 VDC, 4 to 20 mA (default) variable (VDC, floating point, on/off)
Power supply	24 VAC \pm 20% 50/60 Hz 24 VDC \pm 10%
Power consumption	running 8 W / heater 29W holding 2.5 W
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	100 k Ω for 2 to 10 VDC (0.1 mA) 500 Ω for 4 to 20 mA 1000 Ω for floating point and on-off control
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	150 seconds (default) variable (75 to 290 seconds)
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

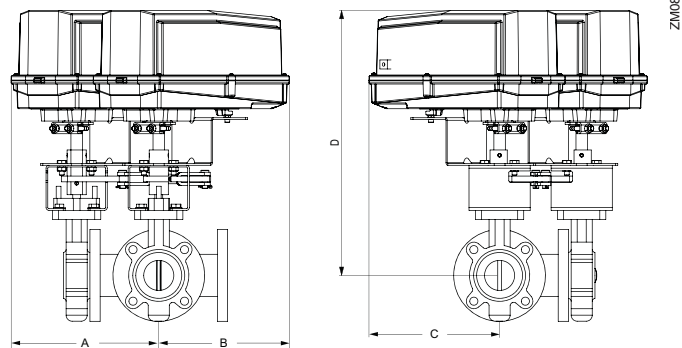


Valve Nominal Size

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



Valve Nominal Size

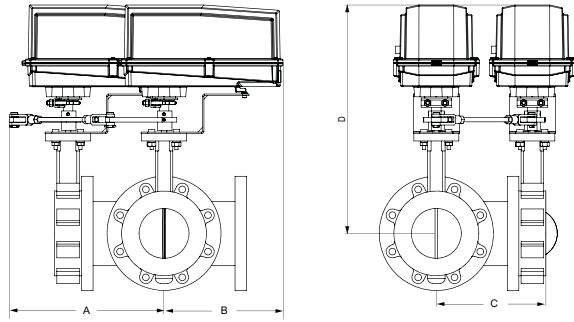
Dimensions (Inches [mm])

Valve Body	Inches	DN [mm]	A	B	C	D
F750-150SHP	2"	50	11.36 [288]	10.49 [266]	10.49 [266]	17.32 [440]
F765-150SHP	2.5"	65	11.43 [290]	10.49 [266]	10.49 [266]	17.32 [440]
F780-150SHP	3"	80	11.47 [291]	10.49 [266]	10.49 [266]	18.07 [459]
F7100-150SHP	4"	100	11.58 [294]	10.49 [266]	10.49 [266]	18.80 [478]
F750-300SHP	2"	50	11.36 [288]	10.49 [266]	10.49 [266]	17.32 [440]
F765-300SHP	2.5"	65	11.43 [290]	10.49 [266]	10.49 [266]	17.32 [440]
F780-300SHP	3"	80	11.47 [291]	10.49 [266]	10.49 [266]	18.07 [459]
F7100-300SHP	4"	100	11.58 [294]	10.49 [266]	10.49 [266]	18.80 [478]

Note: Most F7 versions use dual actuators.

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Dimensions with 3-Way Valve



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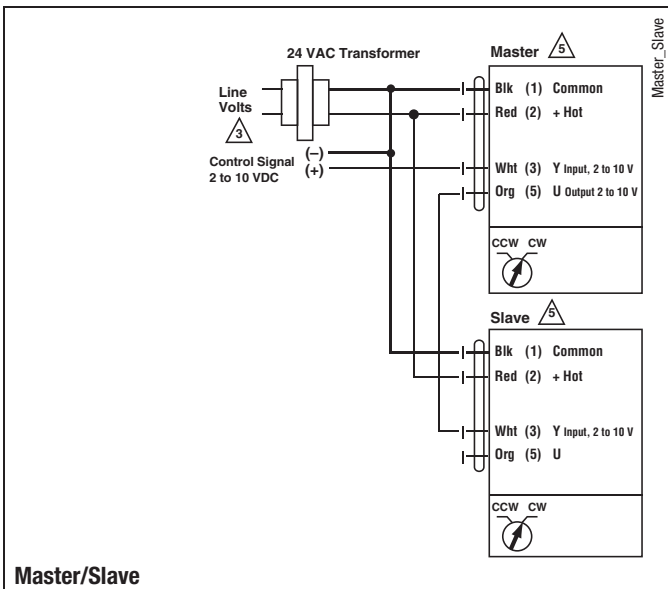
Valve Nominal Size			Dimensions (Inches [mm])					
Valve Body	IN	DN [mm]	A	B	C	D	FLG	
F750HD/HDU	2"	50	11.26 [286]	10.49 [266]	10.49 [266]	18.94 [481]	F05	
F765HD/HDU	2.5"	65	11.32 [287]	10.49 [266]	10.49 [266]	19.49 [495]	F05	
F780HD/HDU	3"	80	11.36 [288]	10.49 [266]	10.49 [266]	19.73 [501]	F05	
F7100HDU	4"	100	11.58 [294]	10.49 [266]	10.49 [266]	20.47 [520]	F07	
F7125HDU	5"	125	11.62 [295]	10.49 [266]	10.49 [266]	20.99 [533]	F07	
F7150HDU	6"	150	11.70 [297]	10.49 [266]	10.49 [266]	21.53 [547]	F07	

Note: Most F7 versions use 2 actuators.

Wiring Diagrams

INSTALLATION NOTES

- 1 Provide overload protection and disconnect as required.
- 2 **CAUTION Equipment Damage!** Actuators may be connected in parallel if not mechanically mounted to the same shaft. Power consumption and input impedance must be observed.
- 3 Actuators may also be powered by 24 VDC.
- 4 Position feedback cannot be used with Triac sink controller. The actuator internal common reference is not compatible.
- 5 Control signal may be pulsed from either the Hot (source) or the Common (sink) 24 VAC line.
- 8 Contact closures A & B also can be triacs. A & B should both be closed for triac source and open for triac sink.



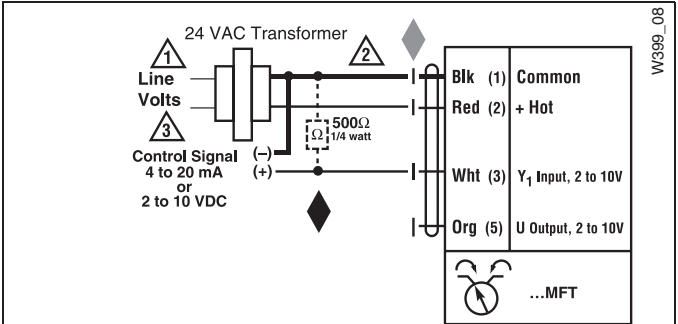
9 For triac sink the common connection from the actuator must be connected to the hot connection of the controller.

APPLICATION NOTES

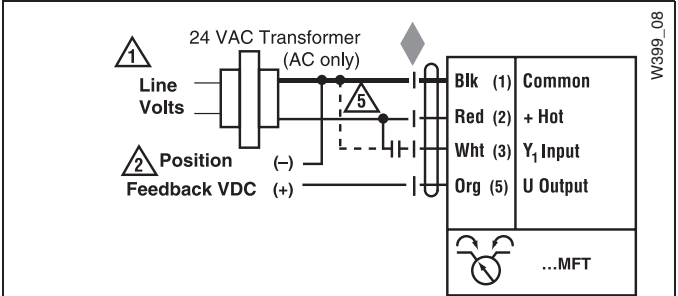
The ZG-R01 500 Ω resistor may be used.

WARNING Live Electrical Components!

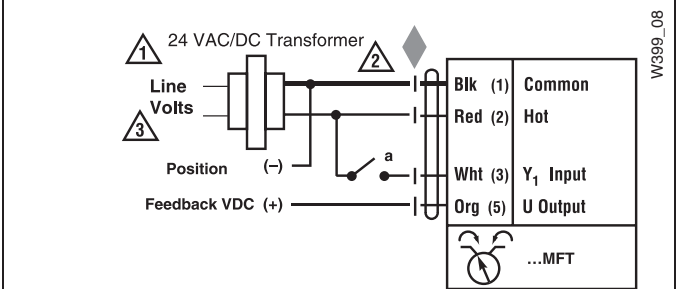
During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.



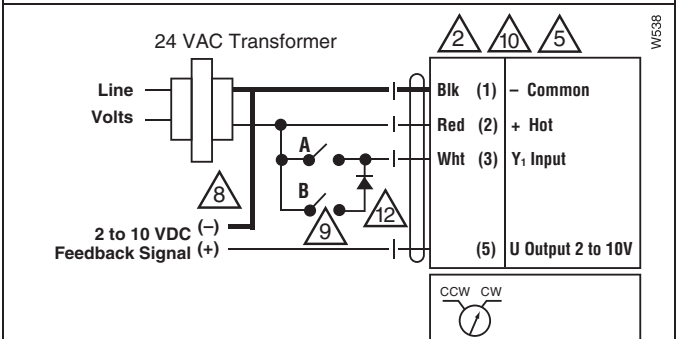
VDC/4-20 mA



PWM



On/Off control



Floating Point control