

F6 Series 2-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

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

Utilizes larger retainer ring set screws to allow the valve to be placed at the end of the line without a down stream flange in either flow direction while still holding full pressure.

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 flange
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

		2-way Valves		Suitable Actuators							
		Valve Nominal Size	Type	Non Fail-Safe				Fail-Safe			
				Spring Return		Electronic					
C _v 90°	C _v 60°	Inches	ANSI 150 2-way	150		150		150		150	
102	56	2	F650-150SHP	GM Series	PR Series			AF Series		GK Series	
146	80	2½	F665-150SHP								
228	125	3	F680-150SHP								
451	248	4	F6100-150SHP								
714	392	5	F6125-150SHP	SY Series (2 Year Warranty)						PKR	
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								
11400	6270	18*	F6450-150SHP								
14420	7590	20*	F6500-150SHP								
22050	11550	24*	F6600-150SHP								

MOD											ON/OFF
Valve	Size	C _v	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	2½"	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	90	392	914	1646	2481	3592	4898	6530	6857
F6400-150SHP	16"	9287	132	531	1230	2229	3361	4865	6634	8845	9287
F6450-150SHP	18"	11400	171	684	1596	3873	4332	6270	8550	11270	11400
F6500-150SHP	20"	14420	207	828	1932	3478	5244	7590	10350	13800	14420
F6600-150SHP	24"	22050	315	1260	2940	5292	7890	11550	15750	21000	22050

Maximum Dimensions (Inches)

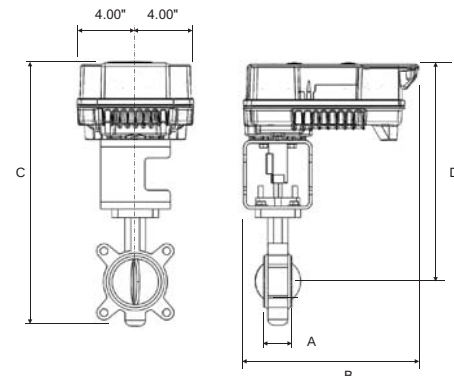
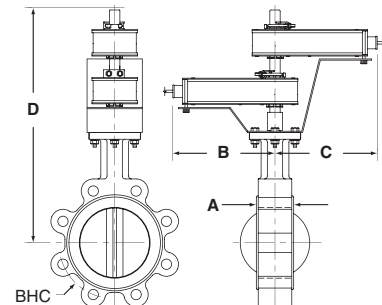
Valve	Size	C _v 90°	A	B	C	D(Max)	BHC	No. of Holes	Lug Bolt	Actuator	Close-Off (PSI)	
F650-150SHP	2"	102	1.75	9.00	9.00	19.50	4.75	4	5/8-11 UNC	2*AF	150	Spring Return
F665-150SHP	2½"	146	1.88	9.00	9.00	20.00	5.50	4	5/8-11 UNC		150	
F680-150SHP	3"	228	1.92	9.00	9.00	20.50	6.00	4	5/8-11 UNC		150	
F6100-150SHP	4"	451	2.13	9.00	9.00	21.00	7.50	8	5/8-11 UNC		150	
F650-150SHP	2"	102	1.75	9.00	9.00	19.50	4.75	4	5/8-11 UNC	GK	285	Electronic Fail-Safe
F665-150SHP	2½"	146	1.88	9.00	9.00	20.00	5.50	4	5/8-11 UNC		285	
F680-150SHP	3"	228	1.92	9.00	9.00	20.50	6.00	4	5/8-11 UNC		285	
F6100-150SHP	4"	451	2.13	9.00	9.00	21.00	7.50	8	5/8-11 UNC		150	
F6100-150SHP	4"	451	2.13	9.00	9.00	21.00	7.50	8	5/8-11 UNC	2*GK	285	Non-Spring Return Electronic Fail-Safe (K)
F650-150SHP	2"	102	1.75	9.00	9.00	19.50	4.75	4	5/8-11 UNC	GM	285	
F665-150SHP	2½"	146	1.88	9.00	9.00	20.00	5.50	4	5/8-11 UNC		285	
F680-150SHP	3"	228	1.92	9.00	9.00	20.50	6.00	4	5/8-11 UNC		285	
F6100-150SHP	4"	451	2.13	9.00	9.00	21.00	7.50	8	5/8-11 UNC		150	
F6100-150SHP	4"	451	2.13	9.00	9.00	21.00	7.50	8	5/8-11 UNC	2*GM	285	
F650-150SHP	2"	102	1.75	10.00	15.00	14.00	4.75	4	5/8-11 UNC	PR/PK	285	
F665-150SHP	2½"	146	1.88	10.00	16.00	14.00	5.50	4	5/8-11 UNC		285	
F680-150SHP	3"	228	1.92	10.00	17.00	15.00	6.00	4	5/8-11 UNC		285	
F6100-150SHP	4"	451	2.13	10.00	18.00	16.00	7.50	8	5/8-11 UNC		285	
F6125-150SHP	5"	714	2.25	10.00	19.00	16.00	8.50	8	3/4-10 UNC	SY4...	285	
F6150-150SHP	6"	1103	2.29	10.00	20.00	17.00	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		285	
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	SY4...	150	
										SY5...	285	
										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	SY7...	150	
										SY8...	285	
										SY8...	150	
F6500-150SHP	20"	14420	5.00	14.00	14.00	49.50	25.00	20	1 1/8-8 UNC	SY10...	285	
										SY10...	150	
F6600-150SHP	24"	22050	6.06	14.00	14.00	56.25	29.50	20	1 1/4-8 UNC	SY10...	150	

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

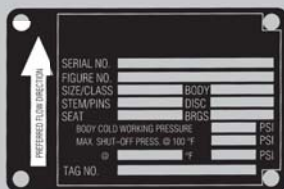
Application Notes

- 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.

Dimensions



SHP series valves have a preferred flow direction.



Preferred Flowrate



5-year warranty



Technical data

Electrical data	Nominal voltage	AC/DC 24 V
	Nominal voltage frequency	50/60 Hz
	Power consumption in operation	12 W
	Power consumption in rest position	3 W
	Transformer sizing	21 VA (class 2 power source)
	Electrical Connection	18 GA plenum cable with 1/2" conduit connector, degree of protection NEMA 2 / IP54, 3 ft [1 m] 10 ft [3 m] and 16ft [5 m]
	Overload Protection	electronic throughout 0...95° rotation
Functional data	Options positioning signal	variable (VDC, on/off, floating point)
	Position feedback U variable	VDC variable
	Bridging time	programmable 0...10 s (2 s default) delay before fail-safe activates
	Pre-charging time	5...20 s
	Direction of motion motor	selectable with switch 0/1
	Direction of motion fail-safe	reversible with switch
	Manual override	external push button
	Angle of rotation	Max. 95°, adjustable with mechanical stop
	Angle of rotation note	adjustable with mechanical stop
	Running Time (Motor)	default 150 s, variable 95...150 s
	Running time motor variable	95...150 s
	Running time fail-safe	<35 s
	Noise level, motor	52 dB(A)
	Noise level, fail-safe	61 dB(A)
Safety data	Position indication	Mechanically, 30...65 mm stroke
	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 2
	Enclosure	UL Enclosure Type 2
	Agency Listing	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU; Listed to UL 2043 - suitable for use in air plenums per Section 300.22(c) of the NEC and Section 602.2 of the IMC
	Quality Standard	ISO 9001
	Ambient temperature	-22...122°F [-30...50°C]
	Storage temperature	-40...176°F [-40...80°C]
	Ambient humidity	Max. 95% RH, non-condensing
	Servicing	maintenance-free
Weight	Weight	4.0 lb [1.8 kg]

Product features

Mode of operation SY9~12 Replacement Handwheel

Accessories

Electrical accessories	Description	Type
	Feedback potentiometer 10 kΩ add-on, grey	P10000A GR
	Feedback potentiometer 1 kΩ add-on, grey	P1000A GR
	Feedback potentiometer 140 Ω add-on, grey	P140A GR
	Feedback potentiometer 2.8 kΩ add-on, grey	P2800A GR
	Feedback potentiometer 5 kΩ add-on, grey	P5000A GR
	Feedback potentiometer 500 Ω add-on, grey	P500A GR
	Auxiliary switch 1 x SPDT add-on	S1A
	Auxiliary switch 2 x SPDT add-on	S2A
	Service Tool, with ZIP-USB function, for programmable and communicative Belimo actuators, VAV controller and HVAC performance devices	ZTH US

Electrical installation

✂ INSTALLATION NOTES

- (A)** Actuators with appliance cables are numbered.
- 1** Provide overload protection and disconnect as required.
- 3** Actuators may also be powered by DC 24 V.
- 5** Only connect common to negative (-) leg of control circuits.
- 7** A 500 Ω resistor (ZG-R01) converts the 4...20 mA control signal to 2...10 V.
- 8** Control signal may be pulsed from either the Hot (Source) or Common (Sink) 24 V line.
- 10** For triac sink the Common connection from the actuator must be connected to the Hot connection of the controller. Position feedback cannot be used with a triac sink controller; the actuator internal common reference is not compatible.
- 12** IN4004 or IN4007 diode. (IN4007 supplied, Belimo part number 40155).
- 46** Actuators may be controlled in parallel. Current draw and input impedance must be observed.
- 47** Master-Slave wiring required for piggy-back applications. Feedback from Master to control input(s) of Slave(s).

◆ Meets cULus requirements without the need of an electrical ground connection.

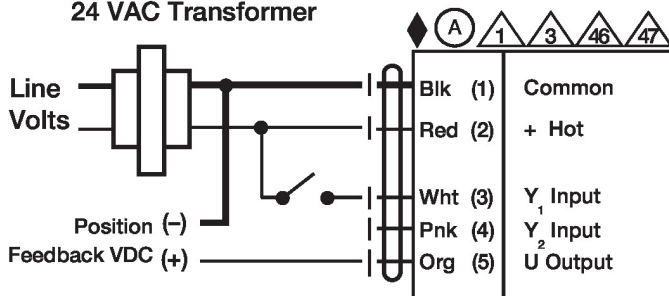
⚠ Warning! Live electrical components!

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.

Wiring diagrams

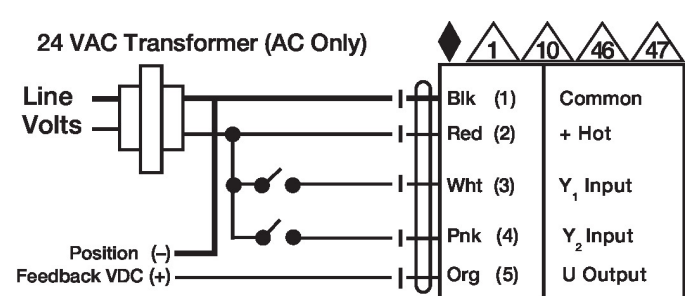
On/Off

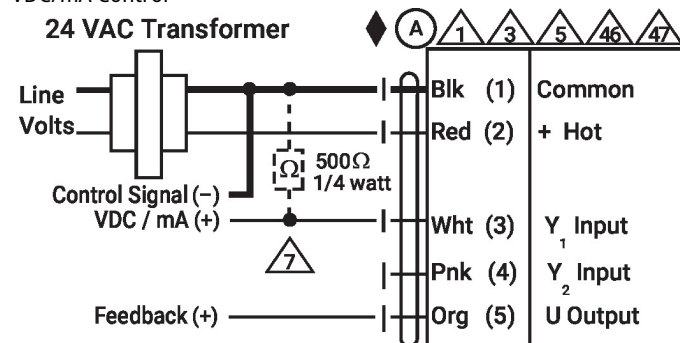
24 VAC Transformer



Floating Point

24 VAC Transformer (AC Only)



VDC/mA Control

PWM Control
