



- 200 psi (2" to 12") and 150 psi (14"-30") bubble tight shut-off
- Long stem design allows for 2" insulation
- Valve face-to-face dimensions comply with API 609 & MSS-SP-67
- 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 bubble tight shut off for liquids. 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. Designed for use in Victaulic piping systems when mated to Victaulic 41 series flange nipples. Fail safe operation is possible with NSV-SY series battery backup systems.

Jobsite Note

Valves should be stored in a weather protected area prior to construction. Complete installation recommendations can be found in Belimo's Installation and Maintenance Instructions for F7...HD Butterfly Valves.

Technical Data	
Service	chilled, hot water, 60% glycol
Flow characteristic	modified linear
Controllable flow range	82°
Sizes	2" to 24"
Type of end fitting	for use with ANSI 125/150 flanges
Materials:	
Body	ductile iron ASTM A536
Body finish	epoxy powder coated
Disc	304 stainless steel
Seat	EPDM standard
Shaft	416 stainless steel
O-ring	EPDM
Bushings	RPTFE
Media temperature range	-22°F to 250°F [-30°C to 120°C]
Body pressure rating	ASME/ANSI Class 125/150
Close-off pressure	200 psi (2"-12"), 150 psi (14"-24")
Rangeability	10:1 (for 30° to 70° range)
Maximum Velocity	12 FPS

Valve		Nominal Size		Type	Suitable Actuators			Electronic Fail-Safe		
C _v 90°	C _v 60°	IN	DN [mm]	2-way	Spring	Non-Spring				
115	44	2"	50	F750HD	AF Series	AM	SY Series	GK		
196	75	2½"	65	F765HD						
302	116	3"	80	F780HD		GM				
600	230	4"	100	F7100HD						
1022	392	5"	125	F7125HD						
1579	605	6"	150	F7150HD						
3136	1202	8"	200	F7200HD						
5340	2047	10"	250	F7250HD						
8250	3062	12"	300	F7300HD						
11917	4568	14"	350	F7350HD						
16388	6282	16"	400	F7400HD						
21705	8320	18"	450	F7450HD						
27908	10698	20"	500	F7500HD						
43116	16528	24"	600	F7600HD						

Valve	Size	C_v	MOD							ON/OFF	
			10°	20°	30°	40°	50°	60°	70°	80°	90°
F750HD	2"	115	.06	3	7	15	27	44	70	105	115
F765HD	2½"	196	.10	6	12	25	45	75	119	178	196
F780HD	3"	302	.20	9	18	39	70	116	183	275	302
F7100HD	4"	600	.30	17	36	78	139	230	364	546	600
F7125HD	5"	1022	.50	29	61	133	237	392	620	930	1022
F7150HD	6"	1579	.80	45	95	205	366	605	958	1437	1579
F7200HD	8"	3136	2	89	188	408	727	1202	1903	2854	3136
F7250HD	10"	5340	3	151	320	694	1237	2047	3240	4859	5340
F7300HD	12"	8250	4	234	495	1072	1911	3062	5005	7507	8250
F7350HD	14"	11917	6	338	715	1549	2761	4568	7230	10844	11917
F7400HD	16"	16388	8	464	983	2130	3797	6282	9942	14913	16388
F7450HD	18"	21705	11	615	1302	2822	5028	8320	13168	19752	21705
F7500HD	20"	27908	14	791	1674	3628	6465	10698	16931	25396	27908
F7600HD	24"	43116	22	1222	2587	5605	9989	16528	26157	39236	43116

F7 Series 3-Way, HD Butterfly Valve
Resilient Seat, 304 Stainless Disc



Maximum Dimensions (Inches)											
Valve	Size	Cv 90°	A	B	C	D(Max)	BHC	No. of Holes	Lug Bolt	Actuator	Close-Off (PSI)
F750HD	2"	115	4.50	6.15	6.15	20.25	4.75	4	5/8-11 UNC	AF	200
F765HD	2½"	196	4.50	6.76	6.50	20.25	4.75	4	5/8-11 UNC	2*AF	200
F780HD	3"	302	5.00	7.28	6.76	20.75	5.50	4	5/8-11 UNC	2*GM/GK	200
F750HD	2"	115	4.50	6.15	6.15	20.25	4.75	4	5/8-11 UNC	SY2...	200
F765HD	2½"	196	5.00	6.76	6.76	20.75	5.50	4	5/8-11 UNC		200
F780HD	3"	302	5.50	7.28	7.28	21.00	6.00	4	5/8-11 UNC		200
F7100HD	4"	600	6.50	8.55	8.55	21.75	7.50	8	5/8-11 UNC		200
F7125HD	5"	1022	7.50	9.64	9.64	22.25	8.50	8	3/4-10 UNC	SY3...	200
F7150HD	6"	1579	8.00	10.19	10.19	22.75	9.50	8	3/4-10 UNC		200
F7200HD	8"	3136	9.00	11.37	11.37	29.00	11.75	8	3/4-10 UNC	SY4...	200
F7250HD	10"	5340	11.00	13.58	13.58	30.00	14.25	12	7/8-9 UNC		200
F7300HD	12"	8250	12.00	15.01	15.01	32.00	17.00	12	7/8-9 UNC	SY5...	200
F7350HD	14"	11917	14.00	17.02	17.02	33.00	18.75	12	1-8 UNC	SY6...†	150
F7400HD	16"	16388	15.00	18.39	18.39	38.50	21.25	16	1-8 UNC	SY7...†	150
F7450HD	18"	21705	16.50	20.63	20.63	39.50	22.75	16	1 1/8-7 UNC	SY9...†	150
F7500HD	20"	27908	18.00	23.00	23.00	41.50	25.00	20	1 1/8-7 UNC		150
F7600HD	24"	43116	22.00	27.9	27.9	53.25	29.50	20	1 1/4-7 UNC	SY12...†	150

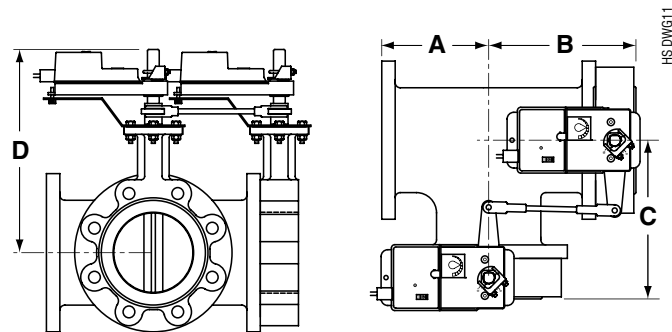
AF maximum actuator ambient temperature is 122°F.
SY... maximum actuator ambient temperature is 150°F.
†SY6 and larger available in 110/220 VAC versions only.

Application Notes

- 1. Valves are rated at 200 psi differential pressure in the closed position.
- 2. Valves are furnished with lugs tapped for use with ANSI Class 125/150 flanges. Installation flanges and hardware are not included.
- 3. 3-way assemblies are furnished assembled and tested, ready for installation. All 3-way assemblies require the customer to specify the 3-way configuration prior to order entry to guarantee correct placement of valves and actuators on the assembly.
- 4. Dimension "D" allows for actuator removal without the need to remove the valve from the pipe.
- 5. Belimo SY Series actuators are NEMA 4X rated.
- 6. Weather shields are available, dimensional data upon request.
- 7. Dual actuated valves have single actuators mounted on each valve shaft.
- 8. Bolts supplied are for shipping purposes only. Upon installation replace with an appropriate SAE grade 5 or better hardware.

Note: For tee configuration, please refer to page 4.

Dimensions



3-Way Configuration Codes

	ON/OFF OR MOD@2VDC	MASTER VALVE IS	MASTER VALVE @ FAIL
	X10	OPEN	NON-FAIL
	X11	OPEN	OPEN
	X12	OPEN	CLOSED
	X13	CLOSED	NON-FAIL
	X14	CLOSED	OPEN
	ON/OFF OR MOD@2VDC	MASTER VALVE IS	MASTER VALVE @ FAIL
	X20	OPEN	NON-FAIL
	X21	OPEN	OPEN
	X22	OPEN	CLOSED
	X23	CLOSED	NON-FAIL
	X24	CLOSED	OPEN
	ON/OFF OR MOD@2VDC	MASTER VALVE IS	MASTER VALVE @ FAIL
	X30	OPEN	NON-FAIL
	X31	OPEN	OPEN
	X32	OPEN	CLOSED
	X33	CLOSED	NON-FAIL
	X34	CLOSED	OPEN
	ON/OFF OR MOD@2VDC	MASTER VALVE IS	MASTER VALVE @ FAIL
	X35	CLOSED	CLOSED

X Specifies Bi-Directional Flow Capability

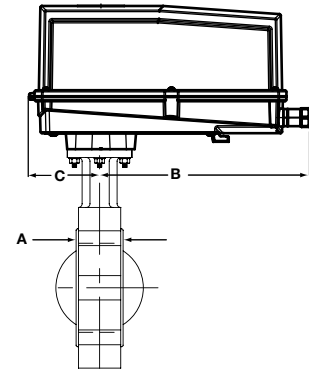
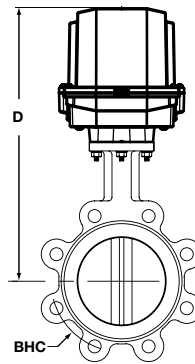
- NOTES
- 1. Slave Valve operates inversely of the Master Valve.
 - 2. The Master Valve is always located on the run.
 - 3. The Slave Valve may also have an actuator if required (Direct Coupled).
 - 4. On/Off actuator normal position is a function of field logic.
 - 5. Proportional actuator normal position is a function of the CCW/CW switch.
 - 6. All 3-way assemblies are designed for 90 degree actuator rotation.

ORDERING INFORMATION
Please note that HD series BF valves over 18" and ALL sizes 3-way tee assemblies ordered with Configuration Codes 30-35 are special order/custom built and are NOT returnable.

GRCB24-3-T N4(H) NEMA 4 Actuators, On/Off, Floating Point



Dimensions with 2-Way Valve



GF_NEMA_4_LineDrawing

Models

GRCB24-3-T N4	w/terminal block
GRCB24-3-T 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 29W 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 90° rotation
Input impedance	1000 Ω at control input
Angle of rotation	90°, adjustable with mechanical stop
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

Valve Nominal Size Dimensions (Inches [mm])

Valve Body	Inches	DN [mm]	A	B	C	D	FLG
F650HD/HDU	2"	50	1.65 [41.9]	10.49 [266]	3.62 [92]	18.94 [481]	F05
F665HD/HDU	2.5"	65	1.76 [44.7]	10.49 [266]	3.62 [92]	19.49 [495]	F05
F680HD/HDU	3"	80	1.78 [45.2]	10.49 [266]	3.62 [92]	19.73 [501]	F05
F6100HDU	4"	100	2.05 [52.1]	10.49 [266]	3.62 [92]	20.47 [520]	F07
F6125HDU	5"	125	2.14 [54.4]	10.49 [266]	3.62 [92]	20.99 [533]	F07

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Wiring Diagrams

INSTALLATION NOTES

- 2 CAUTION Equipment damage!**
Actuators may be connected in parallel.
Power consumption and input impedance must be observed.
- 4** 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. Use suitable flexible metallic conduit or its equivalent with the conduit fitting.

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.

WARNING Mechanical Precautions
The mechanical end stops cannot be moved or repositioned. Doing so will adversely effect the operation of the valve.
The directional switch cannot be moved. Maintain Factory Settings

