Shandong Shengfei Machinery Co., Ltd.
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DOUBLE OFFSET HIGH PERFORMANCE BUTTERFLY VALVES

Shandong Shengfei Machinery Co., Ltd. is a professional manufacturer of soft seat, metal seat and fire-safe high performance butterfly valves, our unique seat design is equal to Flowseal and Bray. Under an ISO 9001 Quality Assurance Program, it assures each valve we produce meets or exceeds your application requirements.

SHENGFEI high performance butterfly valves are available in sizes from 2" - 60" in ANSI/ASME, DIN standards etc. and are available with a diverse range of manual and actuated options.

Our high performance butterfly valves are widely used in many industries including heating,ventilating and air conditioning, power generation,hydrocarbon processing, water and waste water treatment, and marine and commercial shipbuilding. Our products are also installed in applications as diverse as food and beverage processing, snow-making and pulp and paper production.

Configurations are available for harsh conditions as well as applications requiring nominal pressure and temperature ratings.

High Performance Applications

Construction
Chemical / Petro-Chemical
Liquified Gas / Refrigeration
Heavy Industrial
Power / Co-Generation Plants
Steel and Iron Works
Commercial
Pulp and Paper Mills
Oil Refineries and Oil Field
Ship Building
Hydrocarbon Processing
Gas Piping
Local Area Energy Supply
Industrial

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STANDARD	PRODUCTION RANGE		
	ANSI Class 150	ANSI Class 300	ANSI Class 600
RATING -PSI	285	740	1440
RATING -BAR	20	50	100
SIZE -INCH	2-60	2-48	2-24
SIZE-MM	50-1500	50-1200	50-600
TESTING	API 598, EN-12266-1		
FACT TO FACE SPECIFICATIONS	ANSIB16.10 / API609 / MSS-SP-68 / ISO 5752 / BS5155 / EN 558		
END FLANGE SPECIFICATIONS	ASME B16.5: Class 150, 300, 600, 900 JIS B2210: 10K, 16K, 20K DIN ISO PN10, PN16, PN25, PN40, PN64, PN100, PN150		
CONNECTION	Wafer, Lugged, Semi-lugged, Double Flanged		
OPERATOR - MANUAL	Bare Stem, Lever Handle, Worm Gear Operator		
OPERATOR -AUTOMATIC	Electric Motor, Pneumatic Double Acting, Pneumatic Spring Return		
MAIN MATERIALS			
BODY	Carbon Steel (A216-WCB) 316 SS(A351-CF8M)		
DISC	316SS(A351-CF8M)		
STEM	17/4PH(A564-630)		
SEAT	PTFE, RTFE, 316 SS, Inconel, PTFE+316 SS, RTFE+316SS		
SHAFT BEARING	316 SS+DuPont PTFE		
PACKING SEAL	PTFE,Graphite		
SEAT MATERIALS and RATING			
PTFE	Class VI, Bubble Tight		
RTFE	Class VI, Bubble Tight		
316 SS	Class VI Bubble Tight (small size), Class V (large size)		
INCONEL	Class VI Bubble Tight (small size), Class V (large size)		
PTFE+316 SS	Class VI Bubble Tight, Class V w/Preferred Flow After Fire		
RTFE+316 SS	Class VI Bubble Tight, Class V w/Preferred Flow After Fire		

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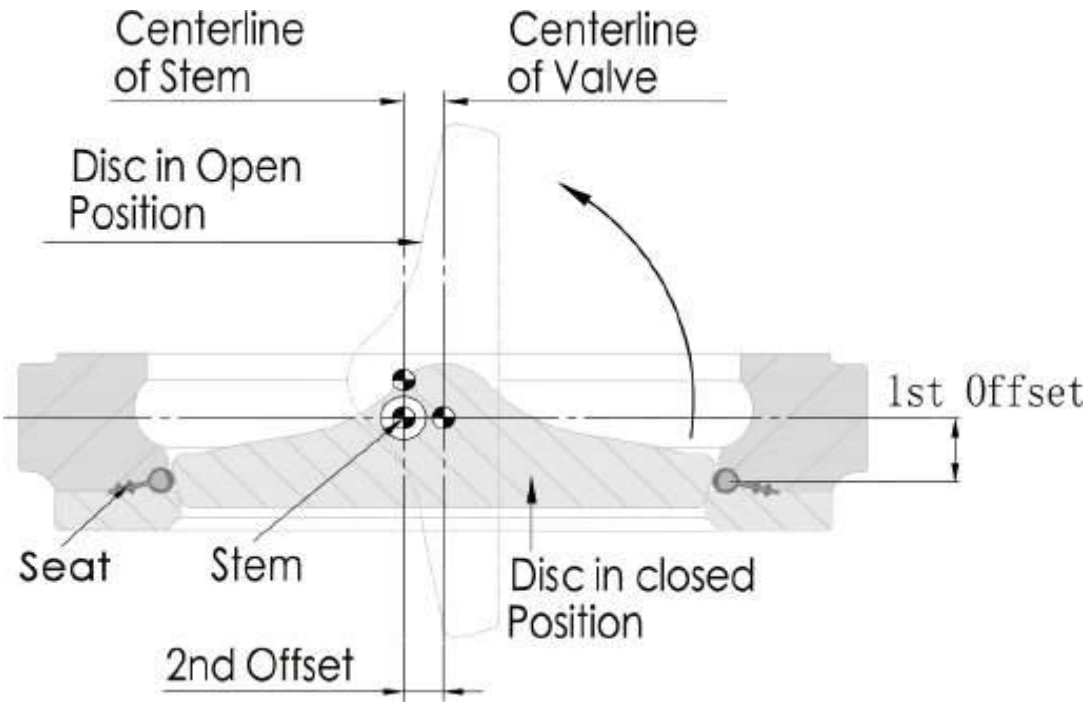
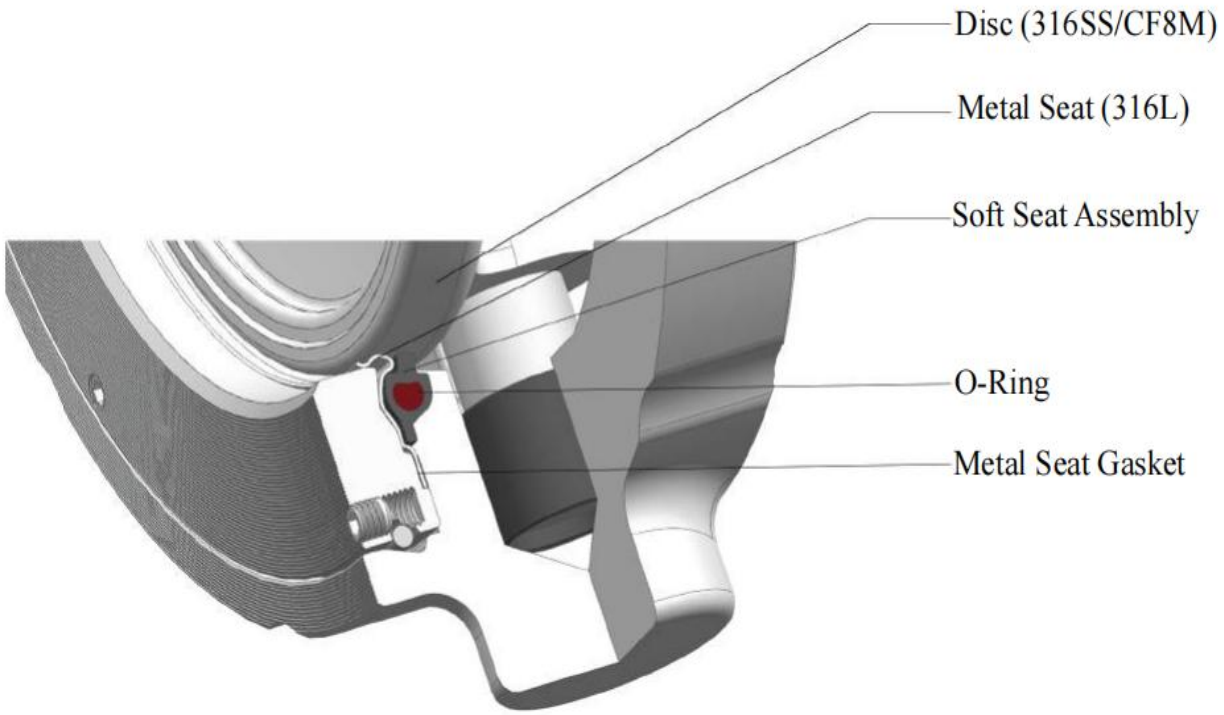
DOUBLE OFFSET/ECCENTRIC DESIGN



The double offset design of the SHENGFEI High Performance Butterfly Valves assures reduced seat wear and bidirectional, zero leakage shut off throughout the full pressure range.
At the initial point of disc opening, the offset disc produces a cam–like action, pulling the disc from the seat. This cam–like action reduces seat wear and eliminates seat deformation when the disc is in the open position. When open, the disc does not contact the seat, therefore seat service life is extended and operating torques are reduced. As the valve closes, the cam–like action converts the rotary motion of the disc to a linear type motion to effectively push the disc onto the seat. The wiping action of the disc against the seat prevents undesirable material build-up from slurry or suspended solids.

UNIQUE VALVE SEAT DESIGN - FIRE SAFE SEAT



The SHENGFEI Fire-Safe high performance butterfly valve (HPBFV) is a fire-safe, soft seat quarter-turn valve. The fire safe design incorporates two seats which function together to seal off pipeline flow. In normal operation, the soft seat provides a bi-directional “bubble tight” shutoff (zero leakage); the metal seat provides bi-directional shutoff in the event of a fire, in conformance to industry fire-safe requirements.

With little or no pressure, the Fire-Safe seat creates a self energized seal against the disc. Higher line pressures act on the geometry of both seats to dynamically load them against the disc, creating higher sealing forces in either direction.

The Fire-Safe metal seat is made of 316L material which is shaped by a proprietary hydro-forming process into its unique design. Stainless steel outer bearings are included for post-fire disc and shaft alignment. Fireproof packing is used to prevent external shaft leakage.

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PRINCIPLE OF SEAT SEALING - FIRE SAFE SEAT

Figure 1, DISC OPEN, Normal Operation

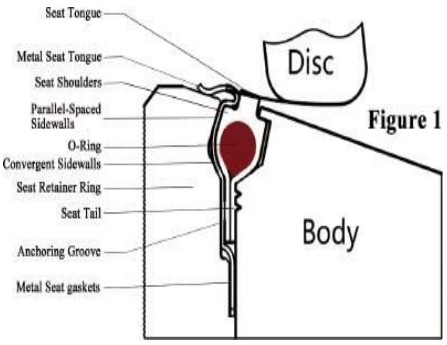

Figure 1

In Figure 1, the disc and seat assembly are not engaged. In this position, the metal seat acts to keep the soft seat inside the seat cavity while the soft seat shoulders seal the cavity from exposure to the process fluid. (The o-ring is under tension and imparts a load against the soft seat.) The soft seat is protected from abrasion and wear because it is recessed inside the seat cavity area. The o-ring is isolated from exposure to the fluid because it is completely encapsulated by the seat tails which act as a (soft) gasket in the anchoring groove area. The metal seat gaskets add further high temperature protection past the anchoring grooves.

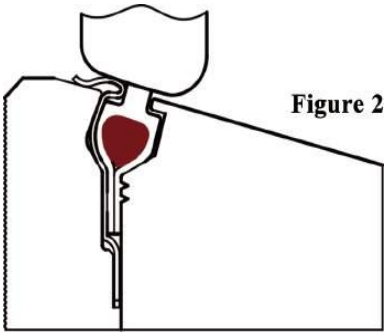
Figure 2

Figure 2 DISC CLOSED, Normal Operation

In Figure 2, the disc and seat assembly are engaged; both the metal seat and the soft seat are in contact with the disc. Under little to no pressure conditions, both seats are self-energized. The disc edge, with a larger diameter than the seat tongues, moves the seats radially outward; the metal seat shape, with a mechanical and dynamic flexibility, is designed to be hoop-loaded and impart a spring force against the disc, while the soft seat o-ring is stretched and flattened (without deformation of the material) and imparts a mechanical pre-load against the disc.

With increased line pressure, the process fluid enters the cavity sidewall area and applies loads against the seat sidewalls. The cavity design allows the seats to move toward the downstream sidewalls, but confines and directs the movement radially inward towards the disc; the higher the pressure the tighter the seal. The symmetrical shape and angle of the cavity permit the seal to be bi-directional.

Figure 3 DISC CLOSED, After Fire (Seat Upstream)

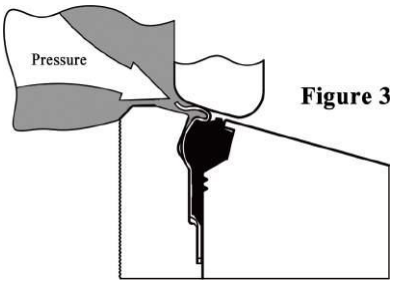

Figure 3

After a fire, with partial or complete destruction of the soft seat, the metal seat maintains metal-to-metal contact with the disc and restricts leakage of the process fluid in conformance to industry fire-safe requirements. With little or no line pressure, the spring force and hoop load of the metal seat maintain a “line contact” seal against the disc edge. Under higher pressures, the process fluid enters the cavity sidewall areas and applies loads against the seat sidewalls (Figure 3). The geometry of the metal seat permits the seat to move axially, but directs the movement radially inward toward the disc. The higher the pressure, the tighter the line contact seal.

Graphite gaskets, on both sides of the metal seat tail, seal the anchoring groove and prevent leakage of the process fluid.

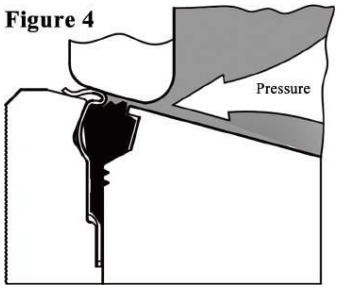

Figure 4

Figure 4 DISC CLOSED, After Fire (Seat Downstream)

The SHENGFEI Fire Safe HPBFV is bi-directional; The angle and shape of the cavity and metal seat maintains metal-to-metal contact in the event of partial or complete soft seat destruction with line pressure in the reverse direction (Figure 4). While the preferred flow direction is “seat upstream” (SUS), the bidirectional seat design is both self-energized and pressure-energized .

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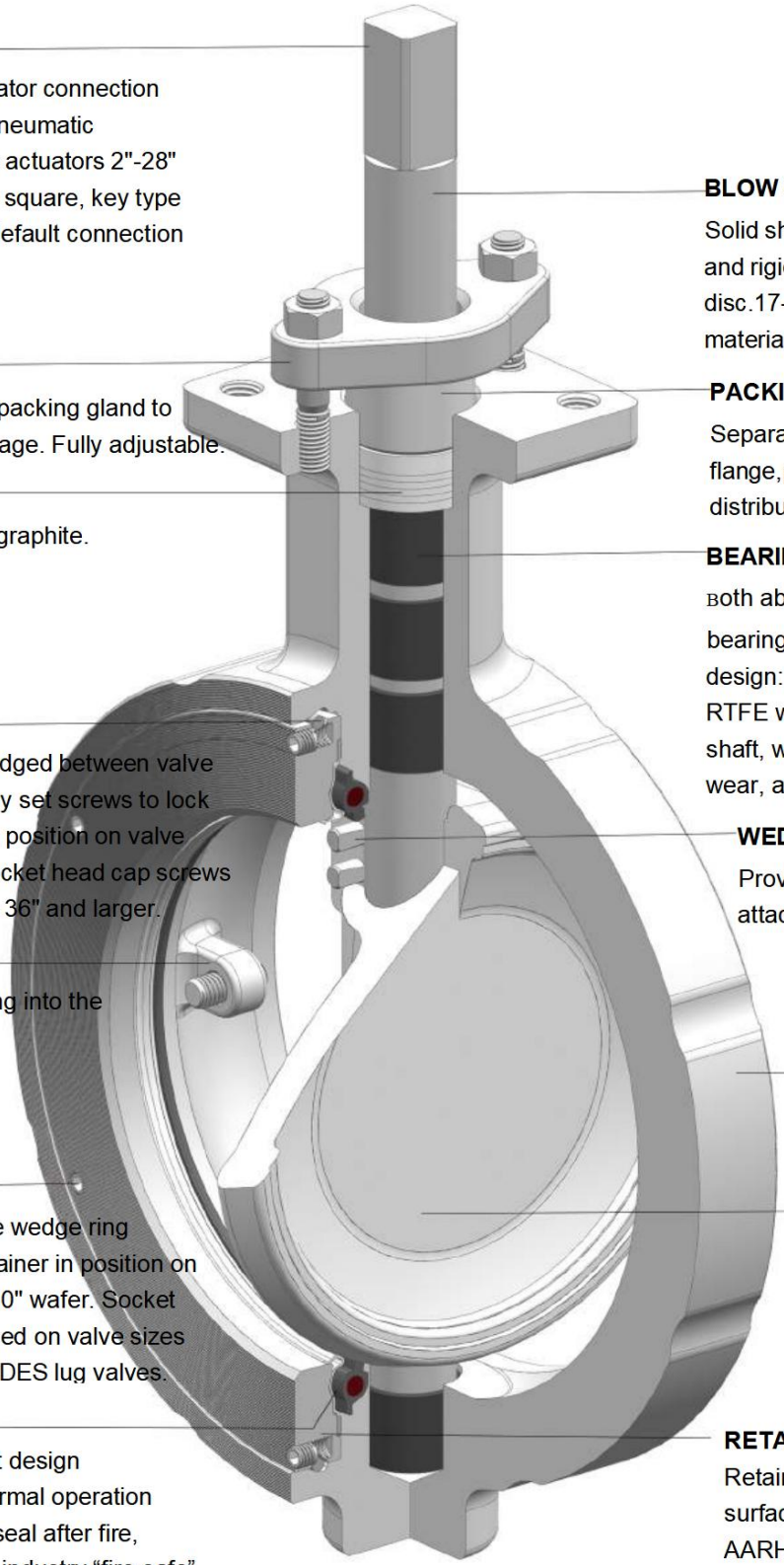
VALVE COMPONENTS - FIRE SAFE SEAT



SQUARE
Square valve-to-operator connection applied to ISO5211 pneumatic actuators and electric actuators 2"-28" default connection as square, key type is available. 28"-60" default connection is KEY type.

GLAND FLANGE
Applies load against packing gland to prevent external leakage. Fully adjustable.

PACKING
Common material is graphite.

WEDGE RING
Stainless steel band wedged between valve body and retainer ring by set screws to lock seat and retainer ring in position on valve sizes 2" through 30". Socket head cap screws are used on valve sizes 36" and larger.

OVERTRAVEL STOP
Prevents disc from rotating into the wrong quadrant.

SET SCREWS
Cone point screws force wedge ring outward to lock seat retainer in position on valve sizes 2" through 30" wafer. Socket head cap screws are used on valve sizes 36" and larger and all DDES lug valves.

FIRE SAFE SEAT
Bi-directional soft seat design for zero-leakage in normal operation and a metal-to-metal seal after fire, meeting or exceeding industry “fire-safe” specifications.

BLOW OUT PROOF SHAFT
Solid shaft provides alignment and rigid support for disc.17-4PH and 316 materials are available.

PACKING GLAND
Separate part from gland flange,preventing uneven load distribution against packing.

BEARINGS
Both above and below the disc, bearings are of composite design: 316 bonded to DuPont RTFE wound ring. Used to align shaft, with high capacity, low wear, and low friction coefficient.

WEDGE PINS
Provide positive mechanical attachment of disc to shaft.

BODY
Wafer, lug,Semi-Lug or Double Flange configuration.

DISC
360° uninterrupted spherical edge for sealing. Profile is designed for maximum flow and equal percentage control.

RETAINER RING
Retains seat in valve. Standard surface finish is 125 to 200 AARH and is compatible with both standard gaskets and spiral wound gasket designs. Outside diameter is recessed within gasket sealing surface to prevent external leakage.

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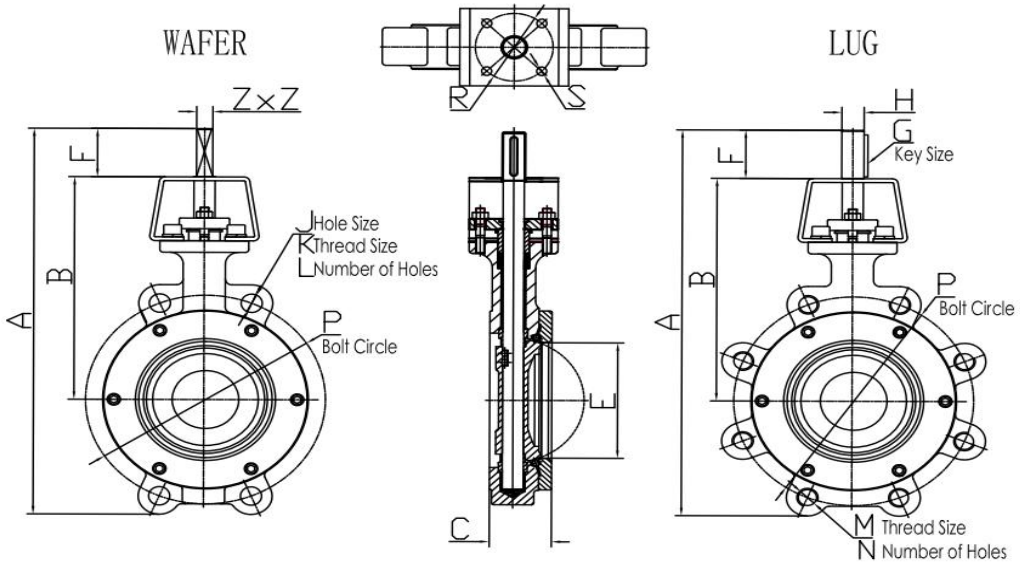
HIGH PERFORMANCE BUTTERLY VALVE DIMENSIONS ANSI CLASS 150



VALVE SIZE		WAFER	LUG	B	C	E	F	Z x Z		J	K	L	M x N	P	R	S	WEIGHT (Kg)	
mm	ins	A	A	ins/mm				G	H					ins mm			WAFER	LUG
50	2"	10.118 257	10.157 258	7.598 193	1.693 43	2.362 60	1.063 27	0. 433*0. 433 11*11					5/8-11X4	4.752 120.7	φ70	4XΦ9	4.4	4.8
65	2½"	10.236 260	10.236 260	7.598 193	1.811 46	2.756 70	1.063 27	0. 433*0. 433 11*11					5/8-11X4	5.50 139.7	φ70	4XΦ9	4.9	5.3
80	3"	11.575 294	11.378 289	8.583 218	1.929 49	3.228 82	1.063 27	0. 433*0. 433 11*11					5/8-11X4	6.00 152.4	φ70	4XΦ9	5.6	6.5
100	4"	13.189 335	13.307 338	9.409 239	2.047 52	4.173 106	1.063 27	0. 551*0. 551 14*14					5/8-11X8	7.50 190.5	φ70	4XΦ9	8	11.5
125	5"	14.685 373	14.764 375	10.354 263	2.205 56	5.039 128	1.181 30	0. 669*0. 669 17*17					3/4-10X8	8.50 215.9	φ70	4XΦ9	10.5	13.5
150	6"	15.827 402	16.063 408	10.906 277	2.402 61	5.984 152	1.260 32	0. 669*0. 669 17*17					3/4-10X8	9.50 241.3	φ70	4XΦ9	13.5	16.5
200	8"	18.346 466	18.543 471	12.480 317	2.500 63.5	7.677 195	1.772 45	0. 669*0. 669 17*17					3/4-10X8	11.750 298.45	φ70	4XΦ9	20.6	24.5
250	10"	21.063 535	21.417 544	13.701 348	2.795 71	9.646 245	1.969 50	0. 866*0. 866 22*22		oval		2	7/8-9X12	14.250 361.95	φ102	4XΦ11	39	45.5
300	12"	24.606 625	24.803 630	15.748 400	3.228 82	11.496 292	2.362 60	1. 063*1. 063 27*27		oval		2	7/8-9X12	17.00 431.8	φ140	4XΦ18	55	67.5
350	14"	28.031 712	27.598 701	16.417 417	3.622 92	13.346 339	2.362 60	1. 063*1. 063 27*27		oval		4	1-8X12	18.750 476.25	φ140	4XΦ18	68	115
400	16"	31.181 792	31.181 792	18.740 476	4.008 101.8	15.236 387	3.150 80	1. 063*1. 063 27*27		oval		4	1-8X16	21.250 539.75	φ165	4XΦ21	116	132
450	18"	35.315 897	35.315 897	22.205 564	4.512 114.6	17.130 435	3.543 90	1. 417*1. 417 36*36		oval		4	1⅛-8X16	22.750 577.85	φ165	4XΦ21	145	168
500	20"	37.992 965	37.992 965	23.543 598	5.000 127	19.291 490	3.543 90	1. 417*1. 417 36*36			1⅛-8	4	1⅛-8X20	25.0 635.0	φ165	4XΦ21	185	220
600	24"	43.189 1097	43.189 1097	26.457 672	6.043 153.5	23.031 585	4.331 110	1. 811*1. 811 46*46			1¼-8	4	1¼-8X20	29.50 749.3	φ165	4XΦ21	290	310
650	26"	45.906 1166	45.906 1166	27.874 708	6.496 165	25.200 640	4.331 110	1. 811*1. 811 46*46			1¼-8	4	1¼-8X24	31.750 806.45	φ165	4XΦ21	330	345
700	28"	48.504 1232	48.504 1232	29.055 738	6.496 165	27.165 690	4.331 110	1. 811*1. 811 46*46			1¼-8	4	1¼-8X28	34.0 863.6	φ165	4XΦ21	495	579
750	30"	51.260 1302	51.260 1302	30.433 773	7.520 191	28.307 719	4.724 120	0.866 22	3.150 80		1¼-8	4	1¼-8X28	36.0 914.4	φ165	4XΦ21	652	773
800	32"	53.425 1357	53.425 1357	31.339 796	7.520 191	30.200 767	4.724 120	0.866 22	3.150 80		1½-8	4	1½-8X28	38.50 977.9	φ165	4XΦ21	736	922
850	34"	56.850 1444	56.850 1444	33.701 856	7.756 197	32.126 816	4.724 120	0.866 22	3.150 80		1½-8	4	1½-8X32	40.50 1028.7	φ254	8XΦ17	842	1047
900	36"	59.134 1502	59.134 1502	36.417 925	8.268 210	34.016 864	4.724 120	0.866 22	3.150 80		1½-8	4	1½-8X32	42.750 1085.85	φ254	8XΦ17	871	1160
1000	40"	64.331 1634	64.331 1634	37.520 953	9.488 241	37.008 940	5.118 130	0.984 25	4.134 105		1½-8	4	1½-8X36	47.250 1200.15	φ254	8XΦ17	1728	1779
1050	42"	66.535 1690	66.535 1690	38.543 979	9.488 241	39.055 992	5.118 130	0.984 25	4.134 105		1½-8	4	1½-8X36	49.50 1257.3	φ254	8XΦ17	1905	1930
1200	48"	74.685 1897	74.685 1897	43.386 1102	10.000 254	46.102 1171	5.118 130	1.260 32	4.528 115		1½-8	4	1½-8X44	56.0 1422.4	φ298	8XΦ22	2074	2548
1350	54"	82.283 2090	82.283 2090	47.598 1209	10.748 273	52.441 1332	5.906 150	1.417 36	5.512 140		1¾-8	4	1¾-8X44	62.75.0 1593.85	φ298	8XΦ22	3175	3210

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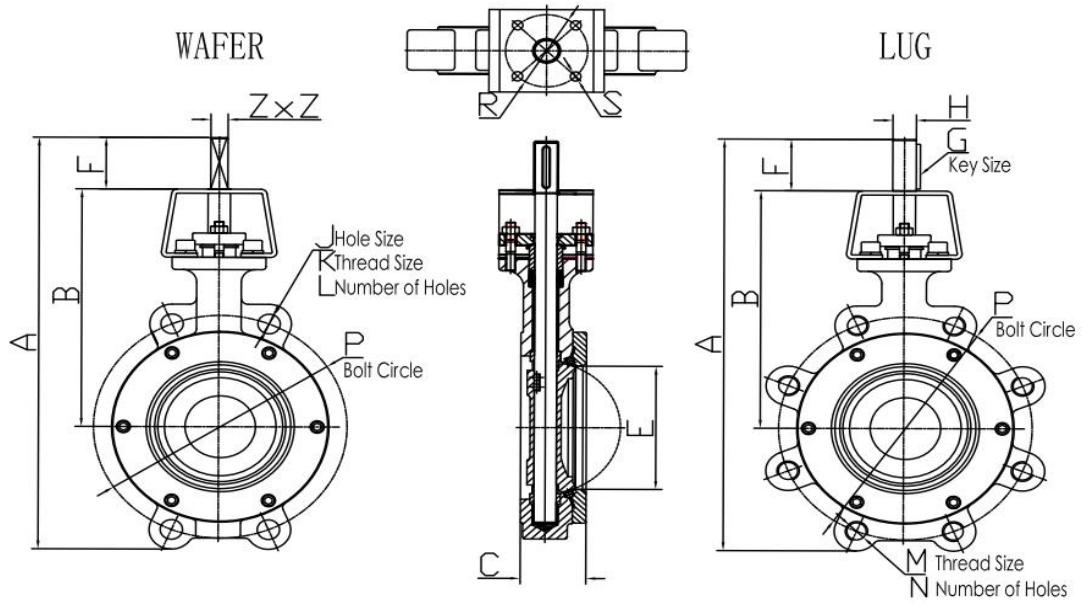
HIGH PERFORMANCE BUTTERLY VALVE DIMENSIONS ANSI CLASS 300



VALVE SIZE		WAFER	LUG	B	C	E	F	Z x Z		J	K	L	M x N	P	R	S	WEIGHT (Kg)	
mm	ins	A	A	ins/mm				G	H					ins/mm			WAFER	LUG
50	2"	10.118/257	10.472/266	7.480/190	1.693/43	2.362/60	1.063/27	0.433*0.433/11*11		oval		4	5/8-11X8	5.00/127	ϕ70	4Xϕ9	4.5	6.1
65	2½"	10.236/260	10.906/277	7.480/190	1.811/46	2.717/69	1.063/27	0.433*0.433/11*11					3/4-10X8	5.878/149.3	ϕ70	4Xϕ9	5	7
80	3"	11.575/294	12.244/311	8.504/216	1.929/49	3.228/82	1.063/27	0.433*0.433/11*11					3/4-10X8	6.625/168.28	ϕ70	4Xϕ9	6.5	9
100	4"	13.150/335	13.740/349	9.252/235	2.047/52	4.173/106	1.063/27	0.551*0.551/14*14					3/4-10X8	7.878/200.1	ϕ70	4Xϕ9	8	14
125	5"	14.685/373	15.118/384	10.00/254	2.244/57	5.039/128	1.181/30	0.669*0.669/17*17					3/4-10X8	9.250/234.9	ϕ70	4Xϕ9	10.5	16.5
150	6"	15.866/403	16.850/428	10.945/278	2.402/61	5.984/152	1.260/32	0.669*0.669/17*17					3/4-10X12	10.618/269.7	ϕ70	4Xϕ9	16.5	22
200	8"	19.094/485	19.685/500	12.756/324	2.835/72	7.677/195	1.970/50	0.866*0.866/22*22					7/8-9X12	13.00/330.2	ϕ102	4XϕI1	35	41
250	10"	21.614/549	22.598/574	14.016/356	3.268/83	9.724/247	2.362/60	1.063*1.063/27*27		oval		2	1-8X16	15.250/387.3	ϕ102	4XϕI1	53	64
300	12"	26.299/668	26.299/668	16.811/427	3.622/92	11.575/294	2.756/70	1.063*1.063/27*27		oval		2	1⅛-8X16	17.750/450.8	ϕ140	4XϕI8	77	90
350	14"	30.433/773	30.433/773	18.386/467	4.646/118	13.465/342	3.150/80	1.417*1.417/36*36			1⅛-8	4	1⅛-8X20	20.250/514.3	ϕ165	4XϕI1	124	146
400	16"	35.512/902	35.512/902	23.110/587	5.354/136	15.236/387	3.150/80	1.417*1.417/36*36			1¼-8	4	1¼-8X20	22.50/571.5	ϕ165	4XϕI1	165	220
450	18"	38.189/970	38.189/970	24.646/626	5.984/152	17.322/440	3.543/90	1.417*1.417/36*36			1¼-8	4	1¼-8X24	24.750/628.6	ϕ165	4XϕI1	218	315
500	20"	44.646/1131	44.646/1131	26.535/674	6.339/161	19.370/492	3.937/100	1.811*1.811/46*46			1¼-8	4	1¼-8X24	27.00/685.8	ϕ165	4XϕI1	298	410
600	24"	48.386/1229	48.386/1229	30.709/780	7.165/182	23.110/587	4.724/120	0.866/22	3.150/80		1½-8	4	1½-8X24	32.00/812.8	ϕ254	8XϕI7	340	495
750	30"	56.614/1438	56.614/1438	34.252/870	8.858/225	28.425/722	5.118/130	0.984/25	4.134/105		1¾-8	4	1¾-8X28	39.250/996.95	ϕ254	8XϕI7	867	1150
900	36"	65.394/1661	65.394/1661	40.551/1030	10.669/271	34.016/864	5.906/150	1.260/32	4.528/115		1¾-8	4	1¾-8X32	46.00/1168.4	ϕ298	8XϕI2	1230	1540
1050	42"	68.268/1734	68.268/1734	43.189/1097	11.496/292	39.291/998	6.299/160	1.417/36	5.512/140		1⅝-8	4	1⅝-8X32	47.50/1206.6	ϕ298	8XϕI2	1760	2390
1200	48"	75.512/1918	75.512/1918	47.441/1205	12.520/318	46.457/1180	7.087/180	1.575/40	6.299/160		1⅞-8	4	1⅞-8X32	54.00/1371.6	ϕ356	8XϕI2	2270	2890

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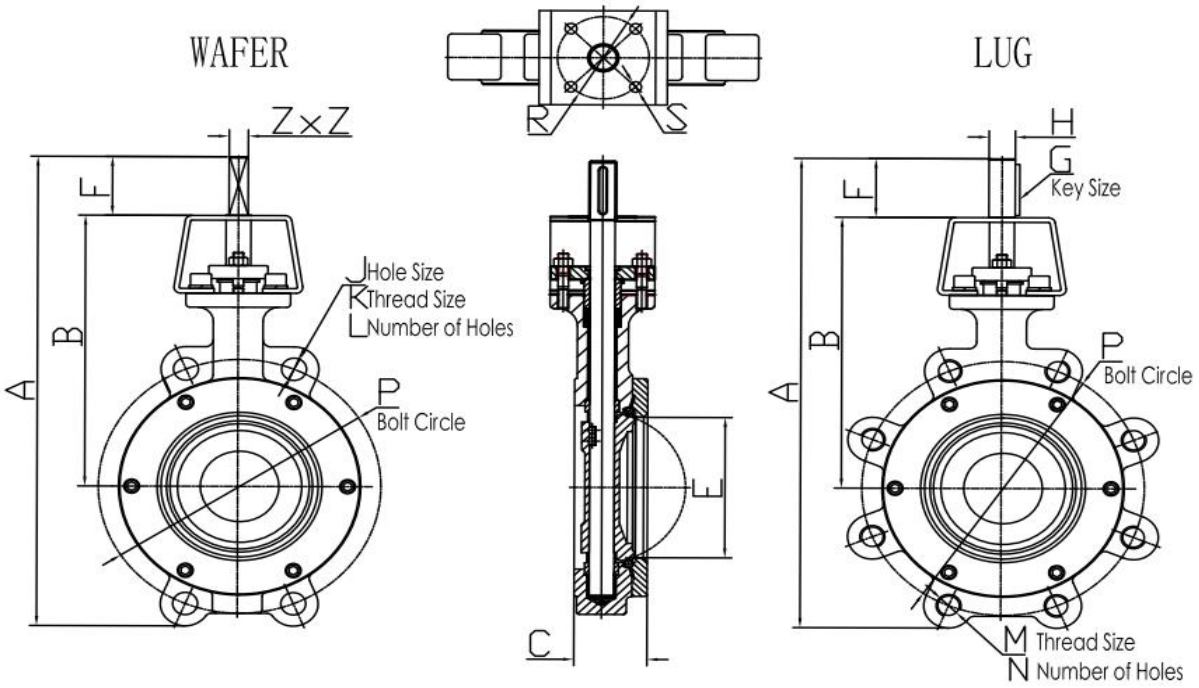
HIGH PERFORMANCE BUTTERLY VALVE DIMENSIONS ANSI CLASS 600



ANSI Class 600

VALVE SIZE		WAFER	LUG	B	C	E	F	Z×Z		J	K	L	M×N	P	R	S	WEIGHT (Kg)	
mm	ins	A	A	ins/mm				G	H					ins/mm	mm	mm	WAFER	LUG
50	2"	10.512/267	10.512/267	7.835/199	1.929/49	2.126/54	1.063/27	0.551*0.551/14*14		oval		4	5/8-11X8	5.00/127	φ70	4XΦ9	7.5	8.5
65	2½"	10.512/267	10.906/277	7.835/199	2.047/52	2.598/66	1.063/27	0.551*0.551/14*14					3/4-10X8	5.878/149.3	φ70	4XΦ9	8.2	9.5
80	3"	12.165/309	12.559/319	8.898/226	2.205/56	3.031/77	1.181/30	0.669*0.669/17*17					3/4-10X8	6.618/168.1	φ70	4XΦ9	10.5	13
100	4"	14.173/360	14.370/365	9.724/247	2.756/70	4.016/102	1.181/30	0.669*0.669/17*17					7/8-9X8	8.50/215.9	φ70	4XΦ9	18.5	25
150	6"	18.071/459	18.071/459	11.811/300	3.346/85	5.748/146	2.165/55	1.063*1.063/27*27			1-8	2	1-8X12	11.50/292.1	φ102	4XΦ11	35	53
200	8"	22.913/582	22.913/582	13.937/354	4.213/107	7.401/188	2.362/60	1.063*1.063/27*27			1⅛-8	4	1⅛-8X12	13.75/349.3	φ102	4XΦ11	67	101
250	10"	26.229/668	26.229/668	15.433/392	4.803/122	9.252/235	2.362/60	1.260*1.260/32*32			1¼-8	4	1¼-8X16	17.00/431.8	φ165	4XΦ21	120	175
300	12"	30.315/770	30.315/770	18.307/465	5.512/140	11.260/286	2.362/60	1.260*1.260/32*32			1¼-8	4	1¼-8X20	19.250/489.0	φ165	4XΦ21	170	230
350	14"	35.276/896	35.276/896	22.362/568	6.103/155	12.835/326	2.953/75	1.417*1.417/36*36			1⅜-8	4	1⅜-8X20	20.750/527.1	φ165	4XΦ21	231	327
400	16"	39.567/1005	39.567/1005	24.843/631	7.008/178	14.843/377	3.543/90	1.811*1.811/46*46			1½-8	4	1½-8X20	23.750/603.3	φ165	4XΦ21	325	482
450	18"	45.551/1157	45.551/1157	29.685/754	7.756/197	16.654/423	3.937/100	0.866/22	3.150/80		1⅝-8	4	1⅝-8X20	25.750/654.1	φ254	8XΦ17	480	652
500	20"	49.370/1254	49.370/1254	31.732/806	8.504/216	18.465/469	4.724/120	0.984/25	4.134/105		1⅝-8	4	1⅝-8X24	28.50/723.9	φ254	8XΦ17	605	815
600	24"	58.780/1493	58.780/1493	31.260/794	9.134/232	22.283/566	5.906/150	1.260/32	4.528/115		1⅞-8	4	1⅞-8X24	33.00/838.2	φ298	8XΦ22	950	1285

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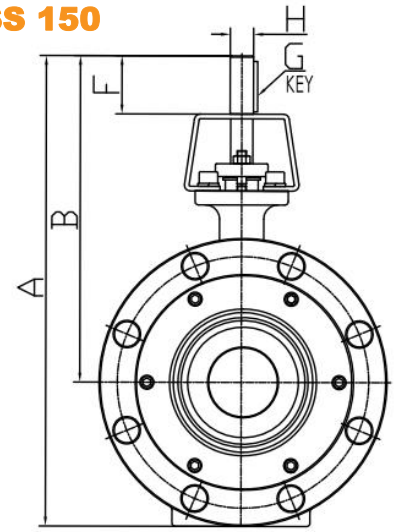
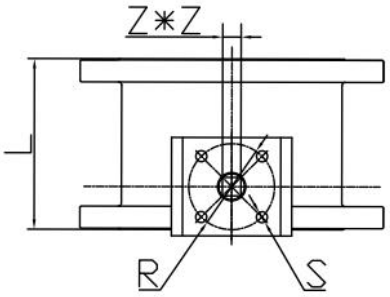
HIGH PERFORMANCE BUTTERLY VALVE DIMENSIONS DOUBLE FLANGE

ANSI CLASS 150





ANSI Class 150

VALVE SIZE		A	B	L		F	Z x Z		R	S	WEIGHT (Kg)	
mm	ins	ins mm	ins mm	Long	Short	ins mm	H	G	mm	mm	Long	Short
80	3"	12.717 323	8.976 228	8.071 205	4.488 114	1.063 27	0.433*0.433 11*11		Φ70	4XΦ9	26	19
100	4"	14.646 372	10.157 258	9.016 229	5.00 127	1.063 27	0.551*0.551 14*14		Φ70	4XΦ9	34	25
125	5"	15.906 404	10.906 277	10.00 254	5.512 140	1.181 30	0.669*0.669 17*17		Φ70	4XΦ9	42	30
150	6"	16.969 431	11.457 291	10.512 267	5.512 140	1.260 32	0.669*0.669 17*17		Φ70	4XΦ9	49	34
200	8"	19.843 504	13.091 332.5	11.496 292	5.984 152	1.772 45	0.669*0.669 17*17		Φ70	4XΦ9	77	51
250	10"	21.693 551	13.701 348	11.811 300	6.496 165	1.969 50	0.866*0.866 22*22		Φ102	4XΦ11	102	78
300	12"	25.276 642	15.748 400	14.016 356	7.008 178	2.362 60	1.063*1.063 27*27		Φ140	4XΦ18	160	112
350	14"	29.055 738	18.150 461	15.00 381	7.520 191	2.362 60	1.063*1.063 27*27		Φ140	4XΦ18	198	141
400	16"	30.354 771	18.622 473	15.984 406	8.504 216	3.150 80	1.063*1.063 27*27		Φ165	4XΦ21	233	175
450	18"	35.670 906	23.150 588	17.008 432	8.760 222.5	3.543 90	1.417*1.417 36*36		Φ165	4XΦ21	272	213
500	20"	38.071 967	24.331 618	17.992 457	9.016 229	3.543 90	1.417*1.417 36*36		Φ165	4XΦ21	351	262
600	24"	43.189 1097	27.205 691	20.00 508	10.512 267	4.331 110	1.811*1.811 46*46		Φ165	4XΦ21	493	386
750	30"	50.906 1293	31.535 801	24.016 610	12.520 318	4.724 120	3.150 80	0.866 22	Φ165	4XΦ21	652	598
900	36"	59.409 1509	36.417 925	27.992 711	12.992 330	4.724 120	3.150 80	0.866 22	Φ254	8XΦ17	869	789

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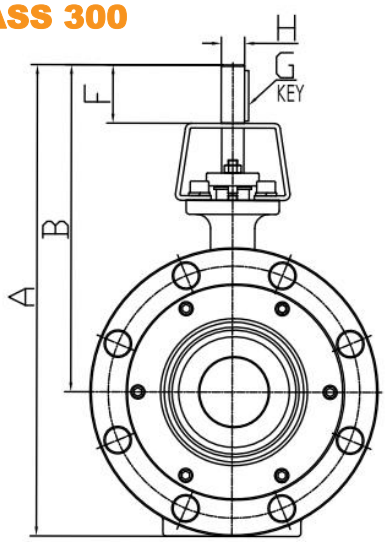
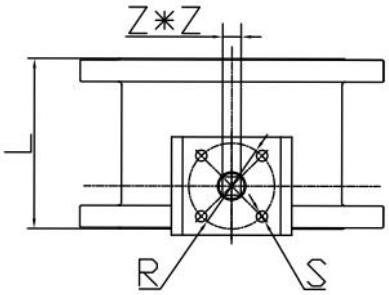
HIGH PERFORMANCE BUTTERLY VALVE DIMENSIONS DOUBLE FLANGE

ANSI CLASS 300





ANSI Class 300

VALVE SIZE		A	B	L		F	Z x Z		R	S	WEIGHT (Kg)	
mm	ins	ins mm	ins mm	Long	Short	ins mm	H	G	mm	mm	Long	Short
80	3"	12.717 323	8.976 228	8.071 205	4.488 114	1.063 27	0.433*0.433 11*11		Φ70	4XΦ9	30	21
100	4"	15.157 385	10.157 258	12.001 305	5.00 127	1.063 27	0.551*0.551 14*14		Φ70	4XΦ9	46	25
125	5"	16.457 418	10.906 277	15.00 381	5.512 140	1.181 30	0.669*0.669 17*17		Φ70	4XΦ9	59	42
150	6"	17.835 453	11.614 295	15.866 403	5.512 140	1.260 32	0.669*0.669 17*17		Φ70	4XΦ9	79	51
200	8"	20.472 520	12.992 330	16.496 419	5.984 152	1.969 50	0.866*0.866 22*22		Φ102	4XΦ11	109	83
250	10"	22.953 583	14.212 361	18.701 475	6.496 165	2.362 60	1.063*1.063 27*27		Φ102	4XΦ11	135	124
300	12"	27.322 694	17.047 433	19.764 502	7.008 178	2.756 70	1.063*1.063 27*27		Φ140	4XΦ18	211	173
350	14"	29.882 759	18.386 467	30.00 762	7.520 191	3.150 80	1.417*1.417 36*36		Φ165	4XΦ21	330	235
400	16"	35.827 910	23.071 586	32.992 838	8.504 216	3.150 80	1.417*1.417 36*36		Φ165	4XΦ21	423	329
450	18"	38.622 981	24.646 626	35.984 914	8.858 225	3.543 90	1.417*1.417 36*36		Φ165	4XΦ21	574	457
500	20"	53.110 1349	26.535 674	39.016 991	9.016 229	3.937 100	1.811*1.811 46*46		Φ165	4XΦ21	660	522
600	24"	48.740 1238	30.709 780	45.00 1143	10.433 265	4.724 120	3.150 80	0.866 22	Φ254	8XΦ17	862	808

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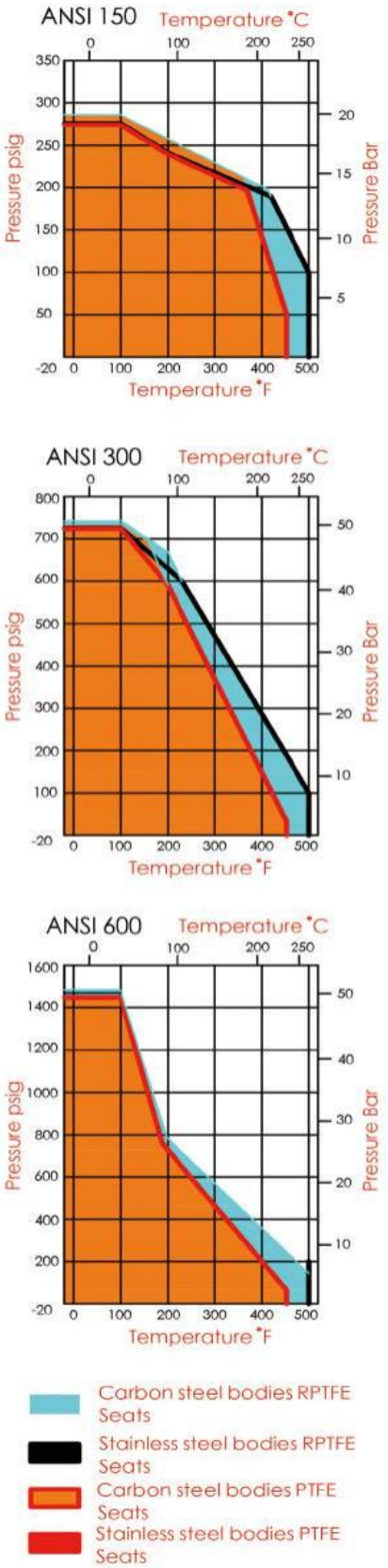
VALVE FLOW COEFFCIENTS

Cv (Coefficient of Volume) is the number of U.S. gallons per minute of water required to pass through a valve with a pressure drop of 1 psi. The chart below records this Cv factor for the SHENGFEI valve classes and sizes at ten degree increments between open and closed. The values shown are for the valve installed in the seat upstream ("SUS") position.

Recommended control angles are between 25°-70°, 60°-65° are preferred.

VALVE SIZE mm	VALVE SIZE ins	Class	Disc Position (degrees) 10°	20°	30°	40°	50°	60°	70°	80°	90°
50	2"	150	1.6	6	14	26	40	55	76	99	103
		300	1.5	6	13	25	37	51	70	95	99
		600	1.5	5	13	24	36	50	69	90	92
65	2½"	150	3	9	17	30	50	79	100	135	160
		300	3	9	17	29	48	79	100	135	160
		600	2.8	8	15	29	48	78	99	130	155
80	3"	150	4.7	14	32	56	87	124	156	178	185
		300	4.7	14	32	56	87	124	156	178	185
		600	3	8	12	46	67	103	135	158	165
100	4"	150	10	30	62	116	175	251	315	365	375
		300	10	30	62	116	175	251	315	365	375
		600	5	28	45	72	95	150	210	272	305
125	5"	150	16	42	79	145	238	365	502	678	795
		300	16	42	79	145	238	365	502	678	795
150	6"	150	37	85	142	220	335	515	760	1080	1360
		300	27	80	138	225	360	520	720	880	1050
		600	16	72	132	205	280	435	620	780	870
200	8"	150	68	170	285	460	690	1070	1610	2250	2830
		300	48	123	242	410	640	930	1350	1720	2010
		600	21	79	212	350	490	760	1060	1350	1510
250	10"	150	105	255	460	710	1070	1650	2440	3470	4320
		300	63	153	300	515	785	1210	1750	2260	2660
		600	42	140	305	510	710	1100	1530	1960	2200
300	12"	150	160	395	710	1090	1640	2540	3760	5350	6660
		300	95	225	435	710	1100	1690	2510	3420	4000
		600	57	193	410	680	1010	1550	2170	2800	3100
350	14"	150	180	450	810	1250	1890	2910	4320	6100	7650
		300	102	243	495	835	1210	1780	2610	3500	4120
		600	70	202	425	735	1100	1570	2410	3300	3900
400	16"	150	235	580	1030	1550	2430	3710	5500	7870	9820
		300	180	420	730	1170	1840	2980	4560	6540	7810
		600	97	250	510	800	1210	1910	2900	4210	5020
450	18"	150	180	520	1190	2240	3530	5110	6980	9120	10520
		300	100	450	1080	1980	3100	4540	6180	8020	9500
		600	120	300	660	1210	1920	2800	3950	5100	6050
	20"	150	210	650	1540	2830	4510	6500	8800	11700	13550
		300	115	540	1250	2340	3730	5400	7310	9580	11000
		600	140	410	940	1700	2700	3920	5300	6950	8050
	24"	150	245	930	2210	3890	6650	9570	12800	17500	20000
		300	185	830	2010	3700	5930	8570	11400	15100	18050
		600	180	510	1210	2260	3600	5200	7000	9310	11000
	26"	150	260	950	2230	3900	6750	9600	12900	17300	24000
	28"	150	290	1300	3120	5800	9350	13600	18300	24000	28100
	30"	150	320	1520	3600	6750	10700	15600	21000	27400	32200
		300	285	1320	3210	6010	8500	13710	18900	24400	28500
	32"	150	340	1620	3840	6160	11400	16500	22300	29200	34100
	34"	150	380	2050	4900	8250	14500	19700	25300	32000	37500
	36"	150	470	2650	5440	10200	16420	23200	31800	41100	48600
		300	370	1710	4650	9100	14800	21200	29300	38000	45200
	40"	150	660	3510	8600	15200	23800	33200	43900	55300	62100
	42"	150	710	3710	9020	16000	25000	35100	46200	58100	65000
		300	460	2650	7520	13000	19000	30100	42200	54100	60000
	48"	150	920	4600	10050	20000	29000	43600	63800	81000	91100
		300	800	4450	10000	17000	26000	41000	58100	74000	83100
	54"	150	1250	6000	15000	27500	40100	60200	87600	111000	125500

PRESSURE/TEMPERATURE



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Seating & Unseating Torques - Class 150

ASME 150 - Torques (N-m) **FIRE SAFE SEAT**

Valve Size		Less than 10.3 Bar		>10.3-14 Bar		>14-17.2 Bar		>17.2-20 Bar	
		Upstream	Downstream	Upstream	Downstream	Upstream	Downstream	Upstream	Downstream
DN50	2"	79	83	80	89	81	94	82	97
DN65	2 1/2"	79	83	80	89	81	94	82	97
DN80	3"	88	93	89	97	90	101	91	105
DN100	4"	99	105	102	114	104	122	106	127
DN125	5"	165	175	171	189	175	203	186	214
DN150	6"	194	204	197	218	209	232	221	243
DN200	8"	301	323	311	340	318	357	330	369
DN250	10"	449	483	471	520	488	557	505	584
DN300	12"	744	789	755	840	766	889	789	924
DN350	14"	1391	1470	1425	1583	1493	1753	1538	1922
DN400	16"	1721	1811	1788	1992	1845	2173	1847	2308
DN450	18"	2315	2158	2147	2384	2158	2554	2181	2723
DN500	20"	2475	2611	2555	2837	2701	3176	3266	4080
DN600	24"	3516	3742	3878	4307	4239	4985	5708	7132
DN650	26"	Please Consult Factory							
DN700	28"	Please Consult Factory							
DN750	30"	Please Consult Factory							
DN800	32"	Please Consult Factory							
DN850	34"	Please Consult Factory							
DN900	36"	Please Consult Factory							
DN1,000	40"	Please Consult Factory							

Seating & Unseating Torques - Class 300

ASME 300 - Torques (N-m) **FIRE SAFE SEAT**

Valve Size		Less than 10.3 Bar		>10.3-24 Bar		>24-38 Bar		>38-51 Bar	
		Upstream	Downstream	Upstream	Downstream	Upstream	Downstream	Upstream	Downstream
DN50	2"	78	82	89	98	98	115	100	125
DN65	2 1/2"	79	83	90	99	99	116	101	126
DN80	3"	88	93	100	110	109	127	111	139
DN100	4"	100	106	126	140	148	174	158	196
DN125	5"	165	175	239	265	303	355	330	412
DN150	6"	232	243	301	334	362	424	395	492
DN200	8"	346	363	444	493	535	629	567	708
DN250	10"	788	833	1045	1161	1257	1477	1364	1703
DN300	12"	1190	1252	1501	1670	1776	2088	1907	2382
DN350	14"	2050	2157	2451	2722	2507	2948	2541	3174
DN400	16"	3017	3175	3876	4305	4237	4983	4441	5548
DN450	18"	Please Consult Factory							
DN500	20"	Please Consult Factory							
DN600	24"	Please Consult Factory							

Note:

1. x1.3 safety factor is recommended.
2. Seating & Unseating Torques: Valve orientation to the flow of media affects the torque. Torque values are presented in two categories (SUS / SDS).
3. Torques shown are for on/off applications and include sizing margins appropriate to normal liquid and gas applications. For severe services, or unusual fluids or slurry, consult factory.

Seating & Unseating Torques - Class 600

ASME 600 - Torques (N-m) **FIRE SAFE SEAT**

Valve Size		Less than 10.3 Bar		>10.3-24 Bar		>24-38 Bar		>38-51 Bar	
		Upstream	Downstream	Upstream	Downstream	Upstream	Downstream	Upstream	Downstream
DN50	2"	Please Consult Factory							
DN65	2 1/2"	Please Consult Factory							
DN80	3"	Please Consult Factory							
DN100	4"	Please Consult Factory							
DN125	5"	Please Consult Factory							
DN150	6"	Please Consult Factory							
DN200	8"	Please Consult Factory							
DN250	10"	Please Consult Factory							
DN300	12"	Please Consult Factory							
DN350	14"	Please Consult Factory							

Note:

1. x1.3 safety factor is recommended.
2. Seating & Unseating Torques: Valve orientation to the flow of media affects the torque. Torque values are presented in two categories (SUS / SDS).
3. Torques shown are for on/off applications and include sizing margins appropriate to normal liquid and gas applications. For severe services, or unusual fluids or slurry, consult factory.

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Maximum Allowable Shaft Torques (N-m)

Valve Size		ASME 150	ASME 300	ASME 600
DN50	2"	201	201	NA
DN65	2 1/2"	201	201	337
DN80	3"	201	201	337
DN100	4"	201	201	576
DN125	5"	337	337	Consult Factory
DN150	6"	337	576	1,481
DN200	8"	576	1481	2,574
DN250	10"	1,481	2574	8,213
DN300	12"	1,481	2574	8,213
DN350	14"	2,574	8,213	16,112
DN400	16"	8,213	16,112	27,829
DN450	18"	8,213	16,112	47,813
DN500	20"	16,112	22,901	70,649
DN600	24"	22,901	47,813	119,711
DN650	26"	22,901	Consult Factory	
DN700	28"	27,829	Consult Factory	
DN750	30"	47,813	95,010	Consult Factory
DN800	32"	47,813	Consult Factory	NA
DN850	34"	47,813	Consult Factory	NA
DN900	36"	47,813	119,711	NA
DN1,000	40"	95,010	218,012	NA
DN1,050	42"	95,010	218,012	NA
DN1,200	48"	119,711	246,931	NA
DN1,350	54"	140,422	367,737	NA
DN1,500	60"	Consult Factory	NA	NA

Based on shaft Material 17-4 PH stainless steel, ASTM A564 Type 630.

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INSTALLATION INSTRUCTIONS

PRE – INSTALLATION PROCEDURE

1. Remove the protective face covers from the valve.

2. Inspect the valve to be certain the waterway is free from dirt and foreign matter. Be certain the adjoining pipeline is free from any foreign material such as rust and pipe scale or welding slag that could damage the seat and disc sealing surfaces.

3. Actuators should be mounted on the valve prior to installation to facilitate proper alignment of the disc in the valve seat.

4. *The valve should be in the closed position.* Make sure the open and closed positions of the actuator correspond to the counter-clockwise to open direction of rotation of the valve.

5. Cycle the valve to the fully open position, then back to the fully closed position, checking the actuator travel stop settings for proper disc alignment.

6. Check the valve identification tag for valve class, materials, and operating pressure to be sure they are correct for the application.

WARNING: Injury or property damage may result if the valve is installed where service conditions could exceed the valve ratings.

7. Check the flange bolts or studs on both sides of the valve for proper size, threading, and length.

VALVE INSTALLATION PROCEDURE

The SHENGFEI High Performance Butterfly Valve can be installed in the pipeline with the shaft in the vertical, horizontal, or other intermediate position. Based on applications experience, however, in media with concentrations of solid or abrasive particles or media subject to solidification buildup, valve performance and service life will be enhanced by mounting the valve with the shaft in the horizontal position.

All SHENGFEI valves are bi-directional and can be mounted in the pipeline in either flow direction; however, the preferred flow direction for all seat styles and materials is with the seat retainer ring located upstream (sus) to provide maximum seat protection.

1. For Wafer style (flangeless) valves:

a. Loosely install the lower flange bolts to form a cradle between the flanges. See Figure 1.

b. Note the flow direction arrow on the tag, place the valve and flange gaskets between the flanges, making sure the arrow on the tag points in the direction of the flow.

c. Install the remaining flange bolts, shifting the valve as necessary to permit the bolts to pass by or through the valve body.

2. For Lug style (single flange) valves:

a. Note the flow direction arrow on the tag, place the valve between the flanges, making sure the arrow on the tag points in the direction of the flow.

b. Install the lower flange bolts loosely, leaving space for the flange gaskets.

c. After inserting the flange gaskets, install the remaining bolts.

3. Using the sequence shown in Figure 2, tighten the flange bolts evenly to assure uniform gasket compression.

Caution: The SHENGFEI valve should be centered between the flanges and gaskets to prevent damage to the disc edge and shaft as a result of the disc striking the flange, gasket, or pipe.

4. If an actuator is to be used, air hoses or electricity should be connected to the unit as specified by the actuator manufacturer.

5. The valve is now ready for operation.

Remember: **Install the valve with the disc in the full closed position!** For more assistance, please feel free to contact SHENGFEI Machinery

Figure 1

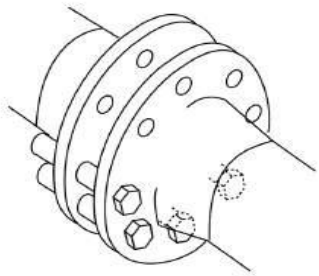

Figure 2