DOUBLE OFFSET HIGH PERFORMANCE BUTTERFLY VALVES

Zhengzhou Free Fluid Control Technology 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.

FREE 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, snowmaking and pulp and paper production.

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

High Performance Applications

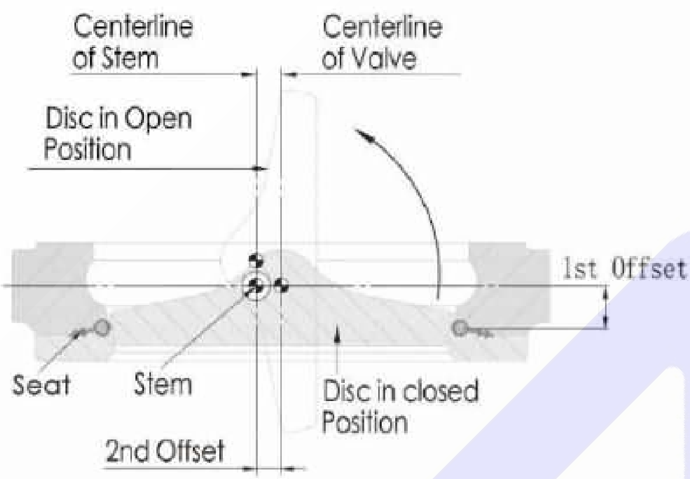
Construction
Chemical / Petro-Chemical
Liquified Gas / Refrigeration
Heavy Industrial
Power / Co-Generation Plants
Steel and Iron Works
Commercial
Pulp and Paper Mills
Oil Refineries and Oil Field
Ship Building
Hydrocarbon Processing
Gas Piping
Local Area Energy Supply
Industrial

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		
FACT TO FACE SPECIFICATIONS	ANSI B16.10 / API 609 / MSS-SP-68 / ISO 5752		
END FLANGE SPECIFICATIONS	ASME B16.5: Class 150, 300, 600 JIS B2210: 10K, 16K, 20K DIN ISO PN10, PN16, PN25, PN40		
CONNECTION	Wafer, Lugged, Double Flanged		
ACTUATOR - MANUAL	Lever Handle, Worm Gear Operator		
ACTUATOR - AUTOMATIC	Electric Motor, Pneumatic Double Acting, Pneumatic Spring Return		

MAIN MATERIALS			
.	ANSI Class 150	ANSI Class 300	ANSI Class 600
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 + RTFE Impregnated, 316 SS + Graphite Impregnated		
PACKING SEAL	PTFE, Graphite		

SEAT MATERIALS and RATING	
PTFE	Class VI, Bubble Tight
RTFE	Class VI, Bubble Tight
316 SS	Class V
INCONEL	Class V
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

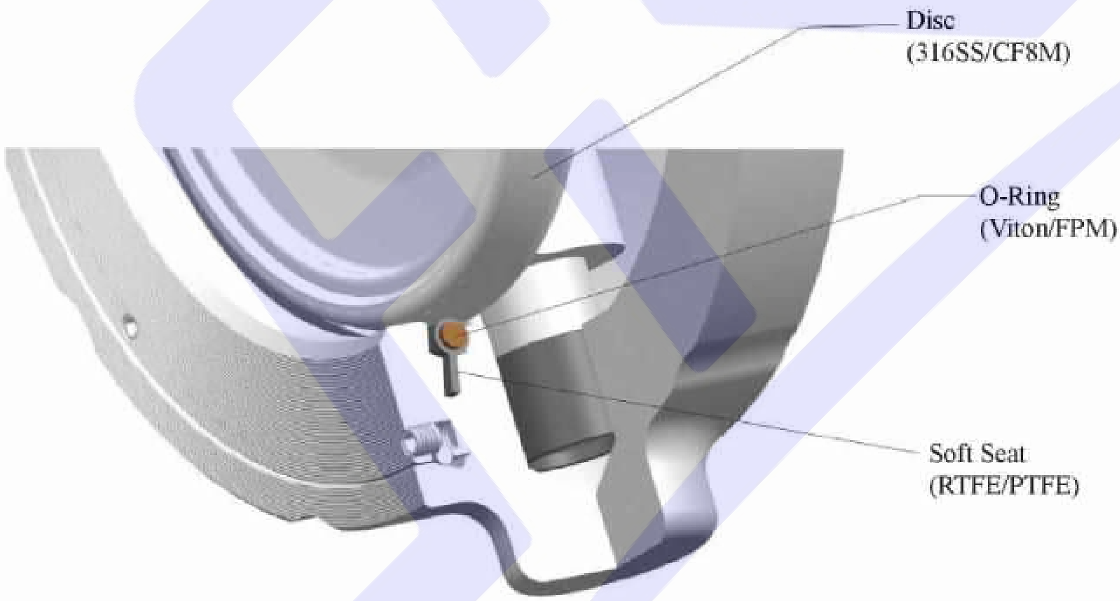
DOUBLE OFFSET/ECCENTRIC DESIGN



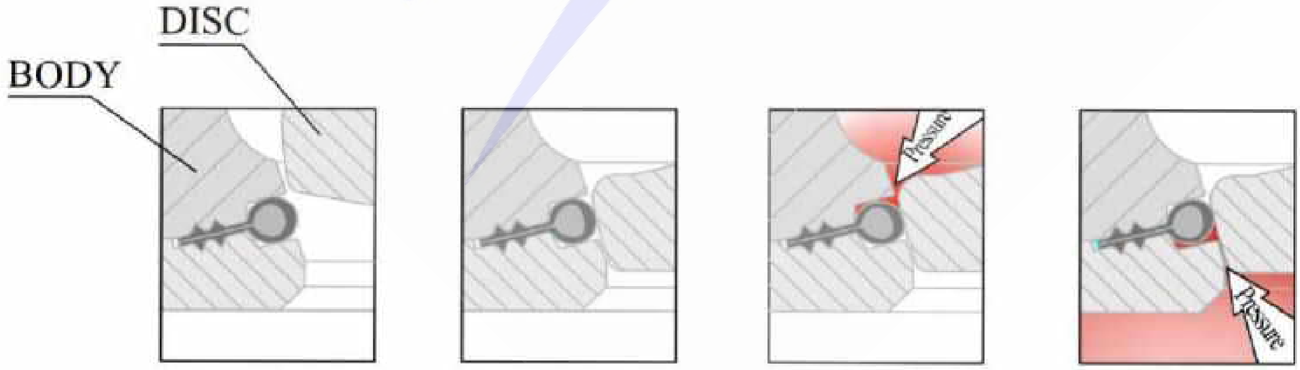
The double offset design of the Huamei High Performance Buttefly Valves assures reduced seat wear and bidirectional, zero leakage shut off throughout the full pressure range.

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 slurries or suspended solids.

UNIQUE VALVE SEAT DESIGN - SOFT SEAT



BI-DIRECTIONAL SEALING



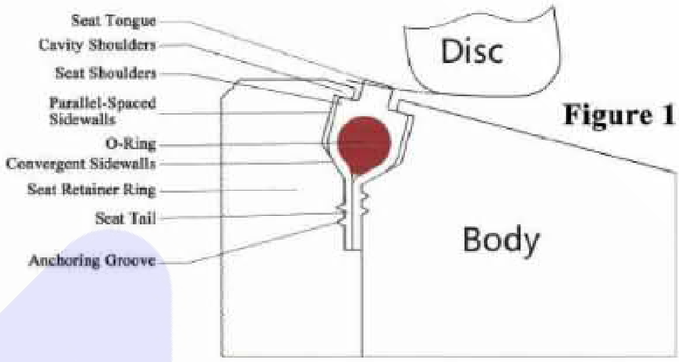
as disc approaches. with no line pressure. line pressure applied from upstream. line pressure applied from downstream.

PRINCIPLE OF SEAT SEALING - SOFT SEAT

Figure 1 DISC OPEN

In Figure 1, the disc and seat are not engaged. In this position, the shoulders of the seat are forced against the cavity shoulders by the compression of the o-ring.

The seat is recessed inside the seat cavity and acts as a gasket in the anchoring groove area. The seat cavity is sealed from exposure from the process fluid and protects the seat from abrasion and wear. The o-ring, which is completely encapsulated by the seat, is also isolated from exposure to the process fluid.



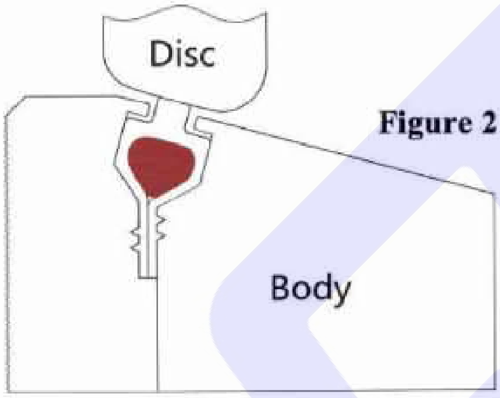


Figure 2 DISC CLOSED, Self-Energized Seal

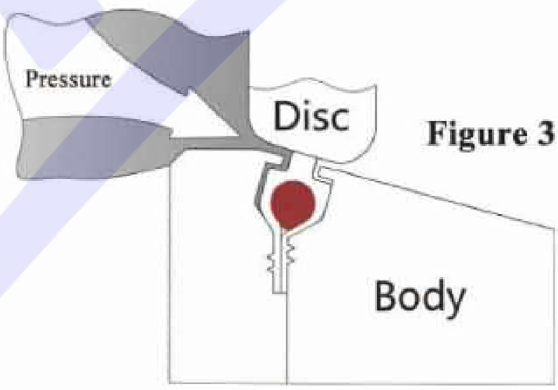
In Figure 2, the disc and seat are engaged, and the process fluid is under low pressure. The edge of the disc, with a larger diameter than the seat tongue, directs movement of the seat radially outward, causing the seat to compress against the convergent sidewalls of the cavity. The elastomeric o-ring imparts a mechanical pre-load between the disc and seat tongue as it is compressed and flattened by the disc; this is the self-energized mode for sealing at vacuum-to-60 psig.

As the seat moves radially outward, the seat shoulders move away from the cavity shoulders and open the cavity to the process media.

Figure 3 DISC CLOSED, Pressure-Energized Seal (Seat Upstream)

As line pressure increases, the process fluid enters the sidewall area and applies a load against the parallel-spaced sidewall and convergent sidewall of the seat. The seat and cavity design permits the seat to move axially to the downstream sidewall, but confines the movement and directs the movement radially inward towards the disc; the higher the line pressure, the tighter the seal between the disc and seat. Because the o-ring is elastic, it is able to flex and deform under loads and return to original shape after removal of the load; it is the rubber which deforms, not the thermoplastic material.

This dynamic seal, sealing equal to Flowseal and Bray, is totally unique among high performance butterfly valves.



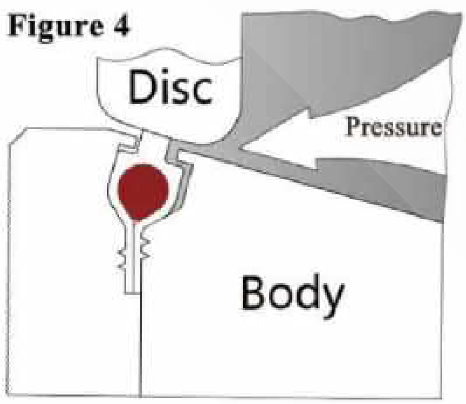
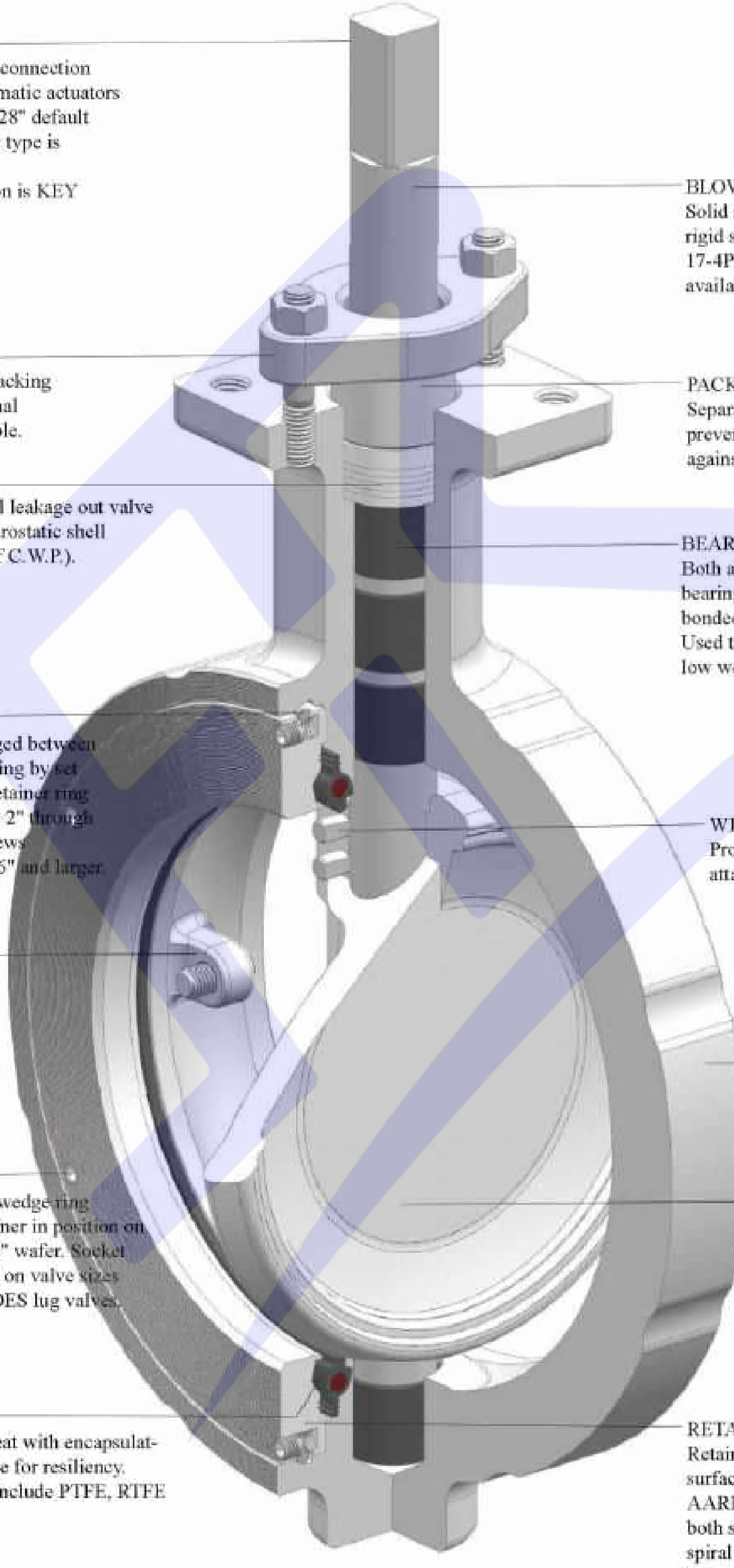


Figure 4 DISC CLOSED, Pressure-Energized Seal (Downstream)

The FREE-VALVE is bi-directional (in some instances, modifications may be required to operate this arrangement for dead end service). The cavity and seat sidewalls are symmetrically designed to permit, confine and direct movement of the seat to the disc to dynamically seal with line pressure in the reverse direction. The disc edge is the segment of a sphere, and the seat is angled towards the disc edge to seal with pipeline pressure in either direction.

Recommended installation direction is "SUS" (seat upstream), as in Figure 3.

VALVE COMPONENTS - SOFT SEAT



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

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

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

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

PACKING
PTFE prevents external leakage out valve neck to full ASME hydrostatic shell test pressures (150% of C.W.P.).

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

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.

WEDGE PINS
Provide positive mechanical attachment of disc to shaft.

OVERTRAVEL STOP
Prevents disc from rotating into the wrong quadrant.

BODY
ASME B16.34 design in either wafer or lug configuration.

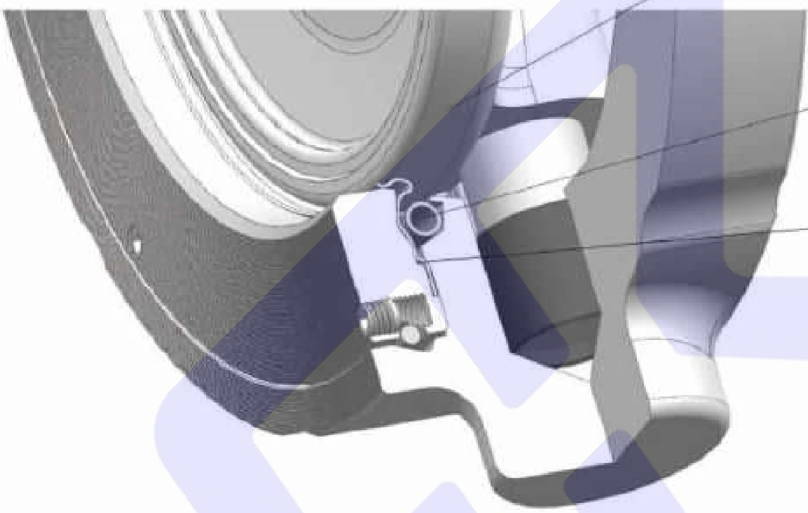
SET SCREWS
Cone point screws force wedge ring outward to lock seat retainer in position on valve sizes 2" through 30" wafer. Socket head cap screws are used on valve sizes 36" and larger and all DDES lug valves.

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

SOFT-SEAT
Patented bi-directional seat with encapsulated elastomeric o-ring core for resiliency. Common seat materials include PTFE, RTFE and UHMWPE.

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.

UNIQUE VALVE SEAT DESIGN - METAL SEAT



The FREE metal-to-metal seat high performance butterfly valve are with metal seat for higher tensile strength, a 300 series stainless steel back-up ring in the seat cavity for axial seat support, and a disc that is case hardened by nitriding.

The Metal seat, by its dynamic and flexible design, applies enough force per linear inch against the disc edge (Rock-well Hardness of C66 to C70) to obtain an optimum sealing characteristic while controlling the loads between the metal surfaces.

The FREE metal-to-metal seat valve is utilized for temperatures up to 900°F, (482°C) in compliance with ASME B16.34 pressure/temperature specifications. Leakage is rated at Class IV per ASME FCI 70-2.

PRINCIPLE OF SEAT SEALING - METAL SEAT

Figure 1 PRINCIPLE OF METAL SEATING

Metal-to-metal sealing is accomplished by the "line contact" between a spherical surface and conical surface. Figure 1 illustrates a typical globe control valve seat and plug. The plug seating surface is the segment of a sphere; when engaged against the seat ring, a line contact seal is achieved.

In a metal seat design, it is necessary to apply enough force per linear inch to maintain a tight metal-to-metal contact between the sealing members; however, high linear thrust can cause a collapse of the seating members ("bearing failure").

Figure 1

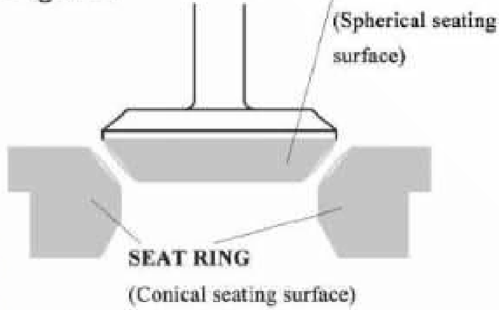


Figure 2 DISC CLOSED, Self-Energized Seal

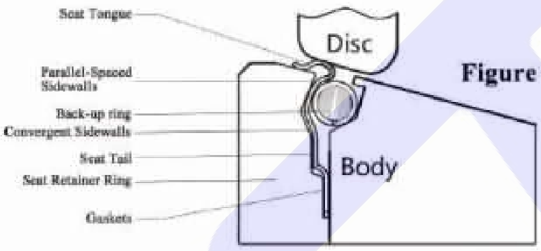


Figure 2

In Figure 2, the disc and seat are engaged, and the process fluid is under low pressure. The spherical edge of the disc, with a larger diameter than the conical seat tongue, imparts a thrust of approximately 600 pounds per linear inch against the seat. The mechanical properties and shape of the metal seat allow it to both flex and maintain a constant thrust against the disc.

This controlled loading prevents the occurrence of bearing failure and reduces the leakage and wear between the components.

Figure 3 DISC CLOSED, Pressure-Energized Seal (Seat Upstream)

As line pressure increases, the process fluid enters the sidewall area and applies a load against the parallel-spaced sidewall and convergent sidewall of the metal seat. The seat moves towards the downstream sidewall while being supported axially by the support ring, as shown in Figure 3. The cavity shape confines the seat movement and directs the movement radially inward towards the disc; the higher the line pressure, the tighter the line contact between the disc and seat. The metal seat, shaped by a special hydroforming process, is able to flex under these loads and return to its original shape after removal of the loads.

This dynamic seal, sealing equal to Flowseal, is totally unique among high performance butterfly valves.

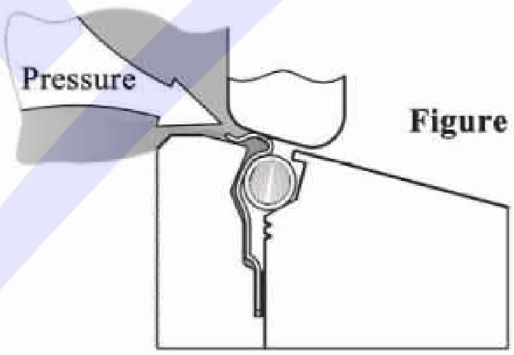
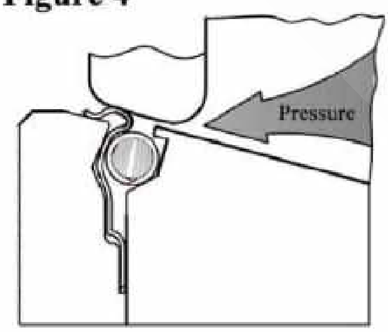


Figure 3

Figure 4 DISC CLOSED, Pressure-Energized Seal (Downstream)

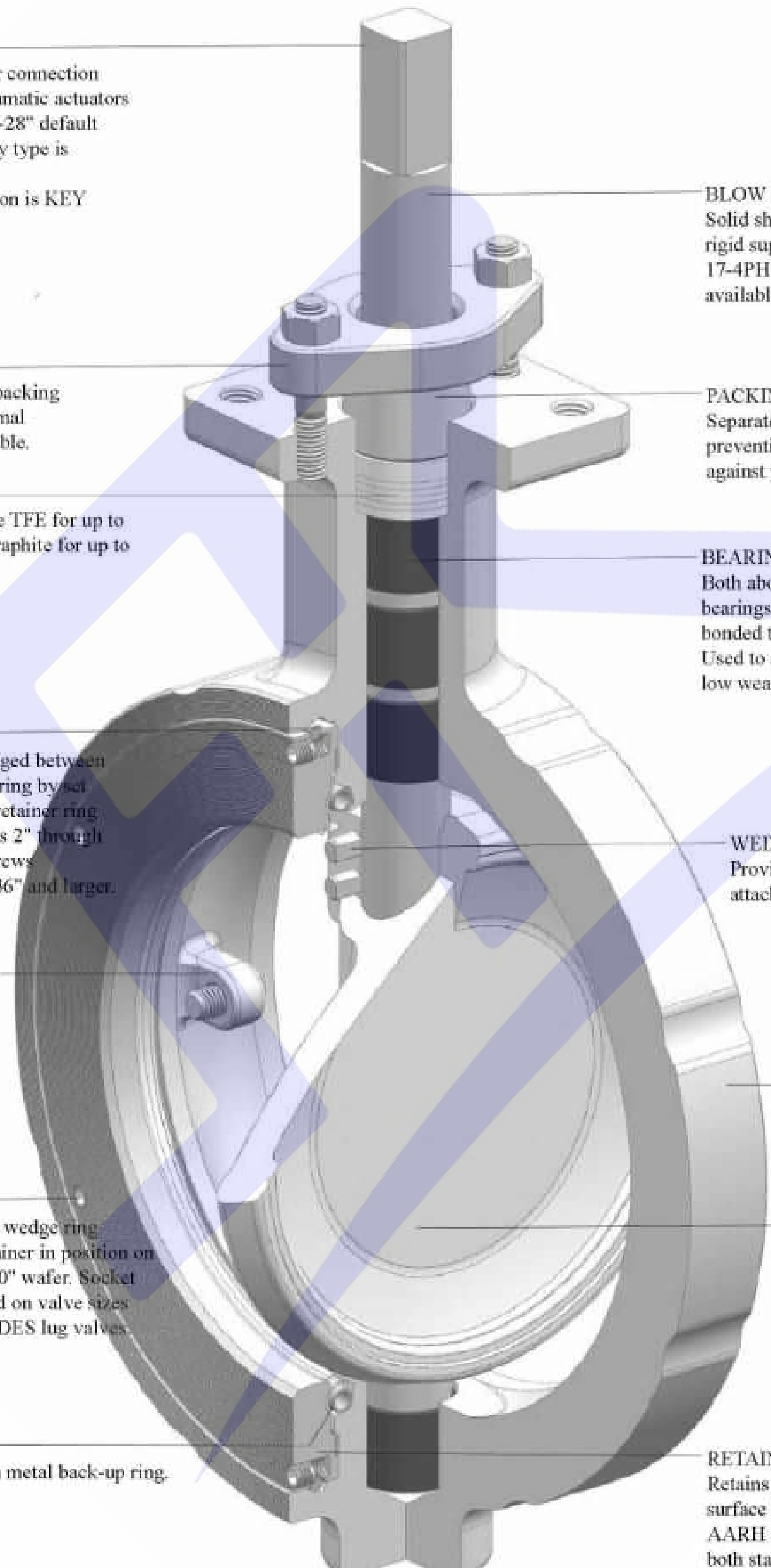
Figure 4



The FREE valve is bi-directional (in some instances, modifications may be required to operate this arrangement for dead end service). The cavity and seat sidewalls are symmetrically designed to permit, confine and direct movement of the seat to the disc to dynamically seal with line pressure in the seat downstream direction, as in Figure 4. Recommended installation direction is "SUS" (seat upstream), as in Figure 3.

The stainless steel back-up ring interacts dynamically with the metal seat for axial support in seat sealing. Additionally, this ring effectively restricts corrosion and particulate build-up in the cavity.

VALVE COMPONENTS - METAL SEAT



SQUARE
Square valve-to-operator connection applied to ISO5211 pneumatic actuators and electic 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 materials are TFE for up to 450°F (232°C) and Graphite for up to 900°F (482°C).

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.

METAL SEAT
Patented metal seat with metal back-up ring.

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 PTFE wound ring. Used to align shaft, with high capacity, low wear, and low friction coefficient.

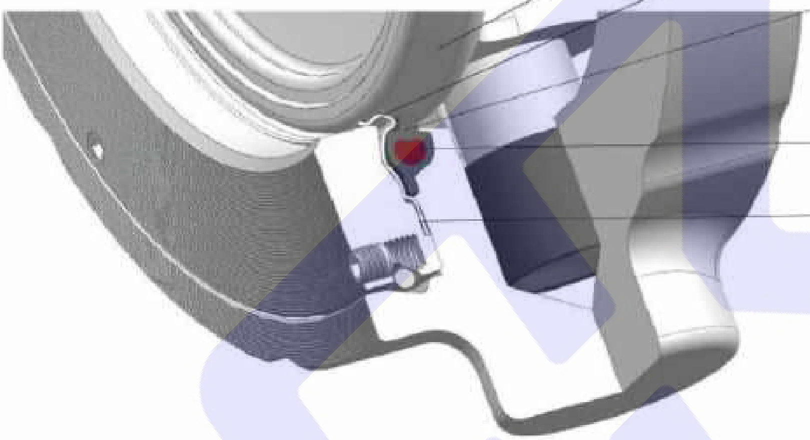
WEDGE PINS
Provide positive mechanical attachment of disc to shaft.

BODY
ASME B16.34 design in either wafer or lug 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.

UNIQUE VALVE SEAT DESIGN - FIRE SAFE SEAT



The FREE Fire-Safe high performance butterfly valve (HPBFV) is a fire-safe, soft seat quarter-turn valve. The fire safe design incorporates two patented 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 selfenergized 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.

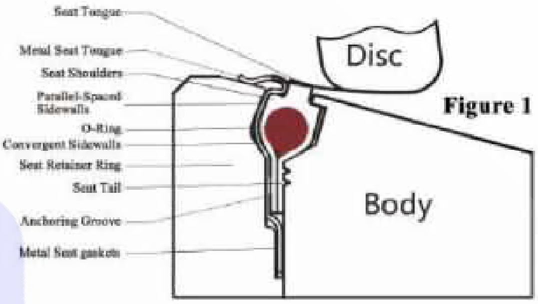
The Fire-Safe metal seat is made of 316L material which is shaped by a proprietary hydroforming process into its unique, patented design. Stainless steel outer bearings are included for post-fire disc and shaft alignment. Fireproof packing is used to prevent external shaft leakage.

PRINCIPLE OF SEAT SEALING - FIRE SAFE SEAT

Figure 1, DISC OPEN, Normal Operation

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.



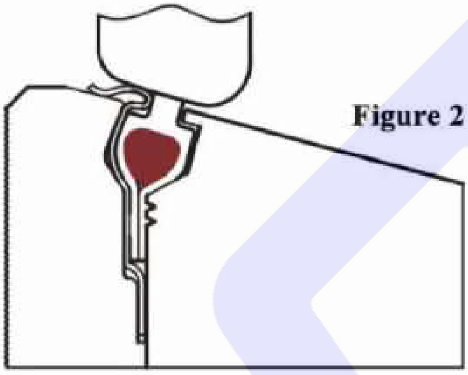


Figure 2 DISC CLOSED, Normal Operation

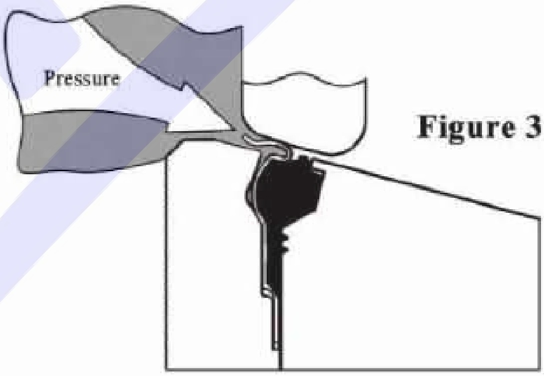
In Figure 2, the disc and seat assembly are engaged; both the metal seat and the soft seat are in contact with the disc. Under little to no pressure conditions, both seats are self-energized. The disc edge, with a larger diameter than the seat tongues, moves the seats radially outward; the metal seat 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)

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.



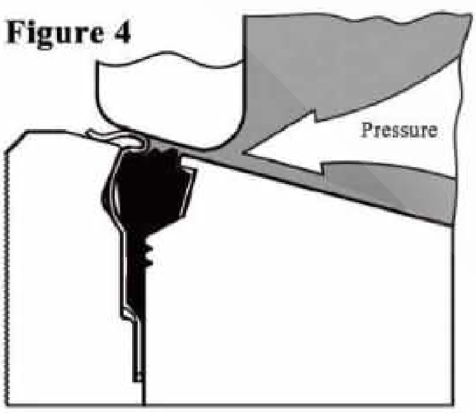
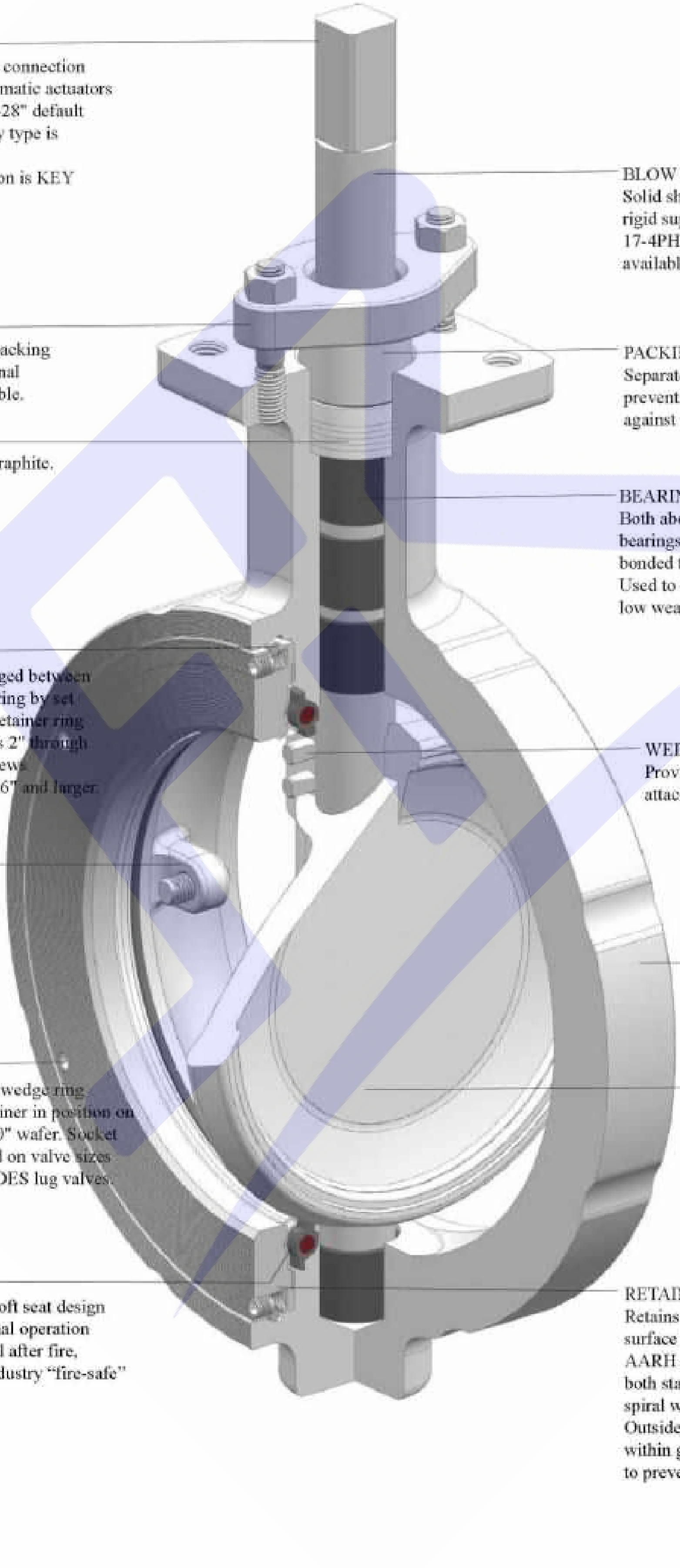


Figure 4 DISC CLOSED, After Fire (Seat Downstream)

The FREE Fire Safe HPBFV is bi-directional; however, modifications are required to operate for bi-directional dead end service. 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 if the flow direction is "seat downstream" (SDS).

VALVE COMPONENTS - FIRE SAFE SEAT



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

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

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

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

PACKING
Common material is graphite.

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

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.

WEDGE PINS
Provide positive mechanical attachment of disc to shaft.

OVERTRAVEL STOP
Prevents disc from rotating into the wrong quadrant.

BODY
ASME B16.34 design in either wafer or lug configuration.

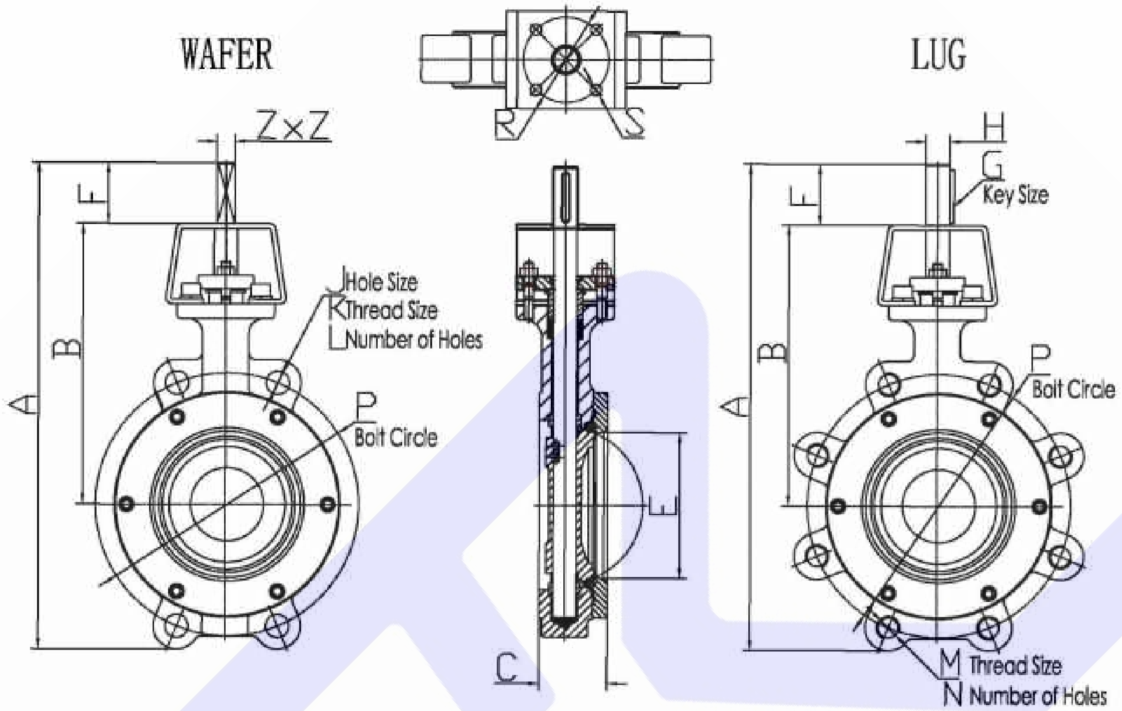
SET SCREWS
Cone point screws force wedge ring outward to lock seat retainer in position on valve sizes 2" through 30" wafer. Socket head cap screws are used on valve sizes 36" and larger and all DDES lug valves.

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

FIRE SAFE SEAT
Patented 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.

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.

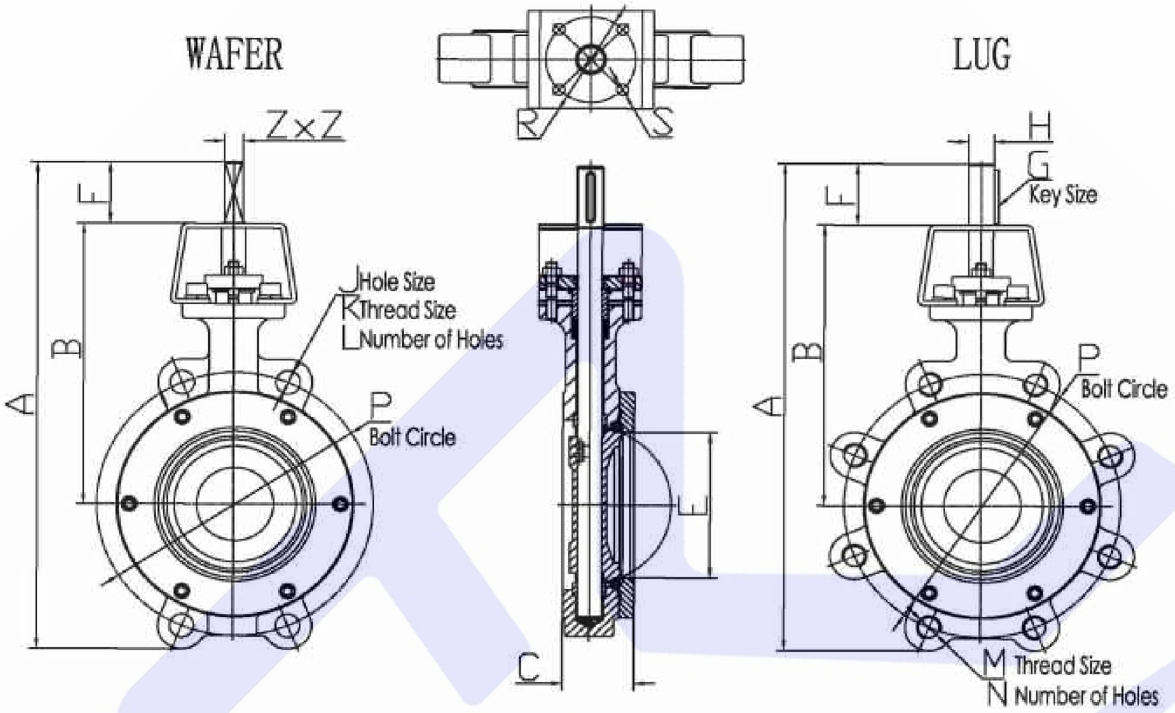
HIGH PERFORMANCE BUTTERLY VALVE DIMENSIONS ANSI CLASS 150



ANSI Class 150

VALVE SIZE mm	VALVE SIZE ins	WAFER A	LUG A	B	C	E	F	Z x Z G	Z x Z H	J	K	L	M x N	P ins/mm	R	S	WEIGHT (Kg) WAFER	WEIGHT (Kg) LUG
				ins/mm														
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	2 1/2"	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	1 1/8-8X16	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			1 1/8-8	4	1 1/8-8X20	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			1 1/4-8	4	1 1/4-8X20	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			1 1/4-8	4	1 1/4-8X24	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			1 1/4-8	4	1 1/4-8X28	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		1 1/4-8	4	1 1/4-8X28	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		1 1/2-8	4	1 1/2-8X28	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		1 1/2-8	4	1 1/2-8X32	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		1 1/2-8	4	1 1/2-8X32	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		1 1/2-8	4	1 1/2-8X36	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		1 1/2-8	4	1 1/2-8X36	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		1 1/2-8	4	1 1/2-8X44	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		1 3/4-8	4	1 3/4-8X44	62.750/1593.85	Φ298	8XΦ22	3175	3210

HIGH PERFORMANCE BUTTERLY VALVE DIMENSIONS ANSI CLASS 300

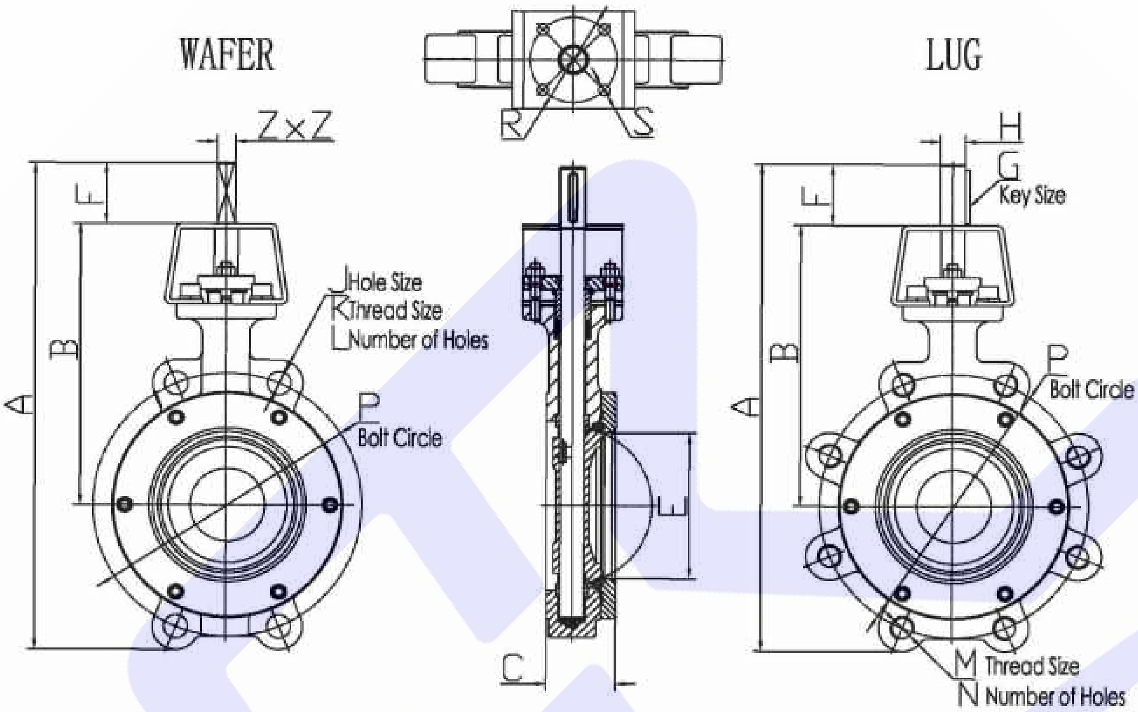


ANSI Class 300

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	4XΦ11	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	4XΦ11	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	1 1/8-8X16	17.750/450.8	Φ140	4XΦ18	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			1 1/8-8	4	1 1/8-8X20	20.250/514.3	Φ165	4XΦ21	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			1 1/4-8	4	1 1/4-8X20	22.50/571.5	Φ165	4XΦ21	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			1 1/4-8	4	1 1/4-8X24	24.750/628.6	Φ165	4XΦ21	218	315
500	20"	44.646/1134	44.646/1134	26.535/674	6.339/161	19.370/492	3.937/100	1.811*1.811/46*46			1 1/4-8	4	1 1/4-8X24	27.00/685.8	Φ165	4XΦ21	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		1 1/2-8	4	1 1/2-8X24	32.00/812.8	Φ254	8XΦ17	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		1 3/4-8	4	1 3/4-8X28	39.250/996.95	Φ254	8XΦ17	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		1 3/4-8	4	1 3/4-8X32	46.00/1168.4	Φ298	8XΦ22	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		1 5/8-8	4	1 5/8-8X32	47.50/1206.6	Φ298	8XΦ22	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		1 7/8-8	4	1 7/8-8X32	54.00/1371.6	Φ356	8XΦ32	2270	2890

NOTE:
Drawings are for reference only. Please contact factory for separate drawing for each size at sales@free-valve.com

HIGH PERFORMANCE BUTTERLY VALVE DIMENSIONS   ANSI CLASS 600



ANSI Class 600

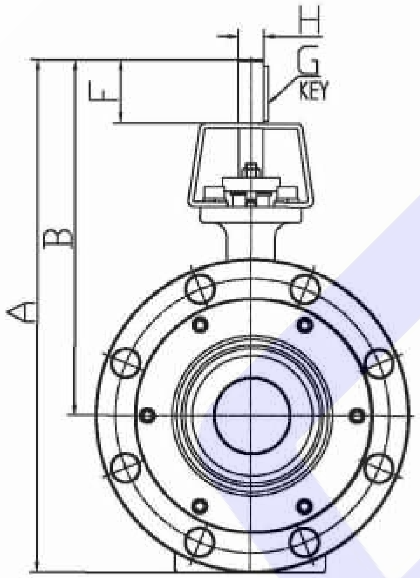
VALVE SIZE		WAFER	LUG	B	C	E	F	Z x Z		J	K	L	M x N	P	R	S	WEIGHT (Kg)	
mm	ins	A	A	ins/mm				G	H					ins/mm	mm	mm	WAFER	LUG
50	2"	10.512/267	10.512/267	7.835/199	1.929/49	2.126/54	1.063/27	0.551*0.551 14*14		oval		4	5/8-11X8	5.00/127	Φ70	4XΦ9	7.5	8.5
65	2 1/2"	10.512/267	10.906/277	7.835/199	2.047/52	2.598/66	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			1 1/8-8	4	1 1/8-8X12	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			1 1/4-8	4	1 1/4-8X16	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			1 1/4-8	4	1 1/4-8X20	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			1 3/8-8	4	1 3/8-8X20	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			1 1/2-8	4	1 1/2-8X20	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		1 5/8-8	4	1 5/8-8X20	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		1 5/8-8	4	1 5/8-8X24	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		1 7/8-8	4	1 7/8-8X24	33.00/838.2	Φ298	8XΦ22	950	1285

NOTE:
Drawings are for reference only. Please contact factory for separate drawing for each size at sales@free-valve.com

DOUBLE OFFSET HIGH PERFORMANCE BUTTERFLY VALVES

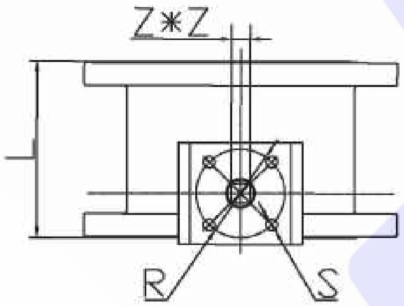
HIGH PERFORMANCE BUTTERLY VALVE DIMENSIONS   DOUBLE FLANGE

Flanged Valves



ANSI Class 150

VALVE SIZE mm	VALVE SIZE ins	A ins/mm	B ins/mm	L Long	L Short	F ins/mm	Z x Z H	Z x Z G	R mm	S mm	WEIGHT (Kg) Long	WEIGHT (Kg) 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"	29.065 / 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

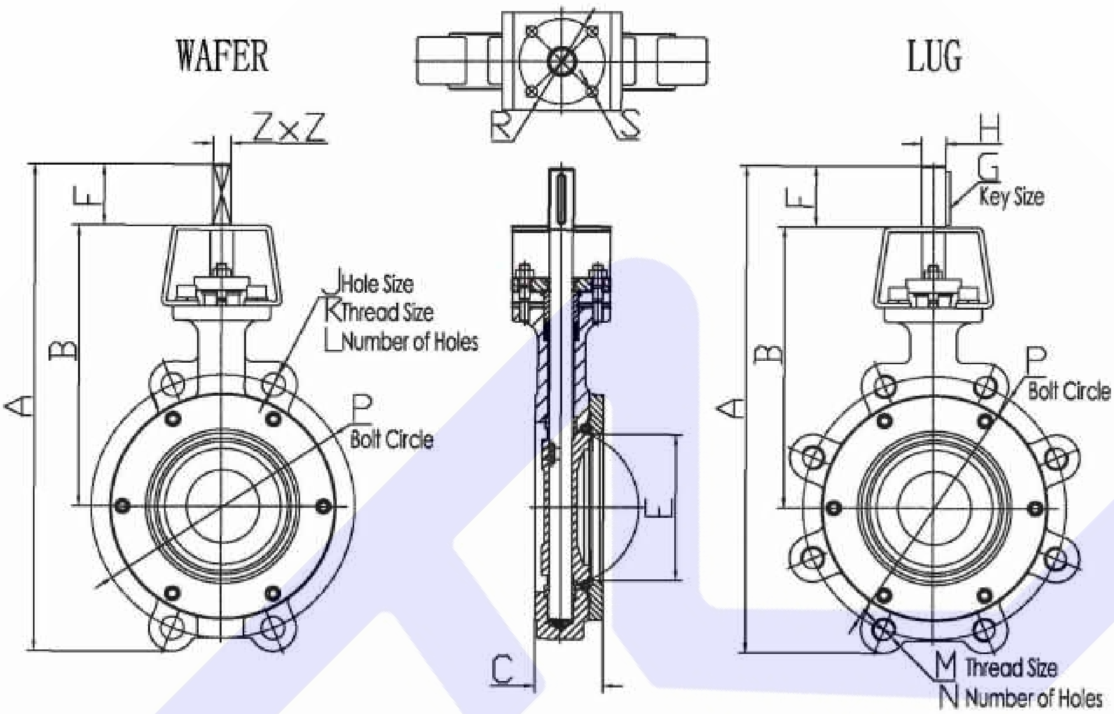


ANSI Class 300

VALVE SIZE mm	VALVE SIZE ins	A ins/mm	B ins/mm	L Long	L Short	F ins/mm	Z x Z H	Z x Z G	R mm	S mm	WEIGHT (Kg) Long	WEIGHT (Kg) 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

NOTE:
Drawings are for reference only. Please contact factory for separate drawing for each size at sales@free-valve.com

HIGH PERFORMANCE BUTTERLY VALVE DIMENSIONS PN16/PN25

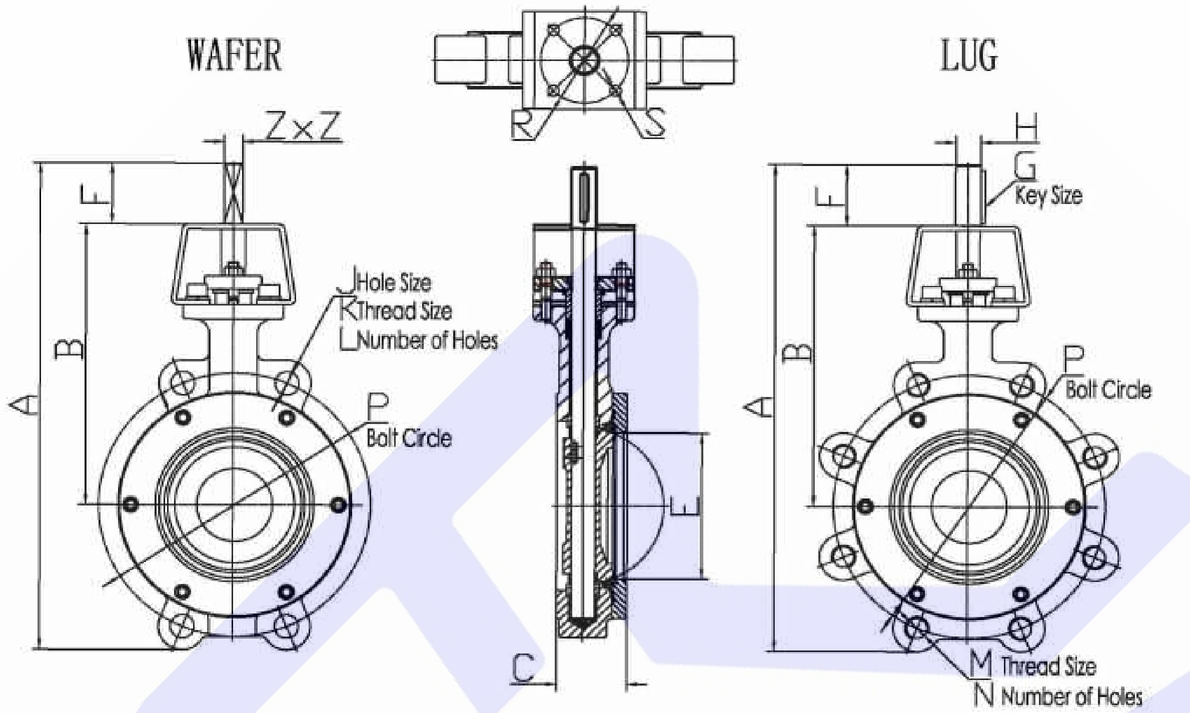


PN1.6MPa/PN2.5MPa

VALVE SIZE		WAFER	LUG	B	C	E	F	Z x Z		J	K	L	M x N	P	R	S	WEIGHT (Kg)	
DN	ins	A	A					G	H				PN1.6/PN2.5	PN1.6/PN2.5	mm	mm	WAFER	LUG
50	2"	257	258	193	43	60.12	27	11*11					M16X4/M16X4	125	φ70	4Xφ9	4.4	4.8
65	2½"	260	260	193	46	69.5	27	11*11					M16X4/M16X8	145	φ70	4Xφ9	4.9	5.3
80	3"	294	289	218	49	82.44	27	11*11					M16X8/M16X8	160	φ70	4Xφ9	5.6	6.5
100	4"	335	338	239	52	105.7	27	14*14					M16X8/M20X8	180/190	φ70	4Xφ9	8	11.5
125	5"	373	375	263	56	128.06	30	17*17					M16X8/M24X8	210/220	φ70	4Xφ9	10.5	13.5
150	6"	402	408	277	61	151.8	32	17*17					M20X8/M24X8	240/250	φ70	4Xφ9	13.5	16.5
200	8"	466	471	317	63.5	195.3	45	17*17					M20X12/M27X12	295/310	φ70	4Xφ9	20.6	24.5
250	10"	535	544	348	71	244.7	50	22*22		oval		2	M24X12/M21X12	355/370	φ102	4Xφ11	39	45.5
300	12"	625	630	400	82	291.9	60	27*27		oval		2	M24X12/M27X16	410/430	φ140	4Xφ18	55	67.5
350	14"	712	701	417	92	339.2	60	27*27		oval		4	M24X16/M30X16	470/490	φ140	4Xφ18	68	115
400	16"	792	792	476	101.8	387.4	70	27*27		oval		4	M27X16/M33X16	525/550	φ165	4Xφ21	116	132
500	20"	965	965	598	127	489.8	90	36*36			M30/M33	4	M30X20/M33X20	650/660	φ165	4Xφ21	185	220
600	24"	1097	1097	672	153.5	585.4	110	46*46			M33/M36	4	M33X20/M36X20	770/770	φ165	4Xφ21	290	310
700	28"	1232	1232	738	165	689.9	148.7	46*46			M33/M39	4	M33X24/M39X24	840/875	φ165	4Xφ21	495	579
800	32"	1357	1357	796	191	767.1	148.7	22	80		M36/M45	4	M36X24/M45X24	950/990	φ165	4Xφ21	736	922
900	36"	1502	1502	925	210	864.0	158.2	22	80		M36/M45	4	M36X28/M45X28	1060/1090	φ254	8Xφ17	871	1160
1000	40"	1634	1634	953	241	940.0	158.2	25	105		M39/M52	4	M39X28/M52X28	1170/1210	φ254	8Xφ17	1728	1779
1200	48"	1897	1897	1102	254	1171.0	178.2	32	115		M45/M52	4	M45X32/M52X32	1390/1420	φ298	8Xφ22	2074	2548
1350	54"	2090	2090	1209	273	1332.0	178.2	36	140		M45/M56	4	M45X36/M56X36	1590/1640	φ298	8Xφ22	3175	3210

DOUBLE OFFSET HIGH PERFORMANCE BUTTERFLY VALVES

HIGH PERFORMANCE BUTTERLY VALVE DIMENSIONS PN40

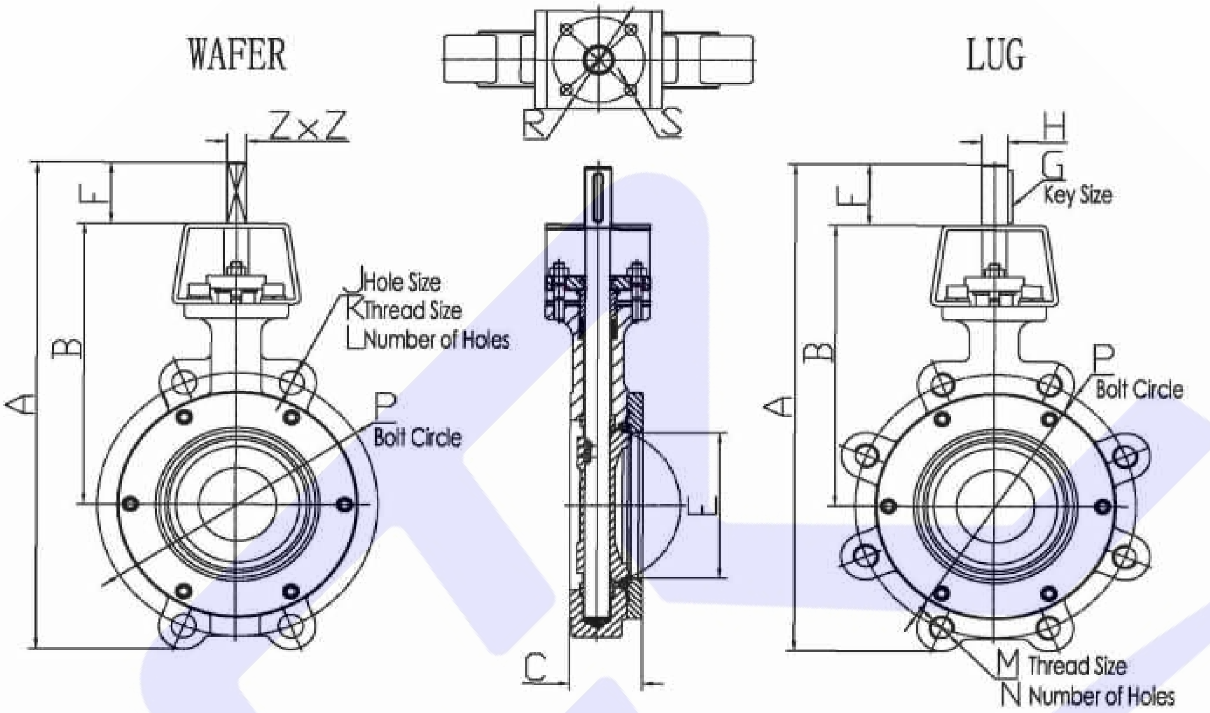


PN4.0MPa

VALVE SIZE		WAFER	LUG	B	C	E	F	Z x Z		J	K	L	M x N	P	R	S	WEIGHT (Kg)	
DN	ins	A	A					G	H					mm	mm	mm	WAFER	LUG
50	2"	257	266	190	43	60	27	11*11		oval		4	M16X4	125	φ70	4Xφ9	4.5	6.1
65	2½"	260	277	190	46	69	27	11*11					M16X8	145	φ70	4Xφ9	5	7
80	3"	294	311	216	49	82	27	11*11					M16X8	160	φ70	4Xφ9	6.5	9
100	4"	335	349	235	52	106	27	14*14					M20X8	190	φ70	4Xφ9	8	14
125	5"	373	384	254	57	128	30	17*17					M24X8	220	φ70	4Xφ9	10.5	16.5
150	6"	403	428	278	61	152	32	17*17					M24X8	250	φ70	4Xφ9	16.5	22
200	8"	485	500	324	72	195	50	22*22					M27X12	320	φ102	4Xφ11	35	41
250	10"	549	574	356	83	247	60	27*27		oval		2	M30X12	385	φ102	4Xφ11	53	64
300	12"	668	668	427	92	294	70	27*27		oval		2	M30X16	450	φ140	4Xφ18	77	90
350	14"	773	773	467.1	118	342	80	36*36			M33	4	M33X16	510	φ165	4Xφ21	124	146
400	16"	902	902	586.5	136	387	80	36*36			M36	4	M36X16	585	φ165	4Xφ21	165	220
450	18"	970	970	626	152	440	90	36*36			M36	4	M36X20	610	φ165	4Xφ21	218	315
500	20"	1134	1134	674	161	492.1	100	45*45			M39	4	M39X20	670	φ165	4Xφ21	298	410
600	24"	1229	1229	780	182	587	120	22	80		M45	4	M45X20	795	φ254	8Xφ17	340	495
700	28"	1355	1355	840	225	667	130	25	105		M45	4	M45X24	900	φ254	8Xφ17	530	660
900	36"	1661	1661	1030	271	864	150	32	115		M52	4	M52X28	1140	φ298	8Xφ22	1230	1540
1000	40"	1710	1710	1055	292	910	160	36	140		M52	4	M52X28	1250	φ298	8Xφ22	1450	1980
1200	48"	1918	1918	1205	318	1180	180	40	160		M56	4	M56X32	1371.6	φ356	8Xφ32	2270	2890

NOTE:
Drawings are for reference only. Please contact factory for separate drawing for each size at sales@free-valve.com

HIGH PERFORMANCE BUTTERLY VALVE DIMENSIONS PN100



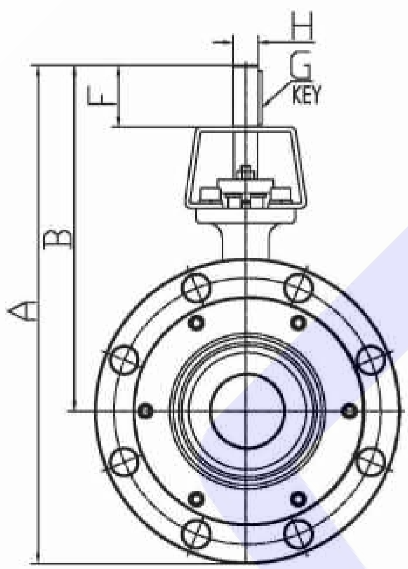
P N 1 0 . 0 M P a

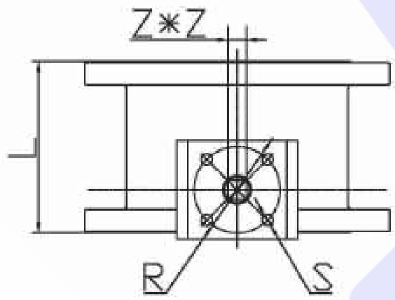
VALVE SIZE		WAFER	LUG	B	C	E	F	Z x Z		J	K	L	M x N	P	R	S	WEIGHT (Kg)	
DN	ins	A	A					G	H					mm	mm	mm	WAFER	LUG
50	2"	267	267	199	49	54.1	27	14*14		oval		4	M24X8	145	φ70	4Xφ9	7.5	8.5
65	$2\frac{1}{2}$"	267	277	199	52	64.6	27	14*14					M24X8	170	φ70	4Xφ9	8.2	9.5
80	3"	309	319	226	56	77.4	30	17*17					M24X8	180	φ70	4Xφ9	10.5	13
100	4"	360	365	247	70	101.8	30	17*17					M27X8	210	φ70	4Xφ9	18.5	25
150	6"	459	459	300	85	145.6	55	27*27			M30	2	M30X12	290	φ102	4Xφ11	35	53
200	8"	582	582	354	107	188.7	60	27*27			M33	4	M33X12	360	φ102	4Xφ11	67	101
250	10"	668	668	392	122	235.1	60	32*32			M36	4	M36X12	430	φ165	4Xφ21	120	175
300	12"	770	770	465	140	285.7	60	32*32			M39	4	M39X16	500	φ165	4Xφ21	170	230
350	14"	896	896	568	155	326.2	75	36*36			M45	4	M45X16	560	φ165	4Xφ21	231	327
400	16"	1005	1005	631	178	377.3	90	46*46			M45	4	M45X16	620	φ165	4Xφ21	325	482
500	20"	1254	1254	806	216	468.6	120	25	105		M52	4	M52X20	760	φ254	8Xφ17	605	815
600	24"	1493	1493	794	232	565.5	150	32	115		M56	4	M56X20	875	φ298	8Xφ22	950	1285

NOTE:
Drawings are for reference only. Please contact factory for separate drawing for each size at sales@free-valve.com

HIGH PERFORMANCE BUTTERLY VALVE DIMENSIONS   DOUBLE FLANGE

Flanged Valves





PN1. 6MP/PN2. 5MPa

VALVE SIZE		A	B	L		F	ZxZ		R	S	WEIGHT (Kg)	
DN	ins			Long	Short		H	G	mm	mm	Long	Short
80	3"	323	227	206	114	27	11*11		φ70	4Xφ9	26	19
100	4"	373	259	229	127	27	14*14		φ70	4Xφ9	34	25
125	5"	404	277	254	140	30	17*17		φ70	4Xφ9	42	30
150	6"	431	291	267	140	32	17*17		φ70	4Xφ9	49	34
200	8"	504	332	292	140	45	17*17		φ70	4Xφ9	77	51
250	10"	551	348.2	300	165	50	22*22		φ102	4Xφ11	102	78
300	12"	642	400	356	178	60	27*27		φ140	4Xφ18	160	112
350	14"	738	462	381	191	60	27*27		φ140	4Xφ18	198	141
400	16"	771	473	406	216	80	27*27		φ165	4Xφ21	233	175
450	18"	906	589	432	223	90	36*36		φ165	4Xφ21	272	213
500	20"	968	618	457	229	90	36*36		φ165	4Xφ21	351	262
600	24"	1098	691	508	267	110	46*46		φ165	4Xφ21	493	386
700	28"	1243	736		292	110	46*46		φ165	4Xφ21		420
750	30"	1293	801	610	318	120	80	22	φ165	4Xφ21	652	598
800	32"	1368	820		318	120	80	22	φ165	4Xφ21		660
900	36"	1509	925	711	330	120	80	22	φ254	8Xφ17	869	789

PN4. OMPa

VALVE SIZE		A	B	L		F	ZxZ		R	S	WEIGHT (Kg)	
DN	ins			Long	Short		H	G	mm	mm	Long	Short
80	3"	332	228	202	114	27	11*11		φ70	4Xφ9	30	21
100	4"	385	258	306	127	27	14*14		φ70	4Xφ9	46	25
125	5"	418	277	381	140	30	17*17		φ70	4Xφ9	59	42
150	6"	453	295	403	140	32	17*17		φ70	4Xφ9	79	51
200	8"	520	330	419	152	50	22*22		φ102	4Xφ11	109	83
250	10"	583	361	475	165	60	27*27		φ102	4Xφ11	135	124
300	12"	694	433	502	178	70	27*27		φ140	4Xφ18	211	173
350	14"	759	467	762	191	80	36*36		φ165	4Xφ21	330	235
400	16"	910	586	838	216	80	36*36		φ165	4Xφ21	423	329
450	18"	981	625	914	225	90	36*36		φ165	4Xφ21	574	457
500	20"	1349	674	991	229	100	46*46		φ165	4Xφ21	660	522
600	24"	1238	780	1143	265	120	80	22	φ254	8Xφ17	862	808

NOTE:
Drawings are for reference only. Please contact factory for separate drawing for each size at sales@free-valve.com

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 HUAMEI 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