Ningjin Huamei Machinery Co., Ltd.
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DOUBLE OFFSET HIGH PERFORMANCE BUTTERFLY VALVES

Ningjin Huamei 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.

Huamei 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

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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		
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		

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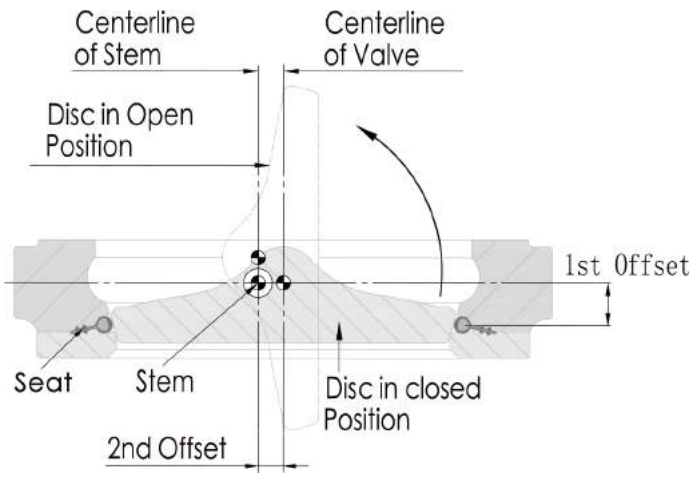
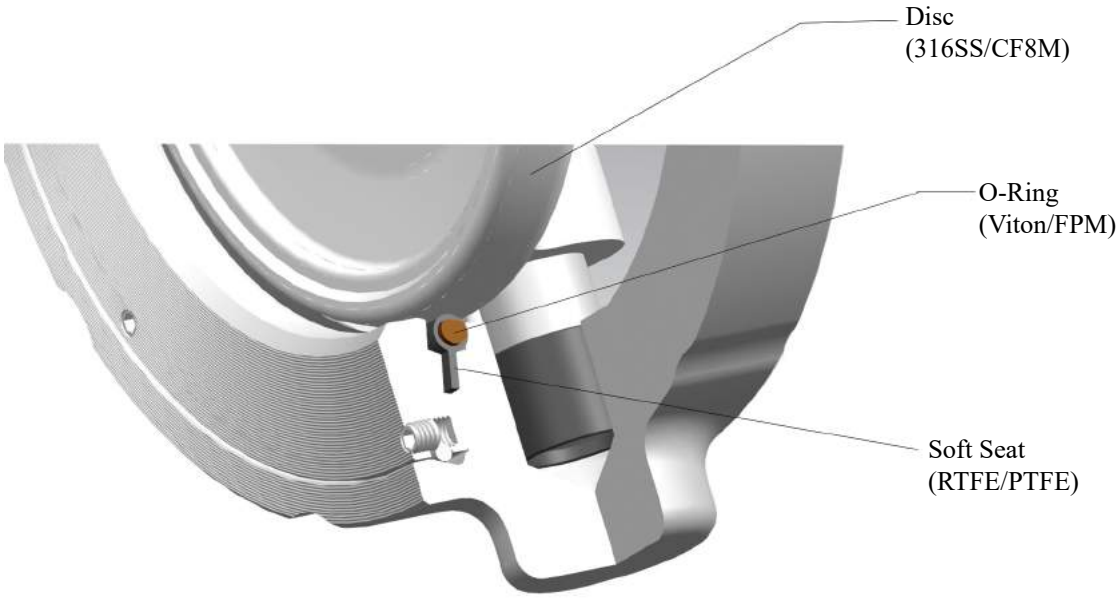
DOUBLE OFFSET/ECCENTRIC DESIGN



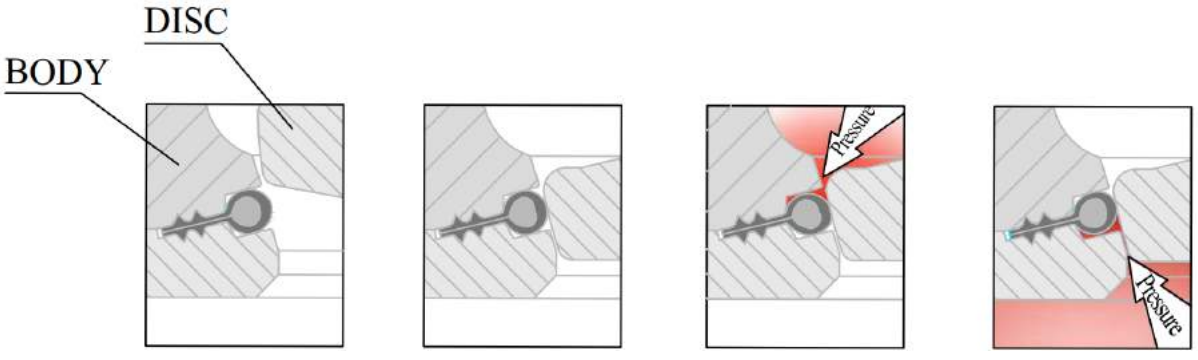
The double offset design of the Huamei High Performance Buttefly Valves assures reduced seat wear and bidirectional, zero leakage shut off throughout the full pressure range.

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 (B TYPE)



BI-DIRECTIONAL SEALING



Seat non-compressed as disc approaches.

Disc in close position, with no line pressure.

Disc in close position, line pressure applied from seat upstream.

Disc in close position, line pressure applied from seat downstream.

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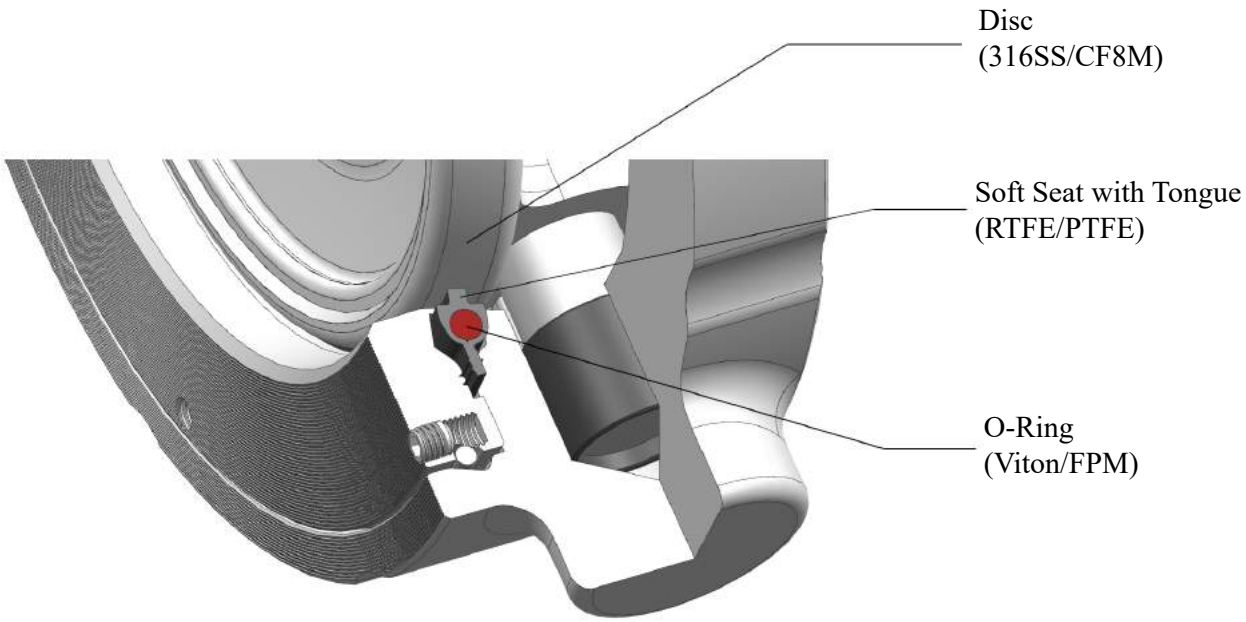
UNIQUE VALVE SEAT DESIGN - SOFT SEAT (F TYPE)



The HUAMEI soft seat valve provides a bi-directional bubble tight shutoff (zero leakage) by the use of a unique seat. This unique seat design creates a self-energized seal in vacuum-to-low pressure applications.

Under higher pressure conditions, the seat is also designed to permit, confine, and direct movement of the soft seat against the disc edge, up to the full ASME Class 150, 300, 600 and PN 10, 16, 25, 40, 100 working pressures.

The soft seat is designed for high services with minimal wear and low torque. Seat replacement is a simple operation, requiring no special tools.

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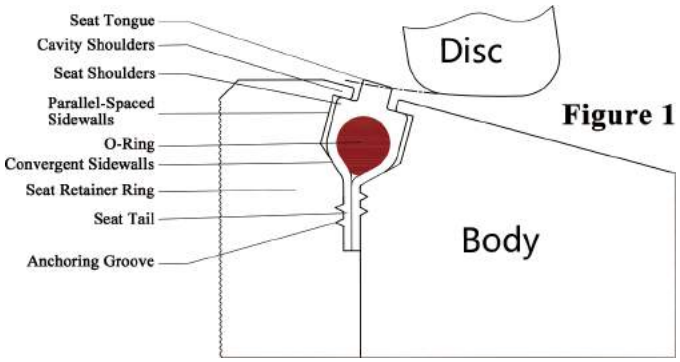
PRINCIPLE OF SEAT SEALING - SOFT SEAT

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.



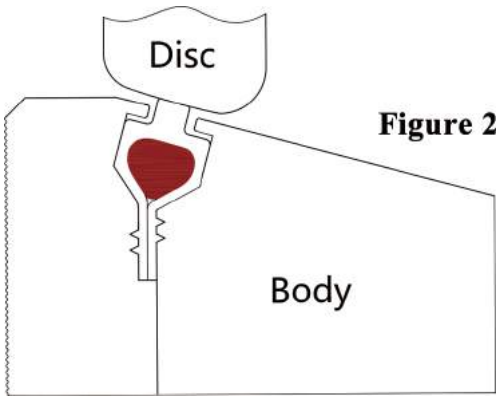


Figure 2 DISC CLOSED, Self-Energized Seal

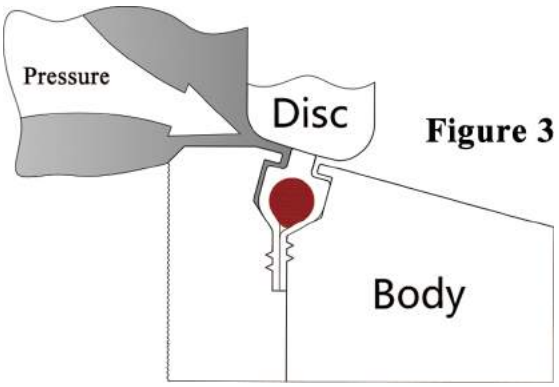
In Figure 2, the disc and seat are engaged, and the process fluid is under low pressure. The edge of the disc, with a larger diameter than the seat tongue, directs movement of the seat radially outward, causing the seat to compress against the convergent sidewalls of the cavity. The elastomeric o-ring 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.



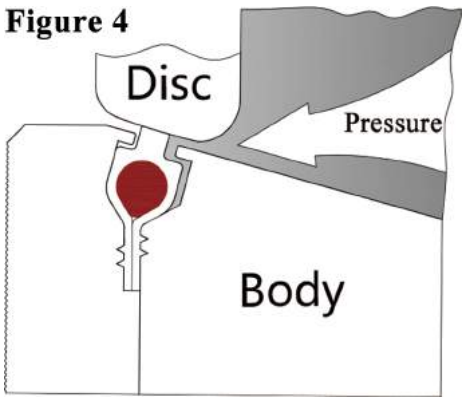


Figure 4 DISC CLOSED, Pressure-Energized Seal (Downstream)

The Huamei HPBFV 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.

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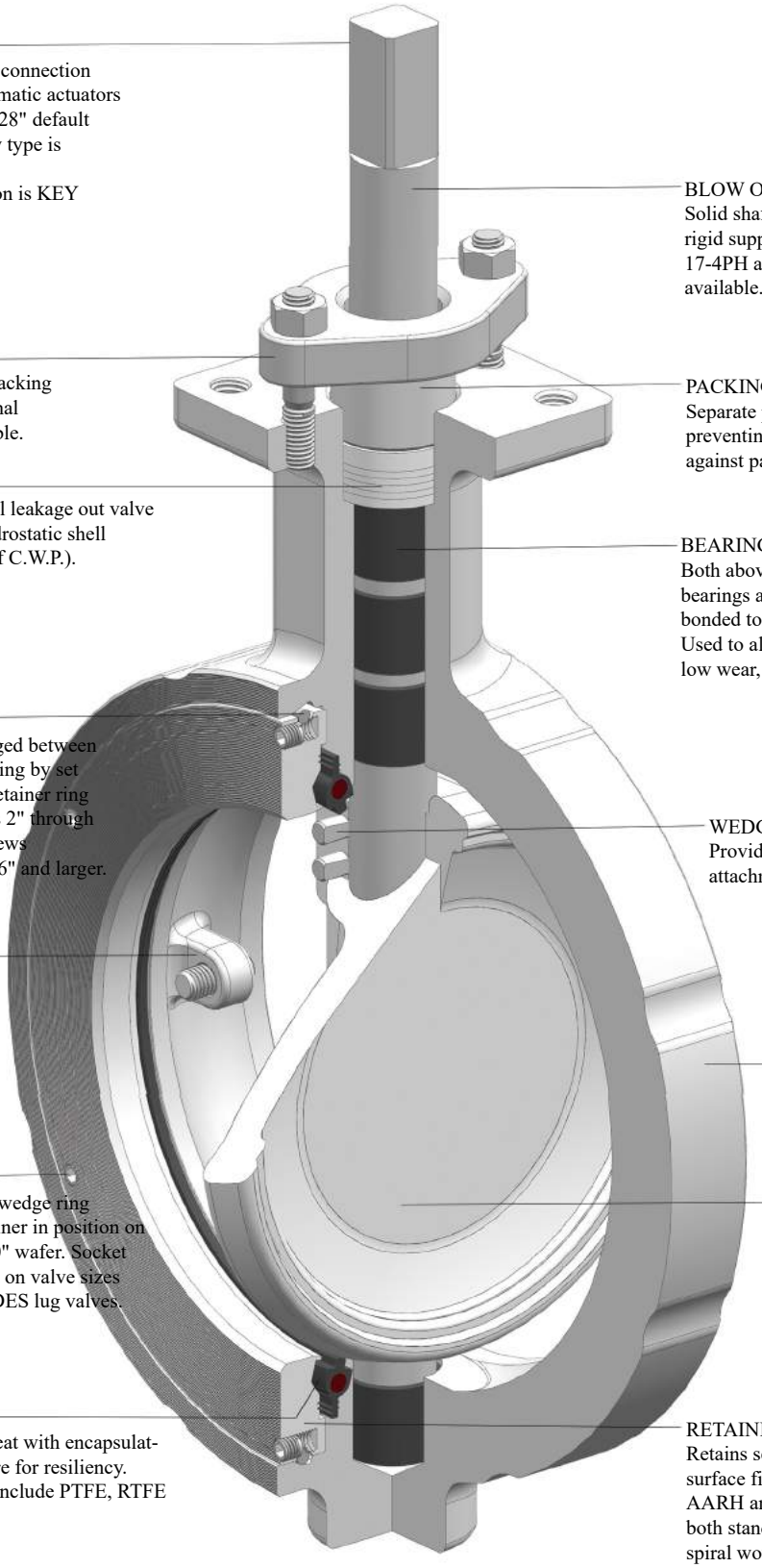
VALVE COMPONENTS - SOFT SEAT



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.

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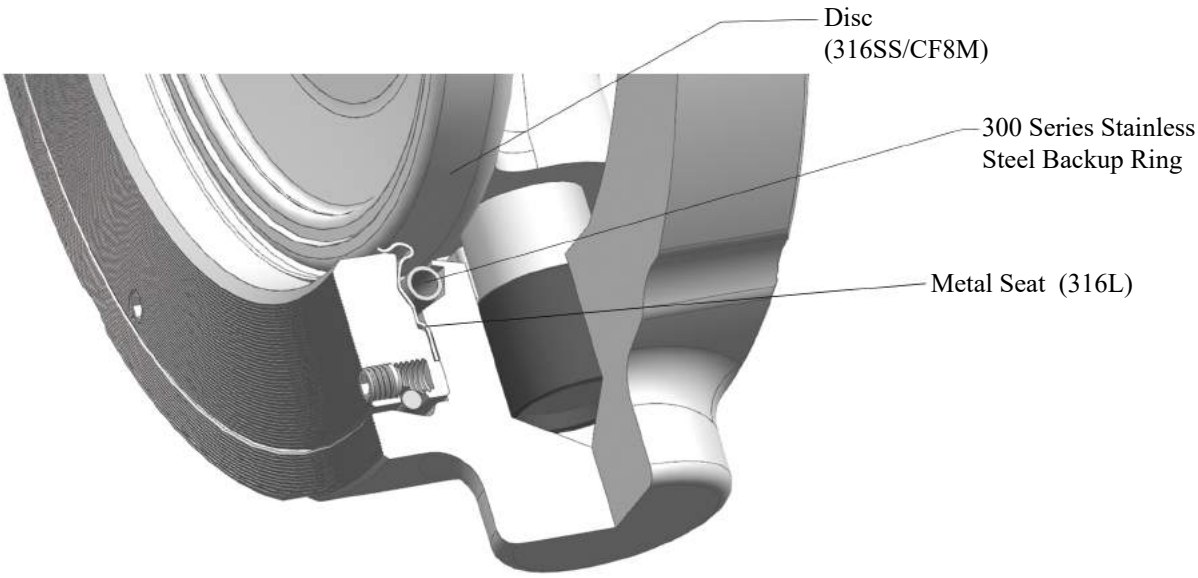
UNIQUE VALVE SEAT DESIGN - METAL SEAT



The HUAMEI 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 HUAMEI 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.

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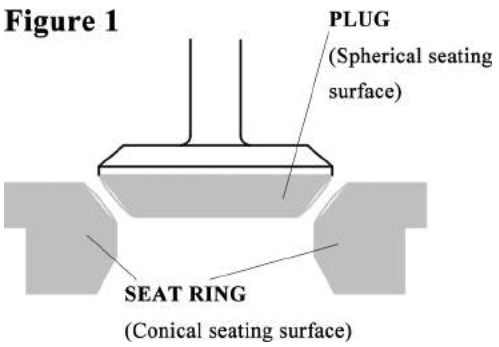
PRINCIPLE OF SEAT SEALING - METAL SEAT

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").



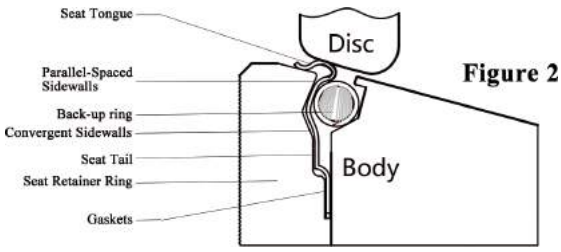


Figure 2 DISC CLOSED, Self-Energized Seal

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.

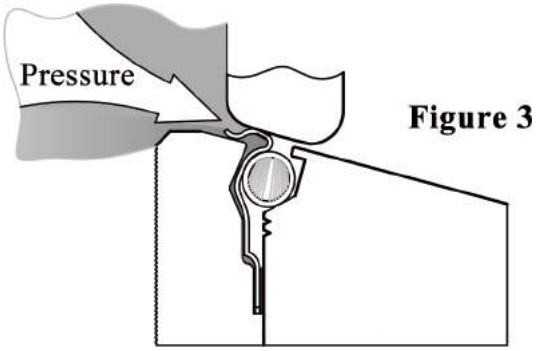


Figure 4

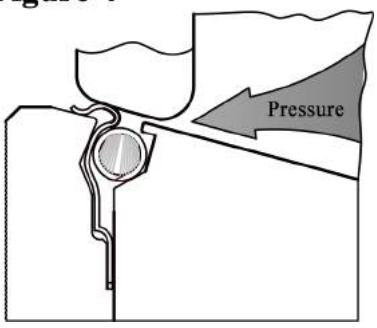


Figure 4 DISC CLOSED, Pressure-Energized Seal (Downstream)

The HUAMEI 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.

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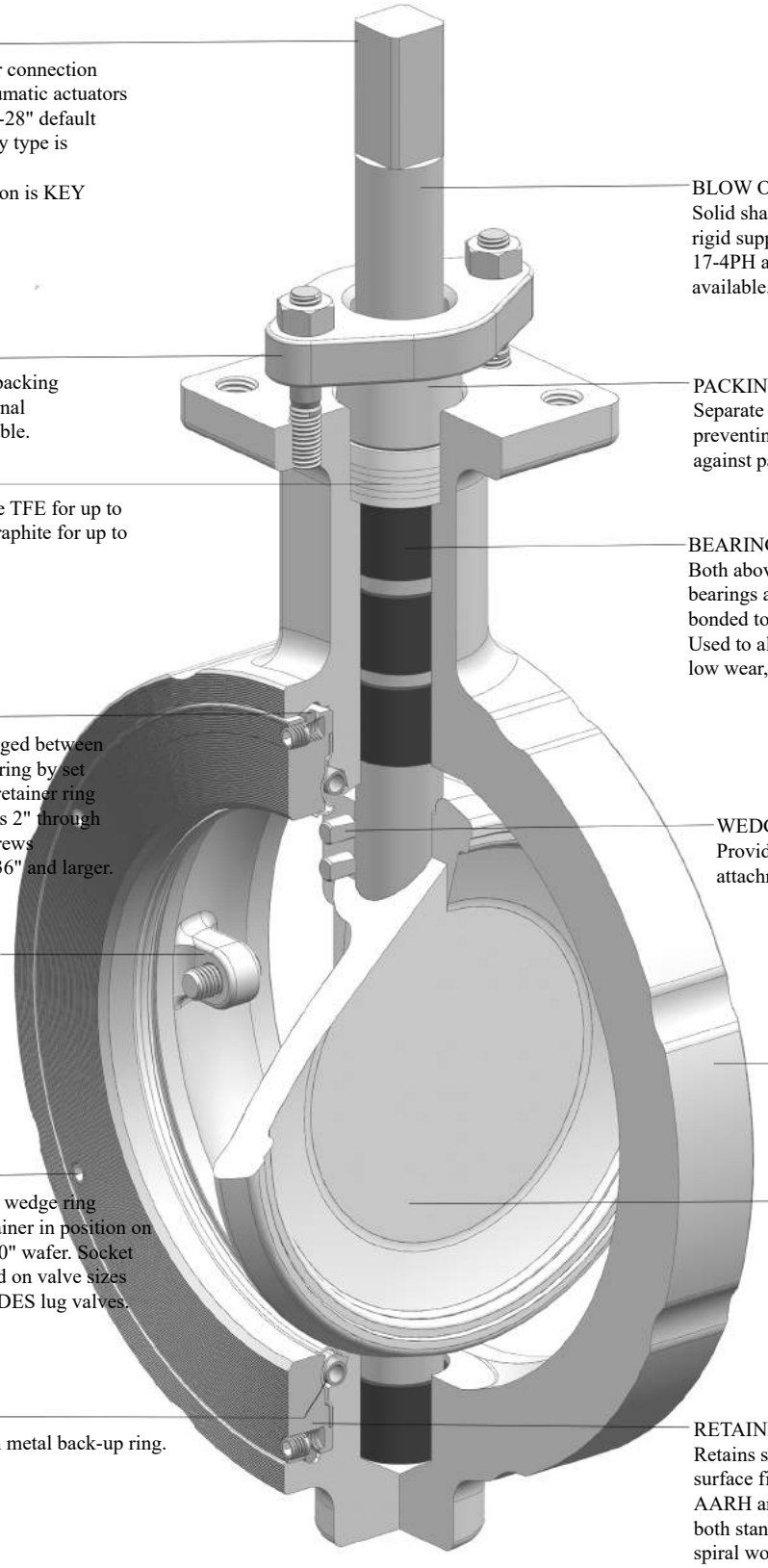
VALVE COMPONENTS - METAL SEAT



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.

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.

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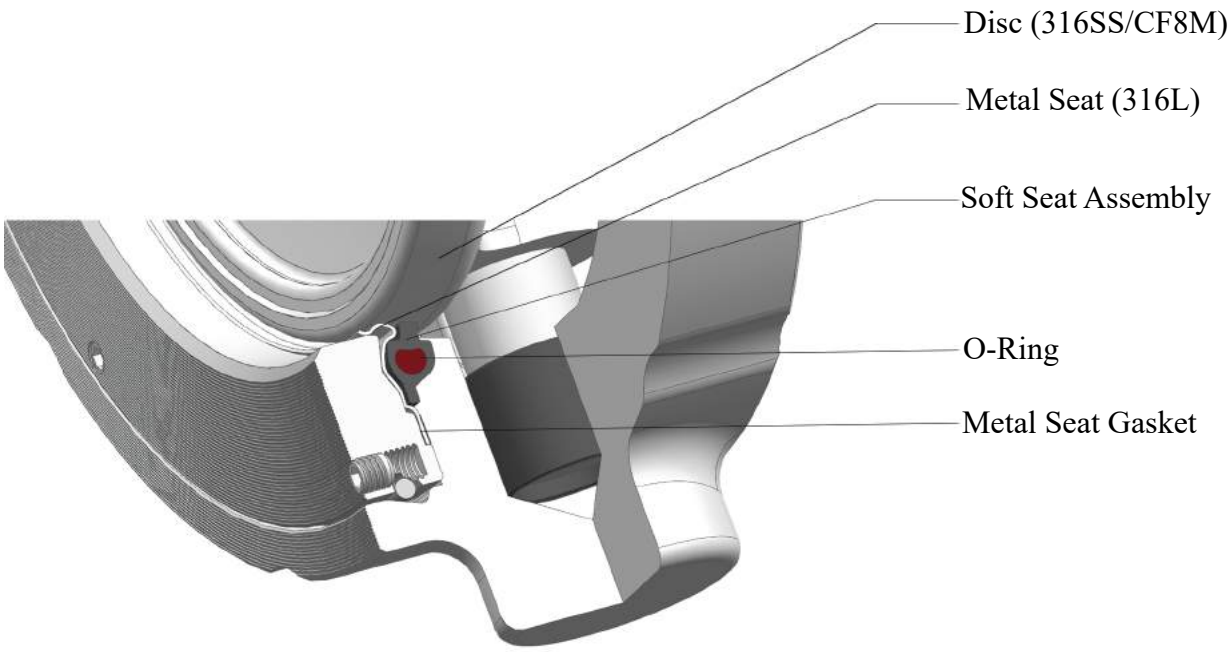
UNIQUE VALVE SEAT DESIGN - FIRE SAFE SEAT



The HUAMEI 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.

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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.

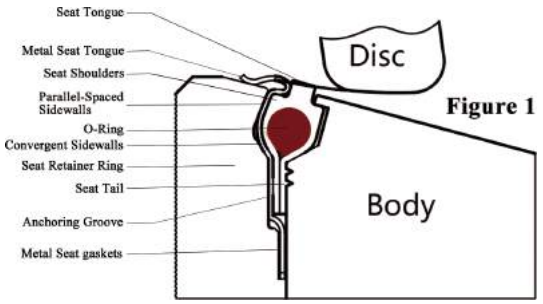

Figure 1

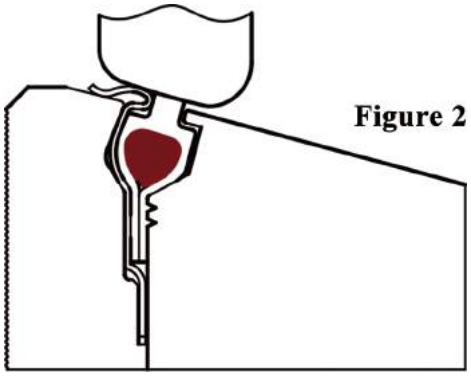
Figure 2

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)

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.

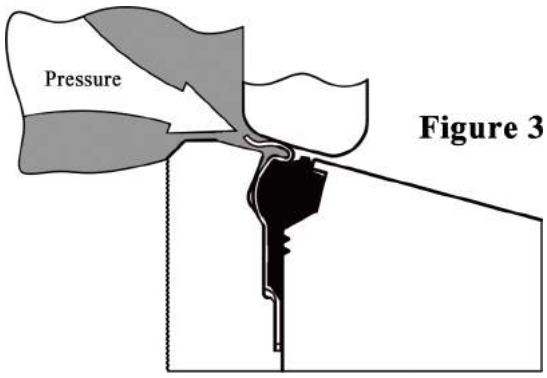

Figure 3

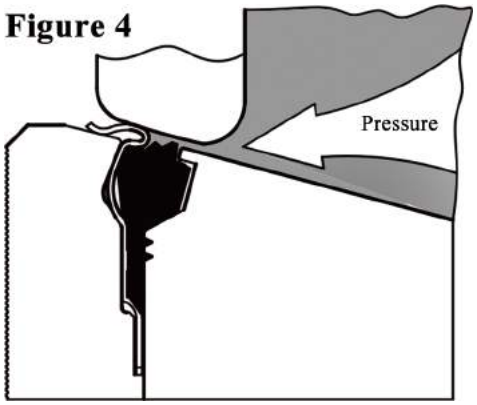

Figure 4

Figure 4 DISC CLOSED, After Fire (Seat Downstream)

The Huamei 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).

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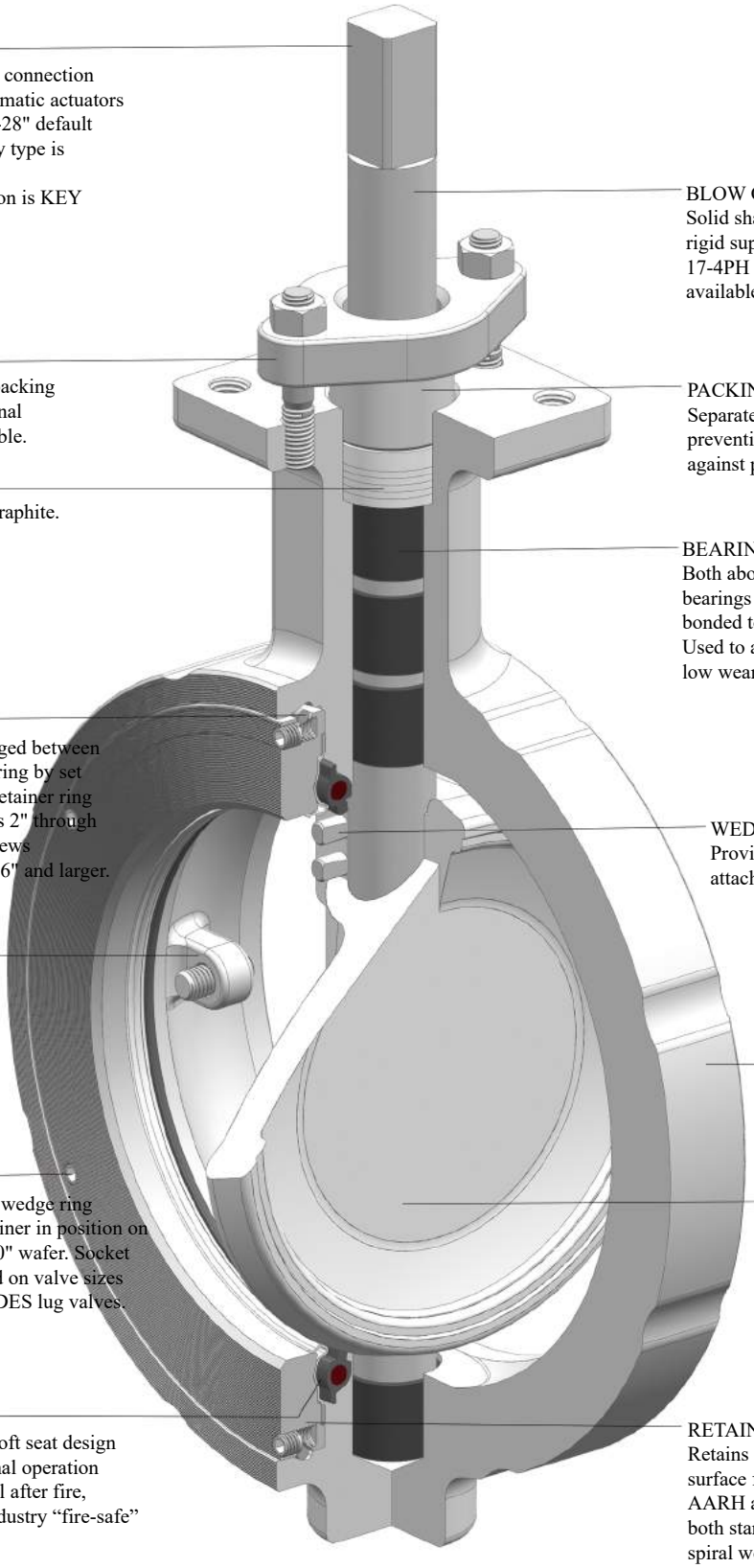
VALVE COMPONENTS - FIRE SAFE SEAT



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.

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
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.

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.

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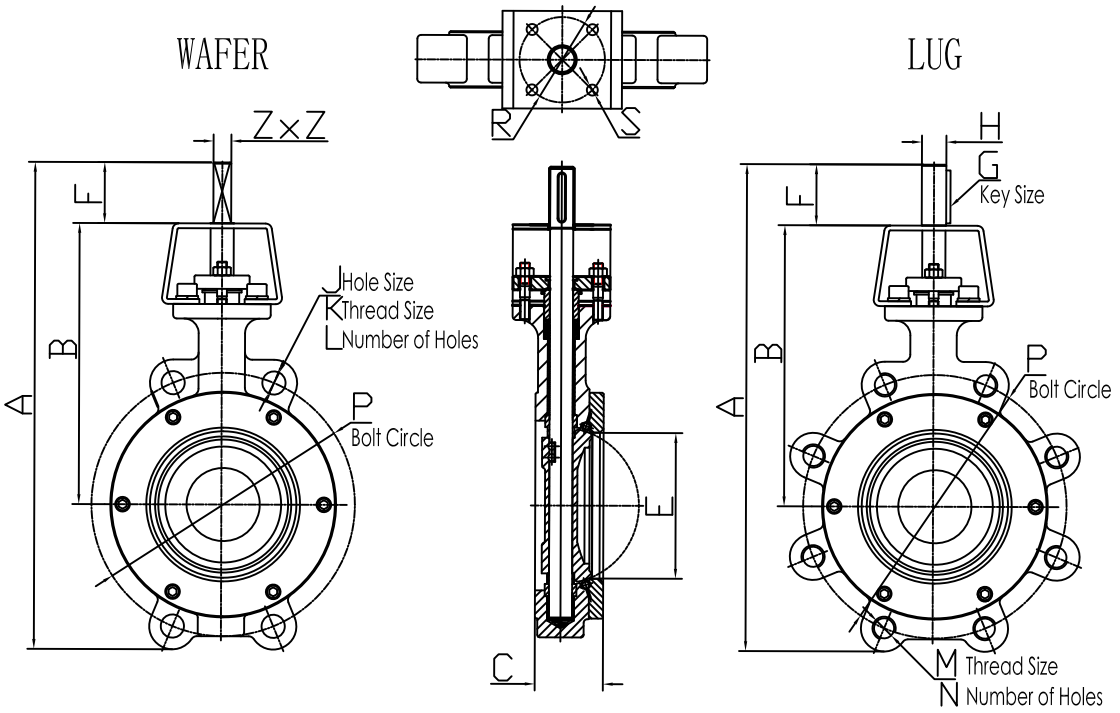
HIGH PERFORMANCE BUTTERLY VALVE DIMENSIONS ANSI CLASS 150



A N S I C l a s s 1 5 0

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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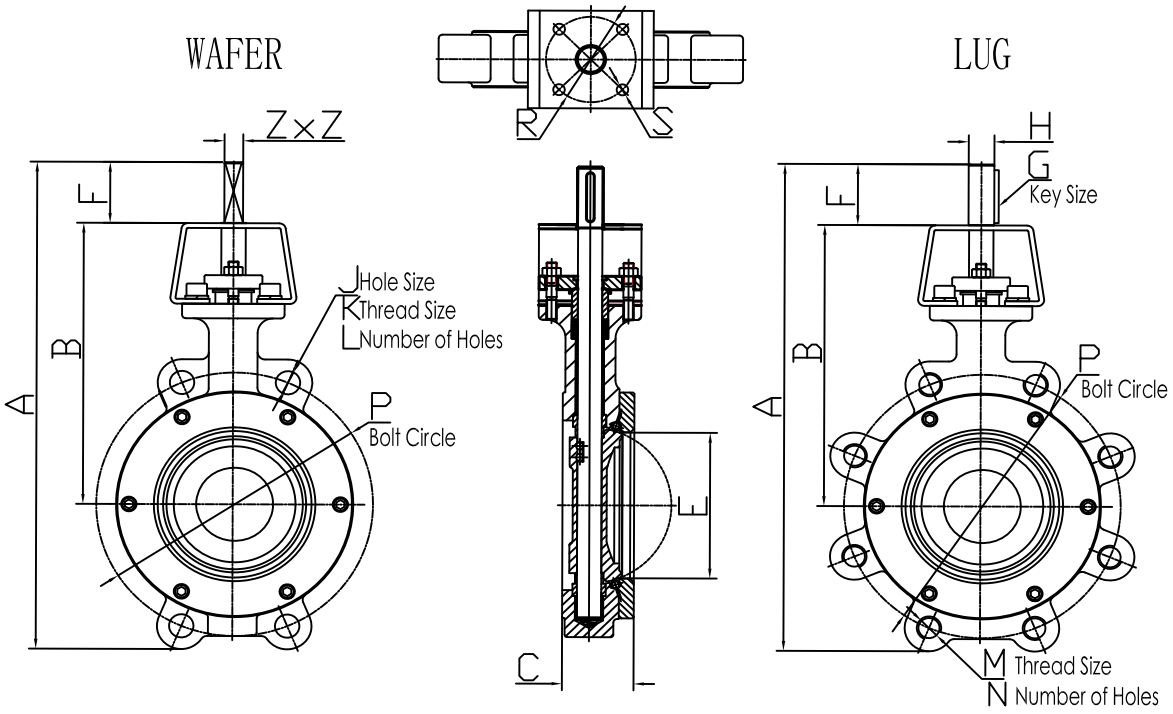
HIGH PERFORMANCE BUTTERLY VALVE DIMENSIONS ANSI CLASS 300



A N S I C l a s s 3 0 0

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	1⅛-8X16	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			1⅛-8	4	1⅛-8X20	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			1¼-8	4	1¼-8X20	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			1¼-8	4	1¼-8X24	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			1¼-8	4	1¼-8X24	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		1½-8	4	1½-8X24	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		1¾-8	4	1¾-8X28	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		1¾-8	4	1¾-8X32	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		1⅝-8	4	1⅝-8X32	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		1⅞-8	4	1⅞-8X32	54.00 1371.6	φ356	8XΦ32	2270	2890

NOTE:
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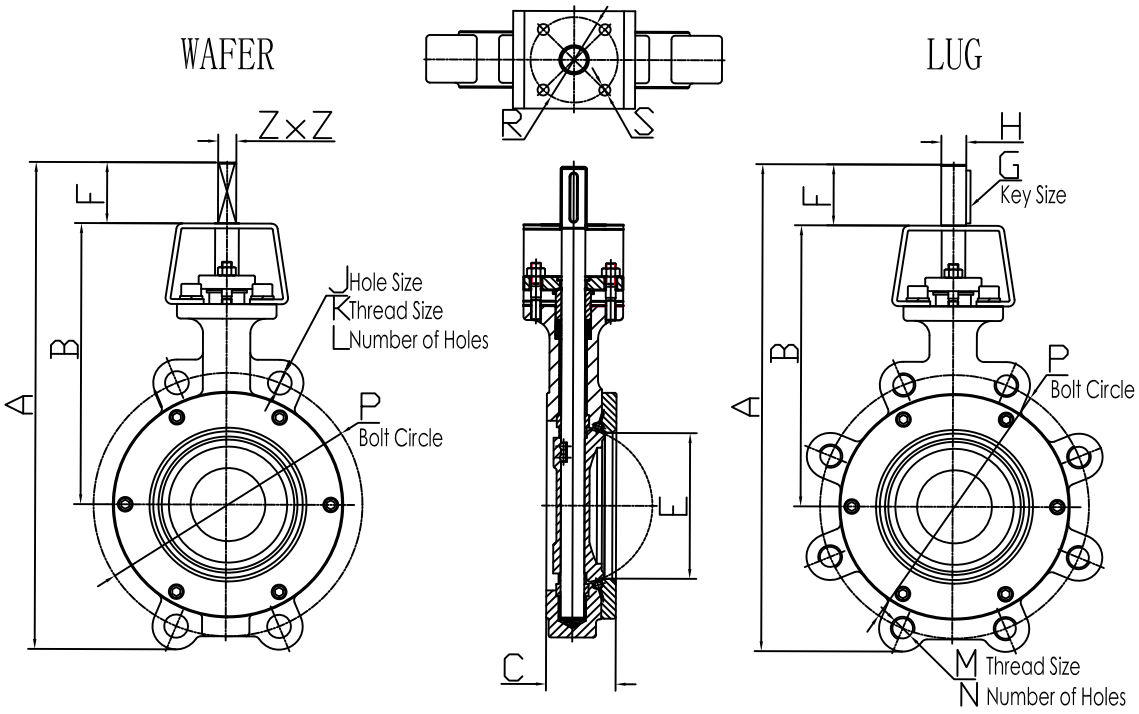
HIGH PERFORMANCE BUTTERLY VALVE DIMENSIONS ANSI CLASS 600



A N S I C l a s s 6 0 0

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	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	4XϕI1	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	4	1 1/8-8X12	13.75 349.3	ϕ102	4XϕI1	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	4	1 1/4-8X16	17.00 431.8	ϕ165	4XϕI2I	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	4	1 1/4-8X20	19.250 489.0	ϕ165	4XϕI2I	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	4	1 3/8-8X20	20.750 527.1	ϕ165	4XϕI2I	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	4	1 1/2-8X20	23.750 603.3	ϕ165	4XϕI2I	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	4	1 5/8-8X20	25.750 654.1	ϕ254	8XϕI7	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	4	1 5/8-8X24	28.50 723.9	ϕ254	8XϕI7	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	4	1 7/8-8X24	33.00 838.2	ϕ298	8XϕI2I	950	1285

NOTE:
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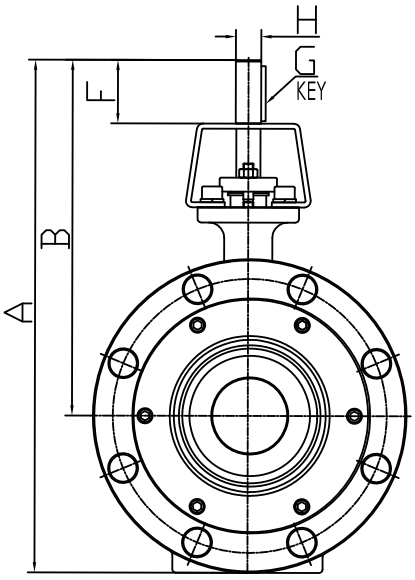
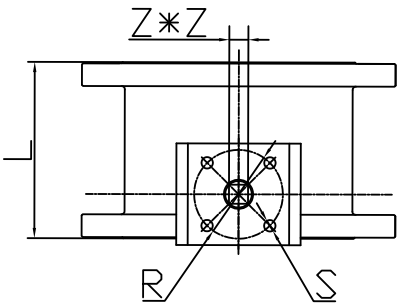
HIGH PERFORMANCE BUTTERLY VALVE DIMENSIONS DOUBLE FLANGE

Flanged Valves





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

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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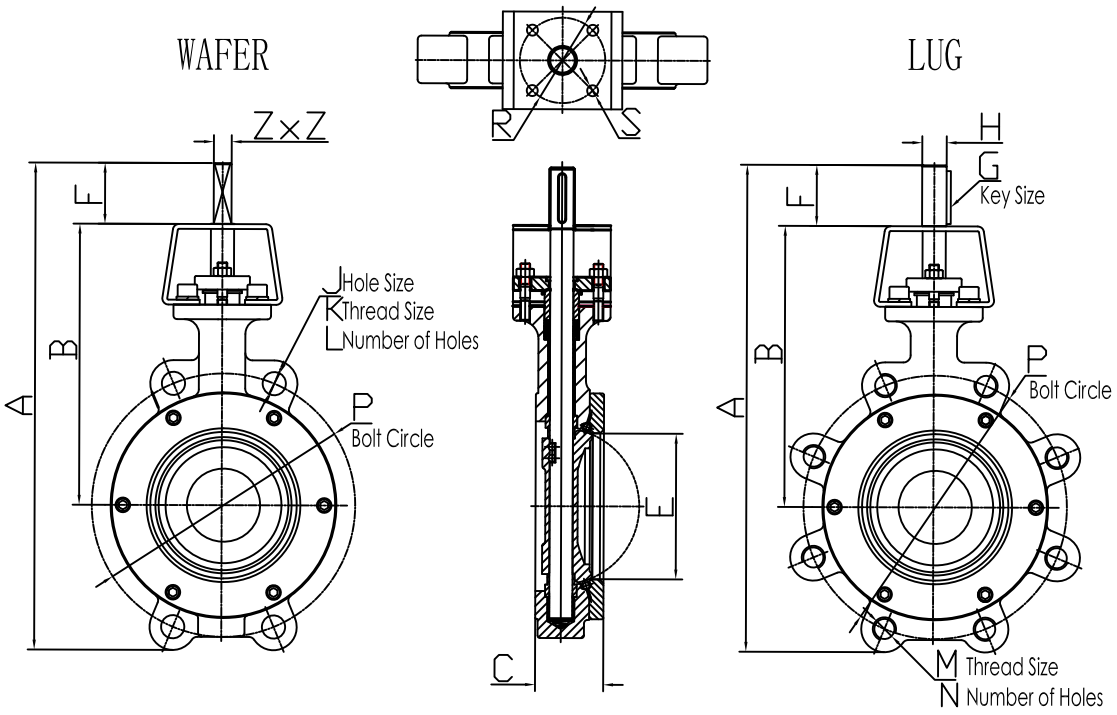
HIGH PERFORMANCE BUTTERLY VALVE DIMENSIONS PN16/PN25



PN1.6MPa/PN2.5MPa

VALVE SIZE		WAFER	LUG	B	C	E	F	Z×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	1050 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

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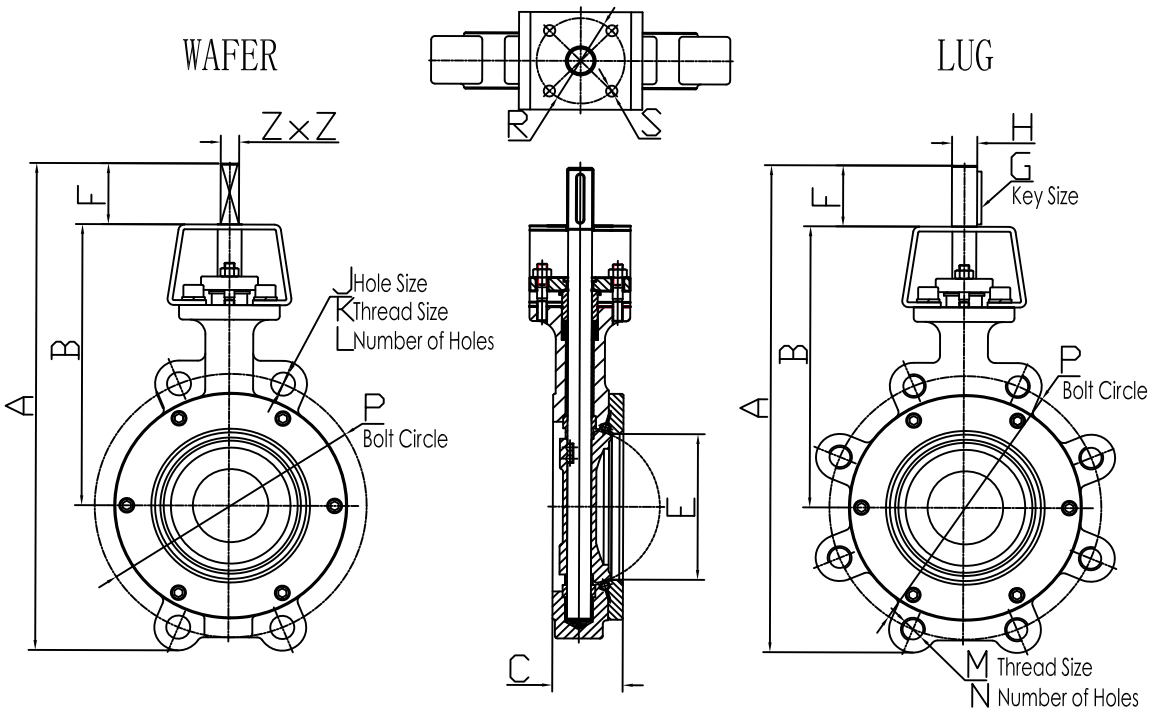
HIGH PERFORMANCE BUTTERLY VALVE DIMENSIONS PN40



PN4.0MPa

VALVE SIZE		WAFER	LUG	B	C	E	F	Z×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:
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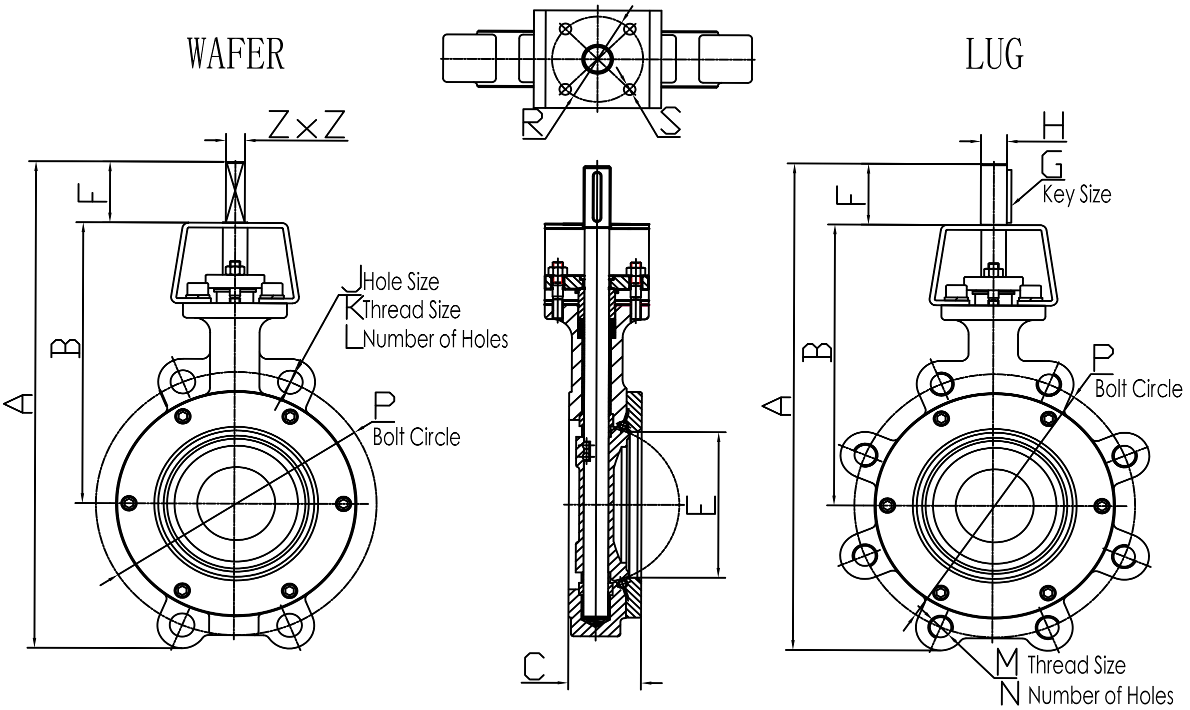
HIGH PERFORMANCE BUTTERLY VALVE DIMENSIONS PN100



PN10.0MPa

VALVE SIZE		WAFER	LUG	B	C	E	F	ZxZ		J	K	L	M xN	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	2½"	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:
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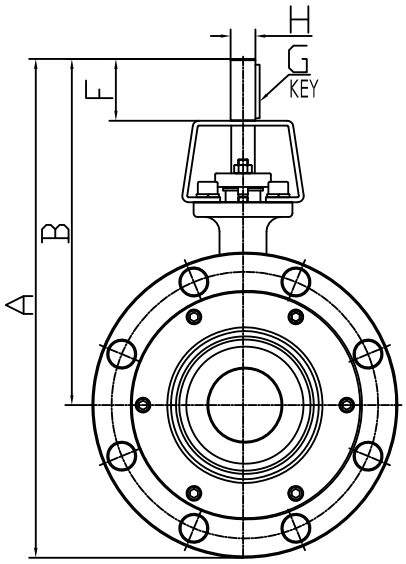
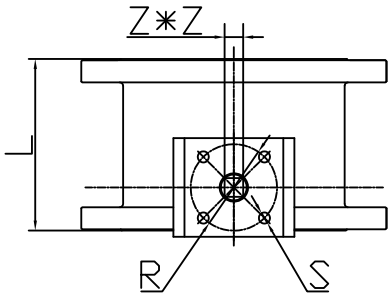
HIGH PERFORMANCE BUTTERLY VALVE DIMENSIONS DOUBLE FLANGE

Flanged Valves



PN1. 6MP/PN2. 5MPa

VALVE SIZE		A	B	L		F	Z x Z		R	S	WEIGHT (Kg)	
DN	ins			Long	Short		H	G	mm	mm	Long	Short
80	3"	323	227	205	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. 0MPa

VALVE SIZE		A	B	L		F	Z x Z		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	305	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:
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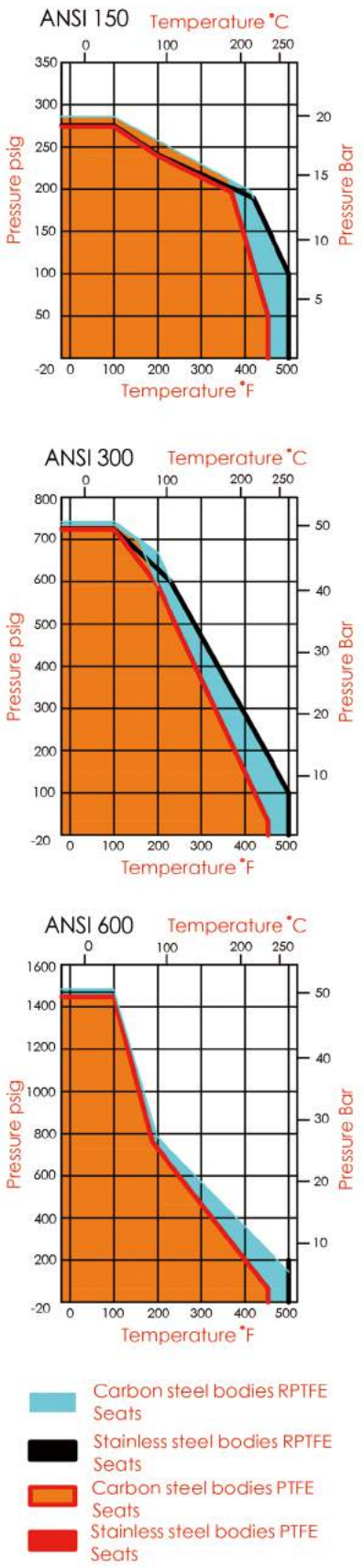
VALVE FLOW COEFFCIENTS

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 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



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Torques

Class 150 / PN16 & 25

ASME 150 - Torques (N-m) SOFT SEAT

Valve Size		0-150 PSIG / 0-14 BAR		285 PSIG / 20 Bar	
		Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)
DN50	2"	15	18	19	25
DN65	2 1/2"	18	24	25	32
DN80	3"	22	24	30	36
DN100	4"	27	41	44	62
DN125	5"	58	70	80	115
DN150	6"	68	93	85	142
DN200	8"	122	175	174	264
DN250	10"	222	301	301	485
DN300	12"	333	468	461	729
DN350	14"	518	711	710	1051
DN400	16"	743	1014	1106	1676
DN450	18"	1052	1610	1533	2383
DN500	20"	1426	2040	2019	3067
DN600	24"	2431	3223	3555	4912
DN650	26"	2795	3285	3560	4960
DN700	28"	3910	4650	5120	7165
DN750	30"	4092	5224	6192	8297
DN800	32"	5050	5978	6632	9514
DN850	34"	5110	5980	6635	9527
DN900	36"	5732	7349	8933	11997
DN1,000	40"	7369	8126	9415	13521
DN1,050	42"	7599	9762	11886	15848
DN1,200	48"	10087	12787	16873	22709
DN1,350	54"	15206	17994	21794	33879
DN1,500	60"	C.F.			

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

Valve Size		0-150 PSIG / 0-14 BAR		285 PSIG / 20 Bar	
		Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)
DN50	2"	25	29	32	35
DN65	2 1/2"	29	33	37	41
DN80	3"	45	50	50	61
DN100	4"	60	72	71	96
DN125	5"	75	85	89	175
DN150	6"	139	220	162	308
DN200	8"	216	380	272	428
DN250	10"	374	603	471	838
DN300	12"	537	875	688	1210
DN350	14"	839	1384	1044	1546
DN400	16"	1091	1766	1654	2393
DN450	18"	1595	3339	2039	3403
DN500	20"	2184	3876	3143	5005
DN600	24"	3384	5124	5512	7243

ASME 150 - Torques (N-m) METAL SEAT

Valve Size		0-150 PSIG / 0-14 BAR		285 PSIG / 20 Bar	
		Upstream	Downstream	Upstream	Downstream
DN50	2"	35	C.F.	51	C.F.
DN65	2 1/2"	44	C.F.	63	C.F.
DN80	3"	77	C.F.	108	C.F.
DN100	4"	107	C.F.	139	C.F.
DN125	5"	115	C.F.	154	C.F.
DN150	6"	223	C.F.	286	C.F.
DN200	8"	342	C.F.	422	C.F.
DN250	10"	575	C.F.	787	C.F.
DN300	12"	775	C.F.	1056	C.F.
DN350	14"	1012	C.F.	1363	C.F.
DN400	16"	1588	C.F.	2192	C.F.
DN450	18"	2367	C.F.	2923	C.F.
DN500	20"	3038	C.F.	4278	C.F.
DN600	24"	4805	C.F.	6461	C.F.

Class 300 / PN40

ASME300 - Torques (N-m) SOFT SEAT

Valve Size		0-150 PSIG / 0-14 BAR		285 PSIG / 20 BAR		400 PSIG / 28 BAR		500 PSIG / 35 BAR		600 PSIG / 42 BAR		700 PSIG / 50 BAR	
		Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)
DN50	2"	18	19	29	35	36	45	43	55	63	72	66	73
DN65	2 1/2"	21	24	32	37	39	50	49	63	65	74	72	78
DN80	3"	23	25	34	40	42	52	52	65	67	76	73	80
DN100	4"	29	44	59	76	57	79	70	99	89	130	104	131
DN125	5"	60	86	79	158	105	165	137	217	145	254	209	295
DN150	6"	72	98	85	164	123	187	157	246	150	260	228	319
DN200	8"	143	201	203	322	242	366	315	462	318	509	441	589
DN250	10"	254	347	315	565	458	627	585	806	607	859	846	1053
DN300	12"	396	541	452	791	724	915	910	1177	971	1243	1368	1520
DN350	14"	647	956	750	1300	1097	1581	1366	1999	1367	2034	1912	2490
DN400	16"	1009	1587	1153	1921	1766	2436	2191	3090	2219	3390	3196	4135
DN450	18"	1287	2003	1494	2712	2016	3212	2680	3964	2711	4294	3826	5053
DN500	20"	2128	2688	2131	3616	3078	4339	3874	5289	4103	5820	5374	6788
DN600	24"	2970	4287	4053	5876	5300	6692	6561	8283	8060	8984	9225	10458

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

Valve Size		0-150 PSIG / 0-14 BAR		285 PSIG / 20 BAR		400 PSIG / 28 BAR		500 PSIG / 35 BAR		600 PSIG / 42 BAR		700 PSIG / 50 BAR	
		Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)
DN50	2"	42	56	47	65	54	73	59	79	64	85	82	95
DN65	2 1/2"	46	59	52	67	58	76	63	81	69	89	88	99
DN80	3"	50	63	56	73	64	83	68	89	73	95	92	108
DN100	4"	73	91	80	104	95	123	112	146	129	168	153	179
DN125	5"	139	243	167	278	181	302	198	332	217	368	287	434
DN150	6"	159	271	182	309	198	337	214	364	232	394	303	464
DN200	8"	246	418	300	510	355	603	428	728	464	789	586	897
DN250	10"	428	727	510	866	601	1021	673	1146	783	1330	940	1439
DN300	12"	610	1036	755	1284	982	1671	1092	1856	1288	2190	1761	2696
DN350	14"	828	1325	1025	1748	1192	2028	1572	2673	1865	3171	2560	3916
DN400	16"	1083	1841	1489	2536	2055	3493	2504	4258	2882	4899	3985	6096
DN450	18"	1574	2676	2011	3418	2593	4408	3093	5259	3639	6187	4963	7594
DN500	20"	2156	3666	3121	5305	4137	7033	5214	8866	6007	10211	7901	12089
DN600	24"	3339	5009	5441	7617	7318	10245	8919	12486	10809	15130	14335	18060

ASME 300 - Torques (N-m) METAL SEAT

Valve Size		0-150 PSIG / 0-14 BAR		285 PSIG / 20 BAR		400 PSIG / 28 BAR		500 PSIG / 35 BAR		600 PSIG / 42 BAR		700 PSIG / 50 BAR	
		Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)
DN50	2"	77		102		114		132					
DN65	2 1/2"	78		109		121		135					
DN80	3"	82		114		127		141					
DN100	4"	109		141		155		168					
DN125	5"	226		288		366		470					
DN150	6"	255		309		391		519					
DN200	8"	373	C.F.	482	C.F.	601	C.F.	737	C.F.	C.F.	C.F.	C.F.	C.F.
DN250	10"	618		837		1028		1320					
DN300	12"	828		1229		1583		2147					
DN350	14"	1101		1629		2056		2711					
DN400	16"	1738		2429		2857		3530					
DN450	18"	2611		3394		4222		4840					
DN500	20"	3567		4858		5923		7370					
DN600	24"	6096		7570		8880		9936					

Class 600 / PN100

ASME600 - Torques (N-m) SOFT SEAT

Valve Size		0-150 PSIG / 0-14 BAR		500 PSIG / 35 BAR		800 PSIG / 55 BAR		1000 PSIG / 70 BAR		1200 PSIG / 85 BAR		1480 PSIG / 100 BAR	
		Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)
DN50	2"	25	30	66	67	77	81	80	109	95	115	100	137
DN65	2 1/2"	32	39	68	69	79	84	85	113	97	118	107	141
DN80	3"	35	43	70	71	81	86	91	121	99	120	112	148
DN100	4"	67	88	78	117	101	162	147	205	141	197	186	266
DN125	5"	100	129	145	242	205	316	263	348	288	406	338	470
DN150	6"	120	151	150	248	210	322	317	433	294	411	406	573
DN200	8"	277	346	348	487	508	712	738	995	732	1024	996	1403
DN250	10"	532	651	618	865	918	1285	1323	1800	1336	1871	1751	2479
DN300	12"	787	963	1057	1480	1596	2234	2083	2836	2346	3285	2586	3662
DN350	14"	946	1313	1391	1948	2113	2958	2693	3668	3119	4366	3523	5043
DN400	16"	1135	1476	1952	2733	2965	4152	3708	5115	4377	6128	5179	7267

ASME 600 - Torques (N-m) METAL SEAT & FIRE SAFE SEAT

Valve Size		0-150 PSIG / 0-14 BAR		500 PSIG / 35 BAR		800 PSIG / 55 BAR		1000 PSIG / 70 BAR		1200 PSIG / 85 BAR		1480 PSIG / 100 BAR	
		Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)	Seat Upstream (SUS)	Seat Downstream (SDS)
DN50	2"	Contact Factory											
DN65	2 1/2"												
DN80	3"												
DN100	4"												
DN125	5"												
DN150	6"												
DN200	8"												
DN250	10"												
DN300	12"												
DN350	14"												
DN400	16"												

DOUBLE OFFSET HIGH PERFORMANCE BUTTERFLY VALVES

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Maximum Allowable Shaft Torques (N-m)

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	C.F.
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	C.F.	
DN700	28"	27,829	C.F.	
DN750	30"	47,813	95,010	C.F.
DN800	32"	47,813	C.F.	NA
DN850	34"	47,813	C.F.	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"	C.F.	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 HUAMEI 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 HUAMEI valves are bi-directional (in some instances, modifications may be required to operate this arrangement for dead end service) 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 HUAMEI 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 fullclosed position! For more assistance, please feel free to contact Huamei Machinery.

Figure 1

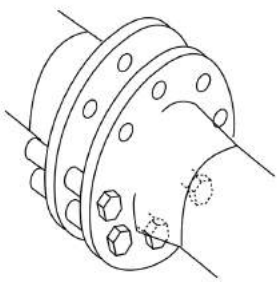

Figure 2