ZSPEC.COM

ZSPEC
FLOW CONTROL

OILFIELD | MARINE | INDUSTRIAL | AGRICULTURE

DOUBLE-OFFSET HIGH-PERFORMANCE BUTTERFLY VALVE

Z TYPE 1000/2000 SERIES HIGH-PERFORMANCE DOUBLE-OFFSET BUTTERFLY VALVE

TYPE: Wafer, Lug, Flanged
SIZE: 2" ~ 48"
PRESSURE RATING: Class 150, Class 300
TEMPERATURE RATING: -27°F ~ 1000°F
Patented Floating Seat Retainer
Bi-Directional Zero Leakage
Low Fugitive Emission System
Fire-Safe: Compliance with API 607

ZSPEC Flow Control, based in Houston, TX, is a leading supplier of valves, fittings, and piping products. With decades of industry experience and knowledge, we invest in inventory and support our customers with a high level of customer service. We are guided by a singular determination to do whatever it takes to be a reliable supplier for our customers with ready-to-ship inventory. With knowledgeable stocking reps across the United States, ZSPEC helps reduce your operating costs by having products in stock and ready to ship, allowing you to spend more time and money focusing on your customer.

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FEATURES

GLAND FLANGE

Uses a fully adjustable two-piece gland flange to ensure an even packing load over 360°.

GLAND BUSH

Stands alone with gland flange, preventing uneven down-pressure on gland packing.

GLAND PACKING

Uses PTFE or same as the valve seat. Performance is compliant with API 598's testing pressure.

VALVE SEAT

Bi-directional, zero-leakage design. Uses MPTFE, RTFE, or UHMWPE.

TAPER PIN

Tangentially positioned half in disc and half in stem to eliminate potential of failure.

THRUST RING

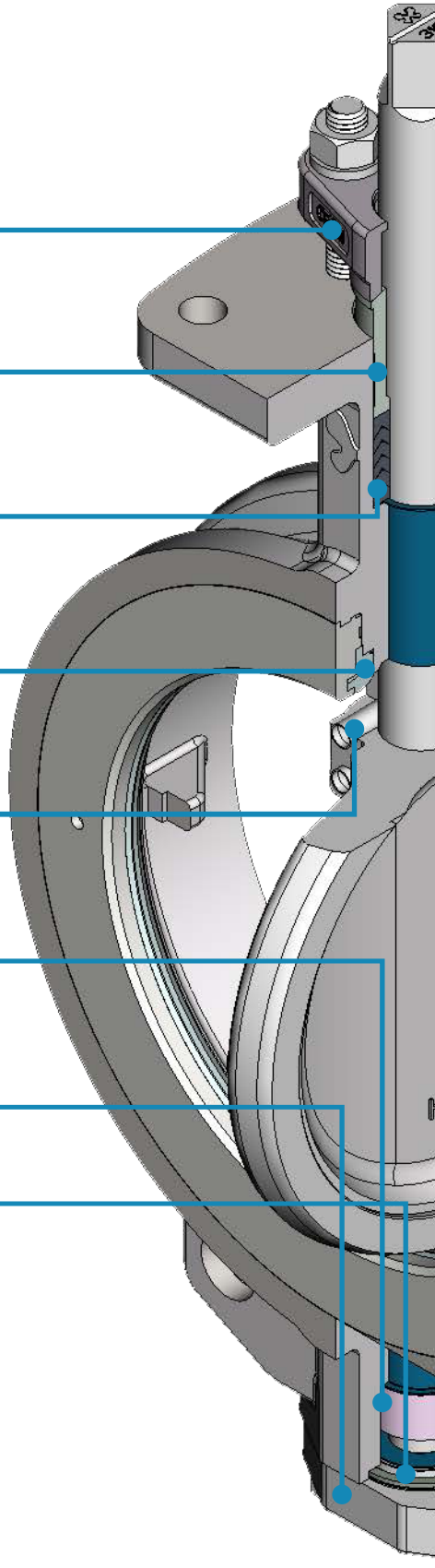
Uses SS316L as material. Positioned in bottom of stem to prevent incorrect stem shift.

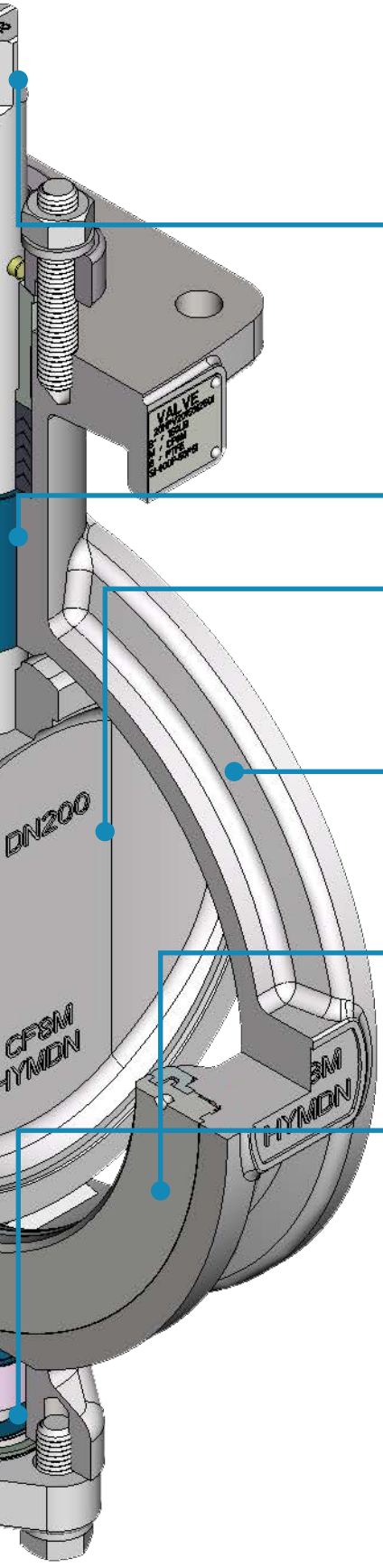
BOTTOM COVER

Uses SS316L to prevent abnormal leakage.

BOTTOM GASKET

Uses RTFE or GRAPHITE as the material.





FEATURES (CONT.)

VALVE STEM

Uses stainless steel with hard chrome plating. A strong and rigid one-piece stem design is utilized, which largely increases the overall strength. Stem and corresponding component sizes are all compliant with ISO 5217. Stem material and disc position are marked on top of the stem.

SELF-LUBRICANT BUSH

Uses RTFE+SS316L as material to reduce stem friction.

VALVE DISC

Uses stainless steel with hard chrome plating. A streamlined design is also utilized with enhanced noise reduction and turbulence.

VALVE BODY

A name plate is designed to display detailed information. Compliant with API 609 & ASME B16.34.

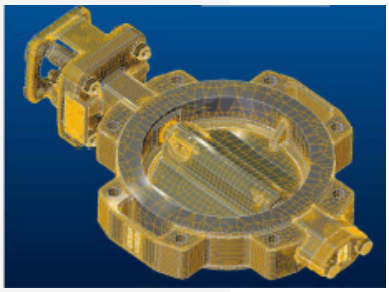
PATENTED RETAINER RING

Uses a no-screw floating design to eliminate cold flow. This design provides a positive tight shut-off of the seat. The surface roughness is 25-200 AARH.

THRUST PLATE

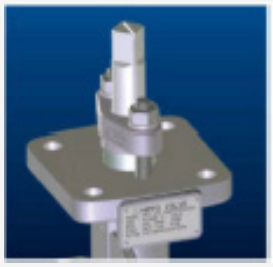
Uses stainless-steel RTFE + SS316L to reduce operating friction between the stem and bottom cover.

FEATURES (CONT.)



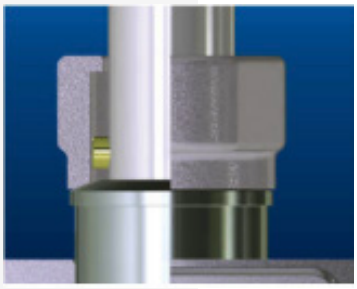
VALVE BODY

ZSPEC's valves are designed in 100% compliance with API 609 / ASME B16.34 and uses PTC Creo Parametric (Pro/E) computer-aided-design in every component, resulting in the best reliability.



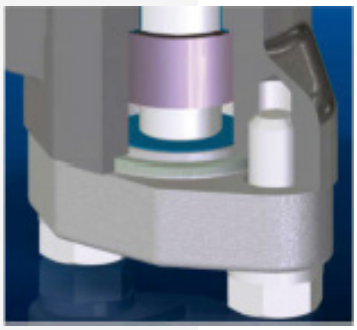
TOP MOUNTING

The yoke is designed with a draining system for outdoor service. Compliant with ISO 5211.



ANTI-BLOW-OUT STEM (UPSIDE AND ANTI-ELECTROSTATIC SYSTEM

Uses an anti-blow-out design and optional anti-electrostatic system. Compliant with API 609 and ATEX.



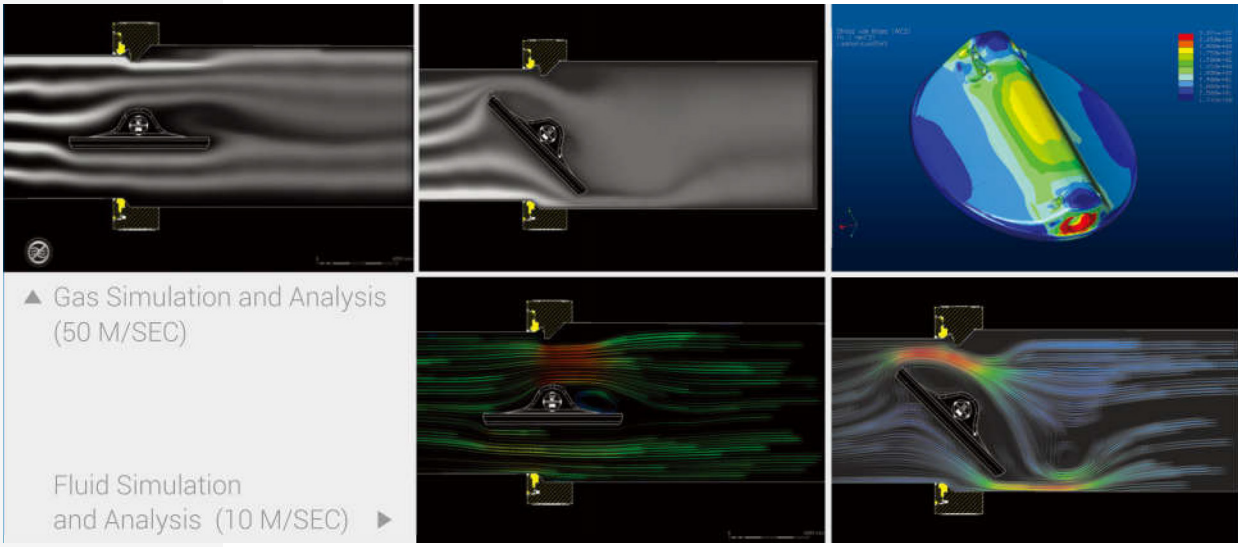
ANTI-BLOW-OUT STEM (DOWNSIDE AND THRUST RING FOR POSITIONING

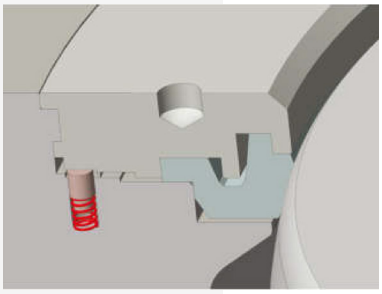
A rigid thrust ring keeps the stem in position. The stem threads are designed to prevent a blow-out. These features are key components of ZSPEC's valve reliability.

FEATURES (CONT.)

VALVE DISC

The valve's disc uses stainless steel with computer-aided PTC Creo Parametric software to analyze stress performance to achieve API 598. Based on advanced 3D CAD simulation, ZSPEC's valve offers a streamlined disc with reduced noise and turbulence. All disc surfaces and stems are hard-chrome-plated. This feature significantly enhances disc performance of anti-rubbing and anti-shocking, which results in a better life cycle.





PATENTED RETAINER RING

ZSPEC's valve includes a patented retainer ring. During installation, screw this ring into the internal tooth of the valve body, then a stainless steel spring catch and PTFE pin will pop up to secure the retainer ring and valve body into the correct position. This design expands the flange-gasket's touching surface, which provides better tolerance for installation error.

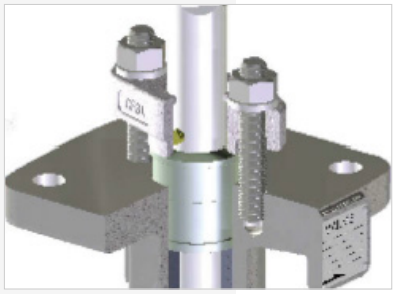
MARKING AND NAME PLATE

ZSPEC's valve is designed with an additional plate that provides detailed information. Compliant with MSS-SP-25 & API 609.

FEATURES (CONT.)

LOW FUGITIVE EMISSION GLAND PACKING SYSTEM

Compliant with latest DIN3780 and MSS-SPI 43.



GLAND FLANGE AND GLAND BUSH

Uses a fully adjustable two-piece gland with spherical mating surfaces to ensure an even packing load over 360°. See items 1 and 4 in the Gland Packing System below.

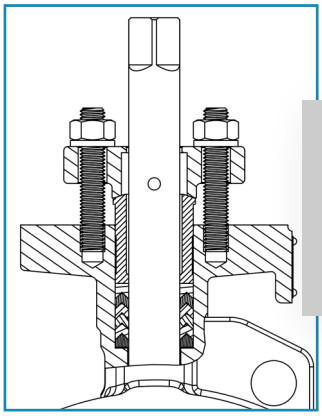
LONG GLAND BUSH FOR POSITIONING

A long gland bush ensures the gland flange always stays centered while adjusting the packing gland. This prevents the gland bush from rubbing and jamming with the stem. See items 2, 3, and 5 in the Gland Packing System below.

GLAND PACKING SYSTEM

FIVE TYPES:

1. Standard Z-Type PTFE or RTFE
2. Live-Loading Low Fugitive Emission Z-Type PTFE or RTFE
3. Standard GRAPHITE
4. Live-Loading Low Fugitive Emission GRAPHITE (EVSP 9000 or 3300W Available)
5. Live-Loading with Lantern Ring

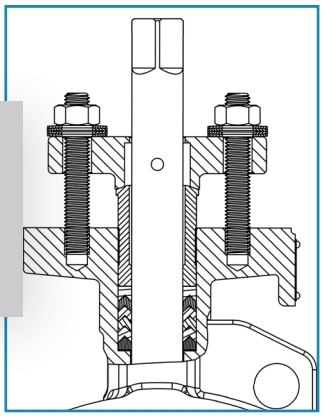


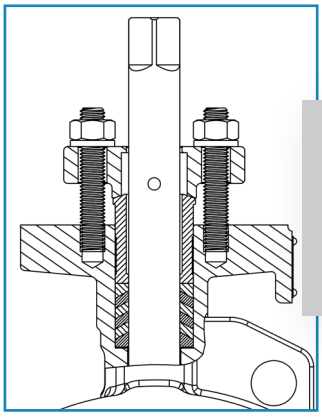
1

STANDARD Z-TYPE PTFE OR RTFE GLAND PACKING SYSTEM

LIVE-LOADING LOW FUGITIVE EMISSION Z- TYPE PTFE OR RTFE PACKING SYSTEM

2





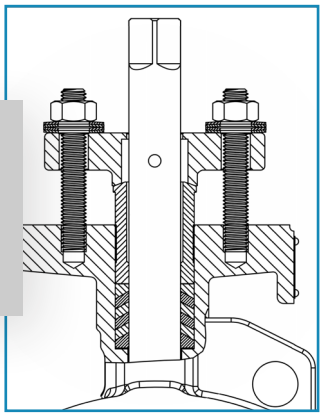
3

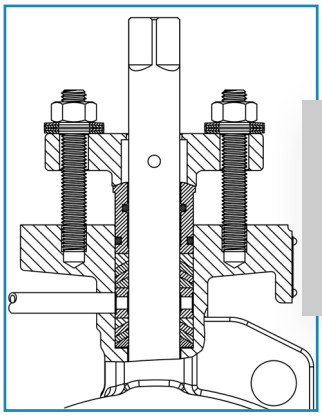
STANDARD GRAPHITE PACKING SYSTEM (FIRE-SAFE ONLY)

LIVE-LOADING LOW FUGITIVE EMISSION GRAPHITE GLAND PACKING SYSTEM

(EVSP9000 or 3300W Available)

4

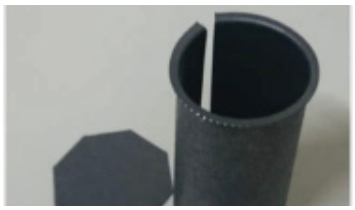




5

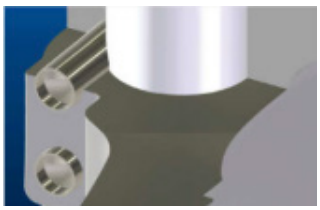
LIVE-LOADING WITH LANTERN RING GLAND PACKING SYSTEM

A lantern ring with double packing leak-off-monitoring, provides purge functionality and monitors leakage from bottom packing.



SELF-LUBRICANT BUSH

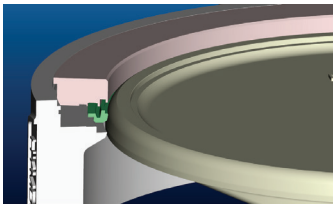
Uses an RTFE + SS316L stem bush. Has an excellent working temperature, strength rating, and low friction factor.



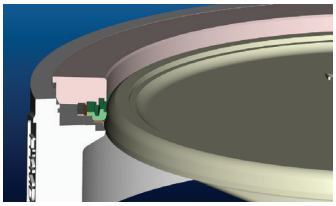
TAPER PIN

Disc taper pins are tangentially positioned half in disc and half in stem, placing them in compression rather than shear, which eliminates the potential of failure. This method is 3 times stronger than the traditional shear way.

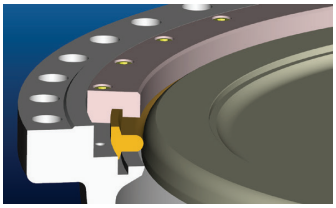
VALVE SEAT



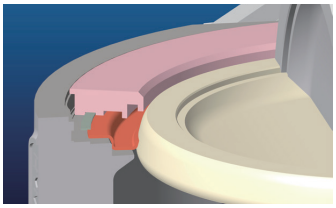
SOFT SEAT



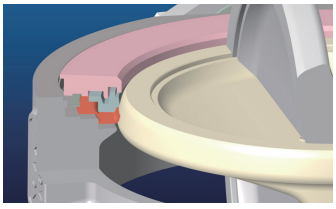
FIRE-SAFE SEAT



RUBBER SEAT



SOLID METAL SEAT



METAL DOUBLE SEAT

ZSPEC's valve design includes five types of seat options: Soft Seat, Fire-Safe Seat, Rubber Seat, Solid Metal Seat, and Metal Double Seat.

Pressure temperature ratings comply with API 609, using a reliable section and corresponding floating seat to fulfill bi-directional, drop-tight, zero leakage shut-off throughout all pressure ranges, as well as full-rated differential pressure. This design reduces rubbing and friction between the disc and the seat, which significantly extends the operational life cycle.

With the variability of seat material, our five seat types meet a wide range of working conditions.

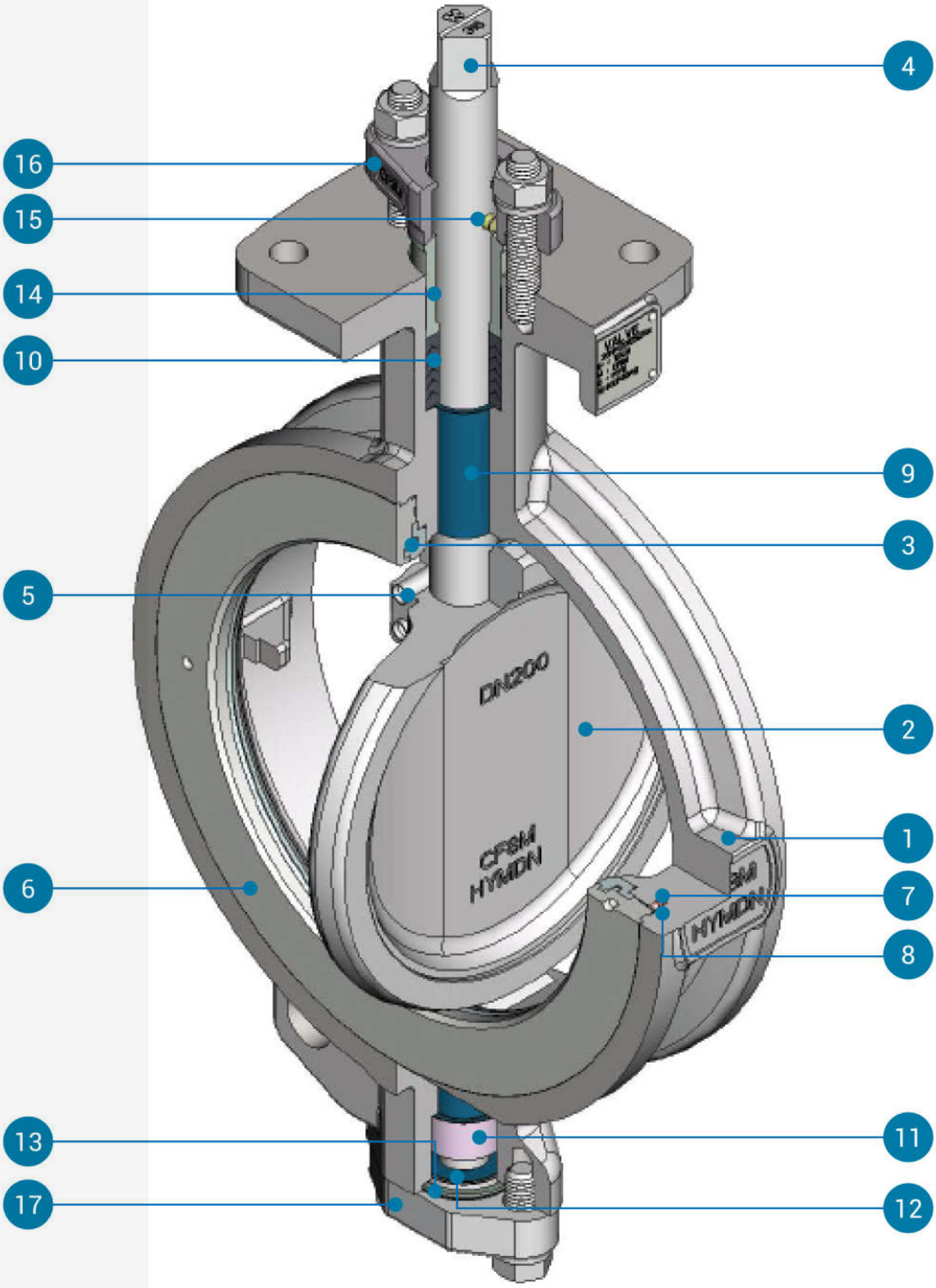
Our Soft Seat includes PTFE, GRAPHITE, or glass fiber-based RTFE, MPTFE, UHMWPE, and Super RPTFE. Compared to general PTFE, our MPTFE has a 2.5 times higher Load-Deformation-Rate and 1.5-4 times higher Acid-Alkaline Permeability. MPTFE can hold 285 PSI with bi-directional zero leakage after 100,000 operations. With our Super RTFE, it can even achieve a million times the normal life cycle.

Our Fire-Safe Seat is designed and certified with API 607, ISO 10497 and provides enhanced safety in hazardous regions.

The Solid Metal seat is designed to be wear-resistant and high-temperature friendly. Depending on nominal diameters, this metal-to-metal design is capable of reaching a tight shut-off of FCI 70-2 Class V-VI.

The Metal Double seat is designed with a dual-seat plate and an additional buffer on the back of the metal seat to improve the life cycle of the solid metal seat.

VALVE COMPONENTS



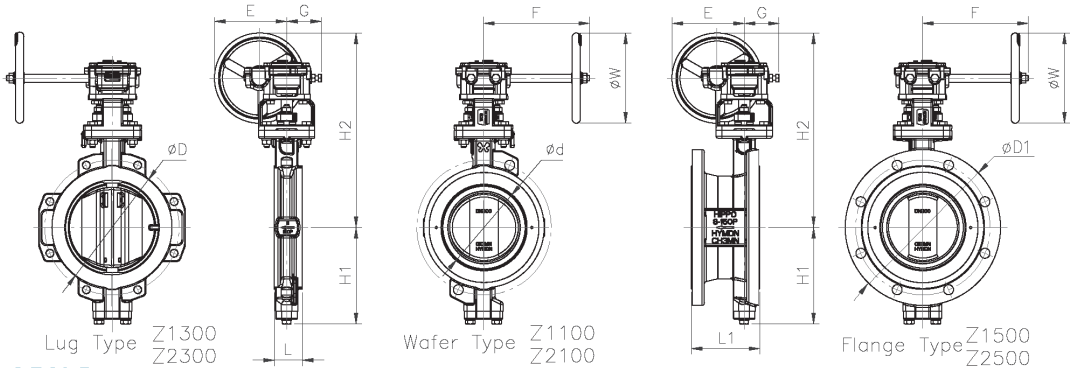
ITEM	NAME	QTY	MATERIAL			REMARK
1	Body	1	A216 Gr. WCB	A351 Gr. CF8	A351 Gr. CF8M	
2	Disc	1	A351 Gr. CF8		A351 Gr. CF8M	●
3	Seat	1	PTFE / MPTFE / RTFE / FIRE SAFE / RUBBER / METAL			★
4	Stem	1	A182 Gr. F6A	A182 Gr. F304	A182 Gr. F316	●
5	Taper Pin	2	A182 Gr. F316L			
6	Retainer Ring	1	A351 Gr. CF8		A351 Gr. CF8M	
7	Stem Bush	2	B-Woven Fabric Metal		A182 Gr. F316	
8	Gland Packing	1	PTFE	RTFE	GRAPHITE (FIRE SAFE ONLY)	▲
9	Thrust Ring	1	A351 Gr. CF8M			
10	Thrust Plate	1	B-Woven Fabric Metal			
11	Gasket	1	PTFE	RTFE	GRAPHITE	▲
12	Gland Bush	1	A351 Gr. CF8M			
13	Anti-Blow-Out Pin	1	A182 Gr. F316			
14	Gland Flange	1	A216 Gr. WCB	A351 Gr.CF8		
15	Bottom Cover	1	A216 Gr. WCB	A351 Gr. CF8	A351 Gr. CF8M	

REMARK

- Surface is hard chrome plated.
- Same as item 3 seat material. If valve is fire-safe design, use GRAPHITE as material.
- Working temperature: PTFE -20.2~320°F, MPTFE -20.2~356°F, RTFE -20.2~446°F. Metal depends on material.
- When VOC emission is requested, item 10 has 2 more materials, EVSP 9000 and 3300W, as options.
- The listed materials are assorted with standard package. We have ALLOY 20, HASTELLOY C276, Duplex A890 6A, and MONEL as options. Please contact us for more details.
- Item 4 uses 17-4PH or UNS S31803 for Class 300LB.

BARE SHAFT DIMENSIONS

Z 1000 150LB Series | Z 2000 300LB Series



150LB

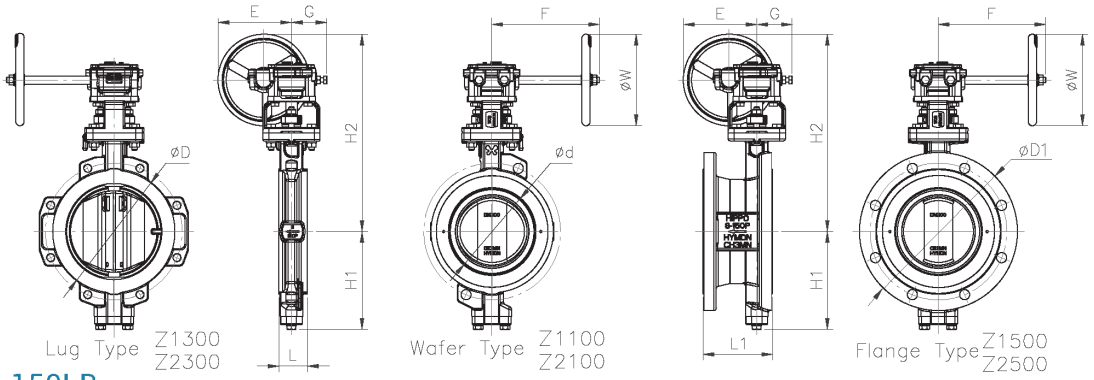
SIZE		L	L1	D	D1	d	H1	H2	H3	S1	d1	S	ISO	Weight (lb)		
DN	in											(b•h)		Wafer	Lug	Flange
50	2	1.77	-	3.74	5.91	1.81	4.65	5.04	3.39	0.71	0.71	0.55	F10	13	15	-
65	2.5	1.89	-	4.41	7.09	2.40	4.96	5.35	3.39	0.71	0.71	0.55	F10	15	18	-
80	3	1.89	4.49	4.96	7.48	2.99	5.28	5.51	3.39	0.71	0.71	0.55	F10	18	20	31
100	4	2.13	5.00	6.10	9.06	3.78	5.67	5.91	3.39	0.71	0.71	0.55	F10	20	29	42
125	5	2.24	-	7.24	10.04	4.65	7.01	6.69	3.50	0.83	0.87	0.67	F10	26	40	-
150	6	2.24	5.51	8.46	11.02	5.63	7.48	7.28	3.50	0.83	0.87	0.67	F10	31	44	62
200	8	2.44	5.98	10.51	13.58	7.40	8.43	8.46	3.98	0.91	0.98	0.75	F12	44	64	99
250	10	2.76	6.50	12.83	15.94	9.29	10.00	10.24	4.09	1.02	1.10	0.87	F12	71	104	139
300	12	3.19	7.01	14.76	19.09	11.06	11.73	11.42	5.08	1.22	1.38	1.06	F14	106	152	218
350	14	3.62	7.48	16.38	21.06	12.60	12.91	12.60	5.28	1.42	1.65	1.26	F14	143	203	282
400	16	4.02	8.50	18.90	23.43	14.61	14.84	14.57	6.22	1.57	1.97	1.42	F16	216	302	381
450	18	4.49	8.74	21.02	25.00	16.54	15.83	15.55	6.22	1.57	1.97	1.42	F16	289	381	454
500	20	5.00	9.02	23.15	27.56	18.46	17.20	16.93	6.61	1.97	2.36	1.81	F16	377	534	580
600	24	6.06	10.51	27.24	32.09	21.61	19.37	18.90	9.45	3.54	2.56	0.71•0.47	F25	606	833	893
700	28	6.50	11.50	31.50	36.50	25.79	22.44	21.85	9.65	3.74	2.95	0.79•0.47	F25	849	1157	1398
750	30	7.48	12.52	33.74	38.74	27.48	23.82	23.62	11.81	3.94	3.35	0.98•0.55	F30	1124	1367	1748
800	32	7.48	12.52	35.83	41.73	29.72	24.80	24.61	12.20	4.33	3.54	0.98•0.55	F30	1215	1693	2024
900	36	7.99	12.99	39.37	45.98	34.25	27.17	26.18	12.60	4.72	3.94	1.10•0.63	F30	1470	2112	2615
1000	40	8.50	16.14	43.90	50.75	37.13	30.24	30.12	14.17	5.12	4.53	1.26•0.71	F35	2064	2681	3468
1100	44	10.00	16.14	48.03	55.24	41.14	32.20	32.09	14.17	5.12	4.53	1.26•0.71	F35	2586	3362	4539
1200	48	10.00	18.50	52.36	59.45	45.08	34.80	34.65	14.17	5.12	4.92	1.42•0.79	F35	3084	3933	5194

300LB

SIZE		L	L1	D	D1	d	H1	H2	H3	S1	d1	S	ISO	Weight (lb)		
DN	in											(b•h)		Wafer	Lug	Flange
50	2	1.77	-	3.74	-	1.81	4.65	5.04	3.39	0.71	0.71	0.55	F10	13	18	-
65	2.5	1.89	-	4.41	-	2.40	4.96	5.35	3.39	0.71	0.71	0.55	F10	15	20	-
80	3	1.89	4.49	4.96	7.48	2.99	5.28	5.51	3.39	0.71	0.71	0.55	F10	18	24	31
100	4	2.13	5.00	6.10	9.06	3.78	5.67	5.91	3.39	0.71	0.71	0.55	F10	20	29	42
125	5	2.24	-	7.24	-	4.65	7.01	6.69	3.50	0.83	0.87	0.67	F10	26	40	-
150	6	2.32	5.51	8.82	12.52	5.63	7.83	7.87	3.98	0.91	0.98	0.75	F12	40	57	93
200	8	2.87	5.98	11.02	15.00	7.40	9.21	9.45	4.09	1.02	1.10	0.87	F12	62	95	150
250	10	3.27	6.50	13.58	17.52	9.29	10.94	10.63	5.08	1.22	1.38	1.06	F14	115	157	209
300	12	3.62	7.01	15.55	20.51	11.06	12.52	12.20	5.28	1.42	1.65	1.26	F14	159	225	328
350	14	4.61	7.48	17.32	23.03	12.60	14.45	14.17	6.22	1.57	1.97	1.42	F16	231	355	423
400	16	5.24	8.50	19.49	25.51	14.61	15.43	15.16	6.61	1.97	2.36	1.81	F16	326	481	573
450	18	5.87	8.74	22.05	28.03	16.54	17.20	16.73	9.45	3.54	2.56	0.71•0.47	F25	472	697	908
500	20	6.26	9.02	24.49	30.51	18.46	18.31	17.72	9.65	3.74	2.95	0.79•0.47	F25	597	871	1160
600	24	7.13	10.51	28.35	36.02	21.61	21.06	20.87	12.20	4.33	3.54	0.98•0.55	F30	952	1418	1786

GEAR OPERATION DIMENSIONS

Z 1000 150LB Series | Z 2000 300LB Series



150LB

● Operator chosen is according to following condition: △10 Bar

SIZE		L	L1	D	D1	d	H1	H2	W	G	E	F	Weight (lb)			Gear Model	Gear Model
DN	in												Wafer	Lug	Flange		
50	2	1.77	-	3.74	5.91	1.81	4.65	11.10	3.94	2.60	3.82	5.24	22	24	-	G07	1:40
65	2.5	1.89	-	4.41	7.09	2.40	4.96	11.42	3.94	2.60	3.82	5.24	24	26	-	G07	1:40
80	3	1.89	4.49	4.96	7.48	2.99	5.28	12.56	5.91	2.60	4.80	5.24	26	29	40	G07	1:40
100	4	2.13	5.00	6.10	9.06	3.78	5.67	12.95	5.91	2.60	4.80	5.24	29	37	51	G07	1:40
125	5	2.24	-	7.24	10.04	4.65	7.01	13.74	5.91	2.60	4.80	5.24	35	49	-	G07	1:40
150	6	2.24	5.51	8.46	11.02	5.63	7.48	14.33	5.91	2.60	4.80	5.24	40	53	71	G07	1:40
200	8	2.44	5.98	10.51	13.58	7.40	8.43	16.97	7.87	3.03	6.34	9.29	62	82	117	G10	1:40
250	10	2.76	6.50	12.83	15.94	9.29	10.00	18.74	7.87	3.03	6.34	9.29	88	121	157	G10	1:40
300	12	3.19	7.01	14.76	19.09	11.06	11.73	20.83	7.87	3.70	7.20	9.29	132	179	245	G12	1:60
350	14	3.62	7.48	16.38	21.06	12.60	12.91	22.01	7.87	3.70	7.20	9.29	170	229	309	G12	1:60
400	16	4.02	8.50	18.90	23.43	14.61	14.84	27.17	11.81	4.72	10.12	12.76	267	353	432	G14	1:64
450	18	4.49	8.74	21.02	25.00	16.54	15.83	28.15	11.81	4.72	10.12	12.76	340	432	505	G14	1:64
500	20	5.00	9.02	23.15	27.56	18.46	17.20	29.53	11.81	4.72	10.12	12.76	428	584	631	G14	1:64
600	24	6.06	10.51	27.24	32.09	21.61	19.37	34.96	15.75	6.02	13.86	14.72	721	948	1008	G16	1:96
700	28	6.50	11.50	31.50	36.50	25.79	22.44	37.91	15.75	6.02	13.86	14.72	963	1272	1512	G16	1:96
750	30	7.48	12.52	33.74	38.74	27.48	23.82	45.87	23.62	7.28	20.16	17.56	1336	1579	1960	G25	1:125
800	32	7.48	12.52	35.83	41.73	29.72	24.80	46.85	23.62	7.28	20.16	17.56	1426	1905	2235	G25	1:125
900	36	7.99	12.99	39.37	45.98	34.25	27.17	48.43	23.62	7.28	20.16	17.56	1682	2324	2826	G25	1:125
1000	40	8.50	16.14	43.90	50.75	37.13	30.24	53.54	23.62	7.28	20.16	17.56	2315	2932	3719	G30	1:125
1100	44	10.00	16.14	48.03	55.24	41.14	32.20	55.51	23.62	7.28	20.16	17.56	2837	3613	4791	G30	1:125
1200	48	10.00	18.50	52.36	59.45	45.08	34.80	58.07	23.62	7.28	20.16	17.56	3336	4184	5445	G30	1:125

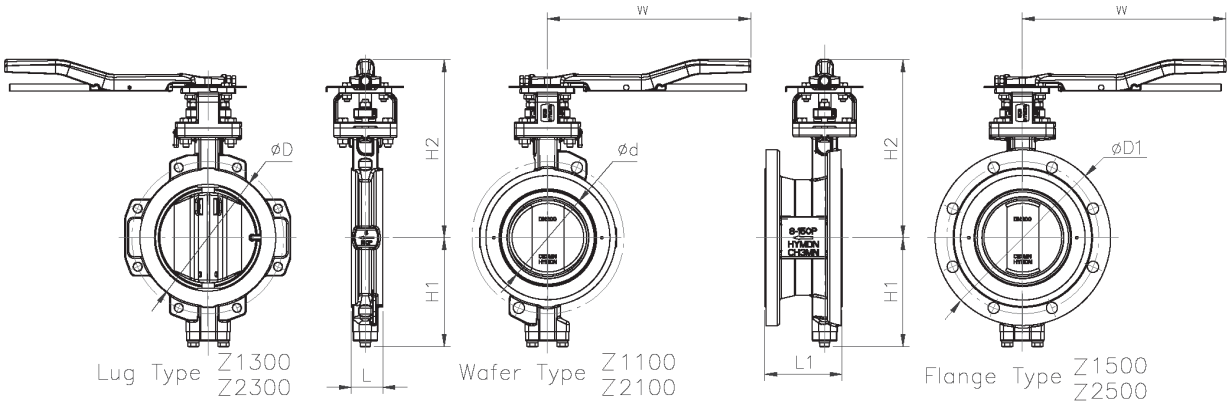
300LB

● Operator chosen is according to following condition: △20 Bar

SIZE		L	L1	D	D1	d	H1	H2	W	G	E	F	Weight (lb)			Gear Model	Gear Model
DN	in												Wafer	Lug	Flange		
50	2	1.77	-	3.74	-	1.81	4.65	11.10	3.94	2.60	3.82	5.24	22	26	-	G07	1:40
65	2.5	1.89	-	4.41	-	2.40	4.96	11.42	3.94	2.60	3.82	5.24	24	29	-	G07	1:40
80	3	1.89	4.49	4.96	7.48	2.99	5.28	12.56	5.91	2.60	4.80	5.24	26	33	40	G07	1:40
100	4	2.13	5.00	6.10	9.06	3.78	5.67	12.95	5.91	2.60	4.80	5.24	29	37	51	G07	1:40
125	5	2.24	-	7.24	-	4.65	7.01	13.74	5.91	2.60	4.80	5.24	35	49	-	G07	1:40
150	6	2.32	5.51	8.82	12.52	5.63	7.83	16.38	7.87	3.03	6.34	9.29	57	75	110	G10	1:40
200	8	2.87	5.98	11.02	15.00	7.40	9.21	17.95	7.87	3.03	6.34	9.29	79	112	168	G10	1:40
250	10	3.27	6.50	13.58	17.52	9.29	10.94	20.04	7.87	3.70	7.20	9.29	141	183	236	G12	1:60
300	12	3.62	7.01	15.55	20.51	11.06	12.52	21.61	7.87	3.70	7.20	9.29	185	251	355	G12	1:60
350	14	4.61	7.48	17.32	23.03	12.60	14.45	26.77	11.81	4.72	10.12	12.76	282	406	474	G14	1:64
400	16	5.24	8.50	19.49	25.51	14.61	15.43	27.76	11.81	4.72	10.12	12.76	377	531	624	G14	1:64
450	18	5.87	8.74	22.05	28.03	16.54	17.20	32.80	15.75	6.02	13.86	14.72	586	811	1023	G16	1:96
500	20	6.26	9.02	24.49	30.51	18.46	18.31	33.78	15.75	6.02	13.86	14.72	712	985	1274	G16	1:96
600	24	7.13	10.51	28.35	36.02	21.61	21.06	43.11	23.62	7.28	20.16	17.56	1164	1629	1997	G25	1:125

LEVER OPERATION DIMENSIONS

Z 1000 150LB Series | Z 2000 300LB Series



150LB

● Operator chosen is according to following condition: △10 Bar

SIZE		L	L1	D	D1	d	H1	H2	W	Weight (lb)			Lever Model
DN	in									Wafer	Lug	Flange	
50	2	1.77	-	3.74	5.91	1.81	4.65	9.76	8.66	18	20	-	L22
65	2.5	1.89	-	4.41	7.09	2.40	4.96	10.08	8.66	20	22	-	L22
80	3	1.89	4.49	4.96	7.48	2.99	5.28	10.24	8.66	22	24	35	L22
100	4	2.13	5.00	6.10	9.06	3.78	5.67	10.63	8.66	24	33	46	L22
125	5	2.24	-	7.24	10.04	4.65	7.01	11.42	11.81	33	46	-	L23
150	6	2.24	5.51	8.46	11.02	5.63	7.48	12.01	11.81	37	51	68	L23
200	8	2.44	5.98	10.51	13.58	7.40	8.43	13.78	15.75	55	75	110	L34

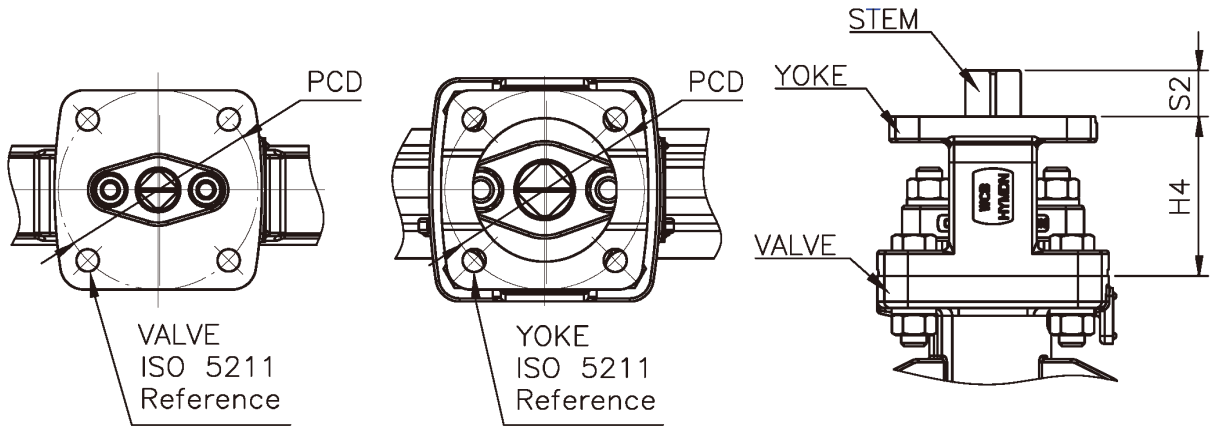
300LB

● Operator chosen is according to following condition: △20 Bar

SIZE		L	L1	D	D1	d	H1	H2	W	Weight (lb)			Lever Model
DN	in									Wafer	Lug	Flange	
50	2	1.77	-	3.74	-	1.81	4.65	9.76	8.66	18	22	-	L22
65	2.5	1.89	-	4.41	-	2.40	4.96	9.92	8.66	20	24	-	L22
80	3	1.89	4.49	4.96	7.48	2.99	5.28	10.24	8.66	22	29	35	L22
100	4	2.13	5.00	6.10	9.06	3.78	5.67	10.63	8.66	24	33	46	L22
125	5	2.24	-	7.24	-	4.65	7.01	11.42	11.81	33	46	-	L23
150	6	2.32	5.51	8.82	12.52	5.63	7.83	13.19	15.75	51	68	104	L34

YOKE DIMENSIONS

Z 1000 150LB Series | Z 2000 300LB Series

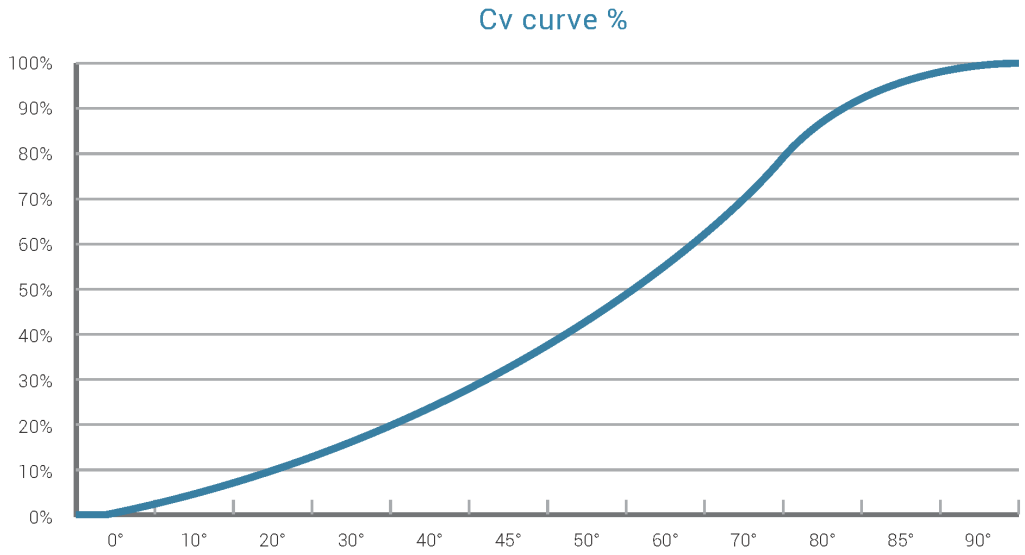


150LB
DN50 - DN1200

SIZE		H4	S2	Yoke		Valve
DN	in			ISO	PCD	ISO
50	2	2.76	0.63	F07	2.76	F10
65	2.5	2.76	0.63	F07	2.76	F10
80	3	2.76	0.63	F07	2.76	F10
100	4	2.76	0.63	F07	2.76	F10
125	5	2.76	0.75	F07	2.76	F10
150	6	2.76	0.75	F07	2.76	F10
200	8	3.15	0.83	F10	4.02	F12
250	10	3.15	0.94	F10	4.02	F12
300	12	3.94	1.14	F12	4.92	F14
350	14	3.94	1.34	F12	4.92	F14
400	16	4.72	1.50	F14	5.51	F16
450	18	4.72	1.50	F14	5.51	F16
500	20	4.72	1.89	F14	5.51	F16
600	24	5.91	3.54	F16	6.50	F25
700	28	5.91	3.74	F16	6.50	F25
750	30	7.87	3.94	F25	10.00	F30
800	32	7.87	4.33	F25	10.00	F30
900	36	7.87	4.72	F25	10.00	F30
1000	40	9.06	5.12	F30	11.73	F35
1100	44	9.06	5.12	F30	11.73	F35
1200	48	9.06	5.12	F30	11.73	F35

CV FLOW COEFFICIENT

Z 1000 150LB Series | Z 2000 300LB Series



150LB

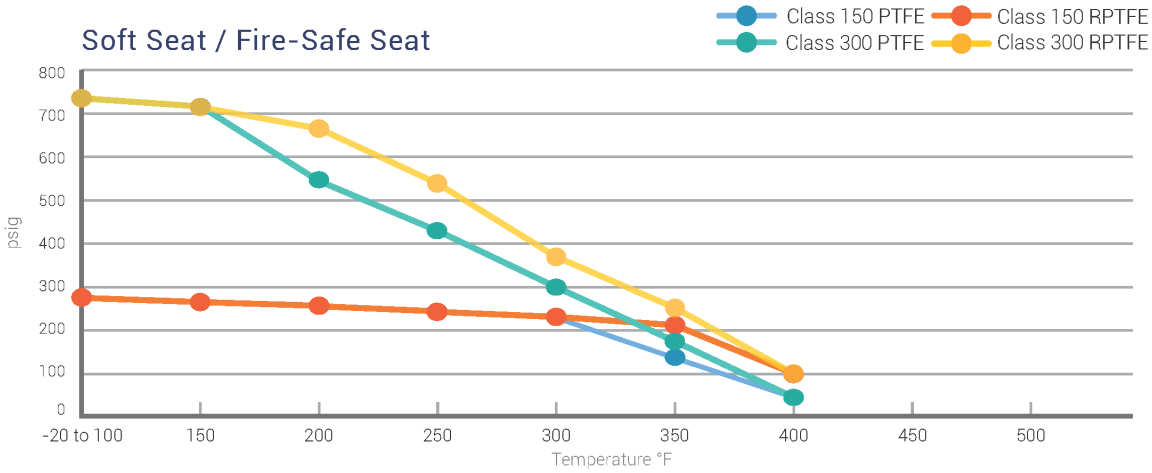
SIZE		*Cv* Value										
mm	in	10°	20°	30°	40°	45°	50°	60°	70°	80°	85°	90°
50	2	0	8	22	36	44	51	60	69	72	70	70
65	2.5	2	16	38	61	71	83	109	135	146	152	150
80	3	6	33	62	94	108	118	143	176	208	230	227
100	4	16	58	106	155	178	213	274	349	433	465	473
125	5	20	94	167	230	263	310	391	488	561	604	605
150	6	40	147	242	335	382	422	560	729	925	975	1010
200	8	66	237	368	509	606	712	985	1296	1640	1715	2004
250	10	139	390	595	807	963	1168	1606	2134	2814	3180	3199
300	12	204	548	820	1138	1357	1591	2219	3067	4085	4484	4672
350	14	264	674	972	1386	1658	1994	2840	3925	5164	5828	5947
400	16	384	864	1196	1765	2155	2611	3755	5105	6975	7920	8182
450	18	508	1092	1551	2341	2881	3522	5125	7134	9511	10599	11548
500	20	626	1294	1792	2651	3304	4082	5919	8256	11429	13126	13813
600	24	1047	2251	3178	4563	5543	6568	9277	12932	17093	18328	19021

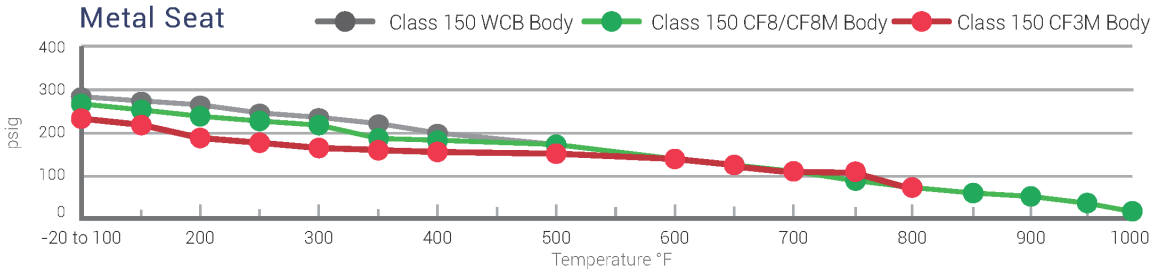
300LB

SIZE		*Cv* Value										
mm	in	10°	20°	30°	40°	45°	50°	60°	70°	80°	85°	90°
80	3	6	33	62	94	108	118	143	176	208	230	227
100	4	16	58	106	155	178	213	274	349	433	465	473
125	5	20	94	167	230	263	310	391	488	561	604	605
150	6	37	137	225	312	355	393	521	678	860	907	939
200	8	62	220	343	473	563	662	916	1206	1525	1595	1864
250	10	129	362	554	750	896	1087	1493	1985	2617	2957	2975
300	12	190	510	762	1059	1262	1480	2064	2852	3799	4170	4345
350	14	246	627	904	1289	1542	1854	2641	3650	4803	5420	5531
400	16	357	803	1112	1642	2004	2428	3492	4748	6487	7365	7609
450	18	473	1015	1442	2177	2679	3275	4766	6634	8845	9857	10739
500	20	583	1204	1667	2466	3073	3797	5504	7678	10629	12207	12846
600	24	974	2093	2956	4244	5155	6108	8627	12027	15897	17045	17689

PRESSURE-TEMPERATURE RATING

Z 1000 150LB Series | Z 2000 300LB Series





		Body and Seat / Temperature		Class 150										Class 300			
				General (a)				WCB		CF8/CF8M		CF3M		General (a)			
				PTFE (g)		RPTFE (g)		AMS 5596 Alloy Inconel® (b)						PTFE		RPTFE	
		°F	°C	psig	bar	psig	bar	psig	bar	psig	bar	psig	bar	psig	bar	psig	bar
Metal Seated (h)	Fire-Safe Seated	Soft Seated	-20 to 100	-29 to 38	285	19.7	285	19.7	285	19.7	275	18.9	230	15.9	740	51	740	51
			150	66	273	18.8	273	18.8	273	18.8	255	17.6	213	14.7	708	48.8	708	48.8
			200	93	260	17.9	260	17.9	260	17.9	235	16.2	195	13.4	550	37.9	675	46.5
			250	121	245	16.9	245	16.9	245	16.9	225	15.5	185	12.8	425	29.3	530	36.5
			300	149	230	15.9	230	15.9	230	15.9	215	14.8	175	12.1	300	20.7	390	26.9
			350	177	140	9.7	215	14.8	215	14.8	195	13.4	168	11.6	175	12.1	250	17.2
			400	204	50	3.4	100	6.9	200	13.8	183	12.6	160	11	50	3.4	100	6.9
			500	260	-	-	(c)	(c)	170	11.7	170	11.7	150	10.3	-	-	(c)	(c)
High Temperature Type			600	316	-	-	-	-	140	9.7	140	9.7	140	9.7	-	-	-	-
			650	343	-	-	-	-	125	8.6	125	8.6	125	8.6	-	-	-	-
			700	371	-	-	-	-	110	7.6	110	7.6	110	7.6	-	-	-	-
			750	399	-	-	-	-	95	6.6	95	6.6	110	7.6	-	-	-	-
			800	427	-	-	-	-	80	5.5	80	5.5	80	5.5	-	-	-	-
			850	454	-	-	-	-	(d)	(d)	65	4.5	(e)	(e)	-	-	-	-
			900	482	-	-	-	-	(d)	(d)	50	3.4	-	-	-	-	-	-
			950	510	-	-	-	-	(d)	(d)	35	2.4	-	-	-	-	-	-
			1000	538	-	-	-	-	(d)	(d)	20 (f)	1.4 (f)	-	-	-	-	-	-

(a) General carbon steel and stainless steel.
(b) AMS 5596 Inconel represents Aerospace Material Specification level Inconel 718.
(c) RPTFE may cover instantaneous 500°F depends on working condition.
(d) Above 800°F, the carbide phase of WCB may convert to graphite. Workable, but not recommended for prolonged use.
(e) Shall not to be used over 800°F.
(f) From 1000°F, shall only use CF8/CF8M with carbon content equals/greater than 0.04%. For temperature range between 1000°F to 1500°F, contact service window for further details.
(g) The maximum service temperature is varied depends on seat materials. Please consult factory for details.
(h) The continuous working temperature is 500°F and instantaneous high temperature is 572°F.

TORQUE CHART

Z 1000 150LB Series | Z 2000 300LB Series

ANSI Class 150LB

SIZE		SOFT SEAT psi (Lbf-in)				FIRE SAFE SEAT psi (Lbf-in)			
mm	in	△P 87 psi	△P 145 psi	△P 232 psi	△P 290 psi	△P 87 psi	△P 145 psi	△P 232 psi	△P 290 psi
50	2	195	239	292	336	274	310	345	389
65	2.5	212	248	310	354	327	416	460	504
80	3	248	319	381	425	389	451	566	673
100	4	310	372	487	655	531	628	735	867
125	5	389	566	832	1036	743	929	1195	1363
150	6	540	743	1115	1372	991	1239	1620	1806
200	8	894	1381	2106	2215	1823	2186	2425	2595
250	10	1407	2195	3372	3531	2850	3266	3850	4110
300	12	2266	3478	5293	6169	4284	4939	5850	7385
350	14	3408	5160	7001	7574	6072	7045	8355	9595
400	16	5001	7550	10231	12612	8461	9922	11887	15613
450	18	6266	9656	13267	16436	10878	12842	15471	17882
500	20	9453	14223	19215	23605	15197	17967	21711	28588
600	24	14914	22215	29845	36439	22817	27110	32836	37878

ANSI Class 300LB

SIZE		SOFT SEAT psi (Lbf-in)				FIRE SAFE SEAT psi (Lbf-in)			
mm	in	△ P 290 psi	△ P 435 psi	△ P 580 psi	△ P 725 psi	△ P 290 psi	△ P 435 psi	△ P 580 psi	△ P 725 psi
50	2	336	434	531	699	398	469	549	717
65	2.5	372	478	584	761	478	593	699	814
80	3	434	558	682	823	673	797	920	1275
100	4	726	991	1257	1478	1115	1381	1646	1797
125	5	1248	1699	2151	2257	1832	2283	2735	3018
150	6	1823	2478	3133	3496	2629	3284	3939	4408
200	8	3213	4478	5753	6576	4700	5965	7240	7399
250	10	5549	7709	9869	11205	7842	10001	12170	12488
300	12	8718	12019	15321	17622	11940	15232	18533	19445
350	14	12904	17693	22490	26481	17162	21959	26747	28827
400	16	20118	27313	34509	39890	25667	32854	40050	43059
450	18	27340	37359	47378	52998	34713	44732	54760	57043
500	20	37580	51202	64823	72833	46776	60389	74010	77869
600	24	58468	79515	100562	113352	71107	92154	113192	120237

Remark

1. The torque in above chart is measured with water media under listed pressure .
2. Installing seat on upstream direction will result lower torque and better life cycle.
3. 290 psi is the limit of Class 150 valve. If you need to use it stably at 290 psi, it is recommended to use Class 300.

MAXIMUM ALLOWABLE STEM TORQUES, MAST

Z 1000 150LB Series | Z 2000 300LB Series

		ASME 150LB		DIN PN25		ASME 300LB	
Size		Model V11 / V13 / V15		Model V11 / V13 / V15		Model V21 / V23 / V25	
inch	mm	lb-in	Nm	lb-in	Nm	lb-in	Nm
2"	DN50	1089	123	3850	435	3850	435
2.5"	DN65	1089	123	3850	435	3850	435
3"	DN80	1089	123	3850	435	3850	435
4"	DN100	1089	123	3850	435	3850	435
5"	DN125	1938	219	6850	774	6850	774
6"	DN150	1938	219	6850	774	9576	1082
8"	DN200	2708	306	9576	1082	14893	1683
10"	DN250	4213	476	14894	1683	27478	3105
12"	DN300	7770	878	27478	3105	34372	3884
14"	DN350	9717	1098	34372	3884	65212	7369
16"	DN400	18443	2084	65213	7369	136089	15378
18"	DN450	18443	2084	65213	7369	Consult factory	
20"	DN500	38478	4348	136089	15378		
24"	DN600	38877	4393	137487	15536		
28"	DN700	64788	7321	Consult factory			
30"	DN750	84230	9518				
32"	DN800	90708	10250				
36"	DN900	103664	11714				
40"	DN1000	Consult factory					
44"	DN1100						
48"	DN1200						

Remark

The strength calculation of each flange is according to default shaft material:

- ASME 150LB: ASTM A182 Gr. F316
- DIN PN25: ASTM A564 17-4ph H1150D
- ASME 300LB: ASTM A564 17-4ph H1150D

American Petroleum Institute

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ZSPEC
FLOW CONTROL

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