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FZV-Ref-2025. 03



PROVIDING COMPLETE CONTROL SOLUTIONS
FOR INDUSTRIAL PIPELINES

CRYOGENIC BUTTERFLY VALVE

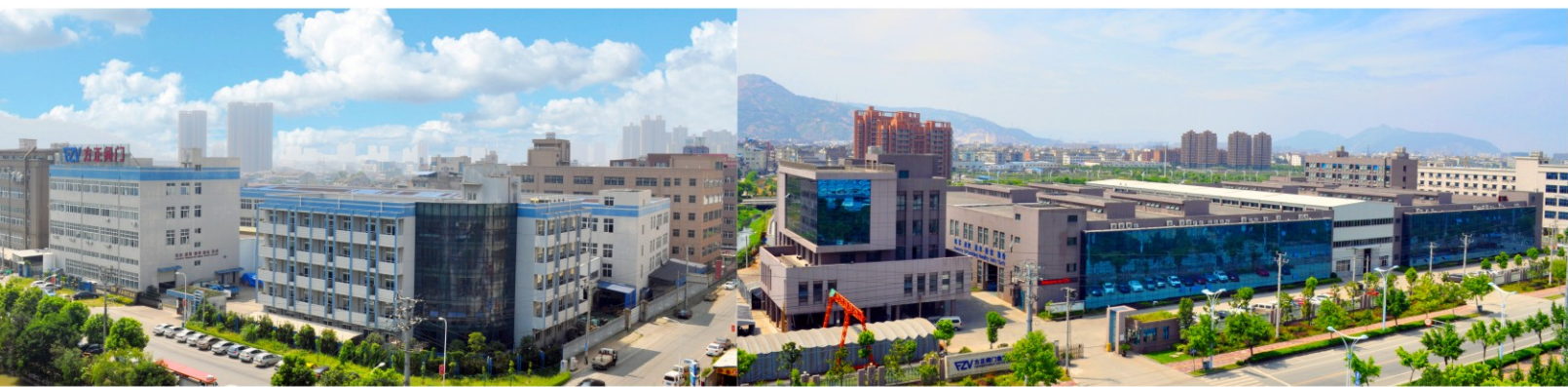
WWW.FZVGROUP.COM



FANGZHENG VALVE GROUP CO., LTD

INDUSTRIAL PIPELINE CONTROL EXPERT

FANGZHENG VALVE GROUP



We (FZV) commit ourselves to manufacturing excellent valves and achieving our customer satisfaction based on the principles of quality assurance and continual improvement.

We specialize in supplying a wide range of API 6D, API 609, API 600, API 594, API 6A, and API 16C products and wellhead equipment.

FZV was formally established in 1992, and so far, FZV has been approved by well-known international and domestic End-users and EPC companies.

FZV has set up three factories based in Shanghai and Wenzhou city with total area 76000 m² and maximum production capacity up to 32000 tons.

To enhance engineering designs and manufacture high-end products, FZV has in-house laboratory equipped with various facilities and test equipment to check and verify the product quality. The following tests are conducted in-house:

- Chemical analysis
- Mechanical test, Hardness, and impact test
- Non-destructive examination
- Salt spray test
- Fugitive emission test(ISO 15848-1 & 2)
- Design validation testing (DVT) as per SHELL(MESC SPE 77/300)
- High temperature (Up to 550°C) and Cryogenic test (Up to -196°C)

FZV is certified by ISO 9001, ISO 14001, OHSAS 18001, API6D, API600, API609, API594, API607, API6A, API6A-PR2, API Spec.Q1, ABS, CCS, DNV, ATEX, and CE/PED, etc.

FZV Main Products Range:

Product types: Ball Valve, Gate Valve, Globe Valve, Check Valve, Butterfly Valve, Slab Gate Valve, Pipe Fitting, Cryogenic Valve, API6A Valve, Wellhead Equipment, Manifold & Christmas tree, etc.

Implemented Standards: ISO, API, BS, etc.

Casting material: WCB, LCB, WC6, WC9, C5, C12, CF3, CF3M, CF8, CF8M, C95500, 4A, 5A, Monel 400/500, Inconel 825/625, Titanium Alloy, etc.

Forging material: A105, LF2, F11, F12, F304, F321, F347, F316, 304L, 316L, C61900, F51, F53, F55, Inconel, Titanium Alloy, etc.

Nominal diameter: NPS 1/2"-68"(DN 15-DN 1,700)

Nominal pressure: API 600 & API 6D: CLASS 150~CLASS 2,500 (PN16~PN420) API 6A: 2,000PSI~15,000PSI

Temperature range: -196°C-550°C

Application : Onshore oil and gas exploitation and transportation, offshore oil and gas platform and FPSO / FLNG / FSRU, natural gas purification and liquefaction unit, LNG receiving station and vaporization unit, refining, chemical industry and chemistry, coal to gas (oil) and coal chemical industry, air separation, power station, aerospace, military industry and new energy (solar power generation, hydrogen energy, etc.) etc.

The Business purpose of FZV: Providing Complete Control Solutions For Industrial Pipelines.

Our Advantages:

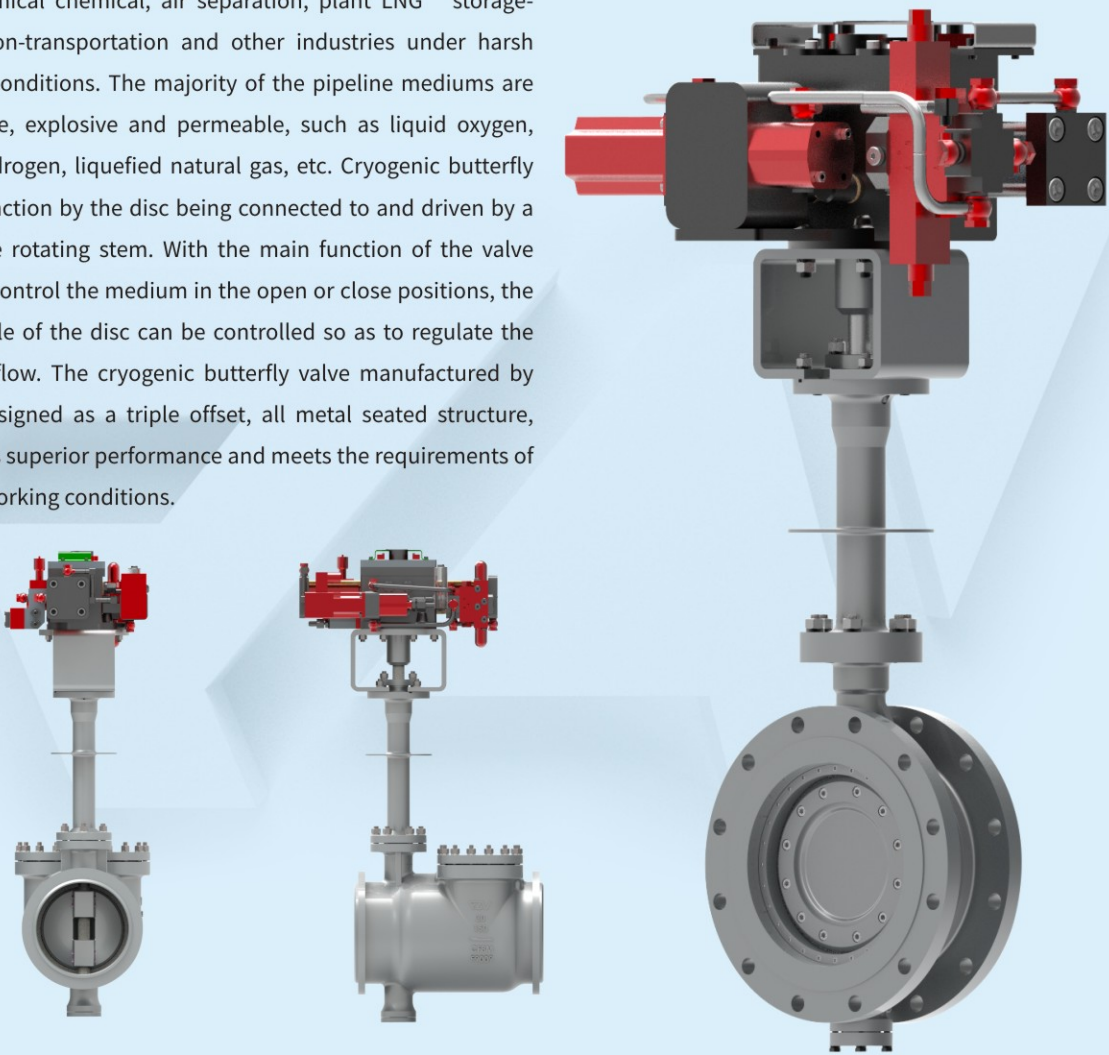
1. Strict quality management system to ensure excellent product quality;
2. Excellent production management system to ensure the shortest delivery;
3. Competitive price;
4. Good after-sales service.

CRYOGENIC BUTTERFLY VALVE

CRYOGENIC TRIPLE OFFSET BUTTERFLY VALVE

Main Operating Function

Cryogenic butterfly valves are primarily used in the oil refining, petrochemical chemical, air separation, plant LNG storage-distribution-transportation and other industries under harsh working conditions. The majority of the pipeline mediums are flammable, explosive and permeable, such as liquid oxygen, liquid hydrogen, liquefied natural gas, etc. Cryogenic butterfly valves function by the disc being connected to and driven by a 90 degree rotating stem. With the main function of the valve being to control the medium in the open or close positions, the open angle of the disc can be controlled so as to regulate the medium flow. The cryogenic butterfly valve manufactured by FZV is designed as a triple offset, all metal seated structure, which has superior performance and meets the requirements of various working conditions.



SCOPE OF USE

BODY TYPE

- Flange
- Butt weld
- Wafer

PRESSURE

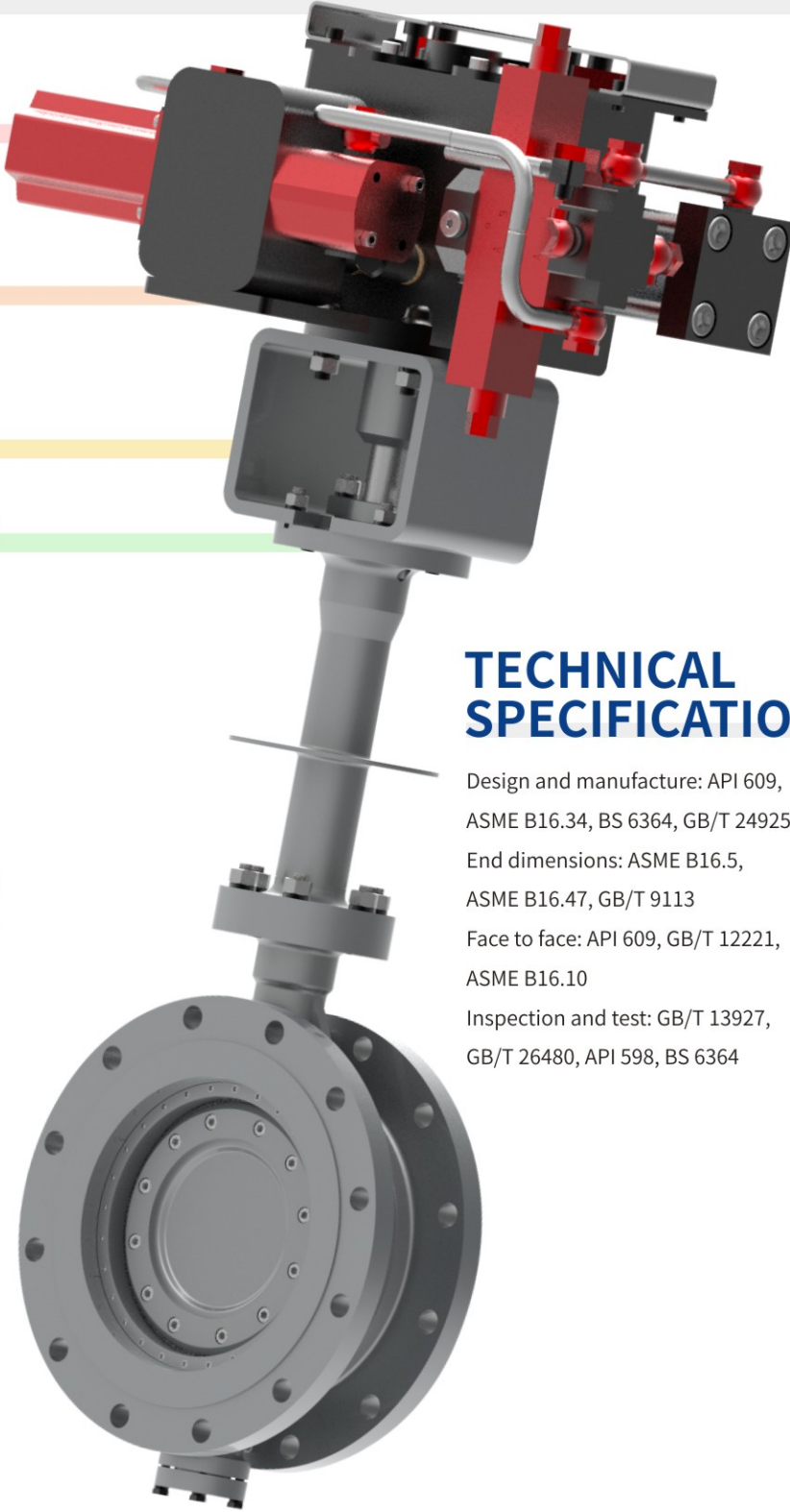
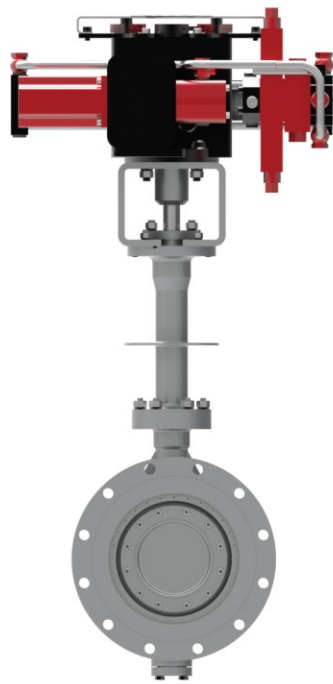
- Class 150
- Class 300
- Class 600
- Class 900
- Class 1500

SIZE RANGE

- NPS 3"~48" (DN80~DN1200)

TEMPERATURE RANGE

- 196°C~80°C (-320.8°F~176°F)

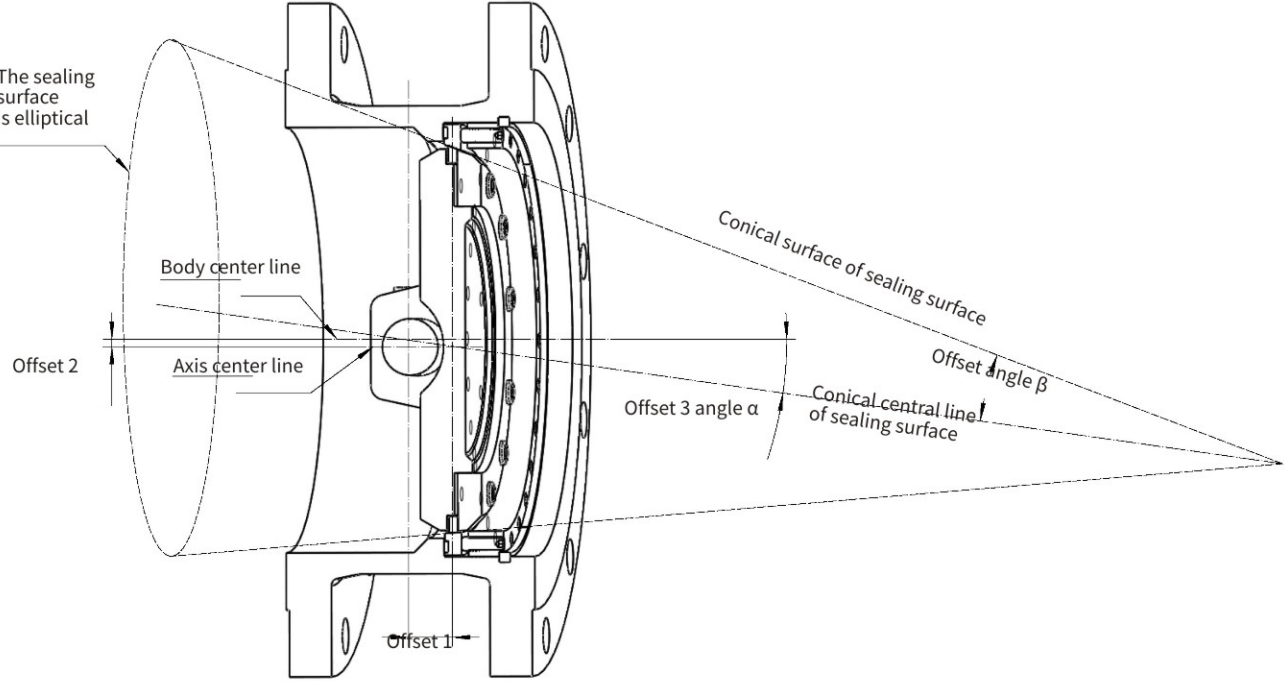


TECHNICAL SPECIFICATIONS

Design and manufacture: API 609,
ASME B16.34, BS 6364, GB/T 24925
End dimensions: ASME B16.5,
ASME B16.47, GB/T 9113
Face to face: API 609, GB/T 12221,
ASME B16.10
Inspection and test: GB/T 13927,
GB/T 26480, API 598, BS 6364

TRIPLE OFFSET PRINCIPLE

TRIPLE OFFSET GEOMETRY



OFFSET 1

This offset is between the axis center of the stem and the perpendicular centre line through the body seat sealing surface. This offset reduces the excessive extrusion between the disc and the seat.

OFFSET 2

This offset is between the axis center of the stem and the body center line. This offset makes the disc quickly detach from the seat when the valve is opened and reduces the opening moment force.

OFFSET 3 angle α

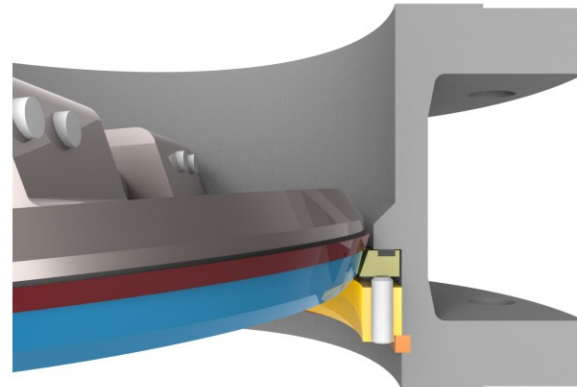
There is an angle α between the revolving axis of the disc seat sealing surface and the axis of the valve pipeline. This angle eliminates the friction between the body and disc seat sealing surfaces when the valve is opening or closing which makes the sealing very reliable.

The common triple offset design of the butterfly valve usually adopts the sealing surface contour with offset angle $\alpha=\beta$. However, because of this feature, the force on the sealing surface is unbalanced and the width of the sealing cone varies greatly. It is easy to cause partial damage of the sealing surface and lead to leakage after long-term use.

In order to change the stress condition of the sealing surface, based on the original parameters, FZV selected the best combination effect through 3D modeling and multiple stress analysis. The offset angle $\alpha\neq\beta$ sealing surface contour is adopted, which can balance the force on the sealing surface and achieve a better sealing performance.

STRUCTURAL FEATURES

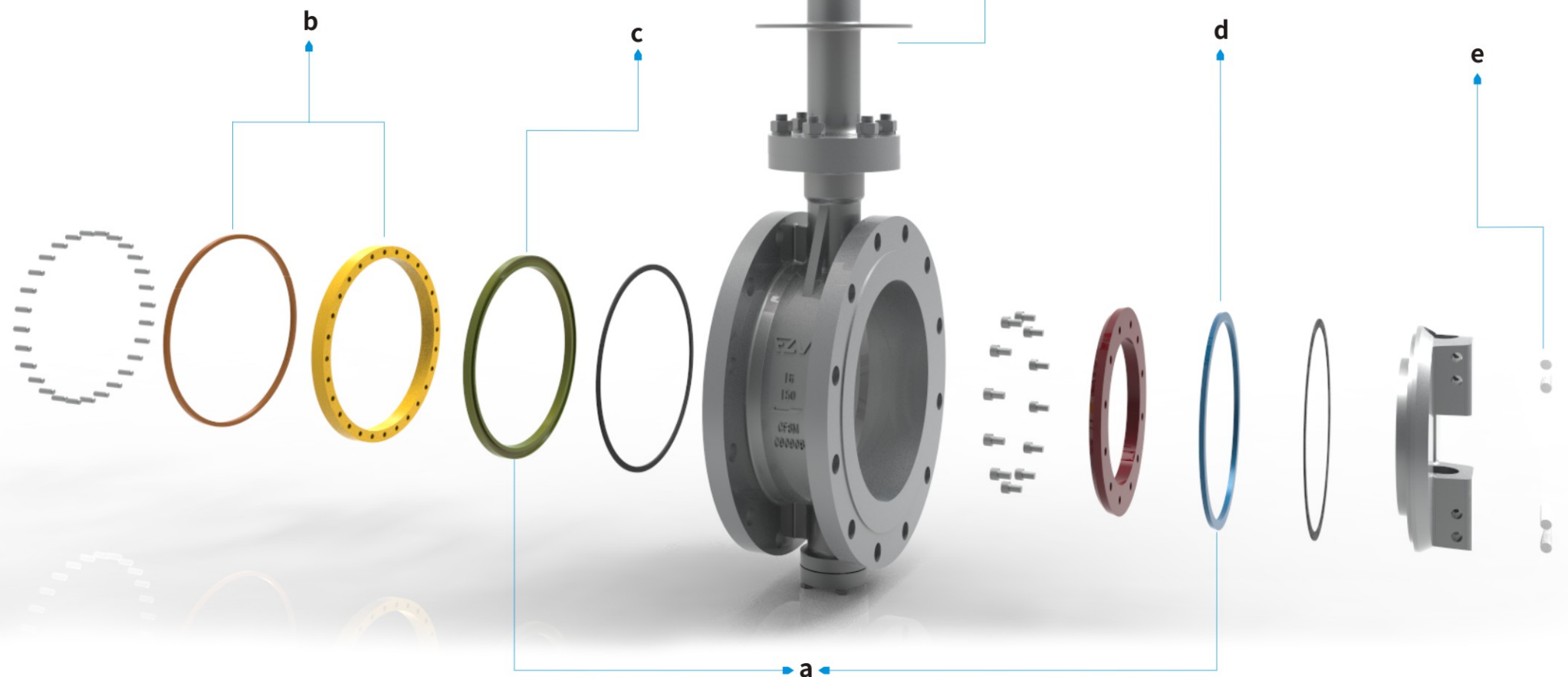
- a. Design of Self-adjustable Double Floating Seal
- b. Seat sealing pressure ring
- c. Removable seat
- d. Self-adjustable metal seal ring
- e. Taper pin with preload function
- f. Extended bonnet for cold box



**No contact between seat and seal ring
when the butterfly valve is opened**

- a. Design of Self-adjustable Double Floating Seal
- b. Seat sealing pressure ring
- c. Removable seat
- d. Self-adjustable metal seal ring
- e. Taper pin with preload function
- f. Extended bonnet for cold box

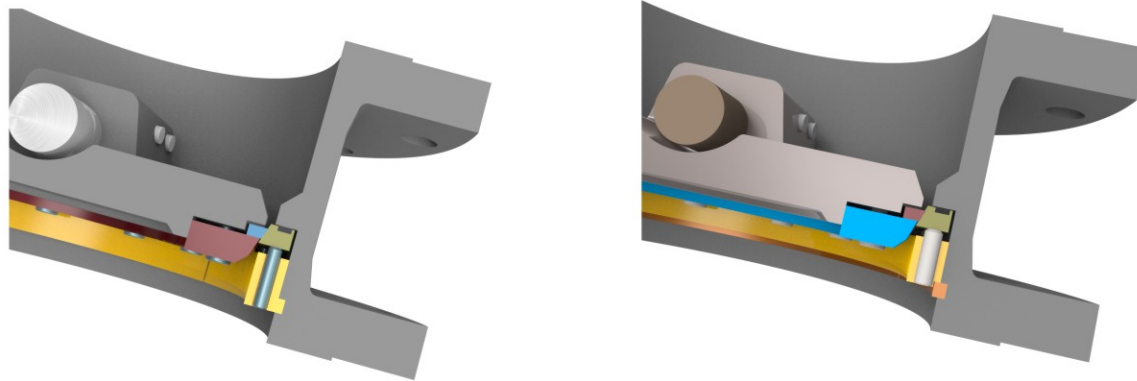
- a. Design of Self-adjustable Double Floating Seal
- b. Seat sealing pressure ring
- c. Removable seat
- d. Self-adjustable metal seal ring
- e. Taper pin with preload function
- f. Extended bonnet for cold box



B. SEAT SEALING PRESSURE RING FEATURE

The common feature on most triple offset butterfly valves with a fixed seat seal ring is that the sealing pressure ring has an external “tongue” and is cut into three or four segments and fits directly into the valve body “groove” for alignment. These segments are secured in place by bolts which are tightened against the body seat. However, when the butterfly valve is used in Cryogenic service, the bolt threads can become deformed and eventually loose. This will also cause the tongue on sealing pressure ring to bend and fail due to the line pressure.

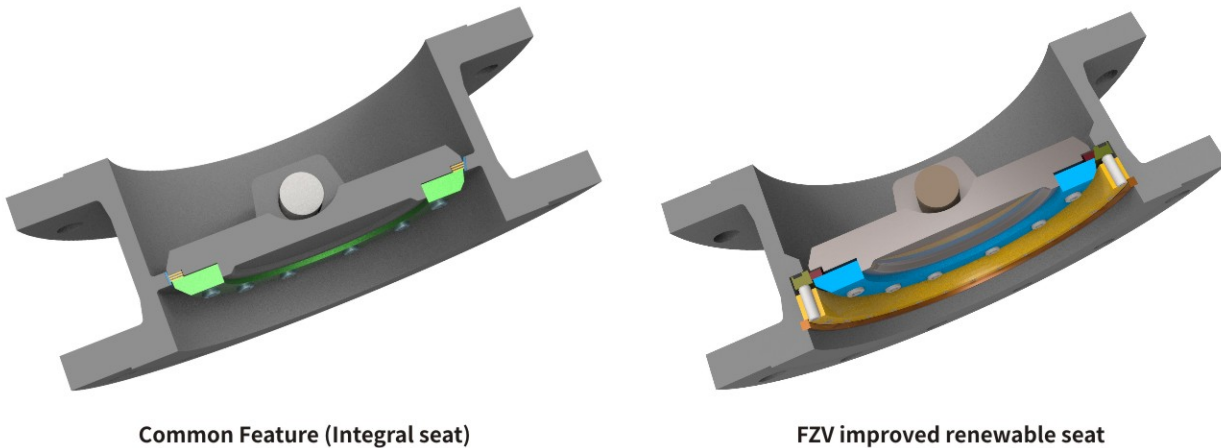
In order to prevent these possible failures, the sealing pressure ring is designed without an external “tongue” and is only cut into two segments. These two segments are supported by a large seal retaining ring type ring which is fixed into a groove in the body. The segments are secured in place by bolts which are tightened against the body seat. This type of design prevents any damage to the sealing ring.



C. REMOVABLE SEAT FEATURE

On a common triple offset butterfly valve, the body seat sealing surface is an integral part of the body and is weld overlaid with a hard, non-corrosive material. If the body seat sealing surface is damaged, then the whole valve has to be replaced or repaired.

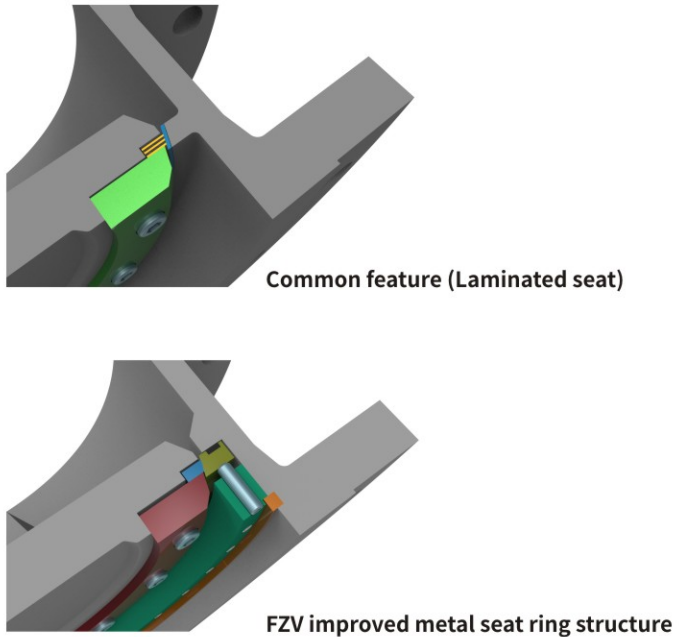
FZV’s cryogenic butterfly valves are designed with renewable body and disc sealing rings. These sealing rings can be repaired as a pair, individually or replaced with new sealing rings as the machining of these sealing rings are machined on the same angle fixture. These sealing rings can be easily replaced on site, which greatly improves the efficiency of on-site maintenance and prolongs the service life of the valve.



D. SELF-ADJUSTABLE METAL SEAL RING STRUCTURE

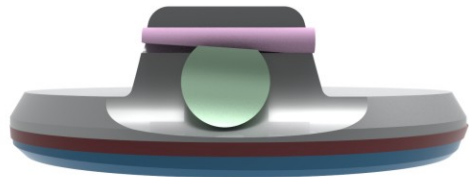
A typical laminated metal seated disc seal ring is fabricated from stainless steel sheets and graphite pressed and precisely machined together. During continuous use under harsh conditions, the graphite can become eroded away as well as being extruded from between the stainless steel sheets due to the medium force, causing eventual failure.

FZV’s renewable body and disc metal seated sealing rings are both hard faced on the sealing surfaces. With the valve in the full or partial open position, there will be no erosion of the sealing surfaces by the friction of the high velocity medium. Even under frequent open and close operations, the efficient sealing capability of the valve is maintained; as a result, it significantly affects to eliminate the possible sealing problems of using a laminated metal seated disc seal ring. As the body and disc sealing rings are manufactured from the same materials, and are in contact with each, the valve basically is designed as fire-safe which means static electricity is never generated. Also, the coefficient of linear expansion of the materials are the same. Therefore, when operating low temperature or even cryogenic service, a zero leakage, bi-directional seal is maintained during the valve service life when operating within the pressure/temperature range.



E. TAPER PIN DESIGN WITH PRELOAD FUNCTION FUNCTION (PATENT DESIGN)

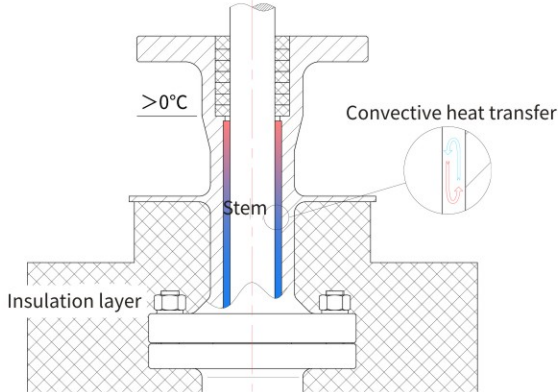
The disc is fixed to the valve stem by taper pins. A taper pin mates with the flat machined face on the valve stem. During the wedging action, taper pins play a key role to connect securely the disc and the valve stem as a one-piece component. This feature affects to eliminate any gap and movement between the disc and the valve stem.



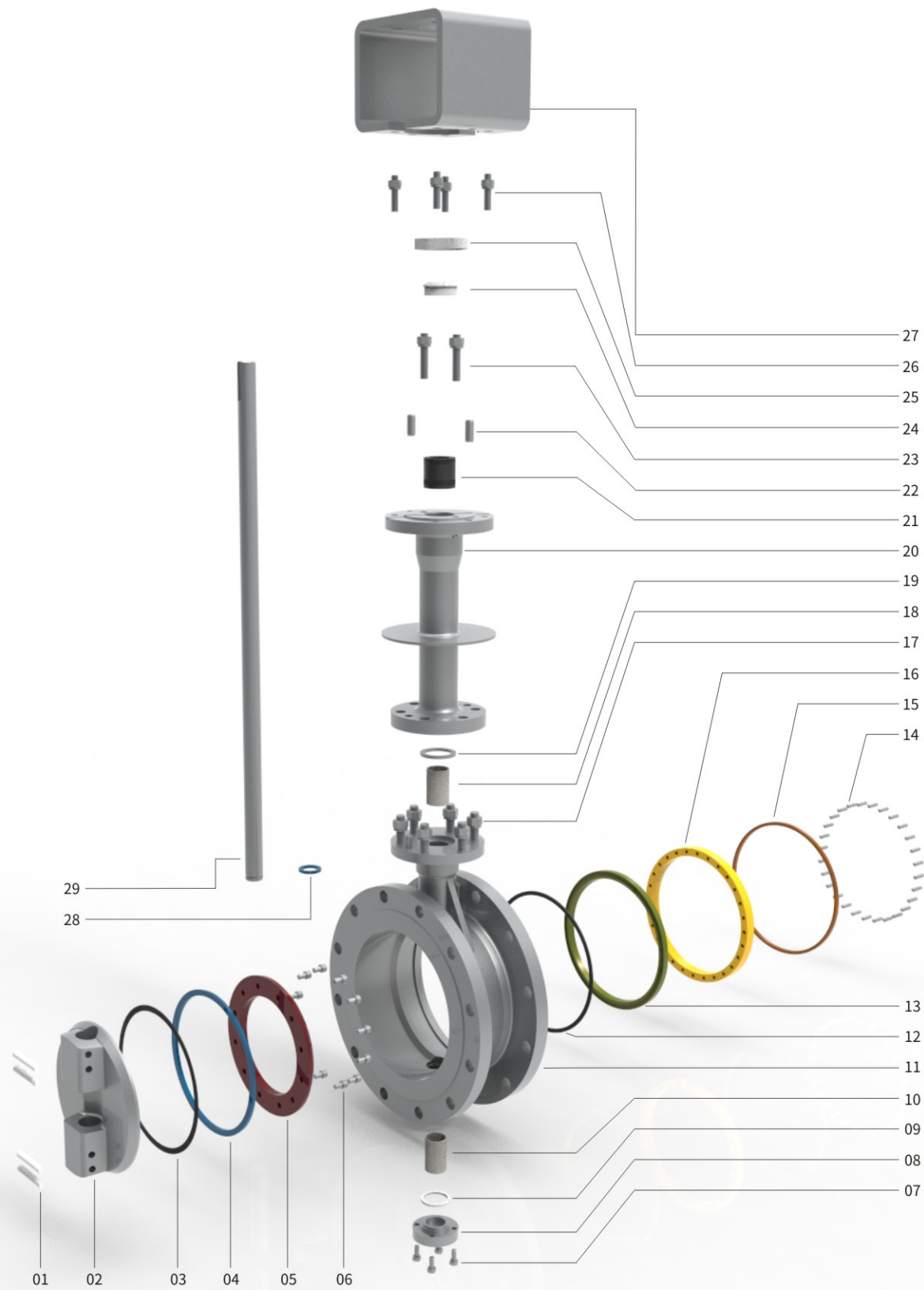
F. EXTENDED BONNET STRUCTURE FOR COLD BOX

In a cryogenic valve, an extended bonnet plays a key role to remain the stem packing at a temperature above the cryogenic medium in the body cavity, preventing the packing from freezing and losing its sealing ability. In addition to this, it provides space to wrap insulation around the bonnet, further minimizing heat transfer from the surrounding environment to the cryogenic fluid.

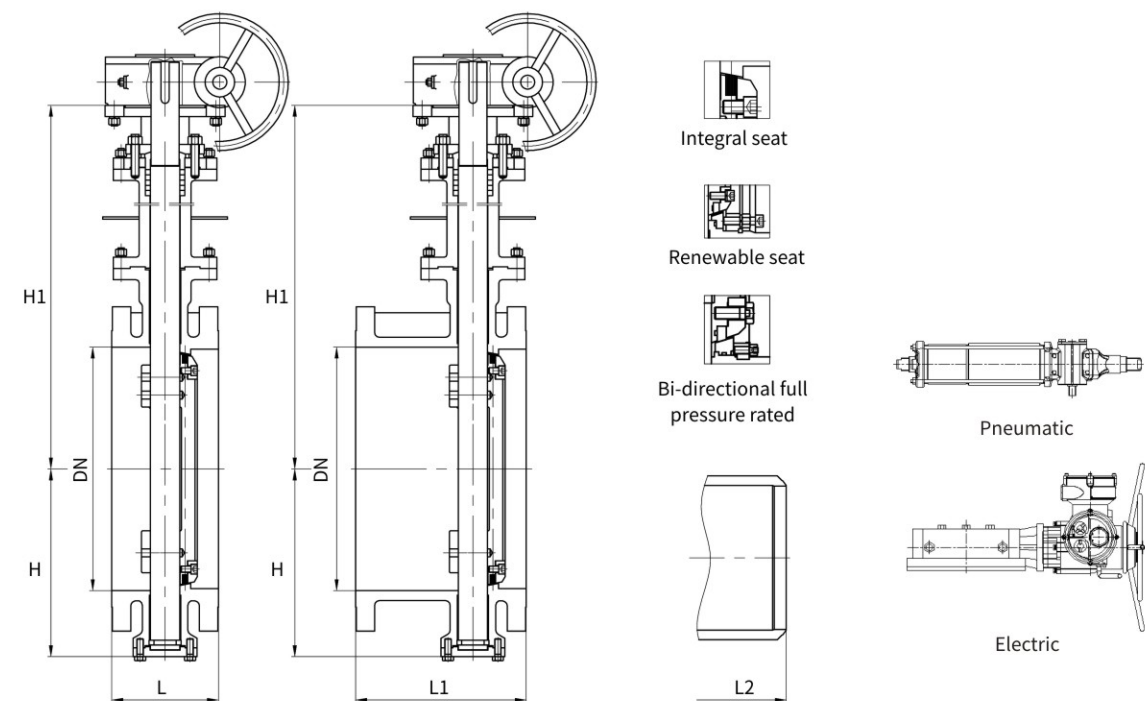
A drip plate is provided in the extended bonnet to collect and contain condensation that forms on the valve body, preventing it from freezing or accumulating on the stem packing and ensuring proper heat transfer and valve operation used in extremely low temperatures. The packing can meet the requirements of TA-luft.



EXPLODED VIEW DRAWING AND MATERIAL TABLE



ITEM	NAME	MATERIAL (TEMPERATURE RANGE -196℃~80℃)	MATERIAL (TEMPERATURE RANGE -101℃~80℃)	MATERIAL (TEMPERATURE RANGE -46℃~80℃)
1	Taper pin	A638 GR.660	A638 GR.660	A638 GR.660
2	Disc	A351 CF8M/CF3M	A352 LC3	A352 LF2
3	Disc gasket	Flexible graphite	Flexible graphite	Flexible graphite
4	Seat ring	A182 F304/F316	A350 LF3	A350 LF2
5	Plate	A182 F304/F316	A350 LF3	A350 LF2
6	Socket head cap screw	A320 B8/B8M	A320 L7	A320 L7
7	Socket head cap screw	A320 B8/B8M	A320 L7	A320 L7
8	Bottom cover	A182 F304/F316	A350 LF3	A350 LF2
9	Bottom cover gasket	304/316+Graphite	304+Graphite	304+Graphite
10	Shaft sleeve	304/316+Graphite	SF-1S	SF-1S
11	Body	A351 CF8M/CF8	A352 LC3	A352 LCB
12	Seat gasket	304/316+Graphite	304+Graphite	304+Graphite
13	Seal retaining ring	A182 F304/F316+STL.21	A350 LF3+STL.21	A350 LF2+STL.21
14	Lock screw	A320 B8/B8M	A320 L7	A320 L7
15	seal retaining ring	A182 F304/F316	A350 LF3	A350 LF2
16	Seat press ring	A182 F304/F316	A350 LF3	A350 LF2
17	Full threaded stud	A320 B8/B8M	A320 L7	A320 L7
	Spring washer	SS304/SS316	SS304	SS304
18	Hex nut	A194 8/8M	A194 7	A194 7
	Shaft sleeve	304/316+Harden	SF-1S	SF-1S
19	Spiral wound gasket	304/316+Graphite	304+Graphite	304+Graphite
20	Extended bonnet	A351 CF8M/CF3M	A352 LC3	A352 LF2
21	Packing	Flexible graphite	Flexible graphite	Flexible graphite
22	pin	A276 420	A276 420	A276 420
23	Full threaded stud	A320 B8/B8M	A320 L7	A320 L7
	Spring washer	SS304/SS316	SS304	SS304
24	Hex nut	A194 8/8M	A194 7	A194 7
	Packing ring	A182 F304/F316	A350 LF3	A350 LF2
25	Gland flange	A240 304/316	A350 LF3	A350 LF2
26	Socket head cap screw	A320 B8/B8M	A193 B7	A193 B7
	Spring washer	SS304/SS316	AISI 1566	AISI 1566
27	Hex nut	A194 8/8M	A194 2H	A194 2H
	Yoke	A351 CF8M/CF8	1020	1020
28	Split collar	A182 F304/F316	A350 LF3	A350 LF2
29	Stem	A638 660	A638 660	A638 660



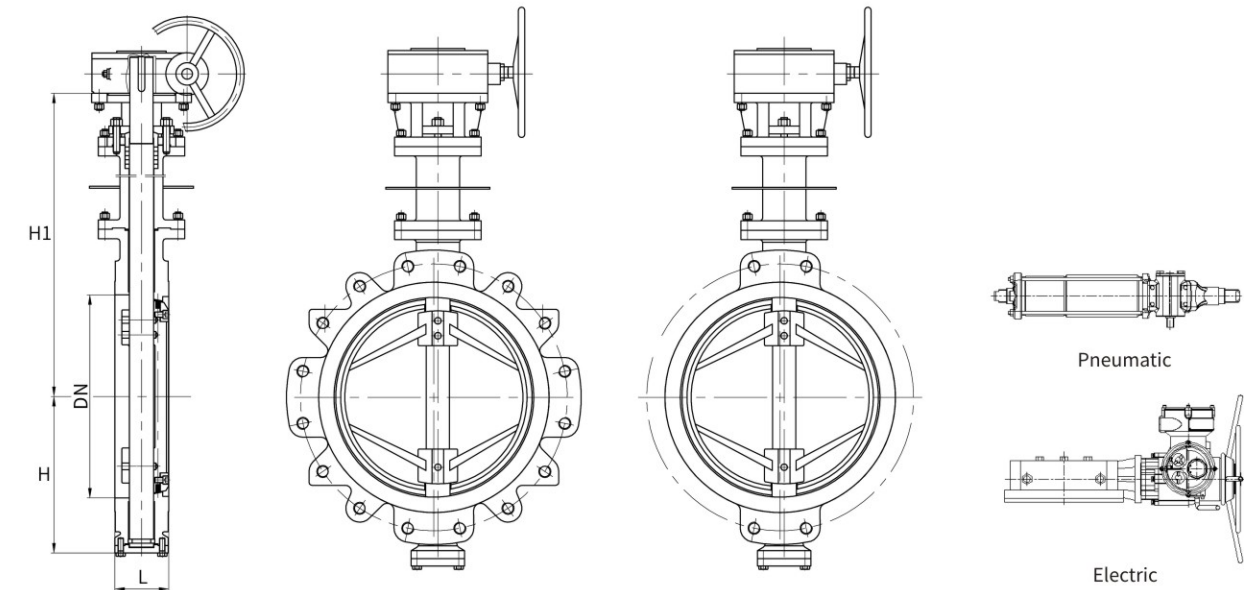
MAIN DIMENSIONS AND WEIGHT

CLASS 150									FLANGE
NPS	L	L1	L2	H	H1	ISO 5211	Nm	CV	Weight (KG)
3	114	203	180	95	496	F07	80	165	35
4	127	229	190	115	520	F07	142	318	48
6	140	292	210	147	625	F10	362	932	86
8	152	330	230	185	658	F12	785	1970	95
10	165	356	250	215	755	F14	1080	2689	130
12	178	381	270	250	847	F14	1510	3900	179
14	190	406	290	390	892	F16	2458	5280	231
16	216	432	310	320	937	F25	2850	7800	316
18	222	457	330	345	1031	F25	4536	9800	368
20	229	508	350	375	1109	F25	6200	12180	470
24	267	559	390	440	1152	F25	8240	19800	653
28	292	610	430	535	1300	F30	11600	27600	972
32	318	660	470	625	1350	F30	17850	35800	1370
36	330	711	510	675	1540	F35	27200	45600	1808
40	410	813	550	725	1607	F35	32000	56000	2132
48	470	864	630	860	1708	F40	45000	83000	2600

CLASS 300									FLANGE
NPS	L	L1	L2	H	H1	ISO 5211	Nm	CV	Weight (KG)
3	114	282	180	105	650	F07	144	165	67
4	127	305	190	128	650	F07	258	318	78
6	140	403	210	190	680	F12	800	682	103
8	152	419	230	230	720	F16	1960	1230	153
10	165	457	250	260	800	F16	2270	2370	179
12	178	502	270	300	825	F16	2780	3520	231
14	190	762	290	330	880	F25	5680	4780	316
16	216	838	310	365	900	F25	7800	6280	368
18	222	914	330	405	985	F25	8950	7980	470
20	229	991	350	440	990	F30	11500	10800	653
24	267	1143	390	520	1135	F30	18400	16180	972
28	292	1346	430	685	1350	F35	27500	22410	1370
32	318	1524	470	705	1420	F40	41200	33050	1808
36	330	1727	510	762	1520	F40	53700	42090	2132
40	410		550	764	1575	F40	68370	48964	2400
48	470		630	916	1800	F48	108000	69350	2600

CLASS 600									FLANGE
NPS	L	L1	L2	H	H1	ISO 5211	Nm	CV	Weight (KG)
3	180	356	180	105	650	F10	340	165	103
4	190	432	190	138	680	F12	633	318	153
6	210	559	210	210	720	F16	1630	682	130
8	230	660	230	245	800	F16	3540	1230	179
10	250	787	250	292	825	F25	5462	2370	231
12	270	838	270	320	880	F25	6018	3520	316
14	290	889	290	350	900	F25	10913	4780	368
16	310	991	310	405	985	F30	15757	6280	470
18	330	1092	330	440	990	F35	19805	7980	653
20	350	1194	350	545	1135	F35	25808	10800	972
24	390	1397	390	597	1350	F40	44799	16180	1370
28	430	1549	430	681	1420	F40	66593	22410	1808
32	470	1778	470	740	1520	F48	90160	33050	2132
36	510	2083	510	800	1575	F48	117500	42090	3600

CLASS 900						CLASS 1500			
NPS	L	H	ISO 5211	Nm	CV	L	ISO 5211	Nm	CV
4	200	138	F16	3540	250	240	F16	3540	107
6	225	210	F25	5462	600	275	F25	5462	250
8	275	245	F25	6018	1079	315	F25	6018	600
10	325	292	F25	10913	1708	365	F25	10913	1079
12	375	320	F30	15757	2620	415	F30	15757	1708
14	425	350	F35	19805	4062				
16	475	405	F35	25808	5292				
18	500	440	F40	44799	7395				
20	575	545	F40	66593	9320				
24	675	597	F48	90160	13578				



MAIN DIMENSIONS AND WEIGHT

CLASS 150							FLANGE
NPS	L	H	H1	ISO 5211	Nm	CV	Weight (KG)
3	48	95	496	F07	80	165	9
4	54	115	520	F07	142	318	13
6	57	147	625	F10	362	932	21
8	64	185	658	F12	785	1970	35
10	71	215	755	F14	1080	2689	79
12	81	250	847	F14	1510	3900	95
14	92	390	892	F16	2458	5280	119
16	102	320	937	F25	2850	7800	156
18	114	345	1031	F25	4536	9800	204
20	127	375	1109	F25	6200	12180	292
24	154	440	1152	F25	8240	19800	447
28	165	535	1300	F30	11600	27600	585
32	190	625	1350	F30	17850	35800	836
36	203	675	1540	F35	27200	45600	1147
40	216	725	1607	F35	32000	56000	1558
48	254	860	1708	F40	45000	83000	2301

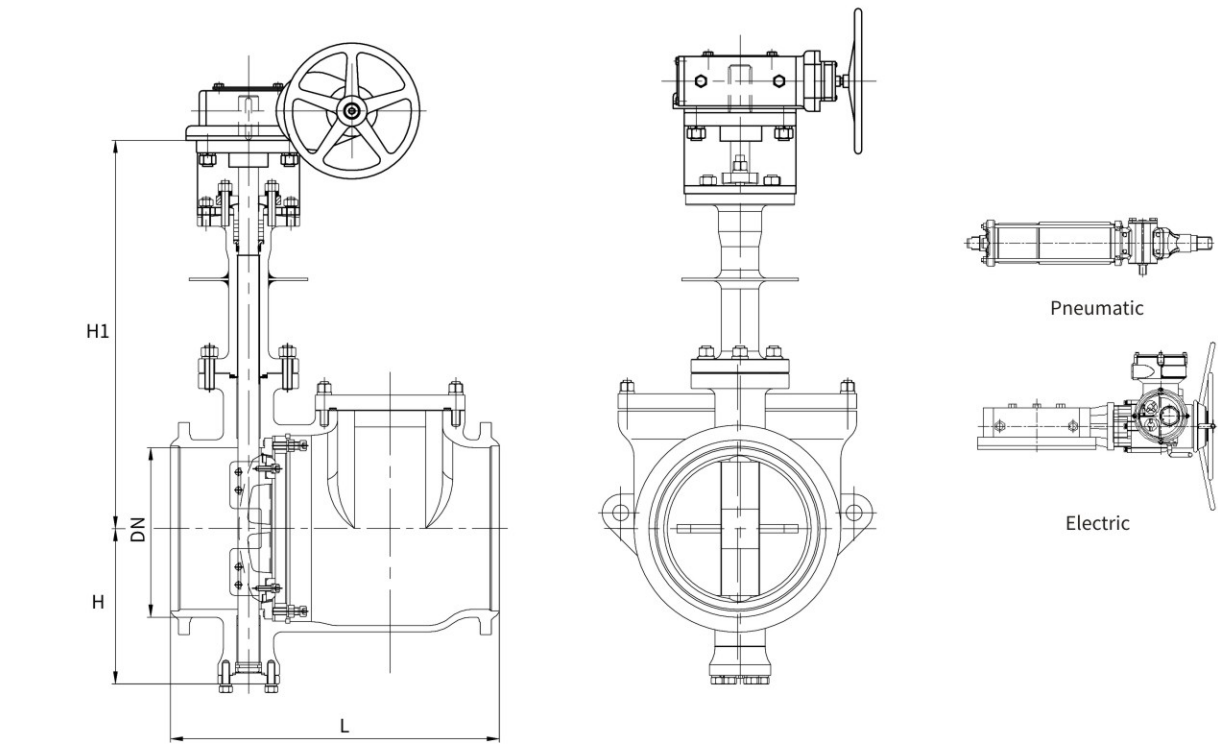
CLASS 300							FLANGE
NPS	L	H	H1	ISO 5211	Nm	CV	Weight (KG)
3	48	105	650	F07	144	165	11
4	54	128	650	F07	258	318	17
6	95	190	680	F12	800	682	32
8	73	230	720	F16	1960	1230	54
10	83	260	800	F16	2270	2370	90
12	92	300	825	F16	2780	3520	159
14	117	330	880	F25	5680	4780	206
16	133	365	900	F25	7800	6280	277
18	149	405	985	F25	8950	7980	349
20	159	440	990	F30	11500	10800	427
24	181	520	1135	F30	18400	16180	696
28	229	685	1350	F35	27500	22410	1056
32	241	705	1420	F40	41200	33050	1463
36	241	762	1520	F40	53700	42090	1929
40	300	764	1575	F40	68370	48964	1857
48	360	916	1800	F48	108000	69350	3000

CLASS 600							FLANGE
NPS	L	H	H1	ISO 5211	Nm	CV	Weight (KG)
3	54	105	650	F10	340	165	20
4	64	138	680	F12	633	318	31
6	78	210	720	F16	1630	682	67
8	102	245	800	F16	3540	1230	194
10	117	292	825	F25	5462	2370	205
12	140	320	880	F25	6018	3520	298
14	155	350	900	F25	10913	4780	351
16	178	405	985	F30	15757	6280	497
18	200	440	990	F35	19805	7980	650
20	216	545	1135	F35	25808	10800	806
24	232	597	1350	F40	44799	16180	1222
28		681	1420	F40	66593	22410	
32		740	1520	F48	90160	33050	
36		800	1575	F48	117500	42090	

TOP-ENTRY CRYOGENIC BUTTERFLY VALVE

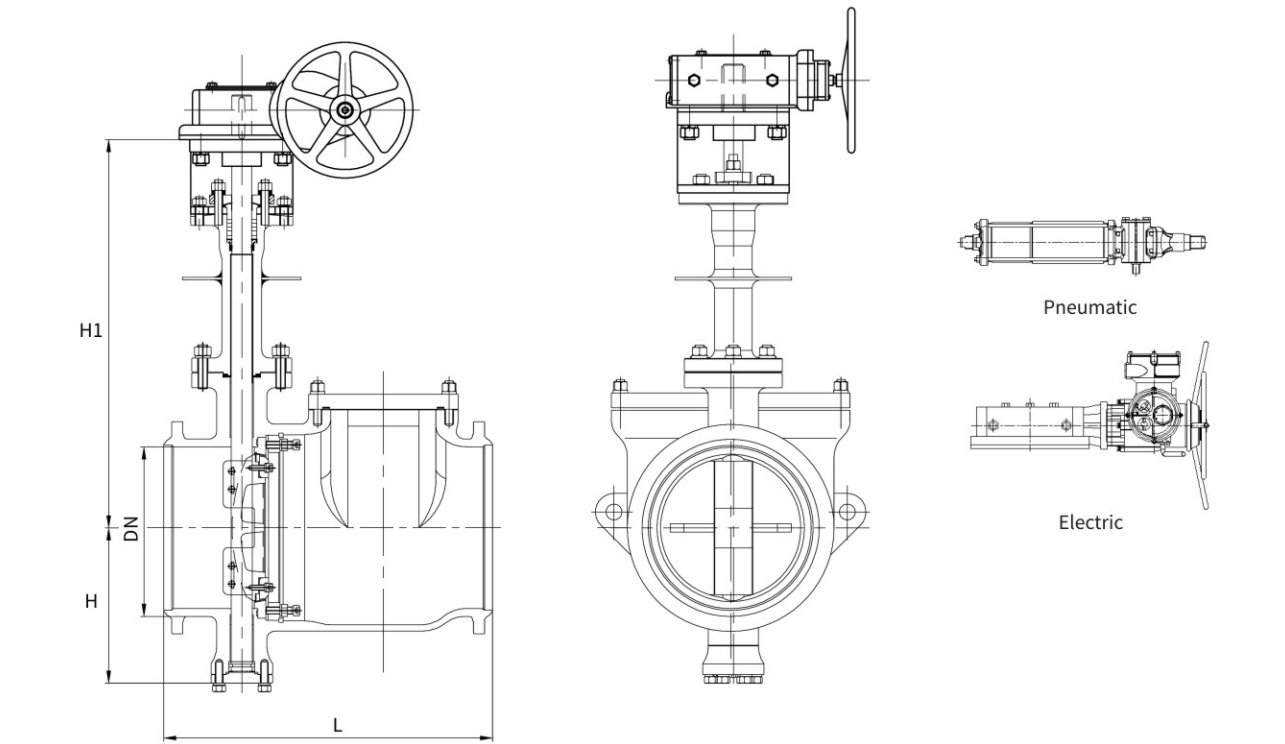


The body seat and the disc seal rings on FZV’ s cryogenic butterfly valve can be renewed or maintained with the valve in-line, which greatly reduces the downtime and maintenance costs. This is possible due to the valve is designed with its entry point at the top of the valve body. This gives easy access to the disc side bolting for the removal and replacement of the body seat and disc seal rings, without having to disassemble the valve operators, stem and disc or the valve from the line.

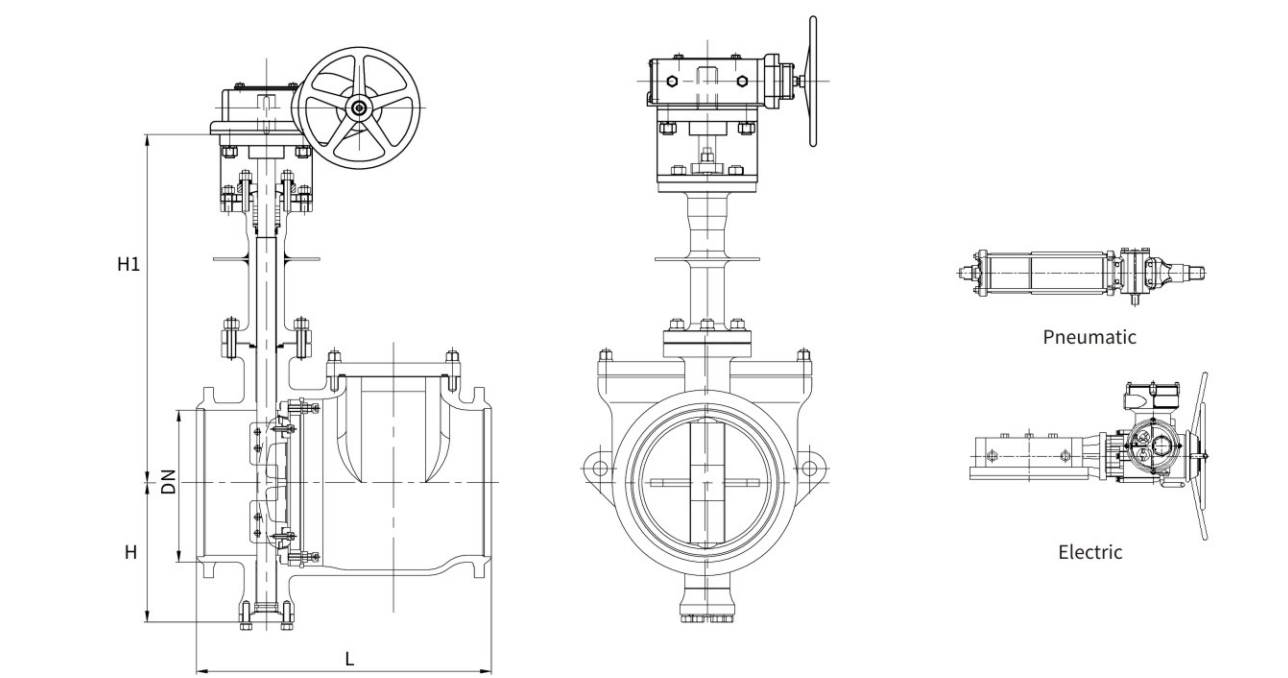


MAIN DIMENSIONS AND WEIGHT

CLASS 150					CRYOGENIC, WITH MAINTENANCE HOLE		
NPS	L	H	H1	ISO 5211	Nm	CV	Weight (KG)
8	482	210	705	F12	980	2000	160
10	602	240	750	F14	1600	2670	210
12	620	265	795	F16	2100	3950	240
14	649	305	810	F16	3600	5300	294
16	692	340	840	F25	4050	7750	438
18	712	395	885	F25	6200	9850	530
20	761	400	970	F25	7600	12180	740
24	827	423	1060	F30	11000	19750	960
28	881	530	1150	F30	15000	27800	1195
30	951	572	1240	F35	17000	32240	1425
32	974	620	1260	F35	23000	35600	1590
36	980	682	1330	F40	27000	45600	2015
40	1015	752	1495	F40	34000	56000	2433
42	1015	752	1495	F40	38000	58000	2550
48	1115	860	1708	F40	45000	83000	3200



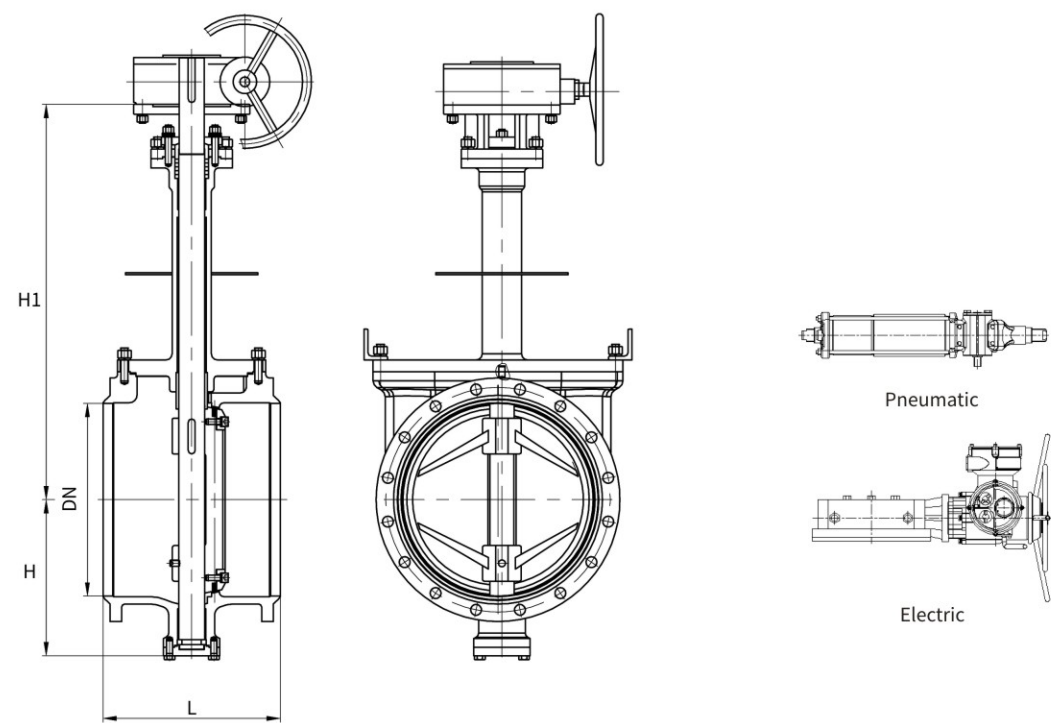
CLASS 300				CRYOGENIC, WITH MAINTENANCE HOLE			
NPS	L	H	H1	ISO 5211	Nm	CV	Weight (KG)
8	562	210	720	F16	2100	1230	225
10	612	245	800	F16	3200	2370	263
12	649	280	825	F25	3900	3620	343
14	713	315	880	F25	6200	4780	525
16	733	360	900	F30	9300	6280	592
18	761	400	985	F30	13000	7900	780
20	796	440	990	F35	17000	10800	815
24	887	500	1135	F35	26000	16180	1210
28	941	605	1350	F40	37000	22410	1575
30	1001	620	1380	F40	45000	27000	1890
32	1029	662	1420	F40	52000	33000	2150
36	1104	729	1520	F48	67000	42000	2375
40	1183	797	1575	F48	88000	49000	2590
42	1183	797	1575	F48	98000	50900	2750
48	1400	916	1800	F48	108000	69350	3400



CLASS 600				CRYOGENIC, WITH MAINTENANCE HOLE			
NPS	L	H	H1	ISO 5211	Nm	CV	Weight (KG)
8		245	800	F16	3540	1230	
10		292	825	F25	5462	2370	
12		320	880	F25	6018	3520	
14		350	900	F25	10913	4780	
16		405	985	F30	15757	6280	
18		440	990	F35	19805	7980	
20		545	1135	F35	25808	10800	
24		597	1350	F40	44799	16180	
28		681	1420	F40	66593	22410	
32		740	1520	F48	90160	33050	
36		800	1575	F48	117500	42090	

CLASS 900				CLASS 1500			
NPS	ISO 5211	Nm	CV	NPS	ISO 5211	Nm	CV
8	F25	6018	1079	8	F25	6018	600
10	F25	10913	1708	10	F25	10913	1079
12	F30	15757	2620	12	F30	15757	1708
14	F35	19805	4062				
16	F35	25808	5292				
18	F40	44799	7395				
20	F40	66593	9320				
24	F48	90160	13578				

For the appearance of 600LB class or above, please contact our company for specific consultation. No further notice will be given for any change.



MAIN DIMENSIONS AND WEIGHT

CLASS 150				CRYOGENIC, WITH MAINTENANCE HOLE			
NPS	L	H	H1	ISO 5211	Nm	CV	Weight (KG)
8	292	210	705	F12	980	2000	160
10	330	240	750	F14	1600	2670	210
12	356	265	795	F16	2100	3950	240
14	381	305	810	F16	3600	5300	294
16	406	340	840	F25	4050	7750	438
18	432	395	885	F25	6200	9850	530
20	457	400	970	F25	7600	12180	740
24	508	423	1060	F30	11000	19750	960
28	610	530	1150	F30	15000	27800	1195
32	660	620	1260	F35	23000	35600	1590
36	711	682	1330	F40	27000	45600	2015
40	813	752	1495	F40	34000	56000	2433
48	915	860	1708	F40	45000	83000	3200

CLASS 300				CRYOGENIC, WITH MAINTENANCE HOLE			
NPS	L	H	H1	ISO 5211	Nm	CV	Weight (KG)
8	400	210	705	F12	980	2000	160
10	450	240	750	F14	1600	2670	210
12	500	265	795	F16	2100	3950	240
14	550	305	810	F16	3600	5300	294
16	600	340	840	F25	4050	7750	438
18	650	395	885	F25	6200	9850	530
20	700	400	970	F25	7600	12180	740
24	800	423	1060	F30	11000	19750	960
28	900	530	1150	F30	15000	27800	1195
32	1000	620	1260	F35	23000	35600	1590
36	1100	682	1330	F40	27000	45600	2015
40	1200	752	1495	F40	34000	56000	2433
48	1400	860	1708	F40	45000	83000	3200

CLASS 600				CRYOGENIC, WITH MAINTENANCE HOLE			
NPS	L	H	H1	ISO 5211	Nm	CV	Weight (KG)
8		245	800	F16	3540	1230	
10		292	825	F25	5462	2370	
12		320	880	F25	6018	3520	
14		350	900	F25	10913	4780	
16		405	985	F30	15757	6280	
18		440	990	F35	19805	7980	
20		545	1135	F35	25808	10800	
24		597	1350	F40	44799	16180	
28		681	1420	F40	66593	22410	
32		740	1520	F48	90160	33050	
36		800	1575	F48	117500	42090	

CLASS 900				CLASS 1500			
NPS	ISO 5211	Nm	CV	NPS	ISO 5211	Nm	CV
8	F25	6018	1079	8	F25	6018	600
10	F25	10913	1708	10	F25	10913	1079
12	F30	15757	2620	12	F30	15757	1708
14	F35	19805	4062				
16	F35	25808	5292				
18	F40	44799	7395				
20	F40	66593	9320				
24	F48	90160	13578				