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FZV-Ref-2024



PROVIDING COMPLETE CONTROL SOLUTIONS
FOR INDUSTRIAL PIPELINES

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)
- Deign 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: API600 & API6D: CLASS 150~CLASS 2,500 (PN16~PN420) API 6A: 2,000PSI~15,000PSI

Temperature range: -196°C-550°C

Applications: 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. Responsive after-sales service.

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TYPES AND APPLICATION

TRIPLE OFFSET BUTTERFLY VALVE

Triple offset butterfly valves are a high performance valve, offering zero-leak capabilities and extended service life due to the offsets of the stem centre-line (offsets 1, 2) and the disc elliptical sealing surface (offset 3) and their material selection. These combined functions greatly reduce the operating torques and eliminates the friction between the body and disc seat sealing surfaces.

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. It can be used to control the flow of various fluids, such as air, water, steam, corrosive media, mud, oil, low temperature molten metal and radioactive media.



selected the correct materials and applied the special material treatment to maintain the sealing contact performance of the seat sealing surfaces. High temperature butterfly valves can be mounted with various types of high temperature proof actuators, which enables the butterfly valve to operate reliably at these high temperatures.



CRYOGENIC TRIPLE OFFSET BUTTERFLY VALVE

Cryogenic butterfly valves are mainly used in the petrochemical, air separation, LNG and other industries under harsh working conditions. The majority of the pipeline mediums are flammable, explosive and permeable, such as ethylene, liquid oxygen, liquid hydrogen, liquefied natural gas, etc. (Please refer to the cryogenic butterfly valve catalogue for more details)



DOUBLE OFFSET BUTTERFLY VALVE

Double offset butterfly valves are also a high performance valve, offering zero-leak capabilities and extended service life as the same as triple offset butterfly valve. The offsets of the valve are the stem centre-line (offsets 1, 2). With the compact design and lower cost than a triple offset valve, the double offset valve is designed to function across various industries including oil and gas, petrochemical, power generation, water/wastewater treatment, and HVAC system.



HIGH TEMPERATURE TRIPLE OFFSET BUTTERFLY VALVE

High temperature butterfly valves are mainly used in the power plant, oil, gas, and chemical processing, chemical, glass and other industries where high manufacturing temperatures and mediums are encountered, e.g., steam, flue gas, high temperature gas, high temperature air, etc.

FZV high temperature pipeline valves are designed to operate at these high temperatures and in a harsh environment for a long time. The valve components are likely at the risk of deformation causing to reduce their material performance due to constant thermal expansion and contraction. Considering these adverse working conditions, FZV has



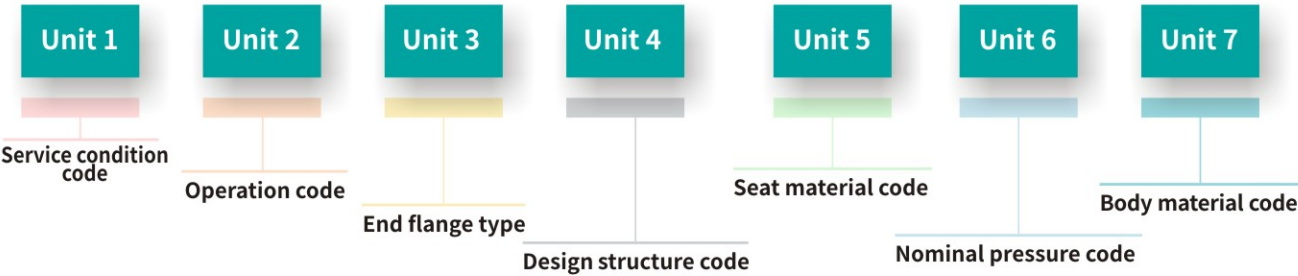
CONCENTRIC BUTTERFLY VALVE

Concentric butterfly valves are mainly used in the petroleum, chemical, metallurgy, water and hydropower industries. Rubber, PTFE and other non-metallic materials which are often designed with the lining in the body which provides the seal between the disc and the body . Due to the limitation of the structural design of the concentric butterfly valve, it is not suitable for use in the high temperature, high pressure industries. (Please refer to the concentric butterfly valve catalogue for more details)



IDENTIFICATION NUMBERING SYSTEM FOR BUTTERFLY VALVE PRODUCTS

A butterfly valve's identification number consists of 7 units as the following:



Unit 1

Table.1 indicates the number of codes used to categorize a butterfly valve's service condition.

Unit 2

Table.2 indicates the number of codes used to categorize a butterfly valve's operation type.

Unit 3

Table.3 indicates the number of codes used to categorize a butterfly valve's End flange type.

Unit 4

Table.4 indicates the number of codes used to specify a butterfly valve's structural design.

Unit 5

Table.5 indicates the number of codes used to specify a butterfly valve's seat material.

Unit 6

Nominal pressure is indicated as a number. Bar unit is used for GB and DIN, such as 16, 25, etc. Class unit is used for ANSI or BS, such as 150, 300, etc. K unit is used for JIS, such as 10K, 20K, etc.

Unit 7

Table.6 indicates the number of codes used to specify a butterfly valve's body material.

BUTTERFLY VALVE SERVICE CONDITION CODE

Table 1

CATEGORY	CODE	CATEGORY	CODE	CATEGORY	CODE
High temperature service butterfly valve	HD	Cryogenic service butterfly valve	DD	Normal service butterfly valve	TD

OPERATION CODE

Table 2

OPERATION	CODE	OPERATION	CODE	OPERATION	CODE	OPERATION	CODE
Bare shaft	0	Worm gear	3	Pneumatic	6	Electric	9
Handle/Handwheel	N/A	Spur gear	4	Hydraulic/Gas-over Oil	7		
Impact type Handwheel	2	Bevel Gear	5	Chain Wheel	8		

Note: (1) For pneumatic or hydraulic valves, 6K、7K are usually used for Normally opened valves and 6B、7B for Normally closed valves.
(2) Explosion-proof electric power is represented by 9B.

END FLANGE TYPE CODE

Table 3

END CONNECTION	CODE	END CONNECTION	CODE	END CONNECTION	CODE	END CONNECTION	CODE
FNPT(SD)	1	Raise Flange(RF)	4	Wafer(WR)	7	Flat Flange(FF)	0
Groove(G)	2	Ring connection flange(RTJ)	5	Hub(CP)	8	NPT one side	1/9
Female flange(FM)	3	Butt welding(BW)	6	Socket welding(SW)	9	SW one side	

STRUCTURAL DESIGN CODE

Table 4

CODE	STRUCTURAL	CODE	STRUCTURAL	CODE	STRUCTURAL	CODE	STRUCTURAL
1	Concentric butterfly valve	2	Double offset butterfly valve	3	Triple offset Butterfly valve	4	PFA lined butterfly valve

SEAT MATERIAL CODE

Table 5

SEAT MATERIAL	CODE	SEAT MATERIAL	CODE	SEAT MATERIAL	CODE
Tin-based bearing alloy	B	Nylon	N	PFA LINED	J
18-8 series stainless steel	P	Mo2Ti stainless steel	R	Integral (integral seat)	W
Fluoroplastics	F	Copper alloy	T	Multilevel Composition	HF
Cr13 stainless steel/alloy steel	H	Rubber	X		
Monel	M	Hard metal	Y		

Note: General drawing design: F for soft seat ,Y for metal seat.

BODY MATERIAL CODE

Table 6

BODY MATERIAL	CODE	BODY MATERIAL	CODE	BODY MATERIAL	CODE	BODY MATERIAL	CODE
Carbon steel	C	Aluminium alloy	L	Plastic	S	Gray cast iron	Z
Cr13 stainless steel	H	Chromium-nickel stainless steel	P	Copper and Copper alloys	T		
Chromium molybdenum series steel	I	Ductile iron	Q	Titanium and Titanium Alloys	Ti		
Malleable iron	K	Chromium-nickel -molybdenum stainless steel	R	Chromium molybdenum vanadium steel	V		

APPLICATION AREAS OF BUTTERFLY VALVES



PETROCHEMICAL INDUSTRY

- Salt water
- Carbon dioxide vapor
- Propylene plant
- Oxygen system
- Flame entrance and isolation
- Ethylene plant
- Coking plant



NUCLEAR POWER INDUSTRY

- Container insulation
- Pump isolation
- Brine system
- Seawater desalination system



POWER GENERATION INDUSTRY

- Pump isolation
- Pump and steam extraction isolation
- Condenser cooling



PETROLEUM REFINING

- Oil storage isolation
- Air supply valve
- Desulfurization system and exhaust gas processor
- Isolation of torch gas, hydrogen and acid gas



CRYOGENIC

- All liquid gases
- Liquefaction and Natural Gas Systems
- Oilfield recovery system



CENTRAL HEATING

- Thermal power station
- Hot water pipe network
- Heat exchange station
- Steam pipe network



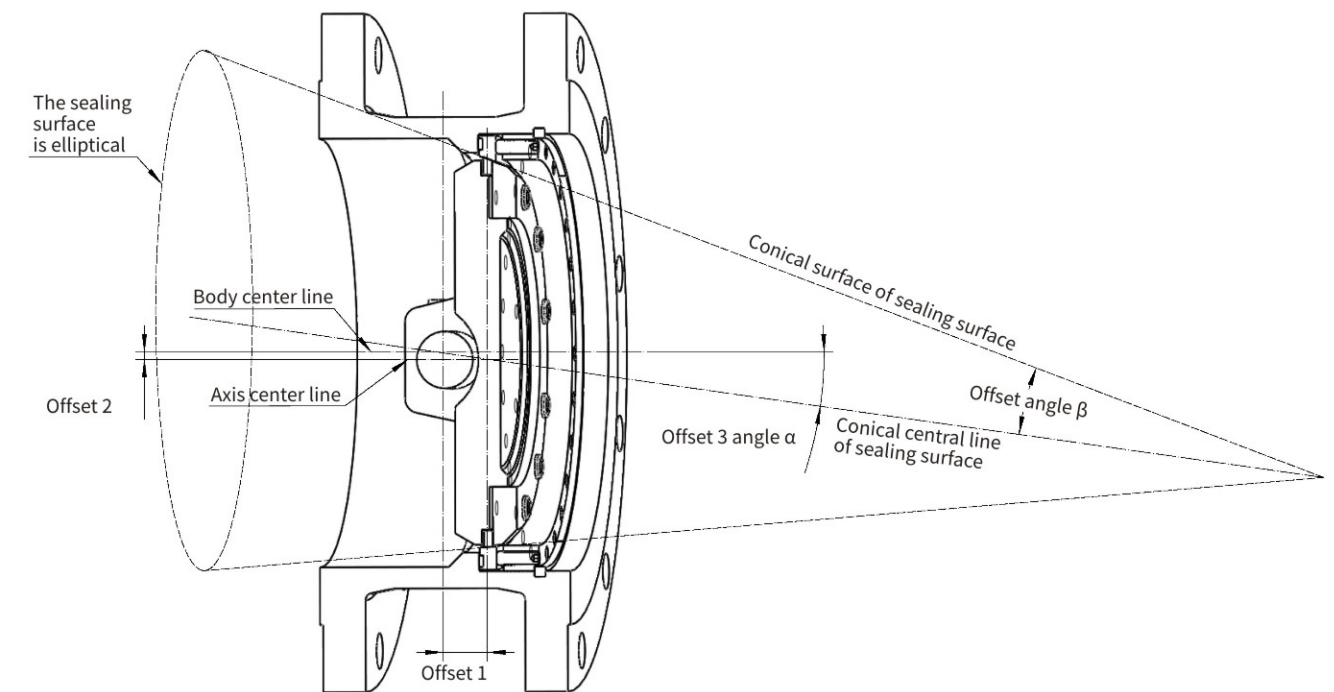
PULP AND PAPER

- Steam Isolation
- Green, Red and Black lacquers
- Oxygen lines
- Lime and slurries



The image displays three different types of industrial valves against a light blue background with abstract geometric shapes. On the left is a large, vertical stainless steel valve with a complex actuator assembly on top. In the center is a brass gear valve with a red handle and a black handwheel. On the right is a smaller, vertical stainless steel valve with a handwheel.

TRIPLE OFFSET GEOMETRY



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.

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.

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.

SCOPE OF USE

BODY TYPE

Flange Butt weld Wafer

PRESSURE

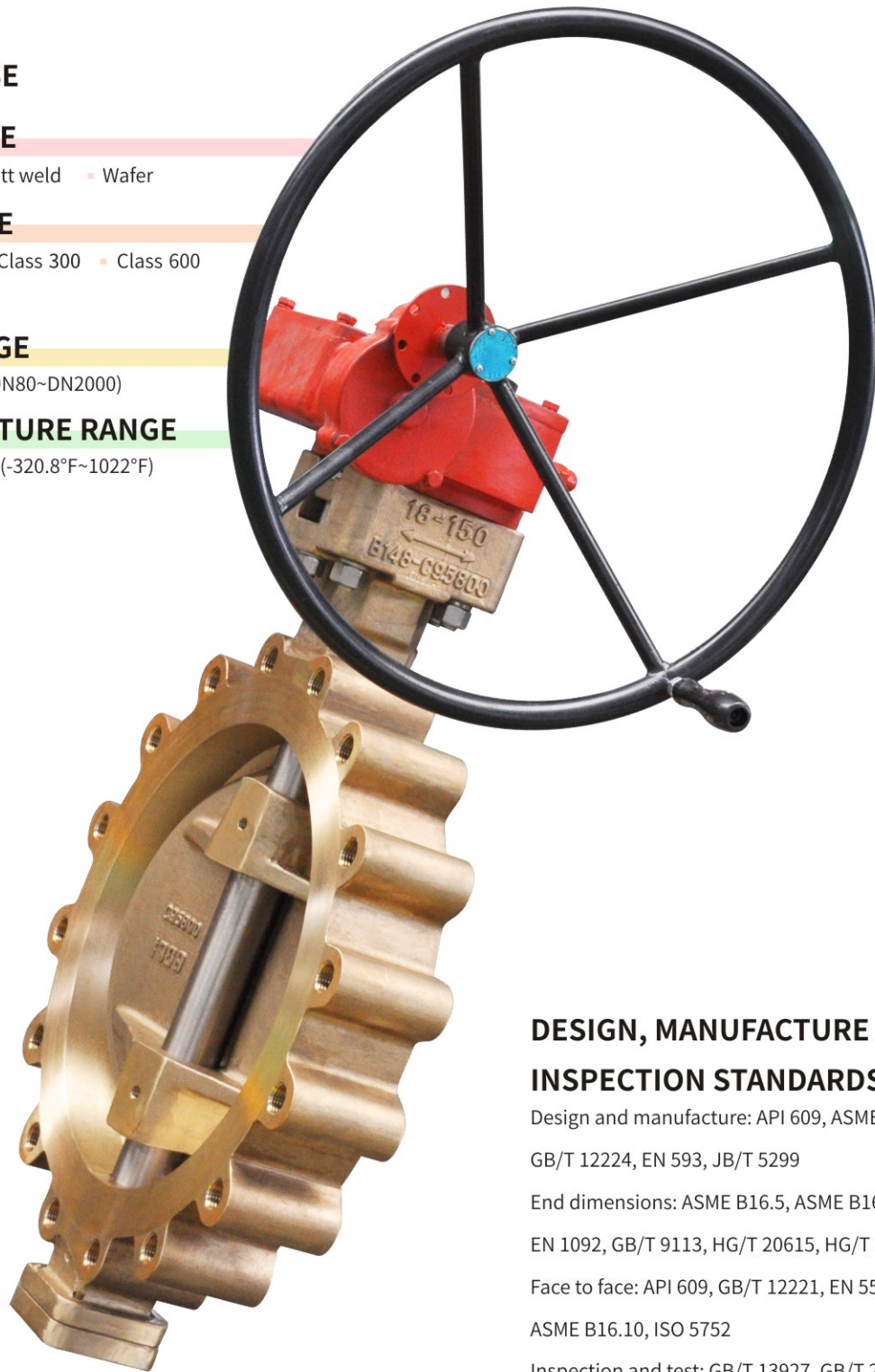
Class 150 Class 300 Class 600
Class 900

SIZE RANGE

NPS 3"~80" (DN80~DN2000)

TEMPERATURE RANGE

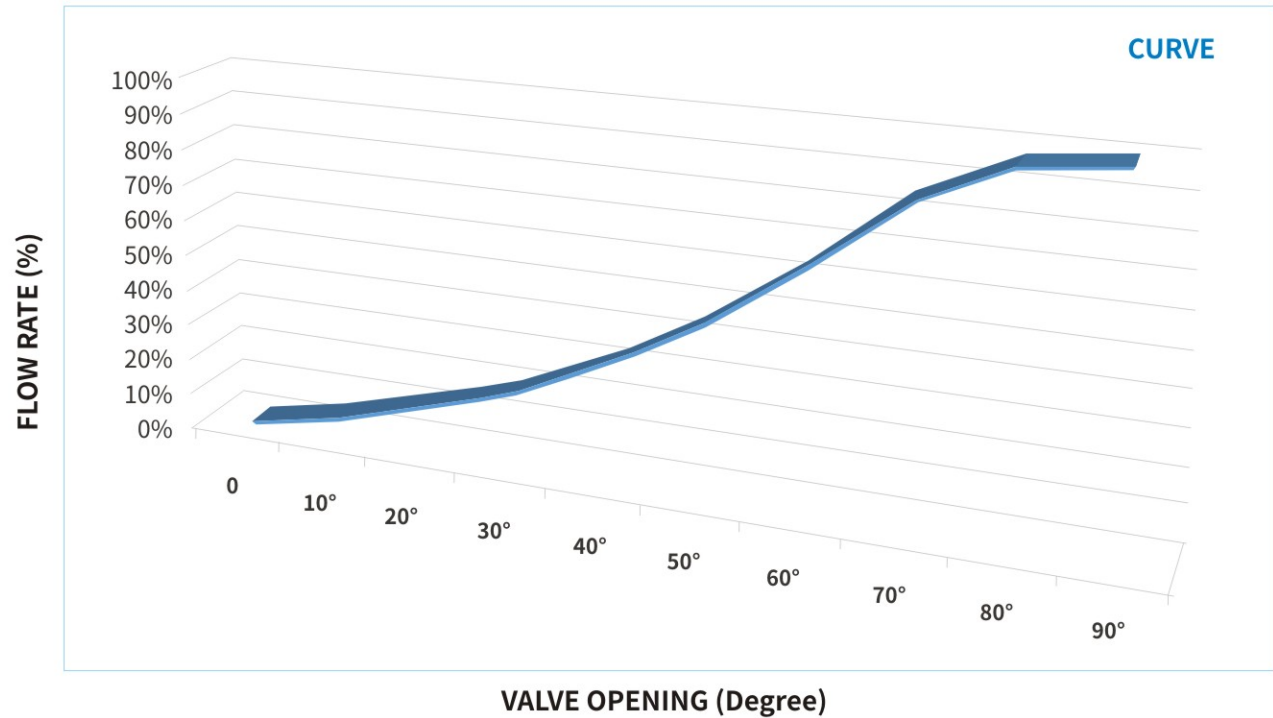
-196°C~550°C (-320.8°F~1022°F)



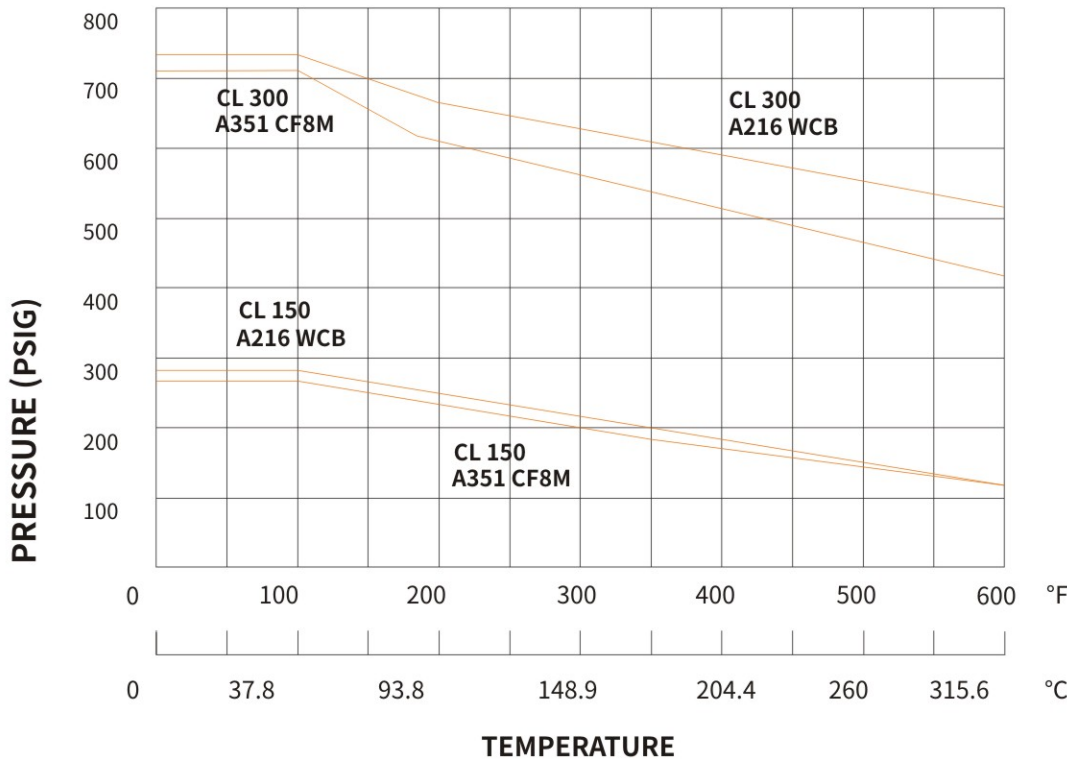
DESIGN, MANUFACTURE AND
INSPECTION STANDARDS

Design and manufacture: API 609, ASME B16.34,
GB/T 12224, EN 593, JB/T 5299
End dimensions: ASME B16.5, ASME B16.47,
EN 1092, GB/T 9113, HG/T 20615, HG/T 20623
Face to face: API 609, GB/T 12221, EN 558,
ASME B16.10, ISO 5752
Inspection and test: GB/T 13927, GB/T 26480,
API 598, EN 12266, ISO 5208

FLOW CURVE

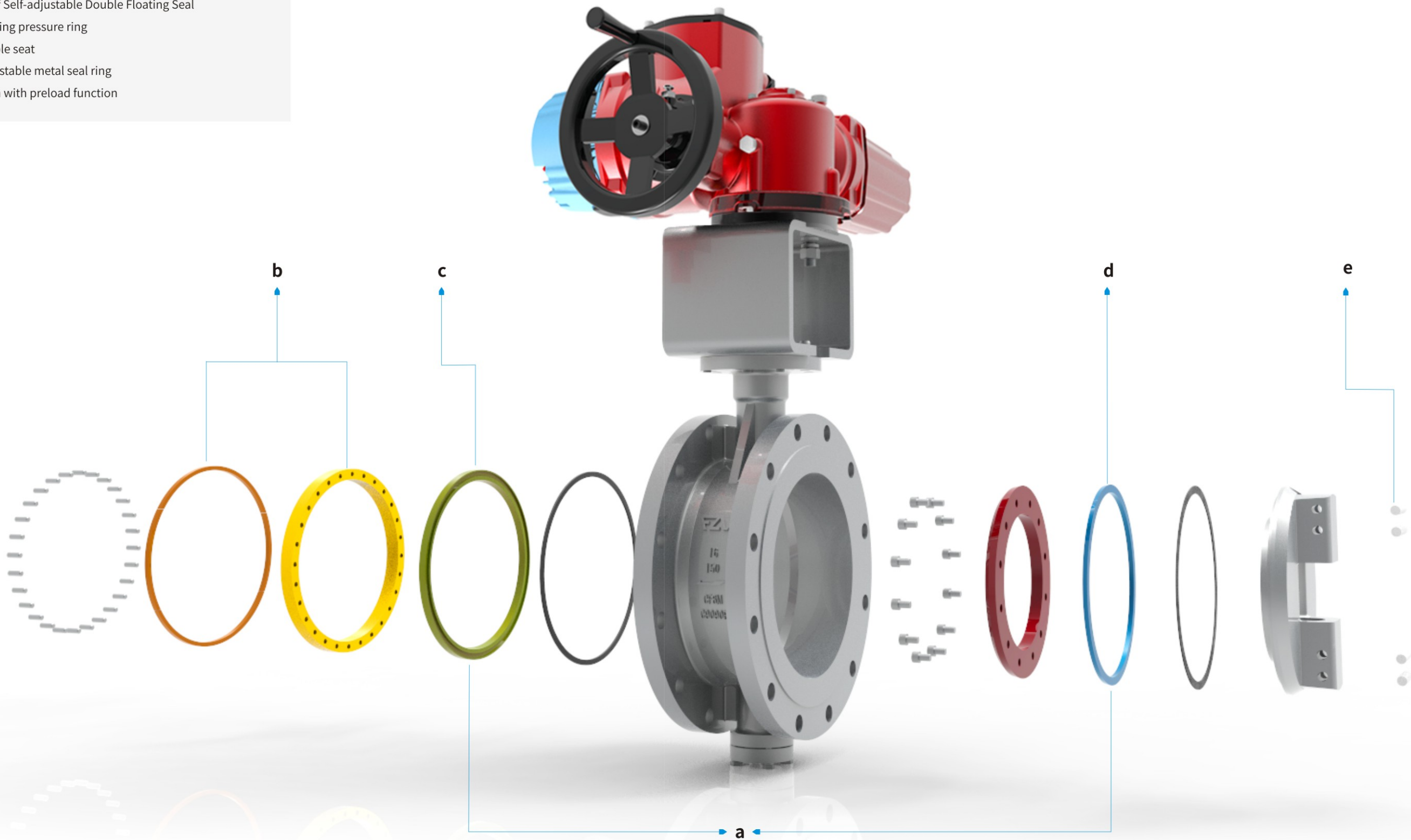


PRESSURE AND TEMPERATURE CURVES



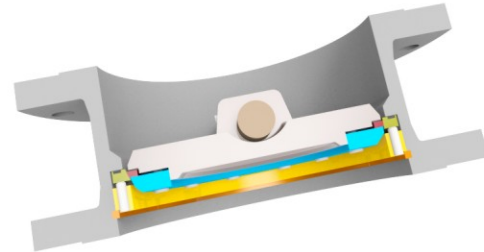
STRUCTURAL FEATURES

- 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



A. DESIGN OF DOUBLE FLOATING SEAL

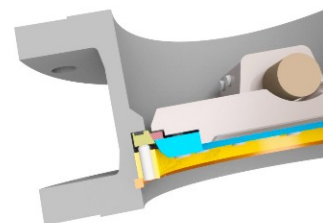
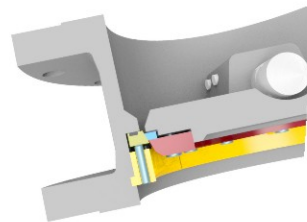
FZV's Cryogenic butterfly valve adopts a double floating sealing design. The components of the sealing pair (body seat, disc seal ring) depends on the thrust of the valve disc when it closes and the force of medium acts to adjust their positions so that a tight seal is developed.



B. SEAT PRESS RING STRUCTURE

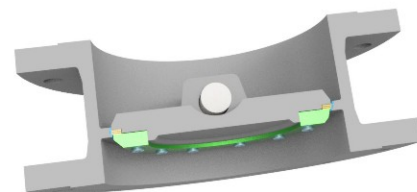
The common feature on most triple offset butterfly valves with a fixed seat seal ring is that the sealing pressure ring has an external "tongue" and is cut into three or four segments and fits directly into the valve body "groove" for alignment. These segments are secured in place by bolts which are 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 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.

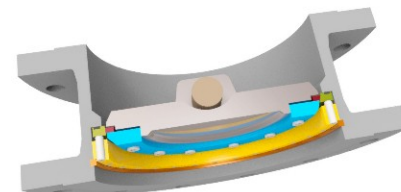


C. REMOVABLE SEAT FEATURE

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 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.



Common Feature (Integral seat)

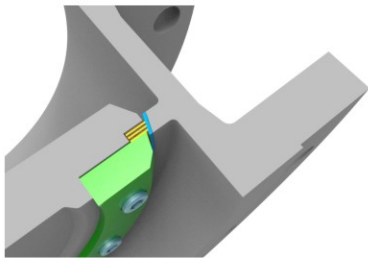


FZV improved renewable seat

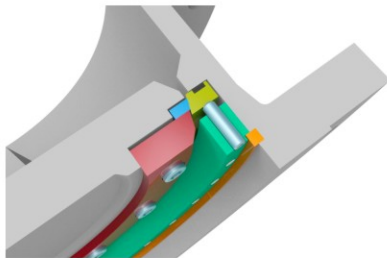
D. SELF-ADJUSTABLE METAL SEAL RING STRUCTURE

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 at 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.



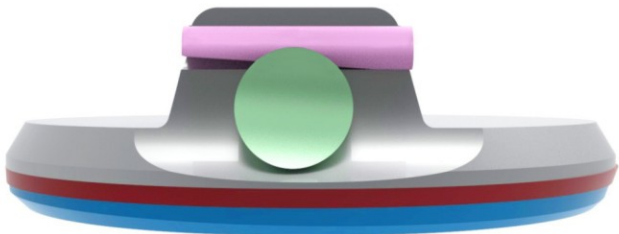
Common feature(Laminated seat)



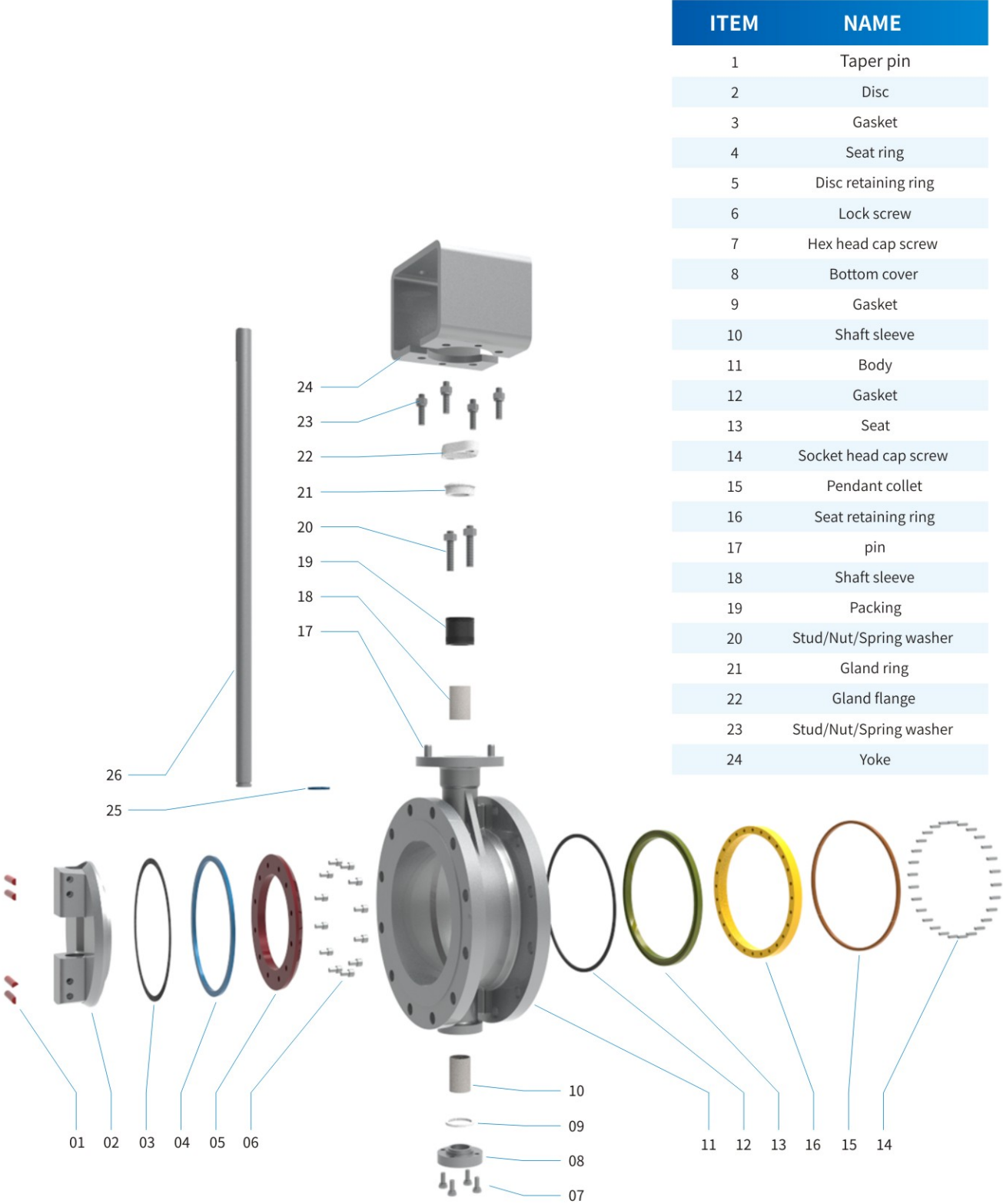
FZV improved metal seat ring structure

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

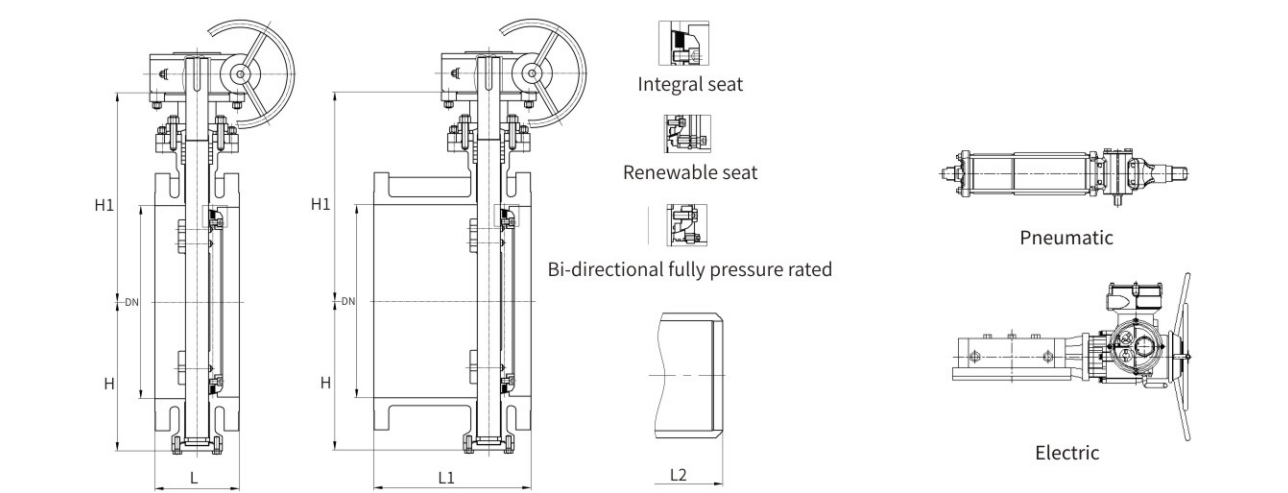
The disc is fixed to the valve stem by taper pins. A taper pin mates with the flat machined face on the valve stem. During the wedging action, taper pins play a key role to connect securely the disc and the valve stem as a one-piece component. This feature affects to eliminate any gap and movement between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



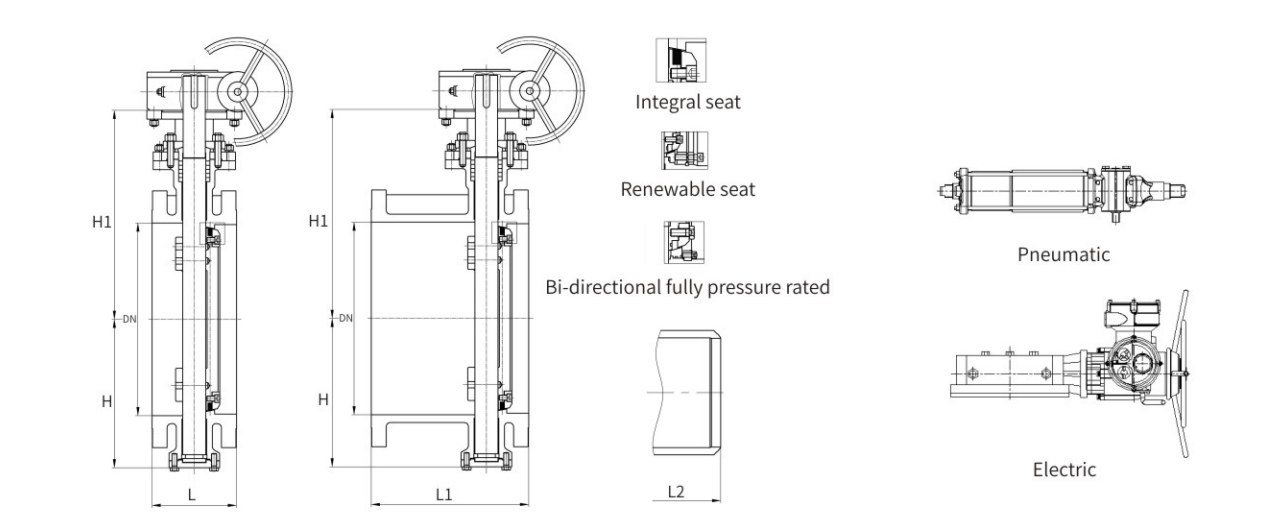
EXPLODED VIEWDRAWING



MAIN DIMENSIONS AND WEIGHT

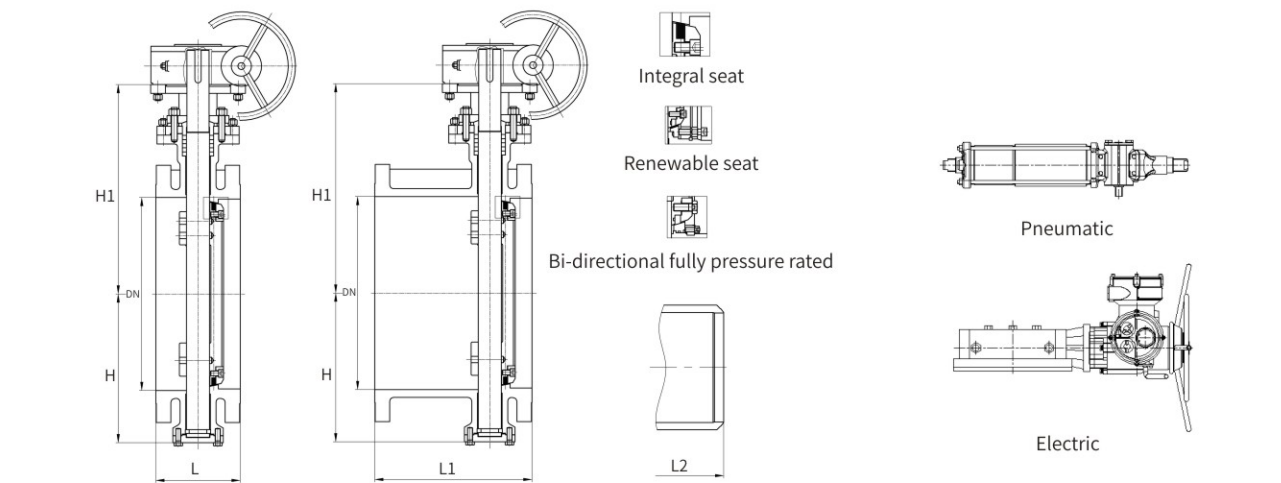


Class 150										
NPS	L	L1	L2	ISO5211	Nm	CV	H	H1	Weight (KG)	
									RF	BW
3	114	203	180	F07	80	165	95	195	20.5	12
4	127	229	190	F07	142	318	115	205	32	18
6	140	292	210	F10	362	932	147	270	49	27
8	152	330	230	F12	785	1970	185	310	74	42
10	165	356	250	F14	1080	2689	215	355	100	66
12	178	381	270	F14	1510	3900	250	395	142	90
14	190	406	290	F16	2458	5280	390	440	195	102
16	216	432	310	F25	2850	7800	320	490	238	139
18	222	457	330	F25	4536	9800	345	510	290	170
20	229	508	350	F25	6200	12180	375	535	358	209
24	267	559	390	F25	8240	19800	440	605	480	353
28	292	610	430	F30	11600	27600	535	680	660	470
32	318	660	470	F30	17850	35800	625	760	880	666
36	330	711	510	F35	27200	45600	675	850	1030	908
40	410	813	550	F35	32000	56000	725	905	1460	1307
48	470	864	630	F40	45000	83000	860	1020	2220	2065
52	530	965	710	F40	56000	104300	915	1080	2680	
56	530	1050	710	F40	70500	121000	980	1205	3100	
60	570	1270	750	F40	86000	160380	1040	1225	3980	
64	600		790							
72	670		870							
80	720		950							



Class 300										
NPS	L	L1	L2	ISO5211	Nm	CV	H	H1	Weight (KG)	
									RF	BW
3	114	282	180	F07	144	165	105	205	28	18
4	127	305	190	F07	258	318	128	225	38	28
6	140	403	210	F12	800	682	190	295	58	46
8	152	419	230	F16	1960	1230	230	345	86	77
10	165	457	250	F16	2270	2370	260	400	148	132
12	178	502	270	F16	2780	3520	300	440	200	188
14	190	762	290	F25	5680	4780	330	485	262	241
16	216	838	310	F25	7800	6280	365	510	340	330
18	222	914	330	F25	8950	7980	405	550	408	380
20	229	991	350	F30	11500	10800	440	600	492	456
24	267	1143	390	F30	18400	16180	520	675	760	710
28	292	1346	430	F35	27500	22410	685	775	1242	1000
32	318	1524	470	F40	41200	33050	705	895	1542	1300
36	330	1727	510	F40	53700	42090	762	950	1995	1500
40	410		550	F40	68370	48964	764	960	2460	
48	470		630	F48	108000	69350	916	1090	4010	
52	530		710	F48	123000	81847	972	1080		
56	530		710	F48	156000	94390	1087	1205		
60	570		750	F60	210000	108400	1145	1225		
64	600		790							
72	670		870							
80	720		950							

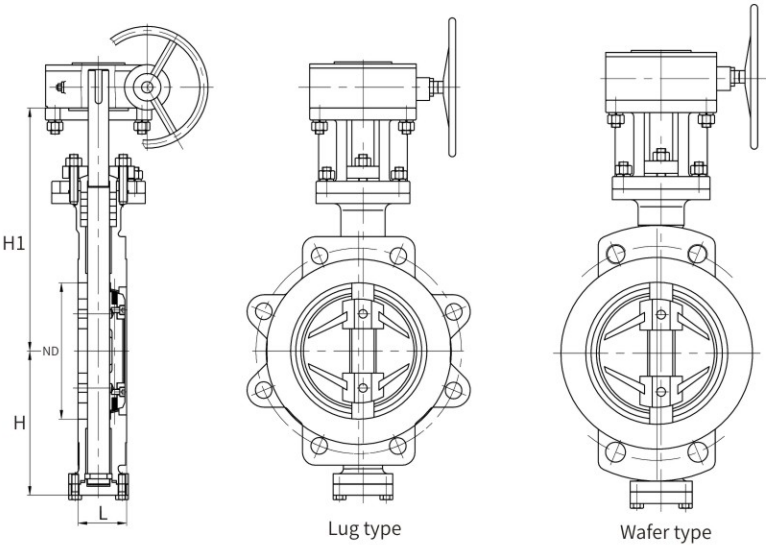
For the appearance of 600LB class or above, please contact our company for specific consultation. No further notice will be given for any change.



Class 600										
NPS	L	L1	L2	ISO5211	Nm	CV	H	H1	Weight (KG)	
									RF	BW
3	180	356	180	F10	340	107	105	242	40	20
4	190	432	190	F12	633	250	138	242	68	31
6	210	559	210	F16	1630	600	210	345	102	67
8	230	660	230	F16	3540	1079	245	380	156	194
10	250	787	250	F25	5462	1708	292	440	248	205
12	270	838	270	F25	6018	2620	320	465	328	298
14	290	889	290	F25	10913	4062	350	527	416	351
16	310	991	310	F30	15757	5292	405	570	546	497
18	330	1092	330	F35	19805	7395	440	615	718	650
20	350	1194	350	F35	25808	9320	545	670	890	806
24	390	1397	390	F40	44799	13578	597	735	1280	1222
28	430	1549	430	F40	66593	20326	681	810		
32	470	1778	470	F48	90160	26370	740	940		
36	510	2083	510	F48	117500	32816	800	1020		

Class 900					Class 1500				
NPS	L	L1	L2	ISO5211	L	L1	L2	ISO5211	
3	200	F16	1630	107	240	F16	3540	107	
4	200	F16	3540	250	275	F25	5462	250	
6	225	F25	5462	600	315	F25	6018	600	
8	275	F25	6018	1079	365	F25	10913	1079	
10	325	F25	10913	1708	415	F30	15757	1708	
12	375	F30	15757	2620					
14	425	F35	19805	4062					
16	475	F35	25808	5292					
18	500	F40	44799	7395					
20	575	F40	66593	9320					
24	675	F48	90160	13578					

CONVENTIONAL WAFER/ LUG TYPE



Class 150								
NPS	L	ISO5211	Nm	CV	H	H1	Weight (KG)	
							WF	LUG
3	48	F07	80	165	95	195	8	9
4	54	F07	142	318	115	205	12	13
6	57	F10	362	932	147	270	21	21
8	64	F12	785	1970	185	310	33	35
10	71	F14	1080	2689	215	355	53	79
12	81	F14	1510	3900	250	395	82	95
14	92	F16	2458	5280	390	440	115	119
16	102	F25	2850	7800	320	490	156	156
18	114	F25	4536	9800	345	510	178	204
20	127	F25	6200	12180	375	535	219	292
24	154	F25	8240	19800	440	605	375	447
28	165	F30	11600	27600	535	680	476	585
32	190	F30	17850	35800	625	760	697	836
36	203	F35	27200	45600	675	850	965	1147
40	216	F35	32000	56000	725	905	1329	1558
48	254	F40	45000	83000	860	1020	2035	2301
52	279	F40	56000	104300	915	1080		
56	279	F40	70500	121000	980	1205		
60	318	F40	86000	160380	1040	1225		
64	318							
72	356							
80	406							

Class 300								
NPS	L	ISO5211	Nm	CV	H	H1	Weight (KG)	
							WF	LUG
3	48	F07	144	165	105	205	8	11
4	54	F07	258	318	128	225	13	17
6	95	F12	800	682	190	295	25	32
8	73	F16	1960	1230	230	345	42	54
10	83	F16	2270	2370	260	400	64	90
12	92	F16	2780	3520	300	440	121	159
14	117	F25	5680	4780	330	485	127	206
16	133	F25	7800	6280	365	510	176	277
18	149	F25	8950	7980	405	550	241	349
20	159	F30	11500	10800	440	600	298	427
24	181	F30	18400	16180	520	675	490	696
28	229	F35	27500	22410	685	775	740	1056
32	241	F40	41200	33050	705	895	1015	1463
36	241	F40	53700	42090	762	950	1381	1929
40	300	F40	68370	48964	764	960	1646	1857
48	360	F48	108000	69350	916	1090	2718	3000
52	390	F48	123000	81847	972	1180		
56	390	F48	156000	94390	1087	1205		
60	410	F60	210000	108400	1145	1225		
64	440							
72	490							
80	540							

Class 600								
NPS	L	ISO5211	Nm	CV	H	H1	Weight (KG)	
							WF	LUG
3	54	F10	340	107	105	242	16	20
4	64	F12	633	250	138	242	20	31
6	78	F16	1630	600	210	345	41	67
8	102	F16	3540	1079	245	380	89	194
10	117	F25	5462	1708	292	440	116	205
12	140	F25	6018	2620	320	465	177	298
14	155	F25	10913	4062	350	527	225	351
16	178	F30	15757	5292	405	570	314	497
18	200	F35	19805	7395	440	615	440	650
20	216	F35	25808	9320	545	670	545	806
24	232	F40	44799	13578	597	735	846	1222
28		F40	66593	681	810	990		
32		F48	90160	740	940	1140		
36		F48	117500	800	1020	1270		

HIGH TEMPERATURE BUTTERFLY VALVE

SCOPE OF USE

END CONNECTION

- Flange
- Butt weld
- Wafer

PRESSURE

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

SIZE RANGE

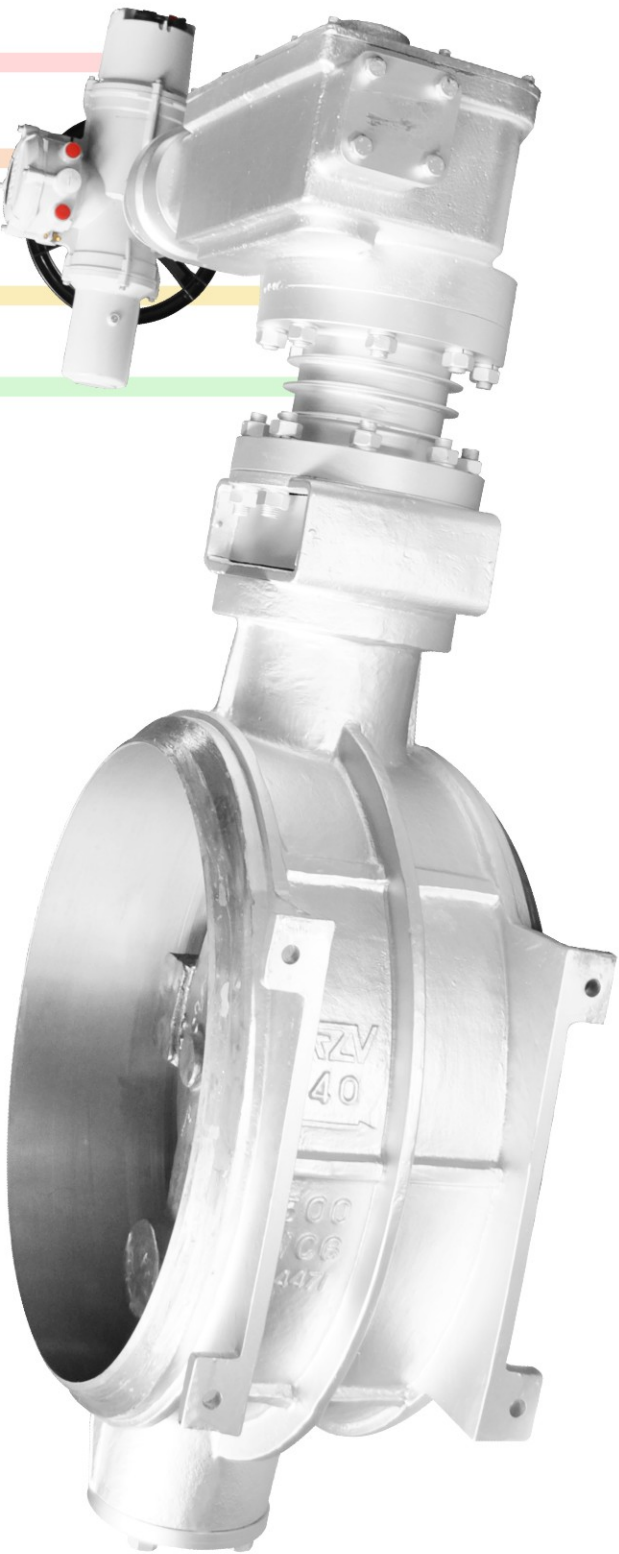
- NPS 3"~80" (DN80~DN2000)

TEMPERATURE RANGE

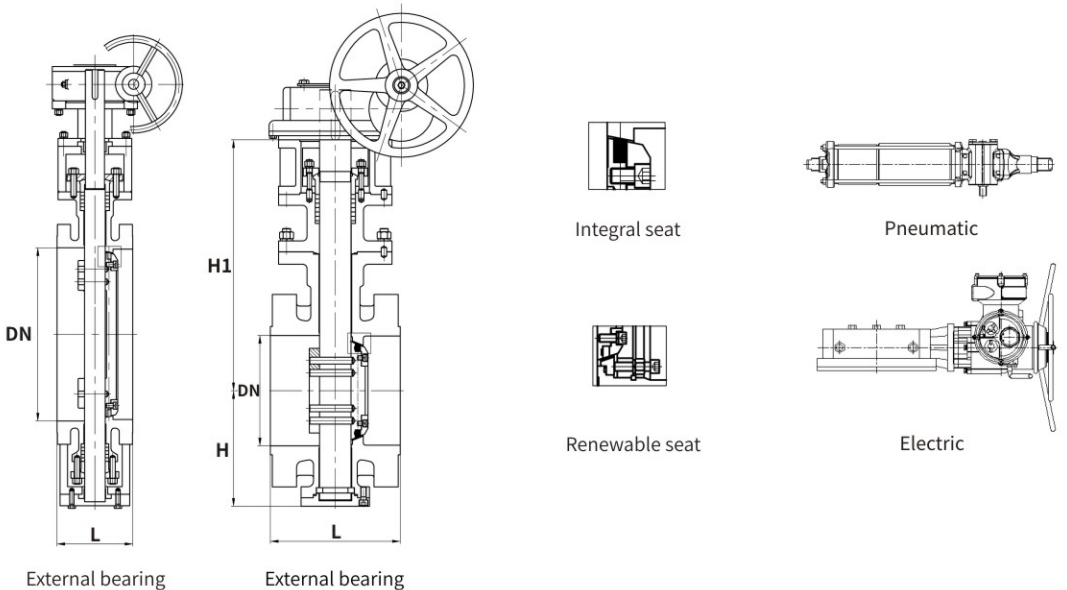
- 200°C~550°C (392°F~1022°F)

DESIGN AND MANUFACTURE STANDARDS

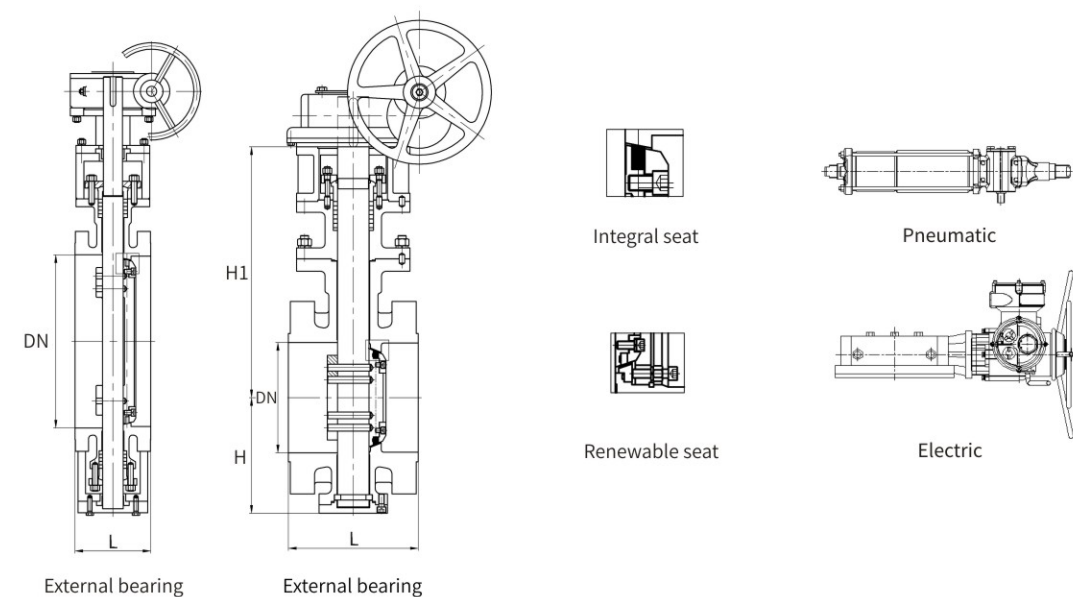
- Design and manufacture: API 609, ASME B16.34
- End dimensions: ASME B16.5, ASME B16.47, EN 1092, GB/T 9113, HG/T 20615, HG/T 20623
- Face to face: API 609, GB/T 12221, EN 558, ASME B16.10, ISO 5752
- Inspection and test: GB/T 13927, GB/T 26480, API 598, EN 12266, ISO 5208



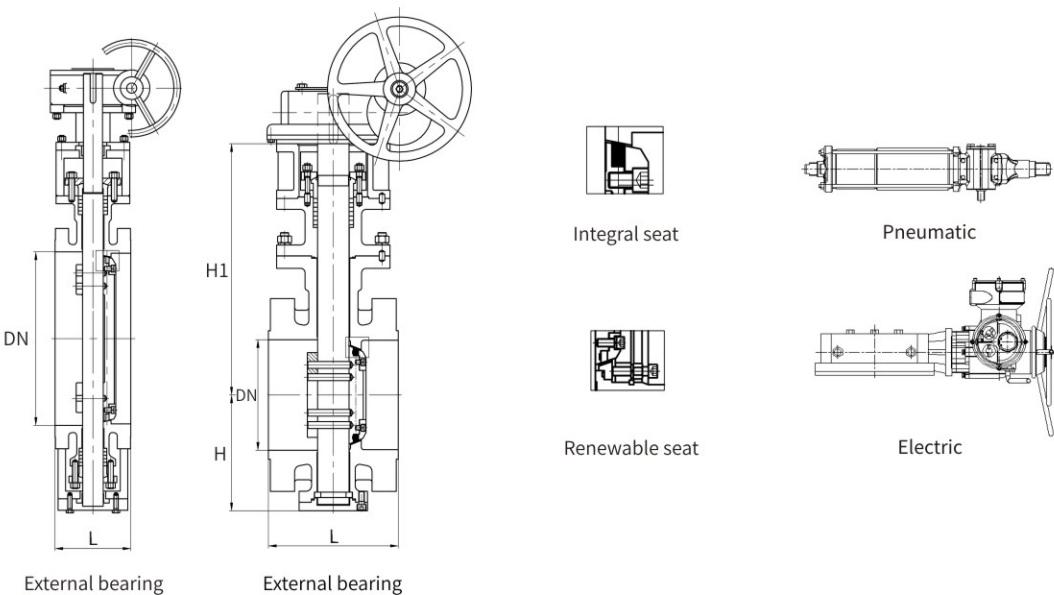
MAIN DIMENSIONS AND WEIGHT



Class 150								
NPS	L Short	L Long	ISO5211	Nm	CV	H	H1	Weight (KG)
3	114	203	F07	80	165	95	195	30
4	127	229	F07	142	318	115	205	40
5	140	267	F10	264	645	138	260	48
6	140	292	F10	362	932	147	270	68
8	152	330	F12	785	1970	185	310	84
10	165	356	F14	1080	2689	215	355	110
12	178	381	F14	1510	3900	250	395	152
14	190	406	F16	2458	5280	390	440	205
16	216	432	F25	2850	7800	320	490	248
18	222	457	F25	4536	9800	345	510	310
20	229	508	F25	6200	12180	375	535	378
24	267	559	F25	8240	19800	440	605	500
28	292	610	F30	11600	27600	535	680	690
32	318	660	F30	17850	35800	625	760	910
36	330	711	F35	27200	45600	675	850	1060
40	410	813	F35	32000	56000	725	905	1490
48	470	864	F40	45000	83000	860	1020	2250
52	530	965	F40	56000	104300	915	1080	
56	530	1050	F40	70500	121000	980	1205	
60	570	1270	F40	86000	160380	1040	1225	
64	600							
72	670							
80	720							



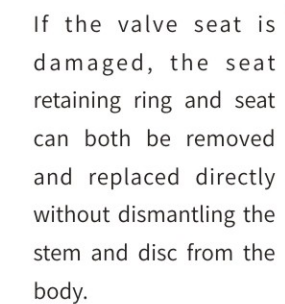
Class 300								
NPS	L Short	L Long	ISO5211	Nm	CV	H	H1	Weight (KG)
3	114	282	F07	144	165			
4	127	305	F07	258	318			
6	140	403	F12	800	645			
8	152	419	F16	1960	932	230	545	96
10	165	457	F16	2270	1970	260	600	158
12	178	502	F16	2780	2689	300	640	210
14	190	762	F25	5680	3900	330	685	272
16	216	838	F25	7800	5280	365	710	350
18	222	914	F25	8950	7800	405	800	428
20	229	991	F30	11500	9800	440	850	512
24	267	1143	F30	18400	12180	520	925	780
28	292	1346	F35	27500	19800	685	1125	1272
32	318	1524	F40	41200	27600	705	1245	1572
36	330	1727	F40	53700	35800	760	1300	2025
40	410		F40	68370	45600	765	1310	2490
48	470		F48	108000	56000	915	1440	4030
52	530		F48	123000	83000			
56	530		F48	156000	104300			
60	570		F60	210000	121000			
64	600							
72	670							
80	720							



Class 600								
NPS	L Short	L Long	ISO5211	Nm	CV	H	H1	Weight (KG)
3	180	356	F10	340	107			
4	190	432	F12	633	250			
6	210	559	F16	1630	600			
8	230	660	F16	3540	1079			
10	250	787	F25	5462	1708			
12	270	838	F25	6018	2620			
14	290	889	F25	10913	4062			
16	310	991	F30	15757	5292			
18	330	1092	F35	19805	7395			
20	350	1194	F35	25808	9320			
24	390	1397	F40	44799	13578			
28	430	1549	F40	66593	20326			
32	470	1778	F48	90160	26370			
36	510	2083	F48	117500	32816			

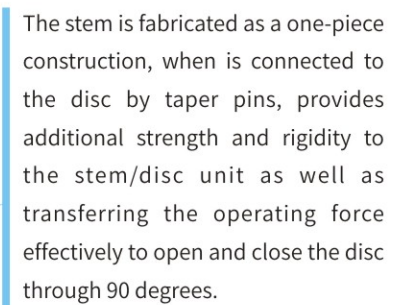
Class 900					Class 1500			
NPS	L Short	L Long	ISO5211	Nm	L Short	L Long	ISO5211	Nm
4	200	F16	3540	250	240	F16	3540	107
6	225	F25	5462	600	275	F25	5462	250
8	275	F25	6018	1079	315	F25	6018	600
10	325	F25	10913	1708	365	F25	10913	1079
12	375	F30	15757	2620	415	F30	15757	1708
14	425	F35	19805	4062				
16	475	F35	25808	5292				
18	500	F40	44799	7395				
20	575	F40	66593	9320				
24	675	F48	90160	13578				

FEATURES



The disc is connected to the valve stem by taper pins. 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.

The disc positioning sleeve keeps the disc in the central position during the complete open and close cycles.



The soft seat has a flexible lip seal design which is reliable for being used when a temperature change and pressure change happens. for the change of temperature and pressure. It can maintain its original shape and seal between the disc and seat without the use of energizing O-rings, springs or other flexible metal components, even when the pressure direction is reversed.

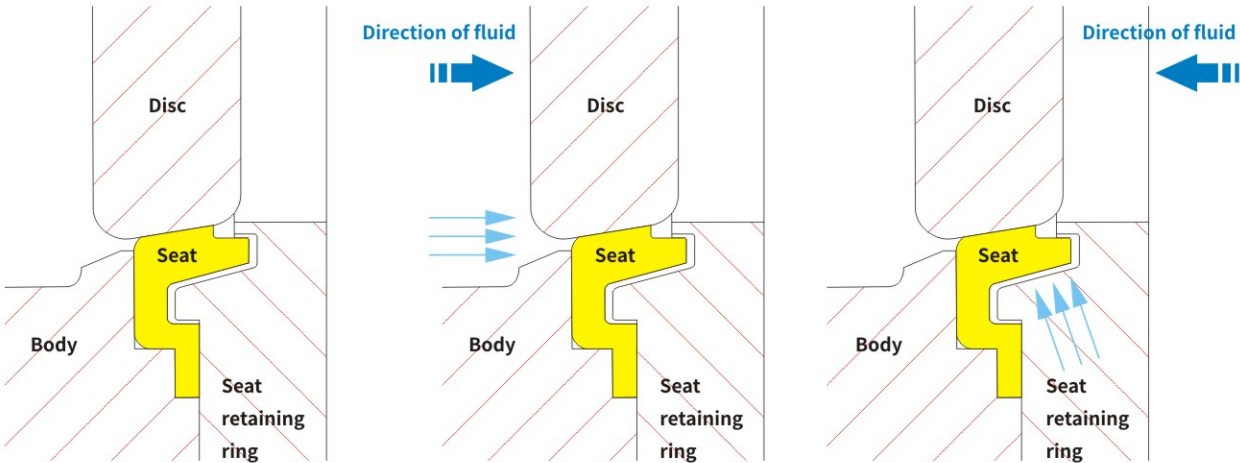
The disc is designed with convex surfaces which provide strength and rigidity to resist any line pressure deformation when in the close position; and good flow linearity and low resistance when in the open position. The sealing surface profile is spherical and highly polished to provide an effective, extended life sealing area.

SEALING CHARACTERISTICS

When the valve is closed, the disc contacts the seat and forms a tight seal as the seat deforms slightly. When the valve is starting to open, the double offset design of the stem quickly separates the disc from the seal in a cam movement profile, which prevents friction between the disc and seat through almost the complete open and close cycles, as well reducing the operating torque and increasing the service life of the valve.

The double offset butterfly valve has the same similar characteristics as the triple offset butterfly valve regarding its zero-leak capabilities, extended service life, low operating torque and ease and convenience of operating.

The soft seat is designed with a flexible lip seal, which due to the excellent elasticity and reliability of the material, it is reliable for being used when a temperature change and pressure change happens, whilst it can maintain its original shape and seal, irrespective of the pipeline pressure direction.



When the valve is in the close position and with no line pressure, the disc's spherical sealing surface profile contacts and expands the seat to form a tight, zero leak seal.

In the closed position and with the pipeline pressure from the stem side; and due to the disc's spherical sealing surface profile, the pressure forces the disc further into the seat, causing the seat to deflect until it is restrained by the groove in the seat retaining ring, thereby creating an even greater sealing force.

In the closed position and with the pipeline pressure from the reversed stem side; the seat is energized by the pressure acting below the seat through the groove in the seat retaining ring, which forces the seat to seal against the disc's sealing profile.

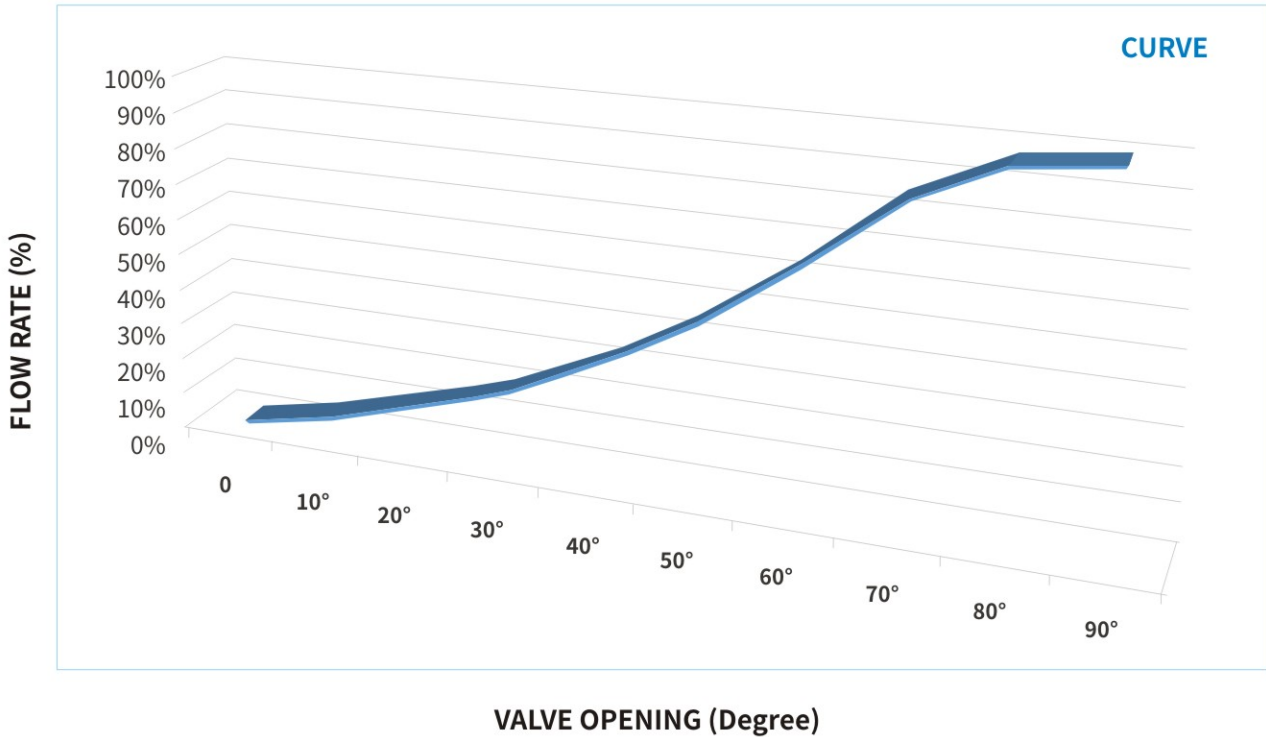
SCOPE OF USE

End Connection: Flange, Butt weld, Wafer
Pressure: Class 150, Class 300
Size range: NPS 3"~36" (DN80~DN900)
Temperature range: -29°C~200°C (-20.2°F~392°F)

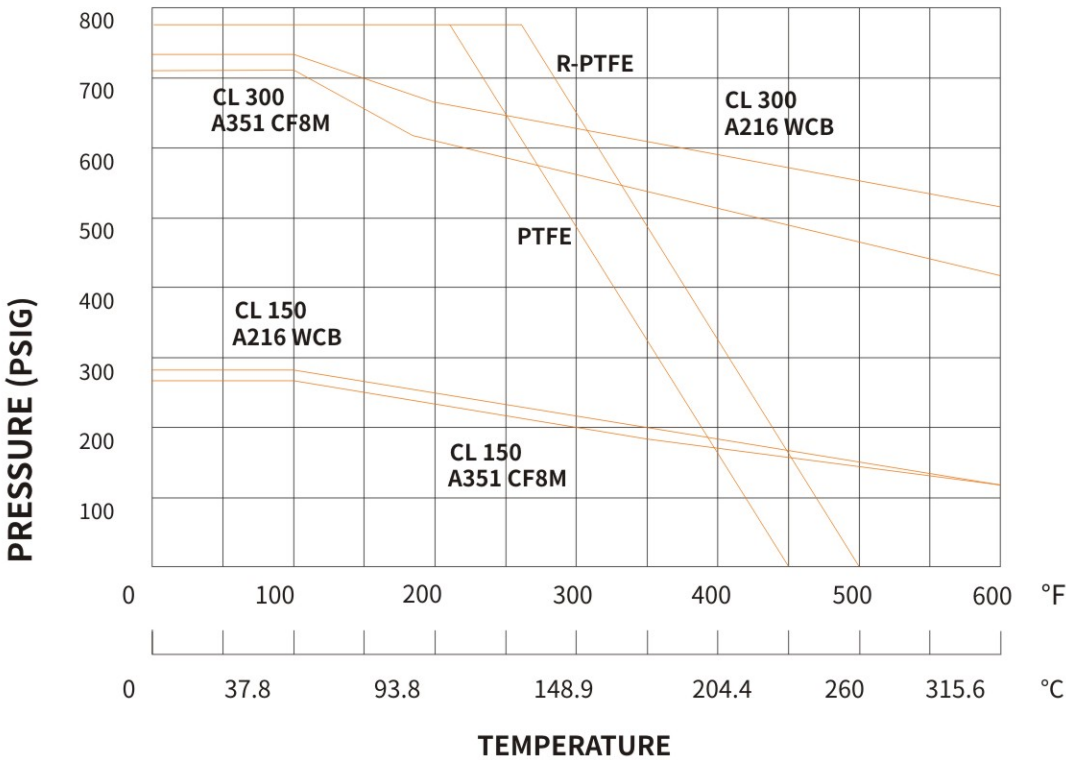
DESIGN, MANUFACTURE AND INSPECTION STANDARDS

Design and manufacture: API 609, GB/T 12238, EN 593, GB/T 12224, ASME B16.34
End dimensions: ASME B16.5, ASME B16.47, EN 1092, GB/T 9113, HG/T 20615, HG/T 20623
Face to face: API 609, GB/T 12221, EN 558, ASME B16.10, ISO 5752
Inspection and test: GB/T 13927, GB/T 26480, API 598, EN 12266, ISO 5208

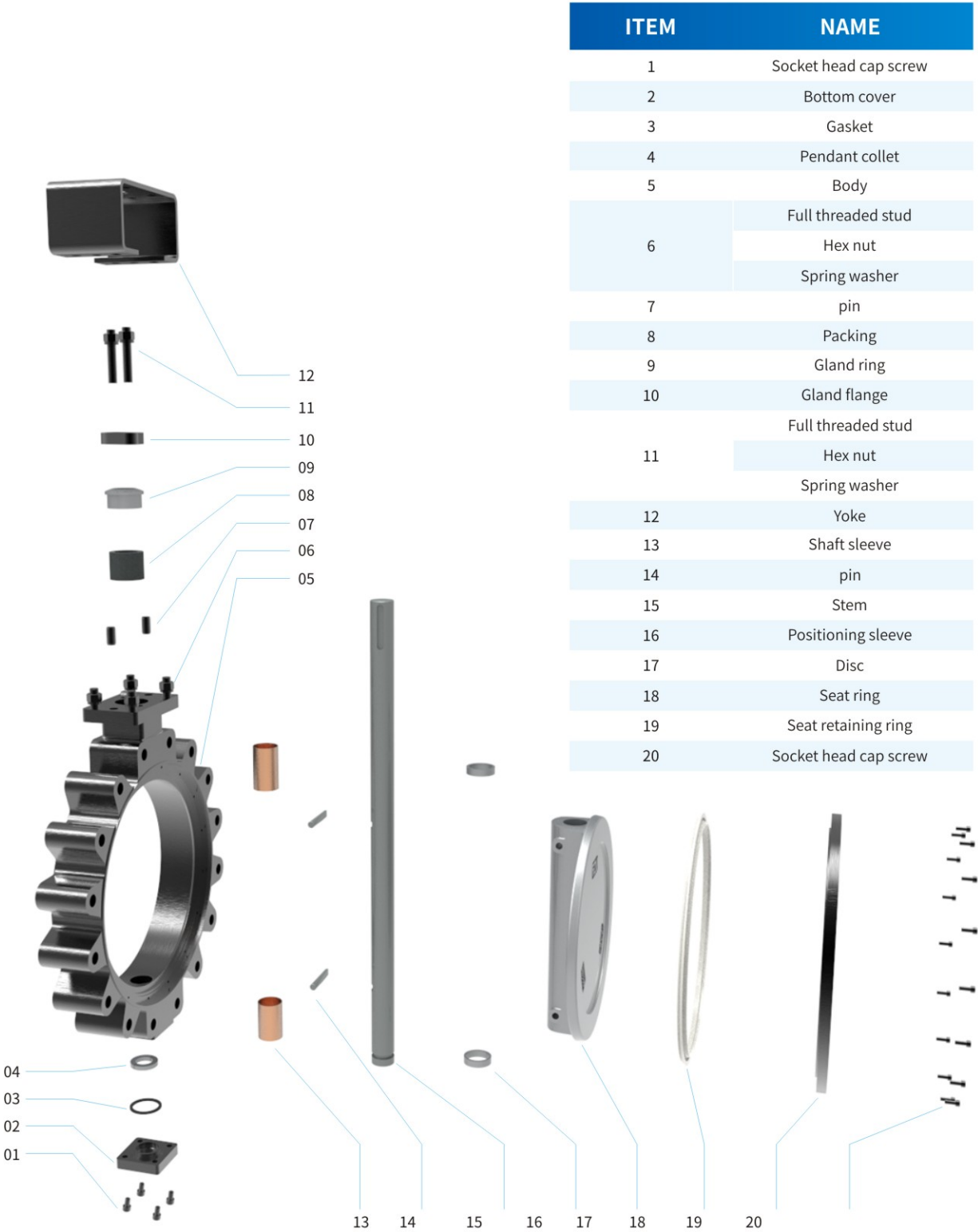
FLOW CURVE



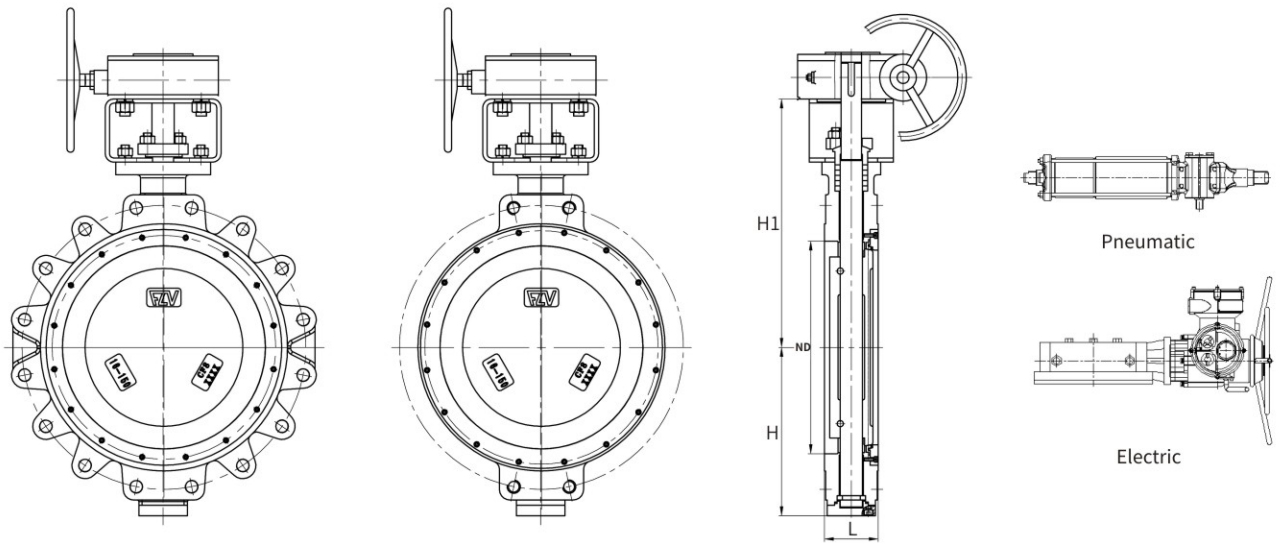
PRESSURE AND TEMPERATURE CURVES



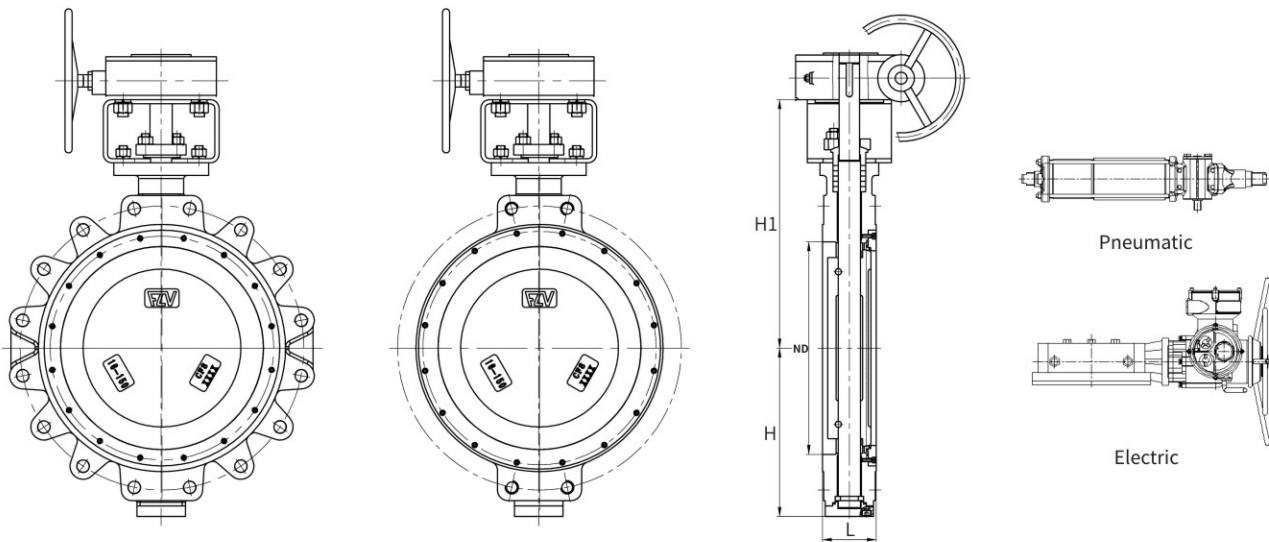
EXPLODED VIEWDRAWING



MAIN DIMENSIONS AND WEIGHT



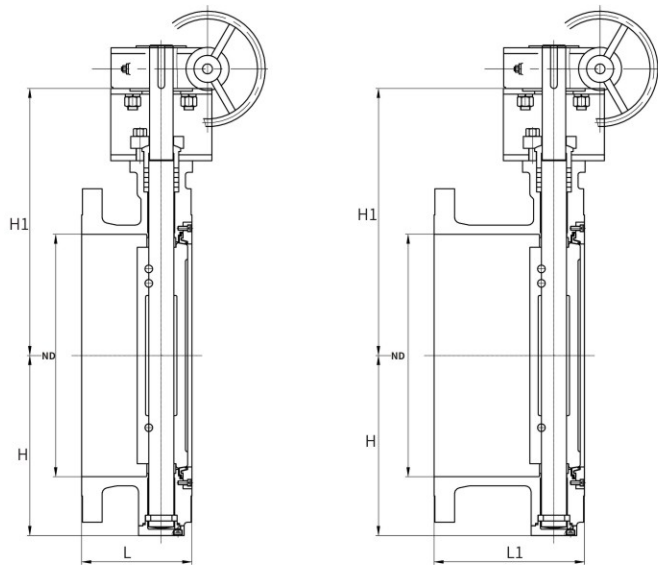
Class 150								
NPS	L	ISO5211	Nm	CV	H	H1	H2	Weight (KG)
3	46	F07	39	165	85	200	40	6
4	52	F07	58	318	110	205	40	7
5	56	F07	86	645	140	240	50	10
6	56	F07	126	932	148	275	60	12
8	60	F10	217	1970	185	301	60	16
10	68	F10	318	2689	215	355	60	30
12	78	F10	475	3900	252	395	60	48
14	78	F12	849	5280	287	445	80	75
16	102	F14	1087	7800	320	490	90	90
18	114	F14	1423	9800	345	510	90	100
20	127	F14	1926	12180	375	535	90	150
24	154	F25	2983	19800	440	605	120	210
30	165	F25	4873	27600	580	710	120	260
36	200	F25	8121	45600	675	850	150	300



Class 300								
NPS	L	ISO5211	Nm	CV	H	H1	H2	Weight (KG)
3	48	F07	55	165	100	210	40	7
4	54	F07	97	318	120	222	40	8
6	59	F10	241	682	185	295	60	14
8	73	F12	477	1230	215	345	80	19
10	83	F12	756	2370	255	400	80	36
12	92	F14	1035	3560	285	440	90	58
14	117	F14	1882	4780	330	485	90	90
16	133	F16	2248	6280	365	510	90	108
18	149	F16	2885	8000	405	550	120	120
20	159	F25	3897	10800	435	580	120	180
24	181	F25	5258	16200	515	645	150	252

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

DOUBLE ECCENTRIC FLANGE



Class 150								
NPS	L	L1	ISO5211	Nm	CV	H	H1	Weight (KG)
3	114	203	F07	39	165	85	200	20.5
4	127	229	F07	58	318	110	205	32
5	140	267	F07	86	645	140	240	38
6	140	292	F07	126	932	148	275	49
8	152	330	F10	217	1970	185	301	74
10	165	356	F10	318	2689	215	355	100
12	178	381	F10	475	3900	252	395	142
14	190	406	F12	849	5280	287	445	195
16	216	432	F14	1087	7800	320	490	238
18	222	457	F14	1423	9800	345	510	290
20	229	508	F14	1926	12180	375	535	358
24	267	559	F25	2983	19800	440	605	480
30	292	610	F25	4873	27600	580	710	660
36	330	711	F25	8121	45600	675	850	1030

Class 300								
NPS	L	L1	ISO5211	Nm	CV	H	H1	Weight (KG)
3	114	282	F07	55	165	100	210	28
4	127	305	F07	97	318	120	222	38
6	140	403	F10	241	682	185	295	58
8	152	419	F12	477	1230	215	345	86
10	165	457	F12	756	2370	255	400	148
12	178	502	F14	1035	3560	285	440	200
14	190	762	F14	1882	4780	330	485	262
16	216	838	F16	2248	6280	365	510	340
18	222	914	F16	2885	8000	405	550	408
20	229	991	F25	3897	10800	435	580	492
24	267	1143	F25	5258	16200	515	645	760