

Triple offset butterfly valve





Leading Manufacturer and Designer of Full Ranges of Industrial Valves

Antiwear Group, as a leader in designing and manufacturing of full ranges of industrial valves, from general use applications to severe conditions, supplies ball valve, butterfly valve, plug valve, gate valve, globe valve, check valve, piston valve, regulating valve, rotating disc valve and labyrinth control valve, which are widely used in refinery, oil & gas, power generation, water treatment, petrochemical, urban construction, paper & pulp, pipeline transferring and other industries. The performance of above valves supplied by Antiwear is appreciated by more and more end users worldwide.

Antiwear firmly believes that honesty is not just a virtue, but also a working and living attitude. In the high-speed development of Antiwear, the company has gradually formed "It's reliable" corporate culture, which means reliable products, reliable people and reliable service. Antiwear Group has completed the quality assurance system certification and passed a series of certificates, including ISO9001, ISO14000, ISO18000, TS, API6D, API607, ISO15848, PED, API 6A and so on.

Antiwear Group boasts manufacturing workshops in Suzhou, Wenzhou, and Shanghai, China and will establish localized warehouses, sales and distributors around the world. Through Internet + production, it can quickly respond to customer's requests. Antiwear's ultimate goal is to "help you enjoy good life"

Best Solution

In the spirit of excellence, continuous improvement, Antiwear keeps on improving the quality of the valve. Besides general use application, Antiwear has done fruitful research on critical service conditions including high temperature, high pressure, strong corrosion, crystallized, high frequently operated and other severe conditions in silicon chemical industry, coal gasification, petrochemical, hydrometallurgical, etc. and summed up the excellent solution in a large number of practice.

- High temperature and high pressure pure oxygen or hydrogen conditions ---- oxygen and hydrogen metal-seated ball valve, globe valve, check valve
- Solid abrasive material conditions ----- metal seated ball valve, rotating disc valve, rotating twin-disc valve
- High temperature exceeding 450 °C conditions ----- Ball valve, disc valve, gate valve



- PP/PE facilities annual operating cycles reaching 1.6 million ----- PDS high-frequency metal and soft seated ball valve
- Solid abrasive particles at high pressure differential breeding and regulating conditions ----- slide plating valve
- Corrosive working conditions ----- plug valve, ball valve
- Fiber and pulp working conditions ----eccentric semi-ball valve
- High temperature solid particles bi-directional seated ball valve- S ZORB ball valve

- Flushing, flashing, cavitation conditions ---- angle control valve
- Zero-leakage request with gas medium at large pipe size ---- triple-offset butterfly valve
- Slurry conditions ---- Y-type globe valve
- Crystallization or slurry conditions ----- plug valve, eccentric semi-ball valve
- Precipitation conditions ---- piston valve
- Multi-level buck and flash conditions ---- labyrinth control valve

Overall solution

- Full range of valves
- All industry applications
- Application of all conditions
- Customize for customers
- Excellent performance under critical conditions
- Extensive R&D and experience

Best quality

- 100% parts inspection critical
- 100% finished product inspection
- 100% supplier certification
- 100% process tracking
- Advanced processing and testing equipment
- Complete quality control system and certification

Internet + production model

- Online sales and service
- Personalized customization
- Specialized small intelligent factory
- Online development, design, procurement, production

Five advantages of Antiwear

Quick response

- 24 hours fast response
- Global warehousing
- Global sales and distributors
- Quick inquiry / quote in one minute
- Order information bar code query system

Reliable culture

- Reliable product
- Trustworthy person
- Timely service
- Help you enjoy good life

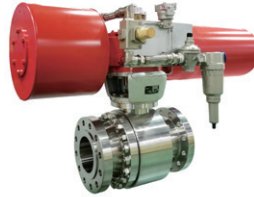
Product under Severe Working Conditions



Metal seated ball valve

Applying for quantitative compression, dual-bearings, Belleville spring design and many different hard coatings. Widely used at abrasive fluid and high temperature conditions.

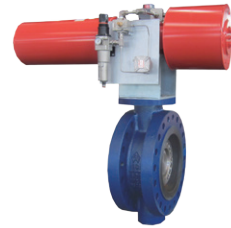
Nominal Size: DN15~DN600, 1/2"~24"
 Temperature range: -196° C~850° C
 Pressure rating: PN10~PN670,
 Class 150~Class 4500



Oxygen service metal-seated ball valve

Completely overcome metal to metal "bite" under high pressure and temperature condition with ultra-high pure gas fluid. On/off operating smoothly without any jam. Valve is fireproof and anti-static design with fully derosination. Internal leakage rate meets and exceeds Class VI of ASME B16.104.

Nominal Size: DN15~DN600, 1/2"~20"
 Temperature range: -196° C~500° C
 Pressure rating: PN10~PN670,
 Class 150~Class 4000



Triple-offset butterfly valve

No friction between plate and seat while operating the valve. Normally the valve is single directional sealed. And di-directional sealing is also available.

Nominal Size: DN50~DN4500, 2"~180"
 Temperature range: -196° C~600° C
 Pressure rating: PN10~PN420,
 Class 150~Class 2500



High temperature and high pressure differential ball valve

Specially designed at high temperature and high pressure differential condition with solid catalyst particles fluid.

Nominal Size: DN50~DN300, 2"~12"
 Temperature range: ≤650° C
 Pressure rating: PN10~PN260,
 Class 150~Class 1500



Rotating disc valve

Mainly used in coal chemical and polysilicon industry. Excellent performance and long working life under abrasive fluid conditions at block and venting system.

Nominal Size: DN25~DN1200, 1"~48"
 Temperature range: -196° C~850° C
 Pressure rating: PN10~PN260,
 Class 150~Class 1500



High temperature double-wedge gate valve

Double-wedge design for high temperature and frequently operating application. Excellent sealing performance and long service life.

Nominal Size: DN200~DN1400, 8"~56"
 Temperature range: ≤816° C
 Pressure rating: PN10~PN420,
 Class 150~Class 2500



High frequently operated PDS ball valve

Designed for quick on/off cycling and high frequently operated applications with solid fluid at system. Widely used in various applications where frequently operated is necessary, especially at PDS system of polyethylene and polypropylene facilities.

Nominal Size: DN15~DN400, 1/2"~16"
 Temperature range: -46° C~450° C
 Pressure rating: PN10~PN260,
 Class 150~Class 1500



Rotating twin disc valve

Specially designed for block, venting, balance valve at lock hopper system with solid fluid. Excellent sealing performance and much longer service life than ball valve. Widely used at coal chemical industry.

Nominal Size: DN40~DN600, 1.5"~24"
 Temperature range: -196° C~850° C
 Pressure rating: PN10~PN260,
 Class 150~Class 1500



Labyrinth control valve

Up to 24 stages labyrinth discs design for high pressure differential adjusting and regulating application. Excellent performance and long service life at many industries, especially at power plant field.

Nominal Size: DN25~DN600, 1"~24"
 Temperature range: ≤700° C
 Pressure rating: PN10~PN760,
 Class 150~Class 4500

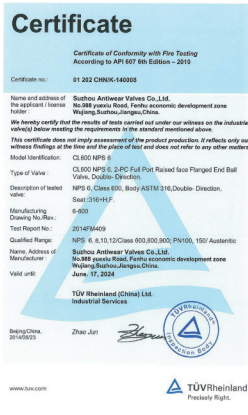
Patents



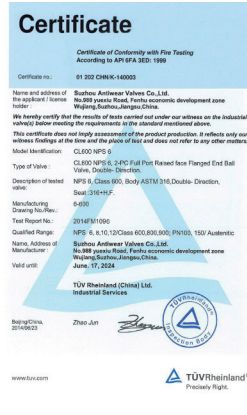
Certificates



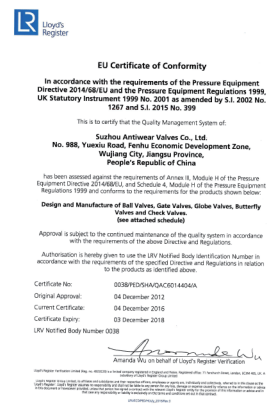
ISO9001



API607



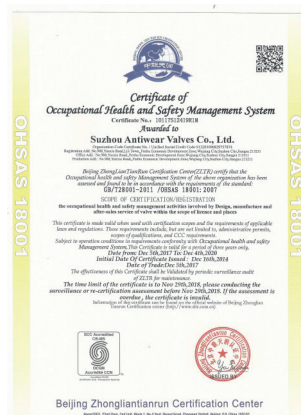
API6FA



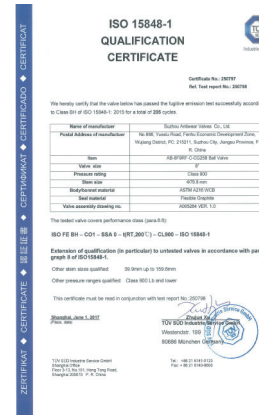
PED



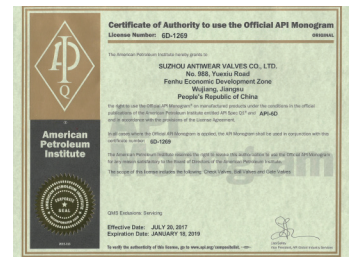
ISO14001



OHSAS18001

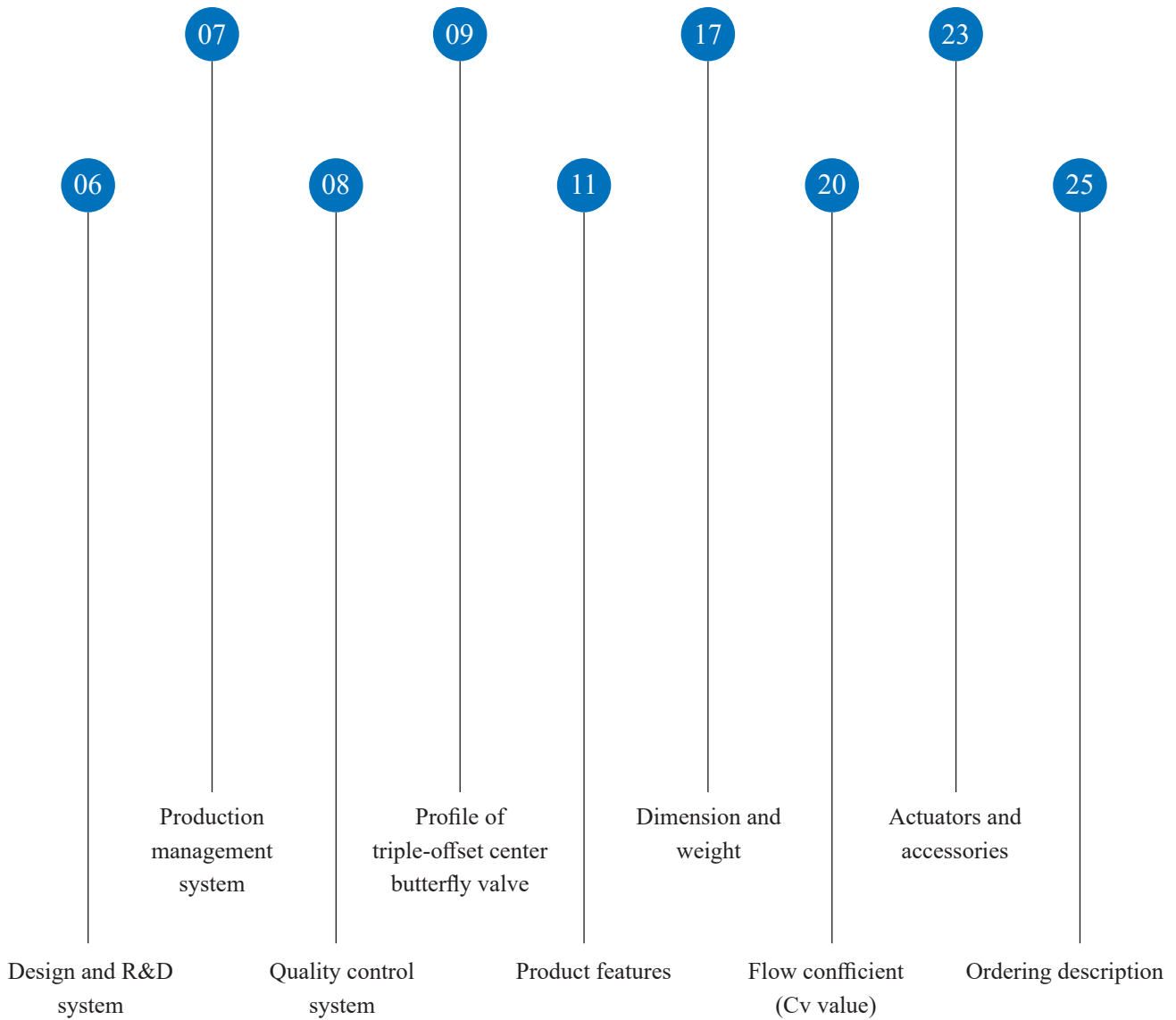


ISO15848



API6D

Direktori

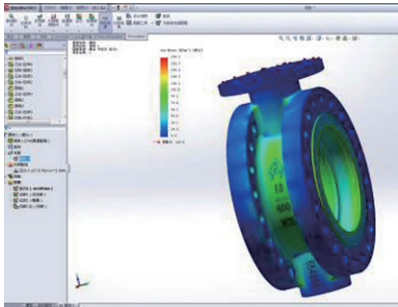
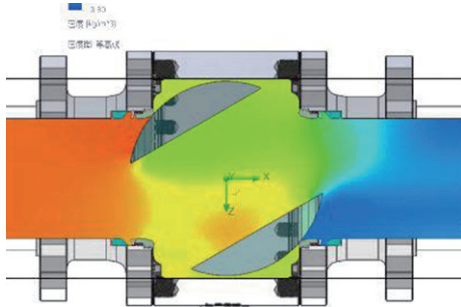
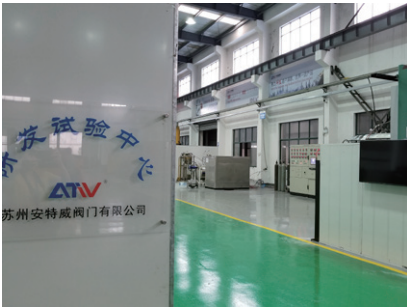


Design and R&D system

Since the establishment of Antiwear, it has been dedicated to research and development with more than 10% of its sales volume on R&D. Targeting conventional conditions and harsh conditions, it develops a variety of generic and targeted products, which earns credits for Antiwear for times.

Design center applies standardized and modular design to achieve interchange between parts. When Antiwear designs new products, it uses three-dimensional simulation, finite element analysis and other technical methods to simulate the verification of the rationality of product design to ensure the reliability and stability of the final product before the new designed product is put into mass production.

Our staff is committed to continuous development of innovative, improved production and technical capabilities. Antiwear boasts a team of professional engineers, technical sellers and certified service technicians. Antiwear firmly believes that creation and innovation is the source of the company's development and is the foundation of excellent enterprise.





Production management system

Antiwear applies a comprehensive and traceable production management system to record the data from the purchase of raw materials, parts processing to conduct assembly test through the central database. In the same time, the central database, through data analysis, optimizes the entire production system;

The planning center obtains the design BOM and the process BOM from the PLM through the ERP system and uses the optimal plan given by the central database to release the production plan and the task. The data between the various factories of Antiwear Group are read through the central database to achieve the optimal allocation of resources.

Procurement center, machine center and assembly center follow the ERP and MES system data and production instructions to conduct material procurement and processing assembly. Quality control center controls the whole process of procurement, machine processing, assembly to ensure each step of the data accuracy and traceability of parts developed from work-blank to finished product and timely summarize the data to the ERP and MES. Test Center follows the test requirements instructed from ERP and MES to conduct test and feed back the test results to the ERP and MES to facilitate lead time customer inquiries for product order information.

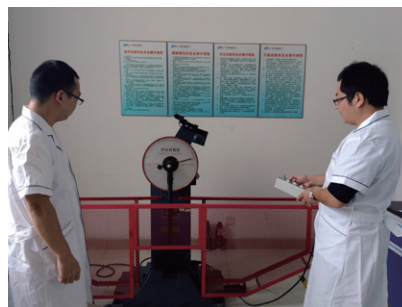
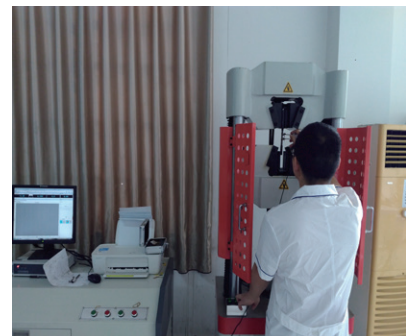


Quality control system

Antiwear pursues advanced scientific research technology and strict quality control and firmly believes that the quality matters is the most important matter in the enterprise development. Through the effective control of ERP and MES software system, all parts and products of Antiwear are recorded in the system with 100% traceability to achieve continuous quality management improvement.

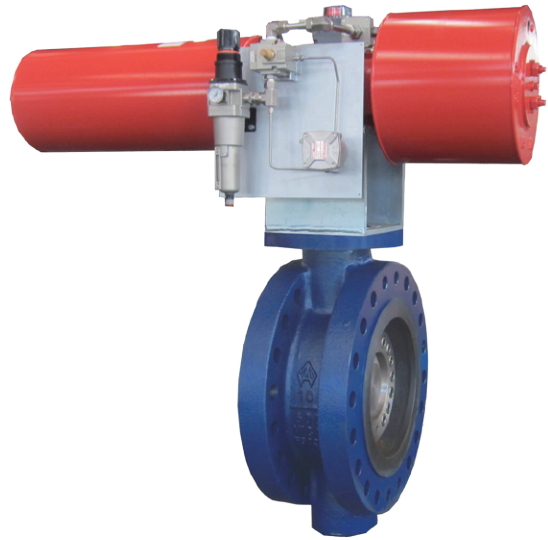
Antiwear has established physical and chemical laboratory and boasts a roundness meter, metal chromatograph, multi-functional metal mechanical tester, carbon and sulfur analyzer, coordinate measuring instrument, Rockwell Vickers hardness tester, ultrasonic flaw detector, ultrasonic thickness Instrument, automatic pressure test device and torque tester and other advanced equipment.

Antiwear has a good quality assurance system to confirm the quality of the product is fulfill with ASME / API / ISO / PED and other relevant international standards. Antiwear is pleased to offer products and quality assurance superior over other valve manufacturers. We aim to fully satisfy customers and provide "a better life" for them.



Profile of triple - offset center butterfly valve

Triple offset butterfly valves can work at high temperature, high pressure and strong corrosion, low wear and other working conditions due to its light weight, compact structure, low operating torque, etc. It has the function of on-off and regulating, can replace gate valve, globe valve and ball valve. It's widely used in metallurgy, chemical, petroleum, thermal power, light industry and other fields.



Design principle

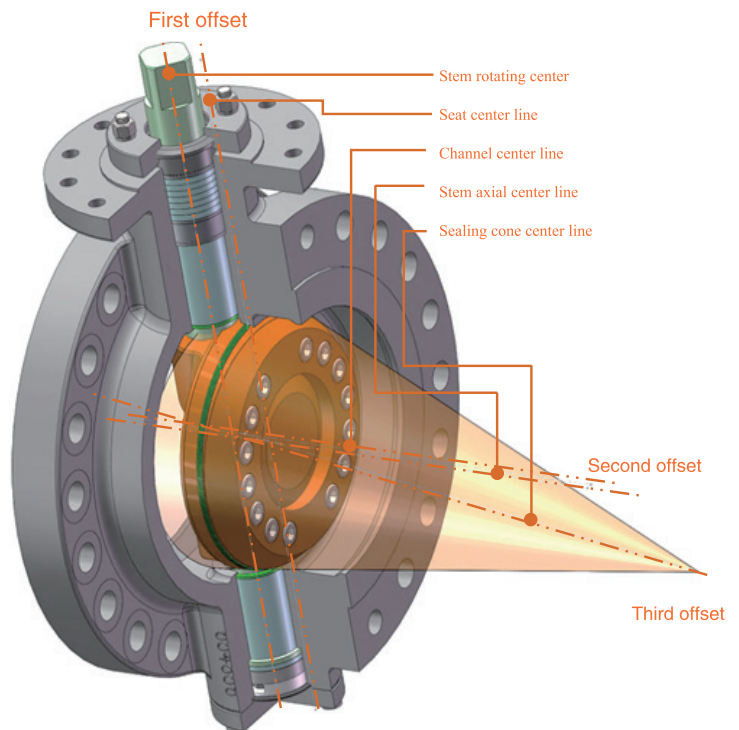
Triple-offset butterfly valve is developed on the basis of double-offset butterfly valve which has the following features:

The shaft rotation center has a distance offset in the axial direction of the sealing pair, marking the first offset which makes the upper and lower ends of the sealing part no longer being the rotary axis so that disperses over-extrusion between upper and lower of valve seat and the plate.

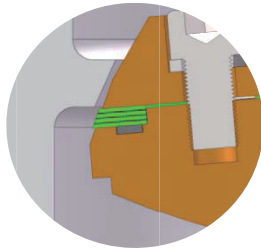
Stem radial centerline deviates from the center of the pipeline, marking the second offset which ensures the butterfly plate can leave quickly from the valve seat after opening the valve. As a result the torque is lower and wear is lighter and service life of the seat is longer.

As the sealing pair of double-offset butterfly valve is a positive cone style, thesealing surface of plate and seat is a real extrusion deformation. This elastic deformation has very high request on valve closed position and it can just work at low pressure differential.

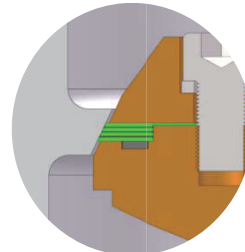
Triple-offset butterfly valve leads additional angel offset on the basis of a double-offset butterfly valve with a taper surface structure as sealing pair - the center line of the sealing cone is deviated from the centerline of the pipeline. The third offset enables the contact of the sealing pair to balance between the sealing and stop position. Higher is the pressure, the better is sealing performance. It can achieve the zero leakage of metal sealing surface even at gas fluid condition.



Sealing characteristics



Before the sealing surface is in contact



After the sealing surface is in contact

Triple-offset butterfly valve’s design principle is to ensure that the valve has no contact friction during opening and closing process from 0 to 90 degrees running and the sealing surface width is enough to get a reliable sealing performance.

When the valve is at closed position, the actuator provides enough torque to drive the stem on seat sealing force which is uniformly acted on the whole corresponding sealing pair. So that the valve can be tightly closed with stainless steel elastic ring to achieve “zero leakage” literally.

Triple-offset butterfly valve sealing mechanism is that the stem presses the contact pressure on the sealing pair to make it radial compression and deformation, resulting in a certain degree of elastic force. Sealing pair contacts of oblique cone structure plus the existence of offset angle make slight "wedge effect" between the sealing pair, then the sealing force is evenly distributed to achieve a strict seal of the valve.

Product series

Antiwear high-performance triple-offset butterfly valve can be divided into following different functions:

- Triple-offset butterfly valves for fluid on/off
 - Triple-offset butterfly valves for fluid regulating
- And according to actual working conditions, it can be divided into following models:

- Regular type
- ◇ Multi-level sealed type

Conditions: applicable to single-phase pure media conditions.

- Functional type

- ◇ Fixed-seat type all-metal sealed type

Conditions: applicable to pressure level of CLASS 900 (including) or below, liquid, gas and steam with a small amount of particulate impurities and other media conditions.

- ◇ Replaceable seat all-metal sealed type

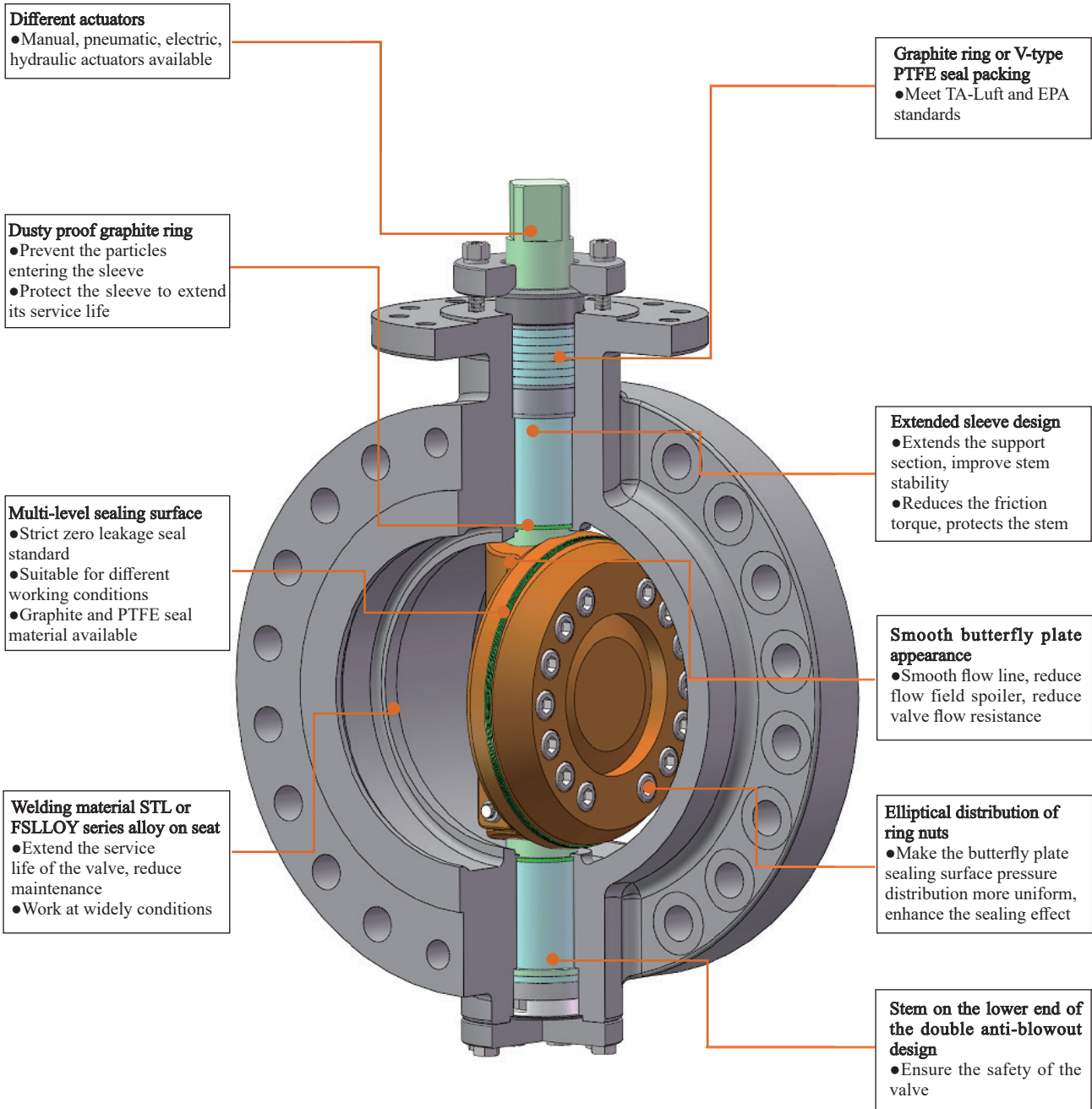
Conditions: applicable to pressure level of CLASS 1500 (including) or above, requiring greater circulation capacity (Cv) and liquid, gas and steam with a small amount of particulate impurities and other media conditions.

Production Ranges

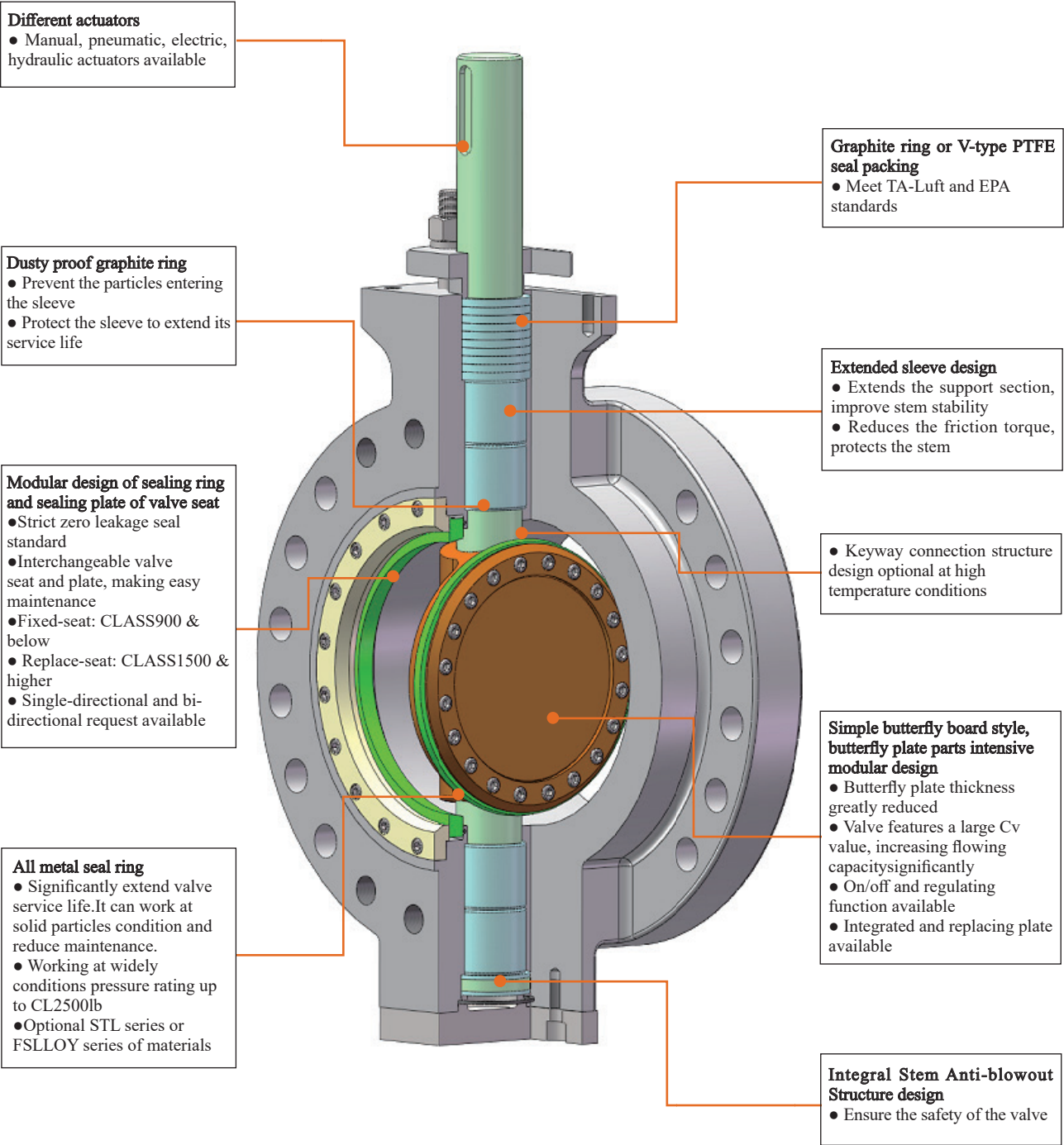
Pressure rating	CLASS150 ~ CLASS2500 (PN10 ~ PN420)
Nominal diameter	2" ~ 48" (DN50 ~ DN1200)
Temperature range	-196℃ ~ 650℃
Operating mode	Handle, turbine, pneumatic actuators, electric actuators, hydraulic actuators and so on

Product features

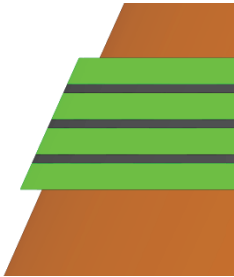
Regulartype design features



Functional type design features

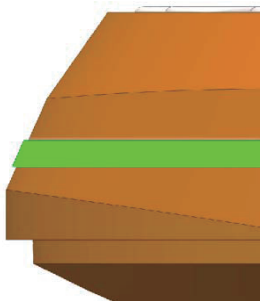


Other features



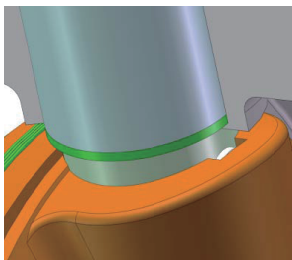
● **Multi-level sealing ring structure**

Unique multi-layer sealing ring design process, thinner graphite or PTFE layer, effectively improve the sealing ring wear and erosion resistance, improve service life.



● **All metal sealing ring structure**

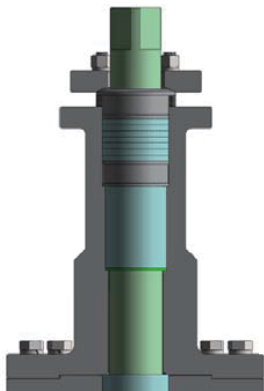
All-metal sealing ring extends the use of triple-offset butterfly valve, the sealing surface material can be selected for different working conditions. Its service life is much longer than that of multi-level sealing ring structure. It is an ideal choice for high pressure, solid materials and other severe conditions.



● **Spline-connection stem design optional**

It can offer compensation of material deformation at high temperature comparing with pin-connection stem design. It makes the valve can work under high temperature without any jam and leakage.

● **Anti-static design**



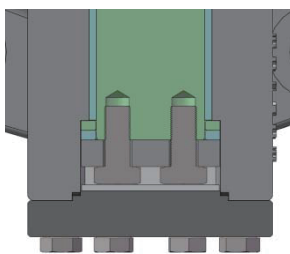
● **Fire-proof design**

The sealing pair of the valve is made of metal to metal or metal to graphite material. Flexible graphite material ensures the sealing reliability of the valve even in the case of fire.

● **Extended stem design**

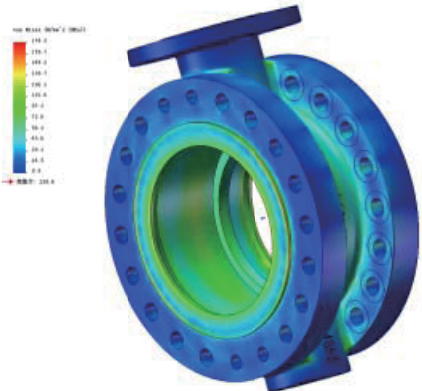
Optional structure for high temperature, low temperature or underground and other conditions

● **Optional jacket insulation design**

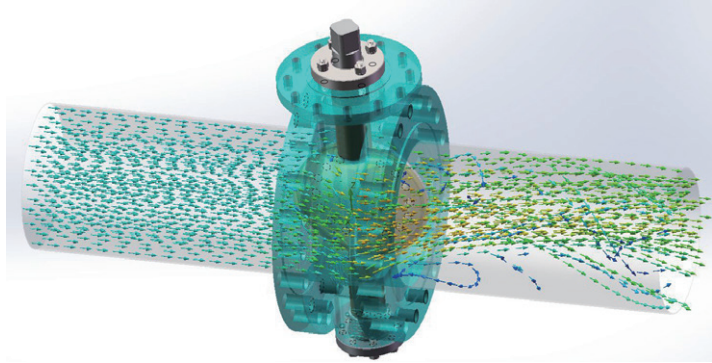


● **Dual-bearing design**

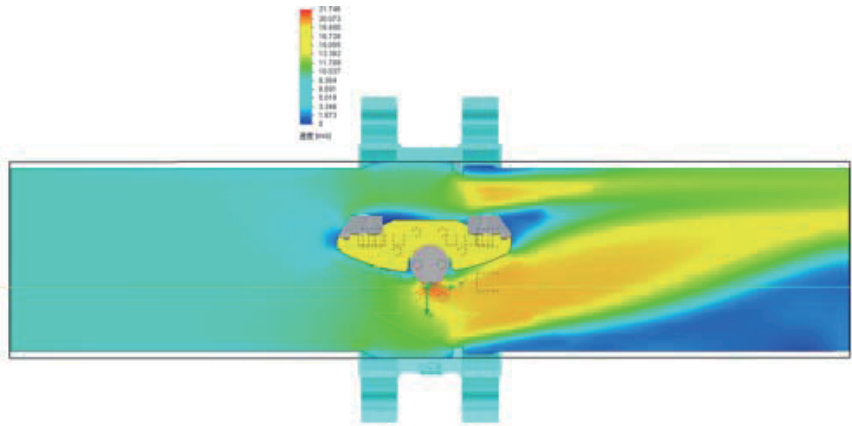
Optional structure to reduce the friction torque



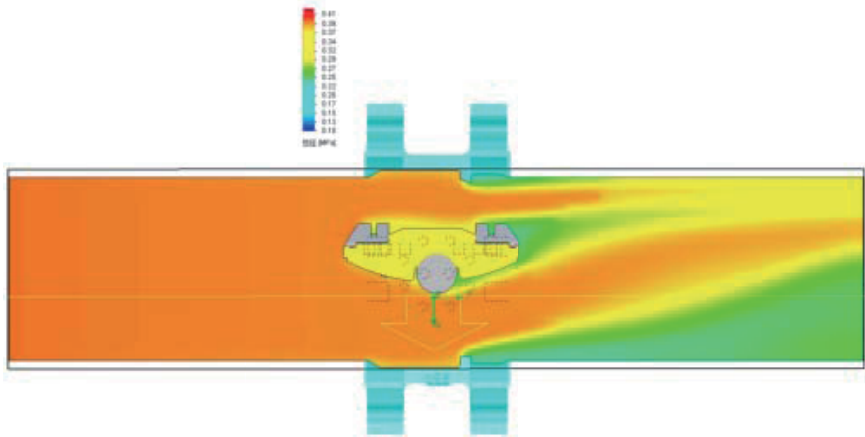
Stress distribution analysis of valve body



Internal distribution of flow field of valve



When the valve is fully open, the internal velocity distribution nephogram



When the valve is fully open, the internal pressure distribution nephogram

Antiwear simulation analyzes the operation and force of triple-offset butterfly valve, and the flow velocity and pressure distribution under corresponding working conditions in order to optimize the structure and parameters by using three-dimensional simulation technology.

Conventional type structural drawing

Technical specification:

Design standard	API 609/ASME B16.34
Structure length	API 609/ASME B16.10
Flange dimension	ASME B16.5/ASME B16.47
Inspection and test	API 598/ASME B16.104/FCI 70-2

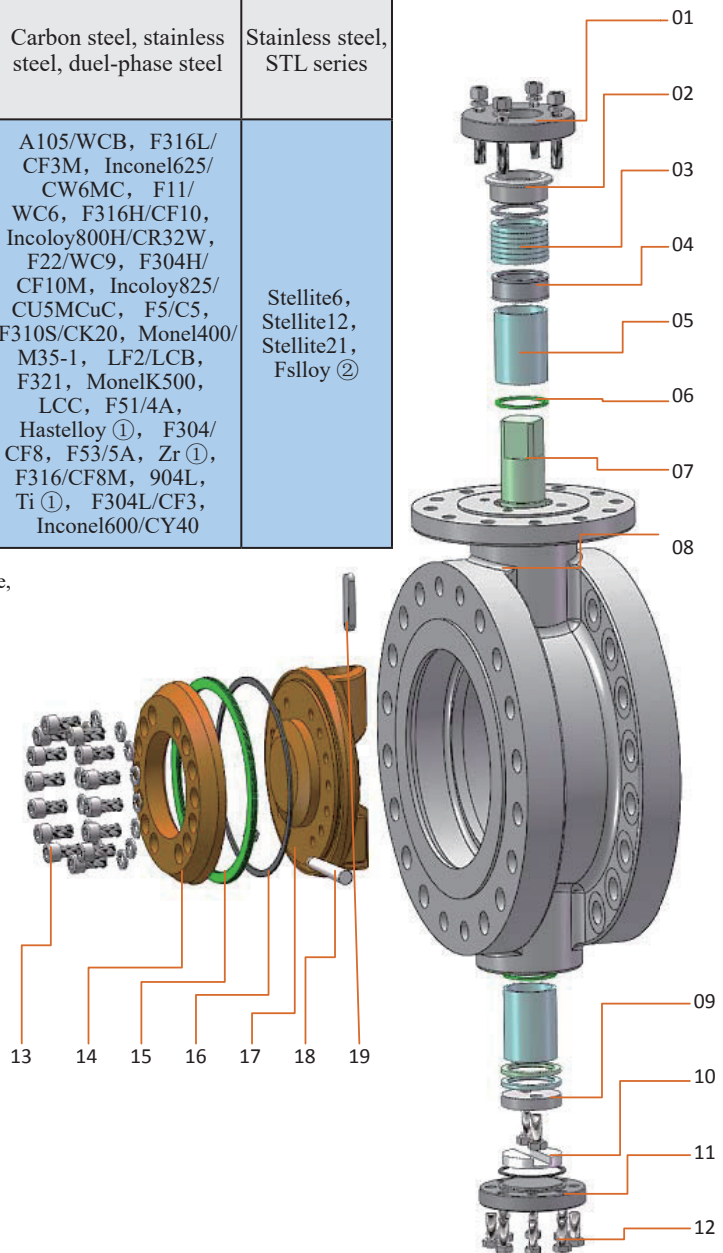
Main parts material:

Part name	Valve body	Stem	Butterfly plate	Valve seat
Material	Carbon steel, stainless steel, dual-phase steel	Stainless steel, dual-phase steel, Precipitation-hardening stainless steel	Carbon steel, stainless steel, dual-phase steel	Stainless steel, STL series
Other material	A105/WCB, F316L/CF3M, Inconel625/CW6MC, F11/WC6, F316H/CF10, Incoloy800H/CR32W, F22/WC9, F304H/CF10M, Incoloy825/CU5MCu, F5/C5, F310S/CK20, Monel400/M35-1, LF2/LCB, F321, MonelK500, LCC, F51/4A, Hastelloy ①, F304/CF8, F53/5A, Zr ①, F316/CF8M, 904L, Ti ①, F304L/CF3, Inconel600/CY40	F11, F22, F5, 304, 316, 304L, 316L, 304H, 316H, 310S, F51, F53, 410, 630, 660, XM-19, Inconel, Incoloy, Monel	A105/WCB, F316L/CF3M, Inconel625/CW6MC, F11/WC6, F316H/CF10, Incoloy800H/CR32W, F22/WC9, F304H/CF10M, Incoloy825/CU5MCu, F5/C5, F310S/CK20, Monel400/M35-1, LF2/LCB, F321, MonelK500, LCC, F51/4A, Hastelloy ①, F304/CF8, F53/5A, Zr ①, F316/CF8M, 904L, Ti ①, F304L/CF3, Inconel600/CY40	Stellite6, Stellite12, Stellite21, Fslloy ②

Note: The materials provided by Antiwear are not limited to above, please contact Antiwear for more materials.

- ① Special material needs to be customized
- ② FSLLOY belongs to Antiwear material

No	Name	No	Name
01	Platen	11	Bottom cover
02	Press sleeve	12	Bolt
03	Packing group	13	Screw
04	Isolated tube	14	Junk ring
05	Bushing	15	Sealing ring
06	Graphite ring	16	Gasket
07	Stem	17	Butterfly plate
08	Valve body	18	Pin
09	Thrust bearing	19	Key
10	Anti-seize gasket		



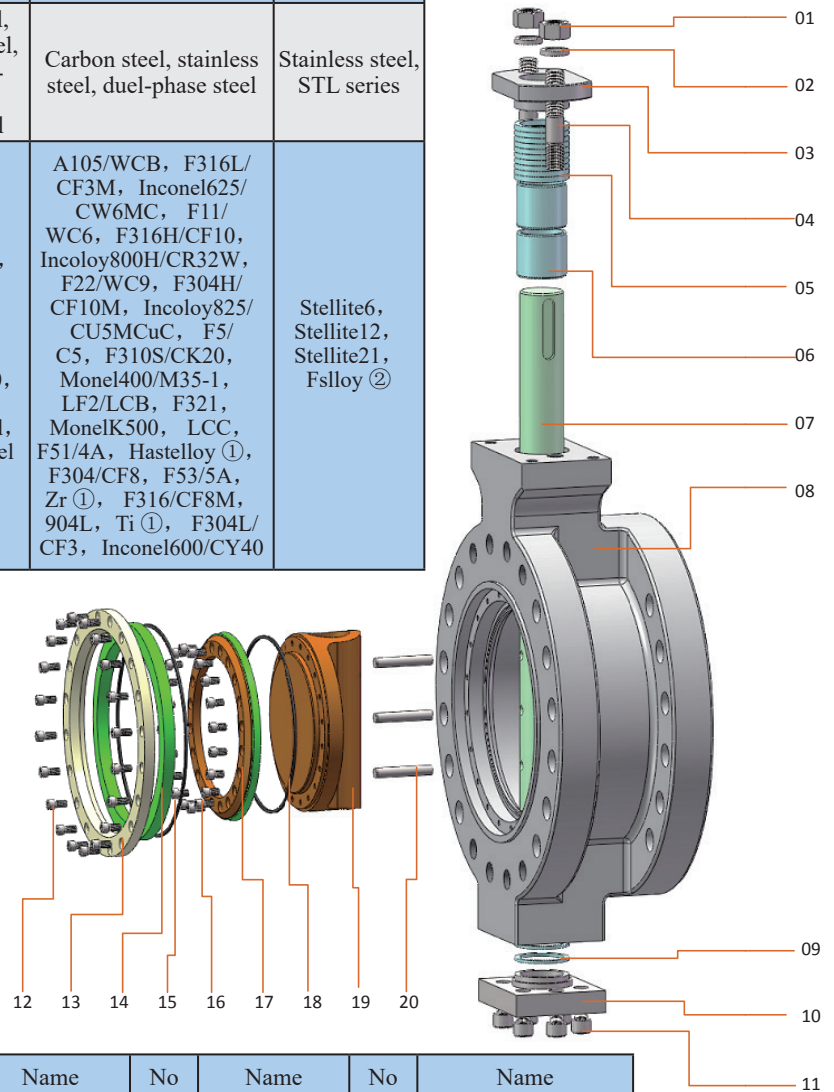
Functional type structural drawing

Technical specifications:

Design standard	API 609/ASME B16.34
Structure length	API 609/ASME B16.10
Flange dimension	ASME B16.5/ASME B16.47
Inspection and test	API 598/ASME B16.104/FCI 70-2

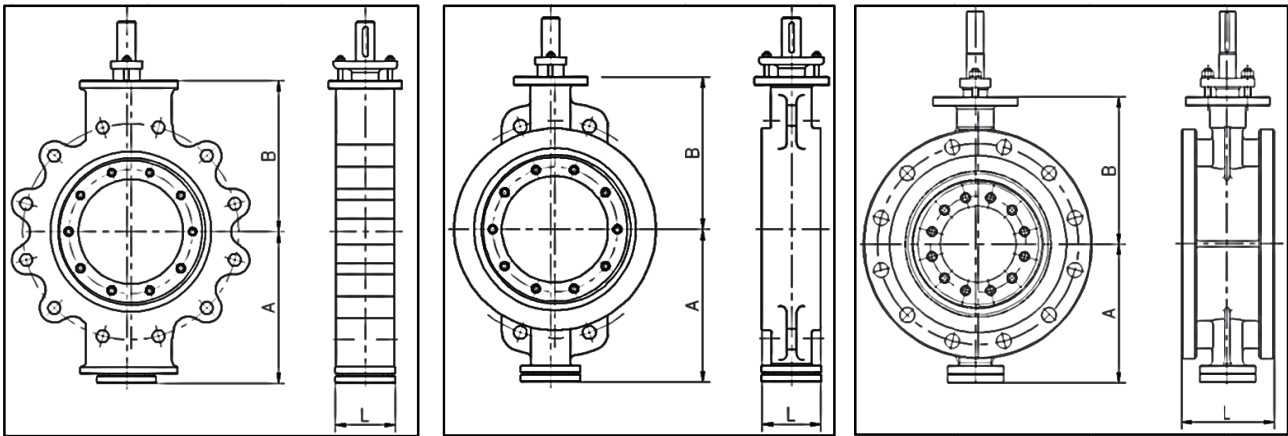
Main parts materials:

Part name	Valve body	Stem	Butterfly plate	Valve seat
Material	Carbon steel, stainless steel, dual-phase steel	Stainless steel, dual-phase steel, Precipitation-hardening stainless steel	Carbon steel, stainless steel, dual-phase steel	Stainless steel, STL series
Other material	A105/WCB, F316L/CF3M, Inconel625/CW6MC, F11/WC6, F316H/CF10, Incoloy800H/CR32W, F22/WC9, F304H/CF10M, Incoloy825/CU5MCuC, F5/C5, F310S/CK20, Monel400/M35-1, LF2/LCB, F321, MonelK500, LCC, F51/4A, Hastelloy ①, F304/CF8, F53/5A, Zr ①, F316/CF8M, 904L, Ti ①, F304L/CF3, Inconel600/CY40	F11, F22, F5, 304, 316, 304L, 316L, 304H, 316H, 310S, F51, F53, 410, 630, 660, XM-19, Inconel, Incoloy, Monel	A105/WCB, F316L/CF3M, Inconel625/CW6MC, F11/WC6, F316H/CF10, Incoloy800H/CR32W, F22/WC9, F304H/CF10M, Incoloy825/CU5MCuC, F5/C5, F310S/CK20, Monel400/M35-1, LF2/LCB, F321, MonelK500, LCC, F51/4A, Hastelloy ①, F304/CF8, F53/5A, Zr ①, F316/CF8M, 904L, Ti ①, F304L/CF3, Inconel600/CY40	Stellite6, Stellite12, Stellite21, Fslloy ②



No	Name	No	Name	No	Name	No	Name	No	Name
01	Nut	05	Packing group	09	Thrust ring	13	Junk ring	17	butterfly plate junk ring
02	Gasket	06	Shaft sleeve	10	bottom cover	14	Valve seat	18	Gasket
03	Platen	07	Stem	11	Screw	15	Gasket	19	Butterfly plate
04	Stud	08	Valve body	12	Screw	16	Screw	20	Spin

Dimension and weight

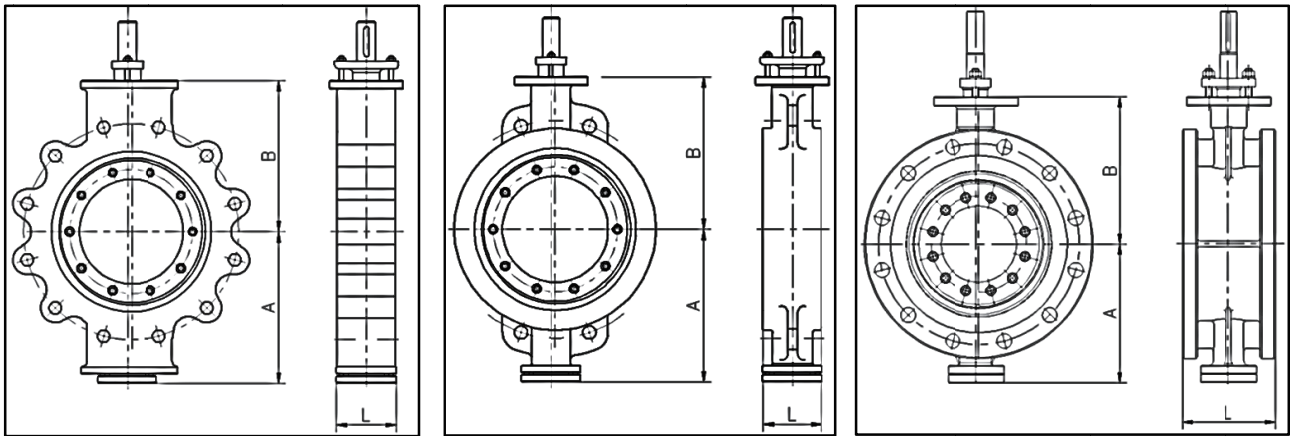


LUG

WAF

RF

Class 150										
Specification	Structure length L(mm)				Valve dimension(mm)		Weight (about) kg			
NPS	LUG	WF	DF-long	DF-short	A	B	LUG	WF	DF-long	DF-short
3"	48	48	203	114	120	125	14	16	25	22
4"	54	54	229	127	150	160	18	21	36	28
6"	57	57	267	140	190	200	30	35	60	40
8"	64	64	292	152	220	235	48	53	93	61
10"	71	71	330	165	250	265	62	71	132	83
12"	81	81	356	178	290	305	85	100	182	127
14"	92	92	381	190	320	330	125	150	235	166
16"	102	102	406	216	350	360	180	210	290	198
18"	114	114	432	222	375	400	260	276	367	229
20"	127	127	457	229	415	450	310	360	475	308
24"	154	154	508	267	450	480	450	555	715	433
26"	-	-	559	292	480	510	-	-	875	612
28"	-	-	610	292	515	535	-	-	1123	767
30"	-	-	660	318	580	610	-	-	1586	990
32"	-	-	711	318	590	620	-	-	1797	1165
36"	-	-	813	330	640	670	-	-	2469	1495
38"	-	-	-	410	680	700	-	-	-	1786
40"	-	-	-	410	700	730	-	-	-	2035
42"	-	-	-	410	750	800	-	-	-	2155
48"	-	-	-	470	800	840	-	-	-	3045

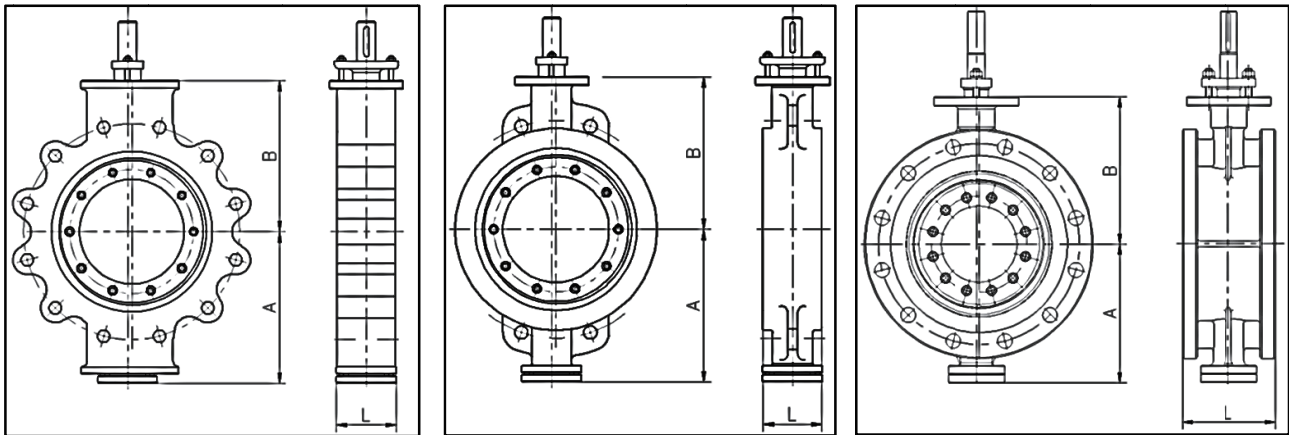


LUG

WAF

RF

Class 300										
Specification	Structure length L(mm)				Valve dimension(mm)		Weight (about) kg			
NPS	LUG	WF	DF-long	DF-short	A	B	LUG	WF	DF-long	DF-short
3"	48	48	282	180	125	135	15	17	33	22
4"	54	54	305	190	160	165	19	22	49	23
6"	59	59	403	210	200	210	42	48	102	61
8"	73	73	418	230	235	240	62	72	140	86
10"	83	83	457	250	260	270	96	117	215	100
12"	92	92	502	270	300	310	130	160	295	175
14"	117	117	762	290	325	335	210	285	455	284
16"	133	133	838	310	365	370	290	380	586	340
18"	149	149	914	330	400	410	355	475	740	487
20"	159	159	991	350	450	460	515	655	985	529
24"	181	181	1143	390	520	540	650	905	1425	834
26"	-	-	1245	410	560	580	-	-	1744	1179
28"	-	-	1346	430	580	610	-	-	2230	1477
30"	-	-	1397	450	600	630	-	-	3145	1907
32"	-	-	1524	470	630	660	-	-	3563	2244
36"	-	-	1727	510	700	730	-	-	4890	2879
38"	-	-	-	530	710	735	-	-	-	3440
40"	-	-	-	550	720	740	-	-	-	3918
42"	-	-	-	570	780	800	-	-	-	4145
48"	-	-	-	630	820	860	-	-	-	5850



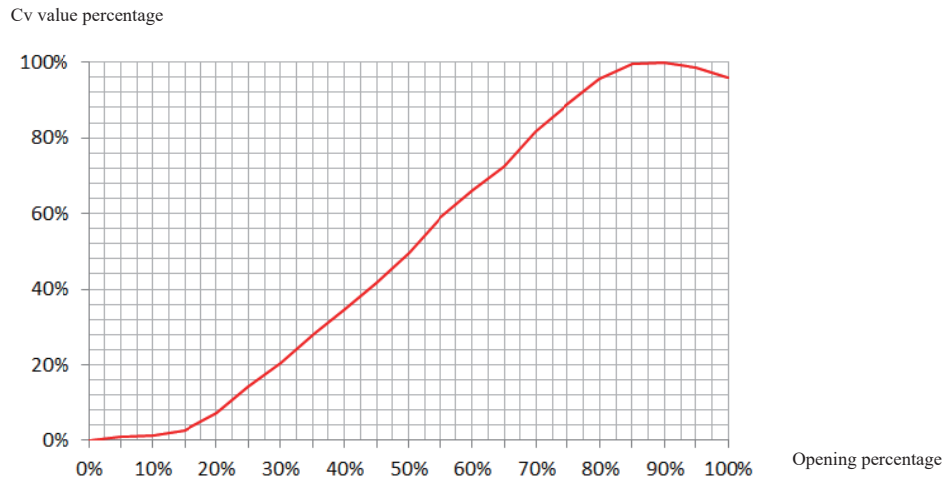
LUG

WAF

DF

Class 600										
Specification	Structure length L(mm)				Valve dimension(mm)		Weight (about) kg			
NPS	LUG	WAF	DF-Tipe panjang	DF-Tipe pendek	A	B	LUG	WAF	DF-Tipe panjang	DF-Tipe pendek
6"	78	78	559	210	225	235	78	93	170	121
8"	102	102	660	230	265	275	115	140	280	198
10"	117	117	787	250	310	320	190	240	450	298
12"	140	140	838	270	335	340	280	350	600	378
14"	155	155	889	290	375	385	320	520	830	445
16"	178	178	991	310	410	420	429	635	1000	670
18"	200	200	1092	330	440	450	558	840	1420	750
20"	216	216	1194	350	485	490	728	1089	1750	1000
24"	232	232	1397	390	550	610	995	1383	2230	1450
Class 900										
Specification	Structure length L(mm)				Valve dimension(mm)		Weight (about) kg			
NPS	LUG	WF	DF-long	DF-short	A	B	LUG	WF	DF-long	DF-short
6"	104	104	705	250	265	280	107	128	235	167
8"	112	112	832	310	300	310	173	210	420	297
10"	135	135	991	350	350	375	245	310	581	385
12"	170	170	1130	380	380	400	436	540	933	588
14"	190	190	1257	400	395	415	572	929	1483	795
16"	202	202	1384	430	425	440	786	1164	1833	1228
18"	230	230	1537	460	460	480	1073	1615	2730	1442
20"	252	252	1664	490	500	530	1404	2100	3370	1928
24"	312	312	1943	530	590	630	1950	2712	4372	2843

Flow coefficient(Cv value)



Rating curve of triple-offset butterfly valve

Class 150									
Specification	Butterfly plate opening angel								
NPS	10°	20°	30°	40°	50°	60°	70°	80°	90°
3"	15	34	54	81	120	183	225	260	250
4"	23	50	78	119	175	266	359	415	399
6"	56	120	187	284	420	643	865	1004	963
8"	99	214	331	506	748	1142	1542	1786	1714
10"	158	341	527	806	1193	1830	2451	2832	2719
12"	230	495	767	1173	1736	2661	3569	4124	3959
14"	309	668	1035	1582	2340	3582	4813	5567	5344
16"	411	887	1377	2104	3115	4767	6402	7400	7104
18"	534	1152	1794	2740	4059	6242	8376	9680	9293
20"	648	1395	2162	3305	4892	7494	10056	11624	11160
24"	945	2039	3160	4830	7149	10953	14696	16990	16311
26"	1114	2402	3724	5691	8423	12905	17315	20014	19213
28"	1283	2765	4288	6552	9697	14856	19935	23038	22116
30"	1487	3206	4971	7595	11242	17223	23111	26710	25642
32"	1691	3647	5654	8639	12787	19590	26287	30383	29168
36"	2157	4646	7200	11004	16287	24945	33475	38692	37144
38"	2406	5183	8038	12282	18177	27162	37362	43182	41455
40"	2655	5721	8875	13559	20067	29379	41248	47672	45765
42"	3240	6984	10834	16786	24498	35721	50361	58204	55876
48"	3825	8248	12794	20012	28930	42062	59474	68736	65987

Class 300									
Specification	Butterfly plate opening angel								
NPS	10°	20°	30°	40°	50°	60°	70°	80°	90°
3"	14	32	50	75	112	170	209	243	233
4"	22	47	72	111	163	247	334	386	371
6"	53	112	174	264	391	598	804	934	896
8"	92	198	308	471	696	1062	1434	1659	1593
10"	147	317	490	750	1109	1701	2279	2634	2529
12"	214	460	713	1091	1615	2474	3319	3836	3682
14"	287	621	963	1472	2176	3331	4475	5177	4970
16"	382	825	1280	1957	2896	4433	5954	6882	6607
18"	497	1071	1668	2549	3775	5806	7790	9003	8643
20"	602	1297	2011	3074	4550	6969	9352	10811	10379
24"	879	1896	2939	4492	6648	10187	13667	15801	15169
26"	1036	2234	3463	5292	7833	12001	16103	18613	17869
28"	1193	2571	3988	6093	9017	13816	18539	21425	20568
30"	1383	2981	4623	7064	10455	16018	21493	24840	23847
32"	1573	3391	5259	8035	11892	18219	24446	28255	27125
36"	2006	4320	6696	10233	15146	23199	31132	35983	34544
38"	2238	4820	7475	11422	16904	25261	34746	40159	38553
40"	2469	5320	8254	12611	18661	27323	38360	44335	42562
42"	3014	6496	10076	15611	22783	33220	46836	54130	51965
48"	3558	7671	11899	18611	26905	39118	55311	63925	61368

Class 600									
Specification	Butterfly plate opening angel								
NPS	10°	20°	30°	40°	50°	60°	70°	80°	90°
6"	46	97	152	230	341	520	700	812	780
8"	81	173	268	411	606	925	1249	1446	1388
10"	127	277	427	654	966	1482	1985	2294	2203
12"	187	400	621	950	1406	2155	2891	3341	3207
14"	251	540	838	1281	1895	2901	3898	4509	4329
16"	333	719	1116	1704	2523	3862	5186	5994	5754
18"	433	932	1453	2220	3287	5057	6784	7841	7527
20"	525	1130	1752	2677	3963	6071	8146	9415	9039
24"	766	1651	3259	3913	5791	8873	11903	13762	13212

Class 900									
Specification	Butterfly plate opening angel								
NPS	10°	20°	30°	40°	50°	60°	70°	80°	90°
6"	36	77	119	182	268	412	553	642	616
8"	63	137	212	324	478	732	986	1142	1097
10"	100	218	337	516	763	1172	1568	1812	1740
12"	147	316	490	750	1111	1703	2284	2640	2534
14"	198	427	663	1013	1497	2292	3080	3563	3420
16"	263	567	881	1347	1993	3051	4097	4736	4546
18"	342	738	1148	1754	2598	3995	5360	6196	5948
20"	414	893	1384	2115	3131	4796	6436	7440	7142
24"	605	1305	2022	3091	4576	7010	9406	10874	10439

Note:

1) Definition

Cv: Flow rate (gallons per minute) of the water flowing through the valve at a temperature of 15 °C when inlet and outlet pressure drops to 1 psi across the valve.

Kv: Flow rate (m³ / hour) of water flowing through the valve at a temperature of 15 °C when when inlet and outlet pressure drops to 1 bar across the valve

2) $C_v = 1.167K_v$.

3) For flow characteristics of some models that are not listed in abvoe table, please consult Antiwear.

Actuators and accessories

All valves can be operated by lever, worm/gears, pneumatic actuators, electric or hydrodynamic actuators.

Normal used pneumatic actuators are rack type actuators, pusher type pneumatic actuators. Actuators and solenoid valves, positioning valves and other accessories supporting, integrating services can be provided.

Manual operated

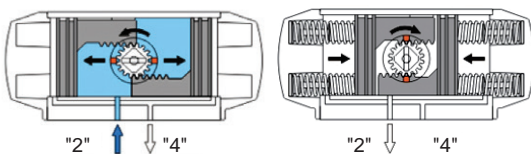
Normal manual actuators are lever, worm/gear, etc.



Pinion and rack pneumatic actuator



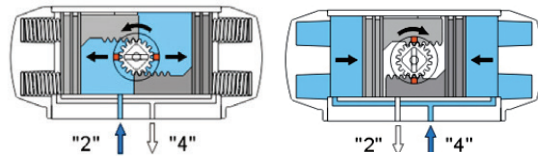
Single acting working principle



When the air supply pressure enters from the second inlet to force the piston to move toward the end cap separately, while compressing the spring, the air is discharged from the fourth outlet, so as to obtain counterclockwise rotation. When the air is lost, the spring closes the piston and the air is discharged from the second outlet, resulting in counterclockwise rotation.



Double acting principle



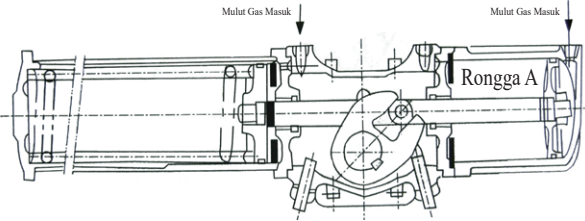
When the air supply pressure enters from the second inlet to force the piston to move toward the end cap separately and the air is discharged from the fourth outlet to obtain counterclockwise rotation. When the air supply pressure comes from the fourth inlet and force the piston to close, the air is discharged from the second outlet, resulting in a clockwise rotation.

Pusher - type pneumatic actuators



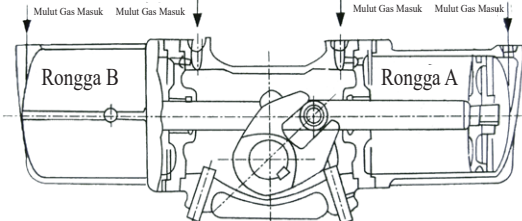
Single acting

Single compressed air enters the A chamber to promote the piston and piston rod for linear motion, the piston and piston rod drive arm rotation, so that the output shaft rotates and the output shaft output end and the valve output shaft connect to complete the valve opening action; when the gas source is cut off, the valve under the action of the spring, completes the closing action.



Double acting

Single compressed air enters the A chamber to promote the piston and piston rod for linear motion, the piston and piston rod drive arm rotation, so that the output shaft rotates and the output shaft output end and the valve output shaft connect to complete the valve opening action; on the contrary, when the compressed air enters B chamber, completing the closing action of valve.



Electric Actuator

Optional angle travel electric actuators are also available.



Frequently - used accessories

Frequently-used accessories include solenoid valves, pneumatic control valve, stroke limit switch, air filter regulator valve, etc.



Ordering description

Model preparation

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
TEB	ST	A	A	600	18	T3	11	11	10	10	A	P	1	RF	1	1	10

1. Company product code:

TEB	Triple-offset butterfly valve	CEB	center line-type butterfly valve	SEB	Single-offset center butterfly valve	DEB	double offset butterfly valve
-----	-------------------------------	-----	----------------------------------	-----	--------------------------------------	-----	-------------------------------

2. Series:

ST	unilateral seal with fixed seat	DT	bilateral seal with fixed seat
SC	unilateral seal with changeable seat	DC	bilateral seal with changeable seat

3. Metric/Imperial

ANSI	Metric
A	B

4. Casting/forging

Casting	forging
A	B

5. Pressure class

Class150	Class300	Class600	Class900	Class1500	Class2500
150	300	600	900	1500	2500

10. Sealing surface material

10	Stellite6
11	Stellite12
12	Stellite21
13	FSLLOY [®]

6. Nominal diameter

NPS	2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24
NPS	26	28	30	32	34	36	42	48	54	60	64	72	80	84
NPS	88	96	104	112	120	128	136	144	152	160				

7. Temperature

T1	≥ -196℃ , < -46℃	T5	≥ 315℃ , < 425℃
T2	≥ -46℃ , < -29℃	T6	≥ 425℃ , < 538℃
T3	≥ -29℃ , < 180℃	T7	≥ 538℃ , < 650℃
T4	≥ 180℃ , < 315℃	T0	Other

11. Stem material

F11	F22	F5	304	316
10	11	12	20	21
304L	316L	304H	316H	310S
22	23	24	25	26
F51	F53	410	630	660
27	28	29	30	31
XM-19	Inconel	Incoloy	Monel	Other
32	40	41	42	00

8. Valve body material

10	A105/WCB	23	F316L/CF3M	41	Incone1625/CW6MC
11	F11/WC6	24	F316H/CF10	42	Incoloy800H/CR32W
12	F22/WC9	25	F304H/CF10M	43	Incoloy825/CU5MCuC
13	F5/C5	26	F310S/CK20	44	Monel400/M35-1
14	LF2/LCB	27	F321	45	MonelK500
15	LCC	28	F51/4A	46	Hastelloy ^①
20	F304/CF8	29	F53/5A	47	Zr ^①
21	F316/CF8M	30	904L	48	Ti ^①
22	F304L/CF3	40	Incone1600/CY40	00	Other

12. Filler

Flexible graphite	PTFE
A	B

13. Drive mode

Handle	Turbine	Pneumatic	Motor	Hydraulic
L	G	P	M	H

9. Valve element material

10	A105/WCB	23	F316L/CF3M	41	Incone1625/CW6MC
11	F11/WC6	24	F316H/CF10	42	Incoloy800H/CR32W
12	F22/WC9	25	F304H/CF10M	43	Incoloy825/CU5MCuC
13	F5/C5	26	F310S/CK20	44	Monel400/M35-1
14	LF2/LCB	27	F321	45	MonelK500
15	LCC	28	F51/4A	46	Hastelloy ^①
20	F304/CF8	29	F53/5A	47	Zr ^①
21	F316/CF8M	30	904L	48	Ti ^①
22	F304L/CF3	40	Incone1600/CY40	00	Other

14. Flange standard

ASME B16.5	ASME B16.47	HG20592	HG20615	Other
1	2	3	4	0

15. Flange sealing mode

Raised faced flange	Loop connection	Face flange	MFM
RF	RJ	FF	FM/M
Tongue and groove face	Butt clamp	Butt welding	Other
TG	WAF	BW	OT

16. Design standard

ASME B16.34	API609	Other
1	9	0

17. Structure length standard

ASME B16.10	GB12221
1	2
API609	Other
7	0

18. Sealing test demand

API598	ASME B16.104	Other
10	IV	0
	20	
	V	
	VI	
	22	

ANTIWEAR VALVES

Antiwear enterprise culture——It's reliable

Core philosophy: Open, Reliable, Enterprising, Innovative

Open Reliable Enterprising Innovative



FLOWTEX
It's reliable



Antiwear (Suzhou) Industrial Intelligent Technology Co.,Ltd.

Add: No.988 Yuexiu Road, Foho Zone, Wujiang
District, Suzhou City, Jiangsu Province, China

Tel: +86-512-82880588

Fax: +86-512-82079059

Web: www.antiwearvalve.com