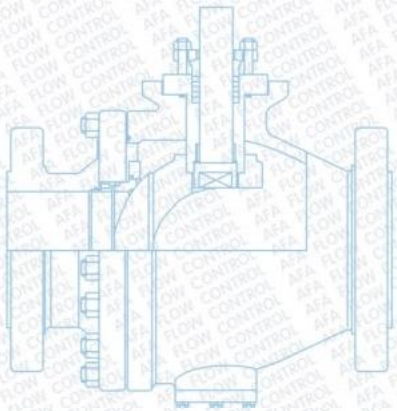

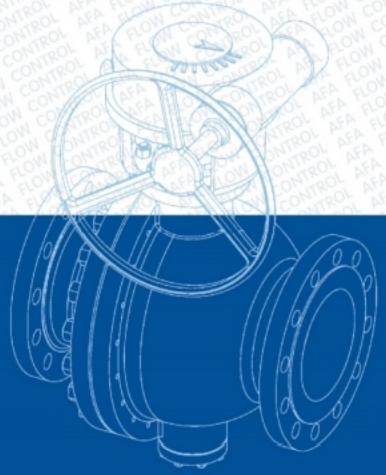

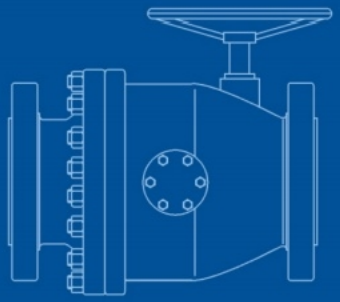

阿伐流体控制有限公司

AFA FLOW CONTROL Co.,LTD

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www.afavalve.com

C型耐磨球阀

C-TYPE WEAR RESISTANT BALL VALVE

阿伐流体控制有限公司

AFA FLOW CONTROL CO.,LTD

About AFA

Catalog

AFA FLOW CONTROL CO., LTD (AFA for short) is located in Tieshan Industrial Park, West Coast New District, Qingdao, covering an area of 25,000 m^2. It is a technology-based valve company integrating R&D, manufacturing, sales and service.The company has currently obtained more than 20 patent technologies, including the invention patent of C-type wear-resistant ball valve, all of which have completely independent intellectual property rights.Our leading products are metal touch ball valves, among which high-performance four-eccentric C-type ball valves and double-eccentric C-type wear-resistant ball valves fill the gaps in the domestic and foreign markets.The company has an R&D center, an intelligent manufacturing center, a ball division, and a spraying division, and has obtained the titles of high-tech enterprise and municipal enterprise technology center.At the same time, our company can undertake the maintenance, modification, commissioning and technical consulting of imported metal touch ball valves.

We focus on introducing international advanced technology, and adopt production standards: API, ANSI, DIN, BS, JIS, GB, etc.Our products are widely used in coal chemical industry, petrochemical industry, offshore platform, LNG, MDI, PTA, Polycrystalline silicon, air separation and other industries.The products we produce include: metal hard seal ball valve, high performance four-eccentric C-type ball valve, double eccentric C-type wear-resistant ball valve, forged steel ball valve, special material ball valve, control ball valve.The valve body materials include carbon steel, chrome-molybdenum steel, stainless steel, ultra-low carbon stainless steel, duplex stainless steel, monel, Inconel, Hastelloy, etc. Pressure level Class150~Class2500; Size range 1/2'-60"; Temperature range is -196°C~816°C.

We currently own the AFA trademark with independent intellectual property rights and actively popularizes it in the market. Our products have been widely used in more than 100 coal chemical companies such as Sinopec, CNOOC, Shenhua, Wanhua, Wison, and Yanchang Petroleum. We are currently vigorously developing foreign markets and our products have been exported to 20 countries and regions including the Middle East, North America, and Europe.

The company attaches great importance to product quality and implements a comprehensive quality management system.We have successively obtained TS(A1), API6D, API 608, API607, API 6FA, API641, IS015848, SIL3, IS09001, IS014001, OHSAS18001, CE and other certificates.

We always adhere to the development strategy of "people-oriented, technological innovation, honest management, and brand-based" to serve the society with high-quality products.We are willing to work together with friends from all around the world to create brilliant future together!

Certifications

Business Licence

Licenses for Opening Accounts

Certificate of Institution Credit Code

Customs Registration Certificate

Certificate of Enterprise Credit Grade

Certification of High and New Technology Enterprises

API 608

Export Enterprise Registration Form

Trademark Registration Certificate

API 6D

Fine Workmanship, Proven by Certifications

The certifications and honors the company has obtained are a recognition of its past achievements, as well as an encouragement to create brilliance in the future.

TS证书

ISO 9001质量管理认证

ISO 14001环境管理认证

ISO 18001职业健康管理认证

API 607 防火试验

API6FA 防火试验证书

ISO15848-1微泄露证书

API641证书

CE证书

CE 0036证书

SIL3证书

Intellectual Property Management System Certificate

Certifications

We use innovative technology to improve the competitiveness of enterprises

We advocate learning, unity, competition and creativity

We use mature technology and reliable product quality to serve users, contribute to society and develop enterprises

Intelligence Manufacturing

Large-scale manufacturing builds the strength and brand of an enterprise

We have sophisticated production equipment, use new industrial concepts and strong technical force to produce high-quality end products that meet international standards.

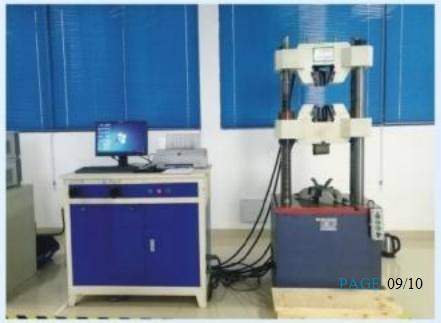
阿伐流体 AFA FLOW

Quality Guarantee

Quality is reflected in unparalleled reliability

The company has a modern quality inspection center and test center, with heat treatment, chemical analysis, spectral analysis, metallurgical analysis, mechanical properties analysis, radiographic testing flaw detection, ultrasonic flaw detection, magnetic particle flaw detection, large and medium-sized pressure test valve test benches, etc.

We adhere to the quality policy of "take customer as priority, achieving zero customer complaints; system-based, pursuing zero product defects", promote user satisfaction projects, and do our best to meet customer needs and expectations.



Boutique Display

Product components are strictly inspected from material selection, processing, production, assembly and debugging

Major customers: CNPC, Sinopec, CNOOC, Shenhua, Wanhua, Wison and more than 100 other domestic companies.

Overview of C-type Wear-resistant Ball Valve

The C-type wear-resistant ball valve is a patented product designed and developed by AFA specifically for harsh working conditions.

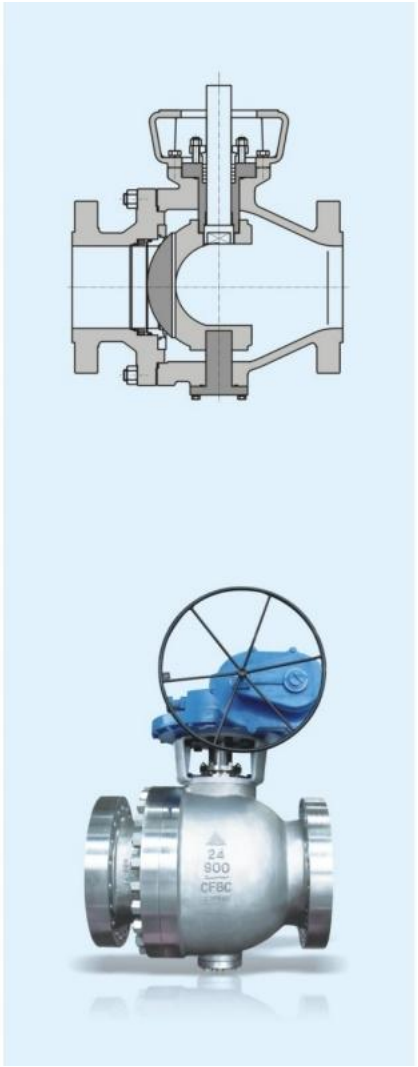
It combines the advantages of valves for a variety of harsh working conditions and eliminates the weaknesses and defects of these designs.T his product fills the gap in the domestic and foreign markets and reaches the international leading level. It can easily replace metal touch ball valves, orbit ball valves, wear-resistant gate valves, open ball valves and other products. From the first generation of C-type valve technology innovation in 2008 to the mature second generation in 2016, it solves the problem of valve switching difficulty, scaling and internal leakage in devices such as black water, gray water, slag water, coal slurry, coal powder, synthesis gas, molecular sieves, etc., prolongs the shutdown and maintenance cycle of the device, and significantly improves economic benefits.

C-type wear-resistant ball valve main application industry

- Coal chemical industry: coal-to-oil, coal-to-methanol, coal-to-alkene, coal-to-hydrogen, coal-to-ethylene glycol, coal-to-dimethyl ether, coal-to-synthetic ammonia
- Petrochemical industry: catalytic cracking, delayed coking, sulfur recovery, hydrocracking, adsorption desulfurization, polypropylene
- Chemical / MTO / MDI / PTA / PX / TDI
- LNG
- Pulp and paper
- Polysilicon

Application scenarios of C-type wear-resistant ball valve

- Black water, grey water, slag water
- Abrasive medium with solid particles
- Corrosive media
- High or low temperature
- mud
- Corrosive high velocity media
- Impact
- Valve cavity overpressure
- Fast closing
- Vibration

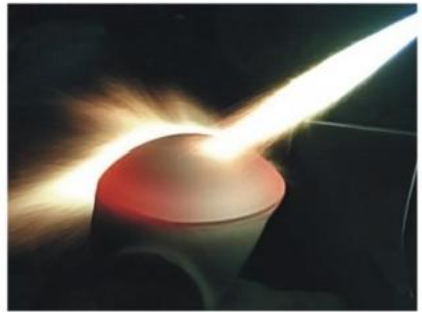


Features of C-type Wear-resistant Ball Valve

- C-type double eccentric design, torque seal
- 1/4 rotation angle, friction-free and wear-free design
- Upper and lower support shaft positioning, fixed ball design
- C Ball's spherical surface is fully coated
- No Dead Cavity，fully opened
- Anti-lock at high temperatures
- Self-cleaning function
- Micro torque when disengaging

■ 1、Using advanced ball and seat spraying technology

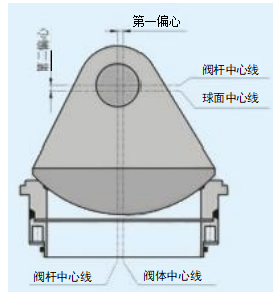
The C ball and valve seat of the C-type wear-resistant ball valve adopt metal-to-metal sealing. Their surface hardening mainly adopts nickel-based alloy hot melt spraying technology, so that its hardness can reach HRC60 or above, the effective thickness of the spray layer processing is above 0.7mm, and the bonding strength is above 12000PSI. Nickel-based alloy has good wear resistance, impact resistance, corrosion resistance and other properties, and can be applied to most harsh working conditions. We can also use supersonic spraying of tungsten carbide, chromium carbide and other hardening technologies according to the process conditions required by the user. Under special working conditions, spraying the entire C ball can effectively avoid premature erosion and damage of the weak spot inside the channel by the medium.



■ 2、C-type double eccentric design, torque seal

The double eccentric structure makes the valve seat and C ball non-contact. The valve seat spring absorbs the expansion under high temperature conditions, which can effectively avoid the sticking and locking of the ball valve under high temperature conditions.

The eccentric design produces a mold-tightening effect. Due to the torque seal, when closing, the C ball moves gradually relative to the valve seat; when opening, the C ball is instantly separated from the valve seat. The switch action resistance is very low, referred to as micro torque. This can reduce the use and maintenance costs of the actuator.



■ 3、1/4 rotation angle, friction-free and wear-free design

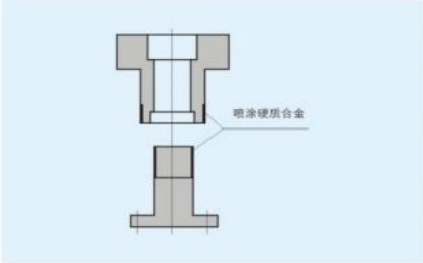
The 1/4 turn angle stroke design enables the ball valve to open and close quickly. The sealing pair of the ball valve only touches at the moment of switching and the rest of the travel range can achieve friction -free and wear-free movement. Low torque operation makes opening and closing easy and fast.

■ 4、Upper and lower support shaft positioning, fixed ball design

The C ball adopts a structural design with fixed upper and lower support shafts. The support shaft and the valve body are statically matched to prevent the C ball from tilting. The valve stem is set inside the upper support shaft. The thrust of the medium on the C ball is jointly borne by the upper and lower support shafts, and the valve stem only transmits the opening and closing torque of the C-type ball valve.

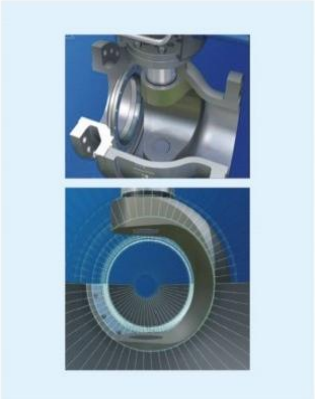
■ 5、**Wear-resistant treatment of upper and lower support shafts**

The contact parts of the upper and lower support shafts with the C ball are sprayed with nickel-based alloy, which improves the strength and wear resistance of the support shaft and ensures that the ball valve will not wear out even after long-term use. This process replaces the traditional bushings and oil-free bearings, effectively avoiding problems such as seizure, expansion, and falling off in the cavity, and can meet the customer's requirements for frequent valve switching.。



■ 6、**Single valve seat, no dead cavity, full bore design**

There is no dead cavity in the valve and no flow resistance in the entire diameter, which effectively prevents the occurrence of overpressure and the hazards of material accumulation and adhesion in the valve.



■ 7 、**Self-cleaning function**

When the valve is opened, the flow of the medium is used to clean the valve cavity and flush out some debris; when the valve is closed, the C ball gradually moves relative to the valve seat, and the valve seat scraper structure design can be used to shear the material adhering to the sealing pair, ensuring the cleanliness of the sealing pair.

■ 8、**Anti-flying design of valve stem**

The valve stem adopts an anti-flying structure design. The valve stem with a large lower end and a small upper end is fixed by the bonnet and bolts to ensure that the valve stem will not be blown out by the medium.

■ 9、**Inherently firesafe**

With an all-metal sealing structure, valve performance is not affected in fire safety simulation tests.

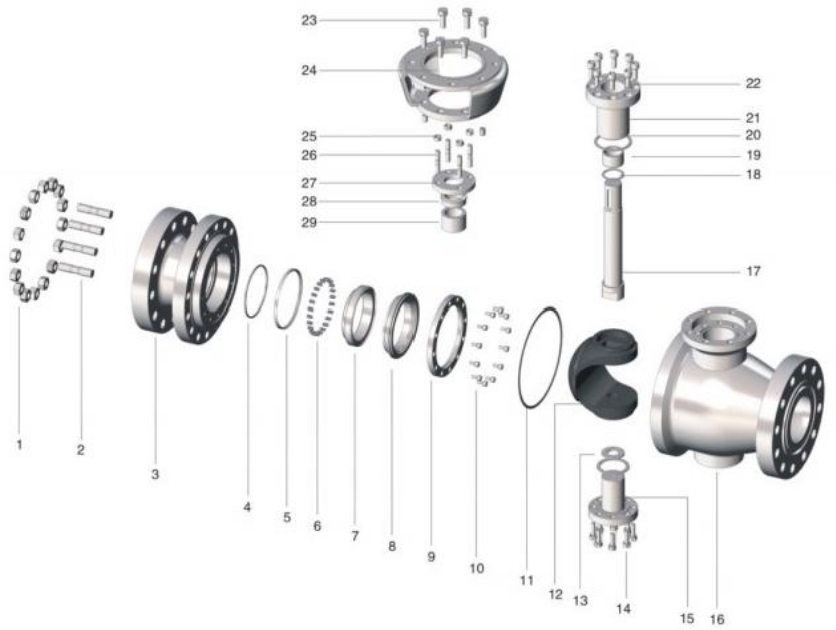
■ 1 0、**Complete anti-static structure design**

The valve body, valve seat, C ball and other metal parts are in close contact to form an electrostatic channel, so there is no need to set up a special anti-static device.

■ 11、**Excellent sealing performance**

The use of full CNC machining and advanced C ball surface grinding technology makes the C ball surface have extremely high dimensional accuracy, shape and position tolerance and surface finish. The C ball and valve seat match up to 100%, ensuring the high-performance sealing of the valve and meeting the sealing requirements of ANSIB16.104 VI level.

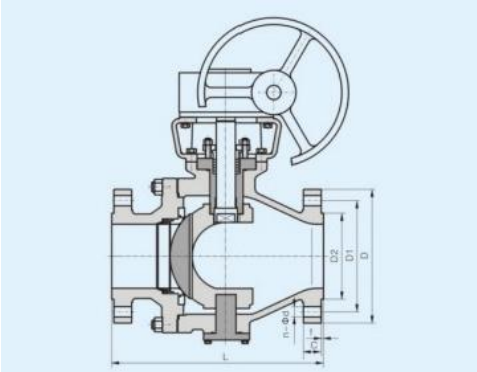
Typical Structure of C-type Wear-resistant Ball Valve



1 -Nut
2-Double-end Stud
3-Bonnet
4-Graphite Ring
5-Graphite Ring
6-Spring
7-Seat Gland
8-Valve Seat
9-Damper
10-Socket Head Cap Screw
11-Gasket
12-C - Ball
13-Gasket
14-Screw
15-Lower Support
16-Valve Body
17-Valve Stem
18-Gasket
19-Bushing
20-Gasket
21-Upper Support
22-Socket Head Cap Screw
23-Screw
24-Stand
25-Screw
26-Double-end Stud
27-Hold-down Grid
28-Packing Cover
29-Packing

Specifications of C-type Wear-resistant Ball Valve

Standards for Design and manufacturing：ASME B16.34、API 608、API6D
Standards for Flange connection：ASME B16.5、ASMEB16.47
Standards for structural length：ASME B16.10
Standards for testing and inspection：API 598



Unit：mm

Pressure	Diameter		Size（mm）							
	DN	NPS	L		D	D1	D2	n-d1	C	f
			RF	BW						
Class150 PN20	50	2	178	216	50	120.7	92.1	4-Φ19	14.3	2
	65	21/2	90	241	80	139.7	104.8	4-Φ19	15.9	2
	80	3	203	283	190	152.4	127	4-Φ19	17.5	2
	100	4	229	305	230	190.5	157.2	8-Φ19	22.3	2
	125	5	356	381	255	215.9	185.7	8-Φ22	22.3	2
	150	6	394	457	280	241.3	215.9	8-Φ22	23.9	2
	200	8	457	521	345	298.5	269.9	8-Φ22	27	2
	250	10	533	559	405	362	323.8	12-Φ26	28.6	2
	300	12	610	635	485	431.8	381	12-Φ26	30.2	2
	350	14	686	762	535	476.3	412.8	12-Φ29	33.4	2
	400	16	762	838	595	539.8	469.9	16-Φ29	35	2
	450	18	864	914	635	577.9	533.4	16-032	38.1	2
	500	20	914	991	700	635	584.2	20-Φ32	41.3	2
	600	24	1067	1143	815	749.3	692.2	20-Φ35	46.1	2
	650	26	1143	1245	870	806.4	749	24-Φ35	66.7	2
	700	28	1245	1346	925	863.6	800	28-Φ35	69.9	2
	750	30	1295	1397	985	914.4	857	28-Φ35	73.1	2
	800	32	1372	1524	1060	977.9	914	28-Φ41	79.4	2
	900	36	1524	1727	1170	1085	1022	32-4	88.9	2

Unit：mm

Pressure	Diameter		Size（mm）						
	DN	NPS	L		D	D1	D2	N-d1	C	f
Class300 PN50	50	2	21	215	165	127	92.1	8-Φ19	20.7	2
	65	21/2	241	241	190	149.2	104.8	8-Φ22	23.9	2
	80	3	282	282	210	68.3	127	8-Φ22	27	2
	100	4	305	305	255	200	157.2	8-Φ22	30.2	2
	125	5	381	381	280	235	185.7	8-Φ22	33.4	2
	150	6	403	457	320	269.9	215.9	12-Φ22	35	2
	200	8	502	521	380	330.2	269.9	12-Φ26	39.7	2
	250	10	668	559	445	387.4	323 a	16-Φ29	46.1	2
	300	12	648	635	520	450.8	381	16-Φ32	49.3	2
	350	14	762	762	585	514.4	412.8	20-Φ32	52.4	2
	400	16	838	838	650	571.5	469.9	20-Φ35	55.6	2
	450	18	914	914	710	628.6	533.4	24-035	58.8	2
	500	20	991	991	775	685.8	584.2	24-Φ35	62	2
	600	24	1143	1143	915	812.8	692.2	24-Φ41	68.3	2
	650	26	1245	1245	970	876.3	749	28-Φ45	77.8	2
	700	28	1346	1346	1035	939.8	800	28-Φ45	84.2	2
	750	30	1392	1397	1090	997	857	28-Φ48	90.5	2
	800	32	1524	1524	1150	1054.1	914	28-Φ51	96.9	2
	900	36	1727	1727	1270	1168.4	1022	32-Φ54	103.2	2

Unit：mm

Pressure	Diameter		Size（mm）							
	DN	NPS	L		D	D1	D2	N-d1	C	f
			RF	BW						
Class600 PN110	50	2	292	292	165	127	92.1	8-Φ19	25.4	7
	65	21/2	330	330	190	149.2	104.8	8-Φ22	28.6	7
	80	3	356	356	210	168.3	127	8-Φ22	31.8	7
	100	4	432	432	275	215.9	157.2	8-Φ26	38.1	7
	125	5	508	508	330	266.7	185.7	8-Φ29	44.5	7
	150	6	559	559	355	292.1	215.9	12-Φ29	47.7	7
	200	8	660	660	420	340	269	12-Φ32	55.6	7
	250	10	787	787	510	431.8	323.8	16-Φ35	63.5	7
	300	2	838	838	560	489	381	20-Φ35	66.7	7
	350	14	889	889	605	527	412.8	20-Φ39	69.9	7
	400	16	991	991	685	603.2	469.9	20-Φ41	76.2	7
	450	8	1092	1092	745	654	533.4	20-Φ45	82.6	7
	500	20	1194	1194	815	723.9	584.2	24-Φ45	88.9	7
	600	24	1397	1397	940	838.2	692.2	24-Φ51	101.6	7
	700	28	1549	1549	1075	965.2	800	28-Φ54	111.2	7
	800	32	1778	1778	1195	1079.5	914	28-Φ60	117.5	7

Unit：mm

Pressure	Diameter		Size（mm）							
	DN	NPS	L		D	D1	D2	N-d1	C	f
			RF	BW						
Class900 PN150	50	2	368	368	215	165.1	92.1	8-Φ26	38.1	7
	65	21/2	419	419	245	190.5	04.8	8-Φ29	41.3	7
	80	3	381	381	240	190.5	127	8-Φ26	38.1	7
	100	4	457	457	290	235	157.2	8-Φ32	44.5	7
	125	5	559	559	350	279.4	185.7	8-Φ35	50.8	7
	150	6	610	610	380	317.5	215.9	12-Φ32	55.6	7
	200	8	737	737	470	393.7	269.9	12-Φ39	63.5	7
	250	10	838	838	545	469.9	323.8	16-Φ39	69.9	7
	300	12	965	965	610	533.4	381	20-Φ39	79.4	7
	350	14	1029	1029	640	558.8	412.8	20-Φ41	85.8	7
	400	16	1130	1130	705	616	469.9	20-Φ45	88.9	7
	450	18	1219	1219	785	685.8	533.4	20-Φ51	101.6	7
	500	20	1321	1321	855	749.3	584.2	20-Φ54	108	7
	600	24	15.do	1549	1040	901.7	692.2	20-Φ67	139.7	7
Class1500 PN260	25	1	254	254	150	101.6	50.8	4-Φ26	28.6	7
	40	11/2	305	305	180	123.8	73	4-Φ29	31.8	7
	50	2	368	368	215	165.1	92.1	8-Φ26	38.1	7
	65	21/2	419	419	245	190.5	104.8	8-20	41.3	7
	80	3	470	470	265	203.2	127	8-Φ32	47.7	7
	100	4	546	546	310	241.3	157.2	8-Φ35	54	7
	125	5	673	673	375	292.1	185.7	8-Φ41	73.1	7
	150	6	705	705	395	317.5	215.9	12-Φ39	82.6	7
	200	8	832	832	485	393.7	269.9	12-Φ45	92.1	7
	250	10	991	991	585	482.6	323.8	2-Φ51	108	7
	300	12	1130	1130	675	571.5	381	16-Φ54	123.9	7
	350	14	1257	1257	750	635	412.8	16-Φ60	133.4	7
	400	16	1384	1384	825	704.8	469.9	16-Φ67	146.1	7
	450	18	1537	1537	915	774.8	533.4	16-Φ73	162	7
	500	20	1664	1664	985	831.8	584.2	16-Φ79	177.8	7

The structure and length of PN16 and PN25 valves are the same as Class 150;
The structure and length of PN40 and PN63 valves are the same as Class 300;
The structure and length of PN100 valves are the same as Class 600;
The structure and length of PN160 valves are the same as Class 900;
The dimensions of ball valves with and without springs are the same.
If you need C-type wear-resistant ball valves with other structures or lengths, please contact us. We can design and manufacture special valves according to your requirements.

Numbering Method C-type Wear-resistant Ball Valve

1 2 3 4 5 6 – 7 8 – 9

Unit No.	Meaning	Description of Unit Number	
1	Dedicated Functions	D-Low Temperature；B-Insulation；T-Regulating；N-With Anti-sulfur Requirements(NACE)	
2	Valve Type	OC-C-type Wear-resistant Ball Valve	
3	Auxiliary Classification	S-Reduced Diameter	
4	Transmission	Handle-ellipsis；3-Worm gear；6-Pneumatic；9-Electric ；8-Gas-hydraulic linkage；2-Electro-hydraulic linkage	
5	Connection Type	1-Female thread connection；2-Male thread connection；4-RF Flange；6-Butt welding connection；7-Wafer connection	
6	Sealing Surface Material	F-PTFE、RPTFE;PK-PEEK;Y-Nickel-based Alloy、Tungsten Carbide、Chromium Carbide	
7	Pressure Level	Nominal pressure (European standard)	10-PN1.0MPa; 16-PN1.6MPa; 40-PN4.0MPa; 63-PN6.3MPa; 100-PN10.0FMPa; 160-PN16.0MPa; 250-PN25.0MPa
		Nominal pressure (American standard)	20-PN2.0MPa; 50-PN5.0MPa; 110-PN11.0MPa; 150-PN15.0MPa; 260-PN26.0MPa; 420-PN42.0MPa;
		Pound Class	150LB-Class 150; 300LB-Class 300; 400LB-Class 400; 600LB-Class 600; 900LB-Class 900; 1500LB-Class 1500; 2500LB-Class 2500
		JIS K	10K-JIS 10K; 20K-JIS 20K; 30K-JIS 30K; 40K-JIS 40K
8	Valve Body Material	C-WCB,A105; C5-C5; C6-WC6,F11; C9-WC9,F22; CL-LCB,LF2 ;LC-LCC; L2-LC2;L3-LC3; P8-CF8,F304; P3-CF3,F304L; R8-CF8M,F316; R3-CF3M,F316L; Ti-T&Titanium Alloy； Q-Ductile Iron； F5-Duplex Steel	
9	Internal Material	If the customer does not require it, this code is omitted (carbon steel valve body is equipped with P8 internal parts as standard, and stainless steel valve body is equipped with internal parts consistent with the valve body material)) P8-CF8,F304; P3-CF3,F304L; R8-CF8M,F316 ;R3-CF3M,F316L; F5-Duplex Steel；	

1、If customers have other needs, please contact us.
2、It is recommended that you provide the corresponding data sheet when placing an order so that we can manufacture products that fully meet your requirements and serve you better.
3、Due to the continuous development of technology, we reserve the right to change the content of the C-type wear-resistant ball valve sample without prior notice to customers.

Quality Service Commitment

1、The products we provide are designed and manufactured according to national standards or corresponding product standards. Each valve is strictly inspected according to the inspection standards before leaving the factory.
2、The products we provide are manufactured, inspected, packaged and shipped strictly in accordance with the relevant provisions of the contract terms, and we ensure that the products are delivered to the designated location on time.
3、Our product warranty period is twelve months. During the warranty period, if the product does not work properly or is damaged due to quality problems, we will be responsible for free repair or replacement.
4、If the customer needs it, we can arrange technical personnel to go to the site to guide installation and commissioning, and provide pre-sales and after-sales technical consultation. The fees will be separately stated by both parties. If the user has any questions, please call us and we will give a reply within 24 hours. If necessary, we will arrive at the site within 48 hours.
5、If users encounter new problems during the using our products, please feel free to feedback so that we can properly handle and improve it to serve you better.

Application Scene












Application Scene