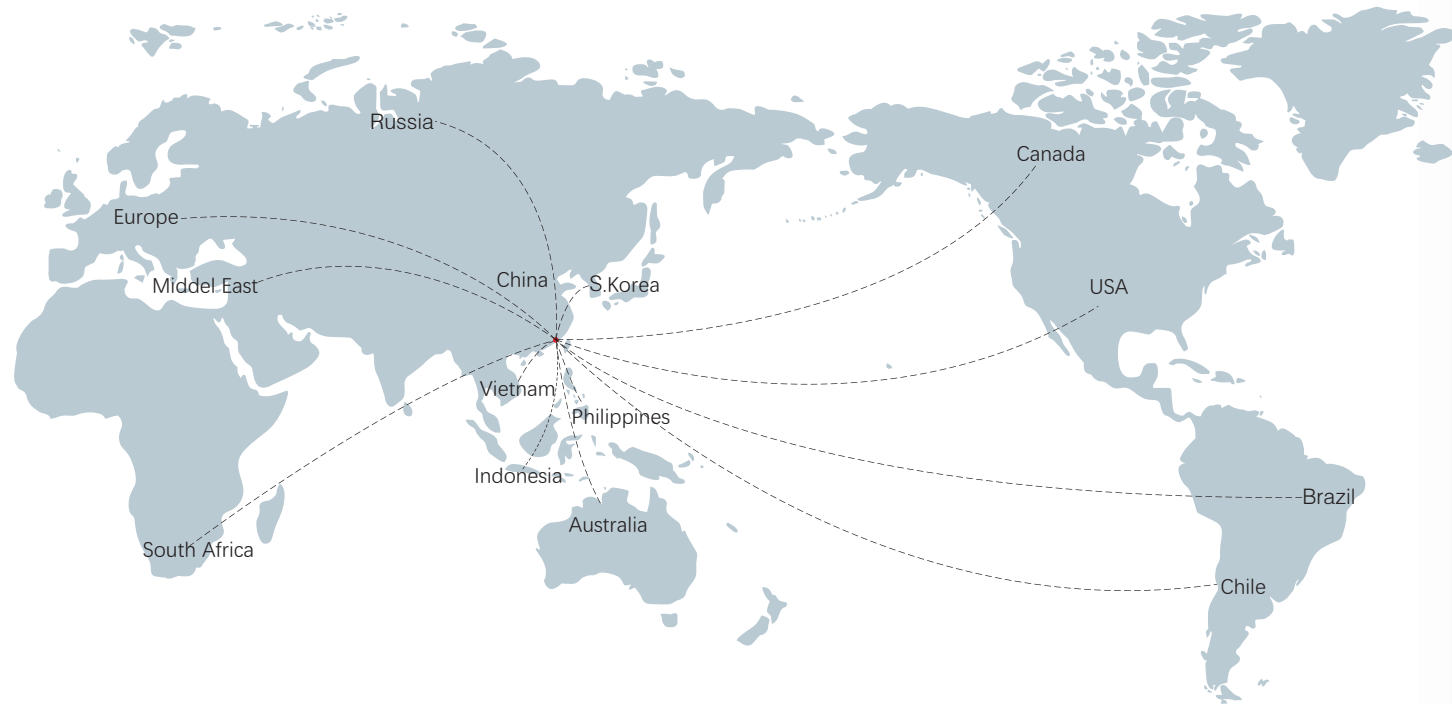


Sales Network



FOYO FOYO VALVE CO.,LIMITED

ADD: No.53, Zhen Nan 5th Road, Tong An Disctric, Xiamen, Fujian, China, 361100
TEL: +86-592-7015182/+86-592-7056132
FAX: +86-592-7056137
E-MAIL: sales@foyovalve.com
WEB: www.foyovalve.com

FOYO | CERAMIC VALVES

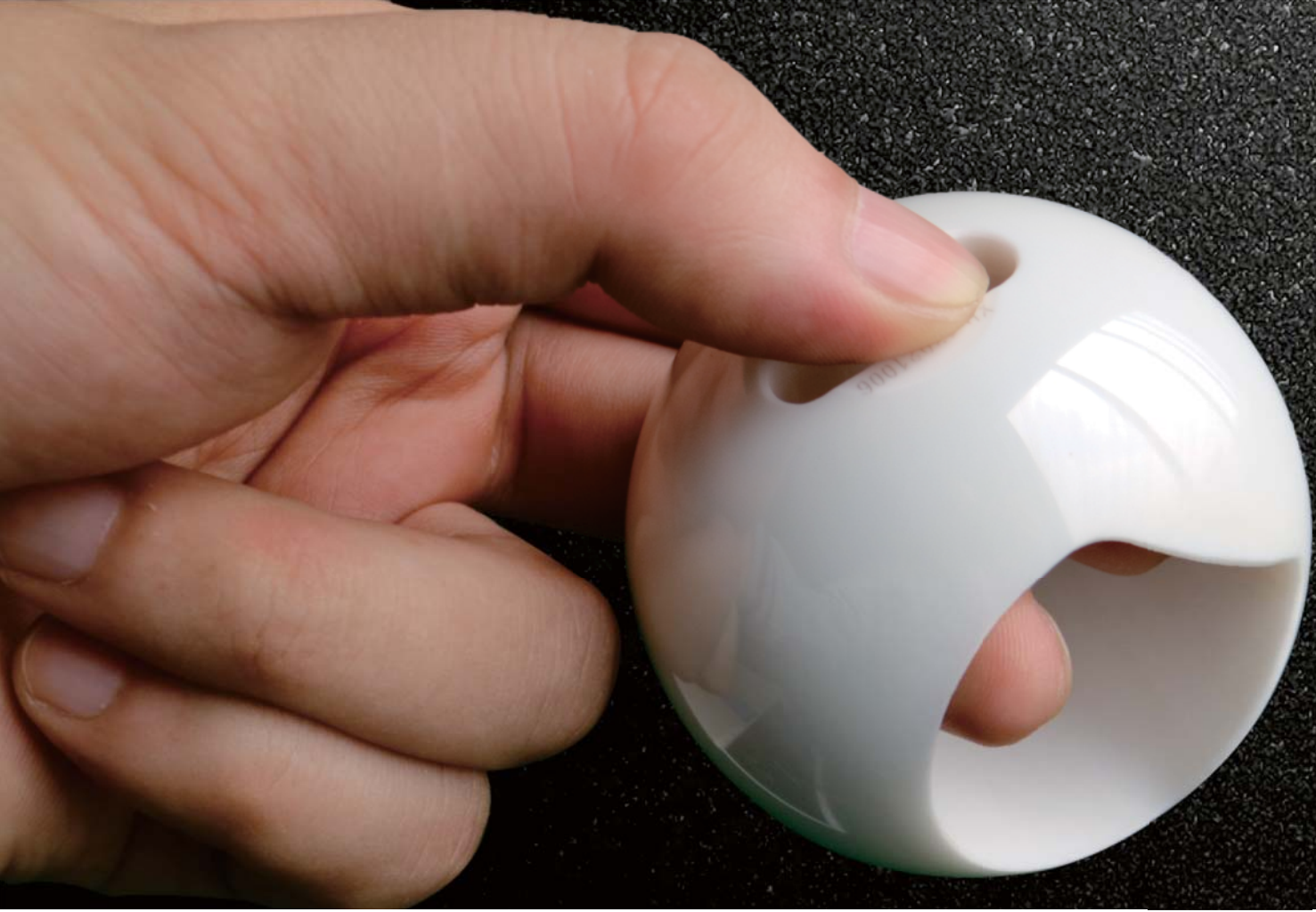
<http://www.foyovalve.com>

Provide Professional Solutions
for Severe Applications

GENERAL CATALOGUE

Ceramic Ball Valve \ Ceramic Butterfly Valve \ Ceramic Segment Ball Valve \
Ceramic Double Disc Valve \ Ceramic Knife Gate Valve \
Ceramic G.G.C Valve \ Ceramic Fittings \ Ceramic Component

FOYO VALVE CO.,LIMITED



FOYO | CERAMIC VALVES

FOYO has professional R&D technical team, who has rich experience of design, production and application of ceramic valves. FOYO production range includes fully lined ceramic ball valve, V port ceramic control ball valve, ceramic butterfly valve, ceramic segment ball valve, ceramic double disc gate valve, ceramic knife gate valve, ceramic wedge gate valve, ceramic globe valve and ceramic check valve, ceramic pipe fittings and so on. Meanwhile FOYO can offer professional anti-abrasive, anti-corrosive and high-temperature fluid control solutions.

FOYO ceramic valves and pipe fittings have been exported to North America, South America, Europe, Middle East, Southeast Asia, etc. Product application field covers coal-fired power plant, steel mill, metallurgy, mining, coal-chemical industry, polysilicon, papler&pulp, lithium battery, petrochemical and so on.

Quality is the life of enterprise! FOYO always put quality at the first place and adhere to technical innovation. Welcome all new and old customers to continue to cooperate with us for win-win purpose.



FCBV Ceramic Ball Valves

For Extreme Corrosive & Abrasive Applications



FCBV Ceramic Ball Valves

FCBV Ceramic ball valves

FOYO FCBV series forged ceramic ball valve uses ceramics ball and lining. When applying to strong acid, strong alkali, slag, powder, grain, slurry, and all kinds of high-temperature, high corrosive and abrasive working condition, our ceramic ball valves have stable working performance and longer service life than metal seated ball valves no matter as on-off valves or flow control valves.

FCBV series forged ceramic ball valve is three-pcs body design with flange connection. Material of body could be carbon steel or stainless steel according to working conditions or per customers' requirements. All wet parts include ball, seat and lining are all made of structure ceramics so that medium will not be in touch with body directly and valve body will not be corroded or abraded.

Pressure Range

PN10,PN16,PN25,PN40,PN63,PN100;
ANSI CL150, CL300, CL600; JIS 10K, 20K

Size Range

DN15~DN300/ANSI 1/2"~12"

Design Standard

Flange Dim. EN1092-1, ASME B16.5, JIS B2220
F-to-F Dim. ASME B16.10, EN558-1
Inspection&Test API 598

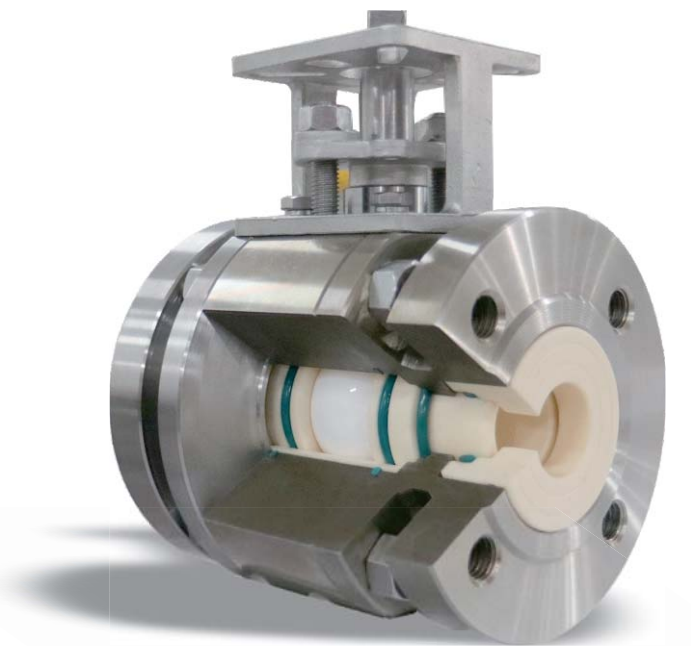
Features

Three pieces design of FCBV series forged ceramic ball valves could make sure of flexible assembling dimensions. Flange dimensions and face to face of valves could be designed per customers' special requirements, so that ceramic ball valve could be assembled on the pipeline without any modification of current pipe and valve assembling cost.

All trims of valves (including ball, seats, bushing, lining and stem, etc) have been precisely designed and machined to make sure that body of valve will not be in touch with medium directly and body of valve will not be corroded or abraded by medium.

Sealing faces of ceramic ball and ceramic seats have been polished by advanced technique and machines. After precise grinding, all leakage level of FCBV series forged ceramic ball valves could reach ANSI/FCI 70-2 Class VI (zero leakage).

Actuation of FCBV series valves includes lever, bare stem, worm gear, pneumatic actuator and electric actuator, etc. Mounting pad is designed according to ISO 5211.



Corrosion Resistance

>99%Al₂O₃, ZrO₂, Si₃N₄, SiC are made by Cold isostatic pressing molding and high sintering. All these ceramics will not interact with almost all organic solvent and inorganic chemical medium (except hydrofluoric acid), so ceramics will not contaminate medium. Solid Tungsten carbide(STC) has good mechanical performance and thermal-shock performance, which is suitable for high temperature, high pressure and high abrasive working conditions.

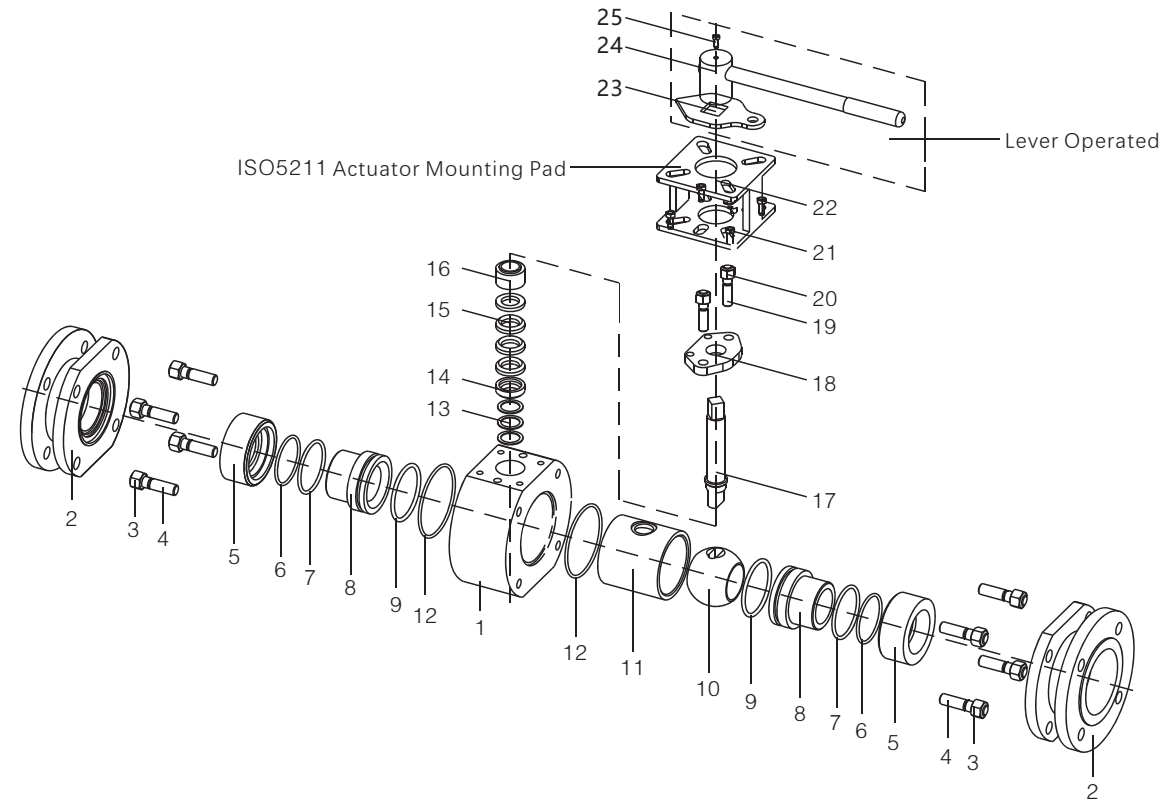
Structure ceramics has wonderful chemical stability, which makes sure that physical property and chemical property of ceramic trims will not change after long times of usage in all kinds of strong acid and strong alkali.

FOYO FCBV series forged ceramic ball valves have showed great performance in various severe highly corrosive working conditions of steel mill, metallurgy, petro-chemical, mining, coal-fired power plant, paper&pulp, polysilicon, etc.

FOYO's experienced engineers will select the most suitable material and solution for different working conditions.



■ Exploded View



■ Parts List

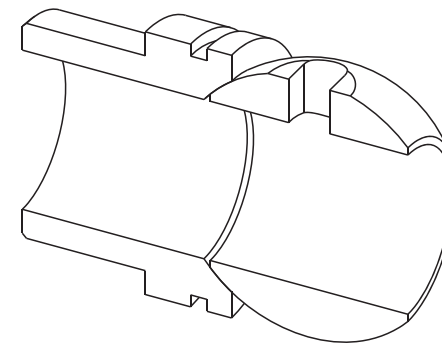
No.	Name	Material
1	Body	A105N, F304,F316,F316L
2	Adapter	A105N, F304,F316,F316L
3	Nut	A194-2H/8
4	Bolt	A193-B7/B8
5	Adapter Lining	Ceramics
6	O-Ring	VITON/MMQ
7	O-Ring	VITON/MMQ
8	Seat	Ceramics
9	O-Ring	VITON/MMQ
10	Ball	Ceramics
11	Bushing	Ceramics
12	O-Ring	VITON/MMQ
13	Gasket	RPTFE

No.	Name	Material
14	Sleeve	F304/F316L/Hastelloy C276
15	Packing	PTFE/Graphite
16	Gland	F304/F316/F316L
17	Stem	17-4PH/F304/F316L/Hastelloy C276
18	Gland Flange	ASTM A351 CF8
19	Bolt	ASTM A193-B7/B8
20	Nut	ASTM A194-2H/8
21	Bolt	SS304
22	Yoke	ASTM A351 CF8
23	Stopper	SS304
24	Lever	AISI 1045/F304
25	Bolt	SS304

Note: Material of parts may be variable against different applications, Please contact FOYO for professional proposal.

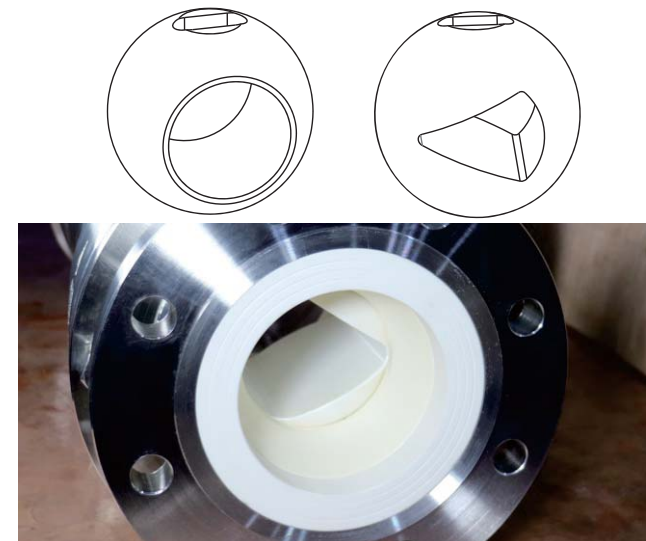
■ Ceramics-to-Ceramics Spherical Sealing

The surface roughness of Spherical seal between ceramic ball and seat is Ra0.1~0.2. Meanwhile High hardness and self-lubricating performance of structure ceramics will make sure that seat sealing of valve could reach zero leakage (Class VI). Open and close torque of ceramic ball valves is much smaller than metal sealing ball valve and soft sealing ball valve with same size and pressure, which avoid cracked ball cause by too high torque.



■ Round and V-Port Ball

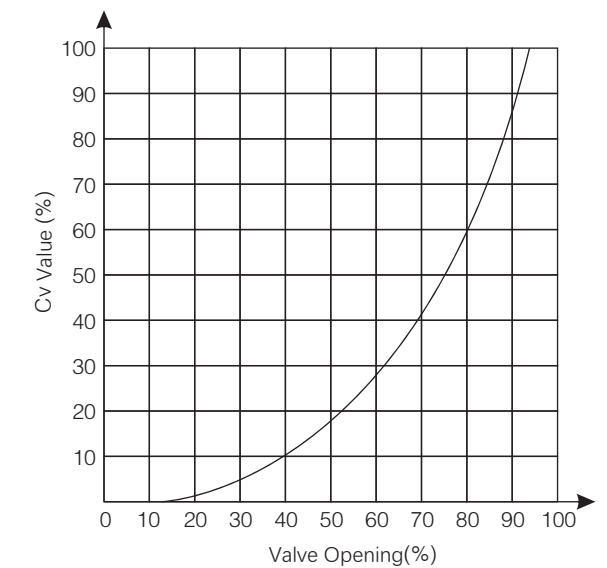
FOYO FCBV series forged ceramic ball includes Round-port and V port. Generally, Round port ball valves are used as shut-off valve; V port ball valves are used as flow control valve. V port ball has equal percentage flow characteristic. If precise and stable control performance is required in any application, equal percent V-port ceramic ball valve is the best choice. Meanwhile, V port ball could cut off solids, fibers in the medium and clean sealing face by itself.



■ Cv Values

SIZE	Cv max.	
	O-Port	V-Port
1/2"	15	8
3/4"	34	18
1"	45	18
1 1/4"	63	35
1 1/2"	114	87
2"	227	122
2 1/2"	316	175
3"	482	240
4"	810	406
5"	1140	485
6"	1900	610
8"	2350	—
10"	3870	—
12"	5200	—

■ Cv Curve for V-port Ceramic Ball Valve



Physical Parameter of Ceramics

Material Item	Unit	>99% Al ₂ O ₃	ZrO ₂	Si ₃ N ₄	SSiC	STC
Bulk Density	g/cm ³	3.9	6.0	3.3	3.2	14
Flexural Strength	Mpa	310	1000	1020	540	3100
Elastic Modulus	Gpa	360	200	300	430	680
Hardness	HRA	88	86	90	92	86
Max. Temp.	°C	1750	1500	1000	1650	1000
Linear Expansion Coefficient	10 ⁻⁶ /°C	7.2	10.5	2.8	3.7	9.6

Corrosion Resistance of Ceramics

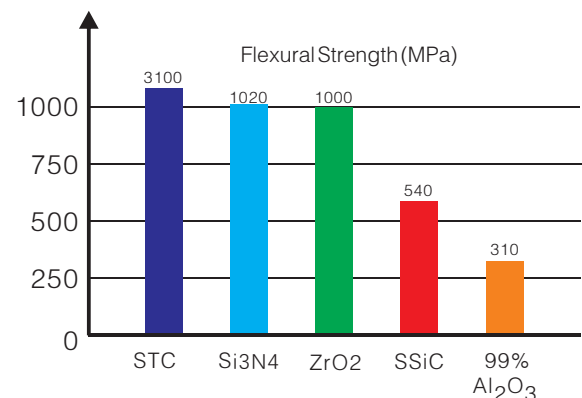
Comparing with other mostly metal and non-metal materials, 99%Al₂O₃, ZrO₂, Si₃N₄ and SSiC used for FOYO ceramic ball valves have better anti-corrosive property when applying for mostly majority strong acid and alkalis. Experienced FOYO engineers would love to choose mostly suitable ceramic material based on your specific working conditions.

Corrosion Resistance Comparison						
Medium	Temp.	Al ₂ O ₃ >99%	ZrO ₂	Si ₃ N ₄	SSiC	
20%HCL	60°C	A	A	B	A	
20%HCL	90°C	A	A	C	A	
60%H ₂ SO ₄	60°C	A	A	A	A	
60%H ₂ SO ₄	90°C	A	A	B	A	
10%HF	60°C	B	C	C	A	
50%HF	90°C	C	X	X	A	
60%HNO ₃	60°C	A	A	C	A	
60%HNO ₃	90°C	B	A	C	A	
30%NaOH	60°C	A	A	B	A	
30%NaOH	90°C	B	B	C	A	

A-Negligible or no corrosion, recommended for valve use
 B-Little or Slight corrosion, fitness for valve use
 C-Significant corrosion, not recommended for valve use
 X-Violent corrosion, not allowed for valve use

Mechanical Properties

Mechanical properties of ceramics are much different from metal material. High Pressure resistance of ceramics is much better than metal material, however tensile and flexural strength is not so good as metal material. Because of sensitive of mechanical shock, during assembling and usage, it will be best to avoid mechanical shock. In terms of Mechanical properties, Solid tungsten carbide (STC) are much better than other ceramics materials; Si₃N₄ and ZrO₂ are worse than STC, while 99%Al₂O₃ and silicon carbide (SSiC) are worse than Si₃N₄ and ZrO₂. For ceramic ball valves, because ball of valve will bear torque, usually SSiC, Si₃N₄ and ZrO₂ will be used for ball and

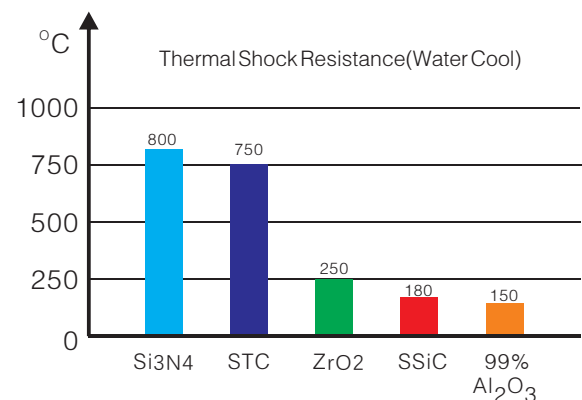


High Temp. & Thermal Shock Resistance

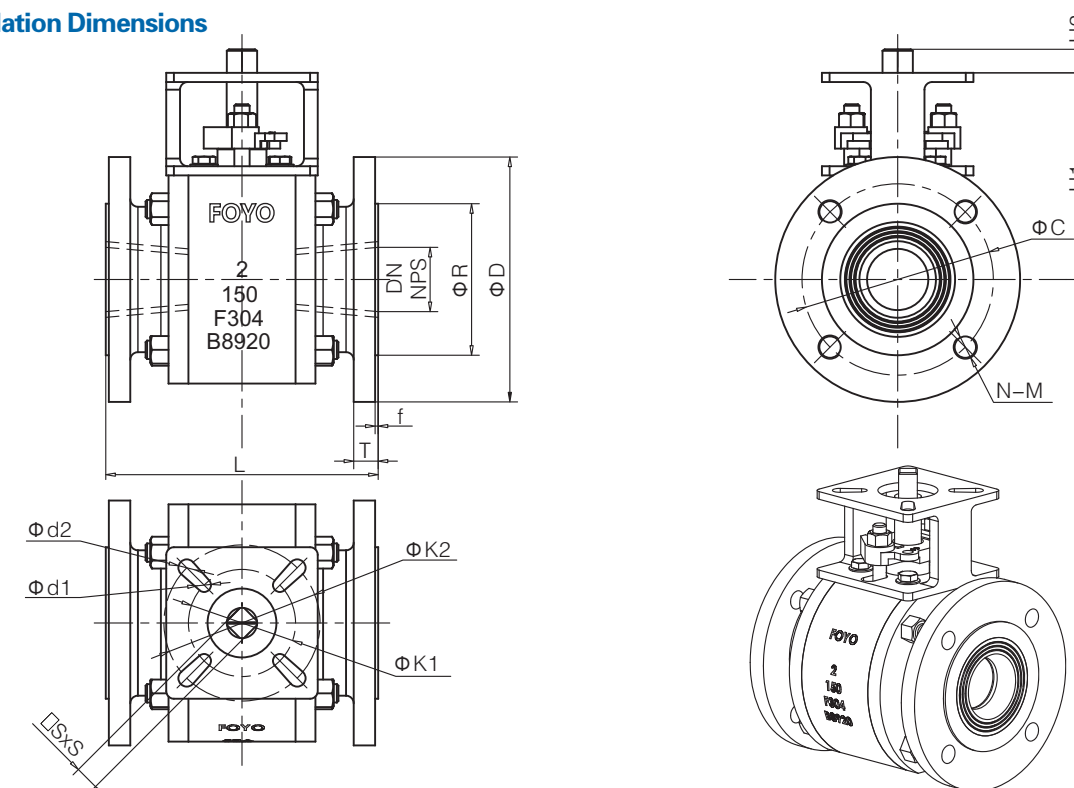
High pure alumina and stabilized zirconia components could maintain their shape, structure as well as other physical/chemical characteristics unchanged when applying temperature over 1000 °C. So structure ceramics are also widely used for parts which need to work under high temperature.

Different ceramics have different thermal shock resistance. The shape of ceramics will also affect thermal shock resistance of ceramics. In general, ceramics with simple shape like ceramic pipe and ceramic plate has better thermal shock resistance comparing with ceramics with complicated structure.

Si₃N₄ has better high-temp. & thermal shock resistance, so it is widely



Installation Dimensions



SIZE		(EN/DIN 1092-1, PN16, RF)							(ASME B16.5 CL 150, RF)						
		Installation Dimension							Installation Dimension						
A	NPS	L	ΦD	ΦC	N-M	ΦR	T	f	L	ΦD	ΦC	N-M	ΦR	T	f
15	1/2"	108	95	65	4-M12	45	16	2	108	90	60.3	4-M12	34.9	11.6	2
20	3/4"	117	105	75	4-M12	58	18	2	117	100	69.9	4-M12	42.9	13.2	2
25	1"	127	115	85	4-M12	68	18	2	127	110	79.4	4-M12	50.8	14.7	2
32	1 1/4"	140	140	100	4-M16	78	18	2	140	115	88.9	4-M12	63.5	16.3	2
40	1 1/2"	165	150	110	4-M16	88	18	3	165	125	98.4	4-M12	73.0	17.9	2
50	2"	178	165	125	4-M16	102	18	3	178	150	120.7	4-M16	92.1	19.5	2
65	2 1/2"	190	185	145	8-M16	122	20	3	190	180	139.7	4-M16	104.8	22.7	2
80	3"	203	200	160	8-M16	138	22	3	203	190	152.4	4-M16	127.0	24.3	2
100	4"	229	220	180	8-M16	158	24	3	229	230	190.5	8-M16	157.2	24.3	2
125	5"	356	250	210	8-M16	188	24	3	356	255	215.9	8-M20	185.7	24.3	2
150	6"	394	285	240	8-M20	212	26	3	394	280	241.3	8-M20	215.9	25.9	2
200	8"	457	340	295	12-M20	268	29	3	457	345	298.5	8-M20	269.9	29.0	2
250	10"	533	405	355	12-M24	320	30	3	533	405	362.0	12-M24	323.8	30.6	2
300	12"	610	460	410	12-M24	378	32	3	610	485	431.8	12-M24	381.0	32.2	2

Actuation Mounting Dimension

SIZE	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100	DN125	DN150	DN200	DN250	DN300
	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"
ISO5211	F05/07	F05/07	F05/07	F05/07	F05/07	F07/10	F07/10	F07/10	F10/12	F10/12	F10/12	F14	F14	F14
ΦK1	50	50	50	50	50	70	70	70	102	102	102	140	140	140
n-Φd1	4- 8	4- 8	4- 8	4- 8	4- 8	4- 10	4- 10	4- 10	4- 12	4- 12	4- 12	4- 18	4- 18	4- 18
ΦK2	70	70	70	70	70	102	102	102	125	125	125	—	—	—
n-Φd1	4- 10	4- 10	4- 10	4- 10	4- 10	4- 12	4- 12	4- 12	4- 14	4- 14	4- 14	—	—	—
45° □SxS	9X9	9X9	9X9	11X11	11X11	14X14	19X19	19X19	22X22	27X27	27X27	36X36	36X36	36X36
H1	89.5	94	94	103	108	135	146	160	196	213	235	270	330	350
H2	12	12	12	14	15	15	18	20	27	27	27	40	40	50
Torque N.M	19	25	25	30	50	70	110	160	250	300	400	750	1200	1200

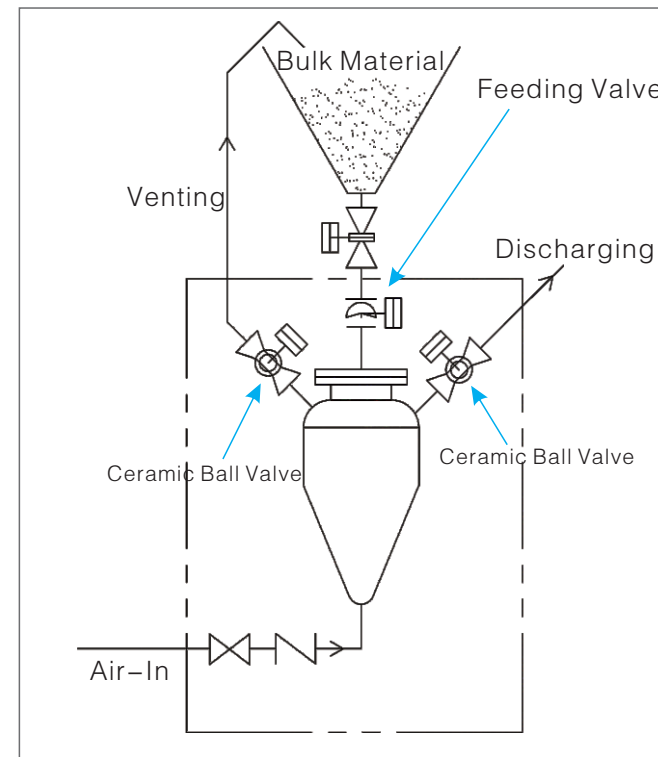
Note: The data above is FoYo's Standard dimension, customized dimension is available on request.

■ Pneumatic Conveying System

As the most popular transportation method of powder material all over the world, comparing with other conveying method, this method is more efficient and cleaner. However, when powder materials flow very fast, valve and pipe will be abraded by powder material, which will cause leakage finally. Frequently replacement and maintenance will hugely reduce efficiency of powder pneumatic conveying system.

After applying structure ceramics with high hardness and good mechanical properties to pipes and valves, abrasion problem of valves have been essentially improved. Flow channel of FOYO FCBV ceramic ball valves have been lined with ceramics and ball are made of ceramics, which ensure wear and abrasion are void significantly. Ceramic ball valves have been proved to have great performance in fly ash handling system of power plant, silicone conveying system of polysilicon field and coal injection system of mill steel, etc. Generally, service life of FOYO FCBV ceramic ball valves used in powder pneumatic conveying is about 3 times longer than metal seated

■ Diagram of Typical Pneumatic Conveying



Note: This is a typical pneumatic conveying unit, and other similar systems are also applicable.

Foyo fully lined ceramic ball valves are widely used in all kinds of powder and solid materials, including:

- >Powder
- >Pellets
- >Fiber
- >Resins
- >Flakes
- >Ash



■ Main Industries Served:

- >Silicone Powder
- >Dry Coal Ash
- >Cement
- >Magnesium Powder
- >Metallurgical Dust
- >Kaolin
- >Alumina Powder
- >Lime Stone Powder
- >Pulverized Coal Injection
- >Quartz Sand
- >Petroleum Solid Catalyst

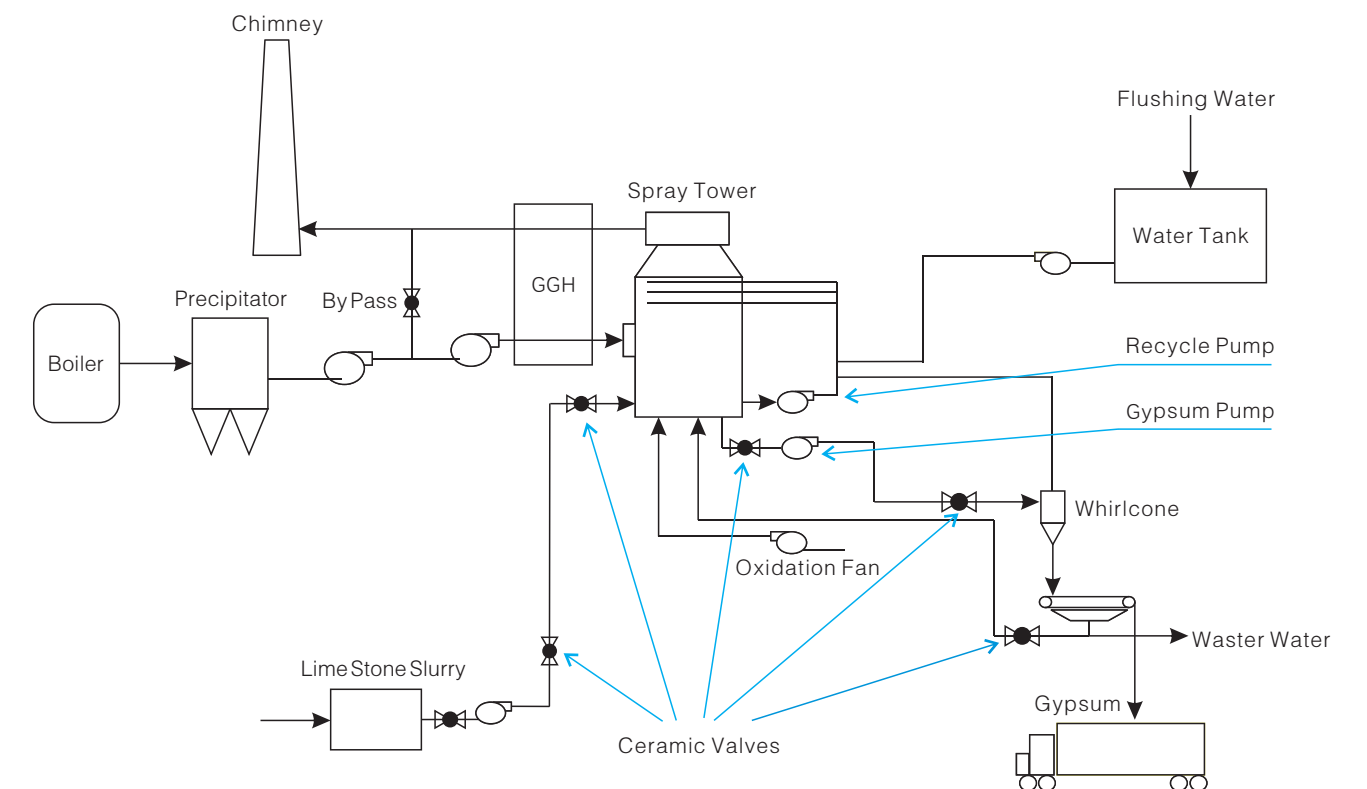


■ Flue Gas Desulfurization, FGD

FGD takes use of lime stone slurry to remove Sox, Nox from flu gases and produces gypsum slurry as a by-product. The biggest technological challenges of FGD systems are the highly corrosion and abrasion of lime stone slurry that cause leakage of pipes and valves. Frequently replacement of valves and maintenance will reduce efficiency and increase cost.

FOYO FCBV ceramic ball valve is fully lined with ceramics, so that medium will not be in touch with metal body directly to avoid corrosion/abrasion of body. By using FOYO FCBV ceramic ball valve, stability and service life of valves/pipes can be improved significantly, so efficiency of FGD system could be increased while cost of FGD system could be reduced.

FOYO offers O port and V port as options. V port ceramic ball valves have better equal percentage flow regulation, which could be used as control valves.



CEBV

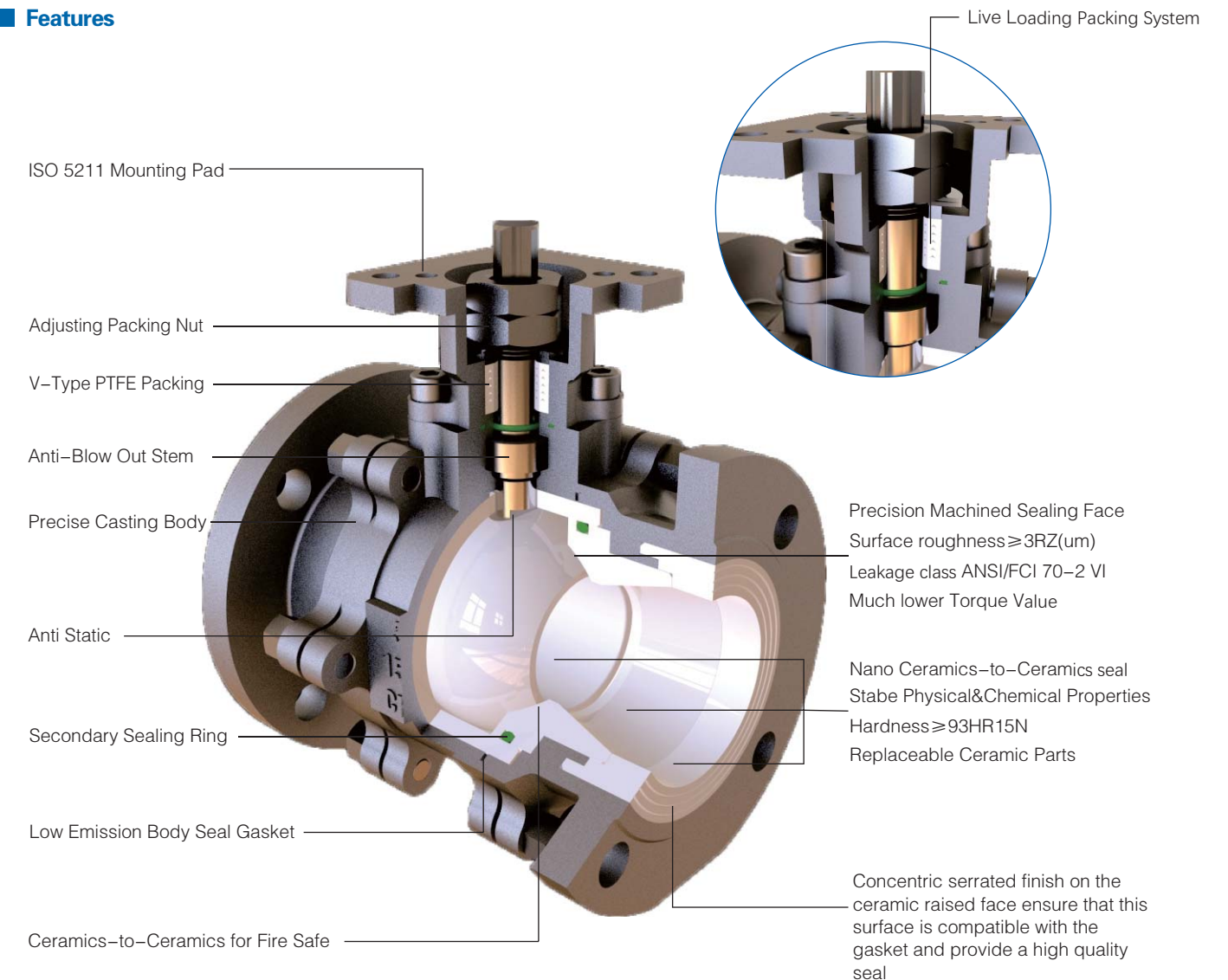
Casting Body Ceramic Ball Valves

For Extreme Corrosive & Abrasive Applications



Casting Body Ceramic Ball Valves

■ Features



Pressure Range

Ceramics sealed and Lined ball valve
Flanged Ends
Lever, Pneumatic, Electric are all optional
Floating ball design

Pressure Ratings

PN10, PN16; ANSI CL 150

Size Range

DN15~100 / 1/2"~4"

Temperature Range

-29 °C ~ +200 °C

Design Standards

Valve Design	ASME B16.34
Face-to-Face	ASME B16.10
Flange Ends	ASME B16.5
Valve Testing	API 598

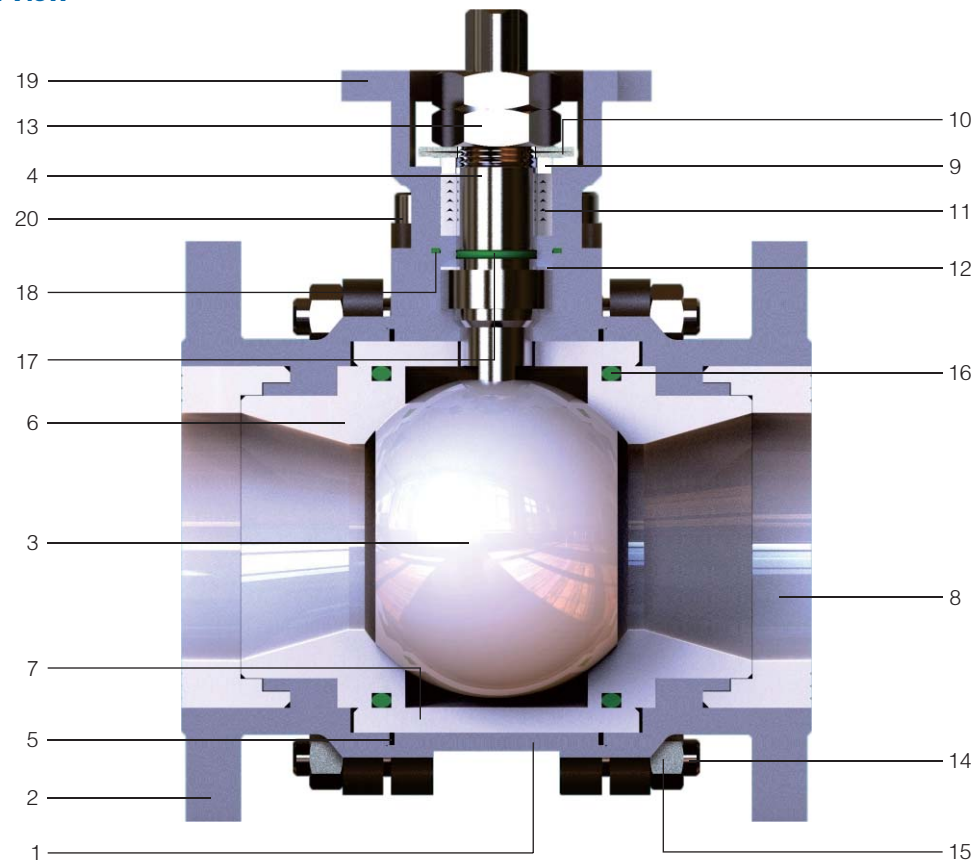
Valve Allowable Leakage

ANSI/FCI 70-2 Table 1 Class VI

Applications :

>Chloride Crystals containing Iron	>Fly Ash
>Chloride	>Lime Stone Slurry
>Hydroxygen Compounds	>Mining Slurry
>Gypsum Slurry	>Salt Slurry
>Silicon Powder	>Potassium Carbonate
>Pulp Slurry	>Sulfite Crystals

Section View

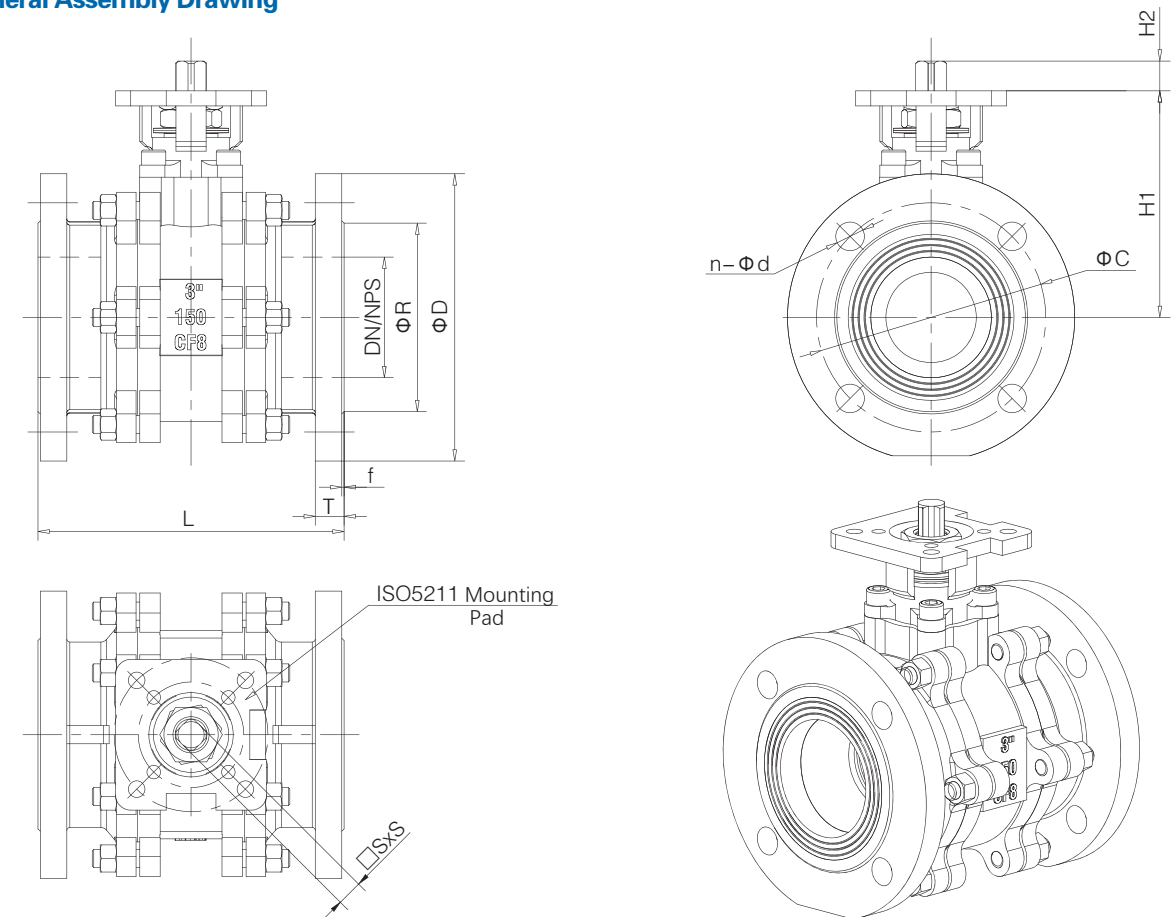


Parts List

Item	Part Name	Material
1	Body	A216 WCB/A351 CF8
2	Body End	A216 WCB/A351 CF8
3	Ball	Ceramics(ZRO2)
4	Stem	F304/17-4PH/HC 276
5	Gasket-Body	PTFE
6	Seat Ring	Ceramics(99% AL2O3)
7	Bushing	Ceramics(99% AL2O3)
8	Clamp Ring	Ceramics(99% AL2O3)
9	Gland	ASTM A276 304
10	Belleville Washer	SS304
11	Gland Packing	PTFE
12	Stem Seal	PTFE
13	Gland Nut	SS304
14	Body Bolt	ASTM A193 B8
15	Body Nut	ASTM A194 8
16	O Ring-Seat	VITON
17	O Ring-Stem	VITON
18	Gasket Bonnet	VITON
19	Bonnet	A216 WCB/A351 CF8
20	Bolt-Bonnet	ASTM A193 B8

Note: Please contact FOYO for professional proposal., Material of parts may be variable against different applications,

General Assembly Drawing



SIZE		L	ISO5211 Fig.	□SxS	H1	H2	ASME B16.5 CL150 RF					EN1092-1 PN16 RF						
DN	NPS						ΦD	ΦC	ΦR	n-Φd	T	f	ΦD	ΦC	ΦR	n-Φd	T	f
25	1"	127	F04-F05	9x9	64	12	110	79.4	50.8	4-16	14	2	115	85	68	4-16	18	2
40	1-1/2"	165	F05-F07	11x11	87	14	125	98.4	73.0	4-16	16	2	150	110	88	4-16	18	2
50	2"	178	F05-F07	14x14	91	14	150	120.7	92.1	4-19	18	2	165	125	102	4-19	18	2
65	2-1/2"	190	F07-F10	19x19	140	20	180	139.7	104.8	4-19	18	2	185	145	122	8-19	20	2
80	3"	203	F07-F10	19x19	153	20	190	152.4	127.0	4-19	20	2	200	160	138	8-19	20	2
100	4"	229	F10-F12	22x22	175	24	230	190.5	157.2	8-19	24	2	220	180	158	8-19	24	2



CBUT Ceramic Butterfly Valves

For Bulk Material Conveying system and Slurry application



Ceramic Butterfly Valves

■ Ceramic Butterfly Valves

Eccentric butterfly valve has many advantages like simple structure, light weight, short structure and easy assembly. However, sealing face of metal sealing butterfly valve is easy to be abraded by gas-solid mixture and slurry containing high-hardness solids, which will cause leakage easily. Combining structure advantage of metal sealing butterfly valve with good performance of structure ceramics, we design CBUT series ceramic sealing butterfly valve.

CBUT series ceramic sealing butterfly valve is wafer connected. Body material could be carbon steel, stainless steel according to working conditions. If customers have special requirement, forged body is optional. Seal ring of disc and seats is made of ceramics, so that sealing face will not be eroded and abraded by medium and make sure of sealing performance during long-time usage.

■ Pressure Ratings

PN10,PN16,ANSI CL150;

■ Size Range

DN50~DN300/ANSI 2"~12"

■ Design Standards

Flange Ends EN1092-1, ASME B16.5

Face-To-Face ASME B16.10

Valve Testing API 598

■ Features

FOYO CBUT series ceramic sealing butterfly valve is eccentric design. When valve is open, sealing ring of disc and seat departs, which will reduce open torque effectively. When valve is closed, sealing ring of disc and seat will make a shear effect to cut off solid and fiber in the medium to avoid foreign things stuck valve or cause leakage.

Sealing ring of disc and seat are made of high performance structure ceramics. ZrO₂,99%Al₂O₃, solid tungsten carbide,Si₃N₄ are available for different working conditions.

Sealing ring of disc and seat sealing is sphere sealing. It makes use of advanced technology and machining equipments. After precise grinding, sealing level could reach ANSI/FCI 70-2 V.

Actuated method includes bare stem, gear, pneumatic actuator, electric actuator and so on. Bracket connections are designed according to ISO 5211.



■ Applications

>99%Al₂O₃, ZrO₂ and Si₃N₄ are made by Cold isostatic pressing molding and high sintering. All these ceramics will not interact with almost all organic solvent and inorganic chemical medium (except hydrofluoric acid), so ceramics will not contaminate medium. Solid Tungsten carbide(STC) has good mechanical performance and thermal-shock performance, which is suitable for high temperature, high pressure and high abrasive working conditions.

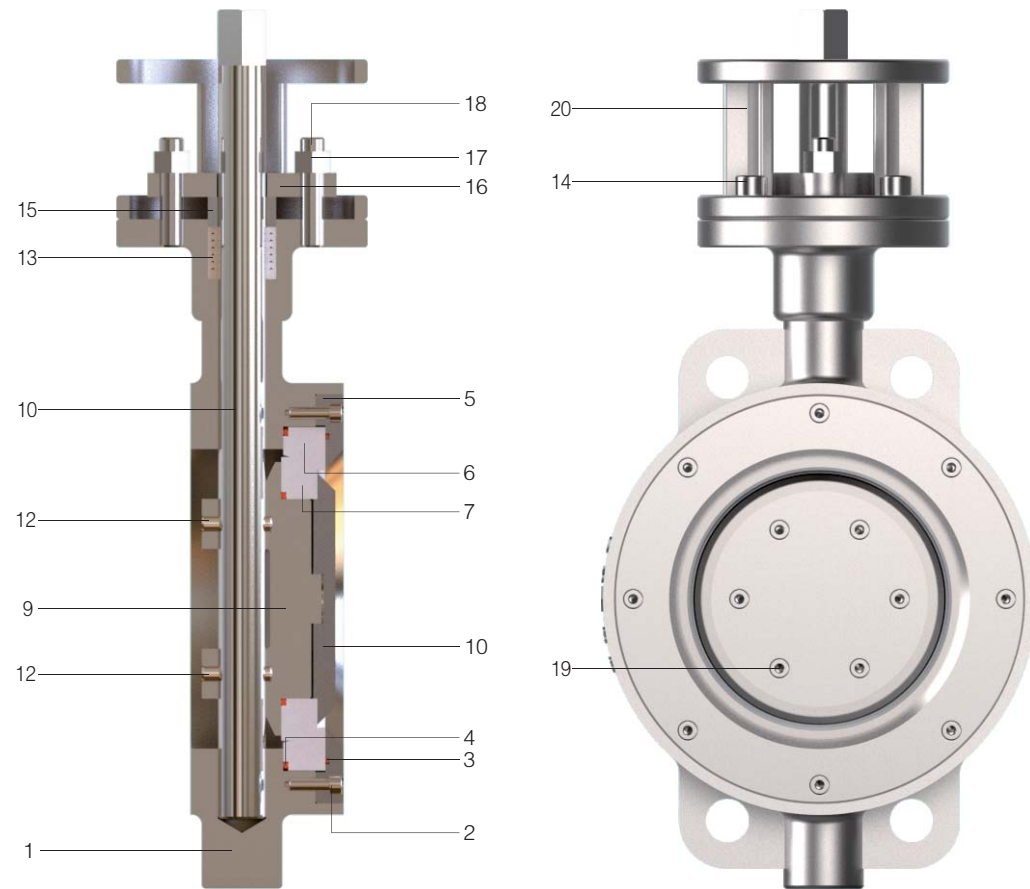
Structure ceramics has wonderful chemical stability, which makes sure that ceramic sealing face of butterfly valve will keep good sealing after long times of usage in all kinds of strong acid and strong alkali mediums.

Currently, FOYO CBUT series ceramic butterfly valves have showed great performance in steel mill, metallurgy, mining, pulp&paper, environment protection, etc

FOYO's experienced engineers will choose the most suitable material and solution for different working conditions.



Section View



Parts List

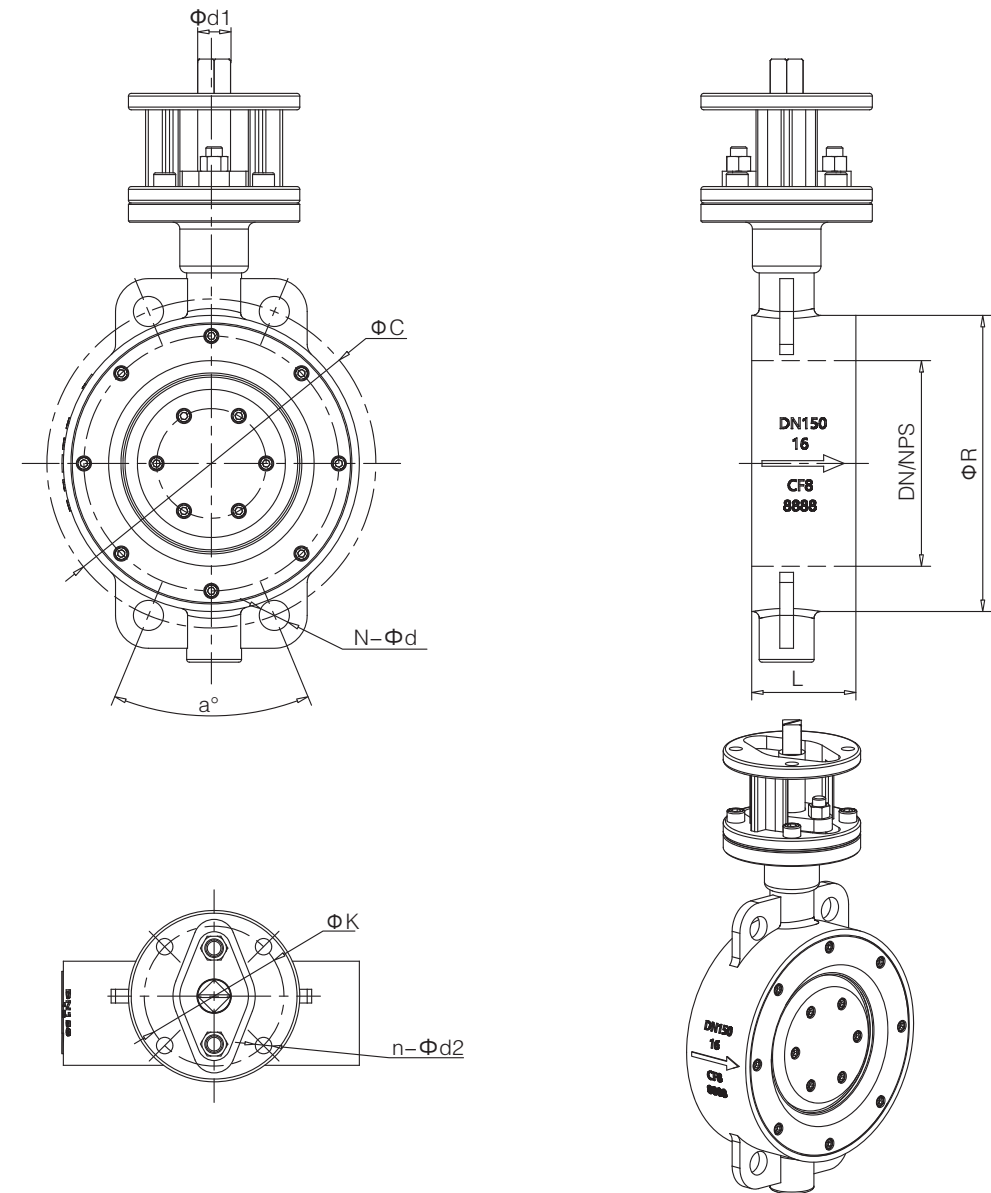
Item	Part Name	Material
1	Body	A216 WCB/A351 CF8
2	Screw	A193 B7/A193 B8
3	O-Ring	VITON/MMQ
4	O-Ring	VITON/MMQ
5	Seat Container	A216 WCB/SS304
6	Seat	Ceramics
7	Sealing Ring	Ceramics
8	O-Ring	VITON/MMQ
9	Disc	A216 WCB/A351 CF8
10	Disc Container	A105/SS304
11	Stem	17-4PH
12	Pin	SS304
13	Packing	PTFE/Graphite

Item	Part Name	Material
14	Bolt	A193 B7/A193 B8
15	Gland Packing	F304
16	Gland Flange	A216 WCB/SS304
17	Nut	A194 2H/A194 8
18	Bolt	A193 B7/A193 B8
19	Screw	A193 B7/A193 B8
20	Yoke	A216 WCB

Note: Parts material may vary according to different working conditions.



General Assembly Drawing



Size		L	Φd1	ΦK	n-Φd2	(EN1092-1 PN16,RF)				(ASME B16.5 CL 150,RF)			
DN	NPS					ΦR	ΦC	N-Φd	a°	ΦR	ΦC	N-Φd	a°
DN50	2"	43	12.6	70	4-Φ10	102	125	4-Φ18	90°	102	120.7	4-Φ18	90°
DN65	2-1/2"	46	16	70	4-Φ10	122	145	4-Φ18	45°	122	139.7	4-Φ18	90°
DN80	3"	64	16	70	4-Φ10	138	160	4-Φ18	45°	138	152.4	4-Φ18	90°
DN100	4"	64	18	70	4-Φ10	158	180	4-Φ18	45°	158	190.5	4-Φ18	45°
DN125	5"	70	22	102	4-Φ12	188	210	4-Φ18	45°	188	215.9	4-Φ22	45°
DN150	6"	76	24	102	4-Φ12	212	240	4-Φ22	45°	212	241.3	4-Φ22	45°
DN200	8"	89	30	125	4-Φ14	268	295	4-Φ22	30°	268	298.5	4-Φ22	45°
DN250	10"	114	36	125	4-Φ14	320	355	4-Φ26	30°	320	362.0	4-Φ26	30°
DN300	12"	114	40	140	4-Φ18	378	410	4-Φ26	30°	378	431.8	4-Φ26	30°

CSBV

Ceramic Segment Ball Valves

For Bulk Material Conveying system and Slurry application



Ceramic Segment Ball Valves

■ Ceramic Segment Ball Valves

Ceramic segment ball valves have lower resistance, small volume, light weight which is easy to transport and assemble. They are widely used for all kinds of abrasive slurry and powder transportation.

Metal sealing part of metal segment ball valve is easily abraded by gas-solid mixture and slurry containing high-hardness solids, which will cause leakage easily. Combining structure advantage of segment ball valve with good performance of structure ceramic, we design CSBV series ceramic segment ball valve.

CSBV series ceramic segment ball valve adopts flanged connections. Body material could be carbon steel, stainless steel according to working conditions or per customers' requirements. Hemispherical sealing ring and seat is structure ceramics, so that sealing face will not be eroded, abraded and corroded by medium and make sure of sealing performance during long-time usage.

Pressure Rating

PN10,PN16,ANSI CL150;

Size Range

DN50~DN300/ANSI 2"~12"

Design Standards

Flange Ends EN1092-1, ASME B16.5

Face-To-Face ASME B16.10

Valve Testing API 598

■ Features

FOYO CSBV series ceramic segment ball valve is eccentric design. When valve is open, Hemispherical sealing ring and seat departs, which will reduce open torque effectively. When valve is closed, hemispherical sealing ring and seat will make a shear effect to cut off solid and fiber in the medium to avoid foreign things stuck valve or cause leakage.

Hemispherical sealing ring and seat are made of high performance structure ceramics. ZrO₂,99%Al₂O₃, solid tungsten carbide,Si₃N₄ are available for different working conditions.

Hemispherical sealing ring and seat sealing is sphere sealing. It makes use of advanced technology and machining equipments. After precision grinding, sealing level could reach ANSI/FCI 70-2 V.

Actuated method includes bare stem, gear, pneumatic actuator, electric actuator and so on. Bracket connections are designed according to ISO 5211.



■ Applications

ZrO₂, 99%Al₂O₃ and Si₃N₄ have excellent chemical stability, which can make sure that sealing face of CSBV series ceramic segment ball valve will not be destroyed after long-time applying in all kinds of corrosive and abrasive medium.

Ceramic segment ball valve has huge body with one-way seal so that valve will not stuck or leak because medium is blocked in the valve.

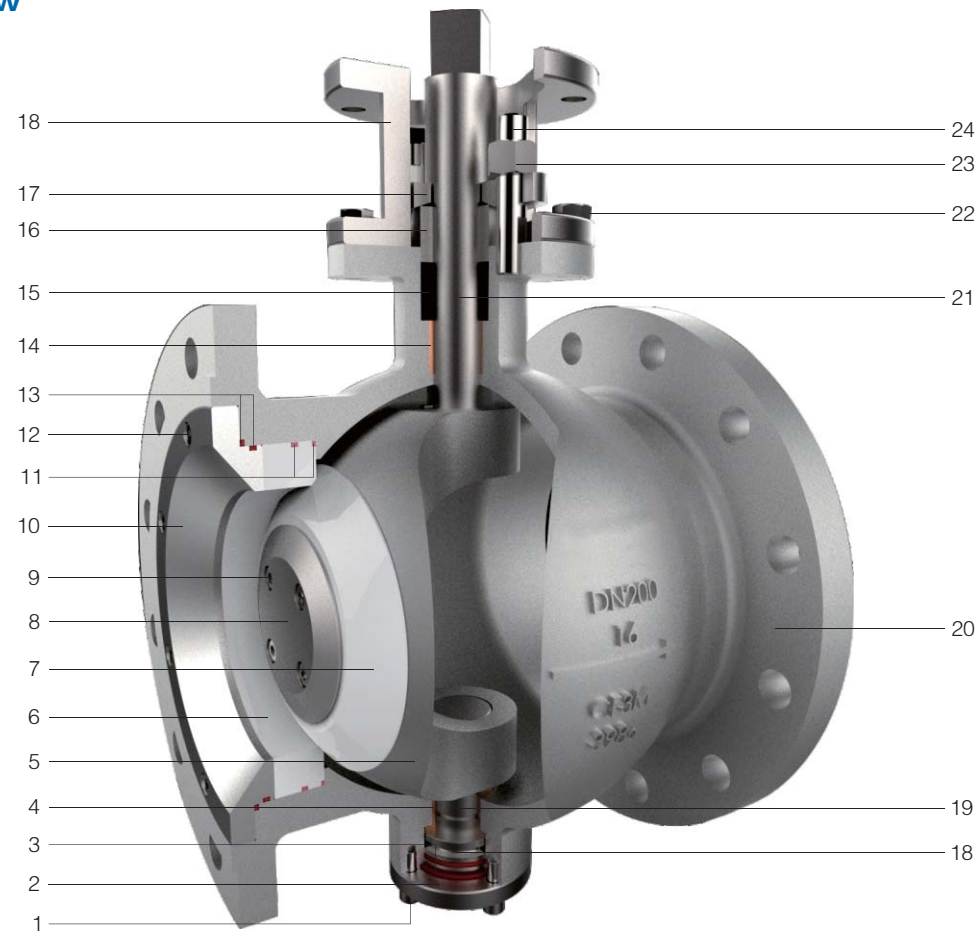
Eccentric structure makes sure that there is shear cut-off of solid and fibers when valve is closing.

CSBV series ceramic segment ball valve has good performance for steel mill, mining, pulp and paper and environmental protection and so on.

FOYO experienced engineers will choose most suitable material and design according to end-user's different working conditions.



Section View



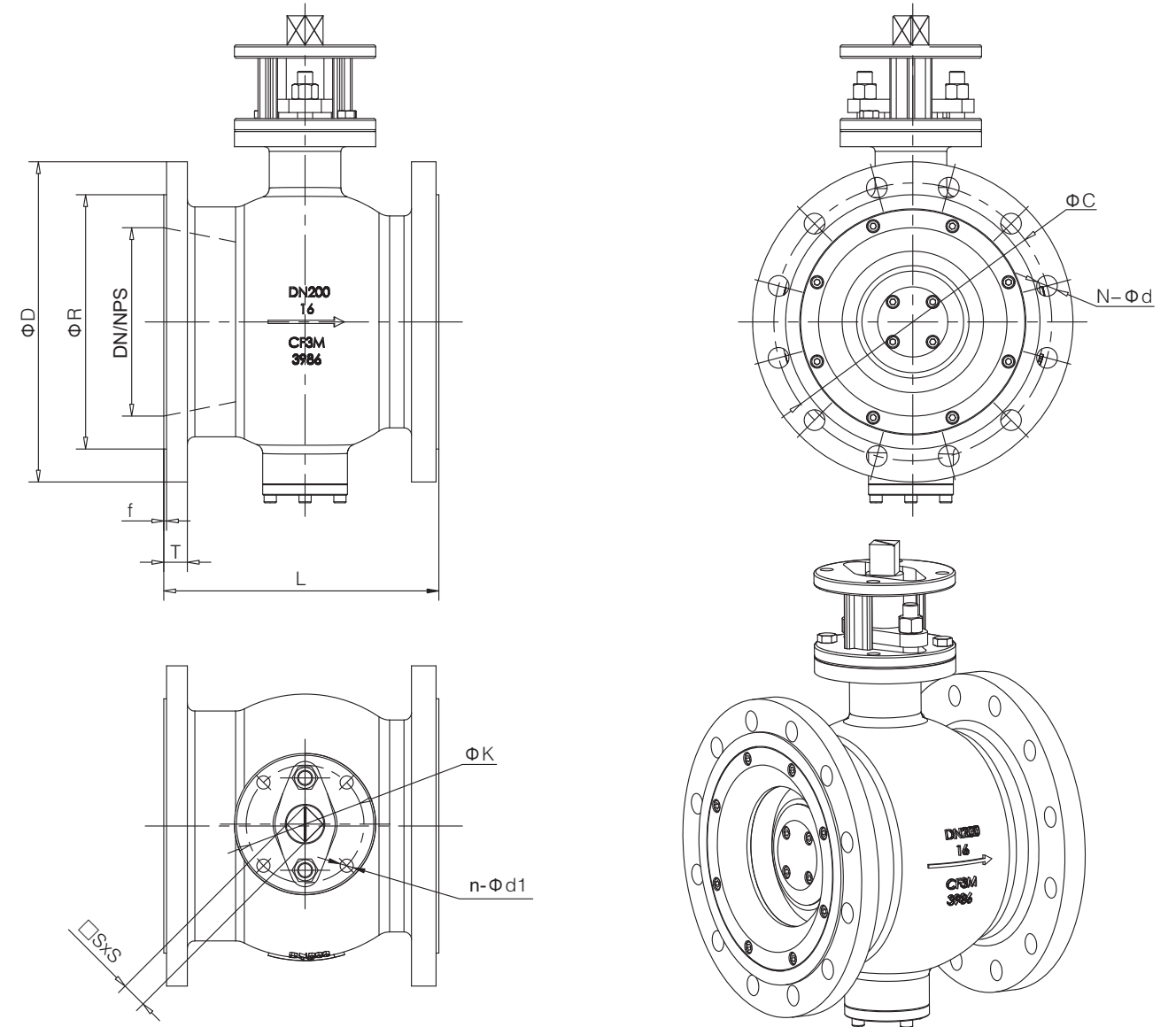
Parts List

Item	Part Name	Material
1	Screw	A193 B7/A193 B8
2	Bottom Cap	A105/F304/F316L
3	O-Ring	VITON/VMQ
4	Bearing	Copper+Graphite/PEEK
5	Segment Ball	WCB/CF8/CF3M
6	Seat	Ceramics
7	Sealing Ring	Ceramics
8	Disc Container	A105/F304/F316L
9	Screw	A193 B7/A193 B8
10	Seat Container	A105/SS304/SS316L
11	O-Ring	VITON/VMQ
12	Screw	A193 B7/A193 B8
13	O-Ring	Graphite/PTFE

Item	Part Name	Material
14	Bearing	Copper+Graphite/PEEK
15	Packing	PTFE/Graphite
16	Gland	SS304/SS316L
17	Gland Flange	WCB/SS304
18	Gasket	PTFE/17-4PH
19	Trunnion	17-4PH/HC. 276
20	Body	WCB/CF8/CF3M
21	Stem	17-4PH/HC. 276
22	Screw	A193 B7/A193 B8
23	Gland Nut	A194 2H/A194 8
24	Gland Bolt	A193 B7/A193 B8

Note: Parts material may vary according to different working conditions.

General Assembly Dimensions



Size		L	□ SxS	ΦK	n-Φd1	(EN1092-1 PN16,RF)						(ASME B16.5 CL 150,RF)					
DN	NPS					ΦD	ΦR	ΦC	N-Φd	T	f	ΦD	ΦR	ΦC	N-Φd	T	f
DN50	2"	178	17x17	70	4-Φ10	165	102	125	4-Φ18	18	3	150	92.1	120.7	4-Φ19	18	2
DN65	2-1/2"	190	19x19	70	4-Φ10	185	122	145	8-Φ18	18	3	180	104.8	139.7	4-Φ19	18	2
DN80	3"	203	19x19	70	4-Φ10	200	138	160	8-Φ18	20	3	190	127.0	152.4	4-Φ19	20	2
DN100	4"	229	22x22	102	4-Φ12	220	158	180	8-Φ18	20	3	230	157.2	190.5	8-Φ19	25	2
DN125	5"	254	22x22	102	4-Φ12	250	188	210	8-Φ18	22	3	255	185.7	215.9	8-Φ23	25	2
DN150	6"	267	22x22	102	4-Φ12	285	212	240	8-Φ22	22	3	280	215.9	241.3	8-Φ23	26	2
DN200	8"	292	27x27	125	4-Φ14	340	268	295	12-Φ22	24	3	345	269.9	298.5	8-Φ23	29	2
DN250	10"	330	27x27	125	4-Φ14	405	320	355	12-Φ26	26	3	405	323.8	362.0	12-Φ26	31	2
DN300	12"	356	36x36	140	4-Φ18	460	378	410	12-Φ26	28	4	485	381.0	431.8	12-Φ26	33	2

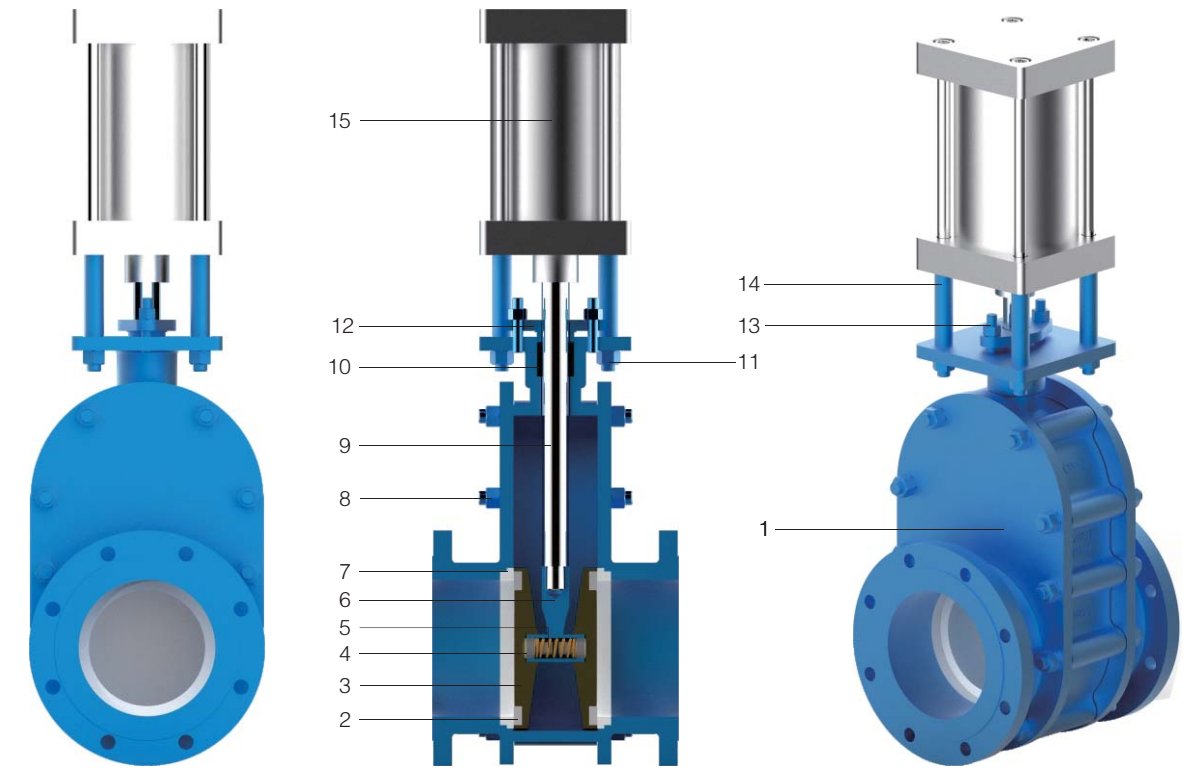
CDGV

Ceramic Double Gate Valves

For Fly Ash Conveying system in Coal Fired Power Plant



Section View

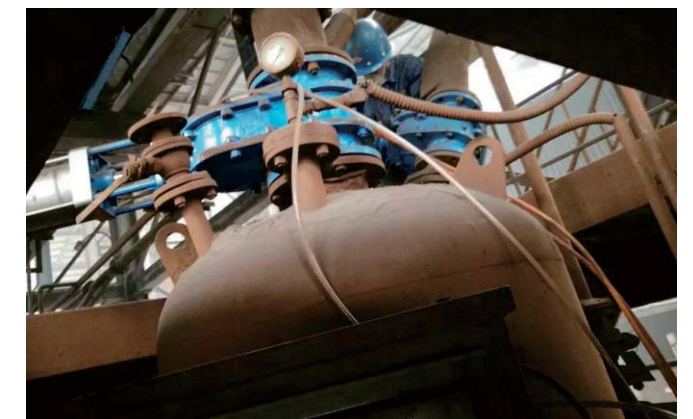
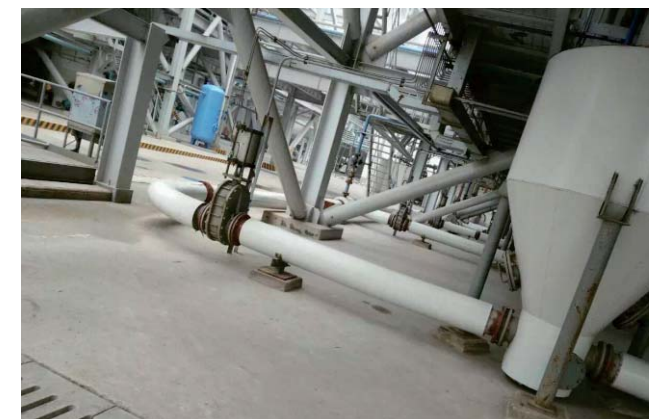


Parts List

Item	Part Name	Material
1	Body	A216 WCB
2	Sealing Ring	Ceramics
3	Disc	A105
4	Adjusting Block	SS304
5	Spring	60Si2MnA
6	Spring Holder	A216 WCB
7	Seat	Ceramics
8	Bolt/Nut	A193 B7/A194 2H

Item	Part Name	Material
9	Cylinder Rod	AISI 1045+Cr
10	Packing	Flexible Graphite
11	Yoke Nut	A194 2H
12	Gland Flange	A216 WCB
13	Bolt/Nut	A193 B7/A194 2H
14	Yoke	AISI 1045
15	Pneumatic Cylinder	Components

Note: Parts material may vary according to different working conditions.



CKGV

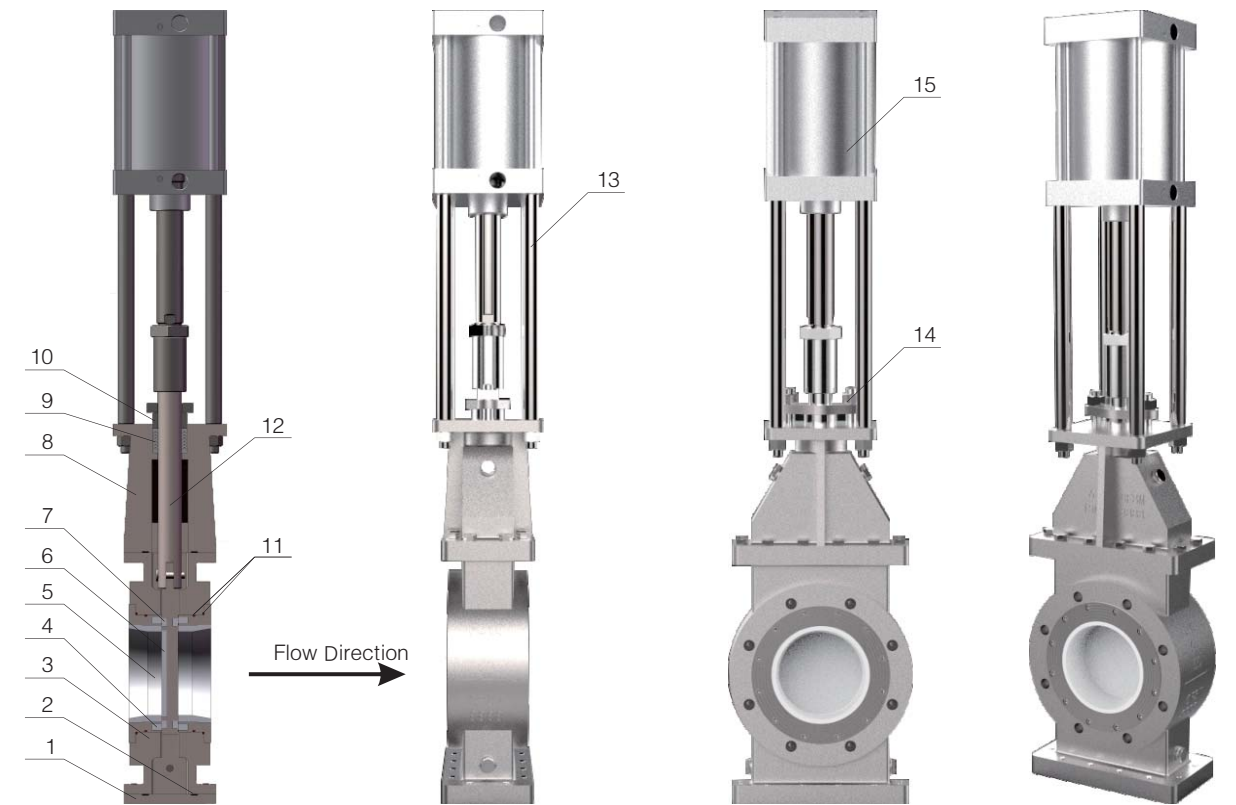
Ceramic Knife Gate Valves

For High Abrasive Bulk Material and Slurry Application



Ceramic Knife Gate Valves

Section View

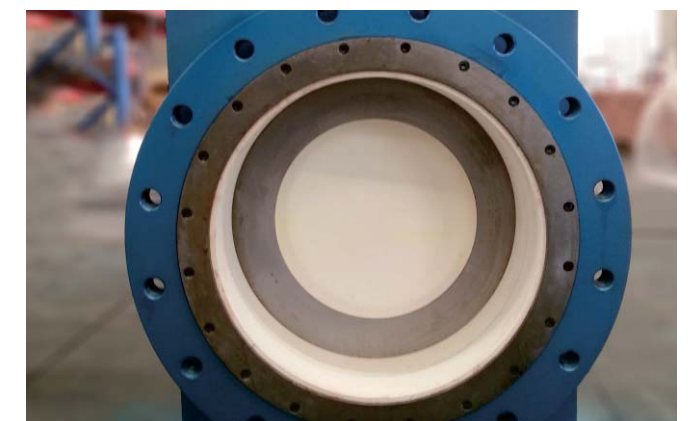


Parts List

Item	Part Name	Material
1	Bottom Cover	AISI 1020/SS304/SS316
2	Gasket	SS304/SS316+ Graphite
3	Body	WCB/CF8/CF8M
4	Seat	Ceramics
5	Body Lining	Ceramics
6	Disc Lining	Ceramics
7	Sealing Ring	Ceramics
8	Bonnet	WCB/CF8/CF8M

Item	Part Name	Material
9	Packing	PTFE/Graphite
10	Gland Flange	WCB/SS304
11	O Ring	VMQ/Viton
12	Stem	17-4PH
13	Yoke	AISI 1045/SS304
14	Gland Bolt/Nut	B7/2H,B8/8
15	Pneumatic actuator	Components

Note: Parts material may vary according to different working conditions.



CGGCV

Ceramic Gate/Globe/Check Valves

To Replace Metal Valves in Corrosive&Abrasive Applications



■ Ceramic Wedge Gate/Globe/Check Valves

Metal sealing wedge gate valve/globe valve/check valves are widely used for industry fields. But for many highly corrosive and abrasive conditions, sealing face of metal seated wedge gate valve/globe valve/check valve will be easily abraded and eroded.

Combining structure advantage of metal sealing wedge gate valve/globe valve/check valve with good performance of structure ceramics, Foyo developed ceramic sealing wedge gate/globe /check valve, which has excellent anti - corrosive, anti - abrasive and high - temperature resistant performance. Service life of FOYO ceramic wedge gate / globe/ check valve are much longer than metal sealing valves.

Professional technical team of FOYO has rich experience with corrosive, abrasive working conditions. We can offer most suitable valve solution based on customers' specific problems.

Valve Types

- Cast Steel Wedge Gate Valve/Globe Valve/Check Valve
- Pressure Seal Wedge Gate Valve/Globe Valve/Check Valve
- Slag Discharge Valve
- Ceramic Plate Gate Valve
- Lift Type Ceramic Check Valve
- Swing type Ceramic Check Valve
- Wafer Ceramic Check Valve, double Disc or Single Disc

Pressure Ratings

Pn10, PN16, PN25, PN40, PN63, PN100, PN160;
ANSI CL150, CL300, CL600, CL900;

Size Range

DN50~DN400/ANSI 1/2"~16"

Design Standard

Flange Ends	EN1092-1, ASME B16.5
Face To Face	EN558-1, ASME B16.10, or as per Request
Valve Testing	API 598
Body Material	Carbon Steel, Stainless Steel, Alloy Steel, duplex SS
Trim Material	Al2O3/ZrO2/Si3N4/STC

Matched Accessories

- Per Customers' requirement, actuator and accessories are available.
- Electric actuator, gear, double acting pneumatic actuator, spring return pneumatic actuator, limit switch, solenoid valve and positioner are available.



■ Applications :

- >Mining
- >Pulp&Paper
- >Petrolchemical
- >Metallurgy
- >Slag discharging
- >high-abrasive gas-solid mixture and liquid-solid mixture



CERAMIC FITTINGS

Ceramics Lined Pipe/Elbow/Tee

For High Corrosive/High Abrasive and High Temp. Fluids



Ceramic Fittings

■ Ceramics Lined Pipe & Fittings

For industry flow control and conveying system, many high abrasive and corrosive medium will destroy valves and pipes seriously. Frequent replacement and maintenance will increase cost and unexpected downtime of system will increase production cost and reduce production efficiency.

FOYO as a professional ceramic valves manufacturer has rich experience of high corrosive and abrasive medium conveying and control. Besides offering various professional anti-corrosive and anti-abrasive ceramic valves solutions, FOYO also can offer ceramic pipe fittings.

Generally ceramics lined pipe fittings have carbon steel or stainless steel jacket. Ceramics lining could be ceramic pipes or mosaic ceramic pieces.

Types of Ceramics Lined Pipe & Fittings

- Ceramics Lined Pipes
- Ceramics Lined Elbows
- Ceramics Lined Reducers
- Ceramics Lined Diverters, Y Type and T Type
- Ceramics Lined Cross
- Ceramic Orifice
- Ceramics Lined Cylinder

Pressure Range

Pn10, PN16, PN25, PN40, PN63, PN100, PN160;
ANSI CL150, CL300, CL600, CL900; JIS 10K, 20K, 30K

Size Range

DN50~DN400/ANSI 1/2"~16"

Design Standard

Flange Dim.	EN1092-1, ASME B16.5, JIS B2220
Installation Dim.	As per request
Jacket Material	Carbon Steel/Stainless Steel/Alloy/Duplex Steel
Lining Material	Al2O3/ZrO2/Si3N4/SSiC, etc.

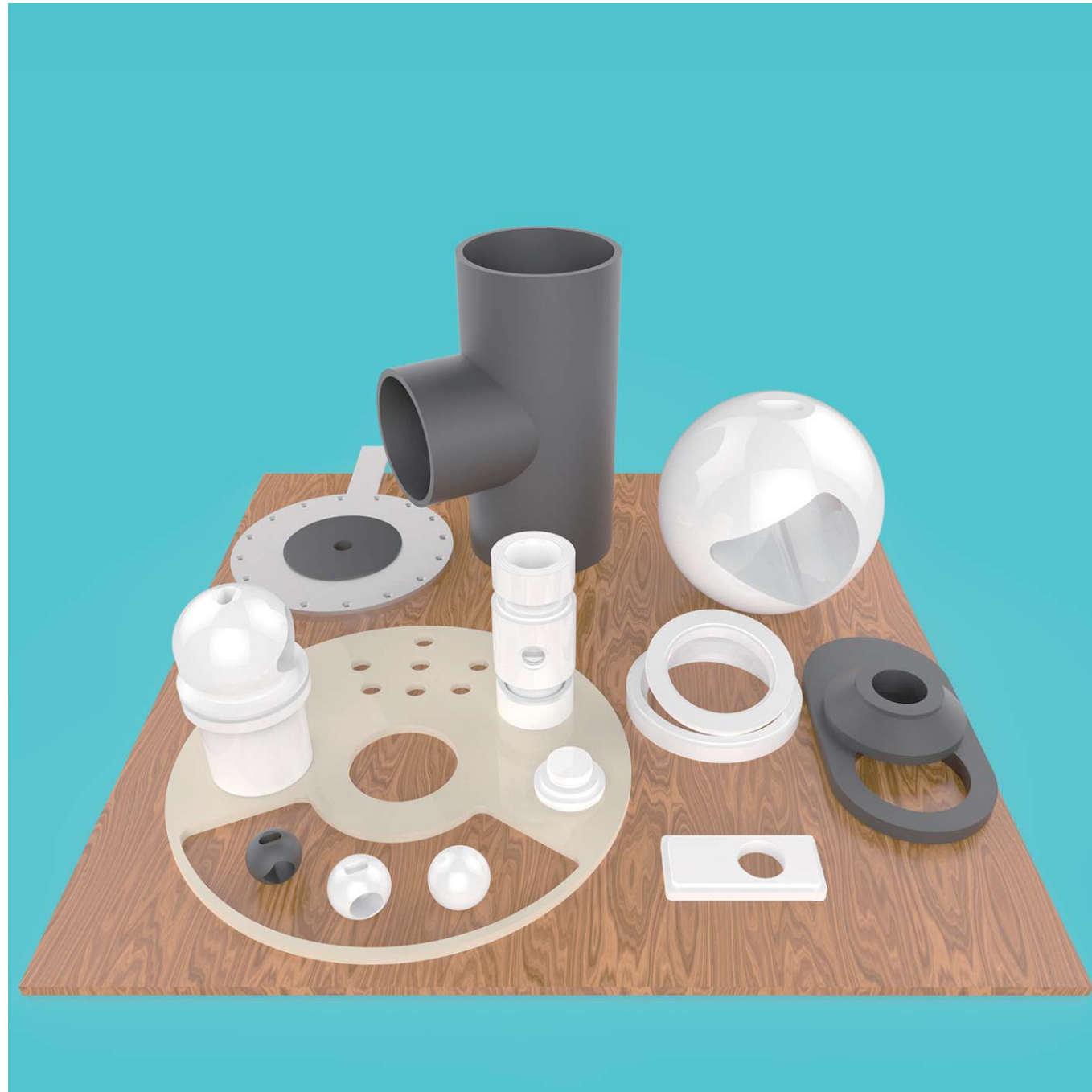
■ Fields

- | | |
|-----------------------|--------------------------------|
| >Mining | >Paper and Pulp |
| >Petroleum | >Metallurgy |
| >Slags transportation | >Any abrasive&corrosive fluids |



CERAMIC PARTS

Ceramic Parts and Solutions as per User's Request



■ Ceramic Parts

Comparing with metal and other non-metal material, structure material could keep excellent mechanical performance and chemical stability when applying to many high-temperature, high corrosive and high abrasive mediums.

FOYO dedicate to using structure material for high-temperature, high corrosive and high abrasive working conditions. Besides ceramic valves and ceramic pipes, FOYO has applied structure material to many fields and offers key parts for many severe conditions.

Types of Ceramics Material

- 95% Alumina(95%Al₂O₃)
- 99% Alumina(99%Al₂O₃)
- Yttrium Stabilized Zirconia(Y-TZP)
- Cerium stabilized Zirconia(Ce-TZP)
- Zirconia Toughened Aluminum(ZTA)
- Silicone Nitride (Si₃N₄)
- Solid Silicone Carbide (SSiC)
- Solid Tungsten Carbide (STC)

Performance Characteristics of Ceramics

- >High Strength
- >Non-Magnetic
- >High Flexural Strength
- >Low Thermal Conductivity
- >High Hardness
- >Corrosion Resistant
- >Abrasion Resistant
- >Low Coefficient of Friction
- >Low Thermal Expansion Coefficient
- >Anti Static
- >High Temperature Resistant

■ Fields

- >Semiconductor
- >Pump & Valves
- >High Temp. & High Pressure Nozzle
- >Food Machinery Parts
- >Molten Metal
- >Metallurgy
- >Precision Instrument
- >Medical instruments
- >Grinding Mill Parts
- >Paper & Pulp
- >Physic-chemical Equipment
- >Ceramic Heaters



Provide Professional Solutions for Severe Applications

>> Poly Silicone



>> Coal Chemical



>> Petroleum



>> Slag Discharge



>> Chemical



>> Pneumatic Conveying System



>> FGD



>> Metallurgy



>> Pulverized coal injection (PCI)

