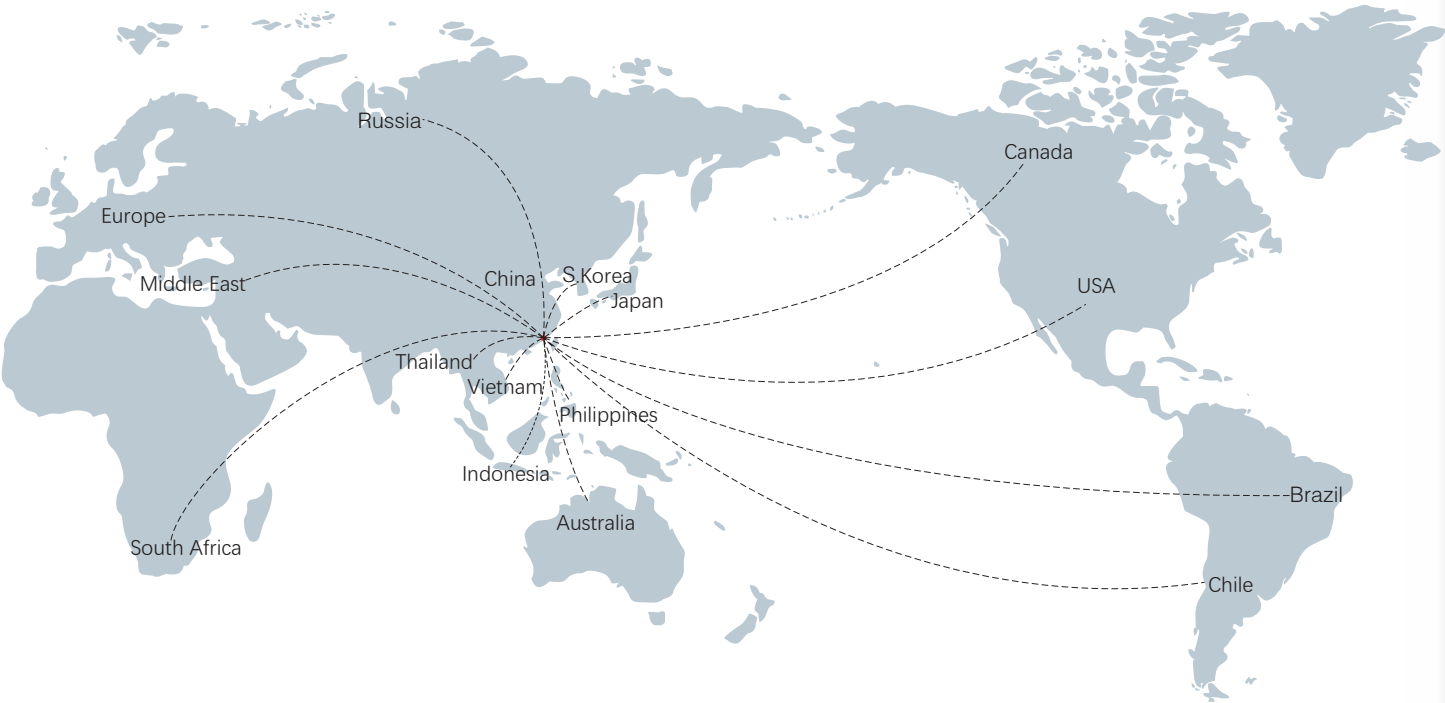


Sales Network



FOYO
FOYO VALVE CO.,LIMITED

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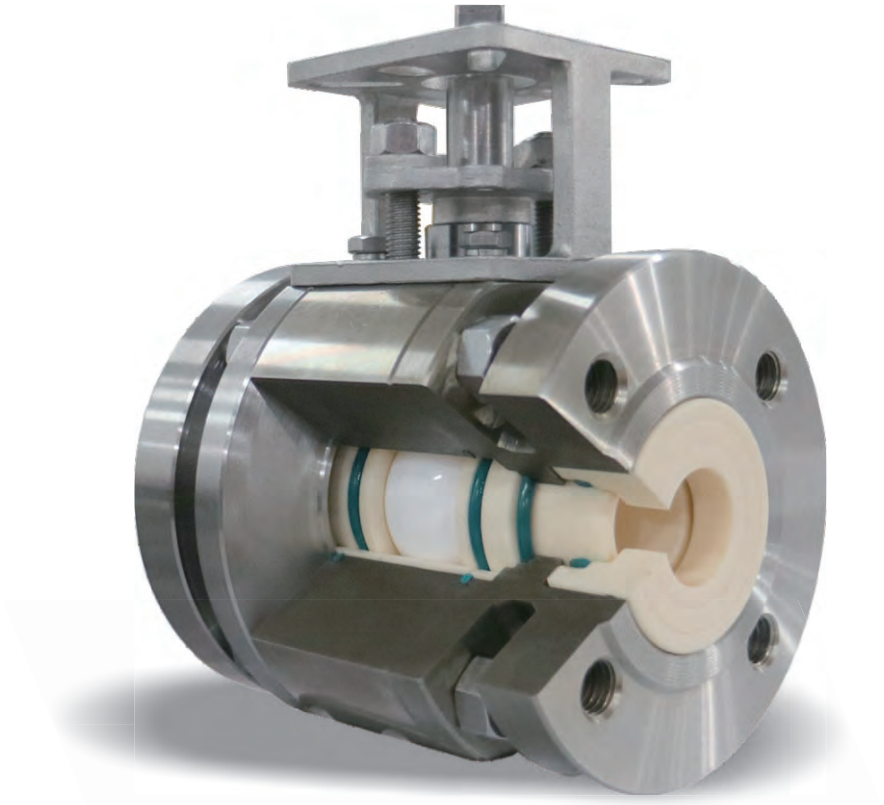
FOYO | **CERAMIC VALVES**

<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 Rotating Disc Valve \
Ceramic Gate,Globe,Check Valve \ Ceramic Pipe Fittings \ Ceramic Parts



FOYO VALVE CO.,LIMITED

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 other 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.

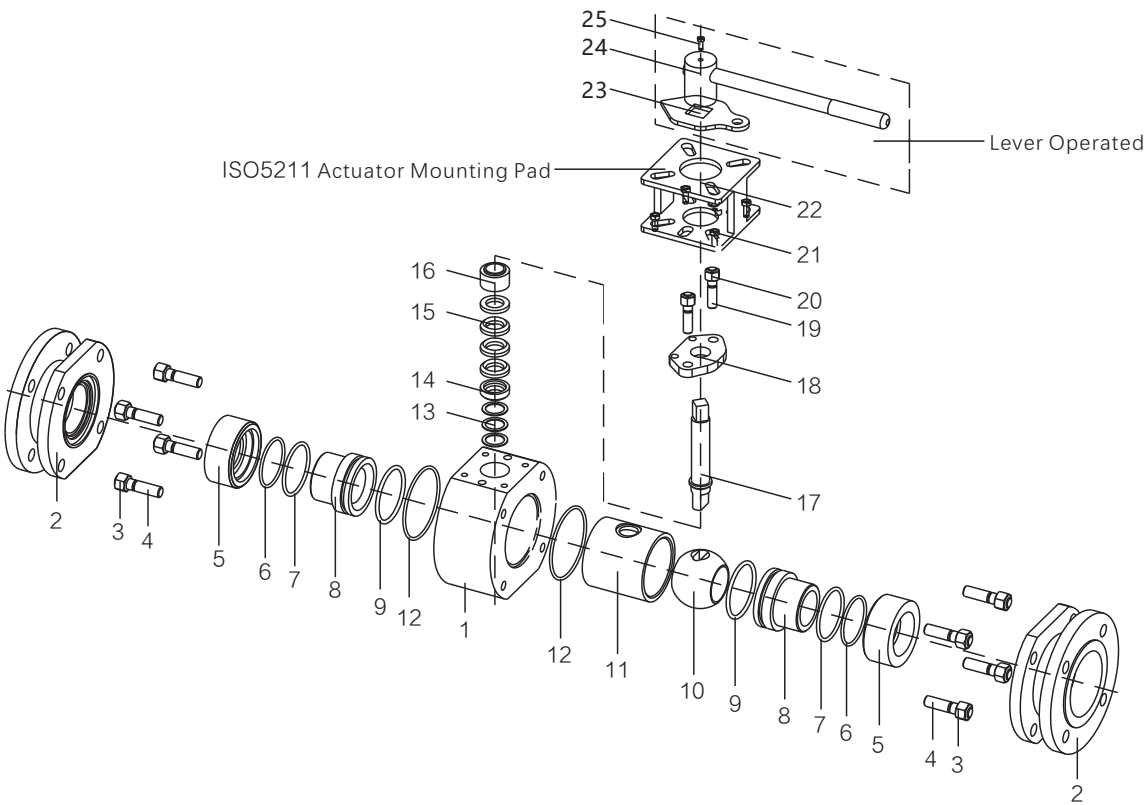
Structure ceramics has wonderful chemical stability, which makes sure that physical property and chemical property of ceramic trims will not change after long times of usage in all kinds of strong acid and strong alkali.

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

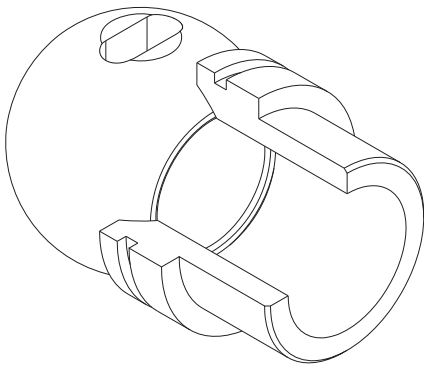
No.	Name	Material
1	Body	A105N, F304,F316,F316L
2	Adapter	A105N, F304,F316,F316L
3	Nut	A194-2H/8
4	Bolt	A193-B7/B8
5	Adapter Lining	Ceramics
6	O-Ring	FKM/VMQ
7	O-Ring	FKM/VMQ
8	Seat	Ceramics
9	O-Ring	VITON/VMQ
10	Ball	Ceramics
11	Bushing	Ceramics
12	O-Ring	VITON/VMQ
13	Gasket	RPTFE

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.

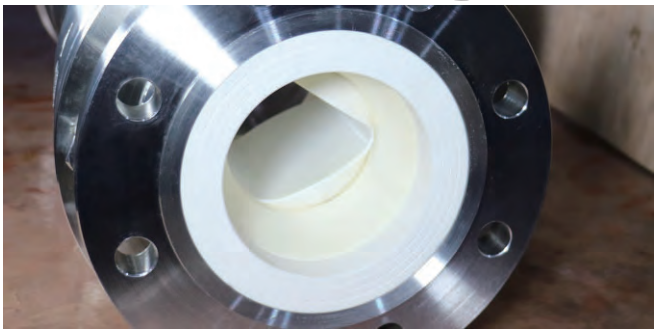
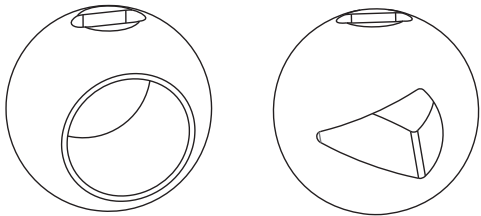
Ceramics-to-Ceramics Spherical Sealing

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 valves; V port ball valves are used as flow control valves. V port ball has equal percentage flow characteristic. If precise and stable control performance is required in any application, equal percentage 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.

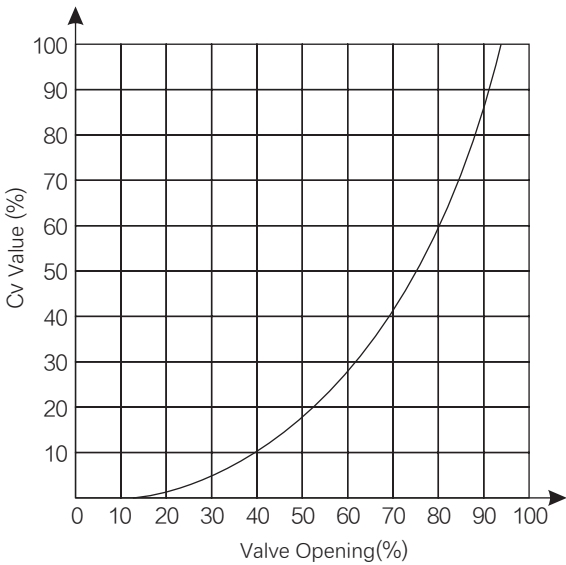


Cv Values

SIZE	Cv max.	
	O-Port	V-Port
1/2"	12	8
3/4"	18	12
1"	18	12
1 1/4"	42	24
1 1/2"	54	31
2"	140	120
2 1/2"	170	145
3"	325	160
4"	650	320
5"	1100	420
6"	2000	610
8"	2300	1200
10"	3600	—
12"	3600	—



Cv Curve for V-port Ceramic Ball Valve



FCBV Ceramic Ball Valves

FOYO

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

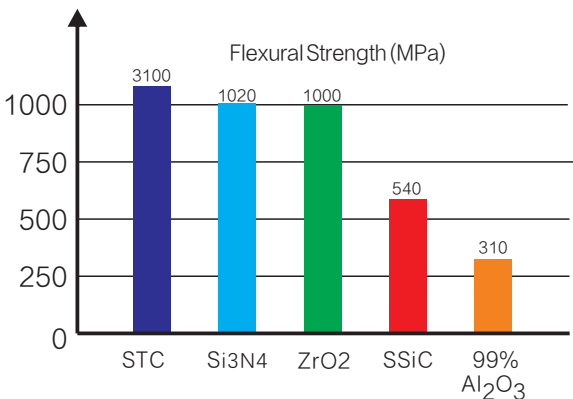
Comparing with other mostly metal and non-metal materials, 99%Al₂O₃, ZrO₂, Si₃N₄ and SSiC used for FOYO ceramic ball valves have better anti-corrosive property when applying for mostly majority strong acid and alkalis. Experienced FOYO engineers would love to choose mostly suitable ceramic material based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

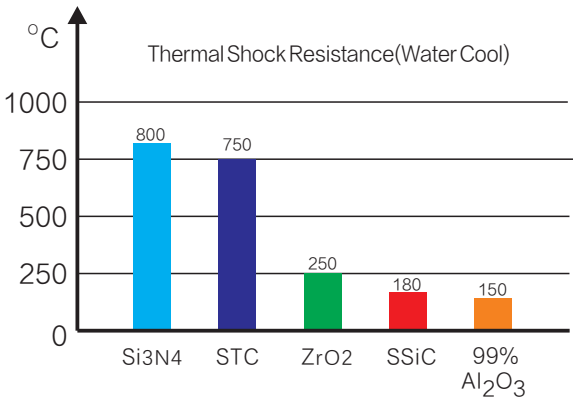
Mechanical Properties

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 seat/lining will be made of 99%Al₂O₃ and SSiC.



High Temp. & Thermal Shock Resistance

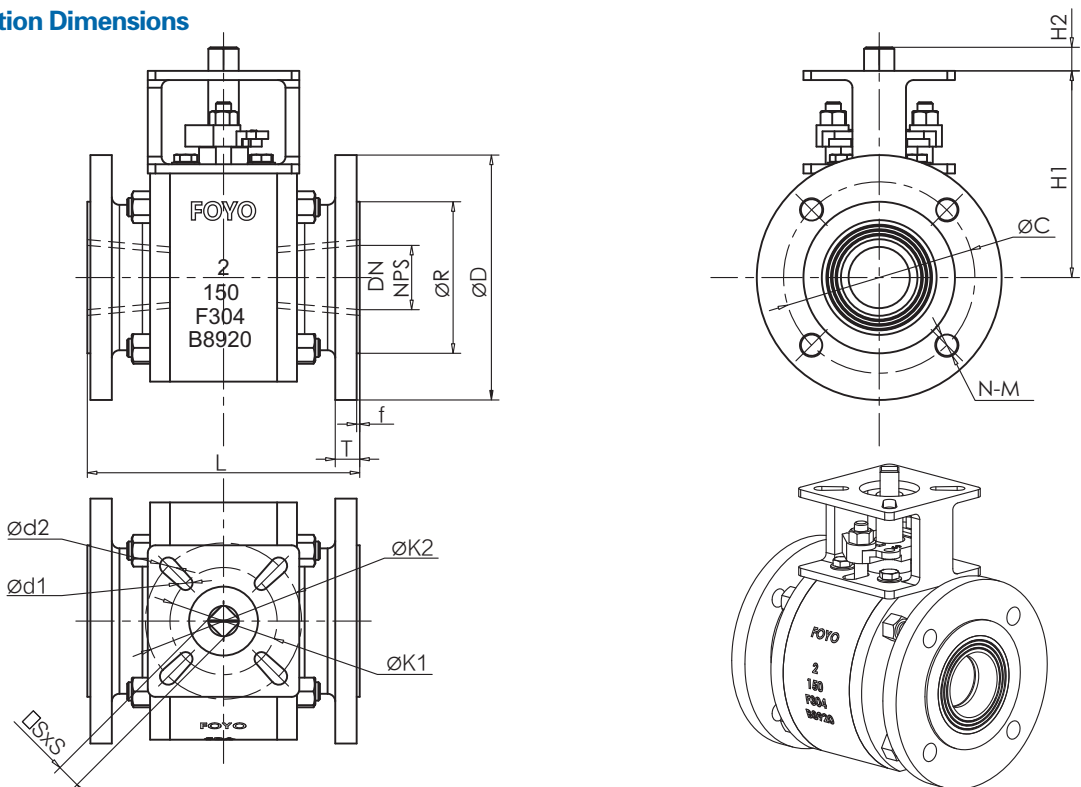
High pure alumina and stabilized zirconia components could keep their shape, structure as well as other physical/chemical characteristics unchanged when applying temperature over 1000 °C. So structure ceramics are also widely used for parts which need to work under high temperature. Different ceramics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



FCBV Ceramic Ball Valves

FOYO

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-Φ8	4-Φ8	4-Φ8	4-Φ8	4-Φ8	4-Φ10	4-Φ10	4-Φ10	4-Φ12	4-Φ12	4-Φ12	4-Φ18	4-Φ18	4-Φ18
ΦK2	70	70	70	70	70	102	102	102	125	125	125	—	—	—
n-Φd1	4-Φ10	4-Φ10	4-Φ10	4-Φ10	4-Φ10	4-Φ12	4-Φ12	4-Φ12	4-Φ14	4-Φ14	4-Φ14	—	—	—
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

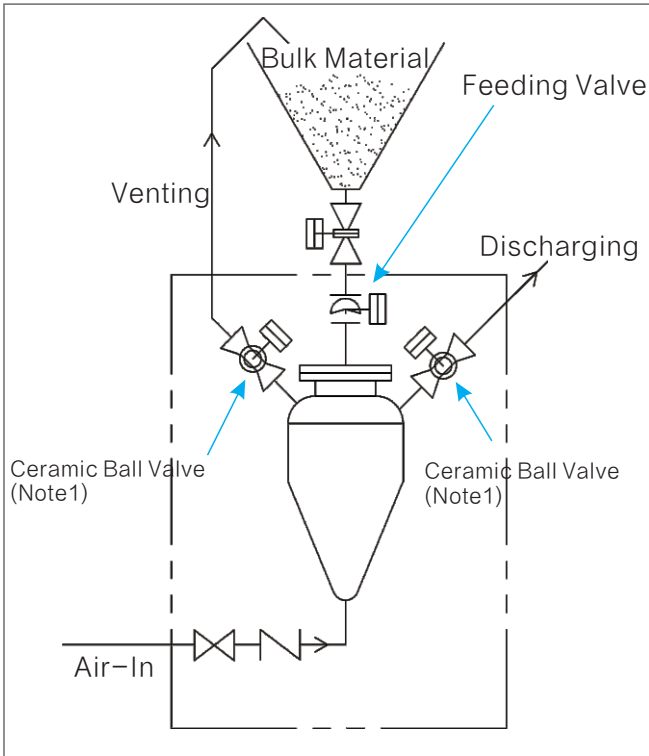
Note: The data above is Foyo' s Standard dimension, customized dimension is available on request.

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 valves, even longer.

Diagram of Typical Pneumatic Conveying System



Note1 : Pneumatic Ceramic Double Disc Valve is optional
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 >Resins
- >Pellets >Flakes
- >Fiber >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

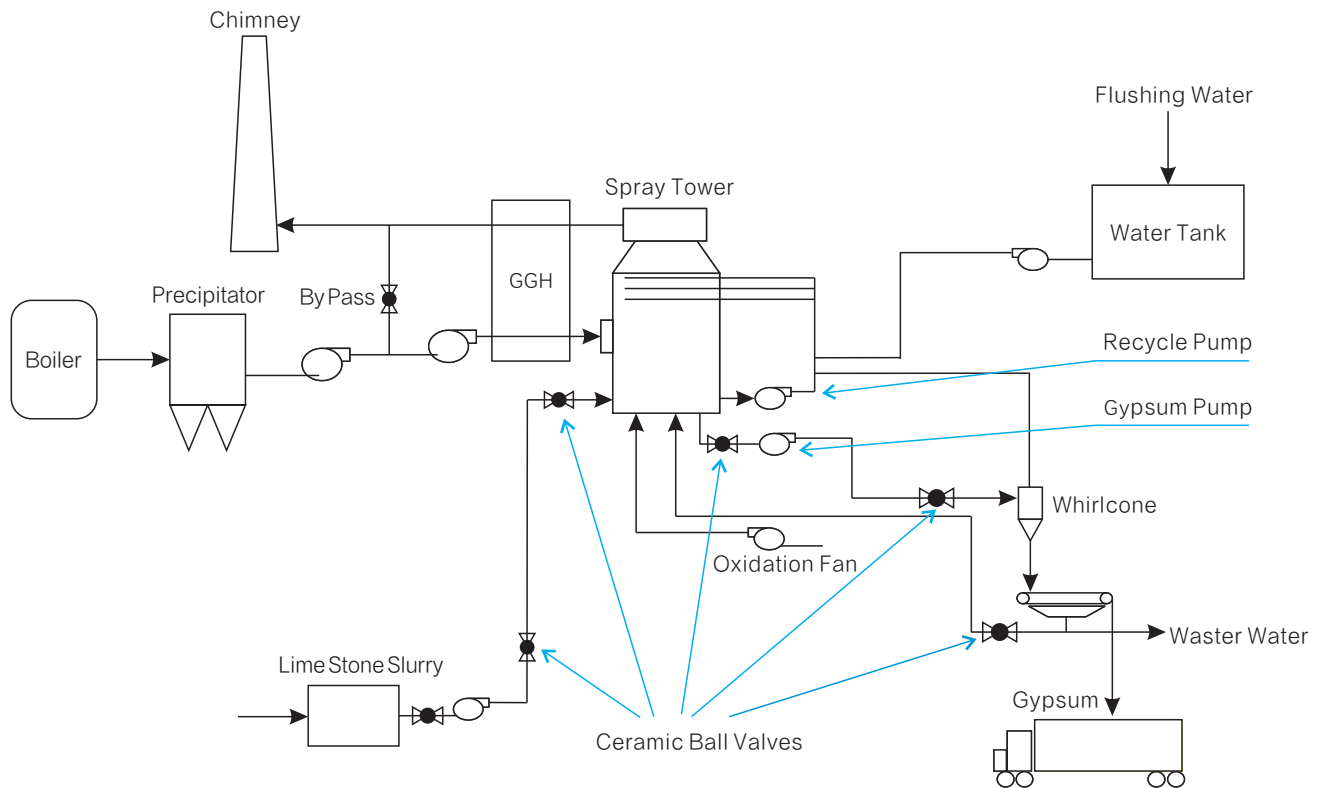


Flue Gas Desulfurization, FGD

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 high 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.

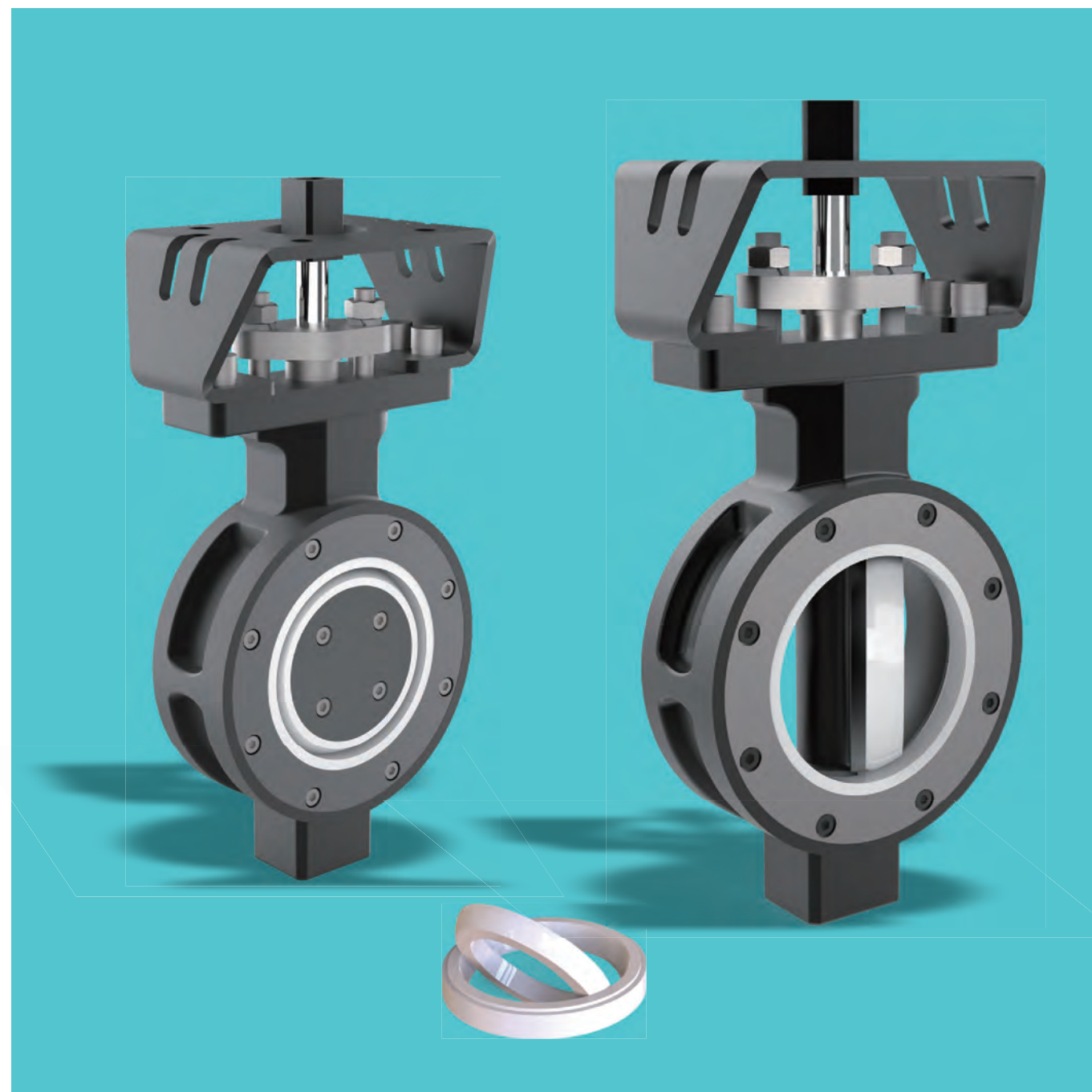
FOYO offers O port and V port as options. V port ceramic ball valves have better equal percentage flow regulation, which could be used as control valves.



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. Sealing ring of disc and seats are 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, JIS 10K

Size Range

DN50~DN300/ANSI 2"~12"/JIS 50A~300A

Design Standards

Flange Ends EN1092-1, ASME B16.5, JIS B2220

Face-To-Face API 609-Category B

Valve Testing API 598

■ Features

FOYO CBUT series ceramic seated butterfly valve is eccentric design. When valve is open, sealing ring of disc and seat depart, 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 getting stuck in the valve or cause leakage.

Sealing ring of disc and seat are made of high performance structure ceramics. ZrO₂, 99% Al₂O₃, STC, SiC and 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.

Actuation includes bare stem, gear, pneumatic actuator, electric actuator and so on. Actuator interfaces are designed according to ISO 5211.



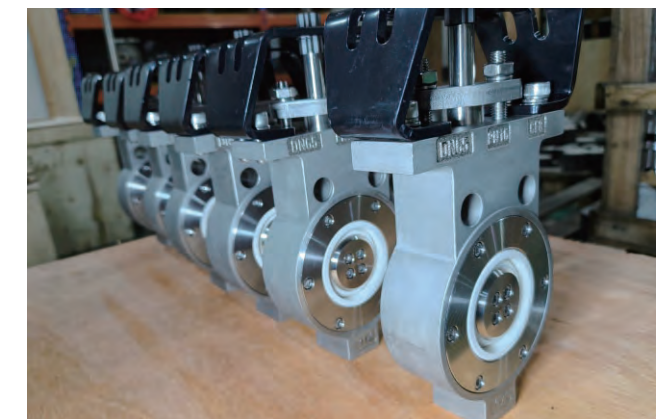
■ Applications

>99% Al₂O₃, ZrO₂, SiC 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). Sintered 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 shown great performance in steel mill, metallurgy, mining, pulp&paper, environment protection, etc

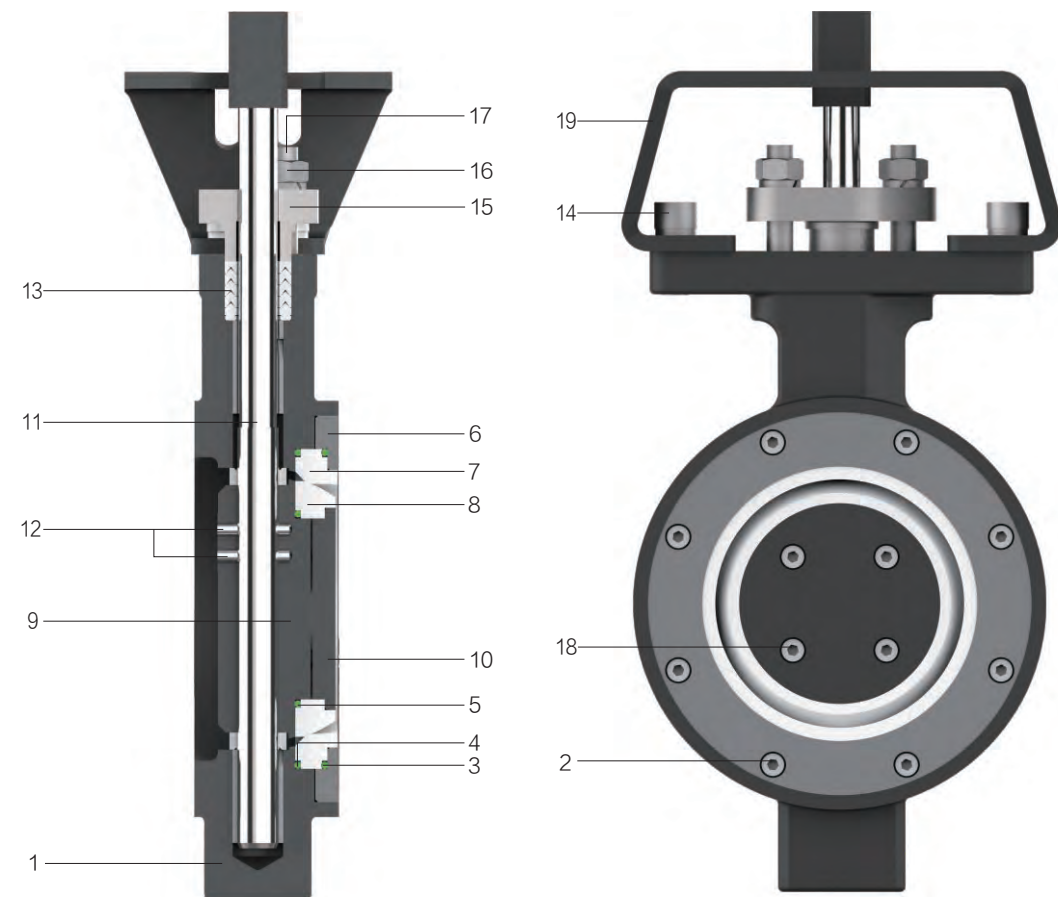
FOYO's experienced engineers will choose the most suitable material and solution for different working conditions.



Ceramic Butterfly Valves

FOYO

Section View

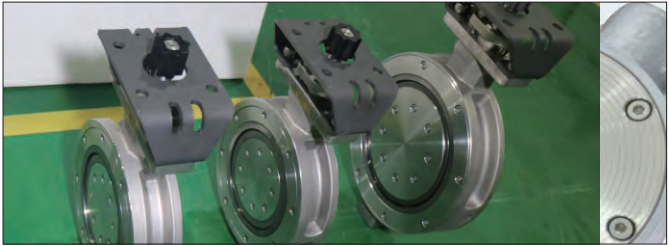


Parts List

Item	Part Name	Material
1	Body	A216 WCB/A351 CF8
2	Screw	A2-70
3	O-Ring	FKM/VMQ
4	O-Ring	FKM/VMQ
5	O-Ring	FKM/VMQ
6	Seat Container	A216 WCB/SS304
7	Seat	Ceramics
8	Sealing Ring	Ceramics
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	Screw	A2-70
15	Gland Flange	A216 WCB/SS304
16	Nut	A194 2H/A194 8
17	Bolt	A193 B7/A193 B8
18	Screw	A2-70
19	Yoke	A216 WCB
20		

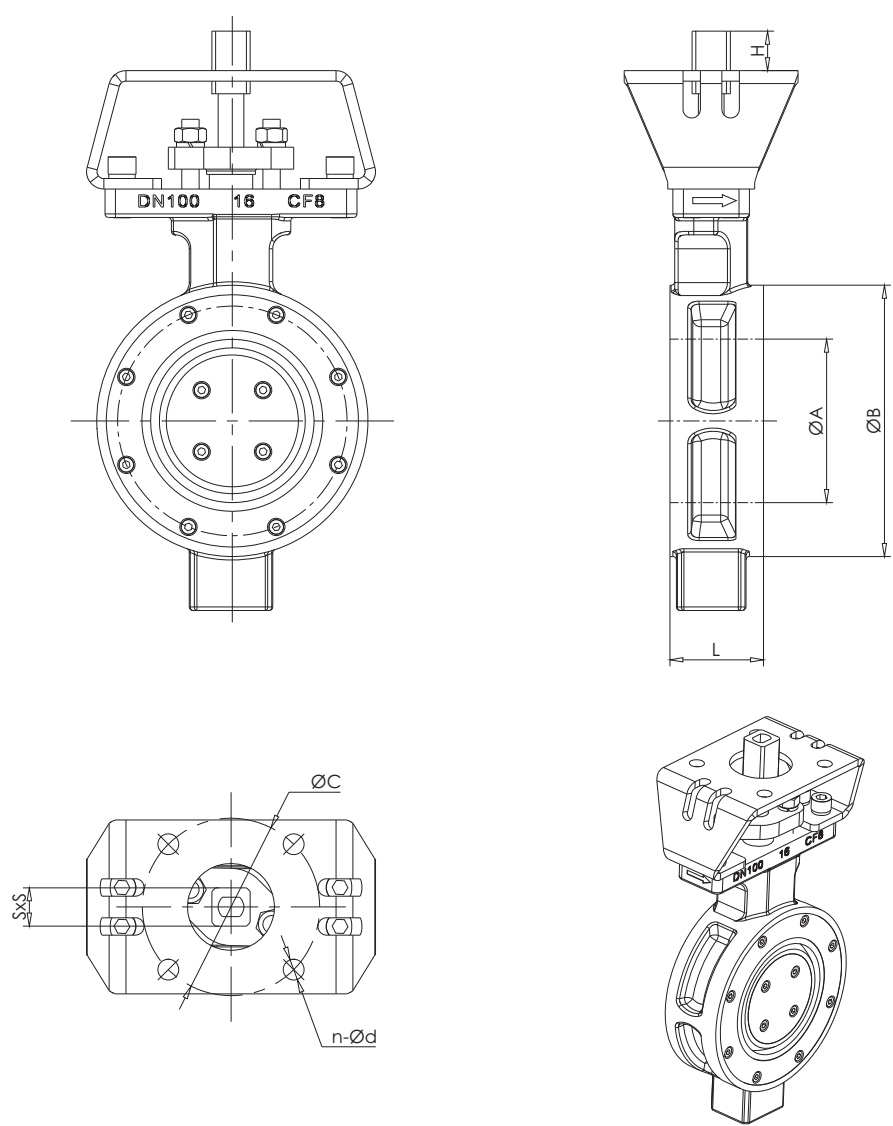
Note: Parts material may vary according to different working conditions.



Ceramic Butterfly Valves

FOYO

General Assembly Drawing



Size		L	ΦA	ΦB	ΦC	ISO 5211	n-Φd	SxS	H	Torque (N.M)
DN	NPS									
DN50	2"	44	52	102	70	F07	4-Φ10	14x14	14	70
DN65	2-1/2"	48	60	116	70	F07	4-Φ10	14x14	14	90
DN80	3"	48	72	132	70	F07	4-Φ10	14x14	14	160
DN100	4"	54	94	156	102	F10	4-Φ12	22x22	22	220
DN125	5"	57	112	185	102	F10	4-Φ12	27x27	27	280
DN150	6"	57	136	217	102	F10	4-Φ12	27x27	27	300
DN200	8"	64	188	273	125	4-Φ14	4-Φ14	27x27	27	450
DN250	10"	71	234	330	125	4-Φ14	4-Φ14	27x27	27	600
DN300	12"	81	282	386	140	4-Φ18	4-Φ18	36x36	36	700

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, JIS 10K

Size Range

DN50~DN300/ANSI 2"~12"/JIS 50A~300A

Design Standards

Flange Ends EN1092-1, ASME B16.5, JIS B2220

Face-To-Face ASME B16.10/EN558:2008, Series 12

Valve Testing API 598

■ Features

FOYO CSBV series ceramic segment ball valve is eccentric design. When valve is opening, Segment ball sealing ring and seat depart, 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 getting stuck in the valve or cause leakage.

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

Disc 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.

Actuation includes bare stem, gear, pneumatic actuator, electric actuator and so on. Actuator interfaces are designed according to ISO 5211.



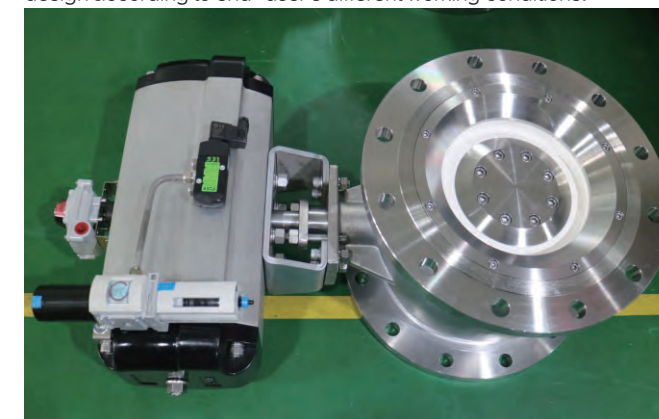
■ Applications

ZrO₂, 99%Al₂O₃, SiC 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. Sintered Tungsten carbide (STC) has good mechanical performance and thermal-shock performance, which is suitable for high temperature, high pressure and high abrasive working conditions.

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 proved good performance for steel mill, mining, pulp and paper and environmental protection and so on.

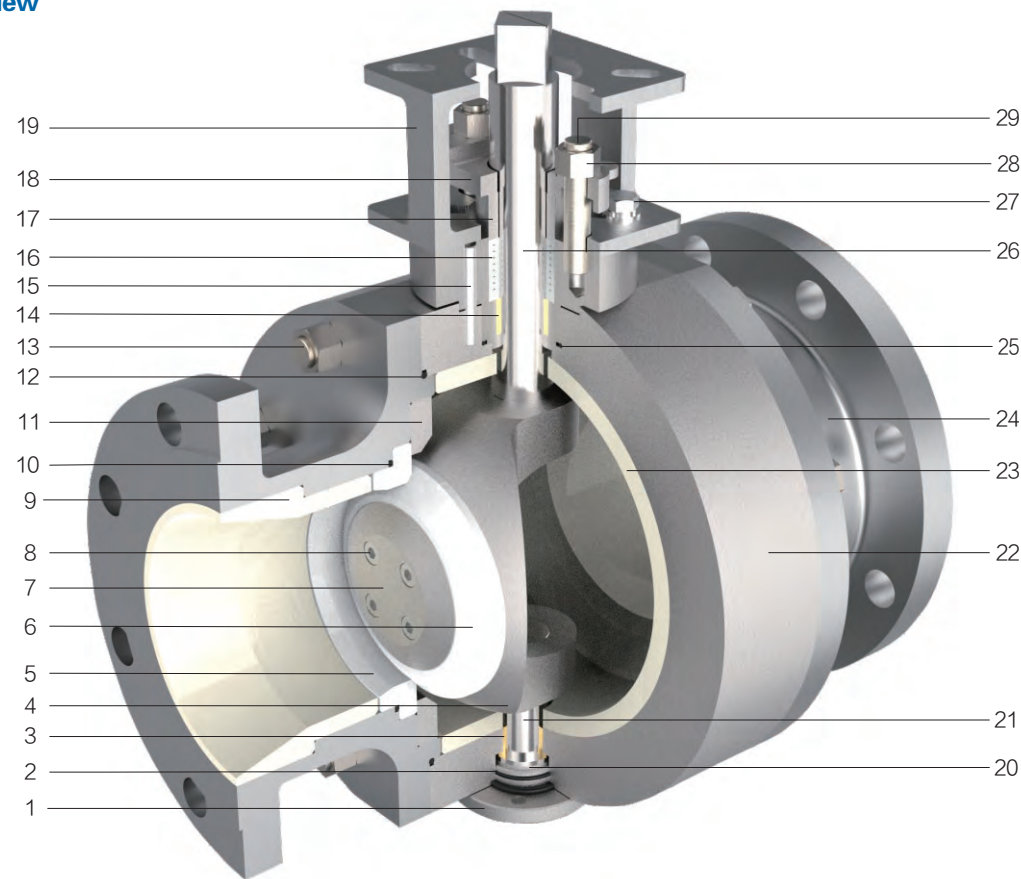
FOYO experienced engineers will choose most suitable material and design according to end-user's different working conditions.



Ceramic Segment Ball Valves

FOYO

Section View



Parts List

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

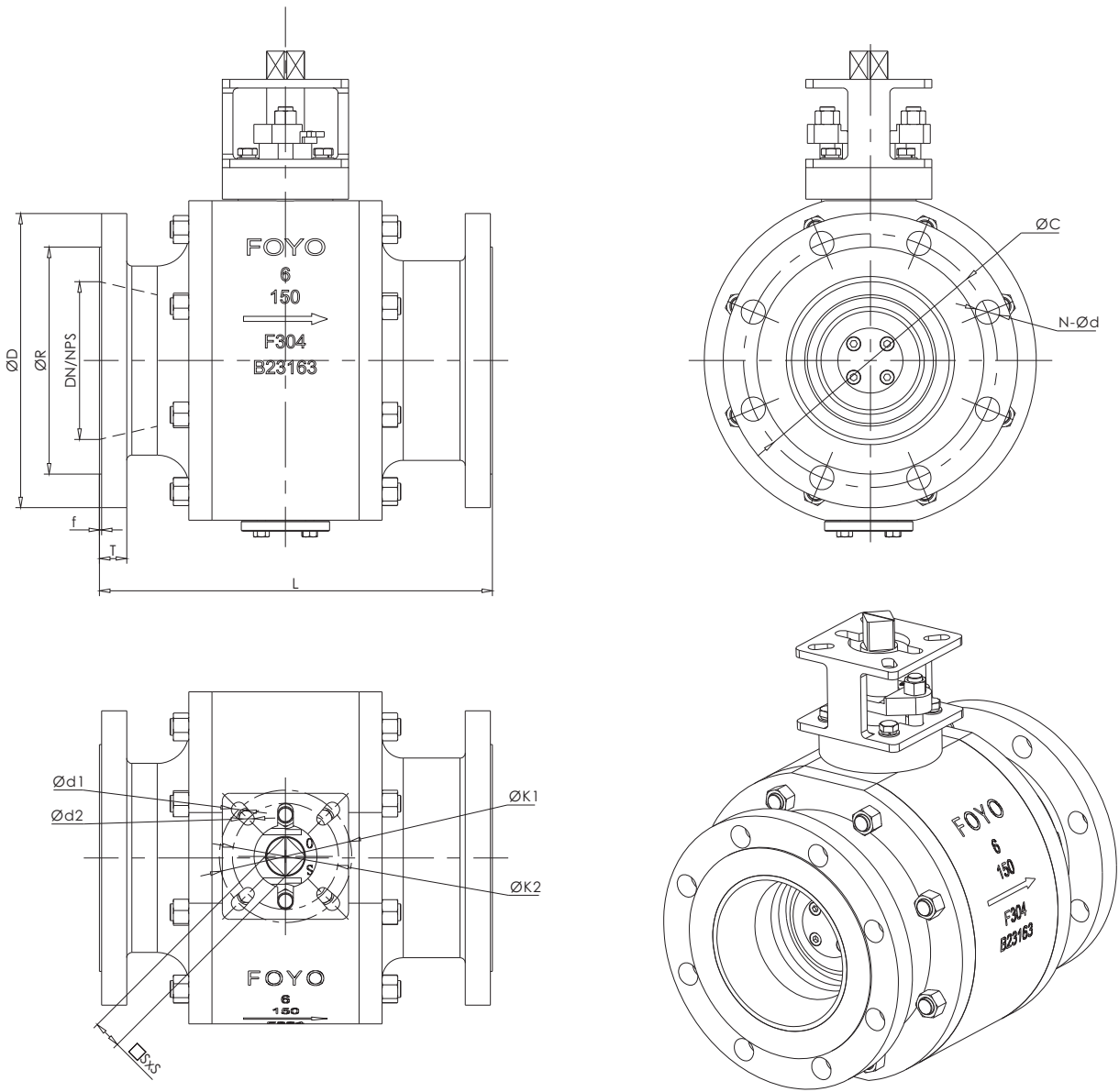
Item	Part Name	Material
16	Packing	PTFE/Graphite
17	Gland	SS304/SS316L
18	Gland Flange	WCB/SS304
19	Yoke	ASTM A351 CF8
20	Gasket	PTFE/17-4PH
21	Trunnion	17-4PH/HC. 276
22	Body	WCB/CF8/CF3M
23	Bushing	Ceramics
24	Adapter	WCB/CF8/CF3M
25	O-Ring	FKM/VMQ
26	Stem	17-4PH/HC. 276
27	Bolt	A2-70
28	Gland Bolt	A193 B7/A193 B8
29	Gland Nut	A194 2H/A194 8

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

Ceramic Segment Ball Valves

FOYO

General Assembly Dimensions



Size		L	SxS	ΦK1	n-Φd1	ΦK2	n-Φd2	(EN1092-1 PN16,RF)					
DN	NPS							ΦD	ΦR	ΦC	N-Φd	T	f
DN50	2"	178	14x14	102	4-Φ11	70	4-Φ9	165	102	125	4-Φ18	18	3
DN65	2-1/2"	222	19x19	102	4-Φ11	70	4-Φ9	185	122	145	8-Φ18	18	3
DN80	3"	241	19x19	102	4-Φ11	70	4-Φ9	200	138	160	8-Φ18	20	3
DN100	4"	305	22x22	125	4-Φ13	102	4-Φ11	220	158	180	8-Φ18	20	3
DN125	5"	356	27x27	125	4-Φ13	102	4-Φ11	250	188	210	8-Φ18	22	3
DN150	6"	394	27x27	125	4-Φ13	102	4-Φ11	285	212	240	8-Φ22	22	3
DN200	8"	457	36x36	140	4-Φ18	102	4-Φ11	340	268	295	12-Φ22	24	3
DN250	10"	533	36x36	140	4-Φ18	102	4-Φ11	405	320	355	12-Φ26	26	3
DN300	12"	610	36x36	140	4-Φ18	102	4-Φ11	460	378	410	12-Φ26	28	4

(ASME B16.5 CL 150,RF)						
ΦD	ΦR	ΦC	N-Φd	T	f	
150	92.1	120.7	4-Φ19	18	2	
180	104.8	139.7	4-Φ19	18	2	
190	127.0	152.4	4-Φ19	20	2	
230	157.2	190.5	8-Φ19	25	2	
255	185.7	215.9	8-Φ23	25	2	
280	215.9	241.3	8-Φ23	26	2	
345	269.9	298.5	8-Φ23	29	2	
405	323.8	362.0	12-Φ26	31	2	
485	381.0	431.8	12-Φ26	33	2	

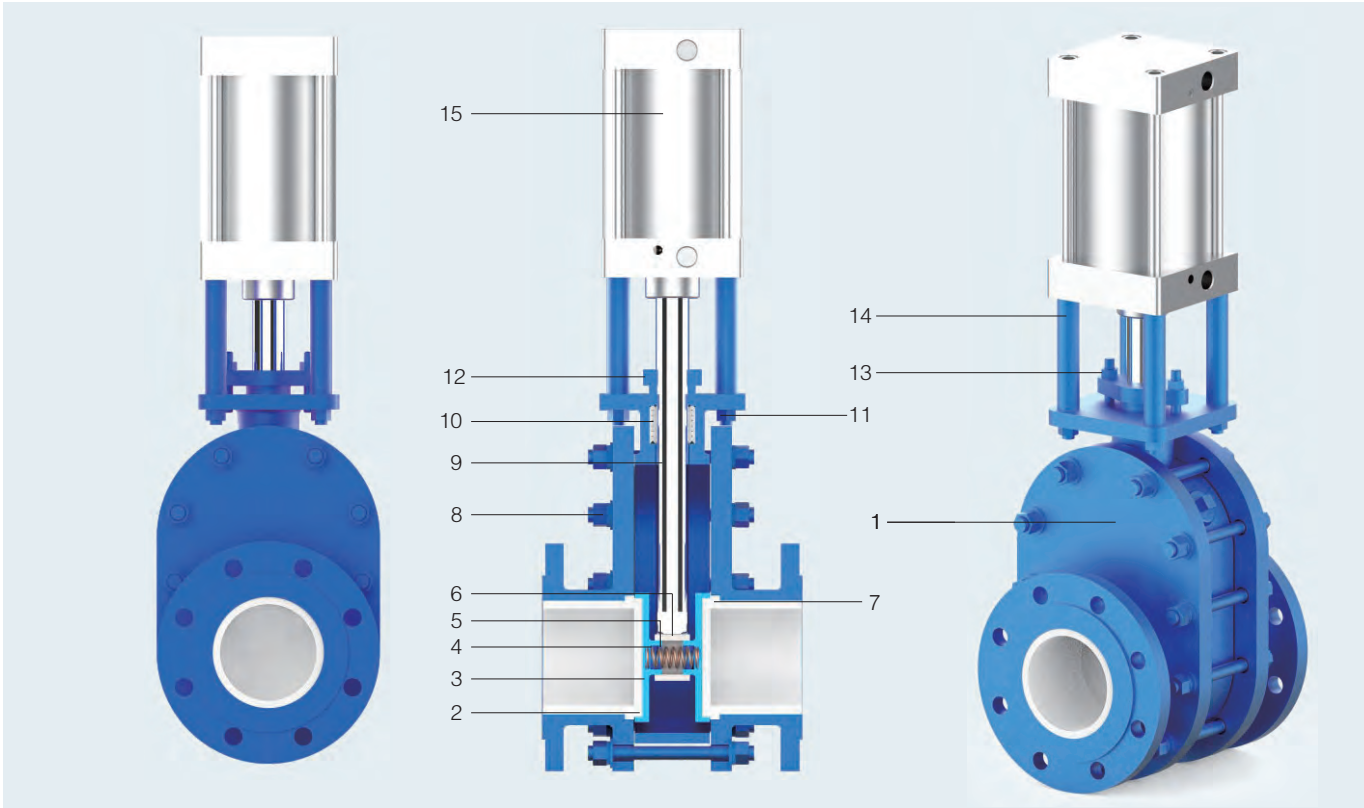
CDDV
Ceramic Double Disc Valves

For Bulk Material Pneumatic Conveying Systems



Ceramic Double Disc Valves

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	FKM/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	Double Acting

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

SPECIFICATION

Product type

Ceramics seated, parallel double disc valve
Flanged type, Wafer type is optional.
Three piece body, Partial Lined or full lined on flow path
Self cleaning design.

Pressure ratings

PN10–PN40; ASME CL150–CL300; JIS 10K–20K

Size range

DN 50~300 / 2"~12"(Full bore).
Reduced bore is optional.

Temperature range

–29 ° C ~ +200 ° C (+500 ° C)
–29 ° F ~ +390 ° F (+930 ° F).

Valve tightness

Class VI for 6" and smaller sizes
Class V for 8" and larger sizes

Design standards

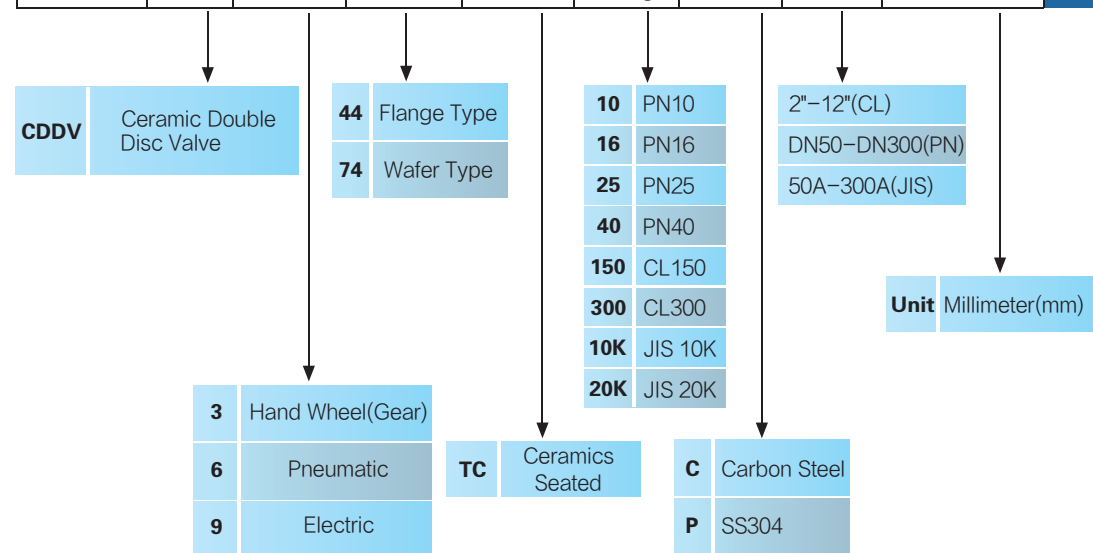
Valve body ASME B16.34
Face-to-Face Mfr's Std. or on customers' request
Valve flanges EN 1092–1, ASME B16.5, JIS B2220
Valve Testing API 598

Ceramic Double Disc Valves

FOYO

■ How to Order

Unit	1	2	3	4	5	6	7	8	Model No.
Item	CDDV	Z6	44	TC	150	C	4"	L280	CDDV-Z644TC-150C-4"-L280
Description	Series	Actuation	Structure	Ceramics Seated	Pressure Rating	Body Material	Valve Size	Face-to-Face Dimension	



Ceramic Double Disc Valves

FOYO

■ Photo Gallery



CRDV

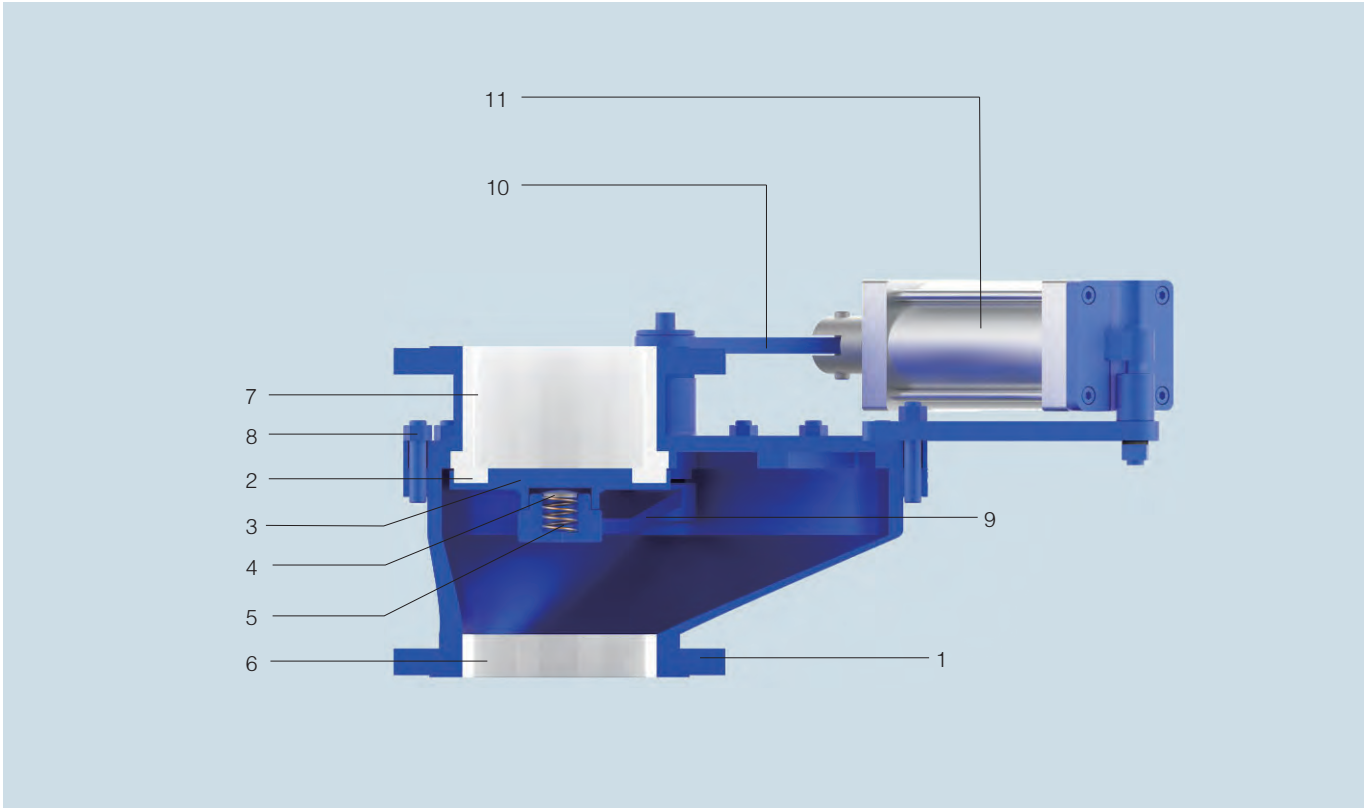
Ceramic Rotating Disc Valves

For Bulk Material Pneumatic Conveying Systems



Ceramic Rotating Disc Valves

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	Body Lining	Ceramics

Item	Part Name	Material
7	Seat	Ceramics
8	Bolt/Nut	A193 B7/A194 2H
9	Hinge	Carbon Steel
10	Driving Arm	A216 WCB
11	Pneumatic Cylinder	Double Acting

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

SPECIFICATION

Product type
Ceramics seated, parallel double disc valve
Flanged type, Wafer type is optional.
Three piece body, Partial Lined or full lined on flow path
Self cleaning design.

Pressure ratings
PN10–PN40; ASME CL150–CL300; JIS 10K–20K

Size range
DN 50–300 / 2"–12".
Redced bore is optional.

Temperature range
–29 ° C ~ +200 ° C (+500 ° C)
–29 ° F ~ +390 ° F (+930 ° F).

Valve tightness
Class V as per FCI 70–2

Design sandards
Valve body ASME B16.34
Face-to-Face Mfr's Std. or on customers' request.
Valve flanges EN 1092–1, ASME B16.5, JIS B2220
Valve Testing API 598

Ceramic Rotating Disc Valves



How to Order

Unit	1	2	3	4	5	6	7	8	Model No.							
Item	CRDV	Z6	41	TC	150	C	8"	L310	CRDV-Z641TC-150C-8"-L310							
Description	Series	Actuation	Structure	Ceramics Seated	Pressure Rating	Body Material	Valve Size	Face-to-Face Dimension								
CRDV Ceramic Rotating Disc Valve		41 Flanged Single Disc			10 PN10 16 PN16 25 PN25 40 PN40 150 CL150 300 CL300 10K JIS 10K 20K JIS 20K	C Carbon Steel P SS304	8"-12"(CL) DN200-DN300(PN) 200A-300A(JIS)	Unit Millimeter(mm)								
		6 Pneumatic		TC Ceramics Seated												



Ceramic Rotating Disc Valves



Photo Gallery



CGGCV

Ceramic Gate/Globe/Check Valves

To Replace Metal Valves in Corrosive&Abrasive Applications



Ceramic Gate/Globe/Check Valves

■ 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 Types

- ☐ Cast Steel Wedge Gate Valve/Globe Valve/Check Valve
- ☐ Pressure Seal Wedge Gate Valve/Globe Valve/Check Valve
- ☐ Slag Discharge Valve
- ☐ Ceramic Parallel Slide 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

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 PIPE 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.

As a professional ceramic valves manufacturer, FOYO has rich experience of high corrosive and abrasive applications. 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 rings 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 & Anti-Abrasion Solutions

For High Corrosive/High Abrasive and High Temp. Applications



Ceramic Parts

■ Ceramic Parts

Comparing with metal and other non-metal material, structure ceramics 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 ceramics for high-temperature, high corrosive and high abrasive working conditions. Besides ceramic valves and ceramic pipes, FOYO has applied structure ceramics 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)
- Sintered Silicone Carbide (SSiC)
- Sintered 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 | >Precision Instrument |
| >Pump & Valves | >Medical instruments |
| >High Temp. & High Pressure Nozzle | >Grinding Mill Parts |
| >Food Machinery Parts | >Paper & Pulp |
| >Molten Metal | >Physic-chemical Equipment |
| >Metallurgy | >Ceramic Heaters |

