

Guva

# KFLOW



F15C/F30C

CERAMIC BALL VALVE

**HIGH PERFORMANCE VALVE**

### Ceramic Materials:



The trim of ceramic valves adopt structural ceramic, compare with metallic materials, its biggest advantages are excellent high temperature mechanical properties, chemical corrosion resisting, high temperature oxidation resisting, wear-proof capability and less specific weight. Therefore, ceramic valves have more excellent performance than ordinary valves.

- Wear-proof capability: the hardness of structural ceramic is 5-15 times of that of stainless steel.
- Chemical corrosion resisting: the chemical properties of structural ceramic are very stable.
- No pollution: to many organic matter and the inorganic matter, the chemical property of structural ceramic is inert and it can not pollute media.

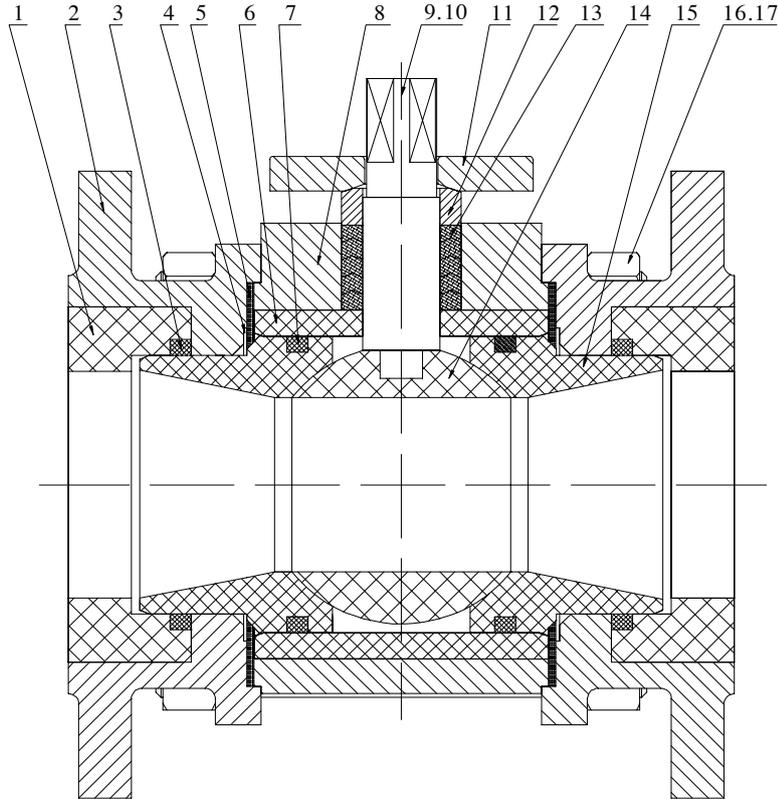
### CERAMIC MATERIAL PERFORMANCE TABLE:

Item	Y-ZrO <sub>2</sub> Y-TZP	Mg-ZrO <sub>2</sub> M-PSZ	Si <sub>3</sub> N <sub>4</sub>	SiC	Common ceramic	Carbide alloy	Steel
Density(g/cm <sup>3</sup> )	6.0~6.05	5.72~5.74	3.2~3.33	3.15~3.25	3.0~3.5	14~18	7.8
Hardness(HRA/C)	87	85	92	94	50~60	90	36
Flexural Strength(Mpa)	1150	900	1200	470	20~50	2000	804
Fracture Toughness(KIC)(Mpa√m)	10~12	13~15	7	4	--	20	101
Compressive Strength(Mpa)	2000	1800	2800	—	--	4000	2000
Thermal Expansion(°C)	87	110	200	75	—	500	500
Thermal Expansion Coefficient(×10 <sup>-6</sup> /°C)	9.6	10	3.4	4	—	7	12
Modulus of Elasticity(Gpa)	200	200	300	400	—	600	
Crushing Load(KN(φ6mm))	15	10	18	3.5	--	—	—
Using Temperature(°C)	<160	<1000	<1500	<1500	—	—	<560
Water Absorption	0	0	0	0.50%	5~10%	—	—
Corrosion Prevention(25°C)	GOOD	GOOD	GOOD	GOOD	GOOD	Flooeey	Flooeey

### CHARACTERS:

<b>Application</b>	F15C/F30C Ceramic ball valve is mainly used in hard corruption and abrasion liquid medium, open and close switches and modulating using.
<b>Principal</b>	This series of ceramic ball valve is structured with structural ceramic or other anti-corrupt materials. Three pieces frame. Made of carbon steel or stainless steel, can protect inner ceramic trims also be able to connect with pipe.
<b>Float Ball Structure</b>	Float ball is designed for this kind of ball valve, whose seal received by media' s self-pressure and pre-tightens strength. Ball is made of ZrO <sub>2</sub> ceramic, whose seal received by ZrO <sub>2</sub> ' s self-lubricating of the process of precision machining and skive with seat oppositely
<b>Operation</b>	0-90° open and close operation, simple, many kinds of shapes holes for kinds of flux characters. For easy control, equipped with plate form for fix actuators firmly.

**STRUCTURE ILLUSTRATION AND PARTS LIST:**



Item	Part Name	Material	Item	Part Name	Material
1	Flange lining	Structure Ceramic	10	Gland Bolt	Carbon Steel/304SS
2	Flange	WCB/CF8/CF8M	11	Gland	Carbon Steel/304SS
3	O ring	Rubber	12	Ring	Carbon Steel/304SS
4	Snap ring	65Mn	13	Packing	Graphite
5	Washer	PTFE	14	Ball	Structure Ceramic
6	Body lining	Structure Ceramic	15	Seat	Structure Ceramic
7	O ring	Rubber	16	Stud Bolt	Carbon Steel/304SS
8	Body	WCB/CF8/CF8M	17	Nut	Carbon Steel/304SS
9	Stem	Hastelloy C-276			

**Standard Matches**

For specific material, consult our factory.

**VALVE STRUCTURE MATERIAL CHOOSE: INSPECTION STANDARD:**

- Body:**
- Cast Steel lined ceramic
  - 304 Stainless Steel lined ceramic
  - 316 Stainless Steel lined ceramic

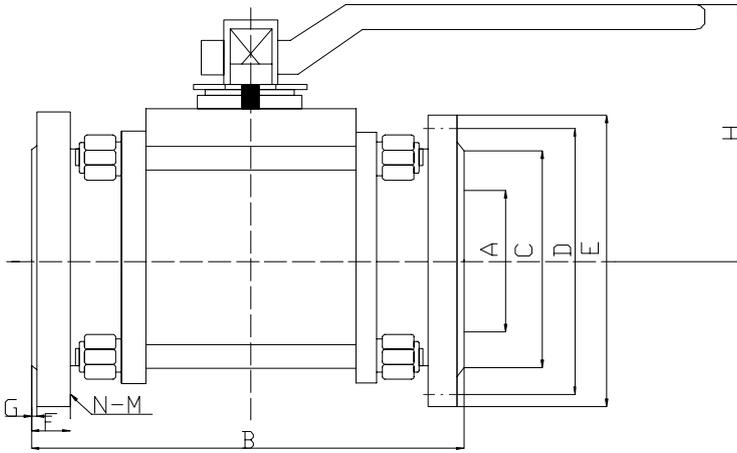
- Ball:**
- Ceramic (ZrO2)
  - Ball hole style: "O" , "V"60° , "V"45°

- Stem:**
- 304 Stainless Steel ASTM 276 Type 304
  - 316 Stainless Steel ASTM 276 Type 316
  - Hastelloy C-276
  - Monel metal

**Valve Inspection complied with ANSIB16.104 Standard**

Shell Strength: 1.5xMax. working pressure psi(MPa)  
 Liquid Seal: 1.1xMax. working pressure psi(MPa)  
 Air Seal: 80psi(0.6MPa)

**SPECIFICATIONS AND DEMENSIONS:**



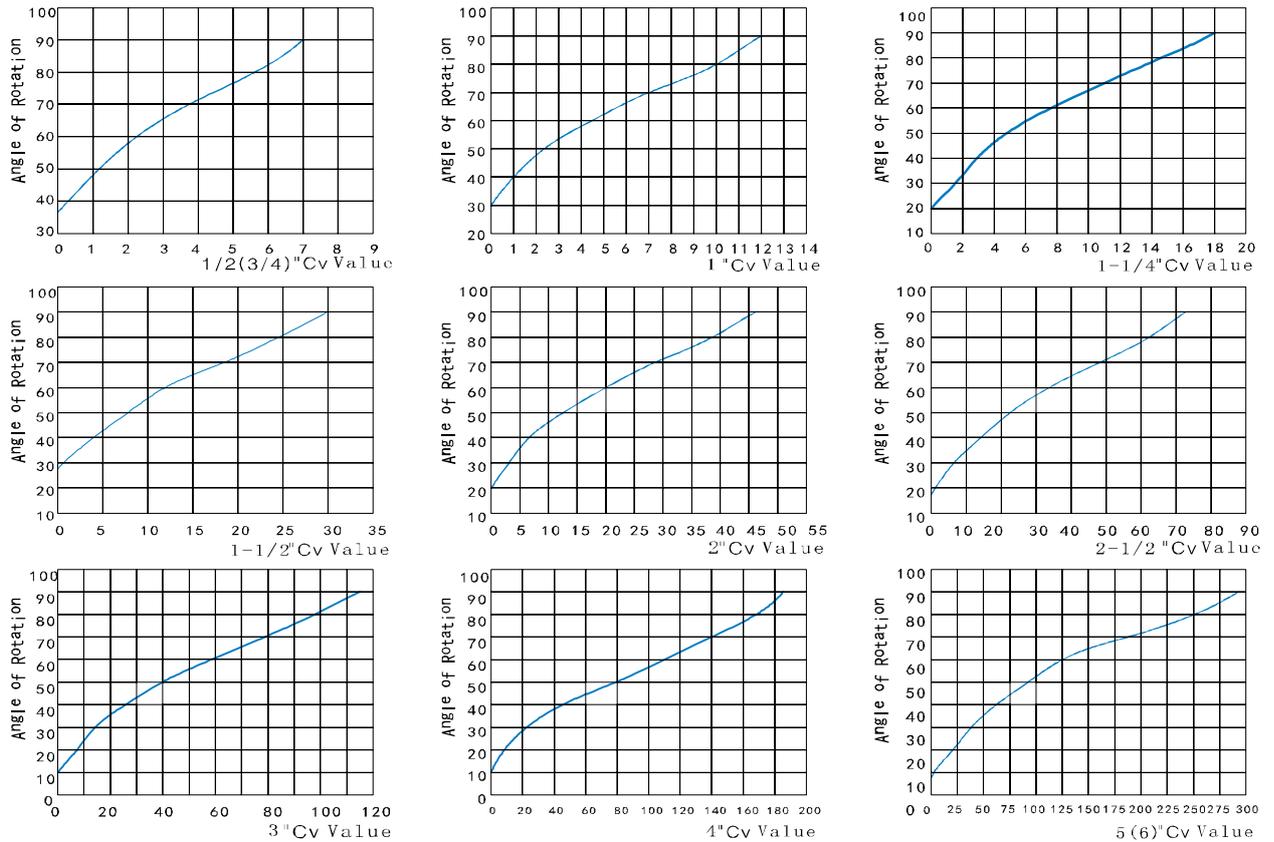
**MODEL F15C**

Size		A	B	H	DIN PN10/PN16						ANSI CLASS150					
Inch	mm				C	D	E	N-M	F	G	C	D	E	N-M	F	G
1/2	15	15	108	85	45	65	95	4-M12	14	2	35	60.5	89	4-M12	11	1.6
3/4	20	15	117	94	55	75	105	4-M12	14	2	43	70	98	4-M12	11	1.6
1	25	20	127	100	65	85	115	4-M12	14	2	51	79.5	108	4-M12	11	1.6
1¼	32	25	140	114	78	100	135	4-M16	16	2	64	89	117	4-M12	13	1.6
1½	40	32	165	121	85	110	145	4-M16	16	2	73	98.5	127	4-M12	14	1.6
2	50	40	178	140	100	125	160	4-M16	16	3	92	120.5	152	4-M16	16	1.6
2½	65	50	190	158	120	145	180	4-M16	18	3	105	139.5	178	4-M16	18	1.6
3	80	65	203	176	135	160	195	8-M16	20	3	127	152.5	190	4-M16	19	1.6
4	100	80	229	202	155	180	215	8-M16	20	3	157	190.5	229	8-M16	24	1.6
5	125	100	254	252	185	210	245	8-M16	22	3	186	216	254	8-M20	24	1.6
6	150	100	267	276	210	240	280	8-M20	24	3	216	241.5	279	8-M20	25	1.6

**MODEL F30C**

Size		A	B	H	DIN PN40						ANSI CLASS300					
Inch	mm				C	D	E	N-M	F	G	C	D	E	N-M	F	G
1/2	15	15	108	90	45	65	95	4-M12	16	2	35	66.5	95	4-M12	15	1.6
3/4	20	15	117	100	55	75	105	4-M12	16	2	43	82.5	117	4-M16	16	1.6
1	25	20	127	105	65	85	115	4-M16	16	2	51	89	124	4-M16	18	1.6
1¼	32	25	140	120	78	100	135	4-M16	18	2	64	98.5	133	4-M16	19	1.6
1½	40	32	165	128	85	110	145	4-M16	18	3	73	114.5	156	4-M20	21	1.6
2	50	40	178	146	100	125	160	4-M16	20	3	92	127	165	8-M16	22	1.6
2½	65	50	190	165	120	145	180	8-M16	22	3	105	149.5	190	8-M20	25	1.6
3	80	65	203	185	135	160	195	8-M16	22	3	127	168	210	8-M20	29	1.6
4	100	80	229	210	160	190	230	8-M20	24	3	157	200.5	254	8-M20	32	1.6
5	125	100	254	265	188	220	270	8-M24	28	3	186	235	279	8-M20	35	1.6
6	150	100	267	290	218	250	300	8-M24	30	3	216	270.5	318	12-M20	37	1.6

**FLUX CHARACTERISTIC TABLE OF CERAMIC BALL VALVE(V60°)**



**Cv VALUE/TORQUE/WEIGHT**

Size		Cv Value			Torque (N·m)		Weight (Kg)
Inch	mm	O	V45	V60	10bar	16bar	DIN PN10/PN16
							ANSI CLASS150
1/2	15	10	4	7	18	28	3
3/4	20	10	4	7	27	42	3.5
1	25	18	8	12	30	46	4.4
1 1/4	32	28	12	18	42	65	6.8
1 1/2	40	47	20	30	50	77	9.2
2	50	73	31	46	60	92	12.5
2 1/2	65	114	48	72	85	130	15
3	80	181	76	115	125	200	22
4	100	292	123	185	165	240	30
5	125	456	192	289	220	320	42
6	150	456	192	289	275	400	54

**TEMPERATURE PRESSURE TABLE:(ANSI B16.34)**

Temperature °C	Max. Working Pressure(MPa)							
	PN16		PN40		CLASS150		CLASS300	
	WCB	CF8	WCB	CF8	WCB	CF8	WCB	CF8
20	1.6	1.52	4	3.8	1.93	1.81	5	4.96
100	1.6	1.31	4	3.44	1.93	1.56	5	4.54
150	1.57	1.29	3.9	3.22	1.89	1.53	4.89	4.28
200	1.52	1.21	3.8	3.02	1.83	1.45	4.84	4.03
250	1.44	1.13	3.6	2.83	1.73	1.34	4.48	3.73

## INSTRUCTIONS:

### ● Installation & Using

1. This kind of valve can be installed on any kinds of pipes. But easy maintenance, inspection and operation is necessary.
2. Prior to installation, please check the label and performance criterion to make sure it can meet your requirements.
3. Prior to installation, please check the pipes connected to the valves and sealing surface to remove the defects and clean the dirty things caused during transportation. No opening and cleaning the valves before cleaning.
4. Prior to installation, please make sure if the stuffing material is stiff. Please ensure the sealing of the stuffing material, but no disturbing to rotation of stems.  
Special Note: Frequent inspection is necessary during usage to make sure the stuffing material is stiff.
5. When connection pipes to the valves, please place asbestos, PTFE or graphite spacers on the sealing surface of the flanges, then use the bolts with uniform force to ensure reliable connection. No direct connection between the pipes and flanges to prevent damages to valve flanges.
6. For pipe testing after installation, the valves should be placed at fully open position.
7. Stems should be used with uniform force for the opening and closing of the valves.  
Special Note: No using the auxiliary levers or other tools to prevent damages to the parts.

### ● Operation

1. Manual or gear driving equipments are used for manual operated valves, electric or pneumatic equipments for electric or pneumatic operated ball valves to open or close the valves by rotating the ball 90 degree.
2. One flute is chiseled on the top of stem. The same direction of flute is as that of the flowing means opening, vertical to that of the flowing means closing.
3. Opening and closing of electric or pneumatic ball valves will be indicated by the indicators on the equipments.

8. For installation and usage of driving equipments of electric and pneumatic operated valves, please see the Introduction to the Electric Operated Valves and the Introduction to the Pneumatic Operated Valves.
9. With valves of installation and usage of driving equipments, when they are installed in the pipeline, should pay special attention to ensuring that the strength and stiffness of attachment bracket well and the tightening of the bolts.
10. For connection of the controlled valves, the power wire and signal wire should be separated and placed in the actuators specifically.  
Special Note: Please use shielded cable for signal wire to prevent outside disturbing.
11. Periodical inspection is necessary during usage and repair or replace the damaged or failed valves in time. Inspection items as following:
  - 1) If there is damages to sealing surface of valve seat and O-type sealing ring;
  - 2) If there is damages to sealing surface of stems and if the stuffing material of spacers is stiff;
  - 3) There should be no blocking to opening and closing of the repaired and re-installed ball valves;
  - 4) Sealing test should be conducted on request after repairing and re-installing of ball valves;
  - 5) Check the sealing surface to find if there is damages.

### ● Storage & Maintenance

1. All the ball valves can not be piled and should be stored in dry and airy rooms with temperature ranging from 5-40 Celsius degree and comparative humidity between 45-90%, keeping the valves fully open and the two ends of pipes connected to the valves blocked.
2. Periodic checking and cleaning necessary for long period storing. Specially keep the sealing surface clean and from damages.
3. No upending for storing.
4. No throwing and impact during moving and transportation. Careful handling.

## KFLOW F15C/30C

All statements, technical information, and recommendations in this bulletin are for general use only. Consult k-flow representatives or factory for the specific requirements and material selection for your intended application.

### Guva International, Inc

 U.S. Valves and Flow Controls Manufacturers

GUVA have the right to modify the product design and specification without informing the customer.

[Http://www.guvaflo.com](http://www.guvaflo.com)