



**HISAKA**

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## HF5 MANUAL - OPERATED BALL VALVE



### HF5 SERIES FEATURES :

In addition to superior characteristics of HF3 Ball Valve, HF5 has such advantages that safety, maintainability and automatization are easily done through further improvement.

1. A rectangular stem top can prevent operational errors.
2. The structure equipped with a standard MAXTITE PTFE® seat ( next generation PTFE seat ) brings a longer product life.
3. Free from any leakage from a gland because manually operated parts are not at all affected by automatization of a process.

### STRUCTURAL FEATURES :

#### 1. Anti-Blow-Out Stem (fire safe)

HF5 has a flanged stem inserted from inside of the body so that the stem never blow out even it is subject to abnormally high pressure or a gland bolt becomes loose. The flange at the lower part of the stem acts as a stopper inside the body. Furthermore, the flanged stem that will closely contact with the body under internal pressure prevents excessive leakage if a gland packing is burnt down at the worst case of fire instance.

#### 2. Secondary Metal Seat (fire safe)

HF5 Ball Valve has a structure that prevents excessive leakage and the spread of fire through close contact of the ball with the secondary metal seat installed in the main body if the ball seat is burnt down.

#### 3. Metal Touch Body Seal (fire safe)

The double-seal type joint of the body cap with a PTFE gasket and metal touch maintains sealing effect and protects excessive leakage if the PTFE gasket is burnt down

#### 4. Anti-Static Device (Optional)

Friction between the ball and the ball seat may generate static electricity. For flammable fluid, an optional anti-static device may be installed on the stem in two different place to prevent electrification . (Anti-static device is not the part equipped as the standard. )

#### 5. Ball Seat

A MAXTITE PTFE® seat ( next generation PTFE seat ) is employed as the standard specification. Its resistance to high temperature is superior to a pure PTFE seat. Moreover, the life of MAXTITE PTFE® seat is long. Flexibility of a ball valve has been further improved through a wide choice of seat material from pure PTFE to metal to meet customer's requirements.

#### 6. Stem

A rectangular top-stem employed by the HF5 Ball Valve can perfectly avoid operational errors of opening and closing . In addition, such stem provides easy identification of the open-close position at the site and increases safety.

#### 7. Gland Packing

A gland packing has a special structure combining a unique hat-shaped stem bearing. Self-sealing function under fluid pressure ensures and maintains sealing performance and, minimizes a hassle of additional tightening of the gland.

#### 8. Pressure Relief Protection

The engagement of the ball and the stem has a hole to prevent internal pressure from rising. The hole enables to avoid rising of fluid pressure in the pocket when the valve is open . Therefore, the ball seat is free from direct damage

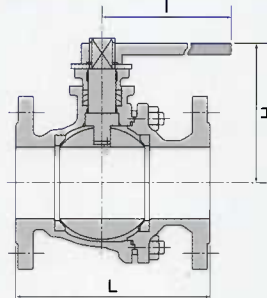
#### 9. Key Lock( with an optional key)

Key lock is available at full open and full close positions. Operational errors by non-authorized personnel can therefore be prevented effectively .

#### 10. Body Material

HF5 Available on stainless steel, Cast steel, Ductile Iron, Cast Iron, Hastelloy & Titanium

### 10K / Class 150 #Ansi - JIS 10K Full Bore-HF5, Stainless Steel & Cast Steel



Nominal diameter	A	15	20	25	32	40	50	65	80	100	125	150	200	250	300
Port diameter	B	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12
L		108	117	127	140	165	178	190	203	229	320	394	457	533	610
H		75	78	102	107	110	112	136	154	177	290	310	375		
I		120	120	150	150	200	250	300	350	400	700	1000	1500	※	※
Weight (kg)		2.2	2.5	3.7	5.9	7.8	9.4	14.5	18.8	28.9	44.4	60.4	92.3	210	335

#### Pressure for inspection

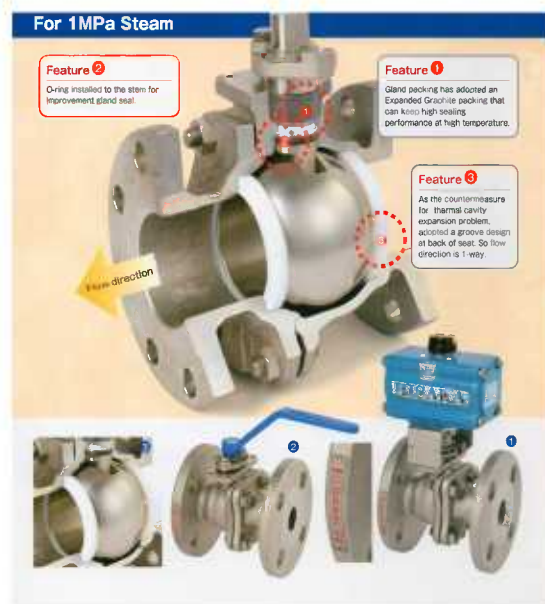
Body	10K...2.06MPa (Pneumatic pressure)
	Class150...2.94MPa (Pneumatic pressure)
Seat	0.59MPa (Pneumatic pressure)

For serviceable range of pressure and temperature, refer to page 6.

Name of parts	Material			
Body	SCS13A	SCS14A	SCS16A	WCB
Body cap	SCS13A	SCS14A	SCS16A	WCB
Ball	SCS13A	SCS14A	SCS16A	SCS13A
	(SUS304)	(SUS316)	(SUS316L)	(SUS304)
Stem	SUS304	SUS316	SUS316L	SUS403
Seat	MAXTITE PTFE® PTFE			
Gland packing	PTFE			

**Standard Connection : JIS and ASME**  
**Pressure Rating : 10K, 20K, #150LB, #300LB**

## BALL VALVE for Steam Service

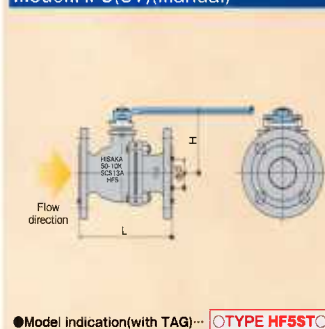


Ball Valve HF5 (ST) type was developed specially for steam. This model had able to solve the problems for steam service, in addition to the ball valve's performance. It is using for many kinds of industries, like chemical, food and so on.

### Main Features

- It was developed as for 2MPa and 1MPa Stream, and an optimal ball valve for stream service. It can be selected depend on the application.
  - By assembling with AD type actuator, it will be a compact type ON- OFF ball valve.
- AS type, TD and TS type are also available
- Operation of valve is quarter turn (90degree), and it was facilitated automation and operation.

### Model:HF5(ST)(Manual)



For 1MPa						For 2MPa					
size	d	L	H	Handle length		size	d	L	H	Handle length	
1/2" (15A)	13	108	59	120		1/2" (15A)	13	140	59	120	
3/4" (20A)	19	117	62	120		3/4" (20A)	19	152	62	120	
1" (25A)	25	127	77	150		1" (25A)	25	165	77	150	
32A	32	140	82	150		1-1/2" (40A)	38	190	100	200	
1-1/2" (40A)	38	165	100	200		2" (50A)	51	216	112	250	
2" (50A)	51	178	112	250		2-1/2" (55A)	64	241	135	300	
2-1/2" (55A)	64	190	135	300		3" (80A)	76	283	154	350	
3" (80A)	73	203	154	350		4" (100A)	102	305	233	550	
4" (100A)	102	229	175	400							
5" (125A)	127	320	290	700							
6" (150A)	152	394	310	1000							

●Model Indication(with TAG)---○TYPE HF5ST○

●UNIT:mm

## BALL VALVE for low temperature service



### Temperature Range

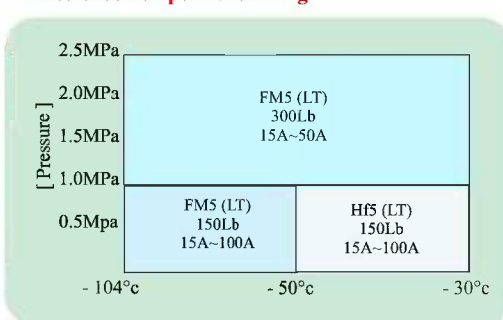
HF5 (LT) Model : -30°C ~ -50°C

FM5 (LT) Model : -50°C ~ -104°C

### Permission Leakage :

- In case of -30°C ~ -50°C  
"0" ZERO LEAKAGE
- In case of -50°C ~ -104°C  
Fluid Liquid (Refrigerant) at the time of 1MPa pressurized  
"0" ZERO LEAKAGE  
Fluid Nitrogen Gas at the time of 1MPa pressurized  
Leakage 25cc/min/inch  
( 1/2" , 3/4" : 25CC/min)

### Pressure / Temperature rating



### Production Range

Model	Class	Design Pressure	15A	20A	25A	40A	50A	65A	80A	100A
HF5 (LT)	150LB	below 1.0MPa	○	○	○	○	○	○	○	○
FM5 (LT)	150LB	below 1.0MPa	○	○	○	○	○	○	○	○
	300LB	below 2.5MPa	○	○	○	○	○	x	x	x

## PNEUMATIC SINGLE & DOUBLE ACTING ACTUATOR

### T-series Actuator



### Double Acting Model

TD1,TD2,TD3,TD4,TD5  
TD6,TD7,TD8,TD9

### Single Acting Model

TS1,TS2,TS3,TS4,TS5  
TS6,TS7,TS8

T-series Actuator (TD and TS Type) is a rigid and high efficiency actuator with 90-deg. rotation mechanism, specially developed and designed so as to actuate ball valves.

Operating principle: Piston linear stroke is converted to rotary torque via a scotch yoke, which is then output to a ball valve to be actuated.

### Specification

Fluid Used	: Air
Maximum operating pressure	: 0.69MPa (7kg/cm <sup>2</sup> G)
Permissible Environment Temp	: -20°C ~ +80°C
Lubrication Oil	: No Need
Guaranteed operation cycles	: 100,000 Cycles
Rotation Angle	: 90deg

### Features

1. Smooth Acting
2. Weather proof structure suited to outdoor application
3. Non-lubrication type
4. Output characteristic suited to ball valves
5. Actuator mount conforming to ISO5211
6. Other instruments easy to mount
7. Position Indicator



## TANK BOTTOM BALL VALVE

### MODEL : TB5



#### FEATURES

Model : TB5 was developed for Tank bottom application. And it exceed for discharging, churning and operation performance, compare with flash valve, gate valve and globe valve

Production Range

Size : 25A ~ 300A

Rating : JIS10K

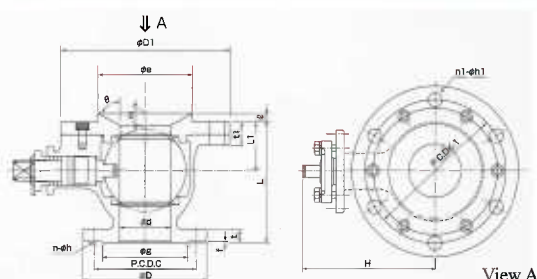
ANSI 150LB

Material : SCS 13A

SCS 14A

SCS 16A

#### TB5 JIS 10K/CLASS 150 DIMENSION OF MANUAL VALVE



#### Features :

##### 1. Churning Performance

Part of ball surface is almost flat with bottom line of tank.  
The Accumulated fluid is so little, and possible to churn the Fluid uniformity

##### 2. Discharging & Operativity

Realized easy operation for quoter rotating by hand lever operation at narrow space link tank bottom  
Fluid is discharged smoothly and high speed by full bore design and realized to get efficiency

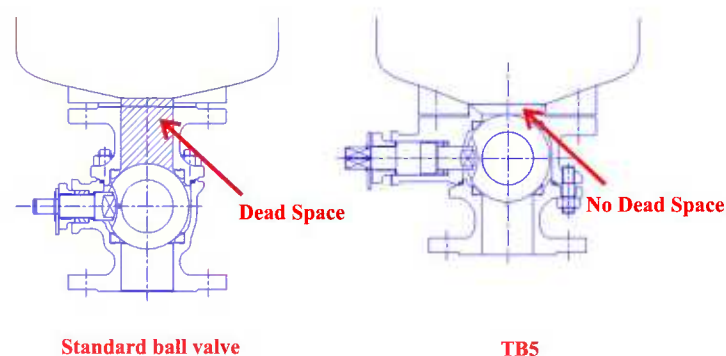
##### 3. Compact design and easy automatization

Compact designed AD/AS actuator cylinder is available to use at at narrow space.  
Automatization is that assemble actuator and yoke set to the valve only unnecessary to remove the Gland Bolt.

##### 4. Link Type

In case of interfere the jacket of tank and actuator, link type actuator suitable to use . This link position is able to change arbitrary

#### Comparison with TB5 and Standard ball valve



## METAL TOUCH BALL VALVE



#### BODY THICKNESS : ANSI B16.34 FACE TO FACE DIMENSION : ANSI B16.10

HISAKA Metal touch ball valve is suitable for powder, slurry, high viscosiy fluid, high temperature fluid. There are 4kinds of hard facing treatment for ball and seat, their treatment suitable for many kinds enviroment and solve your trouble points.

#### Variation of Metal Touch Series :

##### HF5 (M1R) \* HF5 (M1M) \* HF5 (M1H)

This HF5(M) series are separated 3 models according to the operation temperature . And each models has special sealing materials. ( details as folowing ).

The most of body parts for this series are common to the standard model HF5.

Therefore maintenance work is too simple to replace new parts.

#### Seat Leakage :

HF5(M1R)  
HF5(M1M)  
HF5(M1H) } based on ANSI /FCI 70-2 CLASS V

#### Hard Facing

This model has some kinds of hard facing treatment. And these treatment can be selected according to fluid condition.

#### MANUAL OPERATE JIS10K SCS

Size	d	L	H	ℓ	☆
15A	13	108	75	42	120
20A	19	117	78	47	120
25A	25	127	102	51	150
40A	38	165	110	75	200
50A	51	178	112	82	250
65A	64	190	136	84	300
80A	76	203	154	90	350
100A	102	229	177	110	400
125A	127	320	290	160	1000
150A	152	394	310	197	1500
200A	203	457		228	W.GEAR

☆LENGTH OF LEVER

Model	Temp. Range
HF5(M1R)	MAX.200°C
HF5(M1M)	MAX.350°C
HF5(M1H)	MAX.600°C

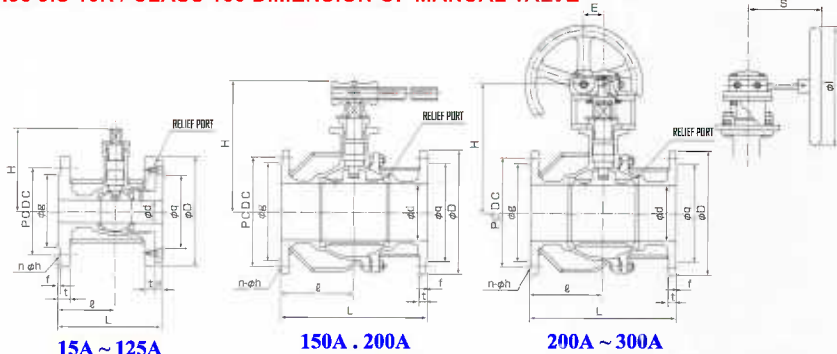
HARD FACING	
BALL	SEAT
TUFFTRIDE	STELLITE NO.6
NEW KANUC	
METCO - 16C	
STELLITE NO.12	

## 2-WAY JACKET BALL VALVE

Model : HJ5



HJ5 JIS 10K / CLASS 150 DIMENSION OF MANUAL VALVE



### Production Range

Size : 15A ~ 300A ( 1/2" ~ 12" )

Rating : JIS10K / JIS20K / JIS30K

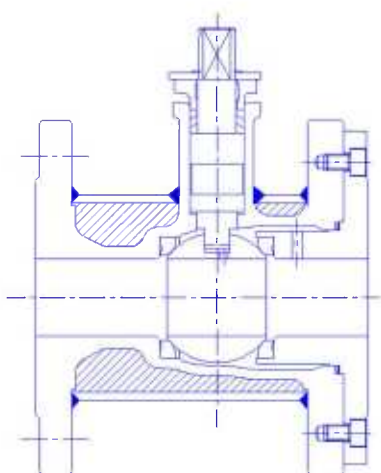
ASME 150Lb / 300 Lb

Material : SCS13A, SCS14A

ASTM A351 CF8, CF8M

### Features

1. Model "HJ5" Jacket Ball Valve is only full bore design. Therefore there are not pressure loss and accumulated fluid in the cavity of body. And full jacket design is able to keep the fluid temperature completely.
2. There is a relief port to prevent expansion for accumulated fluid in the cavity of body. These special design was developed safety measurement by our long experience in many kinds of industrial field, therefore it is possible to prevent various trouble in customer side.
3. Almost of part are same with our standart model (Model:HF5). Therefore it is available to be supplied to customer soon.
4. MODEL "HJ5" is 1-way direction design. At the time of piping work, please be careful flow direction. And flow direction. And Flow direction of valve will be assembled high pressure side to low pressure side, to suit mark "→". If assembled for wrong direction, it happened to leakage.



JIS10K • ANSI150Lb

Size(JIS A)	15	20	25	40	50	65	80	100	150	200	250	300
HISAKA	○	○	○	○	○	○	○	○	○	○	○	○
KTM		⊗	⊗	⊗	⊗		⊗	⊗	⊗	⊗		
KITZ		○	○	○	○	○	◆	◆	◆			

○ Full Bore

◆ Reduce Bore

## 3-WAY JACKET BALL VALVE

Model : H45J

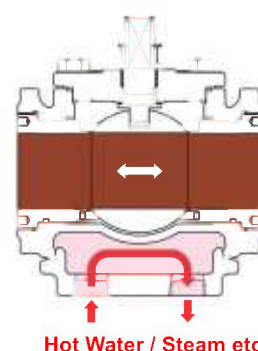


### Features

1. Available to select the flow direction.
2. With 4 pcs of seat. Can be kept tight sealing.
3. With full bore design, no pressure loss and no remaining fluid inside pipe.
4. With full jacket design, can be kept temperature of fluid certainly.
5. Can easy to modify automatization same as 2-way ball valve.

## 2-WAY/ 3-WAY JACKET BALL VALVE

Model : CH1, CH41



### Features

1. Flanges size is same as port size.
2. With full bore design
3. With semi jacket design, it suitable for chocolate service

## Y TYPE 3 WAY BALL VALVE

*For Powder, High Viscosity Fluid*



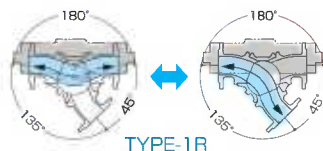
■ HY1 ■ HY1M ■ HY1-AR ■ HY1M-AR  
■ HY2 ■ HY2M ■ HY2-AR ■ HY2M-AR

HISAKA Y-type ball valve is unique 3-way diverter valve designed to convey powder materials. It has features reducing pressure loss for full port and tight sealing by PTFE Ball Seat. In case of using as diverting for high viscosity fluid, it is effective for reducing flow loss. About the automating, this valve can be realized by combining with the newly developed AR-type actuator.

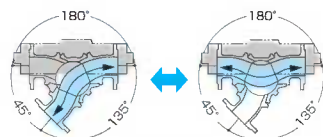
### FEATURES

- As each body cap is fitted individually to the body, piping direction can be varied as necessary, which ensures rational arrangement of valve
- Because fluid route curvature is large (equal to or large than long elbow curvature) pressure loss is reduced
- An elastic is fitted to back side of ball seat so as to prevent reduction of sealing effect due to seat wear by powder material and to prevent increasing of rotating torque.
- The bearing provided at the rotating shaft sliding part prevents scuffing
- Each seal employs O-ring to ensure stable sealing.
- Especially, the dual O-ring on the shaft prevent troubles resulting from entry of powder material.

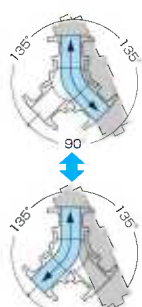
### FLOW DIRECTION



TYPE-1R

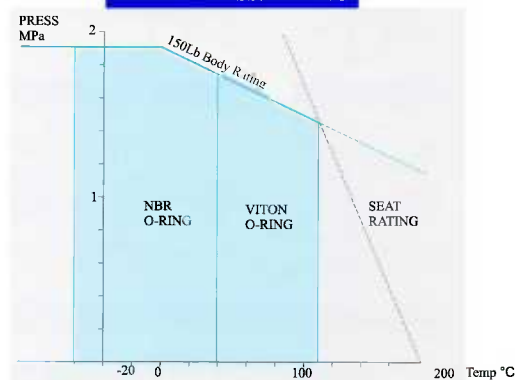


TYPE-1L



TYPE-18R

### TEMP - PRESS. RATING



## 3-WAY BALL VALVE

**4 Seats**



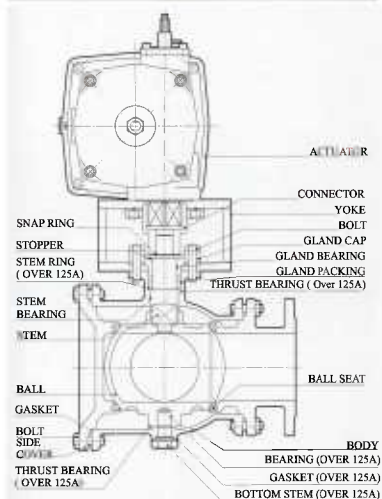
4 SEATS, 3-WAY BALL VALVE HAS MANY FUNCTION AND CAN BE OPERATED FOR CHANGING FLOW DIRECTION, DIVERTING, MIXING.

### MODEL :

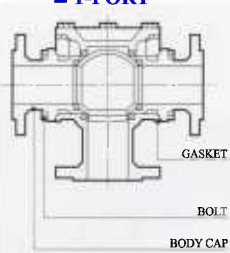
- H45 : Manual Operation ( Hand Lever )
- H45-W : Manual Operation ( Worm Gear )
- H45-AD : Double Acting ON-OFF Operation ( with AD Type Actuator )
- H45-AS : Single Acting ON-OFF Operation ( with AS Type Actuator )
- H45-TD : Double Acting ON-OFF Operation ( with TD Type Actuator )
- H45-TS : Single Acting ON-OFF Operation ( with TS Type Actuator )

### CHARACTERISTICS

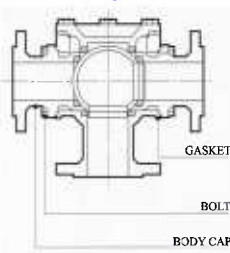
1. CAN BE USED FOR CHANGING FLOW DIRECTION
2. USING 4PCS OF BALL SEAT
3. SPECIAL GLAND DESIGN
4. STOPPER FOR POSITIONING OF FLOW DIRECTION
5. PROTECTED MIS-OPERATION BY RECTANGULAR TOP STEM
6. SIMPLY AUTOMATIZATION AND MAINTENANCE WORK



### T-PORT



### L-PORT



### MATERIAL OF MAIN PARTS

NAME OF PARTS	MATERIAL		
BODY	SCS13A	SCS14A	FC200
BODY CAP	SCS13A	SCS14A	FC200
SIDE COVER	SCS13A (304)	SCS14A (316)	SUS403
BALL	SUS304	SUS316	SUS403
STEM	SUS304	SUS304	
BOLT	SUS304	SUS304	
BALL SEAT	PTFE		
GLAND PACKING	PTFE		
GASKET	PTFE		

### SPECIFICATION OF CYLINDER

MAX OPERATION PRESS	MAX OPERATION TEMP	GUARANTEE TIMES
0.7MPa	-15°C~+80°C	100,000

(STANDARD OPERATION PRESS 0.4 MPa)

### INSPECTION PRESSURE

	JIS 10K	ASME JPI 150Lb
SHELL	2.06 MPa (A.T.P)	2.93 MPa (W.T.P)
SEAT	0.59 MPa (A.T.P)	0.59 MPa (A.T.P)



## CERAMIC LINING BALL VALVE



**Ceramic Lining Ball Valve** is designed for hard powder & high speed pneumatic conveyer system, and it has high performance for anti-erosion. Hisaka's ceramic lining has supplied many kinds critical application and obtained good evaluation from industrial market.

### SPECIFICATION :

- ~ Available Range : 25A - 600A
- ~ Ceramic Tips : Material : Alumina 92%  
Shape: Tip (t 1.5 t3)
- ~ Adhesive : EPOXY or SILICON
- ~ Operation Temp. : EPOXY ~ 150 °C  
SILICON ~ 200 °C
- ~ Anti-Erosion : FC200 x 20 times

### Characteristic :

1. High performance for anti-erosion achieved to prolong a life time of valve.
2. It can be used Hisaka's standard valve so it can be reduced cost and can be shortened the delivery time.
3. Valve of complex shape also can be processed



\* Edge of valve port attached "L" shape tips. So it can be protected erosion and flacking off the tips on edge part.



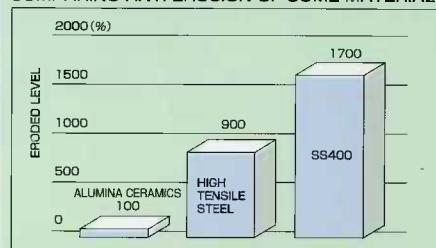
\* Array of tips by hound's tooth pattern, it can be protected erosion and flacking off in parts of seam.



### ■ COMPARING ANTI-EROSION

Hisaka's ceramic lining has high technology for attaching tips by special adhesive. So it is possible to demonstrate for the performance of anti-erosion.

### COMPARING ANTI-EROSION OF SOME MATERIALS



### ■ SUPPLY RECORD OF POWDER FLUID

FLY ASH, COAL POWDER, CEMENT POWDER, WASTE PLASTICS, QUICK LIME, CASTING SAND, ORE POWDER, IRON POWDER, DIATOMITE, SILICA and etc.

## DUAX BALL VALVE

**Model : DX1-TD DX1-TS**



***Duax is an epoch-making ball valve that ball and ball seat are not touched at operating timing.***

In case of using general ball valve for powder line and high frequency operation line, ball and ball seat are damaged and happened leakage, easily. Under this condition, customer will be done maintenance for a short period, and it's costing.

Duax was developed "friction-free ball & ball seat at the time of operation" due to reduce these cost with one of the conception. This model is an epoch making valve (patent granted). Duax has high safety and economical performance, and it's possibility to get high efficiency.

1. Prolong Life

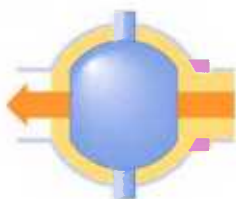
3. Keeping Pressure for Reactor

5. High Frequency Operation

2. Contamination Less

4. Erosive Fluid

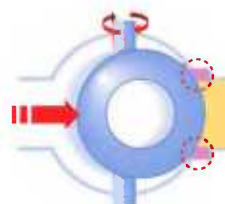
6. High Temperature & Pressure



1. Ball & Ball Seat are not touch



2. Ball rotate with non-touch condition



3. Ball Pushed to ball seat with cam action after rotating ball.

FULL OPEN

ROTATING

FULL CLOSE. PUSHING & SEALING