



**QUANSHUN FLOW CONTROL**

**Brochures of**  
**Eccentric semi-ball valve**

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## Introduction

Eccentric semi-ball valve is a kind of new developed ball valve which is specialized in solving the technical problems during “solid-gas” and “liquid-gas” fluids medium conveying. It is mainly used for cutting off, regulating or changing the direction of medium in the pipeline. Eccentric semi-ball valve is widely used in steel mill ,alumina plant ,soda plant ,water works and so on.



## Design standard

ASME B16.34 -2009 Valves-Flanged ,Threaded,and welding

ASME B16.10-2009 Face to face and End to end dimensions of valves

API 598-2004 Valve Inspection and Testing

GB/T 26146-2010 Eccentric semi-ball valve

GB/T12221 -2005 Metal valves-Face to face

GB/T13927 -2008 Industrial valves - Pressure testing

## Performance data

### 1 ANSI standards

Pressure class	150Lb	300Lb	600Lb
Shell Test (MPa)	3.0	7.7	15.3
Sealing test (MPa)	2.0	5.7	11.3
Applicable medium	Aluminum powder,coal powder,cola ash,soda ,other wearing and corrosive meduim		
Applicable temperature	t≤425℃		

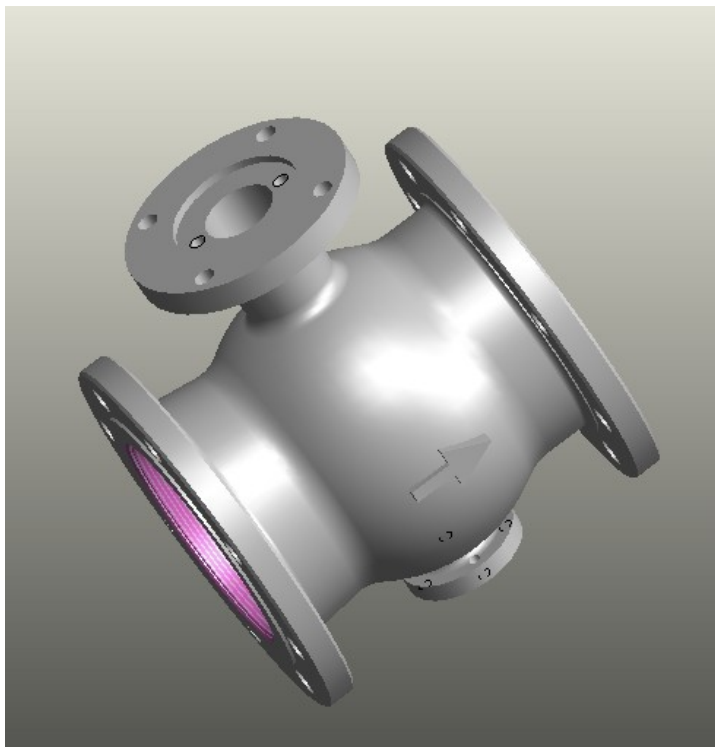
### 2 GB standards

Nominal pressure (MPa)	0.6	1.0	1.6	2.0	2.5	4.0	5.0	6.4	10
Shell Test (MPa)	0.9	1.5	2.4	3.0	3.75	6.0	7.5	9.6	15
Sealing test (MPa)	0.6 6	1.1	1.76	2.2	2.75	4.4	5.5	7.04	11
Applicable medium	Aluminum powder,coal powder,cola ash,soda ,other wearing and corrosive meduim								
Applicable temperature	t≤425℃								

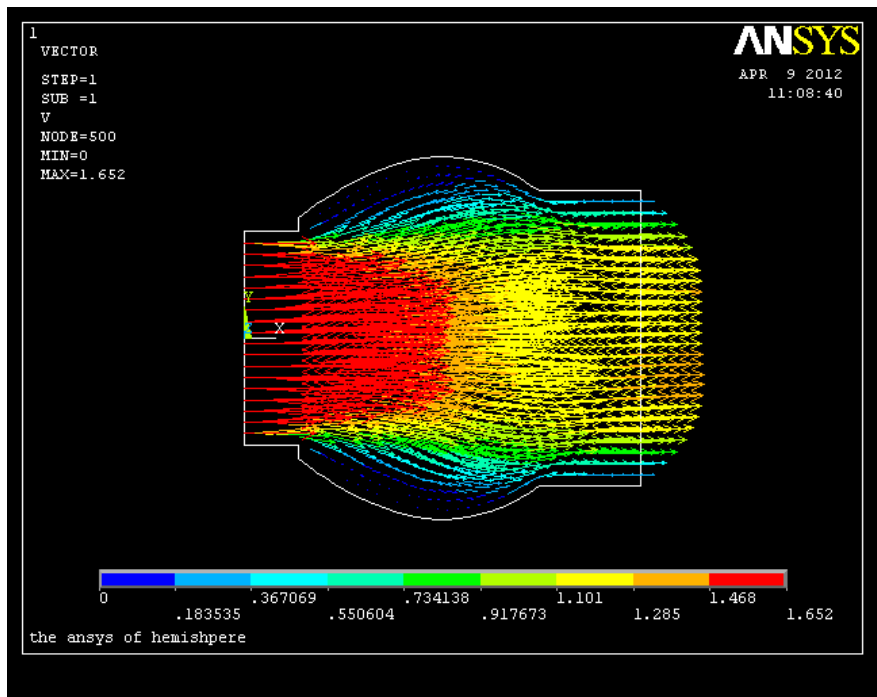
## Design feature

**1. Advanced design concepts and methods make the valve has the advantages of small flow resistance coefficient & low energy consumption.**

According to the analysis through mathematical model of fluid motion Bernoulli equation, momentum equation, continuity equation, energy conservation law, our development and research team analyse the imitative flow pattern by ANSYS software ,then design and optimize the valve body with Solidworks ,which ensure the valve body to be full size design and the fluid resistance coefficient is close to zero.



Valve 3D design model



Analysis of valve inner cavity flow field

**2. Due to unique double eccentric structure, the semi-ball valve can cut solid particles, has "self-cleaning" effect.**

Since the semi-ball adopts eccentric structure, when the hemisphere opens about  $8^\circ$  from the closed position, the hemispherical sealing surface almost completely separates from the valve seat sealing surface, thereby reduces wear between the valve seat and valve disc sealing when it opens and closes. When the valve disc is closed, the force between the valve disc and valve seat sealing surface can effectively cut off the solid particles on the sealing surface of the valve disc, therefore, the semi-ball valve has a good self-cleaning effect on the sealing surface. Following is our test on shear force during the valve is opening and closing, the shear force can cut off steel wire, and the cross-section is still smooth after the paper test .



Shear force test 1



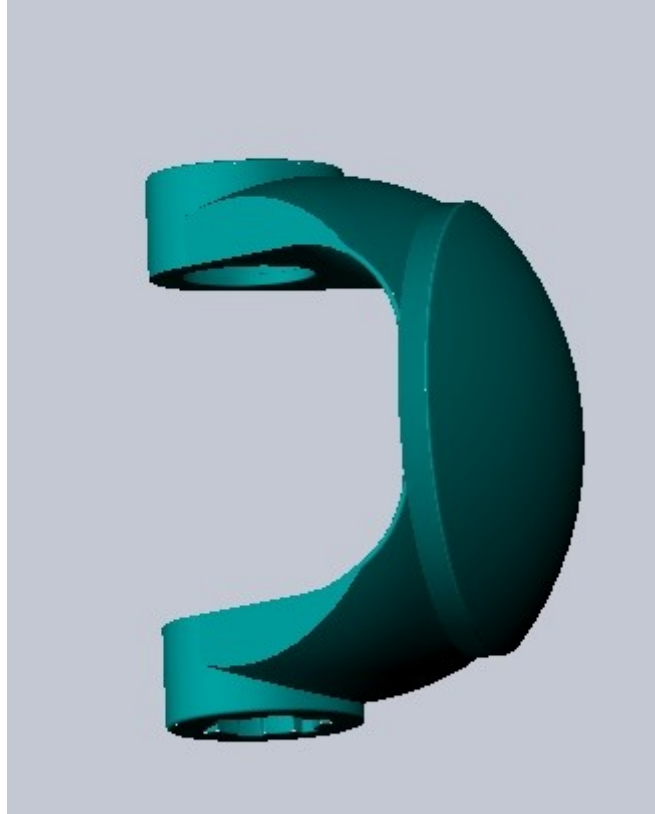
Shear force test 2

**3. Combined with a variety of wear-resistant material, the hardening treatment of the valve materials makes sealing performance better. We can also spray the inner valve body and valve disc for serious conditions ,and the hardness is no less than HRC 60.**

#### 4. High sealing performance

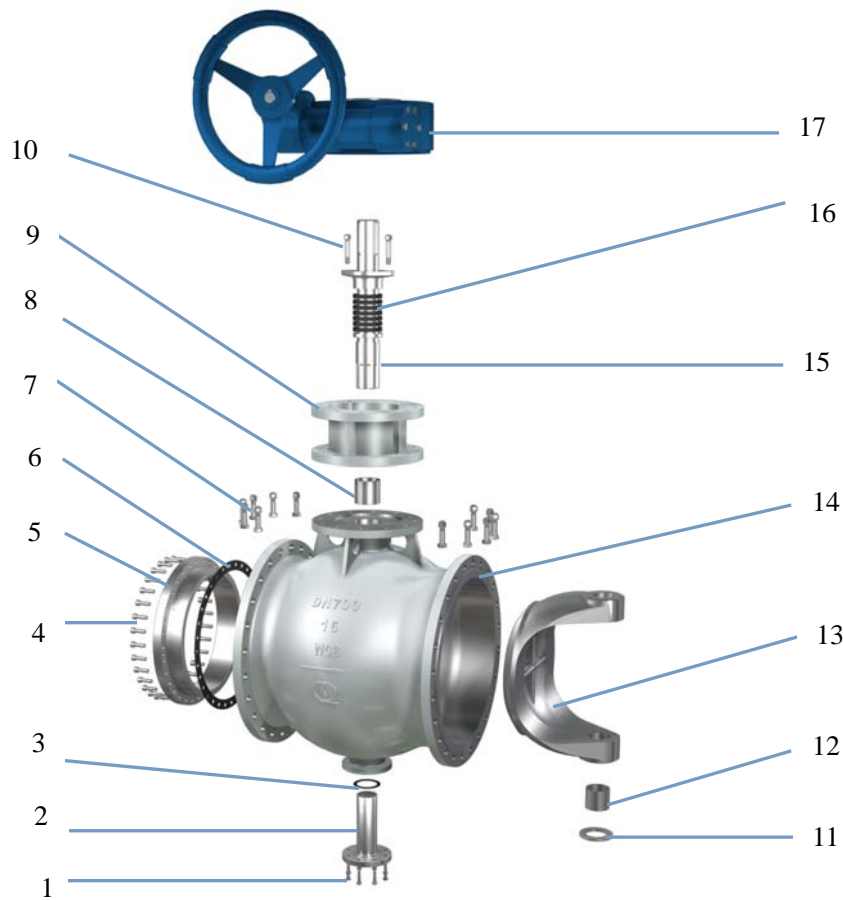
For the valve ball ,we machined the valve ball by CNC and grinding it to get high precision.

When the valve is sealed ,the leakage can reach to class VI .





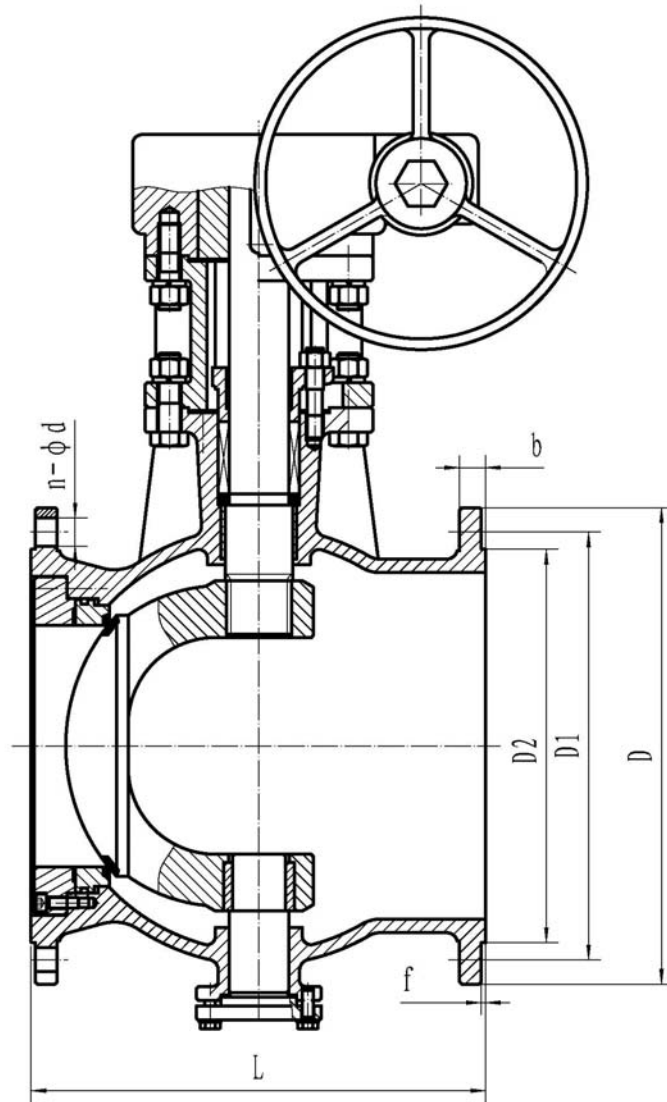
## Main parts materials



No.	Part name	No.	Part name
1	Screw bolt	2	Valve stem
3	Gasket	4	Screw bolt
5	Valve seat	6	Seat ring
7	Screw bolt	8	Axle bushing
9	Valve seat	10	Key
11	Gasket	12	Axle bushing
13	Valve ball	14	Valve body
15	Valve stem	16	Packing
17	Driving actuator		

**Notes:**For the valve parts materials , we can manufacture according to cusotmer's needs .  
WCB,304,316,304L,316L and other materials will be supplied to meet user's demand .

## Connect dimensions



Size		L	L1	D	D1	D2	C	n-d0
Inch	DN(mm)							
PN2. 0MPa(Class150)								
2	50	178	45	150	120.5	92	16	4-18
2-1/2	65	190	45	180	139.5	105	17.5	4-18
3	80	203	45	190	152.5	127	19.5	4-18
4	100	229	63	230	190.5	157.5	24	8-18
5	125	254	63	255	216	186	24	8-22
6	150	267	78	280	241.5	216	25.5	8-22
8	200	292	78	345	298.5	270	29	8-22
10	250	330	120	405	362	324	30.5	12-26
12	300	419	126	485	432	381	32	12-26
14	350	550	120	535	476	413	35	12-29.5
16	400	600	140	600	540	470	37	16-29.5
18	450	650	186	635	578	533.5	40	16-32.5
20	500	700	186	700	635	584	43	20-32.5
24	600	800	186	815	479.5	692	48	20-35.5
PN5. 0MPa(Class 300)								
2	50	216	45	165	127	92	22.5	8-18
2-1/2	65	241	45	190	149	105	22.5	8-22
3	80	283	45	210	168.5	127	29	8-22
4	100	305	63	255	200	157.5	32	8-22
5	125	381	63	280	235	186	35	8-22
6	150	403	78	320	270	216	37	12-22
8	200	419	120	380	330	270	41.5	12-26
10	250	457	140	445	387.5	324	48	16-29.5
12	300	502	186	520	451	381	51	16-32.5

## Application



Steel Industry



Soda Industry



Alumina Industry



Coal Chemical Industry

## How to order

Please give detail information about semi-ball valve

### 1-Driving type code:

Worm gear drive      Pneumatic drive      Electric hydraulic drive

### 2-Connecting way code:

Flange connection      Welding connection      Wafer type connection

### 3-Valve structure code :

(0) Straight through type

### 4-Sealing surface material code:

Y-Hard alloy      M-Surfacing Monel Alloy      H--Stainless steel      M1-Spray WC

### 5-Nominal pressure :

10 times of the MPa

### 6-Valve body material:

C-Cast steel      P-Stainless steel 304      R-Stainless steel 316      I-Chromium-molybdenum steel

### 7- Other information about medium

Temperature , medium ,PH value ,etc