



METAL TO METAL BUTTERFLY VALVE 硬碰硬蝶阀

与全球同步的阀门
制造商

Synchronized with the global
valve manufacturer

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硬碰硬蝶阀 Metal To Metal Butterfly Valve

普通的三偏心多层次金属硬密封的密封环由2层或2层以上的金属片和非金属片复合而成，密封环通过蝶板压环和螺栓固定安装在蝶板上。这种结构的金属硬密封蝶阀，由于受密封环上非金属片的物理及化学性能的影响，仅能适用于一般的非高温高压和非腐蚀性工况。当管道内压力较高，介质流速较快，蝶板处于部分开启或全部开启状态时，高速流体会对蝶板上的密封环产生正面冲刷，导致密封环上的非金属夹层磨损甚至脱落，极大地影响了阀门的密封性能；当管道内介质有腐蚀性时，密封环上的非金属夹层易受到介质的腐蚀，引起阀门密封面泄漏。

综合以上三偏心多层次金属硬密封蝶阀的不足，我司经过多年研发的金属硬碰硬蝶阀（又叫全金属密封蝶阀）克服了普通三偏心多层次金属硬密封蝶阀的各种不足之处，其显著特点有：

1、密封环完全由金属材料制成，不存在PTFE、石墨、橡胶石棉板等非金属材质做成的夹层，阀门在全开或是部分开启的状态下，不会因高速流体的冲刷而造成密封环的损坏，从而极大地提高了阀门使用寿命。

2、密封副部分全部采用了金属材料，能适应高温（ $\leq 800^{\circ}\text{C}$ ）、低温（ $\geq -196^{\circ}\text{C}$ ）、高压（ $\leq \text{PN}260/\text{Class } 1500$ ）、有腐蚀性等苛刻工况。

An ordinary three eccentric, multi layer, hard metal seal ring consists of 2 or more than 2 layers of metal and nonmetal. The sealing ring is fixed on the butterfly plate through the butterfly plate, the pressure ring and the bolt. The metal hard sealing butterfly valve of the structure is only suitable for the general non high temperature, high pressure and non corrosive working conditions because of the influence of the physical and chemical properties of the non-metal sheets on the sealing ring. When the high pressure pipeline, the medium flow faster, the butterfly plate in the opening part or all of the open state, the high-speed fluid will produce a positive erosion of the sealing ring on the sealing disc, resulting in non metal sandwich ring wear or even fall off, greatly affect the sealing performance of the valve; when the pipeline medium is corrosive the sealing ring of nonmetal sandwich, susceptible to corrosion, caused by the leakage of the valve sealing surface.

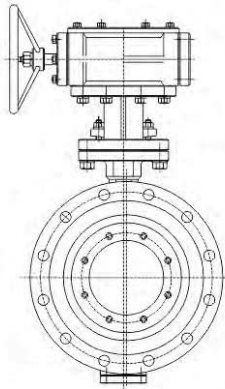
Lack of the above three eccentric multi-level metal seal butterfly valve, after many years of our research and development of metal cutting butterfly valve (also called full metal sealing butterfly valve) overcomes various shortcomings of the ordinary three eccentric multi-level metal seal butterfly valve, its salient features are:

1, completely sealing ring is made of metal materials, there is no sandwich made of PTFE, graphite, asbestos rubber plate and other non-metallic materials, the valve in the fully open or partially open state, will not damage the sealing ring caused by high-speed fluid erosion, thereby greatly improving the service life of the valve.

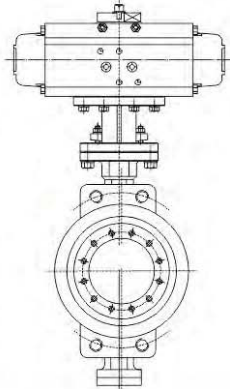
2, the sealing parts used in all metal materials, can adapt to high temperature ($\leq 800^{\circ}\text{C}$) and low temperature ($\geq -196^{\circ}\text{C}$) and high pressure ($\leq \text{PN}260/\text{Class } 1500$), corrosion resistance and other harsh conditions.

硬碰硬蝶阀 Metal To Metal Butterfly Valve

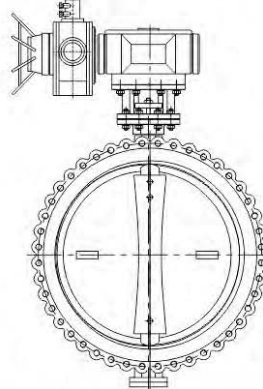
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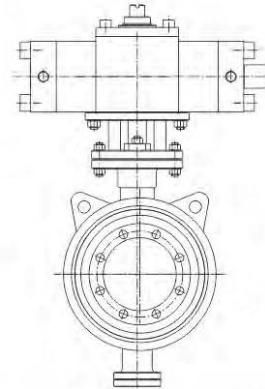
法兰式硬碰硬蝶阀
Flange type butterfly head



对夹式硬碰硬蝶阀
Wafer type butterfly valve head



凸耳式硬碰硬蝶阀
Lug type butterfly valve head



对焊式硬碰硬蝶阀
Head butt type butterfly valve

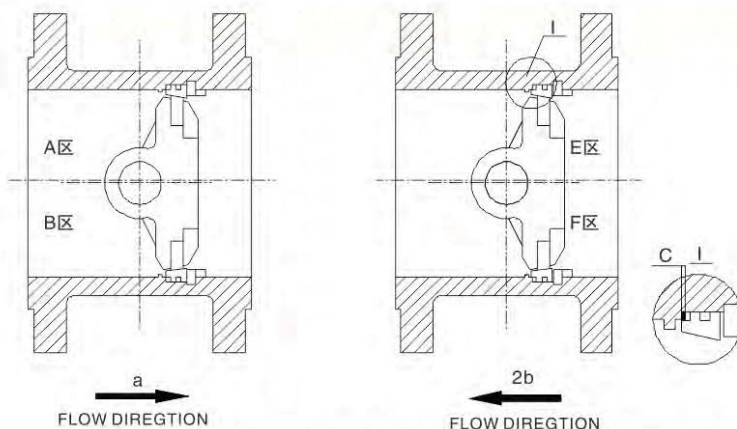
主要技术参数 Main Technology Parameter

设计标准 Design standard	JB/T8527-2015, API 609-2016, EN 593-2009, JIS B2071-2000
结构长度 Structural length	GB/T12221-2005, API 609-2016, EN 558-1:2008, JIS B2002-87
法兰连接尺寸 Flange size	GB/T9113-2010, HG/T20592-2009, JB/T79-2015, ASME B16.5-2013, ASME B16.47-2011, EN 1092-1:2007, GOST54432-2011, JIS B2220-2012
压力试验 Pressure test	GB/T13927, API 598-2016, EN 12266-1:2012, JIS B2003-2013
规格范围 Specification range	DN50-2000, NPS 2-60
压力范围 Pressure range	PN1-260, 150LB-1500LB, 5K-30K
使用介质 Use medium	水、油品、气体及各种腐蚀性介质 Water, oil, gas and various corrosive mediums
温度范围 Temperature range	-196℃-800℃
操作方式 Operation mode	蜗轮、气动、电动、液动等 Worm gear, pneumatic, electric, hydraulic, etc

主要零件材质 Material for Main Parts

零件名称 Part name	可选材料 Optional material
阀体 Body	WCB, CF8, CF3, CF3M, CF8M, 2205, 2507, WC6, LCB, C95800等
蝶板 Disc	WCB, CF8, CF3, CF3M, CF8M, 2205, 2507, WC6, LCB, C95800等
压板圈 Clamping ring	A105, F304, F304L, F316, F316L, F51, F53, C95800等
阀杆 Stem	F6a, F304, F304L, F316, F316L, F51, F53, Monel K400/500, 17-4PH等
密封圈 Seal ring	F304, F316, F316L, S31803, S32750, S32760, Monel K400/500等
底盖 Bottom cover	Q235, F304, F304L, F316, F316L, F51, F53, C95800等
垫片 Shim	SS304+Graphite, SS316+Graphite, PTFE等
轴套 Axle sleeve	SF-1, SF-1B, SS304, SS316, SS304+PTFE, SS316+PTFE等
填料垫 Packing pad	F304, F316, F304L, F316L等
填料 Filler	Graphite, PTFE, PPL等
填料压盖 Packing gland	WCB, CF8, CF3, CF3M, CF8M, 2205, 2507, WC6, LCB, C95800等
螺母 Nut	B7, B8, B7M等
螺栓 Bolt	2H, 8, 2HM等
支架 Bracket	WCB, CF8, CF8M, Q235等

密封原理 Sealing principle



我司生产的双向密封蝶阀正反向密封压力均可达到1:1零泄漏

Our production of two-way sealing butterfly valve positive and negative sealing pressure can reach 1:1 zero leakage

双向密封的原理:

如上图a所示。当阀门关闭的时候, 介质从正面进入, 蝶板中心与阀体中心有偏心, A区面积大于B区面积, 使蝶板工作面上产生压差, 使蝶阀继续向前关闭, 由于三偏心楔锥角密封原理, 阀门越关越紧, 再加上蝶板的向前变形, 使阀门关紧, 达到零泄漏。

如上图2b所示。当介质从反面进入, 蝶板中心与阀体中心有偏心, E区面积大于F区面积, 使蝶板工作面上产生压差, 使蝶阀向后打开, 加上蝶板的变形, 密封圈离开了阀座, 阀体阀座在介质压力的作用下, 使浮动阀座向后移动, 出现间隙c。阀座的移动正好补偿蝶板的变形, 使阀门密封, 最终实现了阀门的双向密封。

The principle of bidirectional sealing:

As shown in figure a above. When the valve is closed, the media from the front to the center of the disc and the center of the valve body is eccentric, A area is more than B area, causing pressure on the working face of the butterfly valve butterfly plate, continue to shut down, because the three eccentric wedge cone seal principle, the valve is closed tightly, plus forward deformation the butterfly plate, so that the valve closed, to achieve zero leakage.

As shown in Figure 2b. When the medium from the opposite side to enter, the butterfly plate center and the center of the valve body is eccentric, E area is more than F area, causing pressure on the working face of the butterfly valve butterfly plate, back open, and deformation of the butterfly plate seal ring left valve seat, valve seat under pressure in the medium, the floating seat move backward, gap C. The movement of the valve seat compensates for the deformation of the butterfly plate so that the valve is sealed and the bidirectional sealing of the valve is realized.

用途及特点 uses And Charac Teristics

- 1、蝶阀为双向承压, 双向密封。采用了偏心可移动活塞式阀座, 确保了反向承压性能。
- 2、操作扭矩较小, 转90度启闭, 轻便迅速。
- 3、流阻小, 具有良好的水力特性, 流量特性近似倾斜直线, 节能效果好, 双向密封对水流无方向要求。
- 4、密封可靠, 启闭寿命达到数25000次以上。
- 5、阀板采用符合流体力学性能的双平板桁架式多流道设计。

1. Butterfly valve for two-way pressure, two-way sealing. The eccentric movable piston seat is adopted to ensure the reverse pressure bearing performance.

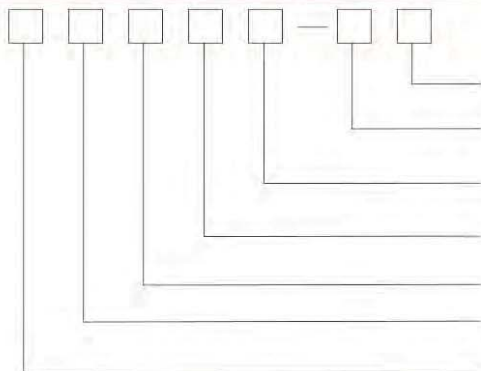
2. Small torque, smart operation and convenience, 90° opening and closing.

3. Small flow-resistance, good water feature, good energy-saving. Flow feature is similar to oblique line and no direction requirements.

4. Reliable sealing, the opening and closing life of more than 25000 times.

5. Valve disc adopts double flat and trussed constructuon and multiflow channel structure which suits hydrodynamics.

型号说明 Model Description



阀体材料: C-碳钢、P-不锈钢

Body material: C- Carbon steel, P- Stainless steel

公称压力: 数字表示, 为单位MPa的10倍

Nominal pressure: digital representation, is 10 times the per unit MPa

密封面材料: H-Cr13系不锈钢、P-不锈钢

Sealing surface material: H-Cr13 stainless steel, P- stainless steel

结构形式代号: 3-三偏心金属密封

Structure of code: 3- three eccentric metal sealing

连接方式: 4-法兰式 6-对焊式 7-对夹式

Connection: 4- flange type, 6- butt welding type, 7- clamp type

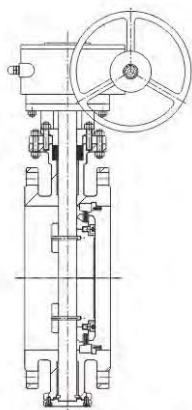
传动方式: 3-蜗轮、6-气动、9-电动

Operator mode: 3- worm, 6- pneumatic, 9- electric

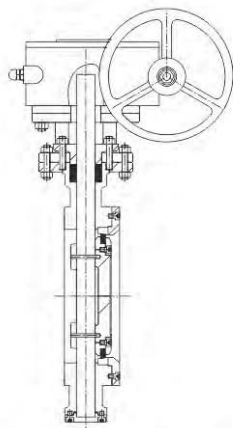
类别: 第一空格Ds表示双向密封 Category: the first space DS two-way sealing

双向密封蝶阀

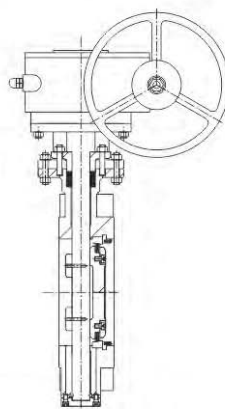
Bidirectional Sealing Butterfly Valve



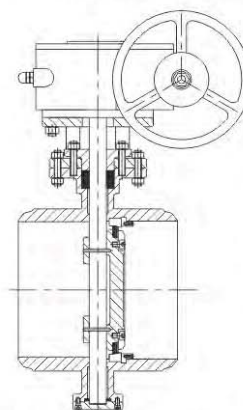
法兰式双向密封蝶阀
Flange type bidirectional
sealing butterfly valve



对夹式双向密封蝶阀
Clip type bidirectional
sealing butterfly valve



凸耳式双向密封蝶阀
Lug type bidirectional sealing
butterfly valve



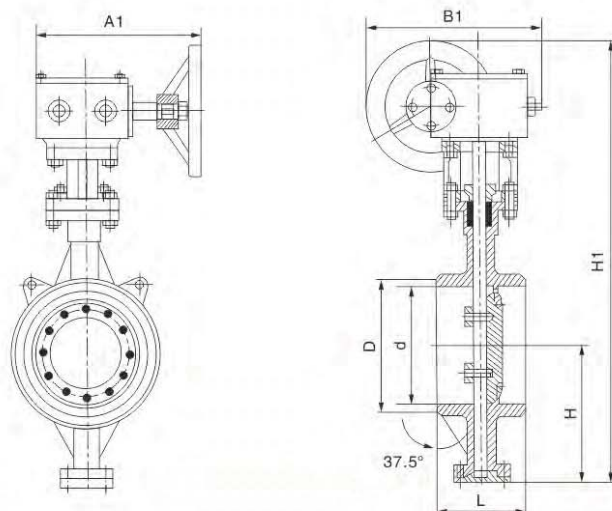
对焊式双向密封蝶阀
Butt welding type bidirectional
sealing butterfly valve

主要技术参数 Main Technology Parameter

公称压力 Nominal pressure	PN1-100, 150LB-600LB
公称规格 Nominal specification	DN50-2000, NPS2-60
适用温度 Applicable temperature	-100℃~600℃
适用介质 Applicable medium	水、油品、气体、酸类、碱类、盐类等 Water, oil, gas, acids, alkalis, salts, etc
驱动方式 Drive mode	蜗轮、电动、气动、液动等 Worm gear, electric, pneumatic, hydraulic, etc
标准类型 Standard type	国标JB/T8527-2015, 美标API 609-2016, 德标EN593-2009, 日标JIS B2071-2000

主要零件材质 Material for Main Parts

零件名称 Part name	可选材料 Optional material
阀体 Body	WCB, CF8, CF3, CF3M, CF8M, 2205, 2507, WC6, LCB, C95800等
阀体阀座 Body, Seat	F304, F316, 13Cr, S31803, Monel等
阀杆 Stem	F6a, F304, F304L, F316, F316L, F51, F53, Monel K400/500, 17-4PH等
支架 Bracket	WCB, CF8, CF8M, Q235等
密封圈 Seal ring	SS304+Graphite, SS316+Graphite, SS316L+Graphite, S31803+Graphite 304+PRFE, 316+PTFE, 304+RPTFE, 316+RPTFE等
填料 Filler	Graphite, PTFE, PPL等
压板圈 Clamping ring	F304, F304L, F316, F316L, F51, F53, C95800等
螺栓 Bolt	B7, B8, B7M等
螺母 Nut	B7, B8, B7M等
底盖 Bottom cover	Q235, F304, F304L, F316, F316L, F51, F53, C95800等
垫片 Shim	SS304+Graphite, SS316+Graphite, PTFE等
轴套 Axle sleeve	SF-1, SF-1B, SS304, SS316, SS304+PTFE, SS316+PTFE等
填料垫 Packing pad	F304, F316, F304L, F316L等
填料压盖 Packing gland	WCB, CF8, CF3, CF3M, CF8M, 2205, 2507, WC6, LCB, C95800等



用途及特点 Uses and Charac Teristics

本蝶阀适用于高温、高压、防火、保温等管道上作启闭或调节介质之用。其主要特点如下：

- 1、结构紧凑、体积小、重量轻、操作灵活、使用方便；
- 2、采用三维偏心弹性或多层次硬密封结构，其密封性能可靠达到零泄漏；
- 3、此阀无法兰，对管道的保温包扎带来很大方便和美观；
- 4、具有耐高温、高压、耐腐蚀、耐磨损等特点。

The butterfly valve is used as opening and closing, or adjusting medium on the pipe of high temperature, high pressure and fireproof. Its main characteristics as below:

1. Tight structure, small volume, light weight, smart operation and convenient using.
2. The valve adopts triple eccentric resilience or multilayer metal seated structure to achieve zero leakage of sealing.
3. This valve doesn't have flange, so it is convenient for thermal insulation of the pipeline.
4. The valve is characterised by high temperature resistance, high pressure resistance, corrosion resistance and wear resistance, etc.

传动型式 Drive Type

蜗轮传动、气传动、电传动、液传动。

Worm and worm gear drive, pneumatic transmission, electric drive, hydraulic transmission

采用标准 Adoption Standard

焊接尺寸 Welding dimension: GB12224-2015; ASME B16.25-2012

结构长度 Face to face length: GB/T12221-2005; API609-2016

压力试验 Pressure test: GB/T13927-2008; API598-2016

主要技术参数 Main Technology Parameter

公称通径 Nominal Diameter	DN(mm)	50 ~ 2000				
公称压力 Nominal Pressure	PN(MPa)	0.6	1.0	1.6	2.5	4.0
试验压力 Ps(MPa) Test Pressure	强度试验 Shell test	0.9	1.5	2.4	3.75	6.0
	密封试验 Seal test	0.66	1.1	1.76	2.75	4.4
	气密封试验 Air Sealing Test	0.6	0.6	0.6	0.6	0.6
适用介质 Appropriate Medium	水、蒸气、油品、酸类腐蚀性等。Water, Steam, Oil, Acid corrosive and so on.					
适用温度 Appropriate Temperatuer	碳钢Carbon steel: -29℃ ~ 425℃ 不锈钢Stainless steel: -40℃ ~ 600℃					

主要零件材质 Material for Main Parts

零件名称 Parts Name	材料 Material
阀体 Body	铸钢、不锈钢、铬钼钢及特殊材料 Cast steel, stainless steel, Cr.Mo.Steel and ad hoc material
蝶板 Disc	铸钢、合金钢(镀硬铬)、不锈钢、铬钼钢及特殊材料 Cast steel, Alloy steel, stainless steel, Cr.Mo.Steel and ad hoc material
密封圈 Sealing Ring	不锈钢、抗磨材料 Stainless steel, resist grind material
阀杆 Stem	2Cr13、1Cr13不锈钢、铬钼钢 Stainless steel, Cr.Mo.Steel
填料 Packing	柔性石墨 Flexible Graphite