

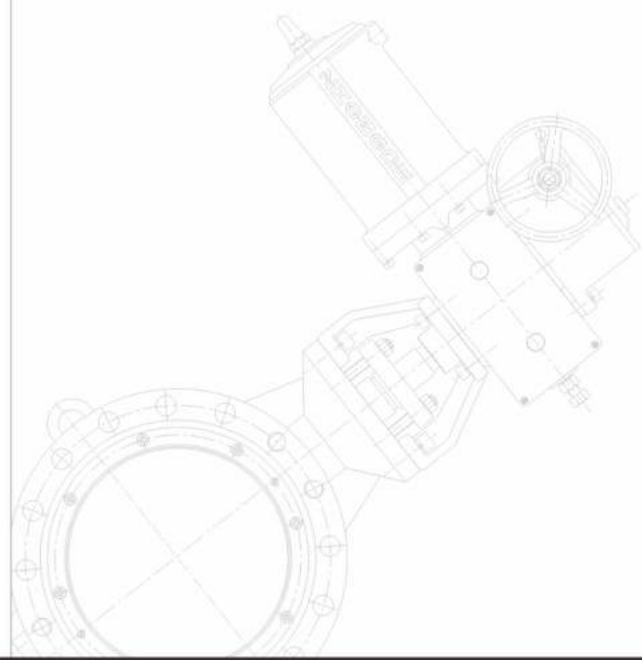
浙江中德自控科技股份有限公司

Zhejiang Zhongde Automatic Control Science And Technology Joint Stock Co., Ltd.

三偏心金属硬密封蝶阀

Triple eccentric metal hard seal butterfly valve

通过了ISO9001质量体系认证
 通过API6D/609产品认证
 通过API6FA/607防火认证
 通过国家特种设备制造许可“压力管道元件”TS认证
 通过CE安全认证
 通过HSE认证
 通过SIL 产品功能安全认证
 通过ISO 15848逸散性认证
 中国著名品牌



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企业概述

浙江中德自控科技股份有限公司(原中德机械集团有限公司)是集研发、生产、销售、服务于一体的专业控制阀制造商。自1992年创立以来,中德致力于发展切断阀专业领域技术,使我们始终处于国内切断阀领域的技术领先地位。在我们二十多年的发展历程中,中德人专业、聚焦、坚持不懈来打造切断阀品牌,其中气\电\液电动高性能蝶阀、高性能球阀、高温耐磨球阀、高温蝶阀、快速切断闸阀等产品广泛应用于石油、化工、天然气、煤化工等高端领域,并获得了众多用户朋友的高度信任。

中德集团现已拥有专业阀门研究中心和一流的生产平台,并通过了ISO9001:质量体系认证,美国石油学会API6D/609产品认证、API6FA/607防火认证,特种设备压力管道制造许可“TS认证”。是中国石化、中石油、中海油、中化、神华、煤化工等领域的一级供应商。先后被评为“中国著名品牌”,“省级星火示范企业”,“国家高新技术企业”,“省明星企业”,连续五年被工行评为“AAA信用企业”。

“客户的满意我们视之为生命”为此中德在国内建立了十二个直销和服务网络,在服务市场的广度和深度上都具有独创性。我们能满足您的需求,我们给您提供“安全、可靠、省心”产品的同时,我们的产品价值永远大于产品价格。无论您在那里,我们具有丰富经验和专业知识的团队都能给您提供“认真、负责、快速”的优质服务。我们坚守“一个电话,一天内到达,一次性成功”的服务承诺。

“以人为本,以德兴业”是中德企业文化的核心,是中德人做人做事的标准,中德人将以“以诚会友,以德待友”来衬托我们过硬的产品质量和一流的服务。中德人厚积薄发,再立潮头,全力打造国家高端切断阀先进制造企业,致力于加快我国切断阀的国产化应用进程,以更好地实现顾客满意度的最大化,中德愿与您精诚合作,共创美好的明天!



BRIEF INTRODUCTION

Zhejiang Zhongde Automatic Control Technology Co., Ltd. (formerly known as Zhongde Machinery Group Co., Ltd.) is a professional control valve manufacturer integrating research, development, production, sale and service. Since its establishment in 1992, Zhongde has been devoted to developing specialized technologies of shut-off valves, keeping us always at the leading position in Chinese shut-off valve industry. During more than twenty years of development, Zhongde personnel are building the brand of shut-off valves with specialization, concentration and perseverance. The products such as high performance butterfly valves, high performance ball valves, high temperature anti-wear ball valves, high temperature butterfly valves and quick shut-off gate valves with pneumatic, electric and electro-hydraulic driving are widely applied in petroleum, chemical industry, natural gas, coal chemical industry and other high-end fields, receiving deep trust from users.

Now Zhongde Group has set up the professional valve research and development center and first-class production platforms. It has successively obtained the ISO9001: quality system certification, API6D/609 product certification, API6FA/607 fire safety certification and special equipment (pressure pipes) manufacturing license TS certification. It is a first-tier supplier of SINOPEC, CNPC, CNOOC, CHEMCHINA, Shenhua Group, coal chemical industry and other fields. It has been successively awarded such honors as “China Famous Brand”, “Spark Model Enterprise in Zhejiang Province”, “National High-tech Enterprise”, “Star Enterprise in Zhejiang Province”, and has been approved as a “Class AAA Creditable Enterprise” by the Industrial and Commercial Bank of China for five years in succession.

“Customer satisfaction is regarded as our life”. For this, Zhongde has established 12 sales and service networks, which are creative both in breadth and depth of serving the markets. We can meet your demands. We will provide you with safe, reliable and trustworthy products and the value of our products is much higher than their price. Wherever you are, our team will offer serious, responsible, fast and high quality services to you with their rich experience and professional knowledge. We always keep our service promise of “one telephone, arrival within one day and success in one step”.

“Human oriented, booming business by morals” is the core idea of Zhongde Enterprise, and the standard followed by Zhongde personnel in conducting themselves and handling affairs. Zhongde personnel will offer high product quality and top-ranking services with the attitude of “meeting friends with sincerity, treating friends with morals”. Accumulating profoundly and working ceaselessly and unremittingly, Zhongde personnel are making all efforts to create an advanced manufacturing enterprise of high-end shut-off valves in China, accelerate the process of localization of shut-off valves and realize maximized customer satisfaction. Zhongde hopes to cooperate with you faithfully and create a brilliant future together!

概要

ZS/DWY系列气/电动三偏心高性能密封蝶阀是我公司在引进国外先进技术的基础上进行特殊设计、精心制造的。本系列蝶阀分为调节型、二位切断型、快速切断调节型三种。三偏心密封型蝶阀阀板采用三偏心结构，密封组件分两种形式：一是采用了金属U型弹性阀座。阀板形状为椭圆形圆锥体，通过挤压U型弹性阀座使阀座变形，直到阀座与阀板椭圆形圆锥密封面紧密吻合而达到密封。二是采用多层复合密封结构，密封副部分采用不锈钢片夹弹性密封片，阀体密封面采用整体堆焊结构。阀板组件为椭圆形圆锥体，使其具有金属硬密封和弹性密封的双重优点，该阀密封圈与阀座接触面是“锥中锥”结构，两个锥均为斜锥。密封圈与金属阀座之间的接触角轻微的“楔块效应”，使密封圈发生柔性和径向压缩。该结构减少了阀门的启闭力矩，使阀门间的摩擦力降到最低，延长了阀门的使用寿命。气/电动蝶阀广泛应用于冶金、石油、化工、轻工、电力等工业部门在生产过程中进行就地自动调节和远距离自动调节。本产品具有密封性能优良，使用寿命长、体积小、重量轻、流通能力大，结构简单合理，易于维修、保养等特点。执行机构是以与立推式气动执行机构的组合为标准产品，也可与电动式或液动式执行机构组合。(见图1)

特点

- Wy三偏心金属密封蝶阀采用金属U型弹性阀座，阀座为浮动式，具有自动调整中心的功能，密封性能好，具有自清扫与剪切功能，适用于含有轻微颗粒及纤维状的介质。
- 三偏心多层复合密封密封采用不锈钢片夹弹性密封片，充分利用特有的凸轮效应，而且完全消除了90°行程中实现阀门的开启时，阀座与密封圈瞬时脱落，消除摩擦磨损。
- 阀板采用三偏心结构，密封面全部堆焊硬质合金，耐磨性好。
- 阀座具有自补偿结构，增加了阀门的使用寿命。
- 阀门流量特性为近似等百分比曲线，可作为调节与切断。
- 满足API607防火要求。

Summary

The ZS/DWY series pneumatic/electric three-eccentric high performance sealing butterfly valve is a specially designed and carefully manufactured product on the basis of introducing foreign advanced technology. The series butterfly valves include three types such as control type, two-position shut-off type and fast shut-off control type. The disc of the three-eccentric sealing butterfly valve adopts three-eccentric structure. The sealing assembly includes two forms: one is the metal U type elastic seat. The disc form is oval cone. Through extruding the U type elastic seat, the seat is deformed until the seat and disc oval cone sealing face fit tightly with each other to realize sealing. The other is to adopt multilayer compound sealing structure. The sealing pair adopts stainless steel sheet and elastic sealing sheet. The body sealing face adopts integral overlaying welding structure. The disc assembly is oval cone, which has advantages of metal hard seal and elastic seal. The contact face of the seal ring and seat is "cone in cone" structure, and the two cones are all bevel cones. The contact angle between the seal ring and metal seat produces light "wedge effect", making the seal ring produce flexible movement and radial compression. The structure reduces opening and closing torque of valve, minimizes the friction between valves and prolongs service life of valve. The pneumatic/electric butterfly valve is widely used for local automatic adjustment and remote automatic adjustment during production in metallurgy, petroleum, chemical industry, light industry, electric power and other industries. The product has such features as good sealing performance, long service life, small volume, light weight, high flow capacity, simple and reasonable structure, easy maintenance and servicing, etc. The product combined with the vertical push type pneumatic actuator is the standard product. The product can also be combined with electric or hydraulic actuator (see figure 1).

Features

- The Wy three-eccentric metal seal butterfly valve adopts metal U type elastic seat. The seat is floating type, with the automatic center adjusting function, good sealing performance, and self-cleaning and shearing function. It is suitable for media containing granules and fibers.
- The three-eccentric multilayer compound seal adopts stainless steel sheet and elastic sealing sheet, which makes use of the unique cam effect and thoroughly eliminates instant dropping of seat and seal ring during valve opening and closing at 90° travel, and eliminates friction and wear.
- The disc adopts three-eccentric structure, and the sealing face adopts hard alloy overlaying welding with good anti-wear performance.
- The seat has self-compensation structure, which enhances the service life of valve.
- The valve flow characteristic is approximate equal percentage curve. It can be used for control and shut-off.
- It meets the API607 fire-proof requirements.

主要技术参数

阀体
型式：扁平偏置铸造体
阀门口径：U型金属环2"~72"，多层复合密封2"~104"
公称压力：ANSI 150LB~ 900LB
连接：法兰型或对夹型
材质：A216 WCB、A217 WC5、A217 WC9、A351 CF8、A351 CF8M
结构长度：见表5-1~8-2(P16~22)
阀盖：标准型-29~+230℃
加长型+230~+650℃ -46 ~ -30℃
但需注意各材料的使用温度、压力范围。见表1(P05)
填料：PTFE，柔性石墨，镍基丝增强柔性石墨
本体涂层：银灰色(环氧树脂)
当本体为不锈钢时，不加涂层

阀内组件
阀板型式：三偏心旋转式
阀座型式：U型金属环 多层复合密封
流量特性：近似等百分比
材质处理：本体、阀板、座环、阀杆等材质组合、处理请参见表2-1~2-3(P06~07)
额定Cv值：请参见表3(P08)
额定行程：0~70°或0~90°
阀座泄露率：ANSI Class IV~VI
最大阀闭压力：请参见表4-1~4-5(P14~15)
外型尺寸：请参见表5-1~8-2(P16~22)
产品重量：请参见表5-1~8-2(P16~22)

Main technical parameters

Body
Type: Flat offset casting
Valve size: U type metal ring 2"~72", multilayer compound seal 2"~104"
Nominal pressure: ANSI 150LB~ 900LB
Connection: Flanged type or wafer type
Material: A216 WCB, A217 WC5, A217 WC9, A351 CF8, A351 CF8M
Face-to-face dimension: See tables 5-1~8-2(P16~22)
Bonnet: Standard type -29~+230℃
extended type +230~+650℃ -46 ~ -30℃
Notice the range of working temperature and pressure for different materials. See table 1(P05).
Packing: PTFE, flexible graphite, nickel-based wire reinforced flexible graphite
Body coating: Silver grey (epoxy resin)
No coating shall be added if the body material is stainless steel.

Trim
Disc type: Three-eccentric rotary type
Seat type: U type metal ring, multilayer compound seal
Flow characteristic: Approximate equal percentage
Material treatment: Please refer to tables 2-1~2-3(P06~07) for the material combination and treatment for body, disc, seat ring and stem.
Rated Cv value: Please refer to table 3(P08).
Rated travel: 0~70° or 0~90°
Seat leakage: ANSI Class IV~VI
Maximum valve closing pressure: Please refer to tables 4-1~4-5(P14~15).
Outline dimensions: Please refer to tables 5-1~8-2(P16~21).
Product weight: Please refer to tables 5-1~8-2(P16~21).



图1 气动三偏心硬密封蝶阀
Figure 1 Pneumatic three-eccentric hard seal butterfly valve



图2 电动三偏心硬密封蝶阀
Figure 2 Electric three-eccentric hard seal butterfly valve

执行机构 Actuator

规格 Specification	型号 Model	气缸式 Cylinder type		电动式 Electric type	电液联动式 Electro-hydraulic type
		ZSS/ZSH	ZST	ZDJ	ZYDZ
		双作用 Double acting	单作用 Single acting		
用途 Purpose		通断、调节 On-off, control		通断、调节 On-off, control	
操作源 Operating source		气压 Air pressure 0.35 ~ 0.7Mpa(G)		电源 Power supply 220VAC 50Hz, 380VAC 50Hz	
输入范围 Input range		通断 On-off: 24VDC, 48VDC, 220VAC 带定位器 With positioner: 4 ~ 20mA, 4 ~ 20mA+HART; 0.02 ~ 0.1MPa		4 ~ 20mA, 1 ~ 5VDC, 0 ~ 10VDC	
动作 Action		通断: 电磁阀通电阀开或阀闭 调节: 随定位器输入信号增加阀开或阀闭 On-off: The valve is opened or closed when the solenoid valve is powered on Control: The valve is opened or closed with the increase of positioner input signal		通断: 通电阀开或阀闭 调节: 随输入信号增加阀开或阀闭 On-off: The valve is opened or closed when powered on Control: The valve is opened or closed with the increase of input signal	
允许环境温度 Allowable ambient temperature		-40°C ~ +80°C		-40°C ~ +80°C	
执行器涂层色 Actuator coating color		橘红色 (环氧树脂) 或银灰色 Orange (epoxy resin) or silver grey		随外购执行器 Actuator	
选购设备 Optional equipment		手动操作机构、限位开关、E/F、P/P定位器空气过滤减压阀、电磁阀、速度调整器、锁止阀及其他 Manual operating mechanism, limit switch, E/F, P/P positioner, Airset, solenoid valve, speed adjuster, locking valve, etc.		手动操作机构、限位开关、输入/输出模拟信号浪涌保护器、阀位变送器、扭矩开关及其他 Manual operating mechanism, limit switch, input/output analogue signal, surge protector, valve position transducer, torque switch and others	

表1 本体材料的使用温度、压力范围
Table 1 Range of working temperature and pressure for body materials

表1-1 Table 1-1 单位Unit: bar(G)

温度 °C Temperature	150#				300#				600#				900#			
	WCB	WC5	CF8	CF8M	WCB	WC5	CF8	CF8M	WCB	WC5	CF8	CF8M	WCB	WC5	CF8	CF8M
-29 ~ +38	19.6	19.8	19.2	19.2	51.1	51.7	49.6	49.6	102.1	103.4	99.2	99.3	153.2	155.1	149.9	148.9
+50	19.2	19.5	18.4	18.4	50.1	51.7	47.8	48.1	100.2	103.4	95.7	96.3	150.4	155.1	143.5	144.3
+100	17.7	17.7	15.8	15.8	46.4	51.5	40.9	42.2	92.8	103.1	81.8	84.4	139.8	154.6	122.6	126.6
+150	15.8	15.8	14.0	14.0	46.1	50.3	36.3	38.6	90.5	100.3	72.7	77.0	135.2	150.6	111.0	115.5
+200	14.0	13.8	12.6	12.6	44.7	48.6	32.8	35.7	87.6	97.2	65.5	71.3	131.4	145.8	103.4	107.0
+250	12.1	12.1	11.7	11.7	41.8	46.3	30.5	33.5	83.4	92.7	61.1	66.8	125.8	139.0	97.5	100.1
+300	10.2	10.2	10.2	10.2	38.7	42.9	29.1	31.6	77.5	85.7	58.1	63.3	119.5	128.6	92.7	94.9
+350	8.4	8.4	8.4	8.4	36.5	40.3	28.2	30.4	73.9	80.4	56.1	60.8	112.7	120.7	88.9	91.0
+375	7.4	7.4	7.4	7.4	34.5	38.9	27.8	29.7	72.9	77.6	55.5	59.4	109.1	116.5	87.1	89.6
+400	6.5	6.5	6.5	6.5	34.5	36.5	27.5	29.2	69.0	73.2	54.9	58.2	104.2	109.8	85.3	88.3
+425	5.5	5.5	4.5	5.6	28.8	35.2	27.2	28.7	57.5	70.0	54.3	57.3	86.3	105.1	84.0	87.4
+450	-	4.7	4.7	4.7	-	33.7	26.9	28.2	-	67.7	53.7	56.2	-	101.4	82.2	86.5
+475	-	3.7	3.7	3.7	-	26.7	26.6	27.4	-	63.4	53.1	54.7	-	95.1	80.8	86.0
+500	-	2.8	2.8	2.8	-	13.9	26.1	26.8	-	53.4	52.1	53.7	-	80.1	79.5	84.7
+538	-	1.4	1.4	1.4	-	12.6	24.4	25.2	-	27.9	48.9	50.0	-	41.8	73.3	75.2
+575	-	1.4	1.4	1.4	-	7.2	20.8	24.0	-	25.2	41.7	47.9	-	21.5	62.5	71.8
+600	-	-	1.4	1.4	-	-	16.9	19.9	-	-	33.8	39.8	-	-	50.6	59.7
+625	-	-	1.4	1.4	-	-	13.8	15.8	-	-	27.6	31.6	-	-	41.4	47.4
+650	-	-	1.4	1.4	-	-	11.3	12.7	-	-	22.5	25.3	-	-	33.8	38.0

注: CF8和CF8M用于温度超过538°C时, 碳含量需大于或等于0.04%。其余材质的额定压力温度范围按照ASME B16.34执行。

表2 本体、阀内件材质组合及使用温度范围、阀门检验与试验
Table 2 Body and trim material combination and working temperature range, valve inspection and testing

表2-1 本体材质: 碳钢(A216 WCB、A217 WC5) Table 2-1 Table Body material: Carbon steel (A216 WCB、A217 WC5)

密封形式		U型金属环密封	多层复合密封	U型金属环密封	多层复合密封
阀体 Body	材质 Material	A216 WCB	A216 WCB	A217 WC5	A217 WC5
	处理 Treatment	-	密封面堆焊硬质合金或STL The sealing face is subject to hard alloy or STL overlaying welding	-	密封面堆焊硬质合金或STL The sealing face is subject to hard alloy or STL overlaying welding
阀板 Disc	材质 Material	A216 WCB/ A351 CF8	A216 WCB/ A351 CF8	A217 WC5/ A351 CF8	A217 WC5/ A351 CF8
	处理 Treatment	密封面堆焊硬质合金或STL The sealing face is subject to hard alloy or STL overlaying welding		密封面堆焊硬质合金或STL The sealing face is subject to hard alloy or STL overlaying welding	
阀座密封圈 Seat ring	材质 Material	420/ A705 17-4PH	不锈钢片夹四氟片或柔性石墨片 Stainless steel sheet and PTFE sheet or flexible graphite sheet	A705 17-4PH/ INCONEL	不锈钢片夹柔性石墨片 Stainless steel sheet and flexible graphite sheet
	处理 Treatment	调质/固溶+时效处理 Quenching and tempering /solid solution + ageing treatment	固溶+时效处理 Solid solution + ageing treatment	调质/固溶+时效处理 Quenching and tempering /solid solution + ageing treatment	固溶+时效处理 Solid solution + ageing treatment
压板 Pressing plate	材质 Material	A216 WCB	A216 WCB	A217 WC5	A217 WC5
阀杆 Stem	材质 Material	A276 420/ A564 T630	A276 420/ A564 T630	A564 T630/ A276 XM-19	A564 T630/ A276 XM-19
	处理 Treatment	调质/固溶+时效处理 Quenching and tempering /solid solution + ageing treatment		调质/固溶+时效处理 Quenching and tempering /solid solution + ageing treatment	
导向轴套 Guiding shaft sleeve	材质 Material	A182 F304	A182 F304	高温合金 High temperature alloy	高温合金 High temperature alloy
	处理 Treatment	渗氮/喷涂 Nitriding/spray coating			
使用温度范围 °C Working temperature range °C		-29-425	-29-425	-29-550	-29-450
填料 Packing		PTFE, 柔性石墨, 镍基丝增强柔性石墨 Flexible graphite, nickel-based wire reinforced flexible graphite			
阀门检验与试验 Valve inspection and testing		ANSI/FCI 70-2/API 598			

表2-2 本体材质: 低碳钢(A352 LCB)及不锈钢(A351 CF8)
Table 2-2 Body material: cryogenic carbon steel (A352 LCB) and stainless steel (A351 CF8)

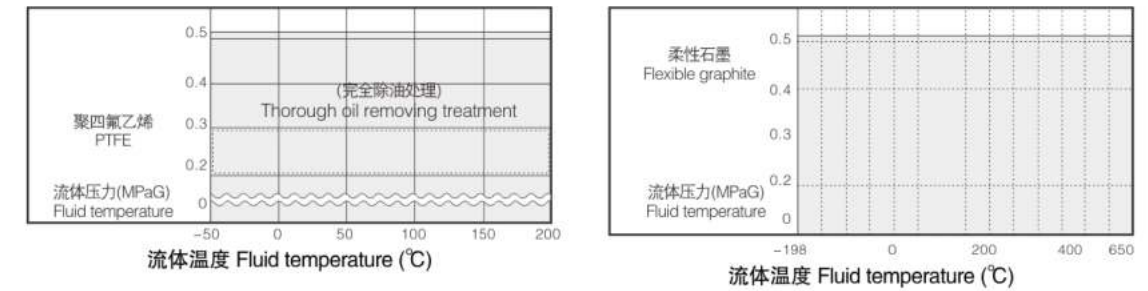
密封形式		U型金属环密封	多层复合密封	U型金属环密封	多层复合密封
阀体 Body	材质 Material	A352 LCB	A352 LCB	A351 CF8	
	处理 Treatment	-	密封面堆焊硬质合金或STL The sealing face is subject to hard alloy or STL overlaying welding	-	
阀板 Disc	材质 Material	A352 LCB/ A351 CF8	A352 LCB/ A351 CF8	A351 CF8	A351 CF8M
	处理 Treatment	密封面堆焊硬质合金或STL The sealing face is subject to hard alloy or STL overlaying welding	密封面堆焊硬质合金或STL The sealing face is subject to hard alloy or STL overlaying welding	密封面堆焊硬质合金或STL The sealing face is subject to hard alloy or STL overlaying welding	
阀座 Seat	材质 Material	A705 17-4PH	不锈钢片夹四氟片或柔性石墨片 Stainless steel sheet and PTFE sheet or flexible graphite sheet	INCONEL	INCONEL
	处理 Treatment	调质/固溶+时效处理 Quenching and tempering/solid solution + ageing treatment		固溶+时效处理 Solid solution + ageing treatment	
压板 Pressing plate	材质 Material	A352 LCB	A352 LCB	A351 CF8	A351 CF8
阀杆 Stem	材质 Material	A564 T630	A564 T630	A276 XM-19	A276 XM-19
	处理 Treatment	调质/固溶+时效处理 Quenching and tempering/solid solution + ageing treatment		固溶+时效处理 Solid solution + ageing treatment	
导向轴套 Guiding shaft sleeve	材质 Material	A182 F304	A182 F304	高温合金 High temperature alloy	高温合金 High temperature alloy
	处理 Treatment	氮化/喷涂 Nitriding/spray coating			
使用温度范围℃ Working temperature range °C		-40~345	-40~345	-46~650	-46~550
填料 Packing		PTFE, 柔性石墨, 镍基丝增强柔性石墨 PTFE Flexible graphite, nickel-based wire reinforced flexible graphite			
阀门检验与试验 Valve inspection and testing		ANSI/FCI 70-2/API 598			

注: 当A351-CF8用于超低温流体时, 耐压部的含镍量必须在9.5%以上。
Note: When A351-CF8 is used for ultra-low temperature fluid, the nickel content of pressure withstanding part must be more than 9.5%.

表2-3 本体材质: 不锈钢 (A351 CF8M) Table2-3 Body material: Stainless steel(A351 CF8M)

阀体材质		A351-CF8M
阀板 Disc	材质 Material	A351 CF8M
	处理 Treatment	密封面堆焊司太来合金 The sealing face is subject to Stellite overlaying welding
阀座 Seat	材质 Material	INCONEL
	处理 Treatment	固溶 Solid solution
压板 Pressing plate	材质 Material	A351 CF8M
阀杆 Stem	材质 Material	A276 XM-19
导向轴套 Guiding shaft sleeve	材质 Material	高温合金 High temperature alloy
使用温度范围℃ Working temperature range °C		-46~650
阀门检验与试验 Valve inspection and testing		ANSI/FCI 70-2/API 598

填料 使用温度、压力范围
Packing Working temperature and pressure range



流量特性 Flow characteristic

流通能力 Flow capacity (Kv) (见表3)

表3

公称通径 Nominal diameter DN(mm)	80	100	125	150	200	250	300	350	400	450	500	600	700	800	900	1000	1200	1400	1600	1800	2000	2200	2400	2600
转角0~70° Rotation angle Kv值	120	230	395	560	960	1550	2100	2810	3680	4650	5740	8260	11855	15500	19890	24280	34970	47600	62170	91500	136145	178460	258700	386420
转角0~90° Rotation angle Kv值	225	460	708	1245	1695	2565	3915	5270	6888	8880	10780	15580	23060	27680	35820	45800	62500	89000	124000	170125	225600	316200	470150	645360

流量特性曲线图: 近似等百分比(见图3)
Flow characteristic curve: approximate equal percentage

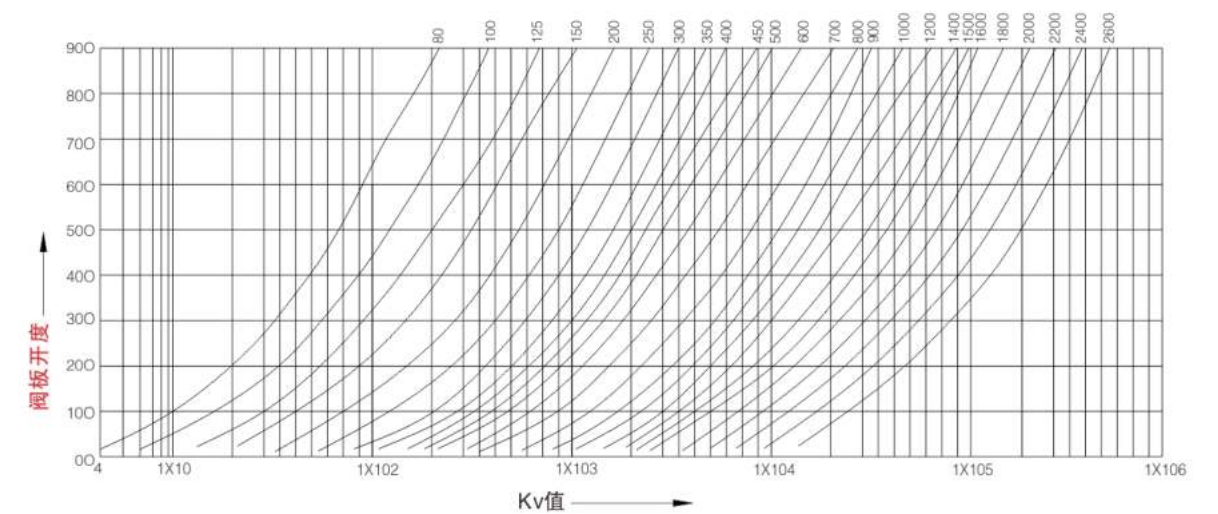
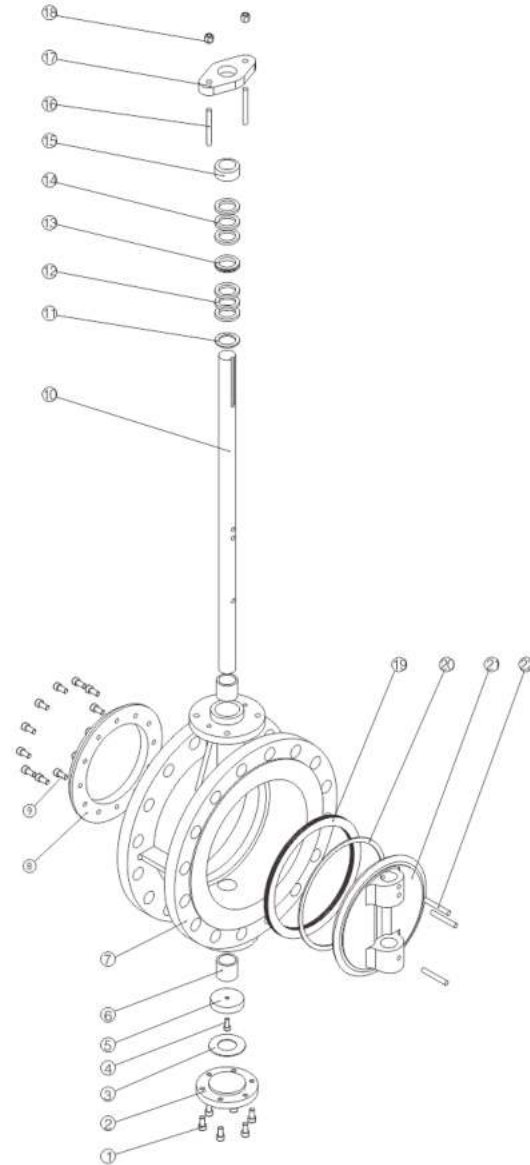


图3 蝶阀流量特性曲线
Figure 3 Butterfly valve flow characteristic curve

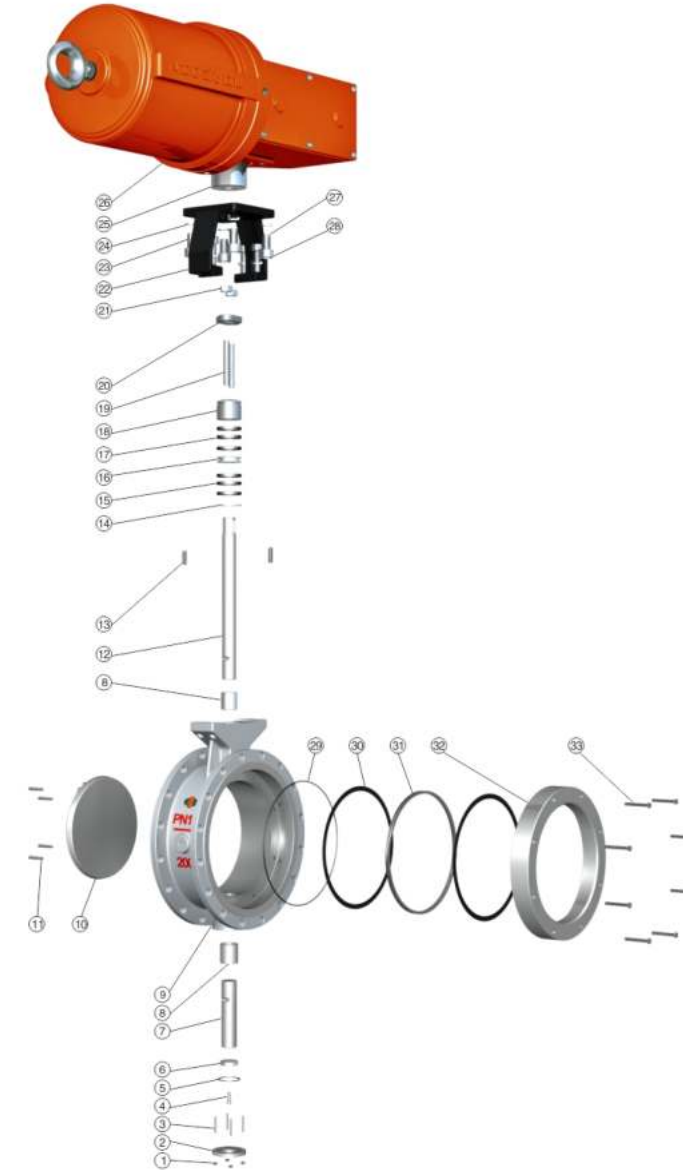
图4 ZS/DW型阀体、本体部构造、主要零部件分解图
Figure 4 ZS/DW model body construction and exploded view of main parts

图4-1 三偏芯复合式密封蝶阀分解图
Figure 4-1 Exploded view of three-eccentric compound seal butterfly valve



1	内六角螺钉 Inner hexagon screw	7	阀体 Body	13	填料隔环 Packing spacer ring	19	密封圈 Seal ring
2	后盖 Back cover	8	压圈 Pressure ring	14	上填料 Upper packing	20	调整密封垫 Adjusting sealing gasket
3	密封垫 Sealing gasket	9	内六角螺钉 Inner hexagon screw	15	填料压套 Packing bushing	21	阀板 Disc
4	内六角螺钉 Inner hexagon screw	10	阀杆 Stem	16	全螺纹螺杆 Full thread screw	22	圆锥销 Conic pin
5	调整块 Adjusting block	11	填料垫片 Packing gasket	17	填料压板 Packing plate		
6	轴套 Shaft sleeve	12	下填料 Lower packing	18	六角螺母 Hexagon nut		

图4-2 三偏芯金属硬密封蝶阀分解图
Figure 4-2 Exploded view of three-eccentric metal hard seal butterfly valve



1	六角螺母 Hexagon nut	7	阀杆1 Stem 1	13	平键 Flat key	19	全螺纹螺杆 Full thread screw	25	连接轴 Connection shaft	31	阀座 Seat
2	后盖 Back cover	8	轴套 Shaft sleeve	14	填料垫片 Packing gasket	20	填料压板 Packing plate	26	ZSS执行机构 ZSS actuator	32	压圈 Pressure ring
3	全螺纹螺杆 Inner hexagon screw	9	阀体 Body	15	下填料 Lower packing	21	六角螺母 Hexagon nut	27	阀体连接螺母 Body connecting nut	33	内六角螺钉 Inner hexagon screw
4	内六角螺钉 Back cover	10	阀板 Disc	16	填料隔环 Packing spacer ring	22	支架 Yoke	28	弹垫 Spring washer		
5	密封垫 Sealing gasket	11	圆锥销 Conic pin	17	上填料 Upper packing	23	执行器连接螺母 Actuator connecting nut	29	密封垫片 Sealing gasket		
6	调整块 Adjusting block	12	阀杆2 Stem 2	18	填料压套 Packing bushing	24	弹垫 Spring washer	30	阀座垫片 Seat gasket		

图5 结构原理 Figure5 Structure and principle

三偏心金属硬密封结构

金属密封蝶阀为三偏心阀板为椭圆形锥体（图5-1），阀座采用金属材料，具有较好弹性，同时设有补偿机构，阀座磨损时自动补偿，偏心结构图减少阀座磨损，提高使用寿命。

三偏心硬密封蝶阀堪称顶尖过程控制阀门，具有不同于其他任何阀门的设计特点。三偏心设计使此阀成为高温、高压和防火应用中气泡级密封的理想硬密封阀门。由于阀座与阀板密封面间的“零摩擦”使其力矩降低，寿命增加。（见图5-2）

Three-eccentric metal hard seal structure

The three-eccentric disc of the metal seal butterfly valve is an oval cone (figure 5-1). The seat is made of metal material, which has good elasticity and compensation mechanism. Automatic compensation can be realized in case of seat wear. The eccentric structure reduces seat wear and enhances service life.

The three-eccentric hard seal butterfly valve is known as the advanced process control valve. It has design features different from other valves. The three-eccentric design makes the valve an ideal hard seal valve for bubble level sealing in high temperature, high pressure and fireproof applications. The “zero friction” between seat and disc sealing faces reduces its torque and enhances its service life (see figure 5-2).

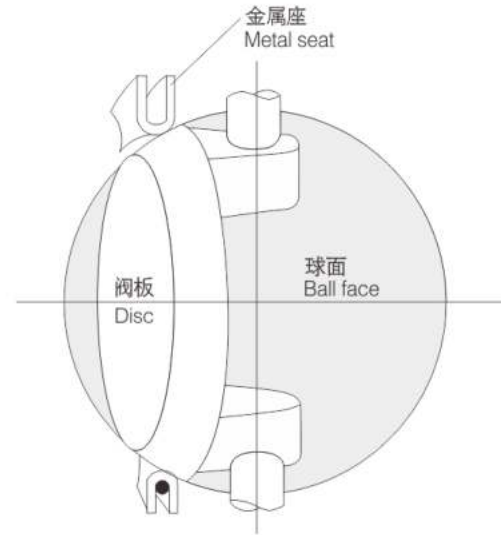


图5-1 阀板结构图
Figure 5-1 Disc structure figure

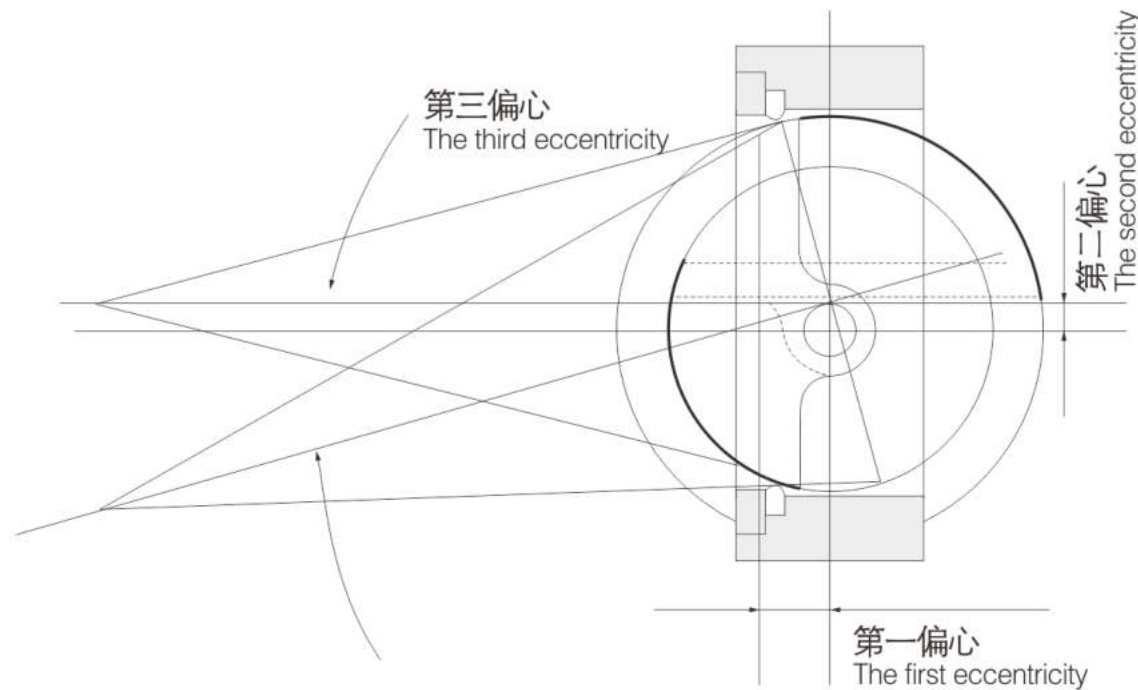


图5-2 三偏心金属硬密封结构图
Figure 5-2 Three-eccentric metal hard seal structure figure

三偏心硬密封蝶阀的阀板与密封组件采用金属U型弹性阀座和三偏心阀板结构。阀板形状为椭圆形锥体，其表面堆焊硬质合金，耐磨性极好。浮动式U型不锈钢阀座具有自动调整中心的功能。当阀门打开时，椭圆形圆锥体阀板的密封面先脱离U形弹性阀座，然后再旋转，可大大降低摩擦阻力及表面磨损，减少了阀门开启力矩、延长阀门使用寿命。关闭时阀板旋转，在偏心轴的作用下，通过阀板密封面的轴向作用力，使弹性阀座进行自动调整中心，阀座随阀板的作用力而发生形变，直到阀座与阀板椭圆形圆锥锥面紧密吻合，从而保证了密封可用于高压工况。

The disc and sealing assembly of the three-eccentric hard seal butterfly valve adopts the metal U type elastic seat and three-eccentric disc structure. The disc is oval cone, and its surface is subject to hard alloy overlaying welding with excellent anti-wear performance. The floating type U stainless steel seat has the function of automatic center adjusting. When the valve is opened, the sealing face of the oval cone disc will first leave the U type elastic seat, and then it turns, so that the friction resistance and surface wear can be greatly reduced, valve opening torque is reduced, and valve service life is prolonged. During closing, the disc turns. Under the action of the eccentric shaft, through the axial force of the disc sealing face, the elastic seat carries out automatic center adjusting. The seat will produce shape change according to the disc force, until the seat and disc oval cone sealing face tightly fit with each other, so as to ensure that the seal can be used for high pressure service conditions.

三偏心复合式密封结构 Three-eccentric compound type sealing structure

三偏心复合式密封蝶阀阀板采用独特的三偏心结构，阀座密封面为阀体本体堆焊层，密封圈采用不锈钢弹性材料（见图5-3和图5-4）。阀板充分利用了凸轮效应原理，实现了阀板在90°行程中阀座与密封圈瞬时脱离，减少阀座与密封圈轴之间的摩擦。从几何形状上使得阀座与密封圈在阀门整个开关行程完全脱离。这一独特的偏心组合，既利用了凸轮效应，又消除了磨损泄漏难。

The disc of the three-eccentric compound type seal butterfly valve adopts unique three-eccentric structure. The seat sealing face adopts body overlaying welding and the seal ring adopts stainless steel and elastic materials (see figure 5-3 and figure 5-4). The disc makes use of the cam effect principle to realize instant dropping of seat and seal ring when the disc is in 90° travel, so as to reduce friction between seat and seal ring shaft, and realize complete disengagement of the seat and seal ring during the whole valve opening and closing travel from geometrical shape. This unique eccentric combination not only uses the cam effect, but eliminates wear.

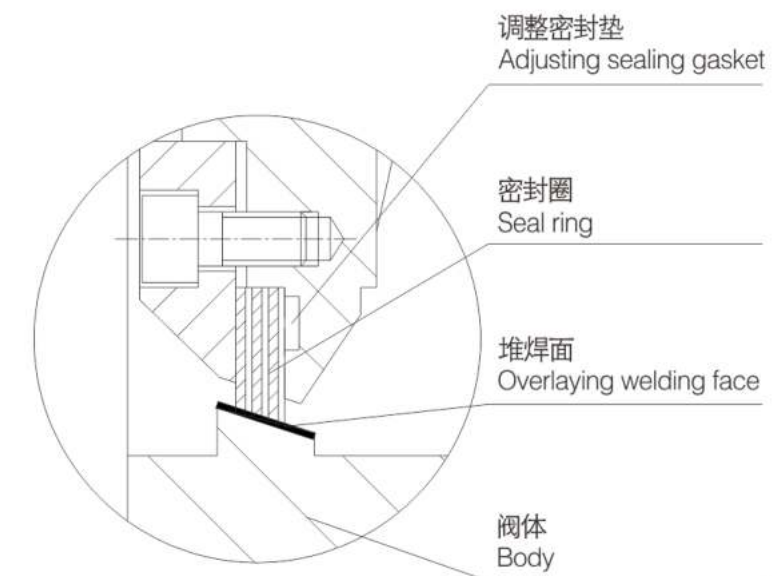


图5-3 三偏心复合式密封示意图
Figure 5-3 Schematic figure of three-eccentric compound type seal

三偏芯金属硬密封蝶阀

Triple eccentric metal hard seal butterfly valve

三偏芯复合式蝶阀优化了阀座与密封圈之间的接触特性。接触角大于锁定锥度范围，从几何形状上排除了卡死的可能，从而确保阀门开关必需扭矩在整个使用过程中不会发生很大的变化。阀座表面堆焊耐高温、耐腐蚀合金材料，密封圈采用软硬层叠式不锈钢片夹弹性密封板(四氟板、橡胶板、石墨板等)(图5-3)。使其具有金属硬密封和弹性密封的双重优点，通过阀密封圈弹性实现的当向阀杆施加扭矩时，该阀密封圈与阀座接触面是“锥中锥”结构，两个锥均为斜锥。密封圈与金属阀座之间的接触角轻微的“楔块效应”，使密封圈发生柔动和径向压缩。正由于阀座与密封圈之间均匀接触，从而实现用最小的转矩实现最严密的关断。本蝶阀密封面选用不锈钢制作，具有耐腐蚀、耐高温、使用寿命长。而且在结构上采用半轴结构，蝶板桁架式结构，蝶板强度高、过流面积大、流阻小、节省能源。结构尺寸短、体积小、重量轻、操作简单等特点。

The three-eccentric compound type butterfly valve optimizes the contact features between seat and seal ring. The contact angle is higher than the locked taper range, so as to eliminate the possibility of blocking from geometrical shape, and ensure that the torque required for opening and closing the valve will not change greatly during the use. The seat face is subjected to overlaying welding of heat and corrosion resistant alloy materials. The seal ring adopts soft and hard laminated stainless sheet and elastic sealing plate (PTFE plate, rubber plate, graphite plate, etc.) (figure 5-3), so as to have advantages of metal hard seal and elastic seal, which is realized through the elasticity of valve seal ring. When torque is exerted on the stem, the contact face of the seal ring and seat is "cone in cone" structure, and the two cones are all bevel cones. The contact angle between the seal ring and metal seat produces light "wedge effect", making the seal ring produce flexible movement and radial compression. Due to the even contact of seat and seal ring, the tightest shut-off is realized through using the minimum torque. The butterfly valve sealing face is made of stainless steel with such features as corrosion resistance, high temperature resistance and long service life. It adopts the semi-shaft structure, and the disc adopts rack structure. The disc has high strength, large flow passing area, low flow resistance and energy saving. The valve has such features as short structure size, small volume, light weight, simple operation, etc.

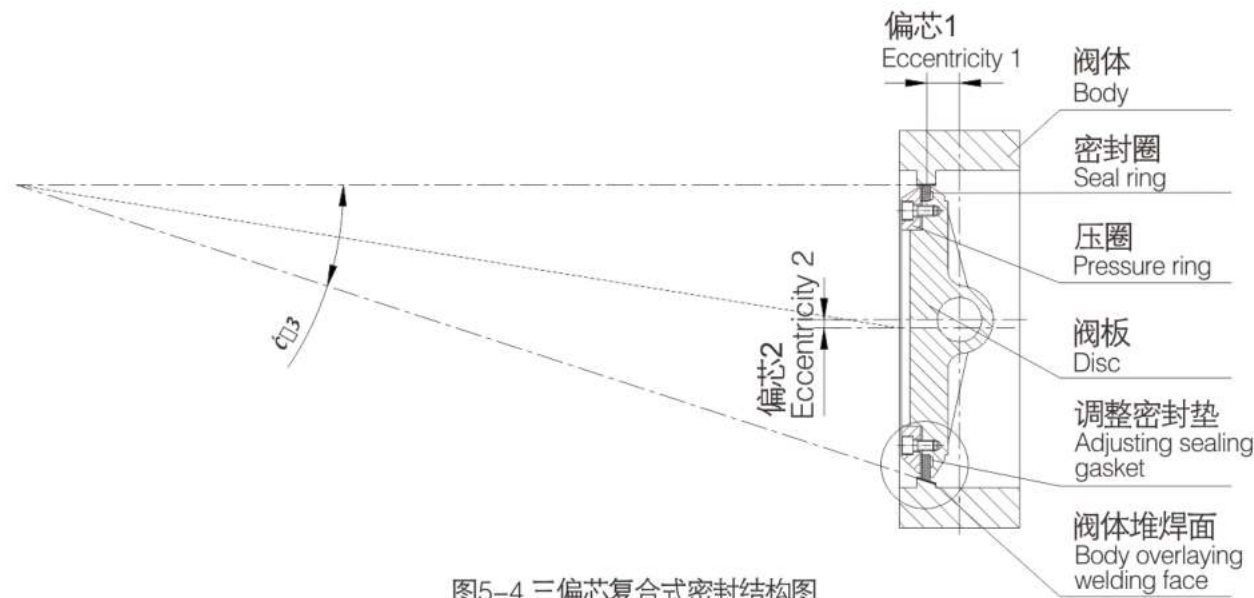


图5-4 三偏芯复合式密封结构图

Figure 5-4 Three-eccentric compound type seal structure figure

最大关闭压差(bar) Maximum closing differential pressure(bar)

表4-1 执行机构：双动作型立推式执行器(ZSS) Table4-1 Actuator: Double acting vertical push type actuator(ZSS)

执行机构型号 Actuator model		ZSS1	ZSS2	ZSS3	ZSS4	ZSS5	ZSS6	ZSS7	ZSS8	ZSS9	ZSS10	ZSS11	ZSS12
阀门口径 Valve size	气源压力 Bar G Air supply pressure												
2"	4	23.3											
3"	4	14.0	28.1										
4"	4	6.50	15.3	35.5									
5"	4		9.50	23.5	38.2								
6"	4		6.60	16.8	25.8	36.5							
8"	4		3.05	12.1	19.6	24.1							
10"	4			6.24	10.2	15.0	35.4						
12"	4			2.55	5.10	10.1	24.6						
14"	4				3.00	6.4	15.4	33.2					
16"	4					3.6	11.5	23.6	30.5				
18"	4					1.52	8.6	15.8	22.4	35.8			
20"	4						4.35	10.2	13.6	25.1	32.5		
24"	4						2.50	8.70	10.0	16.5	22.8		
28"	4							4.25	6.50	10.3	15.4		
32"	4							1.80	2.82	8.80	10.1		
36"	4								1.25	5.05	7.95		
40"	4									2.36	4.35	26.6	
44"	4									1.03	2.56	16.3	
48"	4										1.13	9.25	18.5
52"	4											4.25	10.5
56"	4											2.68	5.85
60"	4											1.05	2.58

表4-2 执行机构：双动作型横推式执行器(ZSH) Table4-2 Actuator: Double acting horizontal push type actuator(ZSH)

执行机构型号 Actuator model		DR 00100	DR 00150	DR 00220	DR 00300	DR 00450	DR 00600	DR 00900	DR01200 /ZD-P180	DR02000 /ZD-P200	DR03000 /ZD-P250	DR05000 /ZD-P300	ZD-P350	ZD-P400	ZD-P450	ZD-P550	ZD-P600	ZD-P800	
阀门口径 Valve size	气源压力 Bar G Air supply pressure																		
2"	4	16.8	26.5																
3"	4	9.50	14.6	22.6															
4"	4		8.65	13.3	23.5														
5"	4			7.66	15.2	28.8	32.5												
6"	4				8.23	16.5	19.8	26.3	30.5										
8"	4					10.6	11.2	14.5	16.5	28.6									
10"	4					6.33	5.66	9.55	11.6	15.3	28.5								
12"	4						2.53	4.35	6.35	9.33	19.2	26.8							
14"	4								3.52	4.25	12.5	16.5	30.8						
16"	4									2.34	7.66	9.80	22.5	31.5	35.6				
18"	4									1.25	4.58	4.03	14.3	23.8	26.3				
20"	4										2.68	2.05	8.35	15.6	19.8	32.5			
24"	4											1.03	3.75	9.02	12.8	26.4			
28"	4												1.25	4.33	8.25	19.5	35.4		
32"	4													1.50	5.44	14.2	27.5	32.8	
36"	4														2.85	9.82	20.5	26.5	
40"	4														1.30	6.65	16.6	19.4	
44"	4															4.89	10.5	14.5	
48"	4																3.05	6.75	9.88
52"	4																2.03	4.55	5.36
56"	4																	2.23	3.53
60"	4																	1.05	2.05

表4-3 执行机构：单动作型立推式执行器(ZSST) Table4-3 Actuator: Single acting vertical push type actuator(ZSST)

执行机构型号 Actuator model		ZST2	ZST3	ZST4	ZST5	ZST6	ZST7	ZST8	ZST10
阀门口径 Valve size	气源压力 Bar G Air supply pressure								
2"	4	8.65	23.5						
3"	4	4.32	16.8						
4"	4		8.52	22.6					
5"	4		3.65	15.2					
6"	4		1.02	7.65	20.8				
8"	4			3.52	13.6				
10"	4				7.05	19.2			
12"	4				2.31	10.5	16.5	20.3	
14"	4					5.30	9.16	12.5	17.5
16"	4						5.55	6.53	9.22

表4-4 执行机构：单动作型横推式执行器(ZSHT) Table4-4 Actuator: Single acting horizontal push type actuator(ZSHT)

执行机构型号 Actuator model		SC00150	SC00220	SC00300	SC00450	SC00600	SC00900 /ZD-P180S	SC01200 /ZD-P200S	SC02000 /ZD-P250S	SC03000 /ZD-P300S	SC05000 /ZD-P350S	ZD-P400S
阀门口径 Valve size	气源压力 Bar G Air supply pressure											
2"	4	10.2	16.5									
3"	4	5.34	9.87	18.5								
4"	4		3.02	10.2	17.3	25.8						
5"	4			4.78	11.0	15.5	24.3					
6"	4				6.51	9.88	12.5	18.5				
8"	4					3.75	5.42	10.1	24.3	28.6		
10"	4							4.38	12.5	19.5	25.3	
12"	4								6.30	9.75	12.4	30.6
14"	4									3.33	7.65	18.6
16"	4										2.30	8.77

表4-5 执行机构：双动作型立推式大力矩执行器(ZSD) Table4-5 Actuator: double acting vertical push type large torque actuator(ZSD)

执行机构型号 Actuator model		ZSD1	ZSD2	ZSD3	ZSD4	ZSD5	ZSD6	ZSD7	ZSD8
阀门口径 Valve size	气源压力 Bar G Air supply pressure								
40"	4	16.5	22.3						
44"	4	9.86	12.5						
48"	4	3.52	6.75	18.6					
52"	4		2.04	10.3					
56"	4			5.62	17.5				
60"	4				9.36	16.3			
64"	4				3.05	8.44	18.8		
72"	4					4.21	9.35	17.6	
80"	4						3.72	9.21	18.5
88"	4						1.05	4.55	9.43
96"	4							2.12	4.61
104"	4								2.30

图6 ZSS/ZSSTW气动立推式蝶阀
Figure 6 ZSS/ZSSTW pneumatic vertical push type butterfly valve

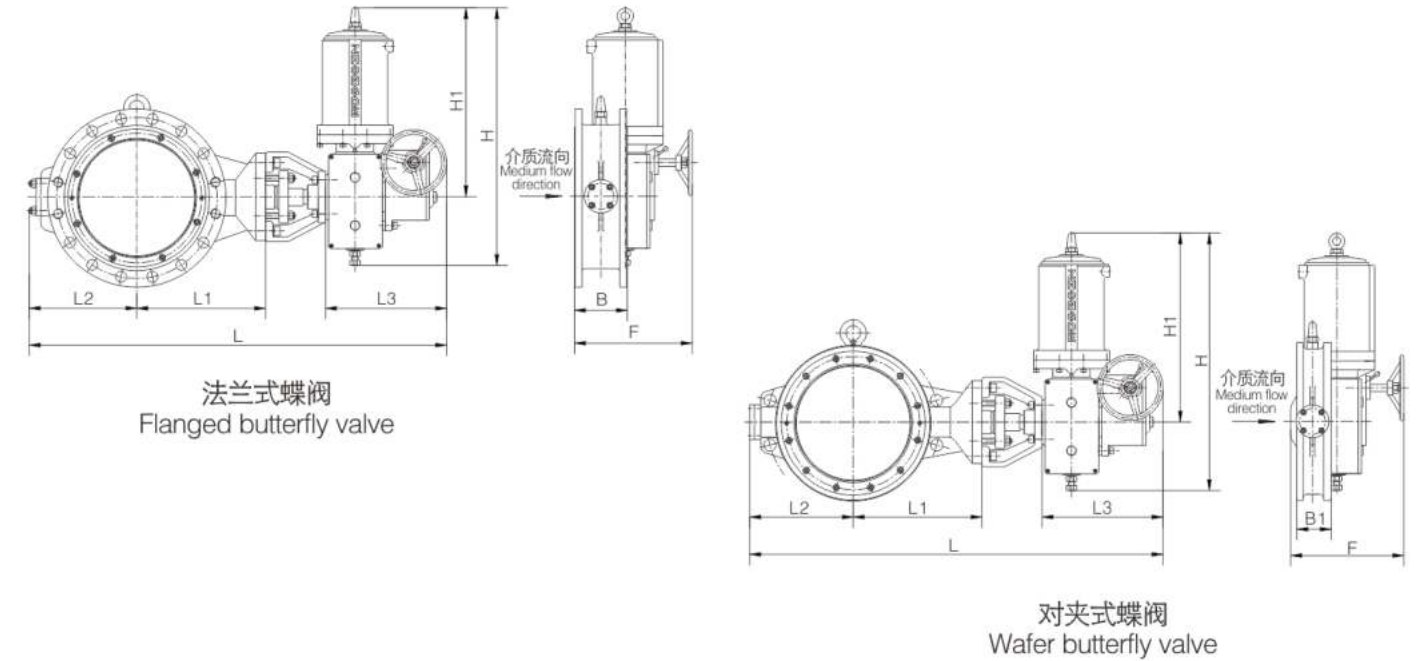


表5-1 ZSSW气动蝶阀外型尺寸——双作用 Table5-1 ZSSWPneumatic butterfly valve outline dimensions—double acting

阀门口径 Valve size (in)	150LB											300LB										
	B	B1	L	L1	L2	L3	F	F1	H	H1	重量(kg) Weight	B	B1	L	L1	L2	L3	F	F1	H	H1	重量(kg) Weight
2"	108	60	610	130	100	250	334	330	540	385	30	150	60	640	150	110	250	355	330	540	385	34
3"	114	64	660	150	130	250	337	330	540	385	34	180	64	730	170	140	280	420	390	670	545	69
4"	127	64	685	160	145	250	344	330	540	385	42	190	64	770	185	165	280	425	390	670	545	78
5"	140	70	770	185	165	280	400	390	670	545	74	200	70	800	200	180	280	430	390	670	545	90
6"	140	70	810	210	180	280	400	390	670	545	80	210	76	900	225	205	330	445	410	960	710	141
8"	152	71	870	235	215	280	418	390	670	545	114	230	89	900	270	250	330	455	410	960	710	177
10"	165	76	990	270	250	330	422	410	960	710	179	250	114	1090	295	275	380	515	460	970	720	258
12"	178	83	1050	300	280	330	429	410	960	710	222	270	114	1290	330	300	520	630	565	960	720	362
14"	190	92	1180	340	320	380	485	460	970	720	318	290	127	1360	360	340	520	640	565	960	720	443
16"	216	102	1250	375	355	380	498	460	970	720	391	310	140	1440	400	380	520	650	565	995	750	573
18"	222	114	1430	405	365	520	606	565	960	720	452	330	152	1490	425	405	520	660	565	995	750	680
20"	229	127	1510	435	415	520	610	565	960	720	520	350	152	1710	460	440	610	685	660	1335	990	1085
24"	267	154	1620	490	470	520	620	565	995	750	752	390	178	1880	540	530	610	705	660	1335	990	1427
28"	292	165	1940	550	730	520	640	565	995	750	878	430	229	2180	575	795	610	725	660	1335	990	1680
32"	318	190	2210	610	790	610	669	660	1335	990	1426	470	241	2700	640	860	980	885	800	1500	1050	2502
36"	330	203	2310	660	840	610	675	660	1335	990	1717	510	241	2820	700	920	980	905	800	1500	1050	3073
40"	410	216	2450	720	920	610	710	660	1335	990	2413	550	300	2920	750	970	980	925	800	1510	1060	3787
44"	410	216	3020	800	1020	980	855	800	1500	1050	3100	550	300	3230	830	1050	1100	1100	1000	1900	1380	4490
48"	470	254	3120	850	1070	980	885	800	1500	1050	3415	630	360	3330	880	1100	1100	1140	1000	1900	1380	4969
52"	470	254	3270	925	1145	980	885	800	1510	1060	3892	-	-	-	-	-	-	-	-	-	-	-
56"	530	279	3530	980	1200	1100	1090	1000	1900	1380	4964	-	-	-	-	-	-	-	-	-	-	-
60"	530	279	3650	1040	1260	1100	1090	1000	1900	1380	5584	-	-	-	-	-	-	-	-	-	-	-

表5-2 ZSSW气动蝶阀外型尺寸——双作用 Table5-2 ZSSW Pneumatic butterfly valve outline dimensions—double acting

阀门口径 Valve size (in)	600LB								重量(kg) Weight
	B	L	L1	L2	L3	F	H	H1	
4"	190	790	200	170	280	425	670	545	82
5"	200	885	220	195	330	445	960	710	137
6"	210	1130	250	220	520	595	960	720	225
8"	230	1235	300	275	520	610	960	720	262
10"	250	1280	330	290	520	620	995	750	370
12"	270	1340	360	320	520	630	995	750	437
14"	290	1565	395	360	610	660	1335	990	776
16"	310	1680	450	420	610	665	1335	990	895
18"	330	2160	480	450	980	800	1500	1050	1368
20"	350	2470	530	710	980	800	1500	1050	1524
24"	390	2590	580	780	980	820	1510	1060	1926

表5-3 ZSSW气动蝶阀外型尺寸——双作用 Table5-3 ZSSW Pneumatic butterfly valve outline dimensions—double acting

阀门口径 Valve size (in)	900LB								重量(kg) Weight
	B	L	L1	L2	L3	F	H	H1	
4"	229	1265	300	295	520	595	960	720	186
5"	254	1320	330	320	520	610	960	720	298
6"	267	1430	360	350	520	630	995	750	340
8"	292	1520	400	400	520	630	995	750	480
10"	330	1710	420	430	610	660	1335	990	815
12"	356	2410	480	650	980	800	1500	1050	1064
14"	381	2495	520	695	980	820	1510	1060	1385
16"	406	2705	580	725	1100	1090	1900	1380	1853

表5-4 ZSSTW气动蝶阀外型尺寸——单作用 Table5-4 ZSSTW Pneumatic butterfly valve outline dimensions—single acting

阀门口径 Valve size (in)	150LB										300LB											
	B	B1	L	L1	L2	L3	F	F1	H	H1	重量(kg) Weight	B	B1	L	L1	L2	L3	F	F1	H	H1	重量(kg) Weight
2"	108	60	610	130	100	250	334	330	740	595	62	150	60	640	150	110	250	355	330	740	595	72
3"	114	64	660	150	130	250	337	330	740	595	70	180	64	690	170	140	250	370	330	740	595	112
4"	127	64	685	160	145	250	344	330	740	595	80	190	64	770	185	165	280	415	380	1250	950	126
5"	140	70	770	185	165	280	350	330	740	595	115	200	70	800	200	180	280	420	380	1250	950	236
6"	140	70	810	210	180	280	390	380	1250	950	135	210	76	850	225	205	280	425	380	1250	950	275
8"	152	71	870	235	215	280	396	380	1250	950	260	230	89	1180	270	250	520	610	565	1332	1060	537
10"	165	76	990	270	250	330	402	380	1250	950	302	250	114	1230	295	275	520	620	565	1332	1060	601
12"	178	83	1240	300	280	520	585	565	1332	1060	558	270	114	1290	330	300	520	630	565	1420	1125	762
14"	190	92	1320	340	320	520	590	565	1332	1060	630	-	-	-	-	-	-	-	-	-	-	-
16"	216	102	1390	375	355	520	605	565	1336	1040	720	-	-	-	-	-	-	-	-	-	-	-

图7 ZSH/ZSHTW气动横推式蝶阀 Figure7 ZSH/ZSHTW Pneumatic horizontal push type butterfly valve

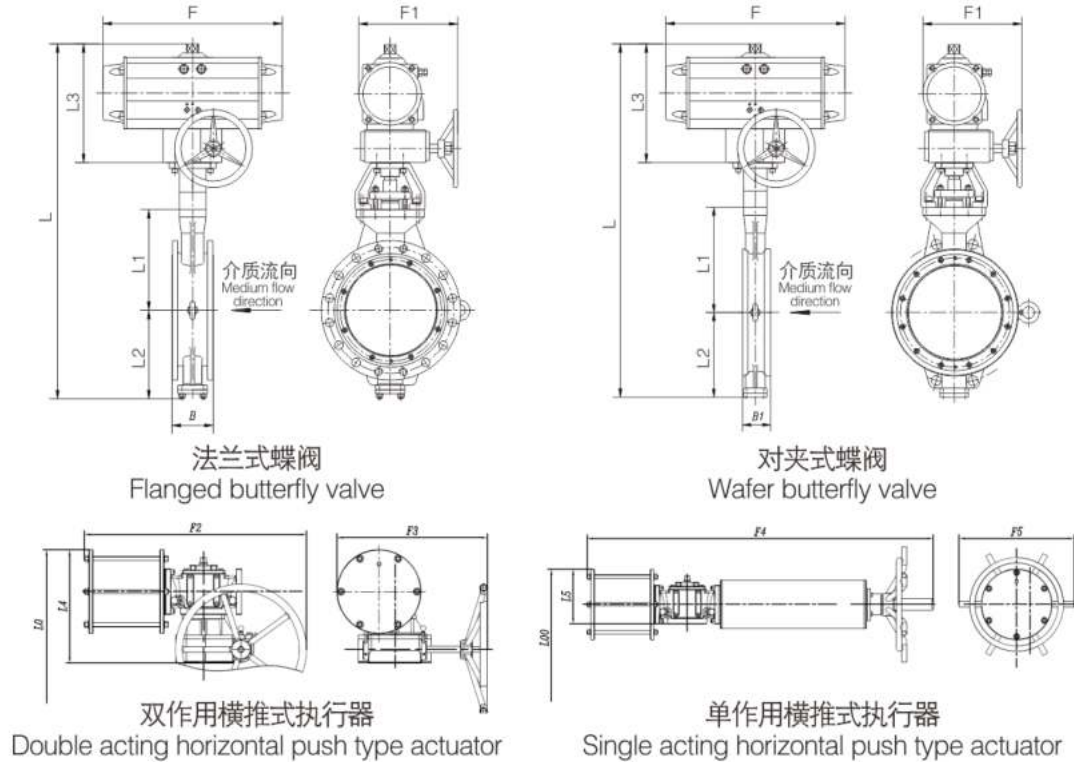


表6-1 ZSH/ZSHTW气动蝶阀外型尺寸 Table ZSH/ZSHTW Pneumatic butterfly valve outline dimensions

阀门口径 Valve size (in)	150LB																重量(kg) Weight
	B	B1	L	L0	L00	L1	L2	L3	L4	L5	F	F1	F2	F3	F4	F5	
2"	108	60	540	-	-	130	100	217	-	-	248	242	-	-	-	17.5	
3"	114	64	587	-	-	150	130	217	-	-	248	242	-	-	-	22	
4"	127	64	650	-	-	160	145	244	-	-	268	248	-	-	-	31	
5"	140	70	715	-	-	185	165	262	-	-	315	256	-	-	-	40	
6"	140	70	775	-	-	210	180	274	-	-	345	262	-	-	-	49	
8"	152	71	855	880	-	235	215	294	330	-	409	305	627	300	-	78	
10"	165	76	955	950	966	270	250	313	330	326	438	313	627	300	1495	350	112
12"	178	83	1060	1010	1026	300	280	358	330	326	487	324	627	300	1495	350	162
14"	190	92	1190	1182	1106	340	320	397	402	326	543	343	850	362	1495	350	201
16"	216	102	1335	1252	1206	375	355	476	402	326	633	407	850	362	1630	375	320
18"	222	114	1428	1354	1246	405	365	508	454	326	728	487	1158	440	1630	375	389
20"	229	127	1592	1434	1426	435	415	592	454	396	876	551	1158	440	1955	460	507
24"	267	154	1752	1544	1536	490	470	592	454	396	876	551	1158	440	1955	460	720
28"	292	165	-	1980	-	550	730	-	570	-	-	-	1158	440	-	-	898
32"	318	190	-	2100	-	610	790	-	570	-	-	-	1158	440	-	-	1167
36"	330	203	-	2324	-	660	840	-	674	-	-	-	1448	622	-	-	1562
40"	410	216	-	2464	-	720	920	-	674	-	-	-	1448	622	-	-	2218
44"	410	216	-	2440	-	800	1020	-	440	-	-	-	1880	845	-	-	2850
48"	470	254	-	2540	-	850	1070	-	440	-	-	-	1880	845	-	-	3165
52"	470	254	-	2740	-	925	1145	-	490	-	-	-	1880	870	-	-	3772
56"	530	279	-	2850	-	980	1200	-	490	-	-	-	1880	870	-	-	4665
60"	530	279	-	3120	-	1040	1260	-	600	-	-	-	2350	980	-	-	5554

表6-2 ZSH/ZSHTW气动蝶阀外型尺寸 Table ZSH/ZSHTW Pneumatic butterfly valve outline dimensions

阀门口径 Valve size (in)	300LB																
	B	B1	L	L0	L00	L1	L2	L3	L4	L5	F	F1	F2	F3	F4	F5	重量(kg) Weight
2"	150	60	595	-	-	150	110	244	-	-	268	248	-	-	-	-	22
3"	180	64	662	-	-	170	140	262	-	-	315	256	-	-	-	-	35
4"	190	64	725	800	-	185	165	274	330	-	345	262	627	300	-	-	47
5"	200	70	775	830	-	200	180	294	330	-	409	305	627	300	-	-	69
6"	210	76	853	880	-	225	205	313	330	-	438	313	627	300	-	-	88
8"	230	89	988	1052	996	270	250	358	402	326	487	324	850	362	1495	350	132
10"	250	114	1087	1102	1046	295	275	397	402	326	543	343	850	362	1495	350	180
12"	270	114	1226	1162	1106	330	300	476	402	326	633	407	850	362	1630	375	290
14"	290	127	1338	1304	1176	360	340	508	454	326	728	487	1158	440	1630	375	400
16"	310	140	1502	1500	1356	400	380	592	570	396	876	551	1158	440	1955	460	540
18"	330	152	1572	1550	-	425	405	592	570	-	876	551	1158	440	-	-	648
20"	350	152	-	1754	-	460	440	-	674	-	-	-	1448	622	-	-	930
24"	390	178	-	1924	-	540	530	-	674	-	-	-	1448	622	-	-	1272
28"	430	229	-	2224	-	575	795	-	674	-	-	-	1448	622	-	-	1485
32"	470	241	-	2120	-	640	860	-	440	-	-	-	1880	845	-	-	2252
36"	510	241	-	2260	-	700	920	-	440	-	-	-	1880	845	-	-	2823
40"	550	300	-	2410	-	750	970	-	490	-	-	-	1880	870	-	-	3667
44"	550	300	-	2570	-	830	1050	-	490	-	-	-	1880	870	-	-	4190
48"	630	360	-	2800	-	880	1100	-	600	-	-	-	2350	980	-	-	4939

表6-3 ZSH/ZSHTW气动蝶阀外型尺寸 Table ZSH/ZSHTW Pneumatic butterfly valve outline dimensions

阀门口径 Valve size (in)	600LB															
	B	L	L0	L00	L1	L2	L3	L4	L5	F	F1	F2	F3	F4	F5	重量(kg) Weight
4"	190	833	850	-	200	170	313	330	-	438	313	627	300	-	-	65
5"	200	923	895	-	220	195	358	330	-	487	324	627	300	-	-	92
6"	210	1017	1022	946	250	220	397	402	326	543	343	850	362	1495	350	128
8"	230	1233	1127	1051	300	275	508	402	326	728	487	850	362	1630	375	191
10"	250	1392	1254	1166	330	290	592	454	396	876	551	1158	440	1955	460	340
12"	270	1452	1430	-	360	320	592	570	-	876	551	1158	440	-	-	405
14"	290	-	1505	-	395	360	-	570	-	-	-	1158	440	-	-	776
16"	310	-	1724	-	450	420	-	674	-	-	-	1448	622	-	-	894
18"	330	-	1784	-	480	450	-	674	-	-	-	1448	622	-	-	1368
20"	350	-	1900	-	530	710	-	440	-	-	-	1880	845	-	-	1524
24"	390	-	2070	-	580	780	-	490	-	-	-	1880	845	-	-	1926

表6-4 ZSH/ZSHTW气动蝶阀外型尺寸 Table6-4 ZSH/ZSHTW Pneumatic butterfly valve outline dimensions

阀门口径 Valve size (in)	900LB															
	B	L	L0	L00	L1	L2	L3	L4	L5	F	F1	F2	F3	F4	F5	重量(kg) Weight
4"	229	1103	-	-	300	295	358	-	-	487	324	-	-	-	-	124
5"	254	1197	-	-	330	320	397	-	-	543	343	-	-	-	-	188
6"	267	1366	1310	1150	360	350	476	420	260	633	407	590	450	1715	435	248
8"	292	1488	1445	1305	400	400	508	465	325	728	487	690	555	1620	1180	390
10"	330	-	1585	1460	420	430	-	555	430	-	-	820	715	2110	1275	641
12"	356	-	1705	1850	480	650	-	375	520	-	-	1385	1210	2510	1410	845
14"	381	-	1845	-	520	695	-	430	-	-	-	1675	1290	-	-	1073
16"	406	-	1995	-	580	725	-	490	-	-	-	1970	1410	-	-	1448

图8 ZSDW大口徑气动立推式蝶阀 Figure8 ZSDW Large size pneumatic vertical push type butterfly valve

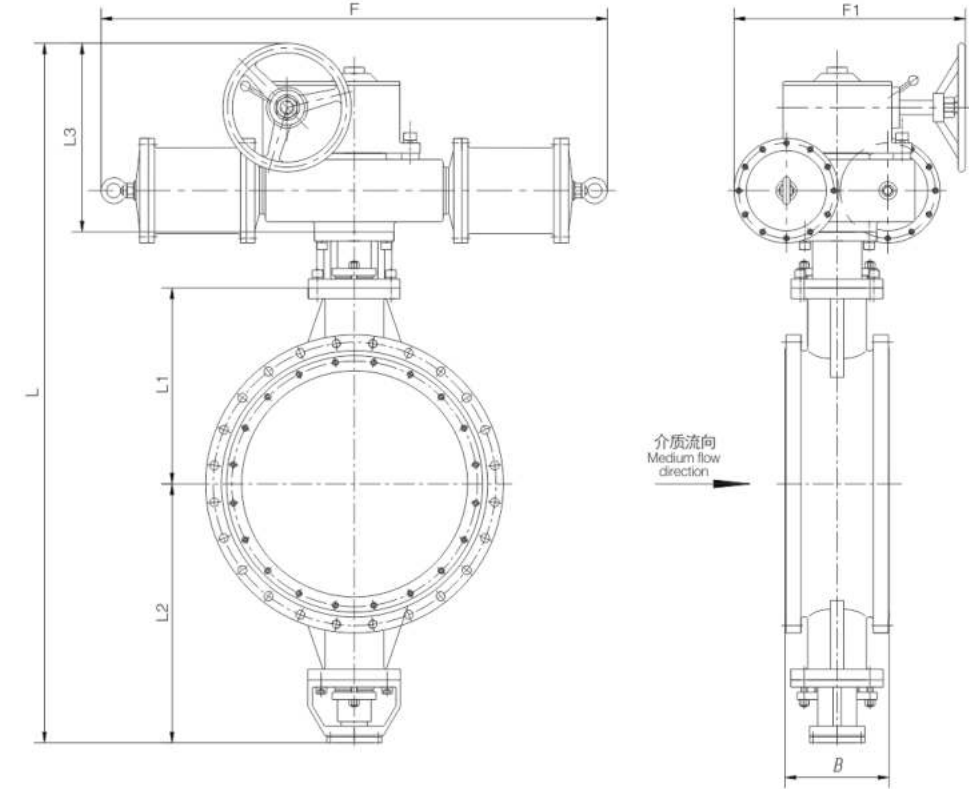


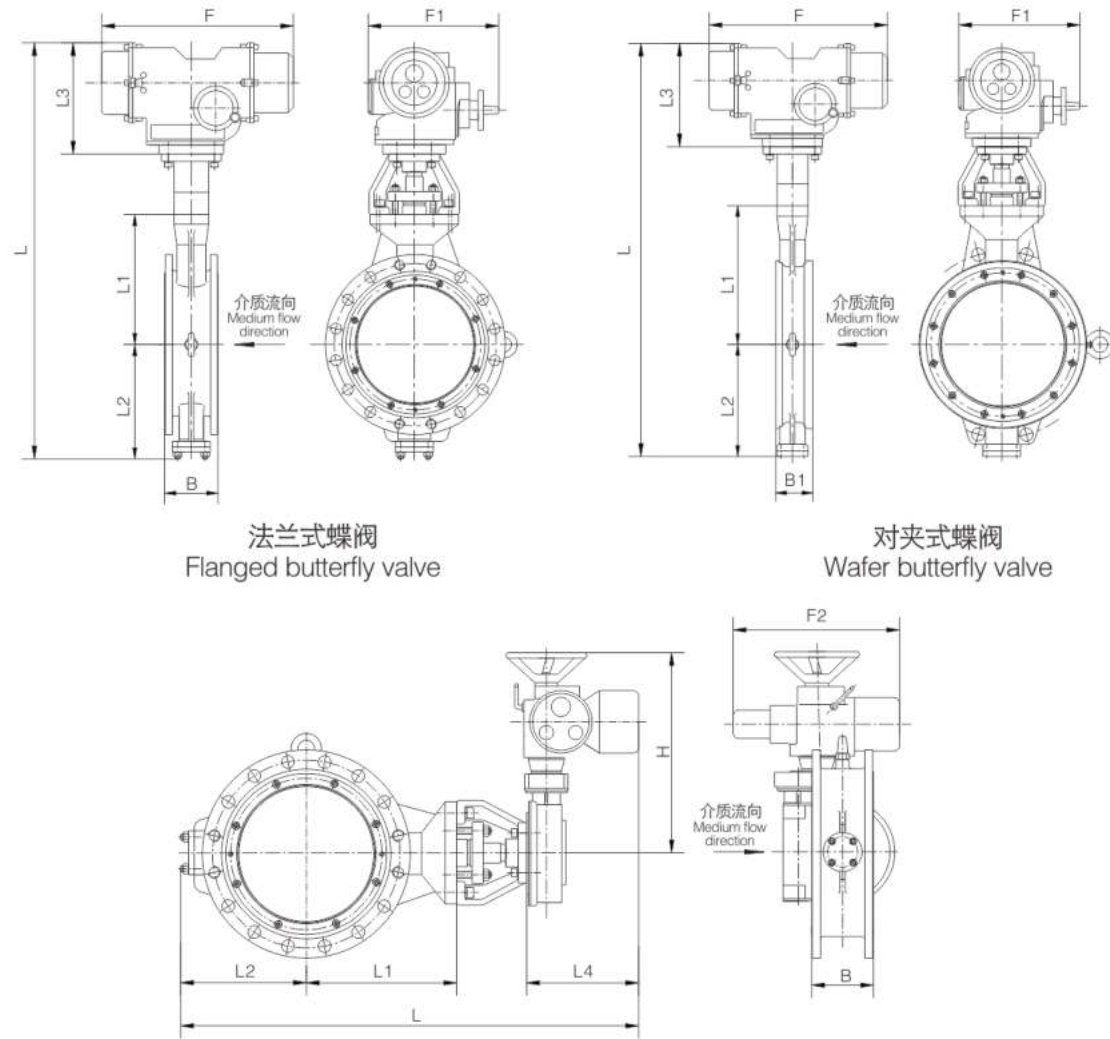
表7 ZSDW气动蝶阀外型尺寸 Table7 ZSDW Pneumatic butterfly valve outline dimensions

阀门口径 Valve size (in)	150LB								300LB							
	B	L	L1	L2	L3	F	F1	重量(kg) Weight	B	L	L1	L2	L3	F	F1	重量(kg) Weight
40"	410	2470	720	920	610	1980	1100	2378	550	2550	750	970	610	1980	1100	3189
44"	410	2650	800	1020	610	1980	1100	2675	550	2710	830	1050	610	2060	1240	3895
48"	470	2750	850	1070	610	2060	1240	3635	630	3180	880	1100	980	2280	1355	4940
52"	470	3300	925	1145	980	2280	1355	4042	630	3380	965	1185	980	2280	1355	5546
56"	530	3410	980	1200	980	2280	1355	4934	710	3610	1020	1240	1100	2500	1420	6436
60"	530	3530	1040	1260	980	2500	1420	5584	710	3750	1090	1310	1100	2725	1580	7027
64"	600	3780	1080	1300	1100	2725	1580	6435	790	4140	1160	1380	1300	3020	1620	8067
72"	670	4020	1200	1420	1100	2725	1580	7240	870	4380	1280	1500	1300	3020	1620	9515
80"	760	4230	1330	1550	1100	2725	1580	8520	-	-	-	-	-	-	-	-
88"	1000	4640	1435	1655	1300	3020	1620	9950	-	-	-	-	-	-	-	-
96"	1100	4940	1560	1780	1300	3020	1620	11920	-	-	-	-	-	-	-	-
104"	1200	5450	1700	1900	1550	3300	1800	17655	-	-	-	-	-	-	-	-

注：以上阀门重量为法兰式蝶阀标准配置双作用执行器带手操的重量，具体配置时需重新核算。

Note: The weight of the above valve is the weight of flanged butterfly valve with standard configuration of double acting actuator and manual operating mechanism. The weight shall be recalculated when detailed configuration is made.

图9 ZDJW电动蝶阀 Figure9 ZDJW Electric butterfly valve



法兰式蝶阀
Flanged butterfly valve

对夹式蝶阀
Wafer butterfly valve

表8-1 电动蝶阀外型尺寸 Table8-1 Electric butterfly valve outline dimensions

阀门口径 Valve size (in)	150LB												300LB											
	B	B1	L	L1	L2	L3	L4	F	F1	F2	H	重量(kg) Weight	B	B1	L	L1	L2	L3	L4	F	F1	F2	H	重量(kg) Weight
2"	108	60	657	130	100	277	-	440	338	-	-	35	150	60	687	150	110	277	-	440	338	-	-	38
3"	114	64	707	150	130	277	-	440	338	-	-	41	180	64	737	170	140	277	-	440	338	-	-	50
4"	127	64	732	160	145	277	-	440	338	-	-	68	190	64	777	185	165	277	-	440	338	-	-	79
5"	140	70	777	185	165	277	-	440	338	-	-	76	200	70	807	200	180	277	-	440	338	-	-	92
6"	140	70	817	210	180	277	-	440	338	-	-	82	210	76	919	225	205	339	-	440	368	-	-	131
8"	152	71	877	235	215	277	-	440	338	-	-	124	230	89	1009	270	250	339	-	440	368	-	-	167
10"	165	76	1039	270	250	339	-	440	368	-	-	154	250	114	1080	295	275	-	330	-	-	626	619	237
12"	178	83	1099	300	280	339	-	440	368	-	-	197	270	114	1140	330	300	-	330	-	-	626	619	301
14"	190	92	1179	340	320	339	-	440	368	-	-	258	290	127	1210	360	340	-	330	-	-	626	619	382
16"	216	102	1249	375	355	339	-	440	368	-	-	331	310	140	1335	400	380	-	335	-	-	626	648	540

表8-2 电动蝶阀外型尺寸 Table8-2 Electric butterfly valve outline dimensions

阀门口径 Valve size (in)	150LB												300LB											
	B	B1	L	L1	L2	L3	L4	F	F1	F2	H	重量(kg) Weight	B	B1	L	L1	L2	L3	L4	F	F1	F2	H	重量(kg) Weight
18"	222	114	1280	405	365	-	330	-	-	626	619	440	330	152	1345	425	405	-	335	-	-	626	648	647
20"	229	127	1360	435	415	-	330	-	-	626	619	508	350	152	1442	460	440	-	362	-	-	626	648	825
24"	267	154	1490	490	470	-	330	-	-	626	619	720	390	178	1635	540	530	-	365	-	-	733	669	1167
28"	292	165	1815	550	730	-	335	-	-	626	648	898	430	229	1935	575	795	-	365	-	-	733	669	1485
32"	318	190	1935	610	790	-	335	-	-	626	648	1166	470	241	2082	640	860	-	382	-	-	733	669	1977
36"	330	203	2085	660	840	-	382	-	-	733	669	1562	510	241	2222	700	920	-	382	-	-	733	669	2873
40"	410	216	2225	720	920	-	382	-	-	733	669	2218	550	300	2335	750	970	-	395	-	-	733	721	3039
44"	410	216	2405	800	1020	-	382	-	-	733	669	2900	550	300	2495	830	1050	-	395	-	-	733	721	3605
48"	470	254	2535	850	1070	-	395	-	-	733	721	3215	630	360	2602	880	1100	-	402	-	-	733	755	4649
52"	470	254	2707	925	1145	-	402	-	-	733	755	3752	630	-	2787	965	1185	-	417	-	-	770	755	5276
56"	530	279	2817	980	1200	-	417	-	-	770	755	4450	710	-	2897	1020	1240	-	417	-	-	770	755	5757
60"	530	279	2944	1040	1260	-	417	-	-	770	803	5314	710	-	3044	1090	1310	-	424	-	-	770	803	6243
64"	600	-	3024	1080	1300	-	424	-	-	770	803	6500	790	-	3217	1160	1380	-	457	-	-	770	829	7240
72"	670	-	3264	1200	1420	-	424	-	-	770	803	7226	870	-	3457	1280	1500	-	457	-	-	770	829	8970
80"	760	-	3587	1330	1550	-	457	-	-	770	829	8120	-	-	-	-	-	-	-	-	-	-	-	-
88"	1000	-	3797	1435	1655	-	457	-	-	770	829	9920	-	-	-	-	-	-	-	-	-	-	-	-
96"	1100	-	4148	1560	1780	-	508	-	-	980	894	12295	-	-	-	-	-	-	-	-	-	-	-	-
104"	1200	-	4408	1700	1900	-	508	-	-	980	894	16545	-	-	-	-	-	-	-	-	-	-	-	-

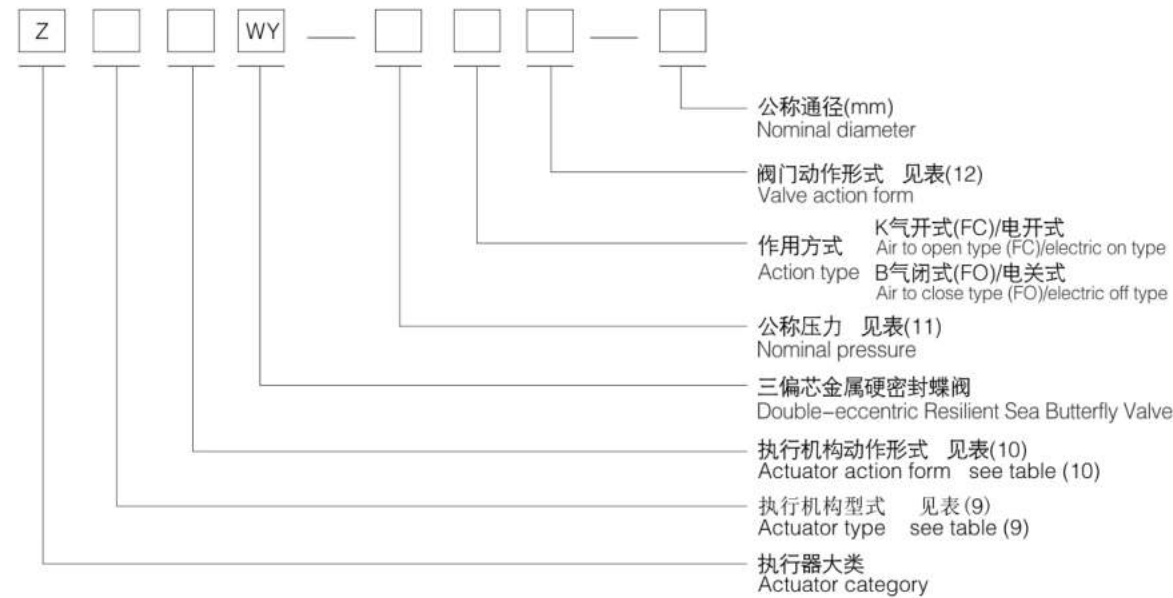
表8-3 电动蝶阀外型尺寸 Table8-3 Electric butterfly valve outline dimensions

阀门口径 Valve size (in)	600LB										重量(kg) Weight
	B	L	L1	L2	L3	L4	F	F1	F2	H	
4"	190	797	200	170	277	-	440	338	-	-	84
5"	200	934	220	195	339	-	440	368	-	-	127
6"	210	989	250	220	339	-	440	368	-	-	165
8"	230	1085	300	275	-	330	-	-	626	619	270
10"	250	1135	330	290	-	335	-	-	626	648	390
12"	270	1222	360	320	-	362	-	-	626	648	562
14"	290	1300	395	360	-	365	-	-	733	669	946
16"	310	1452	450	420	-	382	-	-	733	669	1064
18"	330	1525	480	450	-	395	-	-	733	721	1298
20"	350	1862	530	710	-	402	-	-	733	755	1454
24"	390	2004	580	780	-	424	-	-	770	803	1836

表8-4 电动蝶阀外型尺寸 Table8-4 Electric butterfly valve outline dimensions

阀门口径 Valve size (in)	900LB										重量(kg) Weight
	B	L	L1	L2	L3	L4	F	F1	F2	H	
4"	229	1084	300	295	339	-	440	368	-	-	124
5"	254	1139	330	320	339	-	440	368	-	-	175
6"	267	1229	360	350	339	-	440	368	-	-	207
8"	292	1315	400	400	-	335	-	-	626	648	390
10"	330	1395	420	430	-	365	-	-	733	669	586
12"	356	1712	480	650	-	382	-	-	733	669	795
14"	381	1817	520	695	-	402	-	-	733	755	1002
16"	406	1922	580	725	-	417	-	-	770	755	1326

型号编制 Model establishment



表(9) Table9

执行机构型式 Actuator type	薄膜式 Diaphragm type	活塞式 Piston type	电动式 Electric type	电液联动式 Electro-hydraulic type
代号 Code	M	S	D	Y

表(10) Table10

执行机构动作形式 Actuator action form	气动双作用横推式 Pneumatic double acting horizontal push type	气动双作用立推式 Pneumatic double acting vertical push type	气动单作用弹簧复位式 Pneumatic single acting spring return type	电动/电液联动转角式 Electric/electro-hydraulic rotary angle type
代号 Code	H	S	T	J

表(11) Table11

公称压力PN Nominal pressure	CL150LB	CL300LB	CL600LB	CL900LB
代号 Code	20	50	110	150

表(12) Table12

阀门动作形式 Valve action form	调节型 Control type	二位切断型 Two-position shut-off type	快速切断调节型 Fast shut-off control type
代号 Code	I	II	III

示例:

ZSSWY-20K III -500 气动三偏芯高性能密封蝶阀, 公称压力150LB, 气开式快速切断调节蝶阀, 双作用立推式执行器, 公称口径为20"(500mm)。

ZSTWY-50BI-200 气动三偏芯高性能密封蝶阀, 公称压力300LB, 气关式调节蝶阀, 单作用执行器, 公称口径为8"(200mm)。

For example:

ZSSWY-20K III -500 Pneumatic three-eccentric high performance sealing butterfly valve, nominal pressure 150LB, air to open type fast shut-off control butterfly valve, double acting vertical push type actuator, nominal diameter 20"(500mm)

ZSTWY-50BI-200 pneumatic three-eccentric high performance sealing butterfly valve, nominal pressure 300LB, air to close type control butterfly valve, single acting actuator, nominal diameter 8"(200mm).

配管安装位置

- 蝶阀可在水平或垂直管道上安装, 但气动立推式执行机构一般正立安装(除特殊说明外)见图10。使用前应对管道及压缩空气管路进行吹扫, 彻底清洗管路和阀内腔污物、焊渣、润滑油脂等异物。
- 对于公称口径DN≥500的阀门, 执行机构建议增加弹性支撑或悬吊装置, 以免执行机构过重, 影响阀门正常操作。
- 三偏芯高性能密封蝶阀一般为单向结构, 请在订货时一定要注明安装位置。如需双向密封蝶阀, 请咨询我公司。

Pipe installation position

- The butterfly valve can be installed on horizontal or vertical pipe, but the pneumatic vertical push type actuator shall be generally installed vertically (except those specially noted). See figure 10. Before the use, please scavenge the pipe and compressed air pipe to thoroughly clean away dirty things, welding slag, lubricating grease and other foreign matters in the pipes and valve cavity.
- For valves with nominal diameter DN≥500, it is recommended that the actuator should be additionally provided with elastic supporting or hoisting device. Otherwise, too heavy actuator may influence normal operation of the valve.
- The three-eccentric high performance sealing butterfly valve is generally of single direction structure. Please make sure to specify the installation position when placing orders. If you need double direction sealing butterfly valve, please consult our company.

正确操作

- 阀门在出厂时已经过必要性的性能测试, 且按订单要求进行了整定, 用户一般可直接安装使用。
- 使用手轮操作时, 先将气缸内的残余气体通过电磁阀(或控制元件)排空(在气缸内有残余气体的情况下)。
- 双作用气缸先将执行器的平衡阀打开, 然后将转换手柄置于?手动?位置, 使蜗杆与蜗轮处于完全吻合状态。用手轮操作时请勿用力过大(不可借用其他的外力工具)。
特别提示: 带手动操作机构的阀门在弹簧复位(关闭阀门)或是气动开启(关闭)阀门过程中, 任何一个开度都不能使用“自动手动”切换。
- 操作时, 请参照执行器上铭牌指示。
- 对于单作用执行机构, 在拆卸气缸时, 一定要使用专用工具。

Proper operation

- The valve has undergone necessary performance tests before leaving the factory, and setting has been made according to order requirements, so users can install and use it directly.
- When using the handwheel for operation, first empty the residual gas in the cylinder through the solenoid valve (or control element) (in case there is residual gas in the cylinder).
- For the double acting cylinder, first open the balancing valve of the actuator, turn the change-over handle to the "manual" position to make the worm and worm gear fully fit with each other. Do not use excessive force when operating the handwheel (other tools shall not be used).
Special hint: For the valve with manual operating mechanism, during spring reset (closing the valve) or pneumatic valve opening (closing), any opening cannot be switched through using "automatic-manual".
- During operation, please refer to the indication on the nameplate of the actuator.
- For single acting actuator, please use special tools when removing the cylinder.

维护与保养

1. 正常检查：每年进行一次，检查各管接着部分有无漏气，应换O型密封圈或有关螺钉，检查空气的净化情况，排除过滤器中冷凝水，检查各螺纹连接部有无松动。
2. 输出轴上的轴承、手操机构切换轴上的轴承等转动部位每三个月或半年加一次足够的润滑油脂。
3. 检修时应检查并清洗缸套及活塞，如发现O型密封圈有损坏或老化时应及时更换，装配时应在气缸壁和密封圈沟槽内涂滑油，并注意缓慢将活塞推入气缸，以免损坏O型密封圈。
4. 气源压力应在0.35~0.7MPa(G)范围内，气源应经除尘、脱水等净化处理。

Maintenance and servicing

1. Normal check: Carry out normal check once every year to check if there is any gas leakage at the connecting parts, and replace the O rings or relevant bolts if there is any. Check the air cleanliness. Eliminate condensate in the filter. Check if the connecting parts of all threads are loose.
2. The bearings on the output shaft and the bearings on the change-over shaft of the manual operating mechanism and other moving parts shall be added with sufficient lubricating grease once every three or six months.
3. During maintenance, please check and clean the cylinder cover and piston. If it is found that the O rings are damaged or age, please replace them in time. During assembly, please spread lubricating grease on the cylinder wall and inside the groove of seal rings. Notice that the piston shall be slowly pushed into the cylinder. Otherwise, the O rings may be damaged.
4. The air supply pressure shall be within the range of 0.35~0.7MPa(G). The air supply shall be subjected to dust removing and dehydrating treatment.

订货须知

当您订货时，请明确注明以下各项内容：

1. 阀门口径及阀内孔径
2. 阀体规格及连接形式
3. 阀体材质及阀内件材质
4. 阀门特性及阀芯形式
5. 阀盖形式
6. 执行机构型号是否配手操及气源压力
7. 阀门动作(气源故障要求)
8. 是否要带定位器、电磁阀、空气过滤减压阀等
9. 是否要除油、除水、无铜等特殊规格
10. 配管尺寸、管壁厚(入口侧、出口侧)
11. 流体的名称、状态(液、气、蒸汽等)
12. 常用流量及最大、最小流量
13. 流体压力及压差(全开、全闭时)
14. 流体的温度、比重或密度
15. 流体的粘度、有无浆料、闪蒸
16. 是否用于高压、高温场合
17. 其他特殊要求

Ordering notes

When placing orders, please specify the following items:

1. Valve size and valve bore
2. Body specification and type of connection
3. Body material and trim material
4. Valve characteristic and valve plug form
5. Bonnet form
6. Actuator model and shall it be provided with manual operating mechanism and air supply pressure
7. Valve action (air supply failure requirement)
8. Shall it be provided with positioner, solenoid valve, Air set, etc.
9. Are products of special specifications such as oil removing, water removing and copper-free needed
10. Tube size, tube wall thickness (inlet side, outlet side)
11. Fluid name and status (liquid, gas, steam, etc.)
12. Common flow and maximum and minimum flow
13. Fluid pressure and differential pressure (during full opening and full closing)
14. Fluid temperature, specific gravity or density
15. Fluid viscosity, containing slurry or not, flash evaporation
16. Is it used for high pressure and high temperature applications
17. Other special requirements

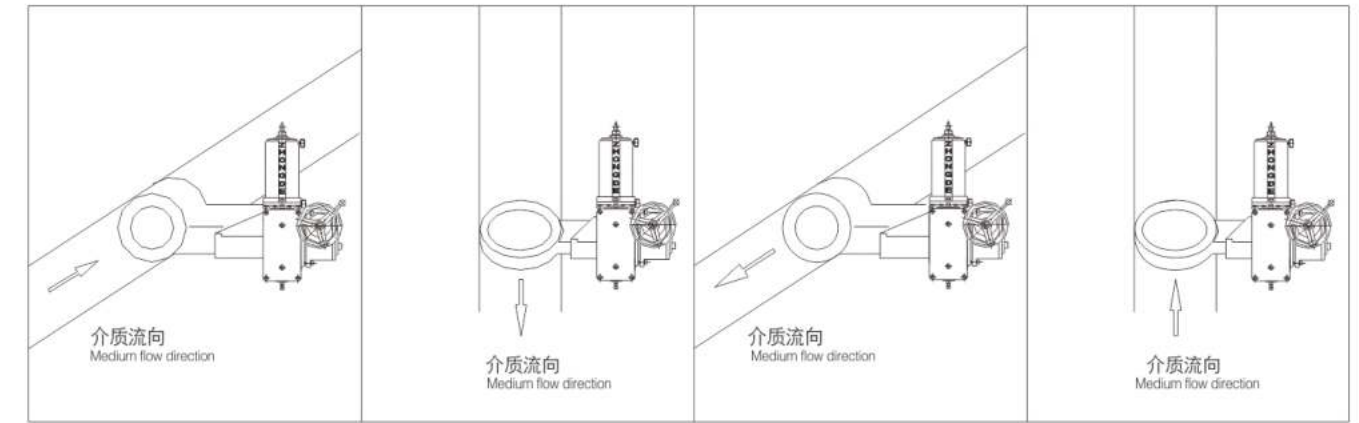


图10 三偏芯蝶阀安装示意图

Figure 10 Three-eccentric butterfly valve installation schematic figure