

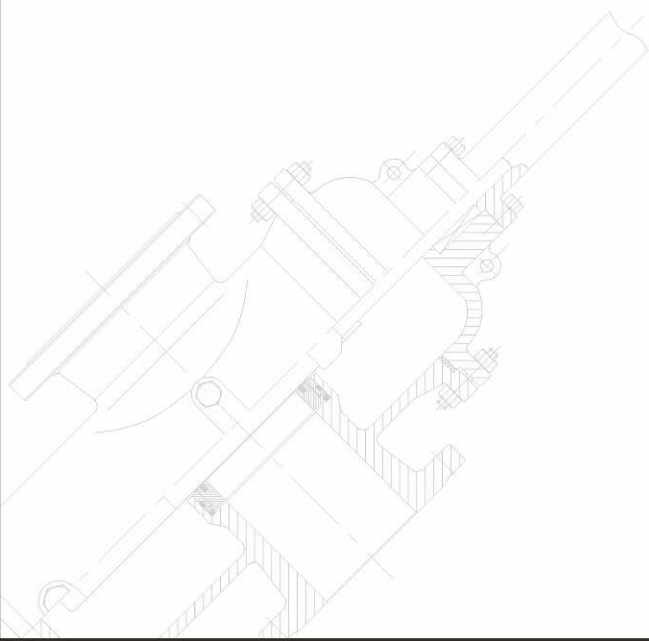
浙江中德自控科技股份有限公司

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

平板闸阀

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

地址：浙江省长兴县太湖街道长兴大道659号

电话：0572-6660053

传真：0572-6556888

售后服务热线：0572-6660121 / 13325722979

E-mail: vip@zhongdegroup.com

Http://www.zhongdegroup.com

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

Z43系列平行单闸板闸阀(又称平板闸阀)是生产过程中控制阀门的重要品种之一。平板闸阀具有良好启闭特性。具有全通径、流阻小、密封性好、开关方便等特点。可适用于成品油的输送管线和贮存设备;石油、天然气的开采井口装置以及带有悬浮颗粒、纤维的介质的管道。

其结构分为带导流孔和无导流孔两种。带导流孔的平板闸阀其闸板上有一与阀体通道相同口径的通孔,可直接用清管器进行清管。由于闸板是在两阀座面上滑动,因此平板闸阀也能适用于带悬浮颗粒的介质;且阀座密封面不会受到阀体热变形的损坏。无导流孔的平板闸阀具有体积小、重量轻等特点。无导流孔的闸板可制造成V形、半圆形、五角形通道,以适应流体调节精度要求不高控制场合。

平行单闸板闸阀可与气动执行机构、电动执行机构、电液动式执行机构或手动执行机构组合。(见图1)



图1、Z43电动平行单闸板闸阀
Figure 1 Z43 Electric parallel single disc gate valve

Summary

The Z43 series parallel single disc gate valve (also called flat gate valve) is an important kind of valve among the control valves used during production. The flat gate valve has good opening and closing performance with such features as full bore, low flow resistance, good sealing performance, convenient opening and closing. It is suitable for transportation pipelines and storage equipment for refined oil products, well head equipment for exploitation of petroleum and natural gas, and pipes of media containing suspended granules and fibers.

It has two kinds of structures such as with diversion hole and without diversion hole. The flat gate valve with diversion hole has a hole on the gate with its size the same as that of the body channel, which can be directly cleaned by the pipe cleaner. As the gate slides on the faces of the two seats, the flat gate valve can also be suitable for media containing suspended granules, and the seat sealing face will not be damaged by the thermal deformation of the body. The flat gate valve without diversion hole has such features as small volume, light weight, etc. The V-shaped, semicircular or pentagonal channel can be made for the gate valve without diversion hole to make it suitable for control applications where the requirement for fluid control precision is not high.

The parallel single disc gate valve can be combined with pneumatic actuator, electric actuator, electro-hydraulic actuator or manual actuator (see figure 1).

标准规格

阀体

结构型式: 平行式单闸板闸阀

阀门口径: 1" ~ 40"

公称压力: ANSI 150LB ~ 900LB

连接方式: 法兰式 (RF、MFM、RTJ)

结构长度: 请参见第13~15页

材质: A215-WCB、A217-WC5、A217-WC9、A217-C5、A351-CF8、A351-CF8M及其它合金钢

各材料的使用温度、压力范围请参见表1

使用温度: -46 ~ 300°C

但需注意各材料的使用温度、压力范围。

填料: 聚四氟乙烯, 柔性石墨 (均可带密封脂结构)

涂层: 银白色 (环氧树脂)

当本体材质为CF8、CF8M等不锈钢时不加涂层。

阀内体部

闸板形式: 带导流孔

无导流孔

特性: 近似等百分比

材质处理: 阀体、闸板、阀座、阀杆等材质组合、处理请参见第6页表2-1~2-2

阀座泄露率: 复合密封为零泄漏

硬密封为ANSI Class IV ~ V

外型尺寸: 请参见第13~15页

产品重量: 请参见第13~15页

Standard specification

Body

Structural form: parallel single disc gate valve

Valve size: 1" ~ 40"

Nominal pressure: ANSI 150LB ~ 900LB

Type of connection: flange connection (RF, MFM, RTJ)

Face-to-face dimension: see P13~15

Material: A215-WCB, A217-WC5, A217-WC9, A217-C5, A351-CF8, A351-CF8M and other alloy steel

See Table 1 for the range of working temperature and pressure for various materials.

Working temperature: -46 ~ 300°C

Pay attention to the range of working

Temperature and pressure for various materials.

Packing: PTFE + flexible graphite

(can be provided with sealing grease structure)

Coating: silver grey (epoxy resin)

No coating shall be added if the body material is CF8, CF8M and other stainless steel.

Trim

Gate form: with diversion hole

without diversion hole

Characteristic: approximate equal percentage

Material treatment: Please refer to tables 2-1 ~ 2-2 (P6) for the material combination and treatment for body, gate, seat, stem, etc.

Seat leakage: zero leakage for compound seal hard seal ANSI Class IV ~ V

Outline dimensions: Please refer to P13~15

Product weight: Please refer to P13~15

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	ZST	ZDDZ	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) Orange green (epoxy resin)		随外购执行器 Actuator	
选购设备 Optional equipment		手动机构、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	

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

表1 Table 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

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

表2-1 本体材质: 碳钢 Table2-1 Body material: Carbon steel (A216-WCB、A352-LCB)

本体材质 Body material		A216-WCB				A352-LCB		
闸板 Gate	材质 Material	A105	420	A182-F304	A182-F316	A350-LF2	A182-F304	A182-F316
	处理 Treatment	ENP	ENP	STL或ENP	STL或ENP	STL	STL	STL
阀座 Seat	材质 Material	A105	420	A182-F304	A182-F316	A350-LF2	A182-F304	A182-F316
	处理 Treatment	STL	STL	STL	STL	STL	STL	STL
阀杆 Stem	材质 Material	A276-420、A564-T630、A182-304、A182-316						
密封面 Sealing face	材质 Material	PTFE、RPTFE、PPL、STL						
填料 Packing	材质 Material	PTFE、柔性石墨 (可带密封脂结构) Flexible graphite (can be provided with sealing grease structure)						
使用温度范围°C Working temperature range		-29 ~ 300				-46 ~ 300		
阀门检验与试验 Valve inspection and testing		API 598 \ ANSI/FCI 70-2						

表2-2 本体材质: 不锈钢 Table2-2 Body material: stainless steel (A351-CF8、A351-CF8M)

本体材质 Body material		A351-CF8		A351-CF8M	
闸板 Gate	材质 Material	A182-F304	A182-F316	A182-F304	A182-F316
	处理 Treatment	STL或ENP	STL或ENP	STL或ENP	STL或ENP
阀座 Seat	材质 Material	A182-F304	A182-F316	A182-F304	A182-F316
	处理 Treatment	STL	STL	STL	STL
阀杆 Stem	材质 Material	A564-T630、A182-304、A182-316			
密封面 Sealing face	材质 Material	PTFE、RPTFE、PPL、STL			
填料 Packing	材质 Material	PTFE、柔性石墨 (可带密封脂结构) Flexible graphite (can be provided with sealing grease structure)			
使用温度范围°C Working temperature range		-46 ~ 300			
阀门检验与试验 Valve inspection and testing		API 598 \ ANSI/FCI 70-2			

填料使用温度、压力范围
Range of working temperature and pressure of packing

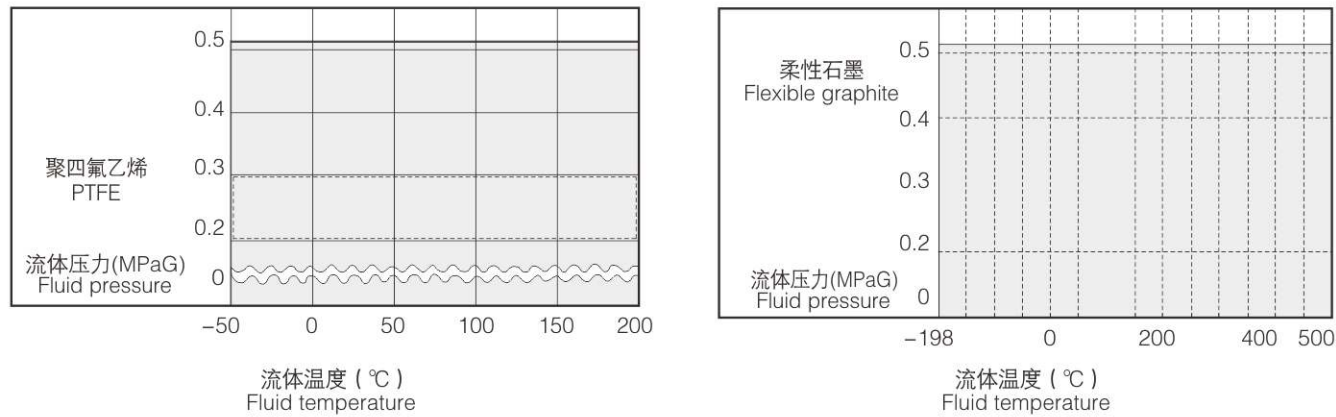


图2、填料的使用温度、压力范围
Figure 2 Range of working temperature and pressure of packing

平板闸阀的流量特性曲线
Flow characteristic curve of flat gate valve

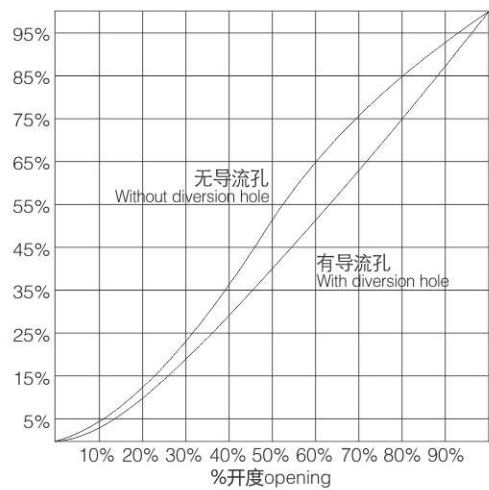


图3、平板闸阀的流量特性曲线
Figure 3 Flow characteristic curve of flat gate valve

带导流孔的平板闸阀，其流量特性近似于同规格的管道，呈近似等百分比特性。

不带导流孔的平板闸阀，其中腔跨度较楔式闸阀小，且属于规则的圆柱体。其压力损失较带导流孔的大，其余特性基本与带导流孔的相似。（见图3）

不带导流孔闸阀其调节型闸板的调节性优于普通型闸板。

As for the flat gate valve with diversion hole, its flow characteristic is approximate equal percentage, which is similar to that of the pipe of the same specification.

As for the flat gate valve without diversion hole, its middle cavity span is lower than that of the wedge gate valve, and it is a regular cylinder. Its pressure loss is higher than that of the flat gate valve with diversion hole, and other characteristics are similar to those of the flat gate valve with diversion hole (see figure 3).

The control characteristic of the control type gate in the gate valve without diversion hole is superior to that of the ordinary gate.

平行单闸板闸阀结构原理
Structure and principle of parallel single disc gate valve

Z43d型带导流孔型阀体、本体结构（见图4）
Z43dBody structure of the valve with diversion hole (see figure 4)

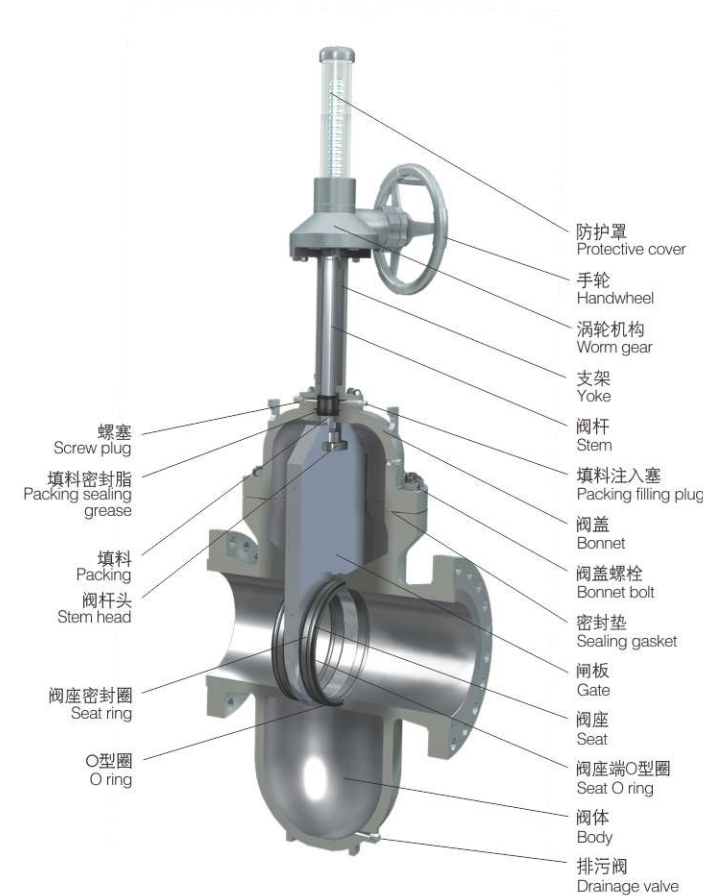


图4、平行单闸板闸阀结构图（带导流孔）
Figure 4 Structural diagram of parallel single disc gate valve (with diversion hole)

结构特点
Structural features

- 1、闸板带一与阀体通道相同口径的通孔，阀门全开时，闸板导流孔与阀体通道形成直管段，可直接用毛球进行吹扫。（见图5）
- 2、闸板开启或关闭行程中阀座始终与闸板接触吻合，软阀座在闸板运行过程中能够自动刮除闸板上的杂质，因此平板闸阀适用于带悬浮颗粒、纤维的介质；且阀座密封面不会受到阀体热变形的损坏。
- 3、两阀座为浮动式，具有软硬复合密封的特点，使用寿命长。当阀门内腔压力异常升高时，浮动阀座可自动将高压泄放排入管道。
- 4、阀体外部两阀座处设有注脂阀，当阀门使用过程中由于密封副磨损发生泄漏时，可通过此处注入密封脂，防止阀门泄漏。
- 5、阀体下部设有排污阀，可排放阀门内部积存的污物。

1. The gate is provided with a hole with its size the same as that of the body channel. When the valve is fully opened, the gate diversion hole and the body channel form a straight pipe section, which can be scavenged directly by a hair ball (see figure 5).
2. The seat always fits the gate during the opening and closing of the gate. During the movement of the gate, the soft seat can automatically scrape off the impurities on the gate. Therefore, the flat gate valve is suitable for media containing suspended granules and fibers, and the seat sealing face will not be damaged by the thermal deformation of the body.
3. The two seats are of floating type, having the features of soft and hard compound seal and long service life. When the pressure inside the valve cavity rises abnormally, the floating seat can automatically discharge the high pressure into the pipe.
4. There is the grease injection valve at the two seats outside the body. If leakage occurs due to wear of the sealing pair during the use of the valve, the sealing grease can be injected to avoid valve leakage.
5. The drainage valve at the bottom of the body can discharge the dirty things accumulated inside the valve.

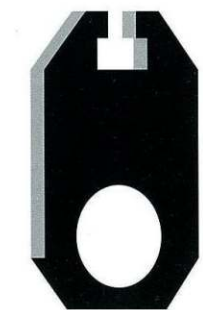


图5、带导流孔闸板结构图
Figure 5 Structure diagram of gate with diversion hole

平行单闸板闸阀结构原理
Structure and principle of parallel single disc gate valve

Z43型无导流孔型阀体、本体结构 (见图6)
Z43 Body structure without diversion hole (see figure 6)

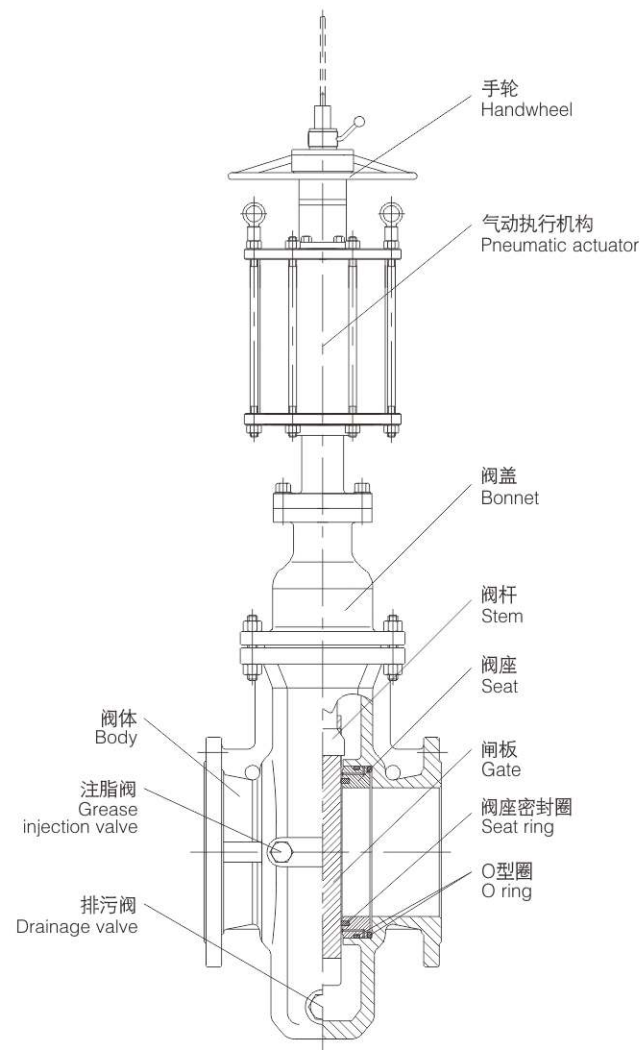


图6、气动平行单闸板闸阀结构图 (无导流孔)
Figure 6 Structural diagram of pneumatic parallel single disc gate valve (without diversion hole)

结构特点
Structural features

- 1、闸板不带导流孔，阀门结构紧凑、体积小、重量轻。
- 2、闸板可设计制造成V形、半圆形、五角形通道，使阀门具有调节性能，可任意开度调节，以满足管道系统对流量的要求。(见图7)
- 3、两阀座为浮动式，具有软硬复合密封的特点，使用寿命长。当阀门内腔压力异常升高时，浮动阀座可自动将高压泄放入管道。
- 4、阀体外部两阀座处设有注脂阀，当阀门使用过程中由于密封副磨损发生泄漏时，可通过此处注入密封脂，防止阀门泄漏。
- 5、阀体下部设有排污阀，可排放阀门内部积存的污物。

1. The gate is not provided with diversion hole and the valve is featured by compact structure, small volume and light weight.
2. The gate can be designed with the V-shaped, semicircular or pentagonal channel to enable the valve to have the control function. The opening can be adjusted freely to meet the requirement for flow by the pipe system (see figure 7).
3. The two seats are of floating type, having the features of soft and hard compound seal and long service life. When the pressure inside the valve cavity rises abnormally, the floating seat can automatically discharge the high pressure into the pipe.
4. There is the grease injection valve at the two seats outside the body. If leakage occurs due to wear of the sealing pair during the use of the valve, the sealing grease can be injected to avoid valve leakage.
5. The drainage valve at the bottom of the body can discharge the dirty things accumulated inside the valve.

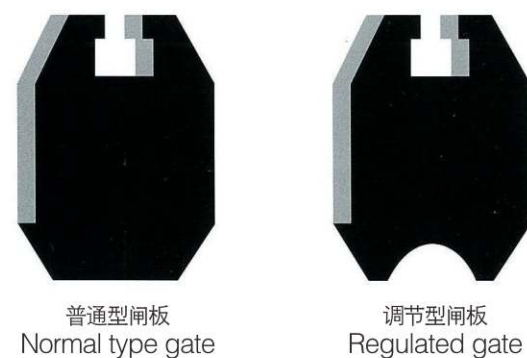


图7、无导流孔闸板结构图
Figure 7 Structural diagram of gate without diversion hole

密封原理
Sealing principle

平行单闸板闸阀阀座采用O形密封圈或圆柱弹簧做施加预紧力的浮动阀座结构，使阀门进出口双向密封；并且该结构的起闭力矩仅为普通阀门的一半，实现阀门轻松开、关。

阀门通常采用软密封结构，阀座密封面上镶嵌PTFE或RTFE，具有PTFE或RTFE对金属和金属对金属的双重密封，同时PTFE密封面也起到清除闸板脏物的作用，使阀门初始密封达到零泄露。

阀体外部设有注油脂结构，油脂通过注油器、阀座进入阀门密封面，使阀门达到零泄露。

带导流孔阀门的闸板，无论是全开或是全关始终与密封面吻合，密封面得到保护不受介质直接冲刷，从而延长使用寿命。

阀门采用带自密封能力的填料结构，无需经常调节，密封性能可靠，开关轻便。填料函处设有辅助密封油脂注入机构，性能得到保障。

阀门在全开时，通道平滑，流阻系数小，无压力损失，可通毛球清扫。

阀门关闭时，能自动卸掉内腔高压，保证安全。(见图8-11)

Sealing principle

The parallel single disc gate valve adopts the seat that adopts O ring for sealing or the floating seat structure that adopts cylindrical spring for exerting pre-tightening force, so as to realize double sealing of the inlet and outlet of the valve. In addition, the opening and closing torque of this structure is only half of that of the ordinary valve, realizing easy opening and closing of the valve.

The valve generally adopts the soft seal structure. The seat sealing face is embedded with PTFE or RTFE, and provided with double sealing of PTFE or RTFE to metal and metal to metal. In addition, the PTFE sealing face also plays the function of removing the dirty things on the gate, so as to make the primary sealing of the valve reach zero leakage.

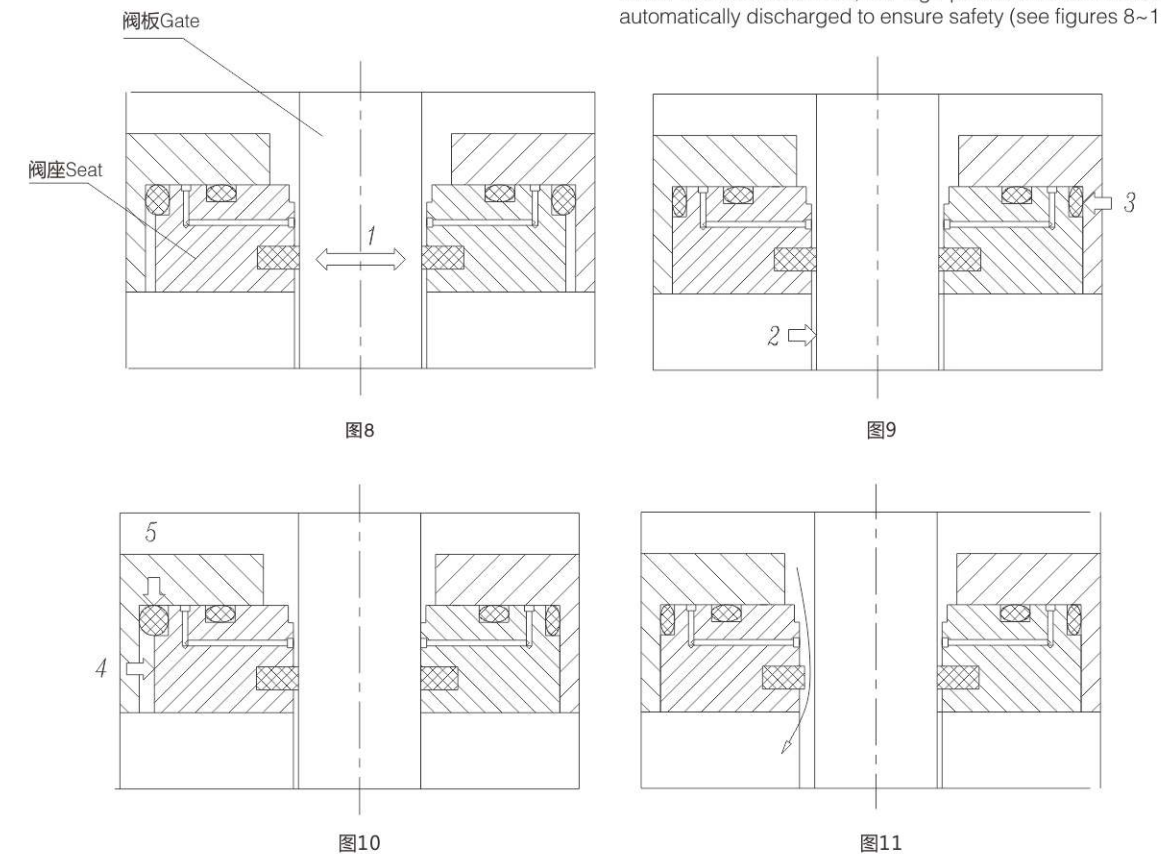
The grease injection structure is provided outside the body. The grease enters the sealing face of the valve after passing through the grease injector and seat, so as to make the valve reach zero leakage.

The gate of the valve with diversion hole always fits the sealing face no matter when the valve is fully opened or fully closed. The sealing face is protected from being directly eroded by media, and its service life is prolonged.

The valve adopts the packing structure with the self-sealing capacity. It does not need constant adjustment, featured by reliable sealing performance and easy opening and closing. The packing box is provided with the auxiliary sealing grease injection structure, so that the performance is ensured.

When the valve is fully opened, the flow channel is smooth, the flow resistance coefficient is low and there is no pressure loss. It can be scavenged by a hair ball.

When the valve is closed, the high pressure inside the cavity can be automatically discharged to ensure safety (see figures 8-11).



工作原理

- (1)、阀门内部压力相当时(1)，闸板处于闭合状态，阀座表面PTFE密封环形成初始密封，每次开、关阀门时，阀座能自动清洗闸板两侧。(如图8)
- (2)、对阀门施加管道压力时(2)，压力作用于闸板，迫使闸板贴近出口阀座上的PTFE环，压缩PTFE环直到闸板停在钢制阀座上，这样就形成了双重密封。同时压力(3)使这一点的O形圈形成密封，阻止任何后部介质流。(如图9)
- (3)、阀腔泄压后，形成进口密封，管道压力作用于进口阀座(4)，使其移向闸板，这时形成PTFE对金属的密封，同时，O形圈(5)与阀座凹槽形成紧密的密封。(如图10)
- (4)、阀门自动泄放多余的压力：当阀腔压力大于管道压力时，由于热膨胀，进口阀座推向凹槽，阀腔内多余的压力在阀座与闸板之间泄放到管道中。(如图11)

Working principle

- (1). When the pressure inside the valve is appropriate (1), the gate is under the closing status. The PTFE seal ring on the seat surface will form the primary sealing, and the seat can automatically clean the two sides of the gate every time when the valve is opened or closed (figure 8).
- (2). When pipe pressure is exerted on the valve (2), the pressure acts on the gate, forcing the gate to keep closer to the PTFE ring on the seat at the outlet, and compress the PTFE ring until the gate stops at the steel seat. Thus, double sealing is formed. In addition, the pressure (3) makes the O ring at this point form sealing to avoid any medium flow at the rear (figure 9).
- (3). After the valve cavity discharges the pressure, sealing will be formed at the inlet. The pipe pressure acts on the seat at the inlet (4), making it move towards the gate. At the time, the sealing of PTFE to metal is formed. Meanwhile, the O ring (5) and seat groove form tight sealing (figure 10).
- (4). The valve discharges excessive pressure: When the valve cavity pressure is higher than the pipe pressure, the seat at the inlet will be pushed towards the groove as a result of heat expansion. The excessive pressure inside the valve cavity will be discharged into the pipe from between the seat and gate (figure 11).

密封原理 Sealing principle

- 1、阀杆填料函孔装有上下两组V形自密封成形填料，中间采用注入式软质填料。在阀门使用中可随时注入填料密封脂，保证填料密封，无外漏现象发生。(见图12)
The holes of the stem packing box are filled with two groups of V-shaped self-sealing forming packing at the top and the bottom, and the injection type soft packing is in the middle. During the use of the valve, the sealing grease can be filled at any time to ensure sealing of packing and no occurrence of leakage (see figure 12).
- 2、如果用户需采用纯金属密封时，通常采用阀座密封面堆焊STL或镍基硬质合金，闸板整体喷涂STL或镍基硬质合金。两者相互研磨，达到密封效果。阀座采用分体式组合而成，采用圆柱弹簧进行预紧。适用于高温及含颗粒、纤维、腐蚀性介质工况。并设有防火、防静电装置，使用寿命长。(见图13)
If users need to use pure metal seal, the seat sealing face is generally subjected to STL or nickel-based hard alloy overlaying welding and the gate is subjected to STL or nickel-based hard alloy spray coating. Both of them lap each other to achieve the sealing effect. The seat is assembled by split seats and pre-tightened by cylindrical spring. It is suitable for high temperature service condition and other service conditions with media containing granules and fibers and corrosive media. Provided with the fire-proof and antistatic device, it has long service life (see figure 13).
- 3、阀体外部两阀座位置各设有一个注脂阀，当阀门使用过程中由于密封副磨损发生泄漏时，可通过此处注入密封脂，防止阀门泄漏，确保阀门的密封及使用。(见图14)
The two seats outside the body are respectively provided with a grease injection valve. If leakage occurs due to wear of the sealing pair during the use of the valve, the sealing grease can be injected to avoid valve leakage and ensure valve sealing and use (see figure 14).
- 4、阀体下部设有排污阀，可排放阀内部积存的污物。(见图15)
The drainage valve at the bottom of the body can discharge the dirty things accumulated inside the valve (see figure 15).

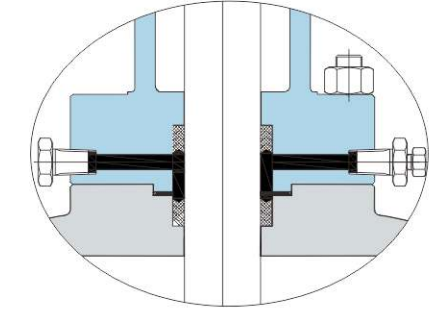


图12 阀杆填料密封结构
Seal structure of stem packing

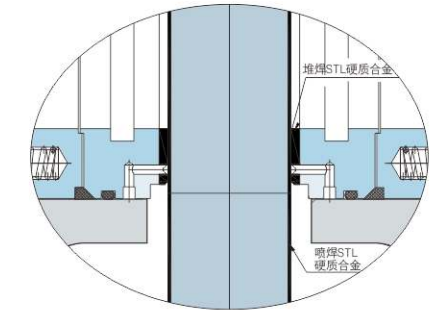


图13 硬密封密封结构
Hard seal structure

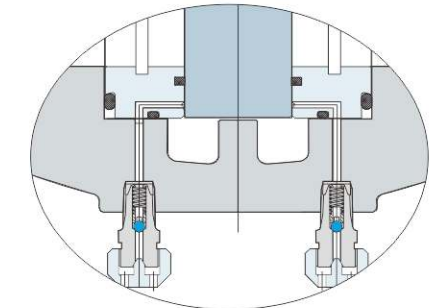


图14 带注脂阀密封结构
Seal structure with grease injection valve

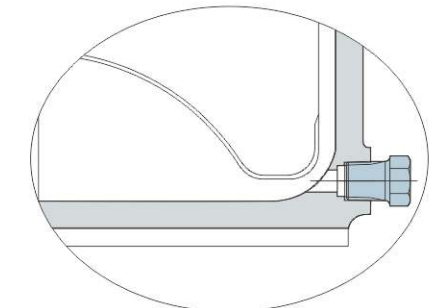
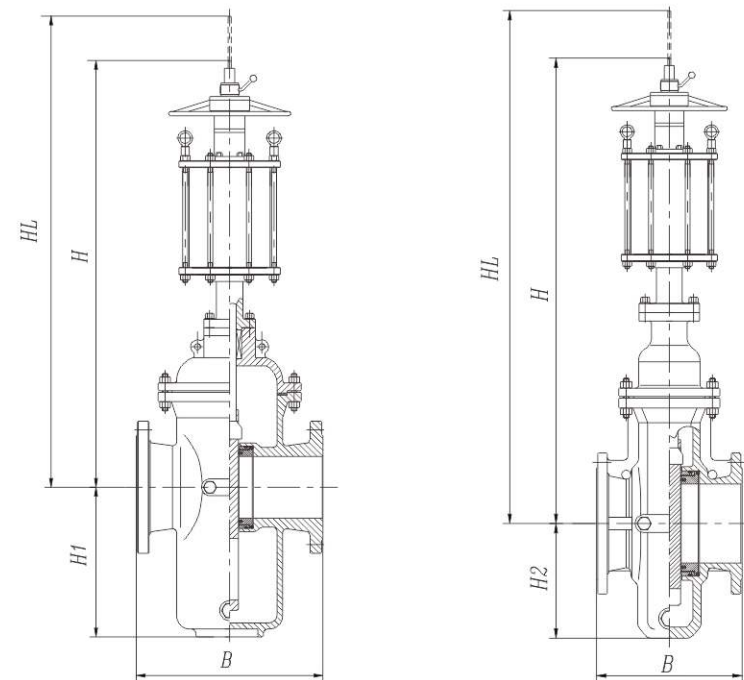


图15 排污口结构图
Structure diagram of drainage port

外型尺寸 Outline dimensions



气动平板闸阀带导流孔
Pneumatic flat gate valve with diversion hole

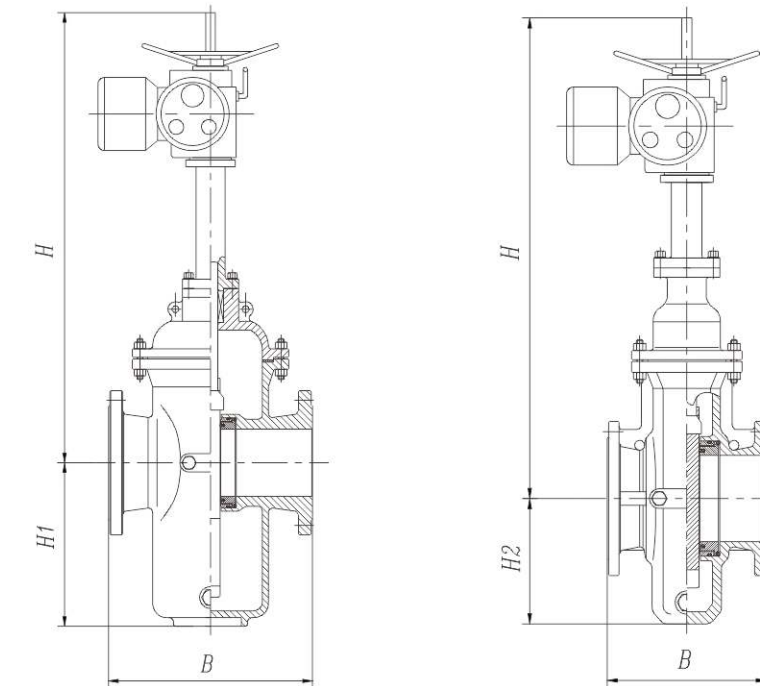
气动平板闸阀无导流孔
Pneumatic flat gate valve without diversion hole

图16-1 ZSZ43气动平板闸阀
Figure 16-1 ZSZ43 pneumatic flat gate valve

表3-1 ZSZ43气动平板闸阀外型尺寸
Table 3-1 ZSZ43 pneumatic flat gate valve outline dimensions

阀门口径 in Valve size	150LB								300LB							
	B		H	HL	H1	H2	重量Weight(kg)		B		H	HL	H1	H2	重量Weight(kg)	
	RF	RJ					有导流孔 With diversion hole	无导流孔 Without diversion hole	RF	RJ					有导流孔 With diversion hole	无导流孔 Without diversion hole
1"	127	140	400	425	80	55	14	12	165	178	400	425	80	55	18	14
1-1/2"	165	178	480	520	140	100	32	25	190	203	480	520	140	100	35	29
2"	178	191	525	575	152	105	38	31	216	232	533	585	155	105	59	50
3"	203	216	730	810	200	120	73	55	283	298	735	815	220	140	85	70
4"	229	241	850	950	240	140	86	64	305	321	860	960	260	160	130	106
5"	254	267	985	1100	280	155	154	128	381	397	985	1100	290	165	189	162
6"	267	279	1120	1270	315	165	176	130	403	419	1125	1275	340	190	230	186
8"	292	305	1430	1630	400	200	265	220	419	435	1435	1635	430	230	355	302
10"	330	343	1665	1915	470	220	400	325	457	473	1775	2025	495	245	520	445
12"	356	368	1930	2230	580	280	535	420	502	518	2030	2330	580	280	700	568
14"	381	394	2185	2535	650	300	750	600	762	778	2305	2655	680	330	1052	863
16"	406	419	2450	2850	720	320	930	755	838	854	2558	2960	750	350	1366	1055
18"	432	445	2755	3205	800	350	1390	1050	914	930	2835	3285	820	370	2000	1630
20"	457	470	3050	3550	880	380	1830	1490	991	1010	3120	3620	900	400	2450	1950
24"	508	521	3580	4180	1040	440	2760	2300	1143	1165	3670	4270	1120	520	3500	2896
28"	610	-	4130	4830	1190	490	3800	2435	1346	1372	4300	5000	1230	530	4830	3260
32"	660	-	4688	5390	1340	540	4900	3200	1397	1553	4805	5605	1420	620	6250	4550
36"	711	-	5430	6330	1500	600	6750	4500	1727	1756	5600	6500	1570	670	8665	5980
40"	811	-	6250	7250	1650	650	7900	5850	-	-	-	-	-	-	-	-

外型尺寸 Outline dimensions



电动平板闸阀带导流孔
Electric flat gate valve with diversion hole

电动平板闸阀无导流孔
Electric flat gate valve without diversion hole

图16-2 ZDZ43电动平板闸阀
Figure 16-2 ZDZ43 electric flat gate valve

表3-2 ZSZ43气动平板闸阀外型尺寸
Table 3-2 ZSZ43 pneumatic flat gate valve outline dimensions

阀门口径 in Valve size	600LB								900LB							
	B		H	HL	H1	H2	重量Weight(kg)		B		H	HL	H1	H2	重量Weight(kg)	
	RF	RJ					有导流孔 With diversion hole	无导流孔 Without diversion hole	RF	RJ					有导流孔 With diversion hole	无导流孔 Without diversion hole
1"	216	216	400	425	80	55	28	23	-	-	-	-	-	-	-	-
1-1/2"	241	241	480	520	140	100	55	40	-	-	-	-	-	-	-	-
2"	292	295	545	595	155	105	72	58	368	371	550	600	185	135	115	78
3"	356	359	745	825	220	140	120	89	381	384	750	830	225	145	220	155
4"	406	435	870	970	265	145	170	130	457	460	890	990	280	180	300	190
5"	508	601	995	1120	295	160	250	185	-	-	-	-	-	-	-	-
6"	559	562	1135	1285	340	190	400	320	610	613	1140	1290	370	220	600	478
8"	660	664	1445	1645	450	250	660	530	737	740	1450	1650	480	280	910	707
10"	787	791	1800	2050	520	270	805	665	838	841	1815	2065	550	300	1276	935
12"	838	841	2040	2340	590	290	1065	780	965	968	2045	2345	640	340	1946	1532
14"	889	892	2385	2735	710	360	1540	1020	-	-	-	-	-	-	-	-
16"	991	994	2620	3020	790	390	2210	1650	-	-	-	-	-	-	-	-
18"	1092	1095	2968	3518	860	410	2730	2250	-	-	-	-	-	-	-	-
20"	1194	1200	3300	3800	950	450	3280	2530	-	-	-	-	-	-	-	-
24"	1397	1407	3950	4550	1150	550	4320	3280	-	-	-	-	-	-	-	-

注：以上阀门重量为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 valve with standard configuration of double acting actuator and manual operating mechanism. The weight shall be recalculated when detailed configuration is made.

表4-1 ZDZ43电动平板闸阀外型尺寸
Table 4-1 ZDZ43 electric flat gate valve outline dimensions

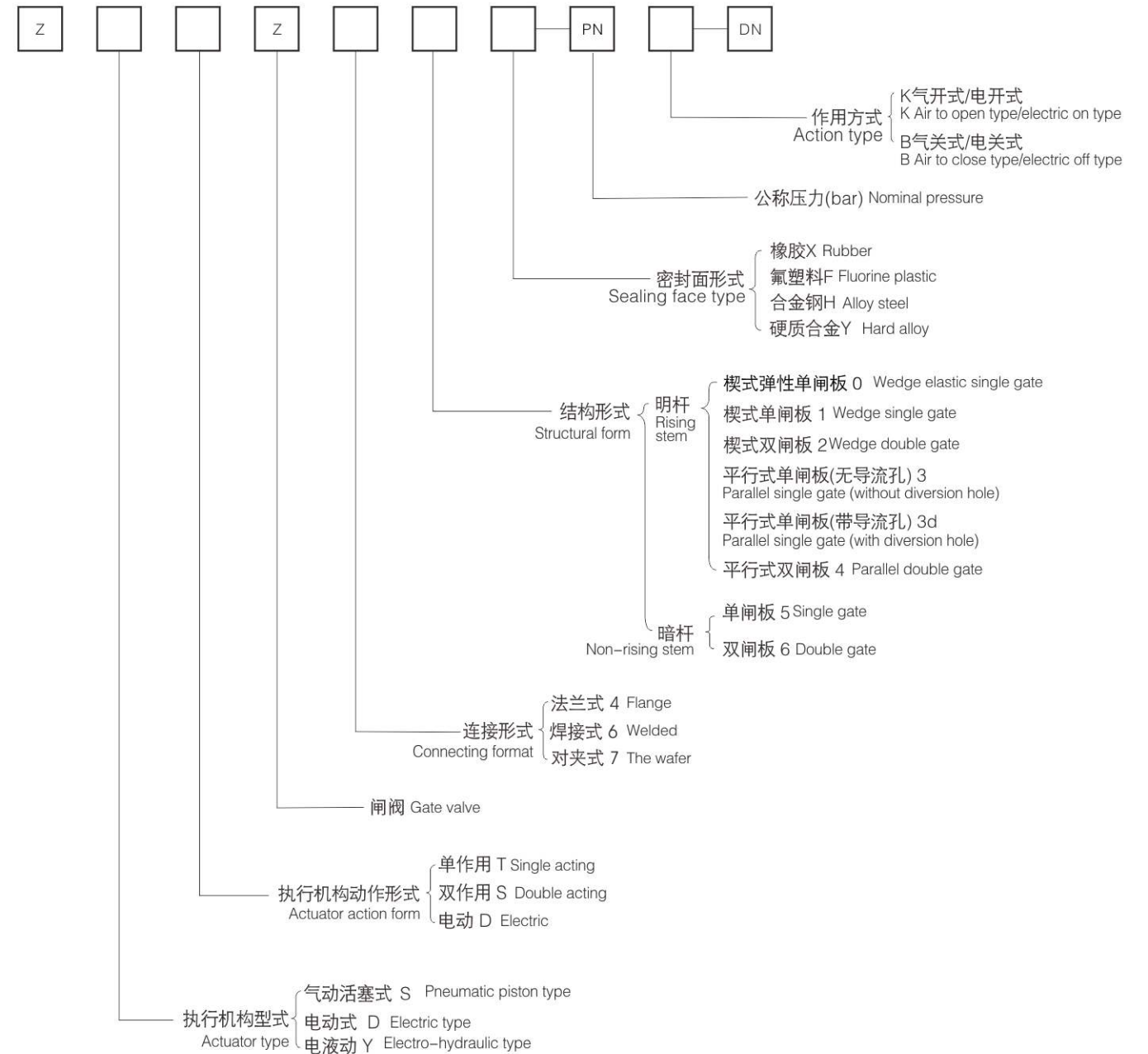
阀门口径 in Valve size	150LB							300LB						
	B		H	H1	H2	重量Weight(kg)		B		H	H1	H2	重量Weight(kg)	
	RF	RJ				有导流孔 With diversion hole	无导流孔 Without diversion hole	RF	RJ				有导流孔 With diversion hole	无导流孔 Without diversion hole
2"	178	191	640	152	105	40	33	216	232	533	155	105	52	43
3"	203	216	720	200	120	82	64	283	298	735	220	140	93	78
4"	229	241	915	240	140	104	82	305	321	860	260	160	121	97
5"	254	267	1012	280	155	150	124	381	397	985	290	165	181	154
6"	267	279	1107	315	165	161	115	403	419	1125	340	190	250	206
8"	292	305	1390	400	200	235	188	419	435	1435	430	230	413	360
10"	330	343	1550	470	220	340	265	457	473	1775	495	245	550	475
12"	356	368	1740	580	280	450	335	502	518	2030	580	280	820	688
14"	381	394	1915	650	300	650	500	762	778	2305	680	330	1030	841
16"	406	419	2105	720	320	778	603	838	854	2558	750	350	1350	1039
18"	432	445	2365	800	350	1180	840	914	930	2835	820	370	1800	1430
20"	457	470	2585	880	380	1390	1050	991	1010	3120	900	400	2325	1825
24"	508	521	2990	1040	440	2202	1742	1143	1165	3670	1120	520	3160	2556
28"	610	-	3390	1190	490	3150	1785	1346	1372	4300	1230	530	4450	2880
32"	660	-	3850	1340	540	3926	2226	1397	1553	4805	1420	620	5270	3570
36"	711	-	4260	1500	600	5570	3320	1727	1756	5600	1570	670	6995	4310
40"	811	-	4680	1650	650	6860	4810	-	-	-	-	-	-	-

表4-2 ZDZ43电动平板闸阀外型尺寸
Table 4-2 ZDZ43 electric flat gate valve outline dimensions

阀门口径 in Valve size	600LB							900LB						
	B		H	H1	H2	重量Weight(kg)		B		H	H1	H2	重量Weight(kg)	
	RF	RJ				有导流孔 With diversion hole	无导流孔 Without diversion hole	RF	RJ				有导流孔 With diversion hole	无导流孔 Without diversion hole
2"	292	295	525	155	105	112	98	368	371	533	185	135	135	98
3"	356	359	730	220	140	155	124	381	384	735	225	145	240	175
4"	406	435	850	265	145	205	165	457	460	860	280	180	290	180
5"	508	601	985	295	160	355	290	-	-	-	-	-	-	-
6"	559	562	1120	340	190	485	405	610	613	1125	370	220	590	468
8"	660	664	1430	450	250	650	520	737	740	1435	480	280	820	617
10"	787	791	1665	520	270	775	635	838	841	1775	550	300	1090	749
12"	838	841	1930	590	290	1265	980	965	968	2030	640	340	1886	1472
14"	889	892	2185	710	360	1650	1130	-	-	-	-	-	-	-
16"	991	994	2450	790	390	2025	1465	-	-	-	-	-	-	-
18"	1092	1095	2755	860	410	2980	2500	-	-	-	-	-	-	-
20"	1194	1200	3050	950	450	3650	2900	-	-	-	-	-	-	-
24"	1397	1407	3580	1150	550	4320	3680	-	-	-	-	-	-	-

注：以上为参考尺寸根据阀门实际所配执行机构形式、型号或品牌不同，阀门整体外形尺寸不同，具体可咨询公司
Note: The weight of the above valve is the weight of valve with standard configuration of double acting actuator and manual operating mechanism. The weight shall be recalculated when detailed configuration is made.

型号编制 Model establishment



例:

- ZSSZ43dF-20K-200
气动平行单闸板阀，带导流孔，双作用气缸，法兰式，密封面为氟塑料，气开式，规格8"，Class 150LB。
Pneumatic parallel single disc gate valve, with diversion hole, double acting cylinder, flange type, sealing face is fluorine plastic, air to open type, size 8", Class 150LB
- ZDDZ43F-20K-150
电动平行单闸板阀，无导流孔，法兰式，密封面为氟塑料，电开式，规格6"，Class 150LB。
Electric parallel single disc gate valve, without diversion hole, flange type, sealing face is fluorine plastic, electric on type, size 6", Class 150LB

配管安装位置

- 1、平行单闸板闸阀可在水平或垂直管道上安装。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。
- 2、对于公称通径 $DN \geq 250$ 的阀门，如执行机构水平安装时，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。
- 3、由于附件安装位置的关系（特别是空气过滤减压阀），请在订货时一定要注明阀门安装位置。

正确操作

- 1、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。
- 2、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）。
- 3、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。
- 4、操作时，请参照执行器上铭牌指示。
- 5、对于单作用执行机构，在拆卸气缸时，一定要使用专用工具。

Pipe installation position

1. The parallel single disc gate valve can be installed on horizontal or vertical pipe. Before the use, please scavenge the pipe and compressed air pipe to thoroughly clean away foreign matters such as dirty things, welding slag, lubricating grease, etc. in the pipes and valve cavity.
2. For valves with $DN \geq 250$, if the actuator is horizontally installed, the actuator advice be additionally provided the elastic supporting or hoisting device. Otherwise, too heavy actuator may influence normal operation of the valve.
3. As the installation position of accessories (especially Airset) shall be taken into consideration, please specify the installation position of the valve when placing orders.

Correct operation

1. 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.
2. When using the operating mechanism 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).
3. 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 return (closing the valve) or pneumatic valve opening (closing), any opening cannot be switched through using "automatic-manual".**
4. During operation, please refer to the indication on the nameplate of the actuator.
 5. For single acting actuators, 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、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 $0.35 \sim 0.7\text{MPa}$ (G) 范围内，气源应经除尘、脱水等净化处理。

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. 是否要带电磁阀、控制箱、空气过滤减压阀等附件
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

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 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 $0.35 \sim 0.7\text{MPa}$ (G). The air supply shall be subjected to dust removing and dehydrating treatment.

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, Airset, 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