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ZHENGZHOU FREE FLUID CONTROL TECHNOLOGY CO.,LTD



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Performance of Ceramic Material

陶瓷特性

耐磨损、耐腐蚀、耐冲刷、高硬度、高强度、防静电、膨胀系数小、自润滑性好

Anti-abrasion, anti-erosion, anti-scour, high-strength, anti-static, low expansion coefficient, good self lubrication

Ceramic Material Performance Table

常用陶瓷材料性能表

| 性能品种 Item | Y-ZrO ₂ Y-TZP | Mg-ZrO ₂ M-PSZ | 90 Al ₂ O ₃ | 95 Al ₂ O ₃ | 99 Al ₂ O ₃ | Si ₃ N ₄ | SiC |
|--------------------------------------|-----------------------------|------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|--------------------------------|-----------|
| 密度 g/cm ³ Density | 6.0~6.05 | 5.72~5.74 | 3.45~3.55 | 3.6~3.75 | 3.9~3.95 | 3.2~3.33 | 3.15~3.25 |
| 硬度HRA/C Hardness | 87 | 85 | 90 | 90 | 92 | 92 | 94 |
| 抗弯强度 Mpa Bending Strength | 1150 | 900 | 350 | 370 | 450 | 1200 | 470 |
| 抗压强度 Mpa Compressive Strength | 2000 | 1800 | 1700 | 2000 | 2200 | 2800 | |
| 弹性模量 Gpa Modulus of elasticity | 200 | 200 | 310 | 330 | 350 | 300 | 400 |
| 最高使用温度 °C Max Service Temperature | 500 | 500 | 1200 | 1250 | 1500 | 1500 | 1500 |
| 吸水率 Water Absorption | 0 | 0 | 0.02% | 0.01% | 0 | 0 | 0.50% |
| 耐酸性(常温) Corrosion Prevention | 优 Good | 优 Good | 优 Good | 优 Good | 优 Good | 优 Good | 优 Good |

Anti-Corrosive Performance Reference Table

材料耐腐蚀性对照表

| 介质 Medium | 温度 Temp | ZrO ₂ | 99% Al ₂ O ₃ | SiC | Si ₃ N ₄ | PTFE | 氟橡胶 Fluorine rubber | SS304 | SS316 |
|------------------------------------|------------|------------------|---------------------------------------|-----|--------------------------------|------|------------------------|-------|-------|
| 20% HCL | 60°C | A | A | A | B | A | A | C | C |
| 20% HCL | 95°C | A | A | A | C | A | A | × | × |
| 60% H ₃ PO ₄ | 60°C | A | A | A | C | A | A | C | C |
| 60% H ₃ PO ₄ | 95°C | A | A | A | C | A | A | C | C |
| 90% H ₂ SO ₄ | 60°C | A | A | A | A | A | A | C | C |
| 90% H ₂ SO ₄ | 95°C | A | A | A | B | A | A | C | C |
| 10% HF | 60°C | C | B | A | A | A | A | C | C |
| 46% HF | 95°C | C | C | A | C | A | A | × | × |
| 60% HNO ₃ | 60°C | A | A | A | C | A | A | A | A |
| 60% HNO ₃ | 95°C | A | B | A | C | A | A | B | B |
| 30% NaOH | 60°C | A | B | A | B | A | A | A | A |
| 30% NaOH | 95°C | B | B | A | C | A | A | B | B |

A-可以忽略或没有腐蚀，推荐使用

B-轻微或很小腐蚀，小心使用

C-比较明显腐蚀，不推荐使用

X-强烈的腐蚀以至无法完成测量

A-Negligible or no corrosion, and recommended for this service.

B-Less or slight corrosion, annual inspection is recommended.

C-Significant corrosion, not recommended for valve use.

X-Unfulfilled measurement due to heavy corrosion.

2 Pneumatic Ceramic Lined Rotating Type Gate Valve 气动陶瓷旋转摆动阀

Product Feature 产品特征

气动陶瓷旋转摆动阀主要用于火力发电厂气动输灰系统仓泵上进料，也可用于其他粉料输送管道如氧化铝干粉、水泥和粉煤灰等进料启闭。本阀门密封面经过研磨加工，确保密封的可靠性，因此阀门具有密封性良好、耐磨性强，启闭灵活，无卡灰及积灰现象。

可根据现场要求选择电磁阀，空气过滤器，磁性位置开关和吹扫装置。

FREE-VALVE's pneumatic ceramic lined rotating type gate valve is mainly used in transport materials on the fly ash conveying system in electrostatic precipitator systems(ESP systems) of coal-power plants, and also used in other powder conveying pipeline, such as: alumina dry powder, cement and coal ash etc. The whole of ceramic sealing faces of the valves are well ground and polished, which is ensure a reliable sealing performance of the valve, so the valve has good sealing performance, high wear-resistance, open and close flexible and have no ash and dust phenomenon.

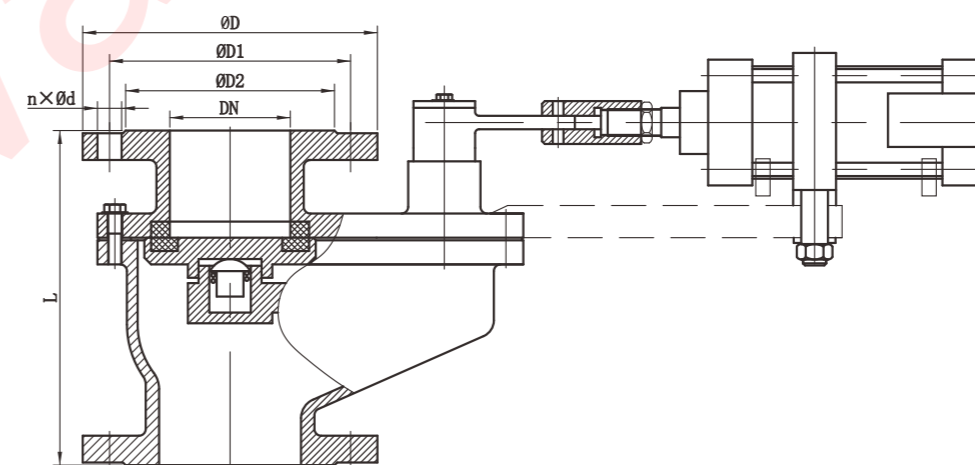
Solenoid valves, air filters, magnetic position switch and blowing devices can be selected according to site requirements.



Products Performance Specification 产品性能规范

| | |
|----------------------------------|------------------------------|
| 法兰标准The standards of flange ends | ASME B16.5, GB/T9113 |
| 公称压力Nominal Pressure | 1.0MPa,Class150 |
| 公称通径 Size Range | DN150 ~ DN 300, NPS6 ~ NPS12 |
| 连接形式 Connection type | Flange |
| 工作温度Working Temperature | ≤200℃ |
| 驱动方式Operating Type | Pneumatic |
| 密封面材质Sealing surface material | Engineering ceramic |
| 结构长度Face to Face | GB/T12221, ASME B16.10 |
| 压力测试 Pressure test | GB/T13927, API598 |

Main Connection and Installation Dimensions 主要连接及安装尺寸



| 公称压力 Nominal pressure | 尺寸 (mm) Dimension | | | | | |
|--------------------------|----------------------|-----|-----|-----|-----|-----------|
| | DN | L | D | D1 | D2 | n × φ d |
| PN10 | 80 | 230 | 195 | 160 | 138 | 8 × φ 18 |
| | 100 | 250 | 215 | 180 | 158 | 8 × φ 18 |
| | 125 | 265 | 245 | 210 | 188 | 8 × φ 18 |
| | 150 | 265 | 280 | 240 | 212 | 8 × φ 22 |
| | 200 | 310 | 335 | 295 | 268 | 8 × φ 22 |
| | 250 | 395 | 390 | 350 | 320 | 12 × φ 22 |
| | 300 | 450 | 440 | 400 | 370 | 12 × φ 22 |
| | 350 | 500 | 500 | 460 | 430 | 16 × φ 22 |

注：本公司可根据用户要求提供产品

Note: Face to face dimension can be customized according to customer requirements.

Application 适用范围

适用介质：粉煤颗粒，粉煤灰
Applicable medium: Coal particles, coal ash



3 Pneumatic Ceramic Lined Rotating Double Disc Gate Valve 气动陶瓷双闸板旋转摆动阀

Product Feature 产品特征

气动陶瓷双闸板旋转摆动阀是为压力和真空系统设计的，在钢铁厂、煤电厂和化工的干灰和水渣等介质管道上作启闭阀门应用，该阀门用于替代除灰出料系统管路中的圆顶阀，本阀门密封面经过研磨加工，确保密封的可靠性，因此阀门具有密封性良好、耐磨性强，启闭灵活，无卡灰及积灰现象。

可根据现场要求选择电磁阀，空气过滤器，磁性位置开关和吹扫装置。

FREE-VALVE's pneumatic ceramic lined rotating double disc gate valves are designed for pressurized and vacuum systems including dense and dilute phase pneumatic conveying systems, discharge and vent applications in steel plant and coal power. The double ceramic sealing faces of the valves are well ground and polished, which ensure a reliable sealing performance of the valve, the valve is used to replace the dome valve in the pipe line of the ash system. Solenoid valves, air filters, magnetic position switch and blowing devices can be selected according to site requirements.

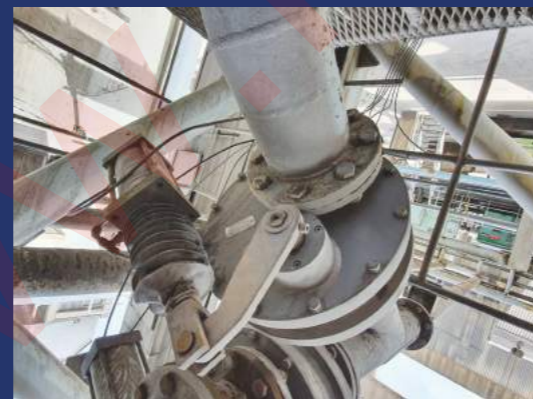


Application 适用范围

适用介质：干灰、粉煤、物料等介质的输送
Applicable medium: Dry ash, Pulverized coal

安装位置 Installation Position

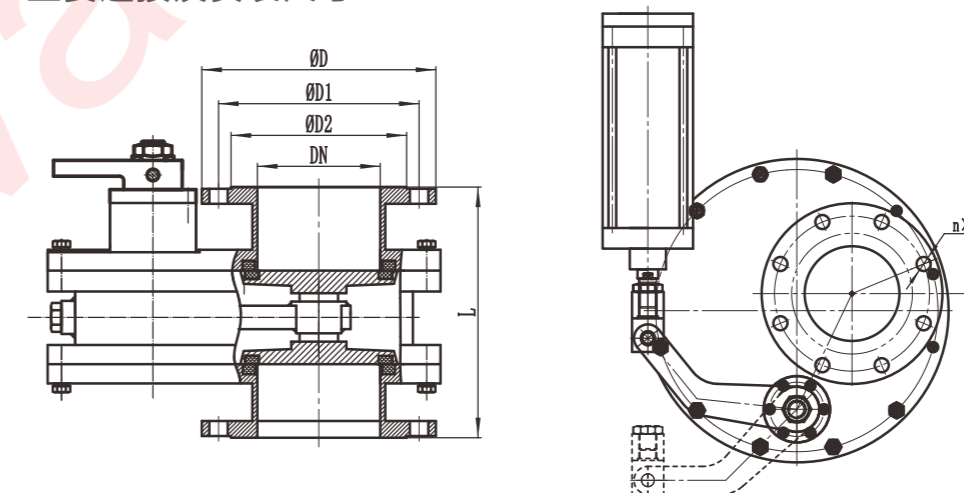
在管道上安装时，此阀的法兰口应在管道的最下部
When installed in the pipeline, the valve flange port should be at the bottom of the pipeline.



Products Performance Specification 产品性能规范

| | |
|-----------------------------------|------------------------------|
| 法兰标准 The standards of flange ends | ASME B16.5, GB/T9113 |
| 公称压力 Nominal Pressure | 1.0MPa, Class150 |
| 公称通径 Size Range | DN150 ~ DN 300, NPS6 ~ NPS12 |
| 连接形式 Connection type | Flange |
| 工作温度 Working Temperature | ≤200℃ |
| 驱动方式 Operating Type | Pneumatic |
| 密封面材质 Sealing surface material | Engineering ceramic |
| 结构长度 Face to Face | GB/T12221, ASME B16.10 |
| 压力测试 Pressure test | GB/T13927, API598 |

Main Connection and Installation Dimensions 主要连接及安装尺寸



| 公称压力 Nominal pressure | 尺寸 (mm) Dimension | | | | | |
|--------------------------|----------------------|-----|-----|-----|-----|----------|
| | DN | L | D | D1 | D2 | n × φd |
| PN10 | 80 | 230 | 195 | 160 | 138 | 8 × φ18 |
| | 100 | 250 | 215 | 180 | 158 | 8 × φ18 |
| | 125 | 265 | 245 | 210 | 188 | 8 × φ18 |
| | 150 | 265 | 280 | 240 | 212 | 8 × φ22 |
| | 200 | 310 | 335 | 295 | 268 | 8 × φ22 |
| | 250 | 395 | 390 | 350 | 320 | 12 × φ22 |
| | 300 | 450 | 440 | 400 | 370 | 12 × φ22 |
| | 350 | 500 | 500 | 460 | 430 | 16 × φ22 |

注：本公司可根据用户要求提供产品

Note: Face to face dimension can be customized according to customer requirements.

4 Pneumatic Ceramic Lined Double Disc Gate Valve 气动陶瓷双闸阀

Product Feature 产品特征

气动陶瓷双闸阀适用于干粉物料的进、放料及输送管道，它不仅采用了增韧工程陶瓷作为关断及抗冲刷材料，而且设计了以弹簧双向柔性预紧压力自密封及闸板运行自转的结构形式，使得处于干粉料介质中的阀门密封面在频繁启闭的过程中得到均匀磨损，从而保证了这类介质管道阀门的较高的关闭密封性能要求及长寿命使用。

可根据现场要求选择电磁阀，空气过滤器，磁性位置开关和吹扫装置。

FREE-VALVE's pneumatic ceramic lined double disc gate valve is mainly used in feeding and dumping for the dry powder and the transport pipeline, which not only adopt toughening ceramic as shut off and wear out resistance material, but also design construction of autofrettage pressure self-sealing and valve disc auto-rotate, so as to the sealing surface within the dry powder get more wear resistance in process of opening and closing frequently, thereby, which guarantee the high requirements of sealing performance of this valve and long working time. Solenoid valves, air filters, magnetic position switch and blowing devices can be selected according to site requirements.



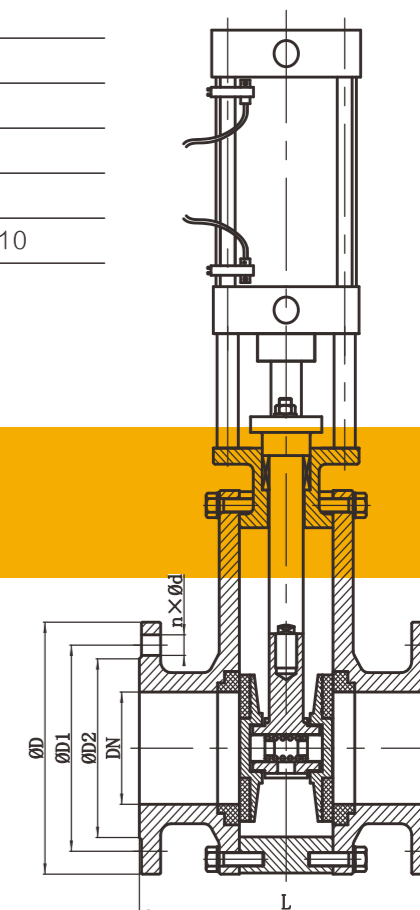
Application 适用范围

电厂除灰-干除灰系统;
Power plant ash handling system
水泥行业-干粉料输送、放料;
Conveying and dumping of cement industry-dry powders
选矿厂-干矿粉灰物料的选择、输送;
Selection and conveying of dressing works-dry powder materials'



Products Performance Specification 产品性能规范

| | |
|----------------------------------|------------------------------|
| 法兰标准The standards of flange ends | ASME B16.5, GB/T9113 |
| 公称压力Nominal Pressure | 1.0MPa, Class150 |
| 公称通径 Size Range | DN150 ~ DN 300, NPS6 ~ NPS12 |
| 连接形式 Connection type | Flange, Wafer |
| 工作温度Working Temperature | ≤200℃ |
| 驱动方式Operating Type | Pneumatic |
| 密封面材质Sealing surface material | Engineering ceramic |
| 压力测试 Pressure test | GB/T13927, API598 |
| 结构长度Face to Face | GB/T12221, ASME B16.10 |



Main Connection and Installation Dimensions 主要连接及安装尺寸

| 公称压力 Nominal pressure | 尺寸 (mm) Dimension | | | | | |
|--------------------------|----------------------|-----|-----|-----|-----------|-----------|
| | DN | L | D | D1 | D2 | n x φ d |
| PN10 | 50 | 240 | 160 | 125 | 100 | 4 x φ 18 |
| | 65 | 260 | 180 | 145 | 120 | 4 x φ 18 |
| | 80 | 260 | 200 | 160 | 135 | 8 x φ 18 |
| | 100 | 280 | 220 | 180 | 155 | 8 x φ 18 |
| | 125 | 300 | 250 | 210 | 185 | 8 x φ 18 |
| | 150 | 300 | 285 | 240 | 210 | 8 x φ 22 |
| | 200 | 310 | 340 | 295 | 265 | 8 x φ 22 |
| | 250 | 365 | 395 | 350 | 320 | 12 x φ 22 |
| 300 | 400 | 445 | 400 | 370 | 12 x φ 22 | |

注：本公司可根据用户要求提供产品

Note: Face to face dimension can be customized according to customer requirements.

5 Ceramic Lined Knife Gate Valve 陶瓷刀闸阀

Product Feature 产品特征

陶瓷刀闸阀是专门针对固液两相流工况介质管道而设计制造的，它采用了增韧型工程陶瓷来作为关断抗冲刷的主要材料，以满足该类介质管道的关断使用功能。该型阀门具有轻便、便于安装以及适应在不同排布管道上任意角度安装，深受用户欢迎。经多年的实践证明，与普通排渣浆液阀相比使用寿命得到大幅提高。

气动阀门可根据现场要求选择电磁阀，空气过滤器，磁性位置开关。

FREE-VALVE's ceramic lined knife gate valve is designed and produced specially for pipeline with solid-liquid two-phase flow medium, which adopt toughening engineering ceramic as the main materials to shut off and avoid the flow wear out, so as to meet the function of the shutoff. This valve is light, easy to install, and installed at any angle on the pipeline with different configuration, so ,obtain the welcome by the user. It is also proven that this valve's working life is greatly prolonged comparing with common slagging slurry valve.

Solenoid valves, air filters, magnetic position switch can be selected according to site requirements.



Application 适用范围

采矿、钢铁工业—用于煤炭、滤渣浆等；
Mining, steel industry—used for coal, filter slurry, etc.
造纸工业—用于任何浓度纸浆、料水混合物；
Paper-making industry—used in pulp, mixture of materials and water with any density.
电站除灰—用于灰渣浆液；
Dusting of power station—used in ash slurry.
洗选煤行业,洗煤厂—煤浆的输送；
Washing coal industry, coal washing plant – used for coal water slurry , coal water slurry,etc.

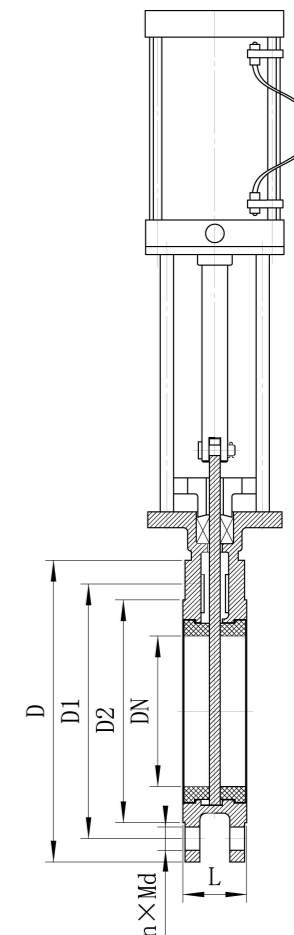


Products Performance Specification 产品性能规范

| | |
|----------------------------------|-----------------------------|
| 法兰标准The standards of flange ends | ASME B16.5, GB/T9113 |
| 公称压力Nominal Pressure | 1.0MPa,Class150 |
| 公称口径Size Range | DN50 ~ DN 600, NPS2 ~ NPS24 |
| 连接形式Connection type | Flange,Wafer |
| 工作温度Working Temperature | ≤200℃ |
| 驱动方式Operating Type | Electric, Pneumatic,Manual |
| 密封面材质Sealing surface material | Engineering ceramic |
| 压力测试 Pressure test | GB/T13927, API598 |
| 结构长度Face to Face | GB/T12221, ASME B16.10 |

Main Connection and Installation Dimensions 主要连接及安装尺寸

| 公称压力 Nominal pressure | 尺寸 (mm) Dimension | | | | | |
|--------------------------|----------------------|-----|-----|-----|-----|----------|
| | DN | L | D | D1 | D2 | n × Md |
| PN10 | 50 | 43 | 160 | 125 | 100 | 4 × M16 |
| | 65 | 46 | 180 | 145 | 120 | 4 × M16 |
| | 80 | 46 | 200 | 160 | 135 | 8 × M16 |
| | 100 | 52 | 220 | 180 | 155 | 8 × M16 |
| | 125 | 56 | 250 | 210 | 185 | 8 × M16 |
| | 150 | 56 | 285 | 240 | 210 | 8 × M20 |
| | 200 | 60 | 340 | 295 | 265 | 8 × M20 |
| | 250 | 68 | 395 | 350 | 320 | 12 × M20 |
| | 300 | 78 | 445 | 400 | 370 | 12 × M20 |
| | 350 | 78 | 505 | 460 | 430 | 16 × M20 |
| | 400 | 102 | 565 | 515 | 482 | 16 × M24 |
| | 450 | 114 | 615 | 565 | 432 | 20 × M24 |
| | 500 | 127 | 670 | 620 | 585 | 20 × M24 |
| | 600 | 154 | 780 | 725 | 685 | 20 × M27 |



6

Ceramic Lined Ball Valve

陶瓷球阀

Product Feature

产品特征

陶瓷球阀利用结构陶瓷的耐腐蚀性、耐磨损性的特点和先进的设计结构。广泛应用于电厂脱硫系统、化工厂等场所。该阀门可提供手动、电动、气动等多种驱动方式。阀球与阀座之间是经过精密研磨的球面密封，密封面的表面光洁度达到Ra0.1~0.2，加之氧化锆陶瓷的高硬度和自润滑特性，阀门的泄漏等级在达到VI级的同时，阀门的启闭扭矩小于同规格金属密封球阀和软密封球阀，这样避免了启闭扭矩过大而导致陶瓷球阀破裂的发生。因此本阀门具有良好密封性、较强的耐磨性，启闭灵活。

FREE-VALVE's ceramic lined ball valve takes advantage of the characters of corrosion resistance and wear resistance of the structural ceramic and the advanced designing structure. The valve is widely used in power plant desulfurizing system, chemical plant ,etc. According to the conditions, manual driving, electric driving and pneumatic driving and so on can be supplied.It is spherical seal of precision grinding between the ball and seat , the roughness surface of the sealing surface is up to Ra0.1 ~ 0.2, coupled with high hardness and good self-lubricating properties of Zirconia ceramics, in ensuring the valve leakage level can reach grade VI at the same time, the valve opening and closing torque is less than metal sealing and soft sealing ball valves with the same specifications, avoid the open/close torque too big and lead to broken ceramic ball. The valve has good sealing performance, high wear-resistance performance, open and close flexible.



Ceramic Ball Structure

陶瓷球结构



通常情况下，陶瓷球阀分为O型和V型两种球阀结构，V型球阀主要用于流量调节，O型球阀主要起切断作用。V型开口的球阀具有等百分比流量特性，小开度时调节性能稳定，适用于对流量调节的精度性和稳定性要求较高的工况条件，同时V型也可切断介质中的颗粒纤维等杂质，具有密封面自清洁功能。O型球阀在流量调节精度要求不高的工况下，也可以作为调节阀使用。

Ceramic lined ball valves are divided into O - type and V - type ball valve. Usually, V - type valve ball is mainly used for flow control, O - type valve ball mainly plays a cutting role.The V type ball valve has the flow characteristics of equal percentage, and the regulating performance is stable when the opening is small. It is suitable for the working conditions with high requirements on the accuracy and stability of the flow regulation. At the same time, the V type ball valve can also cut off the impurities such as the particle fiber in the medium, and has the self-cleaning function on the sealing surface .The valve can also be used as a regulating valve under the condition that the accuracy of flow regulation is not high.

Ceramic Control Ball Valve and Cv Value

陶瓷调节阀及CV值

球阀V型口采用不同的V型球体可获得不同的调节曲线，同时配以精确的控制定位器，使流量调节准确可靠。调节型球阀换成陶瓷球阀后，球阀才能够真正的当调节阀使用，因为陶瓷具有极强的耐冲蚀能力，能够长期保证阀门的调节性和密封性。

FREE-VALVE company offers the V port ball of valve for precise modulating control service,At the same time with accurate control positioner, so that the flow regulation accurate and reliable,In addition to the feature and benefits that have made it the process industry's most preferred lined ball valve worldwide.The ceramic have extremely high shock and erosion resistance to maintain controlling ability and sealing property for a long time. So only with ceramic ball,ball valves can be used as controlling valves.

Flow Coefficient Table

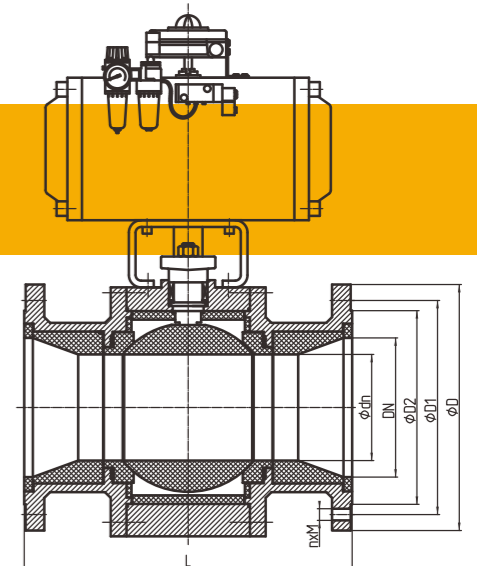
陶瓷球阀流量系数表

| 公称口径 Size Range | | 流量系数 Cv Value | | | |
|--------------------|-----|------------------|------|------|------|
| NPS | DN | O port | V60° | V45° | V30° |
| 1/2" | 15 | 10.2 | 7 | 4 | 3 |
| 3/4" | 20 | 10.2 | 7 | 4 | 3 |
| 1" | 25 | 18.2 | 12 | 8 | 5 |
| 1 1/4" | 32 | 28.6 | 18 | 12 | 8 |
| 1 1/2" | 40 | 47 | 30 | 20 | 13 |
| 2" | 50 | 73 | 46 | 31 | 21 |
| 2 1/2" | 65 | 114 | 72 | 48 | 32 |
| 3" | 80 | 181 | 115 | 76 | 51 |
| 4" | 100 | 292 | 185 | 123 | 82 |
| 5" | 125 | 456 | 289 | 192 | 128 |
| 6" | 150 | 712 | 452 | 300 | 201 |
| 8" | 200 | 1025 | 650 | 432 | 289 |

Products Performance Specification

产品性能规范

| | |
|----------------------------------|------------------------------|
| 法兰标准The standards of flange ends | ASME B16.5, GB/T9113 |
| 公称压力Nominal Pressure | 1.0MPa,Class150 |
| 公称口径Size Range | DN25 ~ DN 200, NPS1 ~ NPS8 |
| 连接形式Connection type | Flange |
| 工作温度Working Temperature | ≤200℃ |
| 驱动方式Operating Type | Manual, Pneumatic , Electric |
| 密封面材质Sealing surface material | Engineering ceramic |
| 陶瓷球阀Ceramic ball | Zirconia ceramics |
| 压力测试 Pressure test | GB/T13927, API598 |
| 结构长度Face to Face | GB/T12221, ASME B16.10 |



Application

适用范围

- 1.煤化工行业的黑水、干燥粉和灰水等工况
Coal chemical industry:black water,dry pulverized coal and ash water,etc
- 2.造纸业的石英，漂白浆液和滤液等工况
Pulp and paper industry:quartz,pulp rejects and filtrated water,etc
- 3.钢铁厂的煤粉喷射，硅酸盐和石灰等工况
Steel industry:coal powder injection,silica and lime,etc
- 4.电厂的脱硫装置，飞灰系统和石灰浆液等工况
Power plants:FGD,fly ash system,lime slurry,etc
- 5.硅化工的有机硅，多晶硅和硅粉等工况
Silicon chemical:organic silicon,polysilicon and silicon powder,etc



Main Connection and Installation Dimensions

主要连接及安装尺寸

| 公称压力 Nominal pressure | 尺寸 (mm) Dimension | | | | | | |
|--------------------------|----------------------|-----|-----|-----|-----|-----|---------|
| | DN | dn | L | D | D1 | D2 | n × M |
| PN10 | 25 | 20 | 127 | 115 | 85 | 68 | 4 × M12 |
| | 32 | 25 | 140 | 140 | 100 | 78 | 4 × M16 |
| | 40 | 32 | 165 | 150 | 110 | 88 | 4 × M16 |
| | 50 | 40 | 178 | 165 | 125 | 102 | 4 × M16 |
| | 65 | 50 | 190 | 185 | 145 | 120 | 4 × M16 |
| | 80 | 65 | 203 | 200 | 160 | 138 | 8 × M16 |
| | 100 | 80 | 229 | 220 | 180 | 158 | 8 × M16 |
| | 125 | 100 | 254 | 250 | 210 | 188 | 8 × M16 |
| | 150 | 125 | 267 | 285 | 240 | 212 | 8 × M20 |
| | 200 | 150 | 292 | 340 | 295 | 268 | 8 × M20 |

7 Ceramic Lined Butterfly Valve 陶瓷蝶阀

Product Feature 产品特征

陶瓷蝶阀在最恶劣的控制环境下工作，同时具有良好的抗空化能力，这是工艺控制阀所面临的主要问题。陶瓷材料主要应用于经常被介质冲蚀的碟板和阀座密封面上。这些陶瓷材料的硬度是不锈钢的6-8倍，这保证了陶瓷蝶阀能够在恶劣的磨损严重的环境下工作。

FREE-VALVE's ceramic lined butterfly valves are operated in the harshest control environments and offers excellent resistant to cavitation which is major problem for process control valves. The ceramic materials are applied to the most common problem areas within disc of butterfly valve. These ceramic materials are 6-8 times harder than stainless steels and this ensures that the ceramic lined butterfly valve can operate under harsh, abrasive service environment.

陶瓷蝶阀可用于切断和流量调节，陶瓷蝶阀具有近似等百分比流量特性，小开度时调节性能稳定。同时陶瓷蝶阀采用偏心结构设计，蝶阀利用偏心楔紧原理可切断介质中的颗粒和纤维等杂质，具有陶瓷密封面自清洁功能。该阀门主要应用于磨损严重的工况作为切断和调节阀使用。
Ceramic lined butterfly valve can be used as on-off and flow control. Ceramic lined butterfly valve has approximately equal percentage flow characteristics, small opening when the regulating performance is stable. At the same time, the ceramic lined butterfly valve is designed with eccentric structure. The ceramic lined butterfly valve can cut off the impurities such as particles and fibers in the medium by using the principle of eccentric wedges, ceramic lined butterfly valve is mainly used under the condition of severe wear as on-off and control valve.



Application 适用范围

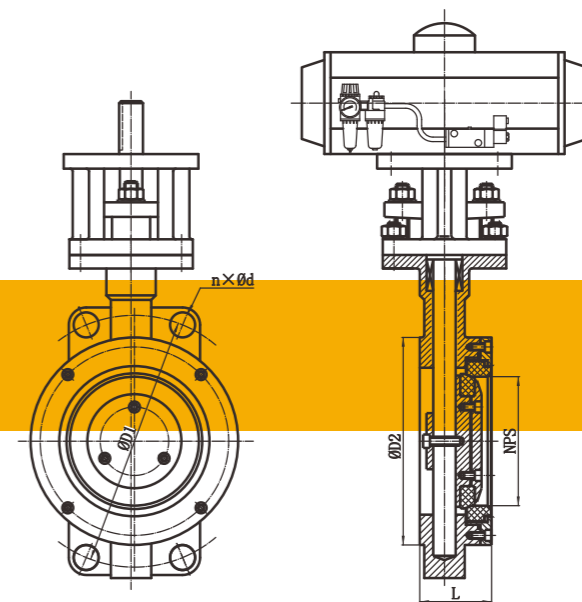
陶瓷蝶阀主要应用与电力、石油、化工、冶金、采矿、污水处理等工业领域，尤其是面对高耐磨、强腐蚀、高温高压等恶劣工况。

Ceramic lined butterfly valve is mainly used in electric power, petroleum, chemical industry, metallurgy, mining, water treatment and other industrial fields, especially using for such high wear resistance, strong corrosion, high temperature and high pressure and other adverse conditions.

Products Performance Specification 产品性能规范

| | |
|----------------------------------|-----------------------------|
| 法兰标准The standards of flange ends | ASME B16.5, GB/T9113 |
| 公称压力Nominal Pressure | 1.0MPa, Class150 |
| 公称口径Size Range | DN50 ~ DN 300, NPS2 ~ NPS12 |
| 连接形式Connection type | Flange, Wafer |
| 工作温度Working Temperature | ≤200℃ |
| 驱动方式Operating Type | Manual, Pneumatic |
| 密封面材质Sealing surface material | Zirconia ceramics |
| 压力测试 Pressure test | GB/T13927, API598 |
| 结构长度Face to Face | GB/T12221, API609 |

Main Connection and Installation Dimensions 主要连接及安装尺寸



| 公称压力 Nominal pressure | 尺寸 (mm) Dimension | | | | | |
|--------------------------|----------------------|-----|-----|-------|-------|----------|
| | NPS | DN | L | D1 | D2 | n x φ d |
| Class150 | 2" | 50 | 43 | 120.7 | 92.1 | 4 x φ 18 |
| | 2 1/2" | 65 | 46 | 139.7 | 104.8 | 4 x φ 18 |
| | 3" | 80 | 64 | 152.4 | 127 | 4 x φ 18 |
| | 4" | 100 | 64 | 190.5 | 157.2 | 4 x φ 18 |
| | 5" | 125 | 70 | 215.9 | 185.7 | 4 x φ 22 |
| | 6" | 150 | 76 | 241.3 | 215.9 | 4 x φ 22 |
| | 8" | 200 | 89 | 298.5 | 269.9 | 4 x φ 22 |
| | 10" | 250 | 114 | 362 | 323.8 | 4 x φ 26 |
| | 12" | 300 | 114 | 431.8 | 381 | 4 - φ 26 |

8

Ceramic Lined Slag Discharge Gate Valve

陶瓷排渣阀

Product Feature

产品特征

陶瓷排渣阀是在普通排渣阀的基础上对易冲蚀、易磨损的部位采用耐磨陶瓷衬里而制成的新型耐磨排渣闸阀，既保留了闸阀结构的优点，又提高了耐冲刷、耐磨损的性能。该阀门靠闸板的升降来实现阀门的启闭，闸板的运动方向垂直于介质流动方向，靠切割纤维材料的刀刃形闸板来切断介质。该阀门广泛适用于高硬度颗粒的水力输煤、水力排渣、泥浆输送管道上作启闭阀使用。

FREE-VALVE's ceramic lined slag discharge gate valves are a new type of wear-resistant slag discharge gate valve made of wear-resistant ceramic lining on the basis of common slag discharge valve which is easy to erosion and wear. It not only retains the advantages of gate valve structure, but also improves the performance of resistance to erosion and wear. The valve depends on the rise and fall of the disc to realize the opening and closing, the movement direction of the disc is perpendicular to the flow direction of the medium, cutting the medium by cutting the blade shaped disc of fiber material. The valves are widely used as opening and closing valve in hydraulic coal conveying, hydraulic slag discharging and mud conveying pipelines with high hardness particles.



Application

适用范围

陶瓷排渣阀广泛适用于灰渣、泥渣、煤浆、矿浆、污水等液固二相介质输送系统。

Ceramic lined slag discharge gate valves are suitable for the conveying system with liquid-solid two-phase medium, such as ash, mine residue and coal residue in iron and steel plant or ash conveying system of power plant, especially useful for the heavy medium system of coal mill.

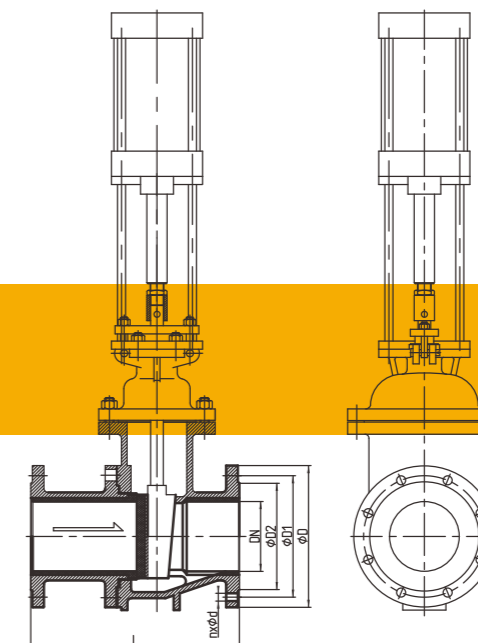
Products Performance Specification

产品性能规范

| | |
|----------------------------------|-----------------------------|
| 法兰标准The standards of flange ends | ASME B16.5, GB/T9113 |
| 公称压力Nominal Pressure | PN10/PN16, Class150 |
| 公称口径Size Range | DN50 ~ DN 350, NPS2 ~ NPS14 |
| 连接形式Connection type | Flange |
| 工作温度Working Temperature | ≤200℃ |
| 驱动方式Operating Type | Manual, Pneumatic |
| 密封面材质Sealing surface material | Engineering ceramic |
| 压力测试 Pressure test | GB/T13927, API598 |
| 结构长度Face to Face | GB/T12221, ASME B16.10 |

Main Connection and Installation Dimensions

主要连接及安装尺寸



| 公称压力 Nominal pressure | 尺寸 (mm) Dimension | | | | | |
|--------------------------|----------------------|-----|-----|-----|-----|-----------|
| | DN | L | D | D1 | D2 | n × φ d |
| PN10 | 80 | 280 | 200 | 160 | 138 | 8 × φ 18 |
| | 100 | 300 | 215 | 180 | 158 | 8 × φ 18 |
| | 125 | 325 | 245 | 210 | 188 | 8 × φ 18 |
| | 150 | 350 | 280 | 240 | 212 | 8 × φ 22 |
| | 200 | 400 | 335 | 295 | 268 | 8 × φ 22 |
| | 250 | 450 | 390 | 350 | 320 | 12 × φ 22 |
| | 300 | 500 | 440 | 400 | 370 | 12 × φ 22 |
| | 350 | 550 | 500 | 460 | 430 | 16 × φ 22 |

Ordering Instructions

订货须知

为了选择最适合的陶瓷阀，在订货时请提供以下资料：提供详细的介质和使用工况对选型尤其重要。如果在选型和使用中有任何疑问，欢迎咨询！

In order to select the proper FREE-VALVE' s ceramic valves for you application, please provide the listed below information. Details of the process fluid and conditions are especially important, if you have any doubt about to selection or application of valves, please contact us.

Email: sales@free-valve.com , marketing@free-valve.com

| 序号 | 项目信息 Item | 描述 Description |
|----|---|-------------------|
| 1 | 订单项目 Ordering Project | |
| 2 | 行业-系统 Industry-System | |
| 3 | 阀门名称 Valve name | |
| 4 | 公称通径 Size Range | |
| 5 | 公称压力和端面形式 Nominal Pressure and facing type | |
| 6 | 使用介质及状况 Service fluid and State | |
| 7 | 最大工作温度 (° C) Max service temperature | |
| 8 | 最大工作压力 (bar) Max service pressure | |
| 9 | 主要零部件材质 Valve material of main parts | |
| 10 | 操作方式 Operating Type | |
| 11 | 结构长度要求 Face to face dimension | |
| 12 | 数量 Quantity | |
| 13 | 其他要求 Other ordering requirements | |

Our Values 价值观

我们不仅仅为客户提供简单的商务报价服务，而且还根据工况条件为客户提供专业性的技术解决方案和及时的服务！

为客户设计出安全可靠的阀门产品。

高度重视客户需求，为客户提供定制化的阀门需求解决方案。

为客户在售前、售中、售后提供优质服务。

为客户提供优质阀门产品和优质的技术支持。

At FREE- VALVE company ,we understand that creating value is not only simply the price of supplying the valve for customers , but also supply professional solutions according to the site working conditions and in time service .

The value is about designing valves that are reliability and safety.

The value is pay great attention to customer needs ,made customized solutions to according customer needs.

The value is the before sale ,selling and after sale service at any time to our customer.

The value is meeting the needs of our customers by providing the products of the high quality-valve and the best technical support .

Our Mission 使命

坚持一流品质、持续创新、优质服务、相互信任与您合作共赢的发展理念，孚瑞人长期发扬工匠精神！

FREE-VALVE focus on High Quality, Continuous Improvement, Outstanding Service and Trust both in the company and in the relationships with customers.

The people of FREE- valve always carry the spirit of craftsmen all the time , so we are known as an excellent source for high quality valve supplies and service.

本公司保留对产品设计和规格修改的权利，样本如有变动，恕不另行通知。
FREE-VALVE company reserves the right to change product designing and specifications, catalogue are subject to change without notice.