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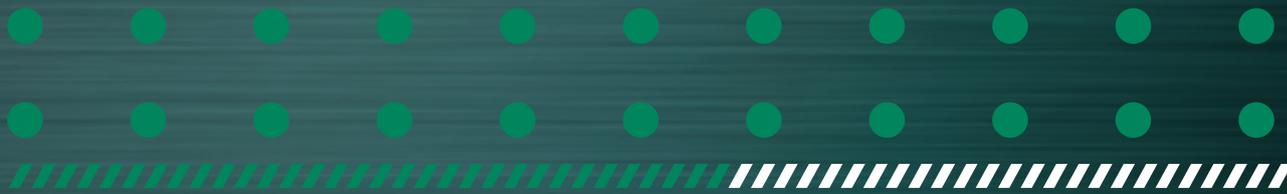


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AIRCONDITIONING TERMINALS 空调末端系列 B4

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德州亚太集团是国内大型暖通空调、洁净技术系统集成供应商。

集多年潜心研究，博采众长自成体系，打造出一流的暖通空调、洁净技术全套设备和众多精品工程。国内以中央电视台新址、酒泉卫星发射中心、北京大兴国际机场、国家质检总局、北京小汤山医院、武汉火神山医院、武汉雷神山医院、三峡工程及近二十个北京奥运场馆等为代表，国外以巴基斯坦乌奇电厂、柬埔寨金边市大都会广场、印度帕帕多拉工程为代表的重点项目，采用了亚太中央空调设备，长期稳定，节能环保，获得了广泛的赞誉。

ISO9001、14001、3C、UL、CE、CRAA 等一系列认证；主机列入节能产品政府采购清单、数十项国家专利、国家级高新技术企业、中国驰名商标，充分标明了亚太集团的管理水平和产品水平。

与荷兰阿波罗合资，以欧洲标准制造的洁净设备全部返销发达国家、中央空调设备相继进入十几个国家和地区，展示亚太集团已经步出国门，与国际接轨。

植根齐鲁大地，秉持“以人为本”的经营理念，崇尚“以德待人”的儒家文化，亚太集团愿与您共同开创明天的辉煌。

Dezhou Yatai Group is a supplier of large HVAC and clean system in China.

Yatai has developed whole set of advanced HVAC and clean technology equipment and lots of wonderful projects based on long-term research and features of the others.

Many famous projects adopted Yatai central air conditioners that run smoothly, save energy, protect environment and have won good reputation widely like the New CCTV, the Jiuquan Satellite Launching Center, Beijing Daxing International Airport, the General Bureau of National Quality Inspection, Beijing Xiaotangshan hospital, Wuhan Huoshenshan hospital, Wuhan Leishenshan hospital, Three-gorge Engineering Project, and over 20 Beijing Olympic Stadiums in China; the UCH Power Plant in Pakistan, the Phnom Penh Capital Squire in Cambodia, the Priyadarshini Jurala Project in India and others across the world.

Yatai has been certified by ISO9001, 14001, 3C, UL, CE, CRAA, etc.; its chiller names have been put on the government purchasing list as energy saving products and obtained dozens of national patents, titles of National High-technology Enterprise and Chinese Famous Trademark, which fully show the high management levels and product qualities of Yatai Group.

The filtering equipment made according to the European Standards by the joint venture, which is co-invested by Dutch Afpro Company and Yatai, are all exported to the developed countries; our central air conditioners have been exported to over 10 countries or regions, which show that Yatai Group has stepped into oversea markets and been in line with the world.

Located at Shandong Province, insisting on business idea of "humanism" and advocating the Confucianism of "getting along with people by morality", Yatai Group wishes to create a brilliant future with you.



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Honorable Qualification



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The fifth part muffler

防火排烟系列

Fire proof and smoke exhaust series

一、订货须知

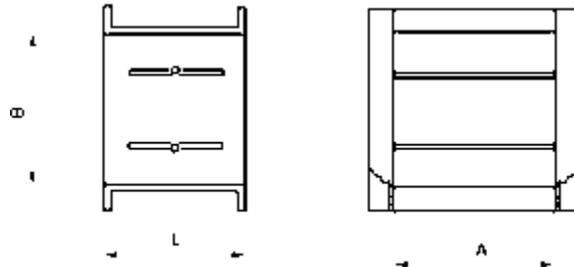
Ordering instruction

1、阀体“A”“B”尺寸的确定：在阀上平行于叶片轴的尺寸为“A”尺寸，垂直于叶片轴的尺寸为“B”尺寸。

2、尺寸“A”“B”“L”的含义：A B为内口尺寸 L为外部尺寸

1.The definition of sizes “A” and “B” of the valve body: “A” represents the distance from left side to right side that is parallel to the blade axis while “B” represents the distance from top side to bottom side that is perpendicular to the blade shaft.

2.The meanings of sizes “A” “B” “L” :A and B are all inner port sizes, L is the outside size.



3、按阀门控制方式分类见表1

3.When divided by valve control type, refer to table 1

代号 Code	控制方式 Control type	
W	温感器控制自动关闭 Automatic turning off of temperature sensor control	
S	手动控制关闭或开启 Manual control is turned on or off	
D	Dc	电控电磁铁关闭或开启 Electrically controlled electromagnet is turned on or off
	Dj	电控电机关闭或开启 Electrically controlled motor is turned on or off
	Dq	电控气动机构关闭或开启 Electronically controlled pneumatic mechanism is turned on or off
注：排烟阀没有温感器控制方式 Remark: smoke exhaust valve has no temperature sensor control type		

4、按阀门功能分类见表2

4.When divided by valve control type, refer to table 2

代号 Code	功能 Function
F	具有风量调节功能 Has the air flow adjustment function
Y	具有远距离复位功能 Has the long-distance reset function
K	具有阀门关闭或开启后阀门位置信号反馈功能 Has the valve location signal feedback function when the valve is turned on or off
注：排烟防火阀和排烟阀不要求风量调节功能 Remark: smoke exhaust fire valve and smoke exhaust valve don't need the air flow adjustment function	

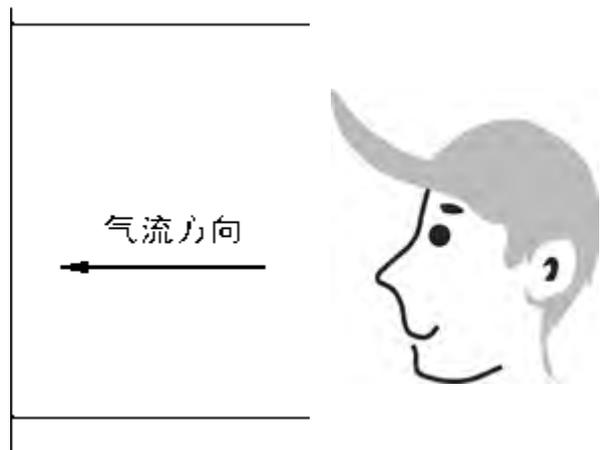
5、对矩形阀门：前面一组数字表示阀的有效宽度A (mm)；后面一组数字表示阀的有效高度B (mm)；(A、B均为内口尺寸)。对圆形阀体：用Φ (mm)表示圆形接口部分的内径。我公司圆形阀体当尺寸>630mm时均采用方圆形结构。

6、阀门控制器左、右式安装位置的判定：人顺气流方向观察，控制装置在左，为左式。在右，为右式。阀门操作器可装于阀体左、右两侧(温感器面对气流方向时)，订货时用户应根据现场情况核实清楚。如用户无需求，出厂时均置于左侧。

5.Rectangular valve: the set of numbers in the front stands for the valid width of the valve A (mm) ; the set of numbers in the back stands for the valid height of the valve B (mm) ; (A and B are all inner port sizes) .

Circular valve body: the symbol Φ (mm) represents the inside diameter of the circular joint. When the dimension of the circular valve body >630mm, it adopts the structure of square outside and circular inside.

6.How to decide the left-type or right-type installation of the valve controller:We following the air flowing direction, if the controller is on the left, then choose the left type. If the controller is on the right, then choose the right type. The valve operator can be installed on the left or right side (when the temperature sensor faces the air flowing direction). Please place an order according to the real on-site conditions. If user has no special demand, valve controller will be fixed on the left.





7、多叶排烟口类产品应注明操作门位置:

例如: (A+250) × B为卧式右; (250+A) × B为卧式左;
A × (B+250) 为立式上; A × (250+B) 为立式下。

8、对阀门材质或表面处理有特殊需求请注明。

9、其它与本说明书不同的技术要求请注明。

10、远距离操作装置拉索长度如超过6米需注明。

11、对排烟防火阀温度熔断为280℃订货时应注明。

12、所有法兰安装孔均由用户自行与风管法兰配作。

13、如用户没有特殊要求, 阀体内外表面则作喷漆处理。(仅指Q235普通钢板)

14、 防火阀、防烟防火阀、防烟防火调节阀, 矩形阀长度均为210~250mm。圆形阀门Φ=200mm以内, 长度均改为220mm, 包括200mm。

※ 我公司也可按“全国通用建筑标准设计图集”中《采暖通风设计选用手册》生产并供应各种规格的风口阀门、消声器、静压箱等。

7.Location of the operation door of multi-blade smoke exhaust outlet series product should be clearly indicated:For example, (A+250) × B is the horizontal type ,the operation gate is on the right; (250+A) × B is the horizontal type, the operation gate is on the left; A × (B+250) is the vertical type,the operation gate is on the top;A × (250+B) is the vertical type, the operation gate is on the bottom.

8.If have special demand for the surface treatment or the valve material, please give clear instruction.

9.If have technical requirements which is different from the instruction book, please give clear indication.

10.If the wire of the long-distance operation device exceeds 6 meters, please give clear instruction.

11.If the operating temperature of the temperature fuse of smoke exhaust fire valve is 280℃,please give clear instruction.

12.All flange installation holes should be done by users themselves according to air duct flange.

13.Without specific demand, the inside and outside surfaces of the valve shall be coated with paint (only refer to Q235 ordinary plate).

14.The length of fire valve, smoke exhaust fire valve, smoke exhaust fire control valve and rectangular valve is 210~250mm. If the inside diameter of circular valve is 200mm, its length should be adjusted to 220mm, 200mm included.

※ Our company can also produce and supply all kinds of air opening valves, mufflers, static pressure boxes etc. according toDesign and Selection Manual for Heating and Ventilation in "National General Architectural Standards Design Atlas".

二、防火阀、排烟防火阀系列产品的通用技术参数

General technical parameters of fire valve and smoke exhaust fire valve series product

一体成型插接工艺镀锌板防火排烟阀

Integrated forming and inserting processed galvanized plate fire and smoke exhaust valve

序号 serial number	内容 content	通用性能及参数 General performance and parameters	
1	阀体厚度 Thickness of valve body	矩形阀为220~230mm, 特殊要求时可按需求制造。排烟口类产品其厚度为250mm The thickness of the rectangular valve is 220~230mm.Special requirements can also be met. The thickness of exhaust outlet products is 250mm	
2	阀体框架 Valve body frame	1.8~2.0mm厚镀锌板, 生产线一体成型框架 1.8~2.0mm galvanized plate is made into integrated forming frame on the production line	
3	叶片 Blade	1.8mm厚镀锌板, 轧成瓦楞状 1.8 mm thick galvanized plate is rolled into corrugated form	
4	感温元件 Temperaturesensing element	易熔合金, 70℃和280℃二种, 达到GB15930-2007之规定 Fusible alloy, has two kinds of temperatures:70 °C and 280 °C;has met the requirement of GB15930-2007	
5	叶片轴及连杆 Blade shaft and connecting rod	Φ 12冷拔圆轴或14 × 3冲压连杆 Φ 12 cold drawn round shaft or 14 × 3 stamping connecting rod	
6	轴承 Bearing	黄铜H62 Brass H62	
7	防火阀、排烟防火阀、 排烟阀(口)自动手动开关 操作装置 Automatic and manual switch operation devices of fire valve, smoke exhaust fire valve, smoke exhaust valve (opening)	额定电压 Rated voltage	DC24V ± 10%
8		额定电流 Rated current	≤0.7A
9		微动开关 Microswitch	接点容量AC380V3A Contact ratingAC380V3A
10		动作转矩 Action torque	0.98 ~ 6.9N.m.
11		电磁铁吸力 Electromagnetic force	1.5Kg ~ 2.5Kg
12		复位方式 Reset mode	手动开启复位 Manual reset
13	漏风量 Air leakage volume	达到GB15930-2007之要求 Meet the requirements of GB15930-2007	
14	阀门局部阻力系数 Local resistance coefficient of valve	阀门叶片全开启时为1.91 The coefficient is 1.91 when the valve blades are fully open	
15	耐火性 Fire resistance	达到或超过GB15930-2007之要求 Meet or beyond the requirement of GB15930-2007	
16	耐腐蚀性 Corrosion resistance	达到或超过GB15930-2007之要求 Meet or beyond the requirement of GB15930-2007	
17	绝缘电阻 Insulation resistance	≥20MΩ	
18	法兰高度H Height of flange	根据GB50243-2002之需求或均按设计要求 According to the requirement of GB50243-2002 or the design requirement	



序号 serial number	内容 content	通用性能及参数 General performance and parameters	
1	阀体厚度 Thickness of valve body	矩形阀为250mm, 特殊要求时可按需求制造。排烟口类产品其厚度为250mm The thickness of the rectangular valve is 250mm.Special requirements can also be met. The thickness of exhaust outlet products is 250mm	
2	阀体框架 Valve body frame	2mm厚Q235热轧钢板, 冷轧成型后焊接而成 The valve frame is made of cold rolled and welded 2mm thick Q235 hot rolled steel plate	
3	叶片 Blade	普通Q235板2mm厚, 轧成瓦楞状 Ordinary Q235 plate is 2mm thick, rolled into corrugated shape	
4	感温元件 Temperaturesensing element	易熔合金, 70℃和280℃二种, 达到GB15930-2007之规定 Fusible alloy, has two kinds of temperatures:70 °C and 280 °C;has met the requirement of GB15930-2007	
5	叶片轴及连杆 Blade shaft and connecting rod	Φ 11.5冷拔圆轴或14×3冲压连杆 Φ 11.5 cold drawn round shaft or 14 x 3 stamping connecting rod	
6	轴承 Bearing	黄铜H62 Brass H62	
7	防火阀、排烟防火阀、 排烟阀(口)自动手动开关 操作装置 Automatic and manual switch operation devices of fire valve, smoke exhaust fire valve, smoke exhaust valve (opening)	额定电压 Rated voltage	DC24V ± 10%
8		额定电流 Rated current	≤0.7A
9		微动开关 Microswitch	接点容量AC380V3A Contact rating AC380V3A
10		动作转矩 Action torque	0.98 ~ 6.9N.m.
11		电磁铁吸力 Electromagnetic force	1.5Kg ~ 2.5Kg
12		复位方式 Reset mode	手动开启复位 Manual reset
13	漏风量 Air leakage volume	达到GB15930-2007之要求 Meet the requirements of GB15930-2007	
14	阀门局部阻力系数 Local resistance coefficient of valve	阀门叶片全开启时为1.91 The coefficient is 1.91 when the valve blades are fully open	
15	耐火性 Fire resistance	达到或超过GB15930-2007之要求 Meet or beyond the requirement of GB15930-2007	
16	耐腐蚀性 Corrosion resistance	达到或超过GB15930-2007之要求 Meet or beyond the requirement of GB15930-2007	
17	绝缘电阻 Insulation resistance	≥20MΩ	
18	法兰高度H Height of flange	根据GB50243-2016之需求或均按设计要求 According to the requirement of GB50243-2016 or the design requirement	





柜式、组合式空调机组
Cabinet, combination type air conditioning unit



吊顶式空调机组KD(D)系列
Ceiling suspension type air conditioning KD(D)series



风机盘管机组
Fan-coils



空调部件系列
Parts of air-conditioners

三、防火排烟阀门定义与3C规格尺寸定义

Definitions of fire proof smoke exhaust valve and 3C specification

1、防火阀

安装在通风、空气调节系统的送、回风管道上，平时呈开启状态，火灾时当管道内烟气温度达到70℃时关闭，并在一定时间内满足漏烟量和耐火完整性要求，起隔烟阻火作用的阀门。

防火阀一般由阀体、叶片、执行机构和温感器等部件组成。

1.Fire proof valve

It is installed on the supply and return air ducts of ventilation and air conditioning system. It is usually in the "on" state. In case of fire, it will be closed when the flue gas temperature in the duct reaches 70°C. And the fire proof valve can in a certain time meet the requirements for smoke leakage and fire proof integrity, playing the role of smoke resistance.

Fire valve is generally composed of body, blade, actuator and temperature sensor.

2、排烟防火阀

安装在机械排烟系统的管道上，平时呈开启状态，火灾时当排烟管道内烟气温度达到280℃时关闭，并在一定时间内能满足漏烟量和耐火完整性要求，起隔烟阻火作用的阀门。

排烟防火阀一般由阀体、叶片、执行机构和温感器等部件组成。

2.Smoke exhaust fire proof valve

Installed in the pipe of the mechanical smoke exhaust system, it is usually in the "on" state. In case of fire, it will be closed when the flue gas temperature in the duct reaches 280°C. And the smoke exhaust fire proof valve can in a certain time meet the requirements for smoke leakage and fire proof integrity, playing the role of smoke resistance.

Smoke exhaust fire proof valve is generally composed of body, blade, actuator and temperature sensor.

3、排烟阀

安装在机械排烟系统各支管端部（烟气吸入口）处，平时呈关闭状态并满足漏风量要求，火灾或需要排烟时手动和电动打开，起排烟作用的阀门，带有装饰口或进行过装饰处理的阀门称为排烟口。

排烟阀一般由阀体、叶片、执行机构和温感器等部件组成。

3.Smoke exhaust valve

Installed at the end of each branch pipe of the mechanical smoke exhaust system (smoke intake), it is usually closed and meets the requirements of air leakage. In case of fire or smoke exhaust, it can be opened manually or electrically. Valves playing the role of smoke exhaust with decorative opening or under decorative treatment are called smoke exhaust opening.

Smoke exhaust valve is generally composed of body, blade, actuator and temperature sensor.

4、3C规格尺寸定义

公安部消防产品合格评定中心

公消评[2017]21号（摘录）

关于进一步减轻企业负担，再次简化防火排烟阀门、消防排烟风机产品认证单元内增型号工作程序，强化生产者主体责任的通知：防火排烟阀门产品公称尺寸按照GB 15930-2007《建筑通风和排烟系统用防火阀门》中相关常用规格申请，参考GB/T 1804-2000《一般公差 未注公差的线性和角度尺寸的公差》的基础上，为进一步减轻企业负担，避免规格型号过多、过杂的情况，对于圆形阀门产品的公称直径、矩形阀门产品的公称尺寸（W（宽）、H（高））的任一尺寸比本单元已获证证书中任一规格产品尺寸小于100mm范围内的产品，免于进行备案。

4.3C specification size definition

Ministry of Public Security Fire Product Conformity Assessment Center

Ministry of Public Security Fire Product Conformity Assessment No. [2017]21

Notice on further reducing the burden on enterprises and once again simplifying the work procedure of adding model in the product certification unit of fire protection and smoke exhaust valve and fire protection and smoke exhaust fan, and strengthening the producer's principal responsibility:

The nominal size of fire proof smoke exhaust valve shall be applied for in accordance with relevant common specifications in GB 15930-2007 "Fire Valves for Building Ventilation and Smoke Exhaust Systems" and refer to the GB/T 1804-2000 "General Tolerance Tolerance of Not-noted Linear and Angular Tolerances". In order to ease the burden on enterprises, avoid too many specifications, any size of nominal diameters of circular valves and nominal sizes of rectangular valves within 100mm shorter than any product already authorized the certificate in this unit, there is no need to be put on record.

四、防火阀系列产品结构

Fire valve series product structure

1、简易防火阀FH-O型

适用：简易防火阀通常被安装在通风管道上，平时阀门常开，气流温度达到70℃时，阀门关闭。

性能：

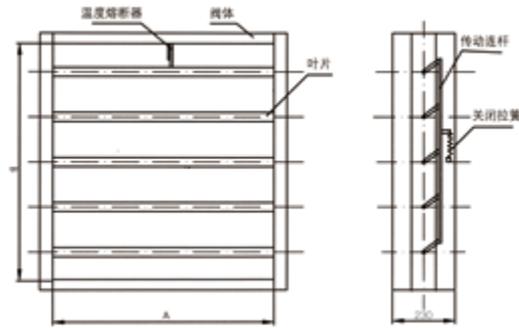
- ◆ 温度到70℃时，温度熔断器动作，阀门靠拉簧力关闭。
- ◆ 用户有特殊要求可加输出电讯号装置。

1.Simple fire valve FH-O

Application: simple fire valve generally is installed on the ventilation pipeline and normally in an "on" state. When the temperature reaches 70℃, the valve will turn off.

Performance:

- ◆ when the temperature reaches 70℃, temperature fuse acts and the valve will be closed by tension spring force.
- ◆ If users have special requirements, we can also fix output electric signal device to the fire valve.



温度熔断器	Temperature fuse
阀体	Valve body
叶片	Blade
传动连杆	Drive link
关闭拉簧	Tension spring used for closing the valve

2、防火阀WSDC-FK型 WSDC-K型

适用：防火阀通常被安装在通风管道上，平时阀门常开，气流温度达到70℃时，阀门关闭。

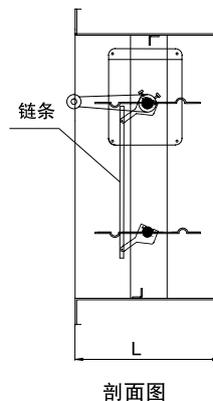
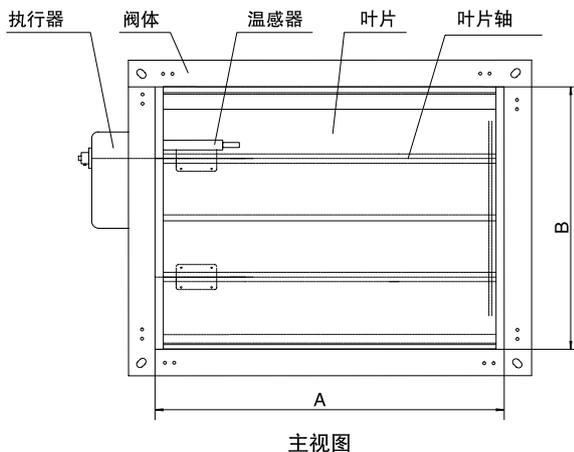
- 性能：
- ◆ 温度到70℃时，温度熔断器动作，阀门靠拉簧力关闭。
 - ◆ 手动关闭、手动复位。
 - ◆ 阀门关闭后，可输出电讯号。

2.Fire valve WSDC-FK and WSDC-K

Application: fire valve generally is installed on the ventilation pipeline and normally in an "on" state. When the temperature reaches 70℃, the valve will close.

Performance:

- ◆ when the temperature reaches 70℃, temperature fuse acts and the valve will be closed by tension spring force.
- ◆ Close manually and reset manually.
- ◆ After the valve is closed, the signal can be sent out.



主视图	Front view
剖面图	Sectional view
执行器	Actuator
温感器	Temperature sensor
阀体	Valve body
叶片	Blade
叶片轴	Blade shaft
链条	Chain



柜式、组合式空调机组
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Fan-coils



空调部件系列
Parts of air-conditioners

3、防火风口

适用：防火风口一般安装在通风或回风管道上。

性能：温度达到70℃时，自动关闭。

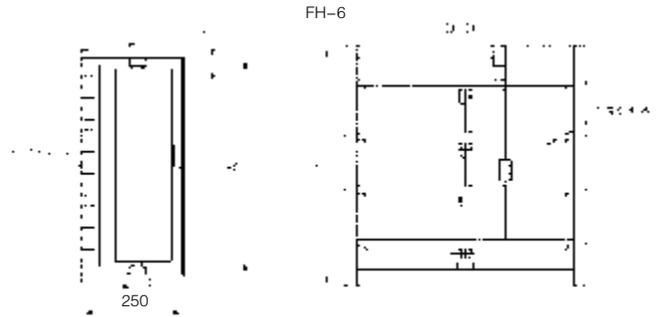
注：按简易防火阀标准加工。

3.Fireproof air opening

Application: fireproof air opening is generally installed on the ventilation or air return pipeline.

Performance: when temp. reaches 70°C, it closes automatically.

Remark: manufactured according to the standard of simple fireproof valve.



铝合金风口
温度熔断器

Aluminium alloy air opening
Temperature fuse

五、排烟防火阀系列产品结构

Smoke exhaust fire valve series product structure

1、排烟阀

适用：排烟阀一般安装在排烟系统的风管上，平时常闭，发生火灾时烟感探头发出火警信号，控制中心给阀上电磁铁接通电信号使阀门迅速打开，也可手动迅速打开阀门进行排烟。

性能：◆电讯号DC24V ± 2.4V将阀门打开。 ◆手动可使阀门打开。 ◆手动复位。

◆阀门动作后输出开启信号。

根据用户要求可以与其它设备联锁。

注：排烟阀不带温度传感器！

1.Smoke exhaust valve

Application: Smoke exhaust valve is generally installed on the pipeline of smoke exhaust system and normally in an "on" state. When a fire breaks out, smoke detector will send out a fire alarm signal to the control center. The control center connects electric signal to the electromagnet on the valve to make the valve turn on quickly. The valve can also be turned on manually to discharge smoke.

Performance: ◆ electric signal DC24V ± 2.4v opens the valve.

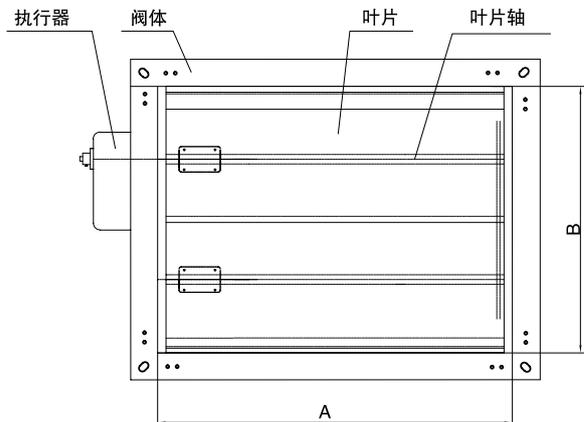
◆ The valve can be opened manually.

◆ The valve can be reset manually.

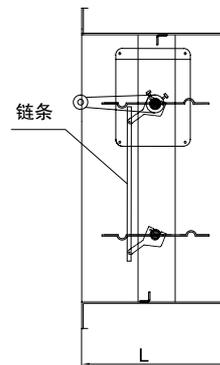
◆ The valve acts to output opening signal.

◆ Interlock with other equipment according to user's requirement.

Remark: smoke exhaust valve has no temperature sensor!



主视图



剖面图

主视图
Front view
剖面图
Sectional view
执行器
Actuator
阀体
Valve body
叶片
Blade
叶片轴
Blade shaft
链条
Chain



2、排烟防火阀

适用：安装在机械排烟系统的管道上，平时呈开启状态，火灾时当排烟管道内烟气温度达到280℃时关闭，并在一定时间内能满足漏烟量和耐火完整性要求，起隔烟阻火作用的阀门。

排烟防火阀一般由阀体、叶片、执行机构和温感器等部件组成。

性能：◆ 电讯号DC24V ± 2.4V将阀门打开。

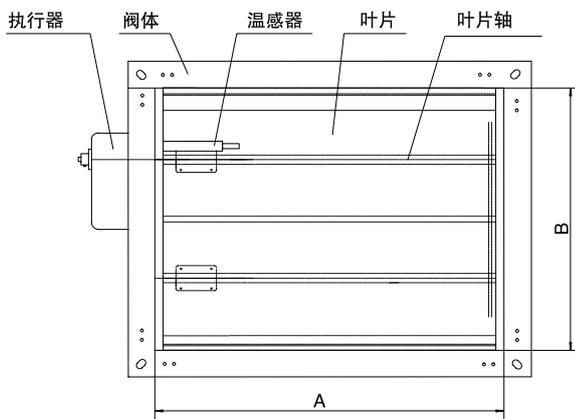
- ◆ 手动可使阀门打开。
- ◆ 手动复位。
- ◆ 温度达到280℃时阀门关闭。
- ◆ 阀门动作后输出开启信号，根据用户要求可以与其它设备连锁。

2.Smoke exhaust fire valve

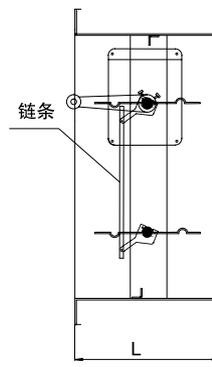
Application: installed on the pipeline of mechanical exhaust system, normally this valve is in an "on" state. When smoke temperature reaches 280℃ in the smoke exhaust pipeline, the valve will shut down, and in a certain time can meet the requirements of smoke leakage and fire tolerance integrity, insulating smoke and resisting fire. Smoke exhaust fire valve is generally composed of valve body, blade, actuating mechanism and temperature sensor and other components.

Performance: ◆ electric signal DC24V ± 2.4v opens the valve.

- ◆ The valve can be opened manually.
- ◆ The valve can be reset manually.
- ◆ When temperature reaches 280℃, the valve will close.
- ◆ Valve acts to output signal and then it can interlock with other equipment according to user's requirement.



主视图



剖面图

主视图	Front view
剖面图	Sectional view
执行器	Actuator
温感器	Temperature sensor
阀体	Valve body
叶片	Blade
叶片轴	Blade shaft
链条	Chain



3、排烟风口

适用：排烟风口，一般用在吊顶上的排风管道上，平时常闭，

火灾发生时，烟感探头发出火警信号给控制中心，控制中心通DC24V电，让阀体上控制机构内的电磁铁动作，使阀门打开，进行排烟，外部的铝合金风口，起到装饰性作用。

性能：◆ 电讯号DC24V ± 2.4V将阀门打开。

◆ 手动打开，手动复位。

◆ 阀门打开时，输出两路电讯号。

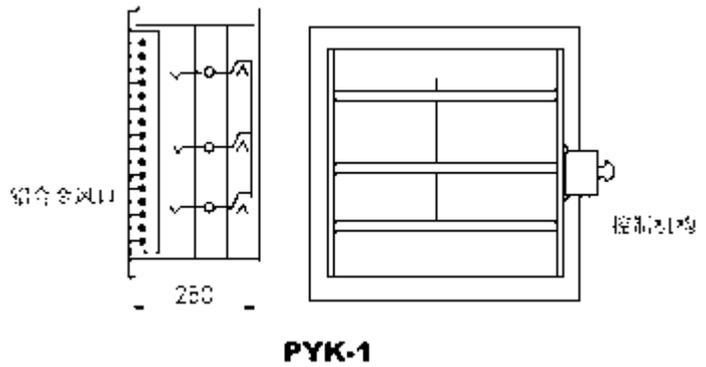
3.Smoke exhaust air opening

Application: smoke exhaust air opening, generally used on the smoke exhaust pipe on the ceiling, normally closed, when the fire break out, the smoke detector will send out a fire alarm signal to the control center. Control center powers with electricity DC24V and let the electromagnetic work inside the control organ on the valve body. Then the valve will open and start to extract smoke. The outside aluminum alloy serves a decorative function.

Performance: ◆ electric signal DC24V ± 2.4v opens the valve.

◆ The valve can be opened or reset manually.

◆ When the valve opens, it outputs two-way electric signals.



铝合金风口
控制机构
Aluminum alloy air opening
Control organ

4、板式排烟口 PYK-2 (BSD)

适用：板式排烟口安装在走道吊顶板上或墙上和防烟前室，也可以直接安装在排烟风道末端。火灾发生时，烟感探头发出火警信号，控制中心通DC24V电给远程控制装置，远程控制装置内的电磁铁动作，释放钢丝绳，在阀体扭簧力作用下将阀门打开或手动打开进行排烟。

性能：◆ 电讯号DC24V ± 2.4V将排烟口打开。

◆ 远距离手动开启。

◆ 远距离手动复位。

◆ 排烟口打开时输出电讯号，根据用户要求可与其它设备联锁。

4.Plate type smoke exhaust air opening PYK-2 (BSD)

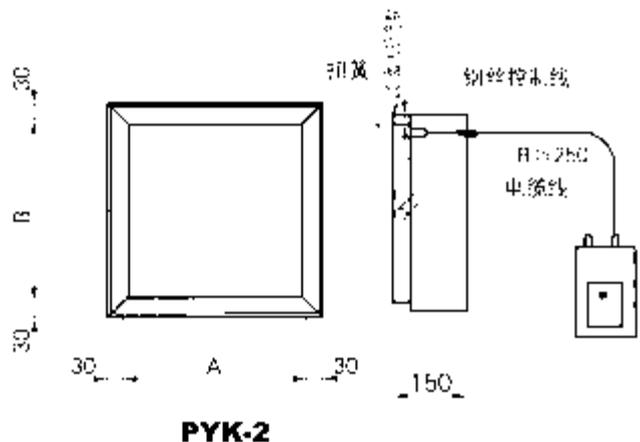
Application: the plate-type smoke exhaust air opening can be installed on the ceiling board or on the wall of the walkway and the smoke proof front room. It can also be directly installed at the end of the smoke exhaust duct. In case of fire, the smoke detector will send out a fire alarm signal and the control center will power the remote control device with DC24V. The electromagnet in the remote control device will act, release the steel wire and open the valve by torsion spring force of the valve body or manually open the valve to discharge smoke.

Performance: ◆ electric signal DC24V ± 2.4v opens the smoke exhaust outlet.

◆ Remote manual start.

◆ Remote manual reset.

◆ Smoke exhaust outlet acts to output signal and then it can interlock with other equipment according to user's requirement.



扭簧
最大折弯数
钢丝绳控制线
电缆线
Torsion spring
Maximum number of bends
Steel wire controller
Cable



5、多叶排烟口

适用：多叶排烟口通常安装在过道或防烟前室、无窗房间的排烟系统上。一般在侧墙上安装，平时常闭。火灾发生时，烟感探头发出火警信号，控制中心通DC24V电给排烟口上控制机构，使排烟口迅速打开，也可手动打开进行排烟。

注：多叶排烟口不带温度传感器。

I 型的风口叶片平行于阀门主轴。 标准为 $(A+250) \times B$

II 型的风口叶片垂直于阀门主轴。 标准为 $A \times (B+250)$

性能：◆ 电讯号 $DC24V \pm 2.4V$ 将排烟口打开。 ◆ 手动开启。 ◆ 手动复位。 ◆ 排烟口打开时输出电讯号，根据用户要求可与其它设备连锁。

5.Multi-blade smoke exhaust outlet

Application: multi-blade smoke exhaust outlet is usually installed in the hallway or smoke exhaust system of the smokeproof front room or windowless room, generally installed on the side wall, usually closed. In case of fire, the smoke detector will send out a fire alarm signal, and the control center will send DC24V power to the control organ on the smoke exhaust outlet, which can make the smoke exhaust outlet open quickly or it can be opened manually.

Remark: multi-blade smoke exhaust outlet has no temperature sensor.

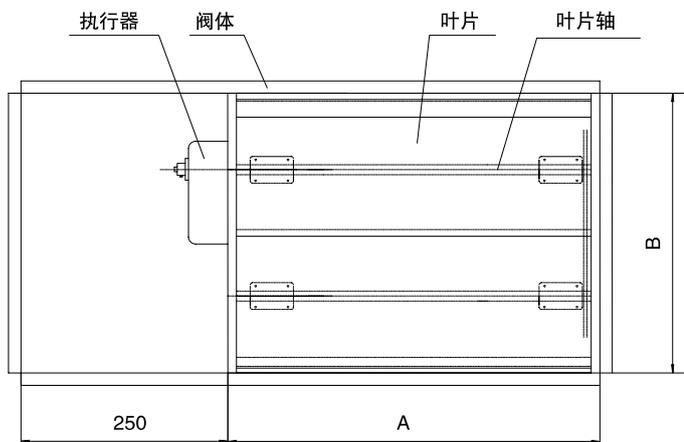
The I type air opening blade is parallel to the main bearing of the valve.

Standard is $(A+250) \times B$.

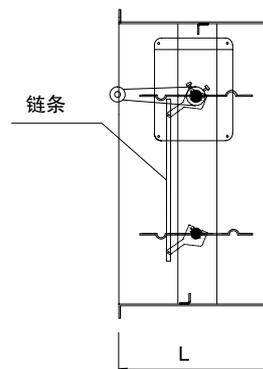
The II type air opening blade is perpendicular to the main bearing of the valve.

Standard is $A \times (B+250)$.

Performance: ◆ electric signal $DC24V \pm 2.4v$ opens the smoke exhaust outlet. ◆ It can be opened manually. ◆ It can be reset manually. ◆ Smoke exhaust outlet acts to output signal and then it can interlock with other equipment according to user's requirement.



主视图



剖面图

主视图	Front view
剖面图	Sectional view
执行器	Actuator
阀体	Valve body
叶片	Blade
叶片轴	Blade shaft
链条	Chain



6、远控多叶排烟口

适用：远程控制多叶排烟口一般安装在过道侧墙或无窗房间的排烟系统上。平时常闭，火灾发生时，烟感探头发出火警信号，控制中心通DC24V电给排烟口上控制机构，使排烟口迅速打开进行排烟，也可远控手动打开，远控手动复位。（I型与II型的区别与PYK-3相同）

如图：(A+250)×B为I型，A×(B+250)为II型，铝合金风口叶片平行于A尺寸。

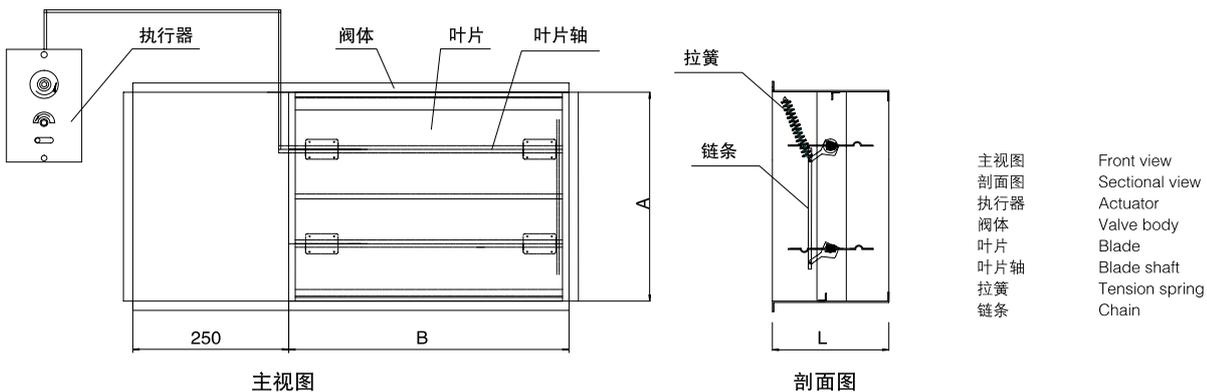
性能：◆电讯号DC24V±2.4V将排烟口打开。◆远距离手动开启。◆远距离手动复位。◆排烟口打开时输出电讯号，根据用户要求可与其它设备联锁。

6.Remote control multi-blade smoke exhaust outlet

Application: remote-control multi-blade smoke exhaust outlet is usually installed on the side wall of hallway or smoke exhaust system of windowless room, usually closed. In case of fire, the smoke detector will send out a fire alarm signal and the control center will send DC24V power to the control organ on the smoke exhaust outlet, which can open the smoke exhaust outlet quickly and it can manually be opened and reset remotely. (The difference between I type and II type is like that of PYK-3).

As the following pictures show: (A+250)×B is the Type I; A×(B+250) is the Type II; blades of aluminum alloy air opening is perpendicular to A.

Performance: ◆ electric signal DC24V±2.4v opens the smoke exhaust outlet. ◆ Remote manual start. ◆ Remote manual reset. ◆ Smoke exhaust outlet acts to output signal and then it can interlock with other equipment according to user's requirement.



7、远程控制多叶防火排烟口

适用：远程控制多叶防火排烟口一般安装在过道侧墙或者安装在无窗房间的排烟系统上。平时常闭，火灾发生时，烟感探头发出火警信号，控制中心通DC24V电给排烟口上控制机构，使排烟口迅速打开进行排烟，也可远控手动打开，远控手动复位。当气温升高到280℃时，排烟口迅速关闭。（I型与II型的区别与PYK-3相同）

如图：(A+250)×B为I型，A×(B+250)为II型，铝合金风口叶片平行于A尺寸。

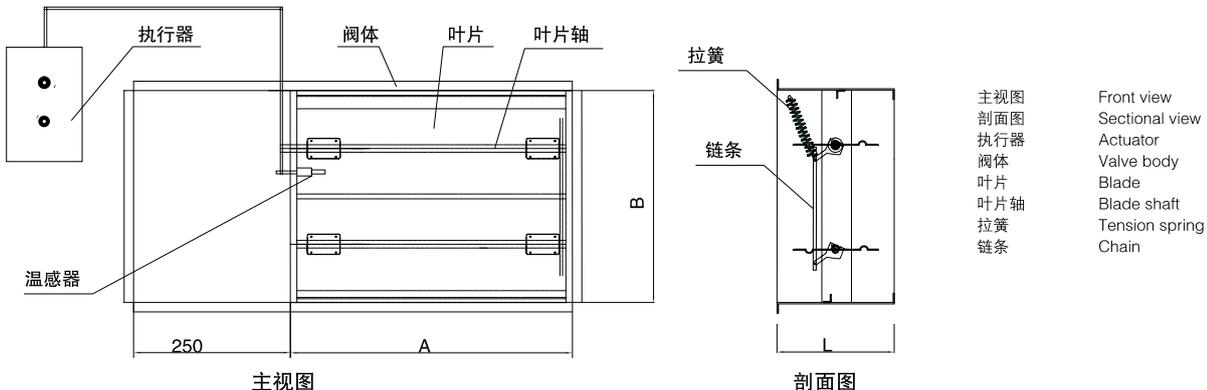
性能：◆电讯号DC24±2.4V将排烟口打开。◆远距离手动开启。◆远距离手动复位。◆温度达到280℃时排烟口关闭。◆排烟口打开时输出电讯号，根据用户要求可与其它设备联锁。

7.Remote control multi-blade fireproof and smoke exhaust outlet

Application: Remote-control multi-blade fire proof and smoke exhaust outlet is usually installed on the side wall of hallway or smoke exhaust system of windowless room, usually closed. In case of fire, the smoke detector will send out a fire alarm signal and the control center will send DC24V power to the control organ on the smoke exhaust outlet, which can make the smoke exhaust outlet open quickly and it can manually be opened and reset remotely. (The difference between I type and II type is like that of PYK-3).

As the following pictures show: (A+250)×B is the Type I; A×(B+250) is the Type II; the blade of Aluminum alloy air opening is perpendicular to A.

Performance: ◆ electric signal DC24V±2.4v opens the smoke exhaust outlet. ◆ Remote manual start. ◆ Remote manual reset. ◆ It shall close when temperature reaches 280℃. ◆ Smoke exhaust outlet acts to output signal and then it can interlock with other equipment according to user's requirement.

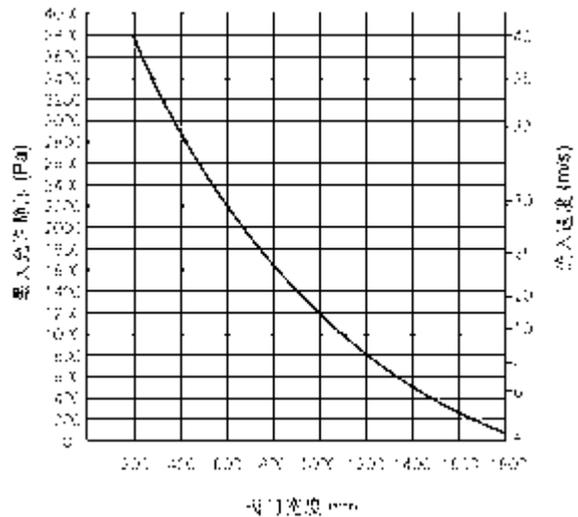


六、阀体的组合及操作器数量的确定

The combination of valve bodies and evaluation of the amount of operators

由于受到叶片刚性的限制，单体防火阀的最大有效宽度受管道内静压的限制应按下图选取。当超过该极限值时，该阀体应采用组合方式。阀体的组合方式可参阅F T系列组合式风阀。阀体的有效通风面积越大时，其关闭力矩也相应增加，为了保证阀门的灵活开启和关闭，每个操作器所操作的阀门的有效面积 $\leq 1.5m^2$ 。单体阀的有效高度一般应 $\leq 1500mm$ ，超过该值时也应采用多个单体阀组合并选用多个操作器。

Due to the limitation of blade rigidity, the maximum effective width of the single fire valve is limited by the static pressure in the pipeline, which should be selected according to the following diagram. When beyond the limit value, the valve body shall adopt the combination type. The combination of valve bodies can refer to FT series combination air valve. The larger the effective ventilation area of the valve body is, the bigger the closing torque will be. In order to ensure the flexible opening and closing of the valve, the effective area of the valve operated by each operator is less than or equal to $1.5m^2$. The effective height of single-body valve should be less than or equal to $1500mm$ in general. Combination of many single-body valves and multiple operators should be adopted when exceeding this value.



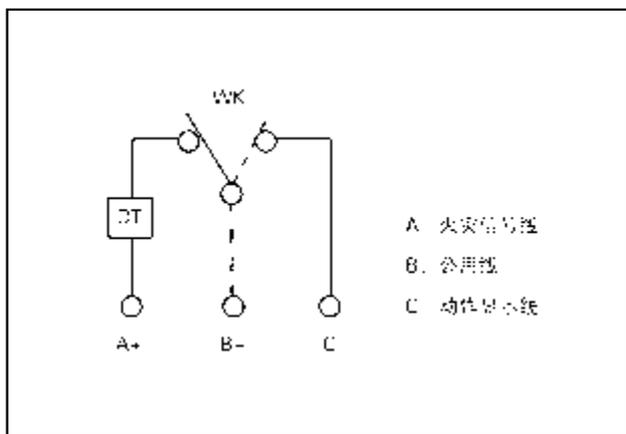
最大允许静压 Maximum allowable static pressure
 流入速度 Inflow velocity
 阀门宽度 The width of the valve

七、控制装置电气原理

Electrical principle of control device

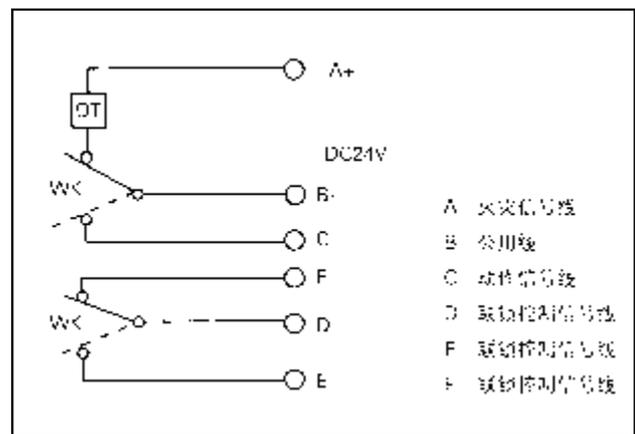
可根据用户要求，使用单微动开关或双微动开关。控制电源DC24V，电流为0.7A。微动开关容量：电压380V电流3A。

According to user's requirements, use single or double microswitches. The control power supply is DC24V, the current 0.7A. Microswitch capacity: voltage is 380V, current 3A.



DC24V 单微动开关原理图

Schematic diagram of DC24V single micro switch



双微动开关原理图

Schematic diagram of double micro switch

火灾信号线 Fire signal line
 公用线 Common line
 动作显示线 Action display line
 动作信号线 Action signal line
 联锁控制信号线 Interlock control signal line



柜式、组合式空调机组
Cabinet, combination type air conditioning unit



吊顶式空调机组KD(D)系列
Ceiling suspension type air conditioning KD(D)series



风机盘管机组
Fan-coils



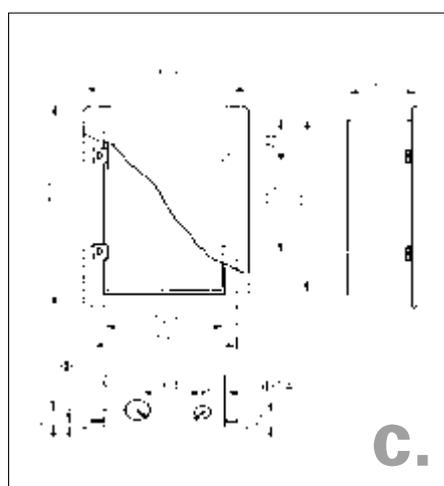
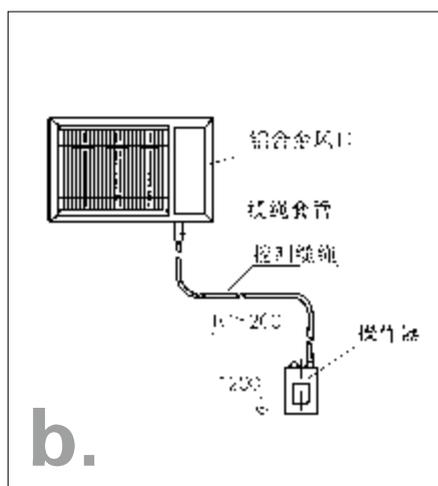
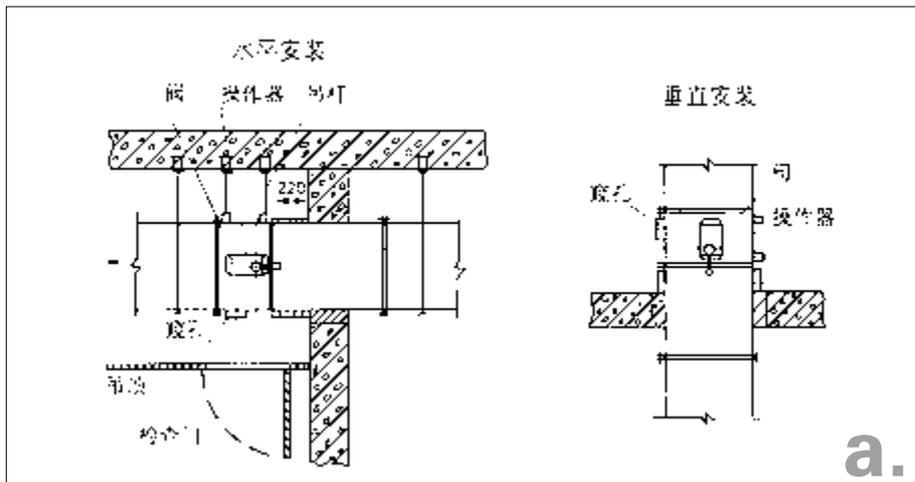
空调部件系列
Parts of air-conditioners

八、防火阀、排烟防火阀系列产品安装的注意事项

Notice for installation of fire valve and smoke exhaust fire valve series product

- 1、阀体应独立吊装，以免管道变形影响阀门的开启或关闭。
- 2、阀体可垂直安装或水平安装，无论何种安装其叶片必须与地面平行，若叶片不能与地面平行时，订货时必须声明！
- 3、阀门操作器一侧和弹簧机构另一侧，应有不少于200mm的净空间，以便检修。
- 4、阀门在吊顶内安装时，操作器下方应设有检修孔，尺寸不小于450X450mm。
- 5、防火阀与防火墙之间的连接风管的外表面应有耐火材料隔热。电气线路应有 $\Phi 20\text{mm}$ 的耐火材料保护管保护。安装时可参考图a。
- 6、采用远控操作器时，控制缆绳应用 $\Phi 20\text{mm}$ 耐火材料管保护，管的弯曲半径不小于200mm，弯曲处不得超过3处，缆绳不长于6m参考图b。
- 7、缆绳缠于操作器上的绕轮时应不小于3圈，缆绳头应用压板紧固。
- 8、远控操作器安装时应在墙壁上予置安装盒，安装盒的大小请参考远控操作器外形尺寸。如图c。

- 1.The valve body shall be lifted independently to prevent pipe deformation so that the opening or closing of the valve shall not be affected.
- 2.Valve body can be installed vertically or horizontally, no matter what kind of installation of the valve body, its blade must be parallel to the ground, if not, this must be declared when ordering!
- 3.There shall be no less than 200mm space on one side of valve operator and the other side of spring organ for convenient maintenance.
- 4.When the valve is installed within the ceiling, the access hole below the operator shall be provided with a size of no less than 450X450mm.
- 5.The outer surface of the connecting air duct between the fire valve and firewall shall be insulated with refractory materials. Electrical wiring should be protected by the $\Phi 20\text{mm}$ refractory material pipe. Refer to picture A for installation.
- 6.When using remote control operator, the control cable should be protected by $\Phi 20\text{mm}$ pipe made of refractory material and pipe bending radius should not less than 200mm. The number is no more than 3 bends. Cable should be no longer than 6m. Refer to Picture b.
- 7.When the cable is wrapped around the wheel of the operator, it shall twine no less than 3 times. The cable end should be tightened with pressing plate.
- 8.The mounting box should be placed on the wall when the remote control operator is installed. Please refer to the contour dimensions of the remote control operator for the size of the mounting box. As shown in Picture c.



水平安装	Horizontal installation
阀	Valve
操作器	Operator
吊杆	Suspender
窥孔	Peephole
吊顶	Suspended ceiling
检查门	Inspection door
垂直安装	Vertical installation
窥孔	Peephole
阀	Valve
操作器	Operator
铝合金风口	Aluminium alloy air opening
缆绳套管	Cable jacket
控制缆绳	control cable
操作器	Operator

齿轮式调节阀

Gear type control valve

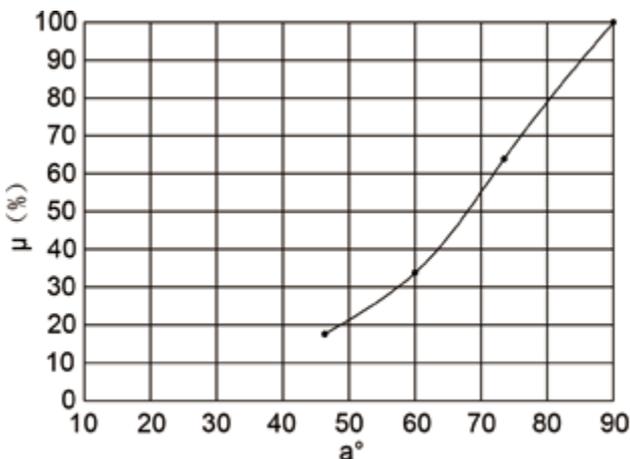
齿轮式调节阀用于对风机或通风管道流量进行实时调节的装置，安装于进风口前部位置或需控制风量区域前部。齿轮式调节阀的调节范围由0°（全开）到90°（全闭）均可实现，且可在任意角度进行自锁。同时也可以对风机的进风量进行控制。

齿轮式调节阀还可被用于防爆风机的吸入口位置，但在订货时需要与厂家进行特别说明。厂家在整个生产制造过程中，可采取相应的防爆措施，从而得以保证产品安全性。

Gear type control valve is used to adjust the flow rate of a fan or ventilation duct, installed in front of the air inlet or areas where air volume needed to be controlled. Gear type control valve can be adjusted from 0° (fully open) to 90° (fully closed), and can be self-locked at any angle. At the same time, the inlet air volume of the fan can also be controlled.

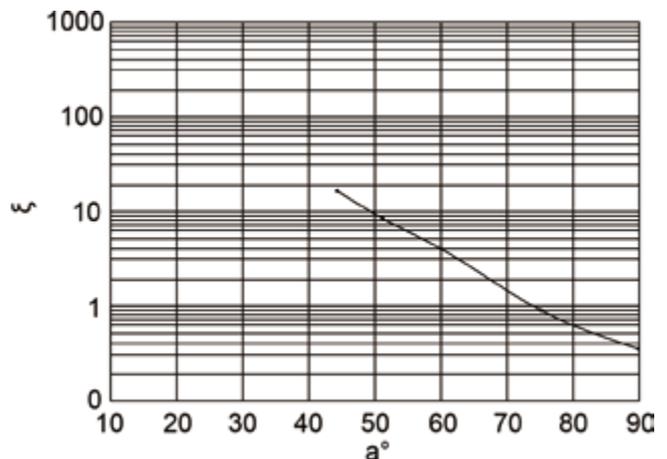
Gear type control valves can also be installed on the suction inlet of explosion-proof fans, but special instructions need to be made with the manufacturer when ordering. In the entire manufacturing process, manufacturers can take corresponding explosion-proof measures to ensure product safety.

序号 No.	内容 Content	通用性能及参数 General performance and parameters
1	阀体厚度 Valve thickness	矩形/圆形阀门厚度210mm 210mm thick rectangular or circular valve
2	阀体框架 Valve frame	2.0mm镀锌板或者314不锈钢板 2.0mm galvanized plate or 314 stainless steel
3	叶片 blade	2.0mm镀锌板或者314不锈钢板 2.0 mm galvanized plate or 314 stainless steel
4	轴套 sleeve	黄铜H62 Brass H62
5	漏风量 Air leakage rate	符合国家标准 Meet national standard
6	阀外形 shape	圆形/方形 Circle/rectangle
7	驱动方式 Driving mode	手动/电动 Manual/automatic
8	风量调节特性 Air volume control characteristics	见风量调节特性曲线图 Refer to air volume control characteristics graph
9	阻力特性 Resistance characteristics	见阻力特性曲线图 Refer to resistance characteristics graph



风量调节特性曲线

Air volume control characteristics graph



阻力特性曲线

Resistance characteristics graph



FT系列风量调节阀

FT series air flow rate control valve

一、概述

Overview

FT系列风量调节阀是我公司开发生产的新型风量调节阀，它集国外风阀及国内多家风阀之优点。具有结构简单合理、泄露量小、摩擦力矩小、运转灵活、叶片刚性好、耐腐蚀、品种齐全等优点。其性能及各项参数指标符合JG/T436-2014标准之规定。可以广泛用在工业和民用空调及通风系统中，以达到精确控制风量的目的。

适用：对开多叶风量调节阀，一般用在空调，通风系统管道中，用来调节支管的风量，也可用新风与回风的混合调节。该阀分为手动和电动两种，按密封性来分，还可分成，密闭型和普通型两种。电动可以自动控制调节风量与自控系统配套。

FT series air flow rate control valve is a new type of air flow rate control valve developed and produced by our company. Adopting the strength of air valves from both home and abroad, it has the advantages of simple and reasonable structure, small leakage, small friction torque, flexible operation, good blade rigidity, corrosion resistance and complete range of varieties. Its performance and parameters have exceeded the JB/T436-2014 standard. It can be widely used in industrial and civilian air conditioning and ventilation systems in order to achieve precise control of air flow rate.

Application: Opposed multi-blade air flow rate control valve, generally used in air conditioning and ventilation system pipes, is used to adjust the branch pipe air flow rate, also can be used for the mixed regulation of fresh air and return air. The valves can be divided into manual type and electric type. According to the leakproofness, the valves can also be divided into enclosed type and ordinary type. The electric type can automatically adjust the air flow rate with automatic control system.



二、FT系列风量调节阀型号说明

Model instruction of the FT series air volume control valve

- 1、SFT-手动对开多叶风量调节阀（SFT-1为矩形，SFT-2为方圆形）
- 2、DFT-电动风阀（DFT-1为矩形，DFT-2为方圆形）
- 3、SMFT-手动密闭对开多叶风量调节阀（SMFT-1为矩形，SMFT-2为方圆形）
- 4、DMFT-电动密闭风阀（DMFT-1为矩形，DMFT-2为方圆形）
- 5、DFT-电动对开多叶风量调节阀（DFT-3为矩形，DFT-4为方圆形），可调节风量。
- 6、DMFT-电动密闭多叶风量调节阀（DMFT-3为矩形，DMFT-4为方圆形，可调节风量）。

- 1.SFT-manual opposed multi-blade air volume control valve (SFT-1 is rectangular, SFT-2 is square outside and round inside)
- 2.DFT-electric air valve (DFT-1 is rectangular, DFT-2 is square outside and round inside)
- 3.SMFT-manual enclosed opposed multi-blade air volume control valve (SMFT-1 is rectangular, SMFT-2 is square outside and round inside)
- 4.DMFT-electric enclosed air valve (DMFT-1 is rectangular, DMFT-2 is square outside and round inside)
- 5.DFT-electric opposed multi-blade air volume control valve (DFT-3 is rectangular, DFT-4 is square outside and round inside)
- 6.DMFT-electric enclosed multi-blade air volume control valve (DMFT-3 is rectangular, DMFT-4 is square outside and round inside)

三、FT系列风量调节阀的主要技术参数

Main technical parameters of the FT Series air volume control valve

序号 Number	内容 Content	通用性能及参数 General performance and parameters
1	阀体厚度 Valve thickness	矩形阀门厚度180mm，方圆形阀门210mm，特殊要求时可按要求制造 Thickness of rectangular valve is 180mm, square outside and circle inside valve 210mm. Special requirements can be met according to the requirements.
2	阀体框架 The frame of valve body	1.5-1.8mm厚钢板，冷轧成型后焊接而成。分镀锌板和普通Q235板两种。 Cold rolled steel plate with a thickness of 1.5-1.8mm and welded. It can be divided into galvanized plate and ordinary Q235 plate.
3	叶片 Blade	1.5mm厚镀锌板，冷轧成瓦楞状。 1.5mm thick galvanized plate is cold rolled into corrugated form.
4	叶片轴及连杆 Blade shaft and connecting rod	12×12方轴或φ12冷拔圆轴，14*3冲压连杆。 12×12 square shaft or φ12 cold drawn round shaft, 14*3 punched connecting rod.
	轴承 Bearing	黄铜H62。 Brass H62
6	漏风量 Air leakage	普通风阀漏风量小于2%，密闭阀采用特种耐高温橡胶密封条或者阀体四周不锈钢弹片密封，泄露量极低。 The air leakage of ordinary air valve is less than 2%. The sealing valve adopts special high temperature resistant rubber seal strip or was sealed by stainless steel clips around the valve body. The leakage is very low.
7	阀外形 Valve contour	有矩形和方圆形二种，圆形风道，选用方圆形风阀，解决了圆阀泄露量大的缺点。 Have rectangular valve and round inside, square outside valve. The round air duct should adopt square outside, round inside air valve, which has solved the shortcoming of high leakage amount of round valve.
8	阀的组合 Valve combination	除单体阀外，还可由若干单体阀组合成较大的组合阀，阀中各单体阀可联动同步运转。 In addition to the single-body valve, several single-body valves can be combined together into a large combination valve. The single-body valves in the combination valve can be linked together to realize synchronous operation.
9	使用温度 Operation temperature	-40℃~+95℃或-50℃~+300℃。 -40℃~+95℃ or -50℃~+300℃.
10	对叶片轴允许最大扭矩 Maximum allowable torque for blade shaft	35NM。
11	流量特性 Flow characteristics	叶片对开时流量特性为等百分比。 The flow characteristic is equal percentage when the blades are apart.
12	最大允许静压及流入速度 Maximum allowable static pressure and inflow velocity	由允许静压及流入速度曲线查出（图二）。 Get the value by allowable static pressure and inflow velocity curve (Picture 2)
13	驱动方式 Driving mode	手动、电动。 Manual mode or electric mode.



四、FT系列风量调节阀主要规格

Main specifications of FT series air volume control valve

FT系列风量调节阀的有效高度受叶片模数的限制，选用时请尽量按表1和表2所推荐的高度进行选取。

The valid height of the FT series air volume control valve is limited by the blade modulus. Please try to select it according to the recommended height in Table 1 and Table 2.

表1低泄漏量风量调节阀推荐高度表

Table 1 table of recommended height for low leakage air volume control valve

有效高度(mm) Valid height															
107	125	135	143	155	167	173	186	196	206	255	273	281	291	299	310
321	329	340	356	403	421	432	442	450	460	471	480	489	500	509	517
555	569	580	588	598	609	617	625	632	641	650	661	670	678	699	717
728	735	746	754	765	775	782	793	800	802	811	820	831	839	847	865
876	884	894	902	905	913	921	925	943	954	961	972	981	992	995	1000
1013	1024	1032	1042	1050	1061	1069	1086	1104	1115	1124	1133	1143	1153	1161	1172
1180	1190	1198	1201	1209	1217	1247	1265	1276	1285	1294	1305	1309	1320	1328	1338
1349	1357	1365	1408	1426	1437	1440	1445	1455	1466	1475	1486	1494	1497	1505	1513
1569	1587	1598	1605	1616	1624	1634	1645	1653	1661	1730	1735	1748	1753	1759	1768
1772	1777	1785	1790	1801	1809	1883	1901	1909	1920	1930	1941	1949	1956	1966	2031

表2普通型风量调节阀推荐高度表

Table 2 table of recommended height for ordinary type air volume control valve

有效高度(mm) Valid height												
102	110	120	130	140	150	160	170	180	190	200	210	
220	250	260	270	280	290	300	310	320	330	340	350	
360	370	380	390	400	430	440	450	460	470	480	490	
500	510	520	530	540	560	580	600	610	620	630	640	
650	660	670	680	690	700	710	730	760	770	780	790	
800	810	820	830	840	850	860	870	880	900	930	940	
950	960	970	980	990	1000	1020	1090	1100	1150	1200	1250	
1300	1310	1320	1330	1340	1370	1400	1420	1440	1450	1470	1480	
1500	1560	1580	1600	1620	1640	1650	1660	1720	1740	1760	1780	
1800	1820	1840	1850	1900	1920	1940	1950	1960	1980	1990	2000	

注：1 A×B为风量调节阀的有效宽度和有效高度，法兰高度H根据GB50243-2002的要求或均按设计要求。

2 用户所需风量调节阀的有效高度与上表不同时，请与我公司联系，我们将能满足您的要求，有效宽度可按用户的实际要求进行制造。

note: 1. Get the valid width and height of the air volume control valve by A × B, the flange height is according to the requirements of GB50243-2002 or design.

2. If the valid height of air volume control valve required by the user is different from that in the table above, please contact our company. We will be able to meet your requirements. The valid width can be manufactured according to the user's actual requirements.





五、FT系列风量调节阀的泄漏量

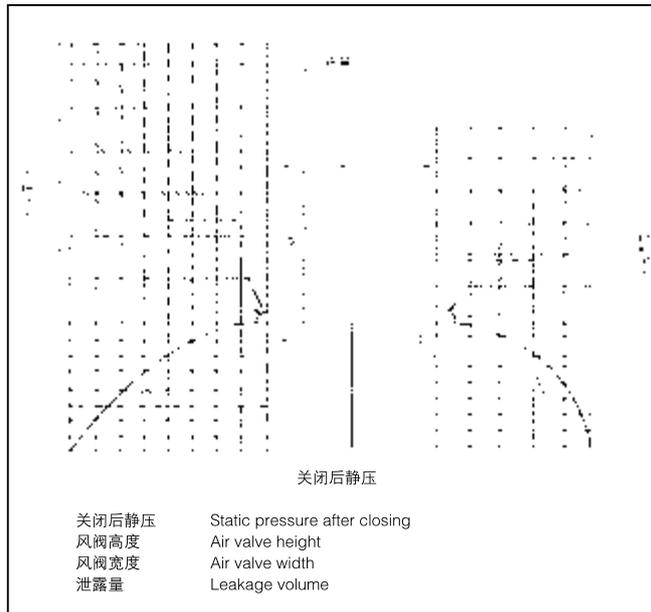
FT series air volume control valve leakage volume

FT系列风量调节阀按其泄漏量大小可分为普通风量调节阀和低泄露量风量调节阀。其泄露量符合JG/T7436-2014之要求。即普通风量调节阀其泄露率 $\leq 2\%$ 。对于低泄露量风量调节阀其泄露量可由图一求出。例：一个宽度1000mm，高900mm关闭后承受静压为1000Pa的低泄露量风量调节阀，其泄露量按下列步骤求出。

- 1、从关闭后静压为1000Pa点出发，向左引水平线与曲线1相交于a点，从a点出发引垂线与风阀的给定高度900mm的斜线相交于b点，从b点引水平线与A线相交于c点。
- 2、从关闭后静压为1000Pa点出发，向右引水平线与曲线2相交于d点，从d点出发引垂线与风阀的给定高度1000mm的斜线相交于e点，从e点引水平线与B线相交于f点。
- 3、连接c和f点，此连接线与C线相交点即为最大泄露量135m³/h。

FT series air volume control valves can be divided into ordinary air volume control valve and low leakage air volume control valve according to their leakage capacity. The leakage rate of ordinary air control valves is 2% or less which meets the requirements of JG/T436-2014. For the low leakage rate air volume control valve, the leakage rate can be calculated from Picture 1. For example: a 1000 mm wide, 900mm high low leakage rate air volume control valve, when turned off, its endured static pressure is 1000 pa, the leakage rate can be calculated by the following steps.

1. Let us suppose the static pressure is 1000 pa after the valve closes off. Starting from the static pressure number 1000 we draw a horizontal line intersecting with curve 1 at Point a. From Point a we draw a perpendicular line that intersects with the diagonal from a given height 900mm of the air valve and the intersection is Point b. Then draw a horizontal line from Point b which intersects with Line A at point c.
2. Still let us suppose the static pressure is 1000 pa after the valve closes off, we draw a horizontal line rightward to intersect Curve 2 at Point d. From Point d we draw a perpendicular line that intersects with the diagonal from a given height 1000 mm of the air valve and the intersection is Point e. Then draw a horizontal line from Point e which intersects Line B at point f.
3. Connect Point c and Point f to create a line, this line intersects Line C at some point and this point shows the maximum leakage volume is 135m³/h.



图一 低泄露型风量调节阀泄露量曲线

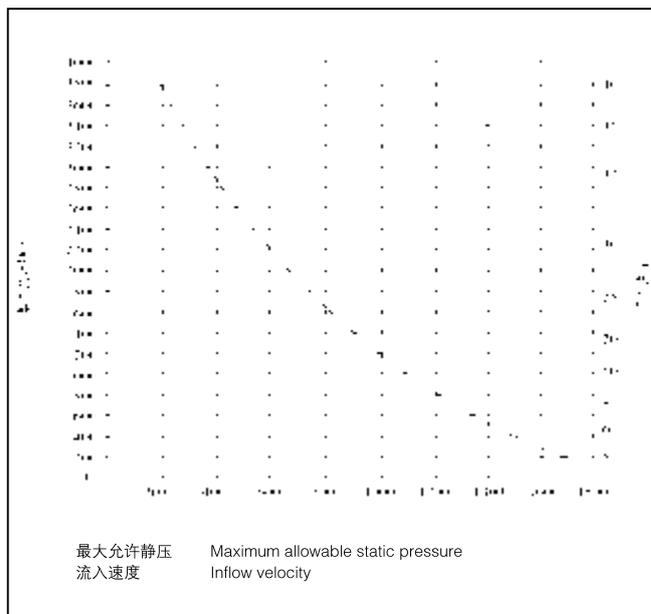
Picture 1 Leakage volume curve of the low leakage volume air flow control valve

六、FT系列风量调节阀最大允许静压及流入速度

Maximum allowable static pressure and inflow velocity of FT series air flow control valve

风阀承受的静压是风阀全关时所承受的压力。流入速度是风阀全开时气体流经风阀时的速度。风阀的最大允许静压及流入速度与风阀的有效宽度成反比，即风阀的有效宽度越小，其最大允许静压和流入速度越大。如图二曲线所示。

The static pressure borne by the air valve is the pressure when the air valve is fully closed. The inflow velocity is the velocity of the gas flowing through the valve when the air valve is fully open. The maximum allowable static pressure and inflow velocity of the air valve are inversely proportional to the valid width of the air valve, namely the smaller the valid width of the air valve is, the greater the maximum allowable static pressure and inflow velocity will be. Refer to Picture 2.



图二 风阀宽度与最大允许静压及流入速度曲线

Picture 2 Curve of air valve width and maximum allowable static pressure and inflow velocity

ZFT系列组合式风阀

ZFT series combination air valve

一、概述

Overview

ZFT系列组合式风阀是我公司在FT系列风量调节阀的基础上研制开发的一种大型组合式风阀。它以FT系列风量调节阀为基础单元（简称单体阀），通过传动机构将若干个单体阀组合成一个可同步运行的大型组合式风阀。它具有FT系列风量调节阀的全部优点，同时也具有组合方便灵活，可适应不同通风道截面积之需要，并具有维护简单等优点。

组合式风阀采用耐高温的低泄漏量的单体阀（ $-50^{\circ}\text{C}\sim+205^{\circ}\text{C}$ ）和耐高温的执行机构（ $+150^{\circ}\text{C}$ 正常工作一小时），可满足美国国家防火协会制定的有轨交通系统标准NFPA-130中关于在地下铁道中通风排烟设备之要求。

我公司生产的大型组合式风阀可以广泛应用于地下铁道的通风排烟系统之中，是实现各种环控通风模式的重要部件。除应用于地下铁道的通风排烟系统之外，也可应用于具有不同技术要求的大型厂房，仓库，地下坑道等需要大通风量的场所的通风排烟系统之中。

根据使用对象的技术要求，组合阀中的单体阀，可以选用普通型、低泄漏量型、高温型（ $-50^{\circ}\text{C}\sim+205^{\circ}\text{C}$ ）、常温型（ $-40^{\circ}\text{C}\sim+95^{\circ}\text{C}$ ）等不同类型的风阀。从而保证组成的组合阀具有最佳的价格性能比。

ZFT series combination air valve is a kind of large combination air valve developed by our company on the basis of FT series air volume control valve. It is based on the FT series air volume control valve unit (single-body valve for short). Through the transmission mechanism several single-body valves can be combined into a synchronously operated large combination type air valve. It has all the advantages of FT series air volume control valve and also has the advantages of convenient and flexible combination, easy adaption to the needs of cross-sectional area of different ventilation duct and simple maintenance.

Combination air valve which adopts high temperature resistant low leakage single-body valve ($-50^{\circ}\text{C}\sim+205^{\circ}\text{C}$) and high temperature resistant actuating mechanism (under the temp. of $+150^{\circ}\text{C}$, its normal working time is one hour) can meet the equipment requirements of ventilation and smoke exhaust in underground railway of rail traffic system standard NFPA-130 made by the US National Fireproof Association.

The large-size combination type air valve manufactured by our company can be widely used in the ventilation and smoke exhaust system of underground railway and it is an important component to realize various environmental control ventilation modes. In addition to the ventilation and smoke exhaust system used in the underground railway, it can also be used in the ventilation and smoke exhaust system of large factories, warehouses, underground tunnels and other places requiring large air volume with different technical requirements.

According to the technical requirements of the application object, we can choose common type, low leakage type, high temperature type ($-50\sim+205$) and normal temperature type ($-40\sim+95$) and other different types of air valves as the single-body valves in the combination valve to ensure that the combination valve has the best cost performance.

二、ZFT系列组合式风阀的主要性能

Main performance of ZFT series combination air valve

- 1、组合式风阀的使用温度、泄漏量、流量特性、允许静压等由所选用的单体阀所决定。
- 2、叶片轴的最大允许扭矩为35NM。
- 3、组合式风阀的规格尺寸由用户提出要求，我公司负责按实地情况和要求进行单独设计。
- 4、组合式风阀的有效通风面积为80%。
- 5、驱动方式：手动、电动、气动等。
- 6、安装方式：水平安装或立式安装（视现场情况而定）。

1. The temperature, leakage volume, flow characteristics and allowable static pressure of the combination air valve are all determined by the single-body valves.
2. The maximum allowable torque of the blade shaft is 35NM.
3. Size of the combination air valve are selected by the user and our company is responsible for the separate design according to the field conditions and requirements.
4. The effective ventilation area of the combination air valve is 80%.
5. Driving mode: manual, electric and pneumatic modes.
6. Installation type: horizontal or vertical installation (depend on the field condition)

三、组合式风阀的结构

Structure of combination air valve

组合式风阀的结构如图三所示

组合式风阀主要由单体阀、框架、传动机构和执行机构等部件组成。

框架是组合式风阀的骨架，根据组合阀的大小及所承受的静压选用不同型号的槽钢焊接而成。由两个单体阀构成的组合式风阀可不用框架，而直接用夹板和螺钉将二个单体阀组合在一起。

组合式风阀的传动机构采用典型的平面四杆机构，该传动机构结构简单、可靠、便于维修和调整。其传动示意图如图四所示。根据用户负载的大小，我公司可提供多种规格的传动机构。

组合式风阀的单体阀，根据组合阀对泄漏量，耐高温等要求选择FT系列中的不同类型之风阀，做为单体阀。组合式风阀执行机构可以选用电动，气动或手动等各种驱动方式。我公司将根据用户的要求提供各种类型的执行机构。如果用户已选择好执行机构，我公司将按用户要求将其执行机构与组合式风阀组合在一起。



为了方便现场操作和调试，本公司可根据用户要求提供电动执行器的现场操作器。该操作器可实现阀位控制状态等的实时显示，故障的声光报警，在该操作器上可预制最佳开启角度，实现对风阀的开启及关闭控制，当操作器处于远方时可接受控制中心的控制信号，实现远方控制。

The structure of combination air valve is shown in Figure 3

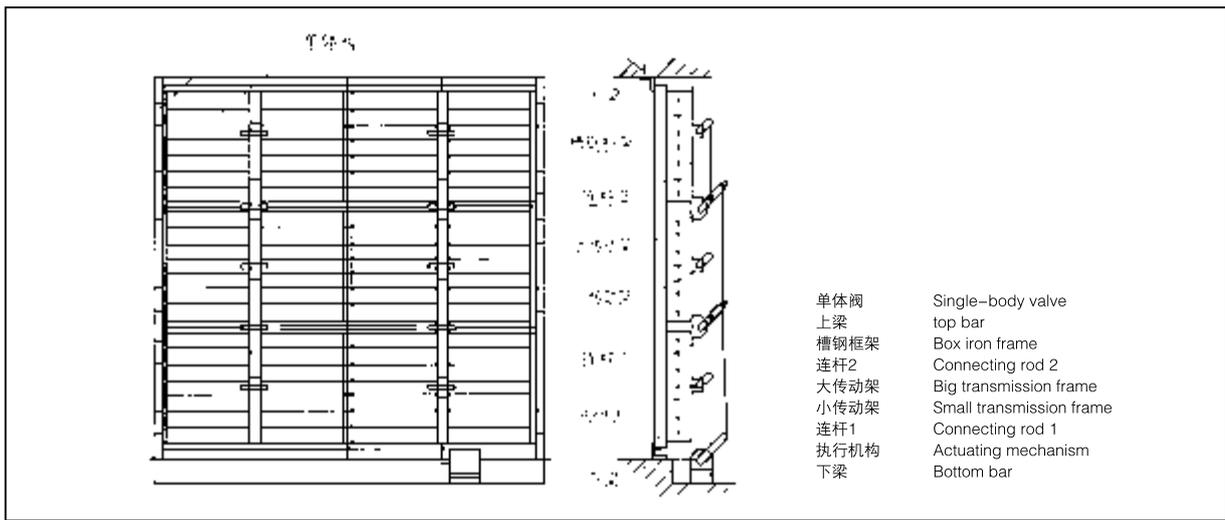
Combination air valve is mainly composed of single-body valve, frame, transmission mechanism, actuating mechanism and other components.

The frame is the skeleton of combination air valve into which different types of box iron is welded according to the size and endured static pressure of the combination valve. It is unnecessary to use framework if the combination valve is composed of two single-body valves. The two single-body valves can be combined together by means of splint and screw.

The transmission mechanism of the combination air valve adopts the typical plane four-bar mechanism, which is simple in structure, reliable, convenient for maintenance and adjustment. Its transmission sketch is shown in Figure 4. According to the users' load, our company can provide the transmission mechanism with a variety of specifications.

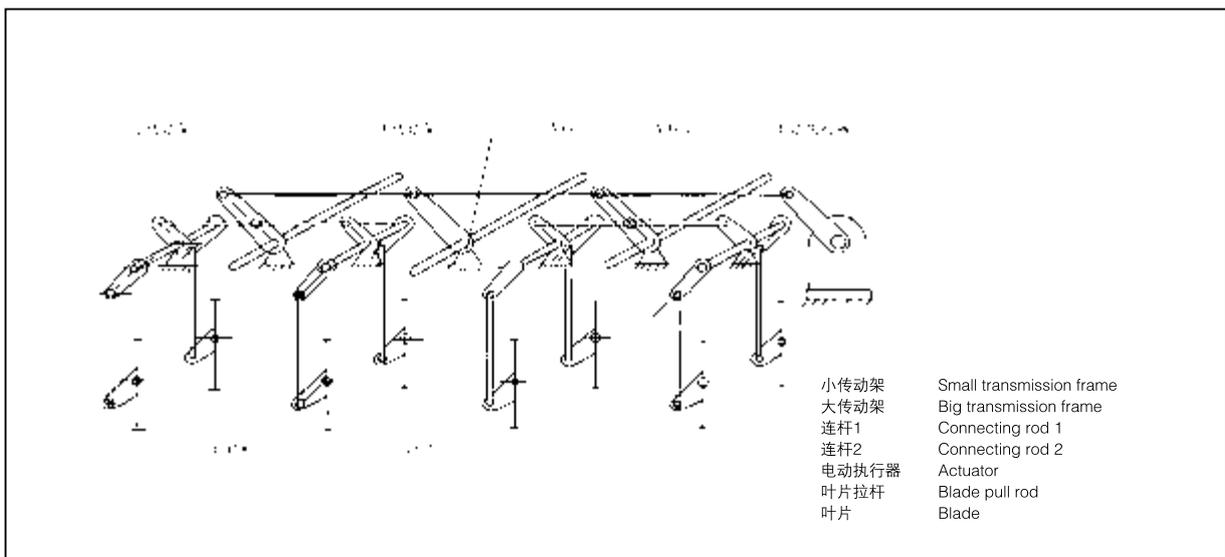
According to the requirements of combination air valve for leakage and temperature resistance, different types of air valve in F T series are selected as single-body valve. The actuator of the combination air valve can be chosen electric, pneumatic or manual driving mode and so on. Our company will provide various types of actuators to our users according to their requirement. If the user had chosen the actuating mechanism, my company would be able to combine the actuator with combination air valve together.

In order to facilitate the field operation and debugging, the company can provide field operator of electric actuator according to user's requirements. The operator can show real-time control state of the valve position and send out sound and light alarm when the valve is in trouble. The user is able to prefabricate the best opening angle on the operator to realize on and off control of the air valve. When in a long distance from the air valve, the operator can receive the signal from control center to conduct remote control.



图三 组合式风阀结构

Figure 3 Combination air valve structure



图四 组合式风阀传动示意图

Figure 4 Transmission sketch of the combination air valve

四、组合式风阀的安装

Installation of combination air valve

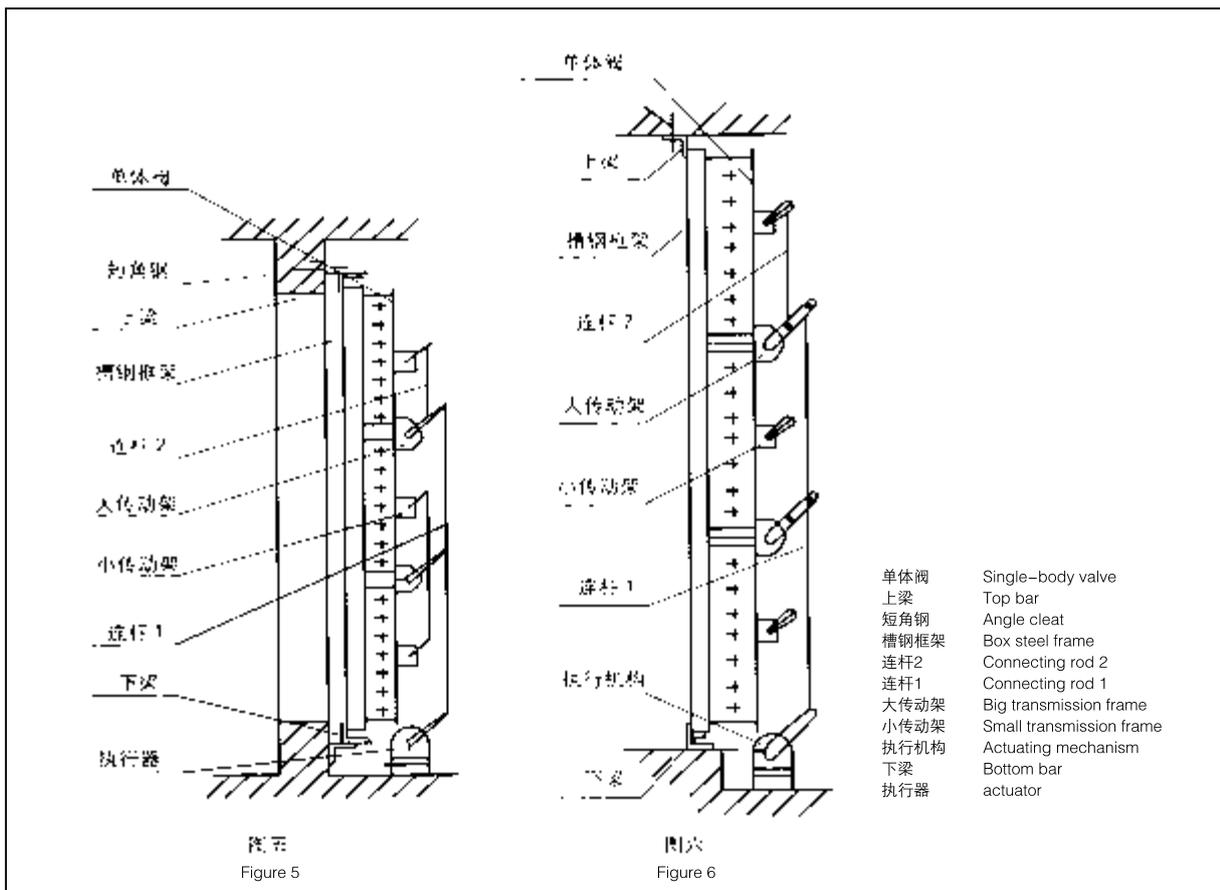
组合式风阀一般尺寸均较大，在工厂组装调试合格后拆成部件运至工地，在工地重新装配安装，根据现场情况采用不同的安装方式，图五、图六，给出二种立式安装方式的示意图。如将该图逆时针旋90°即变为水平安装方式，组合式风阀的安装顺序如下：

- 1、上下梁的安装
- 2、按顺序将框架安装在上下梁上
- 3、将单体阀按顺序安装在框架上
- 4、安装传动机构
- 5、安装执行机构
- 6、调试



The combination air valve generally has a large size. After qualified assembly and debugging in the factory, the disassembled parts will be transported to the construction site for re-assembly and installation. Different installation methods are adopted according to different field conditions. Figure 5 and 6 have given two vertical installation methods. If the figures spin 90° counterclockwise, then they are the horizontal installation sketches. The combination air valve installation sequence is as follows:

1. Installation of top and bottom rods
2. Orderly place the frame on the top and bottom rods
3. Orderly place the single-body valve on the frame
4. Install transmission organism
5. Install actuating mechanism
6. Debugging



立式安装示意图
Vertical installation sketch



LFT铝合金风量调节阀

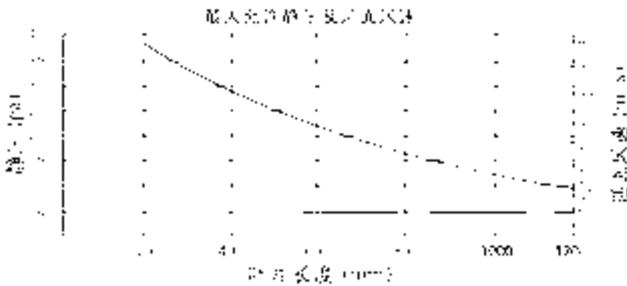
LFT Aluminum alloy air volume control valve

一、概述

Overview

- ◆ 高强度铝合金翼形对开风叶及框架，也可以用铝板冷轧成形，焊接而成。
- ◆ O型密封胶条，有效防止泄漏，采用特种橡胶制成，具有更长寿命。
- ◆ 驱动齿轮，防腐蚀，耐磨损，隐蔽于铝合金框架之内，可避免积灰及损伤，使操作轻便可靠。
- ◆ 高度按叶片模数增减，长度可由客户任意指定尺寸。
- ◆ 手柄可锁定于任意角度，亦可选配各种电动执行器
- ◆ 使用温度范围：-40~80℃。

- ◆ High-strength aluminum alloy wing-shaped opposed blade and frame; can also be welded and formed after the aluminum plate is cold rolled.
- ◆ O-shaped sealing tape can effectively prevent leaking. It is made of special rubber which can have a longer life.
- ◆ Drive gear is anti-corrosion and anti-wear, hidden in the aluminum alloy frame. It can avoid dust and damage, making the operation light and reliable.
- ◆ The height can be increased or decreased according to the blade modulus and length can be specified by customers.
- ◆ The handle can be locked at any angle and various electric actuators are also available.
- ◆ Operating temperature range: -40~80℃.



最大静压：指风阀全开时所承受的压力。最大迎面风速指风阀全开时气流进入风阀的速度。

最大允许静压及迎面风速

静压

迎面风速

叶片长度

最大静压指风阀全开时所承受的压力，最大迎面速度指风阀全开时气流进入风阀的速度

Maximum allowable static pressure and head-on air velocity

Static pressure

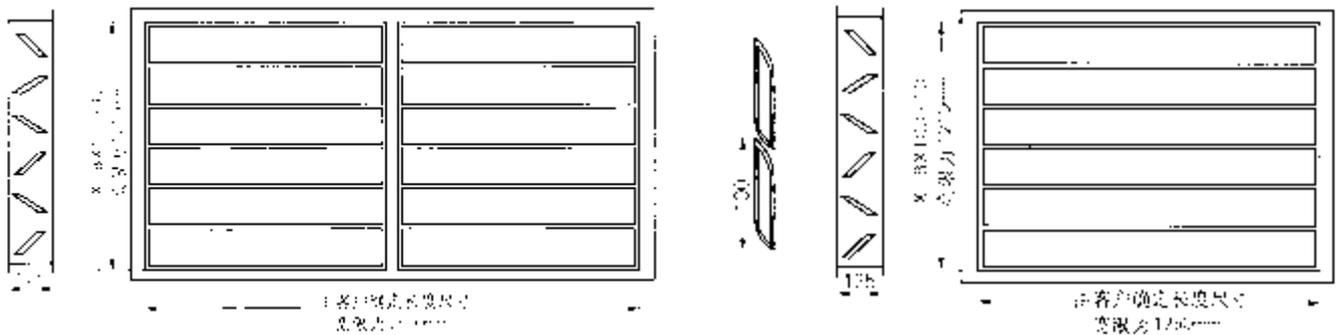
Head-on air velocity

Blade length

The maximum static pressure refers to the endured air pressure when the valve is fully open and the maximum head-on velocity refers to the velocity of airflowing into the valve when the valve is fully open.

二、铝合金风量调节阀结构尺寸图

Dimension diagram of aluminum alloy air flow control valve



高限为1210mm
由客户确定长度尺寸
宽限为2500mm

Height limit is 1210mm
Length is determined by users
Width limit is 2500mm

驱动扭矩

Driving torque

面积 Area	≤0.8	0.8-1.5	1.5-3.0
扭矩 Torque	4	8	15

ZFT系列风量调节阀

ZFT series air volume control valve

一、概述

Overview

ZFT支风管风量调节阀是我公司开发的新型风量调节阀，它集国外及国内多家风阀之优点。具有结构简单合理、泄露量小、摩擦力矩小、运转灵活、叶片钢性好、耐腐蚀、等优点。可以广泛用在工业和民用空调及通风系统中，以达到精确控制风量的目的。

适用：支风管风量调节阀，一般用在空调，通风系统管道中，用来调节支管的风量，也可用在新风与回风的混合调节。该阀体分为手动和电动两种。

ZFT branch air duct volume control valve is a new type of air volume control valve developed by our company. Optimizing the advantages of many air valves from both home and abroad, It boasts of simple and reasonable structure, small leakage, small friction torque, flexible operation, good blade rigidity, corrosion resistance etc. It can be widely used in industrial and civilian air conditioning and ventilation systems to achieve precise control of air volume.

Application: Branch air duct volume control valve, generally used in air conditioning and ventilation system pipes, is used to adjust air volume of the branch air duct. It can also be used to regulatemixed fresh air and return air. The valve body has manual and electric types.



二、ZFT系列风量调节阀订货代号

Ordering code of ZFT series air volume control valve

1	SZFT-手动对开多叶风量调节阀 (SZFT-1为矩形, SZFT-2为方形) SZFT-manual opposed multi-blade air volume control valve (SZFT-1 is rectangular; SZFT-2 is square outside and round inside.)
2	DZFT-电动对开多叶风量调节阀 (DZFT-1为矩形, DZFT-2为方形) DZFT-electric opposed multi-blade air volume control valve (DZFT-1 is rectangular, DZFT-2 is square outside and round inside.)

三、ZFT系列风量调节阀的主要技术参数

Main technical parameters of ZFT series air volume control valve

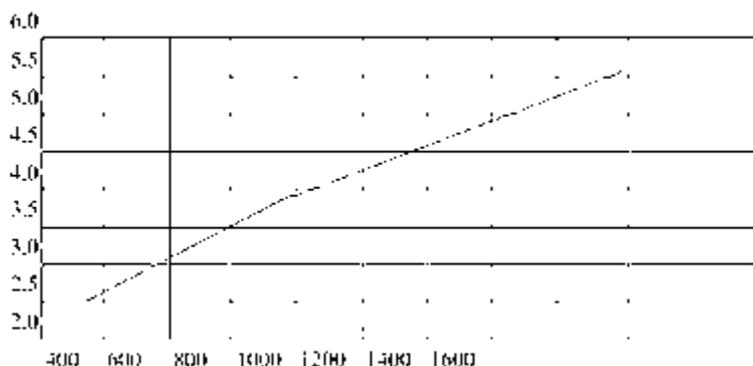
1	阀体厚度 Valve body thickness	70mm
2	阀体框架 Valve body frame	镀锌钢板 Galvanized steel sheet
3	叶片 Blade	铝合金机翼型材 Aluminum alloy wing section bar
4	叶片轴及连杆 Blade shaft and connecting rod	叶片轴为锌铝合金，连杆为45#镀锌钢钝化处理标 The blade shaft is made of zinc-aluminum alloy and the connecting rod is made of passivated 45# galvanized steel
5	泄漏率e(%) Leakage volume	准值2.00(阀两侧正压差2000pa时)检验值0.99 (阀两侧压差2002pa时) Standard value is 2.00(when the positive pressure difference between the two sides of the valve is 2000pa) test value is 0.99(when the pressure difference between the two sides of the valve is 2002pa)
6	阀的组合 Valve combination	除单体外，可由若干个风阀组合成较大的组合阀，单体阀中可联动同步运转 In addition to the single body valve, a number of air valves can form into a larger combination valve. Single body valves can be connected to realize synchronous operation
7	使用温度 Operating temperature	150℃
8	叶片轴允许最大扭矩 Allowable maximum blade shaft torque	40NM
9	流量特性 Flow characteristics	叶片对开时流量特性为等百分比 When the blades are operating in an opposed state, the flow characteristic is equal percent
10	驱动方式 Driving mode	手动、电动、气动 Manual mode, electric mode, pneumatic mode
11	最大允许静压及流入速度 Allowable maximum static pressure and inflow velocity	风阀承受的静压是风阀全关时所承受的压 The static pressure sustained by the air valve is the pressure when air valve is fully closed

流入速度是风阀全开时气体流经风阀时的速度。风阀的最大允许静压及流入速度与风阀的有效宽度成反比。即风阀的有效宽度越小，其最大允许静压和流入速度越大。

The inflow velocity is the velocity of the gas flowing through valve when the valve is fully open. The allowable maximum static pressure and inlet velocity of the air valve are inversely proportional to the effective width of the valve. Namely, the smaller the effective width of the valve is, the greater the allowable maximum static pressure and inflow velocity will be .



Qa: (m³/min.m²)



密闭风量调节阀 (400 × 400) 泄漏风量检验曲线

Air leakage volume test curve of enclosed air volume control valve(400 × 400)

Qa-风阀全关时, 单位面积每分钟泄漏风量 (m³/min.m²)
Δp-风阀全关时, 阀体两侧静压差 (pa)

Qa-air leakage per minute per unit area when the air valve is fully closed (m³/min.m²)
ΔP- static pressure difference on both sides of the valve body when the air valve is fully closed (pa)

四、ZFT风量调节阀的主要规格

Main specifications of ZFT air volume control valve

A 单位mm A Unit mm	B 单位mm B Unit mm	叶片数量 Blade number	调节器位置D 单位mm Regulator positionD Unit mm
100	100	2	25
150	150	3	25
200	200	4	125
250	250	5	125
300	300	6	125
350	350	7	125
400	400	8	225
450	450	9	225
500	500	10	225
550	550	11	225
600	600	12	325
650	650	13	325
700	700	14	325
750	750	15	325
800	800	16	325
850	850	17	425
900	900	18	425
950	950	19	425
1000	1000	20	425
1050	1050		
1100	1100		
1200	1200		
1250	1250		

注: 1.A × B是风管尺寸
2.表中所列A × B尺寸可任意组合
3.尽量选用标准尺寸

Remark: 1.Air duct dimension is A × B
2.The dimensions A × B listed in the table can be arbitrarily combined
3.It is suggested to choose standard size

其它类风阀

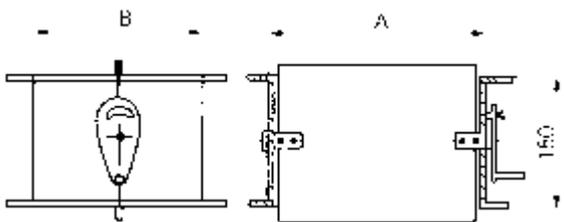
Other air valves

1、矩形钢制蝶阀FTD-1、方圆形FTD-2

Square outside, rectangular inside steel-made butterfly valve FTD-1; square outside, round inside steel-made butterfly valve

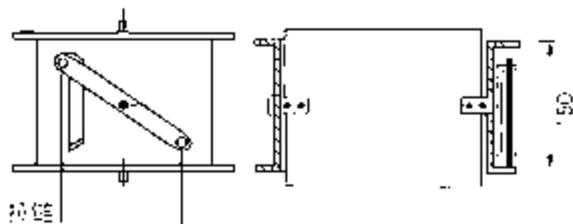
适用：方圆形、矩形钢制蝶阀与FT多叶对开调节阀一样在空调管道中起调节风量的作用，按使用方式，又分手柄式和拉链式。（注：拉链式订货时应注明水平安装或垂直安装。图示为垂直安装）

Application: The square outside, circular inside and square outside, rectangular inside steel-made butterfly valves, like the FT multi-blade opposed control valve, play the role of regulating air flow in the air conditioning pipelines. The valves can be divided into two types: handle type and zipper type. Note: horizontal or vertical installation should be noted when ordering zipper type. The following figures show the vertical installation.



FTD-1方、矩型手柄钢制蝶阀

FTD-1 square handle steel-made butterfly valve and rectangular handle steel-made butterfly valve



FTD-3方、矩型拉链钢制蝶阀

FTD-3 square zipper steel-made butterfly valve and rectangular zipper steel-made butterfly valve

注：FTD-2为方圆形，厚度L=230mm。 FTD-3为拉链式方圆形，厚度L=230mm。

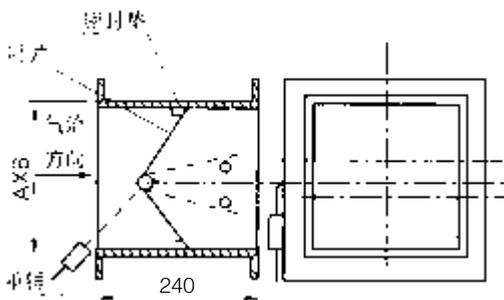
Remark: FTD-2 is square outside, circular inside. Its thickness L is 230mm. FTD-3 is zipper type square outside, round inside type. The thickness L is 230mm.

2、风管止回阀ZFT-1 ZFT-2 ZFT-3

Air duct check valve ZFT-1 ZFT-2 ZFT-3

止回阀一般用在空调管道中是使风机停转后防止气体倒流，要求风道中风速不小于8米/秒时使用，订货时要说明是垂直安装，还是水平安装，水平安装时要加装重锤，用以平衡上部叶片启闭灵活ZFT-3是用薄铝板制造成多叶的形式。只适用于水平安装。

Check valve is generally used in the air-conditioning pipeline to prevent reverse gas after fan stalling. It is used when air speed is no less than 8m/s. When placing the order, please give clear instruction about the installation type: vertical or horizontal. When horizontally installed, the check valve must be fixed with a heavy hammer to let the upper blades open or close easily. ZFT-3, which is only suitable for horizontal installation, is multi-blade type check valve made of thin aluminum plate.



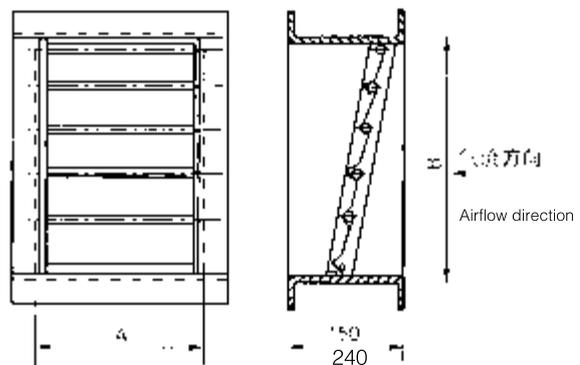
ZFT-1型止回阀

ZFT-1 check valve

密封垫 Gasket
叶片 Blade
气流方向 Airflow direction
重锤 Heavy hammer

注：ZFT-2为方圆形，厚度L=380mm。

Remark: ZFT-2 is square outside, round inside. Thickness L is 380mm.



ZFT-3型止回阀

ZFT-3 check valve

注：矩形200×200以内，厚度L=150mm。 止回阀Φ=200mm以内，厚度L=150mm。

Remark: if the dimension of rectangular check valve is 200mm×200mm, its thickness is 150mm. If the inside diameter of check valve is within 200mm, its thickness is 150mm.



3、余压阀YFT-1

YFT-1 Surplus pressure valve

适用：余压阀一般适用于密封空调房间和净化空调房间正压无能耗自动控制，余压阀的阀板在配重和重锤的合力矩作用下，密封阀板隔断室地内外的空气，调整重锤的位置，就可以调节关闭力矩的大小，让室内维持在某一正压，当室内压力超过该压力时，自动把阀门打开，排出一部分空气，保持室内的压力，使风机不在高负载下工作，这种阀门关闭后密封好，反应灵敏，调节方便，不耗能源，外观漂亮。

Application: The surplus pressure valve is generally used to carry out automatic control of positive pressure in enclosed air conditioning rooms and purification air-conditioning rooms without any energy consumption. The valve plate of surplus pressure valve, under the resultant moment of force of counterweight and heavy hammer, separates the air indoor from outdoor. Through adjusting the position of the heavy hammer to regulate the closing torque, the specific positive pressure inside the room can be maintained. When indoor pressure exceeds this pressure, the valve will automatically open to discharge part of the air, thus keeping the indoor pressure in a certain range. As a result, fan does not work under heavy load. The valve features good seal performance, fast response, convenient adjustment, no energy consumption and beautiful appearance.



格栅叶片
Grill blade
自垂叶片
Gravity blade
配重
Counterweight
尺寸
Size

序号 Serial number	规格A × B Specification
1	300 × 150
2	400 × 150
3	450 × 150
4	500 × 200
5	600 × 200
6	600 × 250
7	800 × 300

注：L尺寸由用户来订

Remark: the size of "L" is determined by users.

4、管道修理门GM

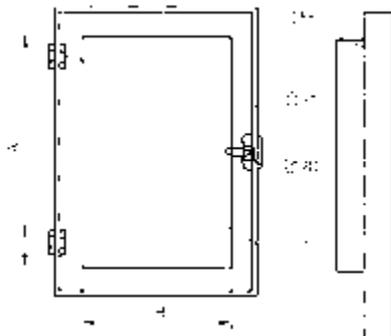
Pipe repairing door GM

运用：管道修理门通常安装在空调或通风系统的管道侧壁上，一般靠近阀门，便于检修各种阀门，如防火阀、止回阀、排烟阀。

结构：修理门分门、门框和附件部分，门中间填充厚度为25mm的超细玻璃棉，以减少冷热损失，门和门框都采用合叶连接，门上还装锁扣，在门关闭时可以锁紧，固定在门框上的密封胶条保证门的密封性。门和门框都采用0.6mm厚的镀锌钢板制造，耐用防锈。

Application: Pipe repairing door is usually installed on the side wall of the pipeline of the air conditioning or ventilation system, generally close to the valve for the maintenance of various valves such as fireproof valve, check valve and smoke exhaust valve.

Structure: Repairing door is consist of door, door frame and accessories. There is 25mm thick super-fine glass wool filling the inside part of the door to prevent cold or heat loss. The door, on which latch is fixed, and door frame are linked by hinge. The latch can lock tightly when door is closed. The sealant tape fixed on the door frame is to ensure the seal performance of the door. Both door and door frame are made of 0.6mm thick galvanized steel plate which is rustproof and durable.



门框
Door frame
合叶
Hinge
锁扣
Latch
门
Door

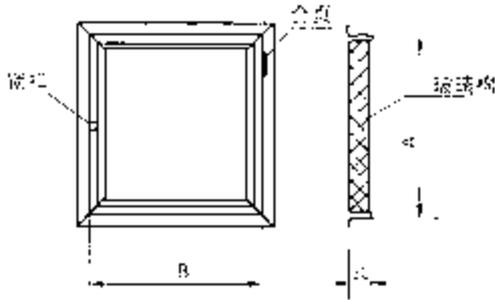
序号 Serial number	规格A × B Specification
1	150 × 150
2	200 × 150
3	300 × 200
4	400 × 200
5	400 × 300
6	500 × 300

5、吊顶检查门 DM-1、DM-2

Suspended ceiling inspection door DM-1, DM-2

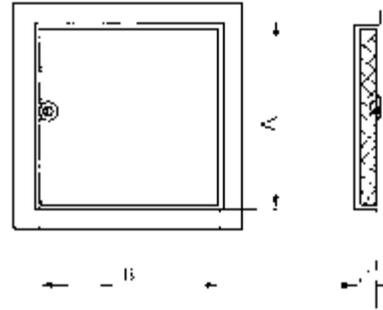
吊顶检查门通常安装在有空调通风管道的吊顶上，一般设在防火阀控制机构下侧，便于修理防火阀及控制机构的地方。

Suspended ceiling inspection door is usually installed on the suspended ceiling with air conditioning ventilation pipe, generally located under the bottom of the fire valve control mechanism to facilitate the repair of the fire valve and control mechanism.



铝合金吊顶检查门DM-1

Suspended ceiling inspection door made of aluminum alloy



镀锌钢板吊顶检查门DM-2

Suspended ceiling inspection door made of galvanized steel plate

锁扣 Latch
合页 Hinge
玻璃棉 Glass wool

6、蝶阀、止回阀、修理门、检查规格表

Butterfly valve, check valve, repairing door, inspection specifications

ZTF-1

FTD-1 FTY-2 FTD-3 ZTT-3

吊顶检查门DM-1 DM-2
Suspended ceiling inspection door
DM-1 DM-2

序号 Serial number	规格A×B Specifications	序号 Serial number	规格A×B Specifications	序号 Serial number	规格A×B Specifications
1	160×160	17	500×320	33	800×500
2	200×160	18	630×320	34	1000×500
3	200×200	19	800×320	35	1250×500
4	250×200	20	100×320	36	320×630
5	320×200	21	200×400	37	400×630
6	400×200	22	320×400	38	630×630
7	500×200	23	400×400	39	800×630
8	630×200	24	500×400	40	1000×630
9	250×250	25	630×400	41	1250×630
10	320×250	26	800×400	42	800×800
11	400×250	27	1000×400	43	1000×800
12	500×250	28	250×500	44	1250×800
13	630×250	29	320×500	45	1600×800
14	300×300	30	400×500	46	1000×1000
15	320×320	31	500×500	47	1250×1000
16	400×320	32	630×500	48	

序号 Serial number	方圆Φ Circumference
1	160
2	200
3	250
4	300
5	320
6	400
7	500
8	600
9	800

序号 Serial number	规格A×B Specifications
1	160×160
2	200×200
3	250×250
4	320×320
5	400×400
6	500×500
7	630×630

序号 Serial number	规格A×B Specifications	锁扣数 Number of latches
1	200×200	1
2	250×250	1
3	300×300	1
4	400×400	2
5	450×450	2
6	500×500	2



铝合金风口

Aluminum alloy air opening

一、送风类

Air supply series



FK-1 FK-19双层百叶式风口

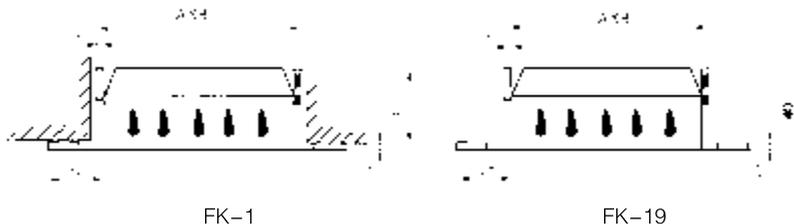
FK-1 and FK-19 double deflection grille

FK-1、FK-19型风口属双层调节百叶式送风口。本系列风口可直接与风机盘管配套使用，也可用于集中空调系统的末端。本风口的叶片角度可在0° -90° 范围内任意调节，将叶片调节成不同角度，可以得到不同的送风距离和不同的扩散角。叶片调节工具另行订货。

FK-1与FK-19的区别在于外框和叶片尺寸不同，FK-19为窄边框窄叶片风口，其余完全相同。风口还可配对开多叶调节阀，用以控制风量。本风口的安装方式，可根据用户需要及建筑格式的不同，采用各种方式。

FK-1 and FK-19 type air openings belongs to the double deflection grille. This series can be directly used with fan coil and also be used on the end of central airconditioning system. The blade angle of this air opening can be adjusted freely within the range of 0° -90° . We can get different air supply distance and divergence angle through adjusting the blade angle. The blade adjustment instrument should be ordered separately.

The difference between FK-1 and FK-19 is that the outer frame and blade dimensions are different. FK-19 has a narrow frame and narrow blades and the rest are exactly the same. Air opening can also be paired with opposed multi-blade control valve to control the air volume. The installation type of this air opening can be arranged according to different user's demand and architecture style.



FK-1

FK-19

FK-1 FK-19双层百叶式风口尺寸图

Dimension table of FK-1 and FK-19 double reflection grille

规格尺寸(mm) Dimension				100×100		100×150		100×200 150×150		100×250		100×300 150×200		100×400 200×200	
颈部风速 m/s Neck air speed	吹出角度 Air blowing out angle	全压损失 mmH ₂ O Total pressure loss	静压损失 mmH ₂ O Static pressure loss	风量 m ³ /h Air volume	到达距离 m Arrival distance										
1	A	0.13	0.07	36	1.01	55	1.23	70	1.42	90	1.59	110	1.74	125	2.01
	B	0.19	0.13		0.73		0.90		1.04		1.16		1.27		
	C	0.22	0.16		0.58		0.70		0.82		0.90		0.99		
	D	0.3	0.23		0.4		0.48		0.56		0.62		0.68		
2	A	0.53	0.28	72	1.71	110	2.08	140	2.42	180	2.69	220	2.94	250	3.41
	B	0.75	0.5		1.19		1.45		1.68		1.87		2.05		
	C	0.90	0.66		0.95		1.16		1.34		1.50		1.64		1.90
	D	1.19	0.94		0.71		0.87		1.01		1.12		1.23		1.42
3	A	1.18	0.63	108	2.23	165	2.82	210	3.26	270	3.63	330	3.98	375	4.61
	B	1.68	1.13		1.66		2.03		2.36		2.62		2.87		
	C	2.03	1.48		1.32		1.61		1.87		2.08		2.28		2.64
	D	2.67	2.12		0.98		1.20		1.39		1.55		1.70		1.97
4	A	2.11	1.13	144	2.63	220	3.22	280	3.73	360	4.15	440	4.45	500	5.27
	B	2.99	2.01		2.63		2.48		2.88		3.20		3.15		
	C	3.61	2.63		1.58		1.93		2.24		2.49		2.73		3.16
	D	4.74	3.76		1.16		1.42		1.65		1.83		2.02		2.33
5	A	3.29	1.76	180	2.83	275	3.45	350	4.00	450	4.45	550	4.88	625	5.65
	B	4.67	3.14		2.28		2.79		3.23		3.60		3.94		
	C	5.65	4.10		1.76		2.15		2.50		2.78		3.04		3.53
	D	7.41	5.88		1.30		1.59		1.84		1.84		2.24		2.60

FK-2 FK-20单层百叶式风口

FK-2 and FK-20 single deflection grille

FK-2; FK-20型风口属单层调节百叶式送风口，其叶片及边框分别与FK-1; FK-19型风口通用。常用此作为回风口，当作为回风口使用时经常与FK-5型铝合金过滤器配套使用，在此风口后面亦可装上多叶对开调节阀，用以控制风量。其安装方式相同于FK-1; FK-19型风口。

FK-2、FK-20区别在于外边框和叶片尺寸不同，FK-20为窄边框窄叶片，其余完全相同。FK-2; FK-20型风口结构形式分以下两种：



注：定货时，请注明叶片走向，如无注明，按FK-2B加工。

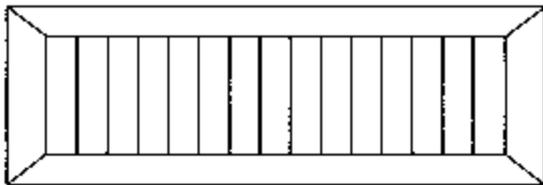
Remark: When ordering, please indicate the blade direction. If not, then it is processed according to the FK-2B standard.

FK-2 and FK-20 air openings are single deflection grille air supply outlets and their blades and frames respectively compatible with FK-1 and FK-19 air openings. These are also commonly used as return air inlets. When it is used as return air inlet, it is often used in combination with the FK-5 aluminum alloy filter. Multi-blade opposed control valve can be installed behind the air opening to control air volume. Its installation mode is the same as that of FK-1 and FK-19 air openings.

The differences between FK-2 and FK-20 are that their outer frames and blade sizes are different. FK-20 has a relatively narrow frame and narrow blades and the rest are the same as that of FK-2. FK-2 and FK-20 air opening structures can be divided into the following two forms.

叶片垂直于长边

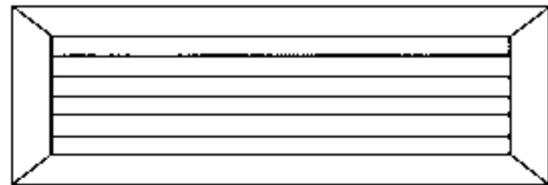
Blades are perpendicular to the long side



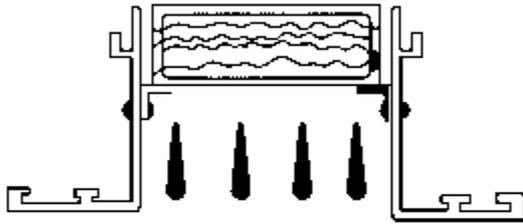
FK-2A 型 FK-20A 型

叶片平行于长边

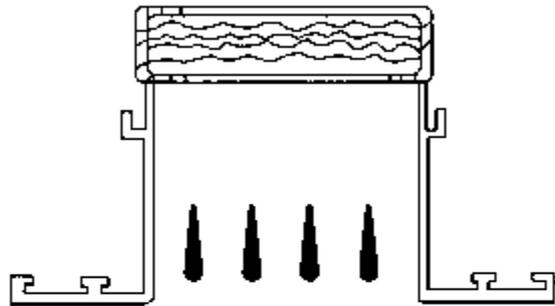
Blades are parallel to the long side



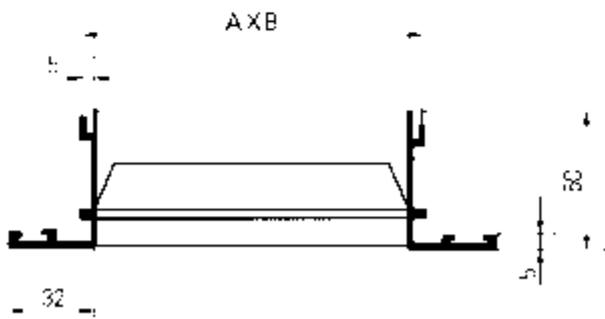
FK-2B 型 FK-20B 型



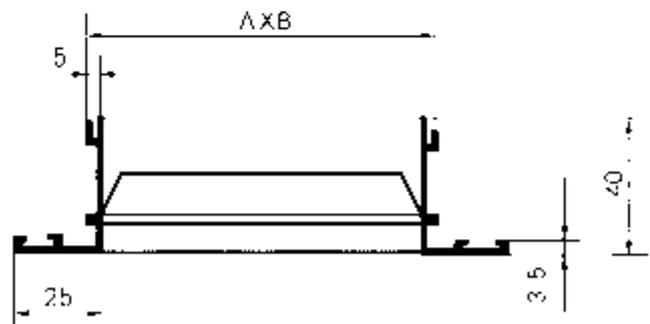
方式 I



方式 II



FK 2



FK 20



柜式、组合式空调机组
Cabinet, combination type air conditioning unit



吊顶式空调机组KD(D)系列
Ceiling suspension type air conditioning KD(D) series



风机盘管机组
Fan-coils



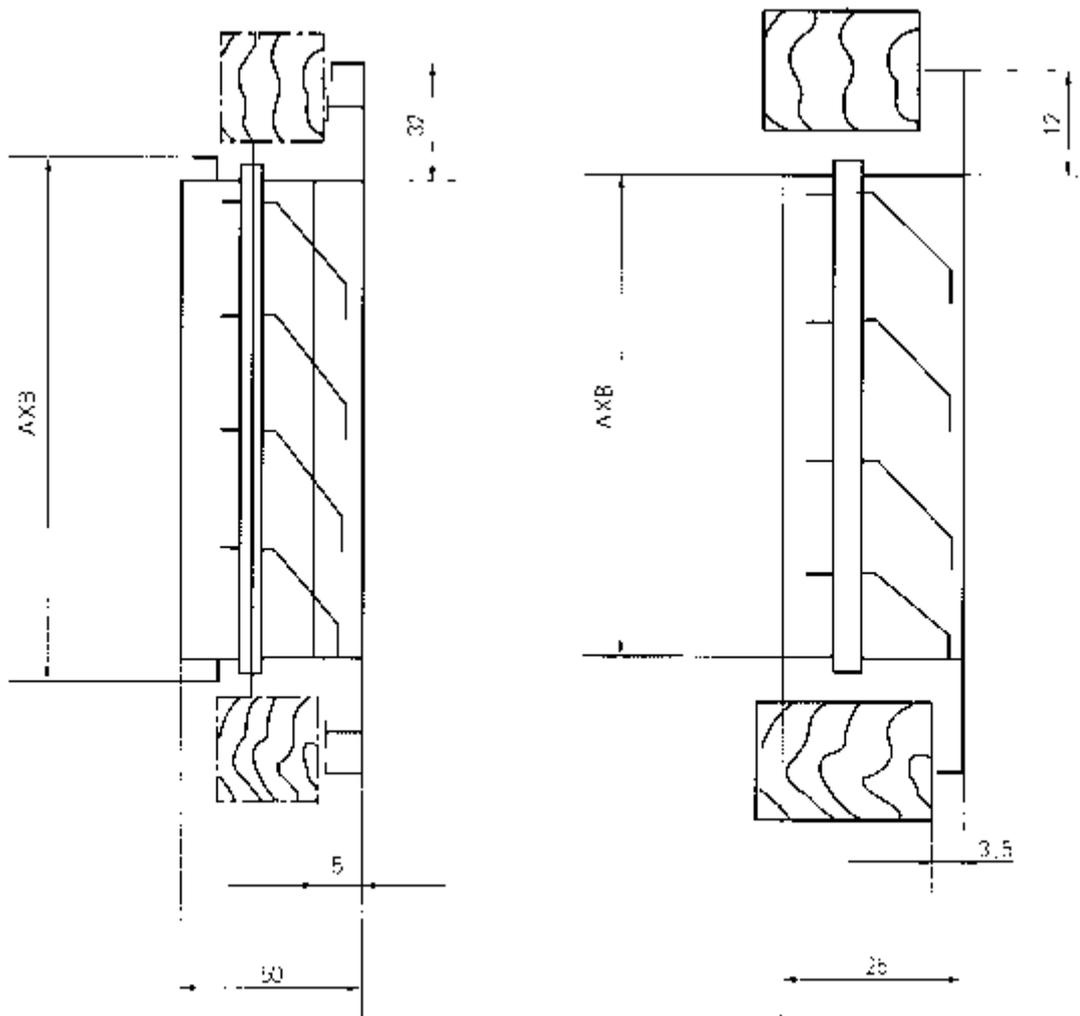
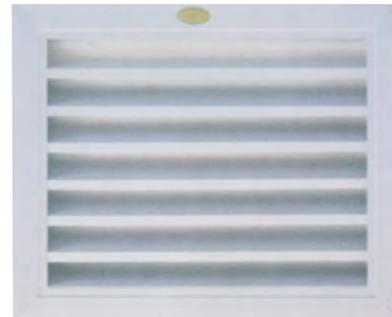
空调部件系列
Parts of air-conditioners

FK-4 FK-27侧壁格栅式风口

FK-4 FK-27 side wall grille type air opening

FK-4、FK-27型风口属侧壁格栅式风口，常用于洗漱间、卫生间的回风，电梯、管道口及检修口的装饰。此系列风口的叶片为固定式，其安装方式同FK-7型风口。FK-4与FK-27风口区别在于边框，叶片尺寸不同而形状相同，FK-27为小边框小叶片格栅回风口。

FK-4 and FK-27 type air openings belong to the side wall grille type air opening which is often used for washroom and bathroom air return, elevator, pipeline opening and repairing opening decoration. The blades of this series air opening are fixed and their installation mode is the same as that of FK-7 air opening. The difference between FK-4 and FK-27 air openings lies in the frame. The blade size is different but shape is the same. FK-27 is the grille return air inlet with small frames and small blades.



FK-4、FK-27 型风口侧尺寸图

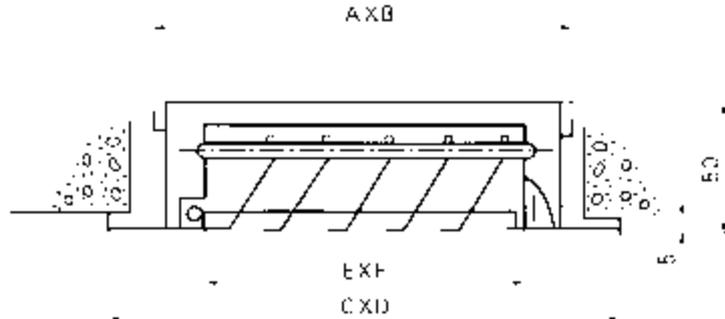
FK-4 and FK-27 air opening side dimension figure

FK-12可开式侧壁格栅式风口

FK-12 openable side-wall grille air opening

整个风口呈活门形式，活门与边框间开关自如，有利于安装和过滤器的配套使用，常用于客房的回风。与本风口配套的FK-5过滤器是固定在活门上，因此只要用手轻拨活门上两边的门栓，活门即可打开，便能够从活门上抽出或插入过滤器；关闭时，只要将活门推上，两边弹簧门栓即可自动上锁，外表平整如一。

The whole air opening is in the form of a small openable door. Free opening and closing between the small openable door and frame is conducive to the its installation and matching use of the filter. This air opening is often used for the air return of guestrooms. FK-5 filter, coupled with the air opening, is fixed on the small door. As long as with a gentle push of the latch on both sides of the door, the small door will open. Then the filter can be pull out or inserted into it; when closing, as long as the small door is pushed up, spring latches on both side can be automatically locked with an even appearance.



FK-12可开式侧壁格栅式风口尺寸图表

Dimension table of the FK-12 openable side-wall grille type air opening

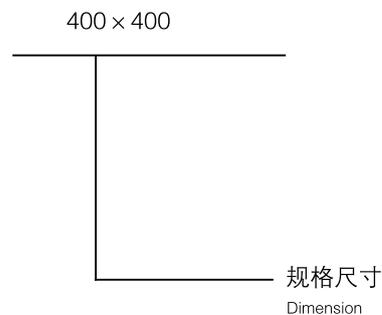
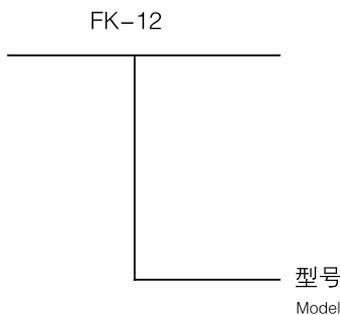
规格尺寸A x B Dimension	C x D	E x F	规格尺寸A x B Dimension	C x D	E x F
300 x 300	354 x 354	265 x 265	500 x 500	554 x 554	465 x 465
300 x 400	354 x 454	265 x 365	500 x 600	554 x 654	465 x 565
300 x 500	354 x 554	265 x 465	500 x 800	554 x 854	465 x 765
400 x 400	454 x 454	365 x 365	600 x 600	654 x 654	565 x 565
400 x 500	454 x 554	365 x 465	600 x 800	654 x 854	565 x 765
400 x 600	454 x 654	365 x 565	600 x 1000	654 x 1054	565 x 965

- 注：1、该风口叶片做成平行于长边，若有不同要求时，订货时特别注明。
2、规格尺寸A x B即为订货尺寸。A x B尺寸除表中规定的以外，可根据用户要求延长或缩短。但A x B尺寸应大夫174 x 174。

Remark: 1. The air opening blades are made parallel to the long side. If there are different requirements, please note when ordering.
2. Dimension A x B is the size for ordering. Dimension A x B may be lengthened or shortened upon user's request besides the sizes specified in the table. But Dimension A x B should be larger than 174 x 174.

标记示例

Example





柜式、组合式空调机组
Cabinet, combination type air conditioning unit



吊顶式空调机组KD(D)系列
Ceiling suspension type air conditioning KD(D)series



风机盘管机组
Fan-coils



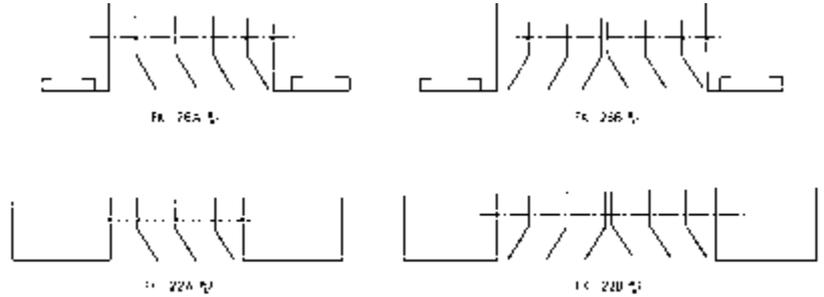
空调部件系列
Parts of air-conditioners

FK-22 FK-26固定叶片斜送风风口

FK-22 and FK-26 fixed blade inclined air supply opening

FK-22、FK-26型风口之叶片是固定式，为斜送风口，叶片斜角 24° 。FK-22型与FK-26型两风口的区别在于外框不同，其余完全相同，根据使用场所可采用单向斜送风或双向斜送风形式，叶片布置形式分为以下两种：此类风口设计新颖，造型美观，即可用做送风也可用做回风，因而颈部可陪多叶对开调节阀又可配过滤器。

The blades of FK-22 and FK-26 type air openings are fixed. They are inclined air supply outlet with a blade inclined angle of 24° . The difference between the two types of air openings lies in their frames with the rest are all the same. According to the operation places, you can choose one-way inclined air supply form or two-way inclined air supply form. The following are the two kinds of blade arrangement types: this series air opening has a novel design and aesthetic shape which can be used to supply or return air. So a multi-blade opposed control valve and a filter can be fixed to its neck.

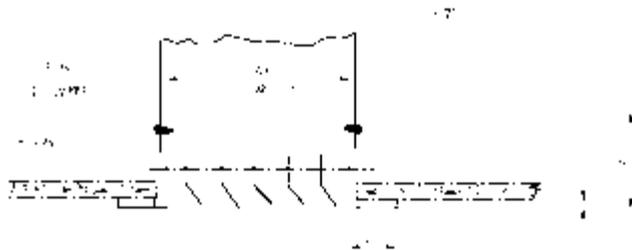


FK-22、26型风口叶片布置图
(沿外框方向剖切，即叶片平行于长边制造)

Blade arrangement figure of FK-22 and FK-26 type air openings
(Cutting along the direction of the outer frame, namely, the blades are made parallel to the long side.)

FK-26固定叶片斜送风风口安装形式见下图

Installation figure of FK-26 fixed blade inclined air supply opening is as follows



风管
拉铆或自攻螺钉
天花板
规格尺寸

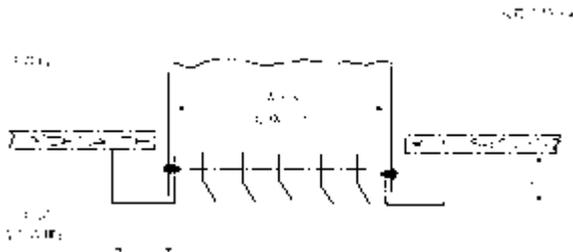
Air duct
Riveting or tapping screws
Ceiling
Dimension

FK-22固定叶片斜送风风口安装形式见下图

Installation figure of FK-22 fixed blade inclined air supply opening is as follows

FK-22型风口可安装在天花板上或侧墙上，外形露出天花板之外。亦可配装在静压箱上。除表中列出的规格系列尺寸之外，用户可根据需要自行选定。

FK-22 air opening can be fixed onto the ceiling or side wall with some part outside the ceiling. It can also be mounted on the static pressure box. In addition to the specifications listed in the table, users can choose other specifications as needed.



天花板
风管或静压箱
规格尺寸
拉铆或自攻螺钉

Ceiling
Air duct or static pressure box
Size
Riveting or tapping screws

标记示例

Example

FK-26

固定叶片斜风风口型号
Fixed blade oblique air leaving air opening model

300X500

AXB的尺寸
AXB size

FK-21地送风固定百叶风口

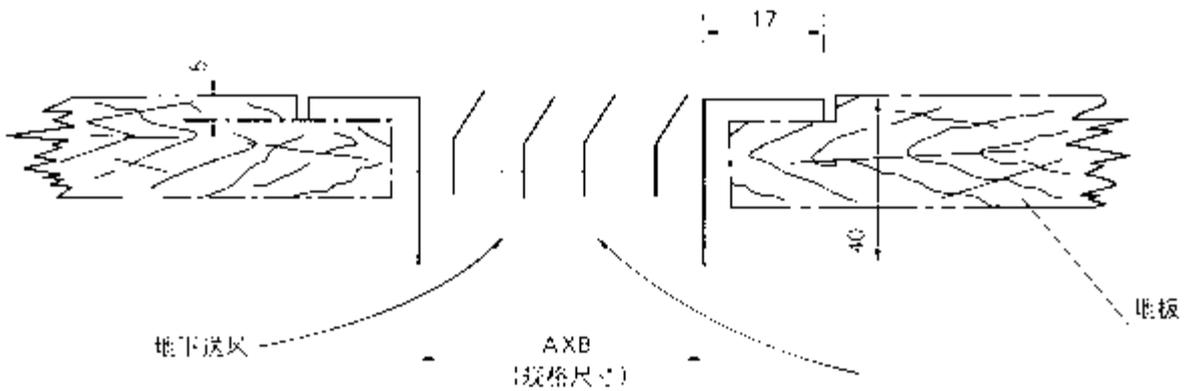
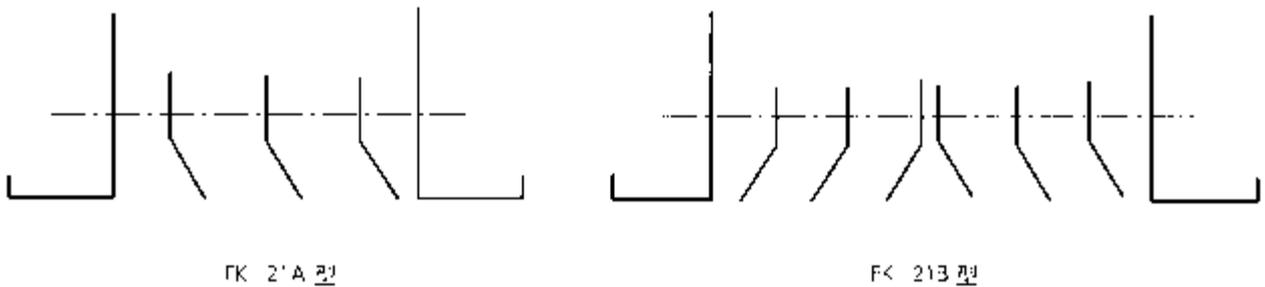
FK-21 ground air supply fixed register

FK-21风口的百叶为固定形式，百叶与外框专门为地送风而设计的，型材钢性好，并斜向送风，斜度为11.3°。此风口有单向斜送风及双向斜送风两种形式，用户可根据使用场所选用。

The shutters of FK-21 air opening are fixed. Shutters and frame are designed specifically for ground air supply. Section bar has a good rigidity. The inclined angle of air supply is 11.3°. Users can according to the applied place to choose one-way oblique air supply type or two-way oblique air supply type.

叶片布置如下图

Blades arrangement is as follows



地下送风
地板
地送风固定百叶风口型号

Ground air supply
Ground
Ground air supply fixed register model

标记示例

Example



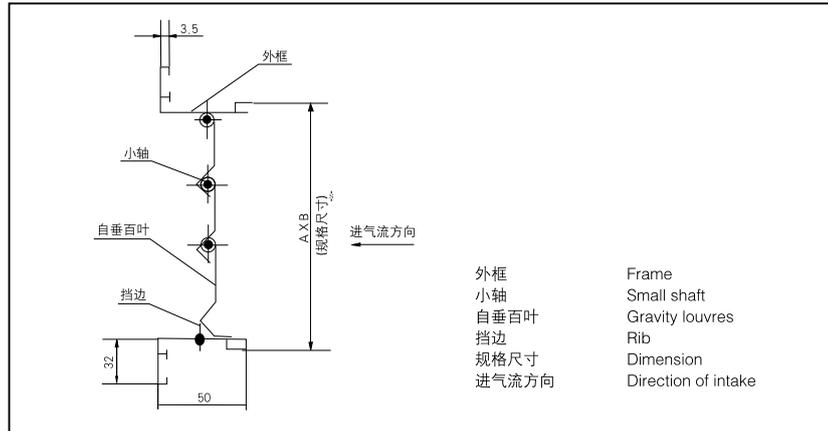


FK-14自垂百叶式风口

FK-14 gravity register

此风口用于具有正压的空调房间自动排气。通常情况下靠风口的百叶自重而自然下垂，隔绝室内外空气交换，当室内气压大于室外气压时，气流将百叶吹开而向外排气，反之室内气压小地室外气压时，气流不能反向流入室内，该风口有单向止回作用。

This air opening is used for automatic air discharge in an air-conditioned room with positive pressure. Usually air exchange is cut off by the naturally drooping louvers near the air opening because of its own gravity. When the indoor air pressure is larger than the outside air pressure, air will blow open the louvers and flow outside. Whereas when the indoor air pressure smaller than outdoor air pressure, air can't reversely flow into the room. The air opening has a one-way check function.



FK-14型风口的结构、尺寸图
Structure and dimensions of FK-14 air opening

FK-28遮光百叶

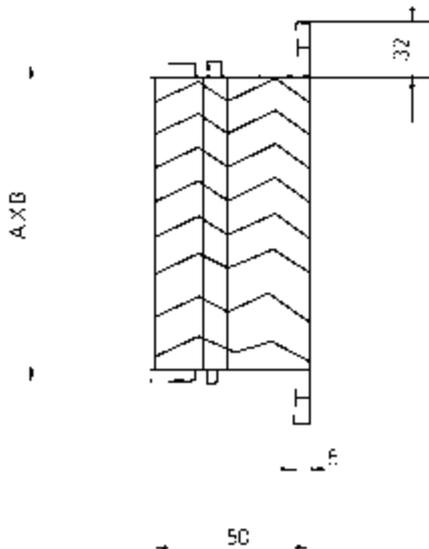
FK-28 shading shutters

此风口为暗室通风且避光的要求而特别设计和制造，多用于暗房通风风口。

This air opening is specially designed and manufactured for the requirements of dark room ventilation and light shading.

结构尺寸如下

The structural dimensions are as follows



FK-28遮光百叶风口规格表 单位mm

Specifications of FK-28 shading register

规格尺寸 (A×B) Size	规格尺寸 (A×B) Size
200×200	400×500
200×300	400×600
300×300	500×500
300×400	500×600
400×400	600×600

标记示例

Example

FK-14
自垂百叶式风口型号
Model of gravity register

300X400
AXB的尺寸
A×B size

FK-10 FK-31四面吹散流器

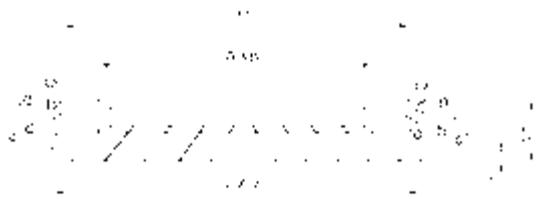
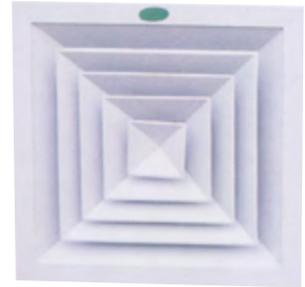
FK-10 and FK-31 four-direction blowing diffuser

FK-10型风口为方形散流器，气流型属贴附（平送）型。适用于播音室、医院、剧场、教室、音乐厅、图书馆、游艺厅、剧场休息厅、一般办公室、商店、旅馆、饭店及体育馆等。为了使人们在各种环境里避免噪音的干扰以及不适感，除了按性能表确定颈部风速外，还需要考虑安装高度及安装场合。

FK-31型风口是在FK-10的基础上发展而成的，其差别：FK-10是正方形的，FK-31是长方形的，结构形式基本上一样。

FK-10 air opening is a square diffuser, and the airflow belongs to adhesion (flat delivery) type. Suitable for broadcasting studio, hospital, theatre, classroom, concert hall, library, entertainment hall, theatre lounge, ordinary office, shop, hotel, restaurant and gymnasium, etc. In order to avoid noise interference and discomfort in various environments, besides determining the neck air speed according to the performance list, the installation height and the installation site should also be considered.

FK-31 air opening is developed on the basis of FK-10, and their differences are: FK-10 is square while FK-31 is rectangular and their structures are basically the same.



FK-10、FK-31尺寸图
Dimension figure of FK-10 and FK-31



FK-10正面图
FK-10 front view

FK-31正面图
FK-31 front view

安装高度制约颈部风速的最高限度

The maximum limit of neck air speed is limited by installation height

风口安装高度 Air opening installation height	风口颈部风速 Air opening neck air speed
2.1-2.7m	5.5m/s以下 Below 5.5 m/s
3-4.25m	7.5m/s以下 Below 7.5 m/s

FK-31规格尺寸表

Size list of FK-31

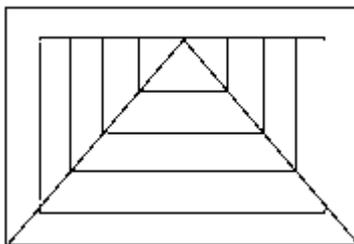
规格尺寸 A × B Size A × B	C × D	E × F
240 × 360	363 × 483	290 × 410
240 × 420	363 × 543	290 × 470
240 × 480	363 × 603	290 × 530
300 × 420	423 × 543	350 × 470
300 × 480	423 × 603	350 × 530
360 × 480	483 × 603	410 × 530

FK-37三面吹散流器

FK-37 three-direction blowing diffuser

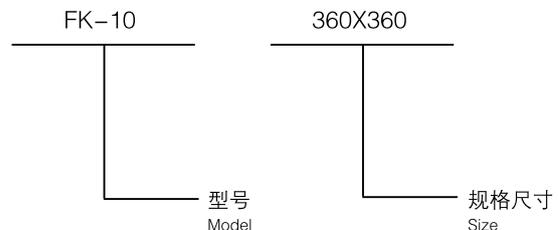
FK-37三面吹可为方形和矩形，型材结构与安装配套，规格系列同FK-10。该散流器安装在靠墙较近的天花板上向房间的中央送风，达到理想的效果。

FK-37 three-direction blowing diffuser can be square or rectangular. Section bar structure matches with installation and specification is as the same as that of FK-10. This diffuser installs on the ceiling close to the wall, supplying air to the center of the room to realize an ideal effect.



FK-37正面图
FK-37 front view

标记示例
Example





FK-39 FK-8圆形散流器

FK-39 and FK-8 circular diffuser

FK-39、FK-8型风口为圆形散流器，FK-8与FK-39不同之处FK-39中心和中间片有小翻边和挂钩不同。一般用与冷暖送风。通常安装在顶棚上。其吹出气流呈贴附（平送）型，其结构为多层锥面型。由于室内诱导气流大于排风量，因此吹出气流减速较快。因此相对任意大小面积来说可以供给较大风量，而且在给定的风量范围内扩散半径的大小变化。

若不采用排气室而使用FK-39、FK-8风口时，为使排气得到调整，需与FK-13型圆形对开调节阀配套使用。

FK-39、FK-8型风口结构裙边与接管组合一体，其他各层叶片为另一组合体，两组之间通过吊装件连接，装卸非常方便。同时也便于调整装在后面的圆形对开调节阀。

The air openings of FK-39 and FK-8 are circular diffusers. The differences between FK-8 and FK-39 are that the center and middle piece of FK-39 have small flanges and the hooks are also different. Generally they are used for cold and warm air supply. Normally they are mounted on a ceiling. Airflow belongs to adhesion (flat delivery) type with a multi-layer cone type structure. As the induction airflow in the room is larger than the exhaust air volume, the blowing airflow decelerates faster. Therefore, for any area of any size, it can supply a large amount of air. It can also regulate air diffusion radius for specified area.

If we use air openings of FK-39 and FK-8 instead of the air discharge chamber, in order to adjust the exhaust, it shall be used together with the FK-13 type circular opposed control valve.

FK-39 and FK-8 air opening structure skirts are combined with connecting pipes. Other blades are another combination. The two groups are joined by hanging and fixing parts, which is very convenient for loading and unloading. It is also convenient to adjust the rear circular opposed control valve.

FK39、FK-8规格尺寸表

Dimension table of FK39 and FK-8

规格 Specification	尺寸 Size	d	D	P	h	k	D1
12		159	286	131	100	6	260
15		154	343	138	100	9	310
20		205	457	156	105	9	420
25		257	572	168	105	13	530
30		308	686	186	110	16	630
35 (14) "		356	749	128	20	10	648
40 (16) "		406	864	141	20	10	749
45 (18) "		457	1016	162	25	20	826
50 (20) "		508	1092	177	25	20	927

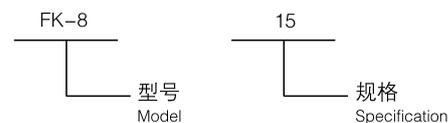


FK-39、FK-8圆形散流器尺寸图表

Size table of FK-39 and FK-8 circular diffusers



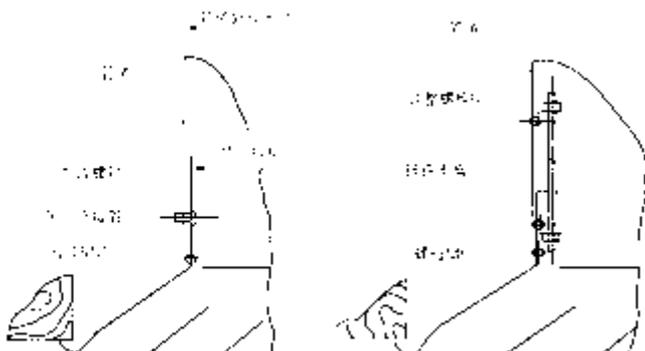
标记示例
Example



FK-39、FK-8 型风口的安装

Installation of FK-39 and FK-8 air openings

与风口颈部套管的圆管道尺寸应比风口颈部名义尺寸大 3-5mm，选用设计时应注意。图1安装形式的自攻螺钉和图2的螺栓定货者自备，若采用图2形式，与风口连接的锌铁支脚可在交货时铆好。



The size of the matching pipeline fixed on the air opening neck should be 3-5mm larger than the nominal size of air opening neck. Pay attention to this point when choosing. The tapping screw in Picture1 and bolt in picture 2 should be prepared by customers themselves. If adopt the installation type in Picture 2, Supporting feet connecting air opening can be riveted before delivery.

管道外径尺寸	Pipe outside diameter
管道	Pipe
颈部规格	Neck specification
自攻螺钉	Tapping screw
风口连接管	Air opening connecting pipe
风口裙边	Air opening skirt
调整螺栓	Adjustable bolt
锌铁支脚	Zinc-iron supporting feet
螺母M5	Nut M5

FK-41、FK-9 圆盘散流器

FK-41 and FK-9 disk diffuser

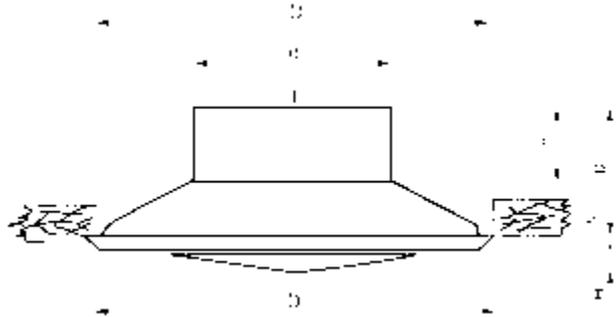
FK-41、FK-9 型风口为圆盘散流器，FK-9 与 FK-41 风口区别在于挂钩。通常用于冷暖送风，其气流特性属散流型（下送）。与 FK-39、FK-8 型风口相比，此风口能以较小的风量供应于较大的地面面积。

若不采用排气扇而使用 FK-41、FK-9 风口时，为使排气得到调整，需与 FK-13 型圆形对开调节阀配套使用。

FK-41、FK-9 风口结构与 FK-39、FK-8 型风口相似，安装方法及调节对开调节阀的方法也相同。

FK-41 and FK-9 air openings are disc diffusers. The difference between FK-9 and FK-41 air openings lies in the hooks. They are generally used for cold and hot air supply with a diffusing airflow characteristic (downward). Compared with FK-39 and FK-8 air openings, the disk diffuser can supply air to a relatively larger ground area with a relatively smaller air volume.

If the air openings of FK-41 and FK-9 are used instead of the discharge fan, in order to adjust the exhaust, it shall be used together with FK-13 type circular opposed control valve. The structures of air openings of FK-41, FK-9 and FK-39, FK-8 are alike. The installation type and opposed control valve adjustment method are also the same.



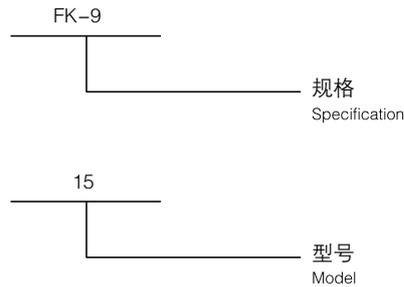
FK-41、FK-9 圆盘散流器尺寸图表

Size table of FK-41 and FK-9 disk diffusers

规格 Specification	尺寸 Size	d	D	P	h	k	H	D1
12		129	286	132	100	6	11	260
15		154	343	138	100	9	14	310
20		205	457	156	105	9	17	420
25		257	572	168	105	13	20	530
30		300	686	186	110	16	23	635

标记示例

Example



FK-15 圆形斜片散流器

FK-15 circular inclined blade diffuser

FK-15 为圆形外框，直形叶片送风口，叶片倾斜 24°

FK-15 has the circular frame, straight blade air supply opening and inclined blades of 24°

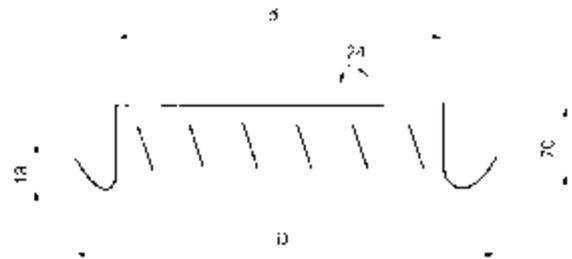
圆形斜片散流器尺寸图表

Size table of circular inclined blade diffuser

单位 mm

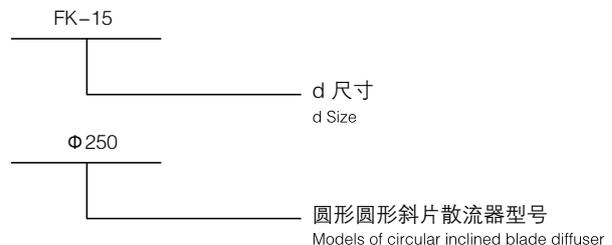
Unit mm

序号 Serial number	d	D
1	Φ200	Φ243
2	Φ250	Φ293
3	Φ300	Φ342
4	Φ350	Φ392
5	Φ400	Φ442
6	Φ450	Φ492
7	Φ500	Φ542



标记示例

Example





FK-16 圆环形叶片散流器

FK-16 ring-shaped blade diffuser

FK-16 为圆形外框，圆环形叶片的送风口，造型新颖美观。

FK-16 has a circular frame, ring-shaped blade air supply opening and beautiful and novel shape.

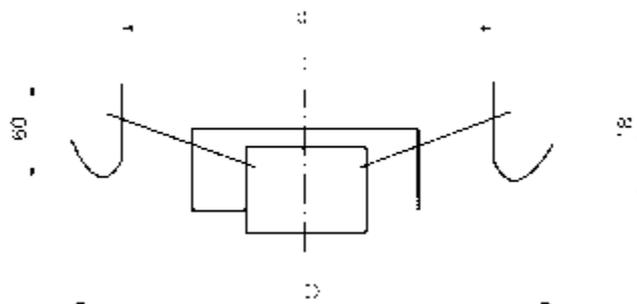
FK-16 的尺寸图表如下

FK-16 size table is as follows

单位mm

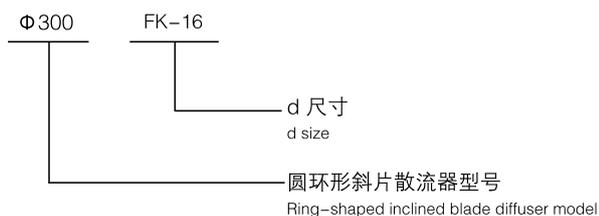
Unit mm

序号	d	D
1	Φ 150	Φ 193
2	Φ 200	Φ 243
3	Φ 250	Φ 293
4	Φ 300	Φ 342
5	Φ 350	Φ 392
6	Φ 400	Φ 442
7	Φ 450	Φ 492
8	Φ 500	Φ 542



标记示例

Example

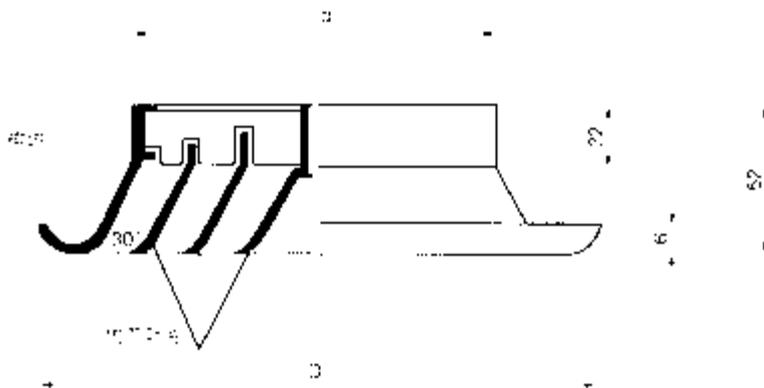


FK-29 小型圆散流器

FK-29 small size circular diffuser

FK-29 型风口为小尺寸圆形散流器，安装在顶棚上冷暖送风。风口裙边及叶片的倾角为 30°。属下送型风口，此风口造形别致，小巧玲珑。用于顶棚较底的较小房间送风。

FK-29 air opening is a small size circular diffuser which is fixed on the ceiling to supply cold and hot air. Inclined angle between skirt of the air opening and blades are 30°. With an exquisite structure and small size, this type of air opening is used to supply air to low-ceiling small rooms.



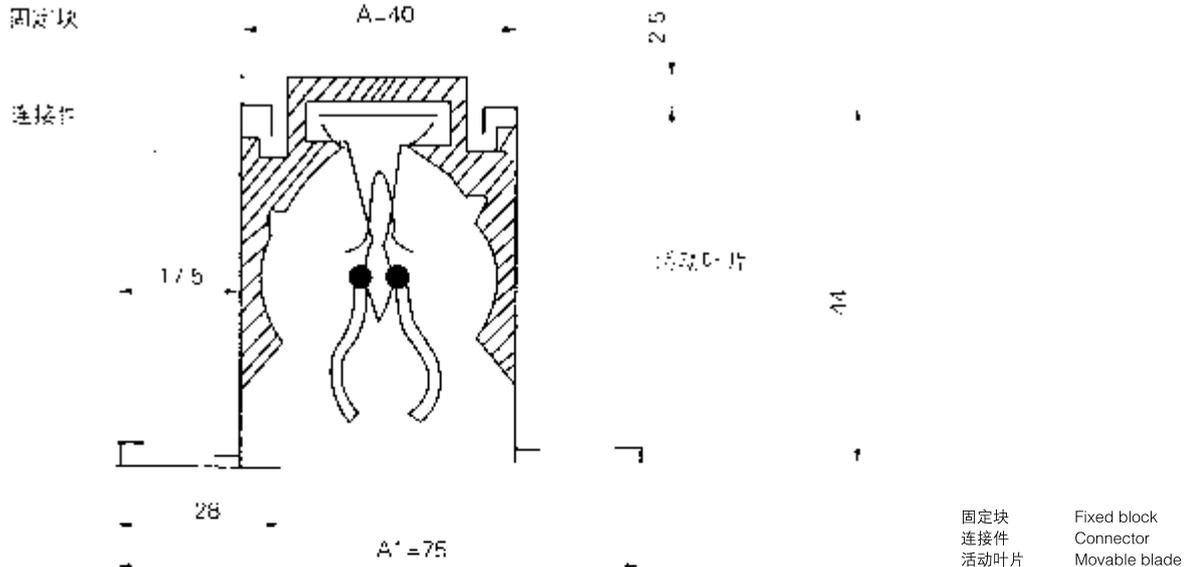
裙边 Skirt hem
内芯叶片 Leaf blade inner core

FK-25 活叶条形散流器

FK-25 movable blade slot diffuser

FK-25 活叶条形散流器，作为送风或回风的部件，有其独特的设计，每一组片槽内有两个可调的叶片，用于控制气流方向大小。从外部就可以方便地调整，该散流器一般用于安装在天花板上，也可以安装在侧墙或其它位置使用。

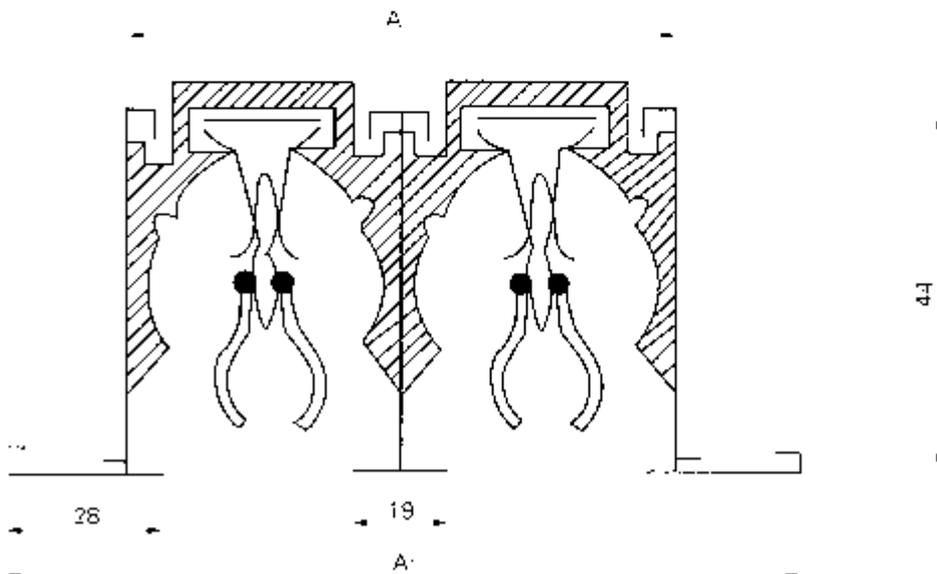
Specially designed FK-25 movable blade slot diffuser is a part to supply and return air. There are two moveable blades which can be adjusted from outside in each set of blade groove to control airflow. The diffuser is generally installed on the ceiling, the side wall or other places.



FK-25散流器结构、尺寸图

Structure and size figure of FK-25 diffuser

固定块 Fixed block
连接件 Connector
活动叶片 Movable blade



FK-25多组型

FK-25 multiple sets

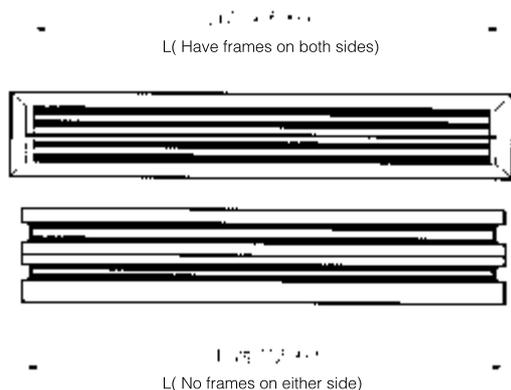


FK-25 活叶条形散流器宽度规格尺寸如下

Size of FK-25 movable blade slot diffuser

宽度方向根据安装的需求可以制成单孔、多孔且每个孔可以单独调节风量及角度。其形状、类别代号与规格长度请按下图及对应的尺寸表。

The width direction of this diffuser can be made into single-hole type or multiple-hole type according to different installation requirements. Air volume and angle of every hole are able to be regulated separately. Refer to the following diagram and corresponding size table for its shape, category code and length.

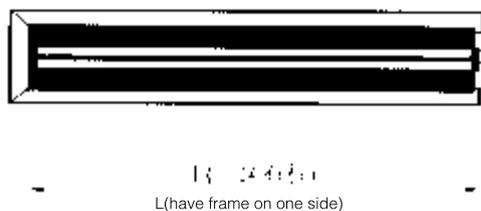
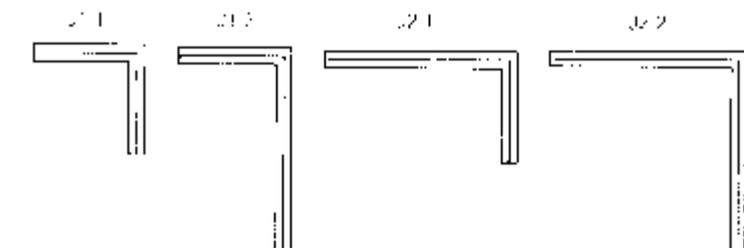


叶片组数 Number of sets of blades	A	A1
1	40	75
2	78.5	113.5
3	117	152
4	155.5	190.5

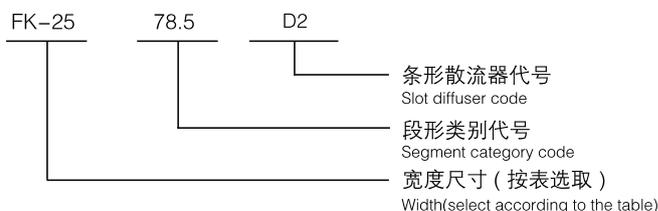
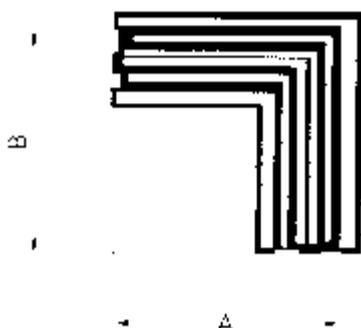
类别代号 Category code	Lmm	类别代号 Category code	Lmm
D1.5	1500	Z1.5	1500
D2	2000	Z2	2000
D3	3000	Z3	3000

FK-25 角度段各类别代号所代表的结构形状见下图:

Every category code represents a kind of structure of the FK-25 angle segment as follows:



类别代号 Category code	Lmm	类别代号 Category code	A	B
T0.5	500	J1.1	300	300
T1.0	1000	J1.2	600	600
T1.5	1500	J2.1	600	300
		J2.2	600	600



上述各段长度尺寸 L 或 (A、B) 除表中规定的系列尺寸外, 用户可根据需要选择其它尺寸。角度段的角为直角。也可以作为非直角。安装时, 当中间段、端头段或角度段组接成一定长度时, 对缝外应有插接板。

Besides every segment length L or A or B stipulated in the table, users can choose other length as needed. The angle of the angle segment can be a right angle or other angles. During installation, when the middle segment, end segment or angle segment need to be combined together, there should be a plug board in every seam.



FK-18条形直片散流器

FK-18 slot straight blade diffuser

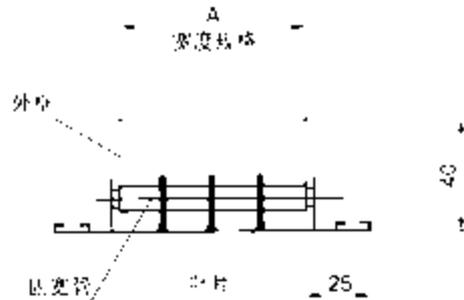
FK-18条形散流器突出了线性设计特点，可以用于室内和环形分布的送、回风，可安装在侧墙或天花板上。

该散流器的叶片如下图所示形状，最大连续长度L可以做3m，对于需要更大长度的风口。可以把两节或多节拼起来使用。拼缝处要有插接板。该散流器也可制成弧形的造型。

长度方向尺寸及各种段形，即单一段、端头段、角度段与FK-25散流器完全相同。除表中列出的规格尺寸外，用户还可根据需要任意选定。

FK-18 slot diffuser with the linear design can be used to supply and return air for rooms and annular region. It can be mounted on the side wall or ceilings.

The shape of blades of the diffuser is shown in the figure below. The maximum continuous length L can be made into 3m. For the air opening which requires a longer length, we can put two or more sections together. There should be a plug board in every seam. The diffuser can also be made into an arc shape. Length, direction, size and various segments, namely single segment, end segment, angle segment are exactly the same as that of FK-25 diffuser. In addition to the dimensions listed in the table, users can also choose other dimensions as needed.



宽度规格 The width of the specification
外框 Frame
固宽管 Solid wide pipe
叶片 Leaf blade

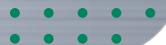
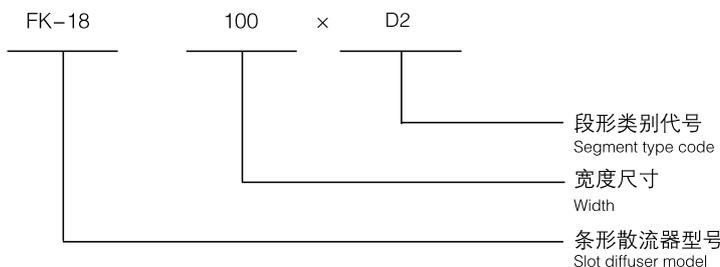
FK-18 条形直片散流器规格系列及送、回风性能数据表

Specification series and air supply and return performance table of FK-18 slot straight blade diffuser

颈部风速 (m/s) Neck air speed		1	2	3	4	5
回风 Air return	静压损失 (mmH ₂ O) Static pressure loss	0.26	1.06	2.38	4.23	6.61
	全压损失 (mmH ₂ O) Total pressure loss	0.20	0.81	1.83	3.25	5.08
	阻力系数 Resistance coefficient	3.32				
叶片数 Number of blades	宽度规格 A(mm) Width A(mm)	每米风量 (m ³ /h) Air volume per meter (m ³ /h)				
2	50	180	360	540	720	900
3	62	225	450	670	895	1120
4	75	270	540	810	1080	1350
5	87	315	hh630	940	1255	1570
6	100	360	720	1080	1440	1800
8	125	450	900	1350	1800	2250
10	150	540	1080	1620	2160	2700
14	200	720	1440	2160	2880	3600

标记示例

Example





FK-58球形可调风口

FK-58 spherical adjustable air opening

FK-58 球形可调风口是一种喷嘴型送风口，高速气流在经过阀体喷嘴中对指定方向送风，气流喷射方向可在顶角为 35° 的圆锥形空间内前后左右方便地调节，气体流量也可通过阀门开合程度来调节。适用于高大屋顶高速送风或局部供冷的场合，如机场候机大厅，室内体育场，宾馆厨房等场合。

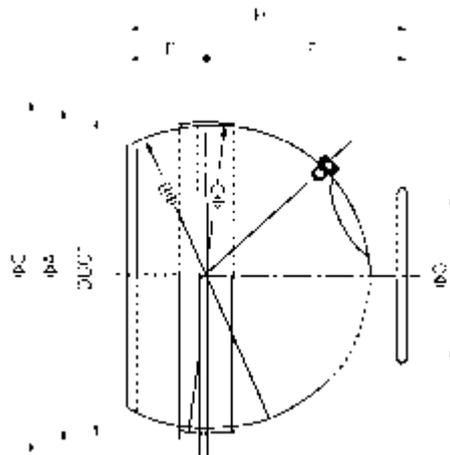
FK-58 spherical adjustable air opening is a kind of nozzle type air supply outlet. High-speed airflow passes valve body nozzle to supply air towards the specified direction. Air ejection direction can be easily adjusted within the cone-like space with an top angle of 35°. Air flow rate can also be regulated through adjusting the degree of valve opening and closing. This kind of air opening is suitable for high speed air supply of spaces with high roofs or places needing local cooling, such as airport waiting hall, indoor stadium, hotel kitchen and other occasions.



FK-58 球形可调风口结构尺寸

Size of FK-58 spherical adjustable air opening

风管尺寸 Air duct size	A	B	C	D	E	F	G	H
85	97	75	115	82	20	50	38	70
110	122	100	140	107	26	62	50	88
140	152	130	170	137	37	78	65	115
160	172	150	190	157	44	90	75	134
215	232	200	250	210	48	112	100	160
280	304	267	322	276	50	174	140	224
318	342	305	360	314	63	200	165	263
318	342	305	360	314	65	185	190	200
430	451	410	469	425	90	260	230	350
490	511	470	529	484	100	300	260	400
490	511	470	529	484	100	300	310	400



FK-55 55A 孔板送风口

FK-55 and 55A punch plate air outlet

孔板送风口与单、双百叶送风口、方形散流器相比，具有送风均匀，速度衰减较快的特点，消除了使人不悦的直吹风感觉。空气由风管进入稳压层后，再靠稳压层的静压作用，流经风口面板上若干圆形小孔进入室内，孔板上孔较小还能起到稳压作用。孔板送风口一般装在顶棚天花板上，向下送风。

Compared with single and double shutter air outlet and square diffuser, punch plate air outlet has the characteristics of even air supply and fast speed attenuation, eliminating the unpleasant feeling of direct air supply. After the air enters the stabilized layer through the air duct, it flows through a number of small circular holes on the air opening panel to enter the room under the static pressure effect of the stabilized layer. The small holes on the punch plate can also play a stabilizing role. Punch plate air outlet is generally mounted on the ceiling, supplying air downward.

天花板回风口

Ceiling return air inlet

FK-55A 天花板回风口，采用硬质铝板冲孔成行，常用于大堂装饰及回风。可按用户要求加工成不同花式。也可与过滤网配套使用。

FK-55A ceiling return air inlet perforated with rigid aluminum plate is often used for lobby decoration and air return. It can be processed into different patterns according to users' requirements. It can also be used with filter together.

二、回风类

Air return series

FK-24 条形活芯回风口

FK-24 slot removable core return air inlet

FK-24 型风口同样突出了线性设计，其设计结构与FK-12 风口基本相似，不同处在于此风口作成了条形，叶片整体的内芯同样可以取出，以便安装过滤器。

结构尺寸如下图所示：

The FK-24 air opening also highlights the linear design, and its design structure is basically similar to that of FK-12 air opening. The difference is that the air opening is in a slot shape and the integral inner core of the blade can also be removed for the easy installation of the filter.
The size is shown in the figure below.



FK-24条缝活芯回风口
FK-24 slot removable core return air inlet

FK-54 防水百叶风口

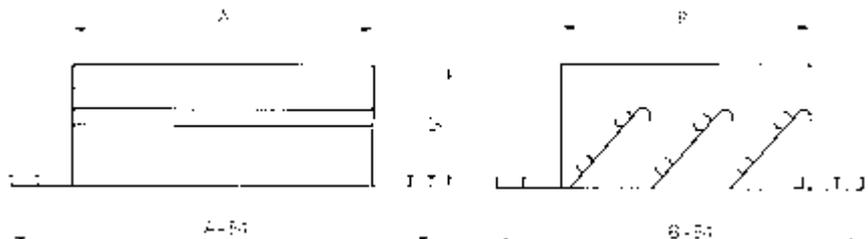
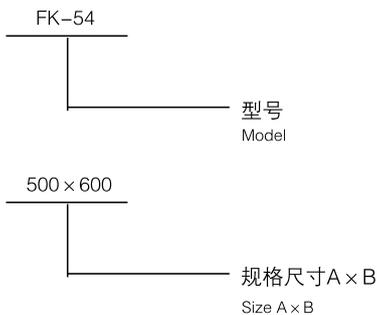
FK-54 waterproof grille

FK-54 防水百叶风口，系铝型材制成，其叶片设计成特殊状，具有防止雨水溅入内部的功能，一般安装在外墙上作为鲜风口。

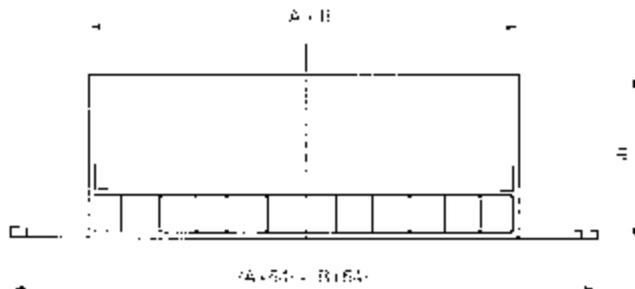
The FK-54 waterproof grille is made of aluminum section bars, and its blades are specially designed to prevent rain water from splashing into the interior. It is generally installed on the outside wall as a fresh air opening.

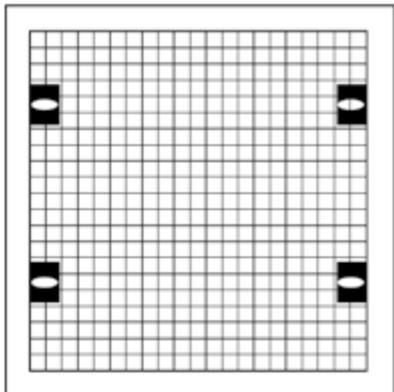
标记示例

Example



FK-54 防水百叶风口尺寸图
Size Figure of FK-54 water-proof grille





FK-47 蛋格式风口

FK-47 cross-shaped square air opening

蛋格式风口边框采用铝合金型材，叶片为优质铝板加工成形，叶片间距为13mm；风口结构简单，由于摩擦等原因引起压力损失小。一般装于天花顶棚活侧墙，用于送风口，也可作回风口用。风口外观颜色可以和室内装修协调，根据用户要求烤漆。

The frame of the cross-shaped square air opening is made of aluminum alloy. Its blades are made of high-quality aluminum plate. The spacing between two adjacent blades is 13mm. With a simple structure, this kind of air opening has small pressure loss from friction. It is normally installed on the decoration ceiling and side wall for air inlet or outlet. According to user's request, appearance of the air opening can be coated with different colors to match indoor decoration style.

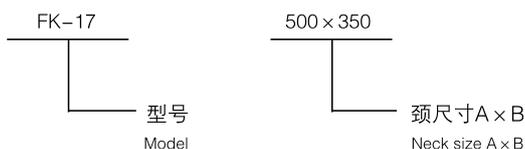
FK-47蛋格式风口颈部的有效面积

The valid area of FK-47 cross-shaped square air opening neck

颈尺寸B(mm) Neck size	颈尺寸A(mm) Neck size							
	150	200	300	400	500	600	800	1000
150	0.016	0.021	0.033	0.440	0.056	0.067	0.090	0.113
200	0.021	0.029	0.045	0.061	0.076	0.096	0.124	0.155
300	0.033	0.045	0.069	0.093	0.118	0.142	0.191	0.239
400	0.044	0.061	0.093	0.126	0.159	0.192	0.257	0.323
500	0.056	0.076	0.118	0.159	0.200	0.241	0.324	0.407
600	0.067	0.092	0.142	0.192	0.241	0.292	0.391	0.490

标记示例

Example



FK-47A 门铰型蛋格式风口

FK-47 hinge cross-shaped square air opening

FK-47A门铰型蛋格式回风口，其叶片配上门铰型框，安装简便，可与装潢配颜色、镀塑或烤漆。

FK-47A hinge cross-shaped square air return inlet whose blades are matched with hinge type frame is easily installed and color-matched, plastic-coated and varnished to fit the whole decoration style.

ASDH门铰方型叶回风口

ASDH hinge square blade air return inlet

ASDH门铰方型叶回风口，采用方形散流器的叶片四面回风，配上门铰型外框、铰链和锁，其特点外表与方型散流器一样，其颈部尺寸大，回风流量增大。

ASDH hinge square blade air return inlet adopts the blades of square diffuser to return air from four directions. Fitted with hinge frame, hinge and lock, its characteristics are like that of square diffuser. It has a huge neck size and large amount of air return volume.



三、附件类

Accessories

FK-5风口过滤器

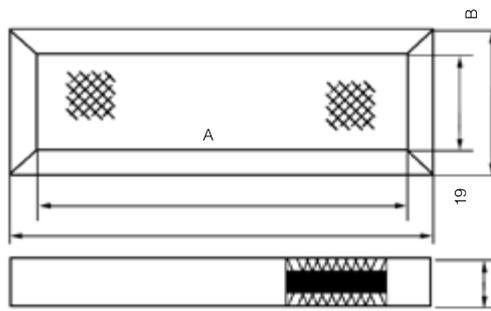
FK-5 air opening filter

FK-5风口过滤器是采用铝合金薄板经过成网加工后叠合而成。外层网板材厚度为0.4mm，并制成瓦楞状，用来提高过滤器的整体强度；内层网用0.05mm厚的铝箔网经过纵横多层叠合而成，用来提高过滤器的过滤效率和容积量。

由于过滤器选择不当，会增大气流阻力，致使风机的负荷加大，因而缩短了风机的使用寿命，FK-5风口过滤器则克服了这种缺陷。如选用FK-5风口过滤器，虽然有时得不到及时清洗，但阻力也很少增加，只是过滤效率有所下降。此种过滤器每次清洗后的使用期为一年，因此每年应将过滤器清洗一次。

FK-5 air opening filter is laminated after net forming of aluminum alloy sheet. The thickness of the outer net plate is 0.4mm and made into corrugated shape, used to improve the overall strength of the filter. The inner net is made of many layers of 0.05mm thick aluminum foil folded vertically and horizontally, which is used to improve the filtration efficiency and volume of the filter.

The improper filter selection leads to increased airflow resistance which causes fan load to rise. Thus the service life of the fan is shortened. FK-5 air opening filter has overcome this defect. If the FK-5 air opening filter is selected, although it is sometimes not cleaned in time, the resistance is also rarely increased, only the filtration efficiency shall decrease. The filter should be cleaned annually.

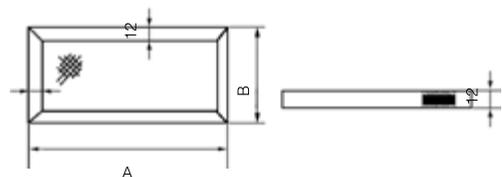


FK-43风口过滤器

FK-43 air opening filter

FK-43风口过滤器的结构与FK-5相同，只是所有边框较小其厚度为12mm，由三层薄网和两层厚网组成。

The structure of the FK-43 air opening filter is the same as that of the FK-5, except that all the frames are smaller and its thickness is 12mm. It is composed of three thin layers and two thick layers.

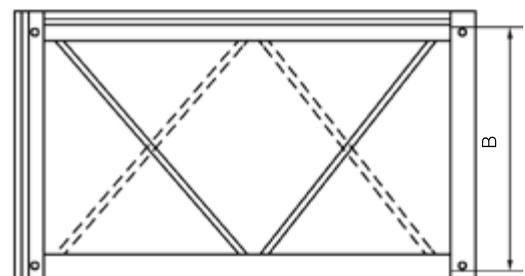
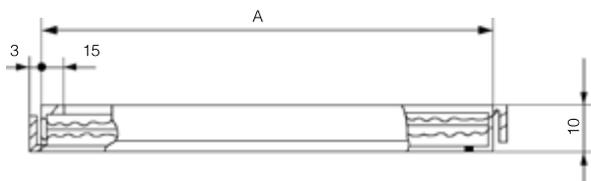


FK-40空调机过滤器

FK-40 air conditioner filter

FK-40空调机过滤器采用了特殊的铝型材外框，由于空调机过滤窗口尺寸较大，过滤器做成多组，靠侧面型材的拉钩而互相牵拉，以便于拆卸清洗。回风风速风压较大，中间有3钢丝加固支撑过滤采用绵凸网，两边采用铝板网加持叠合而成。该过滤器阻力小，厚度薄，为空调机回风过滤器所专用。

FK-40 air conditioner filter adopts special aluminum frame. Because the size of air conditioner filter window is large, the filter is made into several groups which pull each other by the hooks of side section bar for convenient cleaning. The speed and pressure of return air are relatively large. This filter is supported by three steel wires and adopts nylon convex net. Its two sides are laminated and folded by aluminum plate net. The filter, which is specially used for air conditioner return air filter, has small resistance and thin thickness.





FK-57处理机过滤器

FK-57 processor filter

本产品是可用在空调机组处理机回风口上的初效过滤器。其过滤层较厚，共有两层厚网(0.4mm)，8层薄网(0.05mm)，其间还加有内衬网。过滤器的边框由镀锌板(0.8mm)折弯而成，结构为分片搭接。因此其过滤效率和整体强度较以往同类产品有较大提高。

This product is the primary filter which can be used on the return air inlet of the processor of the air conditioning unit. The filter layer is relatively thick, including two layers of thick net (0.4mm) and eight layers of thin net (0.05mm). An inner lining mesh is added between the thick and thin nets. The filter frame is folded by galvanized plate (0.8mm) with several plates laid together. Therefore, its filtration efficiency and overall strength are greatly improved compared with similar products in the past.

规格 Specification	C I	C II	D	E
30 #	33	30	22	40
40 #	43	40	25	50
50 #	53	50	28	60

工作风速: $V \leq 12\text{m/s}$

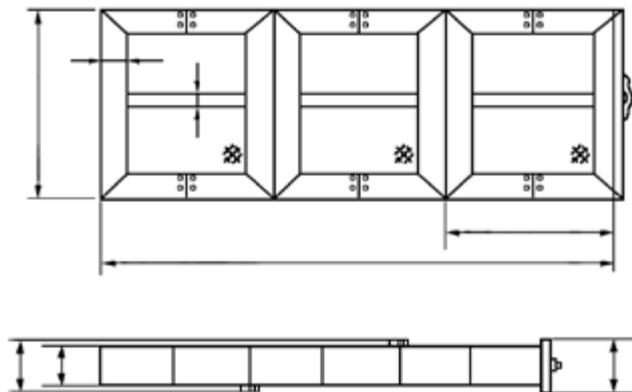
过滤效率: $P=70\%$

最大面积: $A \times B \leq 3000 \times 1200$

Operation air speed: $V \leq 12\text{m/s}$

Filtration efficiency: $P=70\%$

Maximum area: $A \times B \leq 3000 \times 1200$



FK-11为多叶对开调节阀

FK-11 is multi-blade opposed control valve

常与FK-1、FK-2、FK-19、FK-20及FK-10风口配套使用，用来调节整个空调系统气流分布，从而达到理想的效果，它的结构是各个叶片之间采用联动式，只要拨动拨板，所有叶片均可动作，使风口的颈部通风面积变大或变小。

此调节阀与风口的配套安装采用铆接方法，详见FK-10型风口与调节阀配套图。订货尺寸A×B是表示与之配套风口的规格尺寸，实际制造阀时比风口规格尺寸要小。

It is often used in combination with air openings of FK-1, FK-2, FK-19, FK-20 and FK-10 to adjust the air flow distribution of the whole air conditioning system so as to achieve the ideal effect.

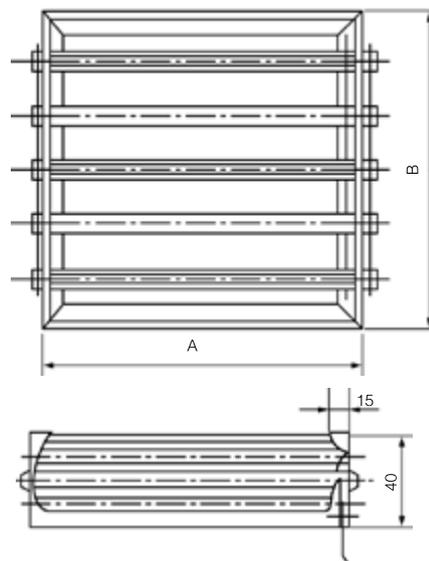
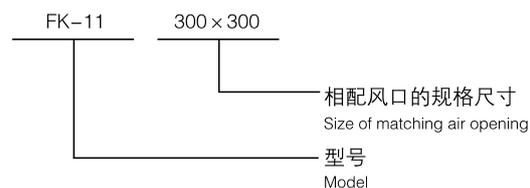
Its structure is that blades are in a linkage state. As long as we press the plate, all the blades will move so that the ventilation area of the air opening neck becomes larger or smaller.

Control valve and air opening are caulked together. Please refer to FK-10 air opening and control valve matching diagram. Ordering Size A×B means the specification and size of its matching air opening. When we actually manufacture valve, its size is much smaller than that of the air opening.



标记示例

Example



FK-13圆形对开调节阀

FK-13 circular opposed control valve

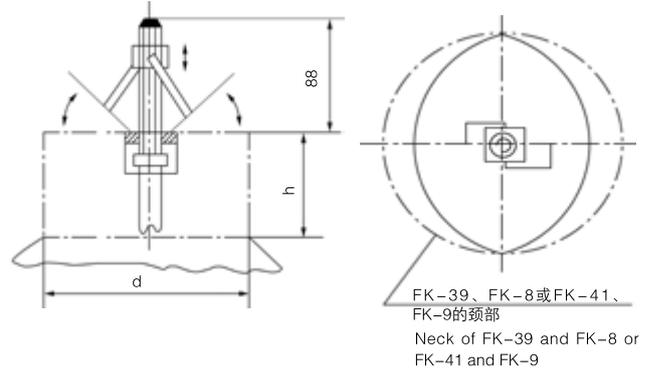
FK-13型圆形调节阀是与FK-39、FK-8、FK-41、FK-9型风口配套产品。它与FK-39、FK-8、FK-41、FK-9风口的接管用铆钉联在一起，其调节方法是摘下风口的中心叶片或圆盘，调节中心螺杆，两个半圆活门就可以从关闭状态调节到开启的任意位置，从而实现对口流量的调节，以得到的空调效果。

FK-13 circular control valve is matched with air openings of FK-39, FK-8, FK-41 and FK-9. It is riveted together with the connecting pipe of FK-39, FK-8, FK-41 and FK-9 air openings. The regulation method is to take out the central blade and disk of the air opening and adjust central bolt so that the two semi-circular openable doors can be adjusted from closing state to any position of the opening state. Thus, the airflow will be controlled to realize air conditioning effect.

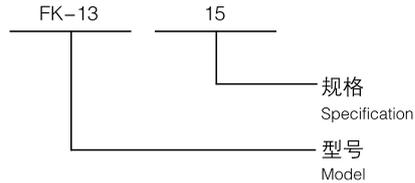
FK-13圆形对开调节阀尺寸表

Size table of FK-13 circular opposed control valve

规格 Specification	尺寸 Size	d
12		129
15		154
20		205
25		257
30		308



标记示例
Example



四、特殊类

Specialities

不锈钢风口

Stainless steel air opening

1、活动百叶风口

- ① FK-32单层百叶风口
- ② FK-33双层百叶风口

FK-32、FK-33单、双层百叶风口的性能、规格及其安装与配套同前面的FK-1和FK-2铝合金单层和双层百叶风口，材质用建筑不锈钢做风口与铝合金风口比较有迥然不同的感官效果，加之表面抛光，适用于超豪华的场所。另外适用于超净、无菌、耐酸碱的实验室内特殊通风要求。

2、固定百叶风口

- ① FK-34侧壁格栅风口
- ② FK-35可开式侧壁格栅式风口

这两种风口的性能、规格及安装与配套同前面的FK-4和FK-12铝合金风口。同样有回风和过滤回风的用途，达到与送风口配套使用之目的。

3、方形散流器

FK-36为不锈钢方形散流器，其性能、规格及其安装与配套同前面的FK-10铝合金方形散流器，同样适用于超豪华场所以及超净、无菌、耐酸碱的实验室内特殊要求。

以上几种类型的不锈钢风口，如果将材质换成镀锌酸洗薄钢板，则成为铁质风口。

1.Movable grille

- ① FK-32 single deflection grille
- ② FK-33 double deflection grille

The performance, specification, installation and matching products of FK-32 and FK-33 single and double deflection grilles are the same as those of FK-1 and FK-2 aluminum alloy single and double deflection grilles. You will totally get a fresh feeling from air opening made from building-used stainless steel compared with that made from aluminum alloy. With its polished surface, it is suitable for luxury places. It can also be applied in super-clean, bacteria-free and acid and alkali resistant labs which have special ventilation requirements.

2.Fixed deflection grille

- ① FK-34 side wall grille air opening
- ② FK-35 openable side wall grille air opening

The performance, specification, installation and matching products of these two air openings are the same as those of FK-4 and FK-12 aluminum alloy air openings. It has the functions of air return and air return filtration which can be used in combination with air outlet.

3.Square diffuser

FK-36 is stainless steel square diffuser. Its performance, specification, installation and matching products of it is the same as those of FK-10 aluminum alloy square diffuser. It can also be applied in super-clean, bacteria-free and acid and alkali resistant labs which have special ventilation requirements.

If the material of the above mentioned stainless steel air openings is replaced by galvanized pickled sheet steel, it will become iron air opening.



弧形、特殊形状风口

Arc-shaped outlet and outlets of other special shapes

1、概要

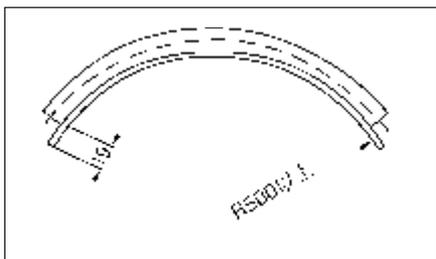
建筑结构造型的不同，装饰的要求风口造型也要不断提高、改革、为广大用户提供了比较理想的特殊风口，如：弧形风口，角度形风口等，灯光风口等达到美观的效果。

1.Overview

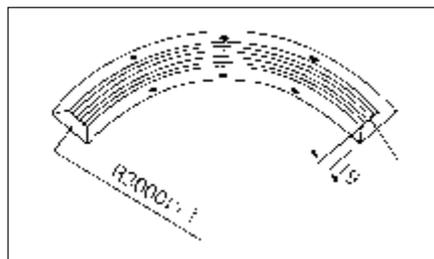
Because of the different building structure type and decoration requirement, air opening styles need to be constantly improved and changed to provide customers with more ideal special air openings like arc shaped air opening, angle shaped air opening and light air openings for a better appearance.

2、尺寸图

2.Size table



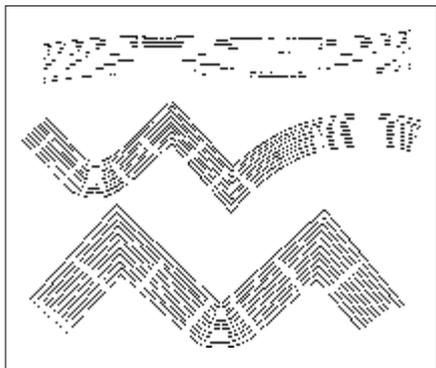
0° 叶90° 角顶送
0° blade, 90° angle, air supply from top



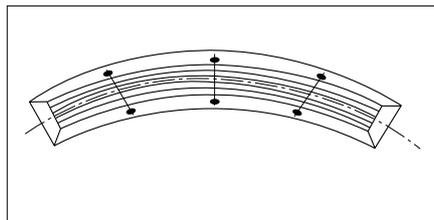
0° 叶135° 角顶送
0° blade, 135° angle, air supply from top

3、结构图

3.Structure figure

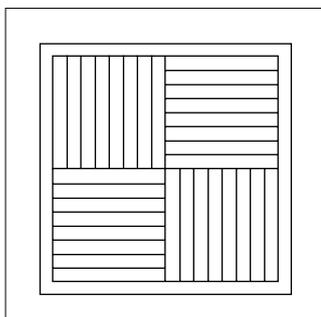


弧形风口
Arc shaped air opening

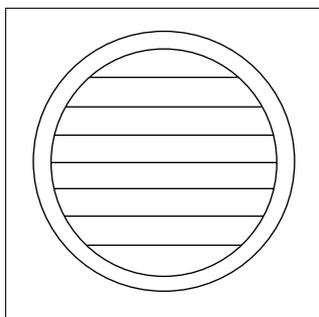


角度顶送、回风口
角度型均可采用、30° 叶、30° 叶二面吹、0度叶、扁叶、弧形可采用0° 叶、扁叶，定货时务必注明顶、侧、弧度、弧长等。

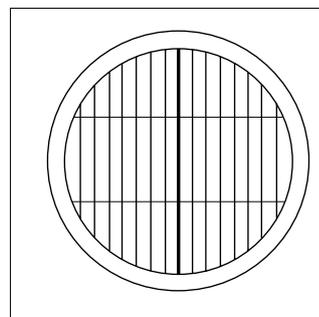
Control angles to achieve air supply from top, air return inlet
Angle air openings can have the following air supply or return types, such as the 30° blade, 30° blade toward two directions, 0° blade, flat blade. Arc shaped air openings can adopt the air supply or return types of 0° blade and flat blade. Be sure to specify the air supply or return types like top or side, and radian and arc length when ordering.



单层可调四面吹
Single layer, four directions blowing



圆形防水叶
Circular water-proof blade



圆形30° 两面吹
Circular type, 30° ,two directions blowing

旋流风口

Twist air opening

1、概述

Y T系列可变旋流风口是我公司在原有S L系列风口的基础上研制和开发的新型风口系列。主要用于如机场、工业厂房、剧院、体育馆、商场、营业大厅、大型会议场所等层高在3.8m以上的较大的空间内。

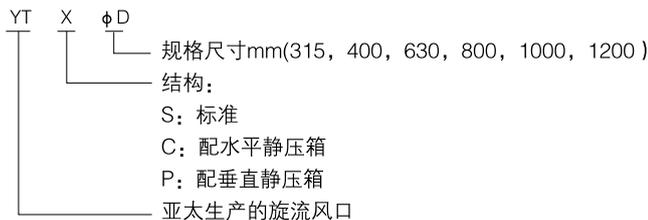
1.Overview

YT series variable twistair opening is a new series of air openings developed by our company on the basis of the original SL series. It is mainly used in large spaces with a floor height of over 3.8msuch as airports, industrial plants, theatres, gymnasiums, shopping malls, business halls and large meeting places.



2、型号说明

2.Model explanation



示例: YT-C- ϕ 315表示为配水平静压箱的旋流风口, 尺寸为 ϕ 315mm。

Example: YT-C- ϕ 315 represents the twist air opening matched by horizontal static pressure box. Inside diameter is ϕ 315mm.

3、特点

Y T系列旋流风口有六种规格(315, 400, 630, 800, 1000, 1200)可供选择, 正面出风口装有利用成型工艺制造的导流罩和涡轮式的叶片, 可通过人工或电动执行机构调整叶片, 达到均匀送风的效果。

与传统的风口相比, 由于Y T系列可变旋流风口的叶片是根据流体力学原理设计的, 使由风口送出的气流形成具有一定初速度的涡流, 从而加大冷、热风的送风深度及覆盖面积, 使空间内的气流充分的进行循环, 达到最佳的通风效果。

3.Characteristics

YT series twistair opening has six kinds of specifications (315,400,630,800,1000,1200) to choose from.The frontair outlet is equipped with the guide hood and turbine type blades manufactured by means of molding process.Blades can be adjusted by manual or electric actuating mechanism to achieve the effect of even air supply.

Compared with the traditional air openings, because the bladesof YT series variable twistair opening is designed according to the principle of fluid dynamics, the airflow sent out by the air opening forms into a twist flow with a certain initial velocity, increasing cold and hot air supply depth and coverage area. The airflow inside the space will fully circulate to achieve the best ventilation effect.



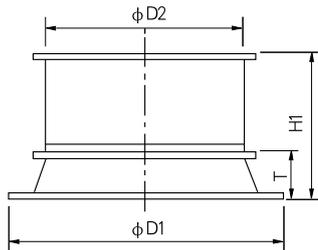
4、技术性能表

4.Technical performance table

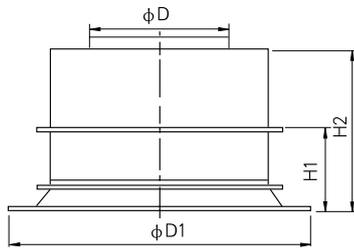
规格mm Specification	风量m ³ /h Air volume	YT-P 压力损失Pa YT-P Pressure loss	YT-C 压力损失Pa YT-C Pressure loss	YT-S 压力损失Pa YT-S Pressure loss	新风送风深度m Fresh air supply depth	供暖送风深度m Heating air supply depth	制冷送风深度m Cooling air supply depth
φ 315	290	8	11	8	2.82	0.75	0.36
	500	26	38	25	5.21	1.53	1.05
	715	47	51	41	6.90	2.39	1.48
	1100	135	153	116	10.96	4.35	1.98
	1500	220	260	200	14.00	6.00	2.75
	2900	-	-	-	-	12.80	4.30
	5800	-	-	-	-	-	7.30
φ 400	550	10	11	5	4.47	1.26	0.85
	900	25	30	14	6.96	2.37	1.46
	1400	63	73	34	10.69	3.98	1.99
	2300	165	193	92	16.90	7.31	3.01
	3600	> 245	> 245	150	-	12.60	4.15
	7300	-	-	-	-	-	7.15
φ 630	1000	9	11	6	4.87	1.52	1.09
	1300	16	19	9	6.20	2.04	1.32
	2100	43	53	26	9.88	3.72	1.88
	3300	105	126	61	15.44	6.26	2.81
	5800	> 245	240	160	-	12.90	4.18
	9200	-	-	-	-	-	7.40
φ 800	1270	8	10	7	4.40	1.50	1.07
	1600	13	18	11	6.86	2.09	1.31
	3000	45	58	37	11.16	4.26	2.12
	5200	133	182	104	16.10	8.33	3.21
	7200	-	-	-	-	12.70	4.17
	11000	-	-	-	-	-	7.30
φ 1000	1800	15	20	12	5.76	1.87	1.26
	2700	28	35	22	7.35	2.53	1.70
	4500	53	70	41	10.52	4.80	2.59
	6900	97	131	76	14.17	7.52	3.44
	9200	155	190	140	17.70	10.00	4.25
	11000	190	250	180	-	11.70	5.98
	17000	-	-	-	-	-	7.65
φ 1200	3100	12	14	10	7.02	2.84	1.66
	6800	33	45	24	12.53	6.12	2.99
	8100	51	63	38	14.30	7.38	3.50
	10000	91	115	70	16.22	9.17	4.13
	17000	200	230	165	-	16.20	7.15

5、规格尺寸

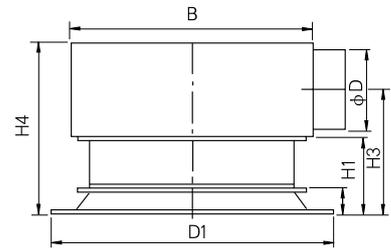
5.Size



YT-S



YT-P

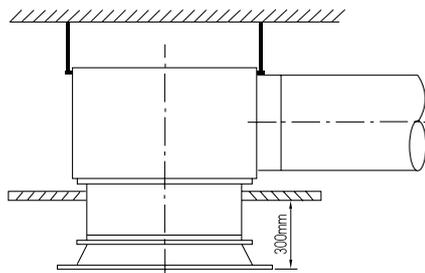


YT-C

规格 Specification	D	D1	D2	H1	H2	H3	H4	T	430
φ 315	248	480	315	200	425	336	472	62	430
φ 400	302	566	400	236	534	418	600	80	515
φ 630	400	870	630	380	748	614	842	124	789
φ 800	498	1077	800	568	1004	848	1128	161	974
φ 1000	752	1354	1000	610	1111	1017	1424	206	1217
φ 1200	898	1588	1200	658	1231	1138	1618	252	1434

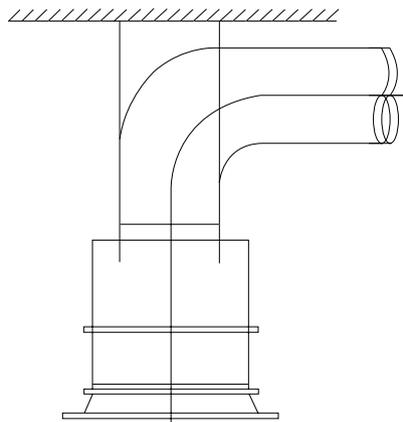
6、安装方式

6.Installation type



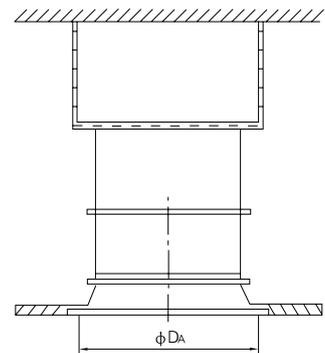
YT-C的安装，风口伸出天花板300mm，送风口方向的角度连续可调

When we install YT-C, the air opening extends 300mm from the ceiling and the angle of the air supply outlet is continuously adjustable.



YT-P型安装，风口悬空吊挂，送风方向的角度连续可调

When we install YT-P, the air opening is suspended under the ceiling. The angle of the air supply outlet is continuously adjustable.



YT-S型在封闭式天花板吊顶中的固定安装，风口送风方向为横向和垂直两种

YT-S type is installed in the suspended roof of the enclosed ceiling. The directions of air outlet are lateral or vertical.

规格 Specification	315	400	630	800	1000	1200
φ D ^A	412	515	810	1015	1290	1530

注：由于YT系列旋流风口的多种功能，它既可固定也可悬挂在天花板上。

在开式吊顶中下齐的固定安装与悬挂式安装的送风效果相同，送风方向的角度连续可调。

Remark: Because of the multiple functions of YT series twist air opening, it can be fixed on the ceiling or suspended under the ceiling. The fixed and suspended installation types on the open ceiling have same air supply effect and the air supply angle can be adjusted too.



球形喷口

Spherical nozzle

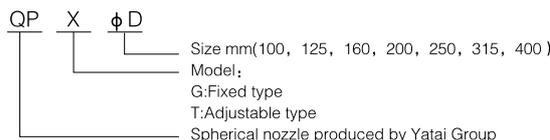
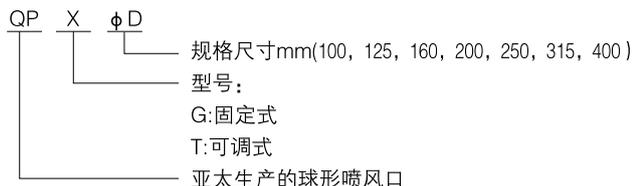
1、概述

QP系列球形喷口是我公司研制开发的新型喷口系列。包括固定式及可调式球形喷口两种类型。主要用于音乐厅、剧场、博物馆等空调送风与人员活动范围有较大距离的环境中。

1.QP series spherical nozzles are a new type of nozzles developed by our company, including fixed type and adjustable type. It is mainly used in concert hall, theater, museum and other places where there is a large distance between air conditioning air supply place and personnel activity area.

2、型号说明

Model explanation



示例: YT-C-φ400 表示为配水平静压箱的旋流风口, 尺寸为 φ400mm。

Example: YT-C-φ400 represents twist air opening matched with horizontal static pressure box. Its inside diameter is 400mm.

3、特点

QP系列电动喷口有七种规格(100, 125, 160, 200, 250, 315, 400)可供选择。当处于面积很大的场所中, 顶层送风不能将空气均匀送到或达不到送风效果时, 安装喷口在侧面, 选用可调式球形喷口送风。在送风与室内温差不断发生变化的情况下, 人工调整或通过执行机构摆动, 使送风气流向上(供暖)或向下(制冷)偏移, 最终达到理想的送风效果。

QP系列球形喷口由于采用最佳的空气动力学喷口结构设计, 能满足很高的噪声要求, 又由于它的高品质的外形设计, 适合各种室内条件和技术要求, 可用于所有的空调系统中。

3.Characteristic

QP series electric nozzles are available in seven specifications (100,125,160,200,250,315,400). When people are in a very large area, the top air supply can not supply air evenly or have a good air supply effect, we can mount it on the side wall and choose the adjustable spherical nozzle to supply air. Under the condition of the constantly changing temperature difference between the air supply and the room, the air supply flow can be shifted upward (heating) or downward (cooling) by manual adjustment or by the actuating mechanism and finally the ideal air supply effect can be achieved.

QPseries spherical nozzle adopts the best aerodynamic structure design which can satisfy a high noise requirement. Because of its high quality appearance design, suitability for all kinds of indoor conditions and strict technical requirements, it can be applied to all the air conditioning systems.

4、送风数据表

4.Air supply data table

规格 Specification	送风距离 Air supply distance									风速 m/s Air speed
	10m			20m			30m			
	风量 m³/h Air speed	LWHD(B)(H)		风量 m³/h Air speed	LWHD(B)(H)		风量 m³/h Air speed	LWHD(B)(H)		
	G	T		G	T		G	T		
100				90	30	28	140	45	44	0.25
125				120	25	25	180	38	37	
160	80	< 18	< 18	160	< 18	< 18	250	32	35	
200	100	< 18	< 18	220	< 18	< 18	300	25	26	
250	130	< 18	< 18	270	< 18	< 18	380	23	22	
315	180	< 18	< 18	350	< 18	< 18	540	20	21	
400	230	< 18	< 18	460	< 18	< 18	700	< 18	< 18	
100	90	30	28	185	50	50				0.5
125	120	25	25	245	45	45				
160	160	< 18	< 18	330	40	45	497	51	56	
200	220	< 18	< 18	435	35	37	655	46	49	
250	270	< 18	< 18	545	32	34	824	43	45	
315	350	< 18	< 18	702	25	26	1055	38	40	
400	460	< 18	< 18	928	25	21	1393	35	31	
100	185	50	50							1.0
125	245	45	45							
160	330	40	45							
200	435	35	37	871	49					
250	545	32	34	1098	50	52				
315	702	25	26	1404	46	47	2106	52		
400	928	25	21	1857	45	42	2783	50	52	

出口有效风量小于 72m³/h 的数据及噪声超过 55dB (H) 的数据都未列入表格中。

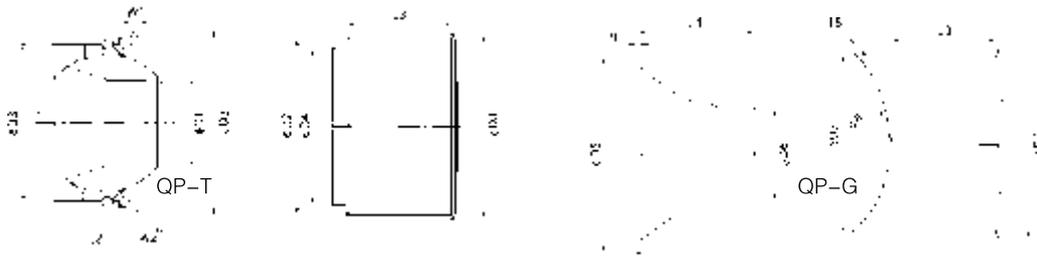
Neither data of valid air volume of outlet less than 72m³/h nor data of noise beyond 55dB (H) is listed in the table.

5、规格尺寸

固定式喷嘴是一种带有安装孔的喷嘴可调式喷嘴的送风喷嘴为球形，卡在外壳之间，配有装饰圈和可直接为圆插接的圆形接管，喷嘴可在 ±30° 范围内人工或电动调节。电动执行器可选择内置或外置，以使用户安装。

5.Size

A fixedtype nozzle outlet is a nozzle with an installation hole.Air supply spray nozzle of the adjustable nozzle outlet is spherical which is clipped between the shell, with a decorative ring and circular connecting pipe which can be linked directly to a circle.The nozzle can be regulated manually or electrically within the range of ±30°. The electric actuator can be built inside or outside for convenient user installation.



6、规格数据表

6.Specification data table

规格 Specification	D1	D2	D3	D4	D5	D6	W1	W2	L1	L2	L3
100	50	135	145	98	135	50	10	-5	95	78	85
125	65	156	170	122	158	65	10	5	112	85	95
160	82	188	200	159	225	81	10	10	122	100	115
200	108	240	256	198	166	108	15	12	155	115	142
250	135	288	300	250	315	135	15	20	188	155	171
315	175	358	385	312	400	175	22	30	225	183	222
400	230	440	466	398	485	230	24	45	288	208	263

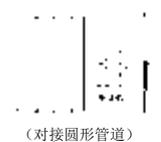
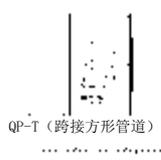
规格 Specification	适合圆筒直径 R Suitable cylinder diameter					
	200	250	315	500	630	800
100	●					
125		●				
160			●	●	●	●
200				●	●	●
250				●	●	●
315				●	●	●

7、安装方式

7.Installation type

可调式

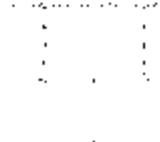
Adjustable type



跨接方形管道
跨接圆形管道
对接圆形管道

固定式

Fixed type



Square jumper pipeline
Circular jumper pipeline
Circular abutting pipeline

QP 系列喷嘴可安装于方形或圆形管道的侧壁上，可用螺栓或铆钉固定，连接处应放密封垫。当直接与圆形管道对接时，可选用带管段的管材，接管直径符合管道的直径。

QP series nozzles can be installed on the side wall of square or circular pipes, which can be fixed with bolts or rivets. Gaskets should be placed at the joints. When it directly docks with the circular pipe, we can choose tubes with pipe segments.The diameter of the connection pipe and that of the pipe should be compatible.



防雨百叶窗系列

Rainproof shutter series

一、单层防雨百叶窗

Single layer rainproof shutter

1、用途与特点

单层防雨百叶窗用于对长期有通风要求的机房或其它公众场合，它由带集水沟（GBC 无）的防雨叶片和带滴水框的侧框架组成。该窗体即使在瓢泼大雨之时，不仅能有效地阻止雨水打进室内，而且在整个百叶窗的迎风面不会形成水帘，从而保证了正常的设计通风要求，厚度为 90mm。

1.Purpose and characteristic

Single-layer rainproof shutter is used in machine rooms or other public places with ventilation requirements for a long time. It consists of rainproof blades with a rain collecting groove (GBC has none) and a side frame with a drip frame. The shutter even in the pouring rain, not only can effectively prevent the rain from entering indoors and the whole windward side of the shutter will not form a water curtain so as to ensure the normal ventilation design requirements. The thickness is 90 mm.

3、规格

3.Specification

3.1 洞尺寸 单位: mm

宽 × 高 × 厚 = B × H × W

其中: $400 \leq B \leq 1250 \times 10$

$H = n \times 65 + 200 \quad 4 \leq n \leq 40$

$W \geq 90$

3.1.Hole size Unit:mm

Width × height × thickness = B × H × W

($400 \leq B \leq 1250 \times 10$

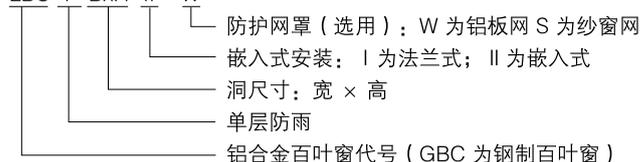
$H = n \times 65 + 200 \quad 4 \leq n \leq 40$

$W \geq 90$)

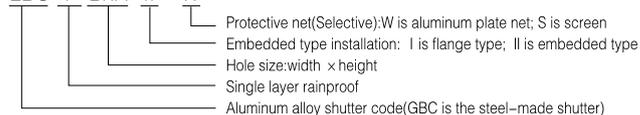
2、型号表示方法

2.Model representation

LBC-F BxH-II -W



LBC-F BxH-II -W



3.2 百叶窗尺寸 单位: mm

宽 × 高 × 厚 = b × h × w

其中 :b=B-15 h=H-15 w=90

3.2.Shutter size Unit:mm

Width × height × thickness = b × h × w

(b=B-15 h=H-15 w=90)

4、技术参数

4.Technical parameters

4.1 有效面积系数

有效面积系数是一个随迎风面积改变而有一微小变化的参数，因此，有效面积系统只能给出一个平均值，即为 0.586。

4.1.The valid area coefficient is a parameter with a slight change with the change of upwind area. Therefore, the effective area system can only give an average value of 0.586.

4.2 干工况阻力性能测试表

4.2.Resistance performance test table of dry working condition

风速 m/s Air speed	1.50	2.00	3.00	4.00	5.00	6.00	7.00
阻力 mmH ₂ O Resistance	0.40	0.81	1.80	3.11	4.76	7.09	9.35
阻力系数 ξ Resistance coefficient	2.85	2.98	3.05	3.08	3.10	3.12	3.15

4.3 湿工况阻力性能测试表

4.3.Resistance performance test table of wet working condition

风速 m/s Air speed	1.50	2.00	3.00	4.00	5.00	6.00	7.00
阻力 mmH ₂ O Resistance	0.41	0.83	1.90	3.23	4.90	7.78	9.84
阻力系数 ξ Resistance coefficient	2.95	3.12	3.22	3.26	3.30	3.43	3.47

4.4 过水量测试表

4.4. Water coming through test table

风速 m/s Air speed	1.0	2.0	3.0	4.0	5.0	6.0	7.0
过水量 g/kg Water coming through volume	1.47	1.21	1.06	0.88	0.77	0.60	0.52

4.5 最大承受风速 30m/s

4.5.Maximum bearable air speed 30m/s

4.6 额定风量: 22000m³/h

4.6.Rated air volume 22000m³/h

二、双层防雨调节百叶窗

Double-layer rainproof regulating shutter

1、用途与特点

双层防雨调节百叶窗用于需通风防雨、隔热保温调节气流的机房或其它公众场合，它由带集水沟的防雨叶片和带滴水框的侧框架及流线型的调节叶片组成，它不仅具有单层防雨百叶窗的优点，而且工作人员还能根据室内的温度或通风量的需求，去调节百叶窗的开度。百叶窗调节灵活、可靠，常年运行无需加油润滑，无噪音，密封性能良好。厚度为两种：160mm 和 180mm。

1.Purpose and characteristic

Double layer rainproof regulating shutter is used in machine room or other public places which need ventilation, rainproof, heat insulation and airflow regulation. It consists of rainproof blades with a rain collecting groove and a side frame with a drip frame and linear regulating blades. It has the advantages of single layer rainproof shutter and the worker can also adjust the opening degree of shutter according to indoor temperature or the demand of ventilation amount. This kind of shutter has advantages of flexible adjustment, reliability, perennial operation without lubrication, no noise and good sealing performance. The two kinds of thickness are 160mm and 180mm.

2、型号表示方法

2.Model representation

LBC-D FT- BxH-II -W



3、规格

3.Specification

3.1洞尺寸 单位：mm

3.1.Hole size Unit:mm

宽×高×厚=B×H×W 其中：500≤B≤1250×10

Width×height×thickness= B×H×W 500 ≤ B ≤ 1250×10

H=n×80.5+200 4≤n≤40 n为正整数 W≥240或W≥180

H=n×80.5+200 4 ≤ n ≤ 40 n Positive integer W ≥ 240 or W ≥ 180

3.2百叶窗尺寸 单位：mm

3.2.Shutter size Unit:mm

宽×高×厚=b×h×w 其中:b=B-15 h=H-15 w=180

Width×height×thickness= b×h×w b=B-15 h=H-15 w=180

4、技术参数

4.Technical parameters

4.1有效面积系数

有效面积系数是一个随迎风面积改变而有一微小变化的参数，因此，有效面积系数只能给出一个平均值，即为0.5251。

4.2阻力性能测试表

4.1.Valid area coefficient

The valid area coefficient is a parameter with a slight change with the change of upwind area. Therefore, the effective area system can only give an average value of 0.5251.

4.2.Resistance performance test table

4.2.1干工况双层铝合金百叶窗阻力性能数据表

4.2.1.Resistance performance data table of dry working condition double layer aluminum alloy shutter

风速 m/s Air speed	1.50	2.00	3.00	4.00	5.00	6.00	7.00
阻力 mmH ₂ O Resistance	0.60	1.35	2.38	4.76	7.55	10.68	13.92
阻力系数 ξ Resistance coefficient	4.45	4.58	4.67	4.78	4.82	4.89	4.95

4.2.2湿工况双层铝合金百叶窗阻力性能数据表

4.2.2.Resistance performance data table of wet working condition double layer aluminum alloy shutter

风速 m/s Air speed	1.50	2.00	3.00	4.00	5.00	6.00	7.00
阻力 mmH ₂ O Resistance	0.66	1.37	2.51	4.98	7.62	11.94	14.56
阻力系数 ξ Resistance coefficient	4.78	4.80	4.85	4.92	4.98	5.02	5.10

4.3双层铝合金百叶窗过水量测试表

4.3.Water coming through volume test table of double layer aluminum alloy shutter

风速 m/s Air speed	1.0	2.0	3.0	4.0	5.0	6.0	7.0
过水量 g/kg Water coming through volume	1.19	1.04	0.86	0.75	0.58	0.50	0.24

4.4双层铝合金百叶窗漏风量测试表

4.4.Air leakage test table of double-layer aluminum alloy shutter

压差 Pa Pressure difference	42	95	130	168	210	252	282
漏风量 m ³ /h Air leakage volume	252	405	520	604	707	784	870

4.5.双层铝合金百叶窗最大承受风速：35m/s

4.6.双层铝合金百叶窗额定风量：21000m³/h

4.7驱动器

4.7.1.手动执行机构：每个百叶窗配一个手动执行机构。

4.7.2.电动执行机构：a 电源：24VAC ± 20%，50Hz；24VDC 220VAC ± 15%，50Hz；240VAC ± 10%，50Hz；b 防护等级：IP42；c 环境条件：-20℃ ~ +59℃，95%RH 无凝结水；d 噪音：小于45dB(A)

4.5.Maximum bearable air speed of double-layer aluminum alloy shutter:35m/s

4.6.Rated air volume of double-layer aluminum alloy shutter:21000m³/h

4.7.Driver

4.7.1.Manual actuating mechanism: each shutter is equipped with a manual actuating mechanism.

4.7.2.Electric actuating mechanism:a Power:24VAC ± 20%,50Hz ; 24VDC 220VAC ± 15%, 50Hz ; 240VAC ± 10%, 50Hz ; b Level of protection:IP42 ; c Environmental condition: -20°C ~ +59°C, 95%RH no condensed water; d Noise: less than 45dB(A)



三、单层调节百叶窗

Single-layer regulating shutter

1、用途与特点

1.Purpose and characteristic

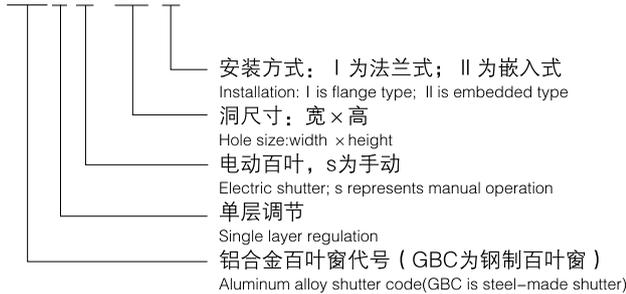
单层调节百叶窗用于对环境需要采光、散热、防风和调节气流无淋雨场合，它可广泛用于机房、办公楼或其它相关的场合，它由流线型的调节叶片和侧框架组成，它的外侧加有防护网罩，内侧有纱窗，能保证室内充满新鲜空气的同时，不会有虫鸟或其它轻飘物体进入室内，给人以心旷神怡的工作及生活环境。厚度为90mm。

Single-layer regulating shutter is widely used in machine room, office building or other related occasions which need light, heat dissipation, wind and rain insulation, airflow regulation and other places. It is composed of linear adjustable blades and side frame, its outside covered with a protective net, inside fixed with the screen window. This kind of design assures plenty of fresh air indoors and at the same time there will be no bug, bird or other light objects entering inside. People will fully enjoy a comfortable living and working life. It is 90mm thick.

2、型号表示方法

2.Model representation

LBC-I-D-BxH-II



3、规格

3.Specification

3.1 洞尺寸 单位：mm

3.1. Hole size Unit:mm

宽 × 高 × 厚 = B × H × W 其中：500 ≤ B ≤ 1250 × 10

Width × height × thickness = B × H × W 500 ≤ B ≤ 1250 × 10

H = H × 80.5 + 200 4 ≤ n ≤ 35 n 为正整 W ≥ 110

H = H × 80.5 + 200 4 ≤ n ≤ 35 n Positive integer W ≥ 110

3.2 百叶窗尺寸 单位：mm

3.2. Shutter size Unit:mm

宽 × 高 × 厚 = B × H × W

Width × height × thickness = B × H × W

其中：b = B - 15 h = H - 15 w = 110

b = B - 15 h = H - 15 w = 110

4、技术参数

4.Technical parameter

4.1 有效面积系数

有效面积系数是一个随迎风面积改变而有一微小变化的参数，因此，有效面积系统只能给出一个平均值，即为0.655。

4.1. Valid area coefficient

The valid area coefficient is a parameter with a slight change with the change of upwind area. Therefore, the effective area system can only give an average value of 0.655.

4.2 干工况阻力性能测试表

4.2. Resistance performance data table of dry working condition

风速 m/s Air speed	1.50	2.00	3.00	4.00	5.00	6.00	7.00
阻力 mmH ₂ O Resistance	0.40	0.81	1.80	3.11	4.76	7.09	9.35
阻力系数 ξ Resistance coefficient	2.85	2.98	3.05	3.08	3.10	3.12	3.15

4.3 湿工况阻力性能测试表

4.3. Resistance performance data table of wet working condition

风速 m/s Air speed	1.50	2.00	3.00	4.00	5.00	6.00	7.00
阻力 mmH ₂ O Resistance	0.41	0.83	1.90	3.23	4.90	7.78	9.84
阻力系数 ξ Resistance coefficient	2.95	3.12	3.22	3.26	3.30	3.43	3.47

4.4 过水量测试表

4.4. Water coming through test table

风速 m/s Air speed	1.0	2.0	3.0	4.0	5.0	6.0	7.0
过水量 g/kg Water coming through volume	1.47	1.21	1.06	0.88	0.77	0.60	0.52

4.5 最大承受风速 30m/s

4.6 额定风量：22000m³/h

4.5. Maximum bearable air speed 30m/s

4.6. Rated air volume: 22000m³/h

四、双层防沙调节百叶窗

Double-layer sandproof regulating shutter

1、用途与特点

1.Purpose and characteristic

防沙百叶窗主要用在沙漠地区有通风要求的电厂汽机房、锅炉房以及控制楼等，它由具有捕集沙粒能力的防沙叶片和可以调节的叶片组成，该百叶窗不仅能有效地捕集空气中的沙粒，而且也能在雨季起到有效防雨作用，还可以根据环境的需要任意调节气流，为沙漠地区的通风提供了更高要求的服务。厚度分两种：160mm和180mm。

Sandproof shutter is mainly used in the turbine room, boiler room and control building of the power plant in desert areas which require a good ventilation condition. It is composed of sandproof blades with the ability of collecting sand grains and adjustable blades. The shutter can not only effectively capture the sand in the air, play an effective rainproof role in the rainy season, but also can adjust the air flow according to the needs of the environment, providing higher quality services for the desert ventilation. There are two kinds of thickness: 160mm and 180mm.

2、型号表示方法

2.Model representation

LBC-D FS- BxH-II-W



3、规格

3.Specification

3.1 洞口尺寸 单位: mm

3.1. Hole size Unit:mm

宽 × 高 × 厚 = B × H × W

Width × Height × Thickness = B × H × W

其中: B=n × 37.5+90 n 为不小于 9 的奇数

B=n × 37.5+90 n is an odd number which is not less than 9

500 ≤ H ≤ 2200 W ≥ 180

500 ≤ H ≤ 2200 W ≥ 180

3.2 百叶窗尺寸 单位: mm

3.2. Shutter size Unit:mm

宽 × 高 × 厚 = b × h × w

Width × height × thickness = b × h × w

其中: b=B-10 h=H-10 w=180 ~ 240

b=B-10 h=H-10 w=180 ~ 240

4、技术参数

4.Technical parameter

4.1 有效面积系数

有效面积系数是一个随迎风面积改变而有一微小变化的参数，因此，有效面积系数只能给出一个平均值，即为0.336

4.2 最大承受风速: 30m/s

4.3 额定风量: 15000m³/h

4.1. Valid area coefficient

The valid area coefficient is a parameter with a slight change along with the change of upwind area. Therefore, the effective area coefficient can only be an average value of 0.336.

4.2. Maximum bearable air speed: 30m/s

4.3. Rated air volume: 15000m

4.4 阻力性能测试表

4.4. Resistance performance test table

风速 m/s Air speed	1.50	2.00	3.00	4.00	5.00	6.00	7.00
阻力 mmH ₂ O Resistance	0.66	1.37	2.77	4.84	7.59	11.11	15.80
阻力系数 ξ Resistance coefficient	4.78	4.80	4.85	4.92	4.98	5.02	5.10

4.5 漏风量测试表

4.5. Air leakage test table

压差 Pa Pressure difference	42	95	130	168	210	252	282
漏风量 m ³ /h Air leakage table	252	405	520	604	707	784	870

4.6 驱动器: 同双层铝合金调节百叶窗

4.6. Actuator: Its data is like that of double layer aluminum alloy regulating shutter



五、百叶窗安装

Shutter installation

1、百叶窗与预留孔洞之间，如果预留孔洞为钢结构，则间隙不小于10mm，要求孔洞每条边的不平整度不得大于 $2\text{mm}/\text{m}^2$ ，两垂直直边的角度误差不得大于 1° 。如果预留孔洞为混凝土及砖混结构，则间隙不得小于20mm，要求孔洞每条边不得大于 $5\text{mm}/\text{m}^2$ ，两垂直直边的角度误差不得大于 2° 。

2、按照《铝合金百叶窗连接图》安装，将各个百叶窗安装于各相应的孔洞内，需调整百叶窗的水平度及垂直度后定位，防止扭曲，安装时，先安装框架，再安装百叶窗。

3、在安装框架时，采用膨胀螺栓M10*80固定，必须保证水平度及垂直度。若墙体为钢结构，用电焊机将框架与钢结构焊接也可，或用M6*20的钻尾钉将4*40的角钢与钢结构连接即可，必须保证不变形。

4、安装时要注意三点：

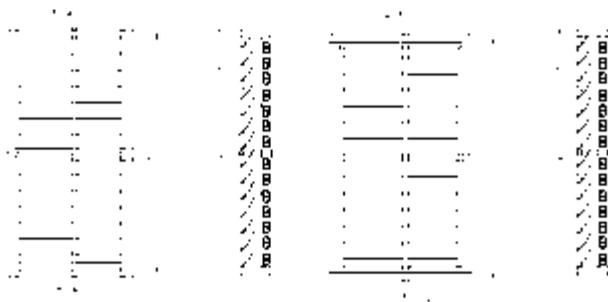
- (1) 注意百叶窗的方向，防雨叶片在室外侧，调节叶片在室内侧。
- (2) 严禁撬扳或直接推拉百叶窗的防雨叶片及调节叶片，应以百叶窗的两侧框架为着力点。
- (3) 按装前，先将两侧的封盖拆除。
- (4) 对于安装好的百叶窗，应有相应的保护措施，以防止人为损坏。

5、图例（仅供参考）

(1) 双层铝合金百叶窗外形图

5. Legend (only for reference)

(1) Double-layer aluminum alloy shutter configuration



嵌入式百叶窗外形图

Configuration of embedded shutter

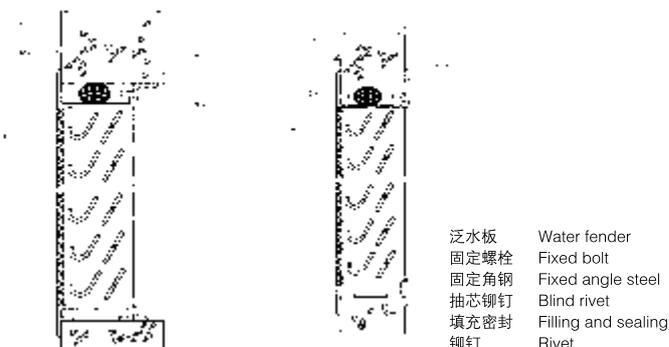
法兰式百叶窗外形图

Flange type shutter configuration

防护网罩	Protective net
防尘纱窗	Dust-proof screen
防雨叶片	Rain-proof blade
防护网罩	Protective net

(2) I型安装图（法兰式）

(2) I type installation (flange type)



泛水板	Water fender
固定螺栓	Fixed bolt
固定角钢	Fixed angle steel
抽芯铆钉	Blind rivet
填充密封	Filling and sealing
铆钉	Rivet

(3) II型安装图（嵌入式）

(3) II type installation (embedded type)



螺栓	Bolt
槽钢	Box iron
固定板厚4mm	Connection thickness 4mm
泛水板	Water fender
铆钉	Rivet
防虫鸟网	Bug and bird shielding net
填充密封	Filling and sealing

六、百叶窗使用说明

Shutter operation instruction

百叶窗在起动前应先检查紧固件的松紧，叶片有无卡碰现象，百叶窗内部有无杂物。再检查电动机构的要求电源与供方电源是否相符。严禁人力扳动活动叶片，防止活动叶片及支架轴被损坏。

Before operating the shutter, check the tightness of the fasteners, whether the blades are stuck and whether there are foreign substances inside the shutter. Then check the required power supply of the electric mechanism is consistent with the power supply of the supplier or not. It is prohibited to pull or drag moveable blades manually to prevent the damage of moveable blades and supporting shaft.

七、控制

Control

1、如果百叶窗的调节为手动，则每个百叶窗均有一个手动机构进行单台控制，如果百叶窗为电动，则每台百叶窗均设有一台驱动器，对于电动百叶窗其控制有如下优点。

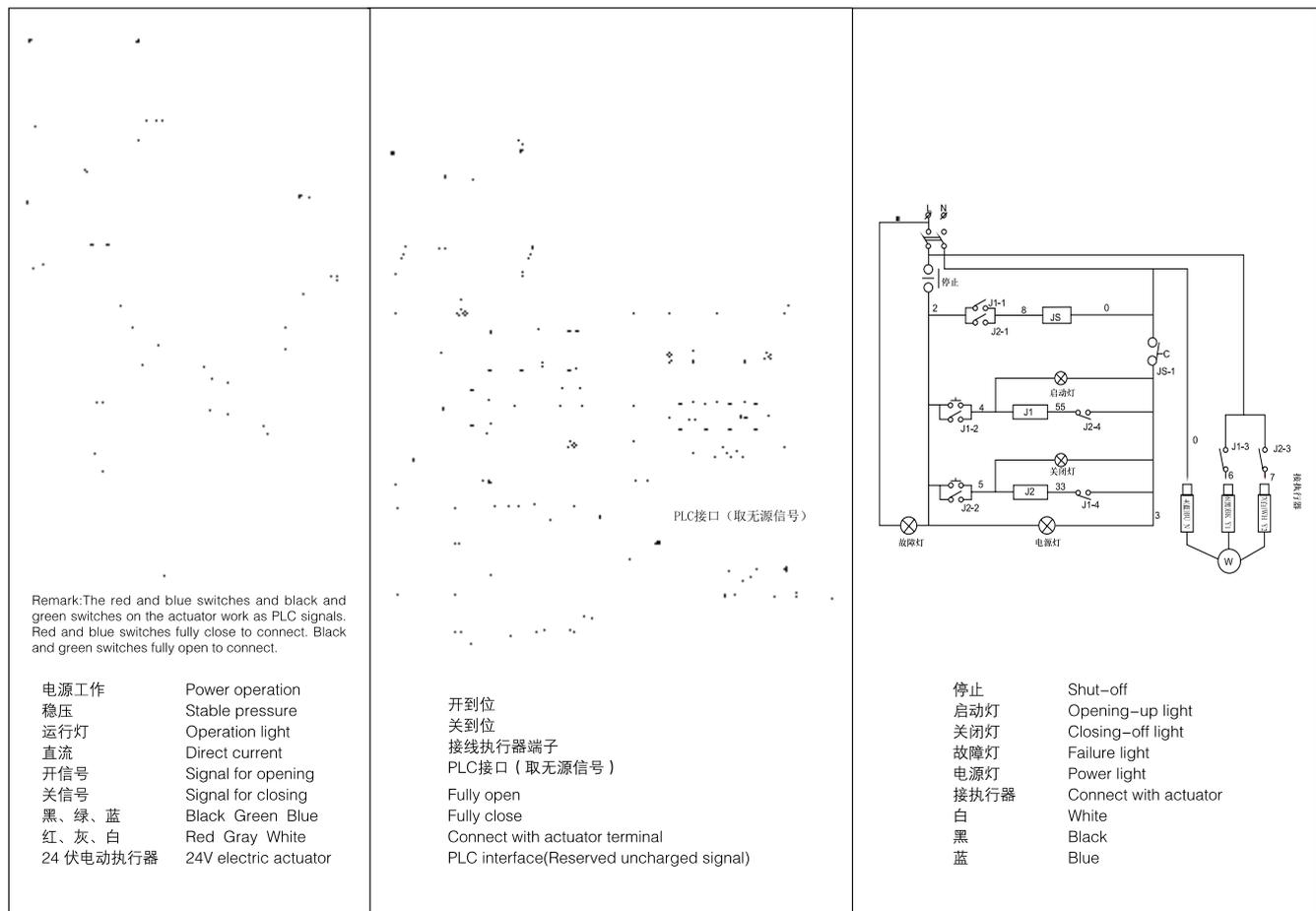
- (1) 可实现远距离操作。
- (2) 可单台进行控制，也可多台并联进行控制。
- (3) 远距离操作时可显示百叶窗的开、关位置。
- (4) 可以与其它设备进行联锁控制。

1.If the shutter is manually adjusted, each shutter has a manual mechanism for each single shutter; if electrically adjusted, each shutter has an actuator. The electric-control shutter has the following advantages.

- (1) Long-distance operation.
- (2) Single-unit control or multi-unit combination control.
- (3) When we operate remotely, we can observe the position of the on and off switches.
- (4) Interlock control with other equipment is available.

2、控制原理图

2.Control principle diagram



24V 控制原理图（国产机构）

24V control principle diagram(domestic mechanism)

220V 控制原理图（国产机构）

220V control principle diagram(domestic mechanism)

AC220V 控制原理图（进口机构、西门子）

220V control principle diagram(domestic mechanism, Siemens)



消声器

Muffler

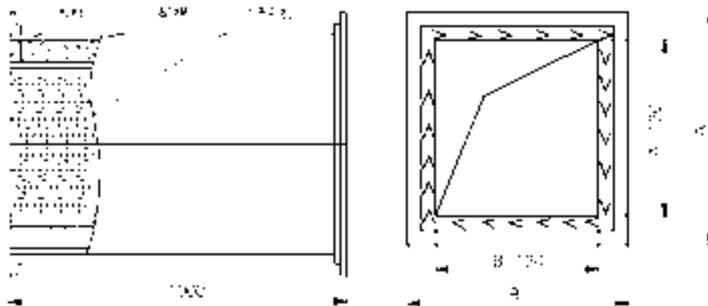
T701-2型矿棉消声器

T701-2 mineral wool muffler

该消声器是净化空调系统所需的理想产品，是国家标准管道消声器之一。

This muffler is an ideal product for purification air conditioning system and is one of the national standard pipe mufflers

木框 Wooden frame
矿棉 Mineral wool
消声孔板 Muffling orifice plate



倍频程频带中心频率 (Hz) Central frequency of octave band(Hz)	100	200	400	800	1600	3150	6300	规格尺寸 A×B Size
频带衰减率 dB Frequency band attenuation rate dB 型号 Model								
1#	7.7	15.0	20.0	23.4	26.2	27.2	18.0	320×320
2#	6.4	12.5	17.3	19.4	21.8	14.6	7.2	320×420
3#	5.8	11.3	15.6	17.5	19.7	13.2	6.6	320×520
4#	6.2	12.0	16.6	18.8	21.0	14.0	7.0	370×370
5#	5.1	10.0	13.9	15.6	17.5	12.0	6.0	370×495
6#	4.6	9.0	12.5	14.0	15.8	10.5	5.3	370×620
7#	5.1	10.0	13.9	15.6	17.5	11.7	5.8	420×420
8#	4.2	8.3	11.6	12.9	14.6	9.7	4.9	420×570
9#	3.8	7.5	10.4	11.7	13.2	8.8	4.4	420×720

T701-6型阻抗复合消声器

T701-6 type impedance muffler

该消声器是国家标准管道消声器之一，为了改变木框变形而影响质量，公司重新设计为钢骨结构的玻璃钢吸声片及内管截面的突变和外管之间的膨涨室所构成，外壳呈矩形，对中频及高频都有较大的消声作用，可用于降低空调及通风系统中的中、低压风机噪声。通风的风量为2000-6000m³/h，用于对金属表面无腐蚀作用及无粉尘的场合，如对金属表面有腐蚀作用也可特殊订货，但订货时需要说明。

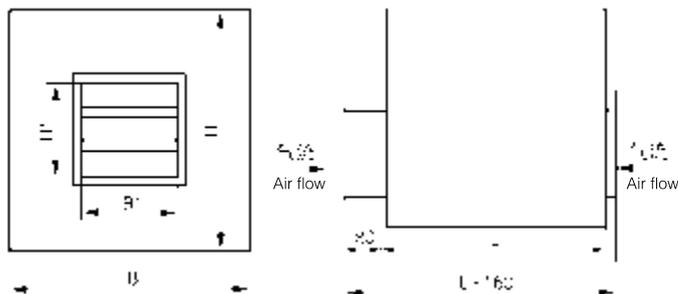
技术性能

衰减消声量：低频 $\Delta R=10 \sim 15$ db/m, khidm $\Delta R=15 \sim 25$ db/m，高频 $\Delta R=25 \sim 30$ db/m（具体详细性能可查国标采暖通风设计选用手册）。

阻力系数 $p=0.4$ ，阻力损失 $H=P \times \frac{V^2 R}{2g}$ mmH₂O

结构形式：

Structure type



The muffler is one of the national standard pipe muffler. In order to change the wooden frame deformation, the company manages to design a new type which is consist of fiber reinforced plastic noise absorption plate, mutation of inner tube cross-section and expansion chamber of the outer pipes. With a rectangular casing, it has a large noise elimination effect on intermediate frequency and high frequency noise. It can be used to reduce the medium and low pressure fan noise of air conditioning and ventilation system. The air volume of ventilation is 2000-6000m³/h, which is used in the occasions without corrosion effect on the metal surface and without dust. If the site has corrosion effect on the metal surface, special orders should be placed with notice of this condition.

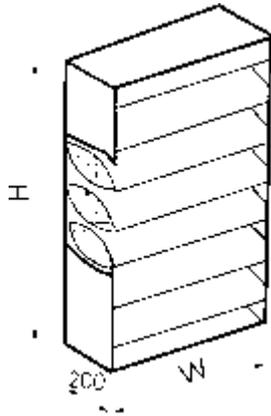
Technological performance

Attenuating noise reduction amount: low frequency $\Delta R=10 \sim 15$ db/m, khidm $\Delta R=15 \sim 25$ db/m, high frequency $\Delta R=25 \sim 30$ db/m (refer to the "Selection Manual for International Standard Ventilation Design" for more detail)

Resistance coefficient $p=0.4$, resistance loss $H=P \times \frac{V^2 R}{2g}$ mmH₂O

CHX-1型消声百页窗

CHX-1 muffler shutter



概述

Overview

采用热浸镀锌钢板材料，也可以用铝或不锈钢材料，其吸声采用小椭圆翼形的阻性吸声片，用于回风或送风系统，空气调节和冷却装置、设备房、计算机房、宾馆、医院、会议室等环境，以消除干扰和噪声。

Made of the materials of hot dip galvanizing steel plate or aluminum or stainless steel, it uses small elliptical wing shaped resistive sound absorption piece to absorb noise. It is widely used in air return or supply systems, air conditioning and cooling devices, equipment room, computer room, hotel, hospital, conference room and so on to eliminate disturbance and noise.

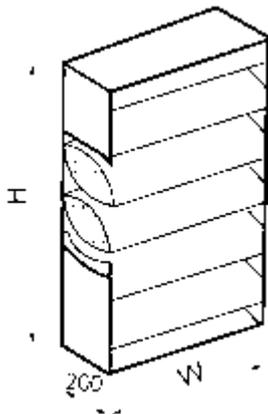
规格

Specification

W (mm)	600-1200															
H (mm)	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550		
片数 Number of blades	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
倍频带中心频率 (Hz) Central frequency of octave band(Hz)	63		125		250		500		1000		2000		4000		8000	
噪声降低 (dB) Noise reduction(dB)	7		8		5		4		8		9		9		8	

CHX-2型消声百页窗

CHX-2 muffler shutter



概述

Overview

采用热浸镀锌钢板材料，也可以用铝或不锈钢材料，其吸声采用小椭圆翼形的阻性吸声片，用于阻隔室内外之间的环境噪声，使空气得到充分的流通，可以平嵌入方式安装在砖石或其它建筑结构之中，或可作独立的阻隔挡板墙。

Made of the materials of hot dip galvanizing steel plate or aluminum or stainless steel, it uses small elliptical wing shaped resistive sound absorption piece to absorb noise to insulate indoor and outdoor ambient noises. Thus, the air inside can fully circulate. The flatly embedded installation type is suitable for masonry or other building structures, or can be used as a separate barrier baffle wall.

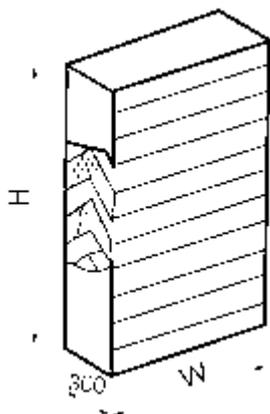
规格

Specification

W (mm)	600-1200															
H (mm)	800	1050	1300	1550	1800	2050	2300	2550	2800	3050	3300	3550	3800			
片数 Number of blades	3	4	5	6	7	8	9	10	11	12	13	14	15			
倍频带中心频率 (Hz) Central frequency of octave band(Hz)	63		125		250		500		1000		2000		4000		8000	
噪声降低 (dB) Noise reduction(dB)	7		8		5		7.5		11		11		11		10	

CHX-3型消声百页窗

CHX-3 muffler shutter



概述

Overview

采用热浸镀锌钢板材料，其吸声是用折板阻性吸声片，吸声面积大，衰减噪声能力强，适用于阻隔室内外之间的环境噪声，可以平嵌入方式安装在砖石或其它建筑结构之中，或可作独立的阻挡板墙。

Made of the materials of hot dip galvanizing steel plate, it uses folded plate resistive sound absorption piece which has a large noise-absorption area, suitable for insulation indoor and outdoor ambient noises. The flatly embedded installation type is applied to masonry or other building structures, or can be used as a separate barrier baffle wall.

规格

Specification

W (mm)	600-1200															
H (mm)	600	830	1030	1230	1430	1630	1830	2030	2230	2630	2830	3030	3230	3430		
片数 Number of blades	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
倍频带中心频率 (Hz) Central frequency of octave band(Hz)	63		125		250		500		1000		2000		4000		8000	
噪声降低 (dB) Noise reduction(dB)	13		11		5		8		14		10		10		12	



T701-4型玻璃棉消声器

T701-4 glass wool muffler

该消声器是净化系统较理想的消声设备,是国家标准管道消声器之一。

The muffler is an ideal muffler equipment of the purification system, which is one of the national standard pipe mufflers.

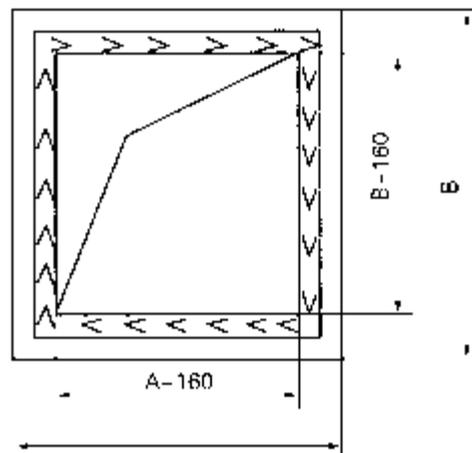
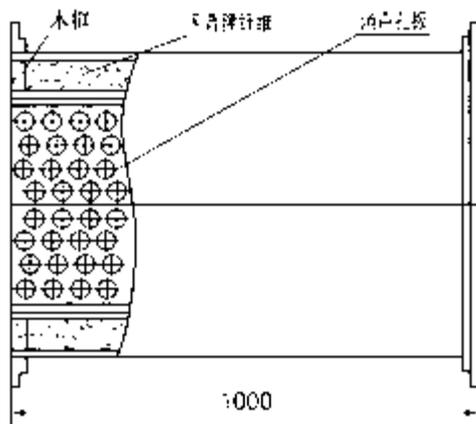
技术性能表

Technical parameter

倍频程频带中心频率 (Hz) Central frequency of octave band(Hz)	100	200	400	800	1600	3150	6300	规格尺寸 A×B Size
频带衰减率 dB Frequency band attenuation rate dB 型号 Model								
1#	7.7	17.6	30.0	29.5	26.5	18.5	12.3	360×360
2#	6.4	14.7	15.1	24.6	22.2	14.8	7.4	360×460
3#	5.8	13.2	22.6	22.1	19.9	13.2	6.6	360×560
4#	6.2	14.1	24.1	23.6	21.2	14.1	7.1	410×410
5#	5.1	11.7	20.1	19.9	17.7	11.8	5.9	410×535
6#	4.6	10.5	18.0	17.6	15.9	10.6	5.3	410×660
7#	5.1	11.7	20.0	19.6	17.7	11.8	5.9	460×460
8#	4.2	9.8	16.7	16.4	14.8	9.8	4.5	460×610
9#	3.8	8.8	15.0	14.7	13.3	8.8	4.4	460×760

结构形式

Structure form



木框
Wooden frame
玻璃纤维
Glass wool fiber
消声孔板
Muffling orifice plate



VKW型消声弯头

VKW muffler bend

VKW 型消声弯头是在公司原有消声弯头的基础上改进的一种新型消声弯头，经测试及有关用户证明，该消声弯头具有良好的性能和较宽的频带，气流阻力小，再声噪音低，它采用较小的穿孔板作吸声材料，取消了阻性吸声材料，因而使结构大简化，适合在一些潮湿、高温、高速气流及超净环境的空调通风工程中使用。

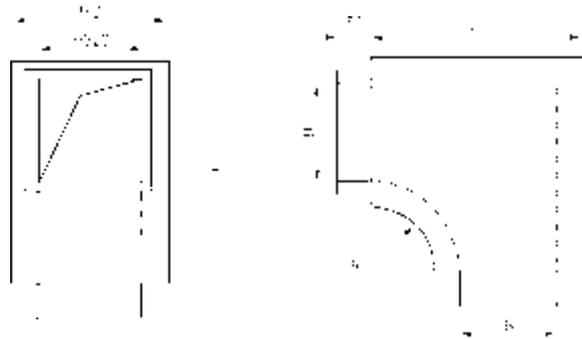
VKW type muffler bend is a new muffler bend improved from the original muffler in our company. Test and users' feedback show the muffler bend has a good performance and wide band, small flow resistance and low noise. It adopts micropunch plate as the noise absorption material instead of resistive one to have a much simplified structure, suitable for some damp, high temperature, high speed airflow, and ultra-clean environmental air conditioning ventilation projects.

构造及选用

Structure and selection

该弯头的内部结构以微穿孔钢板加固槽钢与外壳连接，其中 I 型为单腔消声弯头，适用于中频消声，II 型为双腔消声弯头，消声频带较宽，选用时请注意。

Inside the bend are micropunch steel plate and fixed box iron which connect with shell of the bend. Type I is the single cavity muffler bend suitable for medium frequency sound reduction and type II is the double-cavity muffler bend suitable for multiple frequencies.



VKW 系列规格尺寸表

VKW series size table

型号 Model	风速 m/s Air speed	阻力损失 (Pa) Resistance loss	声级差 Sound level difference							
			125	250	500	1K	2K	3K	4K	8K
VKW- I	5	23.5	3	9	1.3	15	7	4	10	
	10	35	4	9	1.4	17	9	6	12	
	15	70.5	4	10	1.3	54	9	7	13	
	20	34	5	12	1.2	12	12	10	14	
VKW- II	5	24.5	8	12	1.3	14	8	5	10	
	10	39.2	7	13	1.5	15	9	6	110	
	15	80	7	10	1.5	16	10	6	11	
	20	12.5	6	14	1.6	15	12	7	13	

表中数据为 500 × 400 弯头实测 VKW- I 型

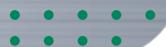
The data in the table above is measured from the 500 × 400 bend VKW- I type

规格 Specification	B × H	b × h	R	规格 Specification	B × H	b × h	R	规格 Specification	B × H	b × h	R
1	320 × 200	740 × 400	220	8	500 × 250	1100 × 450	400	15	630 × 500	1360 × 700	540
2	320 × 250	740 × 450	220	9	500 × 320	1100 × 20	400	16	630 × 630	1360 × 830	500
3	320 × 320	740 × 520	220	10	500 × 400	1100 × 6000	400	17	800 × 320	1700 × 520	700
4	400 × 200	900 × 400	300	11	500 × 500	1100 × 700	400	18	800 × 400	1700 × 600	700
5	400 × 250	900 × 450	300	12	630 × 250	1360 × 450	530	19	800 × 500	1700 × 700	700
6	400 × 320	900 × 520	300	13	630 × 320	1360 × 520	530	20	800 × 630	1700 × 800	700
7	400 × 400	900 × 600	300	14	630 × 400	1360 × 600	530	21	800 × 800	1700 × 1000	700

VKW- II 型

VKW-II type

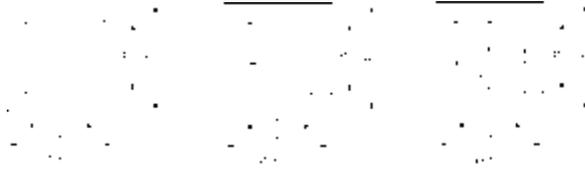
规格 Specification	B × H	b × h	R	规格 Specification	B × H	b × h	R	规格 Specification	B × H	b × h	R
1	320 × 200	790 × 500	170	8	500 × 250	1150 × 550	350	15	630 × 550	1410 × 800	480
2	320 × 250	790 × 550	170	9	500 × 320	1150 × 620	350	16	630 × 630	1410 × 930	480
3	320 × 320	790 × 620	170	10	500 × 400	1150 × 700	350	17	800 × 330	1750 × 620	650
4	400 × 200	950 × 500	250	11	500 × 500	1150 × 800	350	18	800 × 400	1750 × 700	650
5	400 × 250	950 × 550	250	12	630 × 250	1410 × 550	480	19	800 × 500	1750 × 800	650
6	400 × 320	950 × 620	250	13	630 × 250	1410 × 620	480	20	800 × 630	1750 × 930	650
7	400 × 400	950 × 700	250	14	630 × 400	1410 × 700	480	21	800 × 800	1750 × 1100	650





WX型微穿孔消声器

WX type micropunch plate muffler



WX 型微穿孔消声器是一种全金属结构的宽频带消声装置，是由钢板，镀锌板或铝合金板机械冲制的微穿孔板组装而成。由于采用了不同的穿孔率和不同的后腔双层孔板，故在较宽的声频范围内均有良好的消声效果，经测试证明，本消声器（L=1.8 米）在低频时，消声量为 12-26db，在中频时，消声量为 20-25db（风速在 10-15m/s 时）。

本消声器阻力损失很小。经测试，在风速 9-11m/s 时，阻力损失为 7-29Pa。

我公司生产的 WX 型消声器，由两节组成，有效长度 1.8m，断面尺寸系根据全国通用标准风管制作，如下图所示。



根据尺寸大小分为 WX-I 型、WX-II 型、WX-III 型三种规格，选用时根据消声量要求及使用场所条件，可以在中间串联若干断，选用时通过消声器的空气流速不宜过大，一般在 16m/s 左右为宜。订货如无要求按单层单节生产。

WX micropunchplate muffler is a kind of wideband muffler device with all-metal structure, which is assembled by micropunch plates made of steel plate, galvanized plate or aluminum alloy plate.

With different punching ratio and different back cavity double-layer punch plate, it boasts good silencing effect in a wide audio frequency range. Test shows that the noise reduction amount of this muffler is 12-26db when in low frequency, 20-25db when in medium frequency (air speed 10-15m/s).

This muffler has a small resistance loss. According to the test, when air speed is 9-11m/s, the resistance loss is 7-29pa.

The WX muffler manufactured by our company is composed of two sections with an effective length of 1.8m and a section size made according to the national standard air duct. Its dimension is shown as below.

According to the size, the WX micropunch plate muffler is divided into three kinds of specifications: WX - I, WX - II, WX - III. Please choose according to the volume of noise elimination and operation site conditions. Several segments can be linked in the middle together. The air speed going through the muffler should not be too fast, generally around 16 m/s. If there is no special requirements when ordering, we shall produce single layer, single segment type.

结构尺寸 及选用风量表

Size and selection of air volume table

型号 Model	风量 (m³/h) air volume				外形尺寸 (mm) Contour and size			法兰口径 (mm) Flange caliber	
	风速 m/s Air speed	风速 8m/s Air speed	风速 10m/s Air speed	风速 12m/s Air speed	高 (H) Height	宽 (B) Width	长 (L) Length	高 (H1) Height	宽 (B1) Width
1#	2000	2660	3330	4000	800	500	1600	520	230
2#	3000	4000	5000	6000	800	600	1600	510	370
3#	4000	5330	6670	8000	1000	600	1600	700	370
4#	5000	6660	8320	10000	1000	800	1600	770	400
5#	6000	9000	10000	12000	1200	800	900	700	550
6#	8000	10660	13340	16000	1200	1000	900	780	630
7#	10000	13320	16640	20000	1500	1000	900	1000	630
8#	15000	20000	25000	30000	1500	1000	900	1000	630
9#	20000	26700	35400	40000	1800	1400	900	1330	970
10#	30000	40000	50000	60000	2000	1800	900	1500	1310



WX-I 型规格尺寸表

WX-I size table

规格 specifications	B × H	b × h	接管法兰规格 Joining pipe flange specification	适用风量 m³/h Applicable air volume	规格 specifications	B × H	b × h	接管法兰规格 Joining pipe flange specification	适用风量 m³/h Applicable air volume
1	320 × 250	720 × 650	L25 × 4	< 4300	14	630 × 630	1030 × 1030	L25 × 4	< 21000
2	320 × 320	720 × 720	L25 × 4	< 5500	15	800 × 320	1200 × 720	L32 × 4	< 13000
3	320 × 250	800 × 650	L25 × 4	< 5400	16	800 × 400	1200 × 800	L32 × 4	< 17000
4	400 × 320	800 × 720	L25 × 4	< 6900	17	800 × 500	1200 × 900	L32 × 4	< 21000
5	400 × 400	800 × 800	L25 × 4	< 8600	18	800 × 630	1200 × 1030	L32 × 4	< 27000
6	500 × 250	900 × 650	L25 × 4	< 6700	19	800 × 800	1200 × 1200	L32 × 4	< 34000
7	500 × 320	900 × 650	L25 × 4	< 8600	20	1000 × 320	1400 × 720	L32 × 4	< 17000
8	500 × 400	900 × 800	L25 × 4	< 10800	21	1000 × 400	1400 × 800	L32 × 4	< 21000
9	500 × 500	900 × 900	L25 × 4	< 18000	22	1000 × 500	1400 × 900	L32 × 4	< 27000
10	630 × 250	930 × 650	L25 × 4	< 18500	23	1000 × 630	1400 × 1030	L32 × 4	< 34000
11	630 × 320	1030 × 720	L25 × 4	< 10000	24	1000 × 800	1400 × 1200	L32 × 4	< 43000
12	630 × 400	1030 × 800	L25 × 4	< 13000	25	1000 × 1000	1400 × 1400	L32 × 4	< 54000
13	630 × 500	1030 × 900	L25 × 4	< 17000					

WX-II 型规格尺寸表

WX-II size table

26	1250 × 400	1650 × 800	L30 × 4	< 27000	32	1600 × 500	2000 × 900	L40 × 4	< 43000
27	1250 × 500	1650 × 900	L30 × 4	< 33000	33	1600 × 630	2000 × 1030	L40 × 4	< 54000
28	1250 × 630	1650 × 1030	L30 × 4	< 42000	34	1600 × 800	2000 × 1200	L40 × 4	< 69000
29	1250 × 800	1650 × 1200	L30 × 4	< 54000	35	1600 × 1000	2000 × 1400	L40 × 4	< 86000
30	1250 × 1000	1650 × 1400	L30 × 4	< 67000	36	1600 × 1250	2000 × 1650	L40 × 4	< 108000
31	1250 × 1250	1650 × 1250	L30 × 4	< 84000					

WX-III 型规格尺寸表

WX-III size table

37	2000 × 800	2400 × 1200	L40 × 4	< 86000	39	2000 × 1250	2400 × 1625	L40 × 4	< 135000
38	2000 × 1400	2400 × 1400	L40 × 4	< 108000					

VKT-1 消声弯头

VKT-1 muffler bend

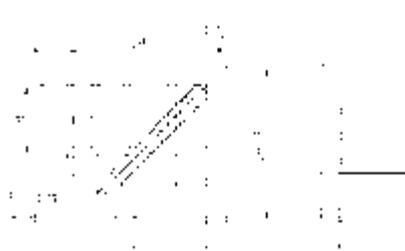
本产品采用外角内圆的结构形式，外壳以优质镀锌钢板制作，以轻钢材作内部龙骨，用超细玻璃棉为吸声材料，因此它具有重量轻，体积小，消声效果好，阻力损失小，外形美观等特点，适用于通风，空调净化系统中。

本产品根据风口截面的大小分为 I、II、III 三种规格，其中 B ≤ 500 时为 I 型，B ≤ 630、B ≤ 1000 时为 II 型，B > 1000 时为 III 型，当风速米 / 秒。为下列数值时阻力（毫米水柱）

This product adopts the structure of right angle outside and arc inside. Its shell made of optimum galvanized steel plate, inside keel lightweight steel and absorption material super-fine glass wool. Thus, it has the advantages of light weight, small volume, good sound reduction, small resistance loss and aesthetic appearance, which is mainly used in ventilation and air conditioning purification system.

消声量 Sound deadening capacity 风管宽度 Air duct width	频率 Frequency	6.5	7.0	7.5	8.0	8.5	9.0	9.5
	I II 型 =0.68 Type I or II =0.68		1.75	2.04	2.33	2.66	3	3.36
III 型 A=0.42 Type III A=0.42		1.45	1.68	1.93	2.19	2.43	2.78	3.1





内部龙骨
配套法兰
导流叶片
Interior keel
Mating flange
Guide blade

VKT22-I 弯头性能表 (单位:分贝)

VKT22-I bend performance table(Unit:decibel)

消声量 Sound deadening capacity	风管宽度 Air duct width	频率 Frequency								声级计权 A 档 Sound level weighting A
		63	125	250	500	1000	2000	4000	8000	
	250mm	4.0	6.0	7.0	12.5	15.0	10.0	11.0	14.0	20
	320	4.5	6.0	7.0	12.5	14.5	13.0	12.0	13.0	20
	400	5.0	6.0	7.0	12.5	14.5	15.5	13.0	12.0	20
	500	5.0	6.0	7.0	12.5	14.5	15.5	13.0	12.0	20
	630	5.0	8.0	9.0	12.5	13.0	14.0	14.0	13.0	20
	800	5.5	10.0	12.5	13.0	12.0	13.0	18.0	14.0	20
	4000	6.0	7.0	12.0	14.0	16.0	18.0	18.0	18.0	20
	7100	7.0	7.0	12.0	14.0	16.0	18.0	18.0	18.0	20

VKT22-I 弯头性能表 (单位:分贝)

VKT22-I bend performance table

I 型 Type I	型号 Model	1	2	3	4	5	6	7	8
	规格 B×H Specification B×H	300×200	300×250	320×320	400×200	400×250	400×320	400×400	500×200
II 型 Type II	型号 Model	12	13	14	15	16	17	18	19
	规格 B×H Specification B×H	630×250	630×320	630×400	630×500	630×630	800×320	800×400	800×500
III 型 Type III	型号 Model	27	28	29	30	31	32	33	34
	规格 B×H Specification B×H	1250×400	1250×500	1250×630	1250×800	1250×1000	1600×500	1600×630	1600×800

安装及注意事项

Installation and precautions

- 1、风管内风速不宜过大，一般 8 米 / 秒左右为宜，最大不超过 12 米 / 秒。
- 2、性能表中的消声量为单个弯头的消声量，当串连使用时，间距必须大于 2X (X 是风口截面对角线长)，效果才好，如 L 小于 2X，由于相互间的作用，其效果只有单个弯头的 1.5 倍，因此，在使用连段消声弯头时，尽可能加长连接间距，以保证其消声效果。
- 3、用于净化系统时，内用玻璃布再加一层尼龙布。
- 4、消声弯头的安装应在风机口的垂直段或水平段。
- 5、订货时，应标明内部龙骨材质，用于净化系统时需加以说明。

- 1.The air speed going through the wind pipe should not be too fast.Generally 8 m/s or so is appropriate.The maximum should not beyond 12m/s.
- 2.Muffler volume in the performance table is that of a single bend.When we chain them together, separation distance must be longer than 2 X (X is the length of diagonal of the air opening section) in order to have a good noise reduction effect. If L is shorter than X, due to the mutual effect, the noise muffler effect is only 1.5 times that of a single bend.Therefore, when using the chain muffler bend, we need to lengthen connecting separation space as far as possible to ensure its muffling effect.
- 3.For cleaning system, add a layer of glass cloth and a layer of nylon cloth inside.
- 4.The installation of the muffler bend shall be in the vertical or horizontal section of the fan inlet.
- 5.When ordering, indicate the inner keel material. If for the purification system, please give a detailed information.

YZP-100型片式消声器

YZP-100 chip muffler

该消声器是在 T701-1 型基础上改进的一种管道式消声设备，主要适合一般空调系统中在消除以低频为主的系统中效果比较突出。

This muffler is an improved pipeline type muffler based on T701-1 type, which is mainly suitable for general air-conditioning systems and has an outstanding effect in eliminating low-frequency noises.

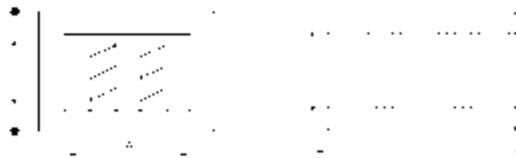
YZP-100 片式消声器衰减特性

Attenuation characteristics of YZP-100 chip muffler

有效长度 (mm) Valid length	消声器片厚 (mm) Chip thickness of muffler	风速 (m/s) Air speed	信频带中心频率的衰减量 (dB) Attenuation quantity of central frequency of signal frequency band						
			63	125	250	500	1000	2000	4000
1000	100	4	4	7	14	16	21	25	24
		6	5	7	16	17	21	25	24
		8	5	7	16	16	21	24	25

结构形式

Structure style



ZP200型片式消声器

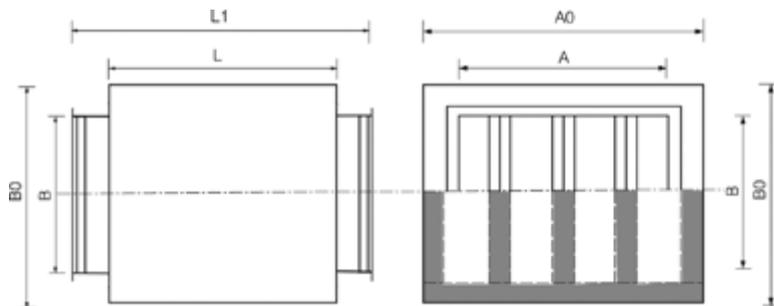
ZP200 chip muffler

与 ZP100 相比，ZP200 四周吸声层和中间吸声片厚度为 200mm，结构与 ZP100 相同。低频消声量更大，消声量 20dB(A)。

压力损失 40~159Pa (风速 5~10m/s)

Compared with ZP100, the thickness of the sound absorption layer and the middle sound absorber plate of ZP200 are both 200mm, and the structure is the same as that of ZP100. It has a good low-frequency sound reduction performance. Sound deadening capacity is 20dB(A).

Pressure loss 40~159Pa (air speed 5~10m/s)

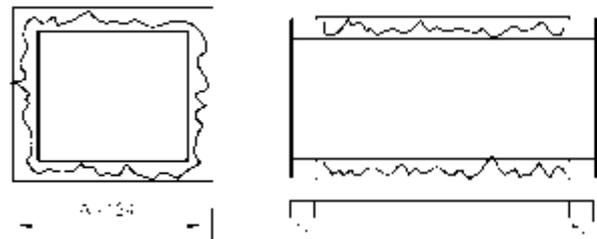


YGZX型管式阻性消声器

YGZX pipe resistive muffler

管式阻性消声器适合用于空调通风系统的支风管和末端，也可以用于风量较小系统的主干管道上。其结构形式如右图：

The pipe resistive muffler is suitable for the branch air duct and the end of the air conditioning and ventilation system. It also can be used in the main duct of the system with small air volume. Its structure style is shown in the right figure.





管式阻性消声器的消声量和阻损

Sound deadening capacity and resistance loss of pipe resistive muffler

有效长度 (mm) Valid length	风速 (m/s) Air speed	阻力损失 (Pa) Resistance loss	下列频率 (HZ) 下的消声器 (dB) Muffler(dB) of the following frequencies(HZ)					
			125	250	500	1000	2000	4000
900	7-8	51	10.7	12.7	24.7	31.5	37.2	33.5
	5-6	47.7	12.5	15.4	26.7	34.0	37.4	33.8
	3-4	11.8	12.7	16.4	28	36	39.2	35.8

YZBX型折板式消声器

YZBX folded plate muffler

折板式消声器属于管道阻性消声器的一种，主要用于通风管道的消声，同时也可用于空调器内。

折板式消声器有效长度每节为 900mm，根据被调房间的需要和声音频谱特性与风量的需求，送风管可选用 2-3 节，回风管可选用 1-2 节，效果最佳。

消声器尽量远离风机出口，避开高速风流，最好设在风管末端，在悬吊时应加隔振措施，以防传递固体噪音。

Folded plate muffler is a kind of pipe resistive muffler, which is mainly used for the sound deadening of ventilation pipe and air conditioner.

Effective length of folded plate muffler of each section is 900 mm. According to the need of the air conditioning room and sound frequency spectrum characteristics and air volume demand, we can choose 2-3 sections of air supply pipe and 1-2 sections of air return pipe in order to have the best effect.

Muffler should be away from the fan outlet as far as possible to avoid high-speed air flow. It is best to set it at the end of the wind duct end. If suspend the muffler, vibration isolation measures should be taken to prevent the transmission of solid noise.

折板式消声器型式结构

Folded plate muffler structure



折板式消声器的性能表

Folded plate muffler performance table

有效长度 (mm) Valid length	风速 (m/s) Air speed	阻力损失 (Pa) Resistance loss	不同频率消声量 (dB) Sound deadening capacity of different frequencies					
			125	250	500	1000	2000	4000
900	8	3.8	6.0	12.7	18.6	19.0	24.0	25.3
	6	1.0	7.0	14.3	20.0	20.7	25.5	26.3
	4	0.4	8.0	15.5	22.1	22.5	26.7	27.7

折板式消声器规格表

Specification table of folded plate muffler

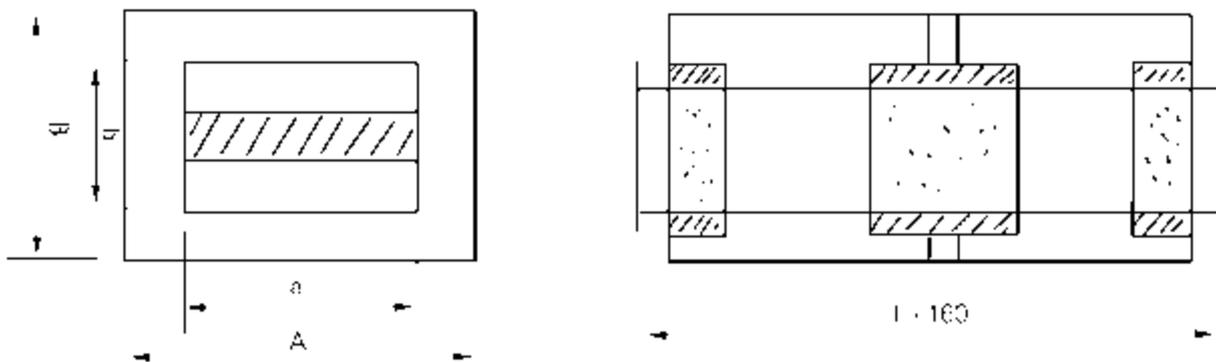
序号 Serial number	A × B (mm)	风道净面积 (m ²) Air duct net area	最大风量 (m ³ /h) Maximum air volume	消声量 Sound deadening capacity
1	800 × 500	0.22	6000	2
2	800 × 630	0.27	7500	2
3	1000 × 500	0.30	9000	3
4	1000 × 630	0.37	10000	3
5	1000 × 800	0.48	13500	3
6	1250 × 630	0.47	13500	4
7	1250 × 800	0.60	18000	4
8	1250 × 1000	0.75	21000	4
9	1600 × 800	0.76	21000	5
10	2000 × 1000	1.20	34000	7
11	2000 × 1250	1.50	43000	7
12	2000 × 1600	1.92	40000	7

YKZF扩张阻抗复合消声器

YKZF expansion impedance muffler

- 1、为了集中阻性和抗性消声器的优点，以使从低频到高频范围内的噪音都得到较好的控制，利用消声器内管截面突变，内外室之膨胀室作用把两种形式的消声结构组合在一起，就构成了一种广频消声器。
- 2、我们结合工程实际对 T701-6 型作了进一步改进，为了改变木框易变形而影响质量，公司重新设计为镀锌钢骨结构，外壳呈矩形，法兰采用镀锌处理和机械冲孔提高了产品抗腐蚀性和连接的效率性。适用于 4-72、9-16、9-26 风机出口消声。
- 3、对中高频率有较大消声作用，可用于降低空调及通风系统中的中、低、压风机噪声。通风风量为 2000-6000m³/h，风速一般为 6-8m/s 为宜，不宜超过 8m/s。消音量低频为 10-15dB/m，中频为 15-25dB/m，高频 25-30dB/m。

1. In order to combine the advantages of resistive mufflers and reactive mufflers to bring all the noises from low to high frequencies under control, we utilize the inner pipe section mutation of mufflers and expansion room function of the inside and outside rooms to combine these two types of mufflers together to get a wide frequency muffler.
 2. T701-6 was further improved according to the engineering practice. In order to change the deformation of the wooden frame to improve product quality, the company redesigned it into galvanized steel structure with a rectangular shell. The flange was galvanized and punched mechanically to increase the corrosion resistance and connection efficiency of the product. It can be applied to air outlet sound reduction of fans of 4-72, 9-16 and 9-26.
 3. Having a large noise reduction volume for medium and high frequencies, it is applied to reduce noise of low, medium and high pressure fans in the air conditioning and ventilation system. When ventilation air volume is 2000-6000m³/h, generally air speed of 6-8m/s is advisable, should not beyond 8m/s. Sound deadening capacity for low frequency is 10-15dB/m, medium frequency 15-25dB/m and high frequency 25-30dB/m.



YKZF 型扩张式阻抗复合消声器规格系列表

Specification series table of YKZF expansion impedance muffler

序号 Serial number	规格 a × b (mm) Specification	外形尺寸 (mm) Contour and size	长度 (mm) Length	有效截面积 (m ²) Valid section	膨胀比 (M) Expansion ratio
1	520 × 230	800 × 500	1600	0.093	4.26
2	510 × 370	800 × 600	1600	0.139	3.91
3	700 × 370	1000 × 600	1600	0.186	3.17
4	770 × 400	1000 × 800	1600	0.231	3.46
5	700 × 550	1200 × 800	900	0.278	3.43
6	780 × 630	1200 × 1000	900	0.372	3.2
7	1000 × 630	1500 × 1000	900	0.463	3.29
8	1000 × 970	1500 × 1400	900	0.695	3.07
9	1330 × 970	1800 × 1400	900	0.928	2.73
10	1500 × 1310	2000 × 1800	900	1.390	2.59

注：膨胀比即为消声器外形断面积与通道有效截面积之比值。膨胀比大低频性好。但消声器体积大，相比造价就大。1-4 号分为 3 个膨胀室，5-10 号分为 2 个膨胀室；可根据用户需求设计生产非标规格。

Remark: The expansion ratio is the ratio of the contour basal area of the muffler to the valid section area of the channel. The bigger the expansion ratio is, the better the low frequency noise deadening capacity will be. But the bigger the muffler volume is, the relative cost will be higher. No. 1-4 are divided into 3 expansion rooms. No. 5-10 are divided into 2 expansion rooms. We can also produce non-standard products based on users' need.



柜式、组合式空调机组
Cabinet, combination type air conditioning unit



吊顶式空调机组KD(D)系列
Ceiling suspension type air conditioning KD(D)series



风机盘管机组
Fan-coils



空调部件系列
Parts of air-conditioners

YGH型超短臂消声弯头

YGH ultra-short arm muffler bend

YGH 型超短臂消声弯头用于机房位置窄小或对原有建筑改进消音系统时，用弯头进行消声处理，以达到减小噪声的目的。它具有结构紧凑占有空间小，重量轻，外形采用外角内圆形式。外壳采用优质镀锌板，内填 50MM 吸声毯，用玻纤布作饰面，一般用于风速不大于 8M/S。

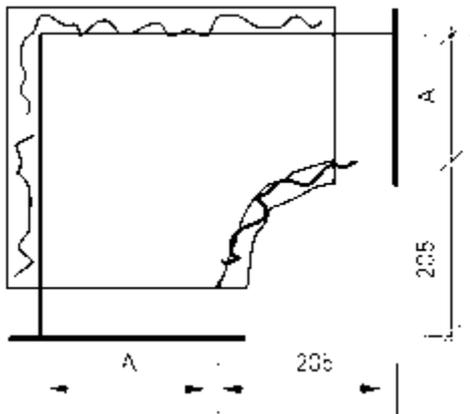
超短臂消声弯头的局部阻力系数值约为 30Pa。

超短臂弯头在 250HZ 范围处其吸声性能最佳。因此用它消除风机的中、低频噪声十分有效，臂长可由用户指定但不能超过当今日本采用的 A+400 值，否则超短臂弯头的优越性就不存在了。

When the machine room is in a narrow space or the muffler system of the original building is to be improved, the YGH ultra-short arm muffler is used for muffler processing so as to reduce the noise. It has the advantages of compact structure, small space taking and light weight. The appearance of it is right angle outside and arc inside. The shell is made of high quality galvanized plate, filled with 50MM sound absorption blanket and glass fiber cloth as the decorative surface, generally used for wind speed no faster than 8M/S.

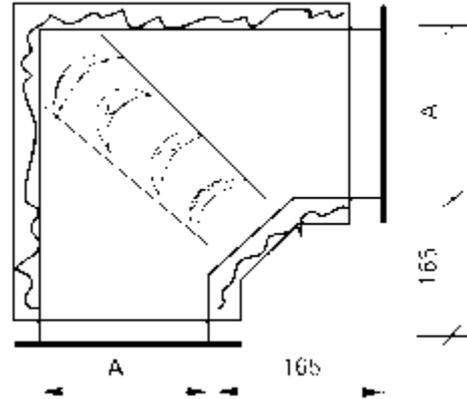
The local resistance coefficient of the ultra-short arm bend is about 30Pa.

The ultra-short arm bend has the best sound absorption performance in the range of 250HZ. So it's effective to eliminate the medium and low frequency noises coming from the fan. Arm length can be specified by users but not beyond today's A + 400 adopted by Japan. Otherwise the advantages of ultra short arm bend will not exist.



1、风管截面A≤500时，弯头无导风消声片

1. When the air duct section $A \leq 500$, there is no wind deflection noise deadening sheet at the bend



2、风管截面A>500时，弯头带短弦导风消声片

2. When the air duct section $A > 500$, there is wind deflection noise deadening sheet with short string at the bend.

YWXJF型微穿孔板复合消声器

YWXJF micropunch plate muffler

我公司生产的 YWXJF 型消声器有独到的声顺空腔阻性吸声之功能，在性能上优于其它类型的微穿孔板消声器，达到国内先进水平。该产品设计结构合理，消除高、中、低频噪声效果最佳，坚固耐用、体积小、造型美观、安装方便、重量轻、防潮、防腐、耐高温、阻力小、不积尘、洁净度高等优点。

消声器的基本长度 2m 由两节组成，如需求可增加若干节，通过消声器的空气流速在 6-8m/s 为合适，最高不超过 12m/s。

YWXJF micropunch plate muffler produced by our company possesses a unique sound-along-cavity, resistive sound-absorbing function. Its performance is better than the other types of micropunch plate muffler which has reached the domestic advanced level. Its design is reasonable. Elimination of high, medium and low frequency noise effect is the best. It has the advantages of duration, small volume, beautiful appearance, easy installation, light weight, moisture and corrosion and high temperature resistance, small resistance, no dust and high cleanliness, etc.

The basic length of the muffler is 2m, which is composed of two sections. More sections can be increased as needed. The air velocity through the muffler should be 6-8m/s and the maximum is no more than 12m/s.

YWXJF 型微穿孔板复合消声器结构

YWXJF micropunch plate muffler structure





YWXJF 型性能表

YWXJF performance table

序号 Serial number	规格 Specification		空气流量 (m³/h) Air flow	阻性 (mmH ₂ O) Resistive value	降噪量 (dB) Noise reduction capacity
	A × B	A1 × B1			
1	120 × 160	380 × 380	300--400	2	23
2	160 × 120	420 × 380	400--530	2	23
3	160 × 160	420 × 420	540--720	2	23
4	200 × 120	460 × 380	505--670	2	23
5	200 × 160	460 × 420	680--900	2	23
6	200 × 200	460 × 460	850--1130	2	23
7	250 × 120	510 × 350	630--840	2	23
8	250 × 160	510 × 420	840--1120	2	24
9	250 × 200	510 × 460	1060--1410	2	24
10	250 × 250	510 × 510	1320--1760	2	24
11	320 × 160	580 × 420	1080--1440	2	24
12	320 × 200	580 × 460	1360--1810	2	24
13	320 × 250	580 × 510	1700--2260	2	24
14	320 × 320	580 × 580	2180--2900	2	25
15	400 × 200	660 × 460	1700--2260	2	25
16	400 × 250	660 × 510	2125--2830	2	25
17	400 × 320	660 × 580	2730--3635	2	25
18	400 × 400	660 × 660	3410--4550	2	25
19	500 × 200	760 × 460	2120--2830	2	25
20	500 × 250	760 × 510	2660--3550	2	25
21	500 × 320	760 × 580	3410--4550	2	25
22	500 × 400	760 × 660	4270--5195	3	26
23	500 × 500	760 × 760	5350--7130	3	26
24	630 × 250	890 × 510	3340--4460	3	26
25	800 × 320	1060 × 580	5460-7360	3	26
26	800 × 400	1060 × 680	6830--9110	3	26
27	1000 × 320	1260 × 580	6827--9100	3	26
28	1250 × 400	1510 × 660	16870--22500	3	26
29	1250 × 630	1550 × 930	16870--22500	3	26
30	1600 × 500	1860 × 760	17130--22880	3.5	26
31	1600 × 630	1900 × 930	21610--28810	3.5	26
32	1600 × 1000	2000 × 1400	343704--58330	3.5	27
33	2000 × 800	2400 × 1200	34350--45810	3.5	27
34	2000 × 1000	2400 × 1400	42980--57310	3.5	27
35	2000 × 1250	2400 × 1650	53760--71680	3.5	27



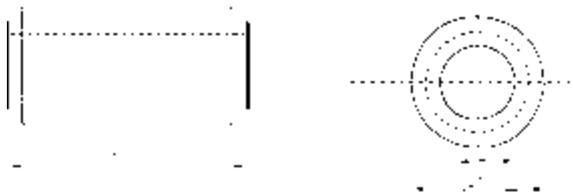


YWXYF型微穿孔板复合消声器

YWXYF micropunch plate muffler

YWXYF 型微穿孔板复合消声器结构

YWXYF micropunch plate muffler structure



YWXYF 型微穿孔板复合消声器性能表

YWXYF micropunch plate muffler performance table

序号 Serial number	规格 Specification		空气流量 (m³/s) Air flow	阻损 (mmH ₂ O) Resistance loss	降噪量 (dB) Noise reduction capacity
	D	D1			
1	100	360	170--220	1.5	22
2	120	380	240--320	1.5	22
3	140	400	330--440	1.5	22
4	160	420	430--570	1.5	22
5	180	440	540--730	1.5	22
6	200	460	760--890	1.5	22
7	220	480	810--1080	1.5	22
8	250	510	1050--1400	1.5	22
9	280	540	1320--1750	1.5	22
10	320	580	1700--2290	1.5	22
11	360	620	2180--2910	1.5	22
12	400	660	2690--3590	1.5	22
13	450	710	3410--4550	2.0	22
14	500	760	4215--5620	2.0	22
15	560	820	5280--7040	2.5	24
16	630	930	6695--8920	2.5	24
17	700	1000	8265--11020	2.5	24
18	800	1100	10900--14400	2.5	24
19	900	1200	13680--18240	2.5	24
20	1000	1300	16900--22530	3.5	26
21	1120	1520	21170--28220	3.5	26
22	1250	1650	26380--35170	3.5	26
23	1400	1800	33110--44140	3.5	26
24	1600	2000	43270--57690	3.5	26
25	1800	2200	54780--73040	3.5	26
26	2000	2400	67650--90210	3.5	26

注：YWXJF 型与 YWXYF 型广泛用于地面与地下建筑通风空调净化系统中降低风机的空动力器噪声。

Remark: YWXJF and YWXYF types are widely used in the building ventilation air purification system both on or under the ground to reduce fan noise.

YCHX月牙形消声百叶窗

YCHX crescent-shaped muffler shutter

YCHX 月牙形消声百叶窗采用热镀锌钢板制作，吸声片为月牙形阻性吸声结构，它两面具有相同的外形，用于阻隔室内外之间的环境噪声。可以平嵌入砖石或其它建筑结构中或作独立挡板。

The YCHX crescent-shaped muffler shutter is made of hot-dip galvanized steel and the sound absorber is a crescent-shaped resistive sound absorption structure. It has the same shape on both sides and is used to block the ambient noise between indoor and outdoor. It can be flatly embedded in masonry or other building structures or as independent baffles.

YCHX 月牙形消声百叶窗结构如图：

The structure of YCHX crescent-shaped muffler shutter is shown in the figure



YCHX 月牙形消声百叶窗性能表

The performance table of YCHX crescent-shaped muffler shutter

W (mm)	600-1200						
H mm	620	820	1020	1220	1420	1620	1820
片数 Number of blades	2	3	4	5	6	7	8
倍频带中心频率 (HZ) Central frequency of octave band	63	125	250	500	1000	2000	4000
噪声值降低 (dB) Reduced noise capacity	14	11	8	8	14	12	10

风口消声器

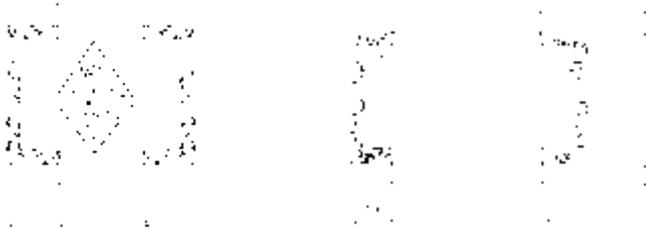
Air opening muffler

该产品适用于各种风管末端。用于消除通风房间内的送风噪声 (或排风噪声)。风速以 1.5-4m/s 为宜，不宜超过 4m/s。

This product is suitable for all kinds of air duct ends. It is used to eliminate air supply noise (or exhaust noise) in the ventilated room. The wind speed is appropriate at 1.5-4m/s, should not beyond 4m/s.

风口消声器结构如图：

Air opening muffler structure is as shown in the figure:



注：axb 尺寸据风口尺寸而定，H-150-500mm

Remark: Dimension axb is subject to air opening dimensions. H-150-500mm

金属通风管道

Metal ventilating duct

通风管道是通风和空调系统中重要的组成部分，是气流分布的重要通道。通风管道的质量关乎整个通风工程或空调系统的正常运行和通风环境需求。

一、材料：

用作通风管道的金属材料有很多，主要有普通薄钢板、镀锌钢板、不锈钢板、铝板和塑料复合钢板。它们的优点是易于工业化加工制作，安装方便、重量轻，能承受较高温度，无污染等。

- 1、普通薄钢板具有良好的加工性能和结构强度，其表面易生锈，应刷漆进行防腐处理，主要用于地下人防除尘或排风排烟系统。
- 2、镀锌钢板：由于表面进行热镀锌，可起防锈作用。用来制作不受酸雾作用的潮湿环境中的风管，是现阶段制作通风管道的主流材料。
- 3、铝、及铝合金板加工性能好，耐腐蚀、摩擦不易起火花，常用于通风工程的防爆系统或防静电系统。
- 4、塑料复合钢板在普通钢板上喷涂上一层 0.2-0.4 厚的塑料层，用于防尘要求较高的空调系统和 -10 ~ 70℃ 温度下耐腐蚀系统的风管。

Ventilating duct is an important part of ventilation and air conditioning system and an important channel for airflow distribution. The quality of ventilating pipe determines the ventilation engineering or the normal operation of the air conditioning system and ventilation environmental requirements.

1. Material

1. Ordinary thin plate has sound process performance and structural strength. Because its surface gets rusty easily, it should be coated with paint, which is mainly used for dust prevention of underground air-raid shelters and air discharge and smoke extraction systems.
2. Galvanized steel plate: As a result of the superficial hot galvanized process, it is rustproof. It is the mainstream material for making ventilating ducts at the present stage like air duct in the humid environment which is free from acid fog.
3. Aluminum and aluminum alloy plates have excellent process performance. They are anti-corrosive and hard to spark when there is friction, usually used in the anti-explosion system or anti-static current system of the ventilation engineering.
4. Plastic composite steel plate is coated a layer of 0.2-0.4 thick plastic on the common steel plate, used in the air conditioning system requiring high dust resistance and air duct of corrosion resistance system in temperatures of -10 ~ 70 °C.



二、通风管道的统一规格

Uniform standard of ventilating duct

1、圆形风管统一规格

1. Uniform standard of circular air duct

外径 D (mm) Outside diameter			
基本系列 Basic series		辅助系列 Auxiliary series	
100	500	80	480
		900/100	500
120	560	110/120	530/560
140	630	130/140	600/630
160	700	150/160	670/700
180	800	170/180	750/800
200	960	190/200	850/900
220	1000	210/220	950/1000
250	1120	240/250	1060/1120
280	1250	260/280	1180/1250
320	1400	300/320	1320/1400
360	1600	340/360	1500/1600
400	1800	380/400	1700/1800
450	2000	420/450	1900/2000

2、矩形风管统一规格

2. Uniform specification of rectangular air duct

外边长 长 × 宽 (mm) Outside side length Length × width(mm)		外边长 长 × 宽 (mm) Outside side length Length × width(mm)	
120 × 120	630 × 500	320 × 320	1250 × 400
160 × 160	630 × 630	400 × 200	1250 × 500
160 × 160	800 × 320	400 × 250	1250 × 630
200 × 120	800 × 400	400 × 320	1250 × 800
200 × 160	800 × 500	400 × 400	1250 × 1000
200 × 200	800 × 630	500 × 200	1600 × 500
250 × 120	800 × 800	500 × 250	1600 × 630
250 × 160	1000 × 320	500 × 320	1600 × 800
250 × 200	1000 × 400	500 × 400	1600 × 1000
250 × 250	1000 × 500	500 × 500	1600 × 1250
320 × 160	1000 × 630	630 × 250	2000 × 800
320 × 200	1000 × 800	630 × 320	2000 × 1000
320 × 250	1000 × 1000	630 × 400	2000 × 1250

三、通风管道的选用标准 GB50243-2002

Selective standard of ventilating pipe GB50243-2002

1、表：钢板风管板材厚度 (mm)

1. Table: Panel thickness of steel-made air duct

类别 Category 风管直径D或边长b Air duct diameter D or side length b	圆形风管 Circular air duct	矩形风管Rectangular air duct		除尘系统风管 Air duct of anti-dust system
		中低压系统 Medium and low pressure system	高压系统 High pressure system	
D(b) ≤ 320	0.5	0.5	0.75	1.5
450 < D(b) ≤ 630	0.75	0.6	0.75	1.5
630 < D(b) ≤ 1000	0.75	0.75	1.0	2.0
1000 < D(b) ≤ 1250	1.0	1.0	1.0	2.0
1250 < D(b) ≤ 2000	1.2	1.0	1.2	2.0
2000 < D(b) ≤ 4000	按设计 Based on design	1.2	按设计 Based on design	2.0

注：

- 螺旋风管的厚度可适当减小 10%~15%。
- 排烟系统风管可按高压系统。
- 特殊除尘应符合设计要求。
- 不适合地下人防与防火墙的预埋管。

Remark:

- The thickness of spiral air duct can appropriately be reduced by 10-15%.
- Air duct of smoke exhaust system is suitable for high pressure smoke exhaust system.
- Special dust elimination must be in accordance with design requirement.
- Not suitable for embedded pipes of underground air-raide defense and firewall.

2、表：高中低压系统不锈钢板风管板材厚度 (mm)

2. Table: plate thickness of high, medium and low pressure system stainless steel air duct

风管直径或长边尺寸b Size of air duct diameter or long side	不锈钢厚度 Thickness of stainless steel
b ≤ 500	0.5
500 < b ≤ 1120	0.75
1120 < b ≤ 2000	1.0
2000 < b ≤ 4000	1.2

3表：中低压系统铝板风管板材厚度 (mm)

3. Table: plate thickness of medium and low pressure system alluminum air duct

风管直径或长边尺寸b Size of air duct diameter or long side	不锈钢厚度 Thickness of stainless steel
b ≤ 320	1.0
320 < b ≤ 630	1.5
630 < b ≤ 2000	2.0
2000 < b ≤ 4000	按设计

四、通风管道的制作

Manufacture of ventilating pipe

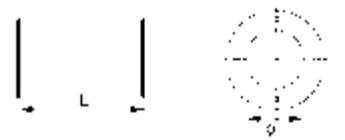
1、矩形风管示意图(以A、B尺寸计)

1.Rectangular air duct schematic diagram (calculate according to sizes A and B)



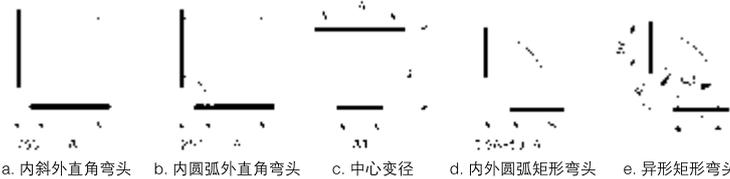
2、圆形风管示意图(以内径计)

2.Circular air duct schematic diagram(calculate according to inside diameter)

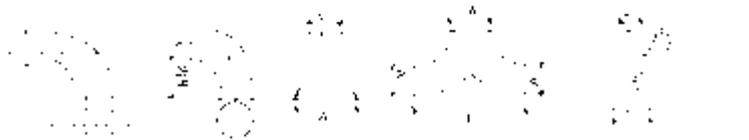


3、特殊风管部件的制作示意图

3.Schematic diagram of special air duct parts manufacture



a. 内斜外直角弯头 b. 内圆弧外直角弯头 c. 中心变径 d. 内外圆弧矩形弯头 e. 异形矩形弯头



f. 异形圆矩弯头 g. 圆形弯头 h. 天方地圆 i. 三通连接 j. 圆形三通(夹角 $\alpha \leq 30^\circ$)

- a. Inside oblique ,outside right-angle bend
- b. Inside arc, outside right-angle bend
- c. Central changing diameter
- d. arc both inside and outside rectangular bend
- e. Special shape rectangular bend
- f. Special shape circular rectangular bend
- g. Circular bend h. One end is square and the other is circular
- i. Tee branch
- j. Circular tee branch (angle $\alpha \leq 30^\circ$)

4、圆形弯头曲率半径最少节数如下：

4.The minimum sections of the circular bend curvature radius are as follows

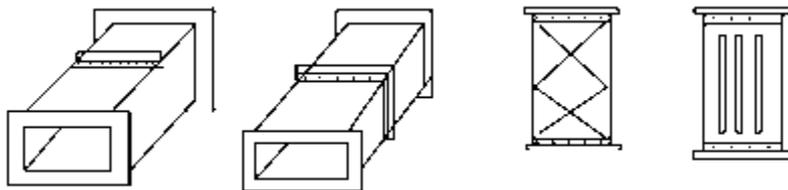
直径D(mm) Diameter	曲率半径R Curvature radius	弯头角度及最少节数 Bend angle and the minimum sections							
		90°		60°		45°		30°	
		中节 Middle section	端节 End section	中节 Middle section	端节 End section	中节 Middle section	端节 End section	中节 Middle section	端节 End section
80-220	$\geq 1.5D$	2	2	1	2	1	2	-	2
220-450	$D \sim 1.5D$	3	2	2	2	1	2	-	2
450-800	$D \sim 1.5D$	4	2	2	2	1	2	1	2
800-1400	D	5	2	3	2	2	2	1	2
1400-2000	D	8	2	5	2	3	2	2	2

五、风管制作的技术要求

Technical requirement of air duct production

1. 风管的加固形式

1.Stabilizing style of air duct



a. 角钢加固 b. 角钢框加固 c. 风管棱线 d. 风管滚槽

- a. Angle steel stabilization
- b. Angle steel frame stabilization
- c. Air duct ridge
- d. Air duct roll groove



柜式、组合式空调机组
Cabinet, combination type air conditioning unit



吊顶式空调机组KD(D)系列
Ceiling suspension type air conditioning KD(D)series



风机盘管机组
Fan-coils



空调部件系列
Parts of air-conditioners

圆形风管（不包括螺旋风管）直径大于 800mm，且其管段长度大于 1250mm 或总面积大于 4m² 均应采取加固措施。

矩形风管边长大于 630mm，保温风管边长大于 800mm，管段长度大于 1250mm 或低压风管单边面积大于 1.2m²，中高压风管大于 1.0m²，均应采取加固措施。加固形式见上图。角钢加固筋应排列整齐，均匀对称。其高度应小于或等于风管法兰宽度。与风管的铆接应牢固，间隔均匀不应大于 220mm，两相交处应连成一体。

If circular duct (excluding spiral air duct) diameter is longer than 800mm and the length of the pipe section is longer than 1250mm or the total area is larger than 4m², it shall take reinforcement measures.

When rectangular air duct side length is longer than 630 mm or side length of the thermal insulation air duct is longer than 800 mm or the length of the section is longer than 1250 mm or unit area of the low pressure air duct is larger than 1.2 m² or medium and high pressure air duct is longer than 1.0 m, reinforcement measures should be taken.

2、净化空调系统风管制作要求：

- (1)、矩形风管边长小于或等于 900mm 时，底面板不应有拼接缝，大于 900mm 时，不应有横向拼接缝。
- (2)、风管所有的螺栓、螺母、垫圈和铆钉均为镀锌材质或不锈钢材质，不会产生化学腐蚀情况。
- (3)、不应在风管内设加固框及加固筋，风管无法兰连接采用插接式连接，螺旋风管采用卡扣式连接，而后进行密封。
- (4)、净化空调系统风管采用联合角咬口形式或共板法兰形式，以保证风管的低泄漏风量和牢固性。
- (5)、产品成形后进行后期处理，消毒清洗用医用消毒剂，对人体和材质不会产生危害。

2.Manufacturing requirements of purification air-conditioning system air duct:

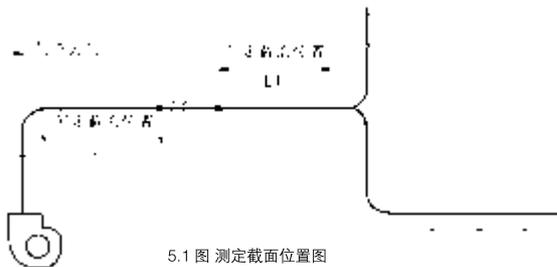
- (1).When the side length of the rectangular air duct is less than or equal to 900mm, there shall be no seams on the bottom panel.When the side length is longer than 900mm, there shall be no transverse seams.
- (2).All bolts, nuts, washers and rivets of air duct are all made of galvanized or stainless steel. Thus they have no chemical corrosion.
- (3).No reinforcing frame and strengthening ribs shall be installed in the air duct. The flangeless air duct shall adopt plug-in connection type and the spiral air duct shall adopt buckle connection.Then the air duct need to be sealed.
- (4).The air duct of purification air conditioning system adopts the forms of joint angle seaming or common plate flange to ensure the low leakage air volume and firmness of the air duct.
- (5).After the product is formed, during post-processing, medical disinfectant having no harm to human body and product material is used for disinfection and cleaning .

六、系统风管的风速、动压、风量的测定

Measurement of air speed, dynamic pressure and air volume of air duct

1、测定孔在风管上的位置原则上应选择气流比较均匀稳定的部位，尽可能地选在选离产生涡流有局部阻力（如各种风阀、弯管、三通以及送排风口等）处。测定孔一般选在气流平稳的下方 4-5 倍风管长边的距离处或者气流转弯前部 1.5-2 倍的风管长边的距离处。

1.Theoretically speaking, the location of the measuring hole on the air duct should be selected where the air flow is relatively even and stable. It should be as far away as possible from places where there is eddy or local resistance (such as various air valves, bends, tees and air inlets or outlets, etc).The measuring hole should be selected upon where is 4-5 times the length of long side of the air duct behind the air stable place or 1.5-2 times the length of long side of the air duct before the air turning place.



5.1 图 测定截面位置图
Section position measurement diagram

图中： $L \geq (4-5)D$ 或 $(4-5)a$ $L_1 \geq (1.5-2)D$ 或 $(1.5-2)a$
注：D 为风管直径 a 为风管大边边长

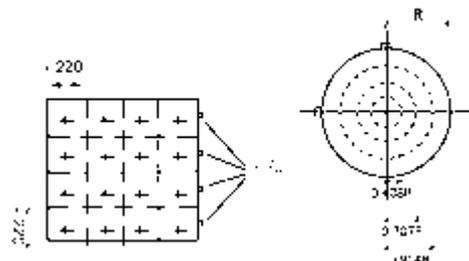
Remark:D is air duct diameter a is the side length of long side of the air duct

气流方向
测定截面位置
Airflow direction
Section position measurement

2、测孔可按下列原则分布

矩形截面测定的位置，是在矩形风管内测量平均风速成时应将风管截面划分为若干相等的小截面并使各小截面尽接近正方形，其面积不得大于 0.05m²。（即每个小截面的边为 200mm ~ 250mm，最好小于 220mm）测点位于各个小截面的中心处至于测孔开设在风管的大边或小边，视工程现场而定，以方便操作为原则。测点位置如下图。

圆形截面测点位置应在互相垂直的同一截面上设置两点，在测定圆形风管内平均风速时，应根据管径大小将截面分成若干个面积相等的同心圆环，每个圆环测量四个点，测点位置如右图。



2.1 图矩形截面内的测点位置
Measuring point position of rectangular section

2.2 图圆形截面内的测点位置
Measuring point position of circular section

2.Measuring hole could be distributed based on the following principles

The measurement of the position of rectangular section is that when the average air speed is measured in the rectangular air duct, the duct section shall be divided into several equal small sections and each small section shall be as close as possible to a square, and its area shall not be larger than 0.05m². (That is, the side of each small section is 200mm ~ 250mm, preferably less than 220mm.) The measuring point is located at the center of each small section and whether the measuring hole is set at the big side or small side of the air duct depending on the engineering site following the principle of convenient operation. The locations of measurement points are shown in the figure below.

Do the following steps to get position of circular section measuring points. We should draw two mutually perpendicular lines on the circular section. Divide the circle into many equal-space circular rings based on the diameter of circular section. Each circular ring will intersect with that two lines we draw before on four points. These four points are the position of measuring points.

3、风管气流压力的测量

用 U 形压力计测量全压和静压时，另一端应与大气相通（用倾斜微压计在正压管段测压时，管的一端应与大气相通，在负压管段测压时，容器开口端应与大气相通）因此压力计上读出的压力，实际上是风管内气体压力与大气压力之压差。（大气压力一般用大气压力表测定）

由于全压等于动压与静压的代数和，可只测量其中两个值，另一值通过计算求得。

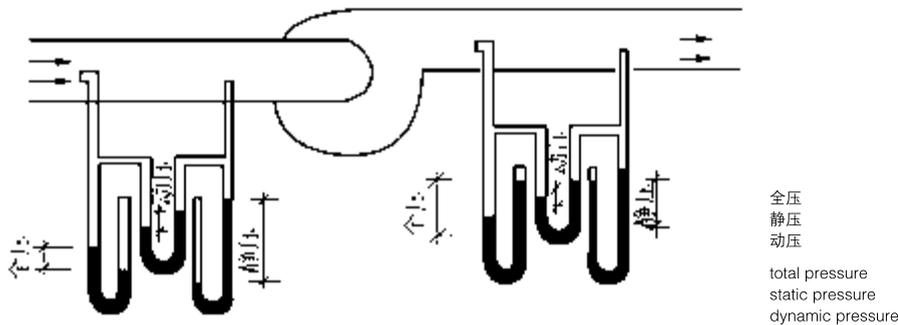
风管中气体压力的测定如图：

3.The measurement of air duct airflow pressure

When U-shaped pressure gauge is used to measure total pressure and static pressure, the other side of the gauge should connect with the atmosphere (when using the oblique micro-pressure gauge to test pressure in positive pressure pipe segment, one end of the pipe should connect with the atmosphere; when in negative pressure pipe segment, the container opening should connect with atmosphere). So reading on pressure gauge actually represents the pressure difference between gas pressure in the air duct and atmospheric pressure. (Atmosphere pressure is generally measured by the atmosphere pressure gauge)

Since the total pressure is equal to the algebraic sum of dynamic pressure and static pressure, only two of these values are measured and the other value can be obtained by calculation.

The measurement of air pressure in air duct is shown in the figure.



七、风管系统的安装注意事项

Air duct system installation precautions

- 1、管道分为成品运输和现场制作两种生产方式，可根据用户实际情况而定。
- 2、运输成品应轻抬轻放，严禁划伤碰伤产品表面，运输过程中应有保护产品的措施。
- 3、成型产品不得暴晒、雨淋和长时间在受潮的环境中，产品与地面应有防潮措施，净化系统风管应在消毒后进行严密封口，不应侵入大气灰尘和有害物质。
- 4、成品按装应根据实际分段按装，保证整个系统的平直性、统一性、安全性。
- 5、按装完毕应把表面灰尘消除干净。净化系统应按装完一段风管截面口密封一段，并保证各连接处的密封。
- 6、最后系统验收必须按照 GB50243-2002 和相关专业标准和规程结合施工图纸进行自检。以确保工程的质量。
- 7、按装完毕根据现场变更情况绘制竣工图。

1. There are two kinds of production modes: finished product delivery and on-site production. This can be determined by the actual situation.
2. Transportation of finished products should be carried carefully. It is strictly prohibited to scratch or bump against the surface of the products and measures should be taken to protect products in the process of transportation.
3. Finished products shall not be exposed to the sun, rain or stay in the damp environment for a long time. There should be moisture-isolated materials between the product and ground. After disinfection, air duct of the purification system should be sealed to prevent dust and toxic substance from entering inside.
4. Finished products should be installed according to the actual segments to ensure the straightness, unity and security of the whole system.
5. Dust off the surface after installation. Every segment of air duct section of the purification system should be sealed after installation to ensure the sealing of the joints.
6. In accordance with GB50243-2002 and related professional standards and procedures combined with construction drawings, the final acceptance of the system necessarily need a self-inspection to ensure the quality of the project.
7. Draw the as-built drawing according to the on-site change conditions after installation.



YJ20、YJ30系列矩形风管厚片式消声器

YJ20,YJ30 series rectangular air duct thick plate muffler

YJ20、YJ30 系列矩形风管厚片式消声器是参照了国外近年来所流行的消声器的有关资料而研制的阻性消声器系列产品，该系列产品外框采用冷轧钢板制造，结构坚固，抗共振性能良好，吸声片采用厚片结构提高了消声器低频插入损失，同时吸声片采用热浸锌穿孔板护面及流线型的形体，减少了风管的阻力，该系列产品的吸声片厚度是固定的，靠调整片距及改变消声器的长度来控制消声器的插入损失和压力损失，可以组合成多种规格供应用者选择。因此在空调系统中得到了广泛的应用。

YJ20 and YJ30 series rectangular air duct thick plate muffler is a resistive muffler series product developed with reference to popular relevant abroad data of muffler in recent years. The outer frame of this series product is made of cold-rolled steel plate with strong structure and sound anti-resonance performance. The sound absorption plate adopts thick plate structure to improve the low frequency insertion loss of the muffler. Meanwhile, the sound absorption plate adopts the protective surface made of hot dip zinc perforated plate and streamlined shape to reduce the resistance of the air duct. The thickness of the sound absorption plate is fixed. The insertion loss and pressure loss of the muffler can be controlled by adjusting the distance of sound absorbers and changing the length of the muffler. These can combine into many specifications for users' selection. Thus, this kind of muffler is widely used in the air conditioning system.

一、YJ20 系列矩形风管厚片式消声器

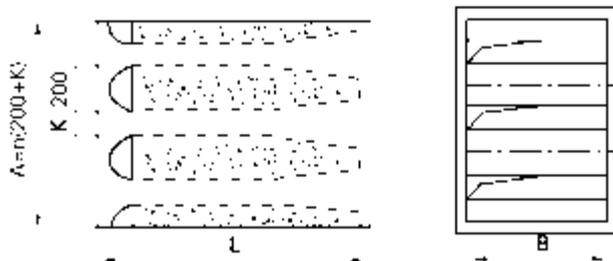
YJ20 series rectangular air duct thick plate muffler

1、YJ20 系列矩形风管厚片式消声器，吸声片厚度为 200mm，气流通道宽度 K 有 100mm；125mm；150mm；175mm；200mm 5 种选择，本系列产品的开口尺寸用 A 和 B 表示。

其中 $A=n(200+k)$ 式中 n 为通道数，K 为通道宽度。

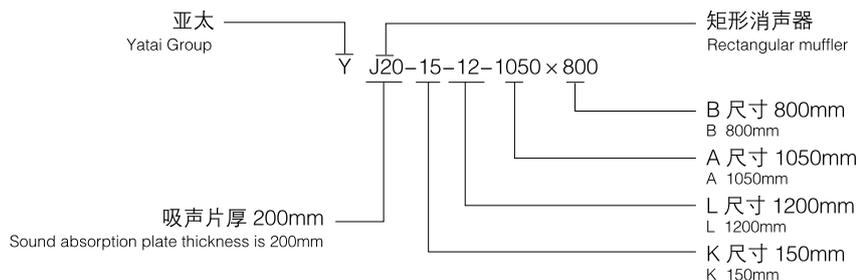
1.For the YJ20 series rectangular air duct thick plate muffler, the thickness of sound absorption plate is 200mm. The muffler has 5 kinds of air passage widths. They are 100mm, 125 mm, 150 mm, 175 mm and 200 mm. Its opening sizes are represented by A and B.

In the equation of $A=n(200+k)$, n is the number of passages; k is the passage width.



2、产品规格表示方法

2. Product specification demonstration



注：消声品的通道数查下表 n=3

Remark: Look for the number of passages of muffler up in the following table.

通道数n Passage number	1					2				
通道宽度(mm) Passage width	100	125	150	175	200	100	125	150	175	200
A (mm)	300	325	350	375	400	600	650	700	750	800
通道数n Passage number	3					4				
通道宽度(mm) Passage width	100	125	150	175	200	100	125	150	175	200
A (mm)	900	975	1050	1125	1200	1200	1300	1400	1500	1600

B 尺寸在 500mm ~ 2000mm 间选择

Choose B from 500mm ~ 2000mm



3、产品的性能
3.Product performance

型号 Specification	静态插入损失 (dB) Static insertion loss								压力损失 (Pa) Pressure loss							
	倍频带中心频率 (Hz) Central frequency of octave band								面风速 (m/s) Ventilation surface velocity							
	63	125	250	500	1k	2k	4k	8k	2	4	6	8	10	12	14	16
YJ20-10-09	8	14	16	32	42	40	26	19		35	70	120	180			
YJ20-10-12	9	15	20	36	45	44	30	21		40	83	145	205			
YJ20-10-15	10	17	31	40	49	48	34	24	5	47	100	170				
YJ20-10-18	11	18	31	46	52	53	39	26	13	58	125	195				
YJ20-12.5-09	6	12	16	30	39	32	21	15		18	44	77	120	180		
YJ20-12.5-12	8	14	22	34	42	37	24	17		27	55	98	160			
YJ20-12.5-15	9	15	28	37	45	41	28	19		33	68	120	185			
YJ20-12.5-18	10	16	30	41	48	45	31	21		40	85	155				
YJ20-15-09	4	11	14	28	37	25	15	12		5	32	52	80	115	155	
YJ20-15-12	6	12	18	31	39	29	18	13		12	37	62	98	145	185	
YJ20-15-15	8	13	26	34	41	33	21	14		20	45	80	120	189		
YJ20-15-18	9	14	28	38	44	37	24	16		27	54	97	150			
YJ20-17.5-09	3	10	14	26	32	23	14	11			22	37	53	74	98	127
YJ20-17.5-12	5	11	18	30	36	26	16	12			27	43	62	88	120	150
YJ20-17.5-15	7	12	23	33	39	29	18	13		8	33	50	75	108	140	175
YJ20-17.5-18	8	12	26	36	42	33	20	14		14	38	60	90	128	165	
YJ20-20-09	2	10	11	25	28	20	13	9			13	33	47	68	90	123
YJ20-20-12	4	10	16	28	32	23	14	10			22	38	58	85	117	160
YJ20-20-15	6	11	18	31	37	26	16	11			27	46	70	105	145	190
YJ20-20-18	7	11	25	34	41	29	17	12		8	33	55	85	130	170	

二、YJ30 系列矩形风管厚片式消声器

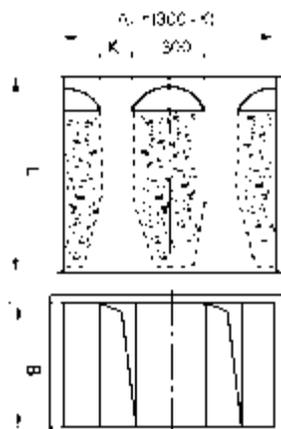
YJ30 series rectangular air duct thick plate muffler

1、Y J30 系列矩形风管厚片式消声器吸声片厚度为 300mm，气流通道宽度 K 有 150mm；200mm；250mm；300mm 4 种选择，气流通道数通常是 1 ~ 3 个，消声器的长度 L 有 900mm；1200mm；1500mm；1800mm 4 种选择，本系列产品开口尺寸用 A 和 B 表示。

其中 $A=n(300+K)$ 式中 n 为通道数，K 为通道宽度。

1.For the YJ30 series rectangular air duct thick plate muffler, the thickness of sound absorption plate is 300mm. The muffler has 4 kinds of air passage widths. They are 150mm, 200mm, 250mm and 300mm. The number of air passages is normally from 1 to 3. There are 4 kinds of the length of muffler: 900mm, 1200mm, 1500mm, 1800mm. Its opening sizes represent by A and B.

In the equation of $A=n(300+k)$, n is the number of passages; k is the passage width.





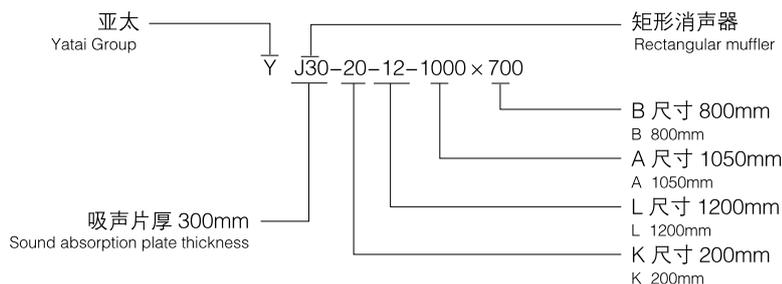
通道数n Number of passages	1				2				3			
通道宽度K (mm) Passage width	150	200	250	300	150	200	250	300	150	200	250	300
A (mm)	450	500	550	600	900	1000	1100	1200	1350	1500	1650	1800

B 尺寸在 500mm ~ 2000mm 间选择。

Choose B from 500mm ~ 2000mm.

2、产品规格表示法

2. Product specification demonstration



注：消声器的通道数查下表 n=2

Remark: Look the number of passages of muffler up in the following table.

型号 Model	静态插入损失 (dB) Static insertion loss								压力损失 (Pa) Pressure loss							
	倍频带中心频率 (Hz) Central frequency of octave band								面风速 (m/s) Face velocity							
	63	125	250	500	1k	2k	4k	8k	2	4	6	8	10	12	14	16
YJ30-15-09	7	14	17	21	28	20	15	14	14	57	120	195				
YJ30-15-12	10	16	23	28	32	26	21	17	16	60	130	205				
YJ30-15-15	11	18	28	33	38	30	25	20	18	65	220					
YJ30-15-18	13	20	33	39	44	35	27	22	20	70	230					
YJ30-20-09	6	11	15	26	29	16	14	13		30	56	90	135	190		
YJ30-20-12	7	12	20	29	31	22	17	16		32	58	92	138	193		
YJ30-20-15	8	15	24	36	37	26	20	17		33	60	97	145	200		
YJ30-20-18	10	18	27	40	41	30	22	13		34	63	107	150	210		
YJ30-25-09	3	10	14	21	21	13	13	8		20	40	62	90	125	160	195
YJ30-25-12	5	12	18	26	25	16	16	9		23	43	65	95	132	165	200
YJ30-25-15	7	14	22	30	30	19	17	11		25	47	72	100	145	175	210
YJ30-25-18	9	16	26	36	35	24	18	13		27	49	78	110	150	185	220
YJ30-30-09	3	8	13	18	15	13	12	9			28	43	58	80	105	135
YJ30-30-12	5	10	15	23	17	15	13	11			30	45	62	85	110	137
YJ30-30-15	6	12	20	27	23	17	15	13		10	32	47	65	90	115	143
YJ30-30-18	7	14	23	31	31	20	16	14		12	36	50	70	98	120	155



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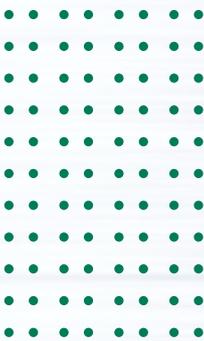
We will nourish and set up a steadfast client group
to realise the stable and steadfast expansion of the sales net

优良的品质和周到的服务，亚太集团取得了骄人的业绩。亚太洁净技术工程接连获得了北京小汤山医院、武汉火神山医院、武汉雷神山医院等近百家医院的青睐，以其洁净技术的杰出性能和净化实力，获得市场信任，树立用户口碑。

With excellent quality and considerate service, Yatai Group has made remarkable achievements. Its purification technology projects are successively favored by Xiaotangshan hospital in Beijing, Huoshenshan hospital and Leishenshan hospital in Wuhan. The outstanding performance of clean technology and purification strength have gained market trust for Yatai Group and established its reputation among users.



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