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SMOKE VENTILATION

SWIFT SMOKE VENTILATOR



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VENTUM INTRODUCTION

VENTUM introduced advanced technology and machine for VENTUM Smoke Ventilation. Reasonable and practical design, strict manufacture technique and management accord with national standard. VENTUM smoke ventilation is applied for skylight, smoke exhausting and ventilation in normal residential, industrial and public buildings.



VENTUM APPLICATION CHART

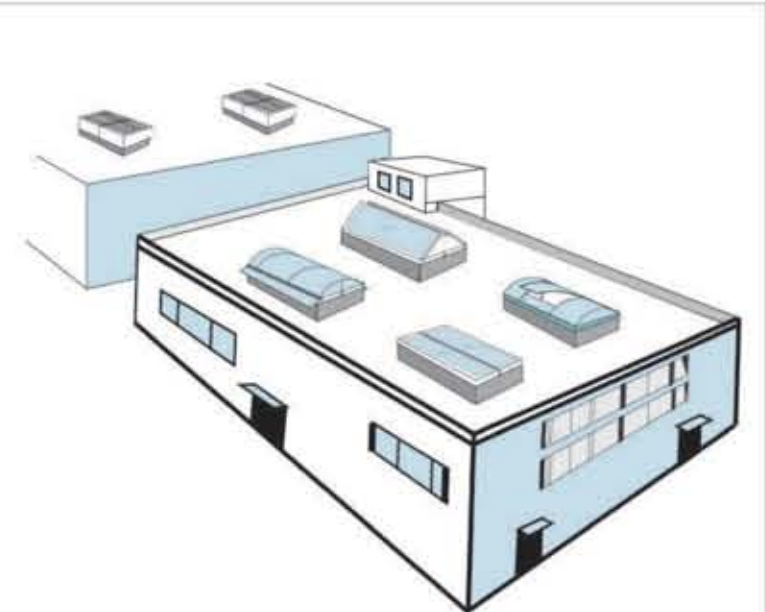
SMOKE VENTILATION TYPES:

There are triangle type, flat type, windshield type, circular arch type, Side open type and so on.

- › Triangle type and flat type are suitable for the buildings which only need skylight and open when necessary. Its largest open angle is 150°+.
- › Windshield type is suitable for buildings which need ventilation and smoke exhausting under any weather conditions. It can prevent from rain and snow. Its largest open angle is 30°.
- › Circular arch type is suitable for buildings which need frequent ventilation. Its largest open angle is 45°.
- › Side open type is suitable for buildings need normal exhaust capacity in industrial workshop with 6m column space. Its largest open angle is 45°.

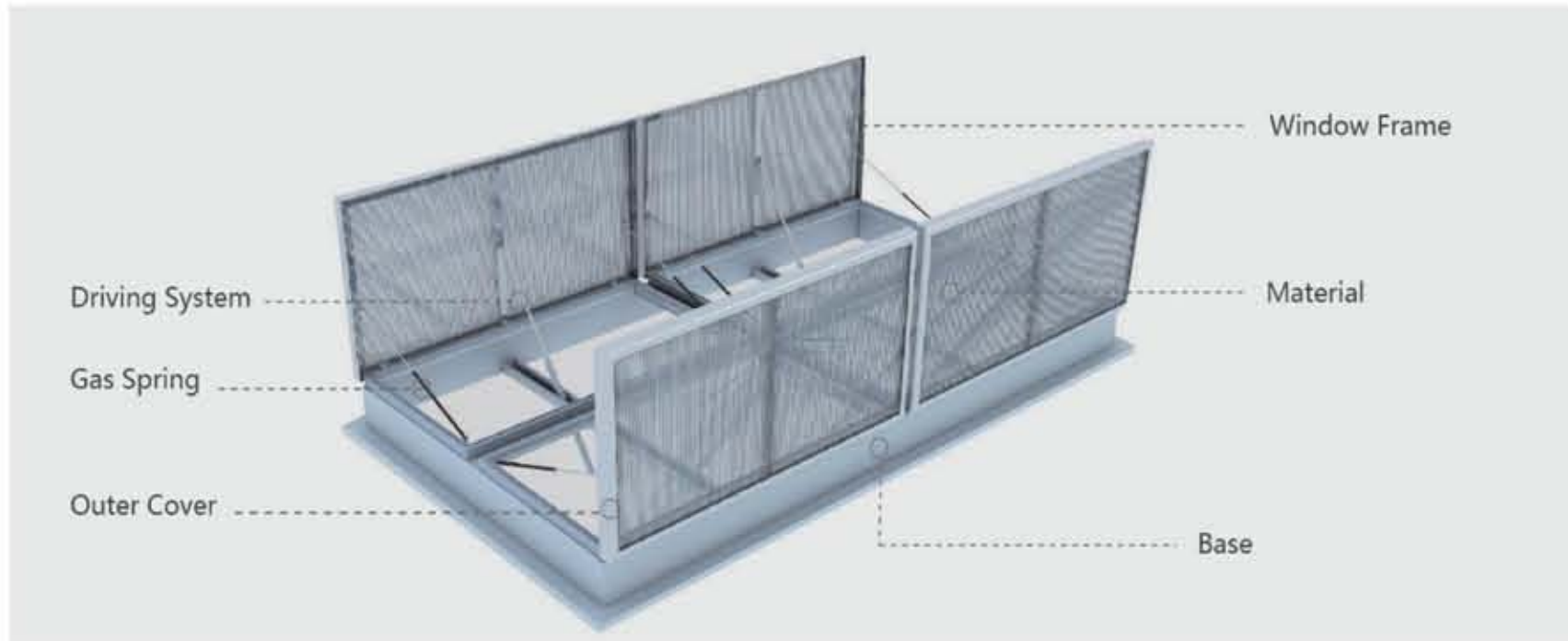
SMOKE VENTILATION CONTROL MODE:

General Control Mode/ Intelligent Control Mode/ Intelligent Network Control Mode, all of these modes have fire linkage control function. We can design different types of smoke ventilation system to play its role to smoke exhaust effectively according to customers different requirement.



VENTUM SMOKE VENTILATOR STRUCTURE

Ventum Smoke Ventilator is an integrating system of skylight, ventilation, smoke extraction, fire fighting linkage. Our smoke ventilator has excellent watertight, air tightness, wind pressure and insulation properties. Electric and pneumatic control systems with network intelligence and fire fighting linkage functions are available. It's safe and reliable. We can supply various reasonable shape design in order to reduce wind pressure and drain away water smoothly. The largest opening angle can reach 150°+ as per clients requirement. We use high quality material on the top, which can increase the daylighting brightness indoors. smoke ventilator is tested and approved.



VENTUM SMOKE VENTILATOR STRUCTURE-ACTUATOR

Ventum smoke ventilator can be equipped with electric and pneumatic actuator.

ACTUATOR-MOTOR

Motor Specs	
1) Input: 24V (DC)	5) Current: 1. Peak: 1.5A
2) Power: 36W	2. Average: 1A
3) Route: 200-1100mm	6) Opening Time: 100mm=4.41s
4) Thrust: 600n	7) Standards: GB16806-2006

ACTUATOR-AIR CYLINDER

While air supply stops gas supply, air cylinder can be self locked and keep current working state.

While air supply stops gas supply, air cylinder can be self locked and keep current working state. When control box of skylight smoke ventilator receives the fire signal, air cylinder can open all windows within certain time. When main air supply pressure is not enough, emergency CO2 air supply can be start by control system order to open all windows within set time, which is safer and more reliable. The largest opening angle can reach 150°+ as per client's requirement.

AIR CYLINDER SPECS

Diameter: 50mm	Function form: Double function
Highest pressure: 1.0MPa	Lowest pressure: 0.1MPa
Speed: 50-500mm/s	Thrust: 1000N

TENSION GAS SPRING

Tension Gas Spring Advantages

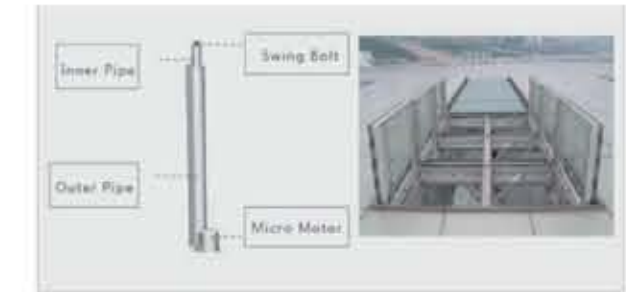
Gas spring is firstly used for supporting in skylight smoke ventilator by our company. Gas spring and motor are used together to make three points support. The structure is more stable and reliable while windows are opening. Gas spring can increase the thrust while opening to make windows open fastly.

According to GB design and standards, skylight smoke ventilator shall withstand 18m/s side wind pressure in opening state. ie. Gale 8, wind pressure 19 (10N/m²).

$$Aw=1.75 \times 2.1=3.68m^2 \quad Rw=1000N+100N+100N=1200N \quad Rn=Rw/Aw=1200N/3.68m^2=326N/m^2$$

TENSION GAS SPRING SPECS

Length: 1000mm Thrust: 100N;
Gas spring works together with air cylinder to make window frame can withstand 18m/s side wind pressure in opening state.

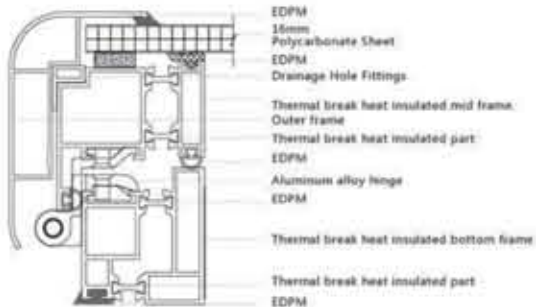


VENTUM SMOKE VENTILATOR STRUCTURE-WINDOW FRAME

Ventum Smoke ventilator has excellent water tightness, air tightness, wind resistance and thermal insulation. The structure design is reasonable and free of hidden dangers of water leakage due to the structure design. We supply kinds of structure according to different application scenarios and different building needs for clients, such as thermal broken insulation aluminum alloy, polyurethane composite materials, ASA components, glass hidden frame and so on.

(1) THERMAL-BREAK HEAT INSULATED ALUMINUM ALLOY FRAME

The thermal-break heat insulated aluminum alloy frame is self designed by Ventum profile has a drainage system in the structure based on the pressure balance design, and there are drainage tank and drain hole for water tightness. The thermal-break heat insulated aluminum alloy frame can be anti-condensation and anti-frost. And it can achieve the form of three sealed structure and reasonably separate the water and vapor, so that it can successfully realize the gas and water pressure balance, and significantly improve the watertight and air tightness of smoke ventilator.



THE TEST DATA OF THE SMOKE VENTILATOR

Items	Highest Level Standard	Measured Data	Test Results
Water tightness	▲ P>700Pa	▲ P>700Pa	Grade 6, Highest Level
Air tightness	Q1<0.5 (m³/m²h)	Q1<0.04 (m³/m²h)	Grade 8, Highest Level
	Q2<1.5 (m³/m²h)	Q2<0.08 (m³/m²h)	
Wind Load Resistance	>5.0kpa	5.3kpa positive pressure 5.1kpa negative pressure	Grade 9, Highest Level

(2) POLYURETHANE COMPOSITE FRAME

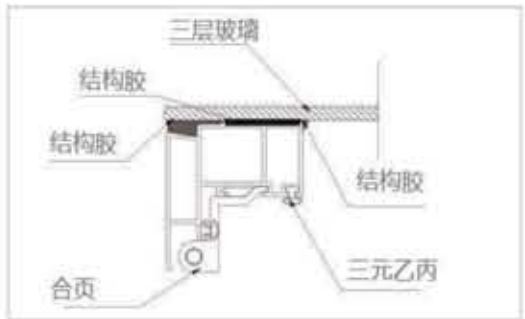
Polyurethane composite frame has a unique cavity design with a reliable waterproof structure. It has excellent insulation properties and ultra- low heat conduction. It is suitable for highland, extremely cold area and buildings with high requirement of heat insulation and structure strength.

Polyurethane composite is a combination material of new polyurethane and glass fiber, it is suitable for buildings with high insulation requirements. The regional cross-section cavity design can achieve excellent insulation effect, and reduce heat exchange and energy loss. Energy saving effect is remarkable. And it has outstanding physical performance, it will not appear cavity deformation, movement and other defects.

Heat Transfer Coefficient $K \leq 1.2 \text{ W/M}^2 \cdot \text{K}$
Thermal Conductivity = $0.22 \text{ W / M} \cdot \text{K}$
Window Frame Insulation $K = (2.0 \text{ W / M}^2 \cdot \text{K})$

(3) HIDDEN FRAME SUPPORTED GLASS

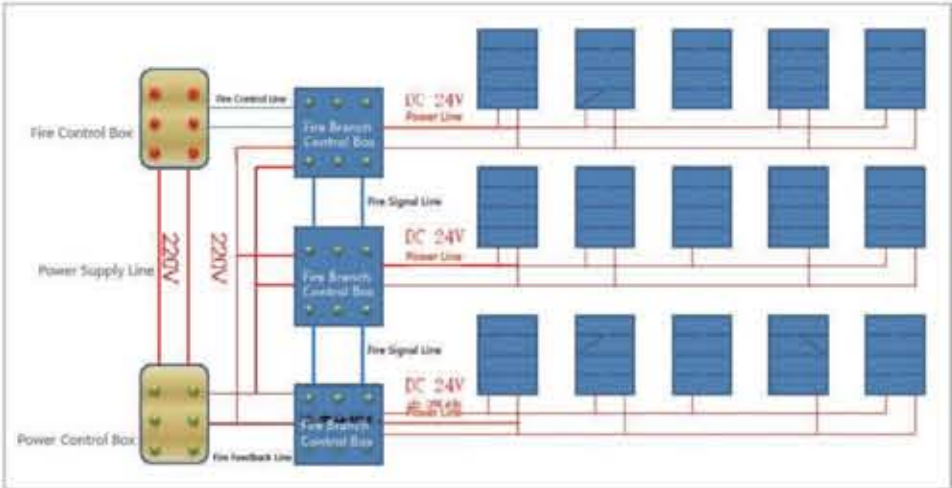
In the case of using glass as the material, we design a hidden aluminum alloy frame with the waterproofing properties. Hidden frame structure can prevent from dust and ponding on the glass surface. And the appearance is more beautiful. Hidden frame structure is widely applicable to large-scale commercial, public buildings and transportation hub buildings.



VENTUM SMOKE VENTILATOR STRUCTURE-CONTROL SYSTEM

1. ELECTRIC CONTROL SYSTEM

Normal control, intelligent control and intelligent network control can be linked with fire fighting system. We can design different models of smoke ventilator according to clients' requirements to achieve its smoke and air extraction function.



OPEN



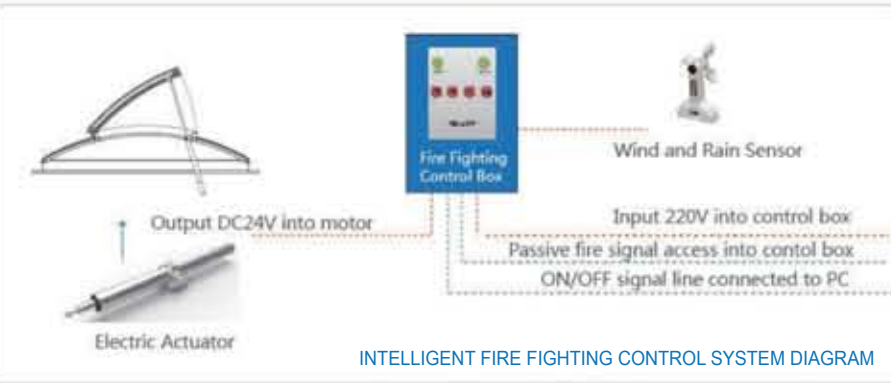
CLOSED

STANDARD
To achieve natural ventilation of the skylight, skylights can be opened and closed by the control box button.
Fire fighting module linkage. Skylights can open automatically to achieve smoke evacuation function.
Read the fire fighting signal and switch to fire mode to start the emergency gas cylinders.
OPTIONAL
Detecting and getting feedback of skylight situation to monitor the working condition of the skylight.
Pneumatic control system is linked with BAS signal to achieve remote intelligent control.
Equipped with spare power to improve the reliability of the control system.

STADARD AND OPTIONAL EQUIPMENT OF CONTROL SYSTEM

(1) FIRE FIGHTING INTELLIGENT CONTROL SYSTEM

Fire intelligent control box can be connected to the wind and rain sensor. While skylight is open and there is rain or wind, the wind and rain sensor will work to send a signal to the control box to close the window. Fire intelligent control box can be connected to the PC, so that the PC can remotely turn on or off the driving motor. Fire control box can be linked with fire signal lines, the use of active or passive signal fire module. When the signal gets into the fire control box, control box will turn or off the motor as priority within 1minute. When 220v power inputs control box, control box transformer will transform 220V into DC24 and instruct electric actuator turn on and off the motor.

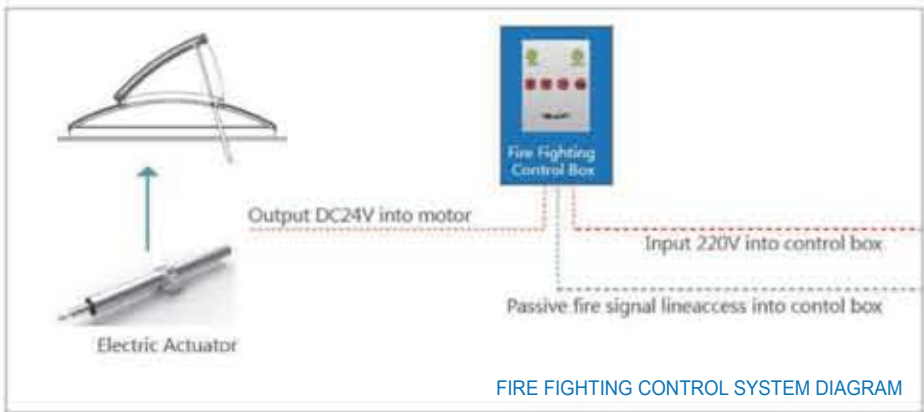


INTELLIGENT FIRE FIGHTING CONTROL SYSTEM DIAGRAM



(2) FIRE FIGHTING CONTROL SYSTEM

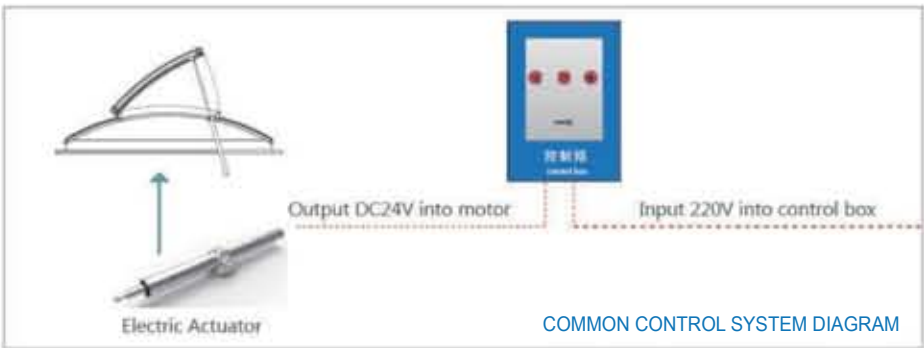
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FIRE FIGHTING CONTROL SYSTEM DIAGRAM

(3) COMMON CONTROL SYSTEM

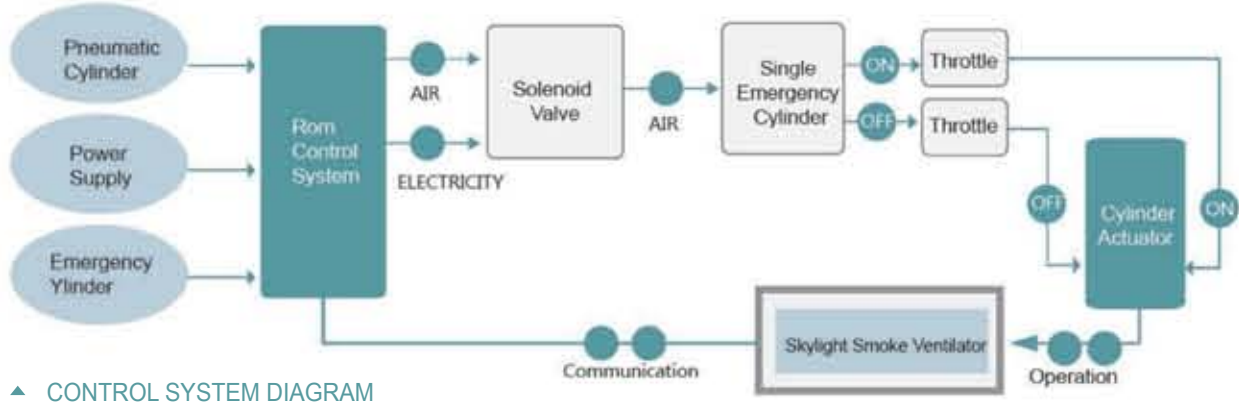
When 220v power inputs control box, control box transformer will transform 220V into DC24 and instruct electric actuator to turn on and off the motor.



COMMON CONTROL SYSTEM DIAGRAM

2. PNEUMATIC CONTROL SYSTEM

Main air supply cylinder and CO² emergency cylinder are used in pneumatic smoke ventilator as the actuator to achieve the fire linkage control. Remote monitoring, feedback and control can be achieved through MODBUS485 protocol, PLC and BAS. Pneumatic smoke ventilator can be opened by the Pneumatic cylinder in case of power failure. When the pressure in main cylinder is insufficient, the emergency CO² pneumatic cylinder will start to open the smoke ventilator according to the control system instructions within the set time. Pneumatic control system is more secure and reliable. The largest opening angle can reach 150°+ to meet clients requirement.



(1) PNEUMATIC CONTROL COMPONENTS



▲ CO²Cylinder

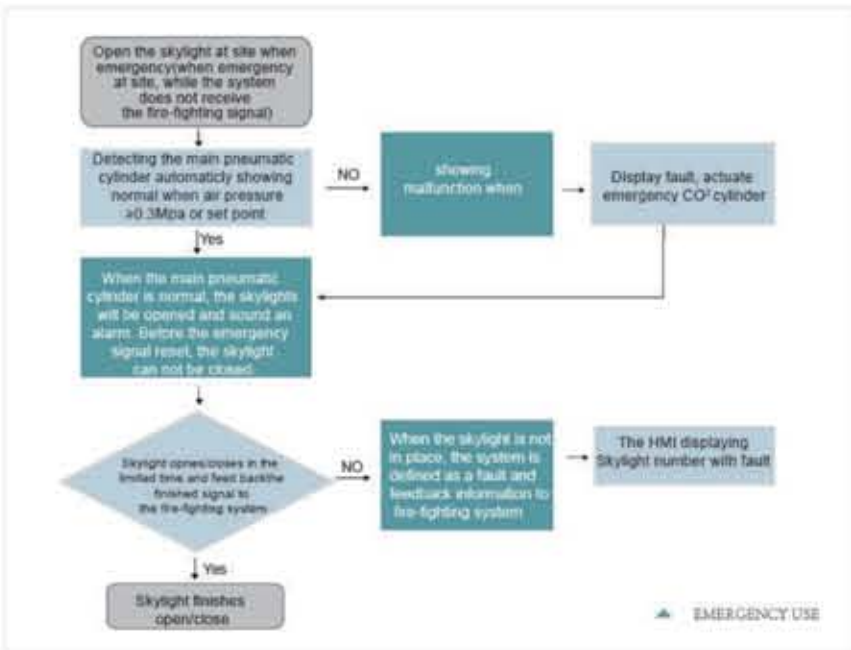
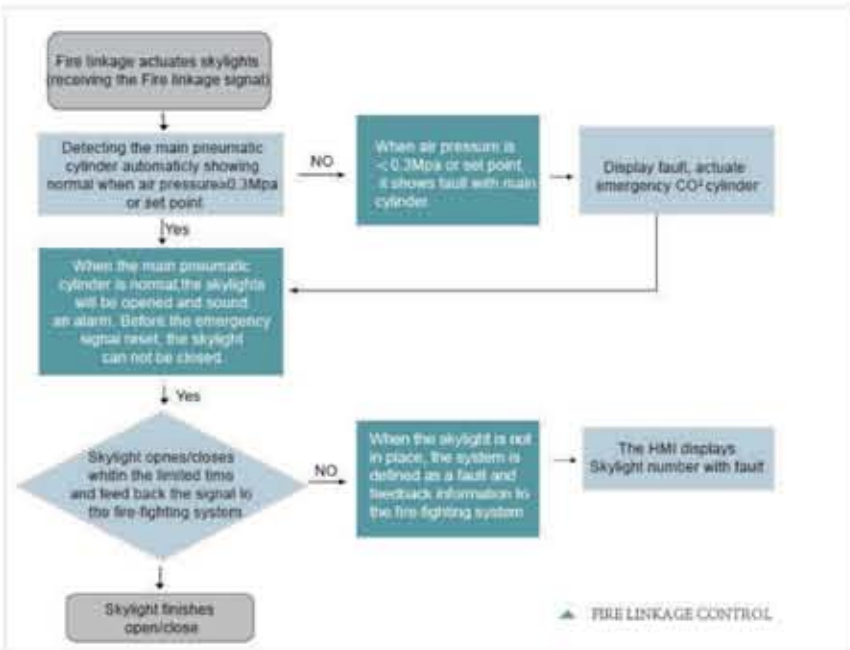
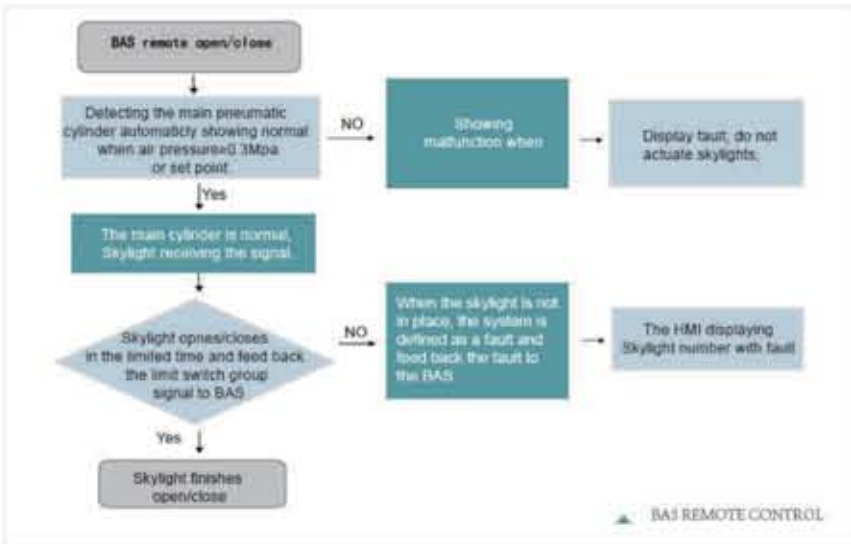
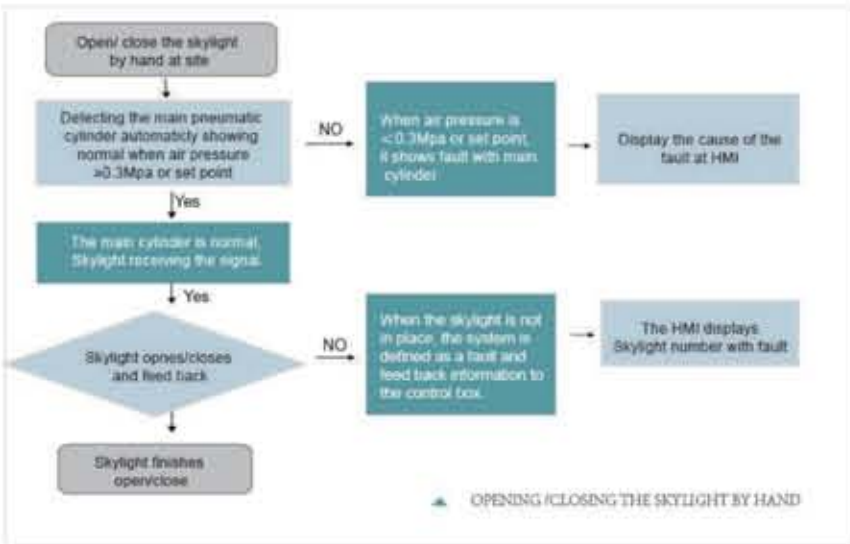


▲ Regulating Valve



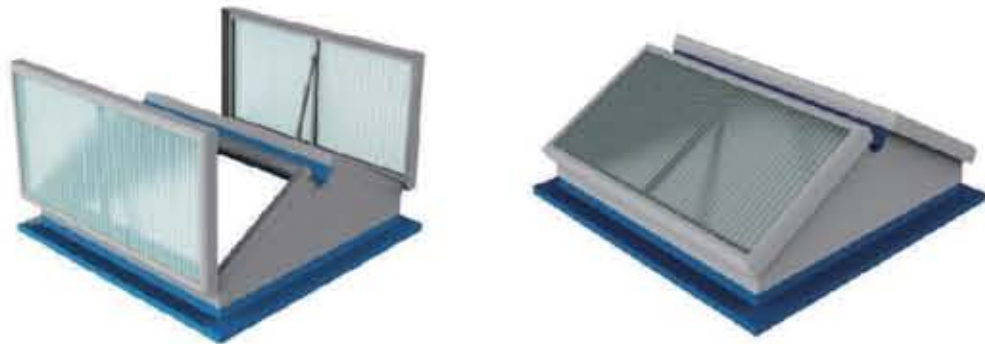
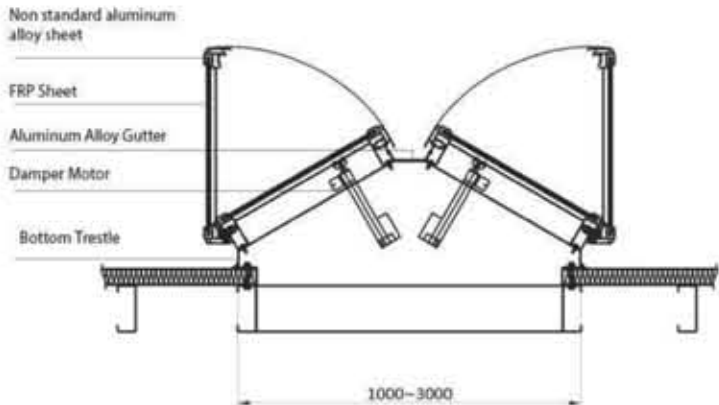
▲ Air Cylinder

(2) PNEUMATIC CONTROL SYSTEM



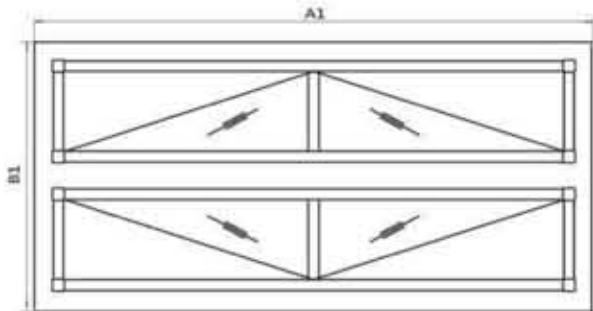
VENTUM TRIANGLE TYPE

With conic shape, it can effectively reduce the wind pressure resistance. FRP Sheet top can effectively increase indoor light. 24V safe voltage damper motor can connect the fire linkage control system and inductor of wind, rain and smoke. It can be applied in workshop, top floor, public building and so on.



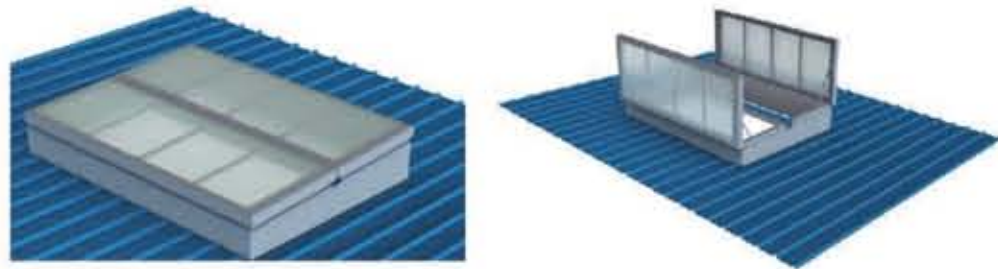
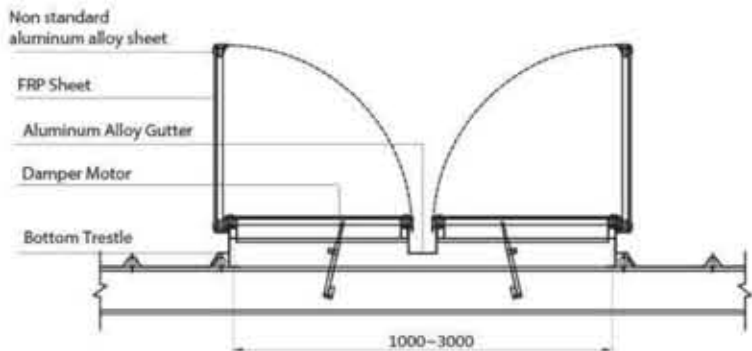
TRIANGLE TYPE SELECTION TABLE

TYPE			Throat Size (Width x Length)	B1×A1 Outline Size (Width x Length)	Window Height
General-purpose control-type T	Intelligent control -type Z	Intelligent Network-based control-type W			
VENT 1T-1015	VENT 1Z-1015	VENT 1W-1015	1000×1500	1256×1756	500
VENT 1T-1020	VENT 1Z-1020	VENT 1W-1020	1000×2000	1256×2256	500
VENT 1T-1215	VENT 1Z-1215	VENT 1W-1215	1200×1500	1456×1756	588
VENT 1T-1220	VENT 1Z-1220	VENT 1W-1220	1200×2000	1456×2256	588
VENT 1T-1225	VENT 1Z-1225	VENT 1W-1225	1200×2500	1456×2756	588
VENT 1T-1520	VENT 1Z-1520	VENT 1W-1520	1500×2000	1756×2256	645
VENT 1T-1525	VENT 1Z-1525	VENT 1W-1525	1500×2500	1756×2756	645
VENT 1T-1530	VENT 1Z-1530	VENT 1W-1530	1500×3000	1756×3256	645



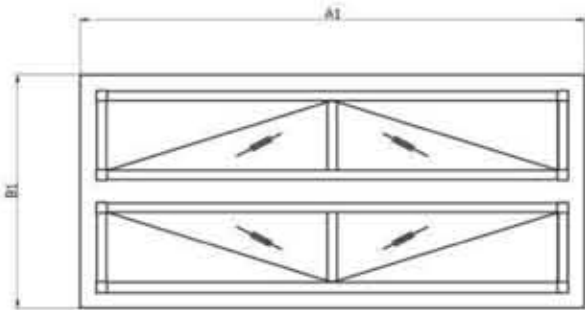
VENTUM FLAT TYPE

Flat appearance and low height can effectively reduce the wind pressure resistance. FRP Sheet top can effectively increase indoor light. 24V safe voltage damper motor can connect the fire linkage control system and inductor of wind, rain and smoke. It can be applied in workshop, hall, stadium and so on .



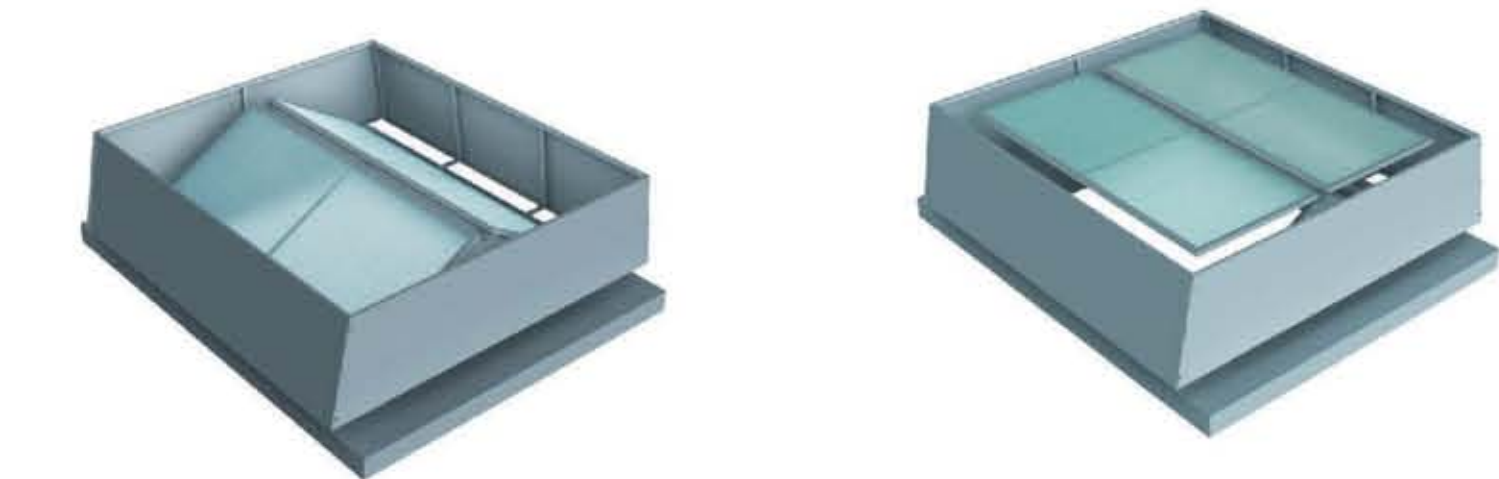
FLAT TYPE SELECTION TABLE

TYPE			Throat Size (Width x Length)	B1×A1 Outline Size (Width x Length)	Window Height
General-purpose control-type T	Intelligent control -type Z	Intelligent Network-based control-type W			
VENT 2T-1015	VENT 2Z-1015	VENT 2W-1015	1000×1500	1256×1756	270
VENT 2T-1020	VENT 2Z-1020	VENT 2W-1020	1000×2000	1256×2256	270
VENT 2T-1215	VENT 2Z-1215	VENT 2W-1215	1200×1500	1456×1756	270
VENT 2T-1220	VENT 2Z-1220	VENT 2W-1220	1200×2000	1456×2256	270
VENT 2T-1225	VENT 2Z-1225	VENT 2W-1225	1200×2500	1456×2756	270
VENT 2T-1520	VENT 2Z-1520	VENT 2W-1520	1500×2000	1756×2256	270
VENT 2T-1525	VENT 2Z-1525	VENT 2W-1525	1500×2500	1756×2756	270
VENT 2T-1530	VENT 2Z-1530	VENT 2W-1530	1500×3000	1756×3256	270

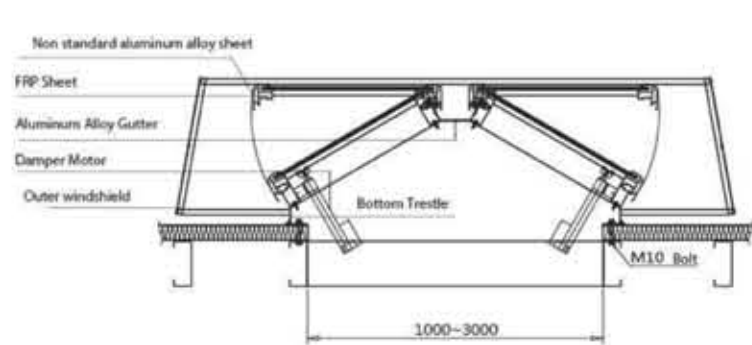


VENTUM WINSHIELD TYPE

With conic shape, it can effectively reduce the wind pressure resistance. FRP Sheet top can effectively increase indoor light. Windsheild in all around can effectively prevent wind from flowing back to indoors. 24V safe voltage damper motor can connect the fire linkage control system and inductor of wind, rain and smoke. It can be applied in workshop, top floor, garage and so on.



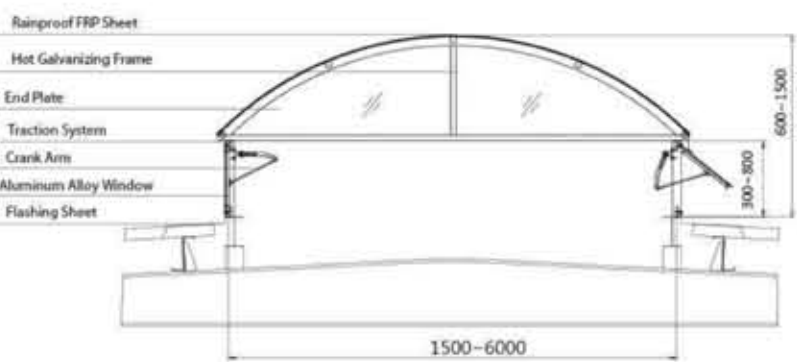
WINSHIELD TYPE SELECTION TABLE



TYPE			Throat Size (Width x Length)	B1×A1 Outline Size (Width x Length)	Window Height
General-purpose control-type T	Intelligent control -type Z	Intelligent Network-based control-type W			
VENT 4T-1015	VENT 4Z-1015	VENT 4W-1015	1000×1500	1956×1756	530
VENT 4T-1020	VENT 4Z-1020	VENT 4W-1020	1000×2000	1956×2256	530
VENT 4T-1215	VENT 4Z-1215	VENT 4W-1215	1200×1500	2156×1756	588
VENT 4T-1220	VENT 4Z-1220	VENT 4W-1220	1200×2000	2156×2256	588
VENT 4T-1225	VENT 4Z-1225	VENT 4W-1225	1200×2500	2156×2756	588
VENT 4T-1520	VENT 4Z-1520	VENT 4W-1520	1500×2000	2456×2256	675
VENT 4T-1525	VENT 4Z-1525	VENT 4W-1525	1500×2500	2456×2756	675
VENT 4T-1530	VENT 4Z-1530	VENT 4W-1530	1500×3000	2456×3256	675

VENTUM CIRCULAR ARCH OPEN TYPE

With artistic circular shape, it can effectively reduce the wind pressure resistance. Its top and side are FRP Sheet. Two sides can be opened and damper motor is 24V safe voltage, which can connect the fire linkage control system and inductor of wind, rain and smoke. It can be applied in huge workshop, warehouse, airport terminal and so on.

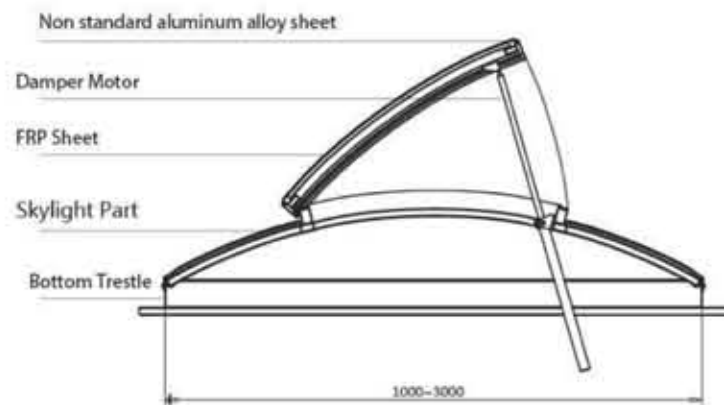
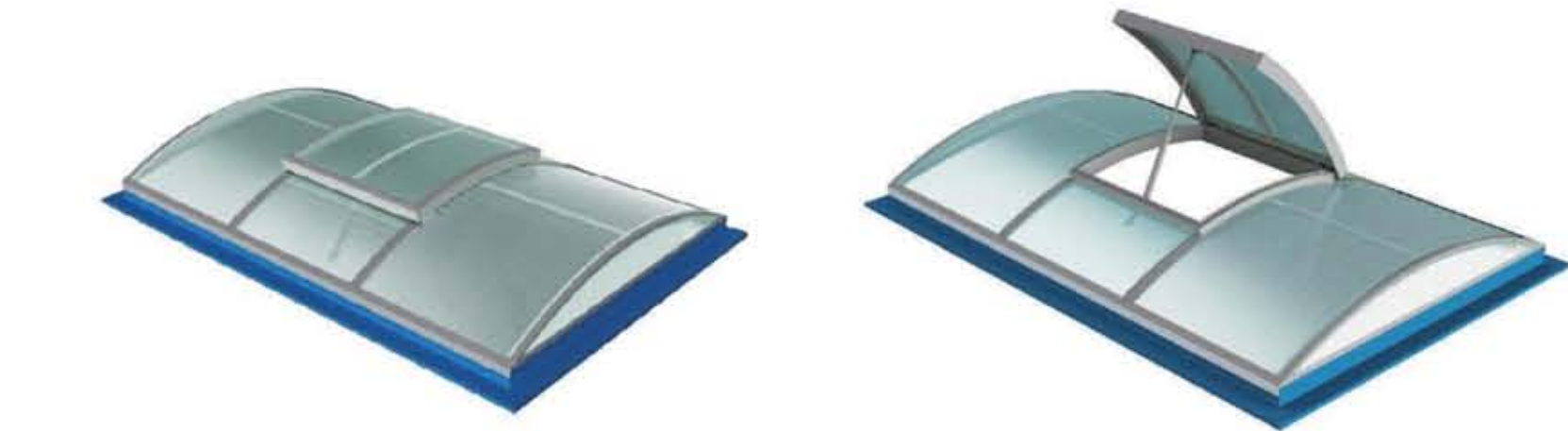


CIRCULAR ARCH SIDE OPEN TYPE SELECTION TABLE

TYPE			Throat Size (Width x Length)	Window Fan Height (H) (mm)	Window Height (H)
General-purpose control-type T	Intelligent control -type Z	Intelligent Network-based control-type W			
VENT 5T-1260n	VENT 5Z-1260n	VENT 5W-1260n	1200	2×450	20.5×6n
VENT 5T-1560n	VENT 5Z-1560n	VENT 5W-1560n	1500	2×600	23.4×6n
VENT 5T-1860n	VENT 5Z-1860n	VENT 5W-1860n	1800	2×750	25.3×6n
VENT 5T-2460n	VENT 5Z-2460n	VENT 5W-2460n	2400	4×750	41×6n
VENT 5T-3060n	VENT 5Z-3060n	VENT 5W-3060n	3000	4×600	46.8×6n

VENTUM CIRCULAR ARCH OPEN TOPPED TYPE

With circular shape, it can effectively reduce the wind pressure resistance. FRP Sheet top can effectively increase indoor light. 24V safe voltage damper motor can connect the fire linkage control system and inductor of wind, rain and smoke. It can be applied in workshop, hall, stadium and so on.

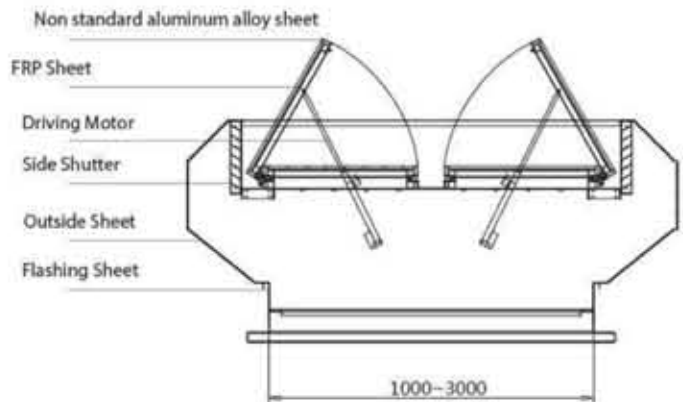
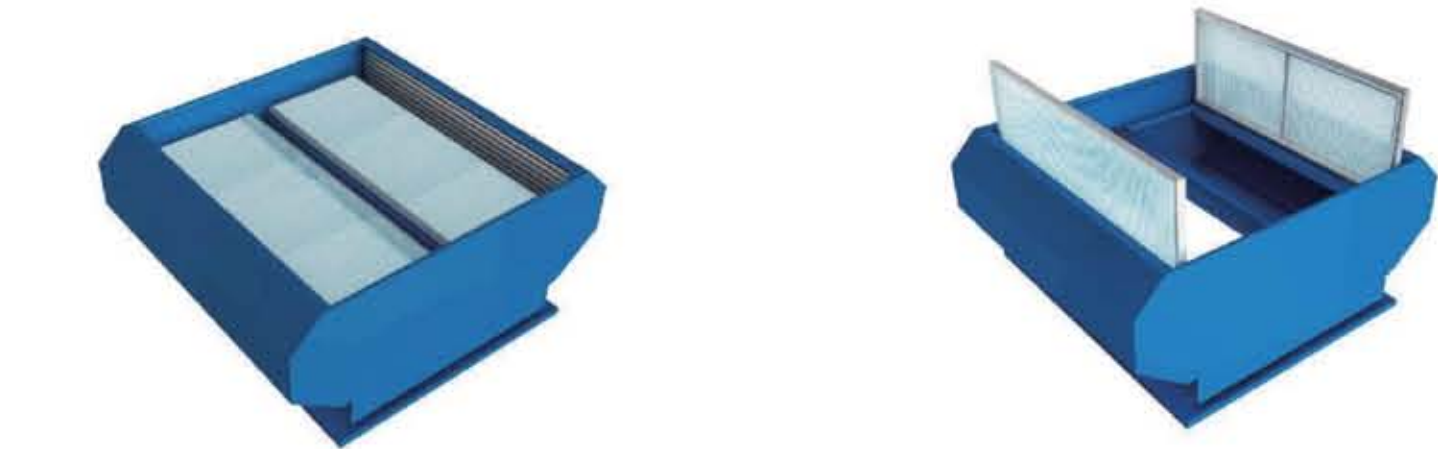


CIRCULAR ARCH OPEN TOPPED TYPE SELECTION TABLE

TYPE			Throat Size (Width x Length)	(mm) Window Fan Height (H)
General-purpose control-type T	Intelligent control -type Z	Intelligent Network-based control-type W		
TOP6T-1010n	TOP6Z-1010n	TOP6W-1010n	1000×1000	1100×2000
TOP6T-2020n	TOP6Z-2020n	TOP6W-2020n	2000×2000	1600×4000
TOP6T-3030n	TOP6Z-3030n	TOP6W-3030n	3000×3000	2100×6000

VENTUM BILATERAL VENTILATION TYPE

With lozenge shape, it can effectively reduce the wind pressure resistance. FRP Sheet top can effectively increase indoor light. Shutter in inner side can still ventilate without opening the window. 24V safe voltage damper motor can connect the fire linkage control system and inductor of wind, rain and smoke. It can be applied in huge workshop, hall, stadium and so on.



BILATERAL VENTILATION TYPE SELECTION TABLE

TYPE			Throat Size (Width x Length)	Outline Size (Width x Length)	Window Height
General-purpose control-type T	Intelligent control -type Z	Intelligent Network-based control-type W			
TOP1T-1015	TOP1Z-1015	TOP1W-1015	1000×1500	1256×1756	500
TOP1T-1020	TOP1Z-1020	TOP1W-1020	1000×2000	1256×2256	500
TOP1T-1215	TOP1Z-1215	TOP1W-1215	1200×1500	1456×1756	588
TOP1T-1220	TOP1Z-1220	TOP1W-1220	1200×2000	1456×2256	588
TOP1T-1225	TOP1Z-1225	TOP1W-1225	1200×2500	1456×2756	588
TOP1T-1520	TOP1Z-1520	TOP1W-1520	1500×2000	1756×2256	645
TOP1T-1525	TOP1Z-1525	TOP1W-1525	1500×2500	1756×2756	645
TOP1T-1530	TOP1Z-1530	TOP1W-1530	1500×3000	1756×3256	645

PROJECTS OF SMOKE VENTILATION









Das Auto.

