

PLATE HEAT EXCHANGER

Energy Recovery Ventilation Specialist



ZENCO INDUSTRIES

ISO 9001:2015 Approved Company

COMPANY

BRIEF INTRODUCTION TO COMPANY



ENERGY RECOVERY VENTILATION SPECIALIST

Holtop is dedicated to the research and technology development in the field of indoor air quality. It is the leading company in China who professionally produces heat recovery ventilation system.

Covering a land of 20000 square meters, Holtop was created in May, 2002 furnished with first-class plants and equipments. Through innovation, it developed its own key components like plate and rotary heat exchangers for various heat & energy recovery systems. It provides now full lines of products covering 5 series and 98 specifications which can basically satisfy the needs of various airflows and installations world widely.

Holtop is trusted by the users for its advanced technology, superb product quality and all-around services. By the end of year 2006, Holtop has supplied successfully to over 3000 customers in the domestic market and exported its products to Japan, Korea, Russia, Italy, Belgium, Australia, New Zealand, etc.

Let's join together to contribute to our commitment of energy saving and pollution reduction.



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OUTLINES

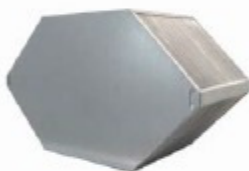
The plate heat exchanger is one of the air-to-air heat exchangers. Outdoor air and exhaust air are separated by the plates to ensure the air tightness while transferring the heat. It has no movement parts, so it's more reliable and has longer service life.

According to the airflow directions of the heat exchanger, it is categorized into cross flow type, counter flow type, and cross-counter flow type. According to the recovery functions of the heat exchanger, it is categorized into sensible heat type and total heat type.



Cross flow plate heat exchanger

- Made by flat aluminum foils of 0.12mm thickness
- Two air streams flow crossly.
- Suitable for room ventilation system and industrial ventilation system.
- Heat recovery efficiency up to 80%



Cross-counter flow plate heat exchanger

- Made by flat aluminum foils of 0.12mm thickness
- Partial air flows crossly and partial air flows counter
- Suitable for room ventilation system and industrial ventilation system.
- Heat recovery efficiency up to 90%



Counter flow plate heat exchanger

- Made by flat aluminum foils of 0.18mm thickness
- Two air streams flow counter
- Suitable machine room ventilation and telecom cabinets ventilation, as well as room ventilation system.
- Heat recovery efficiency up to 90%

Cross flow plate fin heat exchanger

Sensible heat exchanger

Total heat exchanger

- Made by HOLTO 3rd generation E.R. paper
- Structured with flat plates and corrugated plates.
- Two air streams flow crossly.
- Suitable for room ventilation system and industrial ventilation system.
- Heat recovery efficiency up to 80%



UNDERSTANDING MODEL NUMBERS

Model Description

HB S - W 412/412 - 400 - 3 B - 1

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

- ① Stands for Holtop plate heat exchanger
- ② Function code: S - sensible heat exchanger, T - total heat exchanger.
- ③ Structure code: W - cross flow plate fin heat exchanger, ZF - cross flow heat exchanger, CF - counter flow plate heat exchanger, LB - cross-counter flow heat exchanger.
- ④ Stands for the cross section size (mm)
- ⑤ Stands for length of the heat exchanger (mm)
- ⑥ Stands for plate distance (mm)
- ⑦ Material: B - standard type, F - anti-corrosion, G - High temperature
- ⑧ 1/2/3, stands for air streams direction,

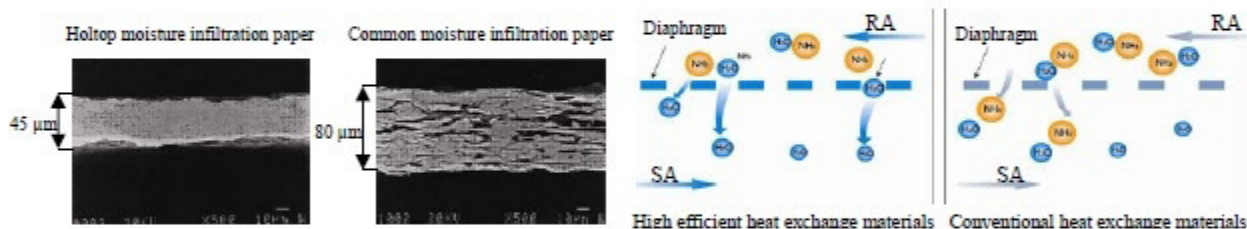
Materials of the heat exchanger

Sensible heat exchanger

The plate is made of aluminum foils specially for air-to-air heat exchange. Various type are available for different applications.

Total heat exchanger

Total heat exchanger is made of ER paper which is featured by high moisture permeability, good air tightness, excellent tear resistance, and aging resistance. The clearance between the fibers is very small, so only the moisture molecules of small diameter can go through, the odor molecules of larger diameter are unable to pass through it. By this means, the temperature and humidity can be recovered smoothly, and prevent the pollutants infiltrating to the fresh air.

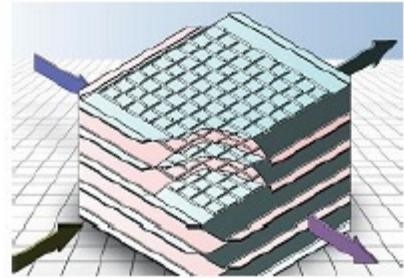


Gas molecules type	Carbon dioxide (CO ₂)	Ammonia (NH ₃)	Methane (CH ₄)	Vapor (H ₂ O)	The clearance of fiber
Diameters (nm)	0.324	0.308	0.324	0.288	0.3 (for reference)

CROSSFLOW PLATE HEAT EXCHANGER

Working principle

Two neighbor aluminum foils form a channel for fresh or exhaust air stream. Heat is transferred when the air streams flow crossly through the channels, and fresh air and exhaust air is totally separated.

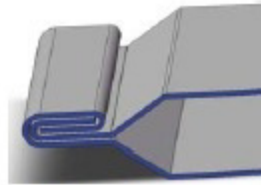


Main features

- Sensible heat recovery
- Total separation of fresh air & exhaust air streams
- Heat recovery efficiency up to 80%
- 2-side press shaping
- Double folded edge
- Completely joint sealing.
- Resistance of pressure difference up to 2500Pa
- Under pressure of 700Pa, air leakage less than 0.06%



2-side pressed shaping

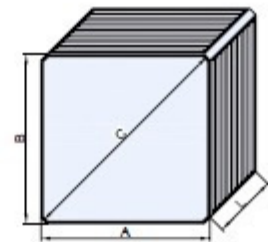
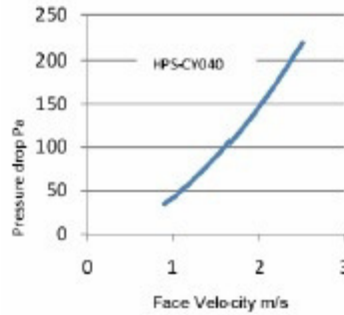
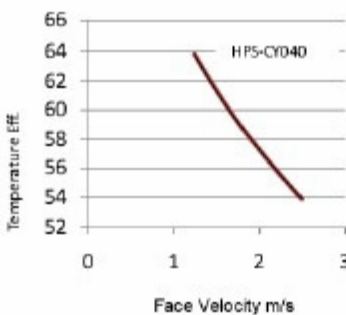


Double folded edge
@5 times plate thickness



Completely joint sealing

Performance chart



All data figured out above air tested according to GBT 21087-2007

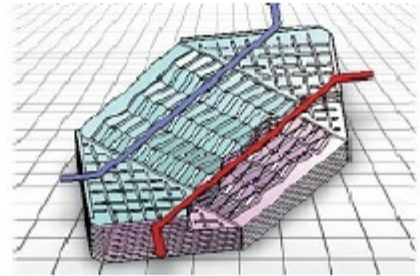
Specifications

Model	A (mm)	B (mm)	Length per piece (L)	Optional spacing (mm)
HBS-ZF250/250	250	250	Custom-made Max. 400mm	4.0
HBS-ZF300/300	300	300		5.0
HBS-ZF350/350	350	350	Custom-made Max. 400mm	4.0
HBS-ZF350/350	350	350		5.0
HBS-ZF350/350	350	350	Custom-made Max. 550mm	6.0
HBS-ZF400/400	400	400	Custom-made Max. 400mm	4.0
HBS-ZF400/400	400	400		5.0
HBS-ZF400/400	400	400	Custom-made Max. 550mm	6.0
HBS-ZF500/500	500	500		6.0, 8.0, 10.0
HBS-ZF600/600	600	600	Custom-made Max. 550mm	6.0, 8.0, 10.0
HBS-ZF700/700	700	700		8.0, 10.0
HBS-ZF800/800	800	800	Custom-made Max. 550mm	8.0, 10.0
HBS-ZF1000/1000	1000	1000		6.0, 8.0, 10.0
HBS-ZF1200/1200	1200	1200	Custom-made Max. 500mm	6.0, 8.0, 10.0
HBS-ZF1400/1400	1400	1400		8.0, 10.0
HBS-ZF1600/1600	1600	1600		8.0, 10.0

CROSS-COUNTER FLOW PLATE HEAT EXCHANGER

Working principle

Two neighbor aluminum foils form a channel for fresh or exhaust air stream. Heat is transferred when the partial air streams flow crossly and partial air streams flow counter through the channels, and fresh air and exhaust air is totally separated.

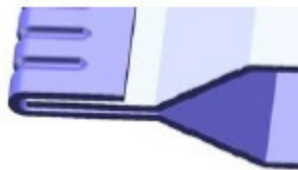


Main features

- Sensible heat recovery
- Total separation of fresh & exhaust air streams
- Heat recovery efficiency up to 90%
- 2-side press shaping
- Single folded edge
- Completely joint sealing.



2-side pressed shaping

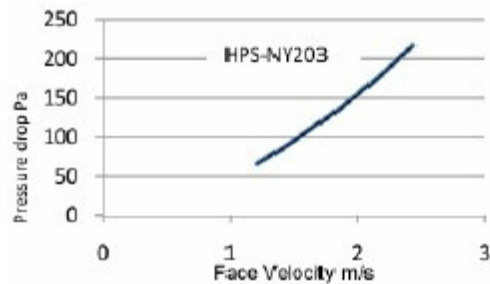
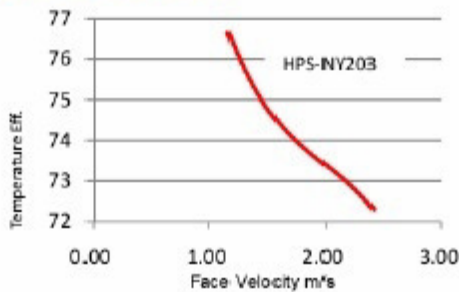


Single folded edge
@3 times plate thickness



Completely joint sealing

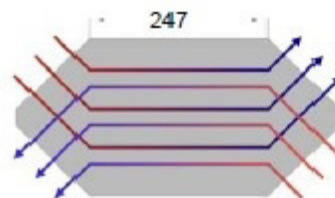
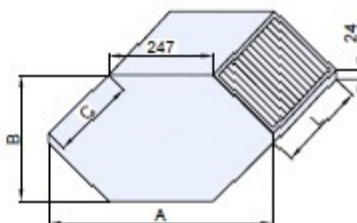
Performance chart



All data figured out above air tested according to GBT 21087-2007

Specifications

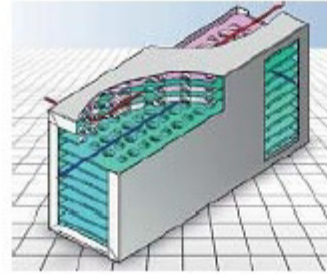
Model	A (mm)	B (mm)	C (mm)	Length per piece (L)	Optional spacing (mm)
HBS-LB539/316	539	316	203	Custom-made Max. 650mm	2.1



COUNTER FLOW PLATE HEAT EXCHANGER

Working principle

Two neighbor aluminum foils form a channel for fresh or exhaust air stream. Heat is transferred when the air streams flow counter through the channels, and fresh air and exhaust air is totally separated.

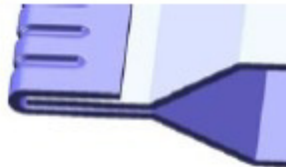


Main features

- Sensible heat recovery
- Total separation of fresh & exhaust air streams
- Heat recovery efficiency up to 90%
- 2-side press shaping
- Single folded edge
- Completely joint sealing



2-side pressed shaping

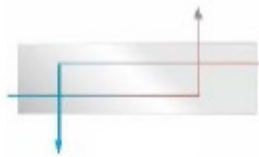


Single folded edge
@3 times plate thickness

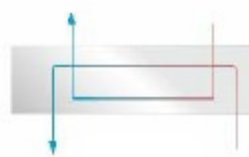


Completely joint sealing

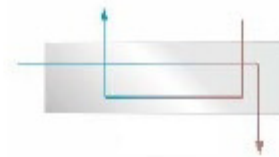
Airflow directions



Airflow direction 1



Airflow direction 2



Airflow direction 3



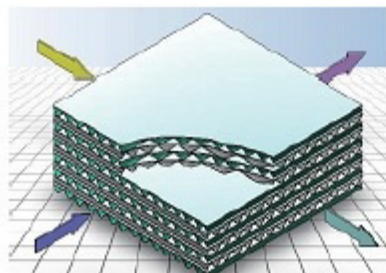
Specifications

Model	A (mm)	B (mm)	C (mm)	Spacing (mm)
HBS-CF496/190	496	190	100-600	3.0, 4.5, 5.5, 6.5
HBS-CF596/190	596	190		
HBS-CF696/190	696	190		
HBS-CF796/190	796	190		

CROSSFLOW PLATE FIN HEAT EXCHANGER

Working principle

The flat plates and the corrugated plates form channels for fresh or exhaust air stream. When the two air streams passing through the exchanger crossly with temperature difference, the energy is recovered.

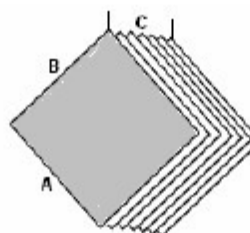


Main features

- Sensible and total heat recovery.
- Made of HOLTOP 3rd generation E.R. paper
- Structured with flat plate and corrugated plate.

Applications

- Direct air to air energy exchange.
- Ideal for both residential and commercial application.
- Suitable for airflow 300-60000m³/h.



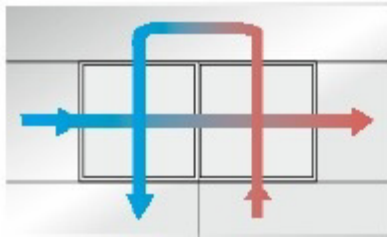
Specifications

Model	A (mm)	B (mm)	Length per piece (L)	Optional spacing (mm)
HBT-W168/168	168	168	Custom-made Max. 500mm	2.0, 2.5
HBT-W202/202	202	202		2.0, 2.5
HBT-W222/222	222	222		2.0, 2.5
HBT-W250/250	250	250	Custom-made Max. 700mm	2.0, 2.5, 3.5
HBT-W300/300	300	300		2.0, 2.5, 3.5
HBT-W350/350	350	350		2.5, 3.5
HBT-W372/372	372	372		2.5, 3.5
HBT-W400/400	400	400		2.5, 3.5
HBT-W472/472	472	472		3.5
HBT-W500/500	500	500	Custom-made Max. 550mm	3.5
HBT-W552/552	552	552		3.5
HBT-W600/600	600	600		3.5
HBT-W652/652	652	652		3.5
HBT-W700/700	700	700		3.5
HBT-W800/800	800	800		3.5
HBT-W1000/1000	1000	1000		Custom-made Max. 450mm
HBT-W1200/1200	1200	1200	3.5	
HBT-W1400/1400	1400	1400	3.5	
HBT-W1600/1600	1600	1600	3.5	

APPLICATIONS

Installation patterns

Pattern 1 and 2, to increase the heat exchange area, suitable for occasions requiring higher heat recovery efficiency, however, air resistance will increase accordingly.

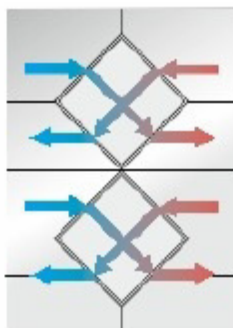


Pattern 1

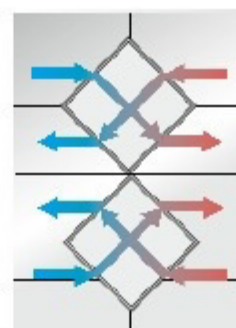


Pattern 2

Pattern 3 and 4, to increase the front face area, suitable for occasions requiring large airflow, both air resistance and heat recovery efficiency remain stable.

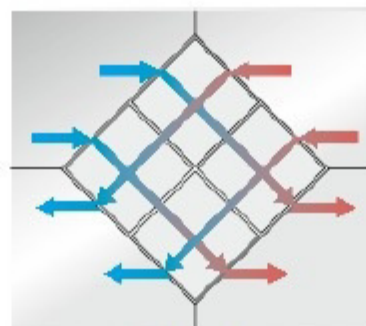


Pattern 3



Pattern 4

Pattern 5, to increase both front face area and heat exchange area, suitable occasions requiring higher heat recovery efficiency and large airflow.

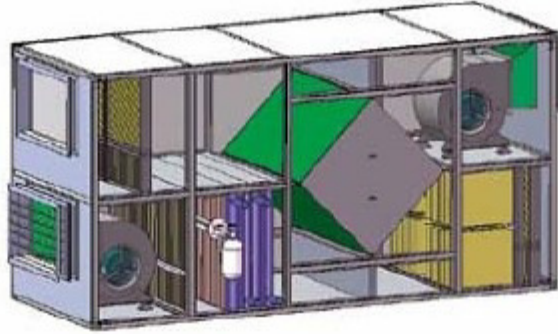


Pattern 5

APPLICATIONS

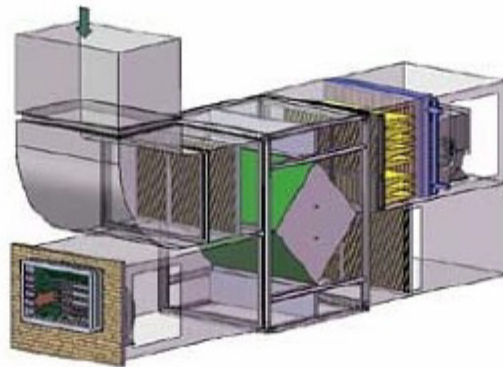
Installed in air handling unit

Holtop plate heat exchanger can be used in the air handling unit (AHU) as a main part of the heat recovery section, and the bypass can be built in when required.



Installed in ducts

It can also be installed in the ducts of ventilation system as a main part of the heat recovery section. The installation is very flexible.



Note: the size and patterns of the heat exchanger should be selected according to the application spaces as well as transportation capability and conditions at installation.

Zenco Industries

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