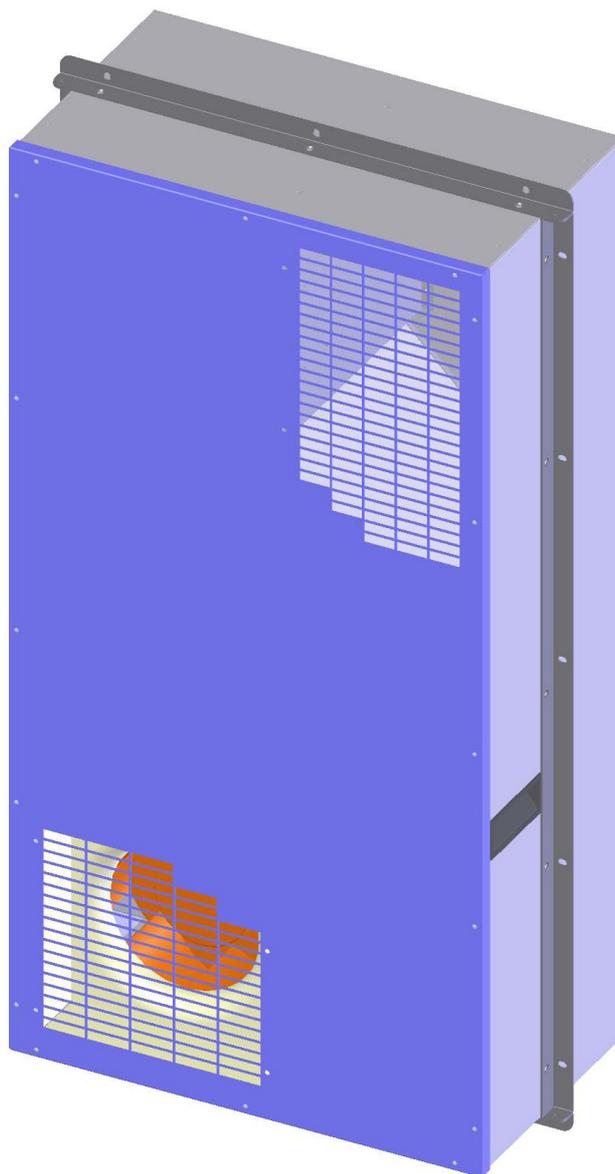


# User/Service Manual for DHX-20-120D-CR

## DHX20-120D-CR 用户及服务手册



**Dantherm Air Handling (Suzhou) Co., Ltd.**

丹腾空气系统（苏州）有限公司

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## 1. Introduction简介

The target group for User/Service Manual is the engineers that install, maintain and repair the DHX20-120D-CR heat exchanger.

该用户/服务手册帮助工程师安装、维护和修理 DHX20-120D-CR 热交换器。

### Usage 用途

The DHX20-120D-CR Heat exchanger is designed especially for mounting in the side of cabinet. The unit uses ambient air for temperature regulation. The internal temperature of the enclosure is cooled via effective utilisation of the ambient air. An air plate heat exchanger is used to transfer the heat. Two radial fans, one for the internal circuit and one for the external circuit provide ventilation. The heat exchanger module is designed in such a way that the speed of the internal circuit fan and external circuit fan are controlled according to temperature, based on the pre-set pattern.

.DHX20-120D-CR热交换器是专门设计安装在机柜的侧面，它利用周围空气进行温度调节。机柜内温度通过有效与周围空气进行热量交换得以降低。用一个空气盘型热交换器来传递热量。有两个离心式风扇，一个用在内循环，一个用在外循环，提供流通的空气。根据预先设置的模式，热交换器被设计成根据温度大小控制内、外风扇的转速的方式。

## 2. Technical data 技术数据

This table shows the technical data for the DHX20-120D-CR:

下表说明了 DHX20-120D-CR 的技术数据:

Parameter 参数		Data 数据
Dimensions 尺寸	(H x W x D) 尺寸大小	890 mm x 450 mm x 260 mm
Power Supply 电源	DC supply 直流电源	48VDC (±20%)
Rate Current 电流	DC 直流电源	3.75A—fan 17.92A--Heater
Gross 毛重	Weight 重量	30Kg
Material 材料	Sheet metal Material 钣金材料	Alzinc 覆铝锌板
Cooling Capacity 换热量	Specific cooling capacity 额定换热量	120 W/K
Heater 加热器	Heater 交流加热器	860Watts(48VDC)
Fan 风扇	Air flow from fans 风扇流量	Internal: Max. 1019 m <sup>3</sup> /h External: Max. 1130 m <sup>3</sup> /h
Protection 防护	Protection category 防护等级	IP55
Sound level (A) 噪音等级 (A)	Sound level (stand alone) 噪音等级	Max. 65dB(A)
Operating temperature range 工作温度范围	Operating temperature range 工作温度范围	-40°C to +55°C

It needs to be considered to add fuse or breaker to protect against excessive current before power on the product.

在热交换器供电前应考虑增加过流保护的保险丝或断路器.

### Dimension Diagram 外形尺寸图 :

Please refer to appendix

请参考附录文件

### Unpacking 拆包

The package includes the following:

- One DHX20-120D-CR unit
- One User & Service Manual;

- Test report.

包装内应含有:

- 一台 DHX20-120D-CR交换器;
- 用户服务手册一份;
- 测试报告。

### **Before you install 安装前**

Ensure the following before you install the unit:

- The site of the enclosure and the arrangement of the heat exchanger are selected in such a way as to ensure good ventilation.
- The location is free from excessive dirt and moisture.
- The mains connection ratings, as stated on the nameplate of the unit, are available.
- The ambient temperature does not exceed +55°C.
- Air inlet and outlet are not obstructed on the inside of the enclosure.
- Authorized & qualified staff must only carry out electrical connection and repairs; only original spare parts can be used!

安装前要确保以下几个方面:

- 热交换器的周围环境及安排应确保较好的通风;
- 应避免安装在过脏和过于潮湿的地方;
- 各主要连接, 参照机器铭牌数据;
- 环境温度不超过 +55°C.
- 在机柜内部周围, 空气入口和出口没有任何障碍;
- 电器的连结和维修是由审定的、有资格的人员进行并且必须使用原始备用件!

### **Precautions 注意事项**

The following precautions must be observed:

- The connected voltage and frequency must correspond to the values stated on the nameplate.
- The unit must not have any additional temperature control connected.
- Line protection should be provided by means of the pre-fuse specified on the nameplate.
- Obey the relevant regulations during installation.
- Mains connection must be made to the connector plug on the heat exchanger.

必须遵循下列注意事项:

- 连接电压和频率必须与铭牌上标示的相对应;
- 不必使用任何额外的温度控制连接装置;
- 输电线保护装置应选用铭牌上规定的保险丝;
- 遵照安装的相关规定;
- 与换热器上的主要连接必须制成联结插头的形式。

### **Installation 安装**

Follow these steps to install the unit:

遵守下列步骤安装设备:

Step 步骤	Action 装配过程
1	Mount the self adhesive gasket to the mounting face of the DHX20-120D-CR unit 在 DHX20-120D-CR的装配面装上粘贴垫圈。
2	Lift the unit up and place it on the side of cabinet, and affirm installation plate according with installation position bolts. 抬起换热器, 将其放置在机柜的背面, 将换热器的安装法兰与机柜安装位置相配合。
3	Mount the nuts and tighten them. 安装螺钉并紧固。
4	Make sure that all circuit breakers related to the heat exchanger are switched off. 确保与热交换器相连的所有电路断路器关闭
5	Connect the following cables to the unit: 连接机器相关电线。
6	Switch on the power to the unit. The unit will now perform. 打开电源, 就可以准备投入使用了。

### 3. Functional description 功能描述

#### Introduction 简介

DHX20-120D-CR is an air-to-air heat exchanger with the capacity to remove 120 W/K. Based on the Measured return air from the cabinet temperature, the control module will regulate the speed of fans.

DHX20-120D-CR 是具有 120 W/K 热交换能力的空气热交换器。根据测量来自机柜的回风温度, 控制模块会按照预定的控制程序, 自动调节风扇的速度。

#### 3.1 Fans 风扇

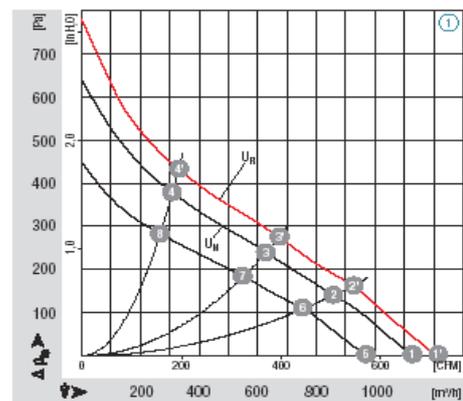
Internal/External fan type are R1G225-AF11-XX, 95W, rate voltage DC48V.

内、外风扇型号是 R1G225-AF11-XX, 95W, 48VDC

Their working curve is same as following graph:

工作曲线如下图:

Characteristics



### 3.2 Recuperator 恢复器

The recuperator is a convection flow type made of epoxy coated aluminium sheets.  
本恢复器是一种氧化铝片制成的对流的恢复器。

### 3.3 Heater 加热器

Heater type is 860W, 48VDC.

A 5°C on/15°C off thermostat will be used to control heater operation, if cabinet temperature is higher than 15°C, heater stop working, if temperature drop to 5°C, heater will start working.

For double security, another thermostat will be used 47°C on/55°C off.

加热器型号：860W，48VDC

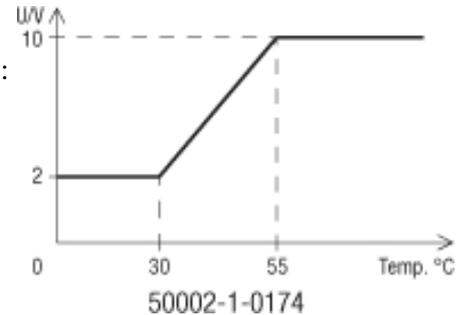
一个 5°C 关闭/15°C 断开的温控将控制加热器的工作状况，如果机柜的温度高于 15°C，加热器停止工作，低于 5°C 时开始工作。双重保险起见，使用另一个温控 47°C 关闭/55°C 断开。

### 3.4 Control Module 控制模块

A temperature module will be used to control external fan speed according to internal return temperature  
利用内循环的回风温度，用一个温度模块控制外风扇的运行速度。

Internal fan run always, external fan speed according to the chart below:

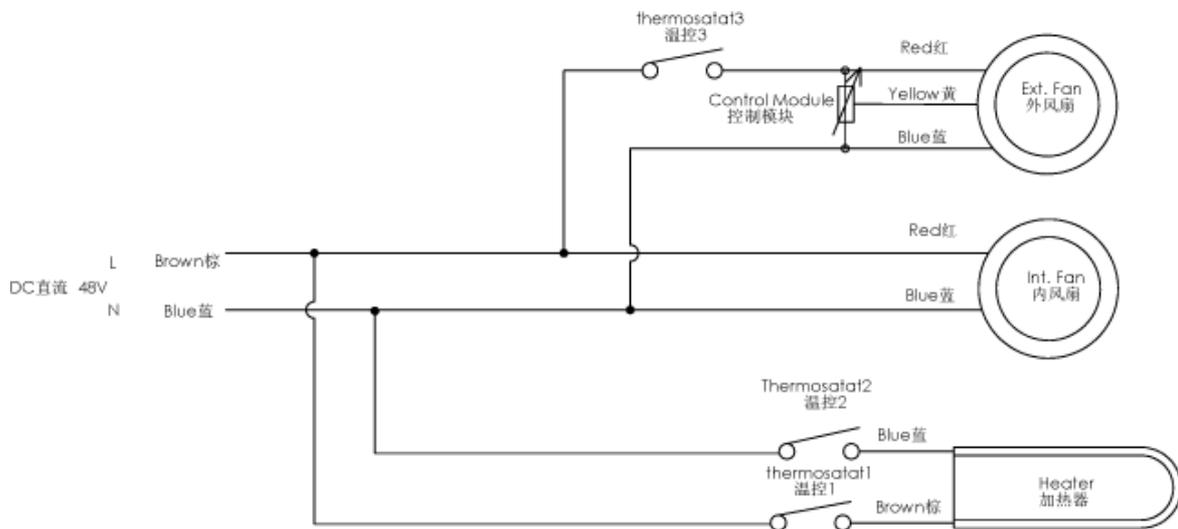
内风扇一直运行，外风扇运行速度参照以下图表：



### 3.5 Wiring diagram 线路图

DHX20-120D-CR works according to the following chart:

DHX20-120D-CR 工作曲线如下图



## 4. How to perform preventive maintenance 如何进行定期检修

### Introduction介绍

The heat exchanger is designed and manufactured to the best possible workman standards, however failures can occur either based on malfunctions of components, outside forces or lack of proper maintenance. This section describes how to replace parts and perform preventive maintenance.

热交换器的设计和制造尽可能地符合工人的习惯标准，然而故障的产生既是在于部件的故障，外部压力，也有可能由于缺乏正确的检修。本部分描述了如何进行零部件更换和定期检修。

### Preventive maintenance定期检修

It is recommended to perform preventive maintenance on the unit twice a year (depends on the location of the site and the nearby surroundings) and the following should be done:

建议对设备进行一年两次的定期检修(根据所处的位置和周围的环境)，按照以下步骤进行：

#### 4.1 How to perform preventive maintenance 如何进行定期检修

请按照以下步骤进行定期检修：

Step 步骤	Action 检修过程
1	Listen to the fans while in operation. The sound should be constant and with very little fluctuation otherwise the fans are out of balance and should be replaced. 机器运行时听风扇的声音，如果声音连续且很少有波动，则运行良好，否则风扇失去平衡，应该进行更换。
2	Switch all the circuit breakers related to the climate unit off. 关闭所有的电路断路器。
3	Remove the internal and external fan by following the procedures in “How to replace the internal fan” and “How to replace the external fan” respectively. 遵循“如何更换内风扇”“如何更换外风扇”的操作规程分别取出内外风扇。
4	Clean the blades of both fans using a brush, compressed air and a vacuum cleaner. 用毛刷，压缩空气和真空吸尘器清洁风扇的叶片。
5	Mount the fans again switch the unit. 将风扇重新装上,启动电源。

## 4.2 How to replace the internal fan 如何更换内风扇

### Introduction介绍

The purpose of the fan is to circulate the air in the unit, to obtain a uniform temperature in the cabinet.  
风扇的作用是促进空气在机器中的循环，使机柜内温度分布均匀。

### When to replace更换时间

The fan should be replaced if it is faulty.  
如果风扇运转不良就应该及时更换。

### Before you start更换前

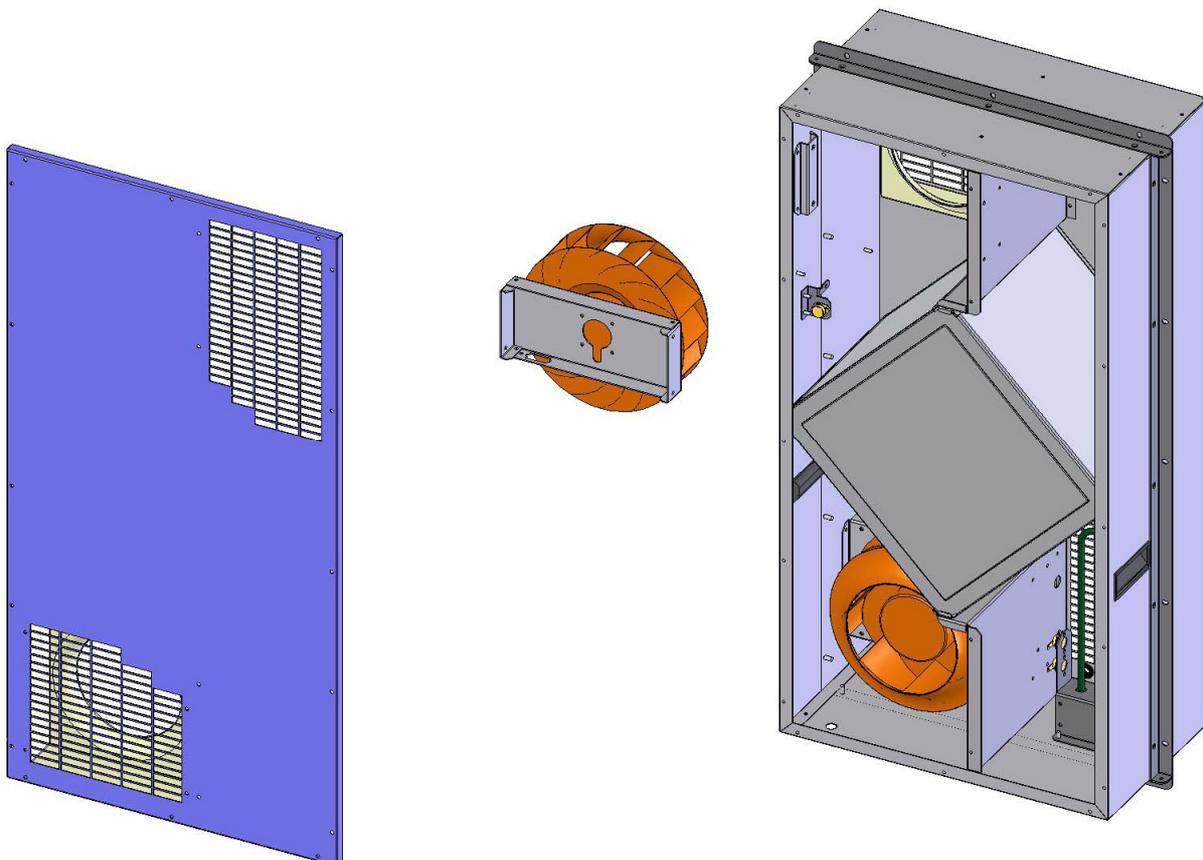
Before you start make sure that you have the following available:

- A cross screwdriver
- A new fan kit

在更换前要准备好以下几样工具和设备:

- 一个十字螺丝起子
- 一套风扇用品

### Illustration说明



Follow these steps to replace the internal fan:

依照以下步骤更换内风扇:

Step 步骤	Action 更换过程
1	Make sure that all circuit breakers related to the climate unit are switched off before you start. 在开始操作前, 请确认关闭所有的电路断路器。
2	Unscrew the screws placed on the cover and the internal fan assembly. 旋开盖板和内风扇组件上的螺丝
3	Lift the fan slightly up and unplug the connector. Remove the whole fan subassembly from the unit. 轻轻托起风扇, 拔去连接插头, 卸下风扇子装配体。
4	Mount the new fan by following step 2 and 3 in reverse order. 按照步骤2 和3的相反步骤安装新的风扇。

### 4.3 How to replace the external fan 如何更换外风扇

#### Introduction介绍

The purpose of the fan is to circulate the air in the unit, to obtain a uniform temperature in the cabinet.

风扇的作用是促进空气在机器中的循环, 使机柜内温度分布均匀。

#### When to replace更换时间

The fan should be replaced if the fan is faulty.

如果风扇运转不良就应该及时更换。

#### Before you start更换前

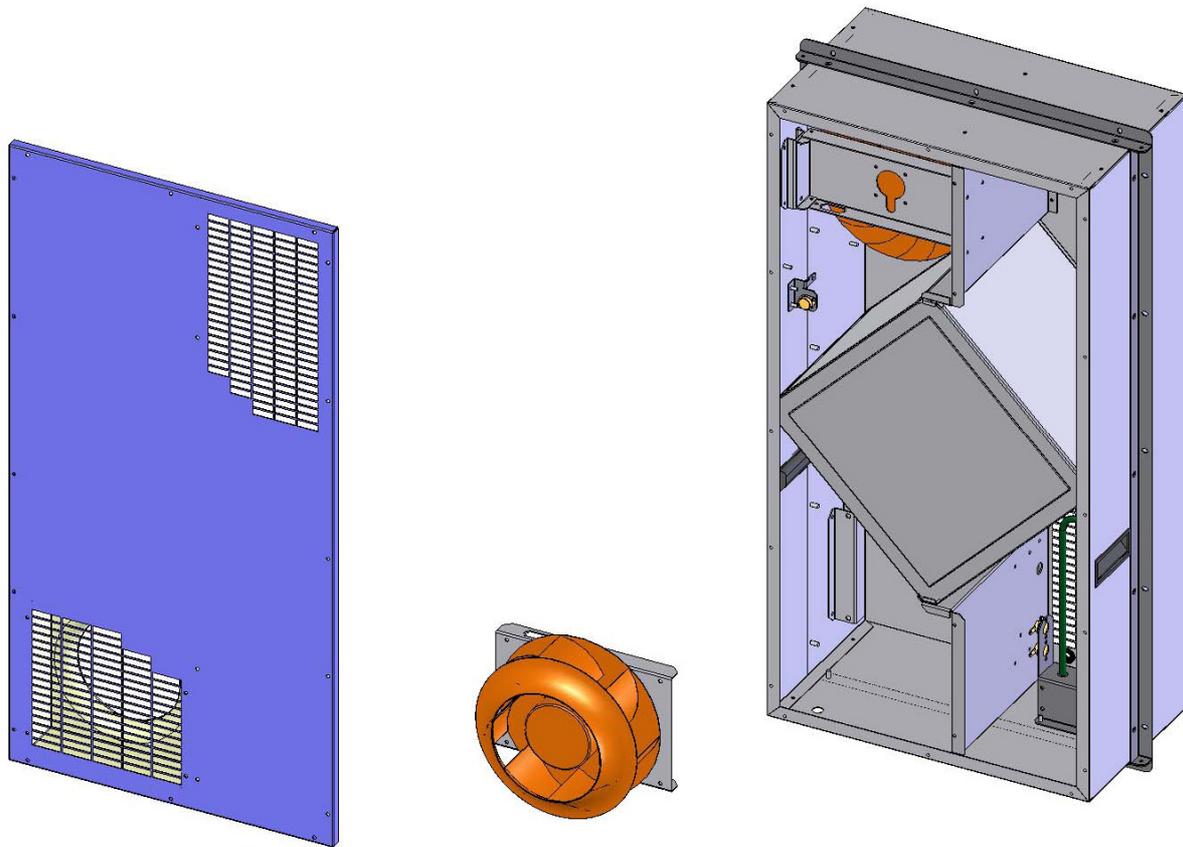
Before you start make sure that you have the following available:

- A cross screwdriver
- A new fan kit

在更换前要准备好以下几样工具和设备:

- 一个十字螺丝起子
- 一套风扇用品

#### Illustration说明



Follow these steps to replace the external fan:

依照以下步骤更换外风扇:

Step 步骤	Action 更换过程
1	Make sure that all circuit breakers related to the heat exchanger are switched off before you start. 在开始操作前, 请确认关闭所有的电路断路器。
2	Unscrew the screws placed on the cover and the external fan assembly. 旋开盖板和外风扇组件上的螺丝
3	Lift the fan slightly up and unplug the connector. Remove the whole fan subassembly from the unit. 轻轻托起风扇, 拔去连接插头, 卸下风扇子装配体。
4	Mount the new fan by following step 2 and 3 in reverse order. 按照 步骤 2-和 3 的相反步骤安装新的风扇。

## 4.4 How to replace the heater element 如何更换加热器

### Introduction 简介

The heater element is placed in the internal air loop and is utilized whenever heat is necessary.  
加热器放置在内部空气循环过程中，当需要加热的时进行加热。

### When to replace 何时更换

The heater element only needs to be replaced when it is faulty.  
当加热器运转不良时，就应该及时更换。

### Before you start 更换前

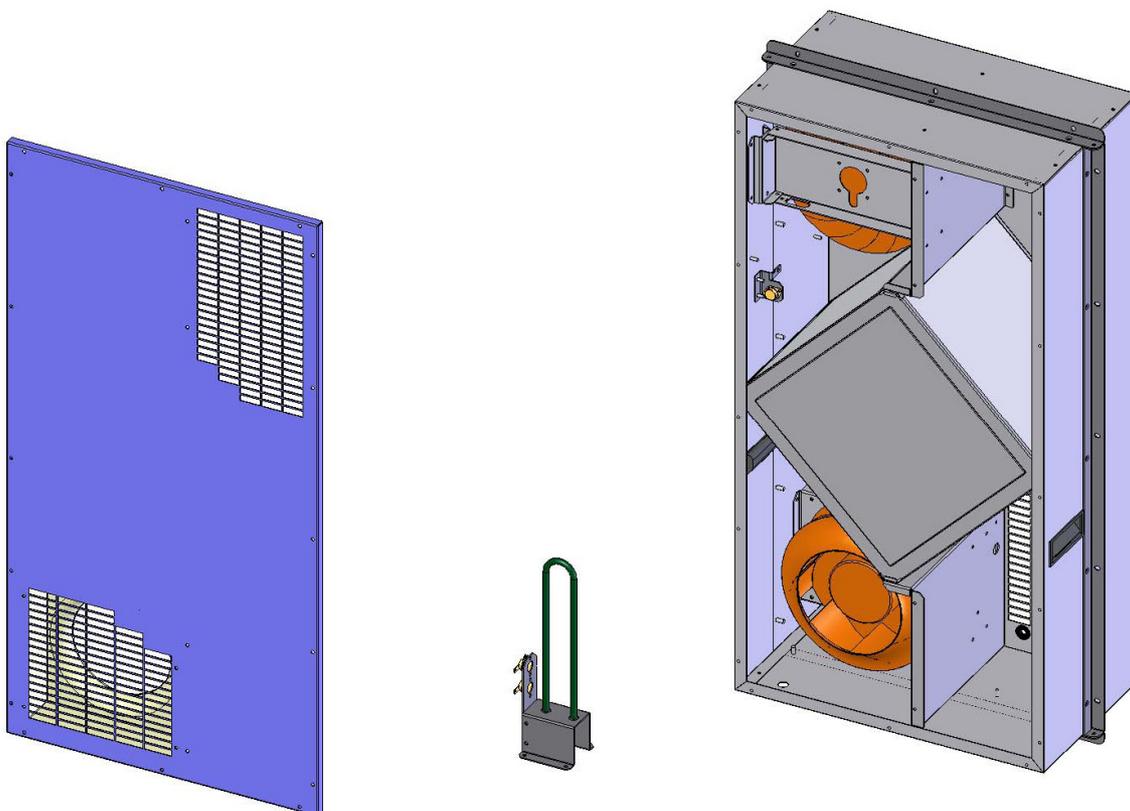
Before you start make sure that you have the following available:

- A cross screwdriver
- A new heater element

在更换前要准备好以下几样:

- 一个十字螺丝起子
- 一个新的加热器

### Illustration 图示



Follow these steps to replace the heater element:

依照以下步骤更换加热器：

Step 步骤	Action 更换过程
1	Make sure that all circuit breakers related to the heat exchanger are switched off before you start. 关闭所有的电路断路器。
2	Unscrew the screws placed on the cover. 旋开盖板上的螺丝。
3	Remove the 3 cross screws on the side of the unit 移除加热器组件上 3 个十字螺丝。
4	Remove the plug,take out the whole heater assembly. 拔去连接插头，卸下加热器装配体。
5	Remove the faulty heater element. 卸下不良的加热器元件。
6	Mount the new heater element by following step 2 to 5 in reverse order. 按照步骤2 和5 的相反步骤安装新的加热器。

## 5. How to recycle the Unit 如何循环利用热交换器

### Introduction介绍

The heat exchanger is designed to last for a number of years. When the time comes that the unit needs to be scrapped the following precautions should be taken to protect our environment.

Please note that the guidelines are general – local rules and procedures may overrule these guidelines and should be observed and followed carefully

热交换器的寿命能持续若干年，当机器到了报废的时候，要注意以下几点以保护我们的环境。请注意总的指导方针是认真遵循当地的法规和程序。

### Main components主要部件

The main components of the unit are:

- Fans
- Metal parts such as cover and air duct plates

主要部件有：

- 风扇
- 钣金件

### Fans风扇

The fan(s) consist of plastic, metal and an internal PCB. They are subject to recycling and should be left to the local "scrap dealer".

风扇是由塑料，金属和内部的 PCB 组成。它们可以进行再循环利用，应当送到当地的废弃物经销商。

### Metal parts 钣金件

The metal parts are uncritical to scrap and can be left to local "scrap dealer". A few parts might have a thin visible layer of insulation. In that case the insulation should be separated from the metal and recycled separately.

钣金件的废弃要求不高，可以送到当地的废弃物经销商，部分零件可能有薄薄的可见绝缘层，在这种情况下，绝缘层应当从钣金中分离并单独循环利用。

## 6. Amend History 修改历史

Version 版本	Date 日期	Remark 备注
Version 1.0 版本号 1.0	Date: 2007-10-30 日期: 2007-10-30	Initial Release 初次发行

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### 7. Appendix附录

