

# **Liebert. PEX+ Series Air Conditioner**

## **Disassembling Manual**

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## Foreword

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Liebert.PEX+ series precision air conditioner is developed based on the global R&D platform of Emerson Network Power Co., Ltd (called “Emerson” for short hereafter) and is specially used for IDC.

This manual is applicable to the condition that the unit cannot pass through due to narrow transportation space. The unit needs not to be disassembled if the transportation space is big enough for the unit to pass through.

This manual describes the disassembly process in details, including overview (containing the information of disassembly tools/cautions), disassembling external package of unit / cabinet plate, electrical parts, copper pipes and cabinets. The disassembly operations need to be proceeded by professional engineers with reference to this manual. After disassembly, move the unit to the specified location and assemble the unit according to the reverse sequence of disassembly procedures.

Emerson will not be responsible for any loss caused by misoperation.

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## Chapter 1 Overview

Liebert.PEX+ series precision air conditioner (called “Liebert.PEX+ air conditioner” for short hereafter) is medium-large professional equipment. During the transportation and moving process, if the transportation space is small and the unit cannot pass through, the modular and disassembly design of Liebert.PEX+ air conditioner provides convenience for the transporting. This chapter introduces the cautions, tools and methods for disassembling Liebert.PEX+ series precision air conditioner (called “Liebert.PEX+ air conditioner” for short hereafter).

### 1.1 Cautions

(1) Proceed the disassembly process strictly according to the following sequence:

Disassembling external package of unit / cabinet plates → Disassembling electrical parts → Disassembling copper pipes → Disassembling structural parts.

(2) In the disassembly process, if there is a need for using fire, be sure to take fire proof and thermal proof measures to avoid burning cables and thermal preservation cotton.

(3) After the unit is moved to the specified location, the sequence of assembly procedures is reverse to that of the disassembly procedures.

(4) When assembling the electrical parts, be sure to restore all the cables, cable ties and pipes.

### 1.2 Tools

The tools used in the disassembly process include: Insulation tapes, band ruler, knife, slot screwdriver, Philips screwdriver, S6 inner hex socket wrench, pipe cutting knife, thermal preservation pipe, pressure meter, welding gun and cutting pliers.

### 1.3 Disassemble method

Liebert.PEX+ air conditioner has two kinds of disassemble methods: Method 1 (disassembling #2 cooling cabinet), Method 2 (disassembling #1 and #2 cooling cabinets). The disassemble drawings and process of method 1 (disassemble #2 cooling cabinet) are shown in Figure 1-1 and figure 1-2. The disassemble drawings and disassemble process of Method 2 (disassemble #1 and #2 cooling cabinets) are shown in Figure 1-3 and figure 1-4.

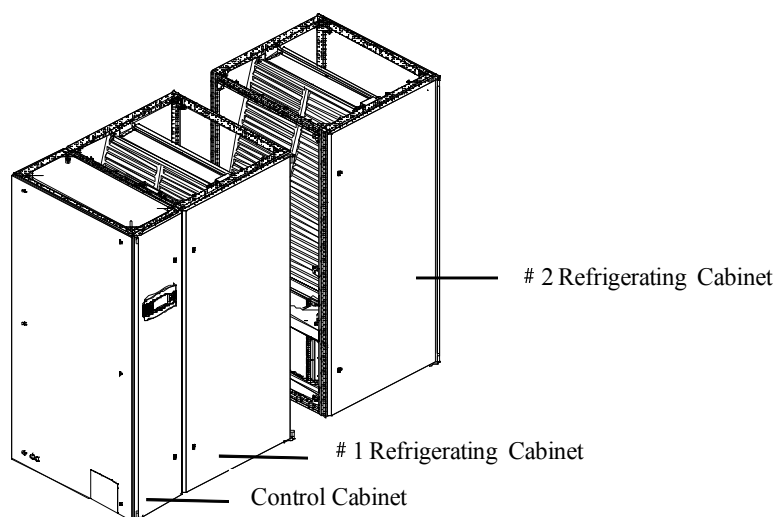


Figure 1-1 Disassemble drawings of method 1

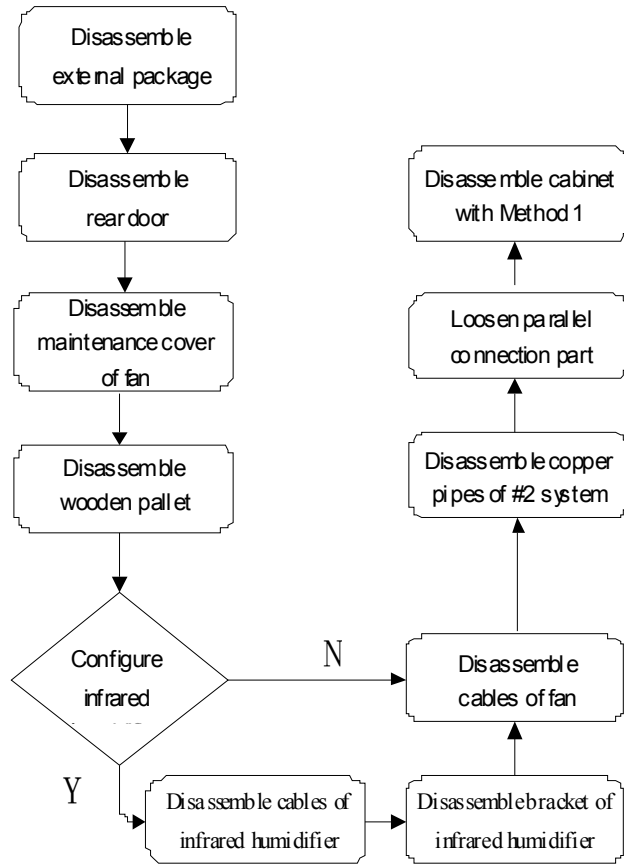


Figure 1-2 Disassemble process of Method 1

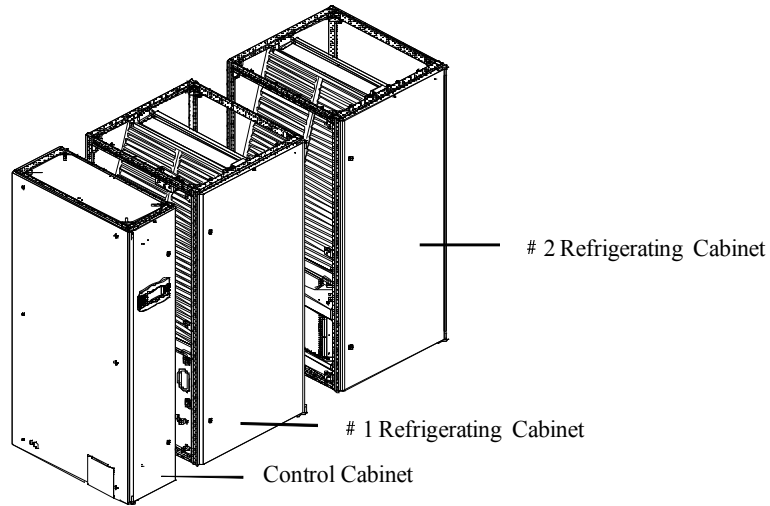


Figure 1-3 Disassemble drawings of Method 2



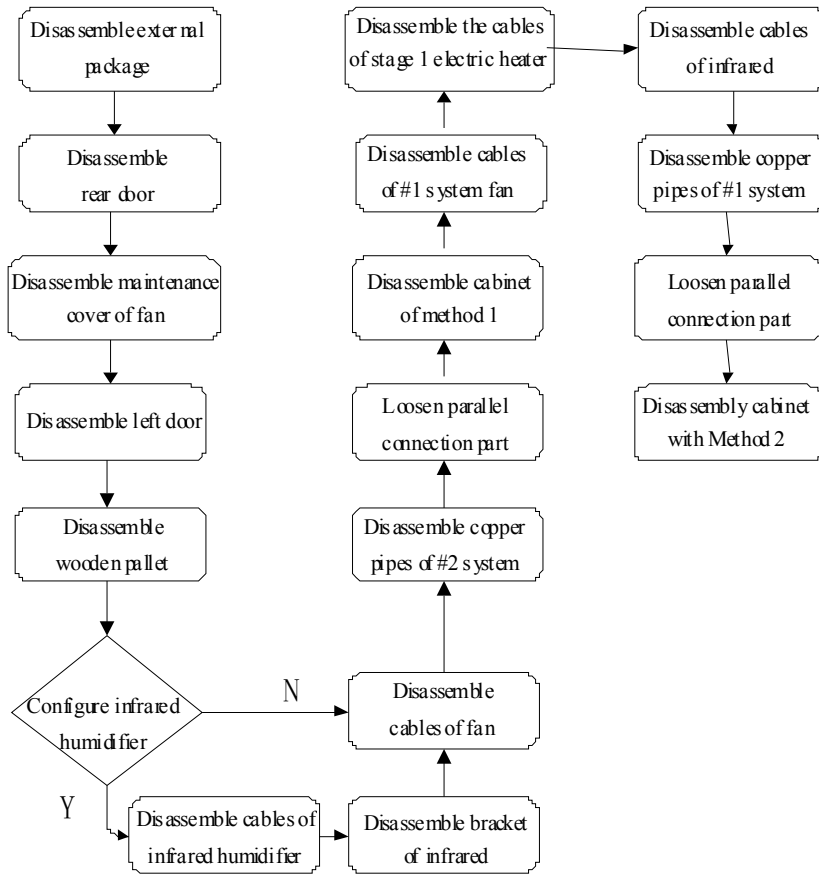


Figure 1-4 Disassemble process of Method 2

## Chapter 2 Disassembling External Package And Cabinet Plate

This chapter focuses on the disassembly process of external package, rear plate, fan cover, left plate and wooden pallet of Liebert.PEX+ air conditioner.

### 2.1 Disassembling external package

Liebert.PEX+ air conditioner has two kinds of packages: Paper package and wooden package, and this section describe the disassembly process with paper package as an example. Use a knife to cut open the wrapping film around the unit, disassemble the honeycomb sandwich paper board, disassemble the wooden pad on the top of the unit and paper cover, as shown in 0.

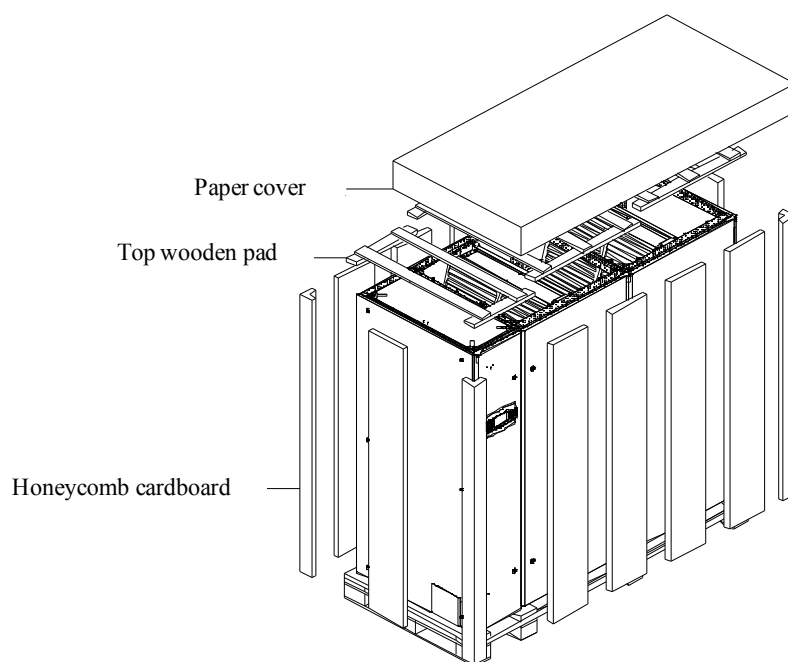


Figure 2-1 Illustration for disassembling external package (paper package)

### 2.2 Disassembling rear plate

The rear plate of the unit is shown in Figure 2-2. Use a screwdriver to loosen the fixing screws of the rear plate (there are 6 screws for each plate), and disassemble the rear Side plate of the unit.

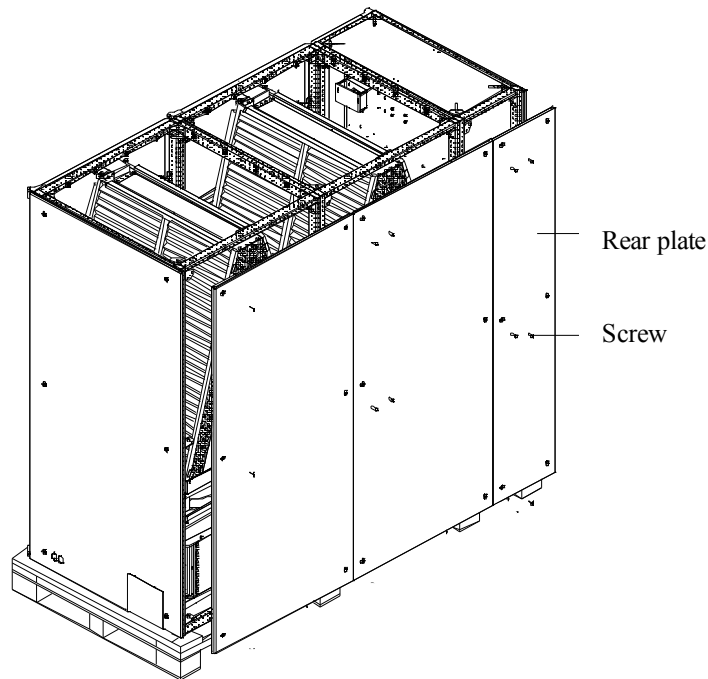


Figure 2-2 Illustration for disassembling the rear plate

## 2.3 Disassembling maintenance cover of fan

Open the front door to reveal the maintenance cover of the fan, as shown in Figure 2-3. Use a screw driver to loosen the fixing screws of the maintenance cover of the fan, and there is no need to disassemble the front door from the cabinet.

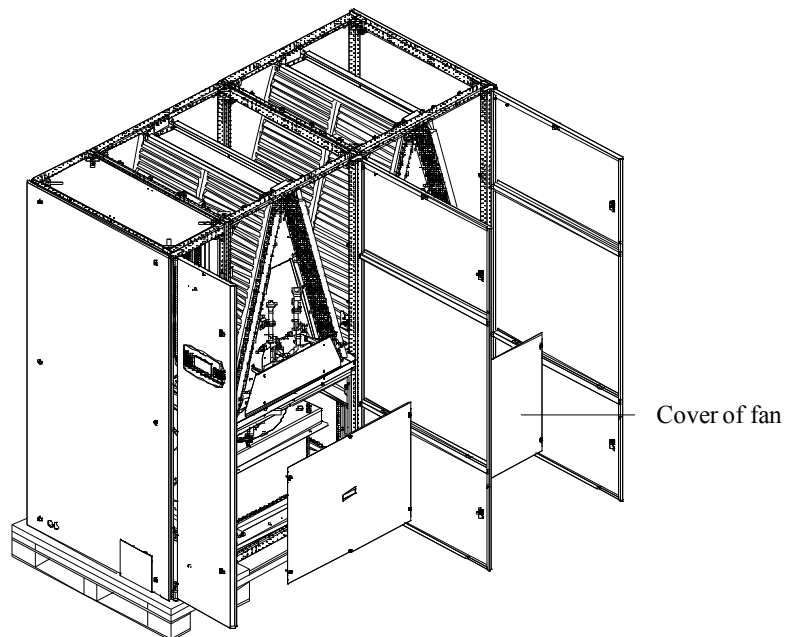


Figure 2-3 Illustration for disassembling the maintenance cover of fan

## 2.4 Disassembling left Cabinet Plate

If you need to disassemble the electric control cabinet separately from the unit, then you need to disassemble the left side cabinet plate to prepare for disassembling the electrical parts. Use a screwdriver to disassemble the left Side plate and there are totally 6 screws, as shown in 0.

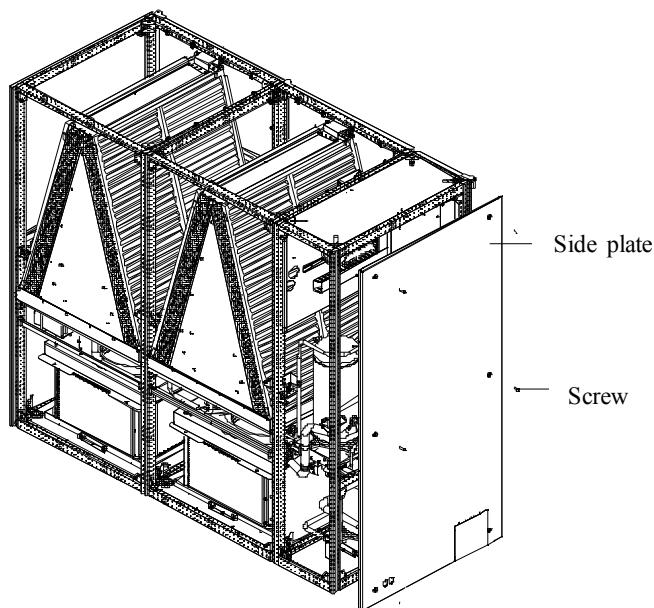


Figure 2-4 Illustration for disassembling the left Side plate

## 2.5 Disassembling wooden pallet

Use outer hex socket wrench to disassemble the pallet and connection screws (8×90), slide the unit to disassemble the pallet, as shown in 0.

The location of connection screws of pallet of P2060~P2100 units is shown in Figure 2-6.

P1030~P1050 has not the two screws respectively in location 5 and location 6.

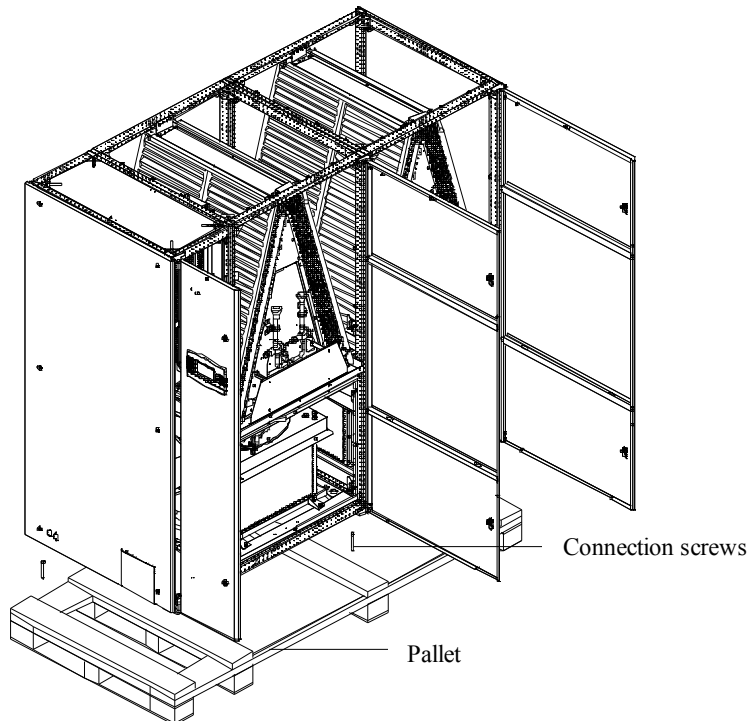
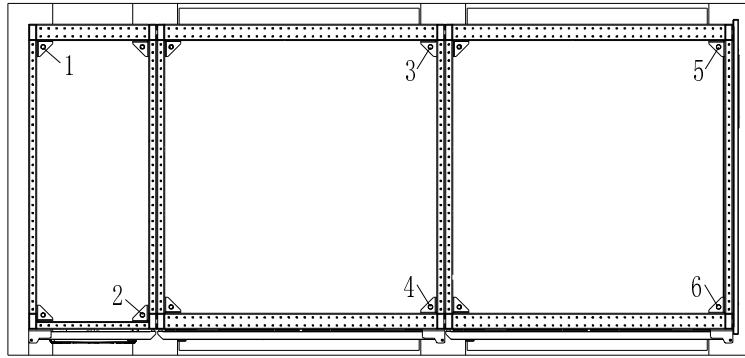


Figure 2-5 Illustration for disassembling the wooden pallet



*Front side of cabinet*

*Figure 2-6 Illustration for the connection screws of the pallet of P2060~P2100 units*

## Chapter 3 Disassembling Electrical Parts

This chapter describes the disassembly process of electrical parts of Liebert.PEX+ air conditioner, including cautions, disassembling cables of #1 system fan, disassembling cables of #2 system fan, disassembling cables of electric heater, disassembling cables of infrared humidifier and disassembling cables of infrared humidifier assembly, and disassembling cables of fan.

### 3.1 Cautions

- (1) Only trained professional person can perform the disassembly and assembly works of electrical parts;
- (2) During disassembly process, be sure to protect the cables against the damage by sharp object, and also protect the cables against being pressed by heavy object or pulled excessively;
- (3) Prior to operating the heating tools such as a welding gun, make sure all the electrical parts are away from the heating source or effectively isolated;
- (4) When cutting the cable ties, take care not to damage the cables;
- (5) Keep the screws and terminals in safe place during disassembly process;
- (6) When disassembling the fan with VSC03Z fan controller, be sure to protect the VSC03Z board against falling.

### 3.2 Disassembling cables of #1 system fan

There are 3 steps to disassemble the cables of #1 system fan: Disassembling fan speed regulation signal cables, disassembling the power cables of fan, and disassembling the fan alarm signal and RS 485 cables, as shown in A, B and C in Figure 3-1.

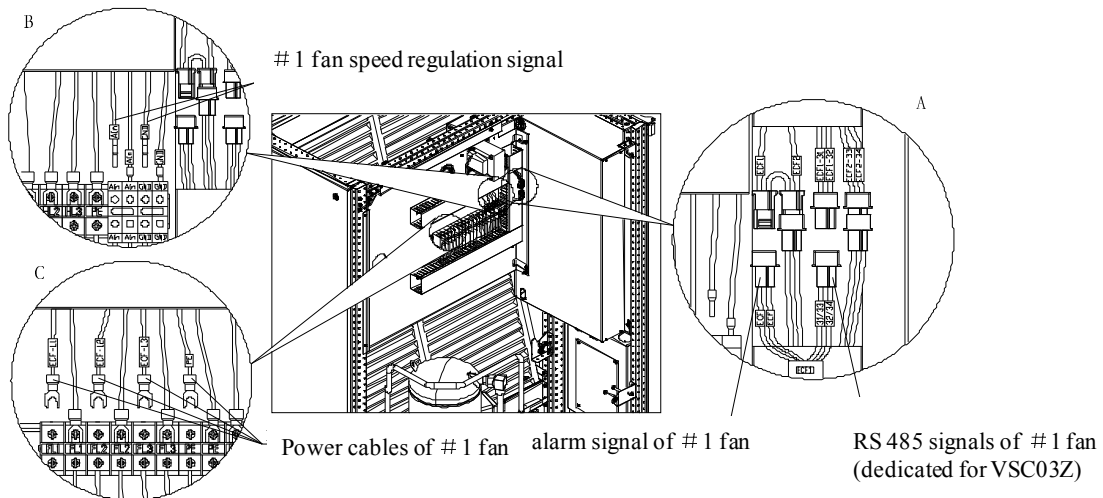


Figure 3-1 Illustration for #1 system fan cables



#### Note

- In A, the cables labeled with “ECF1-31” and “ECF1-32” are the RS485 signal cables of #1 system fan, and if the unit has the non-VSC03Z fan speed regulation board, do not connect the cables, during disassembly, no need to disassemble these cables;
- In B and C, the terminals with the same label have the same voltage potential, and the cables of the #1 system fan and those of #2 system fan must be differentiated strictly. Differentiate them according to the unit conditions during disassembly operations.

### 3.3 Disassembling cables of #2 system fan

There are 3 steps to disassemble the cables of #2 system fan: Disassembling fan speed regulation signal cables, disassembling the power cables of fan, and disassembling the fan alarm signal and RS 485 cables, as shown in A, B and C in Figure 3-2.

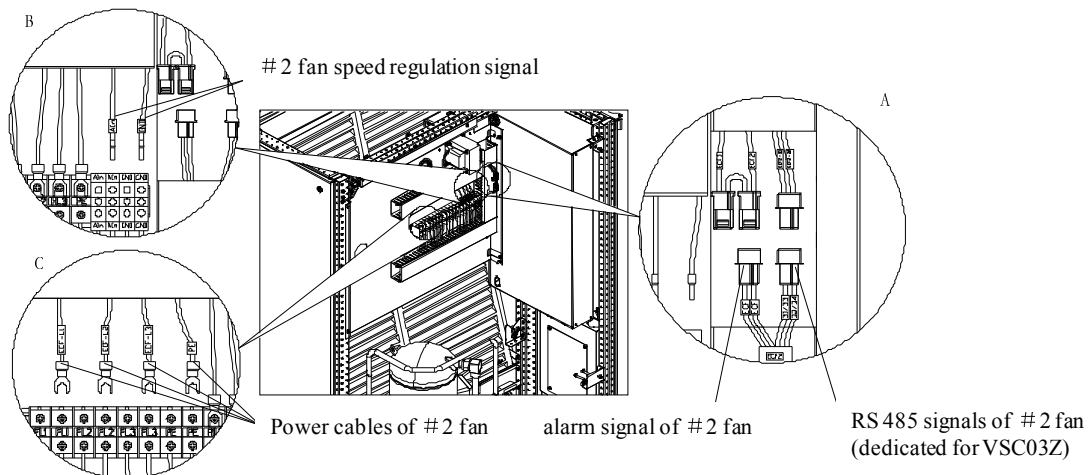


Figure 3-2 Illustration for #2 system fan cables

#### Note

- In A, the cables labeled with “ECF1-33” and “ECF1-34” are the RS485 signal cables of #1 system fan, and if the unit has the non-VSC03Z fan speed regulation board, do not connect the cables, during disassembly, no need to disassemble these cables;
- In B and C, the terminals with the same label have the same voltage potential, and the cables of the #1 system fan and those of #2 system fans must be differentiated strictly. Differentiate them according to the unit conditions during disassembly operations.

### 3.4 Disassembling the cables of stage 1 electric heater

There are two steps for disassembling the cables of stage 1 electric heater, including disassembling the power cables of the electric heater and disassembling the signal cables of the electric heater, as shown in A and B in Figure 3-3.

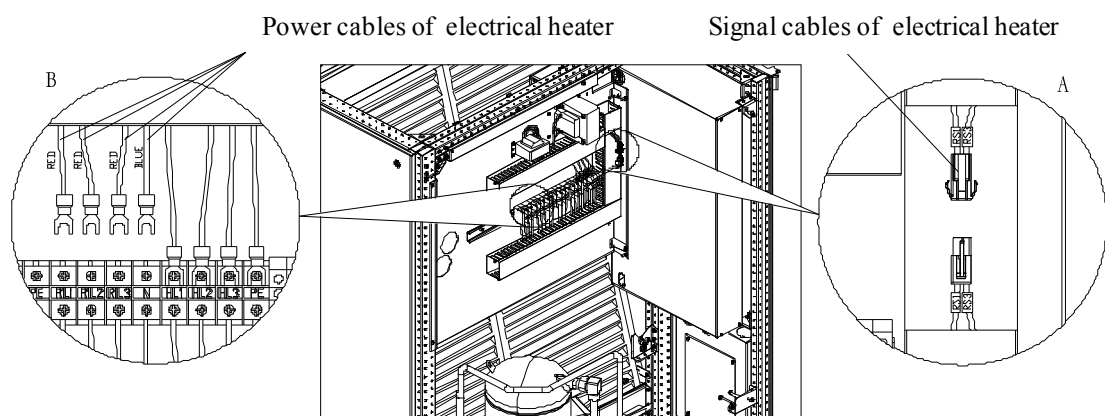


Figure 3-3 Illustration for the cables of the stage 1 electric heater

#### Note

- In B, the power cables of the stage 1 electric heater have two colors of red and blue. The red cables are hot cables and the blue cables are neutral cables and are connected to terminal N.

### 3.5 Disassembling cables of infrared humidifier

There are two steps for disassembling the cables of infrared humidifier, including disassembling the power cables of the infrared humidifier and disassembling the signal cables of the infrared humidifier, as shown in A and B in Figure 3-4.

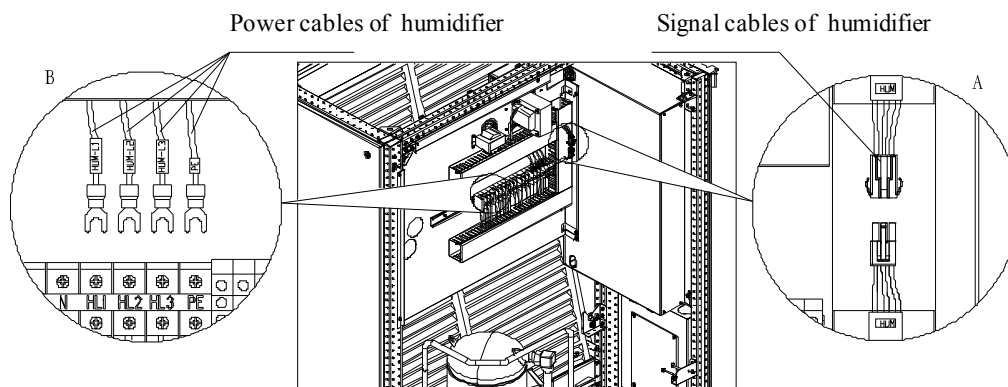


Figure 3-4 Illustration for the cables of the infrared humidifier

### 3.6 Disassembling cables of infrared humidifier assembly

The operation of disassembling cables of infrared humidifier assembly is shown in 0. The details of the signal cables of the infrared humidifier are shown in the drawing, you need to unplug the high water level signal switch signal cables, and the cables of the water supply solenoid valve and the dry burning prevention switch.

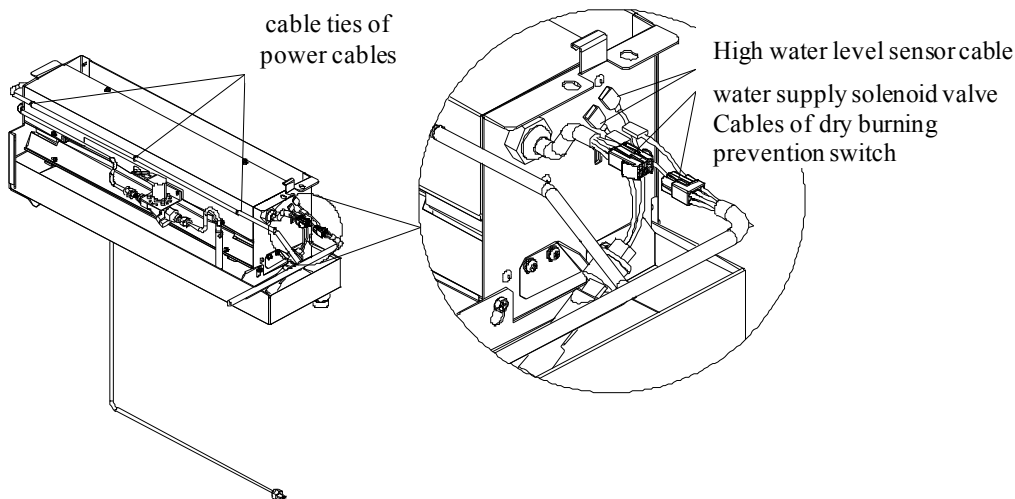



Figure 3-5 Illustration for cables of infrared humidifier assembly

 Note

- The power cables of infrared humidifier need not to be disassembled completely, and you only need to cut the cable ties of the power cables at the outer side of the humidifier.
- When restoring the humidifier, be sure to bind the cable ties.

### 3.7 Disassembling cables of VSC03Z control fan assembly

The cables of the VSC03Z control fan assembly are shown in Figure 3-6.



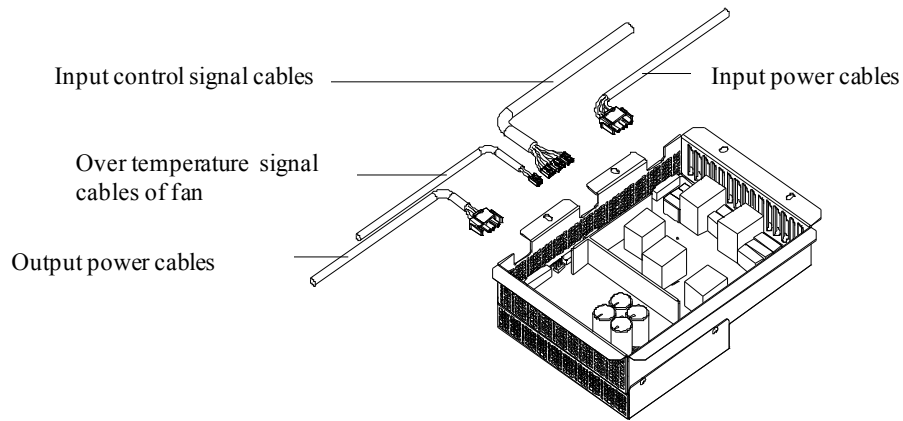


Figure 3-6 Illustration for the cables of the VSC03Z control fan assembly

 Note

- No need to disassemble the input power cables and input control signal cables, however, in order to avoid the risk of pulling the cables of VSC03Z, you can disassemble these cables from the VSC03Z board.
- The connection cables between VSC03Z and the fan are the output power cables and fan over temperature signal cables be sure to disassemble them before disassembling the fan.
- When restoring the cables, be sure to install the OT terminal of the output power cables according to the factory standard.

### 3.8 Disassembling the cables of EBM fan assembly

The cables of EBM fan assembly are shown in Figure 3-7.

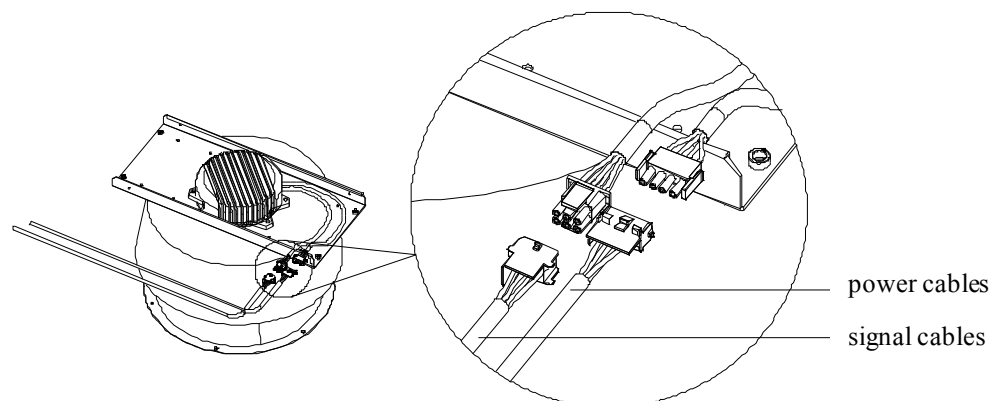



Figure 3-7 Illustration for the cables of EBM fan assembly

 Note

- When restoring the cables, be sure to re-bind the cable ties according to the factory standard.

### 3.9 Disassembling the cables in cable chute and pipes

After completing the steps 3.1-3.8, pull out the cables from the cable chute and pipes of the electric control cabinet. Pull out the cables connected to the refrigerating cabinet and put the cables inside the cabinet. Do not put the cables outside of the cabinet to avoid damaging the cables during transportation process.

## Chapter 4 Disassembling Copper Pipes

Disassemble the copper pipes after disassembling the electrical parts. This chapter describes how to disassemble the copper pipes, including disassembling copper pipes of #1 system and disassembling copper pipes of #2 systems.

### 4.1 Disassembling copper pipes of #1 system

Use a knife to cut open the air exhaust pipes and liquid pipes as shown in Figure 4-1. Use tapes to seal the copper pipes cut open to avoid infiltration of deposit or water.

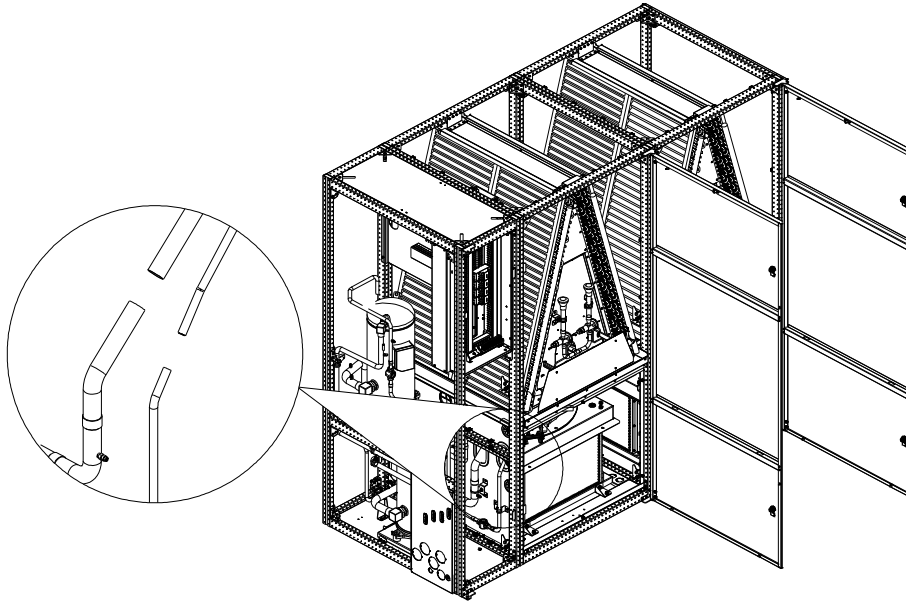


Figure 4-1 Illustration for disassembling the copper pipes of #1 system

### 4.2 Disassembling copper pipes of #2 system

Use a knife to cut open the air intake pipe and liquid pipe of another system behind the cabinet, as shown in Figure 4-2. Use tapes to seal the copper pipes cut open to avoid infiltration of deposit or water.

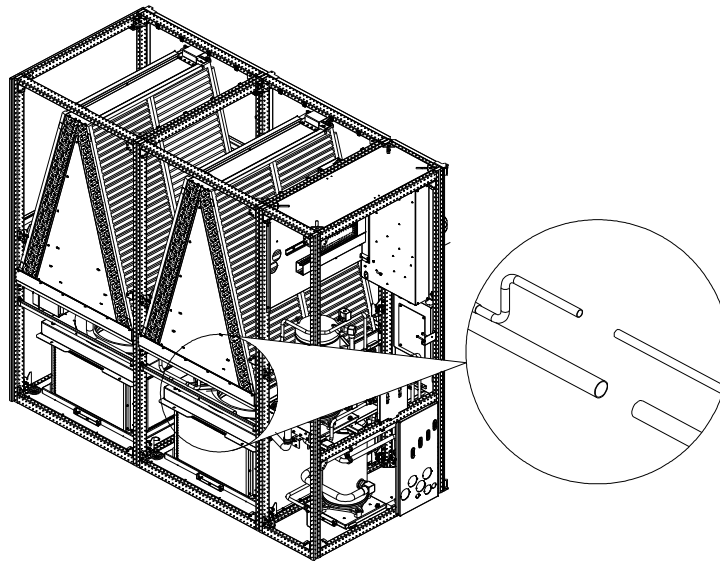


Figure 4-2 Illustration for disassembling the copper pipes of #2 system

## Chapter 5 Disassembling Cabinet

This chapter describes the operation of disassembling cabinet of Liebert.PEX+ air conditioner in details, including disassembling the infrared humidifier assembly and loosening parallel connection part, and disassembling cabinet.

### 5.1 Disassembling the infrared humidifier assembly

Disassemble the infrared humidifier assembly, and take out the humidifier assembly, as shown in Figure 5-1.

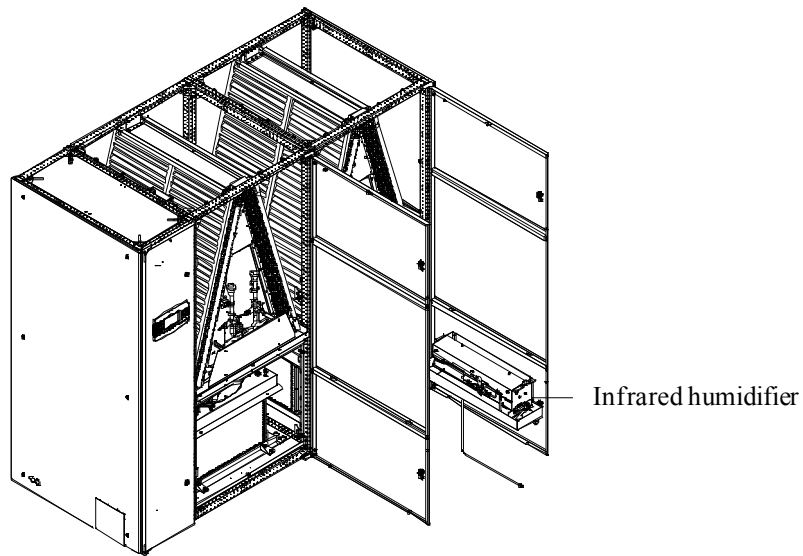


Figure 5-1 Illustration for disassembling the infrared humidifier assembly

Install the infrared humidifier assembly into the intermediate cabinet as shown in Figure 5-2.

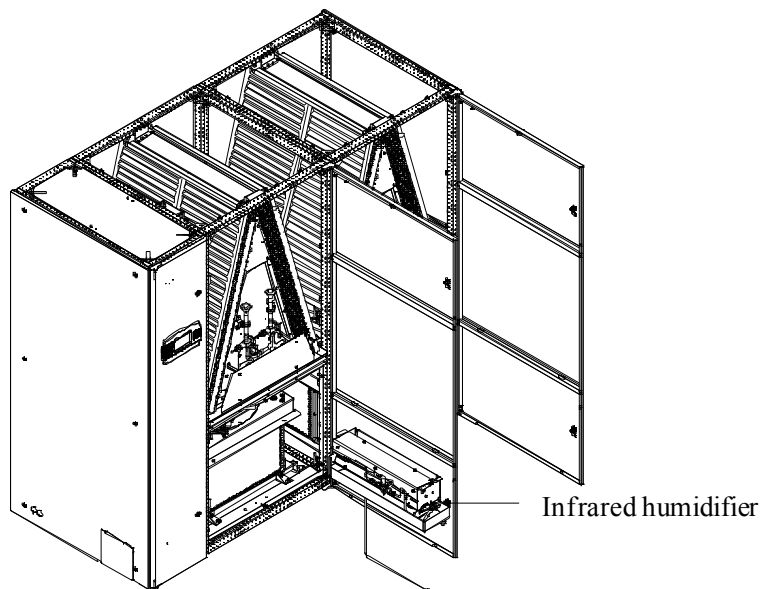


Figure 5-2 Illustration for installing the infrared humidifier assembly

## 5.2 Loosening parallel connection part

Use a hex socket wrench to loosen the connecting screws between the unit and the cabinet, as shown in Figure 5-3. The top part, middle part and bottom part of the vertical pillar respectively have 2 connection screws, so there are totally 6 screws.

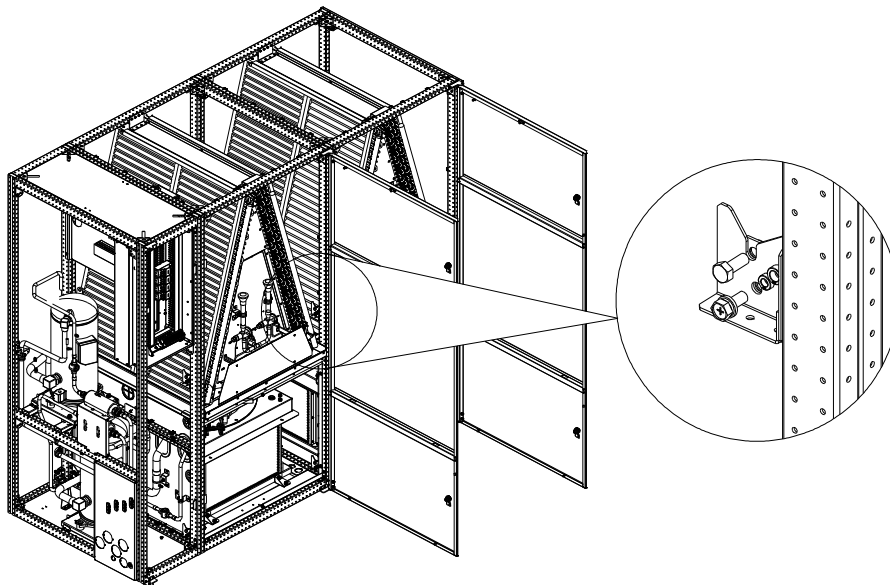


Figure 5-3 Illustration for disassembling the parallel connection part

## 5.3 Disassembling cabinet (disassembling #1 refrigerating cabinet)

Split the unit into separate cabinets as shown in Figure 5-4. Pay attention to protect the outer surface of the cabinet avoid scratching the cabinet.

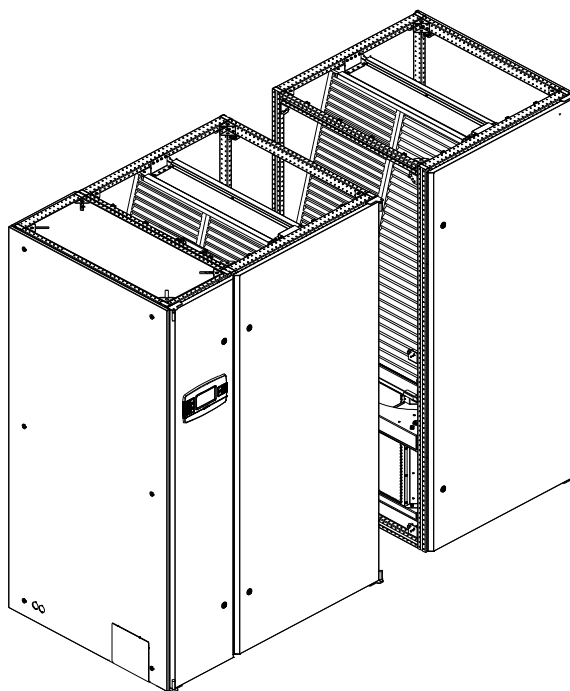


Figure 5-4 Illustration for disassembling the cabinet (disassembling #1 refrigerating cabinet)

## 5.4 Disassembling cabinet (disassembling #1 and #2 refrigerating cabinets)

Remove the parallel connection screws according to Figure 5-3, and then split the unit into separate cabinets as shown in Figure 5-5.

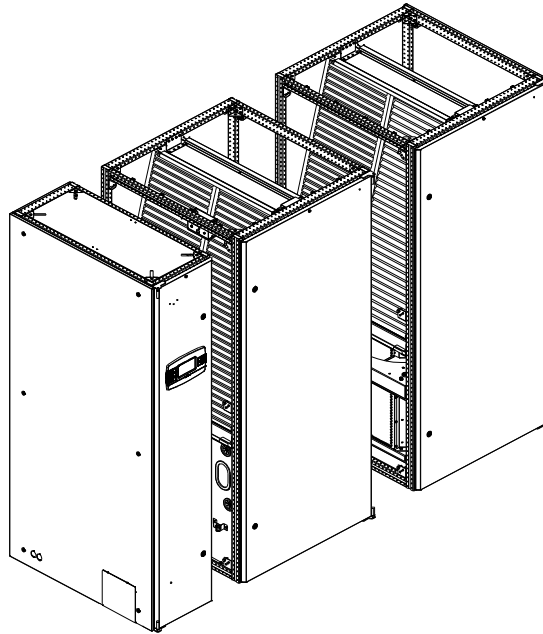


Figure 5-5 Illustration for disassembling the cabinet (disassembling #1 and #2 refrigerating cabinets)

## Chapter 6 Assembling Cabinet and Inspection

Re-assemble the cabinet with the procedures that are reverse to the disassembling procedures. After installing the cabinet, be sure to check for leakage with nitrogen.



### Note

- When welding the copper pipes, be sure to protect the cables and thermal preservation cotton against burning.
- Check if the connection screws are installed.
- Check if the electrical components and terminals are tightened and if the wiring is correct.