

# DINDAN

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Enclosure cooling unit

Model

**40ACU-P23-3**

User's guide



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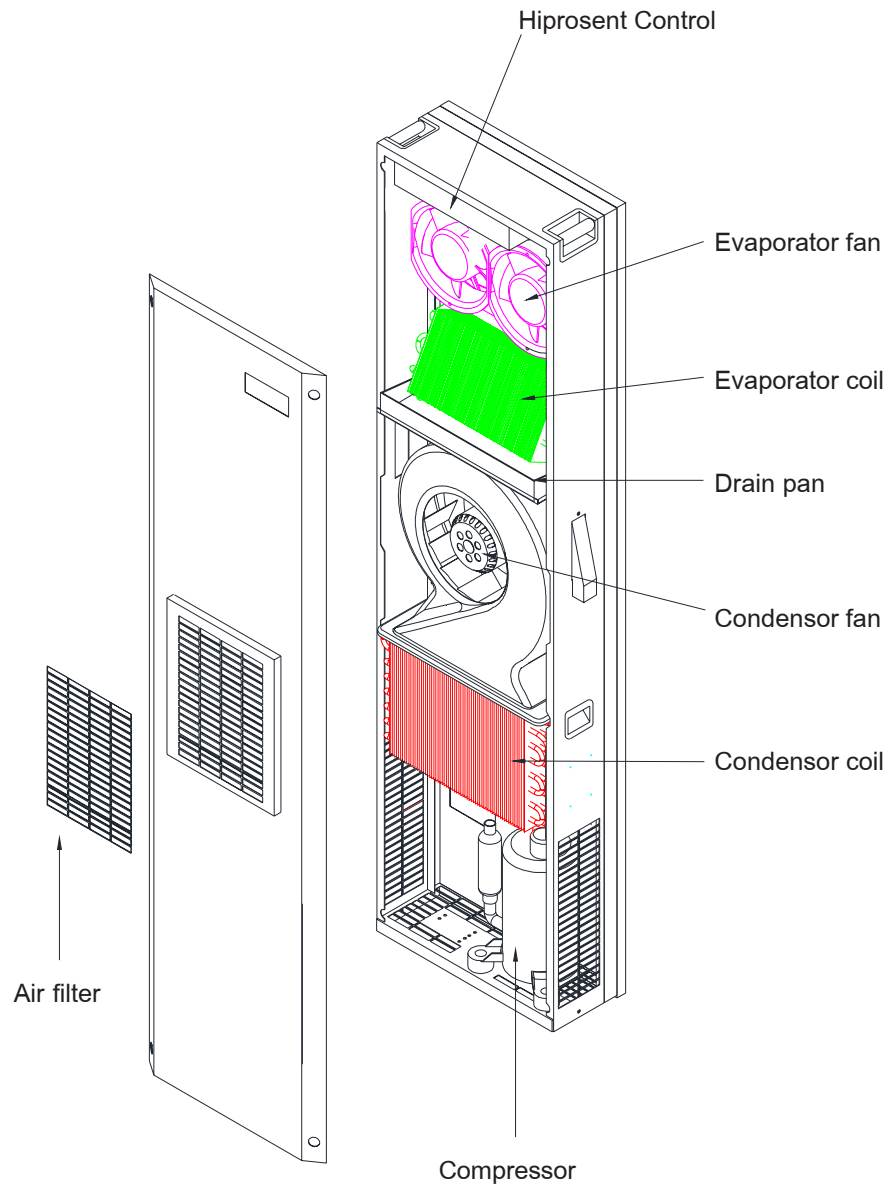
## **Introduction**

Cooling unit for control cabinet is used for diminishing internal heat by providing cool air to the control cabinet that can protect sensitive equipment. It is specially designed to resist surrounding temperature as high as 40-50 °C and can function well in any factories including those with intensive dust, particles and oil mist or with high acidity.

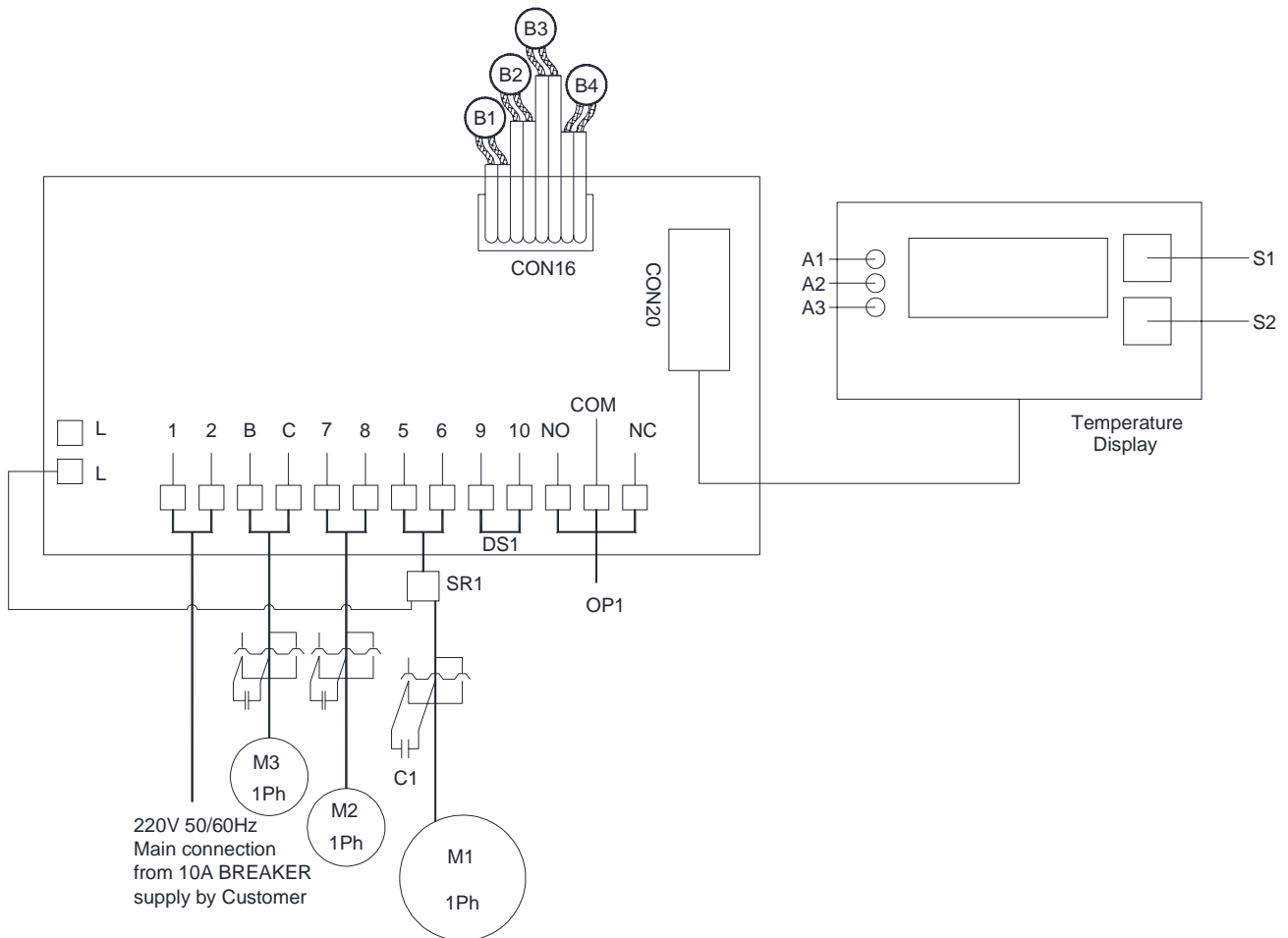
## 1. Over view

### 40ACU-P23-3





# HIPROSENT CONTROL (EGS035-1)



## Control and Monitor

A1 = LED status

A2 = LED Over/Under Voltage Status

A3 = LED compressor's status

S1 = Temperature setting switch (Up)

S2 = Temperature setting switch (Down)

## Cable and signal

B1 = Temperature sensor (inside cabinet)

B2 = Over heat sensor

B3 = Ice sensor

B4 = Ambient temperature sensor

## 220VAC

M1 = Compressor

M2 = Condenser Fan

M3 = Evaporator Fan

SR1 = Solid State Relay

OP1 = Output Alarm มีหน้าสัมผัส NO และ NC

DS1 = Door Switch (NO = Alarm, NC = Normal)

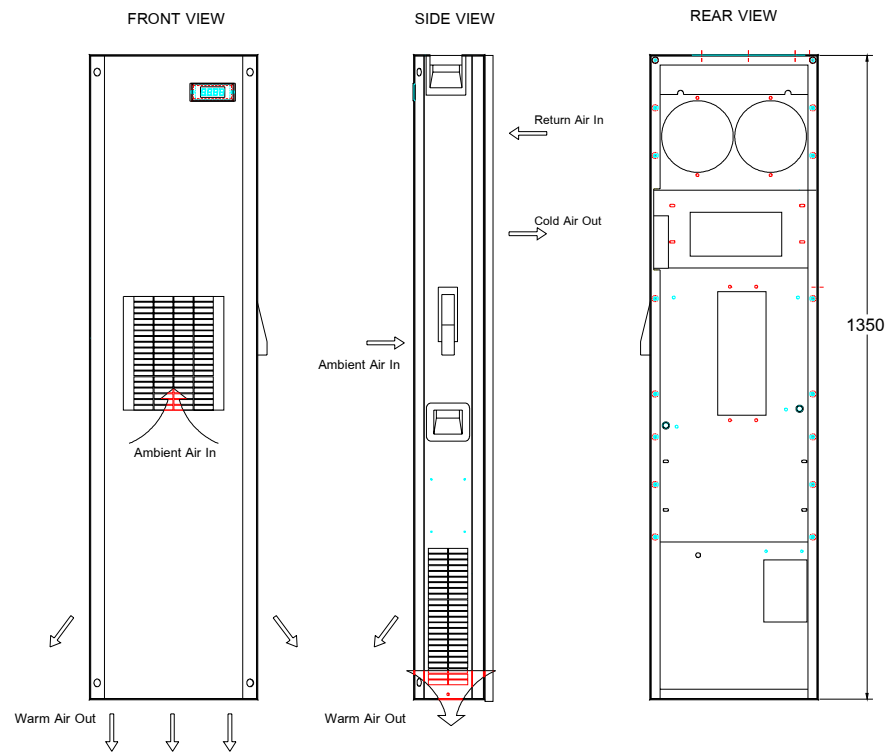
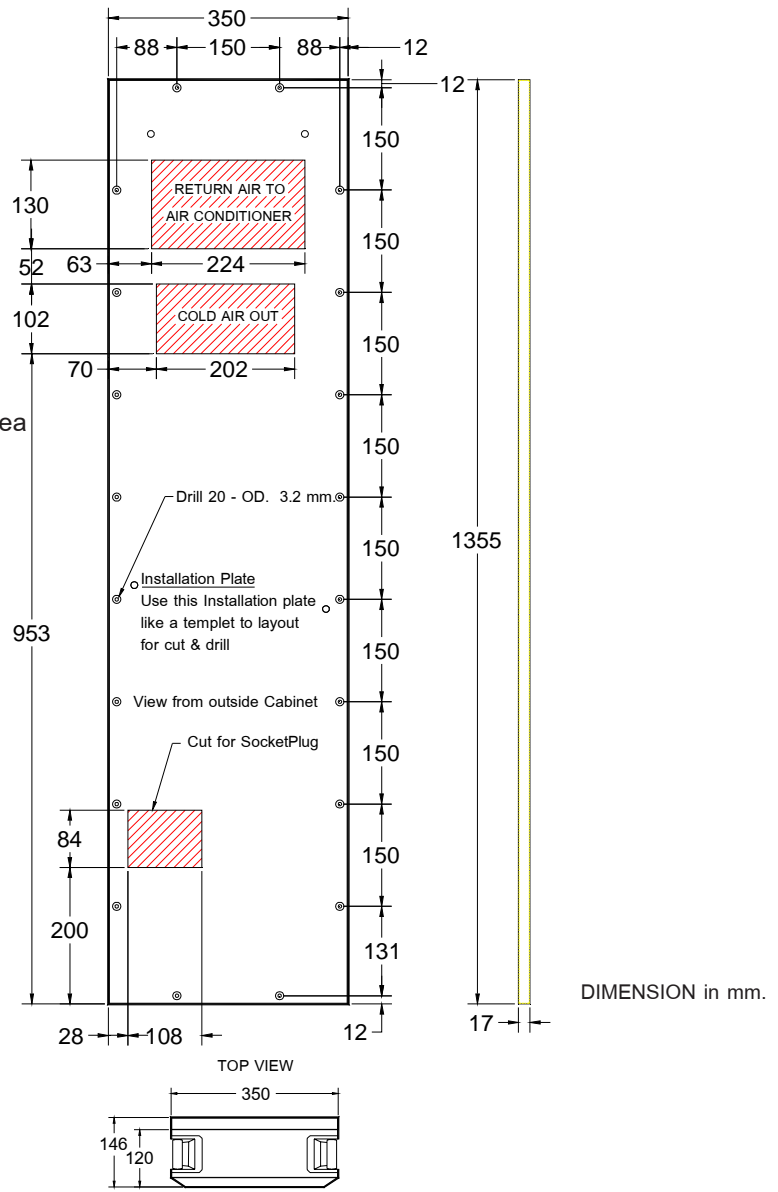
## 2. Specifications

# DINDAN

**Characteristics** (under normal operating condition at ambient temp. +35°C)

<b>Model</b>		<b>40ACU-P23-3</b>
<b>Capacity W.</b>		1200
<b>Installation type</b>		panel
<b>Input</b>	single-phase (V.)	220V+20% / -15%
	frequency (Hz.)	50/60
	current (A.)	3.3
<b>Compressor</b>	hermetic type	rotary
	refrigerant type	r134a
<b>System operate</b>	Direct expand	yes
<b>Hi-prosent ctrl1.</b>	thermostat	yes
	condensor thermal detector	yes
	anti-freeze detector	yes
	compressor overheat detector	none
	water detector	none
<b>Protection</b>	over drain protect system	yes
<b>Display</b>	thermometer (red 7 segment 19 mm.)	yes
	system status (2 colour LED)	yes
<b>Electrical equip.</b>	safety device	7A. slow-blow fuse
<b>Evaporator coil</b>	face area x rows	47.5 sq.inch x 3
	servo fan (r.p.m.)	2850
	number of fan x cfm (0.2 inH <sub>2</sub> O)	2 x 158
<b>Condenser coil</b>	face area x rows	83.5 sq.inch x 6
	centrifugal fan (r.p.m.)	2500
	number of centrifugal fan x cfm	1 x 647.5
<b>Physical data</b>	gross weight (kgs.)	46.60
	dimension (mm.)	W:350 D:146 H:1350
	condensate drain	OD. 1/2 inch
	internal casing	electro-galvanize
<b>Air filter</b>	width x lenth (mm.)	200 x 250

Installation Plate & Templet for cutting Area  
View From Outside of Cabinet





### 3. Notification

- Before, drilling, and cut. should use clean dry cloth, or the inventory doesn't lead the electricity, covers the equipment for protects iron dust touches the electrical equipment while installing. (In case of machine still operate.)
- Cooling unit should be installed in the good circulation area
- Check vertical and horizontal level of which their error shall be allowable within  $\pm 2^{\circ}$  in order to facilitate efficient drainage
- Should always install gasket between Installation plate and Cooling Unit before hang the cooling unit on the installation plate
- Installing of drain tube (Page 17)
- In order to minimize water condensation, cabinet doors should be tightly closed during operation
- Circulation fan should be installed in cabinet if various equipment is densely installed inside
- In order to obtain highest performance and durability, repair and alteration of cooling unit should be under care of distributor
- Should not adjust temperature difference more than  $10^{\circ}\text{C}$  between environmental temperature and cooling space, to prevent moisture build up on some part in the cooling area when you open the cabinet panel
- If it is necessary to set temperature lower than  $25^{\circ}\text{C}$ , it is recommended to use precision cooling unit or contact your Professional Maker.
- The equipments that are locate in the cooling air stream have to be obstructed by the insulator to prevent water condensation

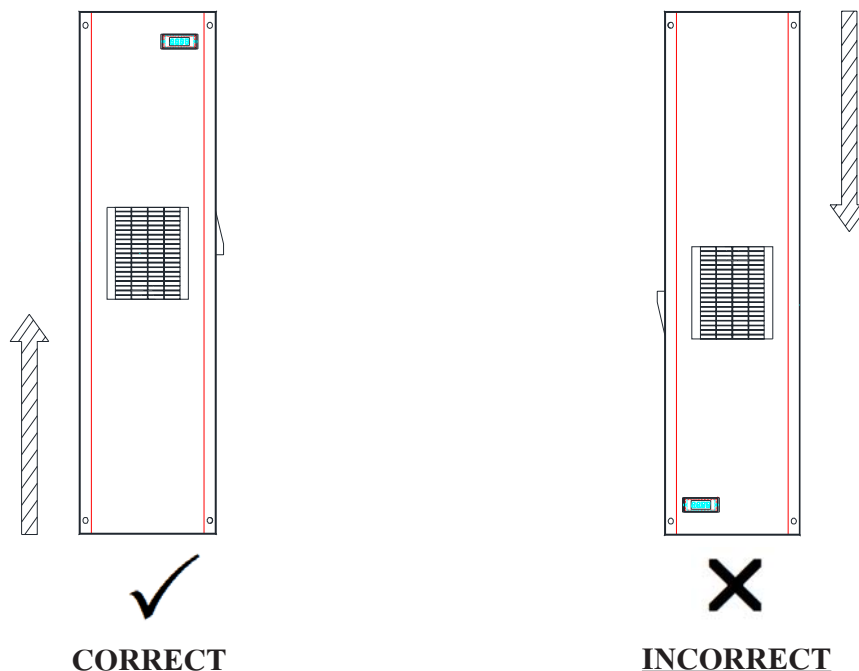
## General Condition

Storage: Cooling unit should be stored at temp not exceeding 70 °C

Transportation: This type of cooling unit can't be laid down horizontally.

Installation: It shall be installed in vertical direction only

(please see figure below)



## Disposal of damaged Cooling Unit

As its refrigeration system contain Refrigerant and lubricating oil for compressor, in order to protect environment, these substances should be disposed of properly or other under direction given by distributor.

## 4. Technical information

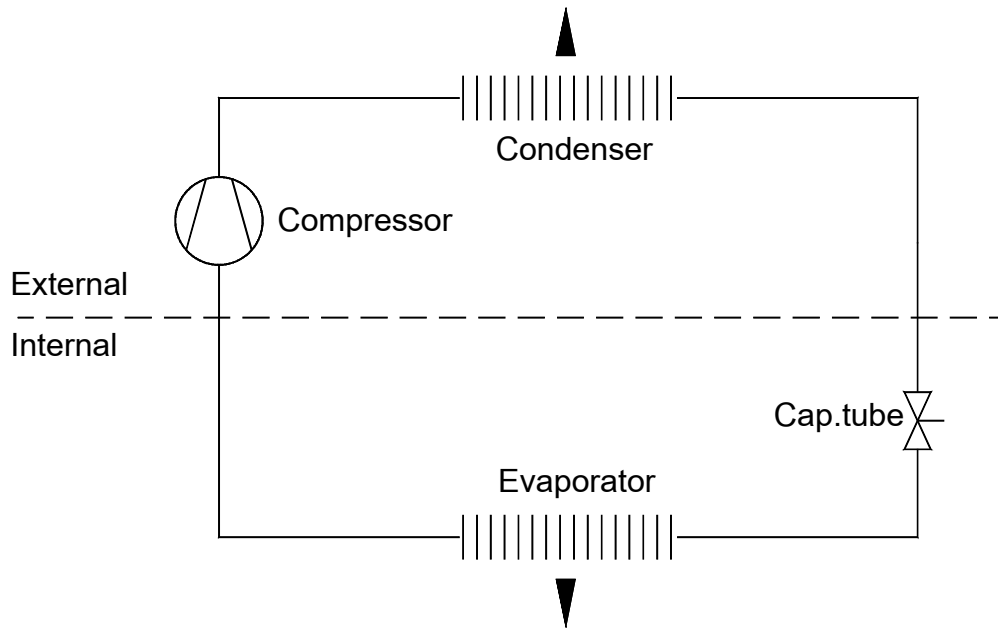
### Protective equipment

Refrigeration system has been tested with high pressure device at 350 PSI. This series of cooling unit also contains electronic circuit and sensors are installed at significant points to monitor any defect of refrigeration cycle in order to reduce burden of the user and to prolong use life of cooling unit at more costeffective practice.

### Note

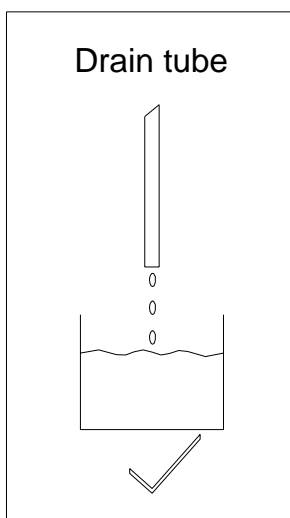
- LED light will display green colour (continuously) to indicate condition.
- Under any abnormal condition, please see pages 21.

## Refrigeration Cycle

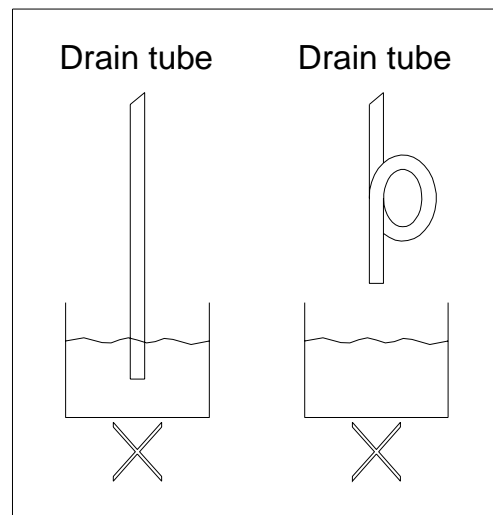


## Drainage

Drainage of condensed water from cooling system shall be done by inserting drain tube under drainpan (see page 17) and trying not to left it twisted. Make sure, the other end of drain tube is not lower than water level in the container, in order to avoid water reflux



**Correct installation**



**Incorrect installation**

## 5. Installation

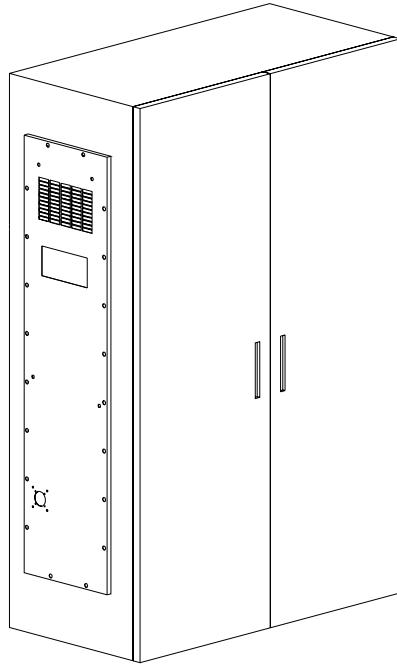
### Accessories for 40ACU-P23-3

<u>Parts</u>	<u>Quantity</u>
Cooling unit	1
User's guide & Warranty card	1
Socket plug guard	1
Socket plug	1
Special holder (see page15)	2
Upper gasket	1
Lower gasket	1
Air filter	1
Installation plate	1
Self tapping screw 1/8" x 1/2" ( <i>for socket plug</i> )	4
Self tapping screw 1/8" x 3/8" ( <i>for Installation plate</i> )	23
1/2" drain tube (200 cm.)	1
3x1.5 Sq.mm. VCT power cord (300 cm.)	1
Spring washer ( <i>for M10 x 45 mm. bolt</i> )	2
M10 x 45 mm. bolt	2
3/4" Cable clamp	3
6" Cable tie	10

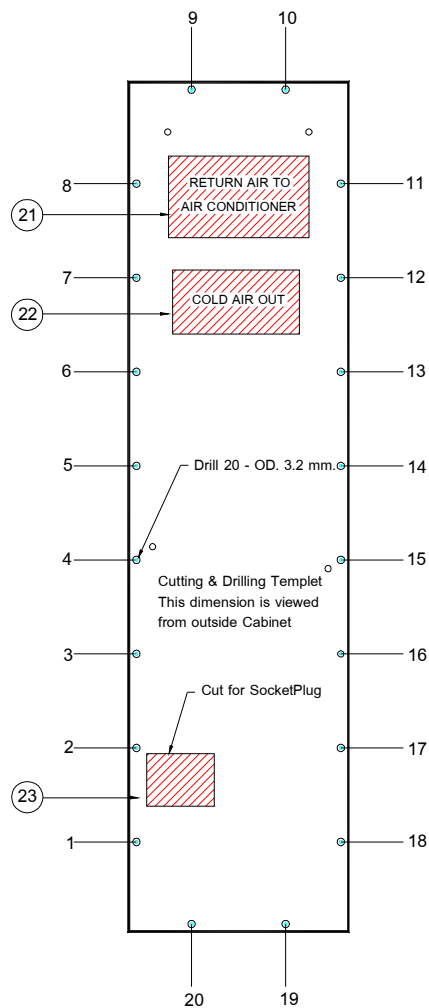
## Installation procedures

Note: please read page 8, item 3 before install cooling unit

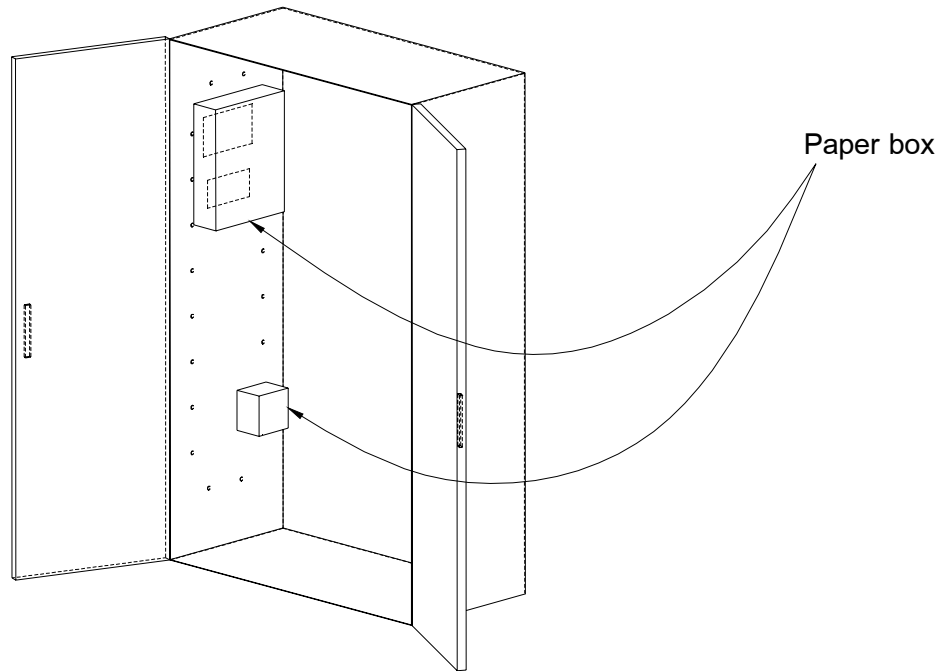
1. Align Installation plate in the position and water level check (see figure below)



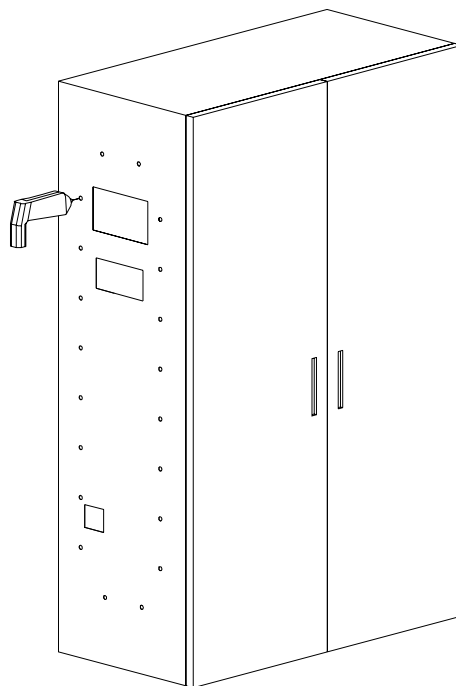
2. Lay out No. 1-23



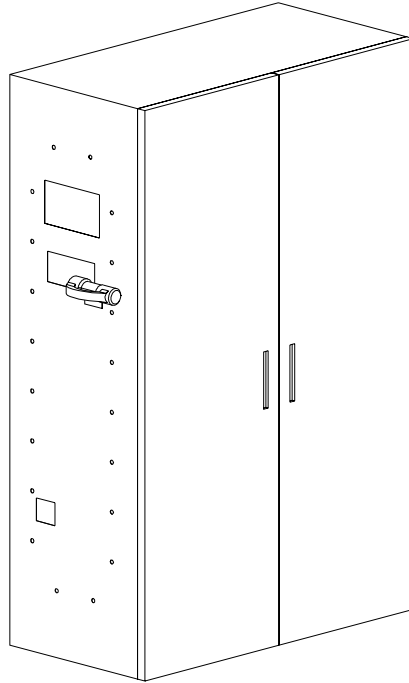
3. Cover equipment in cabinet with clean dry cloth, or the inventory doesn't lead the electricity, and cover with paper box at position will be drilling and cutting in order to prevent metal scrap falling in cabinet. (see figure below)



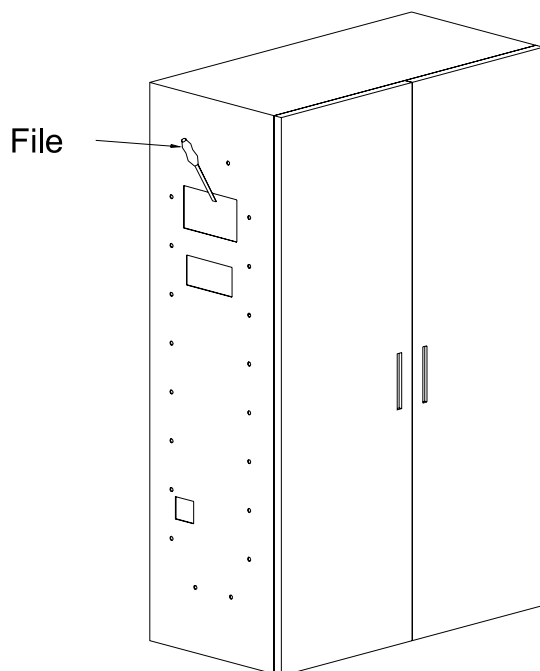
4. Drilling the layout position in item 2 page 12 by following these following steps:  
4.1 Drill 1 - 20 by applying drill bit size 1/8" (3.2 mm.)



5. Cutting the layout position in item 2 page 12 by following these following steps:
- 5.1 cutting for air return at 21
  - 5.2 cutting for air outlet at 22
  - 5.3 cutting for socket plug at 23



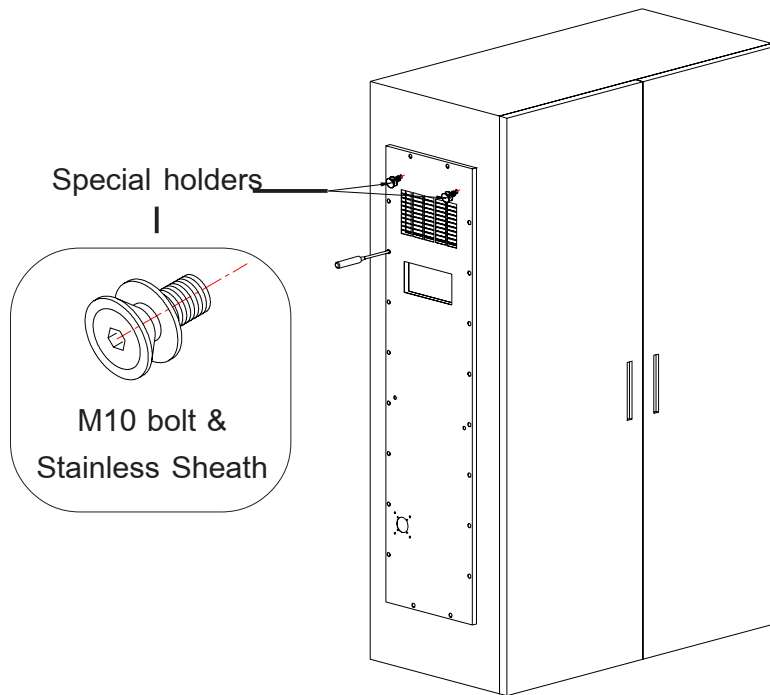
6. File the cutting edge and paint rust proof colour



## 7. Installation plate attachment

7.1 Install the Installation plate with 20 self tapping screws (1/8" x 3/8")

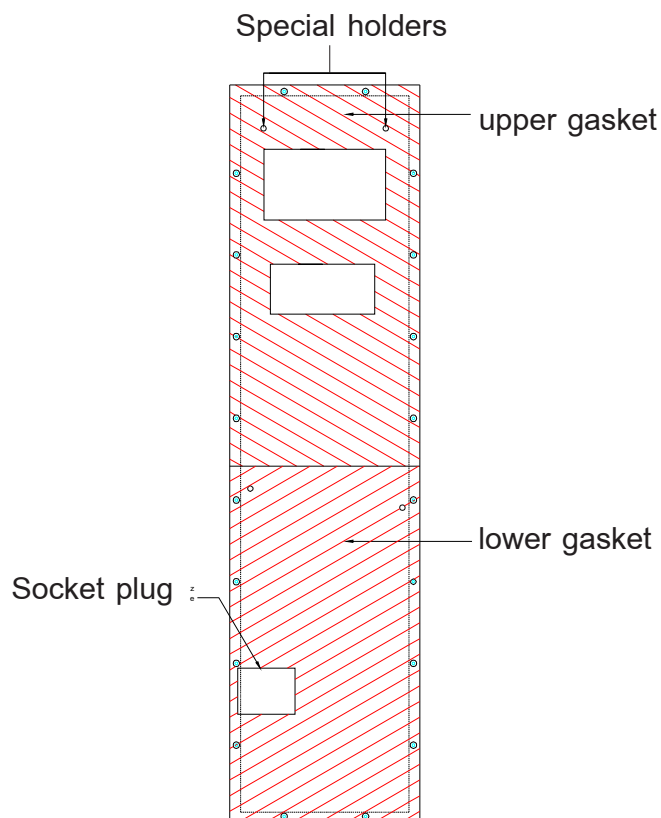
7.2 Fasten Special holders (included with installation accessories)



## 8. Gaskets installation

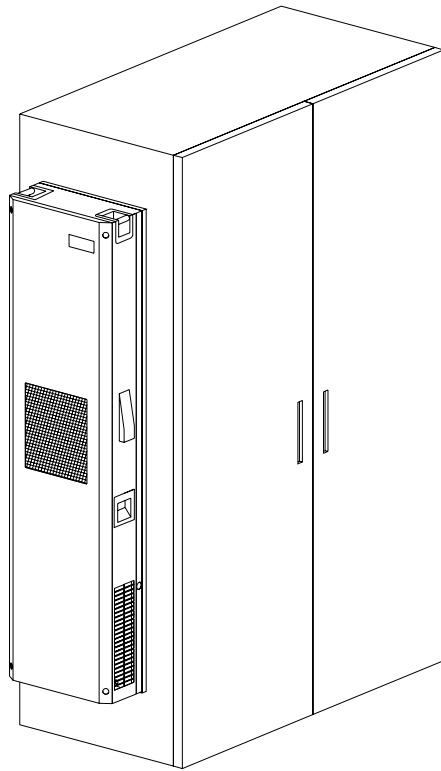
8.1 Peel of tape covers on the 2 gaskets double side tape

8.2 Stick these gaskets on the positions (Gaskets will be installed between installation plate and cooling unit)

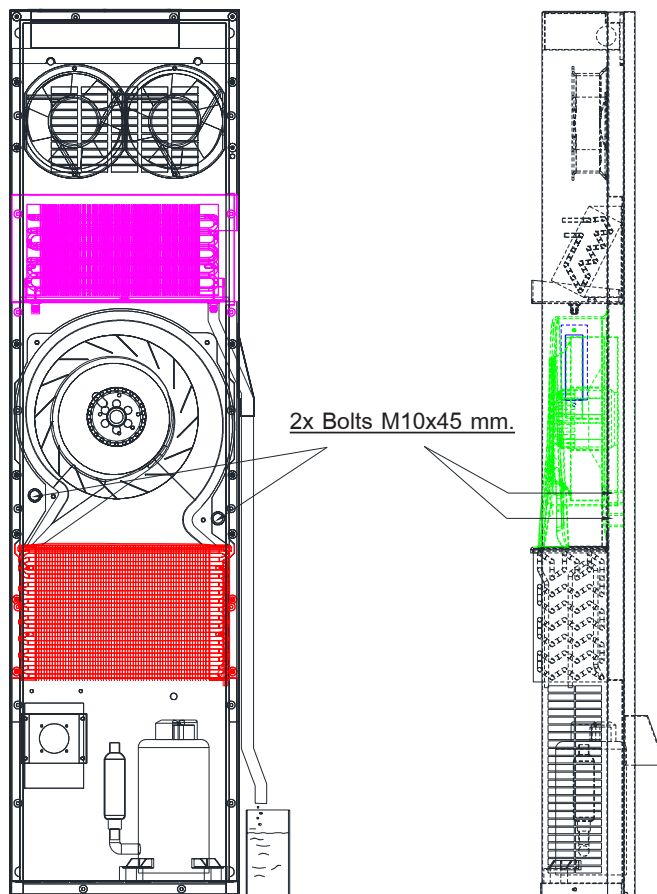




9. Hang cooling unit on the installing plate (see figure below)

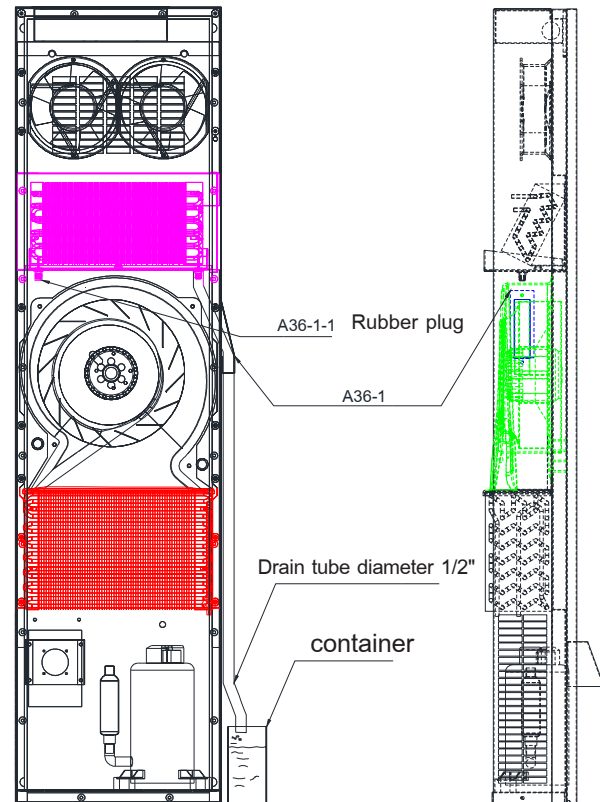


10. Fasten M10x45 mm. bolt (2 unit)

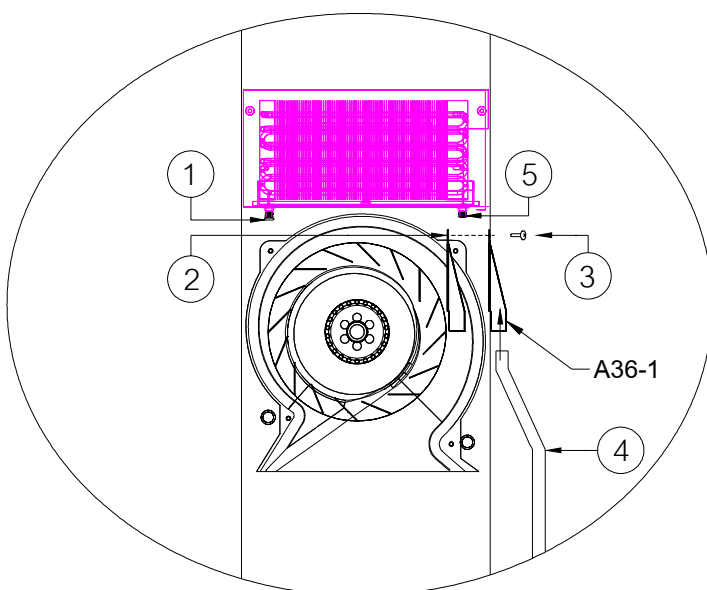


11. Drainage system (This cooling unit has both side drain outlets.) Drain tube of any side can be used (see figure below). Under drainpan has 2 drain outlets on both side either which shall be plugged when the other side is under use. Likewise, drain outlet is split to both sides one of which has to be closed (by the metal sheet) provided when another one is under use while A36-1 is to be taken off and flipped over to fasten from the outside covering drain tube for tidying before use.

Figure demonstrating installation of drain tube



Magnified figure of insertion of A36-1



- No.1 Plug unused tube with rubber plug
- N0.2 Apply A36-1 (drain tube cover)
- N0.3 Fasten self tapping screw to A36-1
- N0.4 Connect drain tube to drain pan 5

Caution: Avoid immerse drain tube under water level (see page 10)

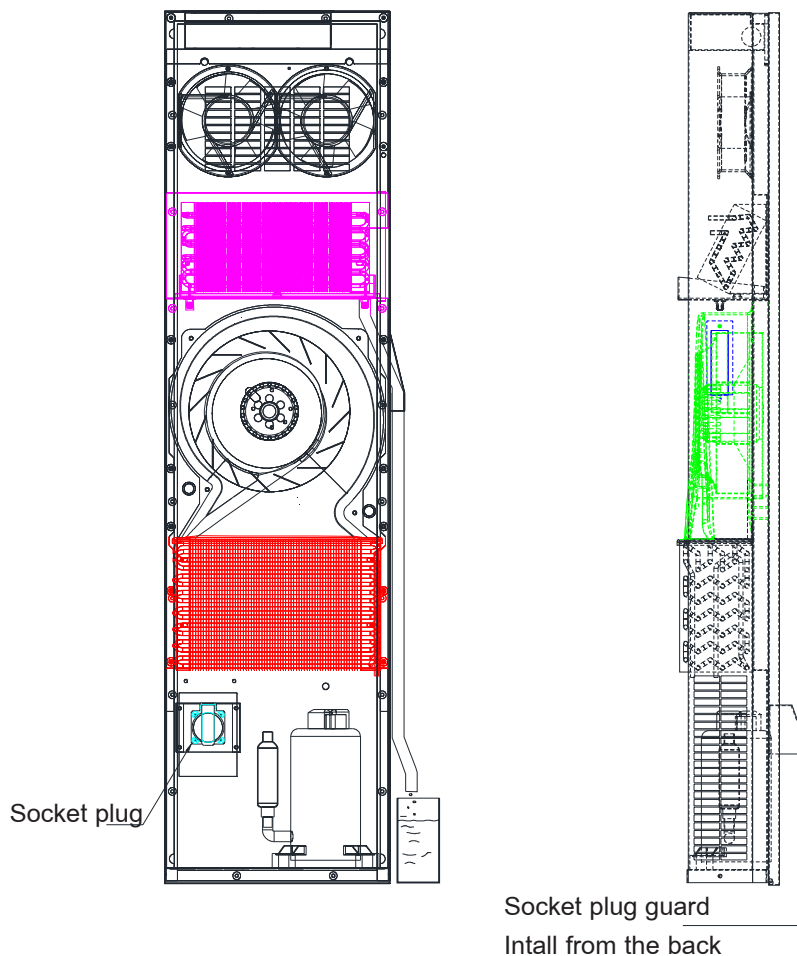
## 12. Connecting electrical power supply to cooling unit

12.1 Install socket plug (included with installation accessories)

12.2 Install socket plug guard behind socket plug (included in installation accessories)

12.3 Connect the power cord to the socket plug

12.4 Install 3x1.5 sq.mm. VCT cable between power source (10A Breaker) to socket plug (for supply 220Vac to socket plug)



**Caution:** 10 Amp. breaker of cooling unit should not be supplied to other equipments

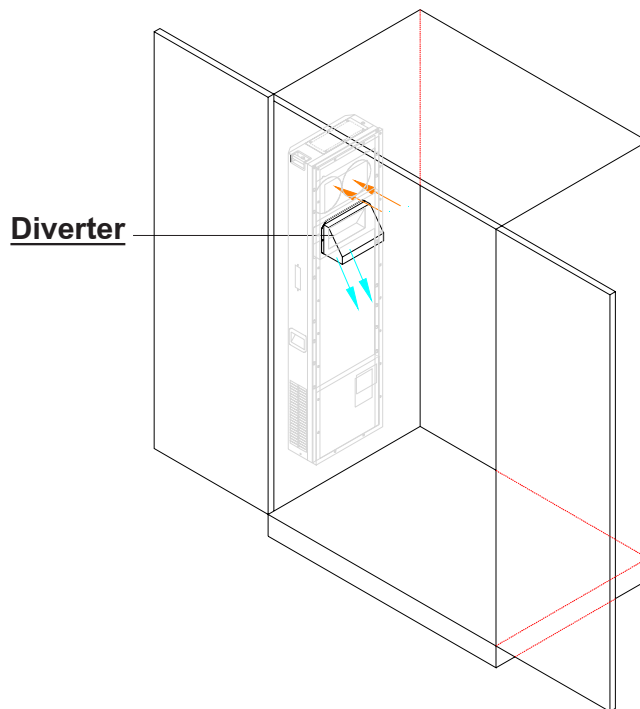
13. Close all of the panels of cooling unit

14. Turn on breaker to supply power for cooling unit

## Air diverter installation (In the necessary case)

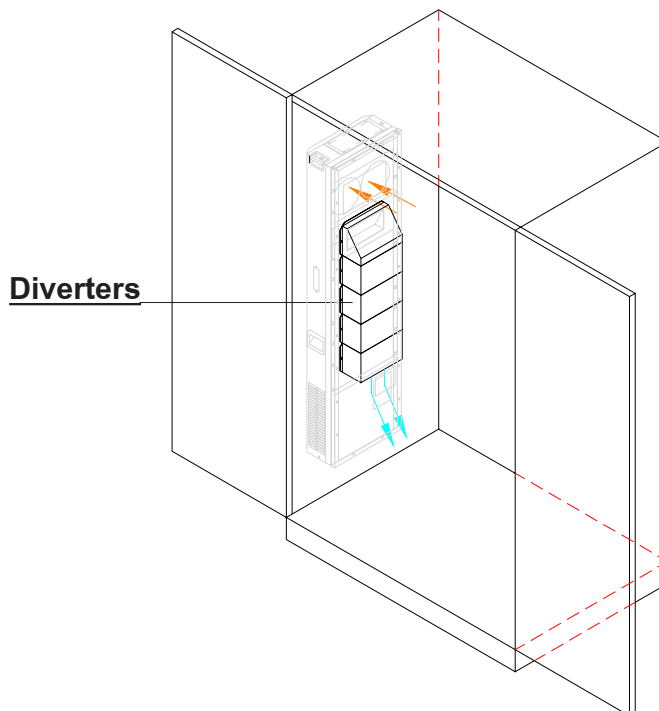
### 1. single air diverter

Turn the air diverter to blow air down as shown below the drill and fix it.



### 2. Multiple air diverters

Turn air diverters to blow air down as shown below the drill and fix it



**Note** Air diverter is the additional, not appropriate with common installation equipment.

## 6. Maintenance

Maintenance of DINDAN cooling unit can be simply done by giving care to the air filter and condensor coil not to be clogged up. The cleaning interval for the air filter depends on how dirty it is of the area where it is installed.

In case of abnormal function, it can be noticed from LED light which is to change in corresponding with abnormal condition of cooling unit. For more details please see page 21.

### Direction

It is suggested to scrape condensor and evaporator coil *at least once a year*. Condensor coil scraping is a cleaning method that can effectively save power consumption and a significant factory for prolonging compressor's use life. Method for condensor scraping (please see page 22) can be started from taking off part No.3 and then scrapping dirt collected on condensor coil.

## 7. Fault indication and analysis:

LED A / display	Nature of fault	Cause	Remedy	Unit's operation
Green / temperature	-	-	-	normal
Green / E01* (LED B = Red)	Over voltage	High voltage supply (264V.)**	Check line voltage connection and Supply new line power	Automatically shut off
Green / E02* (LED B = Red)	Under voltage	Under voltage supply (187V.)**	Check line voltage connection and Supply new line power	Automatically shut off
Green / E03	Over current	Defective equipment	Carry out of cooling service	Automatically shut off
Red & Green	Flood of water	Obstruction in condensate drain	Clean or replace drain hose	Automatically shut off
alternately blink / E04***		Unit is not fitted vertically	Adjust the enclosure level carefully	
Green / E05	Door Switch	Control cabinet doors open	Close the control cabinet door	Automatically shut off
Red color blink / E06	Risk of icing	Operational indication, icing up	Raise the set point value of the internal temperature	Automatically shut off
		Evaporator contaminated	Clean	
		Evaporator fan defective	Replace	
		Lack of coolant	Carry out of cooling service	
Red / E07	Hi-pressure in refrigerant system	Ambient temperature too high	Unit's specified range of application exceed	The unit still operate
		Condenser contaminated	Clean	
		Filter mat contaminated	Clean or replace	
		Condenser fan defective	Replace	
Red / E08	Alarm E07 more than 4 hr.(Ref Red / E07)	(Ref Red / E07)		Automatically shut off
No signal	Unit not operate	Control panel switch off	Switch on the control panel	Unit not operate
		No voltage supply	Supply new line power	
		Internal fuse has broken	Carry out of cooling service	

Note \* If the return voltage is normal. The cooling unit will run again automatically

\*\* Hight Voltage cut-out/cut-in = 264/253 V. , Under Voltage cut-out/cut-in = 187/195 V.

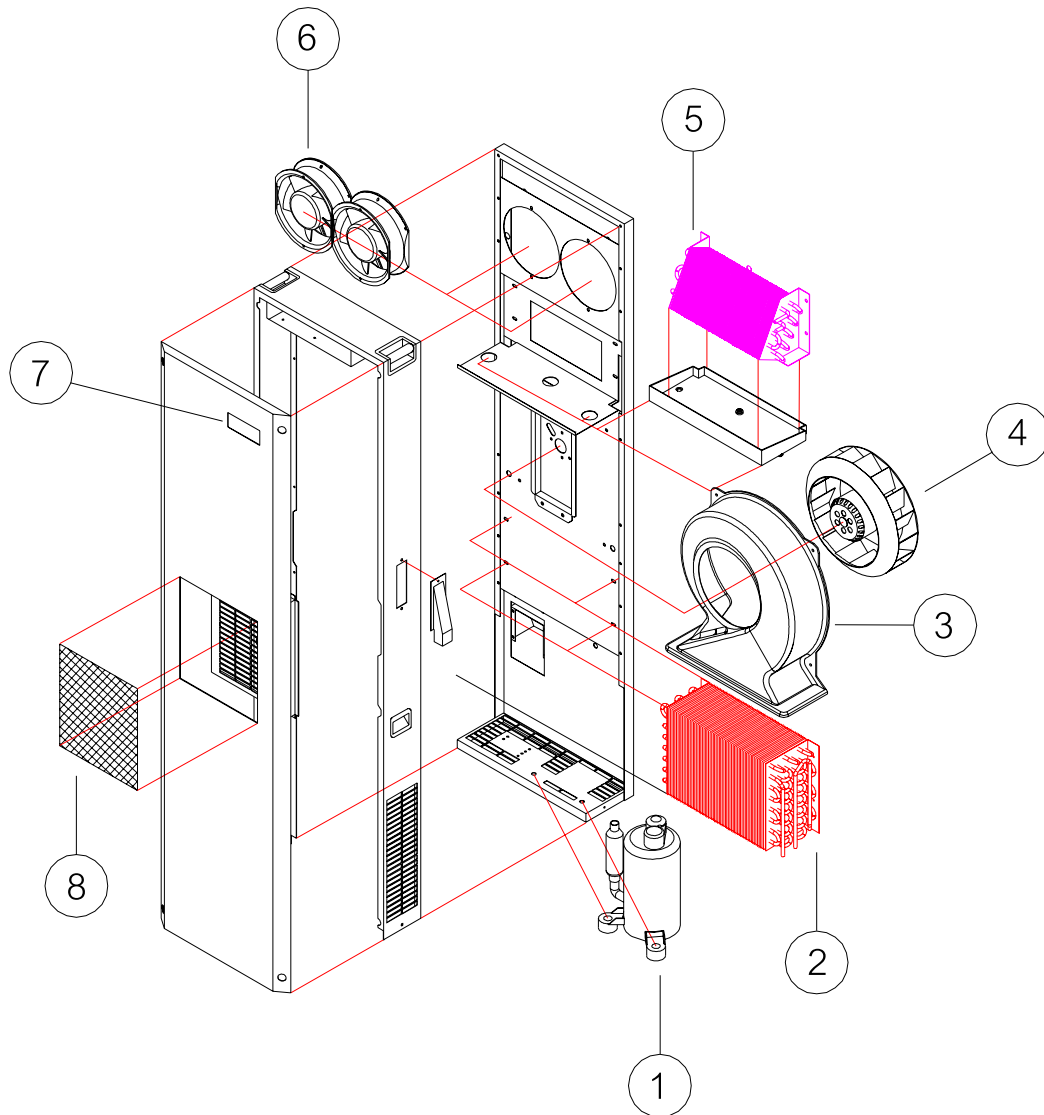
\*\*\* Top model only (rooftype installation model)

LED A = LED Status

LED B = LED Over/Under Voltage

LED C = LED Cooling (Compressor Status)

## 8. Assembly and part number



ITEM	DESCRIPTION	PART NUMBER
1	rotary compressor with run capacitor	EP-04-701
2	condensor coil	-
3	condensing fan cover	EP-10-702
4	condensing centrifugal fan with capacitor	EP-03-706
5	Evaporator coil	-
6	servo fan	EP-03-015
7	control set	XEE-22-016
8	filter	CR-15-701