



# INSTALLATION INSTRUCTIONS AND HOMEOWNER'S MANUAL



## ALIZÉ MODELS

COND-30

COND-36



### INSTALLER / SERVICE TECHNICIAN:

Use the information in this manual for the installation / servicing and keep the document near the furnace for future reference.

Communication wire connected between the indoor and outdoor units must be rated for at least 120VAC, they are protected by the outdoor unit breaker and must be sized appropriately.

Do not install any metering device on the indoor coil. The expansion valve is located in the outdoor unit. If a metering device is already installed in the indoor coil, it must be removed.

Both refrigerant lines must be separately insulated in order to avoid condensation and to ensure proper efficiency.

	COND-30	COND-36
Liquid line dia (In)	1/4	1/4
Gas line dia (In)	5/8	5/8

### HOMEOWNER:

Please keep this manual near the furnace for future reference.

### CAUTION

**DO NOT TAMPER WITH THE UNIT OR ITS CONTROLS. CALL A QUALIFIED SERVICE TECHNICIAN.  
THE WELDS MUST BE DONE BY USING NITROGEN PROTECTIVE GAS. NON-COMPLIANCE WILL MEAN THE IMMEDIATE  
CANCELLATION OF THE WARRANTY.**

Manufactured by :  
Dettson Industries Inc.  
Sherbrooke (Quebec) Canada  
<http://www.dettson.ca/>

# QUICK SETUP

## Simple start-up using communicating thermostat with modulating furnace

1. Turn off the breaker of the outdoor unit and the furnace
2. Connect COND1 and COND2 on the interface card to N(1) and 2 at the outdoor unit (See Figure 9: 30/36K Electrical diagram)
3. Connect the RJ-11 wire between the interface and the furnace control board (See Figure 9: 30/36K Electrical diagram)
4. Position the temperature sensor (included) on the crossover of the indoor coil and connect it to the terminal T1 and Tc of the interface (See section 6.8.1-)
5. Turn the outdoor unit "ON"
6. Turn the furnace "ON"

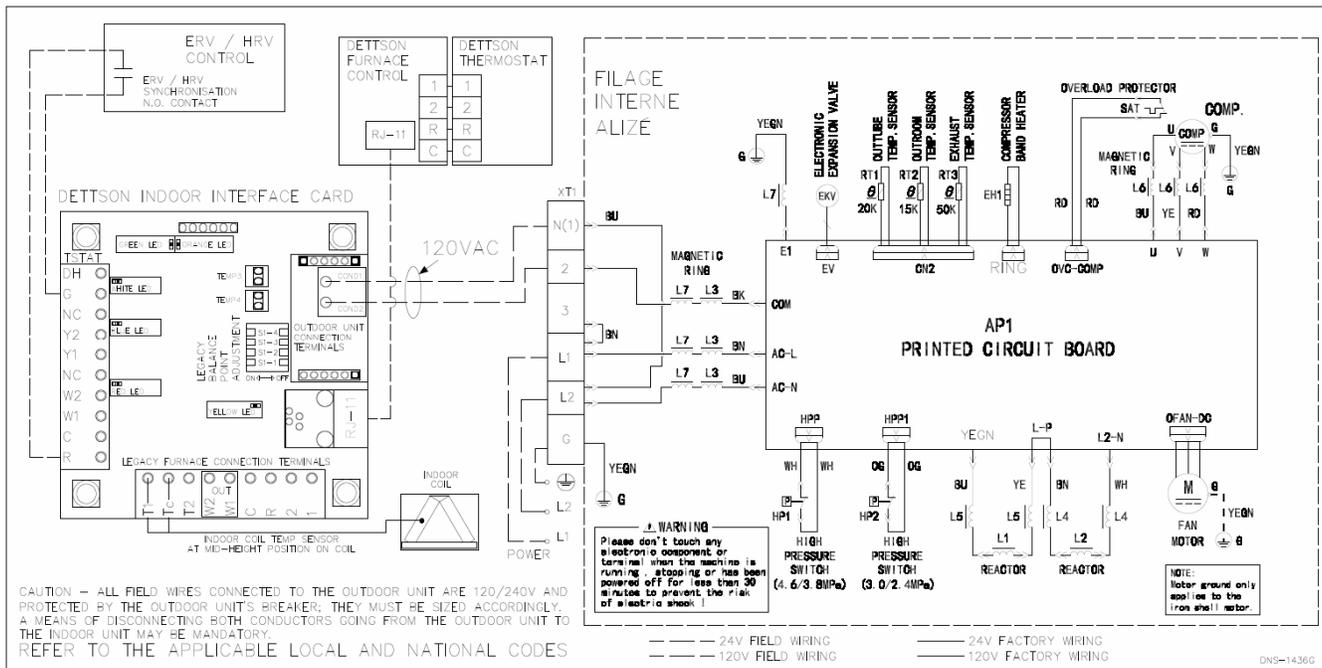
### Make sure the unit is working properly

1. The Green LED on the interface card should be blinking once every two seconds
2. The Orange LED on the interface card should be blinking once every two seconds
3. The communicating thermostat will display "Heat Pump Found"
4. Set the thermostat to "COOL" mode and adjust the set point to a lower value than the actual room temperature
5. The furnace and the outdoor unit should start within 5 minutes

In this configuration, the interface card will gather information from both the outdoor unit and the furnace in order to adjust the fan speed to the capacity of the outdoor unit

### Legacy connection

1. Connect all the thermostat control wires to the interface card and the air handler control board (See Figure 20)
2. Make sure to connect the heat outputs W1 out and W2 out of the thermostat to the W1 and W2 inputs of the furnace – OR – W on W2 on a single stage thermostat
3. Connect COND1 and COND2 on the interface card to N(1) and 2 at the outdoor unit (See Figure 20)
4. Set the dipswitches to the desired balance point (See Table 2)



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# 1-SAFETY PRECAUTIONS

Installing, starting up, and servicing air conditioner can be hazardous due to system pressure, electrical components, and equipment location, etc.

Only trained, qualified installers and service personnel are allowed to install, start-up, and service this equipment.

When handling the equipment, observe precautions in the manual and on tags and stickers on the equipment. Follow all safety codes. Wear safety glasses and work with gloves. Keep quenching cloth and fire extinguisher nearby when brazing.

Read the instructions thoroughly and follow all warnings or cautions in literature and attached to the unit. Always follow building codes and current edition of national as well as local electrical codes.

Recognize the following safety information:



**Warning: Incorrect handling could result in personal injury or death**

**Caution: Incorrect handling may result in minor injury, or damage to product or property**



**WARNING**

## 1.1- WARNING

All electric work must be performed by a licensed technician according to local regulations and the instructions given in this manual

- ⇒ Before installing, modifying, or servicing the system, the main electrical disconnect switch must be in the OFF position. There may be more than 1 disconnect switch. Lock out and tag switches with a suitable warning label.
- ⇒ Never supply power to the unit unless all wiring and tubing are completed, connected and checked.
- ⇒ This system contains dangerous electrical voltage. Incorrect connection or inadequate grounding can cause personal injury or death. Stick to the wiring diagram and all the instructions when wiring.
- ⇒ Have the unit adequately grounded in accordance with the local electric codes;

- ⇒ Have all wiring connected tightly. Loose connections may lead to overheating and a possible fire hazard.

All installation or repair work shall be performed by your dealer or a specialized subcontractor as there is the risk of fire, electric shock, explosion or injury.

- ⇒ Make sure the outdoor unit is installed on a stable, level surface with no accumulation of snow, leaves, or trash beside;
- ⇒ Avoid contact between refrigerant and fire as it generates poisonous gas;
- ⇒ Apply specified refrigerant only. Never have it mixed with any other refrigerant. Never have air remain in the refrigerant lines as it may lead to rupture and other hazards;
- ⇒ Make sure no refrigerant gas is leaking out when installation is completed;
- ⇒ Should there be refrigerant leakage, the density of refrigerant in the air shall in no way exceed its limited value, or it may lead to explosion;
- ⇒ Keep your fingers and clothing away from any moving parts;
- ⇒ Clear the site after installation. Make sure no foreign objects are left in the unit;
- ⇒ Always ensure effective grounding of the unit.



**CAUTION**

## 1.2- CAUTION

- ⇒ Never install the unit in a place where a combustible gas might leak, it may lead to fire or explosion;
- ⇒ Provide an electric leak breaker when it is installed in a wet environment;
- ⇒ Never wash the unit with water
- ⇒ Handle unit transportation with care. The unit should not be carried by only one person if it is more than 20 kg;
- ⇒ Never touch the heat exchanger fins with bare hands;
- ⇒ Never touch the compressor or refrigerant piping without wearing gloves;
- ⇒ Make sure that the air handler filter is clean;
- ⇒ Should any emergency occur, stop the unit and disconnect the power immediately;
- ⇒ Properly insulate **ALL** refrigerant tubing from outdoor units to the interior cooling coil to prevent condensation.

### 1.3- SPECIFICATIONS TABLE

Table 1: Outdoor unit specifications

Model		COND-30	COND-36
Power supply	Rated voltage	V~	208/230
	Rated frequency	Hz	60
	Phase		1
Cooling capacity (min~max)		Btu/h	28000(9485~30026)
Heating capacity (min~max)		Btu/h	28400(9997~32994)
Cooling power input (min~max)		W	2700(600~3900)
Heating power input (min~max)		W	2800(650~4000)
Cooling current input		A	11.5
Heating current input		A	12
Rated input		W	4000
Rated current		A	17
Dehumidifying volume		Pint/h	1.42
EER *		(Btu/h)/W	10.37
COP *			2.97
SEER *			18
HSPF *			9
Compressor type		Rotary	
Compressor LRA		A	40
Compressor RLA		A	13.45
Compressor power input		W	2450
Overload protector		INT11L-6233	CS01F272H01
Throttling method		Electronic expansion valve	
Cooling operation ambient temperature range		° F (°C)	0~115 (-18~45)
Heating operation ambient temperature range		° F (°C)	-4~75 (-20~24)
Condenser form		Aluminum fins-copper tube	
Condenser pipe diameter		inch	φ5/16
Condenser rows-fin gap		inch	2 1/18
Condenser coil dimensions (LXDXW)		inch	37.5X1.5x29.4
Fan motor speed		rpm	795
Fan motor power output		W	90
Fan motor RLA		A	0.5
Air flow volume		CFM	2354
Fan type		Axial-flow	
Fan diameter		inch	φ21.73
Defrosting method		Automatic defrosting	
Climate type		T1	
Isolation		I	
Moisture protection		IPX4	
Permissible excessive operating pressure for the discharge side		MPa	4.3
Permissible excessive operating Pressure for the suction side		MPa	2.5
Sound pressure level		dB (A)	62
Sound power level		dB (A)	72
Dimensions (WXHXD)		inch	38.6x31.1x16.8
Dimensions of carton box(LXWXH)		inch	42.5x19.1x33.1
Dimensions of package(LXWXH)		inch	42.6x19.2x33.7
Net weight		lb	154.4
Gross weight		lb	165.4
Refrigerant		R410A	
Refrigerant charge		oz	84.7
Connection pipe length		ft (m)	24.6 (7.5)
Connection pipe gas additional charge		oz/ft.	0.5
Outer diameter liquid pipe		inch	φ1/4
Outer diameter gas pipe		inch	φ5/8
Max distance height		ft (m)	32.8 (10)
Max distance length		ft (m)	98.4 (30)

# 1.4- OPERATION CHARACTERISTICS CURVES

Figure 1: Operation characteristic curves 30K

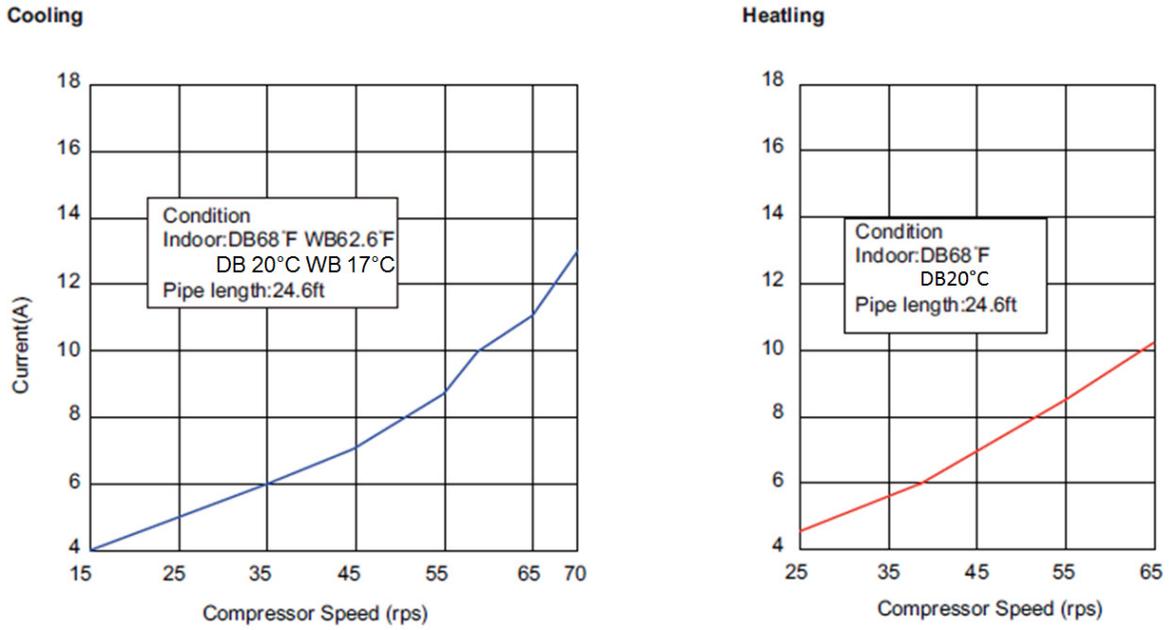
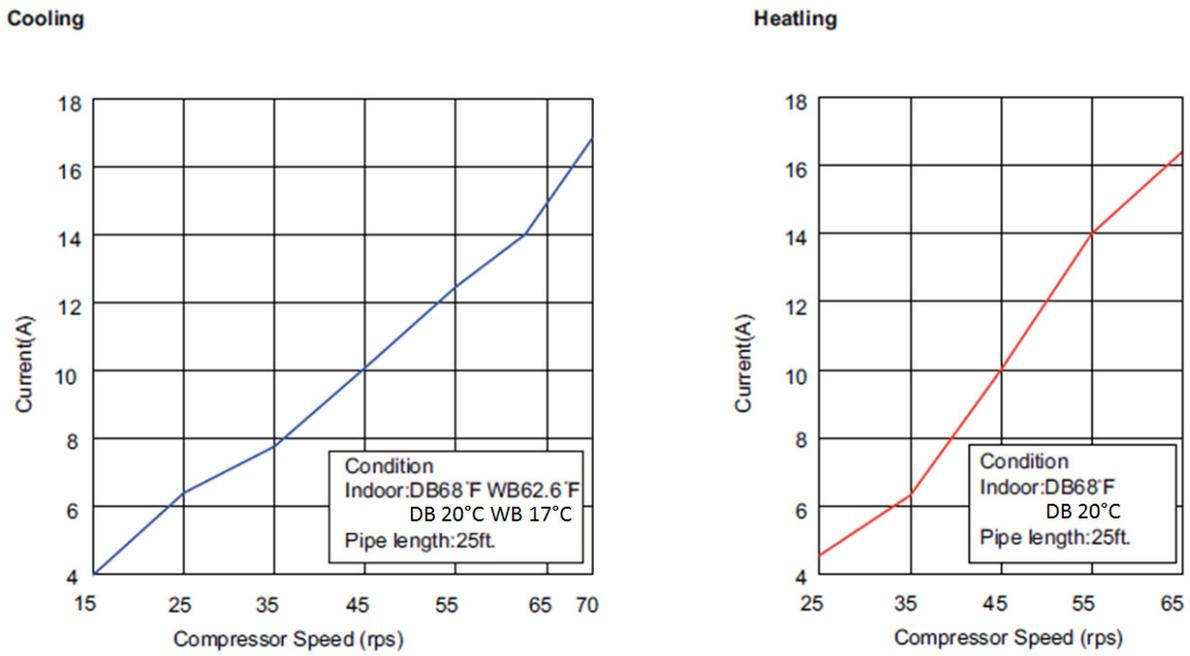


Figure 2: Operation characteristic curves 36K



## 1.5- CAPACITY VARIATION RATIO ACCORDING TO TEMPERATURE

Figure 3: 30K Capacity ratio vs outdoor temperature

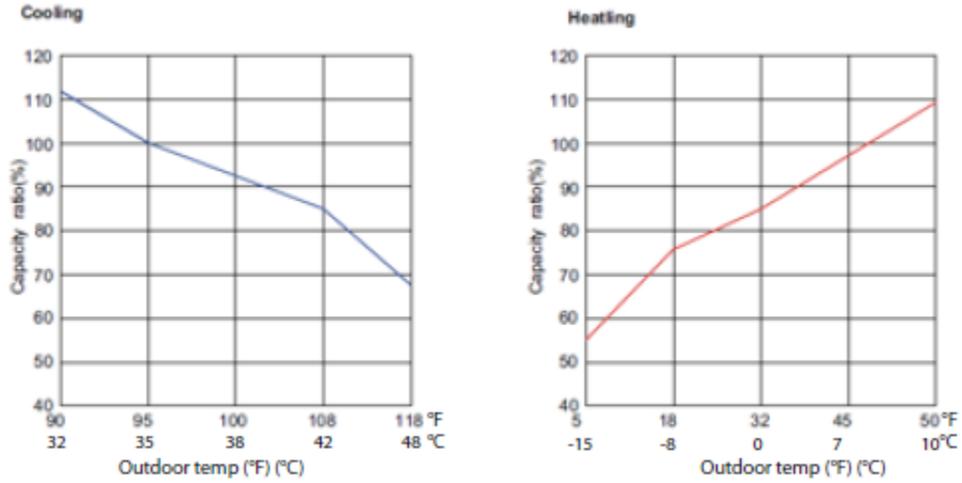
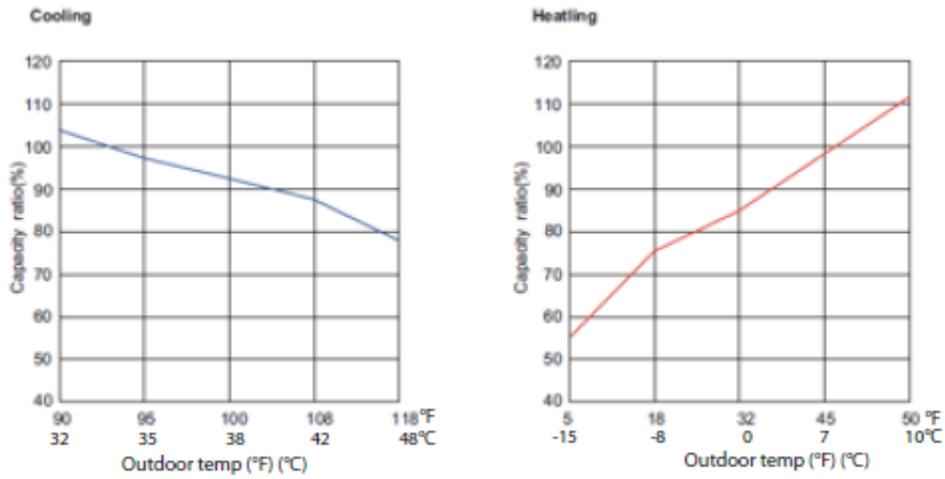


Figure 4: 36K Capacity ratio vs outdoor temperature



1.6- NOISE CRITERIA CURVE TABLES

Figure 5: 30K Noise curve

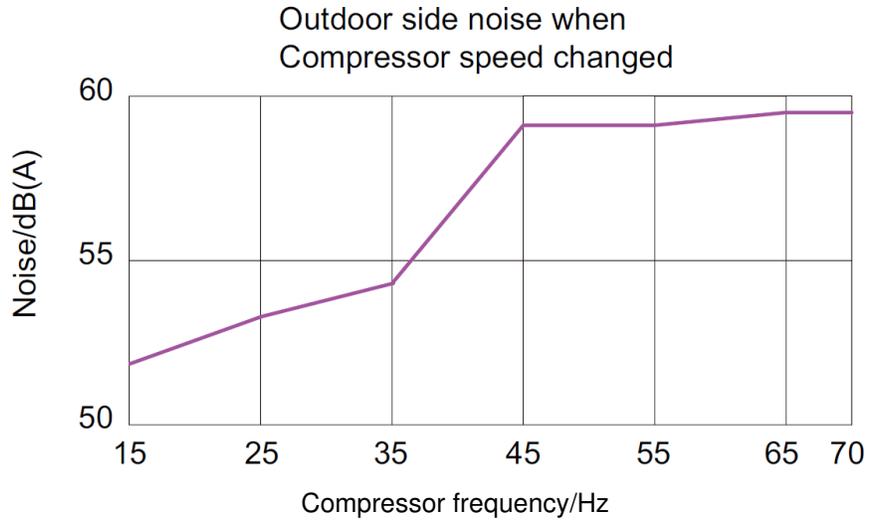
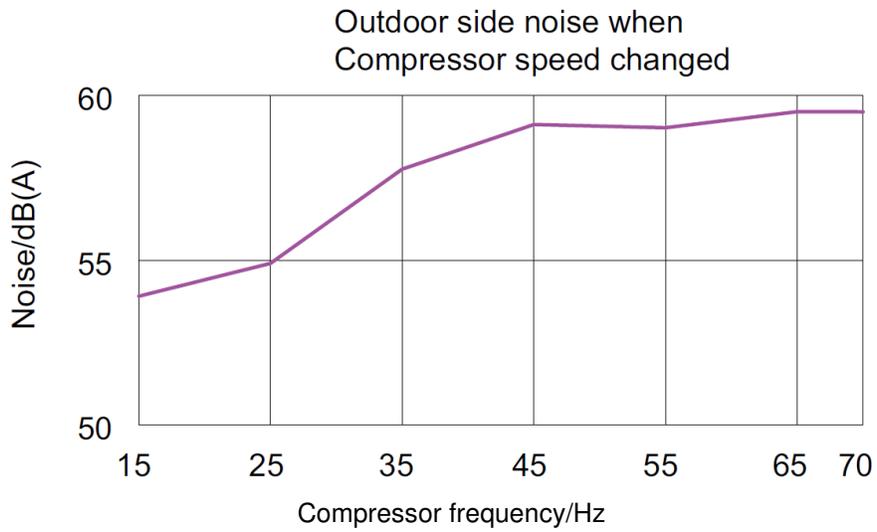
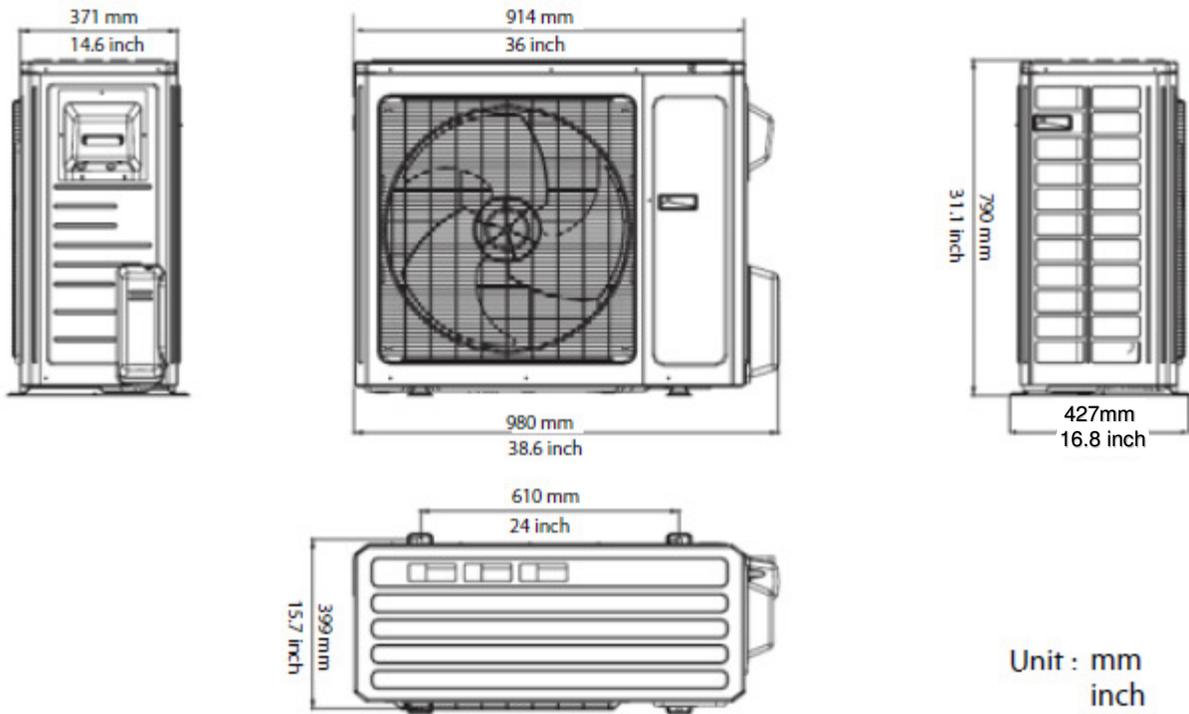


Figure 6: 36K noise curve



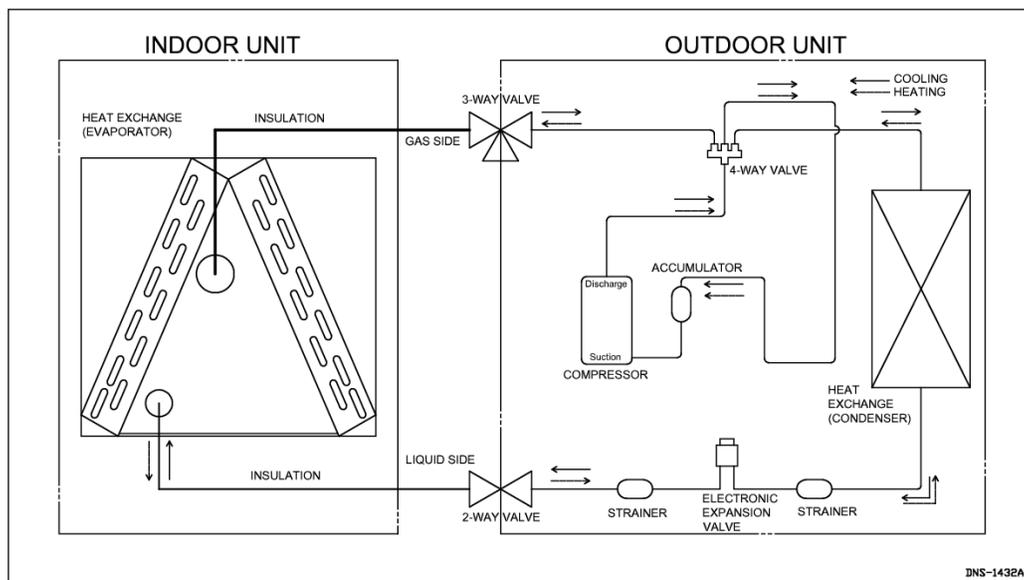
## 2- CONSTRUCTION VIEWS

Figure 7: 30/36K dimensions



## 3- REFRIGERANT SYSTEM DIAGRAM

Figure 8: refrigerant system diagram



\* Properly insulate **ALL** refrigerant tubing from outdoor units to the interior cooling coil to prevent water dripping.

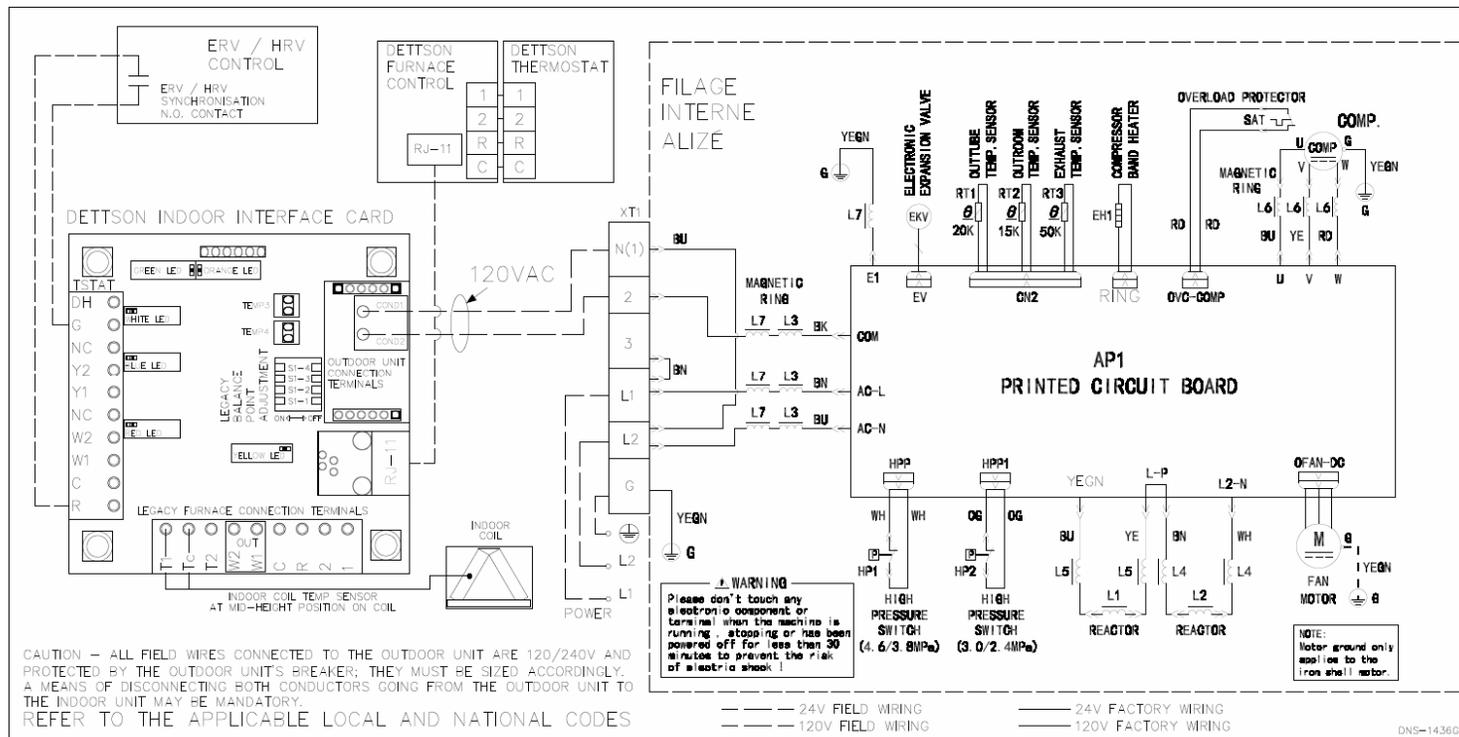
# 4-SCHEMATIC DIAGRAMS

## Outdoor Unit

Symbol	Parts name	Symbol	Color symbol	Symbol	Color symbol
SAT	OVERLOAD	BU	BLUE	VT	VIOLET
COMP	COMPRESSOR	YE	YELLOW	OG	ORANGE
⊕	PROTECTIVE EARTH	RD	RED	BK	BLACK
		BN	BROWN	YEGN	YELLOW GREEN

## 4.1- ELECTRICAL DIAGRAM

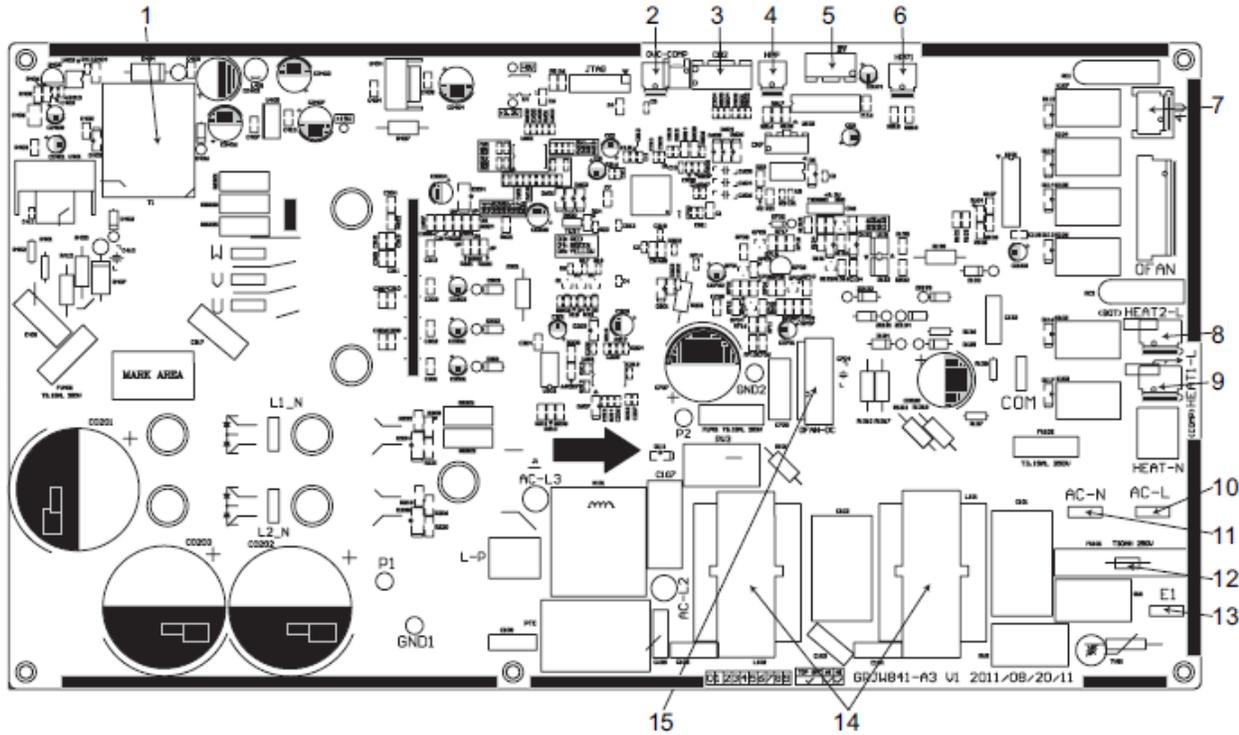
Figure 9: 30/36K Electrical diagram



## 4.2- PRINTED CIRCUIT BOARD

Figure 10: 30/36K Circuit board

● TOP VIEW



No.	Name	No.	Name	No.	Name
1	High frequency transformer T1	6	High pressure protection terminal HPP1	11	Terminal of neutral wire
2	Overload protection terminal of compressor OVC-COMP	7	Terminal of 4-way valve	12	Protective tube FU101
3	Terminal of temp sensor CN2	8	Electric heater band of chassis HEAT1-L	13	Terminal of ground wire
4	High pressure protection terminal HPP	9	Electric heater band of compressor HEAT-L	14	Choke L 101 and L102
5	Electronic expansion valve terminal EV	10	Terminal of live wire	15	Terminal of outdoor fan OFAN-DC

# 5-FUNCTIONS AND CONTROL OUTDOOR UNIT

## 5.1-THERMOSTAT

### 5.1.1- Communicating thermostat (R02P032)

The unit must be used with the Dettson communicating thermostat (R02P029 or R02P032) in order to work as a fully modulating unit. In this case, the interface card (K03081) will be able to gather information from the outdoor unit, the furnace and the thermostat, making this integrated system very easy to install and increased home owner comfort. The indoor blower speed will be determined by various factors including outdoor temperature, compressor speed and demand from the thermostat. The balance point (temperature at which the unit will switch from heat pump heating to auxiliary heat) will be adjustable through the thermostat. If this unit is destined to be used as a cooling system only, the heat pump feature can also be disabled altogether from the communicating thermostat.

**For more details refer to the manual provided with the thermostat.**

### Auxiliary Heating

#### Heat pump Disable

This feature is applicable only in the heat pump mode. When this feature is selected, the thermostat will switch to electric heat and shut off the compressor when the outside temperature falls below the HP balance point. In the Thermostat User Menu, select the temperature which can be between 5 to 50°F.

#### Dual Fuel Disable

This feature is applicable only in the heat pump mode. When this feature is selected, the thermostat will switch to fossil fuel heat and shut off the compressor when the outside temperature falls below the DF balance point. In the Thermostat Installer Menu, select the temperature which can be between 5 to 50°F.

### 5.1.2- Legacy thermostat

Shall the unit be controlled by a one or two stage thermostat, the unit will only be able to run as a one or two stage unit. Hence, the indoor blower speed will only be controlled by the air handler, leading to a fixed air flow operation. In this configuration, the balance point can be set using the dipswitches S1-2 to S1-4 (see Table 2). The Auxiliary heat or heat pump function can also be disabled using these same switches.

#### 5.1.2.1 Balance point adjustment

When the dipswitch bank is set accordingly, the interface card will modify the heat source in function of the outdoor temperature. The outdoor unit will send the temperature reading through the serial communication wires (COND1 and COND2), with no need to install a separate temperature sensor. The unit will heat using the heat pump until the outdoor temperature goes below the balance point that was set according to the dipswitch table below.

Table 2: Dipswitch adjustment

DIP1-2	DIP1-3	DIP1-4	Balance point
OFF	OFF	OFF	-20°C (-4°F)
OFF	OFF	ON	-17°C
OFF	ON	OFF	-14°C
OFF	ON	ON	-11°C
ON	OFF	OFF	-8°C
ON	OFF	ON	-5°C
ON	ON	OFF	-2°C
ON	ON	ON	Heatpump heat only

## 5.2-FUNCTION & CONTROL

### 5.2.1- Temperature Parameters

- Indoor thermostat temperature ( $T_{preset}$ )
- Indoor ambient temperature ( $T_{amb.}$ )

Note:  $T_{compensation}$  is determined by indoor and outdoor units. If the indoor unit controls temperature compensation,  $T_{compensation}$  is determined by the value sent to the outdoor unit by the indoor unit; if it is not controlled by the indoor unit,  $T_{compensation}$  will be 3°C (5.4°F) as default.

### 5.2.2- Basic Functions

Once energized, in no case should the compressor be restarted within less than 3 minutes. In the situation that memory function is available for the first energization, if the compressor is at stop before de-energization, the compressor will be started with a 3-minute lag; and once started, the compressor will not be stopped within 6 minutes regardless of changes in room temperature.

#### 1. Cooling mode

##### Working conditions and process of cooling

- When  $T_{amb} \geq T_{preset}$ , the unit will enter cooling operation, in which case the indoor fan, the outdoor fan and the compressor will work and the indoor fan will run at pre-set speed.
- When  $T_{amb} \leq T_{preset} - 2^\circ\text{C}$  (3.6°F), the compressor will stop, the outdoor fan will stop with a time lag of 60s, and the indoor fan will run at pre-set speed.
- When  $T_{preset} - 2^\circ\text{C}$  (3.6°F) <  $T_{amb}$  <  $T_{preset} + 1^\circ\text{C}$  (1.8°F), the unit will remain at its previous state.

Under this mode, the four-way valve will be de-energized and temperature can be set within a range from 16.1°C (61°F) to 30°C (86°F). If the compressor is shut down for some reason, the indoor fan and the swing device will operate at original state.

##### Protections

###### • Antifreeze protection

Under cooling, 6 minutes after the compressor is started:

- If  $T_{evap} \leq 2^\circ\text{C}$  (35.6°F), the compressor will operate at reduced frequency;
- If  $T_{evap} \leq 1^\circ\text{C}$  (30.2°F), is detected for durative 3 minutes, the compressor will stop, and after 30 seconds, the outdoor fan will stop; and under cooling mode, the indoor fan and the swing motor will remain at the original state;
- If  $T_{evap} \geq 6^\circ\text{C}$  (42.8°F), and the compressor has remained at OFF for at least 3 minutes, the compressor will resume its original operation state.

###### • Total current up and frequency down protection

- When total current  $I_{total} \leq 16\text{A}$ , increasing frequency is allowed;
- When total current  $I_{total} \geq 17\text{A}$ , increasing frequency is prohibited;
- When total current  $I_{total} \geq 18\text{A}$ , the compressor will run at reduced frequency;
- When total current  $I_{total} \geq 20\text{A}$ , the compressor will stop and the outdoor fan will stop with a delay of 60s.

#### 2. Heating Mode

##### Working conditions and process of heating

- If  $T_{amb} \leq T_{preset} + 2^\circ\text{C}$  (3.6°F), the unit enters heating mode, in which case the four-way valve, the compressor and the outdoor fan will operate simultaneously, and the indoor fan will run at pre-set speed in the condition of pre-set cold air prevention.
- If  $T_{amb} \geq T_{preset} + 5^\circ\text{C}$  (9°F), the compressor will stop, the outdoor fan will stop with a time lag of 60s, and the indoor fan will stop after 60-second blow at low speed
- If  $T_{preset} + 2^\circ\text{C}$  (3.6°F) <  $T_{amb}$  <  $T_{preset} + 5^\circ\text{C}$  (9°F), the unit will maintain its original operating status.

Under this mode, the four-way valve is energized and temperature can be set within a range of 16.1°C (61°F) to 60°C (86°F). The

operating symbol, the heating symbol and pre-set temperature are revealed on the display.

### Condition and process of defrost

When duration of successive heating operation is more than 45 minutes, or accumulated heating time more than 90 minutes, and one of the following conditions is reached, the unit will enter the defrost mode after 3 minutes.

- (1)  $T_{outdoor\ amb.} \geq 5^{\circ}C (41^{\circ}F)$ ,  $T_{outdoor\ pipe} \leq -2^{\circ}C (28.4^{\circ}F)$ ;
- (2)  $-2^{\circ}C (28.4^{\circ}F) \leq T_{outdoor\ amb.}$ ;
- (3)  $-5^{\circ}C (23^{\circ}F) \leq T_{outdoor\ amb.} < -2^{\circ}C (28.4^{\circ}F)$ ,  
 $T_{outdoor\ pipe} \leq -8^{\circ}C (17.4^{\circ}F)$ ;
- (4)  $-10^{\circ}C (14^{\circ}F) \leq T_{outdoor\ amb.} < -5^{\circ}C (23^{\circ}F)$ ,  
 $T_{outdoor\ pipe} - T_{compensation} \leq$   
 $(T_{outdoor\ amb.} - 14.8^{\circ}C (5.4^{\circ}F))$ ;
- (5)  $T_{outdoor\ amb.} < -10^{\circ}C (14^{\circ}F)$ ,  $T_{outdoor\ pipe} -$   
 $T_{compensation} \leq (T_{outdoor\ amb.} - 14.8^{\circ}C (5.4^{\circ}F))$ .

After energization, when defrosting for the first time  $T_{compensation} = -17.8^{\circ}C (0^{\circ}F)$ . If it is not the first time for defrosting,  $T_{compensation}$  is determined by  $T_{outdoor\ pipe}$  of last time quitting defrosting.

- (1)  $T_{outdoor\ pipe} > 2^{\circ}C (35.6^{\circ}F)$ ,  $T_{compensation} = -17.8^{\circ}C (0^{\circ}F)$ ;
- (2)  $T_{outdoor\ pipe} \leq 2^{\circ}C (35.6^{\circ}F)$ ,  $T_{compensation} =$   
 $-14.8^{\circ}C (5.4^{\circ}F)$

At that time, the indoor fan stops and the compressor stops, and after 60 seconds the outdoor fan will stop, and then after 30seconds, the four-way valve will stop. After 30 seconds, the compressor is initiated for raising the frequency to defrost frequency. When the compressor has operated under defrost mode for 10 minutes, or  $T_{outer\ tube} \geq 10^{\circ}C (50^{\circ}F)$ , the compressor will be converted to 46Hz operation. After 30 seconds, the compressor will stop. And after another 30 seconds, the four-way valve will be opened, and after 60 seconds, the compressor and the outdoor fan will be started, the indoor fan will run under pre-set cold air prevention conditions, and H1 will be displayed at temperature display area on the display panel. Defrost frequency is 70Hz.

- **Total current up and frequency down protection**
  - (1) When total current  $I_{total} \leq 16A$ , increasing frequency is allowed;
  - (2) When total current  $I_{total} \geq 17A$ , increasing frequency is prohibited;
  - (3) When total current  $I_{total} \geq 18A$ , the compressor will run at reduced frequency;
  - (4) When total current  $I_{total} \geq 20A$ , the compressor will stop and the outdoor fan will stop with a delay of 60s.

### 3. Common Protection Functions and Fault display under COOL and HEAT Modes

#### Overload protection

$T_{tube}$ : measured temperature of outdoor heat exchanger under cooling mode; and measured temperature of indoor heat exchanger under heating mode.

- (1) **Cooling overload**
  - a. If  $T_{tubes} \leq 52.2^{\circ}C (126^{\circ}F)$ , the unit will return to its original state.
  - b. If  $T_{tubes} \geq 55^{\circ}C (131^{\circ}F)$ , frequency rise is not allowed.
  - c. If  $T_{tubes} \geq 57.8^{\circ}C (136^{\circ}F)$ , the compressor will run at reduced frequency.
  - d. If  $T_{tube} \geq 62.2^{\circ}C (144^{\circ}F)$ , the compressor will stop and the indoor fan will run at pre-set speed.
- (2) **Heating overload**

- a. If  $T_{tubes} \leq 52.2^{\circ}C (126^{\circ}F)$ , the unit will return to its original operation state.
- b. If  $T_{tubes} \geq 55^{\circ}C (131^{\circ}F)$ , frequency rise is not allowed.
- c. If  $T_{tubes} \geq 57.8^{\circ}C (136^{\circ}F)$ , the compressor will run at reduced frequency.
- d. If  $T_{tubes} \geq 62.2^{\circ}C (144^{\circ}F)$ , the compressor will stop and the indoor fan will blow residual heat and then stop.

#### Exhaust temperature protection of compressor

- (3) If exhaust temperature  $\geq 97.8^{\circ}C (208^{\circ}F)$ , frequency is not allowed to rise.
- (4) If exhaust temperature  $\geq 102.8^{\circ}C (217^{\circ}F)$ , the compressor will run at reduced frequency.
- (5) If exhaust temperature  $\geq 110^{\circ}C (230^{\circ}F)$ , the compressor will stop.
- (6) If exhaust temperature  $\leq 90^{\circ}C (194^{\circ}F)$  and the compressor has stayed at stop for at least 3 minutes, the compressor will resume its operation.

#### Communication fault

If the unit fails to receive correct signals for durative 3 minutes, communication fault can be justified and the whole system will stop.

#### Module protection

Under module protection mode, the compressor will stop. When the compressor remains at stop for at least 3 minutes, the compressor will resume its operation. If module protection occurs six times in succession, the compressor will not be started again.

#### Overload protection

If temperature sensed by the overload sensor is over  $115^{\circ}C (239^{\circ}F)$ , the compressor will stop and the outdoor fan will stop with a time lag of 30 seconds. If temperature is below  $95^{\circ}C (203^{\circ}F)$ , the overload protection will be relieved.

#### DC bus voltage protection

If voltage on the DC bus is below 150V or over 420V, the compressor will stop and the outdoor fan will stop with a time lag of 30 seconds. When voltage on the DC bus returns to its normal value and the compressor has stayed at stop for at least 3 minutes, the compressor will resume its operation.

Designation of sensors	Faults
Outdoor ambient temperature	The sensor is detected to be open-circuited or short-circuited for successive 30 seconds.
Outdoor tube temperature	The sensor is detected to be open-circuited or short-circuited for successive 30 seconds, and no detection is performed within 10 minutes after defrost begins.
Exhaust	After the compressor has operated for 3 minutes, the sensor is detected to be open-circuited or short circuited for successive 30 seconds.
Overload	After the compressor has operated for 3 minutes, the sensor is detected to be open-circuited or short-circuited for successive 30 seconds.

# 6-INSTALLATION MANUAL

## 6.1-NOTICES FOR INSTALLATION



### CAUTION

1. This unit should be installed only by authorized service technicians according to local and/or government regulations and in compliance with this manual;
2. Warning: before obtaining access to terminals, all supply circuits must be disconnected;
3. The temperature of refrigerant line will be high; please keep the interconnection cable away from the copper tube.

## 6.2-INSTALLATION SITE INSTRUCTIONS

Proper installation site is vital for correct and efficient operation of the unit. Avoid the following sites where:

1. Strong heat sources, vapours, flammable gas or volatile liquids are emitted;
2. High-frequency electro-magnetic waves are generated by radio equipment, welders and medical equipment;
3. Salt-laden air prevails (such as close to coastal areas);
4. The air is contaminated with industrial vapours and oils;
5. The air contains sulphuric gases such as in hot spring zones;
6. Corrosion or poor air quality exists.

## 6.3-INSTALLATION SITE OF THE OUTDOOR UNIT

1. Select a site where there is sufficient ventilation;
2. Select a site where there is no obstructions blocking the inlet and outlet;
3. The site should be able to withstand the full weight and vibration;
4. Select a dry place, and do not expose the unit to direct sunlight nor strong winds;

5. Make sure that the outdoor unit is installed in accordance with the installation instructions, and is convenient for maintenance and repair;
6. The maximum height difference between the indoor cooling coil and the outdoor unit is 32,8ft, and the maximum length of the connecting tubing's must not exceed 49,2ft(14.996 m) (09K), 65,6ft(19.995 m) (12K) and 82ft (24.994 m) (18/24K).

## 6.4-SAFETY PRECAUTIONS FOR ELECTRIC APPLIANCES

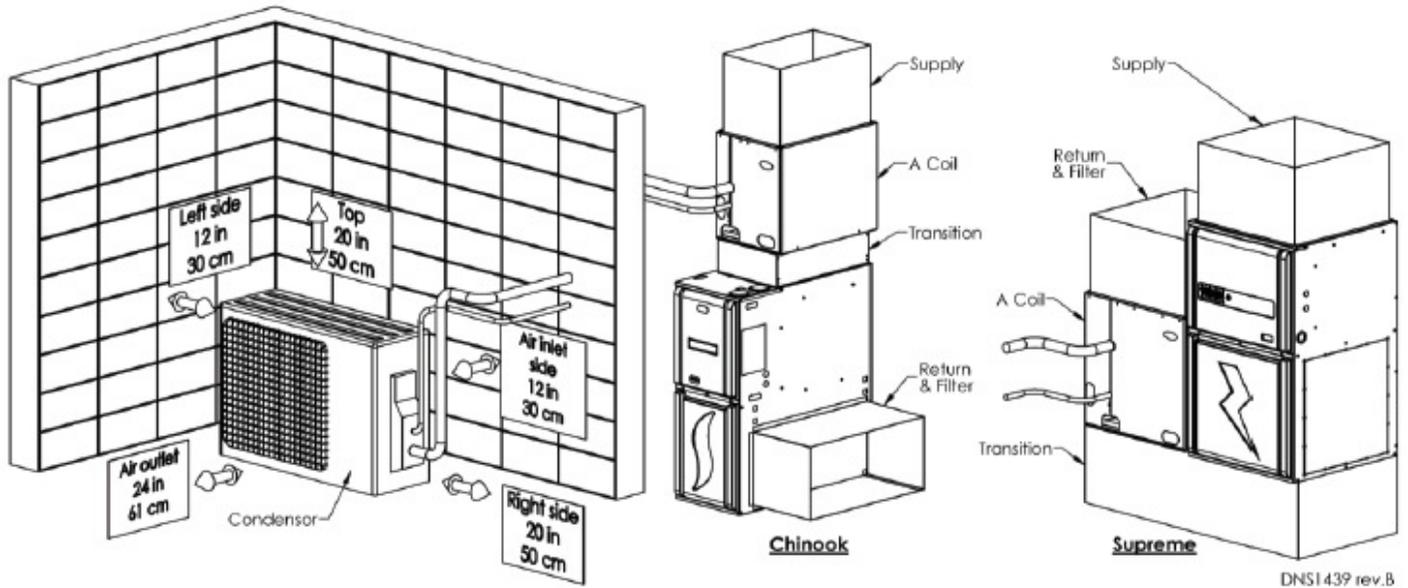
1. A dedicated power supply circuit should be used in accordance with local electrical safety regulations;
2. The unit should be reliably grounded and connected to an exclusive ground device by the professionals;
3. The circuit breaker must have the functions of magnetic tripping and heat tripping to prevent short circuit and overload;
4. The minimum distance between the unit and combustive surface is 4,9 ft.(1.4935 m);
5. The appliance shall be installed in accordance with national wiring regulations;
6. An all-pole disconnection switch with a contact separation of at least 0.1 inch in all poles should be connected in fixed wiring.

## 6.5-GROUNDING

1. Please ensure that the unit is reliably grounded;
2. The yellow-green wire in the outdoor unit is the grounding wire which cannot be used for the other purposes. Improper grounding may cause electric shock;
3. The ground must have reliable terminal. Please do not connect wire with the following:
  - Water Pipe
  - Gas pipe
  - Sewer pipe
  - Other place that professional personnel consider is unreliable.
4. The model and rated values of fuses should accord with the silk print on fuse cover or related PCB.

## 6.6- INSTALLATION DRAWING

Figure 11: Installation schematic and clearances



## 6.7- INSTALLATION OF THE INDOOR COOLING COIL

Check the coil for shipping damage and verify the contents of the box containing the evaporator coil. If you should find damage, immediately contact the last carrier. Coils are shipped with a 10 psi dry air holding charge. Puncture rubber plug on suction line to release charge before removing plugs. The absence of pressure does not verify a leak. Check the coil for leaks before installing or returning it to your wholesaler.

Coil should be level, or pitched slightly toward the drain connection. Airflow face velocity above 350 ft/min is not recommended for downflow or counterflow applications due to potential water blow-off.

For an installation with a **Chinook**, position the coil on the supply outlet of the furnace using sheet metal screws. Drain pans are made of a polymer that can withstand temperatures up to 232.22°C (450°F). Maintain a minimum of 3" clearance over the heat exchanger.

For an installation with a **Supreme**, position the coil on the return outlet of the furnace.

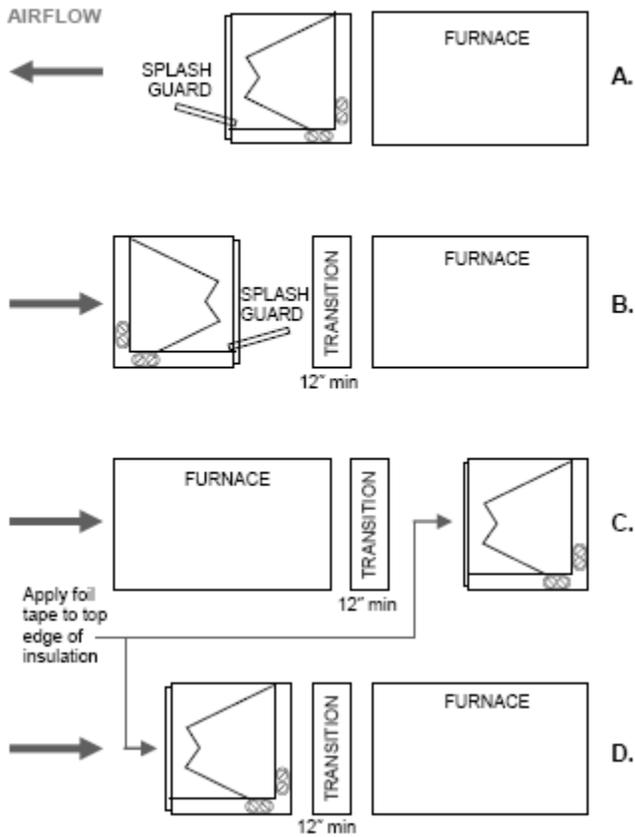
### 6.7.1- Multiposition coil

Multi-Position A-Coils come factory installed with a vertical and horizontal drain pans and can be configured for upflow, downflow, horizontal blow-through or horizontal pull-through installations. In the center opening of vertical drain pan, a metal Inlet Air Restrictor is factory installed and is required for horizontal applications. It may be removed for vertical applications. Airflow face velocity above 350 ft/min is not recommended for downflow or counterflow applications due to potential water blow-off.

For horizontal configurations, install splashguard (included) onto the coil outlet, and extend suction line insulation into the coil cabinet by 2" to prevent moisture from dripping onto the insulation (the rubber grommet may need to be moved). Splashguard installation is not required for vertical configurations. Bottom flange of guard should rest on pan and sides screwed to the duct flanges. See Figure 13 and Figure 14 for splashguard instructions.

In downflow and counter flow configurations, aluminum foil tape must be applied to seal the top edge of the insulation to the cabinet. This tape will prevent the possibility of the insulation delaminating and blocking airflow. In horizontal pull-through and counter flow configurations, a minimum 12" transition is required in front of the coil as shown in Figure 12. This is required to ensure proper airflow distribution and to reduce pressure drop.

Figure 12: Multiposition configurations



- A. **Standard Horizontal Application**  
 Left hand shown / Right hand similar (*not shown*)  
 LOWEST STATIC CONFIGURATION  
 See Spec Guide for additional data
- B. **Pull-Through**  
 Right hand shown / Left hand similar (*not shown*)
- C. **Blow-Through (counter flow)**  
 Left hand shown / Right hand similar (*not shown*)
- D. **Pull-Through (counter flow)**  
 Left hand shown / Right hand similar (*not shown*)

Figure 13: Splashguard without front slope

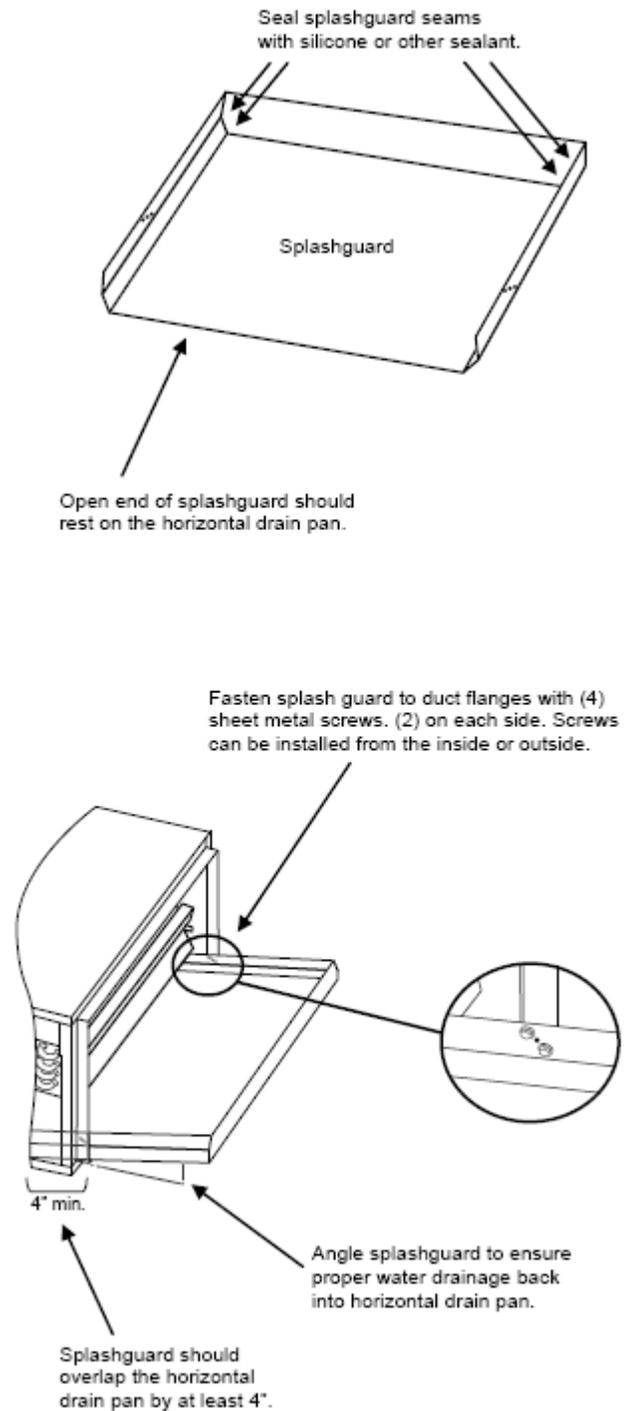
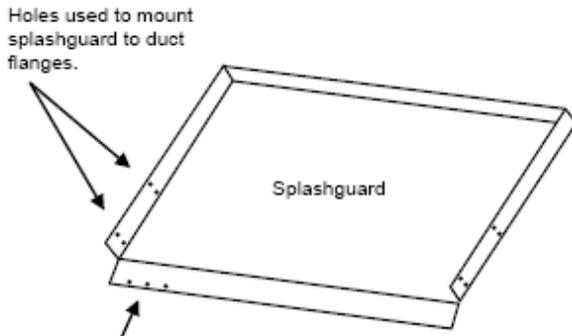
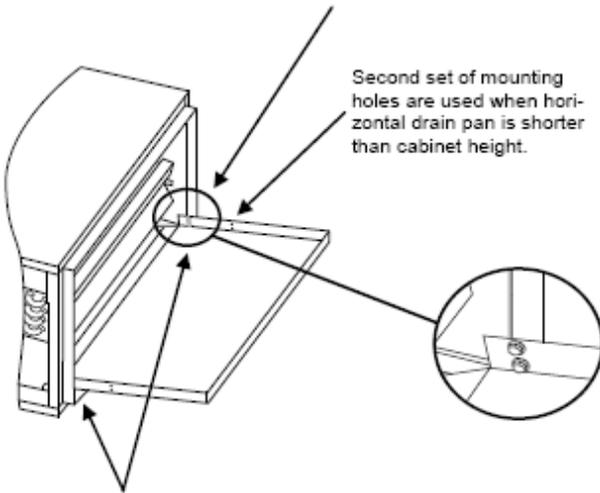


Figure 14: Splashguard with front slope



**Caution:** These holes are for manufacturing purposes only. **DO NOT** use for installation!

First set of mounting holes are used when horizontal drain pan is flush with housing.



Fasten splash guard to duct flanges with (4) sheet metal screws. (2) on each side. Screws can be installed from the inside or outside.

### 6.7.2- Multiposition (field conversion)

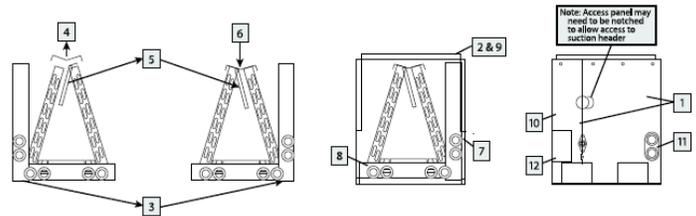
#### Field Conversion Instructions from Left-to-Right or Right-to-Left Airflow

FOR EACH STEP, REFER TO FIGURE 15:

- 1- Remove front panels.
- 2- Remove the top tie bar and pull the coil assembly from the housing.
- 3- Remove the horizontal drain pan, and re-install it to the opposite side of the coil (Note: horizontal drain pan must have drain plugs tightly closed in the rear of the unit).
- 4- Remove the top plate.
- 5- Remove the water diverter, and re-install it to the opposite slab (Note: If water diverter is attached by screws, remove screws, and bend tab straight or cut tab off).
- 6- Replace the top plate, and apply sealant to seal any air gaps.

- 7- Before re-inserting the coil assembly, cut the front flange on the housing and fold it back to allow access to the horizontal drain connections (Note: Copy the factory cut-out on the opposite side of the housing).
- 8- Slide the coil assembly back into the housing (Note: If unit is equipped with a sheet metal spacer, it must be moved to the opposite side of the housing).
- 9- Re-install the piping panel to the housing.
- 10- Cut a hole in the access panel to allow access to the horizontal drain connections, and re-install the access panel to the housing (Note: Access panel may need to be notched to allow access to suction header).
- 11- Seal unused condensate drain connection cut-out holes in the front panel to prevent air leakage.

Figure 15: Multiposition field conversion



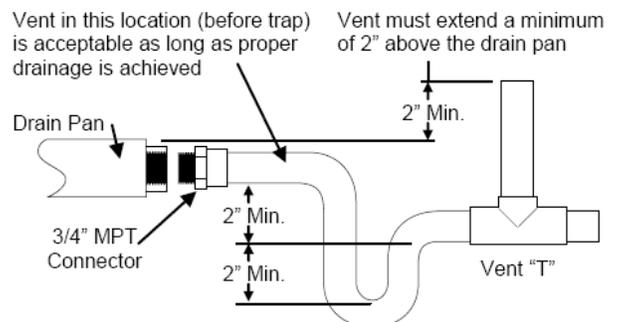
### 6.7.3- Condensate drain

Coils are equipped with multiple drain connections. Determine the drain connections to be used and note the difference between the primary (green) and secondary (red) openings. Drain plugs are provided for all openings; remove and discard the appropriate plugs with 1/2" drive ratchet and verify that remaining plugs are tight (2.5 ft-lbs). Attach drain line to pan with 3/4" male pipe thread PVC fittings. Hand tight is adequate – do not over tighten & do not reduce drain line size!

Route drain line(s) line so they will not be exposed to freezing temperatures and do not interfere with accessibility to the coil, air handling system or filter. The drain should be pitched downward 1" per 10' with a 2" trap as close to the coil as possible. If line makes a second trap, or has an extended run before termination, a vent tee should be installed after the trap closest to the pan. See Figure 16.

If the coil is located in or above a living space where damage may occur from condensate overflow, a separate 3/4" drain must be provided from the secondary drain connection. Run this drain to a place in compliance with local installation codes where it will be noticed when unit is operational. Condensate flowing from the secondary drain indicates a plugged primary drain. Prime the trap with water. Test line for leaks. Test water flow with unit in operation. An auxiliary drain pan should also be installed under the unit as specified by most local building codes.

Figure 16: Condensate drain



## 6.8- INSTALLATION OF INTERFACE CARD

Installation of the interface card is made easy on the Dettson's Chinook and Supreme furnaces. Installation port has been designed on these furnaces. See Figure 17 and Figure 18 for proper location and attachment.

See electrical diagrams, Figure 9 for proper connections with thermostat, furnace and outdoor unit.

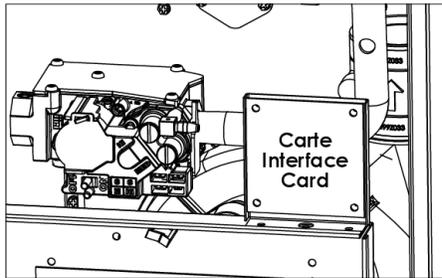
For all other brand of furnaces, see Figure 20 for proper connections.  
**Note that the performance of the outdoor unit will be affected and will not modulate.**

### QUICK SETUP

Erreur ! Source du renvoi introuvable.

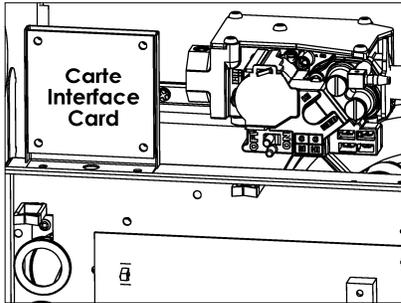
Figure 17: Chinook gas furnace

Chinook 15k-30k-45k-105k-120k



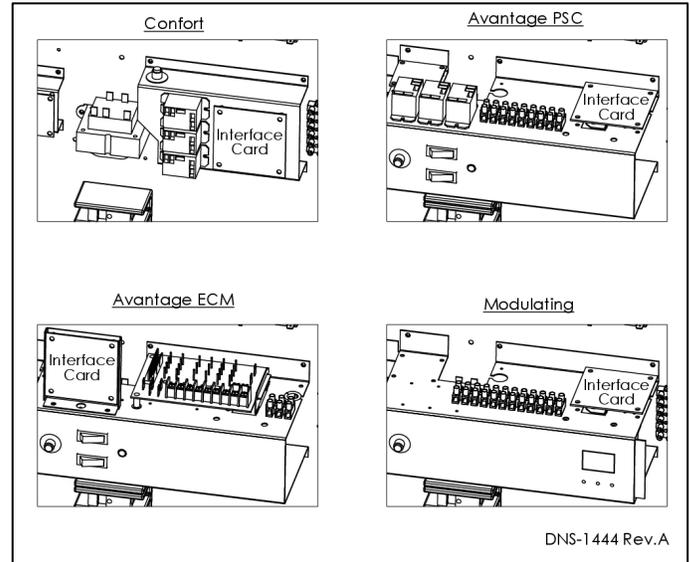
DNS-1445 Rev.A

Chinook 60k-75k



DNS1445 Rev. B

Figure 18: Supreme electric furnace



DNS-1444 Rev.A

### 6.8.1- Evaporator temperature sensor installation

- 1- Attach the provided temperature sensor to the evaporator coil as shown
- 2- Get the wire through the refrigerant line opening
- 3- Cut the wire and skin the conductors. Add wire length if necessary
- 4- Connect the two conductors to T1 and TC on the interface card.  
The polarity is not important

Figure 19: Evaporator Temperature Sensor--

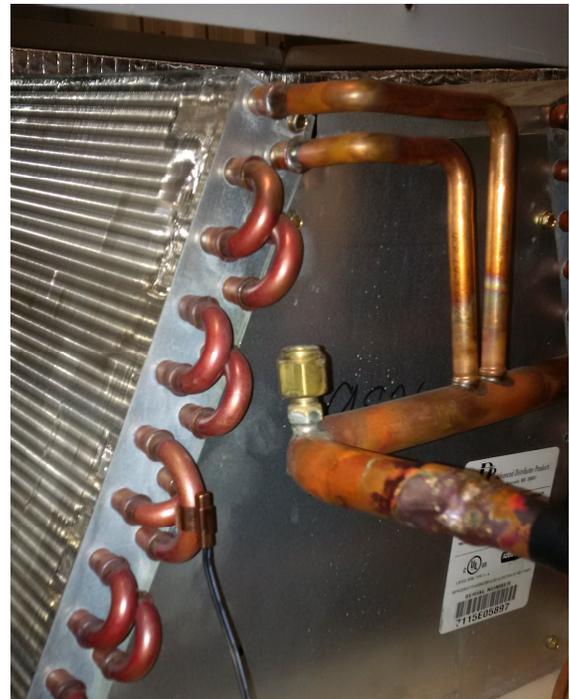
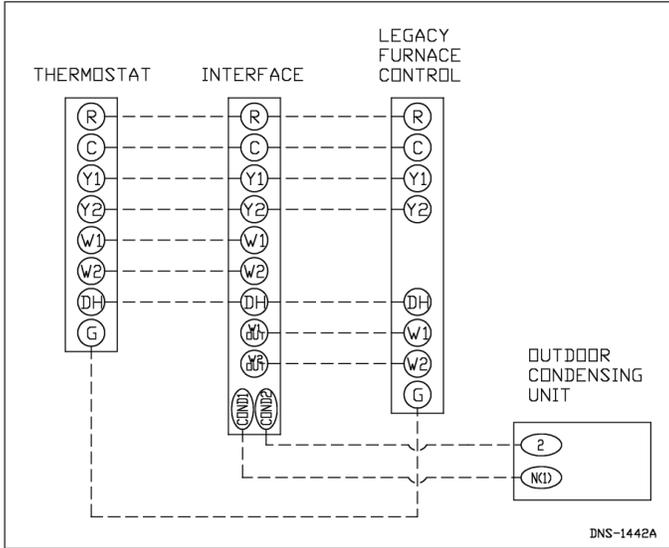


Figure 20: Legacy furnace or air handler



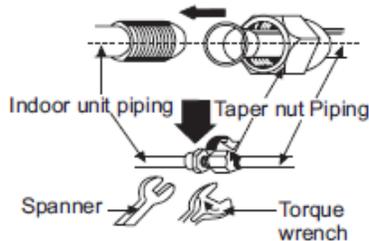
### 6.9- INSTALLATION OF CONNECTION PIPE

Align the center of the pipe flare with the relevant valve. Screw in the flare nut by hand and then tighten the nut with spanner and torque wrench referring to the following;

Table 3: Tubing torque tightening

Tube diameter	Tightening torque, approximate(N·m)
Φ6.35(1/4")	14 ~ 18N·m(140-180kgf.cm)
Φ9.52(3/8")	34 ~ 42N·m(340-420kgf.cm)
Φ12.7(1/2")	49 ~ 61N·m(490-610kgf.cm)
Φ15.88(5/8")	68 ~ 82N·m(680-820kgf.cm)

Figure 21: Tubing tightening



### 6.10- INSTALLATION OF THE OUTDOOR UNIT

#### 6.10.1-Electrical wiring

1. Remove the handle on the right side plate of outdoor unit;
2. Remove cord anchor. Connect and fasten power connection cord to the terminal board;
3. Secure the power connection cord with cord anchor;
4. Make sure the wires have been fastened properly.

#### NOTE:

Incorrect wiring may cause malfunction.

After the wires have been fastened, ensure there is free space between the connection and fastening places on the main wire.

#### 6.10.2-Air purging and leakage test

1. Connect charging hose of manifold valve to charge end of low pressure valve (both high/low) must be tightly shut);
2. Connect joint of charging hose to vacuum pump;
3. Fully open the handle of Lo manifold valve;
4. Open the vacuum pump for vacuumization. At the beginning, slightly loosen joint nut of low pressure valve to check if there is air entering. Then, tighten the nut;
5. Keep evacuating for more than 15 min. and make sure the reading of multi-meter is  $-1.0 \times 10^5$  pa(-76 cmHg);
6. Fully open high/low pressure valves;
7. Remove charging hose from charging end of low pressure valve;
8. Tighten bonnet of low pressure valve. ( as shown below)

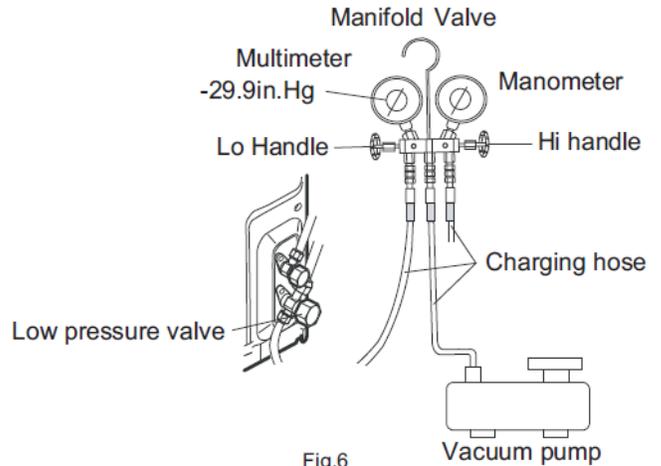
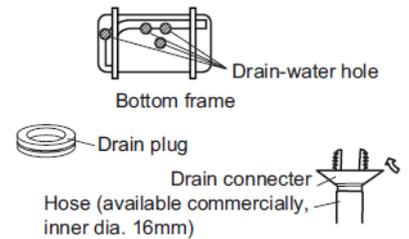


Fig.6



#### 6.10.3-Outdoor unit condensate drainage

During heating operation, the condensate and defrosting water should be drained through the drain hose. Install the outdoor drain connector in a  $\phi$ .98in hole on the base plate, and attach the drain hose to the connector so that the waste water formed in the outdoor unit can be drained. The hole  $\phi$  0.98 must be plugged. Whether to plug other holes or not will be determined by the technician.

#### 6.10.4-Check after installation and test operation

Items to be checked	Possible malfunction
Has the unit been fixed firmly?	The unit may drop, shake or emit noise.
Have you done the refrigerant leakage test?	It may cause insufficient cooling (heating).
Is thermal insulation sufficient?	It may cause condensation.
Is water drainage satisfactory?	It may cause water leakage
Is the voltage in accordance with the rated voltage marked on the nameplate?	It may cause electric malfunction or damage the unit.
Is the electric wiring or piping connection installed correctly and securely?	It may cause electric malfunction or damage parts.
Has the unit been securely earthed?	It may cause electrical leakage.
Is the inlet or outlet blocked?	It may cause insufficient cooling (heating).
Is the length of connection pipes and refrigerant capacity recorded?	The refrigerant capacity is not accurate.

#### 6.10.5-Operation test

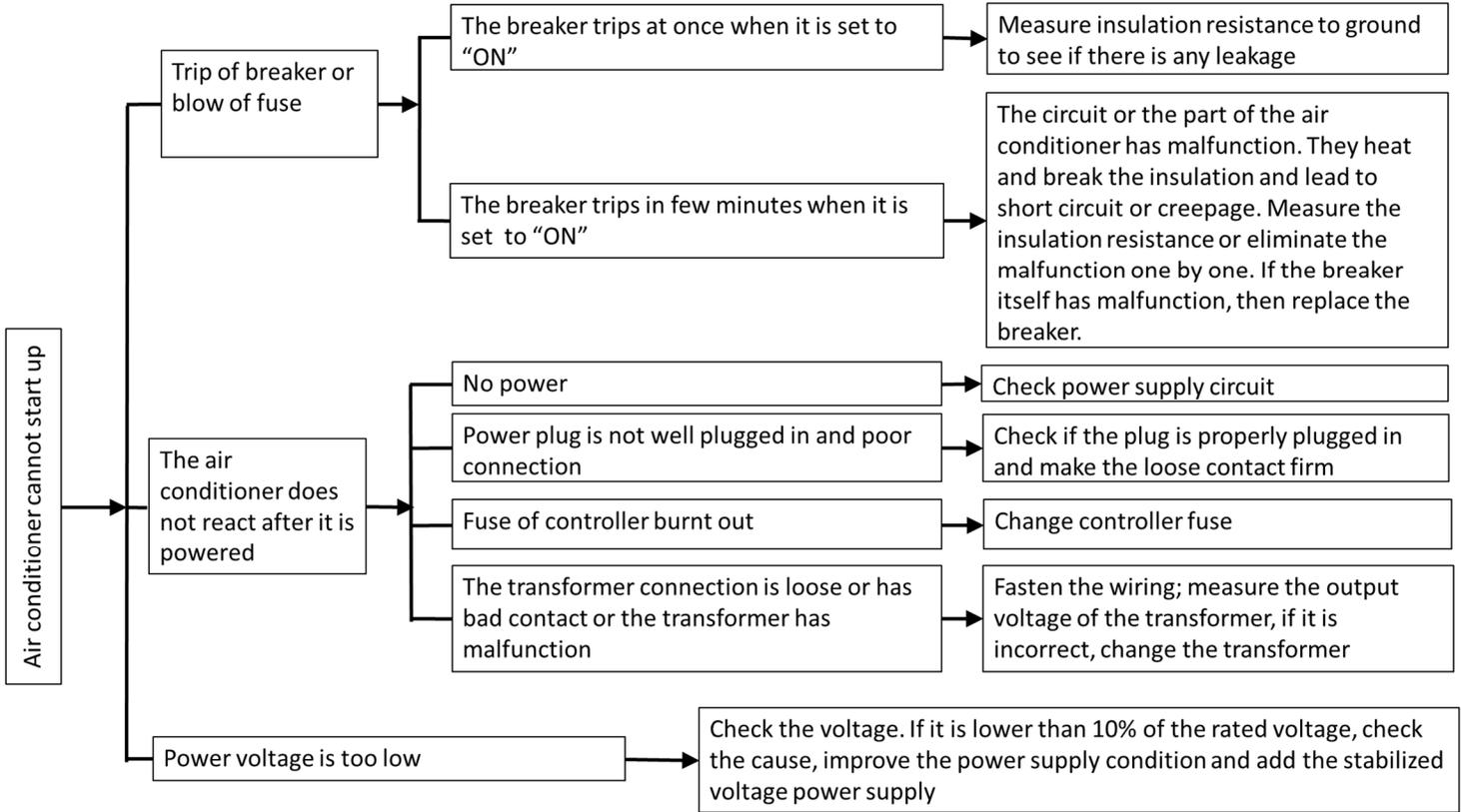
##### Before operation test:

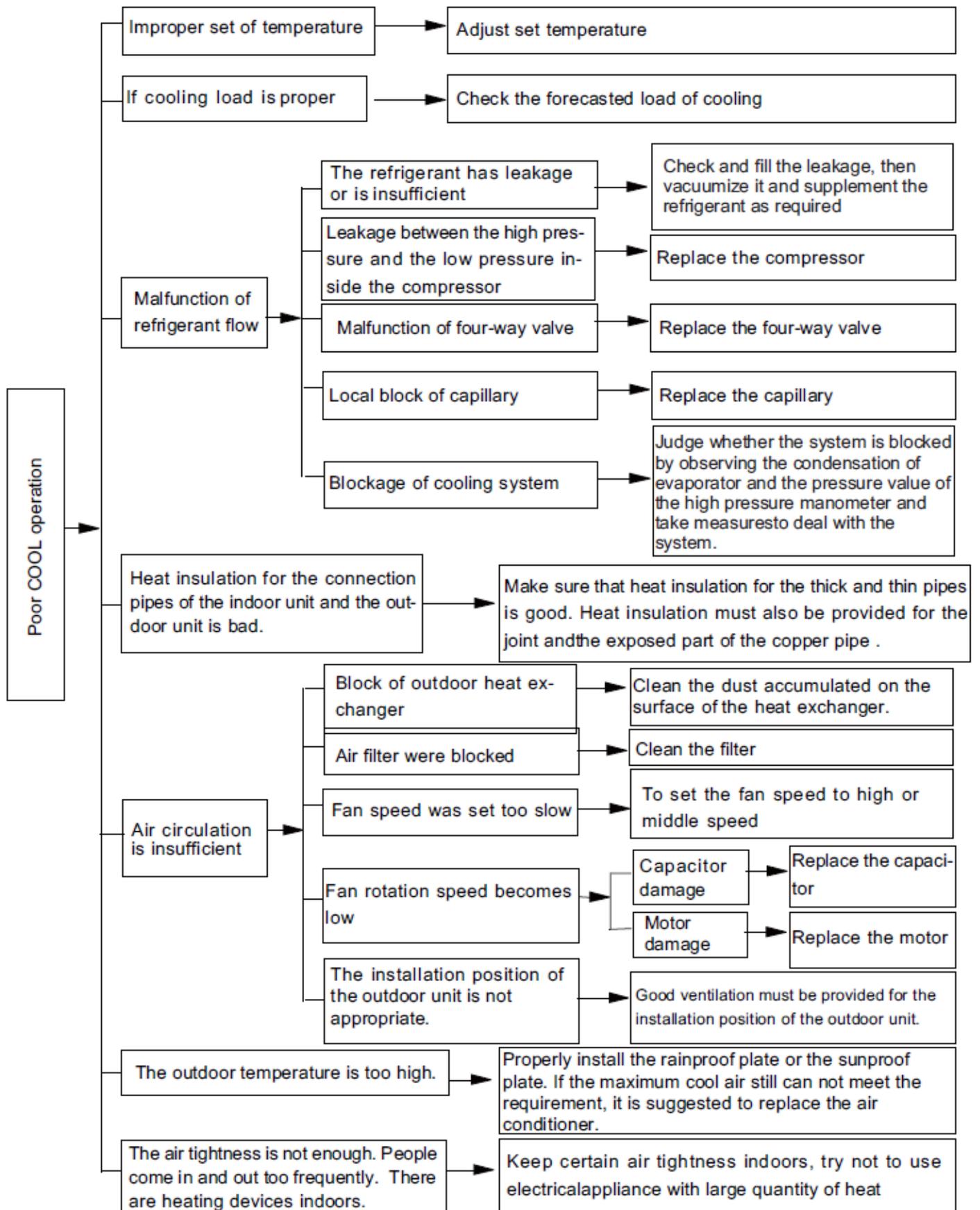
1. Do not switch on power before installation is completely finished;
2. Electric wiring must be connected correctly and securely;
3. Cut-off valves of the connection pipes should be opened;
4. All the impurities such as scraps and thrums must be cleared from the unit.

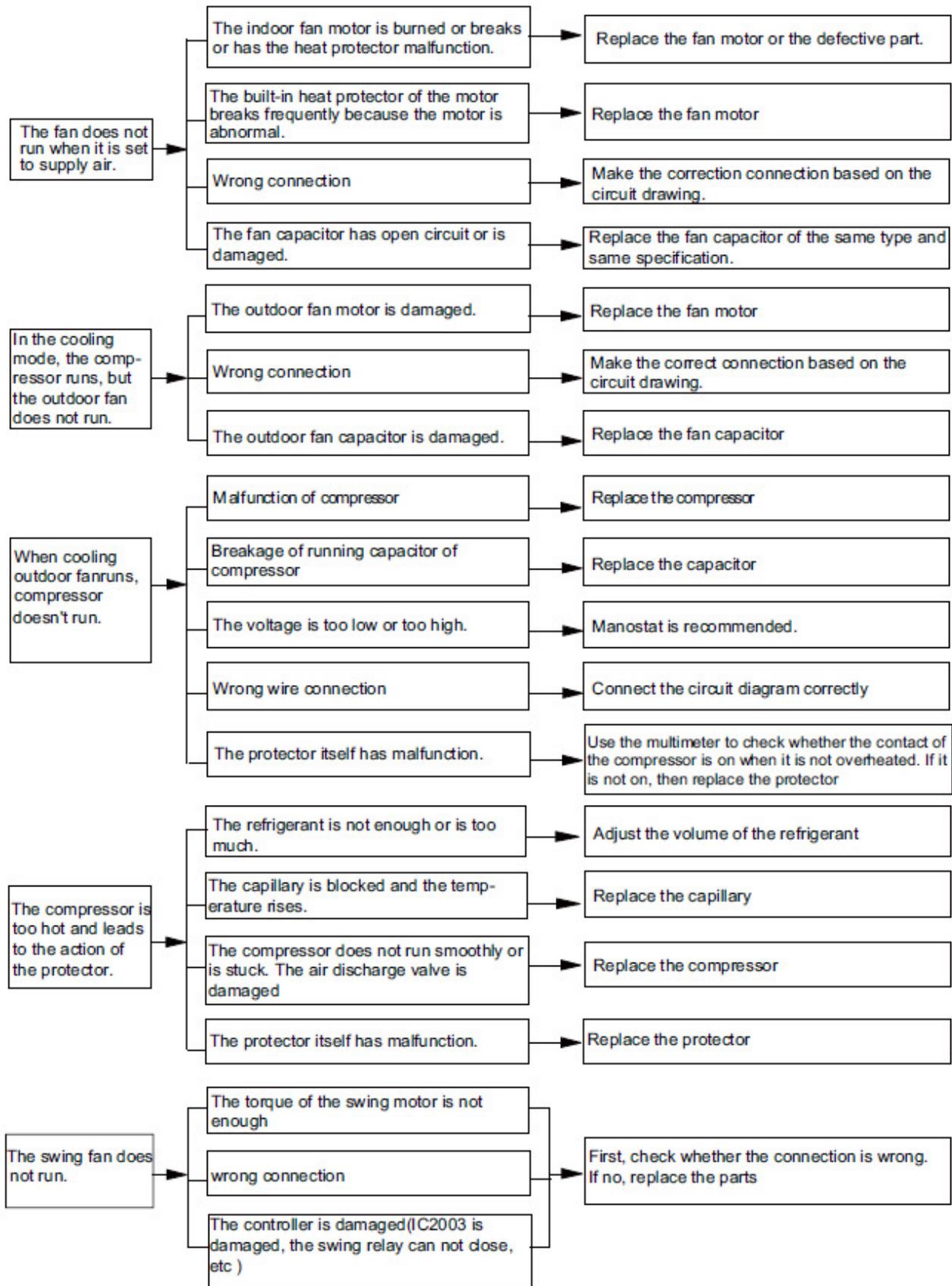
##### Operation test method:

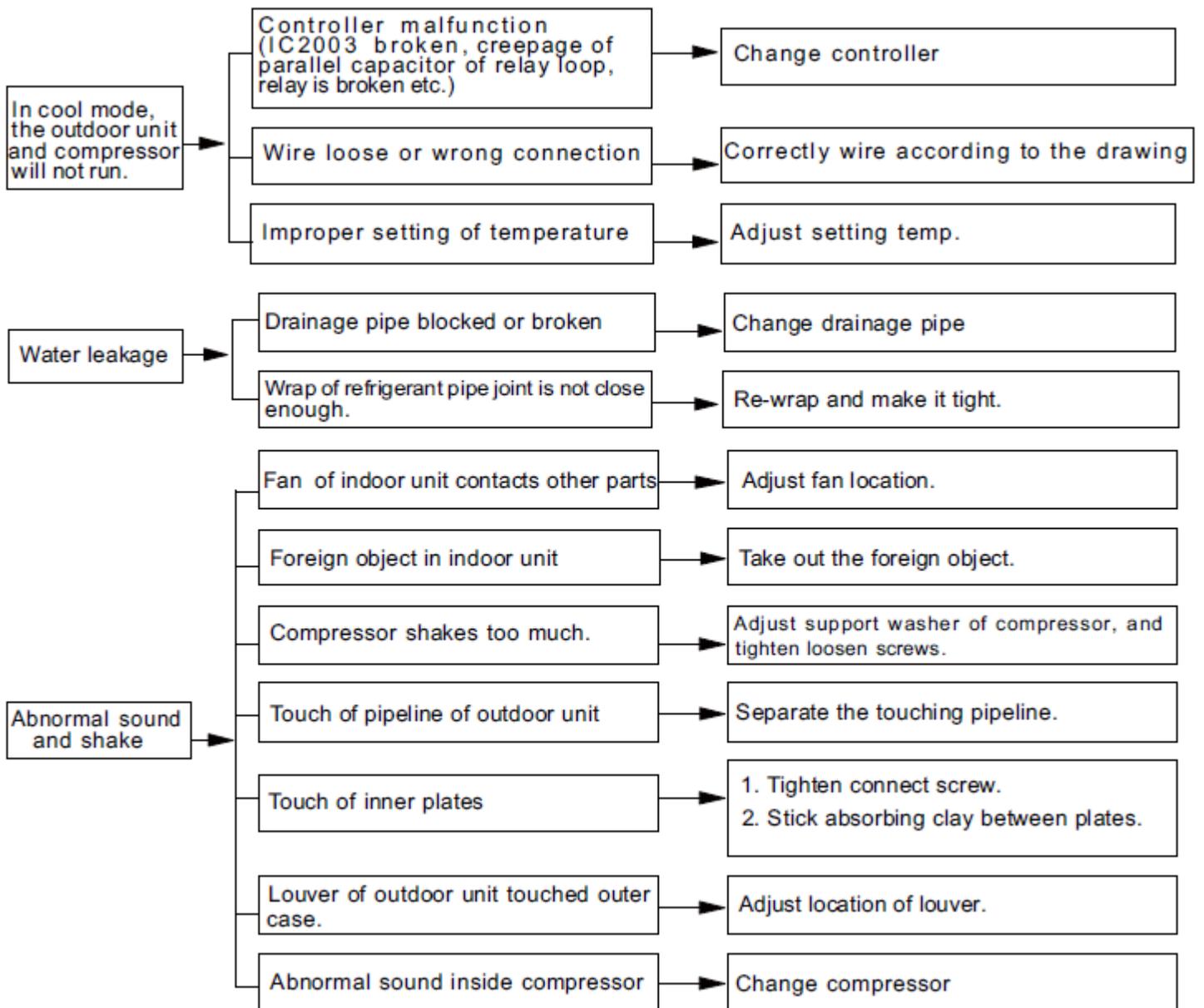
Switch on power and call for heating or cooling on thermostat to check whether the operation is normal or not.

# 7-TROUBLESHOOTING







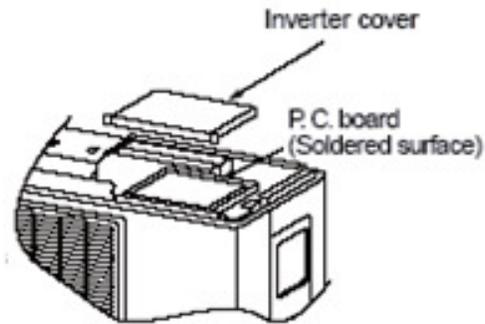


## 7.1-PRECAUTIONS BEFORE PERFORMING INSPECTION OR REPAIR

- Be cautious during installation and maintenance. Follow the codes and regulations to avoid electric shock and casualty or even death. Static maintenance is the maintenance during de-energization of the heat pump.
- For static maintenance, make sure that the unit is de-energized.
- Dynamic maintenance is the maintenance during energization of the unit.
- Before dynamic maintenance, check the electricity and ensure that there is ground wire on the site.
- Take sufficient care to avoid directly touching any of the circuit parts without first turning OFF the power.

**NOTE:** A large capacity electrolytic capacitor is used in the outdoor unit controller (inverter). Therefore, if the power supply is turned OFF, charge (charging voltage DC280V to 380V) remains and discharging takes a lot of time. After turning off the power, if touching the charging section before discharging, an electrical shock may be caused. Discharge the electrolytic capacitor completely.

### Remove the inverter cover



## 7.2-VERIFICATION

- (1) Verify the power supply

Confirm that the circuit breaker is in the ON position

- (2) Confirmation of power voltage

Confirm that power voltage is AC 208-230  $\pm$  10 %. If power voltage is not in this range, the unit may not operate normally.

## 7.3-MALFUNCTION & STATUS CODES OF THE INTERFACE CARD FLASHING LEDES

Locate the various colored LEDs on the interface card on the figure below:

Figure 22: Interface card

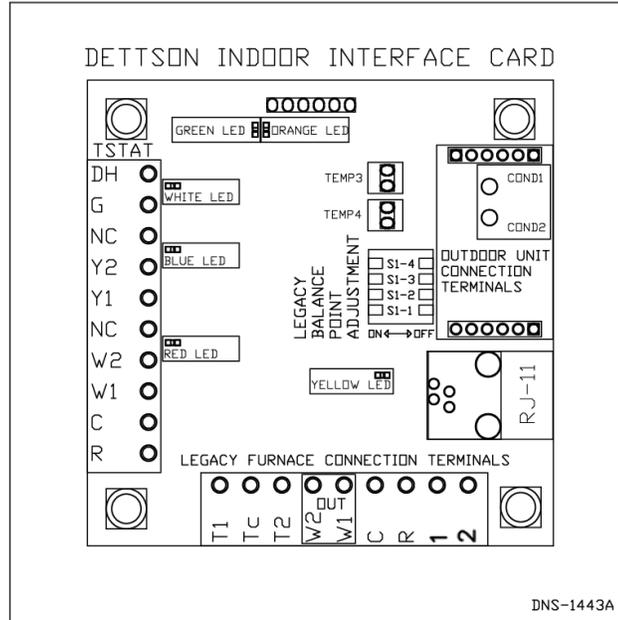


Table 4: Malfunction and status display of interface card

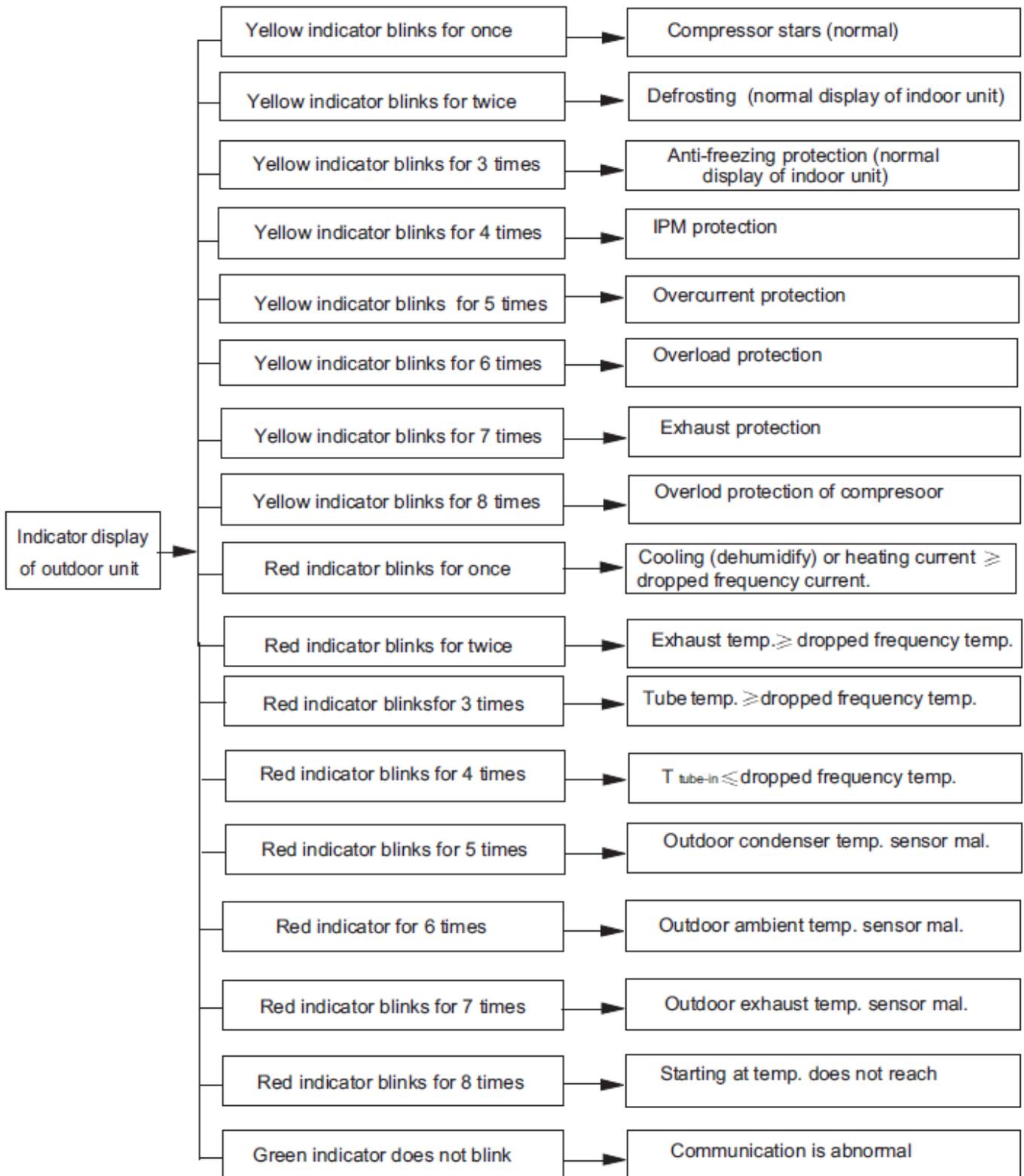
LED COLOR	Blinking	ON	OFF	Cause (If abnormal)	Solution
Green	The interface card is powered up and is trying to communicate with the outdoor unit (Normal)	The interface has stopped operation	The interface has stopped operation	<ul style="list-style-type: none"> <li>- The supply voltage is too low</li> <li>- An high voltage or EMI event occurred</li> </ul>	<ul style="list-style-type: none"> <li>- Make sure 24VAC are reaching the R-C connections</li> <li>- Verify the connections</li> <li>- Cycle the power</li> </ul>
Orange	The interface is communicating with the outdoor unit (Normal)	The interface does not receive communication signals from the outdoor unit	The interface does not receive communication signals from the outdoor unit	<ul style="list-style-type: none"> <li>- The units are not connected properly</li> </ul>	<ul style="list-style-type: none"> <li>- Make sure the connections are made as per Figure 9</li> <li>- Cycle the power of both units</li> </ul>
Yellow	When communicating properly with the communicating furnace, this LED should be blinking by short bursts (Normal with communicating installations)	If the LED is ON most of the time and the it turns OFF for very short periods, the "1" and "2" wires are most likely reversed	The interface does not communicate with the modulating furnace (Normal when legacy wiring is used)	<ul style="list-style-type: none"> <li>- If the installation is communicating and the LED is ON most of the time and the it turns OFF for very short periods, the "1" and "2" wires are most likely reversed</li> </ul>	<ul style="list-style-type: none"> <li>- Turn the power of both the furnace and the outdoor unit and invert the "1" and "2" wires</li> <li>- Turn both units "ON"</li> </ul>
Blue	NA	Legacy thermostat is calling for cooling	Legacy thermostat is not calling for cooling	<ul style="list-style-type: none"> <li>- If the LED has an abnormal behavior</li> </ul>	<ul style="list-style-type: none"> <li>- Check the thermostat wiring</li> </ul>
Red	NA	Legacy thermostat is calling for heating	Legacy thermostat is not calling for heating	<ul style="list-style-type: none"> <li>- If the LED has an abnormal behavior</li> </ul>	<ul style="list-style-type: none"> <li>- Check the thermostat wiring</li> </ul>
White	NA	Legacy thermostat is calling for cooling. No communication with the furnace.	Legacy thermostat is not calling for cooling (Normal with installations that communicate)	<ul style="list-style-type: none"> <li>- If the LED has an abnormal behavior</li> </ul>	<ul style="list-style-type: none"> <li>- Check the thermostat wiring</li> </ul>

## 7.4- MALFUNCTION & STATUS CODES OF THE OUTDOOR UNIT FLASHING LEDS

Table 5: Malfunction and status display of outdoor unit 30/36K

	Malfunction name	Error codes of outdoor unit flashing LEDs			Reasons
		Status of Led Lamp			
		Yellow LED lamp	Red LED lamp	Green LED lamp	
<b>Outdoor unit</b>	<b>Compressor running (normal)</b>	Blinks 1 times			Normal
	<b>Automatic defrosting (normal)</b>	Blinks 2 times			Normal
	<b>Anti-freezing protection</b>	Blinks 3 times			Refrigerant leakage, indoor unit airflow blocked up, filter duty.
	<b>Stop for IPM module protection (over current)</b>	Blinks 4 times			IPM module over current, outdoor unit air flow blocked up.
	<b>Stop for over current protection</b>	Blinks 5 times			Outdoor unit over current, ambient temperature is abnormal.
	<b>Overload protection</b>	Blinks 6 times			Ambient temperature is abnormal, heat exchanger blocked up.
	<b>Stop for exhaust protection</b>	Blinks 7 times			Less refrigerant, capillary blocked, ambient temperature abnormal.
	<b>Stop for compressor overload protection</b>	Blinks 8 times			Compressor shell over heat, less refrigerant, capillary blocked up.
	<b>Stop for over power protection</b>	Blinks 9 times			Ambient temperature is abnormal.
	<b>Stop for IPM module protection (over heat)</b>	Blinks 10 times			IPM module over heat, outdoor unit air flow blocked up.
	<b>Stop for EEPROM read-write malfunction</b>	Blinks 11 times			The EEPROM on the outdoor PCB mainboard can't read or write.
	<b>Stop for low voltage protection</b>	Blinks 12 times			DC voltage is too low.
	<b>Stop for high voltage protection</b>	Blinks 13 times			DC voltage is too high.
	<b>Stop for PFC circuit over current protection</b>	Blinks 14 times			The PFC circuit over current.
	<b>Stop for ID and OD doesn't match</b>	Blinks 16 times			The indoor unit and outdoor unit doesn't match.
	<b>Compressor frequency limit by over current protection</b>		Blinks 1 time		Outdoor unit over current, ambient temperature is abnormal.
	<b>Compressor frequency limit by exhaust protection</b>		Blinks 2 times		Less refrigerant, capillary blocked up, ambient temperature is abnormal.
	<b>Compressor frequency limit by overload protection</b>		Blinks 3 times		Ambient temperature is abnormal, heat exchanger blocked-up.
	<b>Compressor frequency limit by anti-freezing protection</b>		Blinks 4 times		Refrigerant leakage, indoor unit air flow blocked up, filter dirty.
	<b>Outdoor pipe temperature sensor malfunction</b>		Blinks 5 times		Circuit-open or circuit-short for outdoor condenser pipe temp. sensor.
	<b>Outdoor ambient temperature sensor malfunction</b>		Blinks 6 times		Circuit-open or circuit-short for outdoor environment temp. sensor.
	<b>Outdoor exhaust temperature sensor malfunction</b>		Blinks 7 times		Circuit-open or circuit-short for outdoor condenser pipe temp. sensor.
	<b>The indoor temperature reach to operate compressor (normal)</b>		Blinks 8 times		
	<b>Compressor frequency limit by IPM protection</b>		Blinks 11 times		IPM module over heat, outdoor unit air flow blocked up.
	<b>Compressor frequency limit by over power protection</b>		Blinks 13 times		Ambient temperature is abnormal.
	<b>Stop for communication malfunction</b>			Off	Communication line failure, main PCB failure, interfere source, connect line is wrong.
	<b>Communication normal</b>			Blink once	Communication normal
	<b>No feedback of outdoor fan motor</b>		Blinks 14 times		
<b>High pressure protection</b>		Blinks 16 times			
Remark: the lamps blink 0.5 sec on, 0.5 off. Between 2 error cycles it will be 2sec off interval.					

If malfunction occurs, corresponding code will display and the unit will resume normal until protection or malfunction disappears.



## 7.5- ANALYSIS OF SOME OF THE MALFUNCTION DISPLAY:

### 1. Compressor discharge protection:

Possible reasons: shortage of refrigerant; blockage of air filter; poor ventilation or air flow short pass for condenser the system has non condensing gas (such as air, water, etc.); blockage of capillary assy. (including filter); leakage inside four-way valve causes incorrect operation; malfunction of compressor, malfunction of protection relay; malfunction of discharge sensor; outdoor temperature to high.

Processing method: refer to the malfunction analysis in the above section

### 2. Low voltage overcurrent protection:

Possible reason: Sudden drop of supply voltage.

### 3. Communication malfunction:

Processing method: check if communication signal cable is connected reliably

### 4. Sensor open or short circuit:

Processing method: Check whether the sensor is normal, connected with the corresponding position on the controller and if damage of lead wire is found.

### 5. Compressor over load protection:

Possible reasons: insufficient or too much refrigerant: blockage of capillary and decrease of suction temp.: improper running of compressor, burning in or stuck of bearing, damage of discharge valve; malfunction of protector.

Processing method: adjust refrigerant amount; replace the capillary; replace the compressor; use universal meter to check if the contactor of compressor is fine when it is not over heated, if not replace the protector.

### 6. System malfunction:

Overload protection. When tube temperature (Check the temperature of outdoor heat exchanger when cooling and check the temperature if indoor heat exchanger when heating) is too high when cooling; insufficient outdoor air circulation; refrigerant flow malfunction.

Please refer to the malfunction analysis in the previous section for handling method.

### 7. IPM module protection:

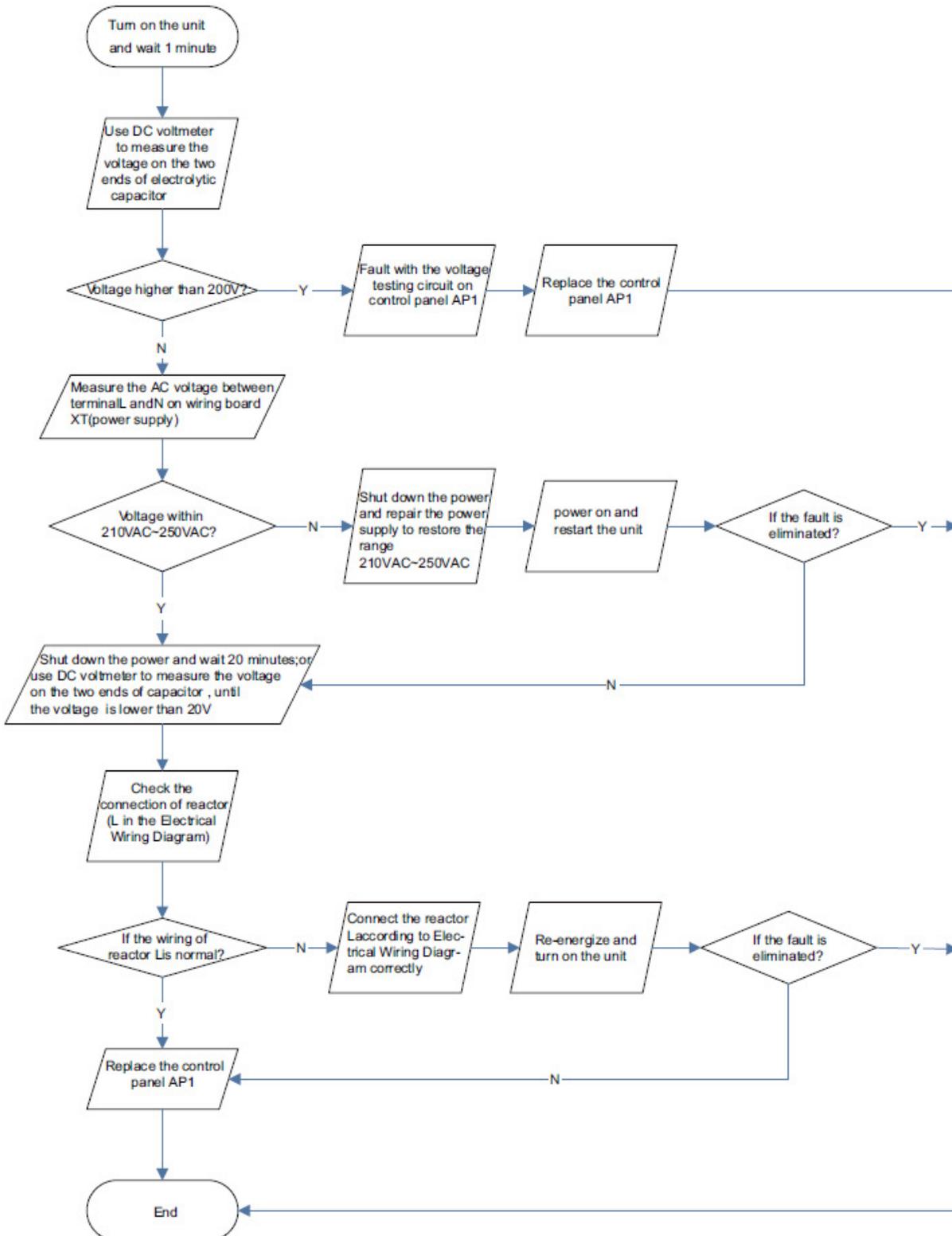
Processing method: once the module malfunction happens, if it persists for a long time and cannot be self-canceled, cut off the power and turn off the unit, and then re-energize the unit again after 10 min. After repeating the procedure for seven times, if the malfunction still exists, replace the module.

## 7.6- TROUBLESHOOTING FLOW CHART

(1) Capacitor charge fault (Fault with outdoor unit) (AP1 below refers to the outdoor control panel)

### USUAL SYMPTOMS

- ⇒ Use AC voltmeter to check if the voltage between terminal L and N on the wiring board is within 210VAC~240VAC.
- ⇒ If the inductor (L) well connected? Is the connection wire loosened or pull-out? Is the inductor (L) damaged?

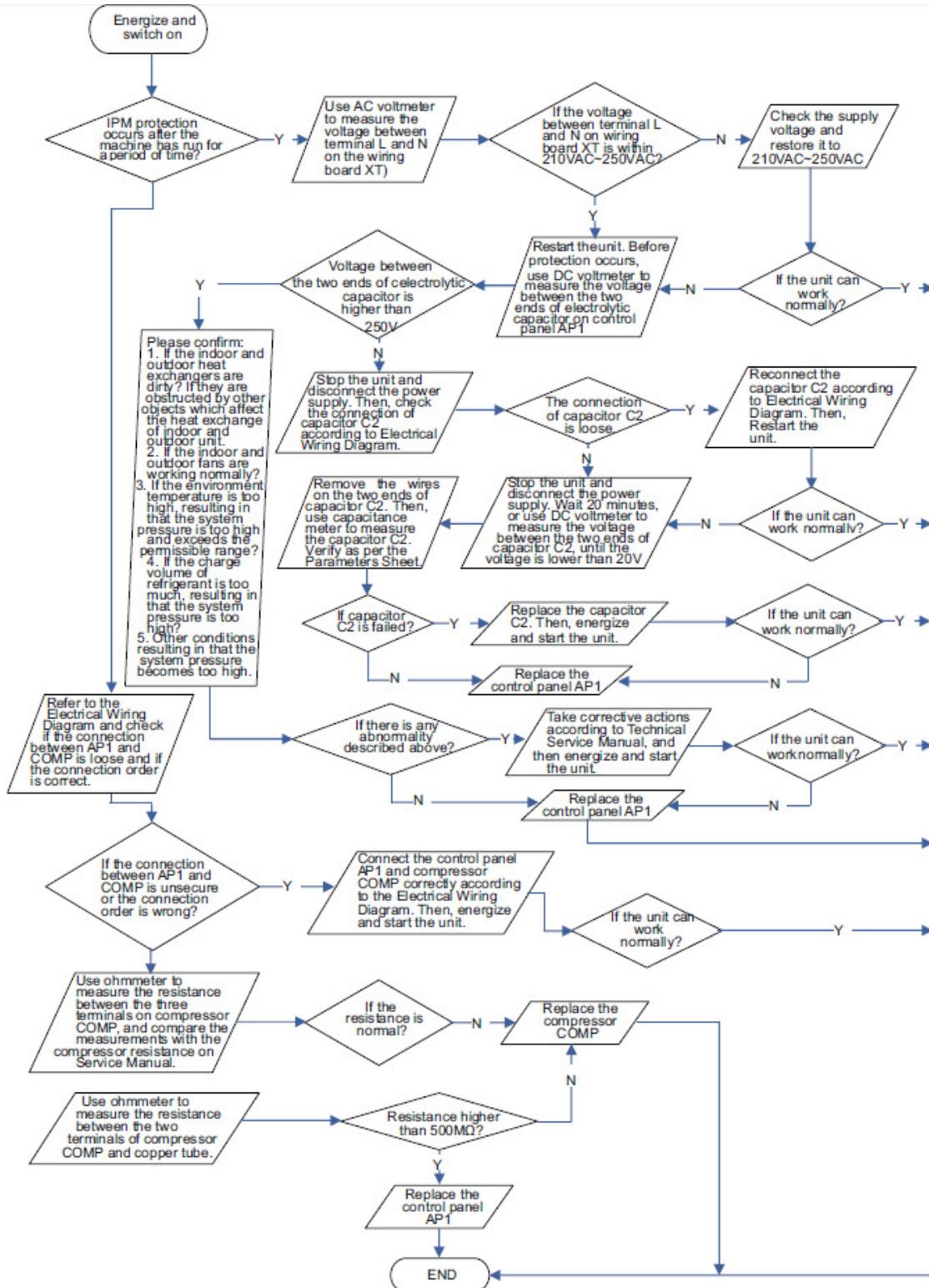


### 7.6.1- IPM protection desynchronizing malfunction; compressor overcurrent

#### USUAL SYMPTOMS

- Are the control board AP1 and the compressor COMP well connected? Are they loosened? Is the connection sequence correct?
- Is the voltage input in the normal range (test the voltage between L, N of wiring board XT by DC voltage meter?)
- Is the coil resistance of compressor normal? Is the compressor coil insulating to copper pipe correctly?
- Is the work load of unit too high? Is the heat of the unit well dissipated?
- Is the refrigerant charged appropriately?

(AP1 BELOW IS THE CONTROL BOARD OF OUTDOOR UNIT)

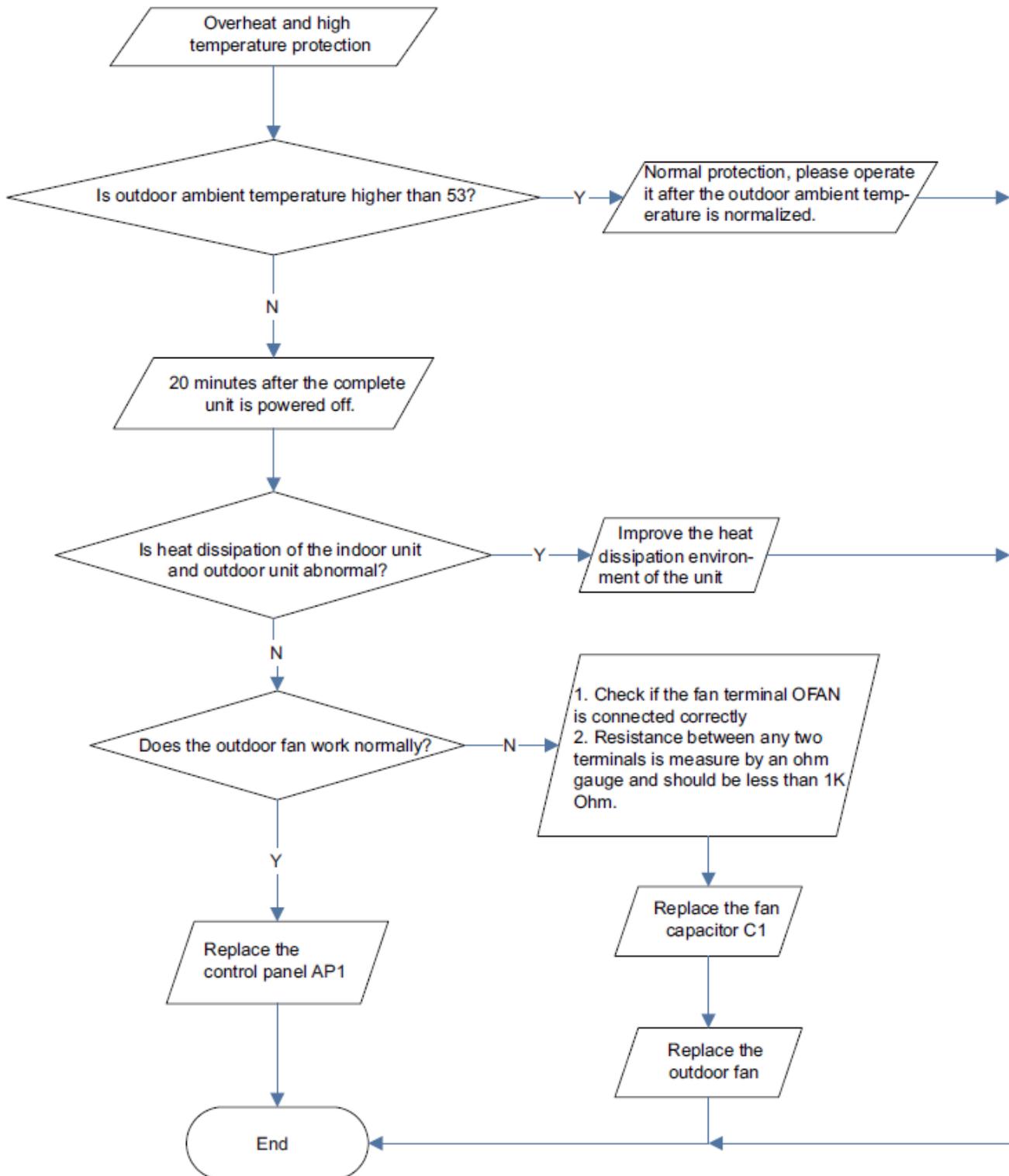


### 7.6.2- Anti-high temperature, overload protection

#### USUAL SYMPTOMS

- Is the outdoor ambient temperature in a normal range?
- Is the indoor and outdoor fans are running normal?
- How is the radiating environment of the indoor and outdoor unit?

(AP1 BELOW IS THE CONTROL BOARD OF OUTDOOR UNIT)

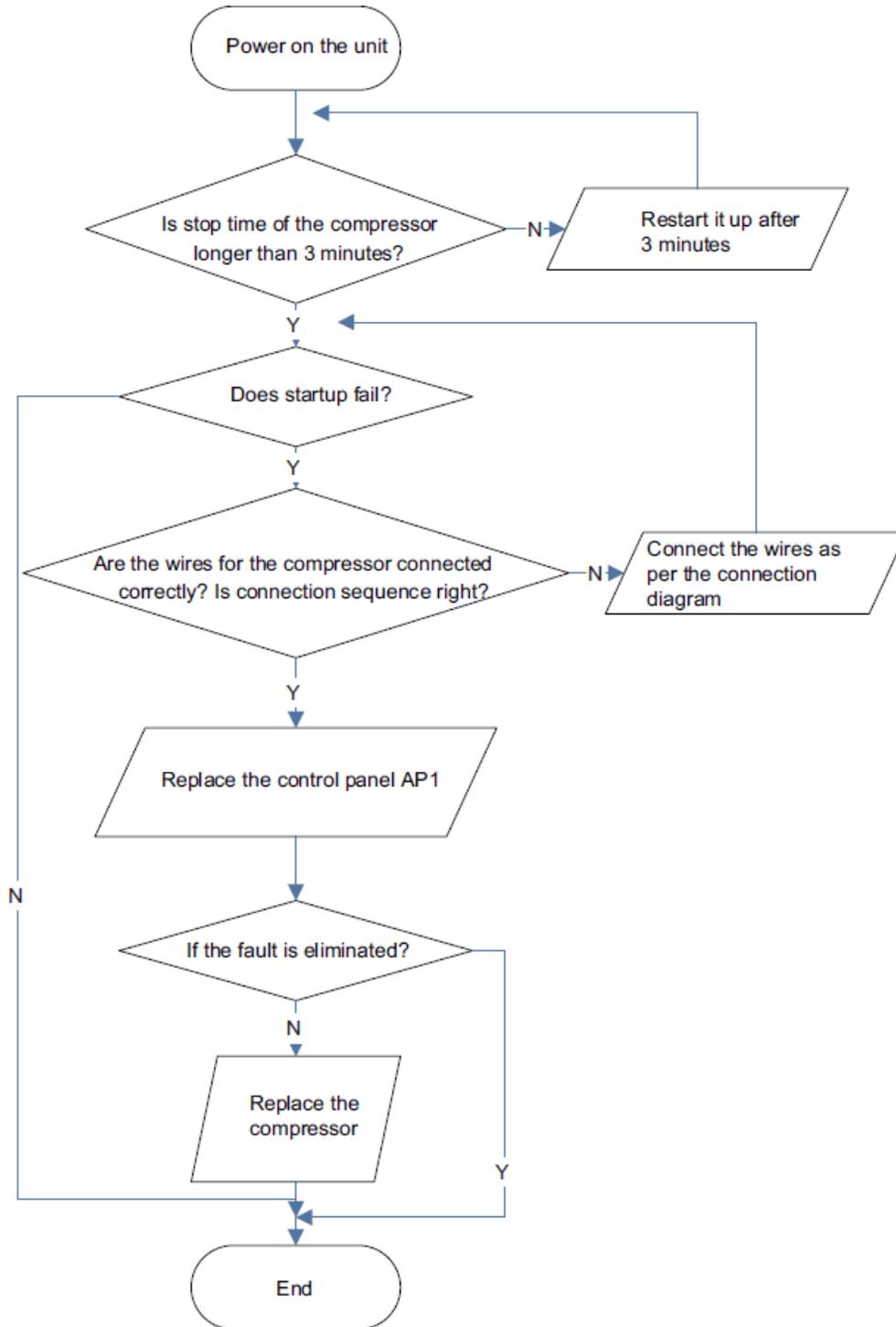


### 7.6.3- Failure start up malfunction

#### USUAL SYMPTOMS

- Is the compressor wiring correct?
- Is the stop time of the compressor enough?
- Is the compressor damaged?
- Is the refrigerant charged too much?

(AP1 BELOW IS THE CONTROL BOARD OF OUTDOOR UNIT)

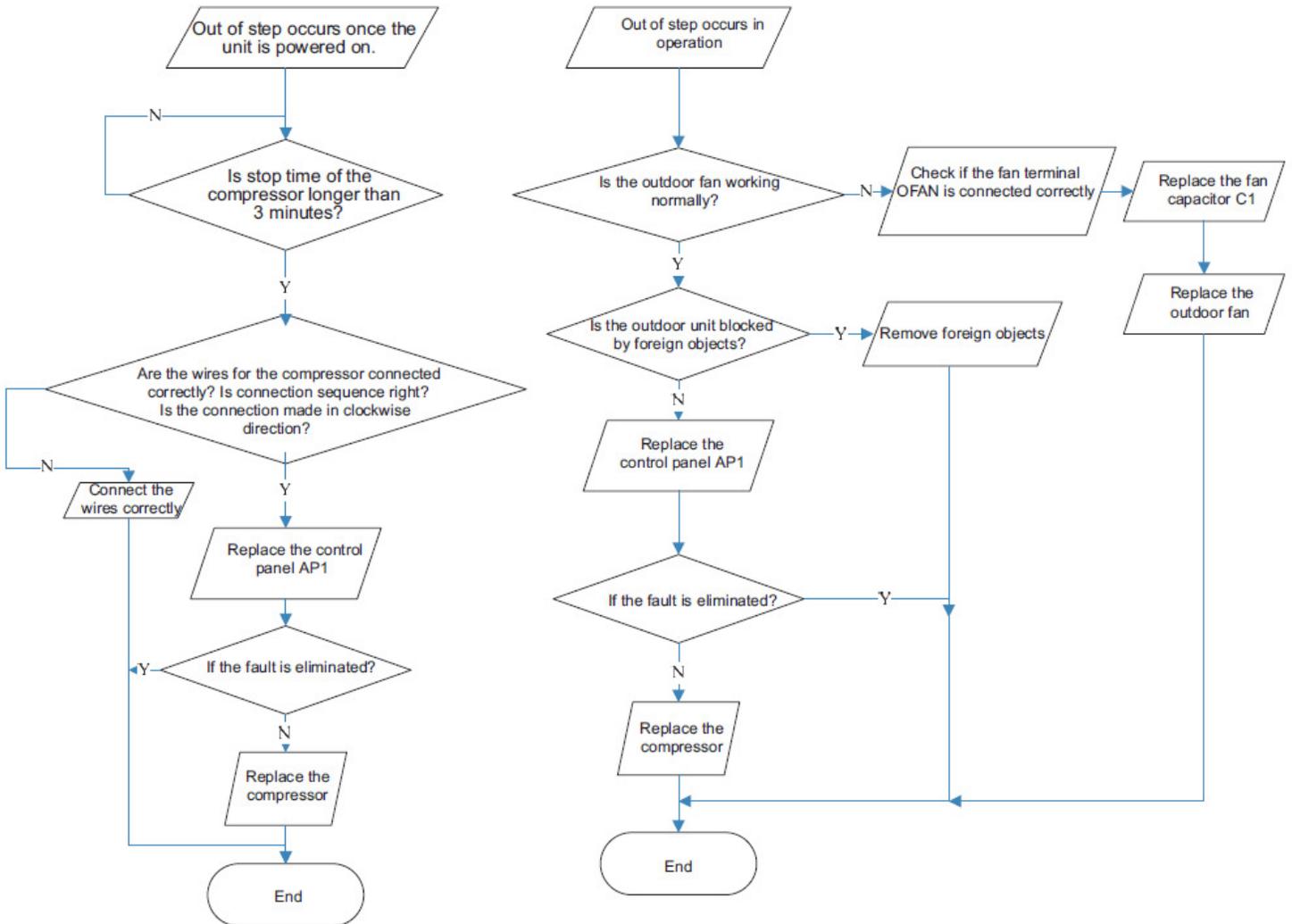


### 7.6.4- Out of step diagnosis for the compressor

#### USUAL SYMPTOMS

- Is the pressure to high?
- Is the input voltage to low?

(AP1 BELOW IS THE CONTROL BOARD OF OUTDOOR UNIT)

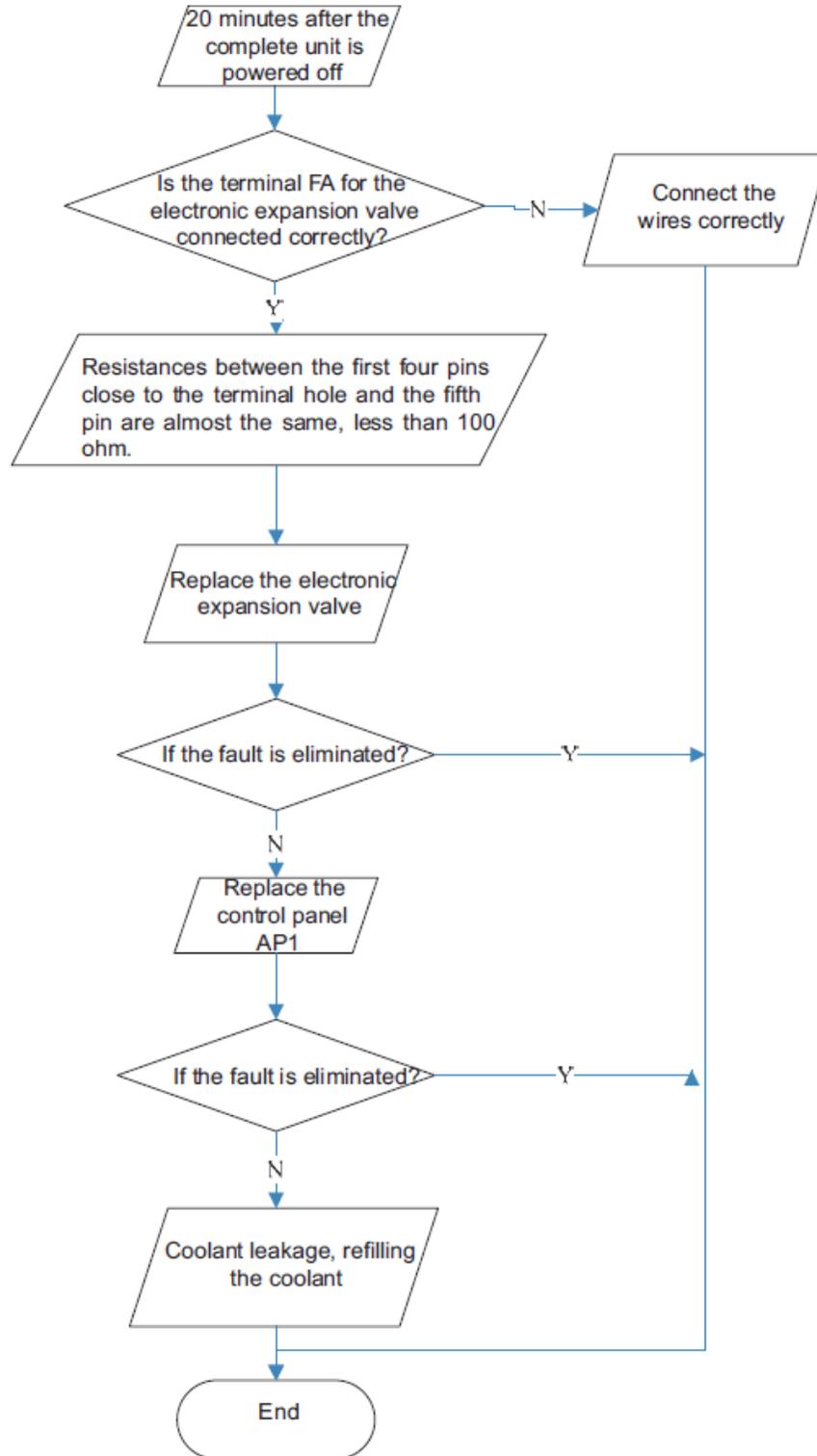


### 7.6.5- Overload and discharge malfunction

#### USUAL SYMPTOMS

- Is the electronic expansion valve connected correctly? Is the expansion valve damaged?
- Is the refrigerant leaking?
- Is the overload protector damaged?

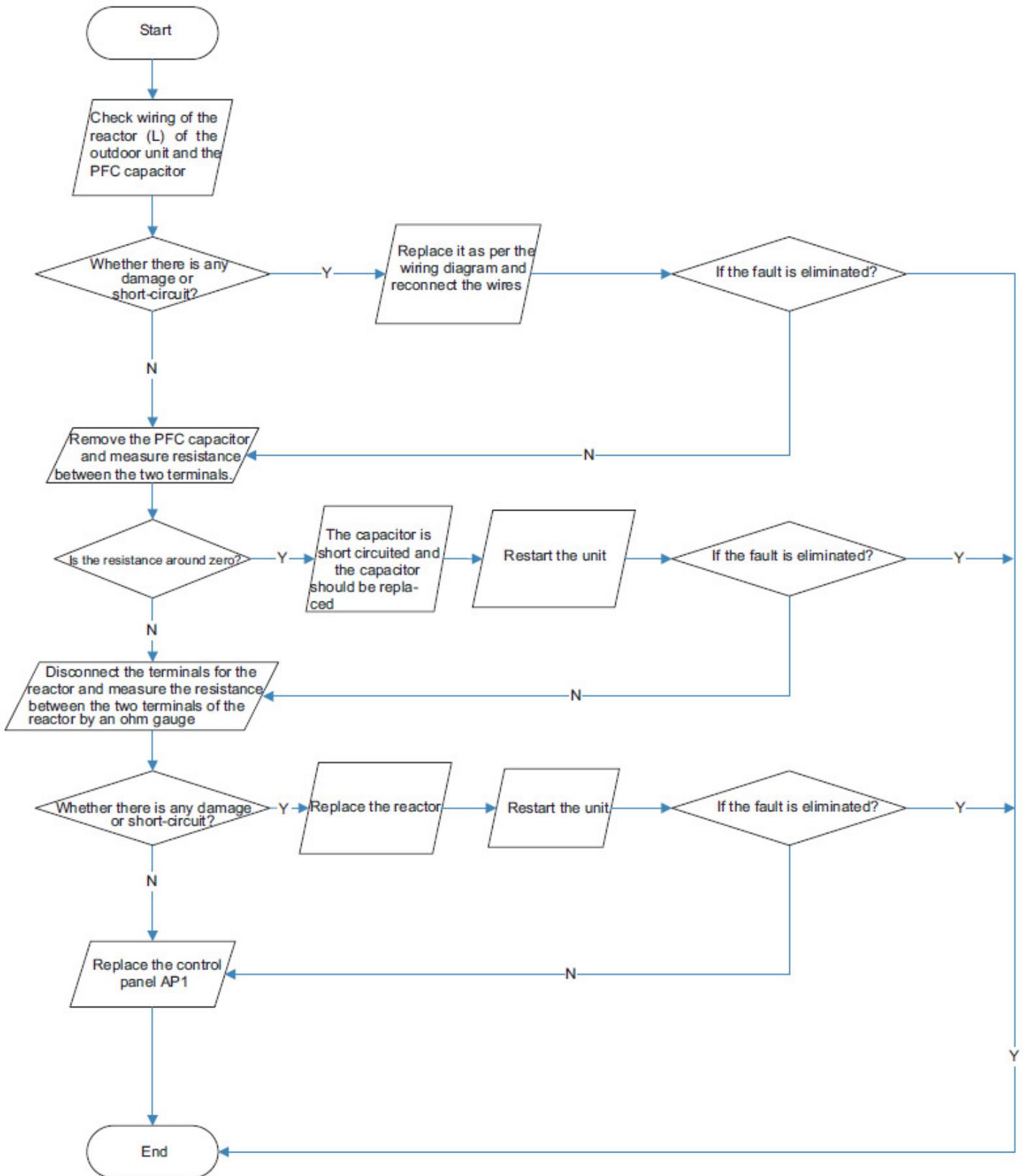
(AP1 BELOW IS THE CONTROL BOARD OF OUTDOOR UNIT)



### 7.6.6- PFC (correction for power factor) malfunction

(AP1 BELOW IS THE CONTROL BOARD OF OUTDOOR UNIT)

Check if the inductor (L) of outdoor unit and PFC capacity are damaged.

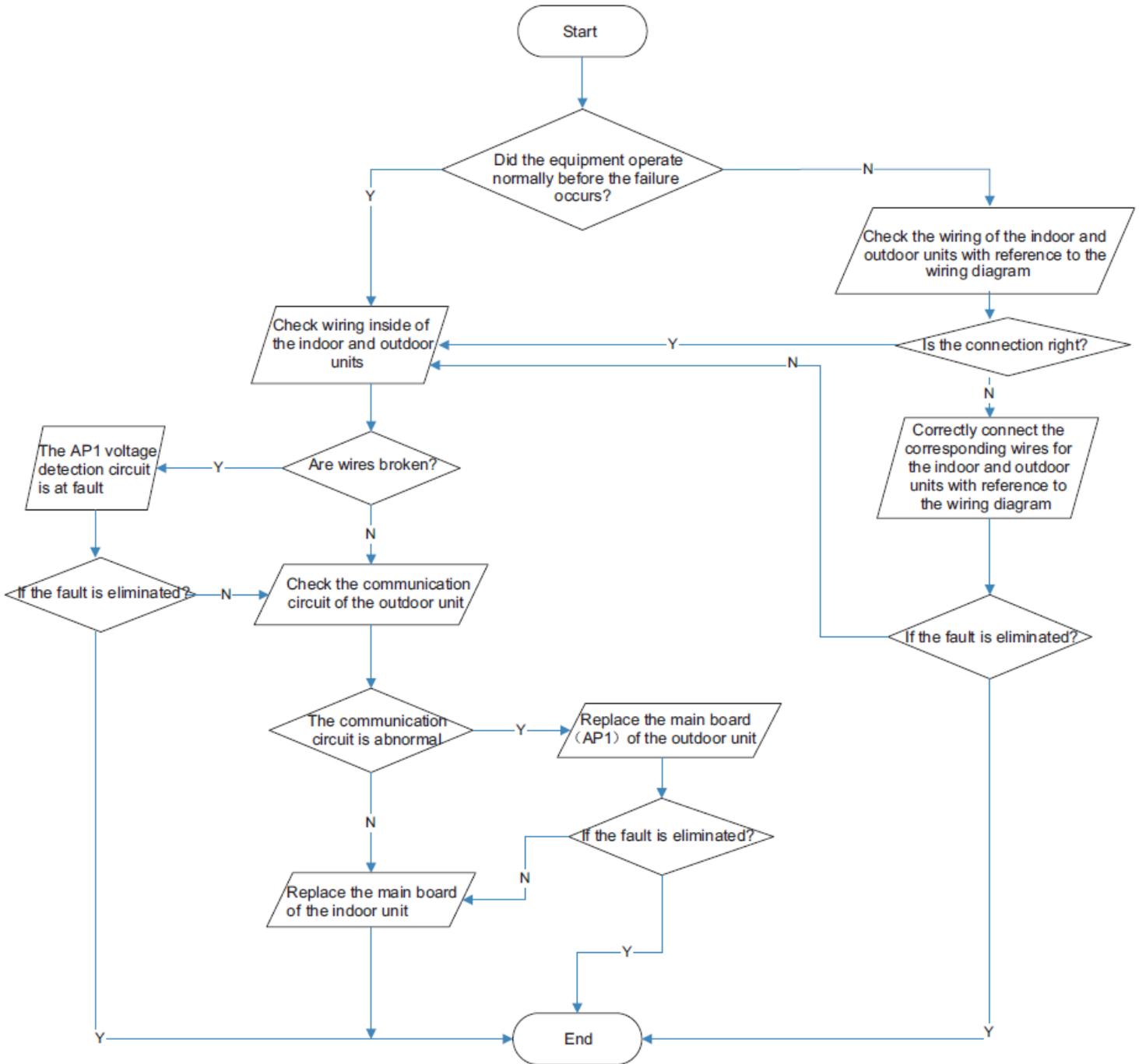


### 7.6.7- Communication malfunction

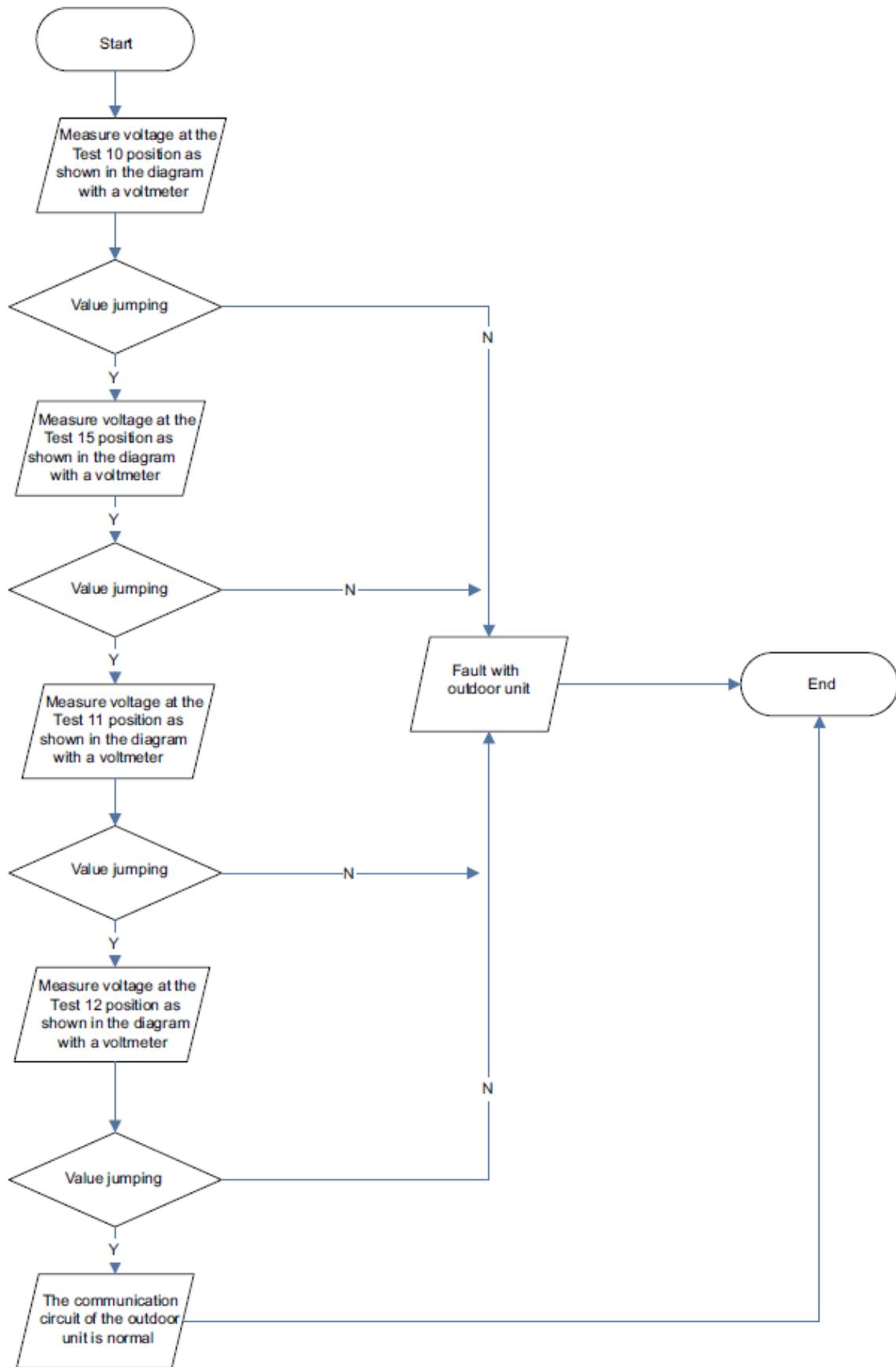
#### USUAL SYMPTOMS

- Check if the connection wire and the built-in wiring of the indoor and the outdoor are connected correctly and not damaged.
- Is the communication circuit of the indoor mainboard is damaged? Is the communication circuit of the outdoor mainboard (AP1) damaged?

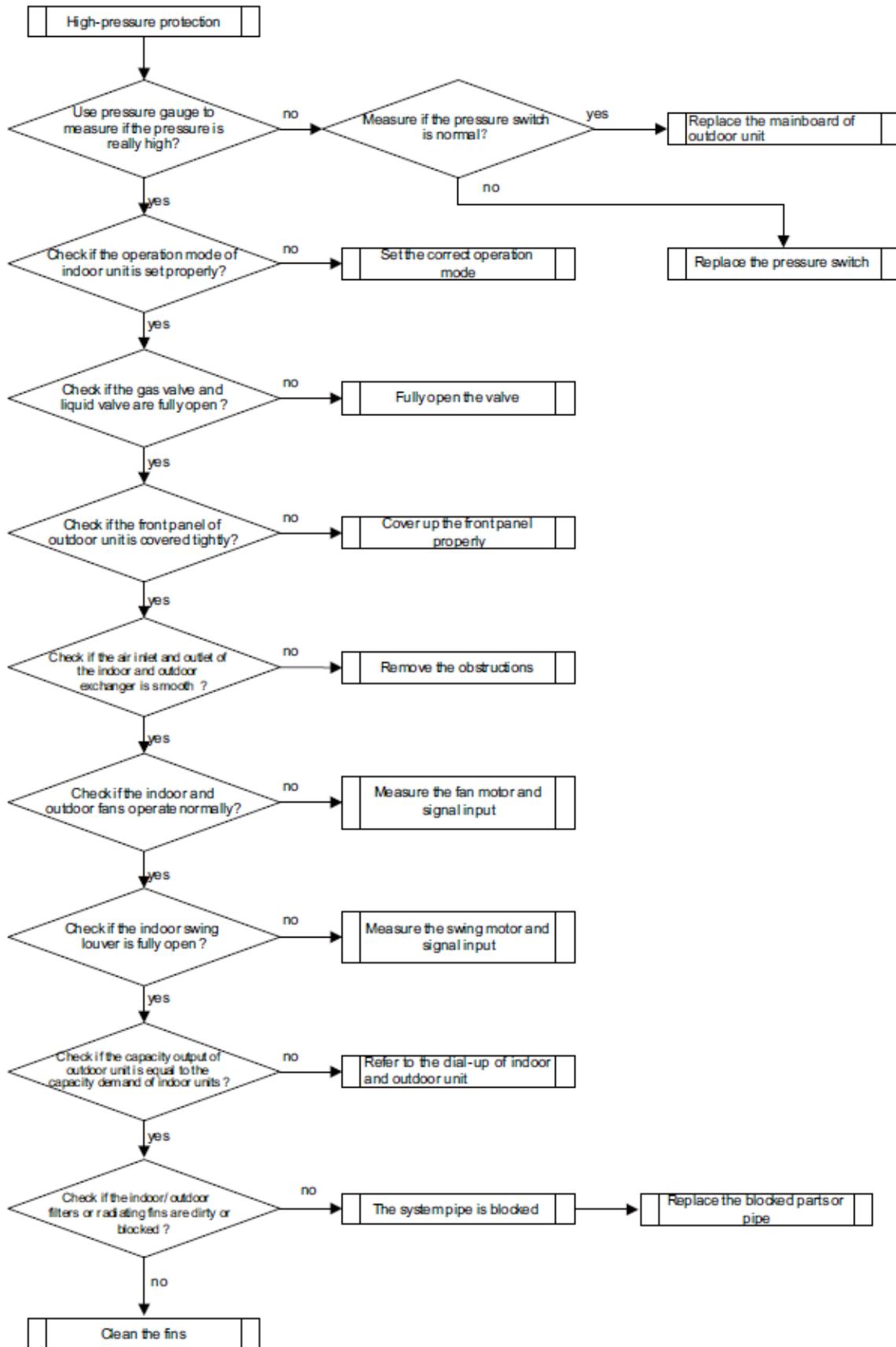
(AP1 BELOW IS THE CONTROL BOARD OF OUTDOOR UNIT)



7.6.8- Flow chart outdoor communication circuit detecting



## 7.6.9- High pressure protection



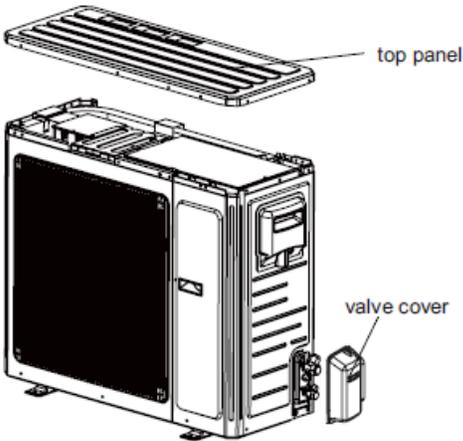
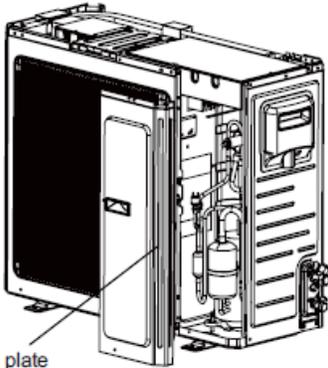
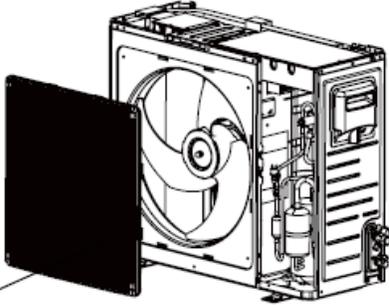
## 8-REMOVAL PROCEDURE OF OUTDOOR UNIT

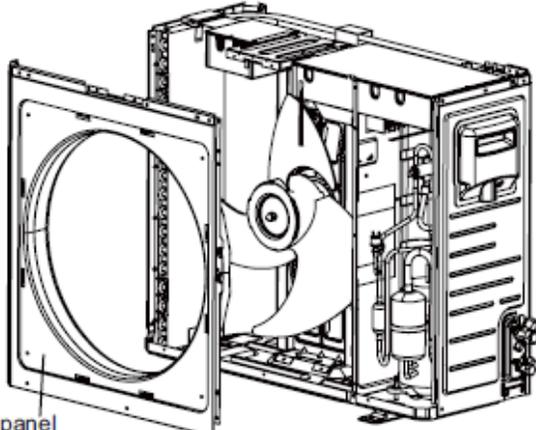
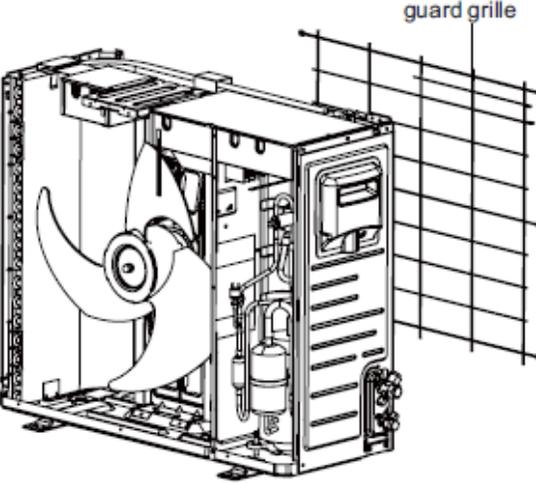
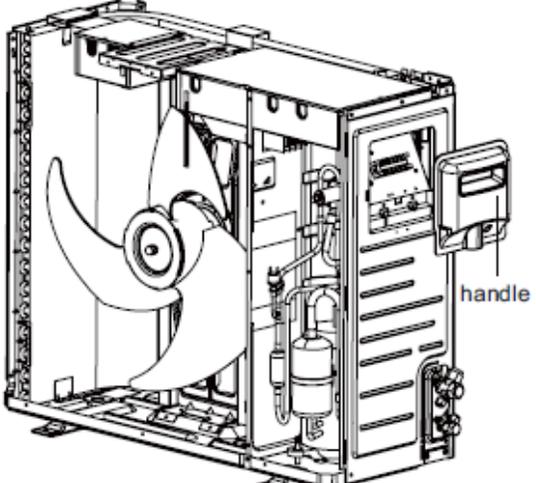
### WARNING

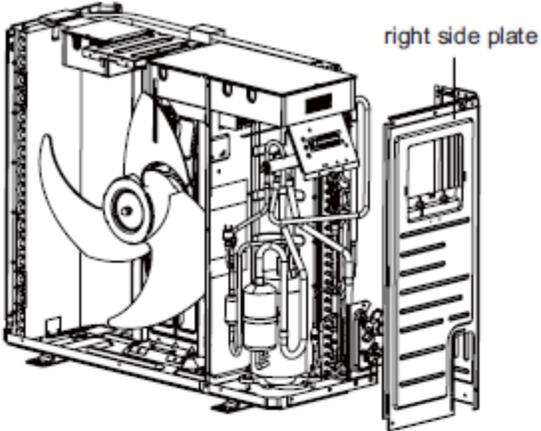
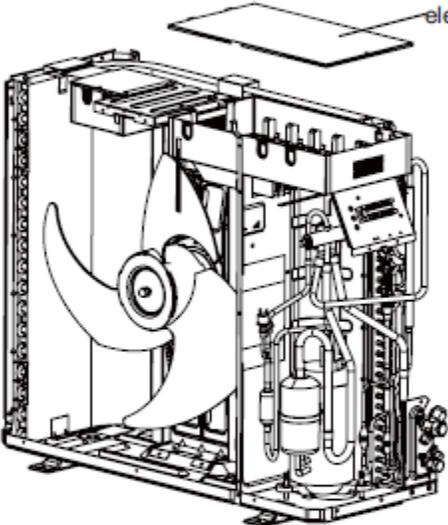
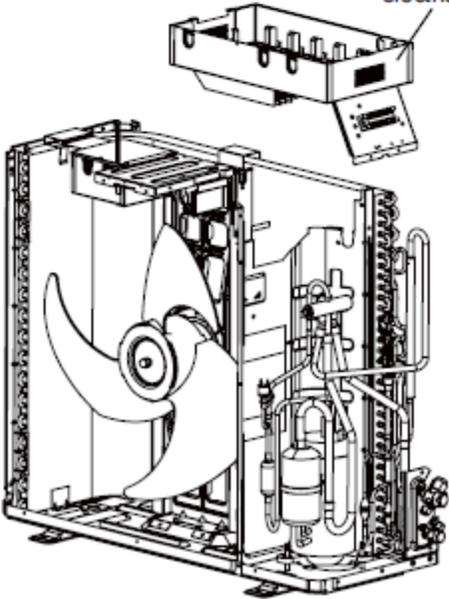
Be sure to wait for a minimum of 10 minutes after turning off all power supplier before disassembly

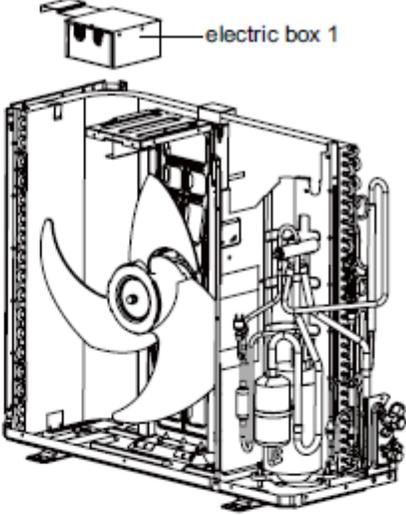
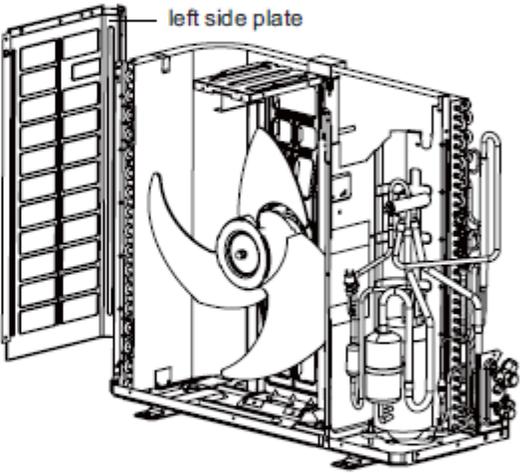
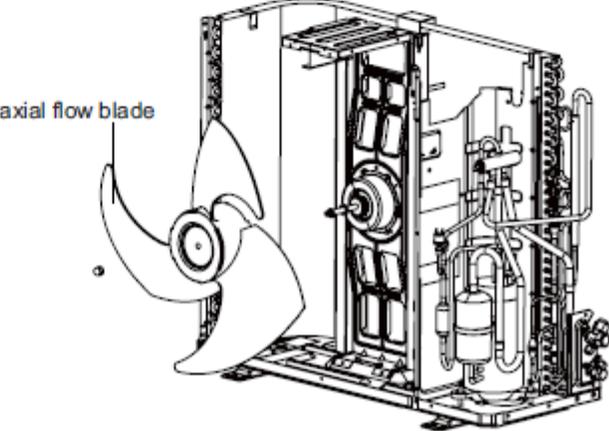
NOTE: Electric heater band is not shown below.

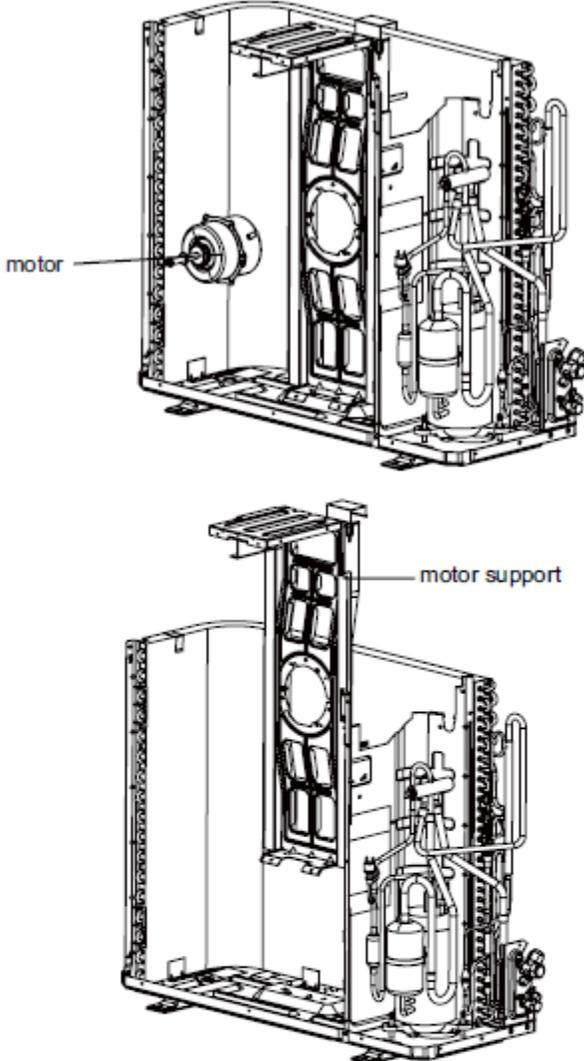
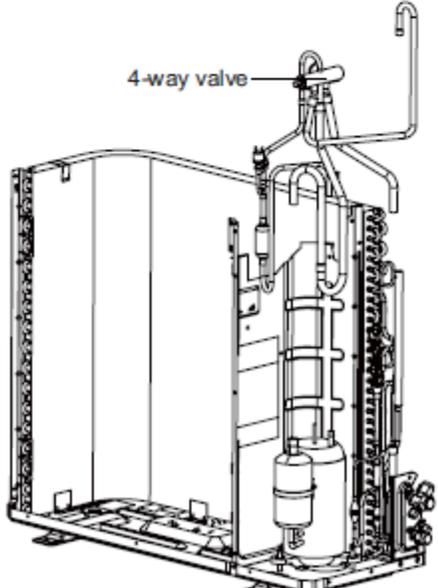
Models: COND-30-01 ET COND-36-01

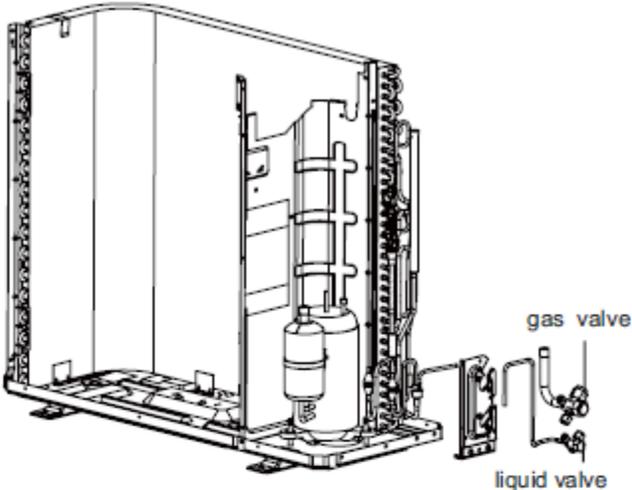
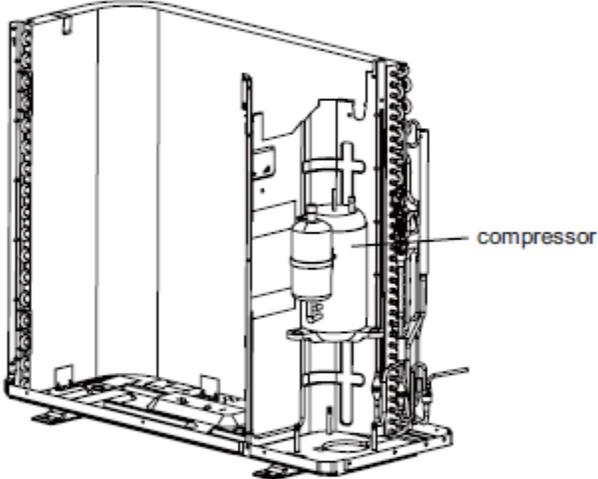
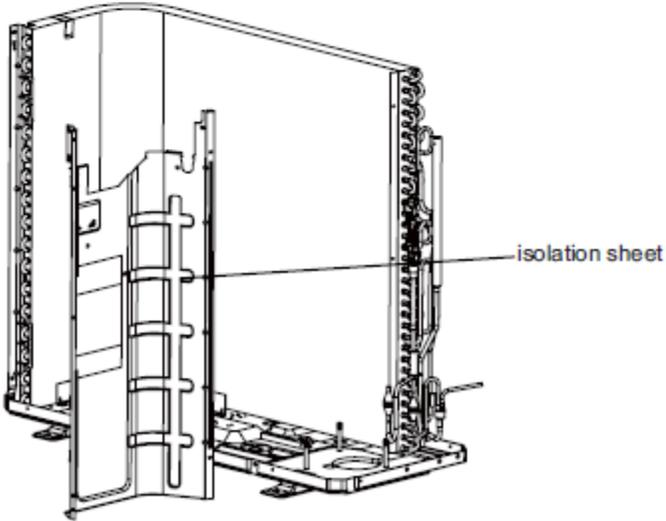
Step		Procedure
1. Remove top cover and front side plate	<p>a Use the screwdriver to remove the screws connecting the top panel and panel and side panels. Remove the top panel. Loosen the screws fixing the valve cover and then remove the valve cover.</p> <p>b Loosen the screws connecting the front side panel and mask and chassis. Remove the front side panel.</p>	 <p>top panel</p> <p>valve cover</p>  <p>front side plate</p>
2. Remove grille	<p>Twist off the screws connecting the grille and panel, and then remove the grille.</p>	 <p>grille</p>

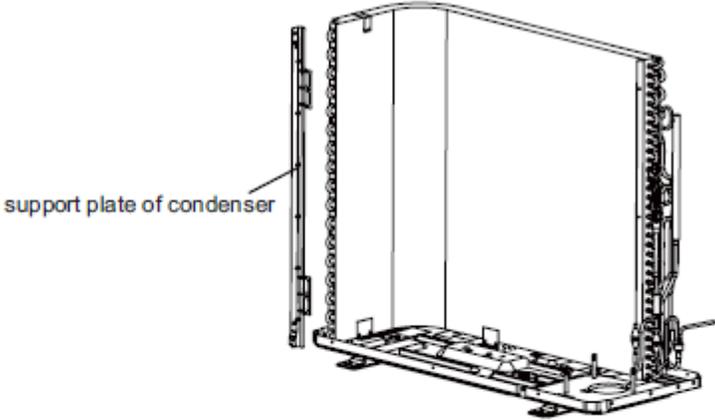
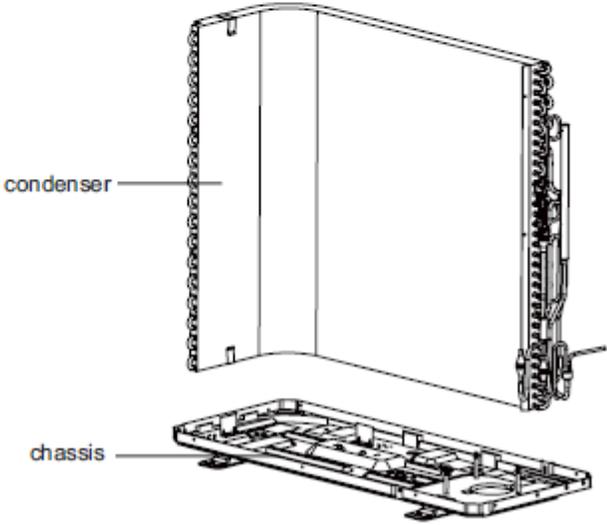
Step	Procedure	
3. Remove panel	<p>Twist off the screws connecting the panel, chassis and motor support with screwdriver, and then remove the panel.</p>	
4. Remove guard grille	<p>Twist off the screws fixing the guard grille and then remove the guard grille.</p>	
5. Remove handle	<p>Twist off the screws fixing the handle and then remove the handle.</p>	

Step	Procedure
<p data-bbox="126 155 402 180">6. Remove right side plate</p> <p data-bbox="175 281 597 394">Twist off the screws connecting the right side plate and chassis, valve support and condenser, and then remove the right side plate.</p>	 <p data-bbox="1260 205 1419 226">right side plate</p>
<p data-bbox="126 655 376 680">7. Remove electric box</p> <p data-bbox="126 856 548 940">a Twist off the screws on electric box cover with screwdriver, and then remove the electric box cover.</p> <p data-bbox="126 1507 597 1612">b Twist off the screws on electric box, cut off the tieline with scissors or pliers, pull out the wiring terminal, pull it upwards to remove the electric box.</p>	 <p data-bbox="1295 720 1484 741">electric box cover</p>  <p data-bbox="1230 1297 1354 1318">electric box</p>

Step	Procedure	
c	<p>Twist off the screws between electric box 1 and left side plate with screwdriver, pull it upwards to remove the electric box 1.</p>	
8. Remove left side plate	<p>Twist off the screws connecting the left side plate and chassis with screwdriver, and then remove the left side plate.</p>	
9. Remove axial flow blade	<p>Twist off the nuts on blade with wrench and then remove the axial flow blade.</p>	

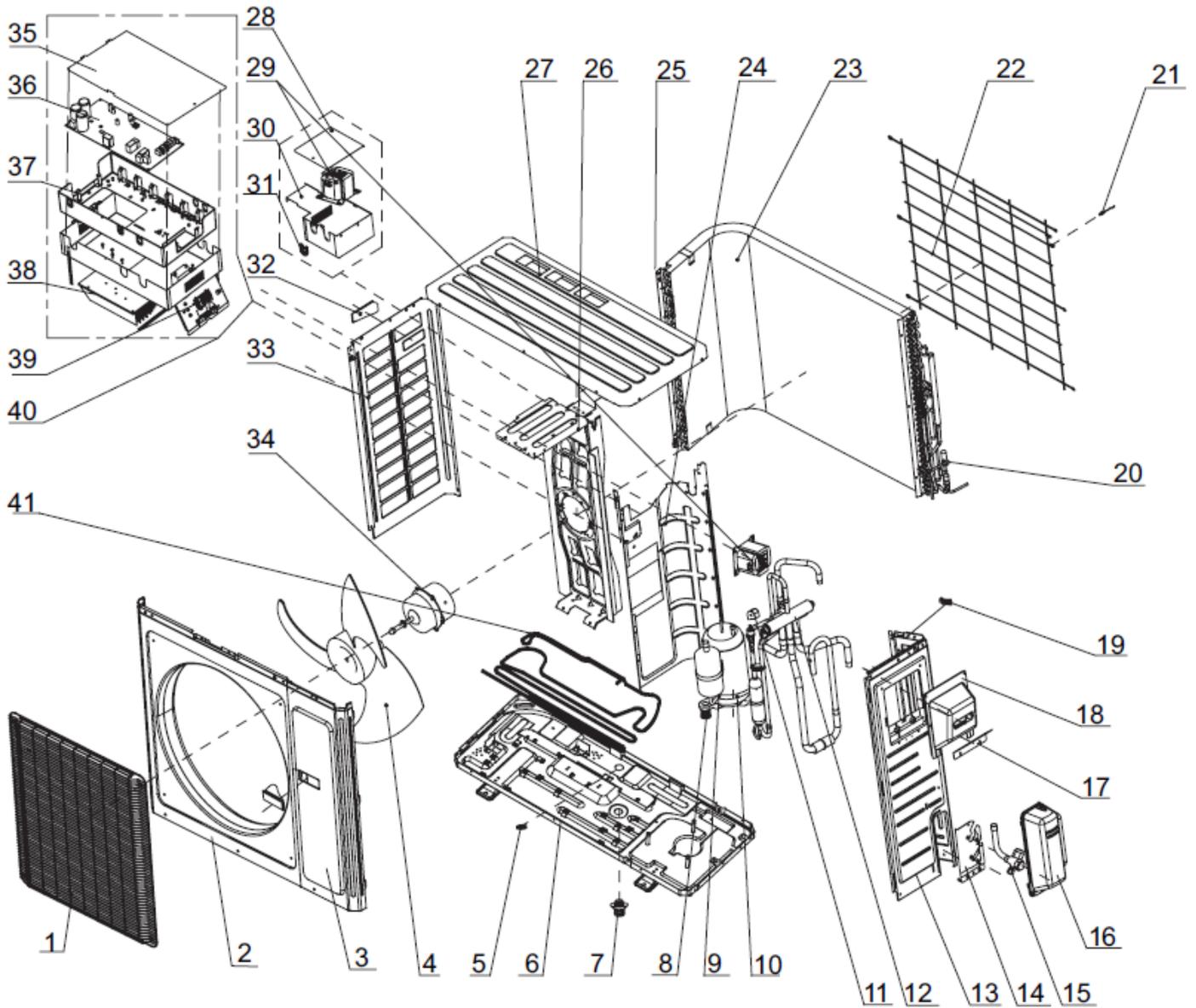
Step	Procedure	
10. Remove motor and motor support	<p>a Twist off the tapping screws fixing the motor, pull out the pin of leading wire for motor and then remove the motor.</p> <p>b Twist off the tapping screws fixing the motor support, pull it upwards and then remove the motor support.</p>	 <p>The diagram consists of two parts. The top part shows a side view of the refrigerator's internal components with a label 'motor' pointing to a cylindrical component on the left. The bottom part shows the same side view with the motor removed and the label 'motor support' pointing to a vertical metal frame structure that has been pulled upwards.</p>
11. Remove 4-way valve	<p>Unsolder the pipeline between compressor, condenser, gas and liquid valve, and then remove the 4-way valve. (note: release all refrigerant before unsoldering).</p>	 <p>The diagram shows a side view of the refrigerator's internal components with a label '4-way valve' pointing to a valve assembly at the top of the vertical pipe structure.</p>

Step	Procedure
<p data-bbox="147 142 537 170">12. Remove gas valve and liquid valve</p> <p data-bbox="209 260 583 611">Twist off the 2 bolts fixing the valve sub-assy. Unsolder the soldering joint between gas valve and air-return pipe and then remove the gas valve. (note: when unsoldering the soldering joint, wrap the gas valve with wet cloth completely to avoid the damage to valve, and release all refrigerant completely at first). Unsolder the soldering joint between liquid valve and connection pipe of liquid valve, and then remove the liquid valve.</p>	
<p data-bbox="147 705 399 732">13. Remove compressor</p> <p data-bbox="209 898 607 953">Twist off the 3 foot nuts on compressor and then remove the compressor.</p>	
<p data-bbox="147 1245 427 1272">14. Remove isolation sheet</p> <p data-bbox="209 1482 553 1591">Twist off the screws connecting isolation sheet and end plate of condenser and chassis, and then remove the isolation sheet.</p>	

Step	Procedure	
<p data-bbox="154 153 553 184">15. Remove support plate of condenser</p> <p data-bbox="215 260 574 394">Twist off the screws connecting the support plate of condenser and condenser with screwdriver, and then remove the support plate of condenser.</p>	 <p data-bbox="634 380 911 411">support plate of condenser</p>	
<p data-bbox="154 665 516 697">16. Remove chassis and condenser</p> <p data-bbox="215 768 610 823">Pull it upwards to separate the chassis and condenser.</p>	 <p data-bbox="688 877 802 909">condenser</p> <p data-bbox="716 1146 802 1178">chassis</p>	

# 9-COMPONENTS AND REPLACEMENT PARTS

## 9.1- EXPLODED VUE 30/36K



## 9.2- PARTS LIST 30/36K

N°	Description	Part code COND-30	Part code COND-36	Quantity
1	Front grill	COND-01473050	COND-01473050	1
2	Cabinet	COND-0143500401P	COND-0143500401P	1
3	Front side plate	COND-01305086P	COND-01305086P	1
4	Axial flow fan	COND-10335014	COND-10335014	1
5	Drainage plug	COND-06813401	COND-06813401	3
6	Chassis sub-assy	COND-02803101P	COND-02803026P	1
7	Drainage connector	COND-06123401	COND-06123401	1
8	Compressor silent bloc	COND-76815218	COND-76815218	3
9	Compressor and fittings	COND-00105051	COND-00205275	1
10	Electrical heater	COND-7651873209	COND-7651873209	1
11	Magnet coil	COND-4300040029	COND-4300040029	1
12	4-way valve assy	COND-03123895	COND-03123890	1
13	Right side plate	COND-0130504402P	COND-0130504402P	1
14	Valve support plate	COND-0171501201P	COND-0171501201P	1
15	Cut-off valve suction line	COND-07133157	COND-07133157	1
16	Cut-off valve liquid line	COND-07135054	COND-07135054	1
17	Retaining plate	COND-02115006P	COND-02115006P	1
18	Handle assy	COND-02115005	COND-02115005	1
19	Wiring clamp	COND-26115004	COND-26115004	1
20	Electronic expansion valve coil	COND-4300876703	COND-4300876703	1
21	Temperature sensor	COND-3900031001	COND-3900031001	1
22	Rear grill	COND-01475013	COND-01163491	1
23	Condenser assy	COND-01163509	COND-01163509	1
24	Clapboard	COND-01233134	COND-01233134	1
25	Condenser support plate	COND-01175092	COND-01175037	1
26	Motor support sub-assy	COND-01802876	COND-01802876	1
27	Top cover sub-assy	COND-01255007	COND-01255007	1
28	Electric box cover	COND-01425279	COND-01425279	1
29	Reactor	COND-43130192	COND-43130192	2
30	Electric box sub-assy	COND-02603620	COND-02603620	1
31	Pass wire ring sub-assy	COND-76614102	COND-76614102	2
32	Left handle	COND-26235401	COND-26235401	2
33	Left side plate	COND-01305043P	COND-01305043P	1
34	Fan motor	COND-15702802	COND-1570280205	1
35	Electric box cover	COND-01425281	COND-01425281	1
37	Electric box	COND-02603614	COND-02603614	1
38	Radiator	COND-49013046	COND-49013046	1
39	Terminal board	COND-42010255	COND-42010255	1
40	Electric box assy	COND-02613050	COND-02613030	1
41	Electrical heater (chassis)	COND-765100047	COND-7651000413	1
	Pressure switch – regulation	COND-460200061	COND-460200061	1
	Pressure switch – protection	COND-46020003	COND-46020003	1
	Compressor overload protection	COND-00185012	COND-00185012	1
	Interface card	K03081	K03081	1
	Communicating thermostat	R02P032	R02P032	1
	Indoor coil temperature probe	R02Z012	R02Z012	1

**APPENDIX 1: RESISTANCE TABLE OF AMBIENT TEMPERATURE SENSOR 15 K**

° F	° C	Resistance kΩ									
-2	-19	181,4	68	20	25,01	138	59	5,13	208	98	1,427
0	-18	171,4	70	21	23,9	140	60	4,948	210	99	1,386
1	-17	162,1	72	22	22,85	142	61	4,773	212	100	1,346
3	-16	153,3	73	23	21,85	144	62	4,605	214	101	1,307
5	-15	145	75	24	20,9	145	63	4,443	216	102	1,269
7	-14	137,2	77	25	15	147	64	4,289	217	103	1,233
9	-13	129,9	79	26	19,14	149	65	4,14	219	104	1,198
10	-12	123	81	27	18,13	151	66	3,998	221	105	1,164
12	-11	116,5	82	28	17,55	153	67	3,861	223	106	1,131
14	-10	110,3	84	29	16,8	154	68	3,729	225	107	1,099
16	-9	104,6	86	30	16,1	156	69	3,603	226	108	1,069
18	-8	99,13	88	31	15,43	158	70	3,481	228	109	1,039
19	-7	94	90	32	14,79	160	71	3,364	230	110	1,01
21	-6	89,17	91	33	14,18	162	72	3,252	232	111	0,983
23	-5	84,61	93	34	13,59	163	73	3,144	234	112	0,956
25	-4	80,31	95	35	13,04	165	74	3,04	235	113	0,93
27	-3	76,24	97	36	12,51	167	75	2,94	237	114	0,904
28	-2	72,41	99	37	12	169	76	2,844	239	115	0,88
30	-1	68,79	100	38	11,52	171	77	2,752	241	116	0,856
32	0	65,37	102	39	11,06	172	78	2,663	243	117	0,833
34	1	62,13	104	40	10,62	174	79	2,577	244	118	0,811
36	2	59,08	106	41	10,2	176	80	2,495	246	119	0,77
37	3	56,19	108	42	9,803	178	81	2,415	248	120	0,769
39	4	53,46	109	43	9,42	180	82	2,339	250	121	0,746
41	5	50,87	111	44	9,054	181	83	2,265	252	122	0,729
43	6	48,42	113	45	8,705	183	84	2,194	253	123	0,71
45	7	46,11	115	46	8,37	185	85	2,125	255	124	0,692
46	8	43,92	117	47	8,051	187	86	2,059	257	125	0,674
48	9	41,84	118	48	7,745	189	87	1,996	259	126	0,658
50	10	39,87	120	49	7,453	190	88	1,934	261	127	0,64
52	11	38,01	122	50	7,173	192	89	1,875	262	128	0,623
54	12	36,24	124	51	6,905	194	90	1,818	264	129	0,607
55	13	34,57	126	52	6,648	196	91	1,736	266	130	0,592
57	14	32,98	127	53	6,403	198	92	1,71	268	131	0,577
59	15	31,47	129	54	6,167	199	93	1,658	270	132	0,563
61	16	30,04	131	55	5,942	201	94	1,609	271	133	0,549
63	17	26,68	133	56	5,726	203	95	1,561	273	134	0,535
64	18	27,39	135	57	5,519	205	96	1,515	275	135	0,521
66	19	26,17	136	58	5,32	207	97	1,47	277	136	0,509

**APPENDIX 2: RESISTANCE TABLE OF TUBE TEMPERATURE SENSOR 20 K**

° F	° C	Resistance kΩ									
-2	-19	138,1	68	20	18,75	138	59	3,848	208	98	1,071
0	-18	128,6	70	21	17,93	140	60	3,711	210	99	1,039
1	-17	121,6	72	22	17,14	142	61	3,579	212	100	1,009
3	-16	115	73	23	16,39	144	62	3,454	214	101	0,98
5	-15	108,7	75	24	15,68	145	63	3,333	216	102	0,952
7	-14	102,9	77	25	20	147	64	3,217	217	103	0,925
9	-13	97,4	79	26	14,36	149	65	3,105	219	104	0,898
10	-12	92,22	81	27	13,74	151	66	2,998	221	105	0,873
12	-11	87,35	82	28	13,16	153	67	2,896	223	106	0,848
14	-10	82,75	84	29	12,6	154	68	2,797	225	107	0,825
16	-9	78,43	86	30	12,07	156	69	2,702	226	108	0,802
18	-8	74,35	88	31	11,57	158	70	2,611	228	109	0,779
19	-7	70,5	90	32	11,09	160	71	2,523	230	110	0,758
21	-6	66,88	91	33	10,63	162	72	2,439	232	111	0,737
23	-5	63,46	93	34	10,2	163	73	2,358	234	112	0,717
25	-4	60,23	95	35	9,779	165	74	2,28	235	113	0,697
27	-3	57,18	97	36	9,382	167	75	2,206	237	114	0,678
28	-2	54,31	99	37	9,003	169	76	2,133	239	115	0,66
30	-1	51,59	100	38	8,642	171	77	2,064	241	116	0,642
32	0	49,02	102	39	8,297	172	78	1,997	243	117	0,625
34	1	46,6	104	40	7,967	174	79	1,933	244	118	0,608
36	2	44,31	106	41	7,653	176	80	1,871	246	119	0,592
37	3	42,14	108	42	7,352	178	81	1,811	248	120	0,577
39	4	40,09	109	43	7,065	180	82	1,754	250	121	0,561
41	5	38,15	111	44	6,791	181	83	1,699	252	122	0,547
43	6	36,32	113	45	6,529	183	84	1,645	253	123	0,532
45	7	34,58	115	46	6,278	185	85	1,594	255	124	0,519
46	8	32,94	117	47	6,038	187	86	1,544	257	125	0,505
48	9	31,38	118	48	5,809	189	87	1,497	259	126	0,492
50	10	29,9	120	49	5,589	190	88	1,451	261	127	0,48
52	11	28,51	122	50	5,379	192	89	1,408	262	128	0,467
54	12	27,18	124	51	5,197	194	90	1,363	264	129	0,456
55	13	25,92	126	52	4,986	196	91	1,322	266	130	0,444
57	14	24,73	127	53	4,802	198	92	1,282	268	131	0,433
59	15	23,6	129	54	4,625	199	93	1,244	270	132	0,422
61	16	22,53	131	55	4,456	201	94	1,207	271	133	0,412
63	17	21,51	133	56	4,294	203	95	1,171	273	134	0,401
64	18	20,54	135	57	4,139	205	96	1,136	275	135	0,391
66	19	19,63	136	58	3,99	207	97	1,103	277	136	0,382

**APPENDIX 3: RESISTANCE TABLE OF OUTDOOR DISCHARGE TEMPERATURE SENSOR 50 K**

° F	° C	Resistance kΩ									
-20	-29	853,5	50	10	98	120	49	18,34	190	88	4,754
-18	-28	799,8	52	11	93,42	122	50	17,65	192	89	4,609
-17	-27	750	54	12	89,07	124	51	16,99	194	90	4,469
-15	-26	703,8	55	13	84,95	126	52	16,36	196	91	4,334
-13	-25	660,8	57	14	81,05	127	53	15,75	198	92	4,204
-11	-24	620,8	59	15	77,35	129	54	15,17	199	93	4,079
-9	-23	580,6	61	16	73,83	131	55	14,62	201	94	3,958
-8	-22	548,9	63	17	70,5	133	56	14,09	203	95	3,841
-6	-21	516,6	64	18	67,34	135	57	13,58	205	96	3,728
-4	-20	486,5	66	19	64,33	136	58	13,09	207	97	3,619
-2	-19	458,3	68	20	61,48	138	59	12,62	208	98	3,514
0	-18	432	70	21	58,77	140	60	12,17	210	99	3,413
1	-17	407,4	72	22	56,19	142	61	11,74	212	100	3,315
3	-16	384,5	73	23	53,74	144	62	11,32	214	101	3,22
5	-15	362,9	75	24	51,41	145	63	10,93	216	102	3,129
7	-14	342,8	77	25	49,19	147	64	10,54	217	103	3,04
9	-13	323,9	79	26	47,08	149	65	10,18	219	104	2,955
10	-12	306,2	81	27	45,07	151	66	9,827	221	105	2,872
12	-11	289,6	82	28	43,16	153	67	9,489	223	106	2,792
14	-10	274	84	29	41,34	154	68	9,165	225	107	2,715
16	-9	259,3	86	30	39,61	156	69	8,854	226	108	2,64
18	-8	245,6	88	31	37,96	158	70	8,555	228	109	2,568
19	-7	232,6	90	32	36,38	160	71	8,268	230	110	2,498
21	-6	220,5	91	33	34,88	162	72	7,991	232	111	2,431
23	-5	209	93	34	33,45	163	73	7,726	234	112	2,365
25	-4	198,3	95	35	32,09	165	74	7,47	235	113	2,302
27	-3	199,1	97	36	30,79	167	75	7,224	237	114	2,241
28	-2	178,5	99	37	29,54	169	76	6,998	239	115	2,182
30	-1	169,5	100	38	28,36	171	77	6,761	241	116	2,124
32	0	161	102	39	27,23	172	78	6,542	243	117	2,069
34	1	153	104	40	26,15	174	79	6,331	244	118	2,015
36	2	145,4	106	41	25,11	176	80	6,129	246	119	1,963
37	3	138,3	108	42	24,13	178	81	5,933	248	120	1,912
39	4	131,5	109	43	23,19	180	82	5,746	250	121	1,863
41	5	125,1	111	44	22,29	181	83	5,565	252	122	1,816
43	6	119,1	113	45	21,43	183	84	5,39	253	123	1,77
45	7	113,4	115	46	20,6	185	85	5,222	255	124	1,725
46	8	108	117	47	19,81	187	86	5,06	257	125	1,682
48	9	102,8	118	48	19,06	189	87	4,904	259	126	1,64

## APPENDIX 4: WARRANTY POLICY

### General Warranty

Dettson Industries Inc., subject to the limitations described in this Equipment Warranty Policy Certificate, warrants that each and every appliance product by Dettson Industries Inc. is, under normal operating conditions, free of defect in material and workmanship for a specific period of time from the date of original installation (as described in the "Summary of Warranty Programs" section below).

This warranty covers the appliance only and does not include labour costs, freight costs or other indirect expenses related to routine maintenance or the replacement of parts. If a part fails during the applicable warranty period, Dettson Industries Inc. will provide, at its sole discretion, a new or remanufactured part to replace the defective part at no charge. Alternatively, and at its sole discretion, Dettson Industries Inc. will allow a credit in the amount of the then factory price for a new equivalent part toward the retail purchase price of a new Dettson Industries Inc. product.

### Summary of Warranty Programs

PRODUCT	PARTS
<b>Alizé Outdoor Cooling Unit</b> -COND-09-12-18-24 & COND-30/36	5 years
<b>Cooling Coil</b>	2 years
<b>Thermostats</b> (R02P029, R02P030 & R02P032)	5 years

### Limitations

This warranty does not cover defects or damages on equipment without serial number or whose serial number has been erased or modified.

**A) Consumable Items:** This warranty does not apply to fan belts, filters, oil nozzles or other materials which must be replaced in the course of routine maintenance.

**B) Corrosive Atmosphere:** The operation of a heat exchanger in the presence of corrosive elements such as acids, chlorine, fluorine or other damaging chemicals voids this warranty.

**C) External Factors:** This warranty does not apply to damages to the product caused by misuse, failure to provide proper maintenance, accidents, Acts of God, improper fuel or inadequate electrical supply.

**D) Unauthorized Alteration:** Unauthorized alteration or repair of the appliance affecting product reliability or performance voids this warranty.

**E) Installation by a qualified person:** The product must be installed by a qualified fitter in accordance with Dettson Industries Inc.'s installation instructions, applicable local and national codes, the industry standards and those of professional organizations such as the Heating, Refrigeration and Air Conditioning Institute of Canada and the Air Conditioning Contractors of America. Failure to do so voids this warranty.

**F) Unauthorized Installation of Accessory Equipment:** Dettson Industries Inc. authorizes the application of accessory

equipment which will operate in conjunction with its products provided that the following conditions are met:

**i.)** The function or performance of the Dettson Industries Inc. appliance is not altered.

**ii.)** The accessory is installed in accordance with its manufacturer's installation instructions.

**iii.)** The environment in which the appliance is supposed to operate is not modified.

**iv.)** Furnaces cannot be installed with a one hundred per cent (100%) outdoors return air.

**G) Lost or Stolen Products:** This warranty does not apply to products reported as lost or stolen.

**H) Original Installation Site:** This warranty does not apply to products no longer at the site of original installation.

**I) Improper Application:** This warranty does not include damages caused by improper matching or misuse of the product or its components.

**J) Routine Maintenance:** The warranty is valid only if the instructions specified in the Installation and Operating Instructions are strictly observed. Failure to do so may void any and all warranties, at Dettson Industries Inc.'s discretion.

### Consequential Damages

Dettson Industries Inc. shall not be responsible for any consequential damages caused by any defect in the product.

### Exclusive Warranty

The warranty provided by Dettson Industries Inc. is exclusive; all other representations, warranties or conditions, expressed, implied or statutory, required by law or otherwise, are hereby excluded.

### Beginning of the Warranty Period

If the original sales invoice cannot be provided to establish the date of original installation, it is determined that the warranty comes into effect ninety (90) days after the product was shipped from the manufacturing plant.

### Replacement Parts Warranties

All replacement parts obtained directly from Dettson Industries Inc. and used for routine maintenance of Dettson Industries Inc. products are warranted for a period of twelve (12) months from the date of repair. Dettson Industries Inc. reserves the right to require proof of repair before granting any credit. Replacement parts are shipped at the expense of the consumer. Should we request that the defective parts or components be shipped back for further investigation, a return authorization number will be issued and return freight arrangements will be specified by Dettson Industries Inc.

### Warranty Execution

Dettson Industries Inc. shall not be liable for any default or delay in execution of this warranty caused by any contingency beyond our control, including wars, government restrictions or restraints, strikes, fires, floods or short or reduced supplies of raw material.