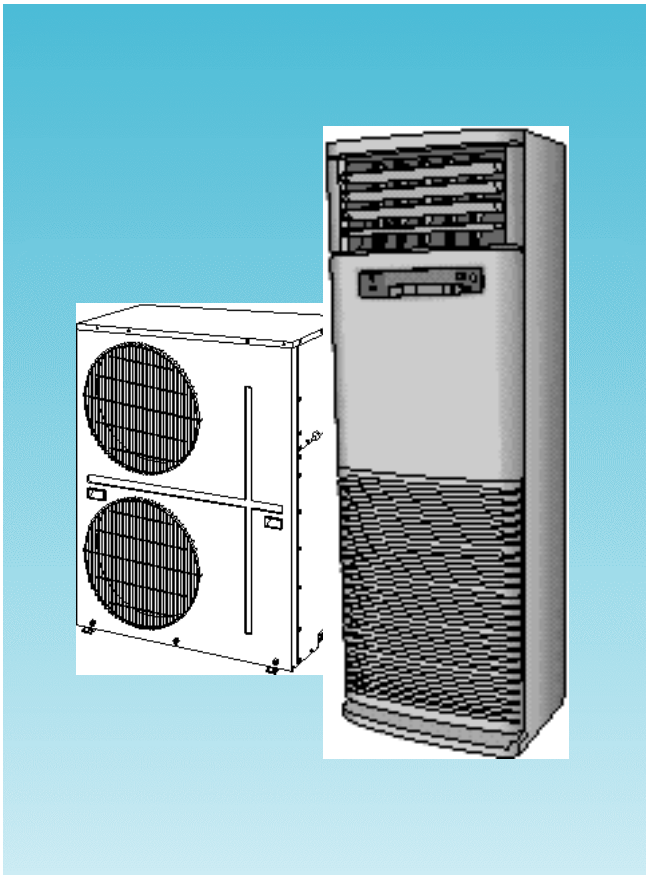
SAMSUNG

# PACKAGED AIR CONDITIONER

## APH450PG

# SERVICE Manual

AIR CONDITIONER



CONTENTS

# 1. Precautions

1) Turn off the the power.
Be sure to turn off the power before attempting to repair the unit such as the disassembly of the unit.

2) Be careful of electric shock
When checking the circuit with the power connected in unavoidable circumstances, take special care not to touch the live parts. There is a danger of electric shock.

3) Use of appropriate parts
Be sure to use the genuine parts of the relevant model when it is necessary to replace parts. (Replace parts instead of repairing with regard to the malfunctioning of electric contact areas. Never attempt to modify the unit. It is extremely dangerous for the consumer to attempt to repair the unit on his(her) own.)

4) Use of proper tools
Use appropriate tools for repair, and use measuring equipment after accurate calibration. Using worn tools may result in problems, including poor contact and poor connection.

5) Avoid damage to electric wire or electric cord.
Check the electric cord or electric wire for any damage during repair.
Be sure to replace it if damaged.

6) Avoid intermediate connection of the electric cord.
Never attempt to make an intermediate connection by cutting the middle area of the electric cord or make a connection to the power receptacle as it is very dangerous, causing problems or fire.

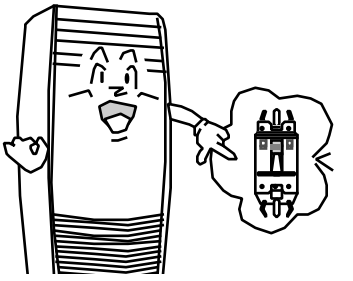
7) Checking of insulation
Be sure to check the insulation resistance after completion of the assembly work.
(Check whether the insulation resistance of the electric wire and grounding terminal is over 30MΩ by using the insulation resistance tester, and then connect the power source.)

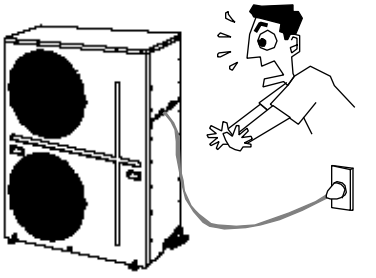
8) Checking of grounding
Check the grounding condition, and perform repair if poorly grounded.

9) Checking of installation condition
Check the installation condition of the unit, and perform repair if there is any defective area.
If the unit remains in an unstable installing condition, install it at a new site.

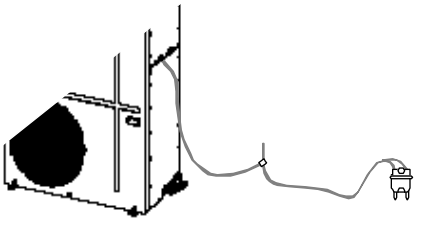
10) Be careful of children
As the repair of the unit involves a lot of dangerous elements, do not allow children to approach nearby during repair work.

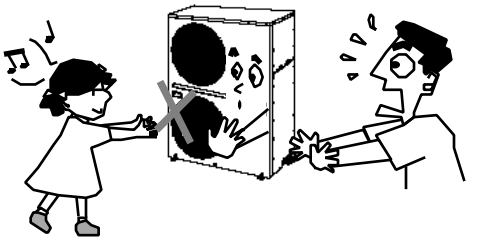
Turn off the sub power switch separately installed.





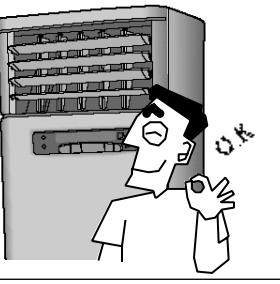
No connection with the power receptacle





## Cleaning

Upon completion of the repair, clean the air conditioner and surrounding area, and inform the customer of completion of the repair.



# 2. Product Specifications

## 2-1 Table

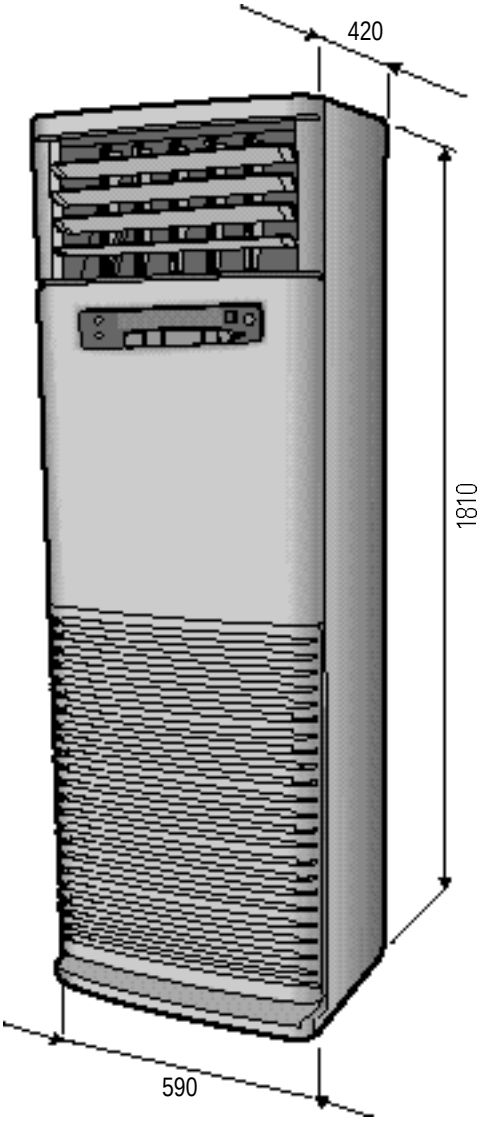
| ITEM | | Model | APH450PG | |
|---|---|---|---|---|
| | | | Indoor unit | Outdoor unit |
| Power source | | ø/V/Hz | 3 / 380 / 50 | |
| Capacity | | kcal/h | 11,250 / 12,200 | |
| (Cooling/Heating) | | BTU/h | 45,000 / 48,800 | |
| Aux. heater | | Watt/h | 3,000 | |
| Power consumption | | W | 5,000 / 4,700 | |
| E.E.R (Cooling/Heating) | | kcal/Wh | 2.25 / 2.60 | |
| Running current (C/H) | | A | 9 / 8.7 | |
| Noise level (C/H) | | dBA | 53 / 54 | 63 |
| Moisture removal | | l/hr | 5.8 | |
| Air circulation | | $m^3/h$ | 1,920 | 4,800 |
| Dimension | Width | mm | 590 / 704 | 930 / 1,200 |
| (Net/Packed) | Height | mm | 1,810 / 1,925 | 1,240 / 1,370 |
| | Depth | mm | 420 / 600 | 385 / 540 |
| Weight(Net/Packed) | | | 75 / 85 | 123 / 133 |
| Piping box | | kg | 14 | |
| Refrigerant type | | | R-22 | |
| Refrigerant quantity | | kg | 4.8 | |
| Compressor type | | | Reciprocating | |
| Protective device | | | Internal thermostat (CM) | |
| | | | High pressure switch | |
| Refrigerant piping size | | inch | Gas : 3/4", Liquid : 3/8" | |
| Drain piping size | | mm | I.D 18 | I.D 16 |
| Loading Q'ty (20'/40') | | set | 12 / 24 | |

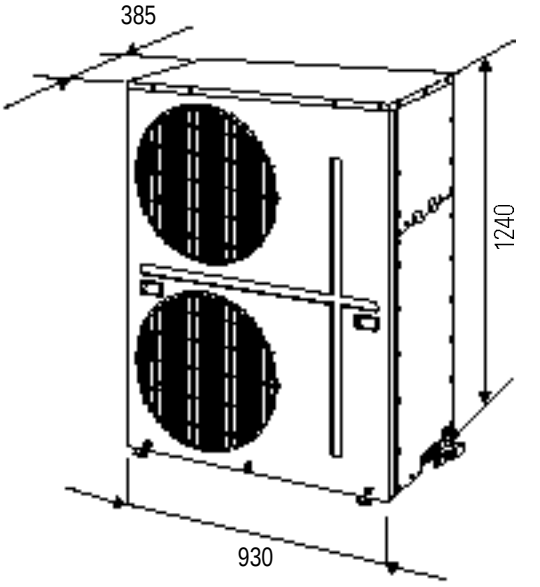
Note: (1) The data are measured at the following conditions.

| | | APH450PG | |
|---|---|---|---|
| | | Cooling | Heating |
| Indoor air temperature | DB | 27.0˚C(80.6˚F) | 20.0˚C(68.0˚F) |
| | WB | 19.0˚C(66.2˚F) | 12.0˚C(53.6˚F) |
| Outdoor air temperature | DB | 35.0˚C(95.0˚F) | 7.0˚C(44.6˚F) |
| | WB | 24.0˚C(75.2˚F) | 6.0˚C(42.8˚F) |

## 2-2 Dimensions

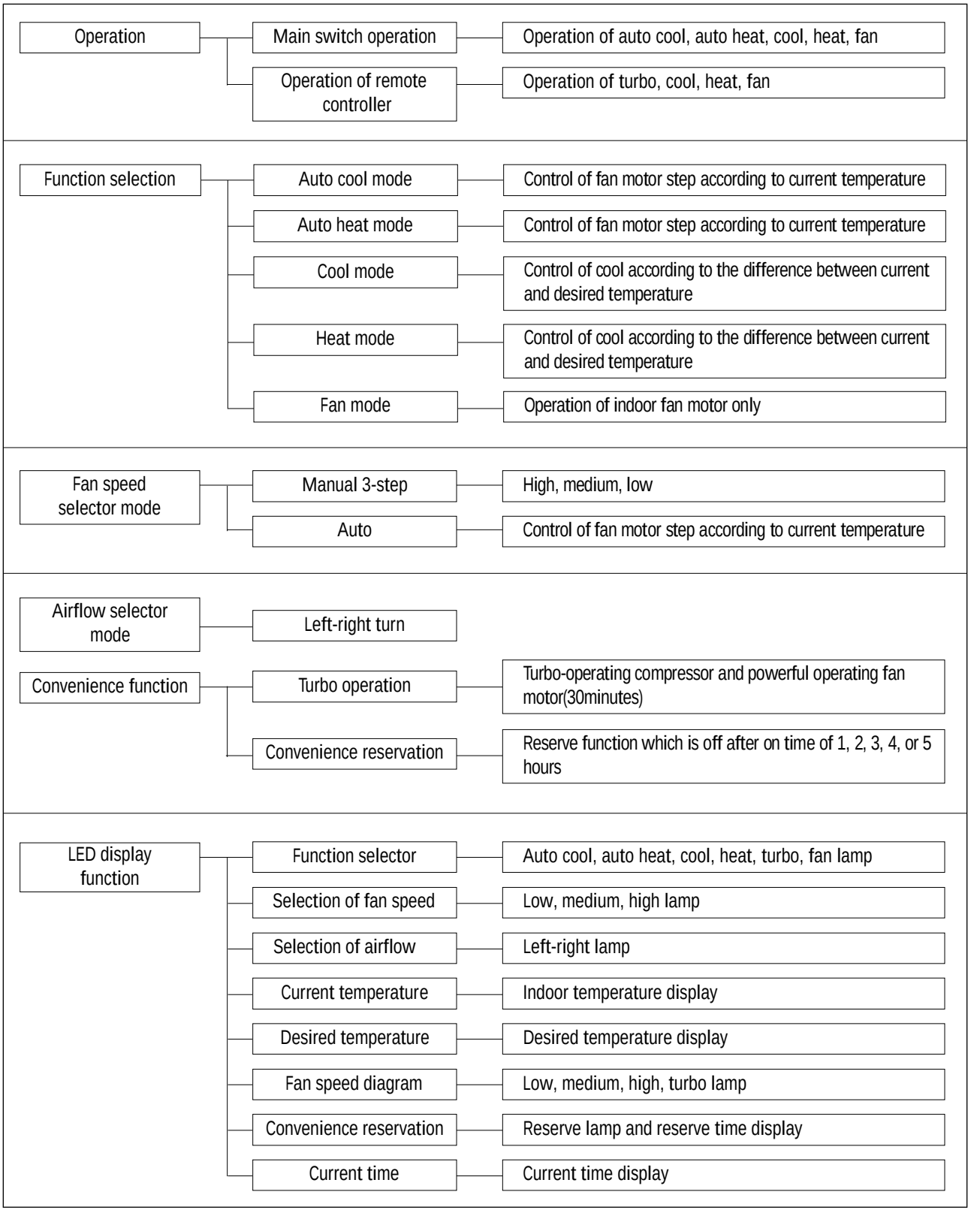
Unit : mm



# 3. Operating instructions and Installation

## 3-1 Operating Instructions

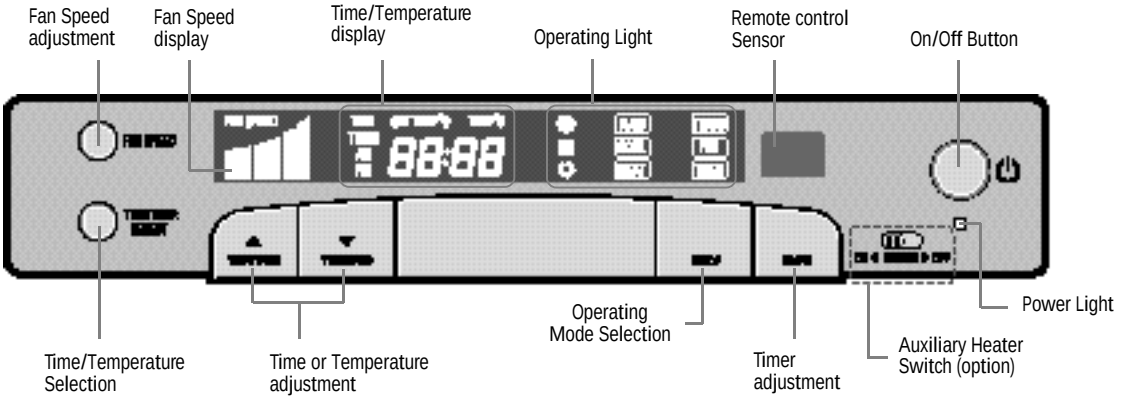


## 3-2 Key type and functions

### 3-2-1 PANEL key type and functions

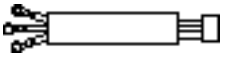
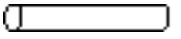
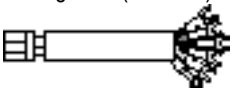
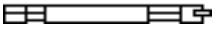
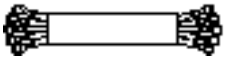
| Key name | Key operating function | Key type |
|---|---|---|
| On/off | Start and end of operation<br>- ON 1 time = operation start, ON again = operation end.<br>- No continued operation | TACT |
| Mode selection | Change of the operation mode<br>- Each time the button is pressed(ON), the mode is changed in the following order:<br>"auto → cool → fan"(standard=auto)<br>- No continued operation | TACT |
| Fan speed selection | Setting of the indoor fan motor speed<br>- Each time the button is pressed ON, the mode is changed in the following order:<br>"low → medium → high"(standard=high) | TACT |
| Temperature(time) setting(up) | Increase the desired temperature(current time)<br>- Temperature: When pressing the button(ON) one time,<br>the desired temperature is increased by the unit of 1°C.(18°C- 30°C)<br>- Time: When pressing the button(ON) one time, the time is increased by 1 minte.<br>If the "on" button is pressed continuously, the time is increased by 10 minutes.<br>- One short, and continued operation | TACT |
| Temperature(time) setting(down) | Decrease the desired temperature (current time)<br>- Temperature: When pressing the button(ON) one time,<br>the desired temperature is decreased by the unit of 1°C. (18°C - 30°C)<br>- Time: When pressing the button(ON) one time, the time is decreased by 1 minute.<br>If the "on" button is pressed continuously, the time is decreased by 10 minutes.<br>- One short, and continued operation | TACT |
| Change of display | The temperature and current time can be changed.<br>- If the "on" key is pressed 1 time, current temperature<br>and desired temperature are displayed.<br>- If the "on" key is pressed 1 time, current time is displayed. | TACT |
| Brief reservation | The hours of 1,2,3,4 and 5 is selected whenever one time of on is performed. | TACT |
| Heater on/off selection | If the switch is selected to the on direction, the heater is operating at the heater operation condition.<br>The heater is not operating when the switch is selected to the off position. | SLIDE |

* Operating functions



## 3-3 Accessory Parts List

### 3-3-1 Connection Parts

| No. | Part Name | Q'ty | Remarks |
|---|---|---|---|
| 1 | Connecting pipe  3/8" (ø9.52mm) | 1 | Option (Piping box) |
| 2 | Connecting pipe  3/4" (ø19.05mm) | 1 | |
| 3 | Heater cable (3 strand)  | 1 | |
| 4 | Protection tube  | 1 | |
| 5 | Connecting wire (7 strand)  | 1 | Piping box |
| 6 | Wire of sensor (2 strand)  | 1 | |
| 7 | Power cable  | 1 | |
| 8 | Drain hose  | 1 | |
| 9 | Finishing tape  | 2 | |
| 10 | Insulation tape  | 1 | |
| 11 | Insulation tube for indoor unit piping connection  | 1 | |

### 3-3-2 Others

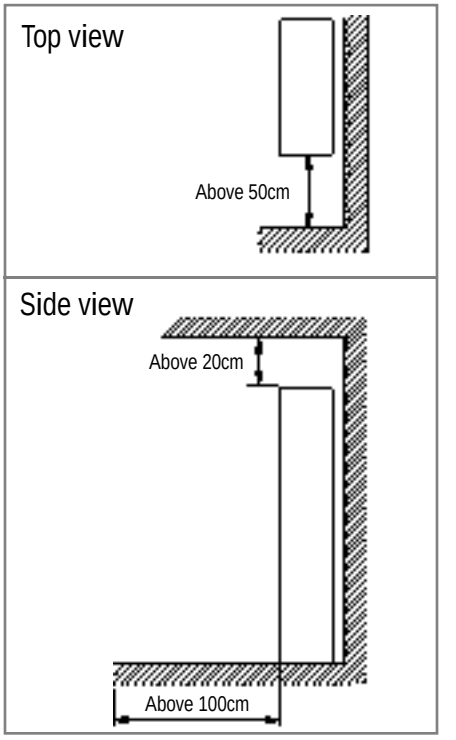
| No. | Part Name | | Q'ty | Remarks |
|---|---|---|---|---|
| 1 | Leg holder for indoor unit  | | 4 | Piping box |
| 2 | Screw  | TH M4 X 12 | 4 | |
| | | TH M4 X 25 | 4 | |
| 3 | Cable clamp  | 12N | 2 | Option(Piping box) |
| | | 8N | 3 | Piping box |
| | | 6N | 1 | |
| 4 | Indoor unit fixing holder  | | 1 | |
| 5 | Leg holder for outdoor unit  | | 4 | |
| 6 | Insulation rubber bottom  | | 4 | |
| 7 | Cable tie  | | 5 | |
| 8 | Putty  | | 3 | |
| 9 | Pipe band  | | 3 | |
| 10 | Rubber cabi slot  | | 1 | |
| 11 | Rubber cabi hole  | | 1 | |
| 12 | Drain plug out  | | 1 | |

## 3-4 Installation

### 3-4-1 Selection of Installation Place

3-4-1(a) Indoor Unit

- Install the unit at a place close to the wall facing the outside as it is necessary to perform piping connection with the outdoor unit.
  - It is effective to install the unit at a window side to ensure uniform distribution of indoor temperature.
- Install the unit at a place where there is no obstacle against the wind around the air inlet and air outlet.
- Install the unit horizontally at a stable, rigid place. (When installing the unit at a place subjected to vibration, noise may occur.)
- Avoid a place near the door which is frequented by people.
- Avoid a place subject to direct sunlight.

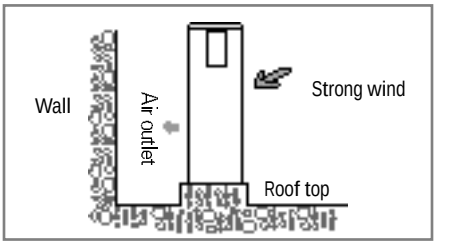



3-4-1(b) Outdoor Unit

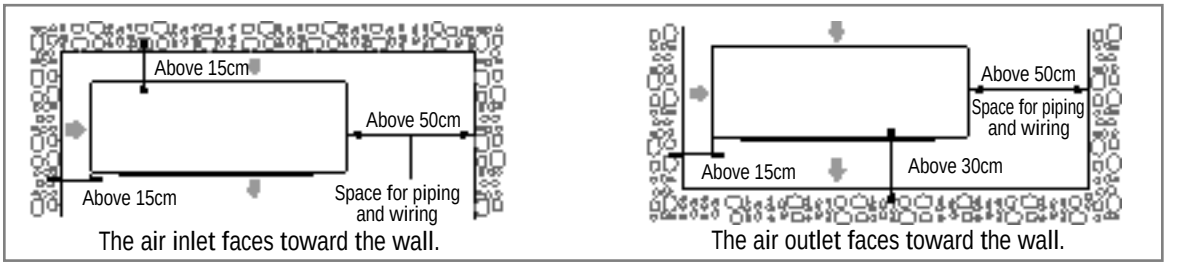
- Place free from the risk of combustible gas leakage.
- Place which can bear the weight of the unit.
- Place which can bear the fixing strength of the outdoor unit.
- Avoid a place subject to oil (including machine oil).
- Avoid a saline place.
- Avoid a place subject to sulfide gas (hot spring zone). (When installing the unit at such special environmental conditions, it may cause machine trouble. When it is unavoidable to use such places. It requires special maintenance.)
- A place where the discharge air and noise of the outdoor unit do not disturb the neighborhood. (Take special care not to cause any inconvenience to your neighbors when installing the unit on the borderline with your neighborhood.)
- A place where strong wind does not head against the air outlet of the outdoor unit. (If a strong wind heads directly against the air outlet at the time of cool operation, a safety device can be operated.)
- Do not install the outdoor unit at an unstable place such as outer wall of an apartment or building. The outdoor unit may fall down, causing severe personal or property damage or loss.

* If there is any unavoidable reason to install the unit at such a place, take the following measures against the wind;

1. When installing the unit at a roadside concentrated with buildings, install it parallel with the road.
2. Install the unit so that the air outlet faces toward the wall at a place such as rooftop, which may be subjected to strong wind.




* The outdoor unit should be installed in accordance with the service space.



## 3-4-2 Electrical Work

The electrical work should be performed by a specialist qualified for the work.

- Use the three phase power supply, and be sure to install the sub power distributing board for exclusive use with the unit(separately purchased by the user).
- * Avoid octopus-type wiring as it can cause a drop in voltage, thus resulting in poor performance of the automatic control circuit.
- Be sure to install circuit breaker (separately purchased by the user).
- Be sure to connect the grounding wire.

### Electric power spec

| | | |
|---|---|---|
| Power | | 3phase 4wires 380V |
| Ampere of breaker | | 50 A |
| Knife switch | Switch | 25 A |
| | Fuse | 25 A |
| Size of grounding wire | | 2.5 $mm^2$ |
| Min. size of electric wires from/to the indoor/outdoor unit | | 0.75 $mm^2$ |

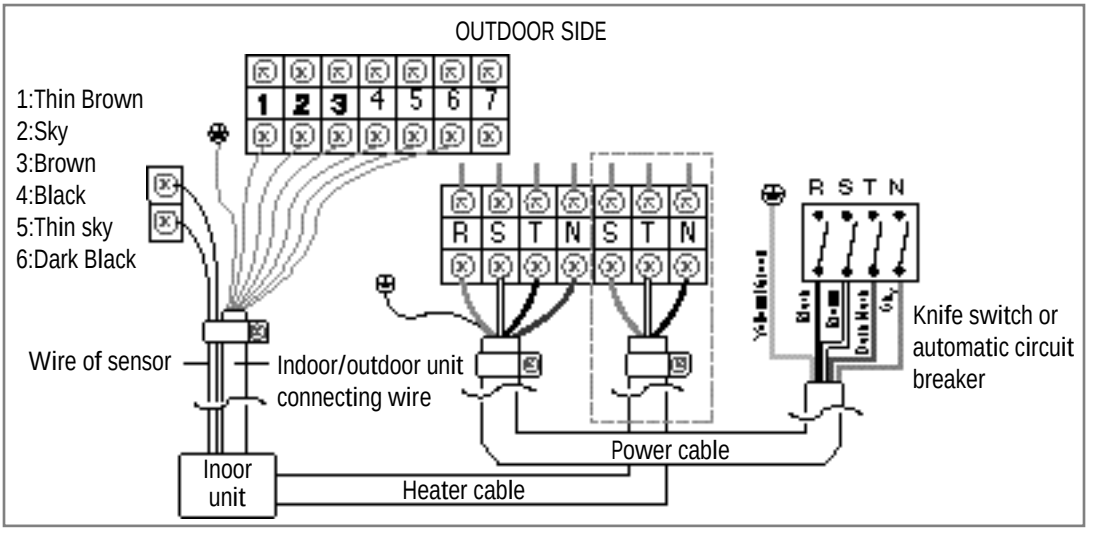
**CAUTION**

- Be sure to use the wires, and switches or fuses of power distribution board are qualified and fulfill the specification.
- Be sure to install knife switch or circuit breaker on the power distribution board.
- The electrical and grounding work should be performed as per " technical specification of electrical facilities " and " specification of internal wiring ".
- Be sure to connect main electrical input wires with bolted connectors using compressed terminal.

| | |
|---|---|
| Applicable voltage 380V | 342V ~ 418V |

### When connecting 3Phase 4wires 380V AC

1. Remove cover of electric box on side panel of outdoor unit.
2. Connect electric input wires (R,S,T,N) to each terminal (R,S,T,N) of the electric box on outdoor unit respectively.
3. Connect electric wires to each terminal on indoor and outdoor unit respectively.




**CAUTION**

- Be sure to connect electrical wires correctly, if not it can cause a trouble.
- * Be sure to fix wires from/to the indoor and outdoor unit on the piping insulated. Avoid wires contact to bare pipe or valve directly without any insulated spacer.

* Must be use the approval wire according to IEC or EN requirement.

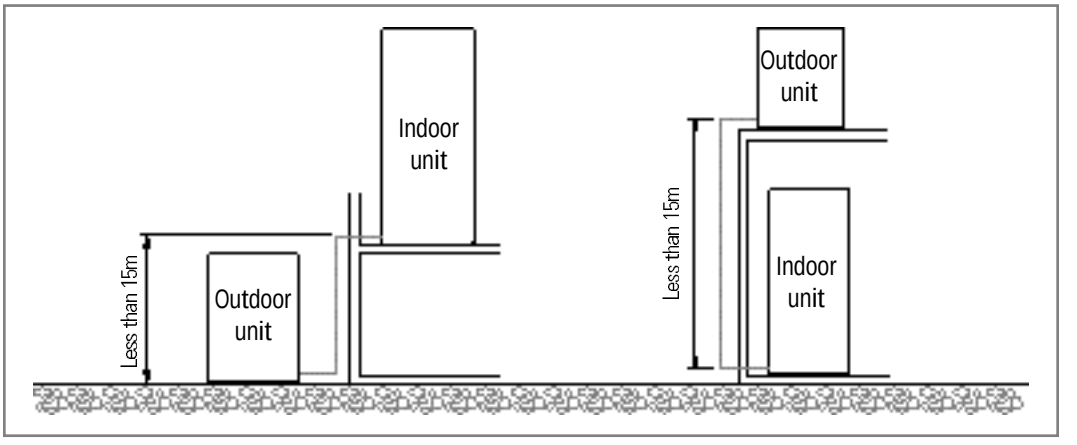
## 3-4-3 Installation Method

### 3-4-3(a) Installation Procedures

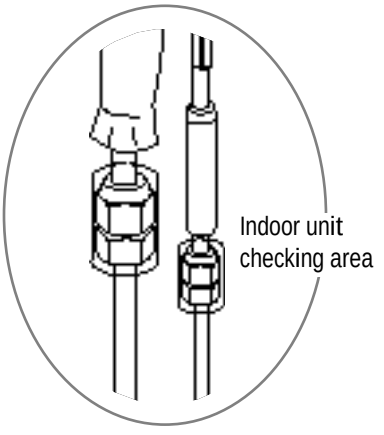
1. Open the inlet grille, and remove the flare nut.
2. Bend the connection pipe to an appropriate length using the spring bender depending upon the installation place.
   - Allowable pipe length : Maximum 25m
   - Allowable pipe drop distance : Maximum 15m
   - Make no more than ten bending points on the pipe
   - When the pipe length is in excess of the standard pipe length of 5m, add the refrigerant (R-22) of 50g for each additional 1m.

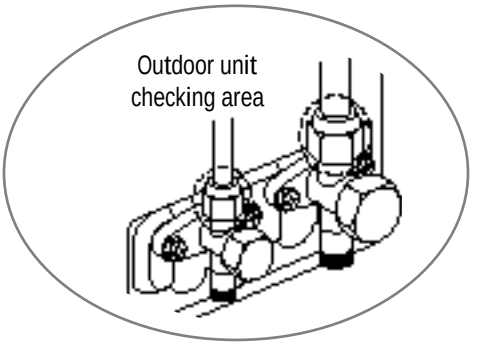
**CAUTION**

- If the pipe is lengthened, the performance of the unit is degraded, and the service life is shortened. Therefore, the pipe length should be as short as possible (less then 15m).




3. Install the high pressure pipe to the heat exchanger liquid pipe, and the low pressure pipe to the heat exchanger gas pipe respectively using the flare nut, taking care not to cause any leakage of refrigerant.
4. Be sure to insulate the pipe with appropriate insulation material.
5. Insert the drain hose into the drain pipe, and connect them by tying them to the cable tie to prevent any water leakage.
6. After completion of the installation, check the connecting area for any gas leakage.
7. Wind a finish tape when the wiring of the refrigerant pipe, the unit, and the drain piping are completed.

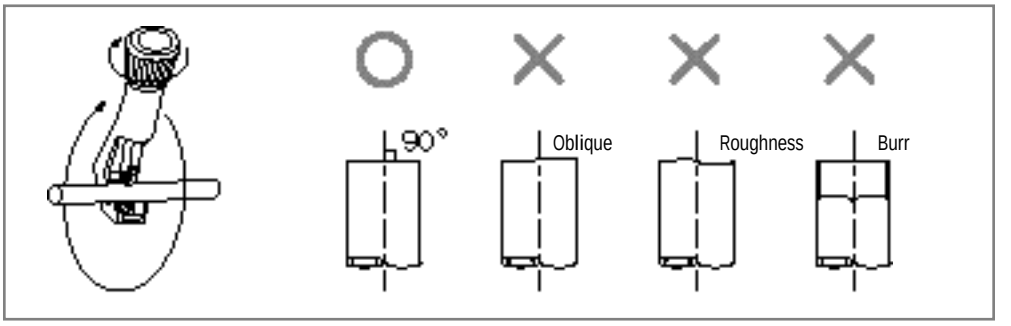


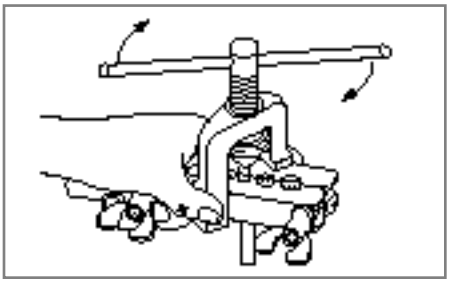
## 3-4-3(b) Connection of Refrigerant Piping

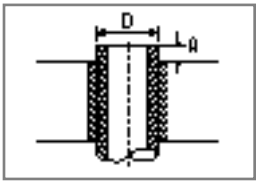
### Flare Processing

1. Cut the pipe using the pipe cutter.



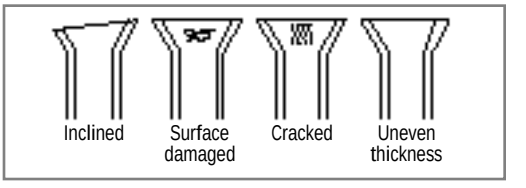

2. Insert the flare nut into the pipe, and then perform the flare processing.





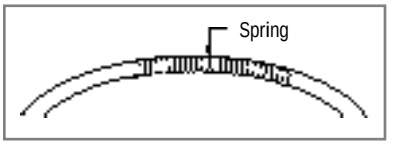

| Outer Diameter | A ( out / in) |
|---|---|
| ø 9.52mm | 1.7 / 1.0 (mm) |
| ø 19.05 mm | 2.2 / 1.5 (mm) |

• Unproper flaring




### Pipe Bending

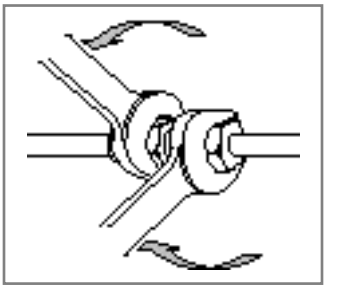
1. Perform bending of the pipe using the bender which has a specified bending radius.
2. Be sure to take full care to perform bending of the pipe successfully at one time.
   Bending and unbending the pipe more than twice makes the bending work increasingly difficult.
3. You may use the spring inserted into the gas pipe instead of the bender to bend the pipe.
4. When you bend the pipe using the spring, hold the pipe with both hands to prevent any distortion, and secure a minimum bending radius of more than 100mm.




### Tightening of Connection Parts

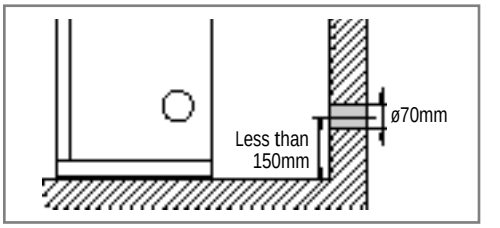
- Align the center of the connection piping, and tighten the flare nut by turning it with hand. Then tighten it again using the spanner in the direction as shown in the figure.

| Outer Diameter | Tightening Torque | Final Torque | Remarks |
|---|---|---|---|
| ø 9.52mm | 400 kg • cm | 450 kg • cm | |
| ø 19.05mm | 700kg • cm | 750kg • cm | |



### 3-4-3(c) Drilling a Hole in the Wall

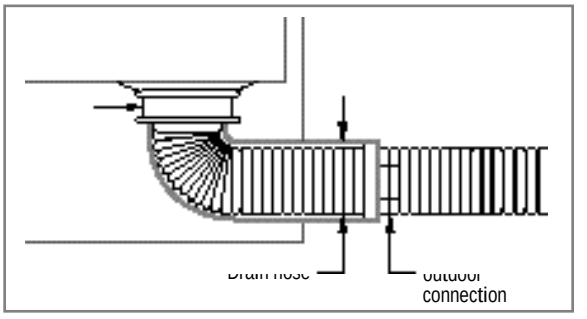
- Drill a hole of 70mm in diameter to the outside.
- The drilling should be done at a distance of less than 150mm from the floor facing the indoor unit.




### 3-4-3(d) Drain Hose

- Extend the drain hose to the drain hose connected to the drain pan, and fix it with the tape or a cable tie to prevent separation. Then make a covering of it so that water can not flow outwardly.

| | |
|---|---|
| Piping Material | Vinyl Chloride(Outer diameter ø 16mm) |
| Insulator | Foamed Polyethylene |

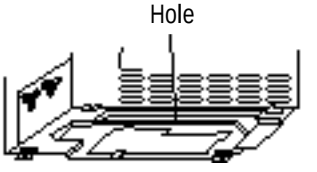


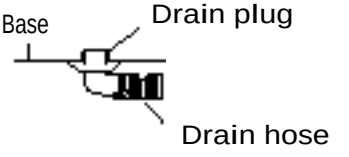

**CAUTION**

1. As the draining is of natural drain type, make the drain hose direct downward.
2. If there is any foreign substance in the drain plate, it may clog the drain pipe. Therefore, be sure to remove the foreign substance inside after installation.
3. After completion of installation, be sure to pour water into the drain pan, and then check the draining condition. (There is no problem in draining when the draining is completed within 20 seconds.)

- In heating and deice operation, condensed water may be generated. Install drain line as following procedure.

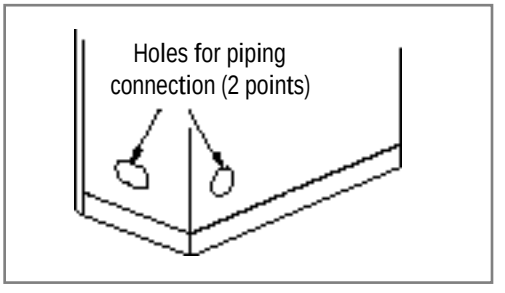
1. Insert the drain plug into base hole.
2. And then connect drain hose to drin plug.

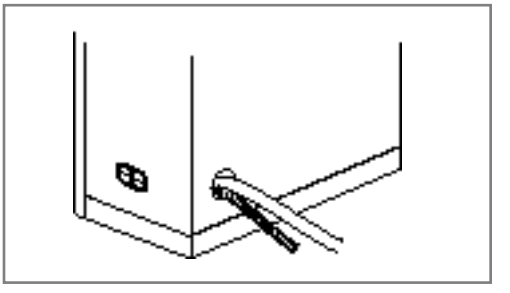



### 3-4-3(e) Rat-prevention Cover

- The piping of this unit can be connected to the left and rear side.
- When you hit the area for piping connection slightly with a hammer, a hole is made.
  - If there is any reason to change connection, fill in hole with ruber cabi slot.



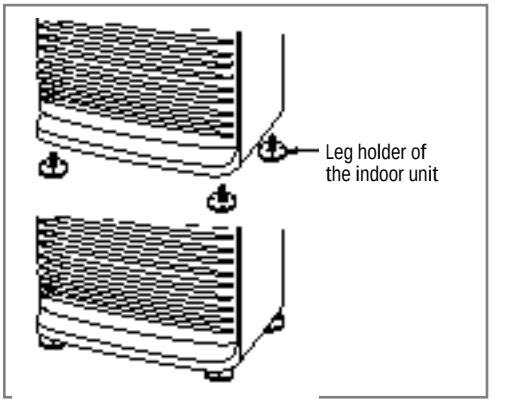
### 3-4-3(f) Indoor Unit

In order to install drain hose through wall, adjust height (max. 150mm) of the indoor unit using leg holder.

#### Fixing to the floor

- When using the leg holder of the indoor unit.

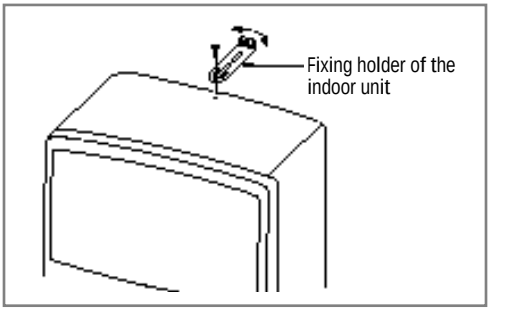
1. Lie down the unit on flat floor.
2. Insert the leg holders into screwed holes and then fasten them clockwise.
3. Turn the unit right and adjust horizontal line of it.
   * Mis-alignment of the unit can cause vibration and noise.




#### Fixing to the wall

- When using fixing holder of the indoor unit.

1. Fix the holder using long screw bolts on wall.
2. Fix the unit using two screw bolts or four anchor bolts.
   (Size of the screw hole on the holder is ø4.5mm and size of the bolt is ø6mm.)




### 3-4-3(g) Outdoor Unit

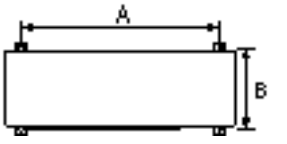
#### When using the anchor bolt

1. Fix the unit on a flat, rigid floor using the anchor bolt. (Anchor bolt : M10 x 4 points - separately purchased)

Anchor bolt fixing dimensions

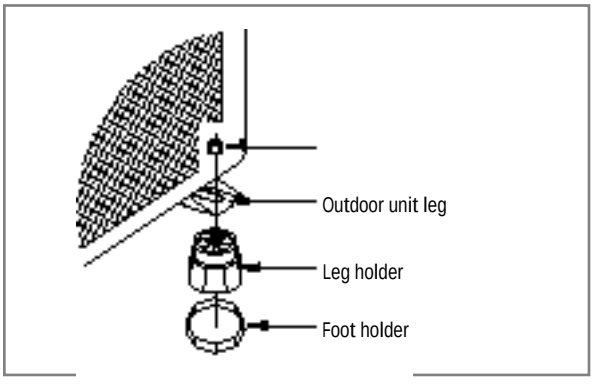
Unit:mm

| | |
|---|---|
| A | 840 |
| B | 415 |



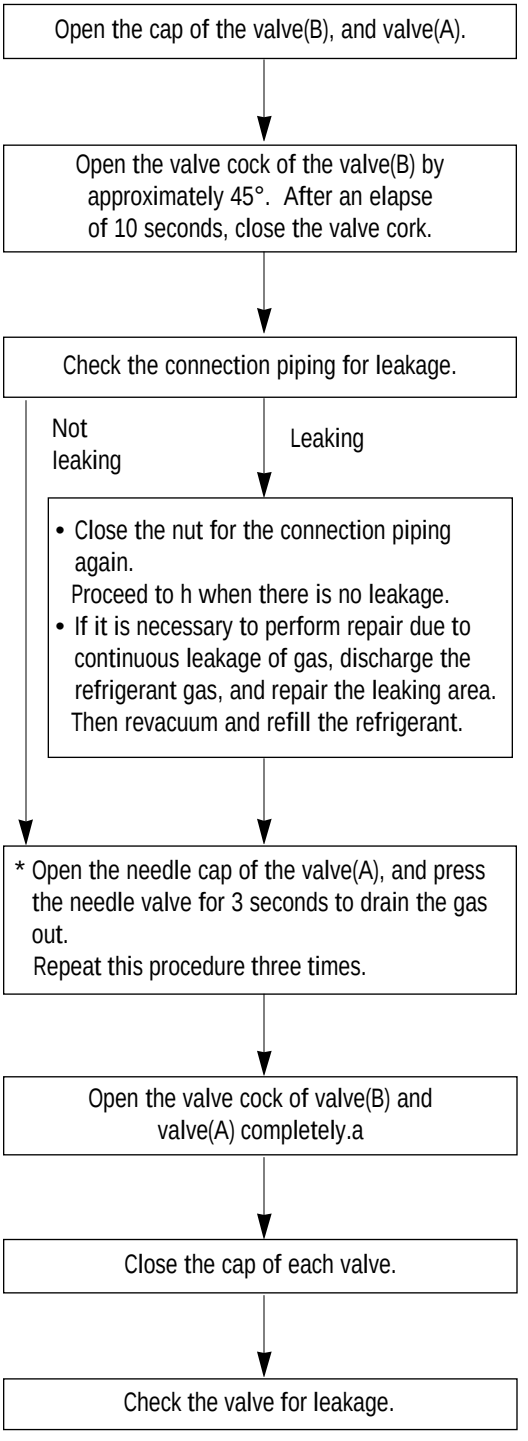

#### When using the leg holder of the outdoor unit

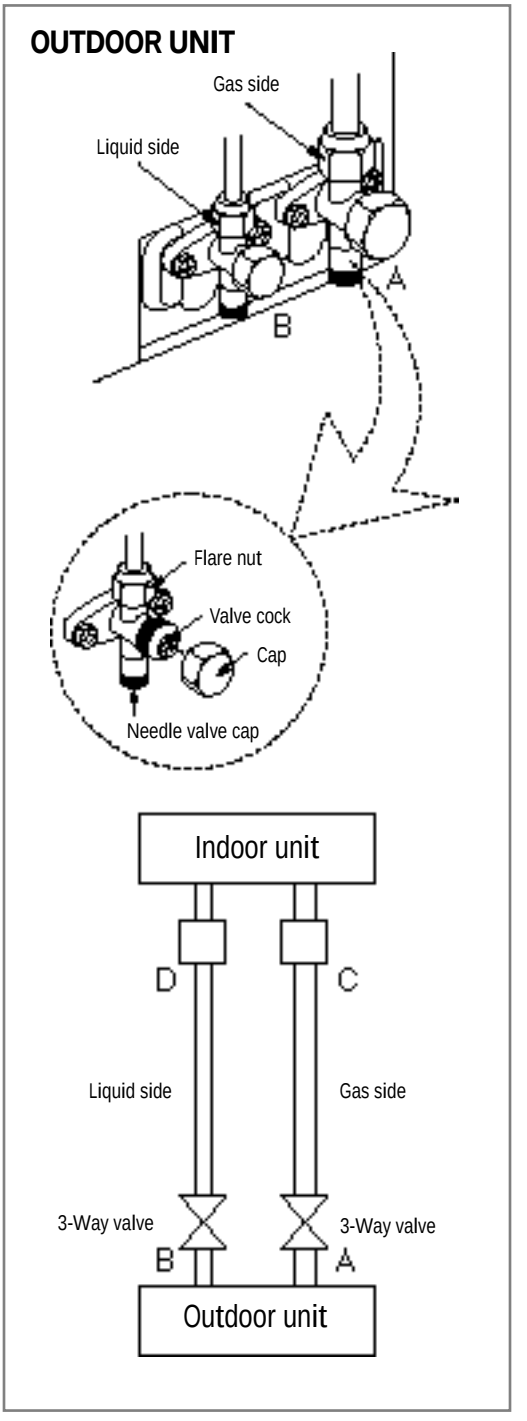
1. Insert the foot holder (4EA).
2. Remove the nut fastened to the leg holder, and then insert the leg holder into the hole of the outdoor unit leg.
3. Fix the unit securely with the nut.



## 3-4-3(h) Air Purge

- Be sure to perform the air purge of the indoor unit, and piping using the refrigerant of the outdoor unit at the time of installation.



## 3-4-3(i) Refrigerant Charging

Air purge(at the time of new installation only)

↓

Close the gas pipe side valve by turning it clockwise.
Connect the pressure gauge to the low pressure side service valve, and then open the gas pipe side valve again.

↓

Connect it to the refrigerant filling tank.
(Turn the tank upside down : Fill the refrigerant in liquid form.)

↓

Start cooling operation.

↓

Check the pressure of the pressure gauge.
Check whether the low pressure side is within the range of 4.5~5.5kg/cm2G
(outside temperature 35°C).

↓

Open the tank and refill the refrigerant until arriving at the proper pressure.
(Refill the refrigent slowly checking the pressure.)

↓

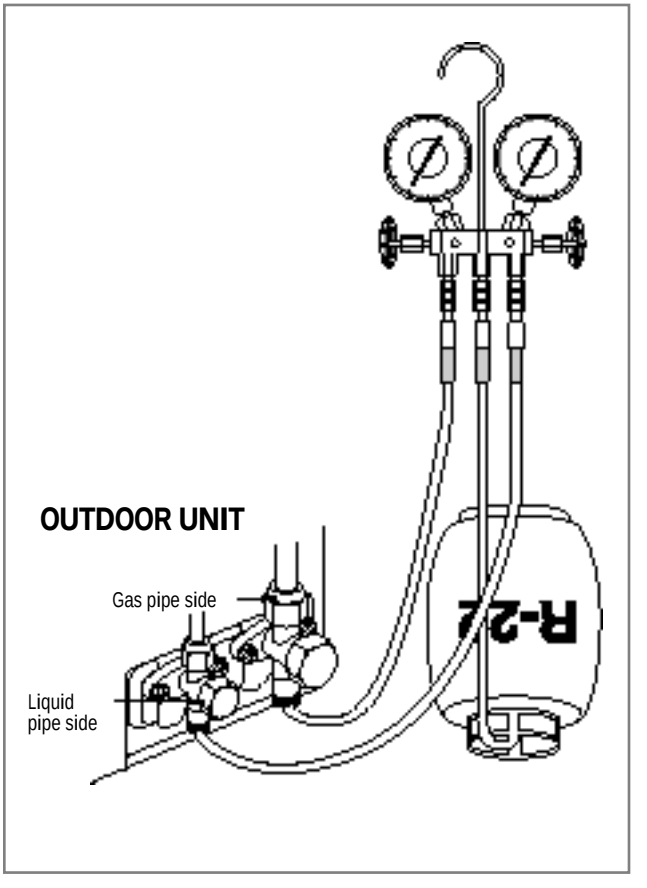
Stop operation.

↓

Close the gas pipe side valve, and loosen the pressure gauge connected.
Then open the gas pipe side valve again.

↓

Tighten the cap of each valve using a specified tool.

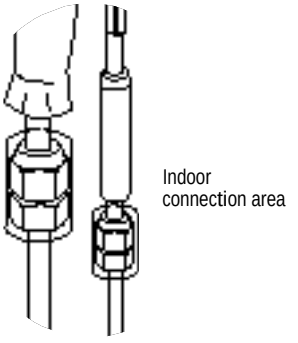


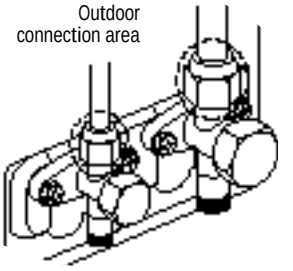
## 3-4-4 Check and Test Operation

### 3-4-4(a) Check

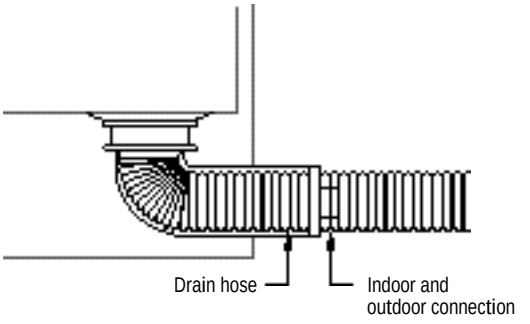
- Be sure to check the following again after completion of installation.

1. Check the piping connection area for any gas leakage.

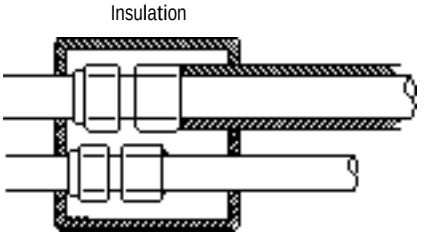


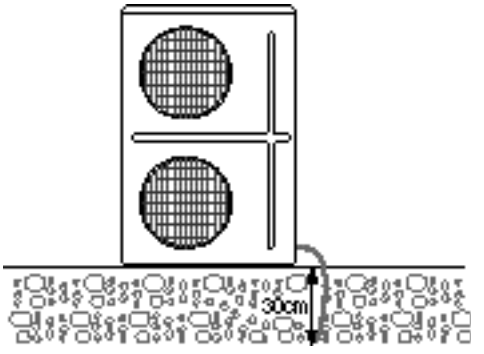

2. Is the drain hose properly connected?




3. Is the insulation of the piping in good condition?




4. Is grounding properly made?

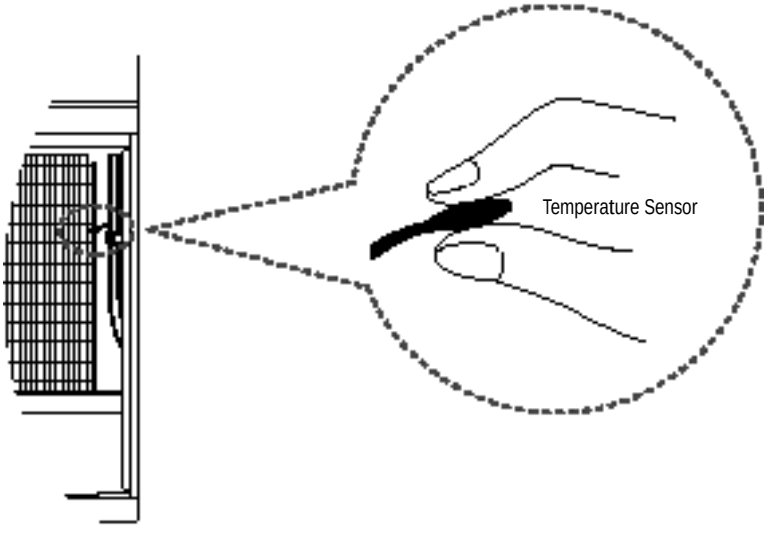


## 3-4-4(b) Test Operation

- After checking, read the owner's instructions carefully, and perform a test operation. Then deliver the unit to the customer.
  (When delivering the unit, be sure to read carefully and follow the contents of the owner's instructions.)

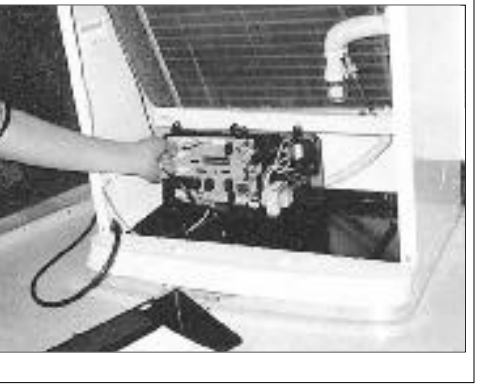
**CAUTION**

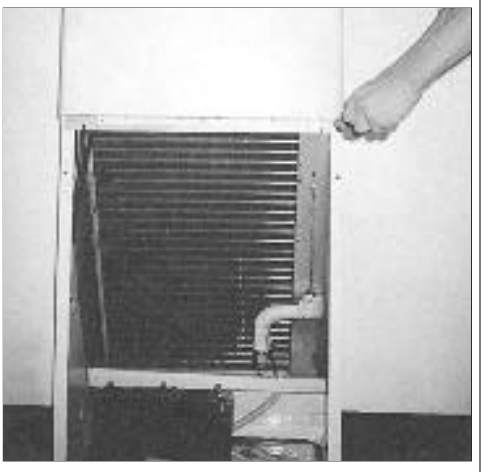
1. Be sure to check whether the service valve is opened before attempting to perform the test operation.
2. Never attempt to start test operation by force pressing the electronic contactor as it is very dangerous.
   (This is very dangerous as the protective device does not work.)
3. Be sure to perform the test operation after installation.
   It is easy to start the test operation in winter if you increase the sensor temperature to 23°C ~ 25°C by holding the indoor temperature sensor. (Cooling operation)

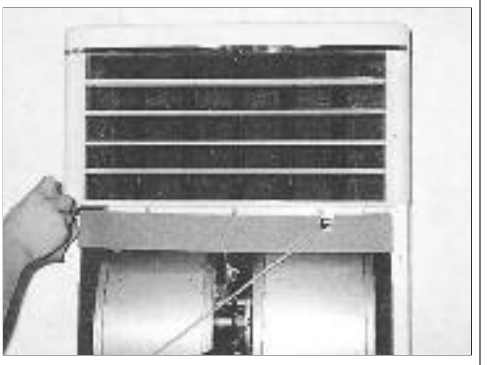
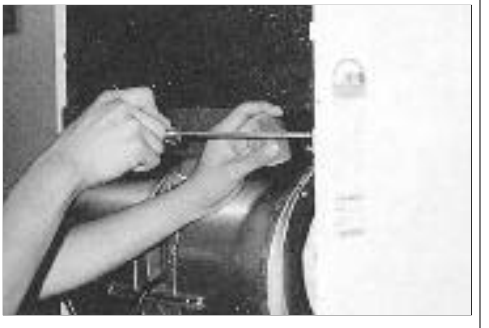
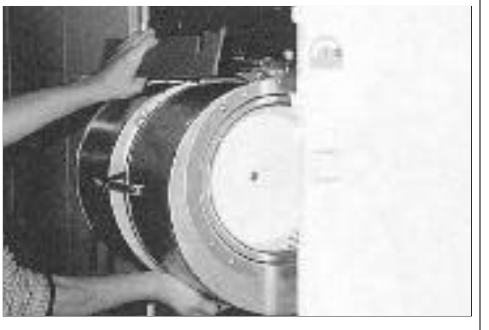


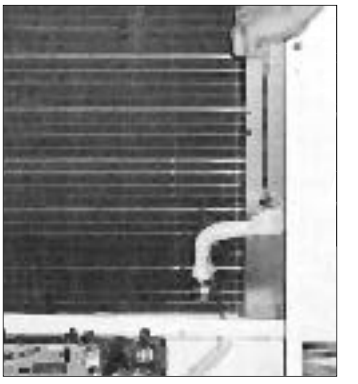
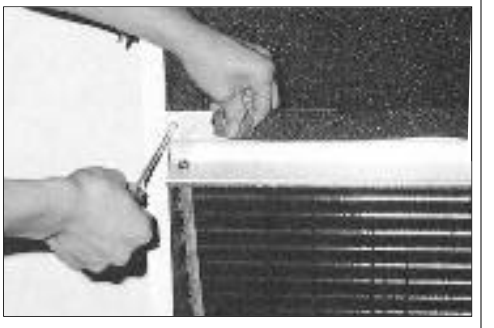
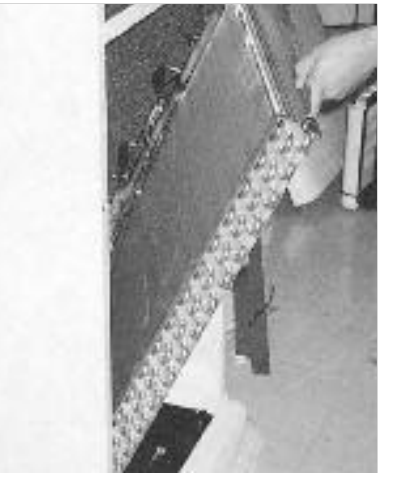
# 4. Disassembly and Reassembly

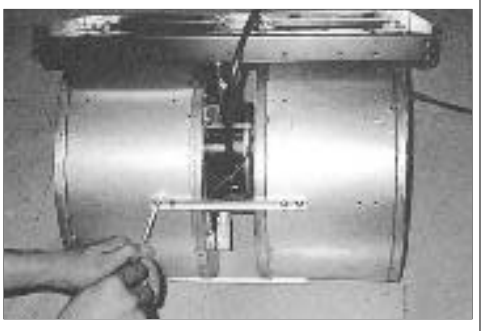
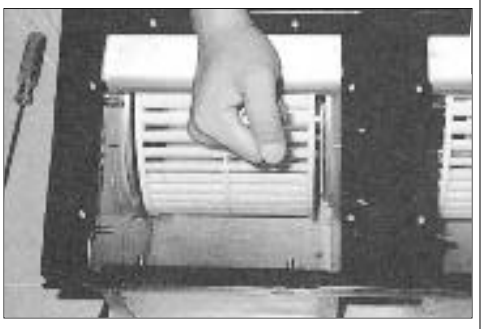
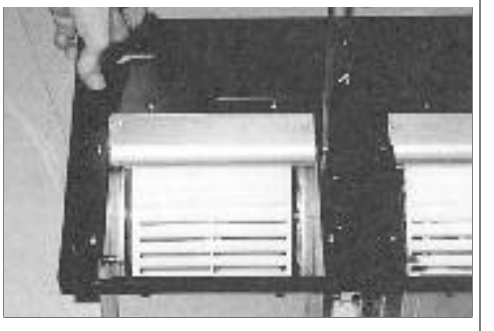
## 4-1 Indoor Unit

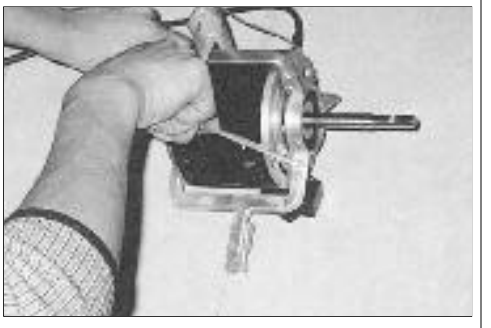
| No | Parts | Procedure | Remarks |
|---|---|---|---|
| 1 | Indoor unit | |  |
| 2 | Inlet grille | 1) Open the inlet grille and remove the connection ring. |  |
| 3 | Main PCB | 1) Separate the PCB connect wire after separating the control box cover.<br>2) Separate the connection wire to separate the front cover and duct.<br>3) The main PCB should be separated by turn over the mountain tab. |  |

| No | Parts | Procedure | Remarks |
|---|---|---|---|
| 4 | Front cabi | 1) The front cabi should be separated by giving strength downward after loosening 2 screws at the lower end. |  |
| 5 | Plate top | 1) The plate top should be separated by loosening screws. |  |

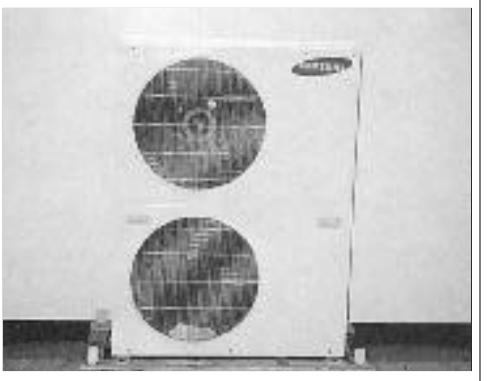
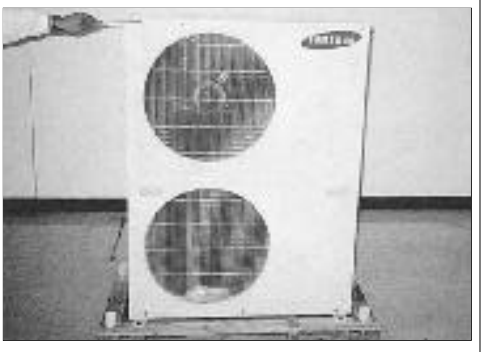
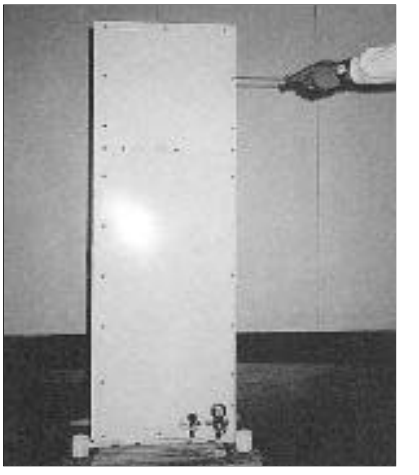
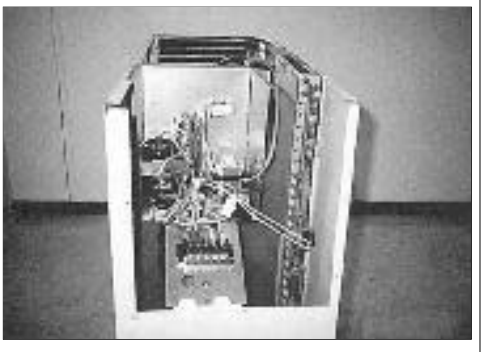
| No | Parts | Procedure | Remarks |
|---|---|---|---|
| 6 | Ass'y grille out | 1) First loosen screws at left and right sides of grille out. |  |
| | | 2) Then the ass'y grille out should be separated by giving strength upward (↑). |  |
| 7 | Ass'y Blower in | 1) First loosen the 4 screws at left and right sides. |  |
| | | 2) Then the ass'y duct should be separated by lifting it. |  |

| No | Parts | Procedure | Remarks |
|---|---|---|---|
| 8 | Evaporator | 1) First separate the cover after loosening the screws fixed at evap cover R. |  |
| | | 2) Then separate the 3 screws fixed at cabinet BKT of evaporator BKT. |  |
| | | 3) Evaporator should be separated by flinging ahead. |  |

| No | Parts | Procedure | Remarks |
|---|---|---|---|
| 9 | Motor | 1) When the ass'y duct should be separated from the motor, the 2 bracket should be separated first. |  |
| | | 2) Then the bolts fixed at the blower and motor shaft should be separated. |  |
| | | 3) Then the screws binding the holder top blower and duct should be separated. |  |
| | | 4) The duct of one side should be separated as the picture shows after loosening the upper binder. |  |
| | | 5) The binder of the motor and the duct should be separated. |  |

| No | Parts | Procedure | Remarks |
|---|---|---|---|
| | | 6) Then the motor should be separated. |  |
| | | 7) The bracket fixed at the motor should be separated. |  |
| 10 | Panel PCB | 1) Should be separated after loosening the insulating material and binders at the back of the front side. |  |

## 4-2 Outdoor Unit

| No | Parts | Procedure | Remarks |
|---|---|---|---|
| 1 | Outdoor unit | 1) Packaged air conditioner outdoor unit |  |
| | | 2) The binders of the front side should be separated. |  |
| | | 3) The flank and the binders should be separated from each other. |  |
| 2 | Control box | 1) Connect distributed wires in the control box. |  |

# 5. Troubleshooting

| | Troubleshooting |
|---|---|
| First, | Items to be checked first |
| Second, | Check the corrective actions in the case of occurrence of self-diagnosis mode |
| Third, | When the trouble is not related to the 1st or 2nd items above, check the troubled area in detail in accordance with the fault analysis method by symptom. |

## 5-1 Items to be checked first

1) Is the supply voltage appropriate?
   The supply voltage: should be AC 187V-AC 253V/60Hz
2) Is the connecting wire between the indoor unit and outdoor unit appropriate?
   Be sure to check whether the cables for the indoor unit and outdoor unit are securely connected by the same terminal number.
3) When any claim occurs according to the contents of the table below, it is not related the trouble of the air-conditioner at all.

| No. | Operation of air-conditioner | Description |
|---|---|---|
| 1 | The compressor does not operate even though the desired temperature is set lower than room temperature (during the cooling operation) | The compressor operation is delayed for 3 minutes for the protection of it during the restart of compressor. It operates normally after 3 minutes delay even at the initial operation. |
| 2 | The hot wind does not come out even though the desired temperature is set higher than the room temperature. (heating operation) | In order to prevent the discharging of cool wind, the room fan motor operates only when the temperature of indoor heat exchanger is kept higher than a constant one. |
| 3 | The wind quantity is not controlled during the automatic (cooling/heating) turbo operation. | The wind quantity is set by the micom during the automatic turbo operation. |
| 4 | The temperature can not be set during the automatic (cooling/heating) turbo blowing operation. | The desired temperature is set automatically during the automatic turbo operation. The wind blowing operation is simply the operation mode for the circulation of indoor air. |

## 5-2 Self-diagnosis and corrective actions

| No. | Temperature display | Cause | Corrective actions |
|---|---|---|---|
| 1 | E1 | Short of indoor temperature sensor<br>Open of Indoor temperature sensor | Check of departure of indoor temperature sensor<br>Check of PCB open/short |
| 2 | E5 | Short of indoor heat exchanger sensor<br>Open of indoor heat exchanger sensor | Check of indoor exchanger sensor departure<br>Check of PCB open/short<br>Replacement of sensor |
| 3 | E6 | Short of outdoor heat exchanger sensor<br>Open of outdoor heat exchanger sensor | Check of outdoor exchanger sensor departure<br>Check of PCB open/short<br>Replacement of sensor |
| 4 | E7 | Short of heater temperature sensor<br>Open of heater temperature sensor | Check of heater wiring diagram<br>Check of sensor attachment location |
| 5 | EL | When the electrical heater is over heated | Check of heater temperature sensor departure<br>Check of PCB open/shore<br>Replacement of sensor |

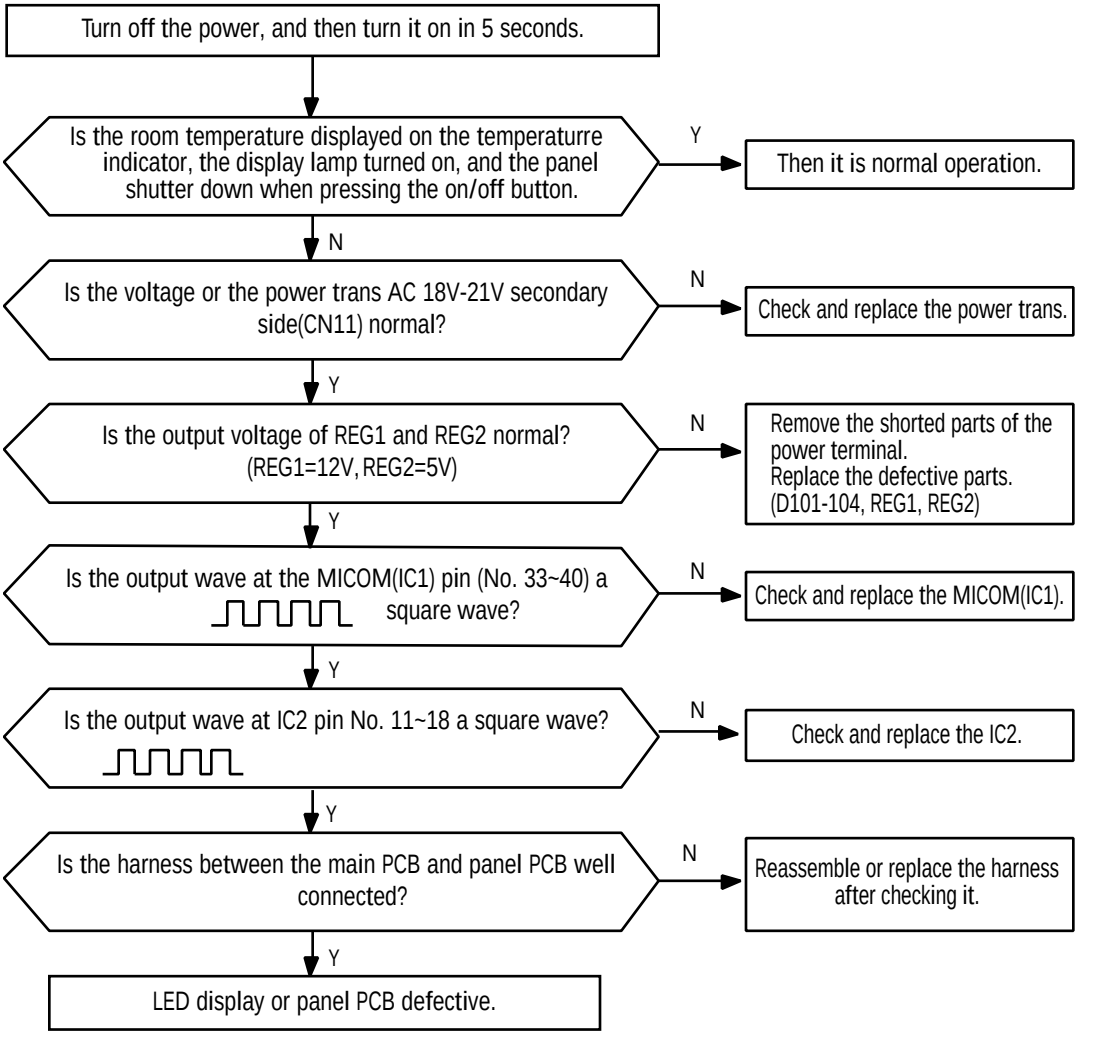
## 5-3 Fault Analysis by Symptom

### 5-3-1 No Power (No display)

1) Checkpoints

(1) Is the voltage of the power source normal?(AC 187V - AC 253V)
(2) Is the power line in good contact?
(3) Check the power fuse(F701, F702) and PCB fuse(F101) for open.
(4) Are the primary and secondary sides of the power-trans in good contact with the connector?
(5) Is the output voltage of REG1(KA7812) normal?(DC 11.5V - DC 12.5V)
(6) Is the output voltage of REG2(KA 7805) normal?(DC 4.5V - DC 5.5V)

2) Checking procedures(after checking the checkpoints of clause 1)

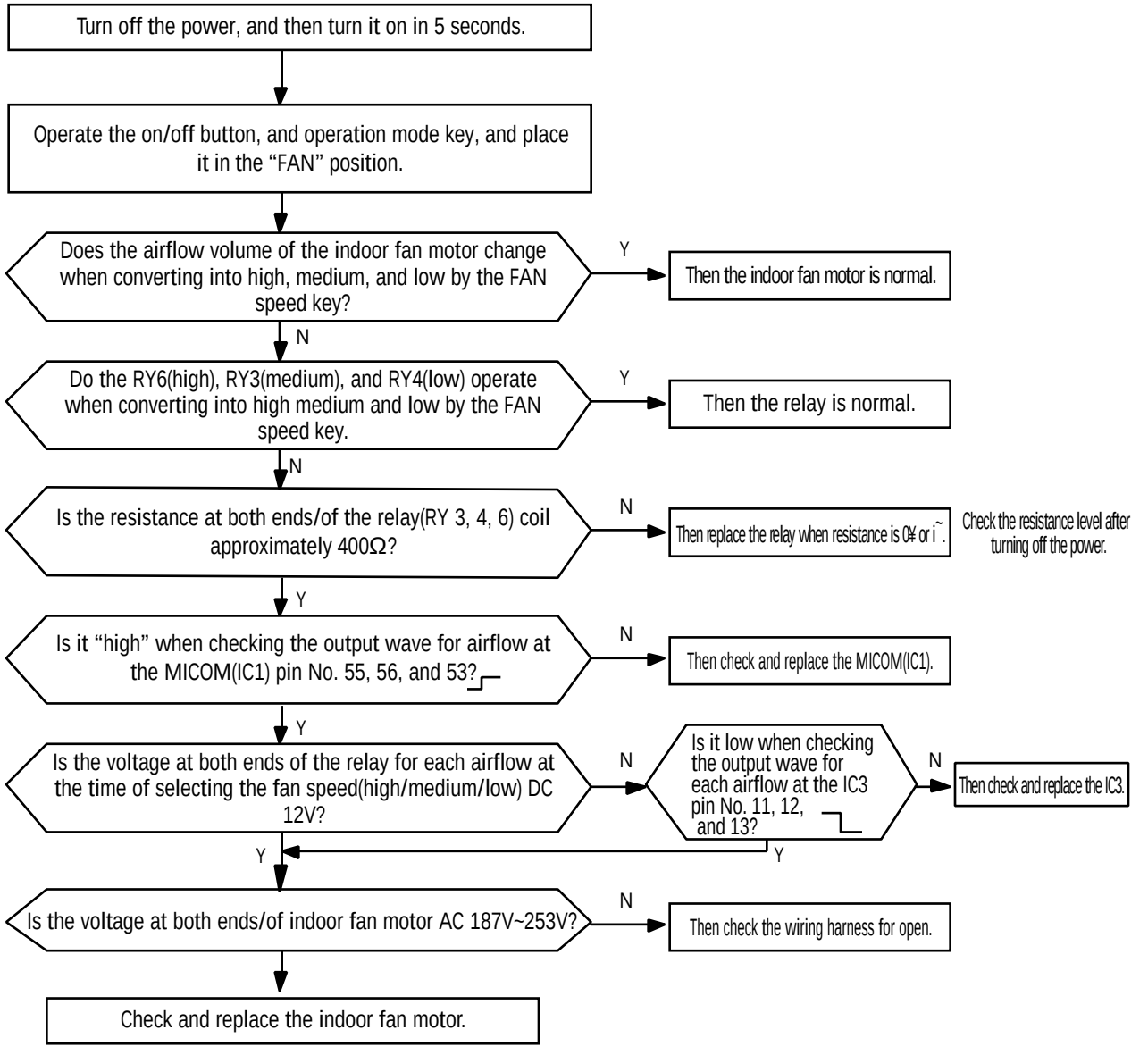


## 5-3-2 When the Indoor Fan Motor does not Operate.

1) Checkpoints

(1) Is the voltage of the power source normal?(AC 187V-AC 253V)
(2) Is the indoor fan connector (CN71) in good contact?
(3) Is the starting condensor of the fan motor in good contact with the terminal?
(4) Is the resistance at both ends of the relay coil approximately 400Ω?

2) Checking procedures(after checking the checkpoints of clause 1)

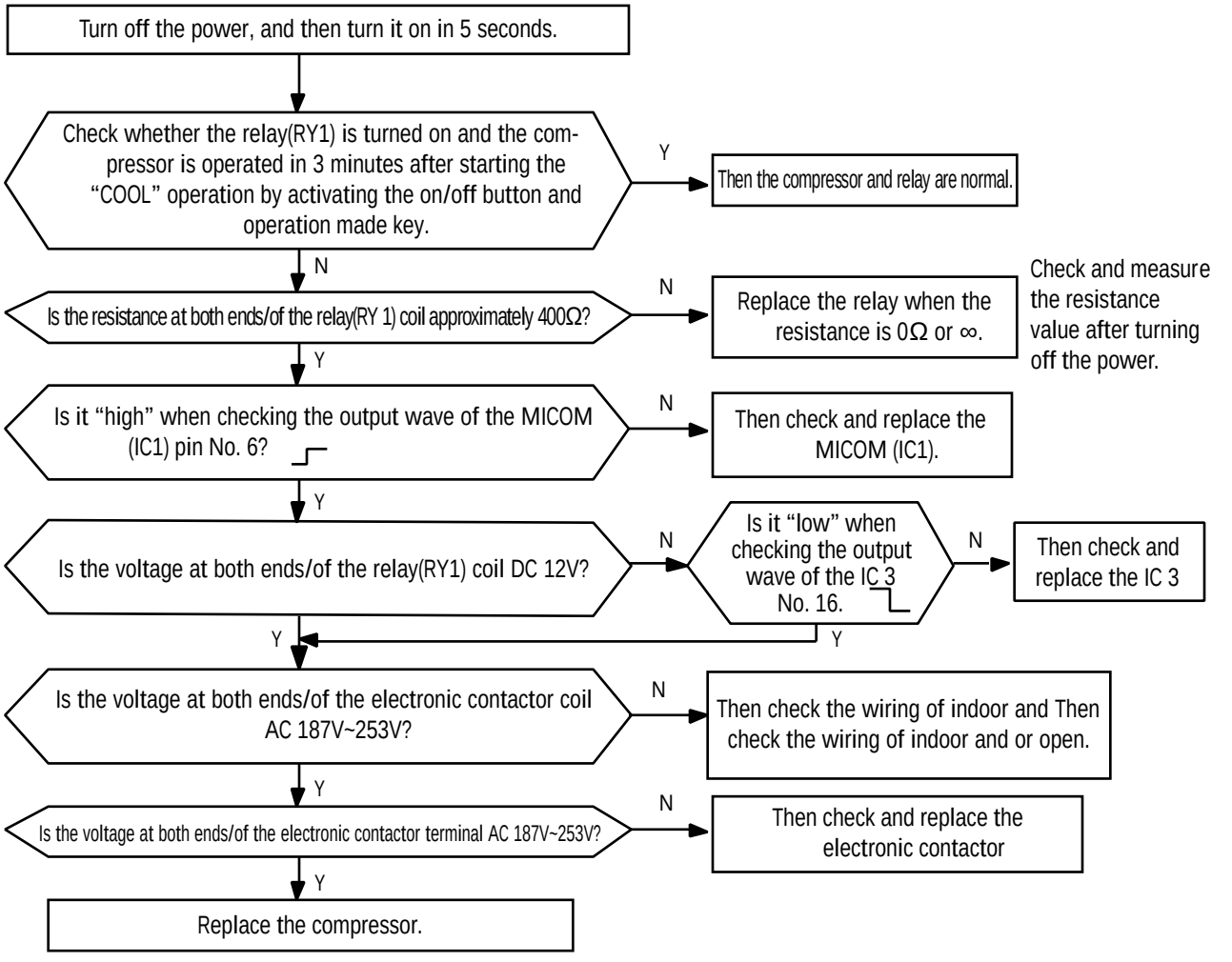


### 5-3-3 When the Compressor Does not Operate

1) Checkpoints

(1) Is the voltage of the power source normal?(AC 187V - AC 253V)
(2) Is the desired temperature set at a higher level than the current temperature at the time of “Cool” operation?
(3) Is the power-in good contact with the comp. connector(GT 1, 2, 3, 4, 5)?
(4) Check the wirings of the outdoor and indoor unit for a wrong connection or poor contact.
(5) Isn’t the compressor in a 3-minute stand-by state?

2) Checking procedures(after checking the checkpoints of clause 1)

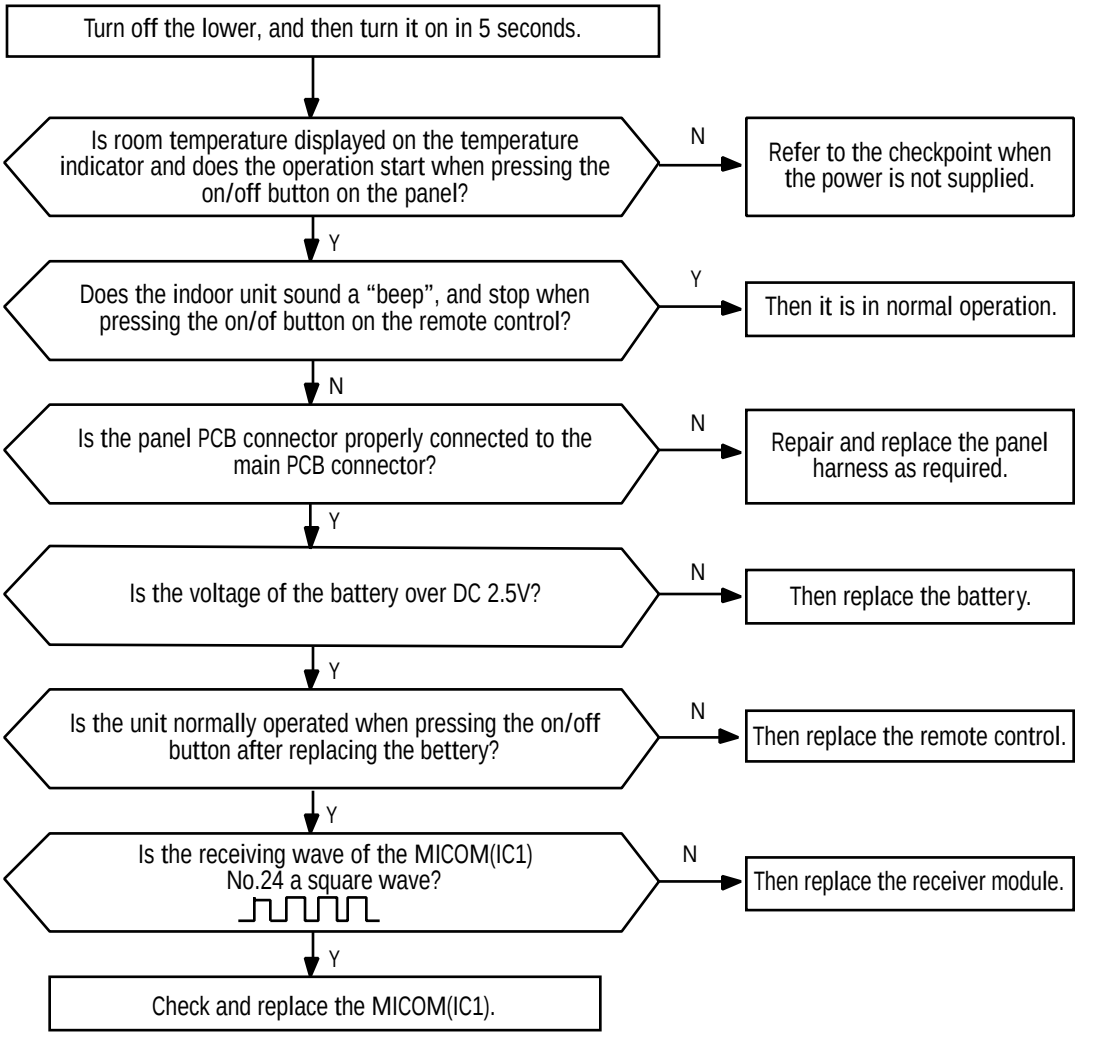


### 5-3-4 When the remote control does not operate

1) Checkpoint

The sounds “beep” when it receives the signal of the remote control.

2) Checking procedures



## 5-4 PCB Inspection

### 5-4-1 Inspection Precautions

1. Be sure to check whether the AC sub power switch is removed when removing the main PCB or panel PCB.
2. Do not hold the outside of the main PCB or panel PCB with the hand or aply excessive force to it.
3. When connecting or removing the connector to the main PCB or panel PCB, do not pull the lead wire, but hold the entire assembly with the hand.

### 5-4-2. Inspecting procedures

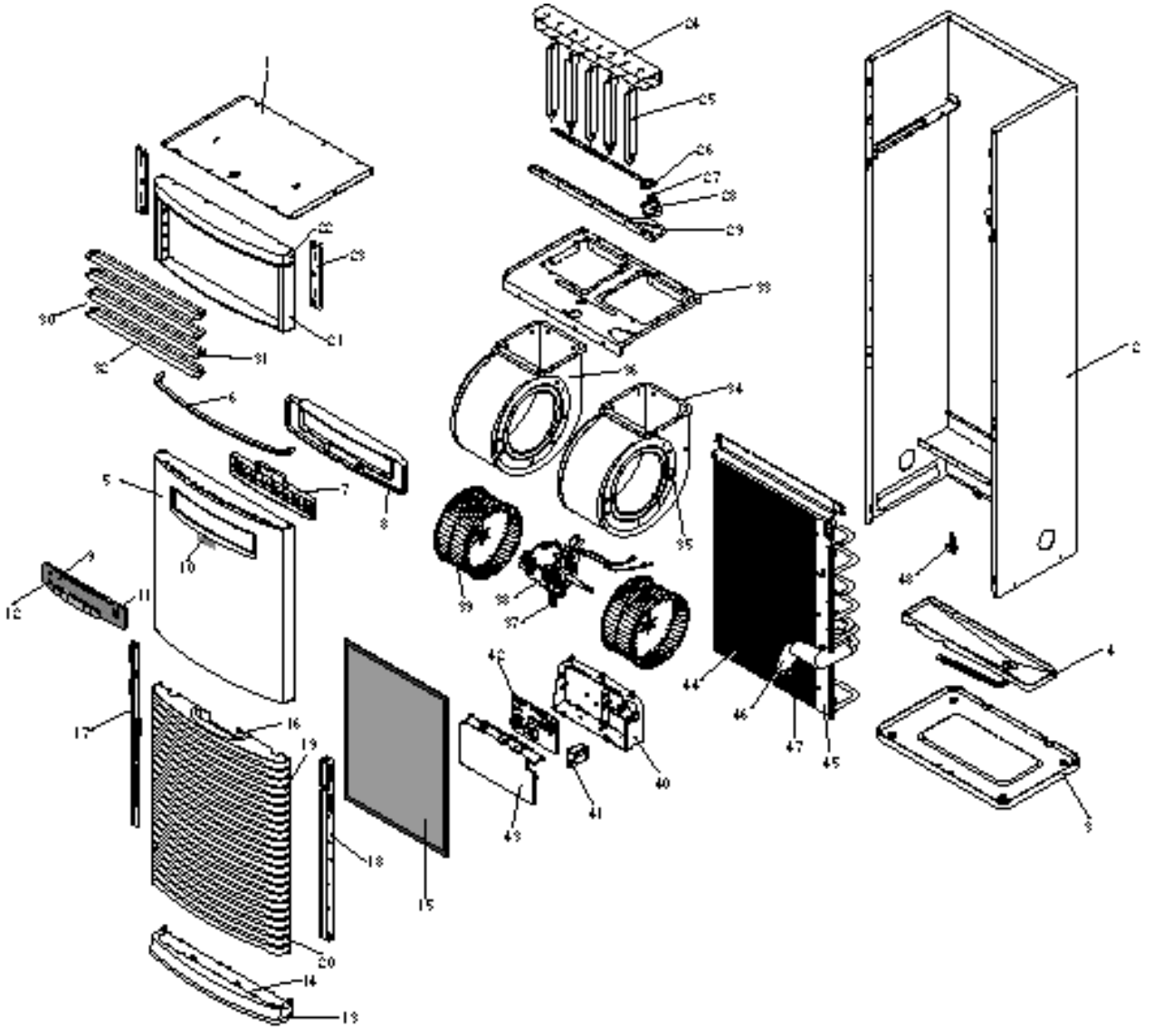
1. When there is any trouble with the main PCB or panel PCB, check the connector for a poor connection, and the PCB or copper-clad pattern for separation.
2. The PCB is composed of the following two parts;
   - Main PCB: The main PCB is composed of the micom and peripheral circuit, relay drive sensor drive circuit, DC 5V power circuit, DC 12V power circuit and buzzer drive circuit.
   - Panel PCB: The panel PCB is composed of the LED display key and remote control.

### 5-4-3. Detailed inspection procedures

| NO | Procedures | Checking method | Cause of trouble |
|---|---|---|---|
| 1 | Turn off the sub power switch, and then check PCB fuse. | 1) Is the fuse blown? | 1) Overvoltage?<br>2) Indoor fan motor short? |
| 2 | 1. Apply the supply voltage<br>2. When power lamp and LED display operate after pressing the on/off button, it is not related to items 1)~4). | Check the supply voltage<br>1) Is the voltage between both ends/of the trans connector “AC187V~AC253V” (GT6, GT7)<br>2) Voltage between both terminals of the CN 11 AC15V~ AC22V<br>3) Is the voltage between both terminals of the REG1 (KA 7812) out and GND DC 12V?<br>4) Is the voltage between both terminals of the REG2 (KA7805) out and GND DC 5V? | 1) Power cord faulty, poor connection of indoor and outdoor unit, fuse blown, wrong wiring of power cables.<br>2) Power trans faulty.<br>Power circuit faulty.<br>3) Power circuit faulty load short.<br>4) Power circuit faulty, load short. |
| 3 | Set the unit to “COOL” operation mode by the “ON/OFF” button and mode selector key.<br>1. Cool operation<br>2. Set the desired temperature at a sufficiently lower level than the current temperature. | 1) The compressor does not operate. | 1) The relay(RY1) for driving the electronic contractor does not operate.<br>2) Electronic contactor faulty. |
| 4 | Set the unit to “HEAT” operation mode by the “ON/OFF” button and mode selector key.<br>1. Heat operation<br>2. Set the desired temperature at a sufficiently lower level than the current temperature. | 1) The compressor does not operate. | 1) The relay(RY1) for driving the electronic contactor does not operate.<br>2) Electronic contactor faulty. |
| 5 | Set the unit to “HEAT” operation mode by the “ON/OFF” button and mode selector key.<br>1. Heat operation<br>2. Set the desired temperature at a sufficiently lower level than the current temperature. | 1) Is the voltage between the com terminal and the high, medium, and low terminal of the indoor fan motor connector AC187V~AC253V? (When selecting each fan speed)<br>2) The indoor fan motor does not turn. | 1) Indoor fan motor faulty.<br>2) Starting condenser faulty. |

# 6. Exploded Views and Parts List

## 6-1 Indoor Unit

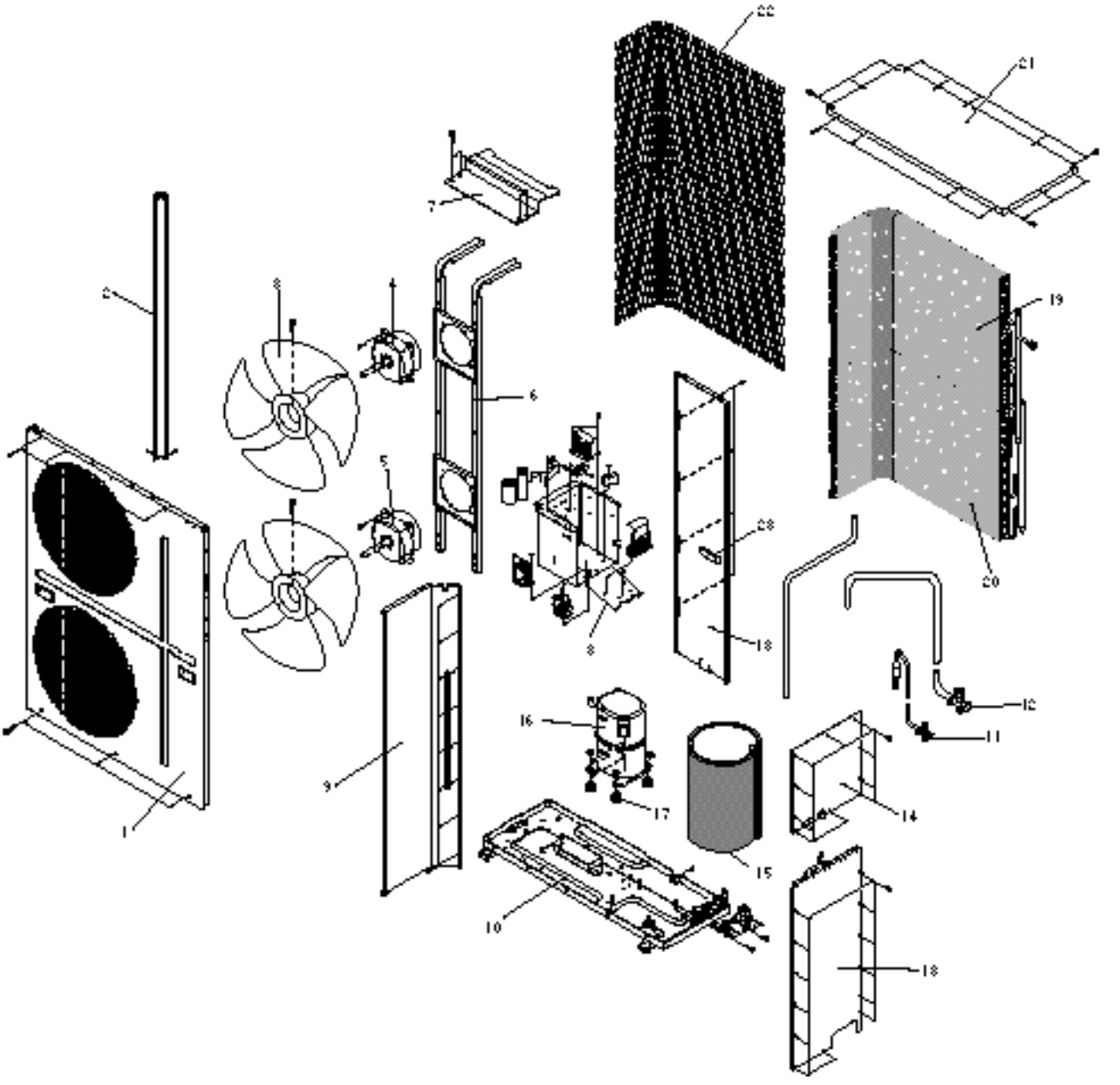


■ PART LIST

| No | CODE-NO | DESCRIPTION | SPECIFICATION | Q'TY | REMARKS |
|---|---|---|---|---|---|
| 1 | DB70-10271A | PLATE-TOP | SECC-P, -, -, -, -, SC-94445T | 1 | |
| 2 | DB90-10561A | ASS'Y-CABI IN | AP-1100, L1810590°ø363 | 1 | |
| 3 | DB90-20171B | ASS'Y-BASE IN | SAH-2017, 2517, SECC-P(20/20) | 1 | |
| 4 | DB91-90012C | ASS'Y-DRAIN PART | AP-1604CR, - | 1 | |
| ● | DB90-40113F | ASS'Y-CABI FRONT | Heater only model | (1) | Option |
| | DB90-40113D | " | Non heater model | (1) | |
| 5 | DB90-10175A | ASS'Y-CABI FRONT IN | SA-165CH, LAMINATED | 1 | |
| 6 | DB64-50076A | DECORATION-LOW | ABS, -, -, - | 1 | |
| 7 | DB63-10027A | COVER-CONTROL | ABS, -, -, - | 1 | |
| 8 | DB63-10432A | " | EPS | 1 | |
| 9 | DB93-40232T | ASS'Y-CONTROL PANEL | Heater only model | (1) | Option |
| | DB93-40232V | " | Non Heater model | (1) | |
| 10 | DB64-30011D | BRAND-SAMSUNG | KOAL, T1.6, W11.5, L70, BLK, - | 1 | |
| 11 | DB64-50019A | KNOB-A | ABS, CR, SAH-165CH, - | 1 | |
| 12 | DB64-50020A | KNOB-B | ABS, CR, SAH-165CH, - | 2 | |
| 13 | DB64-50069A | DECORATION-DIE | ABS, GRY, SAH-165CH, - | 1 | |
| 14 | DB61-30501A | BRACKET-DECO LOW | SECC-P(20/20), T2.0, SC-4 | 1 | |
| 15 | DB74-10079A | FILTER-PRE | PE, T0.3, AP-110 | 1 | 16~20 ASS'Y |
| ● | DB92-10007B | ASS'Y-GRILLE IN | SAH-165CH, - | 1 | |
| 16 | DB67-90005A | BASKET-PEMOCON | SAH-2016/2516 | 1 | |
| 17 | DB61-30108A | BASKET-GRILL LF | SC-9444ST, SAH-165CH | 1 | |
| 18 | DB61-30109A | BASKET-GRLL RH | SC-94445T, SAH-165CH | 1 | |
| 19 | DB64-10035A | GRILLE INLET UP | ABS, SAH-2016/2516 | 1 | |
| 20 | DB64-10036A | GRILLE INLET LOW | ABS, SAH-2016/2516 | 1 | 21~29 ASS'Y |
| ● | DB92-10298A | ASS'Y-GRILLE OUT | AP-1100, - | 1 | |
| 21 | DB64-10034A | GRILLE OUTLET | ABS, SAH-2016/2516 | 1 | |
| 22 | DB64-50075A | DECO UP | ABS, SAH-2016/2416 | 1 | |
| 23 | DB61-40034A | HOLDER OUT GRILL | SECC-P(20/20), BLK | 2 | |
| 24 | DB61-40235A | HOLDER-BLADE UP | SGCCM, T1, -, L564 | 1 | |
| 25 | DB66-30156A | BLADE-V | PC ABS, T3, 5, - | 5 | |
| 26 | DB66-60026A | LINK-BLADE V | PC ABS, T2, 12, -, -, - | 1 | |
| 27 | DB68-70001A | CAM BLADE | POM | 1 | |
| 28 | DB95-20065E | ASS'Y-MOTOR SWING | 516RPM M2LA49ZR32, - | 1 | |
| 29 | DB61-40234A | HOLDER-BLADE LOW | SGCCM, T1, -, L564 | 1 | 31, 32 ASS'Y |
| 30 | DB92-20017A | ASS'Y BLADE H | SAH-2016/2516 | 4 | |
| 31 | DB61-40037A | HOLDER-BLADE | ZN-DC1, -, -, SAH-165CH | 2 | |
| 32 | DB66-30070A | BLADE-H | SECC-P, T0.5, 230, - | 1 | 33~39 ASS'Y |
| ● | DB94-30143C | ASS'Y BLOWER IN | APH450PG, 6uF | 1 | |
| 33 | DB61-40233A | HOLDER-TOP BLOWER | SGCCM, T2.0, -, AP-1100 | - | |
| 34 | DB90-40112B | ASS'Y-CASE DUCT R | AP-1100, T0.8 | 1 | |
| 35 | DB63-10431A | COVER-BELL MOUTH | SGCCM, T0.8, -, -, M, AP-1100 | 4 | |
| 36 | DB90-40112A | ASS'Y CASE DUCT L | AP-1100, T0.8 | 1 | |
| 37 | DB61-30507A | BRACKET-MOTOR IN | SGCCM, T2.0, -, AP-1100 | 3 | |
| 38 | DB95-20136E | ASS'Y-MOTOR IN | APH450PG | - | |
| 39 | DB67-50003A | BLOWER | ABS, -, - | 2 | |
| 40 | DB61-10023A | CASE-CONTROL | ABS, -, -, BLK, -, - | 1 | |
| 41 | DB26-10070A | TRANS-POWER | DC17, AC230, -, -, -, DC17, DC0.6A | 1 | |
| 42 | DB93-10519A | ASS'Y-PCB MAIN | | 1 | |
| 43 | DB63-10033A | CSVER-CONTROL CASE | ABS, -, BLK, -, - | 1 | |
| 44 | DB96-40164B | ASS'Y-EVAP IN | APH450PG | - | |
| 45 | DB63-10430A | COVER-EVAP R | SGCCM, T0.8, -, -, L749 W 77 | 1 | |
| 46 | DB96-10559A | ASS'Y-TUBE INLET PART | AP-1300, 1.2/850/900/950/1000 | 1 | |
| 47 | DB96-50083A | ASS'Y COLLECTOR IN | AP-1604CR, - | 1 | |
| 48 | DB61-40052A | HOLDER-THERMISTOR | ABS, -, WHT, - | 1 | |
| 49 | DB91-20081A | ASS'Y ELEC HEATER | APH450PG | 1 | Heater only |

## 6-2 Outdoor Unit

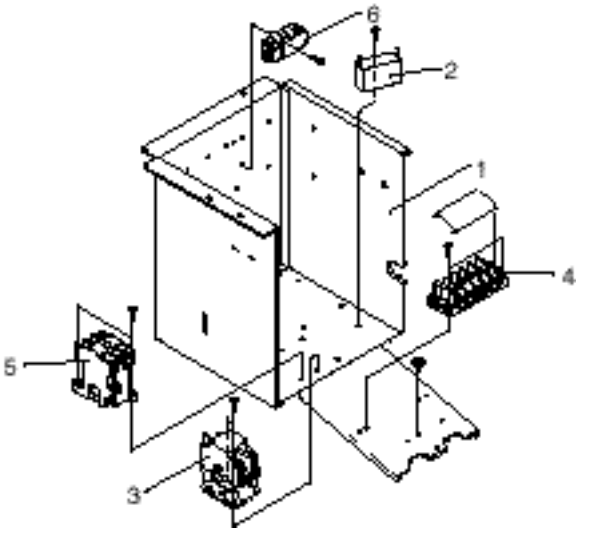
### 6-2-1 Outdoor Unit



■ PART LIST

| No | CODE-NO | DESCRIPTION | SPECIFICATION | Q'TY | REMARKS |
|---|---|---|---|---|---|
| 1 | DB90-10565A | ASSY-CABI OUT AIR | WELD GUARD FAN | 1 | |
| 2 | DB63-30028C | GUARD-INLET | SC-91438T, - | 1 | |
| 3 | DB67-50067A | FAN-PROPELLER | AS+GF20, D495, 4BLADE | 2 | |
| 4 | DB95-20137F | ASSY-MOTOR OUT | AP-1100, OSM-6508SRC | 1 | |
| 5 | DB95-20137G | ASSY-MOTOR OUT | AP-1100, OSM-6508SRC WIRE | 1 | |
| 6 | DB90-30028E | ASSY-MOUNT MOTOR OUT | APE-1600CR, - | 1 | |
| 7 | DB61-40088A | HOLDER-FRAME | SGCC1, T1.6, -, - | 1 | |
| 8 | DB93-40693A | ASSY-CONTROL OUT | Heater only model | (1) | |
| | DB93-40696A | " | Non-heater model | (1) | |
| 9 | DB93-40272A | PARTITION | T1, -, 389.17°ø1239.46 | 1 | |
| 10 | DB67-30025A | ASSY-BASE OUT | AP-3508, M8 WELD BOLT | 1 | |
| 11 | DB99-10114A | ASSY VALVE 3/8" CHECK | APH450PG | 1 | |
| 12 | DB99-10115A | ASSY-4 WAY V/V | APH450PG | 1 | |
| 13 | DB90-10071B | ASSY-CABI OUT LW SD | SECC-P(20/20), T0.8 | 1 | |
| 14 | DB90-10085B | ASSY-CABI OUT UP SD | SECC-P(20/20), T0.8 | 1 | |
| 15 | DB72-50556A | INSU SOUND | T12, W940, L380 | 1 | |
| 16 | DB95-10068A | ASSY-COMP | CRNQ-0500-TFD | 1 | |
| 17 | DB73-10008A | GROMMET-MOUNT | BROWN | 4 | |
| 18 | DB90-10369D | ASSY-CABI OUT B | AP-1004/1604CR, - | 1 | |
| 19 | DB96-30277A | ASSY-COND UP | 1.7 WAVE | 1 | |
| 20 | DB96-30278A | ASSY-COND LOW | 1.7 WAVE | 1 | |
| 21 | DB98-20057A | ASSY-PLATE TOP | AP-1004/1604CR, - | 1 | |
| 22 | DB63-30110C | SCREEN-GUARD | P.E.H 100%, T2.5, -, - | 1 | |
| 23 | DB67-90017B | HANDLE | ABS, -, SC-90073R | 1 | |

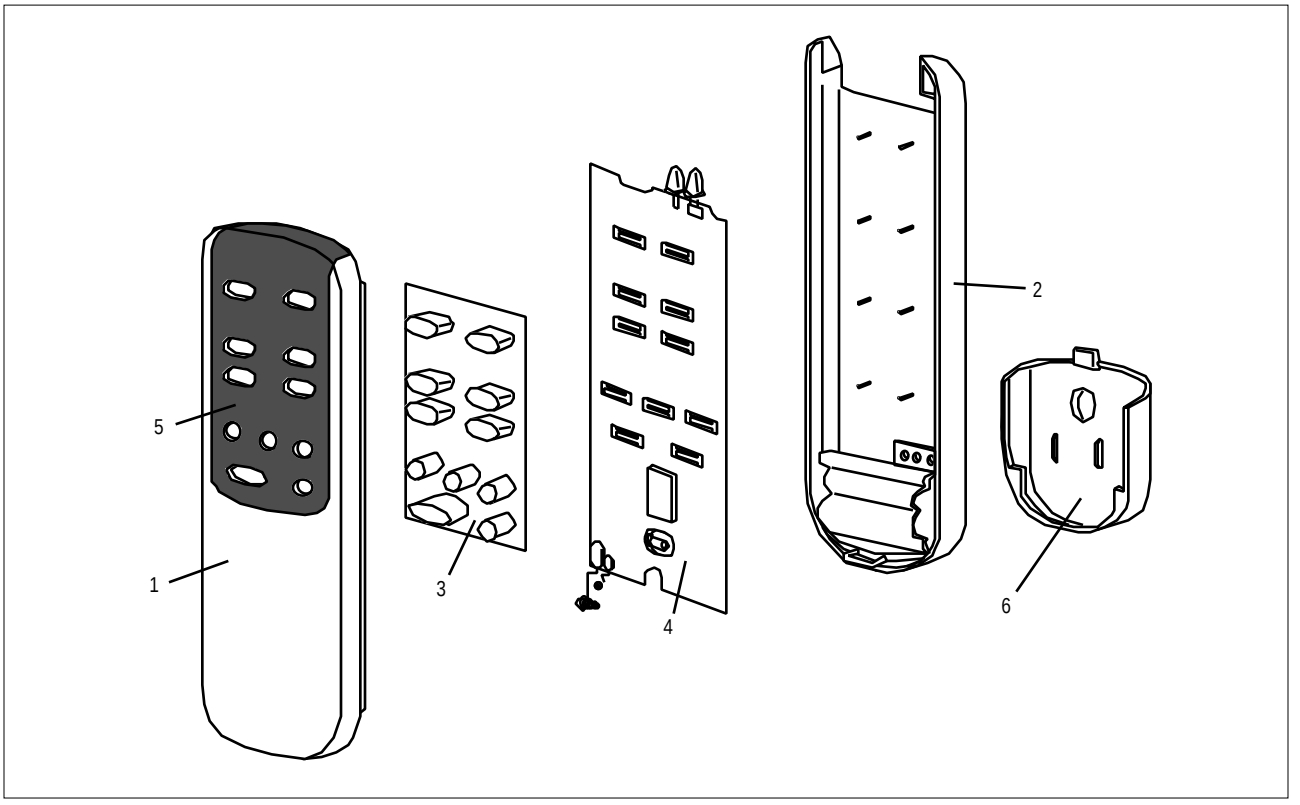
## 6-2-2 ASS'Y CONTROL BOX




■ Parts List

| No | CODE NO | Description | Specification | Q'ty | Remark |
|---|---|---|---|---|---|
| 1 | DB93-40419A | ASS'Y CONTROL BOX OUT | SGCC-M, Z(Z=22) | 1 | |
| 2 | 2501-001098 | CAPACITOR OUT | 450VAC 4uF | 2 | |
| 3 | DB34-90089A | MAGNET-CONTACTOR | 42AF35AL | 1 | |
| 4 | DB65-40022A | TERMINAL BOARD | 600V 35, 15A | 1 | |
| 5 | DB34-90090A | MAGNET-CONTACTOR | 42AF35ALPM | 1 | Heater only |
| 6 | DB47-90121A | FILTER-NOISE | PC4-F05 | 1 | |

## 6-3 Remote Control

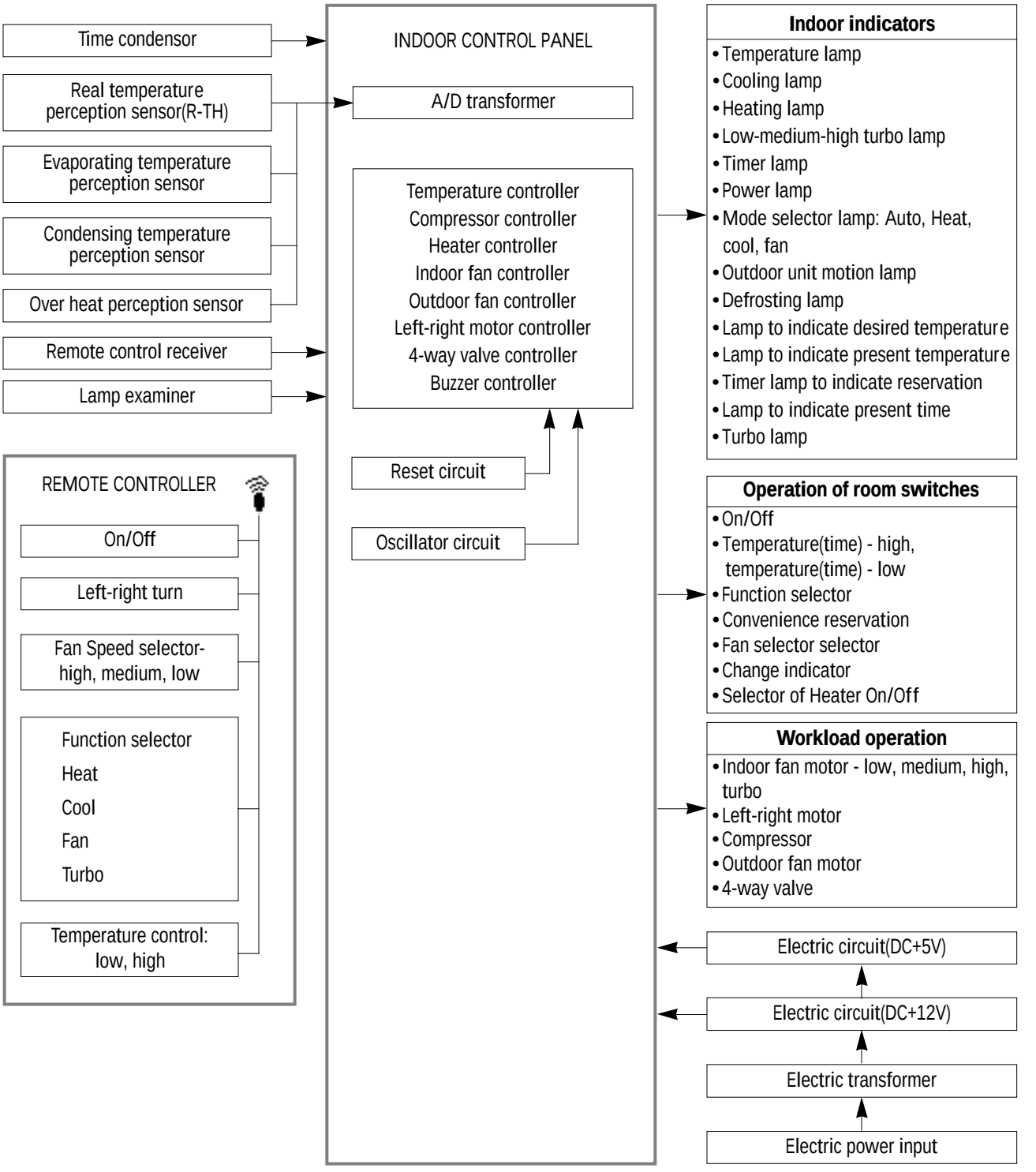



■ Parts List

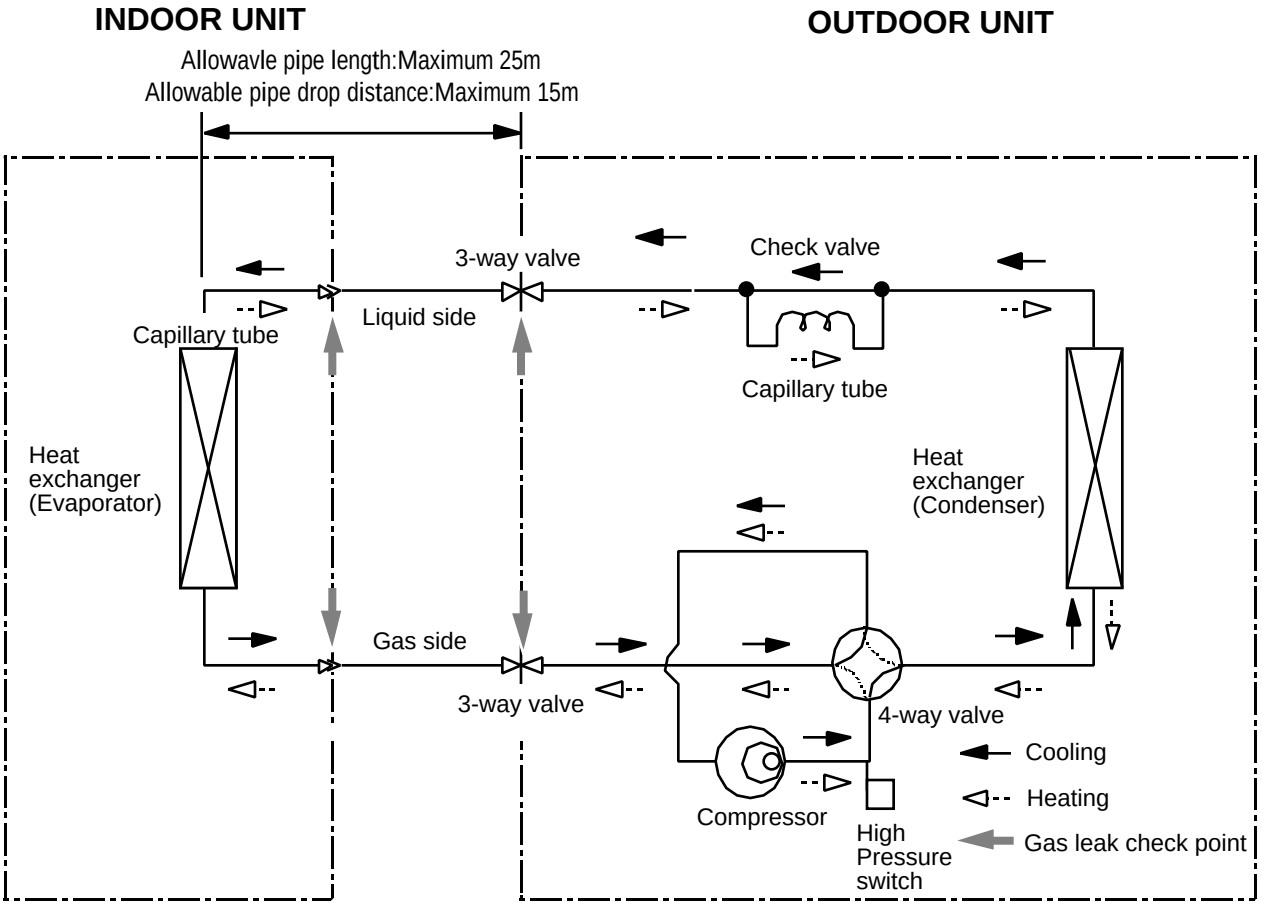
| No | CODE NO | Description | Specification | Q'ty | Remark |
|---|---|---|---|---|---|
| | DB93-30026K | ASS'Y-REMOCON | AR-H60 | 1 | |
| 1 | DB61-10022A | CASE-REMOCON(UPP) | ABS | 1 | |
| 2 | DB61-10011A | CASE-REMOCON(LW) | ABS | 1 | |
| 3 | DB73-20013A | RUBBER(BT) | NBR | 1 | |
| 4 | DB93-10509A | ASS'Y-REMOCON PCB | APH450PG | 1 | |
| 5 | DB64-40008J | WINDOW-REMOCON | PC T1.5 | 1 | |
| 6 | DB63-10081A | COVER BATTERY | ABS | 1 | |

# 7. Block Diagrams

## 7-1 Micro Computer Block Diagram



## 7-2 Refrigerating Cycle Block Diagram



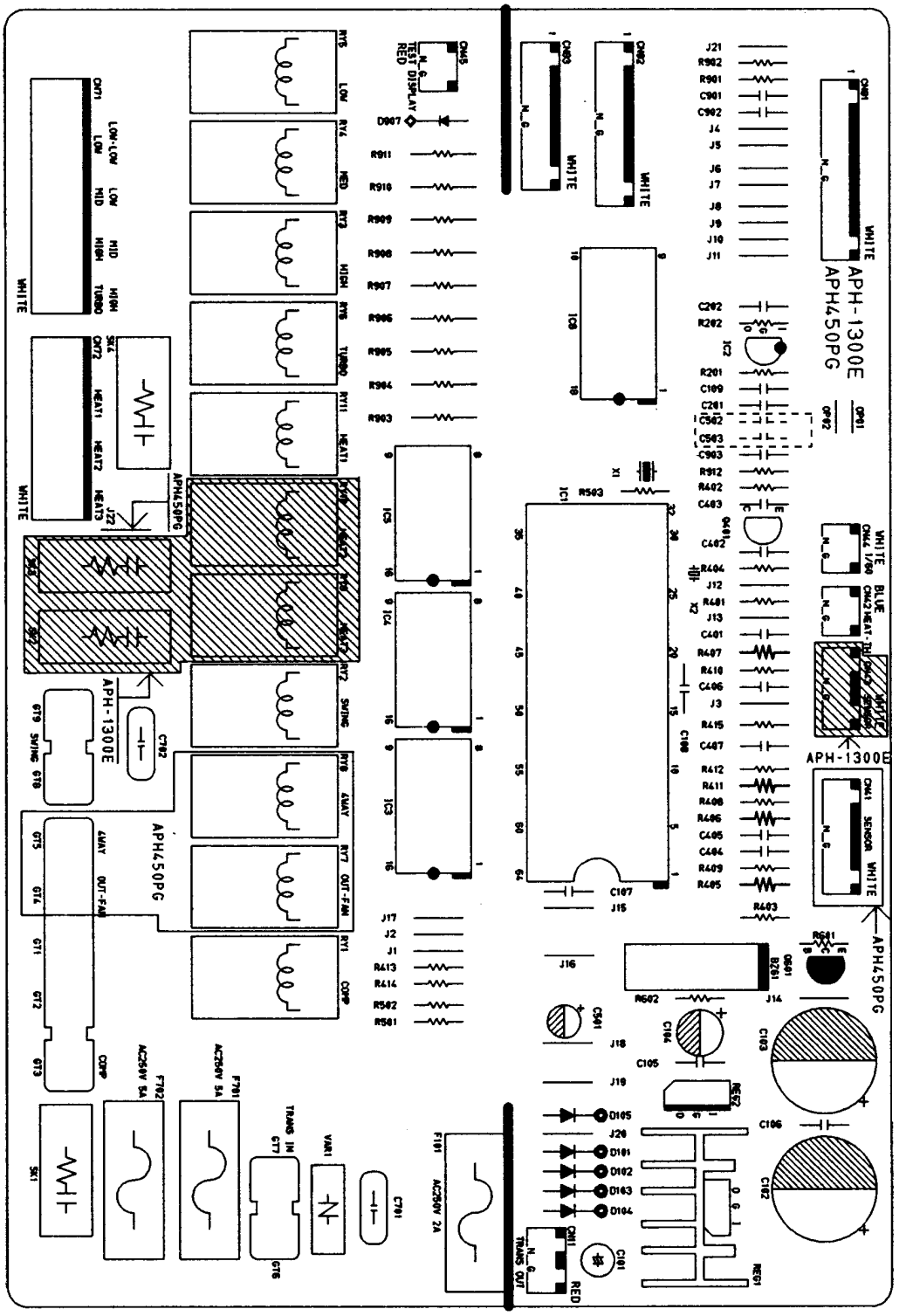

* Amount of refilling per extension length of 1m;
When extending the pipe length by more than 5m, 50g of R-22 refrigerant should be refilled per extension length of 1m.

Refrigerating cycle temperature and pressure

| Operating Condition | | STD Pressure (kg/cm2G) (GAS SIDE) | Piping Temp.(˚C) | | UseTemp. Condition (°C) | | | |
|---|---|---|---|---|---|---|---|---|
| | | | T1 | T2 | Indoor | | Outdoor | |
| | | | | | DB | WB | DB | WB |
| Cooling | Standard | 4.5~5.5 | 40~45 | 9~12 | 27 | 19 | 35 | 24 |
| | Max over load | 6.5~7.5 | 50~55 | 14~18 | 32 | 23 | 43 | 26 |
| | Low temp | 3~4 | 30~35 | 1~4 | 21 | 16 | 21 | 16 |
| Heating | Standard | 18.5~20.5 | 32~36 | 65~75 | 20 | - | 7 | 6 |
| | Max over load | - | 36~40 | 70~80 | 27 | - | 21 | 16 |
| | Deice | - | 28~32 | 40~45 | 20 | - | 2 | 1 |

# 8. PCB Diagrams

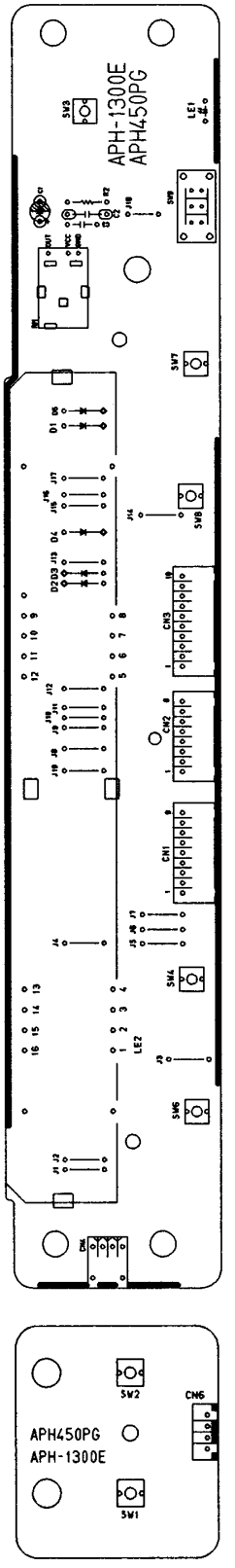
## 8-1 Ass'y Main PCB (Code No : DB93-10519A, B)



■ PARTS LIST

| DESIGN LOCATION | CODE NO | Description | Specification | APH450PG | Remark |
|---|---|---|---|---|---|
| - | DE62-30031A | HEAT SINK(L) | AL6063 T16.8 W23.5 L30 | 1 | |
| SK1, SK4 | DE47-30019A | SPARK-KILLER | ESQ-1201 | 1 | |
| F701, F702 | 3601-001094 | FUSE | FST 250V 5A 20mm | 2 | |
| F101 | DB47-90053A | FUSE | FST 250V 2.0A 20mm | 1 | |
| VAR1 | DB47-90014A | VARISTOR | INR1-D471-SVC471D-10A | 1 | |
| RY1-RY8, RY11 | 3501-001042 | RELAY | UT205-12S 250V3A | 6 | |
| C701 | 2306-000111 | C-FILM | CF 912 M 630V T 104J | 1 | |
| C702 | 2301-000133 | C-FILM | CF 912 M 630V T 103J | 1 | |
| CN11 | 3711-000880 | CONNECTOR-WAFER | SMW250-03 RED | 1 | |
| CN41 | 3711-000940 | CONNECTOR-WAFER | SMW250-06 BLUE | 1 | |
| CN44 | 3711-002662 | CONNECTOR-WAFER | JSW250-02 WHT | 1 | |
| CN91 | 3711-000577 | CONNECTOR-WAFER | SMW250-10 WHT | 1 | |
| CN92 | 3711-001084 | CONNECTOR-WAFER | SMW250-08 WHT | 1 | |
| CN93 | 3711-001154 | CONNECTOR-WAFER | SMW250-09 WAT | 1 | |
| CN71 | 3711-000357 | CONNECTOR-WAFER | YW396-09A WHT | 1 | |
| | DB61-40240 | FUSE HOLDER | FH-51H 7.5A | 3 | |
| IC1 | DB09-10138A | IC-MCU (M1COM) | MB89635R-435 | 1 | |
| IC2 | DE13-20009A | IRESET IC | KA7533 DIP | 1 | |
| IC3, IC5 | DE13-20017A | IC-LINEAR | KID65003AP | 2 | |
| IC4 | 1003-000217 | IC-DRIVE | ULN2981 | 1 | |
| Q601 | 0504-000201 | TR-SWITCHING | R1002 | 2 | |
| Q401 | 0501-000398 | TR-GENERAL | KSC935Y | 1 | |
| REG1 | DB47-90036A | C-VOLT REG | KA7812 | 1 | |
| REG2 | DB47-90037A | IC-VOLT REG | KA7805 | 1 | |
| - | | SCREW TAPPING | PH 3 L6 AB FEFZY | 1 | |
| D101-D105 | DB47-90118A | DIODE-RECT | 1N4007 1000V 1A | 5 | |
| D907 | DB47-90011A | DIODE-SW | 1N4148 1.2V 4.0NS T | 1 | |
| X1 | 2802-000103 | RESONATOR | 10MHz CST10MTW-TF | 1 | |
| X2 | DE30-20013A | CRISTAL | 32, 768KHE | 1 | |
| BZ61 | DE30-20013A | BUZZER | CBE2220BA | 1 | |
| C102 | 2401-000725 | C-ELECT | CE 04 C 35V T 222-M | 1 | |
| C103 | 2401-000710 | C-ELECT | CE 04 C 25V T 222-M | 1 | |
| C104 | 2401-000303 | C-ELECT | CE 04 C 25V 101-M | 1 | |
| C501 | 2401-003107 | C-ELECT | CE 04 C 16V 470-M | 1 | |
| C105, C109, C201, C202 C401-C407 | 2201-000144 | C-CERAMIC | CK 0A 50V T 104-Z | 16 | |
| C901, C902 | 2201-000176 | C-CERAMIC | CK OA 50V T 103-Z | 2 | |
| C903 | 2401-000353 | C-CERAMIC | CK OA 50V T 101-Z | 1 | |
| R201, R201 | 2001-000042 | R-CARBON | RD 1/4 T 102-J | 2 | |
| R401, R403, R413-R415 R501, R502, R601, R901 R902 | 2001-000065 | R-CARBON | RD 1/4 T 103-J | 11 | |
| R402 | 2001-000047 | R-CARBON | RD 1/4 T 222-J | 1 | |
| R405, R406, R411 | 2004-001136 | R-METAL | RD 1/4 T 682-F | 2 | |
| R404 | 2001-000588 | R-CARBON | RD 1/4 T 332-J | 1 | |
| R408~R410, R912 | 2001-00036 | R-CARBON | RD 1/4 T 330-J | 4 | |
| R602 | 2001-001172 | R-CARBON | RD 1/2 T 620-J | 1 | |
| R903-R911 | 2003-000160 | R-METAL OXIDE | RS 1T 121-J | 9 | |
| R407 | 2004-000616 | R-METAL | RS 1/4 243-F | 1 | |

## 8-2 Ass'y Panel PCB(Code No : DB93-10520A, B)

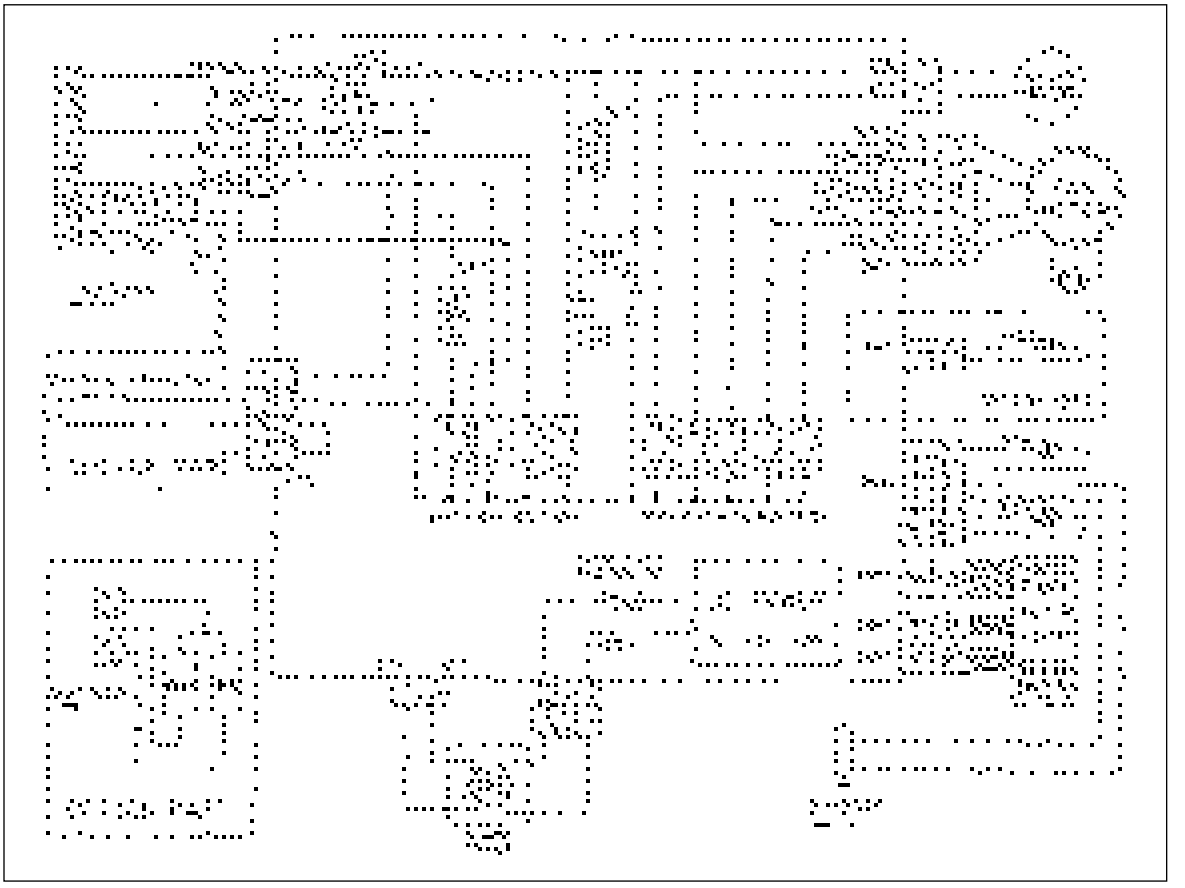


■ PART LIST

| DESIGN LOCATION | CODE NO | Description | Specifition | Q'TY | Remark |
|---|---|---|---|---|---|
| R1 | 2001-000065 | R-CARBON | RD 1/4 T 103-J | 1 | |
| C1 | 2401-003107 | C-ELECT | CE 04 C 16V 470-M | 1 | |
| C2 | 2201-000144 | C-CERAMIC | CK OA 50V T 104-Z | 1 | |
| - | DB32-50023A | MODULE REMOCON | TSOP-1238 TB1 | 1 | |
| D1-05 | DB47-90011A | DIODE SW | 1N4148 1.2V | 4 | |
| LE1 | DB07-10050A | LED LAMP | LTL-4212 RED T P10.0 | 1 | |
| - | DE07-20142A | LED DISPIAY | SSG-9405T-01 | 1 | |
| SW1-SW4, SW6-SW8 | DB34-90082A | SW-TACT | KPT-1115D | 7 | |
| SW9 | 3408-000326 | SW-SLIDE | - | | |
| CN1 | 3711-000570 | CONNECTOR-WAFER | SMAW250-10-WHT | 1 | |
| CN2 | 3711-001111 | CONNECTOR-WAFER | SMAW250-08-WHT | 1 | |
| CN3 | 3711-001147 | CONNECTOR-WAFER | SMAW250-09-WHT | 1 | |
| CN4 | 3710-000193 | CONNECTOR-WAFER | BH250-04R WHT | 1 | |
| CN6 | 3711-000940 | CONNECTOR-WAFER | YFAW205-304R WHT | 1 | |

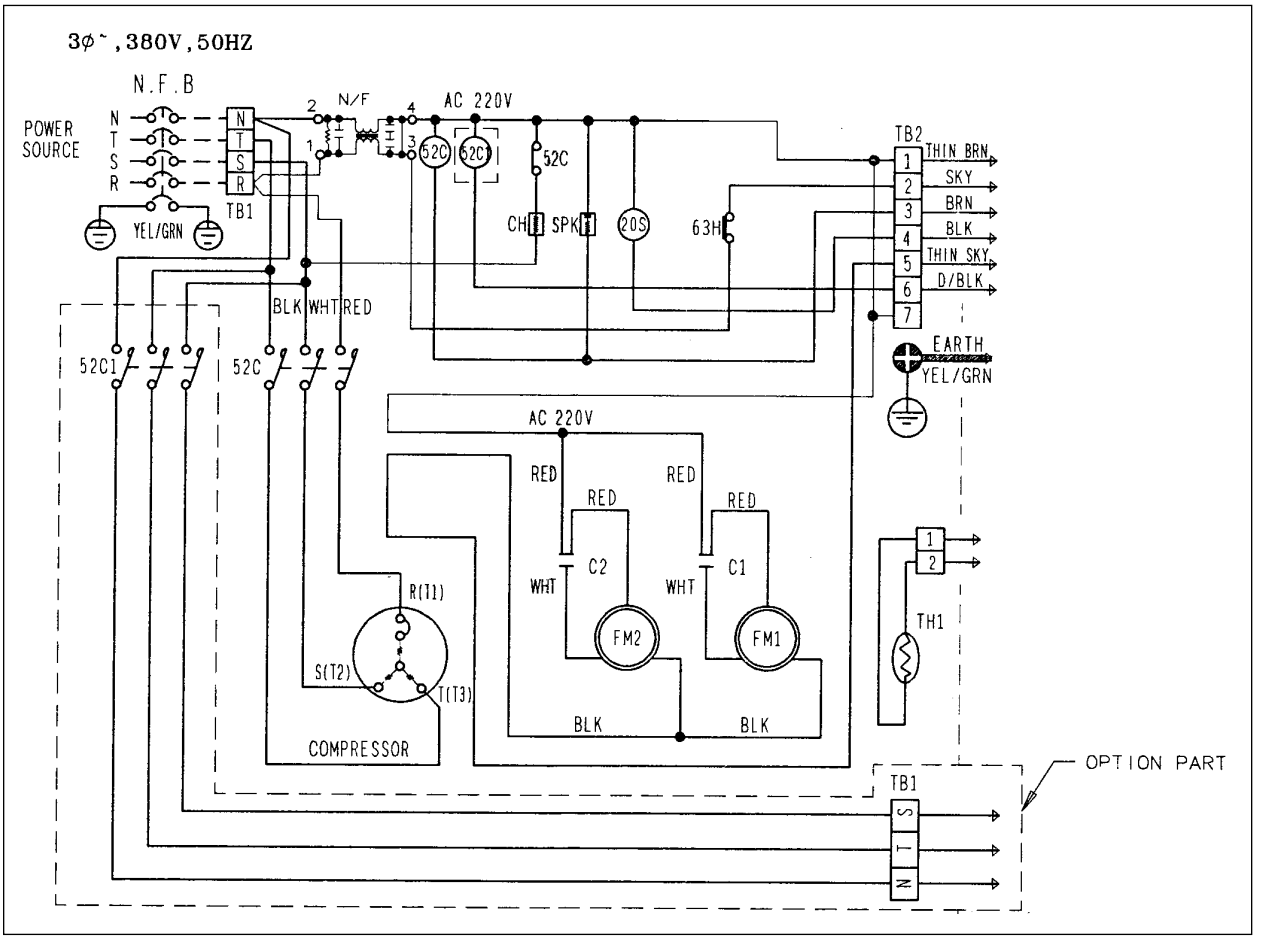
# 9. Wiring Diagrams

## 9-1 Indoor Unit



| MARK | NAME |
|---|---|
| SK1,4 | SPARK KILLER |
| VAR1 | VARISTOR |
| FM | INDOOR FAN MOTOR |
| RTH ROOM | THERMISTOR |
| HTH | OVERHEAT SENSOR |
| ETH | EVAP. SENSOR |
| SWING | SWING MOTOR |
| RY1 | COMPRESSOR DRIVE RELAY |
| RY2 | SWING MOTOR DRIVE RELAY |
| RY3 | FAN MOTOR DRIVE RELAY(HIGH) |
| RY4 | FAN MOTOR DRIVE RELAY(MID) |
| RY5 | FAN MOTOR DRIVE RELAY(LOW) |
| RY6 | FAN MOTOR DRIVE RELAY(TURBO) |
| RY7 | OUTDOOR FAN DRIVE RELAY |
| RY8 | 4WAY V/V DRIVE RELAY |
| RY11 | HEATER DRIVE RELAY |
| HEATER | P.T.C. HEATER |

## 9-2 Outdoor Unit




| APH450PG | |
|---|---|
| **NOTE** | **NAME** |
| 52C | MAGNETIC SWITCH COMP |
| 52C1 | MAGNETIC SWITCH ETH |
| TB 1, 2 | TERMINAL BLOCK |
| TH 1 | THERMISTOR CONDENSER |
| CH | CRANK CASE HEATER |
| SPK | SPARK KILLER |
| 20S | 4-WAY VALVE |
| C1,2 | CAPACITOR OUT |
| N.F.B | CIRCUIT BREAKER 25A |
| 63H | HIGH-PRESSURE SWITCH |
| FM1, 2 | FAN MOTOR OUT |
| N/F | NOISE FILTER |

* USE 25AMPS TIME DELAY FUSE OR CIRCUIT BREAKER

# UPDA TE LOG SHEET

| Application date | Page | Part# | Note(Cause & Solution) | S/Bulletin# |
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Use this page to keep any special servicing information. (Service Bulletin, etc.)
If only parts number changes, Just change parts number directly on parts list.
And if you need more information, please see the service bulletin




SyncMaster 17GLi/CMG7387L Service Manual
First edition June 1995.

# 10. Schematic Diagrams

## 10-1 Indoor Unit