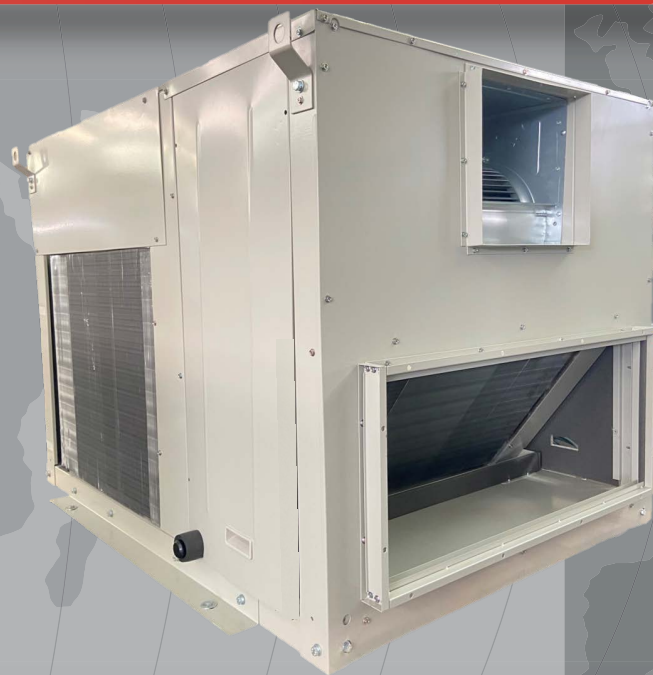




# AIR-COOLED ROOFTOP PACKAGE

Models: FACP05



# Engineering Specifications

## General Data - Air-cooled Rooftop Package

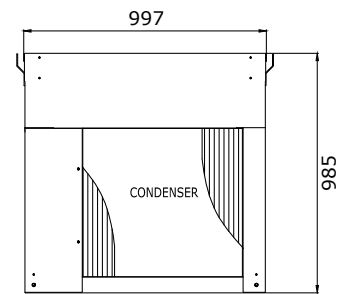
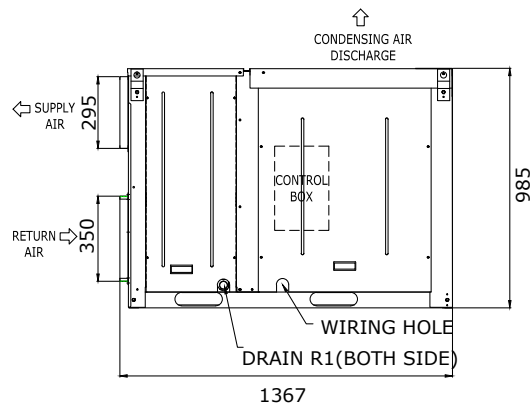
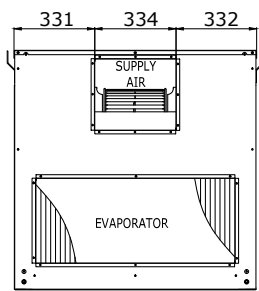
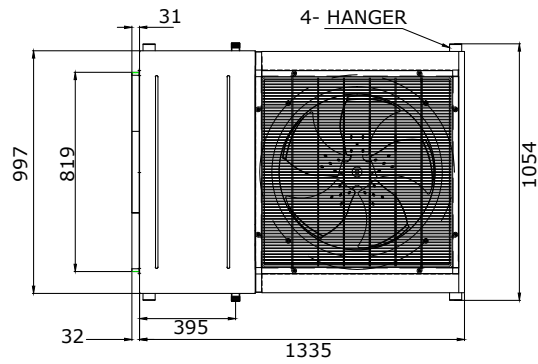
Model name		FACP	5
Power supply			3N~380~415 50Hz
Total Cooling Capacity	Outdoor 35°CDB	kW	13.5
		Btu/h	46000
		kcal/h	11600
Sensible cooling capacity	Outdoor 35°CDB	kW	11.3
		Btu/h	38556
		kcal/h	9718
Power Input		kW	5.4
Operating current		A	10.2
Capacity step		%	0-100%
Refrigerant			R407C
Refrigerant charge		kg	3.0
Refrigerant control			Thermal Expansion Valve
External finish			Acrylic resin coating
Color			MUNSELL 5Y8/1
Dimension	Height	mm	985
	Width	mm	997
	Depth	mm	1367
Net Weight		kg	240
Compressor			Hermetic scroll
Evaporator			Cross fin coil
Evaporator fan			Centrifugal - direct drive
Evaporator fan motor			Single phase induction motor
No. x Motor Output		kW	1 x 0.55
Evaporator fan airflow	CMM		58
	CFM		2060
	L/S		972
External static pressure	mmAq		0.8
	Pa		80
Condenser			Cross fin coil
Condenser fan			Propeller - direct drive
Condenser fan motor			Three phase cage induction motor
No. x Motor Output		kW	1 x 0.37
Condenser fan air flow	CMM		129
	CFM		4532
	L/S		2139
Drain connection		mm	25.4
Sound pressure level		dB(A)	62
Protection devices		Low pressure switch, High pressure switch, fuse, over current relay (compressor), internal overload protection (compressor, outdoor and indoor fan motor)	

### Note:

- Cooling capacity is based on the following conditions.  
Indoor: 27°C DB, 19°C WB; Outdoor: 35°C DB
- Refrigerant charge volume is factory charged.
- Capacity is gross capacity which does not include a deduction for evaporator fan motor heat.
- The measuring point of sound pressure level is 1 m from the unit surface.
- The range of working voltage is within  $\pm 10\%$  voltage of power supply.
- Specification subject to change without notice.

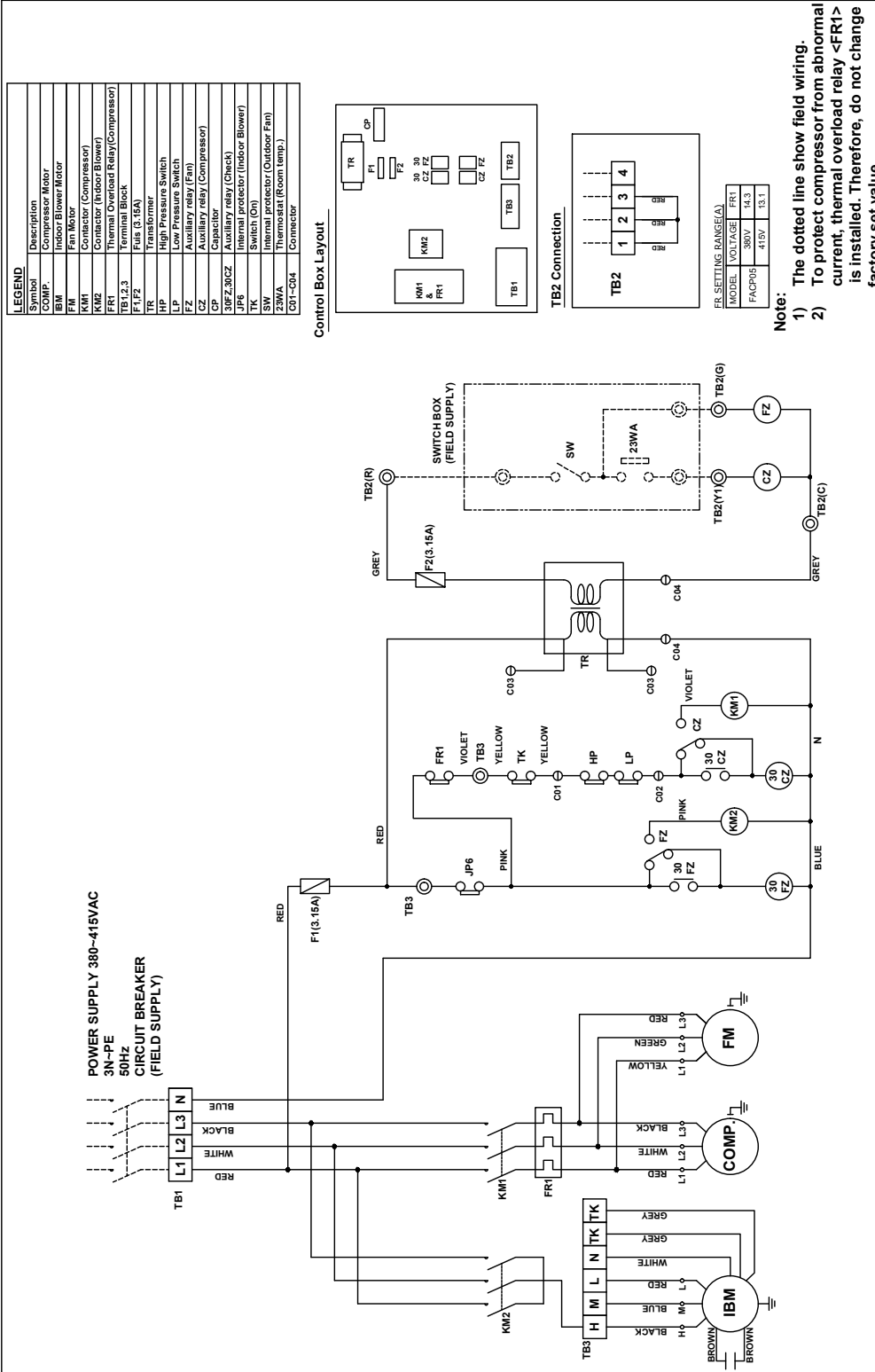
# Dimension

MODEL: FACPO5



# Wiring Diagram

**MODEL: FACP05**



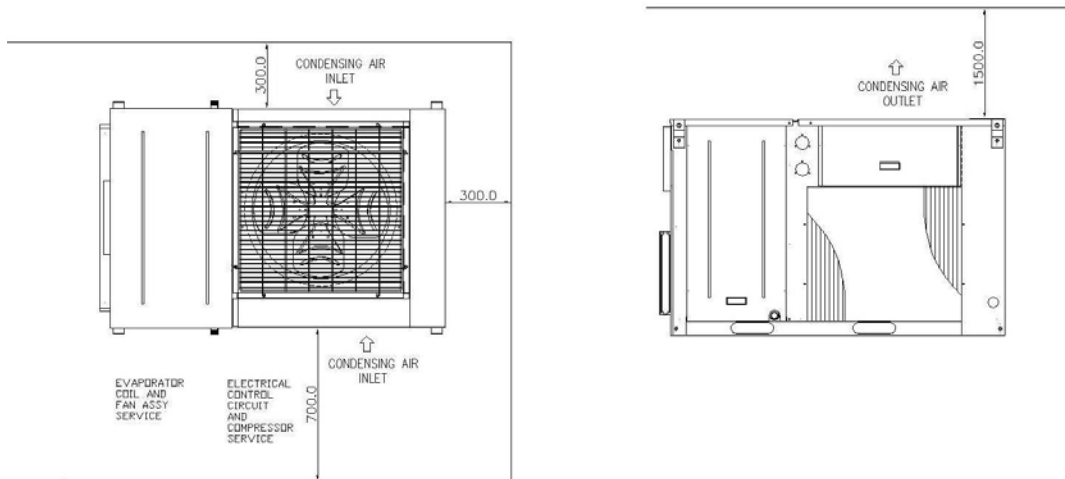
# Installation

All series of conditioners are designed for outdoor installations and are to be placed on a slab or rooftop. However, if the air conditioner is to be installed in a plant room, please contact your equipment supplier prior to installation.

Access for both service and installation must be provided to the compressors, control wiring and fans as shown below.

## 1. Space required around units

- Care must be taken to prevent recirculation of the condenser air. To stabilize compressor, condensing pressures it is recommended that wherever is possible the condenser air inlet side be faced away from prevailing winds.
- For rooftop installation, the type of mounting base depends on the roof construction. A built-up roof may not support the weight of the unit and so it may be necessary to support the unit by adding structural members below it.
- The units are equipped with hoisting plates for rigging and hoisting of the unit. The hoisting plates are located on the top of the unit. When hoisting the unit with a crane, spreader bars must be used to prevent damage to side panels by the supporting cables.

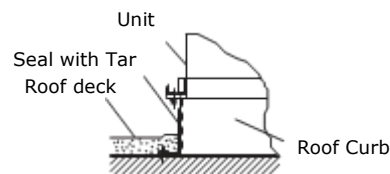
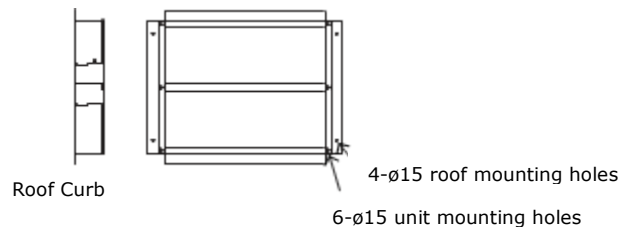


(Unit:mm)

## 2. Installation of the Unit

The figure shows the use of the roof curb available for mounting these units.

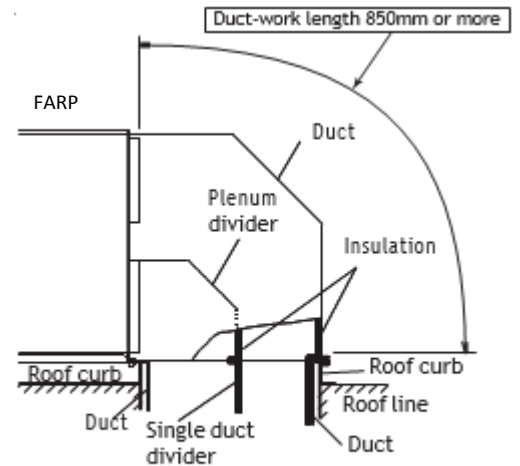
The curb should be sealed and fixed to the roof with weather stripping. A suggested means of sealing the unit and roof curb is shown below.



(Unit:mm)

### 3. Duct Construction

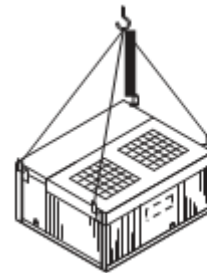
- Series FACP units are equipped with horizontal supply and return air openings. Duct connection to the unit should be made with duct flanges and secured directly to the air openings with flexible duct connectors to avoid abnormal noise transmission.
- For vertical air supply, a field supply plenum should be used. The figure below shows the recommended method for duct connection.
- To prevent air leakage, all duct seams should be taped. Ducts that run in air spaces that are not air conditioned must be insulated and provided with a vapor barrier. Ducts exposed to the outside must be weather proofed. For quiet operation, we recommend that the insulation on the supply duct to be placed inside, lining the duct.
- Where ducts from the outside enter a building, the duct openings in the building should be sealed with weather stripping to prevent rain, dust, sand, and etc. from entering the building.
- Fans will not accept any external resistance to airflow. Hence, need to determine what provision is available if ductwork is to be fitted with external fans.
- Correctly sized filter must be fitted and there is no provision within the unit. However, the filters may be installed in the return air duct.



Duct connection with a vertical air plenum

### 4. Lifting Method

When the unit is to be lifted and moved, attach ropes to the suspension plates (4 pcs) provided on the top of the unit. When the unit is lifted, the center of gravity tends to shift the unit to one side and so balance, as shown in the right figure, should be achieved. The angles at which the ropes suspended the unit should be at least 60 at the compressor end and at least 45 at the condenser end. Care should be taken to avoid contact with the main unit while carrying.

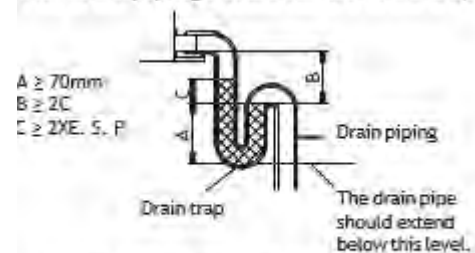


Hook as directly aligned over the center of gravity as possible.

### 5. Drain Piping

- The condensate drain fitting (R1) is provided. The drain pipe can be let out at the right or left side. Under standard specifications, it is let out at the left side and the right side is covered.
- The drain pipe must have a trap on the outside of the unit and must be installed at an incline for proper drainage, as shown on the right.
- To prevent condensate formation and leakage, provide the drain pipe with insulation to safeguard against sweating.
- Upon completion of the piping work, check that there is no leakage and that the water drains off properly.

The drain piping should have a drain trap.



Note: ESP = External Static Pressure  
Drain trap for condensate

## 6. Refrigerant Charge

The table below shows the amount of the charge when the unit is shipped.

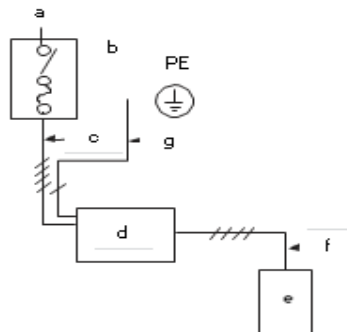
Refrigerant charge per circuit (kg)	FACP05
R407C	2.6

## 7. Electrical Wiring

### a. Method for connecting electrical wire

Please consult with your power company before doing the wiring in the instructions.

**The entire wiring diagram of the unit.**



a.	Power Supply
b.	Main Switch/ Fuse (Field Supply)
c.	Power Supply Wiring for Unit
d.	Unit
e.	Remote Controller/ Thermostat (Field Supply)
f.	Connection Wiring for Unit/ Remote Controller
g.	Earth

### b. Electrical Wiring

In case of using switch box (field supply), please set up wires as shown above. Remove the panel on the left side of the unit and connect the units power supply wiring to the proper terminals in the control box. Connect the wires on the basis of following wiring diagram. Mistake in wiring connection may damage the controller.

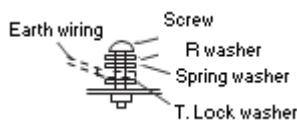
**Caution:** This controller can be damaged if wrong connection.

Construct the earth connection.

All electrical work must be carried out by a qualified electrical trades-person and in accordance with local supply authority requirements and associated regulations. The range of working voltage is within  $\pm 10\%$  voltage of power supply. The unit is to be wired from an electrical distribution board wither by a circuit breaker (preferred) of HRC fuse.

Fix power source wiring to control box by using buffer bushing for sensible force (PG connection or the like). Connect control wiring to control terminal block through the bush of the control box.

**Note:** Earth wiring must be connected.



**c. Wiring Example**

MODEL	Power cable	MCB Capacity	Earth cable
FACP05	6mm <sup>2</sup>	20A	10mm <sup>2</sup> over

The grounding wire must be the same diameter as the power able wires. See table above. The selection of other capacities should be determined in accordance with the relevant standards. All electrical wiring must comply with local electrical authority regulations.

**8. Before starting the trial run**

After having installed the unit, check that:

- The unit fixed securely.
- The unit installed properly
- The drain pipe is provided with a drain trap.
- The electrical wiring has been connected correctly and the terminal screws have been properly tightened.
- The duct work has been performed correctly.
- Before turning the unit on, measure the resistance between the terminals of the electrical parts and ground with a 500v megger and check that the value is at least 1.0M ohm. If the measured value is below 1.0M ohm, do not operate the unit.
- Check that the fans are rotating in correct direction.
- Check whether there is refrigerant leakage, and slack power or transmission cable.
- Check the operation of high-pressure switch.

If the two lead wires of the outdoor unit fan motor are disconnected from the contact and cooling is performed, the high-pressure switch should operate and stop the unit after 5 to 10 minutes.

Perform trial operation after completing above items.



# Instruction to Use

## 1. Caution for use

Keep the following points in mind to safeguard against failures and break downs.

- For safety, confirm that the earth terminal has been connected to the earth wire correctly.
- Never block or cover the unit's intakes or outlets. It will reduce the unit's efficiency.
- To start the unit again turns the start switch on after 3 minutes have elapsed.  
Repeatedly stopping and starting within 3 minutes can trip the fuse or power source switch.

## 2. Maintenance

For superior performance and lasting durability, please do not forget to conduct proper and regular maintenance.



### Caution

For safety, turn the power source off before service work.

### a. Cleaning of panel

Clean dirt of panel as follows.

Use a household neutral cleanser such as for dishes or vegetables.

Motion a soft cloth with the cleanser, then wipe lightly.

Next, wipe three or four times with another soft cloth moistened with water. Finally, wipe off all the remaining cleanser with a soft cloth.

Moisten a soft cloth with alcohol, the wipe off lightly. Isopropyl alcohol is sold at stores as reagents in small quantities.

Finger-marks

Grease

Neutral cleanser

Adhesive

Paste

Isopropyl Alcohol

### Note:

Alcohol is highly combustible. Take extreme care when handling.  
Also, do not use paint or adhesive thinner.

### b. Cleaning the outdoor heat exchanger

If you use your air conditioner for prolonged periods,

The outdoor heat exchanger will become dirty, impairing its function and reducing air conditioner's performance.

Consult your equipment supplier or air conditioning contractor on how to clean the heat exchanger.

### c. When beginning to use air conditioner again

Please turn on the power supply after the following check is done and no abnormality is found.

It is confirmed that air inlet and outlet are not blocked.

It is confirmed that the earth connection line does not come off.

The earth connection line is installed firmly in the unit.

It is confirmed that there are neither lifting, blocking, nor bending about the drain-hose.

- It is confirm to keep the controller OFF.
- The power supply switch is turned ON.

### d. When the air conditioner is not to be used for long time

If the air conditioner is not to be used for a long time due to a seasonal change, etc., Please do the following work.

- The power supply is switched OFF.  
If the power supply is kept on, electricity tons will be wasted.  
Also, the accumulation of dust, etc., can result in fire.
- Filter, eliminator and drain pan are cleaned. Be sure to throw dust properly.
- Run it for 4-5 hours with the air blowing until the inside is completely dry.
- Failing to do so can result in the growth of unhygienic, unhealthy mold in scattered areas throughout the room.

**e. In case of failure**

- Never remodel the air conditioner. Consult your dealer for any repair service. Improper repair work can result in water leakage, electric shock, fire, etc.
- if the poser breaker is frequently activated, get in touch with your dealer. Leaving the unit as it is under such conditions can result in fire or failure.
- if the refrigerant gas blows out or leaks, stop the operation of the air conditioner.
- Thoroughly ventilate the room, and contact your dealer. Leaving the unit as it is, can result in accidents due to oxygen deficiency.

**3. Transferring Work and Construction**

**a. Transfer of Installation**

- When removing and reinstalling the air conditioner when you enlarge your home, remodel or move, consult with your dealer in advance to calculate the cost of the professional engineering work required for transferring the installation.
- Please do not mix different types of refrigerant when you add the refrigerant (R-22 or R407C) during installation and the transferring.
- When moving or reinstalling the air conditioner, consult with your dealer. Defective installation can result in electric shock, fire, etc.

**b. Place for Installation**

Please do not use the unit in following places.

- place where a lot of oil (the machine oil is contained), moistures and dust exist.
- Place where a lot of salinities such as beach district exist.
- Place where Sulphur gas, volatile gas, and corroded gas are filled.
- Place where acid solution is frequently used.
- Place where special spray is frequently used.
- Hot spring zone.
- Near to machine which generates high cycles. (e.g high cycle welding machine etc.)
- Place where ventilation entrance of unit is blocked by snowfall.
- The unit must be installed in stable, level surface.

The main body might corrode when the unit is used in such a place, the refrigerant leak, the performance of the unit decreases remarkably, causing damage to parts of the unit.

**c. Regarding Electric Work**

- The electrical work must be undertaken by a person who is qualified as an electric engineer according to the (technical standard respecting electrical installation), (internal wiring rules), the installation and operation manual with the absolute use of exclusive circuits. The range of working voltage is within  $\pm 10\%$  voltage of power supply.
- Please install a special power supply in the power supply.
- Please install the earth connection for the electric shock prevention.
- Never connect the grounding wire to a gas pipe, water pipe, arrester, or telephone grounding wires. For details, consult your dealer.
- In some types of installation sites, the installation of an earth leakage breaker is mandatory. For details consult your dealer.
- The breaker and the fuse must use the correct capacity.

The main body might corrode when the unit is used in such a place, the refrigerant leak, the performance of the unit decreases remarkably, causing damage to parts of the unit.

**d. Consideration of the noise.**

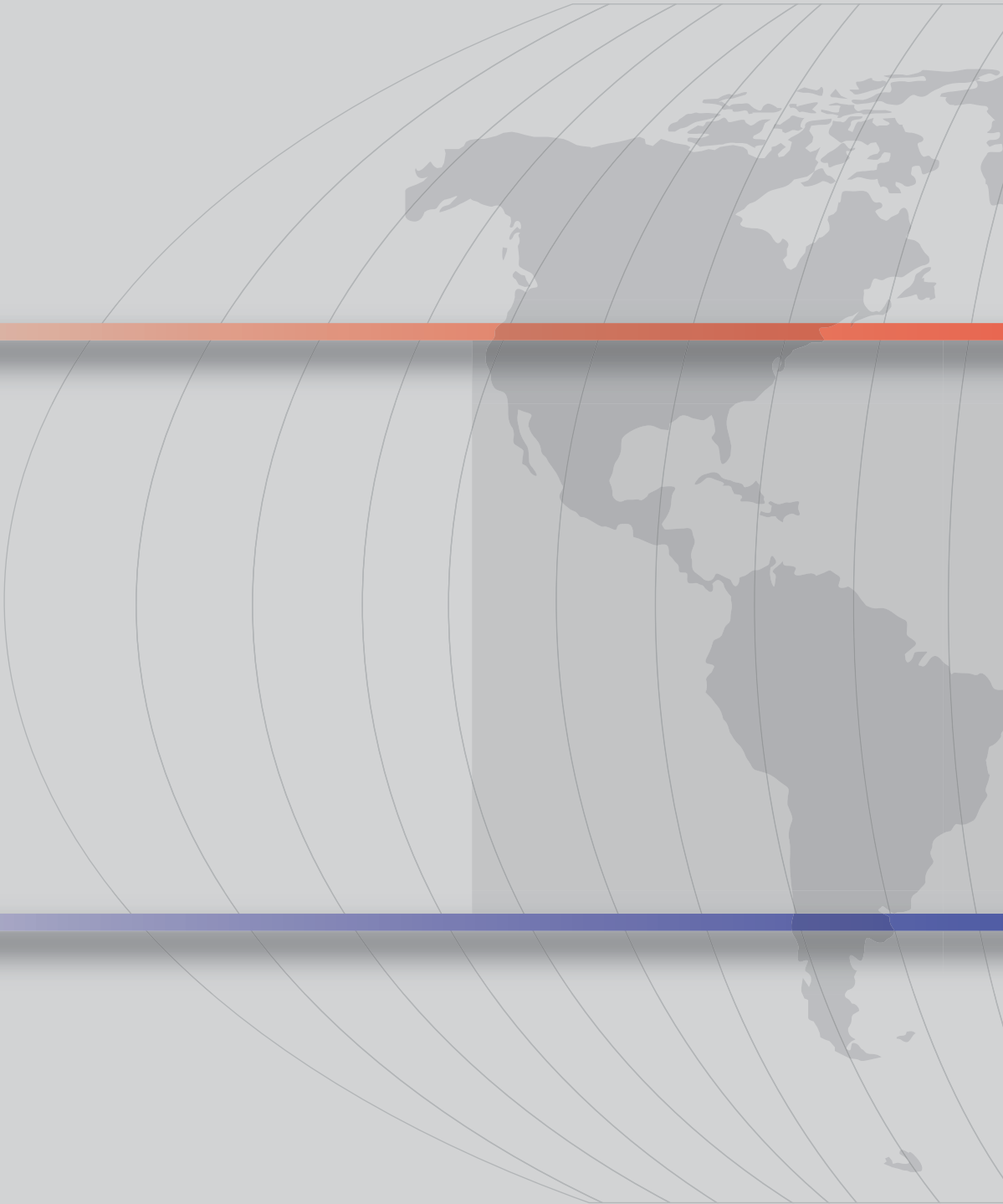
- Take sufficient measures against noise when installing the unit where noise level is critical.
- If any object is placed near the air outlet of the unit, decreased performance and increased noise will result. Avoid any obstacles adjacent to the air outlet.

**e. Maintenance and Inspection**

- If the unit is used throughout several seasons, the heat exchanger can get dirty, reducing performance.
- Depending upon conditions of usage, foul odors can be generated & drainage can deteriorate due to dust and dirt, etc.

## Troubleshooting

Problem	Cause	Troubleshooting
<b>Unit Not Running</b>	Power failure.	Press the [ON/OFF] button after power.
	The power supply is turned OFF.	Turn the power supply ON.
	The fuse in the power supply is burnt.	Replace fuse.
	The earth leakage breaker is gone.	Put in the earth leakage breaker.
	The wiring phase of power supply is mistaken.	Modify the wiring phase of power supply
<b>Unit Running but Not Cool</b>	Improper temperature adjustment.	Check the set temperature and inlet temperature on the liquid crystal display and adjust accordingly.
	The filter is filled with dust and dirt	Clean up the filter
	There are some obstacles at the air inlet or outlet of the units.	Remove.
	Windows or doors are open.	Close.
	Insufficient refrigerant charge.	Contact your installation contractor.
	The restart-preventing circuit is in operation for 3 minutes.	Wait for a while. (To protect the compressor, a 3-minute restart preventing circuit is built into the unit. Therefore, there are occasions when the compressor does not start running immediately. There are cases when it does not run for as long as 3 minutes.)
<b>Fan Runs but Compressor Does Not Run</b>	The set temperature for thermostat is excessively high for cooling.	For temperature control, decrease the set temperature at cooling.
	The room temperature is excessively low for cooling.	Cannot be operated as it is out of temperature control range.
<b>Compressor Runs but Stops Immediately</b>	Air outlet or inlet is blocked.	Remove blocking matter.
<b>Water or Steam Is Discharged From The Unit</b>	Air Flow too high	It is not a breakdown. Please contact and consult your dealer.
	The drain pipe is clogged, therefore the drain water overflows.	Clear the drain pipe.



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