

INSTALLATION INSTRUCTIONS INDOOR UNIT

Model No.: S-180ME** S-224ME** S-280ME**

CAUTION
R410A
REFRIGERANT

This Air Conditioner contains and operates with refrigerant R410A.
THIS PRODUCT MUST ONLY BE INSTALLED OR SERVICED BY QUALIFIED PERSONNEL.
Refer to Commonwealth, State, Territory and local legislation, regulations, codes, installation & operating instructions, before the installation, maintenance and/or service of this product.
Refer to the outdoor unit installation instruction manual for the outdoor unit installation.

Note: Ensure to hand over this installation instruction manual to the person performing the installation and inform the customer to keep it properly stored.

SAFETY PRECAUTIONS

- Read the following "SAFETY PRECAUTIONS" carefully before installation.
- Electrical work must be installed by a licensed electrician. Be sure to use the correct rating of the power plug and main circuit for the model to be installed.
- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below. Incorrect installation due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.

WARNING	This indication shows the possibility of causing death or serious injury.
CAUTION	This indication shows the possibility of causing injury or damage to properties only.

The items to be followed are classified by the symbols:

	Symbol with white background denotes item that is PROHIBITED.
	Symbol with dark background denotes item that must be carried out.

- Carry out test running to confirm that no abnormally occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the customer to keep the operating instructions for future reference.

WARNING	Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer. Any unit method or using incompatible material may cause product damage, burst and serious injury.
WARNING	Do not install outdoor unit near handrail of veranda. When installing air-conditioner unit on veranda of a high rise building, child may climb up to outdoor unit and cross over the handrail causing an accident.
WARNING	Do not use unspecified cord, modified cord, joint cord or extension cord for power supply cord. Do not share the single outlet with other electrical appliances. Poor contact, poor insulation or over current will cause electrical shock or fire.
WARNING	Do not tie up the power supply cord into a bundle by band. Abnormal temperature rise on power supply cord may happen.
WARNING	Do not insert your fingers or other objects into the unit, high speed rotating fan may cause injury.
WARNING	Do not sit or step on the unit, you may fall down accidentally.
WARNING	Keep plastic bag (packaging material) away from small children, it may cling to nose and mouth and prevent breathing.
WARNING	When installing or relocating air conditioner, do not let any substance other than the specified refrigerant, eg air etc mix into refrigeration cycle (piping). Mixing of air etc. will cause abnormal high pressure in refrigeration cycle and result in explosion, injury etc.
WARNING	Do not pierce or burn as the appliance is pressurized. Do not expose the appliance to heat, flame, sparks, or other sources of ignition. Else, it may explode and cause injury or death.
WARNING	Do not add or replace refrigerant other than specified type. It may cause product damage, burst and injury etc.
WARNING	For R410A model, use new piping, flare nut and tools which is specified for R410A refrigerant. Using of existing (R22) piping, flare nut and tools may cause abnormally high pressure in the refrigerant cycle (piping), and possibly result in explosion and injury. For R32 and R410A, the same flare nut on the outdoor unit side and pipe can be used.
WARNING	Since the working pressure for R32/R410A is higher than that of refrigerant R22 models, replacing conventional piping and flare nuts on the outdoor unit side are recommended.
WARNING	Thickness for copper pipes used with R410A must meet the requirement. Refer to GENERAL piping thickness table in outdoor unit installation manual. It is desirable that the amount of residual oil is less than 40 mg/10m.
WARNING	Engage authorized dealer or specialist for installation. If installation done by the user is incorrect, it will cause water leakage, electrical shock or fire.
WARNING	For refrigeration system work, install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock or fire.
WARNING	Use the attached accessories parts and specified parts for installation. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock.
WARNING	Install at a strong and firm location which is able to withstand weight of the set. If the strength is not enough or installation is not properly done, it will set drop and cause injury.
WARNING	For electrical work, follow the national regulation, legislation and this installation instruction. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough or defect found in electrical work, it will cause electrical shock or fire.
WARNING	Do not use joint cable for indoor / outdoor connection cable. Use the specified indoor/outdoor connection cable, refer to instruction ELECTRICAL WIRING and connect tightly for indoor/outdoor connection. Clamp the cable so that no external force will have impact on the terminal. If connection or fixing is not perfect, it will cause heat up or fire at the connection.
WARNING	Wire routing must be properly arranged so that control board cover is fixed properly. If control board cover is not fixed perfectly, it will cause fire or electrical shock.
WARNING	This equipment is strongly recommended to be installed with Earth Leakage Circuit Breaker (ELCB) or Residual Current Device (RCD). Otherwise, it may cause electrical shock and fire in case of equipment breakdown or insulation breakdown.
WARNING	During installation, install the refrigerant piping properly before running the compressor. Operation of compressor without fixing refrigeration piping and valves at opened position will cause suck-in of air, abnormal high pressure in refrigeration cycle and result in explosion, injury etc.
WARNING	During pump down operation, stop the compressor before removing the refrigeration piping. Removal of refrigeration piping while compressor is operating and valves are opened will cause suck-in of air, abnormal high pressure in refrigeration cycle and result in explosion, injury etc.
WARNING	Tighten the flare nut with torque wrench according to specified method. If the flare nut is over-tightened, after a long period, the flare may break and cause refrigerant gas leakage.
WARNING	After completion of installation, confirm there is no leakage of refrigerant gas. It may generate toxic gas when the refrigerant contacts with fire.
WARNING	Ventilate if there is refrigerant gas leakage during operation. It may cause toxic gas when the refrigerant contacts with fire.
WARNING	Be aware that refrigerants may not contain an odour.
WARNING	This equipment must be properly earthed. Earth line must not be connected to gas pipe, water pipe, earth of lightning rod and telephone. Otherwise, it may cause electrical shock in case of equipment breakdown or insulation breakdown.
CAUTION	Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.
CAUTION	Prevent liquid or vapor from entering sumps or sewers since vapor is heavier than air and may form suffocating atmospheres.
CAUTION	Do not overcharge the unit, refer to gas charge specification in Outdoor Installation manual. Overcharge will cause over current and damage to compressor.
CAUTION	Do not release refrigerant during piping work for installation, re-installation and during repairing a refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.
CAUTION	Do not install this appliance in a laundry room or other location where water may drip from the ceiling, etc.
CAUTION	Do not touch the sharp aluminium fin, sharp parts may cause injury.
CAUTION	Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.
CAUTION	Select an installation location which is easy for maintenance. Incorrect installation, service or repair of this air conditioner may increase the risk of rupture and this may result in loss damage or injury and/or property.
CAUTION	Power supply connection to the room air conditioner. Use power supply cord type designation 60245 IEC 57 or heavier cord. Connect the power supply cord of the air conditioner to a circuit breaker for the permanent connection. It must be a double pole switch with a minimum 3.0mm contact gap. Power supply point should be in easily accessible place for power disconnection in case of emergency.
CAUTION	Installation work. It may need two people to carry out the installation work.
CAUTION	Keep any required ventilation openings clear of obstruction.

PRECAUTION FOR USING R410A REFRIGERANT

- The basic installation work procedures are the same as conventional refrigerant (R32, R22) models. However, pay careful attention to the following points:
- Do not perform flare connection inside a building or dwelling or room, when joining the heat exchanger of indoor unit with interconnecting piping. Refrigerant connection inside a building or dwelling or room must be made by brazing or welding. Joint connection of indoor unit by flaring method can only be made at outdoor or at outside of a building or dwelling or room. Flare connection may cause gas leak and flammable atmosphere.
- The appliance shall be stored, installed and operated in a well ventilated room with indoor floor area larger than Am² (min) (Refer to Check of Density Limit) and without any continuously operating ignition source. Keep away from open flames, any operating gas appliances or any operating electric heater. Else, it may explode and cause injury or death.
- Refer to "PRECAUTION FOR USING R410A REFRIGERANT" in outdoor unit installation manual for other precautions that need to pay attention to.

Check of Density Limit

WARNING Always check the gas density limit for the room in which the unit is installed.
CAUTION Pay special attention to any location, such as a basement, etc., where leaking refrigerant can accumulate, since refrigerant gas is heavier than air.

When installing an air conditioner in a room, it is necessary to ensure that even if the refrigerant gas accidentally leaks out, its density does not exceed the limit level for that room.
If the density could exceed the limit level, it is necessary to provide an opening between the unit and the adjacent room, or to install mechanical ventilation which is interlocked with a leak detector.

(Total refrigerant charged amount: kg)
(Min. indoor volume where the indoor unit is installed: m³)
≤ Limit density 0.44 (kg/m³)

The limit density of refrigerant R410A which is used in this unit is 0.44 kg/m³ (ISO 5149).
The shipped outdoor unit comes charged with the amount of refrigerant fixed for each type, so add it to the amount that is charged in the field.
(For the refrigerant charge amount at shipment, refer to the unit's nameplate.)
Minimum indoor volume & floor area as against the amount of refrigerant is roughly as given in the following table.

Checking of limit density
Density limit is determined on the basis of the size of a room using an indoor unit of minimum capacity.
For instance, when an indoor unit is used in a room (floor area 15 m² × ceiling height 2.7 m = room volume 40.5 m³), the graph at right shows that the maximum overall refrigerant charge amount of limit density (0.44 kg/m³) that is not required to install a ventilation fan should be calculated as follows.

Due to the room volume, m³
Maximum overall refrigerant charge amount = (room volume) × (limit density)
= 40.5 (m³) × 0.44 (kg/m³) = 17.82 kg

Overall refrigerant charge amount for this system is 72.709 (kg).
The formula for the minimum room volume should be determined as follows.

Required minimum room volume = (overall refrigerant charge amount) ÷ (limit density)
= 72.709 (kg) ÷ 0.44 (kg/m³) = 165.25 (m³)

Required minimum floor area = (minimum room volume) ÷ (ceiling height)
= 165.25 (m³) ÷ 2.7 (m) = 61.2 (m²)

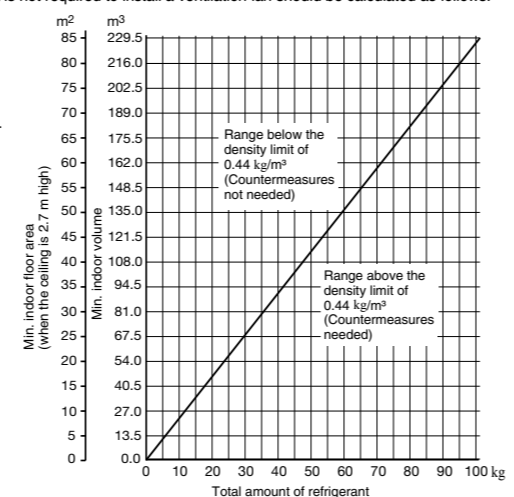
Therefore an opening for ventilation is required.

< Formula for computation >
Overall refrigerant charge amount for the air conditioner: kg

(Minimum room volume for indoor unit: m³)
= 72.709 (kg) ÷ 0.44 (kg/m³) = 165.25 (m³)

Overall refrigerant charge amount for the air conditioner: kg
= 1.80 (kg/m³) > 0.44 (kg/m³)

Accordingly, it is necessary to install a ventilation fan for this room.



ACCESSORIES SUPPLIED WITH INDOOR UNIT

Part Name	Figure	Q'ty	Remarks	Part Name	Figure	Q'ty	Remarks
Special washer		8	For indoor unit suspension	Hose band		1	For securing drain hose
Drain hose		1	For drain hose connection	Clamper		2	For power supply cord / control wiring

1. SELECT THE INDOOR UNIT INSTALLATION LOCATION

1-1. Indoor Unit

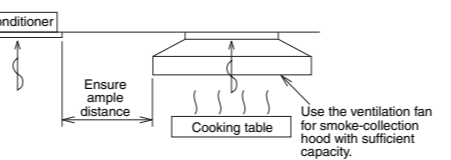
- Provide a check port on the piping side ceiling for repair and maintenance.
- Install the indoor unit once the following conditions are satisfied and after receiving the customer approval.
 - The indoor unit must be within a maintenance space.
 - The indoor unit must be free from any obstacles in path of the air inlet and outlet, and must allow spread of air throughout the room.
- If the height from the floor to ceiling exceeds three meters, air flow distribution deteriorates and the effect is decreased.

WARNING

- The installation position must be able to support a load four times the indoor unit weight.
- The indoor unit must be away from heat and sources of steam, but avoiding installation near an entrance.
- The indoor unit must allow easy draining.
- The indoor unit must allow easy connection to the outdoor unit.
- The indoor unit must be at least 3 m away from any noise-generating equipment. The electrical wiring must be shielded with a steel conduit.
- If the power supply is subject to noise generation, add a suppressor.
- Do not install the indoor unit in a laundry. Electric shocks may result.
- Installation height is more than 2.5m.

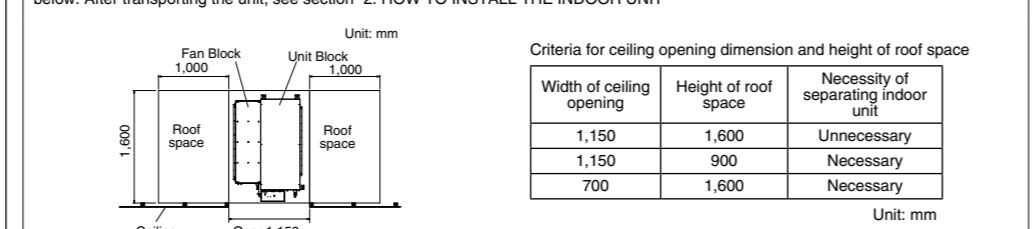
NOTE Thoroughly study the following installation locations

- In such places as restaurants and kitchens, considerable amount of oil steam and flour adhere to the fan, the fin of the heat exchanger, resulting in heat exchange reduction, spraying, dispersing of water drops, etc.
- In these cases, take the following actions:
 - Make sure that the ventilation fan for smoke-collecting hood on a cooking table has sufficient capacity so that it draws oily steam which should not flow into the suction of the air conditioner.
 - Make sure there is enough distance from the cooking room to install the air conditioner in such place where it may not suck in oily steam.
- Avoid installing the air conditioner in such circumstances where cutting oil mist or iron powder exist, especially in factories, etc.
- Avoid places where inflammable gas is generated, flows-in, contaminated, or leaked.
- Avoid places where sulphurous acid gas or corrosive gas can be generated.
- Avoid places near high frequency generators.



1-2. When transporting the indoor unit to the roof space through the ceiling opening

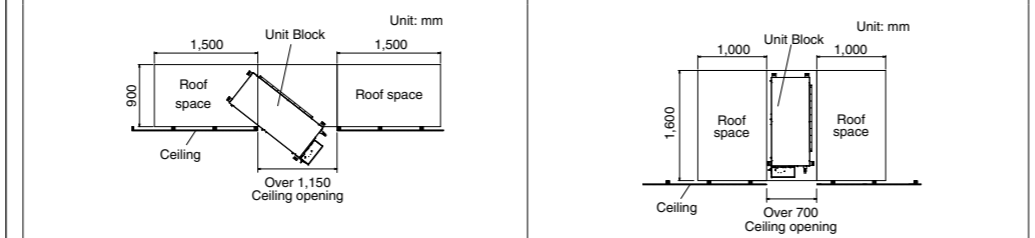
Transport is possible without separation with a ceiling opening dimension of over 500 × 1,150 mm and a roof space dimension as shown below. After transporting the unit, see section "2. HOW TO INSTALL THE INDOOR UNIT"



It is possible to separate the indoor unit into Fan Block and Unit Block. Separated transport if necessary

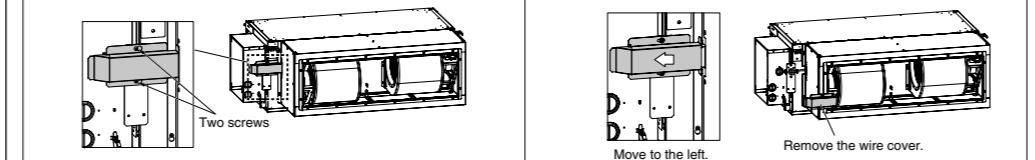
<Case 1>
If a ceiling opening dimension is over 500 × 1,150 mm and a roof space dimension is shown below, the indoor unit can be separated to fit through the space. For separating procedure, see section "1-3. How to separate the indoor unit".

<Case 2>
If a ceiling opening dimension is over 500 × 700 mm and a roof space dimension is shown below, the indoor unit can be separated to fit through the space. For separating procedure, see section "1-3. How to separate the indoor unit".

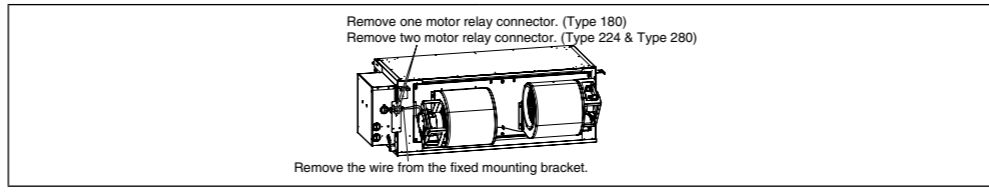
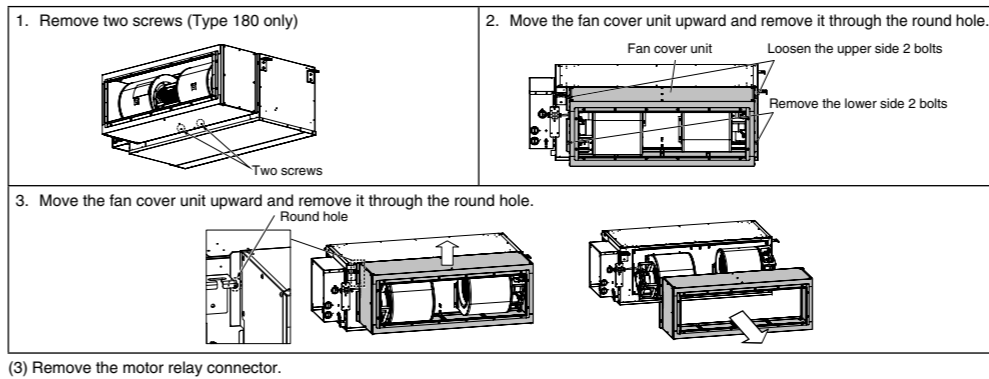


1-3. How to separate the indoor unit

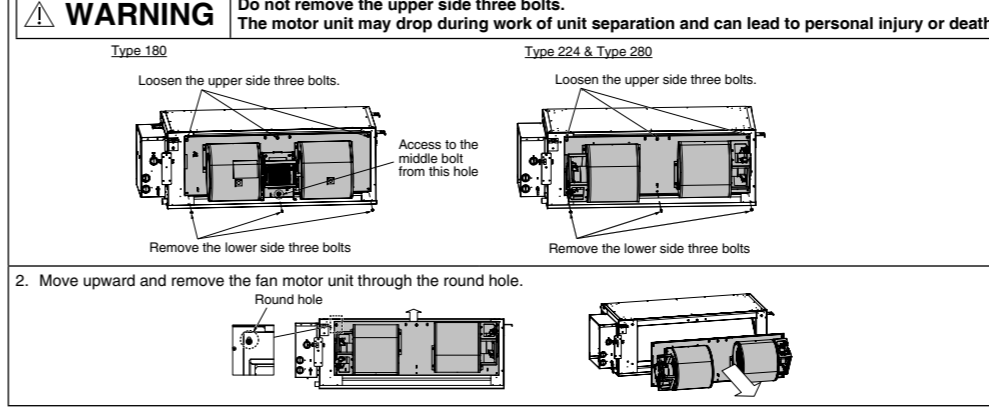
- Remove the wire cover.
- Loosen two screws.
- Move to the left and remove the wire cover through the round hole.



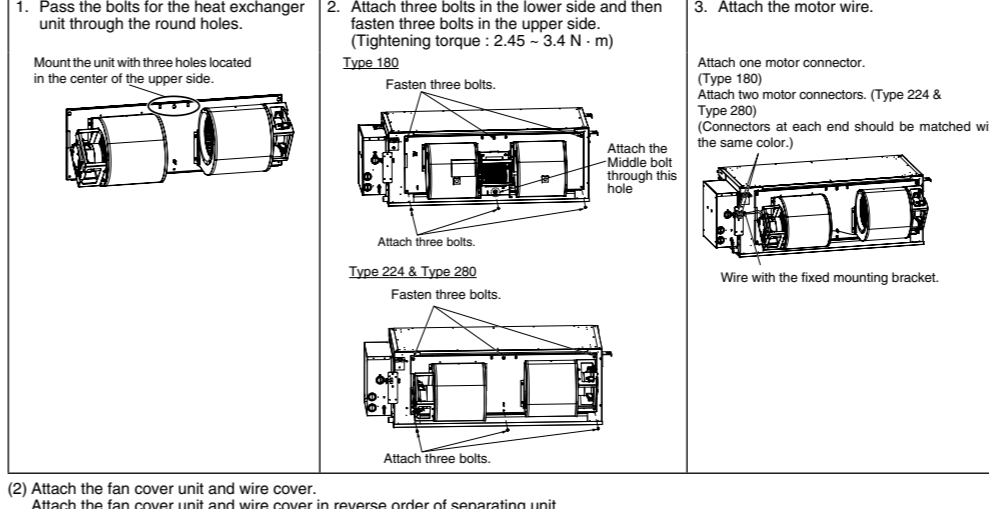
(2) Remove the fan cover unit.



(3) Separate the fan motor unit and heat exchanger unit.



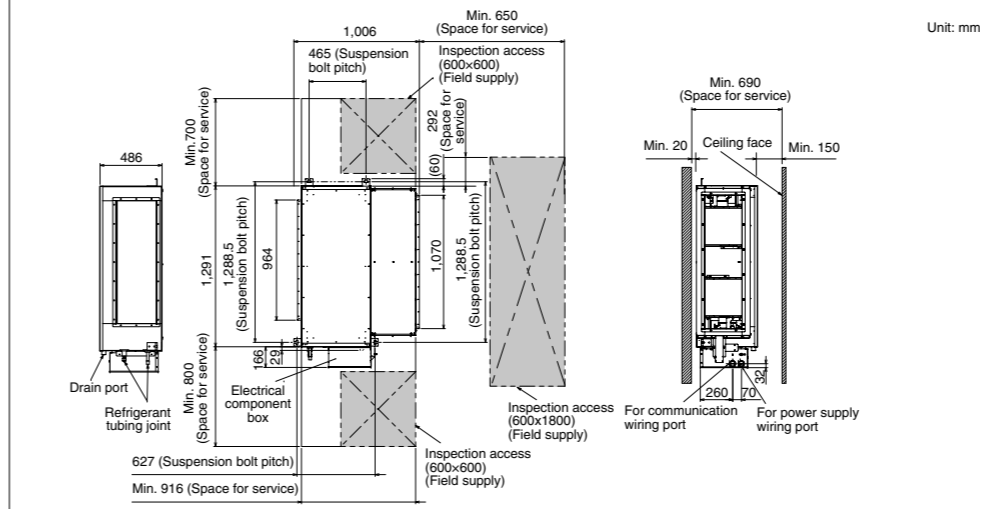
1-4. How to assemble the indoor unit



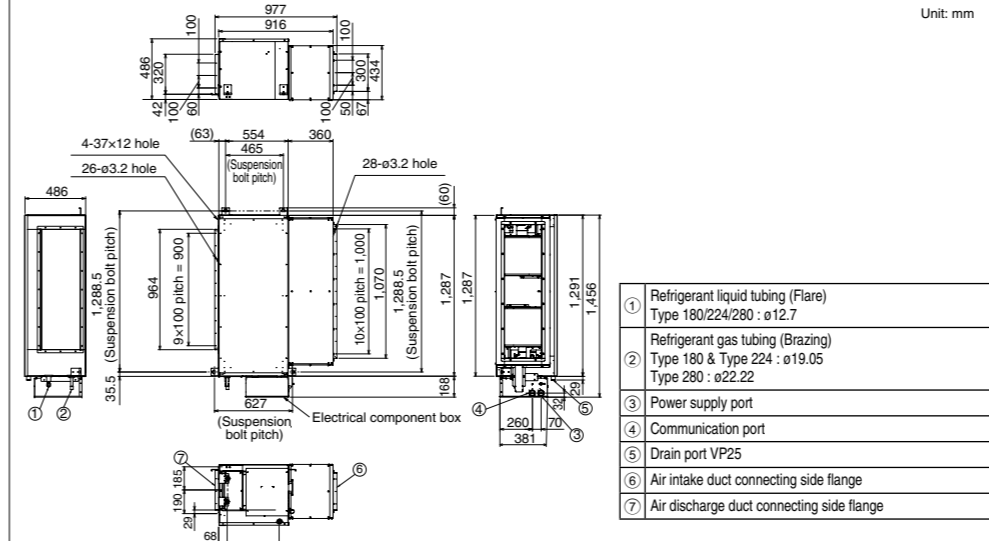
2. HOW TO INSTALL THE INDOOR UNIT

2-1. Required Minimum Space for Installation and Service

(1) Dimensions of suspension bolt pitch and unit

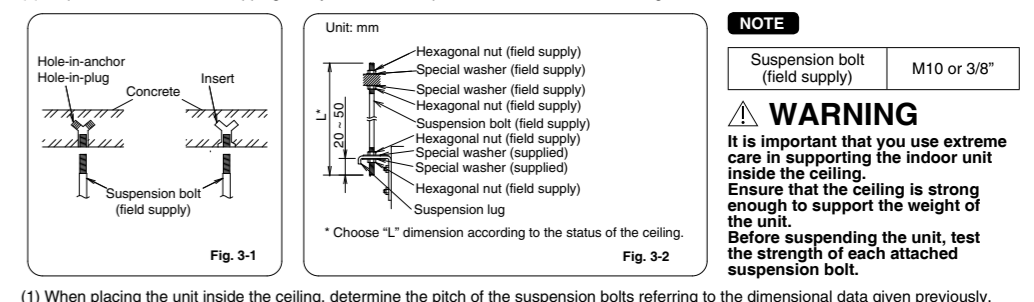


(2) Dimensions of indoor unit



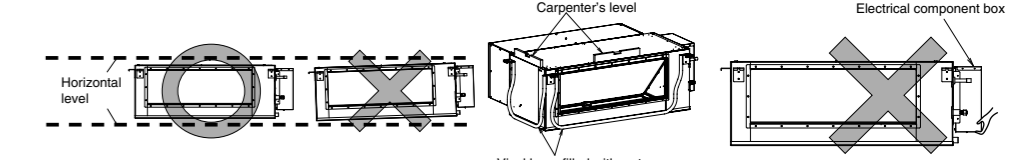
2-2. Suspending the Indoor Unit

- Check the suspension bolt pitch.
- Ensure that the ceiling is strong enough to support the weight of the unit.
- To prevent the unit from dropping, firmly fasten the suspension bolts as shown in the figure below.



- When placing the unit inside the ceiling, determine the pitch of the suspension bolts referring to the dimensional data given previously. Tubing must be laid and connected inside the ceiling when suspending the unit.
- If the ceiling is already constructed, lay the tubing into position for connection to the unit before placing the unit inside the ceiling.
- Suspend and fix the indoor unit using the 2 hexagonal nuts (field supply) and special washers (supplied with the unit) as shown in Fig. 3-2.

CAUTION The top of the unit must be installed horizontally.



- Check the unit is placed horizontally. Make sure the unit is installed level using a level or a vinyl hose filled with water. In using a vinyl hose instead of a level, adjust the top surface of the unit to the surface of the water at both ends of the vinyl hose and make horizontal adjustment on all 4 corners of the unit. If the air discharge side of the unit is installed downward, splashing water or water leak may occur. Also, the dust may accumulate inside the drain pan caused by draining residual water. When lifting the unit, do not attempt to hold the electrical component box in hand.

2-3. Installing the Refrigerant Tubing

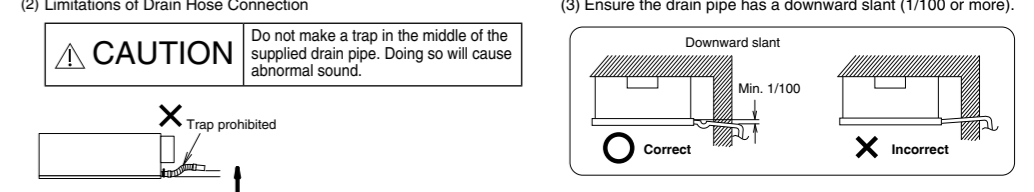
The size of the refrigerant tubing is as shown in the table below.

Type	180/224	280
Gas tube	ø19.05 (100 m) (Brazing connection)	ø22.22 (100 m) (Brazing connection)
Liquid tube	ø12.7 (Flare connection) Tightening torque (approximately): 49 - 55 N · m Thickness of connecting tube : 0.8 mm	

- NOTE**
To fasten the flare nuts, apply specified torque.
- When brazing, must be cool the pipe by wet cloths after removing the insulation tube and the cover plate.
 - When brazing the gas tubing, cool the tubing with dampened shopcloths as you work, as shown in the figure below, to protect the unit's thermistor from the heat generated by brazing.
 - When brazing, be careful not to heat the electrical component box. Doing so may cause the unit to be damaged.
 - Pipe insulation must be made after leak detection for tubing connection area was performed.
 - Be sure to insulate both the gas tubing and liquid tubing.
 - In addition, wrap the insulation material (field supply) around the tubing joints, and fasten in place with vinyl tape or other means.
 - Failure to insulate the tubing may result in water leakage from condensation.
 - Plug all gaps at tube through-holes in the unit with insulation or a similar substance to prevent air leakage.

2-4. Installing the Drain Piping

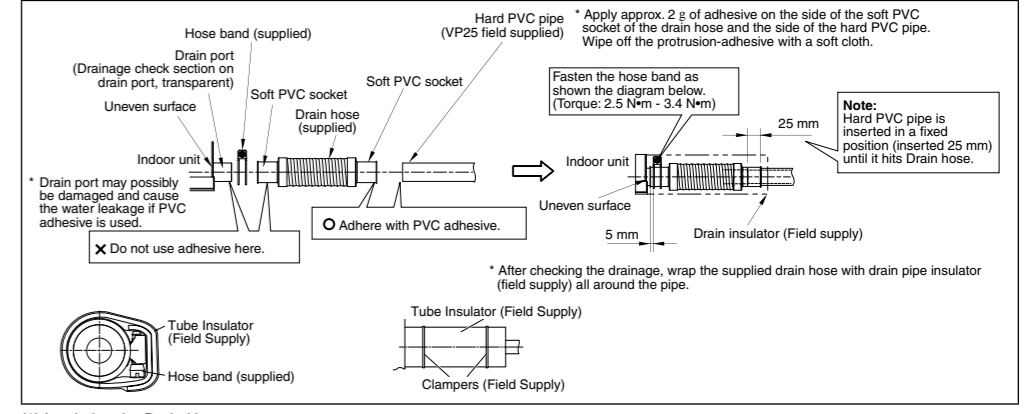
- Before Performing the Installation Drain Piping
 - Prepare standard hard PVC pipe (O.D. 32 mm) for the drain and use the supplied drain socket to prevent water leaks. The PVC pipe must be purchased separately.
 - When doing this, apply adhesive for the PVC pipe at the connection point. See section "2-4-2. Installing the Drain Pipe".
- Limitations of Drain Hose Connection
 - Do not make a trap in the middle of the supplied drain pipe. Doing so will cause abnormal sound.
 - Ensure the drain pipe has a downward slant (1/100 or more).



- The drain pipe with a trap should be installed away from the indoor unit.
- Do not attach any air purge equipment.
- If attached, drain water may result in splashing out of the drain pipe.
- When the drain piping is completed, perform the water leak test and check for a water leak.
- If detected, it may result in water leakage or condensation.
- When the drain piping is completed, perform the drainage test if the water drains smoothly.
- If not draining smoothly, it may result in water leakage or condensation.
- When the drain piping work is finished securely, wrap the insulation material around the indoor side drain pipe.
- At this time, do not wrap together with the refrigerant tubing. If wrapped together, the drain pipe is lifted and water drainage will not be operated. Consequently, the water comes out of the drain pan and it can lead to water leakage.

2-4-2. Installing the Drain Pipe

- CAUTION**
- How to Connect Drain Port and Drain Hose
 - First insert the supplied hose band into the drain port pipe. Then make sure the head of the screw is facing toward a technical engineer when placing the screw of the hose band at an upward angle.
 - Insert the soft PVC socket of the supplied drain hose to the drain port pipe.
 - Never apply the adhesive to the both ends of the soft PVC socket and the drain port pipe.
 - Insert the drain hose to the point where there is a difference in level as shown in the figure below and fasten it with the hose band 5 mm away from that position.
 - Tightening torque must be 2.5 - 3.4 Nm.
 - Tightening position of the hose band must be upward.
 - How to Install the Drain Pipe
 - Connect the hard PVC pipe (O.D. 32 mm) to the side of the soft PVC socket of the drain hose.
 - Apply approx. 2 g of adhesive on the side of the soft PVC socket of the drain hose and the side of the hard PVC pipe.
 - Do not apply force to the drain port when connecting the drain pipe. Install and fix it near the indoor unit as close as possible.



(3) Selecting the Drain Hose

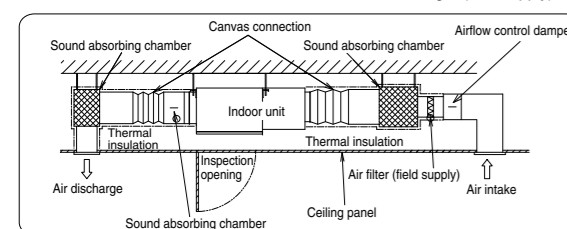
- Insulation of heat insulation materials for drain hose (Drain insulator). When using the heat insulation materials (field supply), kindly use the same size and performance as refrigerant tubes. Check for its size as below table.

Insulation Material	Thermal insulation thickness
Polyethylene foam (same as heat insulators for refrigerant tubes)	Insulation thickness must 10mm or greater

CONTINUE TO THE NEXT PAGE

2-5. Caution for Ducting Work

- This unit has high static pressure.
- In case of small pressure resistance (for instance, a short duct), install an airflow control damper (field supply) for adjusting airflow volume as airflow volume / airflow noise increases.
- If the air conditioner is to be installed in a room such as an office or meeting room which requires a low sound level, provide a supply and return sound absorption chamber with an acoustic liner.
- Use a flexible canvas connection or vibration isolation hanger (field supply) to break transmission of mechanical vibration of the unit.



CAUTION

- Use incombustible duct materials.
- Use thermal insulation to prevent duct condensation.
- An air filter (field supply) must be installed at the air intake side. If not installed, the heat exchanger will get dirty and the unit will reduce the quality.
- Obtain and install an air filter (field supply) which can easily wash away the dust by lukewarm, soapy water or suck up with a vacuum cleaner.
- Clean the air filter periodically to collect dust and other particles from the air.
- Use duct static pressure within a range of specification value.

3 ELECTRICAL WIRING

As to main power source and cable size of outdoor unit, read the installation manual attached to the outdoor unit.

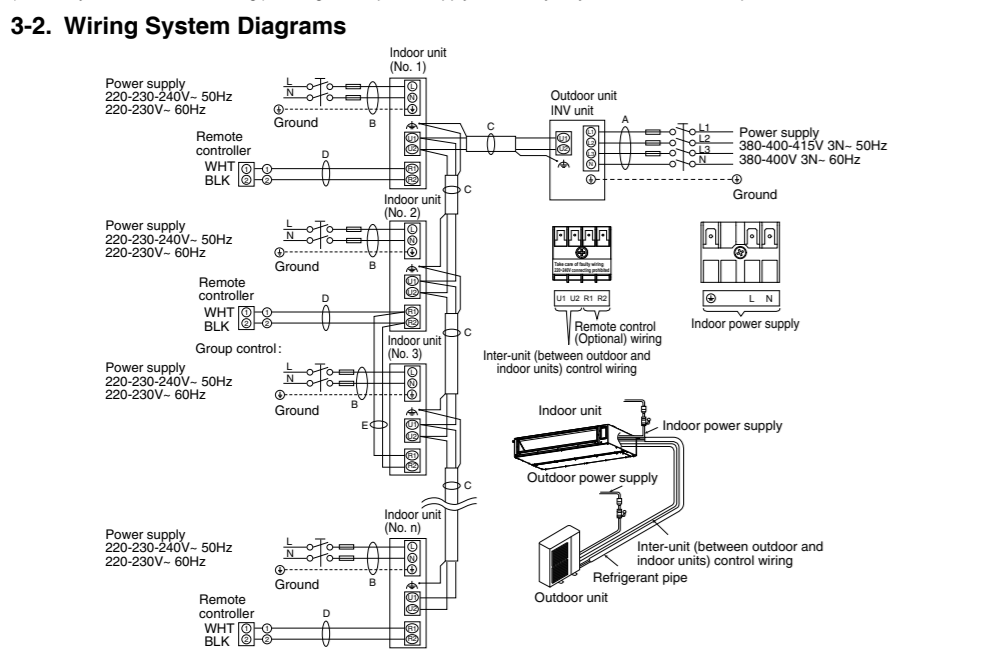
3-1. General Precautions on Wiring

- This air conditioner must be installed in accordance with national wiring regulations.
- Cables connected to indoor unit must be approved polychloreprene sheathed type 60245 IEC 57 or heavier.
- The units must be connected to the supply cables for fixed wiring by qualified technician.
- Circuit breaker must be incorporated in the fixed wiring in accordance with the national wiring regulations. The circuit breaker must be approved, suitable for the voltage and current ratings of equipment and have a contact separation by 3mm in all poles.
- When the supply cable is damaged, it must be replaced by qualified technician.
- Be sure to install a current leakage breaker, main switch and fuse to the main power supply, otherwise electric shocks may result.
- Be sure to connect the unit to secure earth connection.
- If the earthing work is not carried out properly, electric shocks may result.
- Wiring shall be connected securely by using specified cables and fix them securely so that external force of the cables may not transfer to the terminal connection section.
- Imperfect connection and fixing leads to fire, etc.

- Select a power source that is capable of supplying the current required by the air conditioner.
- Feed the power source to the unit via a distribution switch board designed for this purpose, the switch should disconnect all poles with a contact separation of at least 3 mm.
- Always ground the air conditioner with a grounding wire and screw to meet the LOCAL REGULATIONS.
- Be sure to connect the indoor/outdoor unit connection wires correctly to terminal board.
- Be sure to turn off the main power before installing and connecting the remote controller.
- Each wiring connection must be done in accordance with the wiring system diagram.

Wrong wiring may cause the wires overloaded and overheated.

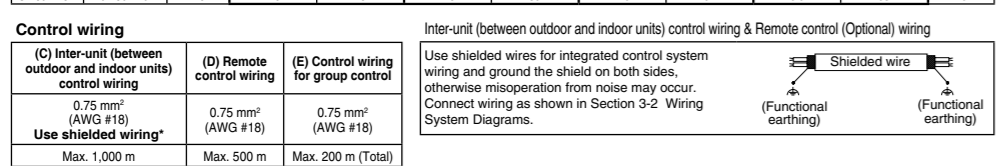
3-2. Wiring System Diagrams



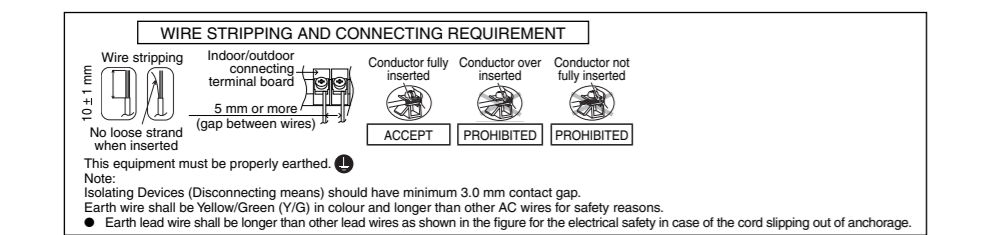
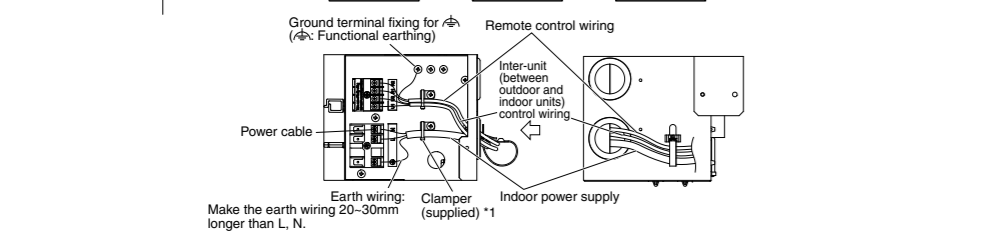
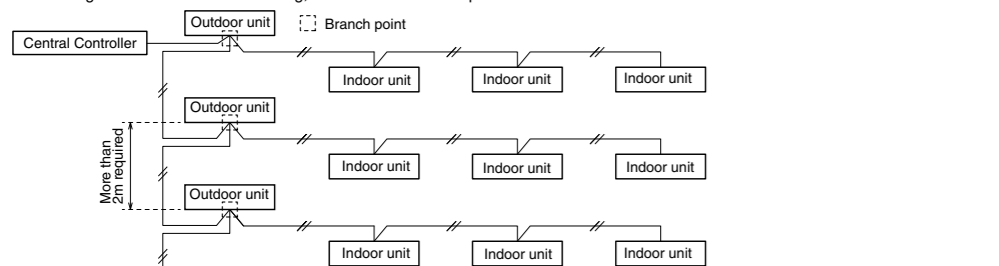
- See the section "3-3. Recommended Wire Length and Wire Diameter for Power Supply System" for explanation of "A", "B", "C", "D", and "E" in the above diagram.
- The basic connection diagram of the indoor unit shows the 6P terminal board, so the terminal boards on your equipment may differ from the diagram.
- Attach the terminal cover after fixing the wires at the terminal board.

3-3. Recommended Wire Length and Wire Diameter for Power Supply System

Model	Power Supply	Recommended Wire Length and Wire Diameter for Power Supply Cable								Time Delay Fuse or Circuit Capacity (A)	
		Min. Wire Size (mm ²)	Max. Length (m)	Min. Wire Size (mm ²)	Max. Length (m)	Min. Wire Size (mm ²)	Max. Length (m)	Min. Wire Size (mm ²)	Max. Length (m)		
S-180MESH	220-230-240V~ 50Hz	1.5	15	26	2.5	43	4.0	69	6.0	104	10
S-224ME3H	220-230-240V~ 50Hz	1.5	15	23	2.5	39	4.0	62	6.0	93	10
S-280ME3H	220-230-240V~ 50Hz	1.5	15	23	2.5	39	4.0	62	6.0	93	10



- For outdoor unit wire length and wire diameter for power supply system (A), refer to the installation instruction manual that comes with that outdoor unit.
- For Optional Parts connecting wiring size, refer to Installation Manual of the Optional Parts.



4 REFRIGERANT PIPING

Must ensure mechanical connections be accessible for maintenance purposes. The liquid tubing side is connected by a flare nut, and the gas tubing side is connected by brazing.

4-1. Connecting the Refrigerant Tubing

- Replace air inside the tube with nitrogen gas to prevent copper oxide film from forming during the brazing process. (Oxygen, carbon dioxide and Freon are not acceptable.)
- Do not allow the tubing to get too hot during brazing. The nitrogen gas inside the tubing may overheat, causing refrigerant system valves to become damaged. Therefore allow the tubing to cool when brazing.
- Use a reducing valve for the nitrogen cylinder.
- Do not use agents intended to prevent the formation of oxide film. These agents adversely affect the refrigerant and refrigerant oil, and may cause damage or malfunctions.

4-2. Connecting Tubing Between Indoor and Outdoor Units

- Tightly connect the indoor-side refrigerant tubing extended from the wall with the outdoor-side tubing.

Indoor Unit Tubing Connection

Indoor unit type	180/224	280
Gas tubing (mm)	ø19.05	ø22.22
Liquid tubing (mm)		ø12.7

- To fasten the flare nuts, apply specified torque.
 - When removing the flare nuts from the tubing connections, or when tightening them after connecting the tubing, be sure to use a torque wrench and a spanner. If the flare nuts are over-tightened, the flare may be damaged, which could result in refrigerant leakage and cause injury or asphyxiation to room occupants.
 - For the flare nuts at tubing connections, be sure to use the flare nuts that were supplied with the unit, or else flare nuts for R410A, R32 (type 2). The refrigerant tubing that is used must be of the correct wall thickness as shown in the table below.

Tube diameter	Flare nut tightening torque (approximate)	Min. tube thickness
ø12.7 (1/2")	55±6 N·m (550±60 kgf·cm)	0.8 mm (Material Temper - O)
ø19.05 (3/4")	-	1.2 mm (Material Temper - O)
ø22.22 (7/8")	-	1.0 mm (Material Temper - 1/2 H + H)

- Because the pressure is approximately 1.6 times higher than conventional refrigerant R22 pressure, the use of ordinary flare nuts (type 1) or thin-walled tubes may result in tube rupture, injury, or asphyxiation caused by refrigerant leakage.
- In order to prevent damage to the flare caused by over-tightening of the flare nuts, use the table above as a guide when tightening.
- When tightening the flare nut on the liquid tube, use an adjustable wrench with a nominal handle length of 200 mm.

4-3. Insulating the Refrigerant

- Be sure to perform heat insulation on the drain, liquid and gas piping. Imperfection in heat insulation work leads to water leakage.

- Selection of heat insulation materials for refrigerant tube. When using heat insulation materials (field supply), kindly check for its size and performance.
 - Material for insulation material: Polyethylene foam.
 - Heat transfer rate: less than 0.051W/m·K.
 - Material withstand temperature: 120°C or above (gas tubing).
- For other tubing 80°C or above.
 - Must be easy to use, age resistance and not easily absorb moisture.
 - Be sure to match the below insulation material size with tube sizes.

Piping size, mm (In)	Thermal insulation size (I.D.)	Thermal insulation Thickness
12.7 (1/2")	14 - 16 mm	Insulation thickness must be 10mm or greater
19.05 (3/4")	20 - 24 mm	
ø22.22 (7/8")	22 - 25 mm	

- Taping the flare nuts
 - Wind the white insulating tape around the flare nuts at the gas tube connection.
 - Then cover up the tubing connection with tube insulator (field supply) and fill in the gap with black insulation tape.
 - Finally fasten with clampers (field supply)

If noise bothers you from the area between indoor and outdoor units' connection pipes, it is effective to wind the soundproofing materials (field supply) to reduce noise.

- Finishing the installation
 - After finishing insulating and taping over the tubing, use sealing putty to seal off the hole in the wall to prevent rain and draft from entering.

- Precautions in high humidity circumstances
 - This air conditioner has been tested according to the "JIS Standard Conditions with Mist" and have been confirmed that there are no faults. However, if it is operated for a long time in high humid atmosphere (dew point temperature: more than 23°C), water drops are liable to fall. In this case, add heat insulation material according to the following procedures:
 - Heat insulation material to be prepared. Adiabatic glass wool with thickness 10-20mm
 - Stick the wool on all air-conditioners that are located in the ceiling atmosphere
 - In addition to the normal heat insulation (thickness: more than 10mm) refrigerant piping, add a further of 10-30 mm thickness material.

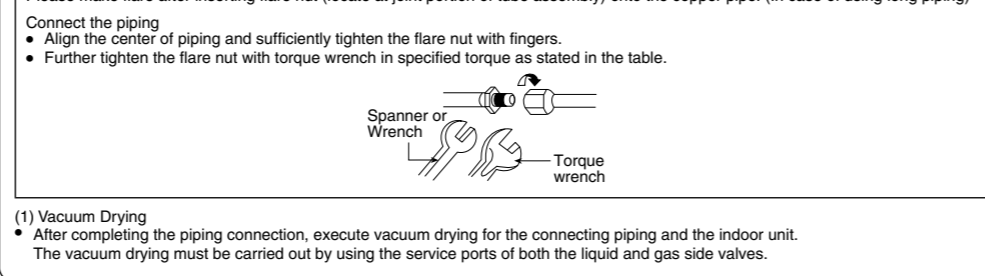
Do not wind the insulating tape too tightly since this will decrease the heat insulation effect. Also ensure that the condensation drain hoses splits away from the bundle and drips clear of the unit and the tubing.

- Finishing the installation
 - If the exterior of the outdoor unit valves has been finished with a square Duff covering, make sure you allow sufficient space to access the valves and to allow the panels to be attached and removed.

- Additional precautions for R410A models
 - For connection joint of all models. Please make flare after inserting flare nut (locate at joint portion of tube assembly) onto the copper pipe. (In case of using long piping)
 - Connect the piping
 - Align the center of piping and sufficiently tighten the flare nut with fingers.
 - Further tighten the flare nut with torque wrench in specified torque as stated in the table.

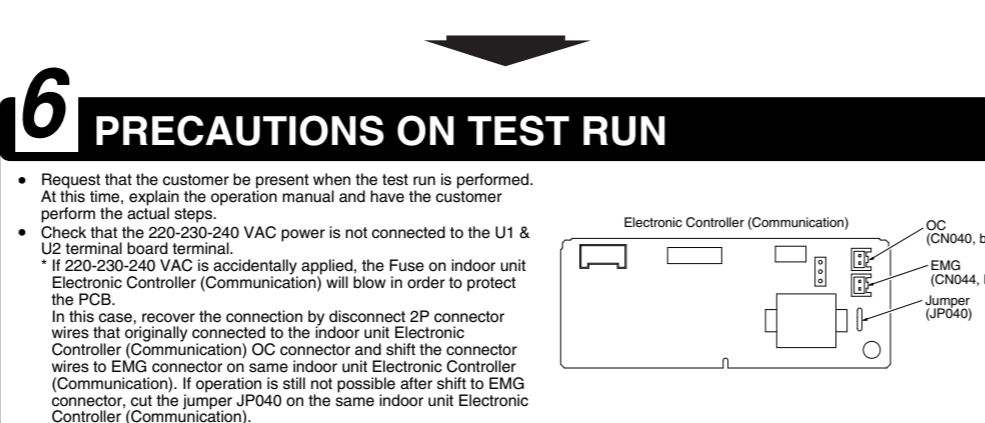
4-4. Additional Precautions for R410A models

- Vacuum Drying
 - After completing the piping connection, execute vacuum drying for the connecting piping and the indoor unit. The vacuum drying must be carried out by using the service ports of both the liquid and gas side valves.



5 HOW TO INSTALL THE TIMER REMOTE CONTROLLER OR HIGH-SPEC WIRED REMOTE CONTROLLER (OPTIONAL PART)

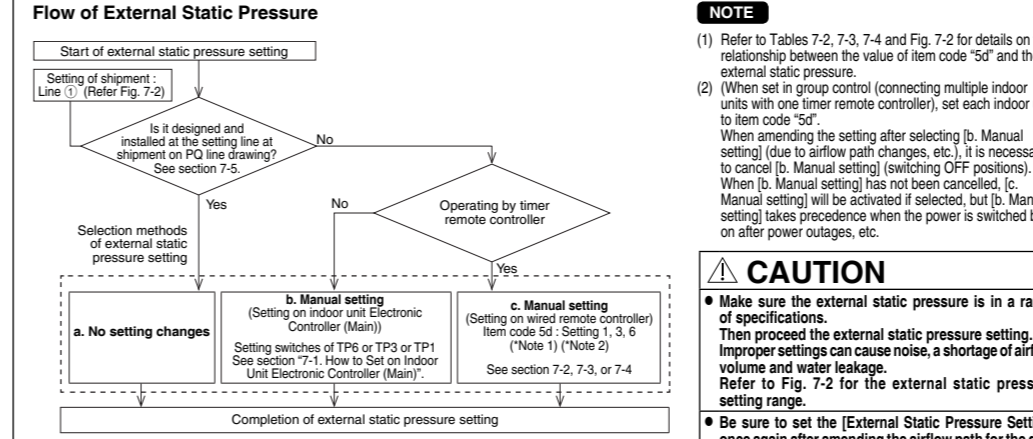
- Request that the customer be present when the test run is performed. At this time, explain the operation manual and have the customer perform the actual steps.
- Check that the 220-230-240 VAC power is not connected to the U1 and U2 terminal board terminal.



7 EXTERNAL STATIC PRESSURE SETTING

Choose one of the methods (selection of "a", "b", "c" within the range of dotted line as shown in the flowchart below) and make settings.

- No setting changes: When using as it is factory preset at shipment.
- Manual setting (on indoor unit Electronic Controller (Main)): If resetting after external static pressure setting once, it might be different from factory preset.
- Manual setting (by wired remote controller): Static pressure setting excepting factory preset at shipment.



- Turn off the power breaker to halt the supply of electricity to the indoor unit Electronic Controller (Main).
- Open the lid of the electrical component box and confirm the location where the Select switch on the indoor unit Electronic Controller (Main) is placed. (Fig. 7-1)
- Set the On/Off switches in the Off position which are now set in the On position. Select the positions of the Select SW001 switches respectively to make the desired external static pressure settings referring to the Table 7-1.

External static pressure at the time of rated airflow volume	SW001	Indoor Unit Electronic Controller (Main)
180	224/280	TP6 TP3 TP1
180Pa	200Pa	1 ON 3
120Pa	130Pa	1 ON 2 ON 3
75Pa	75Pa	1 ON 2 ON 3 ON

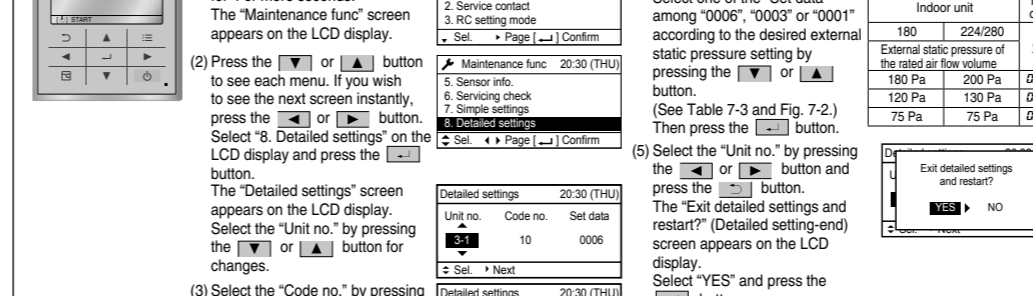
7-1. How to Set on Indoor Unit Electronic Controller (Main)

- Press and hold down the **ON** and **TP6** buttons simultaneously for 4 or more seconds. (The Unit No., Item Code and Detailed Data will blink on the LCD display.)
- The indoor unit numbers in the group control will be sequentially displayed whenever the Unit Select button is pressed.

- Specify the "5d" item code by pressing the **TP6** button for the temperature setting buttons and confirm the values. ("00 0 1" set at shipment)
- Press the **TP6** button for the time to amend the values for the set data. Refer to Table 7-2 and Fig. 7-2 and select a value "00 06", "00 03" or "00 0 1".
- Press the **TP6** button.
- The display will stop blinking and remain illuminated.
- Press the **TP6** button. The fan motor will stop operating and the LCD display will return to the normal stop mode.

7-2. Operating the Timer Remote Controller (CZ-RTC4/CZ-RTC4A)

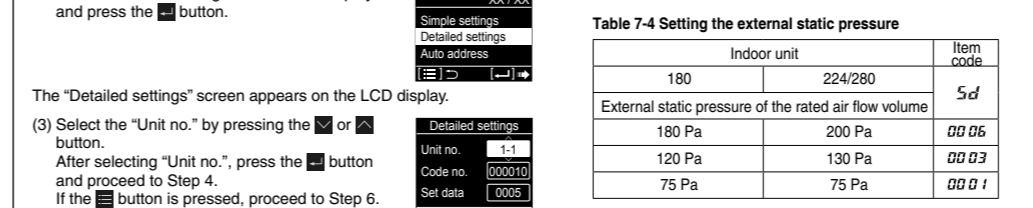
- Keep pressing the **TP6** and **TP3** buttons simultaneously for 4 or more seconds. The "Maintenance func" screen appears on the LCD display.
- Press the **TP6** or **TP3** button to see each menu. If you wish to see the next screen instantly, press the **TP6** or **TP3** button. Select "3. Detailed settings" on the LCD display and press the **TP6** button.



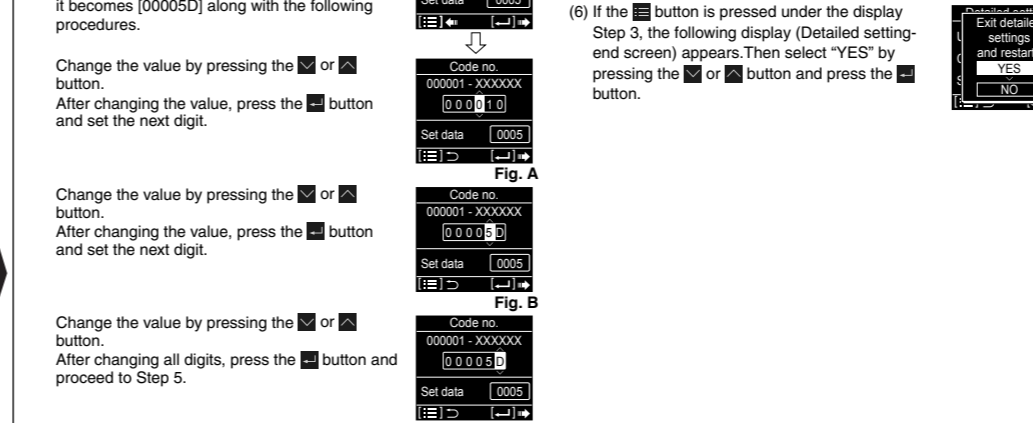
- Select the "Code no." by pressing the **TP6** or **TP3** button. Change the "Code no." to "5d" by pressing the **TP6** or **TP3** button (or keeping it pressed).
- Select the "Set data" by pressing the **TP6** or **TP3** button. The "Detailed settings" screen appears on the LCD display. Change the "Set data" to "0006" by pressing the **TP6** or **TP3** button (or keeping it pressed).

7-3. Operating the High-spec Wired Remote Controller (CZ-RTC5B)

- Keep pressing the **TP6** and **TP3** buttons simultaneously for 4 or more seconds. The "Maintenance func" screen appears on the LCD display. Change the "Code no." to "5d" by pressing the **TP6** or **TP3** button (or keeping it pressed).
- Select the "Set data" by pressing the **TP6** or **TP3** button. The "Detailed settings" screen appears on the LCD display. Change the "Set data" to "0006" by pressing the **TP6** or **TP3** button (or keeping it pressed).



- Keep pressing the **TP6** button for 2 seconds or more during selecting "Code no.". Change the "Code no." one digit at a time so that it becomes [00005d] along with the following procedures.



7-5. Indoor Fan Performance

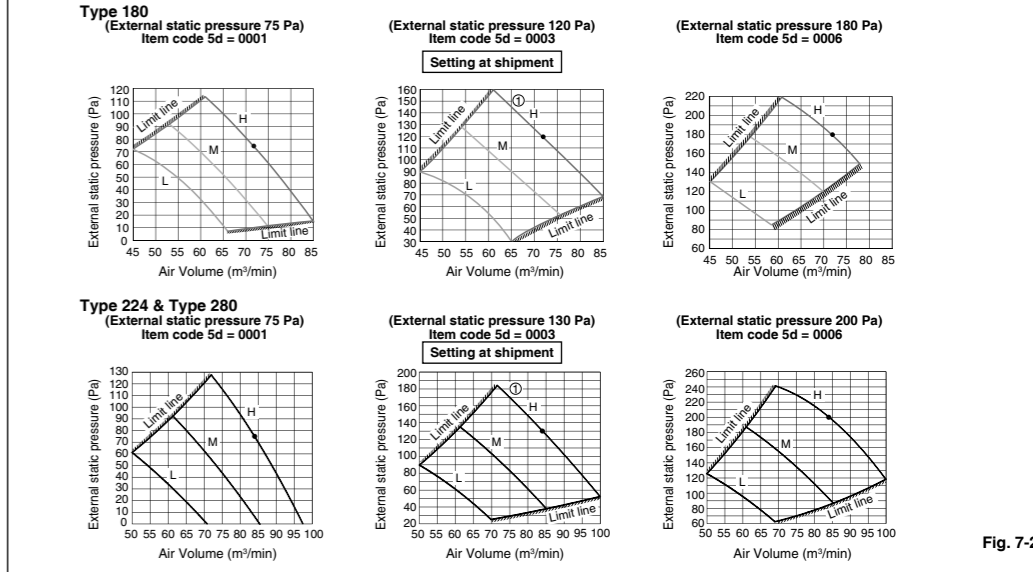
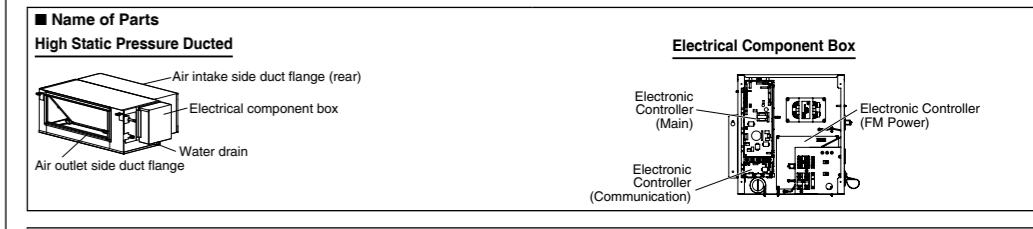


Fig. 7-2

8 APPENDIX



- Engage authorized dealer or specialist for cleaning.
- For safety, be sure to turn the air conditioner off and also to disconnect the power before cleaning.
- Do not pour water on the indoor unit to clean it. This will damage the internal components and cause an electric shock hazard.

- Never use solvents or harsh chemicals when cleaning the indoor unit. Do not wipe plastic parts using very hot water.
- Some metal edges and the fins are sharp and may cause injury if handled improperly. Be especially careful when you clean these parts.
- The internal coil and other components of outdoor unit must be cleaned regularly. Consult your dealer or service center.

- Operate the fan for half a day to dry out the inside.
- Disconnect the power supply and also turn off the circuit breaker.
- Clean the air filter and replace it in its original position.

Should the power fall while the unit is running If the power supply for this unit is temporarily cut off, the unit will automatically resume operation once power is restored using the same settings before the power was interrupted.

- After completing work, be sure to measure and record trial run properties, and store measuring data, etc.
- Measuring items are room temperature, outside temperature, suction temperature, blow out temperature, wind velocity, wind volume, voltage, current, presence of abnormal vibration and noise, operating pressure, piping temperature, compressive pressure, airleak pressure.
- As to the structure and appearance, check the following items.

- Is circulation of air adequate?
- Is there any leakage of refrigerant?
- Are the terminal screws loosened?
- Is draining smooth?
- Is remote controller switch operated?
- M3...69-98N·cm (7-10kgf·cm)
- Is heat insulation complete (refrigerant and drain piping)?
- Is there any faulty wiring?
- M4...157-196N·cm (16-20kgf·cm)
- M5...196-245N·cm (20-25kgf·cm)

Check the indoor and outdoor unit intakes and outlets for blockage; if there is a blockage, remove it.

Refer to the Installation Instructions attached to the outdoor unit.

CHECK THE FOLLOWING ITEMS WHEN INSTALLATION IS COMPLETE

- After completing work, be sure to measure and record trial run properties, and store measuring data, etc.
- Measuring items are room temperature, outside temperature, suction temperature, blow out temperature, wind velocity, wind volume, voltage, current, presence of abnormal vibration and noise, operating pressure, piping temperature, compressive pressure, airleak pressure.
- As to the structure and appearance, check the following items.

- Is circulation of air adequate?
- Is there any leakage of refrigerant?
- Are the terminal screws loosened?
- Is draining smooth?
- Is remote controller switch operated?
- M3...69-98N·cm (7-10kgf·cm)
- Is heat insulation complete (refrigerant and drain piping)?
- Is there any faulty wiring?
- M4...157-196N·cm (16-20kgf·cm)
- M5...196-245N·cm (20-25kgf·cm)

As for work specifications of the outdoor unit, read the OUTDOOR UNIT INSTALLATION MANUAL attached to the outdoor unit.

Teach the customer the operation and maintenance procedures, using the operation manual (air filter cleaning, temperature control, etc.)

Refer to installation manual of optional parts (sold separately).

As for work specifications of the outdoor unit, read the OUTDOOR UNIT INSTALLATION MANUAL attached to the outdoor unit.

Indoor unit	224/280	Item code
External static pressure of the rated air flow volume	5d	
180 Pa	200 Pa	00 06
120 Pa	130 Pa	00 03
75 Pa	75 Pa	00 0 1

- Failure to set this parameter may result in decreased airflow and condensation.

- If the **TP6** button is pressed under the display Step 3, the following display (Detailed setting-screen) appears. Then select "YES" by pressing the **TP6** or **TP3** button and press the **TP6** button.



Change the value by pressing the **TP6** or **TP3** button. After changing the value, press the **TP6** button and set the next digit.