



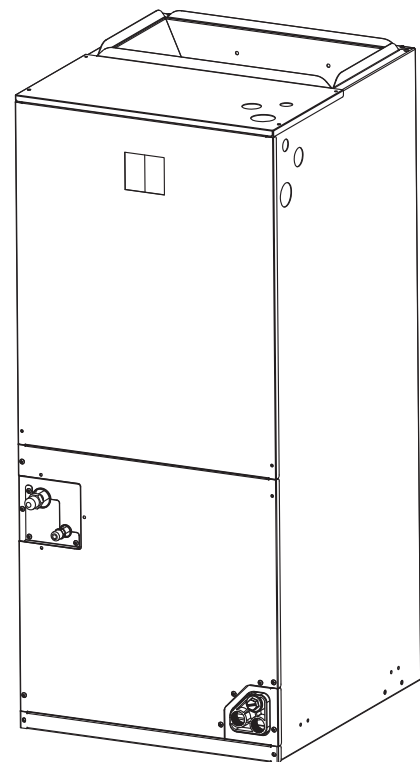
Operation Installation & Maintenance Manual

VRF INDOOR UNIT

Type	Model
MPAHU TYPE	CHV-18MPAHU CHV-24MPAHU CHV-30MPAHU CHV-36MPAHU CHV-42MPAHU CHV-48MPAHU CHV-54MPAHU CHV-60MPAHU

IMPORTANT:

***READ AND UNDERSTAND
THIS MANUAL BEFORE
USING THIS HEAT-PUMP
AIR CONDITIONER.
KEEP THIS MANUAL FOR
FUTURE REFERENCE.***



M01502Q

ORIGINAL INSTRUCTIONS

IMPORTANT NOTICE

- Our company pursues a policy of continuing improvement in design and performance of products. The right is therefore reserved to vary specifications without notice.
- Our company cannot anticipate every possible circumstance that might involve a potential hazard.
- This heat pump air conditioner is designed for standard air conditioning only. Do not use this heat pump air conditioner for other purposes such as drying clothes, refrigerating foods or for any other cooling or heating process.
- The installer and system specialist shall secure safety against leakage according to local regulations or standards. The following standards may be applicable if local regulations are not available.
International Organization for Standardization: (such as ISO 5149, EN 378 and ASHRAE Standard 15).
- No part of this manual may be reproduced without written permission.
- Signal words (DANGER, WARNING and CAUTION) are used to identify levels of hazard seriousness. Definitions for identifying hazard levels are provided below with their respective signal words.

▲ DANGER

: Immediate hazards which WILL result in severe personal injury or death.

▲ WARNING

: Hazards or unsafe practices which COULD result in severe personal injury or death.

▲ CAUTION

: Hazards or unsafe practices which COULD result in minor personal injury or product or property damage.

NOTE

: Useful information for operation and/or maintenance.

- It is assumed that this heat pump air conditioner will be operated and serviced by English speaking people. If this is not the case, the distributor should add safety, caution and operating signs in the native language.
- This heat pump air conditioner can only be installed by dealers or professionals. The installation by user may lead to water leakage, electric shock or fire.
- If you have any questions, contact your distributor or dealer of our company.
- This manual gives a common description and information for this heat pump air conditioner which you operate as well as for other models.
- Refer to Installation & Maintenance Manual of outdoor unit for temperature operation range.
- This manual should be considered as a permanent part of the air conditioning equipment and should remain with the air conditioning equipment.
- The models in this manual are partial units shall only be connected to an appliance suitable for the same refrigerant.
- The models in this manual are partial units air conditioner, complying with partial unit requirements of the relevant standard, and must only be connected to other units that have been confirmed as complying to corresponding partial unit requirements of the relevant standard.
- Use ELB with medium or higher sensing speed (ELB with an operating time of 0.1 seconds or less), or electric shock or fire may arise.

CHECKING PRODUCT RECEIVED

- Upon receiving this product, inspect it for any shipping damage.
Claims for damage, either apparent or concealed, should be filed immediately with the shipping company.
- Check the model number, electrical characteristics (power supply, voltage and frequency) and accessories to determine if they are correct.

The standard utilization of the unit shall be explained in these instructions.

Therefore, the utilization of the unit other than those indicated in these instructions is not recommended.

Please contact your local agent, as the occasion arises.

Our company's liability shall not cover defects arising from the alteration performed by a customer without our company's consent in a written form.

TABLE OF CONTENTS

Section1 Operation Manual

1. Safety Summary.....	1
2. System Description	3
3. Wire Controller.....	6
4. Before Operation	6
5. Automatic Control	6
6. Air Filter (Field-supplied).....	7
7. Troubleshooting	8
7.1 If Trouble Still Remains	8
7.2 No Operation	8
7.3 Not Cooling or Heating Well	8
7.4 This is Not Abnormal	8

Section2 Installation & Maintenance Manual

1. Safety Summary.....	9
2. Structure.....	10
2.1 Refrigerant Cycle.....	10
2.2 Necessary Tools and Instrument List for Installation.....	10
3. Transportation and Handling.....	10
3.1 Transportation	10
3.2 Unpacking.....	10
3.3 Handling of Indoor Unit.....	11
4. Indoor Unit Installation.....	13
4.1 Factory-Supplied Accessories	13
4.2 Initial Check	13
4.3 Installation Location	14
4.4 Installation	14
4.5 Air Duct	30

5. Refrigerant Piping Work	31
5.1 Piping Materials	31
5.2 Piping Connection	31
6. Drain Piping	32
7. Electrical Wiring	33
7.1 General Check.....	34
7.2 Electrical Wiring Connection.....	34
7.3 Field Minimum Wire Sizes for Power Source	35
8. Test Run.....	36
9. Safety and Control Device Setting	36
10. Common.....	37
10.1 Setting of DIP Switch.....	37

Section1 Operation Manual

1. Safety Summary

DANGER

- Do not perform any alteration to this product, otherwise, it may cause water leakage, breakdown, short circuit, electric shock, fire, etc.
- Piping, welding and other such work should be carried out far away from the flammable and explosive materials, including the air conditioner refrigerant, to guarantee the security of the site.
- To protect the air conditioner from heavy corrosion, avoid installing the outdoor unit in the place, where sea water can splash directly onto it or in sulphurous air near a spa. Do not install the air conditioner where excessively high heat-generating objects are placed.
- Use ELB with medium or higher sensing speed (ELB with an operating time of 0.1 seconds or less), or electric shock or fire may arise.
- Do not pour water into the indoor or outdoor unit. These products are equipped with electrical parts. If poured, it will cause a serious electrical shock.
- Do not touch or adjust safety devices inside the indoor or outdoor units. If these devices are touched or readjusted, it may cause a serious accident.
- Do not open the service cover or access the indoor or outdoor units without turning OFF the main power supply.

WARNING

- If the supply cord is damaged, it must be replaced by the factory or its service department to avoid danger.
- The place where this product is installed must have the reliable electrical grounding facilities and protections. Please do not connect the grounding of this product to various kinds of air feeding ducts, drain pipes, lightning protection facilities as well as other piping lines to avoid electric shock and damage caused by other factors.
- Wiring must be done by the qualified electrician. All the wiring operations must be conducted according to the local electrical codes.

WARNING

- You should consider the capacity of the electric current of your electrical meter and socket before installation.
- The power wire where this product is installed should have the independent leakage protection device and the electric current over-load protection device provided for this product.
- Never use gasoline or other inflammable gas near the air conditioner to avoid danger. When any abnormality like burnt smell, deformation, fire, smoke, etc. is found, you should stop using the air conditioner, immediately cut off the main power supply and contact the dealer.
- The first 6 inches of supply air plenum and duct work must be constructed of sheet metal as required by NFPA 90B.
- The supply air plenum or duct must have a solid sheet metal bottom piece directly after the air handler unit with no opening, registers or flexible air ducts located in it. If flexible supply air ducts are used, they may be located only in the side walls of the rectangular plenum, a minimum of 6 inches from the solid bottom.
- Turn OFF the main power switches to the indoor unit and outdoor unit before electrical wiring or periodical check, and wait for at least 10 minutes.
- Prevent rats or other small animals damaging the wiring and electrical components. Bitten unprotected parts may cause a fire.
- Refrigerant leakage can cause difficulty with breathing due to insufficient air. If leakage occurs, turn OFF the main switch, put out fire at once and contact your service contractor.
- Do not use any sprays such as insecticide, lacquer, hair spray or other flammable gases within approximately 3.3ft.(1m) from the system.
- If Ground Fault Circuit Interrupter(GFCI) or fuse is often activated, stop the system and contact your service contractor.

WARNING

PROPOSITION 65:

- This appliance contains fiberglass insulation. Respirable particles of fiberglass are known to State of California to cause cancer.
- All manufacturer products meet current federal OSHA Guidelines for safety. California Proposition 65 warnings are required for certain products, which are not covered by the OSHA standards. California's Proposition 65 requires warnings for products sold in California that contain or produce any of over 600 listed chemicals known to the State of California to cause cancer or birth defects such as fiberglass insulation, lead in brass, and combustion products from natural gas.
- All "new equipment" shipped for sale in California will have labels stating that the product contains and /or produces Proposition 65 chemicals. Although we have not changed our processes, having the same label on all our products facilitates manufacturing and shipping. We cannot always know "when, or if" products will be sold in the California market.
- You may receive inquiries from customers about chemicals found in, or produced by, some of our heating and air conditioning equipment, or found in natural gas used with some of our products. Listed below are those chemicals and substances commonly associated with similar equipment in our industry and other manufacturers.
 - Glass Wool (Fiberglass) Insulation
 - Carbon Monoxide(CO)
 - Formaldehyde
 - Benzene

NOTE

- Storage condition:
 - Temperature -13~140°F(-25~60°C)
 - Humidity 30%~80%
-

WARNING

- More details are available at the websites for OSHA (Occupational Safety and Health Administration), at www.osha.gov and the State of California's OEHHA (Office of Environmental Health Hazard Assessment), at www.oehha.org. Consumer education is important since the chemicals and substances on the list are found in our daily lives, Most consumers are aware that products present safety and health risks, when improperly used, handled and maintained.

CAUTION

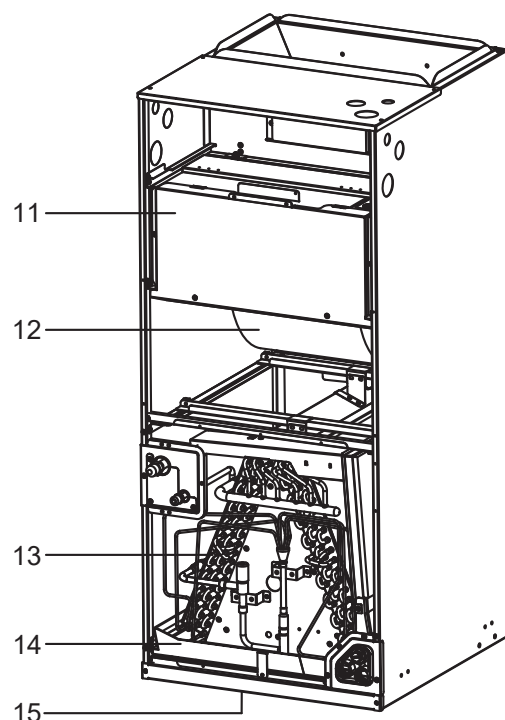
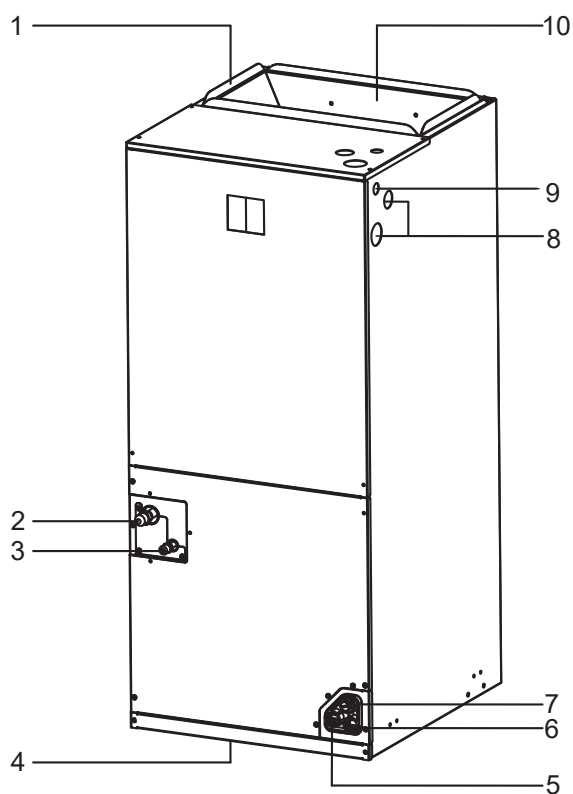
- Do not turn the air conditioner on and off from the main power switch. Use the ON/OFF operation button.
 - Do not stick anything into the air inlet and air outlet of both the indoor and outdoor units. This is dangerous because the fan is rotating at a high speed.
 - Do not cool or heat the room too much if babies or invalids are present. Type and rating of circuit breakers / ELB are detailed below.
 - The method of connection of the appliance to the electrical supply and interconnection of separate components are detailed below.
 - The information of dimensions of the space necessary for correct installation of the appliance including the minimum permissible distances to adjacent structures is detailed below.
 - The range of external static pressures for ducted appliances is detailed below.
 - Make sure the blower motor support is tight (3-motor mounting bolts). Then check to see if wheel is tightly secured to motor shaft before operation unit.
 - The appliance is not to be used by children or person with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
 - Children should be supervised so that they do not play with the appliance.
 - The appliance should not be installed in the laundry.
-

2. System Description

Table 2.1 Indoor Unit Type List

	Nominal Capacity(kBtu/h)							
Indoor Unit type	18	24	30	36	42	48	54	60
	○	○	○	○	○	○	○	○

○ : Available



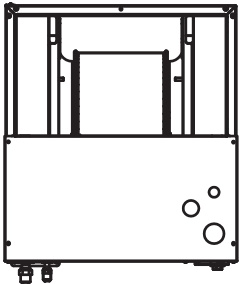
1. Air outlet flange
2. Refrigerant pipe (Gas)
3. Refrigerant pipe (Liquid)
4. Air inlet
5. Auxiliary drainage hole
6. Drainage hole
7. Auxiliary drainage hole
8. High voltage wiring connection
9. Communication wiring connection
10. Air outlet
11. Electric box
12. Fan volute
13. Evaporator
14. Drainage pan
15. Filter cover

NOTE

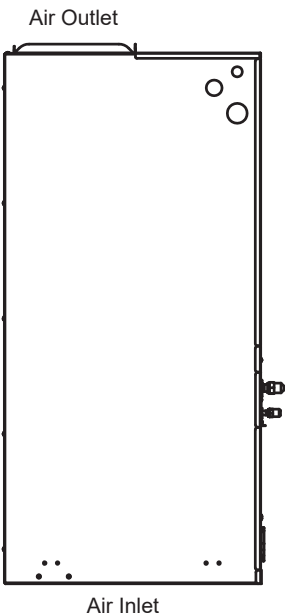
- The figures are based on the external views of the standard model. Consequently, the shape may differ for the air conditioner model you have selected.

Dimensions 18-42

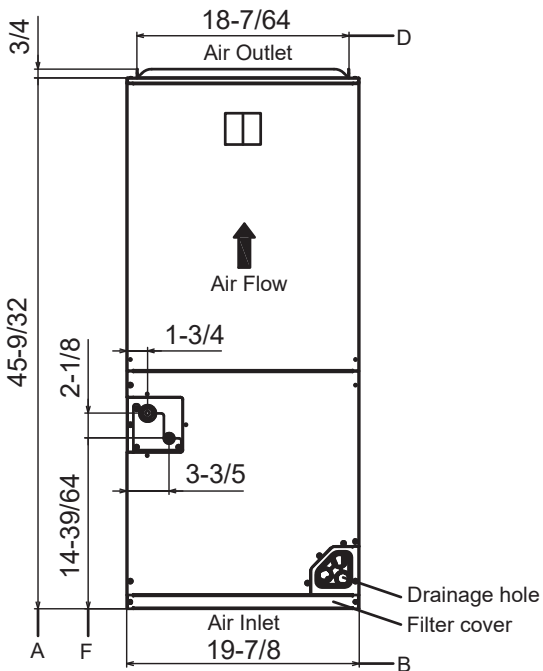
(Unit: in.)



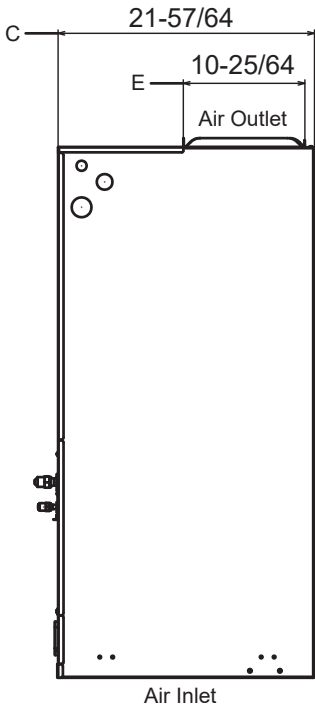
Top View



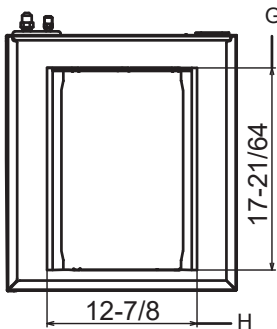
Side View



Front View



Side View

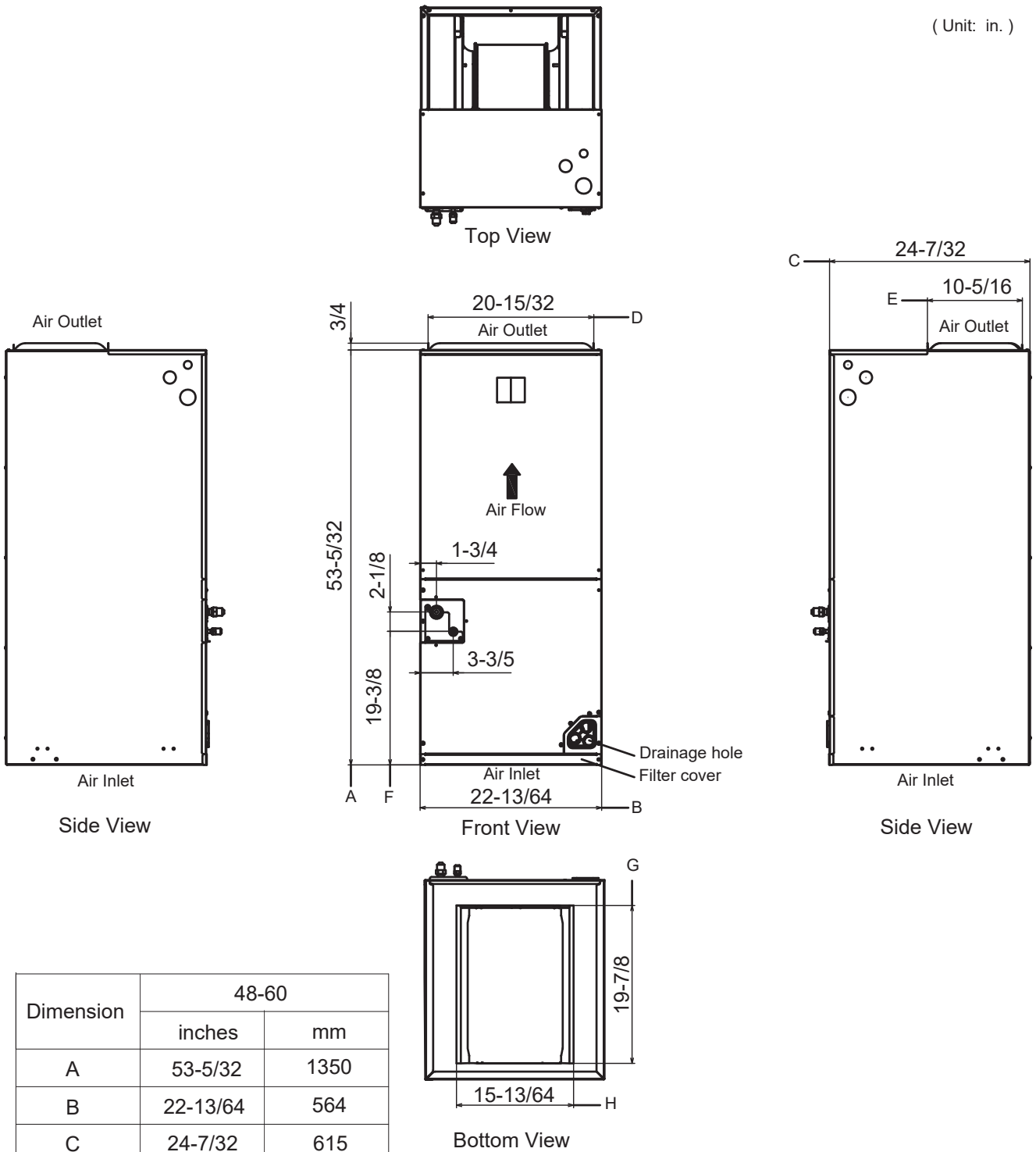


Bottom View

Dimension	18-42	
	inches	mm
A	45-9/32	1150
B	19-7/8	505
C	21-57/64	556
D	18-7/64	460
E	10-25/64	264
F	14-39/64	371
G	17-21/64	440
H	12-7/8	327

Dimensions 48-60

(Unit: in.)



Dimension	48-60	
	inches	mm
A	53-5/32	1350
B	22-13/64	564
C	24-7/32	615
D	20-15/32	520
E	10-5/16	262
F	19-3/8	492
G	19-7/8	505
H	15-13/64	386

3. Wire Controller

- Refer to the wire controller instruction manual for operation details.
 - The wire controller can be matched with Hisense brand or other brands, but different manufacturer's wire controllers cannot be used simultaneously to control the indoor unit.
 - When selecting other manufacturer's wire controllers, they need to be matched with the indoor unit and 24V protocol converter.
-

4. Before Operation

CAUTION

Supply electrical power to the system for approximately 12 hours before start-up after long shutdown. Do not start the system immediately after power supply, it may cause a compressor failure, because the compressor is not heated well.

Make sure that the outdoor unit is not covered with snow or ice. If covered, remove it by using hot water (approximately 122°F(50°C)). If the water temperature is higher than 122°F (50°C) , it will cause damage to plastic parts.

When the system is started after a shutdown longer than approximately 3 months, it is recommended that the system be checked by your service contractor.

Turn OFF the main switch when the system is stopped for a long period of time. If the main switch is not turned OFF, electricity is consumed, because the oil heater is always energized during compressor stopping.

5. Automatic Control

The system is equipped with the following functions.

- **Three Minute Guard (Enforced Stoppage)**
The compressor remains off for at least 3 minutes once it has stopped. If the system is started within approximately 3 minutes after it has stopped, the RUN indicator is activated. However, the cooling operation or the heating operation remains off and does not start until 3 minutes has elapsed.
- **Three Minute Guard (Enforced Operation)**
If all indoor units of the system are Thermo-OFF within approximately 3 minutes after compressor has started, compressor is operated during 3 minutes continuously. However, if all indoor units of the system are stopped by remote control switch, compressor is stopped.
- **Oil Return Operation**
If an indoor unit is stopped more than 2 hours continuously, this function is operated during a few minutes.
It has this function to prevent to accumulate in the heat exchanger of stoppage indoor unit at cooling operation.
- **Frost Prevention During Cooling Operation**
When the indoor unit is operated at low discharge air temperature, the cooling operation may be changed to fan operation for a while to avoid frost formation on the indoor heat exchanger.
- **Hot Start During Heating Operation**
To prevent cold air discharge in the room, the fan speed is controlled from the slow position and the low position and then to the set position according to the discharge air temperature.
- **Slow Air Control During Defrosting Operation**
When the outdoor unit is performing the automatic defrosting operation, the indoor fan is stopped.
- **Cooling of Indoor Unit**
When the heating operation is stopped, the indoor fan operation is maintained at the slow position for the maximum of 2 minutes to lower temperature of the inside unit.
- **Automatic Defrosting Cycle**
When the heating operation is stopped by pressing RUN/STOP switch, frosting on the outdoor unit is checked and the defrosting operation may be performed for the maximum of 10 minutes.

● Prevention of Overload Operation

When the outdoor temperature is high during heating operation, heating operation is stopped due to activation of the outdoor thermistor until the temperature becomes low.

NOTE

If the system is stopped due to a power failure, it will not automatically start again although power is restored.

Repeat the start-up procedure from Step 1 to start the system. In the event of a very brief power failure (2 seconds maximum), the settings are memorized.

Therefore, the system starts automatically after approximately 3 minutes.

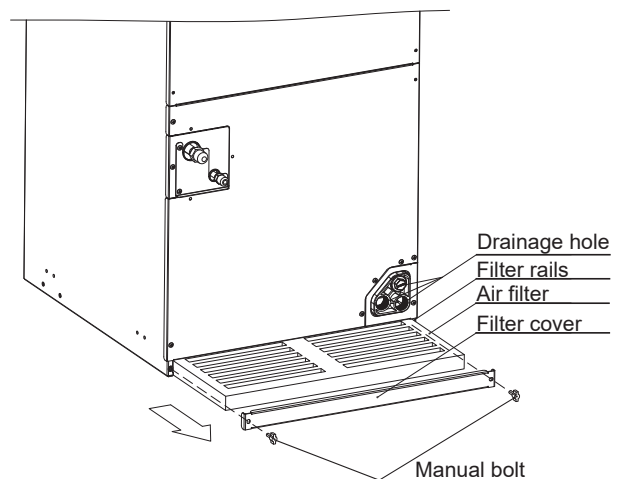
6. Air Filter (Field-supplied)

Please replace or clean the filter timely after the unit running for every 1200 hours, because there will be lots of dust accumulated on the surface of the filter after a period of time.

The indication, " Filter " is shown on the display of the wire controller after approximately 1,200 hours operation. Follow these steps to properly replace the filter:

- Turn OFF the main power switch before taking out the filter.
- Remove the two manual bolts.
- Take down the filter cover and pull out the filter from the case.
- Insert the clean filter(or a new one) into the case along the filter rail.
- Fix the filter cover with manual bolts.
- After cleaning the air filter,press the " FILTER " button. The " FILTER " indication will disappear and the next filter cleaning time will be set.

Model	Filter size(L×W×H) in.
18-42	20×18×1
48-60	22×20×1



NOTE

- When cleaning the air filter, please check the dirty blockage of the drainage hole, and clean up according to the situation.
-

7. Troubleshooting

CAUTION

When overflow of drain water from the indoor unit occurs, stop the operation and contact your contractor.

When you smell or see white smoke coming from the unit, turn OFF the main power supply and contact your contractor.

7.1 If Trouble Still Remains

If the trouble still remains even after checking the following, contact your contractor and inform them of the following items.

- (1) Unit Model Name
- (2) Content of Trouble

7.2 No Operation

Check whether the SET TEMP is set at the correct temperature.

7.3 Not Cooling or Heating Well

- Check for obstruction of air flow of the outside or inside units.
- Check if too much heat source exists in the room.
- Check if the air filter is clogged with dust.
- Check to see if the doors or windows are opened or not.
- Check if the temperature condition is not within the operation range.

7.4 This is Not Abnormal

- **Smells from Indoor Unit**
Smell adheres on indoor unit after a long period of time. Clean the air filter and panels or allow a good ventilation.
- **Sound from Deforming Parts**
During system starting or stopping, an abrading sound might be heard. However, this is due to thermal deformation of plastic parts. It is not abnormal.
- **Steam from Outdoor Heat Exchanger**
During defrosting operation, ice on the outdoor heat exchanger is melted, resulting in making steam.
- **Dew on Air Panel**
When the cooling operation continues for a long period of time under high humidity conditions (higher than 80 °F (27°C)/80% R.H), dew can form on the fair panel.
- **Refrigerant Flow Sound**
While the system is being started or stopped, sound from the refrigerant flow may be heard.

Section2 Installation & Maintenance Manual

1. Safety Summary

WARNING

- Do not perform installation work, refrigerant piping work, drain piping and electrical wiring connection without referring to the installation manual.
- Check that the ground wire is securely connected.
- Connect a fuse of specified capacity.
- Install the air conditioner on a solid base that can support the unit weight. (An inadequate base or incomplete installation may cause injury due to falling off from the base.)
- Electrical work should be carried out in accordance with the installation manual and the local and national electrical wiring rules or code.
(Insufficient capacity or incomplete electrical work may cause electrical shock or fire.)
- Be sure to use a dedicated power circuit.
(Never use the power supply shared by another appliance.)
- For wiring, use a cable long enough for the entire distance, and do not use an extension cord.
- Do not put other loads on the power supply, and please use a dedicated power circuit.
- Use the specified types of wires for electrical connections between the indoor and outdoor units. (Firmly clamp the interconnecting wires so that the terminals receive no external stress.)
- Incomplete connections or clamping may cause terminal overheating or fire.
- After establishing connection between all the wires, fix the cables to prevent undue force on the electrical covers or panels.
(Install covers over the wires, incomplete cover installation may cause terminal overheating, electrical shock or fire.)
- Avoid contact between wires and sharp sheet metal or sharp corners.
- Turn OFF the main power switches to the indoor unit and outdoor unit before electrical wiring or periodical check, and wait for at least 10 minutes.

WARNING

- There is 100PSIG high pressure nitrogen in the evaporator, please release it first before installation. It proves the evaporator to be in good state if there is nitrogen out, otherwise, it indicates the evaporator leaks.
- Refrigerant R410A is non-flammable, non-toxic, and odorless, and may produce toxic gases when exposed to open flame. Since this refrigerant gas is heavier than air, it may result in lack of oxygen, thereby leading to breathing difficulties when the area near the ground is filled with this gas. If that's the case, please turn off the main switch immediately, cut off the power supply, and open the doors and windows for ventilation. Put out any open flame, and contact your service dealer. Performing leak detection and gas tightness test with oxygen, acetylene or other flammable and toxic gases may cause explosion, so nitrogen is recommended for this test.
- After all installations are completed, make sure that no refrigerant leaks. (The refrigerant produces, toxic gas if exposed to flames.)
- When carrying out piping connection, do not let air substances other than the specified refrigerant get into refrigeration cycle. (Otherwise, it will cause decreased performance, abnormal high pressure in the refrigeration cycle, explosion and injury.)
- Make sure that the installation has a proper earth connection. Do not ground the unit to a utility pipe, arrester, or telephone grounding. Incomplete grounding may cause electrical shock. (A high surge current from lightning or other sources may cause damage to the air conditioner.)
- An earth leakage circuit breaker may be required depending on the site condition to prevent electrical shock.
- Disconnect the power supply before wiring, piping, or checking the unit.
- Do not install the indoor unit, outdoor unit, remote control switch and cable within approximately 9.8ft.(3m) from strong electromagnetic wave radiators such as medical equipment.

2. Structure

2.1 Refrigerant Cycle

Regarding the Refrigerant Cycle diagrams, refer to Technical Catalogue.

2.2 Necessary Tools and Instrument List for Installation

No.	Tool	No.	Tool
1	Handsaw	12	Air filter
2	Screwdriver	13	Charging Cylinder
3	Vacuum Pump	14	Gauge Manifold
4	Refrigerant Gas Hose	15	Cutter for Wires
5	Megohmmeter	16	Gas Leak Detector
6	Copper Pipe Bender	17	Leveller
7	Manual Water Pump	18	Clamper for Solderless Terminals
8	Pipe Cutter	19	Hoist (for Indoor Unit)
9	Brazing Kit	20	Ammeter
10	Hexagon Wrench	21	Voltage Meter
11	Spanner		

NOTE

- The size of the air filter refer to Chapter 6 of the operating manual.
- About vacuum pump, gas hose, charging cylinder, gauge manifold, please use suitable equipments for R410A respectively . Do not mix other refrigerant.

3. Transportation and Handling

3.1 Transportation

Transport the product as close to the installation location as possible before unpacking.

CAUTION

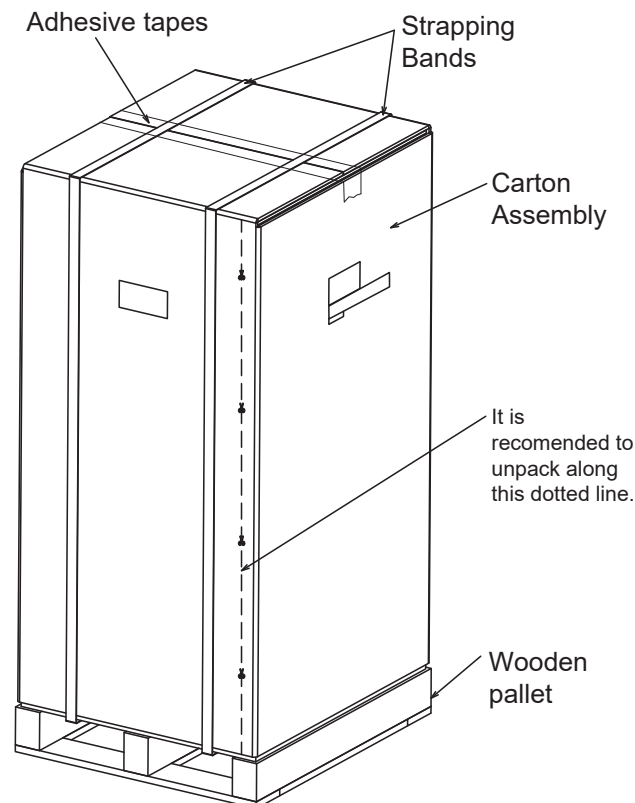
Do not put any material on the product.

3.2 Unpacking

All units are packed by a wooden pallet and carton assembly. Firstly to unpack it, place the unit on the assembly area to avoid damages in transport. Two persons are required.

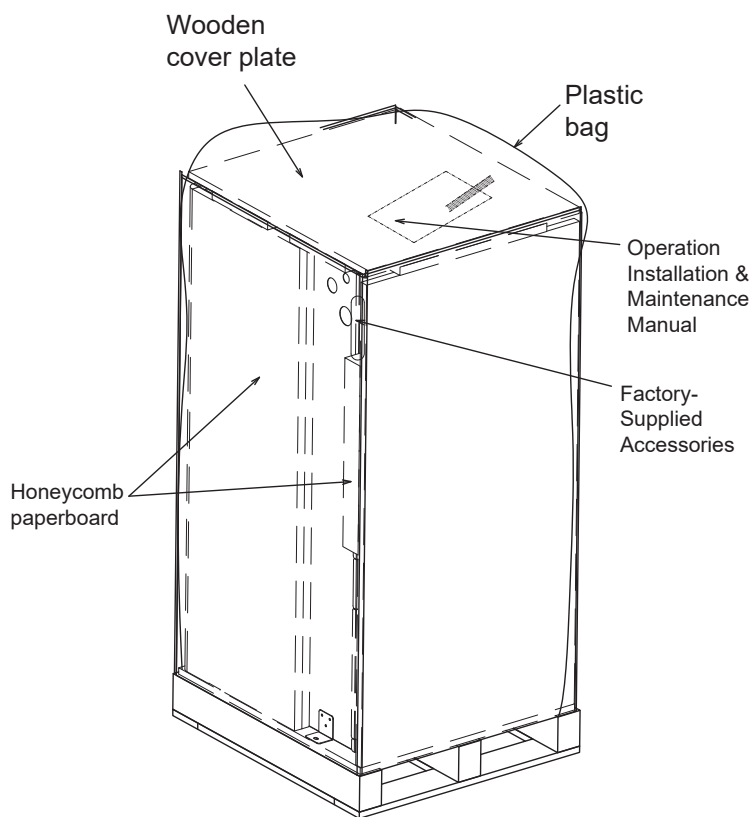
(A) Cut the strapping bands and remove the adhesive tapes.

(B) Cut open the carton assembly along the dotted line and then remove it.

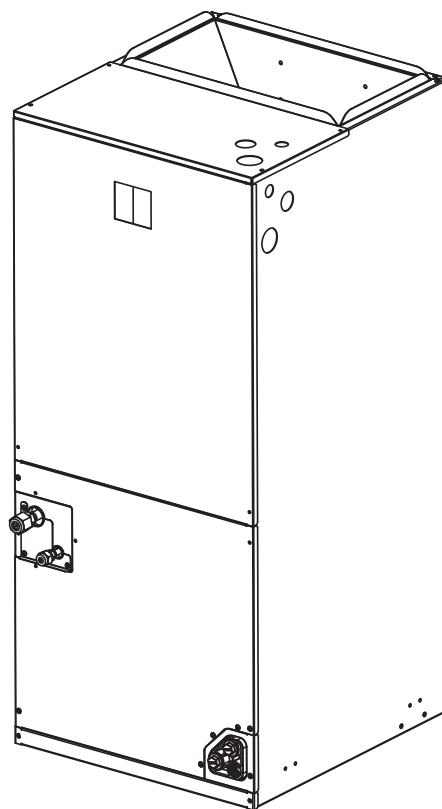
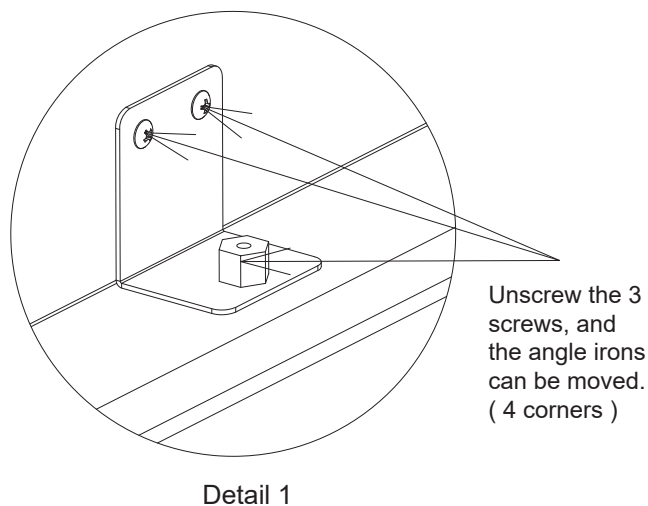
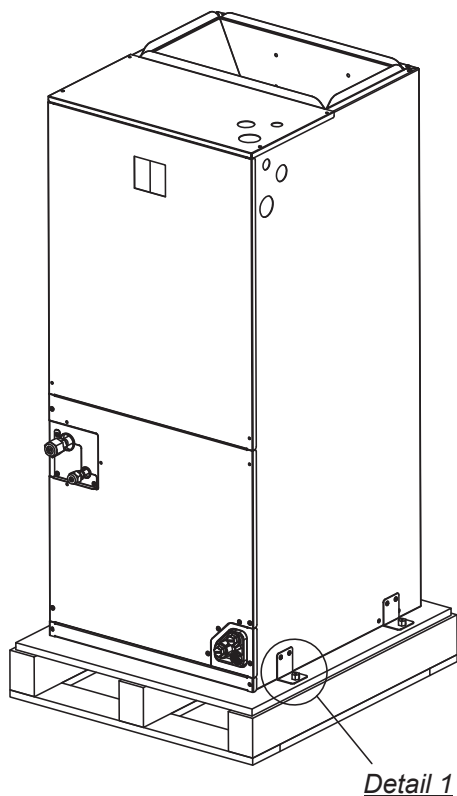


(C) Put away the operation Installation & maintenance manual and Factory-Supplied Accessories.

(D) Remove the wooden cover plate and honeycomb paperboards, and then remove the plastic bag around the unit.



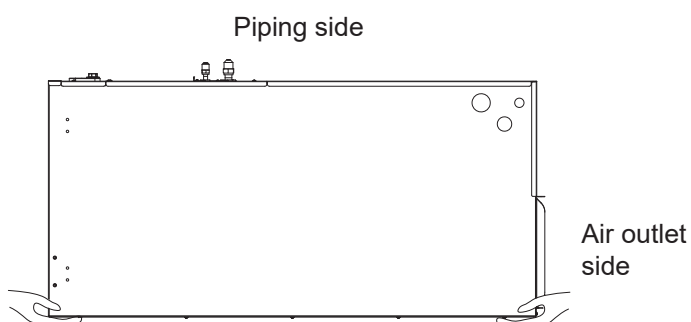
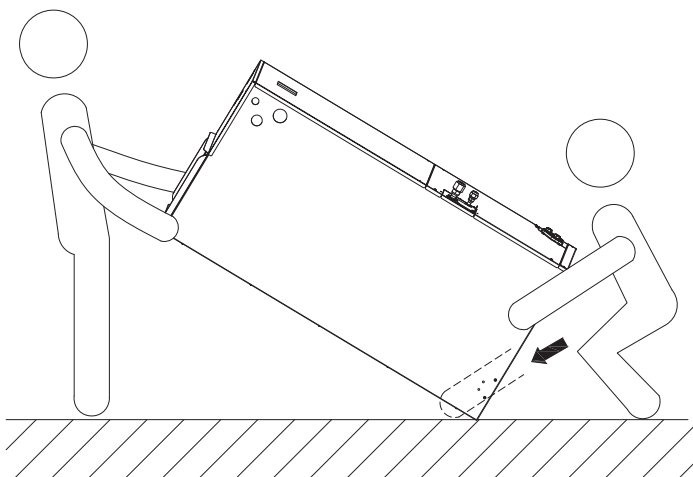
(E) Remove the 4 L-shaped feet at 4 corners, and then remove the indoor unit from wooden pallets, and place it carefully on the floor, as near as possible to its final location.



the Indoor Unit

3.3 Handling of Indoor Unit

- Two people are required when handling because of the weight of the unit.
- When transporting the indoor unit, it is necessary to face the unit upwards.
- Carefully tilt the unit to the back and two people should lift the bottom of the indoor unit with both hands.



! WARNING

Do not put any foreign material into the indoor unit and check to ensure that none exists in the indoor unit before the installation and test run. Otherwise, a fire or failure, etc. may occur.

! CAUTION

- Be careful not to damage on insulation materials on unit surface when lifting.
- During the handling of the indoor unit, please wear protective equipment such as safety gloves to avoid cutting from sharp corners of the sheet metal.

4. Indoor Unit Installation

DANGER

Do not install the indoor unit in a flammable environment to avoid fire or an explosion.

WARNING

- Check to ensure that the indoor unit is placed in a position that is sturdy and stable enough to withstand the weight for a long time. If it is not strong enough, it may cause the indoor unit to fall down and cause personal injury.
- Do not install the indoor unit outdoors. If installed outdoors, an electric hazard or electric leakage will occur.

4.1 Factory-Supplied Accessories

Check to ensure that the following accessories are packed with the indoor unit.

NOTE

If any of these accessories are not packed with the unit, please contact your contractor.

Table 4.1 Factory-Supplied Accessories

Accessory	Q'ty	Purpose
Rubber ring 	1	For vertical downflow installation
Label 	1	For pasting unit
Label 	1	For pasting unit at State of California

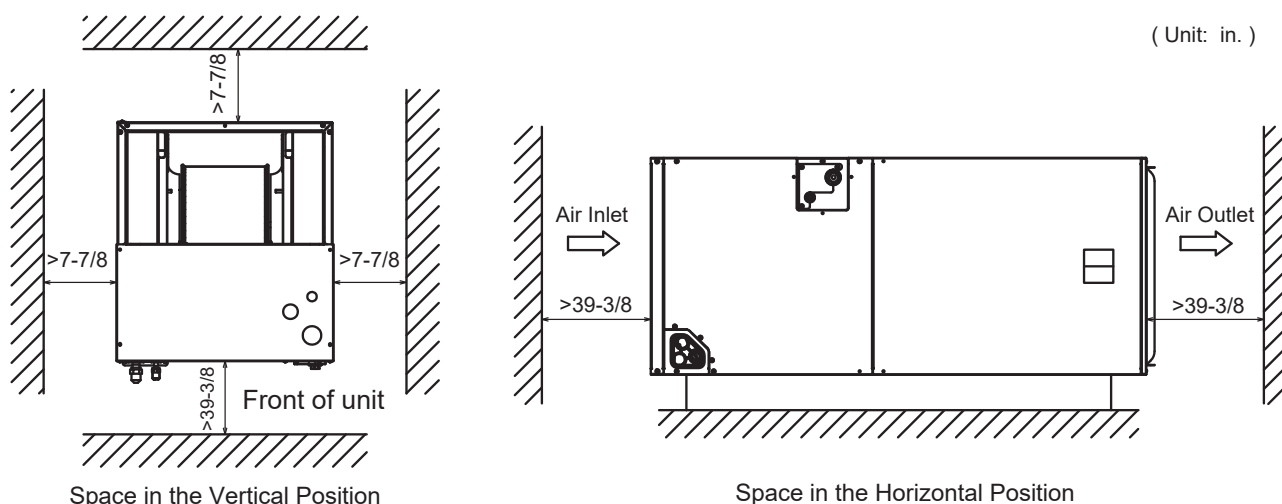
4.2 Initial Check

WARNING

- When moving the unit after unpacking, make sure not to exert any pressure on other parts, especially the refrigerant piping, drain piping and flange parts.

WARNING

- Wear protective gears when installing the unit.



4.3 Installation Location

- Before choosing the installation location, get the user's approval.
- Consider the air distribution from the indoor unit to the space of the room, and select a suitable location so that uniform air temperature in the room can be obtained.
- The air path is not blocked.
- Condensation can drain properly.
- Ensure sufficient clearance for maintenance and servicing.
- Piping between the indoor and outdoor units should be within the allowable limits. (Refer to the installation of the outdoor unit)
- The indoor unit, outdoor unit, power supply wiring and transmission wiring should be kept at least 1 meter away from televisions and radio, which prevents image interference and noise in those electrical appliances. (Noise may be generated depending on the conditions under which the electric wave is generated, even if a one-meter distance is maintained.)
- Do not install the indoor unit in a machinery shop or kitchen where vapor from oil or its mist flows to the indoor unit. The oil will deposit on the heat exchanger, thereby reducing the performance of the indoor unit, and may deform and in the worst case, break the plastic parts of the indoor unit.
- When the unit is installed in a hot and humid place, it is recommended to insulate the cabinet exterior and to use auxiliary drain pan.
- If installed above a finished living space, an auxiliary drain pan(as required by many building codes), must be installed under the entire unit and its condensate drain line must be routed to a location such that the user will see the condensate discharge.

- Pay attention to the following points when the indoor unit is installed in a hospital or other facilities where there are electronic waves from medical equipment.
 - (A) Do not install the indoor unit where the electromagnetic wave is directly radiated to the electrical box.
 - (B) Install the indoor unit and components as far as possible or at least 9.8ft.(3m) from the electromagnetic wave radiator.
 - (C) Install a noise filter when the power supply emits harmful noises.
- To avoid any corrosive action to the heat exchangers, do not install the indoor unit in an acid or alkaline environment.

4.4 Installation

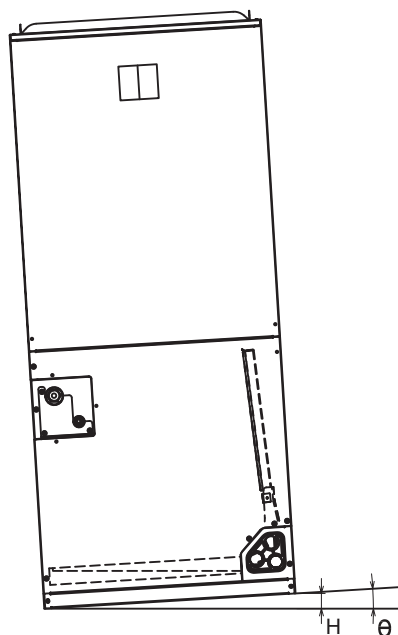
NOTE

- These appliances are designed for indoor installation only.
- The indoor unit have four installation configurations, including: vertical upflow installation, horizontal right hand airflow installation, horizontal left hand airflow installation and vertical downflow installation. Regardless of the installation configuration, the drainage hole is relatively located on the lower side of the gas/liquid refrigerant pipe to facilitate the normal discharge of condensate.
- The air filter is field-supplied. Please prepare the corresponding size filter according to Chapter 6 of the operating manual and install it on the indoor unit.
- It is must to install an external auxiliary drain pan (field-supplied) for all installation configurations.
- The indoor unit has been configured for use in both vertical upflow installation and horizontal right hand airflow installation at the factory. For horizontal left hand airflow installation and vertical downflow installation, they need to be modified on site according to the installation instructions.

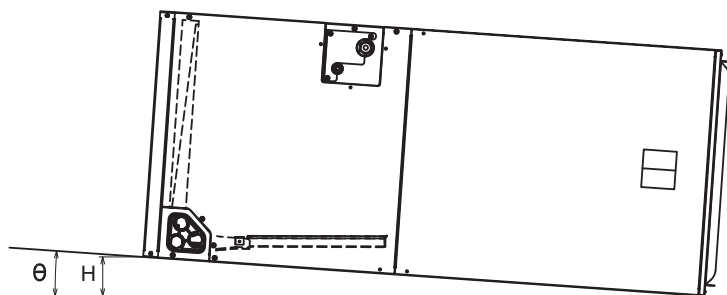
- If due to limitations, the two ends of the indoor unit cannot be completely horizontal after installation, and without affecting the discharge of condensate, the maximum allowable inclination angle of the unit is as follows.

Model	Installation configuration	θ (°)	H (in)
18-42	vertical	1	3/8
	horizontal	3	2-3/8
48-60	vertical	1	27/64
	horizontal	3	3-7/16

θ : the maximum allowable inclination angle;
H: Maximum allowable height difference between two ends.

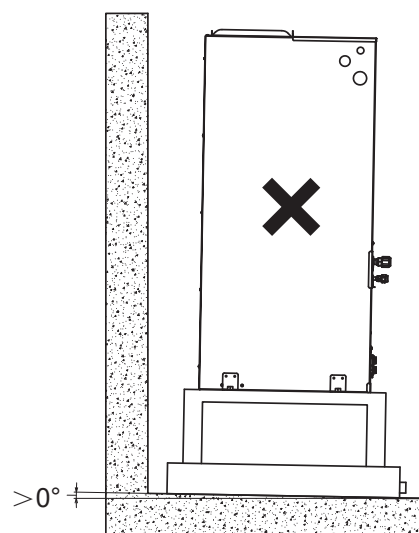
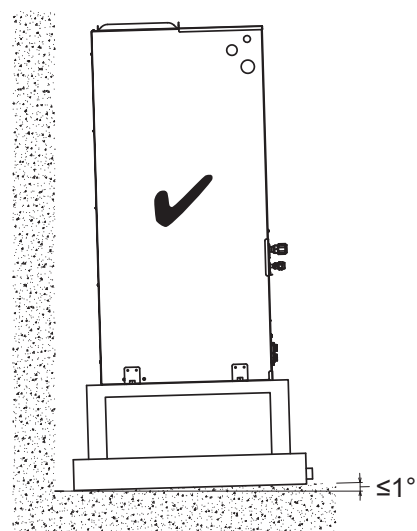
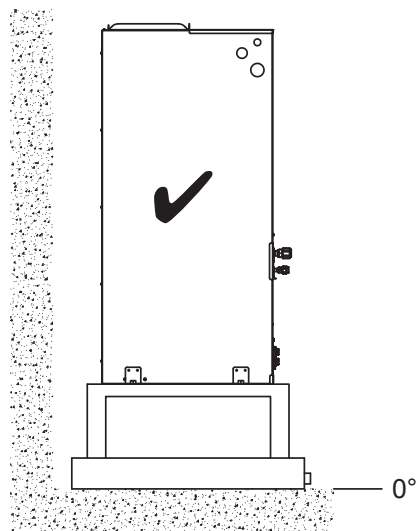


Vertical Installation



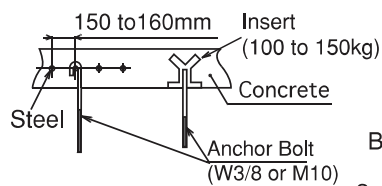
Horizontal Installation

- The indoor unit tilt backward (tilt angle less than 1°) is allowed, while tilt forward is forbidden.

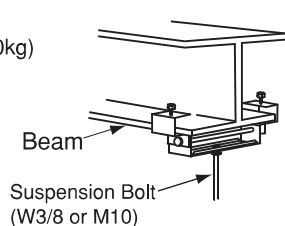


- If installing through suspension bolts, at least four W3/8 or M10 or more bolts are required for fixing the indoor unit.

- For Concrete Slab

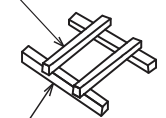


- For Steel Beam

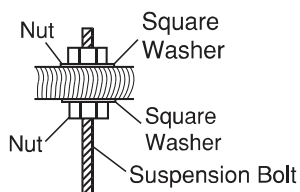


- For Wooden Beam Suspension

Wooden Bar
(60mm to 90mm Square)



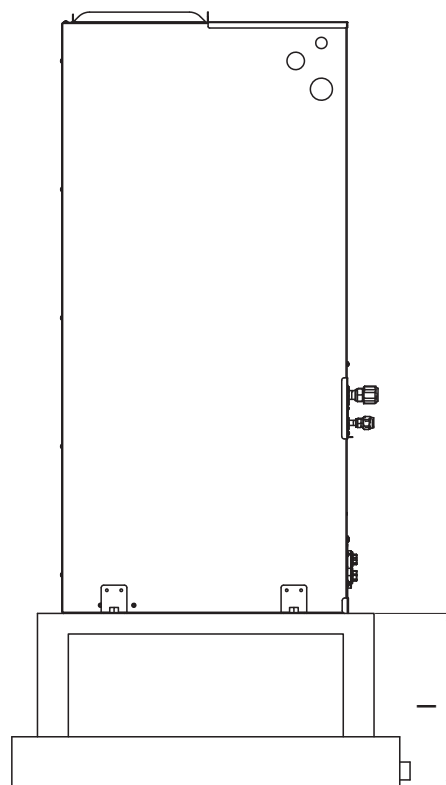
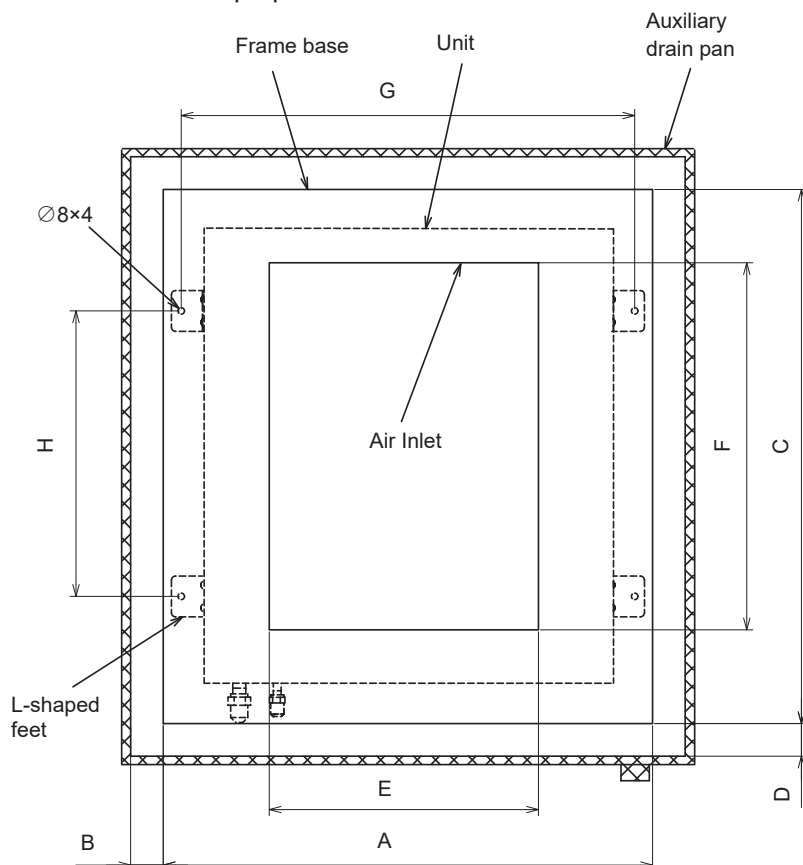
Wooden Beam



Mounting of Suspension Bolts

4.4.1 Vertical upflow installation

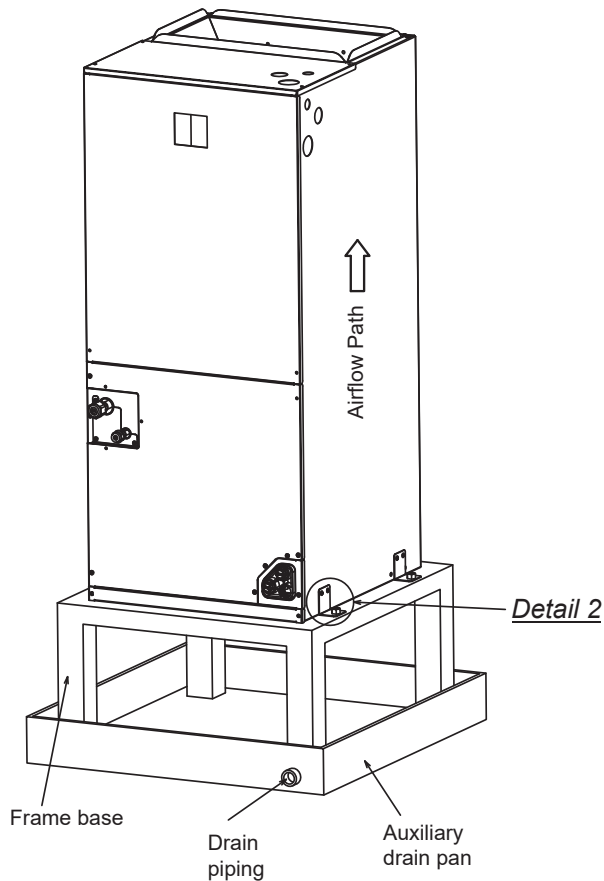
- The installation configuration for upflow is already configured at the factory and does not require on-site modifications.
- Frame base and auxiliary drain pan are field-supplied. Please ensure that the base is strong enough to support the weight of the indoor unit. Please refer to the size preparation as shown.



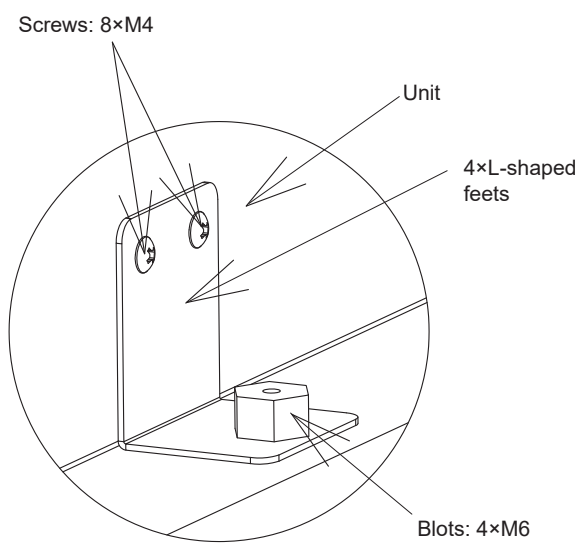
Dimension	18-42	
	inches	mm
A	>23-5/8	>600
B	>1-31/32	>50
C	>25-25/32	>655
D	>1-31/32	>50
E	12-63/64	330
F	17-23/32	450
G	21-57/64	556
H	13-25/32	350
I	19-11/16	500

Dimension	48-60	
	inches	mm
A	>25-63/64	>660
B	>1-31/32	>50
C	>28-5/32	>715
D	>1-31/32	>50
E	15-23/64	390
F	21-1/16	535
G	24-1/4	616
H	14-11/64	360
I	19-11/16	500

- Use four L-shaped feet on both sides to firmly fix the indoor unit to a reliable frame base, and install an auxiliary drain pan at the bottom to discharge condensate.



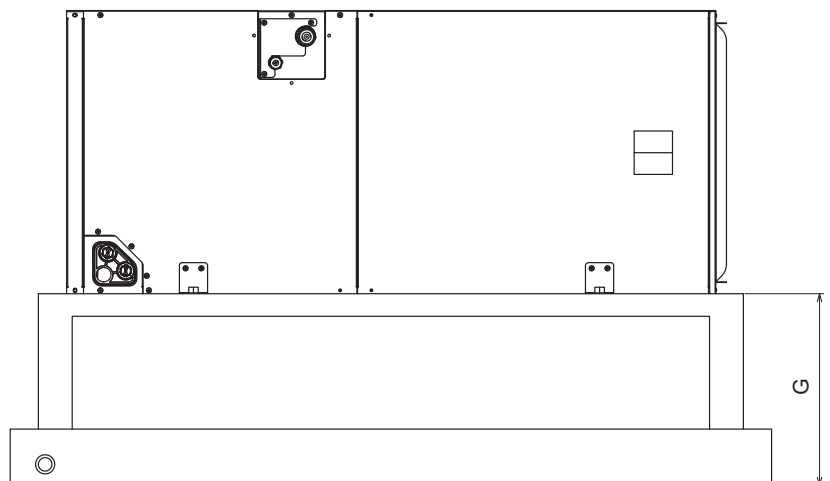
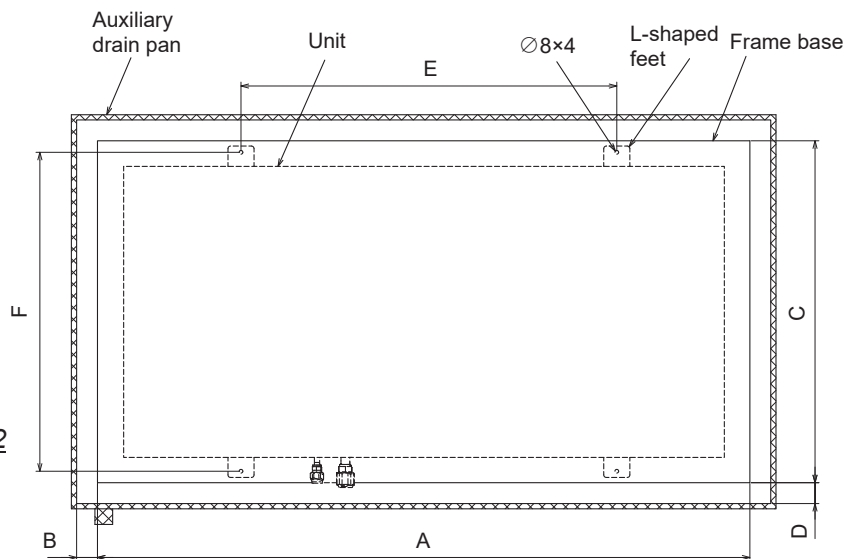
Vertical upflow installation



Detail 2

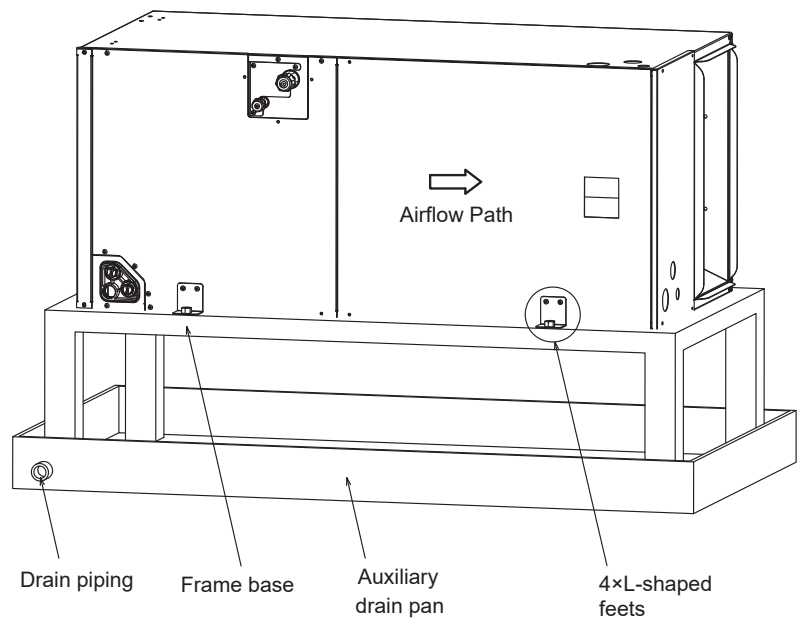
4.4.2 Horizontal right hand installation

- The installation configuration for horizontal right hand is already configured at the factory and does not require on-site modifications.
- Frame base and auxiliary drain pan are field-supplied. Please ensure that the base is strong enough to support the weight of the indoor unit. Please refer to the size preparation as shown.



Dimension	18-42	
	inches	mm
A	>49-7/32	>1250
B	>1-31/32	>50
C	>25-25/32	>655
D	>1-31/32	>50
E	28-11/32	720
F	21-1/64	610
G	19-11/16	500

Dimension	48-60	
	inches	mm
A	>57-3/32	>1450
B	>1-31/32	>50
C	>28-5/32	>715
D	>1-31/32	>50
E	32-9/32	820
F	26-3/8	670
G	19-11/16	500

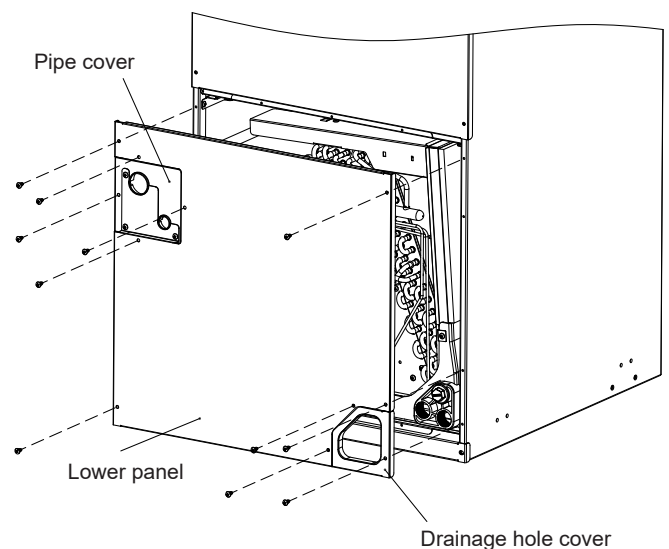


Horizontal right hand installation

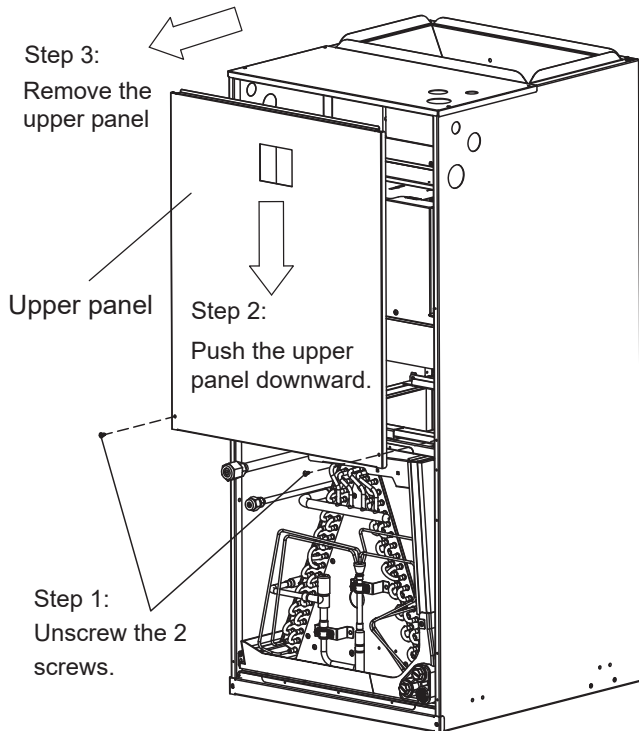
4.4.3 Horizontal left hand installation

- When the unit is horizontal left hand installation, the following steps are required.
(A) Remove the lower panel, pipe and drainage hole cover. Unscrew screws.

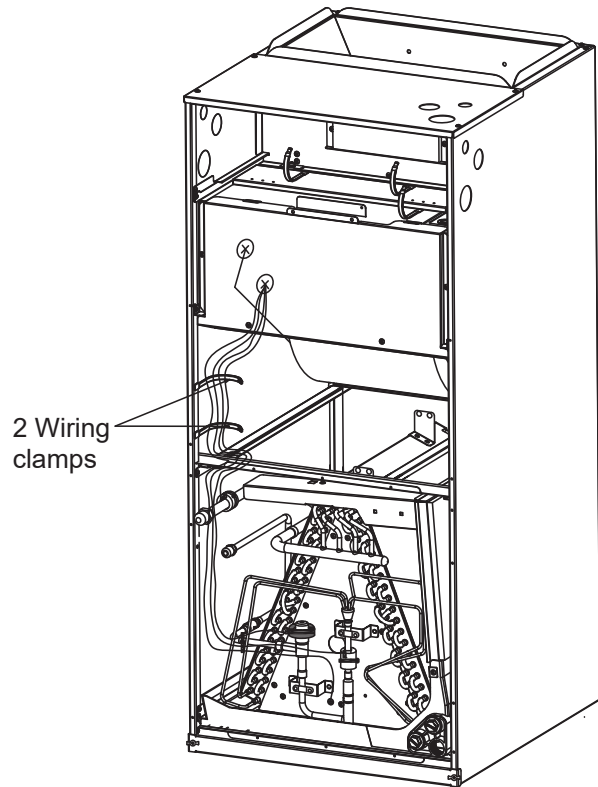
- When the unit is horizontal right hand installation, rotate it clockwise for 90 degrees, as shown in figure horizontal right hand installation.
- Use four L-shaped feet on both sides to firmly fix the indoor unit to a reliable frame base and install an auxiliary drain pan at the bottom to discharge condensate.



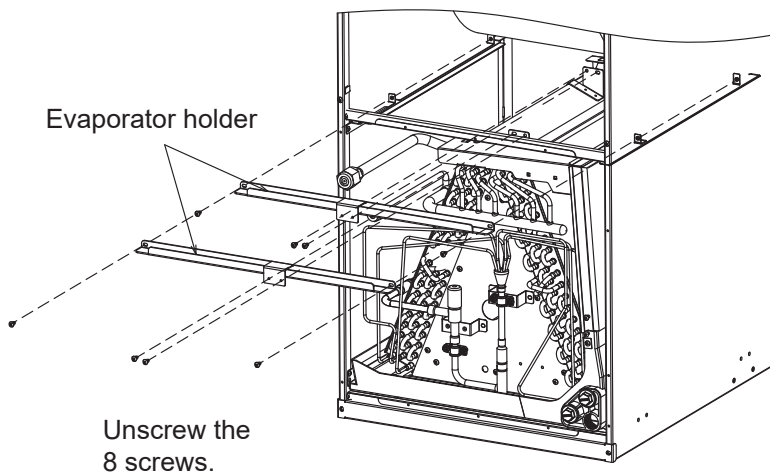
(B) Remove the upper panel.



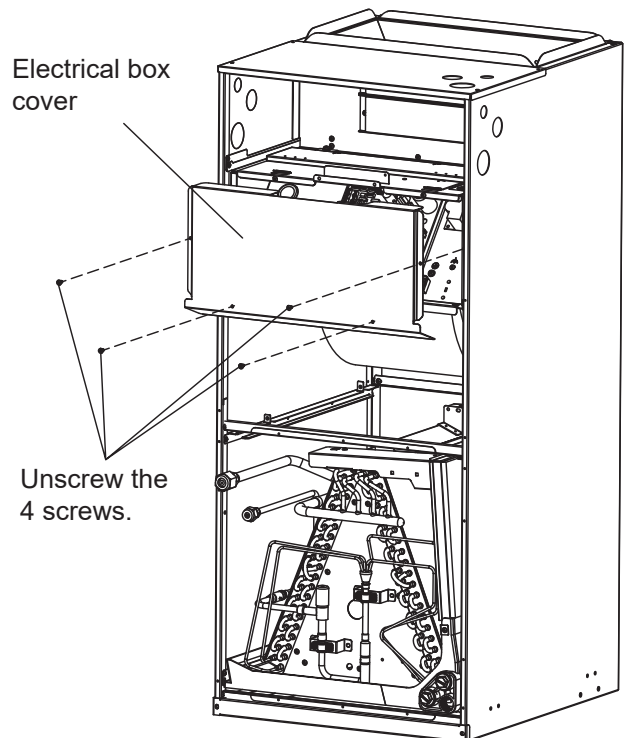
(D) Remove the two wiring clamps.



(C) The two holders used to fix the evaporator during transportation should be removed and stored properly. Before the next indoor unit transportation, they should be installed in their original positions and the evaporator should be fixed.

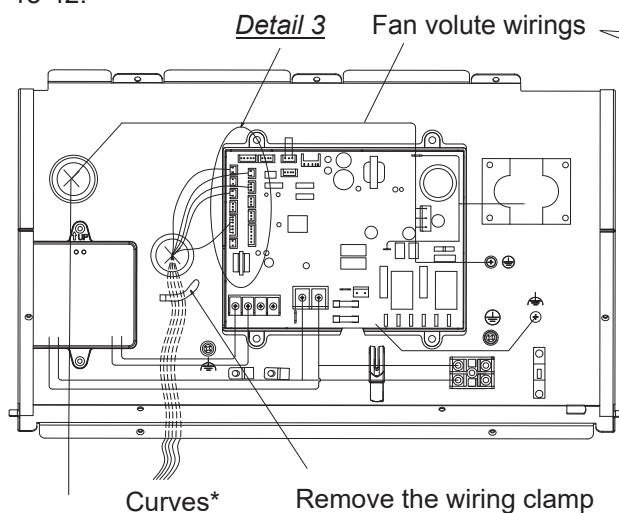


(E) Remove the electrical box cover.

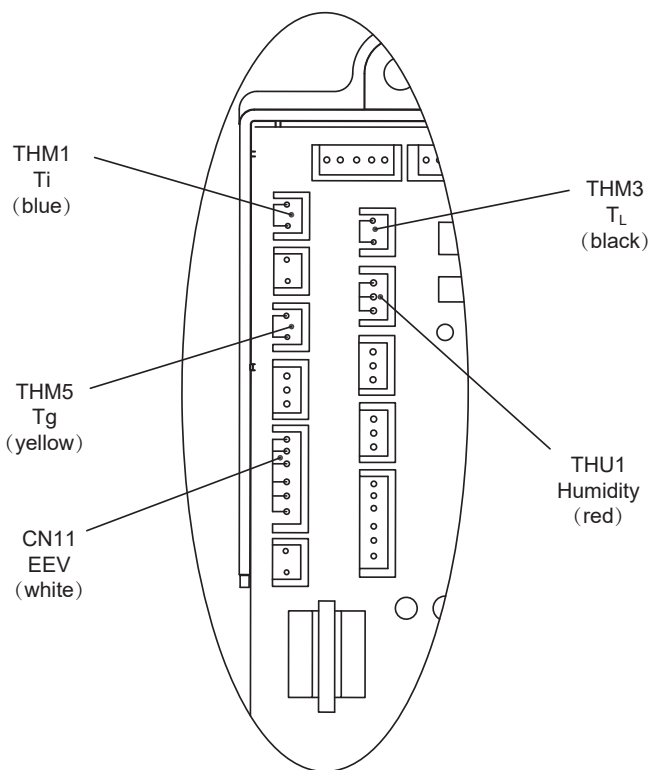


(F) Remove the wiring clamps, Ti, Tg, T_L, EEV and humidity sensor (option) from the socket. Take out the wirings from the electrical box hole, and put them together with the evaporator, taking care not to damage the wirings and plugs.

18-42:



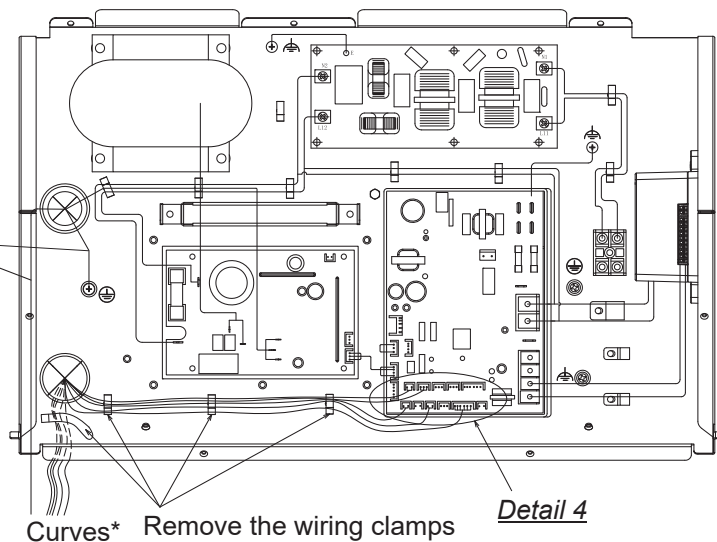
*The curve represents the wirings to be removed.



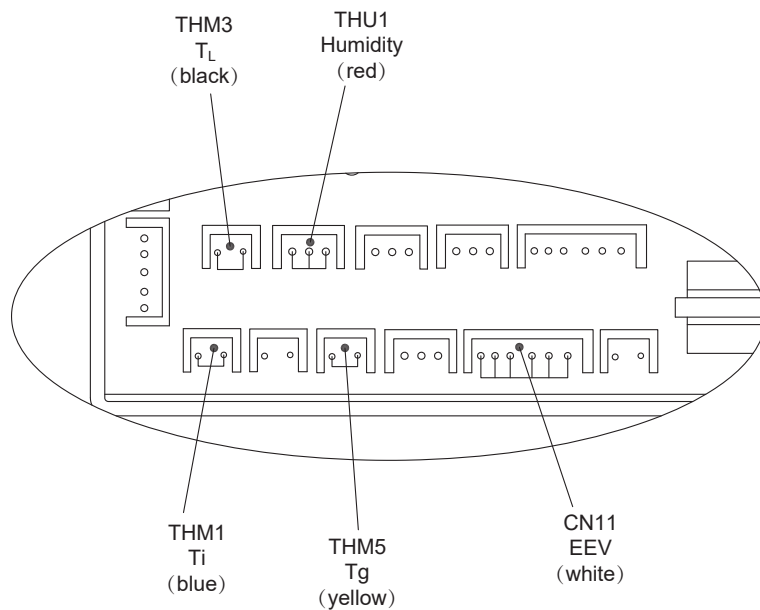
Detail 3

Ti: Air inlet temperature sensor
T_L: Liquid pipe temperature sensor
Tg: Gas pipe temperature sensor
EEV: Electronic Expansion Valve
Humidity: Humidity sensor (option)

48-60:



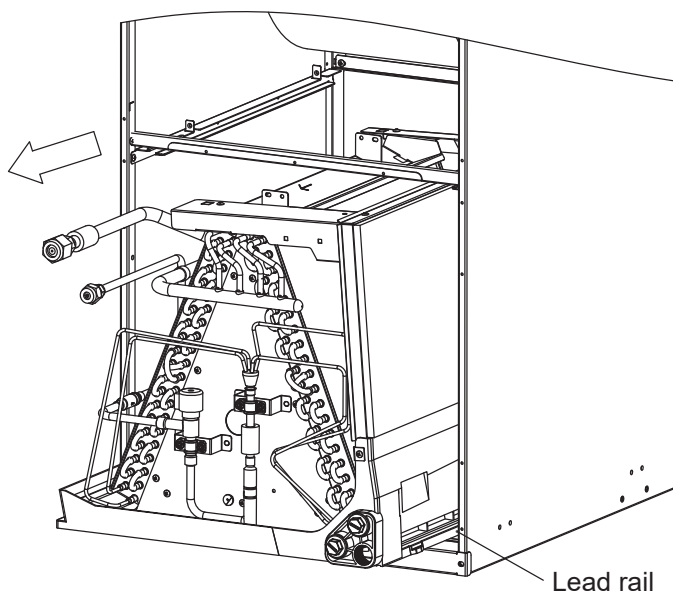
*The curve represents the wirings to be removed



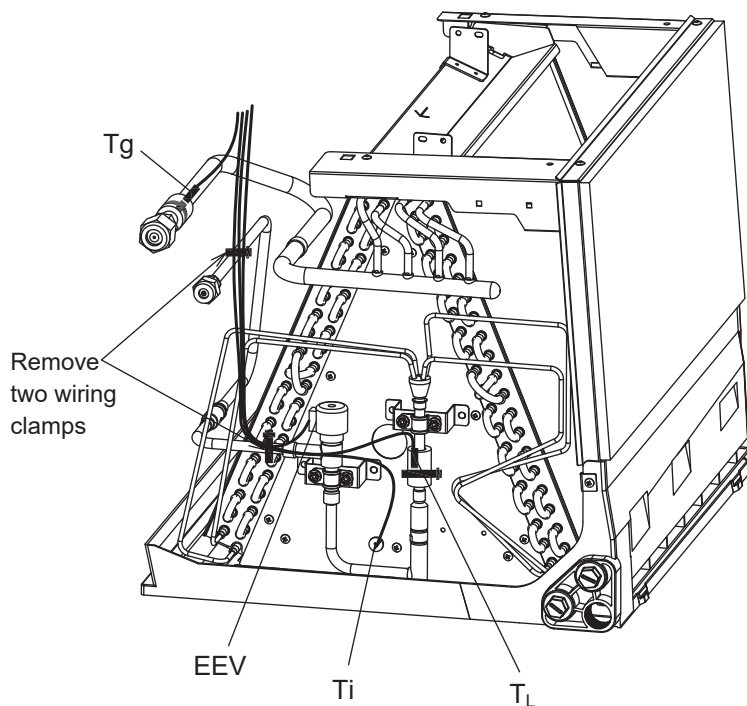
Detail 4

Ti: Air inlet temperature sensor
T_L: Liquid pipe temperature sensor
Tg: Gas pipe temperature sensor
EEV: Electronic Expansion Valve
Humidity: Humidity sensor (option)

(G) Extract the evaporator with the removed wirings.

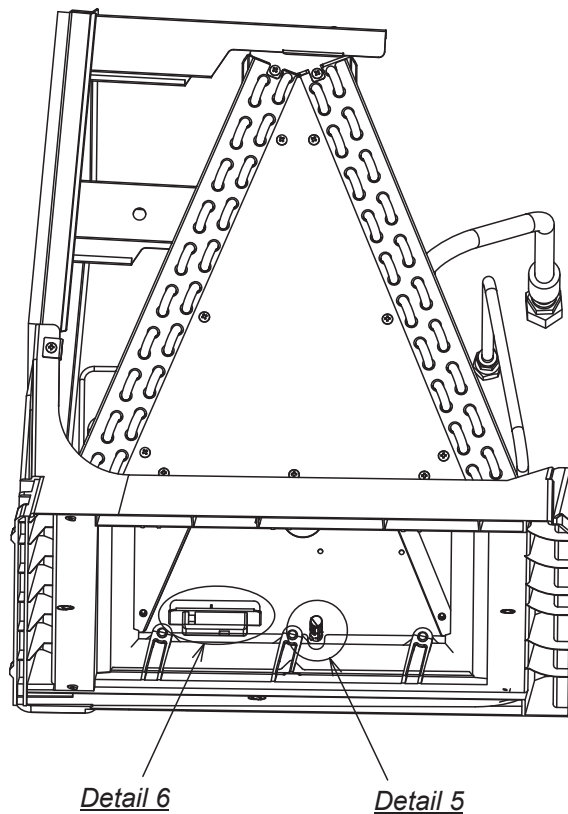


(H) Remove the two wiring clamps.

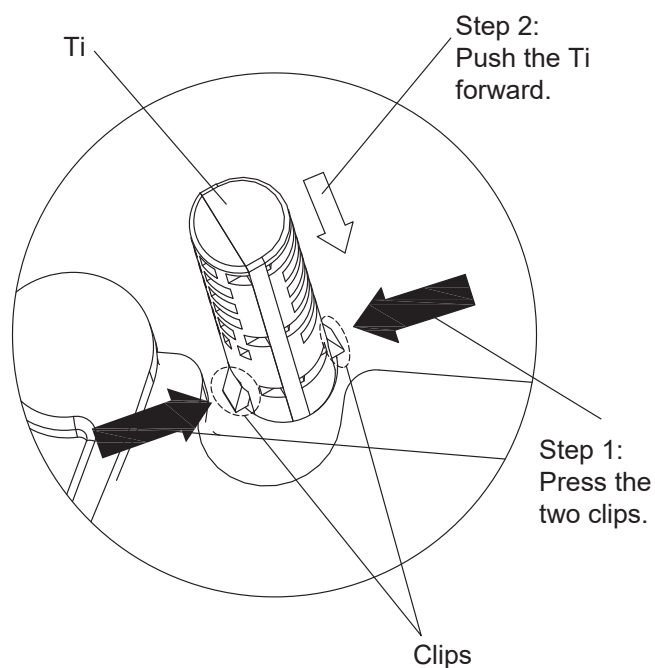


Ti: Air inlet temperature sensor
 TL: Liquid pipe temperature sensor
 Tg: Gas pipe temperature sensor
 EEV: Electronic Expansion Valve
 Humidity: Humidity sensor (option)

(I) Tilt the bottom of the evaporator from backward to show Ti (Air inlet temperature sensor) and Humidity sensor (option). Follow the instructions to remove it.



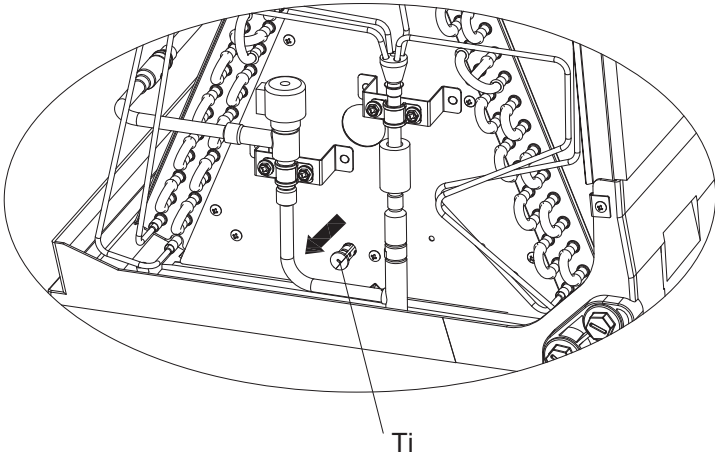
Press the clips on both sides of Ti (Air inlet temperature sensor).



Ti: Air inlet temperature sensor

Detail 5

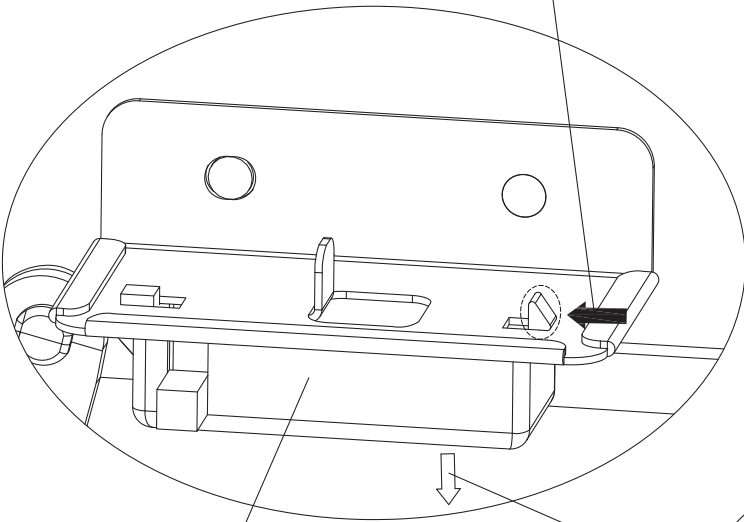
Remove Ti from the front of the evaporator.



Ti: Air inlet temperature sensor

Press the Humidity sensor (option) indicator side clip. Remove it from the evaporator.

Step 1: Press the clip.

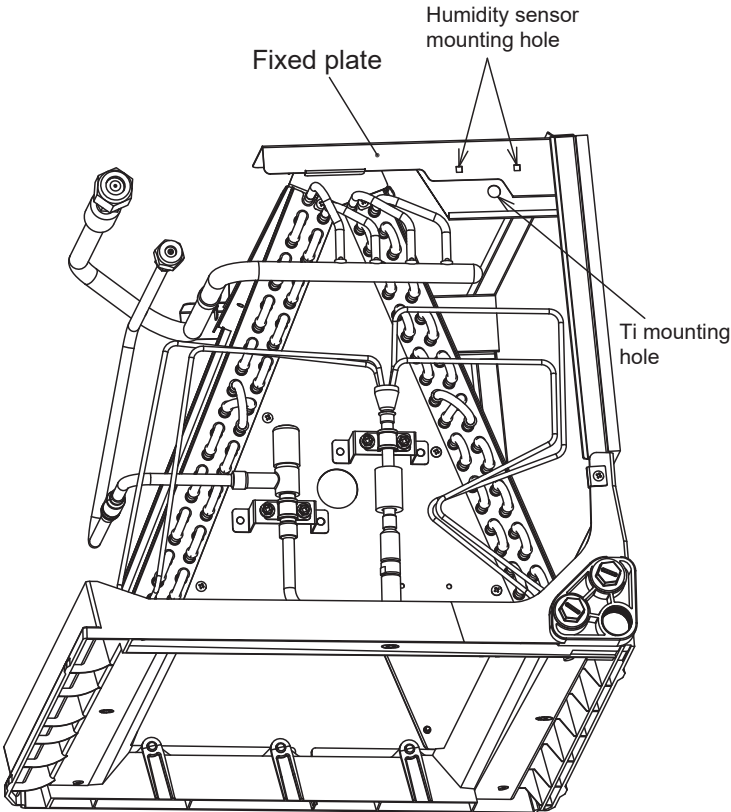


Humidity sensor(option)

Detail 6

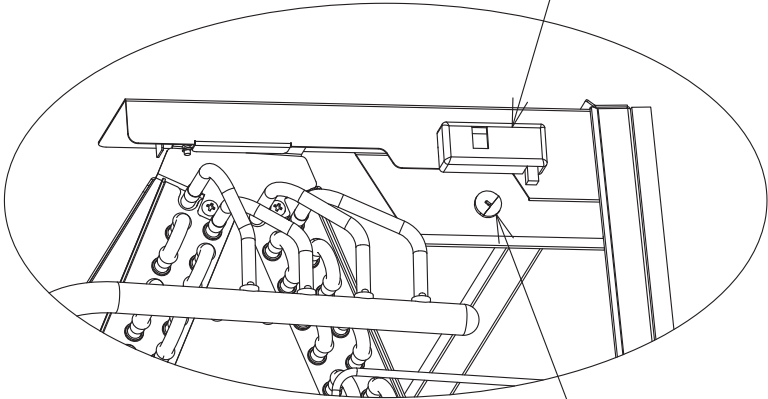
Step 2: Removed the sensor downward.

(J) Install the removed Ti (Air inlet temperature sensor) and Humidity sensor (option) into the fixed plate above the front of the evaporator.



Ti: Air inlet temperature sensor

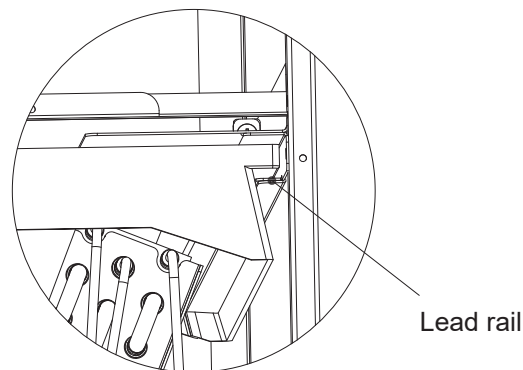
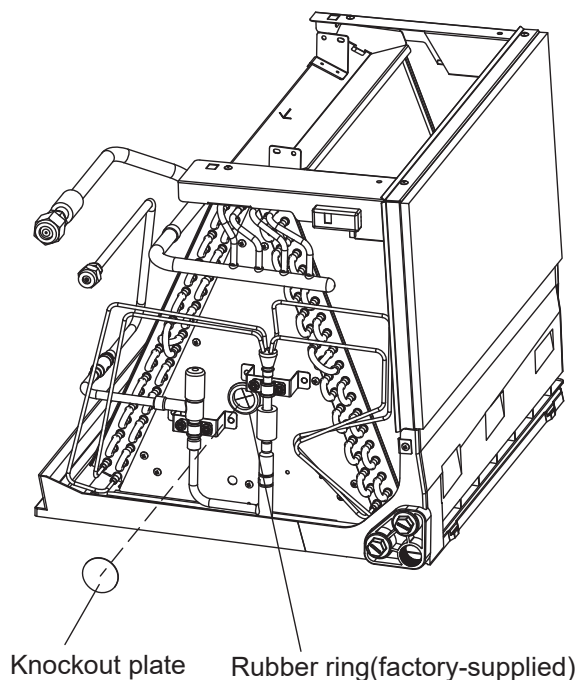
Humidity sensor (option)



Ti: Air inlet temperature sensor

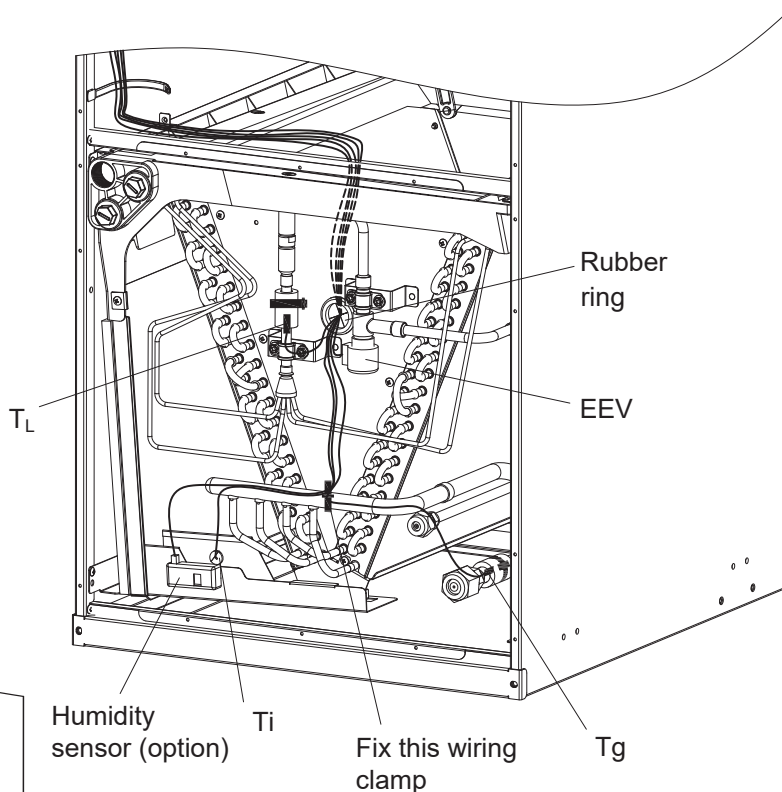
Ti

(K) Knock open the knockout hole on the evaporator and install the rubber ring (factory-supplied).

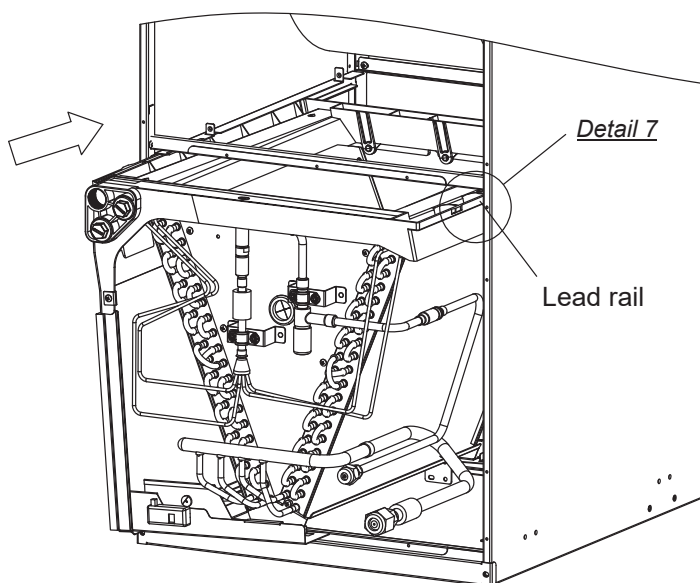


Detail 7

(M) Fix the wirings of Ti and Tg and Humidity sensor (option) with wiring clamps according to the positions shown in the figure and then thread the wirings of Ti & Tg & T_L & EEV & Humidity sensor (option) into the rubber ring.



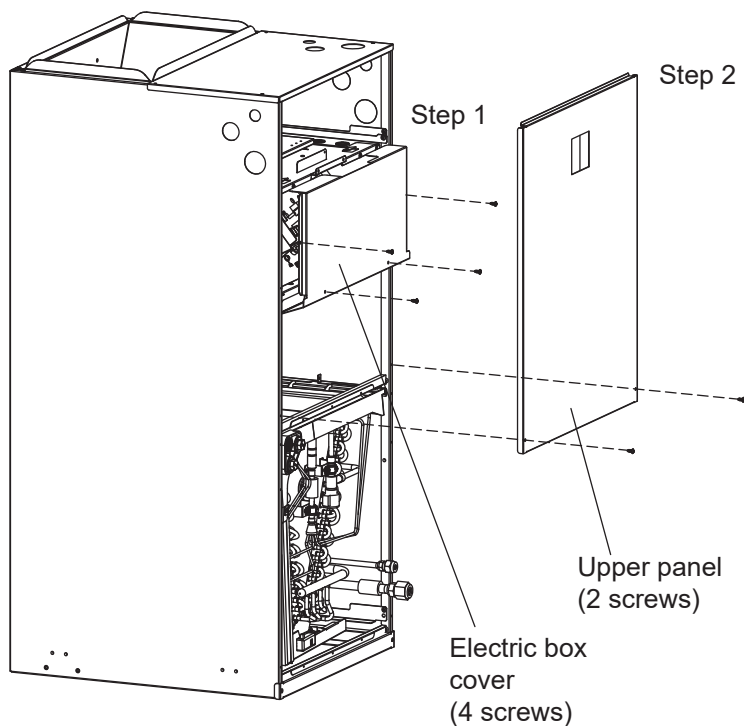
(L) Rotate the evaporator for 180 degrees and insert it into the upper side of the lead rail. Pay attention to protecting the wirings during the process.



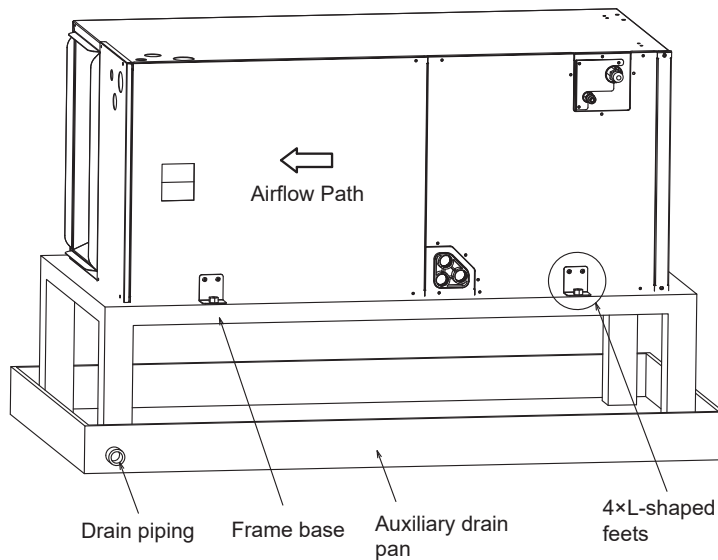
Ti: Air inlet temperature sensor
T_L: Liquid pipe temperature sensor
Tg: Gas pipe temperature sensor
EEV: Electronic Expansion Valve
Humidity: Humidity sensor (option)

(N) Insert the wirings into the electrical box in its original position (refer to 4.4.3.F). And then refix the wirings with wire clamps (refer to 4.4.3.D&F).

(O) Reinstall electric box cover and then reinstall the upper panel.



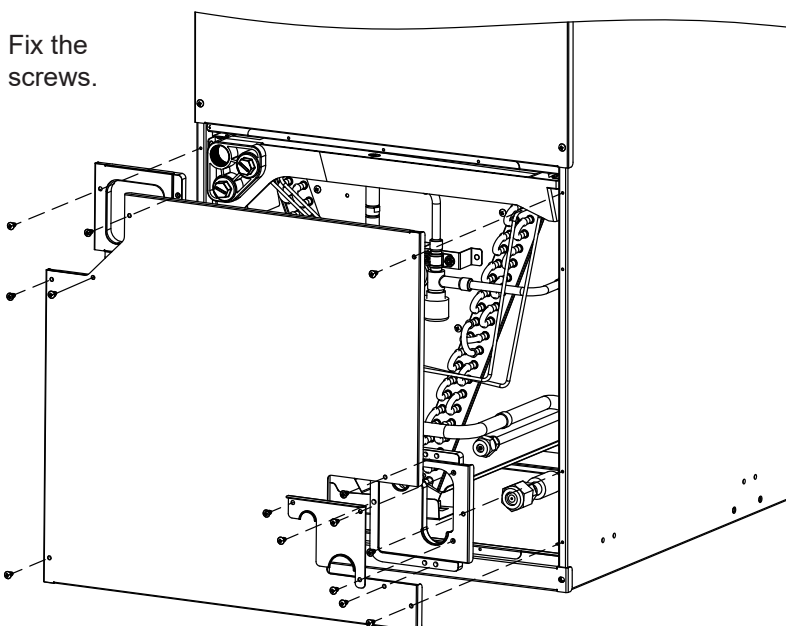
● Use four L-shaped feet on both sides to firmly fix the indoor unit to a reliable frame base and install an auxiliary drain pan at the bottom to discharge condensate.



Horizontal left hand installation

*Frame base and auxiliary drain pan are field-supplied. Please refer to the size preparation as Horizontal right hand installation.

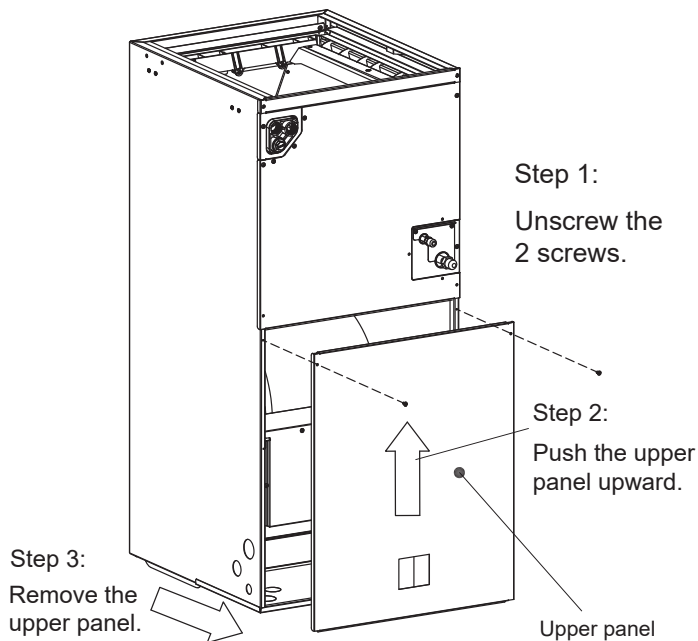
(P) Reinstall the lower panel, pipe and drainage hole cover. Rotate the unit anticlockwise for 90 degrees, as shown in figure horizontal left hand installation.



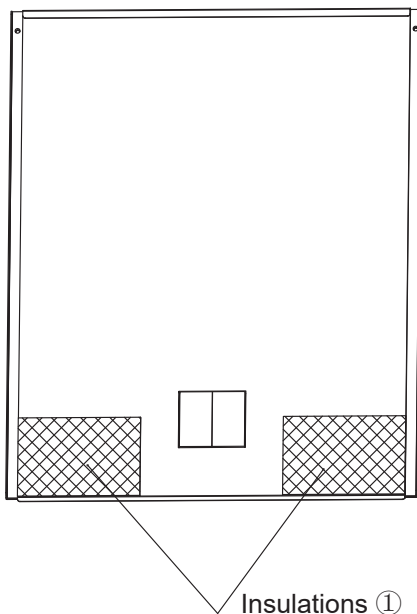
4.4.4 Vertical downflow installation

- When the unit is vertical downflow installation, it is also necessary to modify the indoor unit on site, and the modification method is the same as the horizontal left hand installation. Please refer to 4.4.3 for details.
- Using the vertical downflow installation, when indoor temperature is 77~80.6°F(25~27°C) and humidity is 85% or more, there is a risk of condensation in the indoor unit. Insulations (option) need to be pasted on the indoor unit as shown in the figure below:

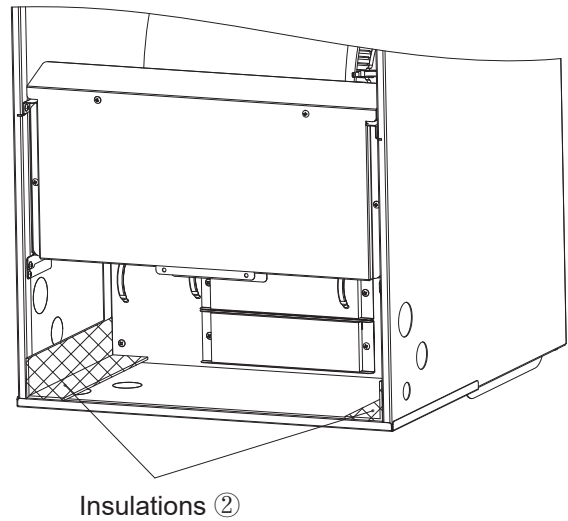
(A) Remove the upper panel.



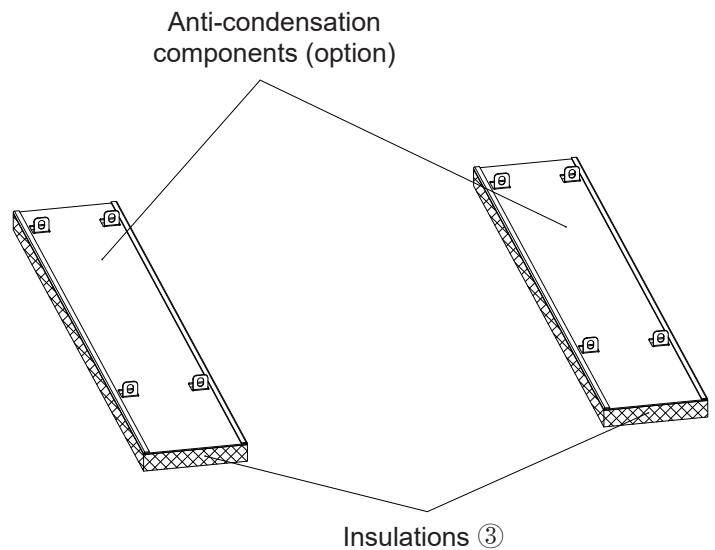
Paste the insulations ① at the corners as shown on the back of the upper panel.



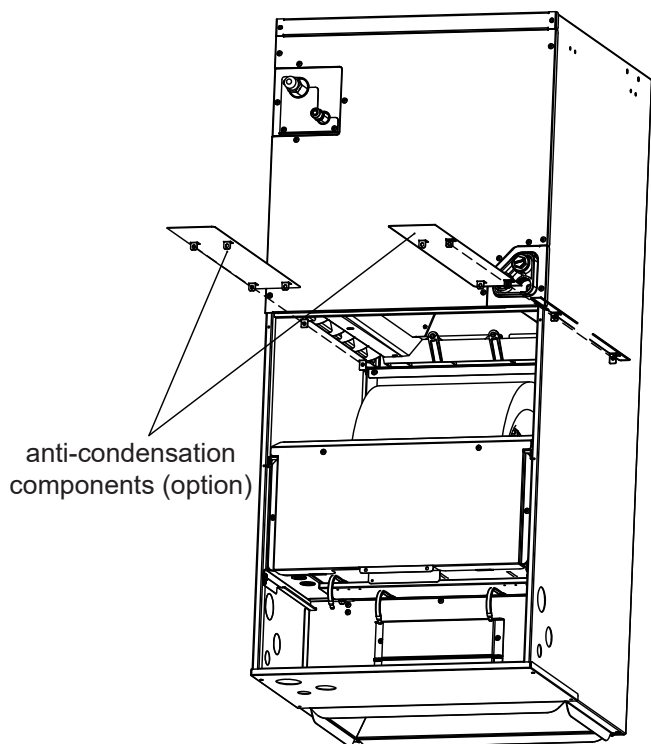
Paste the insulations ② at two corners inside the indoor unit.



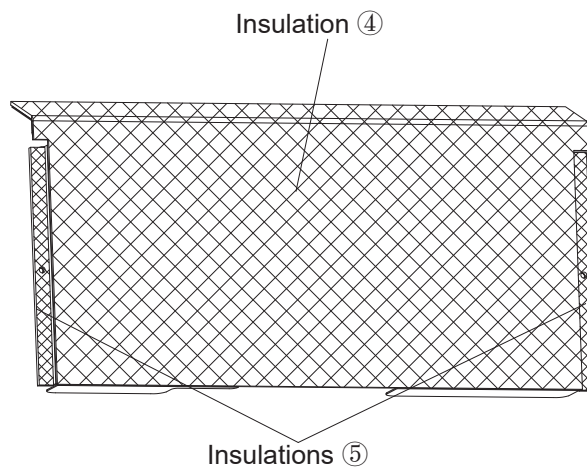
(B) Install two anti-condensation components (option) under the evaporator.



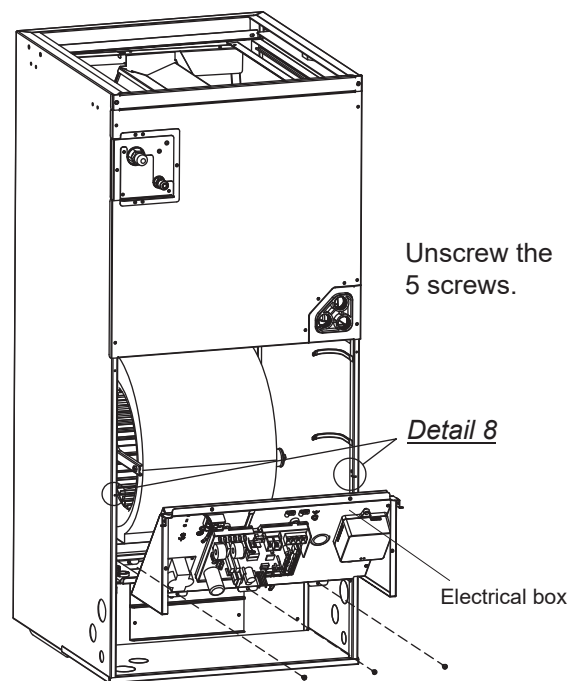
Then install the anti-condensation components (option) with 4 screws.



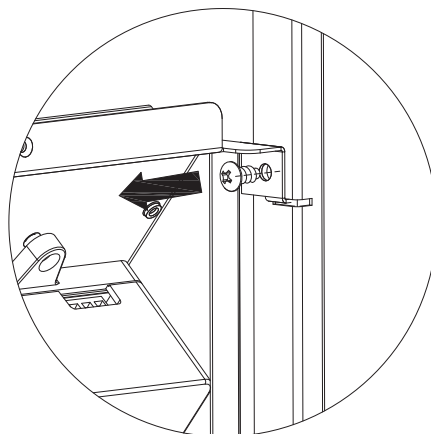
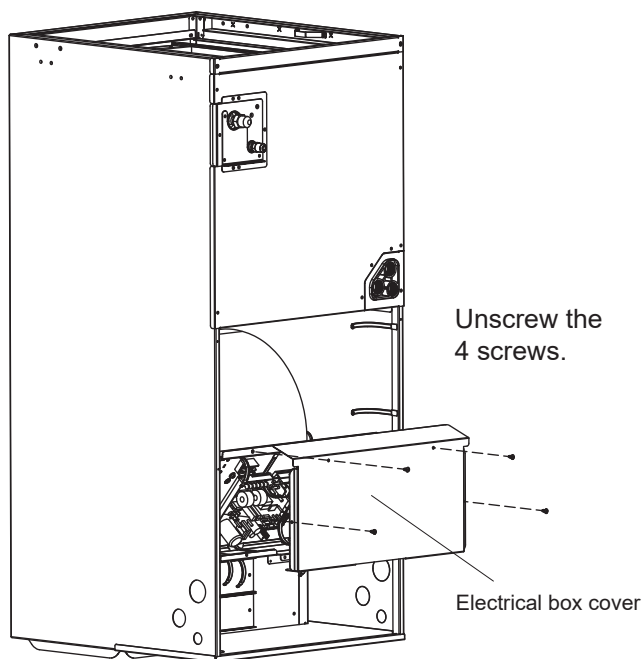
Paste the insulations ④ and ⑤ on the outer side of the electrical box cover.



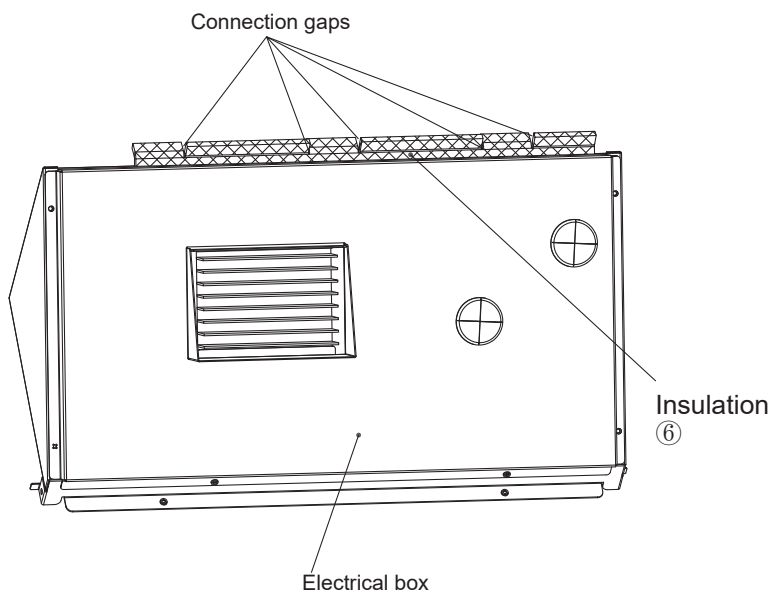
(D) Remove wiring clamps, sensor plugs and fan volute wirings refer to 4.4.3.F and then remove the electrical box. Pay attention to protecting the wirings during the process.



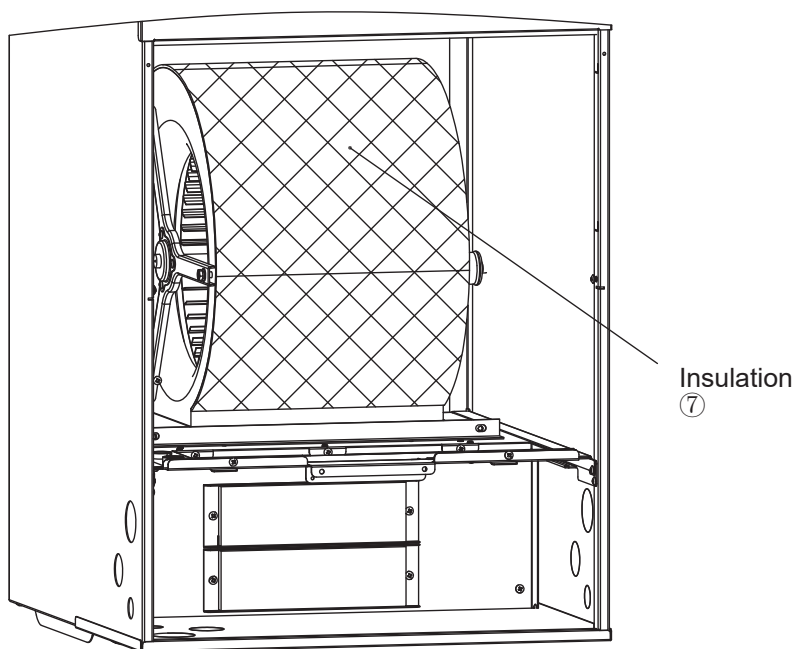
(C) Remove the electrical box cover.



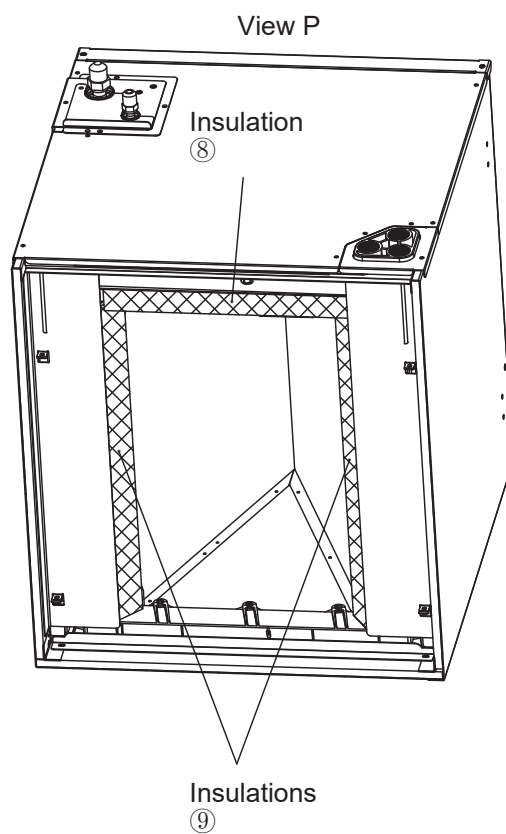
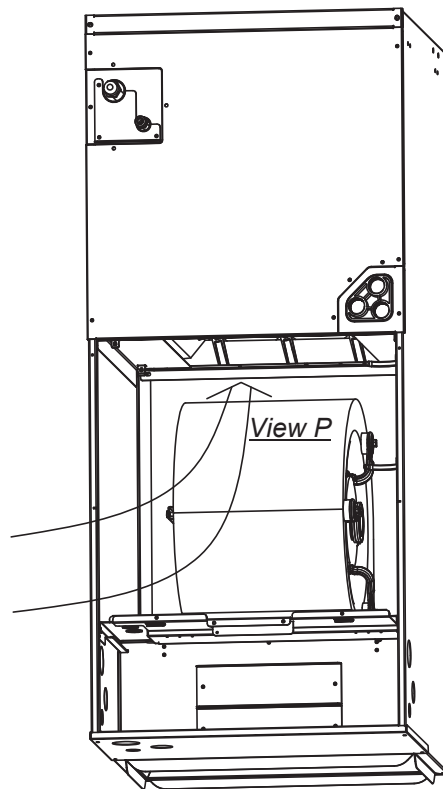
Attach the insulation ⑥ along the edges of the electrical box, and cut the connection gaps as shown.



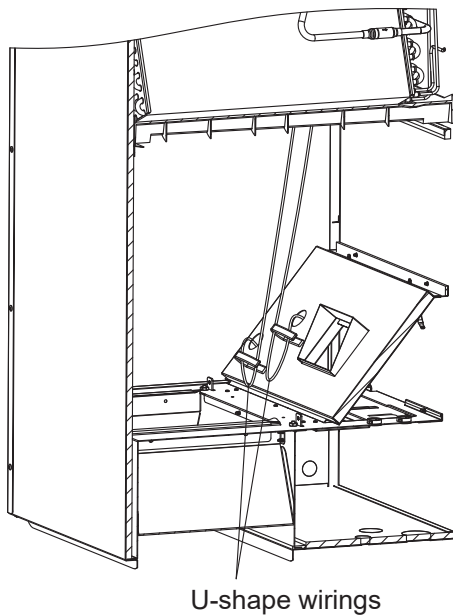
Paste the insulation ⑦ on the fan casing.



Paste the insulations ⑧ and ⑨ on the gaps between the bottom of the drain pan and the sheet metal, on the front, left and right sides.

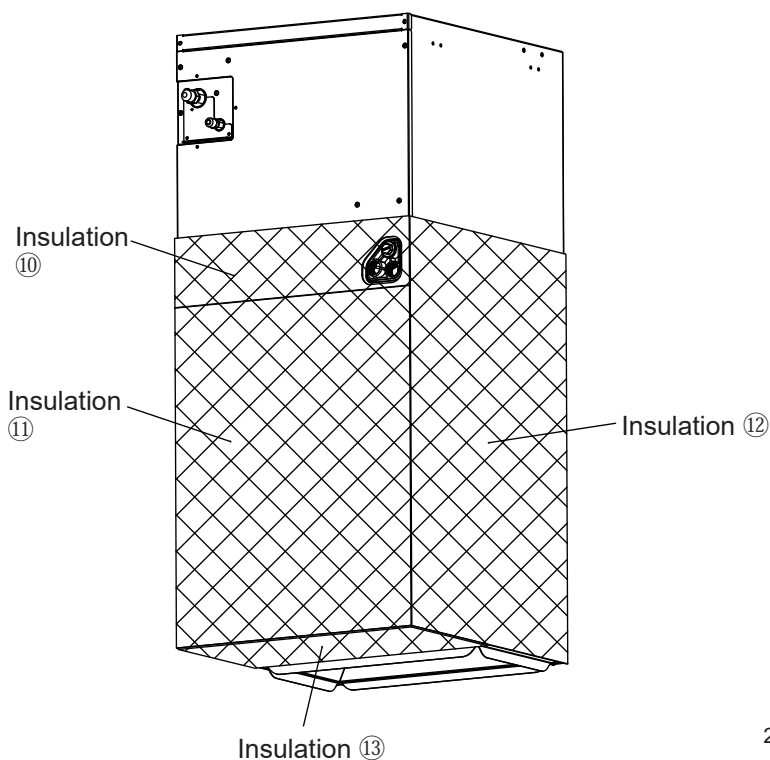


(E) Reinstall the electrical box in its original position (refer to 4.4.4.D).
Clamp the wirings as U-shape to prevent the water enter into the electrical box.

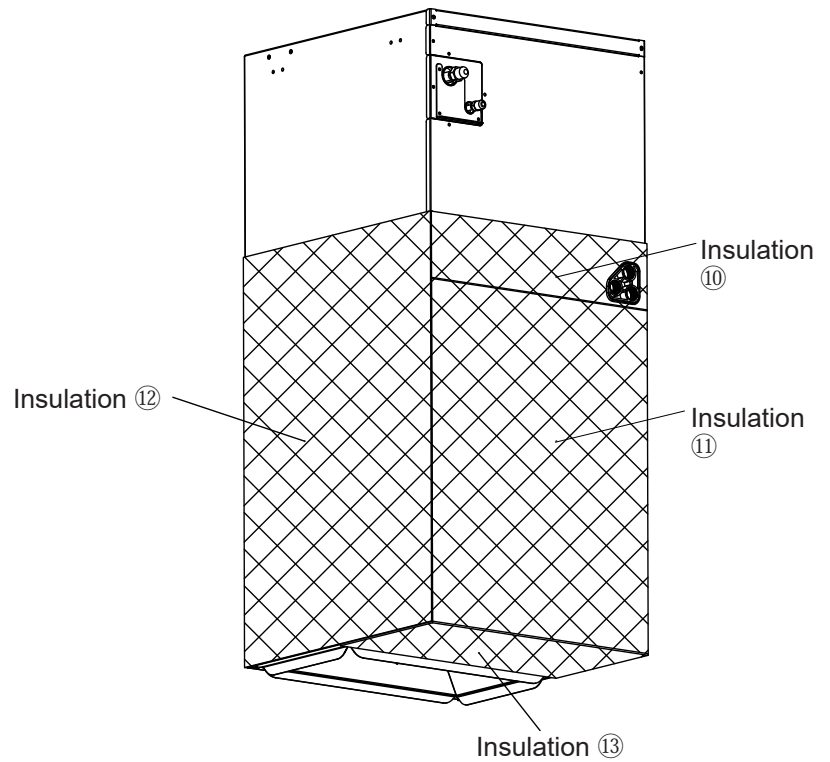


(F) Reinstall electric box cover and the upper panel (refer to 4.4.3.O).

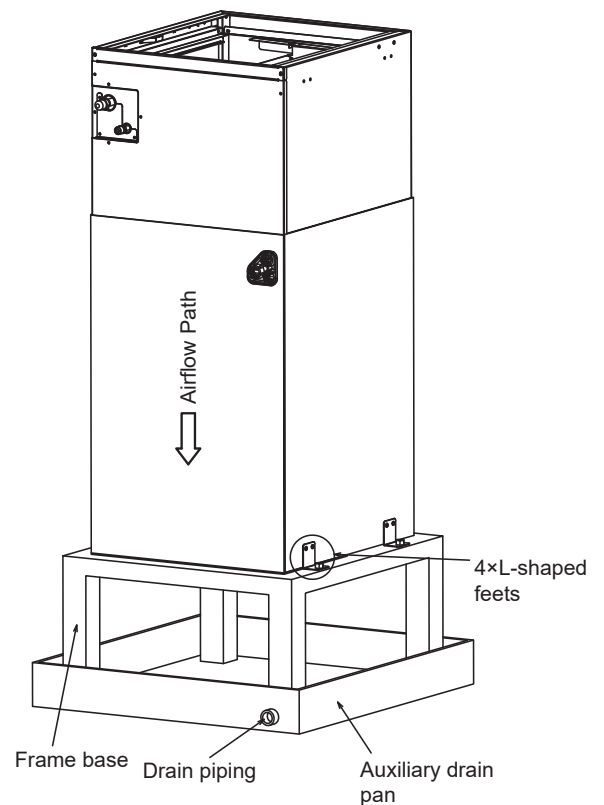
Paste the insulations ⑩, ⑪, ⑫ and ⑬ on the front, bottom, left and right sides of the indoor unit.



(G)



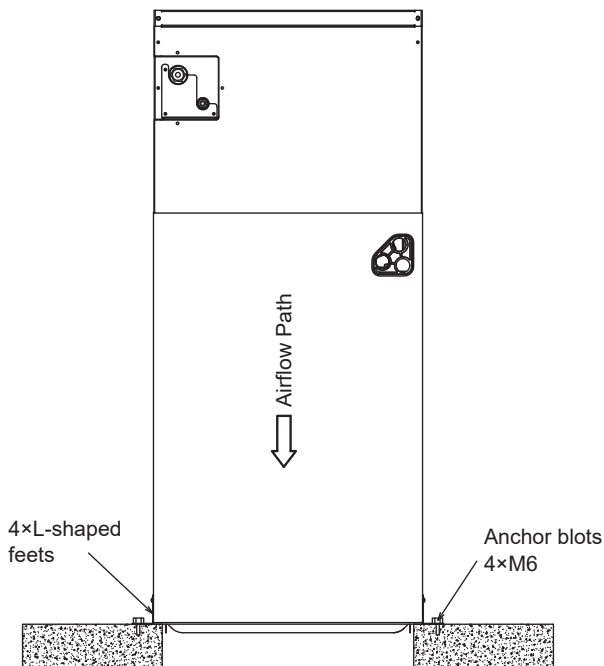
- After the modification according to the instructions, use four L-shaped feet on both sides to firmly fix the indoor unit to a reliable frame base and install an auxiliary drain pan at the bottom to discharge condensate.



Vertical downflow installation

*Frame base and auxiliary drain pan are field-supplied.
Please refer to the size preparation as vertical upflow installation.

- If the space is limited and cannot be fixed to the frame base, the indoor unit needs to use four L-shaped feets on both sides to be fixed into the ground.



Insulation(option) dimension 18-42

Insulation number*	18-42		
	inches	mm	Qty per unit
①	5-29/32×3-15/16×13/64	150×100×5	2
②	10-3/64×3-21/32×13/64	255×93×5	2
③	19-31/64×3-15/32×19/32	495×88×15	2
④	18-27/64×10-63/64×13/64	468×279×5	1
⑤	7-43/64×35/64×25/32	195×14×20	2
⑥	14-49/64×63/64×13/64	375×25×5	1
⑦	31-57/64×10-5/8×13/64	810×270×5	1
⑧	11-39/64×3-15/32×1/8	295×88×3	1
⑨	17-1/8×1-37/64×1/8	435×40×3	2
⑩	19-59/64×5-5/16×1/8	506×135×3	1
⑪	25-1/8×19-59/64×1/8	638×506×3	1
⑫	30-5/16×21-27/32×1/8	770×555×3	2
⑬	27-51/64×10-43/64×1/8	706×271×3	1

Insulation(option) dimension 48-60

Insulation number*	48-60		
	inches	mm	Qty per unit
①	5-29/32×3-15/16×13/64	150×100×5	2
②	12-13/32×3-21/32×13/64	315×93×5	2
③	21-27/32×3-15/32×19/32	555×88×15	2
④	20-25/32×12-13/64×13/64	528×310×5	1
⑤	9-1/16×35/64×25/32	230×14×20	2
⑥	17-9/16×1-1/16×13/64	446×27×5	1
⑦	37-51/64×12-63/64×13/64	960×330×5	1
⑧	13-31/32×3-17/64×1/8	355×83×3	1
⑨	19-11/16×1-37/64×1/8	500×40×3	2
⑩	22-9/32×8-7/64×1/8	566×206×3	1
⑪	28-15/64×22-9/32×1/8	717×566×3	1
⑫	36-7/32×24-1/64×1/8	920×610×3	2
⑬	30-5/32×13-5/64×1/8	766×332×3	1

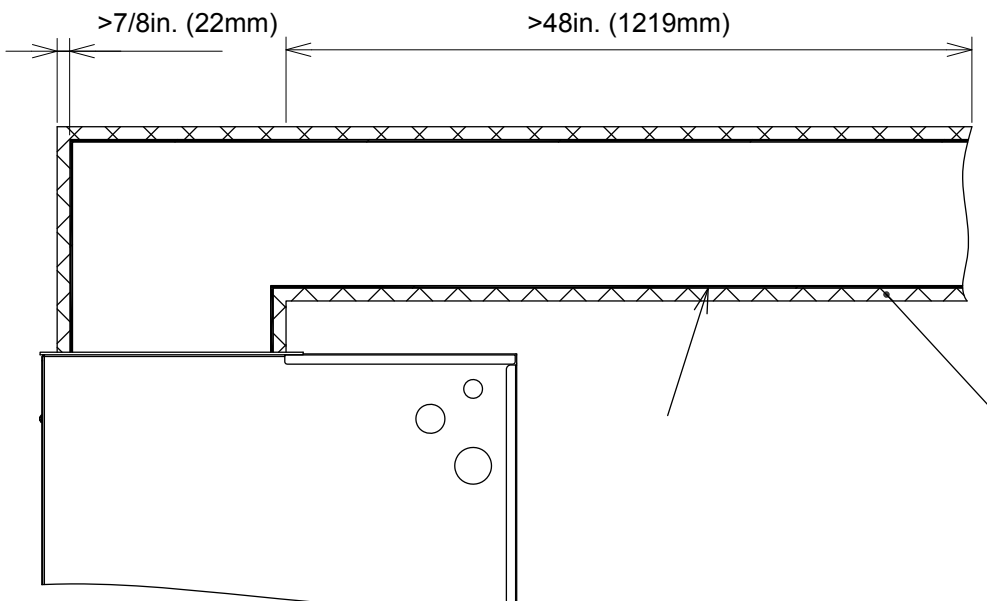
*Note: There is a corresponding number tag on the insulation.

4.5 Air duct

Field duct work must comply with the National Fire Protection Association NFPA 90A, NFPA 90B and any applicable local ordinance.

! WARNING

- Flame retardant ductwork is to be used and sealed to the unit in a manner that will prevent leakage.
- The first 48 inches of supply air plenum and duct work must be constructed of sheet metal as required by NFPA 90B.
- The thickness of sheet metal ducts must meet NFPA 90B requirements.
- Sheet metal duct work run in unconditioned spaces must be insulated and covered with a vapor barrier. Fibrous duct work may be used if constructed and installed in accordance with SMACNA Construction Standard on Fibrous Glass Ducts. Duct work must comply with National Fire Protection Association as tested by U/L Standard 181 for Class I Air Ducts. Check local codes for requirements on duct work and insulation.
- Joints and seams shall be fastened and made airtight. Material must be nonflammable and meet NFPA 90A, NFPA 90B and any applicable local ordinance.
- Ducts shall be supported by metal hangers, straps, lugs, or brackets.
- No nails shall be driven through the duct walls, and no unnecessary holes shall be cut therein.
- Duct work shall be installed in conformance with SMACNA HVAC Duct Construction Standards-Metal and Flexible, and SMACNA Residential Comfort System Installation Standards Manual.
- Duct system must be designed within the range of external static pressure the unit is designed to operate against. It is important that the system airflow be adequate. Make sure supply and return duct work, grills, special filters, accessories, etc, are accounted for in total resistance.
- If a vibration isolation connectors used in duct systems, the material must meet NFPA 90A, NFPA 90B and any applicable local ordinance.
- Do not, under any circumstances, connect return duct work to any other heat producing device such as fireplace insert, stove, etc. Unauthorized use of such devices may result in fire, carbon monoxide poisoning, explosion, personal injury or property damage.
- The supply air plenum or duct must have a solid sheet metal bottom piece directly after the air handler unit with no opening, registers or flexible air ducts located in it. If flexible supply air ducts are used, they may be located only in the side walls of the rectangular plenum, a minimum of 6 inches from the solid bottom.



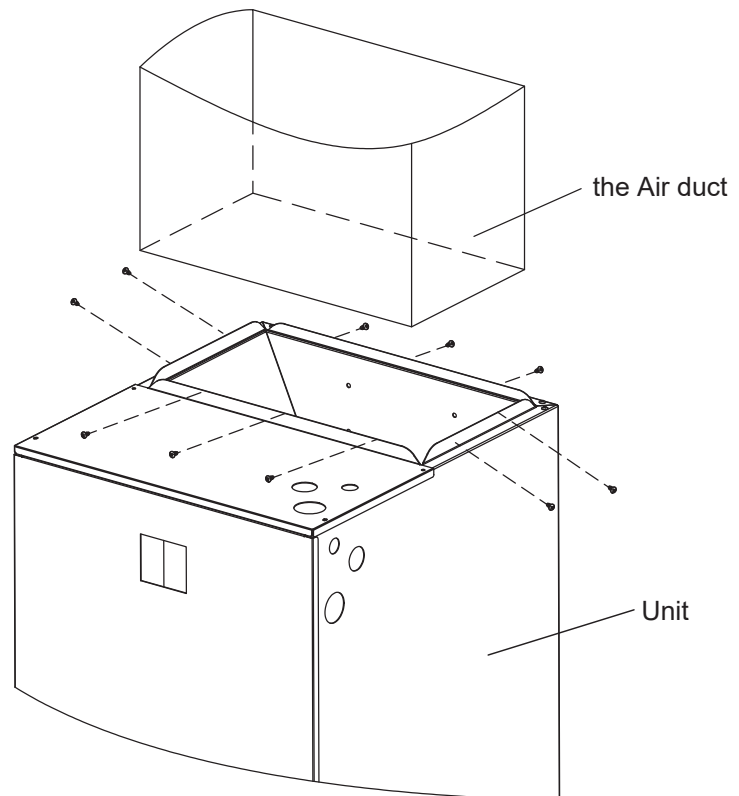
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NOTE

- The size of the duct connection refer to the operation manual for indoor unit dimensions.
- The length of the screws for fixing the duct should not longer than 0.75in (19mm).
- The duct system must not be supported by the indoor unit.
- When installing the indoor unit in location with noise requirements, the duct system should be designed to avoid vibration transmission.

5. Refrigerant Piping Work

! DANGER

Use refrigerant R410A in the refrigerant cycle. Do not charge oxygen, acetylene or other flammable and poisonous gases into the refrigerant cycle when performing a leakage test or an air-tightness test. These types of gases are extremely dangerous and can cause an explosion. It is recommended that compressed air, nitrogen or refrigerant be used for these types of tests.

5.1 Piping Materials

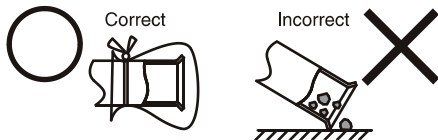
- (1) Prepare locally-supplied copper pipes.
- (2) Select clean copper tubes making sure there is no dust and moisture inside the tubes.

Before connecting pipes, blow the inside of the tubes with nitrogen or dry air, to remove any dust or foreign materials.

5.2 Piping Connection

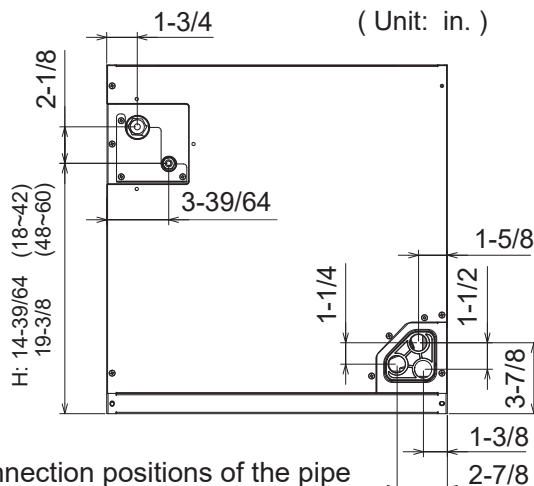
! CAUTION

- Cap the end of the pipe when the pipe is to be inserted through a hole.
- Do not put pipes on the ground directly without a cap or vinyl tape at the end of the pipe.



- An excess or a shortage of refrigerant is the main cause of trouble to the units. Charge the correct refrigerant quantity.

- (1) The connection positions of the pipe are shown below.



Connection positions of the pipe

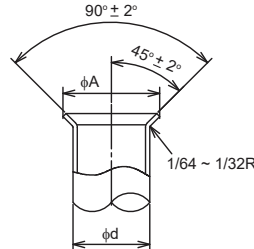
Model	Gas Piping	Liquid Piping
18-60	5/8 (Ø 15.88)	3/8 (Ø 9.53)

Unit: in.(mm)

※ Flaring Dimension

Perform the flaring work as shown below.

Unit: in.(mm)



Diameter φ D	A ⁺⁰ _{-1/64(0.4)} R410A
1/4(6.35)	1/32(9.1)
3/8(9.53)	33/64(13.2)
1/2(12.7)	21/32(16.6)
5/8(15.88)	25/32(19.7)
3/4(19.05)	(*)

- (*) It is impossible to perform the flaring work with 1/2H material. In this case, use an accessory pipe(with a flare).

- (2) When tightening the flare nut, use two spanners as shown.

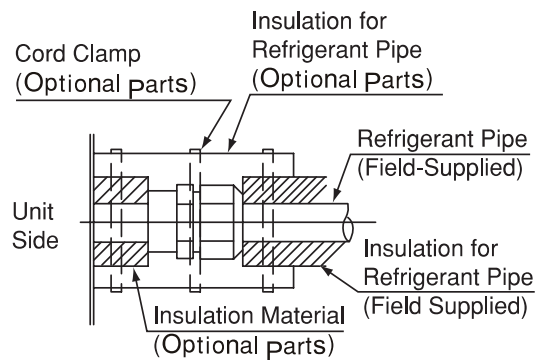


Required Tightening Torque

Pipe Size	Tightening Torque
φ1/4 in. (6.35 mm)	10.3 - 13.3 ft·lbs (14 - 18 N·m)
φ3/8 in. (9.53 mm)	25.1 - 31.0 ft·lbs (34 - 42 N·m)
φ1/2 in. (12.7 mm)	36.1 - 45.0 ft·lbs (49 - 61 N·m)
φ5/8 in. (15.88 mm)	50.2 - 60.5 ft·lbs (68 - 82 N·m)

Tightening Work of Flare Nut

- (3) After connecting the refrigerant piping, seal the refrigerant pipes by using the Field - supplied insulation material as shown.



Insulation on Pipes

- (4) Evacuation and refrigerant charging procedures should be performed according to "Installation & Maintenance Manual" of the outdoor unit.

Refer to the outdoor unit Installation Instructions for details on piping size selection, piping installation, and charging information.

Coil is shipped filled with Nitrogen. Evacuate the system before charging with refrigerant. Install refrigerant lines so that it does not block service access to the front of the unit. Nitrogen should flow through the refrigerant lines while brazing. Use a wet rag or an approved heat paste to protect the TXV sensing bulb during the brazing process.

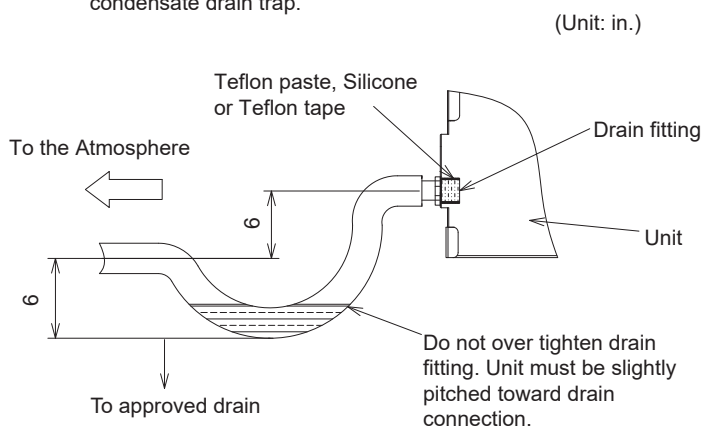
6. Drain Piping

The indoor unit has field supplied primary and secondary 3/4-in. NPT drain connections.

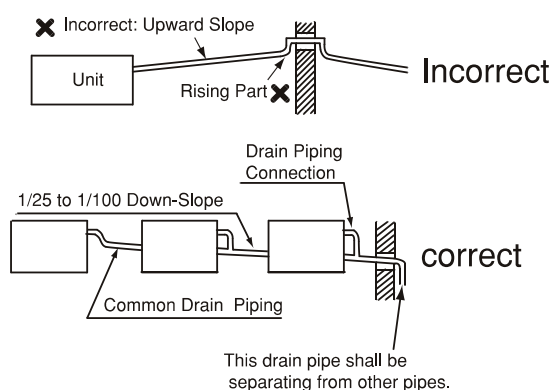
When making drain fitting connections to the drain pan, use a thin layer of Teflon paste, Silicone or Teflon tape and install by hand tightening.

When making drain fitting connections to drain pan, do not over-tighten.

Do not operate unit without condensate drain trap.



The drain piping must be performed with a DOWN-SLOPE pitch of 1/25 to 1/100.



Do not connect the drain pipes directly to sewage piping or any other drainage piping to avoid ammonia odour. The ammonia in the sewage might enter the indoor unit through the drain pipes and corrode the heat exchanger. Do not twist or bend the drain hose, because excessive force is applied during twisting or bending and may also cause leakage. The drain line should be insulated where necessary to prevent sweating and damage due to condensate forming on the outside surface of the pipe.

NOTE

- Do not create an upper-slope or rise for the drain piping, since drain water can flow back to the unit and leakage to the room will occur when the unit operation is stopped.
- When the common drain piping is connected with other indoor units, the connected position of each indoor unit must be higher than the common piping. The pipe size of the common drain pipe must be large enough according to the unit size and number of units.
- After performing drain piping work and electrical wiring, check to ensure that water flows smoothly as in the following procedure.

Checking with the Float Switch

 - a. Switch ON the power supply.
 - b. Pour 2 to 2.5 liters of water into the drain pan.
 - c. Check to ensure that the water flows smoothly and no water leakage occurs. When water cannot be found at the end of the drain piping, pour another 2 liters of water into the drain pan.
- If unit is located in or above a living space where damage may result from condensate overflow, a field-supplied, external condensate pan should be installed underneath the entire unit, and a secondary condensate line (with appropriate trap) should be run from the unit into the pan. Any condensate in this external condensate pan should be drained to a noticeable place. The owner of the structure must be informed that when condensate flows from the secondary drain or external condensate pan, the unit requires servicing or water damage will occur. Install traps in the condensate lines as close to the coil as possible.

7. Electrical Wiring

WARNING

- Turn OFF the main power switches to the indoor unit and outdoor unit before electrical wiring or periodical check, and wait for at least 10 minutes.
- All electrical work must be done as outlined in this manual and in accordance with this manual. Substandard work can result in fire and damage to the unit.
- Use specified cables between units and choose the cables correctly. If not, an electrical shock or fire may occur.
- Do not open the service cover or access panel for the indoor or outdoor units without turning OFF the main power supply. It can result in an electrical shock.
- Turn OFF the main power switch of the indoor unit and the outdoor unit before attempting any electrical wiring work or a periodical check is performed. If not, it will result in an electric shock or a fire.
- Check to ensure that the indoor fan and the outdoor fan have stopped before attempting any electrical wiring work or for any scheduled electrical work that is being performed.
- The wires must be firmly secured. External force applied to terminals may cause a fire.
- It is forbidden to connect a plurality of power lines into one power terminal block. At the indoor unit side of air conditioner, power wiring can be extended through a power distribution box. Be sure to calculate the wiring capacity carefully, since excessively low wiring capacity may frequently cause fire.
- Do not start the system before all check points are thoroughly checked.
- Use ELB with medium or higher sensing speed (ELB with an operating time of 0.1 seconds or less), or electric shock or fire may arise.
- Avoid the contact of wires with the refrigerant piping, sheet metal edges and electrical components in unit. Otherwise, the wires may get damaged or even cause a fire.
- The power cord should not come into direct contact with the wire hole sheet metal after installation.
- Prevent rats or other small animals damaging the wiring and electrical components. Bitten unprotected parts may cause a fire.

WARNING

- Knockouts are provide on the indoor unit top panel and sides of the cabinet to allow for the entry of the supply voltage conductors. If the knockouts on the cabinet sides are used for electrical conduit, an adapter ring must be used in order to meet UL 60335 safety requirements. An MEC or CEC approved strain relief is to be used at this entry point. Some codes/municipalities require the supply wire to be enclosed in conduit. Consult your local codes.
- Do not cut, puncture or alter the cabinet for electrical wiring.
- If heat kit(option) is required and already installed on indoor unit, power source cable should be installed separately and the size should be selected in accordance with UL.

CAUTION

- Before proceeding with electrical connections, make certain that power supply are as specified on the unit rating plate. See unit wiring label for proper field high and low-voltage wiring. Make all electrical connections in accordance with the NEC and any local codes or ordinances that may apply. Refer to the NEC(USA) or CSA(Canada) for wire sizing. Use copper wire only.
- Every installation must include an NEC(USA) or CSA (Canada) approved over-current protection device.
- Wrap the accessory packing around the wires, and plug the wiring connection hole with the seal material to protect the product from any condensate or insects.
- Tightly secure the wires with the cord clamp inside the indoor unit.
- Secure the cable of wired control using the cord clamp inside the electric box. But North American products, Local safety standards are adopted for power wiring.
- Tighten screws to the following torques.
 - M3.5: 0.9 ft·lbs (1.2 N·m)
 - M4: 0.7 to 1.0 ft·lbs (1.0 to 1.3 N·m)
 - M5: 1.5 to 1.8 ft·lbs (2.0 to 2.4 N·m)
 - M6: 3.0 to 3.7 ft·lbs (4.0 to 5.0 N·m)
 - M8: 6.6 to 8.1 ft·lbs (9.0 to 11.0 N·m)
 - M10: 13.3 to 17.0 ft·lbs (18.0 to 23.0 N·m)

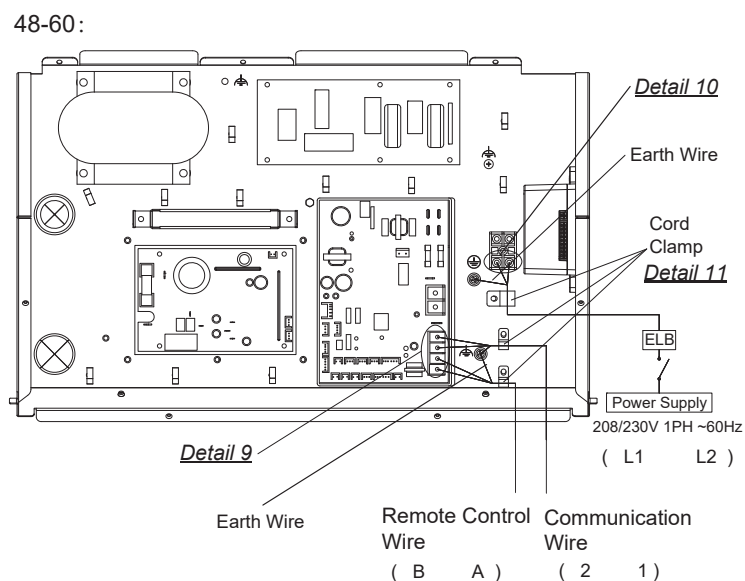
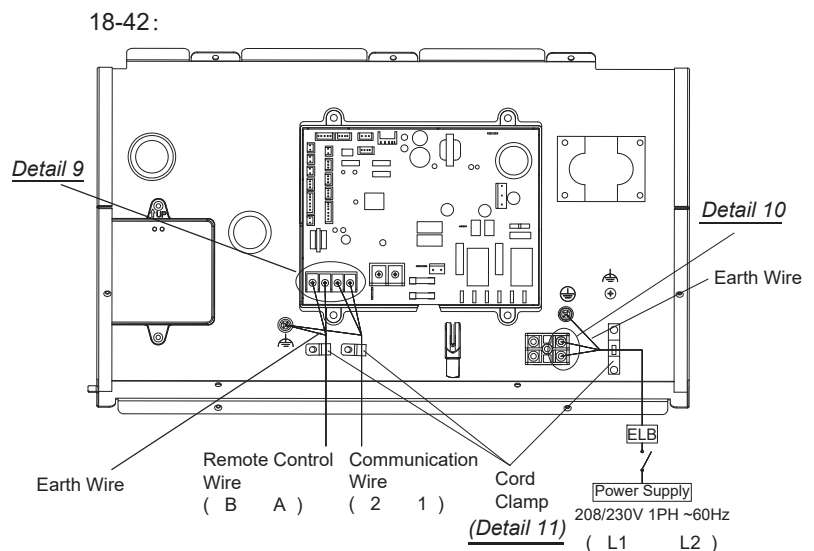
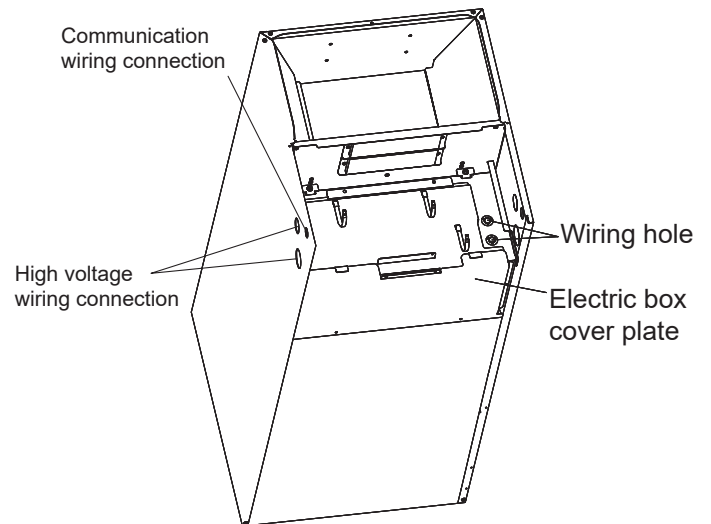
7.1 General Check

- (1) Make sure that the field-selected electrical components (main power switches, circuit breakers, wires, conduit connectors and wire terminals) have been properly selected according to the electrical data. Make sure that the components comply with National Electrical Code (NEC).
- (2) Check to ensure that the voltage of power supply is within $\pm 10\%$ of nominal voltage and earth phase is contained in the power supply wires. If not, electrical parts will be damaged.
- (3) Check to ensure that the capacity of power supply is enough. If not, the compressor will not be able to operate cause of abnormally voltage drop at starting.
- (4) Check to ensure that the earth wire is connected.
- (5) Check to ensure that the electrical resistance is more than 1 megohm, by measuring the resistance between ground and the terminal of the electrical parts. If not, do not operate the system until the electrical leakage is found and repaired.

7.2 Electrical Wiring Connection

The electrical wiring connection for the indoor unit is shown in Fig. 7.1

- (1) Connect the power supply wires to the terminal board in the electrical control box of both outdoor unit and indoor unit. And connect the earth wire to the electrical control box of outdoor unit. In addition, connect the earth wire to earth screw in the electrical control box of indoor unit. Refer to Fig. 7.1.
- (2) Connect the communication wires between the outdoor and indoor units to terminals 1 and 2 on the terminal board. If power supply wiring is connected to 1 and 2 of terminal board, printed circuit board will be damaged.
- (3) Use shielded twisted pair for communication wire connecting of the indoor unit and outdoor unit, respectively connected to the 1 and 2 terminals of the terminal block between the indoor and outdoor unit. Connect the communication wire of the wired controller to the A and B terminals of the indoor unit terminal block.
- (4) The recommended ELB, FUSE sizes etc. are shown in Table 7.1.
- (5) In the case that a conduit tube for field-wiring is not used, fix rubber bushes with adhesive on the panel.



Enlarged View of Terminal Block (TB) Wiring

Detail 11: Cord Clamp Installation Diagram

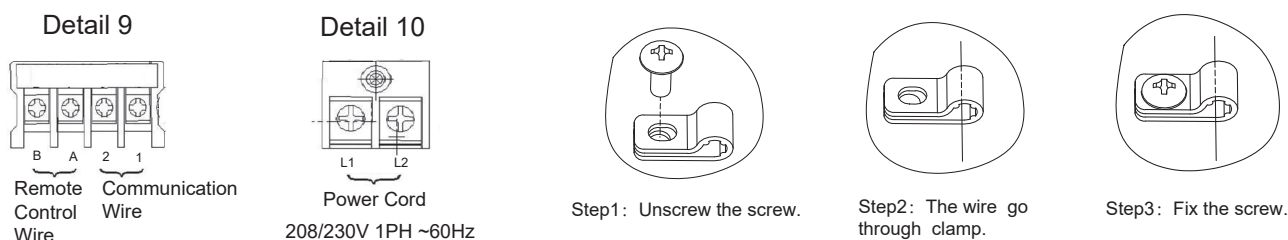


Fig. 7.1 Wiring Connection for Indoor

7.3 Field Minimum Wire Sizes for Power Source

! WARNING

- Use an ELB (earth leakage breaker). If not used, it will cause an electric shock or a fire.
- Run through the cables using conduit tube, and completely seal the end of conduit tube with sealing materials.

Table 7.1 Minimum Wire Sizes for Power Source on Field

Model	Indoor Unit							Inverter
	Hz (Hz)	Voltage (V)	Max. (V)	Min. (V)	MCA (A)	MOP (A)	Fuse (A)	MOC (A)
18-42	60	208/230	253	188	5.94	6.48	10	4.75
48-60	60	208/230	253	188	7.81	14.06	5	6.25

Model	Wiring Size			ELB	
	Power Supply Wiring	Ground Wiring	Communication Cable (AWG)	Nominal Current (A)	Nominal Sensitive Current (mA)
18-42	Wiring size and length must comply with local codes		18	15	30
48-60			18	15	30

MCA: Minimum Circuit Ampacity (A)

MOP: Maximum Overcurrent Protective Device (A)

MOC: Maximum Operating Current (A)

ELB: Earth Leakage Breaker

NOTES:

- (1) Field wiring shall conform to local laws and regulations, and all wiring operations must be performed by qualified professionals.
- (2) Refer to relevant standards for above-noted power cord size.
- (3) Use the charts above to select appropriate sized breakers / fuses / overcurrent protection switches and wiring in accordance with local codes.
- (4) Ensure communication cable is a minimum of AWG18 (0.82mm²), 2-Conductor, Stranded Copper.
- (5) A switch that can ensure all-pole disconnection shall be installed between power supply and air conditioning unit in such a manner that the contact spacing shall not be less than 1/8 in. (3mm).
- (6) Once the power cord is damaged, the dealer or the professionals from designated maintenance department must be contacted in a timely manner for repair and replacement.
- (7) For the installation of power cord, the ground wire must be longer than the current-carrying conductor.
- (8) Select power wire size based on the value of the MCA.
- (9) Use shielded cables for communication wire.
- (10) Select circuit breaker model based on the value of the MOP.

8. Test Run

Test run should be performed according to "Installation & Maintenance Manual" of the outdoor unit.

WARNING

- Do not operate the system until all the check points have been cleared.
 - (A) Check to ensure that the electrical resistance is more than 1 megohm, by measuring the resistance between ground and the terminal of the electrical parts. If not, do not operate the system until the electrical leakage is found and repaired.
 - (B) Check to ensure that the stop valves of the outdoor unit are fully opened, and then start the system.
 - (C) Check to ensure that the switch on the main power source has been ON for more than 12 hours, to warm the compressor oil by the crankcase heater.
- Pay attention to the following items while the system is running.
 - (A) Do not touch any of the parts by hand at the discharge gas side, since the compressor chamber and the pipes at the discharge side are heated higher than 194°F(90°C).
 - (B) **DO NOT PUSH THE BUTTON OF THE MAGNETIC SWITCH(ES).** It will cause a serious accident.

9. Safety and Control Device Setting

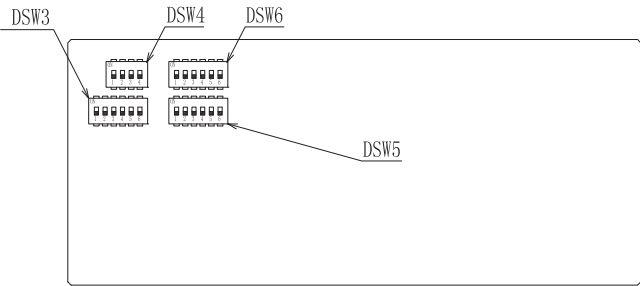
Indoor Unit

Indoor Unit Capacity (kBtu/h)		18-42	48-60
Capacity of Fuse on Indoor Unit Control Circuit	A	10	5
Freeze Protection Temperature	Cut-out Cut-in	°F(°C) °F(°C)	32(0) 57.2(14)
Set Temperature Difference		°F(°C)	35.6(2)

10. Common

10.1 Setting of DIP Switch

- (1) DIP switch must be set with power sources of the indoor and outdoor units in OFF state. Otherwise, the settings are invalid.
- (2) The location of DIP switch is shown in the figure below



- (3) The PCB of indoor unit is furnished with 4 DIP switches that must be set based on the following requirements before test run. The system must not be started before the completion of DIP setup.

- (a) All indoor units must be numbered (DSW6) as shown in the figure below. The outdoor unit numbering must start with "0".

Setting Method 1	DSW6 (Setting 0~63)	Ex.) Set machine No. 16
	1 2 3 4 5 6 ON OFF Note: 8421 coding method	1 2 3 4 5 6 ON OFF

DSW6 is set to "0" before delivery; up to 64 indoor units can be connected with.

- (b) Capacity Code Setting (DSW3)
No setup is required.
The code is set before delivery. This switch is used to set the capacity of indoor unit.
- (c) Model Code Setting (DSW4)
No setup is required. The code is set before delivery.
- (d) Cooling System Code No. Setting (DSW5)
The setup is needed. All are set to OFF before delivery.

Refrigerant System Setting		
Setting Method 1	DSW5 (Setting 0~63)	Ex.) Set system No. 5
	1 2 3 4 5 6 ON OFF Note: 8421 coding method	1 2 3 4 5 6 ON OFF

DSW5 is set to "0" before delivery; up to 64 indoor units can be connected with.

Note:

Symbol "■" indicates the location of DIP switch.
The position indicated in the diagram is in the factory-set state.

CAUTION

The power supply shall be turned off before the setup of DIP switch. Otherwise, the settings will be invalid.

Decimal No.	8421 code					
	1	2	3	4	5	6
0	☐	☐	☐	☐	☐	☐
1	☒	☐	☐	☐	☐	☐
2	☐	☒	☐	☐	☐	☐
3	☒	☒	☐	☐	☐	☐
4	☐	☐	☒	☐	☐	☐
5	☒	☐	☒	☐	☐	☐
6	☐	☒	☒	☐	☐	☐
7	☒	☒	☒	☐	☐	☐
8	☐	☐	☐	☒	☐	☐
9	☒	☐	☐	☒	☐	☐
10	☐	☒	☐	☒	☐	☐
11	☒	☒	☐	☒	☐	☐
12	☐	☐	☒	☒	☐	☐
13	☒	☐	☒	☒	☐	☐
14	☐	☒	☒	☒	☐	☐
15	☒	☒	☒	☒	☐	☐
16	☐	☐	☐	☐	☒	☐
17	☒	☐	☐	☐	☒	☐
18	☐	☒	☐	☐	☒	☐
19	☒	☒	☐	☐	☒	☐
20	☐	☐	☒	☐	☒	☐
21	☒	☐	☒	☐	☒	☐
22	☐	☒	☒	☐	☒	☐
23	☒	☒	☒	☐	☒	☐
24	☐	☐	☐	☒	☒	☐
25	☒	☐	☐	☒	☒	☐
26	☐	☒	☐	☒	☒	☐
27	☒	☒	☐	☒	☒	☐
28	☐	☐	☒	☒	☒	☐
29	☒	☐	☒	☒	☒	☐
30	☐	☒	☒	☒	☒	☐
31	☒	☒	☒	☒	☒	☐
32	☐	☐	☐	☐	☐	☒
33	☒	☐	☐	☐	☐	☒
34	☐	☒	☐	☐	☐	☒
35	☒	☒	☐	☐	☐	☒
36	☐	☐	☒	☐	☐	☒
37	☒	☐	☒	☐	☐	☒
38	☐	☒	☒	☐	☐	☒
39	☒	☒	☒	☐	☐	☒

40	☐	☐	☐	☒	☐	☒
41	☒	☐	☐	☒	☐	☒
42	☐	☒	☐	☒	☐	☒
43	☒	☒	☐	☒	☐	☒
44	☐	☐	☒	☒	☐	☒
45	☒	☐	☒	☒	☐	☒
46	☐	☒	☒	☒	☐	☒
47	☒	☒	☒	☒	☐	☒
48	☐	☐	☐	☐	☒	☒
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60	☐	☐	☒	☒	☒	☒
61	☒	☐	☒	☒	☒	☒
62	☐	☒	☒	☒	☒	☒
63	☒	☒	☒	☒	☒	☒



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