TOSHIBA

Carrier

A2L

R454B

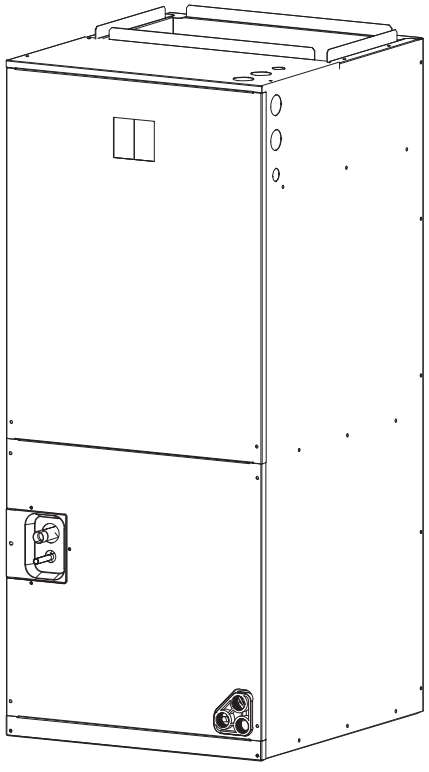
Vertical Air Handling Unit

Installation, Operation and Maintenance Manual

Model name:

For Commercial Use

MMD-UB0091VHN-UL
MMD-UB0121VHN-UL
MMD-UB0181VHN-UL
MMD-UB0241VHN-UL
MMD-UB0301VHN-UL
MMD-UB0361VHN-UL
MMD-UB0421VHN-UL
MMD-UB0481VHN-UL
MMD-UB0601VHN-UL



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CONTENTS

1. Symbol and Key to Safety Instructions

1.1 Symbol Keywords

	WARNING	The warnings in this document are identified by warning triangles printed on a black background. The keyword at the beginning of the warning indicates the type and severity of the risk if no measures are taken to prevent it.

The following keywords are defined and used in this document:

▶	Dangerous	Means a hazardous situation, which, if not avoided, will lead to death or serious injury.
▶	Warning	Indicates a hazardous situation, which may lead to death or serious injury if not avoided.
▶	Caution	Indicates a hazardous situation, which may cause mild to moderate injury if not avoided.
▶	Note	Used to deal with behaviors unrelated to personal injury.

Important Information

	This symbol represents important information that is not harmful to people or property.

1.2 Safety

Please Read Before Continuing.

Warning:

- The unit must be installed by qualified personnel with a capability certificated for handling R454B refrigerant. Refer to regulation and laws in use on installation location.
- This appliance is not intended for use by persons (including children) 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.
- The appliance shall be installed in accordance with national wiring regulations.
- Children should be supervised to ensure that they do not play with the appliance.
- The minimum clearance to combustible surfaces (curtains,blinds,etc.) from the appliance should be 300 mm.
- Leak detection system installed. Unit must be powered except for service
- Before accessing the connection terminals, all power circuits must be disconnected.
- Please read these instructions carefully before attempting to install or operate. Failure to follow these instructions may result in incorrect installation, adjustment, repair or maintenance, which may result in fire, electric shock, property damage, personal injury or death.
- Installation, service, maintenance and repair of this unit must be performed by a certified technician.
- Servicing shall be performed only as recommended by the manufacturer.
- Product uninstallation and recycling must be performed by a certified technician.
- keep any required ventilation openings clear of obstruction;
- The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation
- The appliance shall be stored in a room without continuously operating open flames (for example an operating gas appliance) and ignition sources (for example an operating electric heater)
- The appliance is intended only for indoor use (excluding laundry rooms). The degree of protection against harmful ingress of water of the appliance is IPX0.
- The appliance can not be altitudes exceeding 2000m.
- The product intended to use for more than one room.

QUALIFICATION OF WORKERS

The installation and servicing of this equipment must be performed by qualified, experienced technicians only. Professional installation personnel should have the following experience:

- Installing the electric heater
- Opening of sealed components
- Opening of ventilated enclosures
- Commissioning and troubleshooting
- Checking the electric control part and wiring
- Breaking into the refrigerant circuit and charging

This document is property of customer and should be kept together with this equipment.

These instructions do not cover all the different variations of the system, nor do they provide all the unexpected situations that may be encountered during the installation process.

The manufacturer recommends installing only approved matched indoor and outdoor systems. All of the manufacturer's split systems are AHRI rated only with TXV indoor systems. Some of the benefits of installing approved matched indoor and outdoor split systems are maximum efficiency, optimum performance and the best overall system reliability.

Warning: Fire, electric shock, property damage, personal injury or death

- The whole installation process must comply with NATIONAL, STATE AND LOCAL CODES. If you need more information, please contact your local dealer.
- Dispose of properly in accordance with federal or local regulations . Flammable refrigerant used.
- Risk of fire due to flammable refrigerant used . Follow handling instructions carefully in compliance with national regulations

Warning: Risk of electric shock

- Can cause injury or death. disconnect all remote electric power supplies before servicing. More than one disconnect switch may be required to cut off the power of the equipment. Dangerous voltage can cause serious personal injury or death.

Warning: Electric shock

- If the fan assembly needs to be dismantled, all disconnect switches supplying power to the equipment must be powered off and locked (if the device cannot be seen), so that the field power cord can be safely dismantled from the fan assembly. Otherwise, it may cause electric shock, personal injury or death.

Warning: Fire, electric shock, property damage, personal injury or death

- Flammable refrigerant used . Consult repair manual/owner's guide before attempting to service this product . All safety precautions must be followed.
- Due to possible equipment damage or personal injury, installation, repair and maintenance should be carried out by trained qualified maintenance personnel. Consumers are advised to only clean/replace the filter screen. Do not operate the equipment with the access panel removed.

Warning:

- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater.
- Do not pierce or burn.
- Be aware that refrigerants may not contain an odour.

A2L	This symbol that this appliance used a flammable refrigerant. If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire.
	This symbol that the operation manual should be read carefully.
	This symbol that a service personnel should be handling this equipment with reference to the installation manual.
	This symbol that information is available such as the operating manual or installation manual.

Warning:

- This product may expose you to chemicals including lead and lead components, which are known to cause cancer, birth defects or other reproductive harm in California. For more information, please visit www.P65Warnings.ca.gov.

Warning: Electric shock

- The device must be permanently grounded. Otherwise, it will cause electric shock, personal injury or death.

Note: Fire risk

- The product is only used for one or two residences.
- The materials of pressure ventilation system and piping system must meet the latest NFPA 90B standard.

Note:

- Make sure the fan bracket is fastened (3motor mounting bolts-Figure1). Then, before operating the device, check whether the wheels are firmly fixed on the motor shaft.

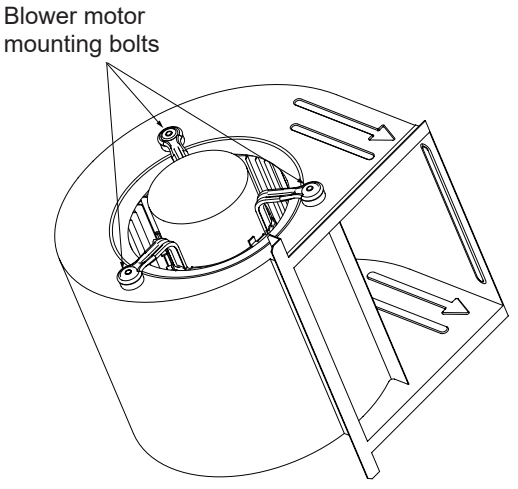


Figure 1.1

1.3 Safety Precautions for R454B Refrigerant

Warning:

- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater.
- Do not pierce or burn.
- Be aware that refrigerants may not contain an odour.

LEAK DETECTION SYSTEM installed

Unit must be powered except for service.

The service life of the refrigerant sensor is 15 years.

For the unit with refrigerant sensor, when the refrigerant sensor detects refrigerant leakage, the indoor unit displays a error code on wired-remote controller and the compressor of outdoor unit immediately stops, and the indoor fan starts running. When the refrigerant sensor malfunctions, the wired remote controller displays the error code J29. Refer to the error code table in Installation Manual or Service Manual for details. The refrigerant sensor cannot be repaired and can only be replaced by the manufacturer, qualified installer, or qualified service person. It shall be only replaced with the refrigerant sensor specified by the manufacturer.

Unventilated area

- The appliance shall be stored so as to prevent mechanical damage from occurring.
- The appliance using flammable refrigerants is installed shall be so constructed that should any refrigerant leak, it will not stagnate so as to create a fi re or explosion hazard.
- The appliances connected via an air duct system to one or more rooms with A2L refrigerants are installed in a room with an area less than Amin, that room shall be without continuously operating open flames (for example an operating gas appliance) or other potential ignition sources (for example an operating electric heater, hot surfaces).
- A flame-producing device may be installed in the same space if the device is provided with an effective flame arrest.
- Auxiliary devices shall not be installed in the duct work. Examples of such potential ignition sources are hot surfaces with a temperature exceeding 700˚C and electric switching devices.
- Only auxiliary devices approved by the appliance manufacturer or declared suitable with the refrigerant shall be installed in connecting ductwork.
- For non-duct connected appliances containing A2L refrigerants with the supply and return air openings in the conditioned space may have the body of the appliance may be installed in open areas such as false ceilings not being used as return air plenums, as long as the conditioned air does not directly communicate with the air of the false ceiling.
- For duct connected appliances, false ceilings or drop ceilings may be used as a return air plenum if a refrigerant detection system detection is provided in both the appliance and any external connections are also provided with a sensor immediately below the joint.
- Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work.

Equipment leak detection

Field-made refrigerant joints indoors shall be tightness tested. The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure. No leak shall be detected.

Qualification of workers

Every working procedure like maintenance, service and repair operations that affects safety means shall only be carried out by competent persons.
Examples for such working procedures are:

- breaking into the refrigerating circuit;
- opening of sealed components;
- opening of ventilated enclosures.

Checks to the area

Prior to beginning work on systems containing FLAMMABLE REFRIGERANTS, safety checks are necessary to ensure that the risk of ignition is minimised.

Work procedure

Work shall be undertaken under a controlled procedure so as to minimise the risk of a flammable gas or vapour being present while the work is being performed.

General work area

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

Checking for presence of refrigerant

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

Presence of fire extinguisher

If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO_2 fire extinguisher adjacent to the charging area.

No ignition sources

No person carrying out work in relation to a REFRIGERATING SYSTEM which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.

Ventilated area

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

Checks to the refrigerating equipment

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer’ s maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer’s technical department for assistance.
The following checks shall be applied to installations using FLAMMABLE REFRIGERANTS:

- the actual REFRIGERANT CHARGE is in accordance with the room size within which the refrigerant containing parts are installed;
- the ventilation machinery and outlets are operating adequately and are not obstructed;
- if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant
- marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;
- refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

Checks to electrical devices

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised. Initial safety checks shall include:

- that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
- that no live electrical components and wiring are exposed while charging, recovering or purging the system;
- that there is continuity of earth bonding.

Repairs to sealed components

Sealed electrical components shall be replaced.

Repair to intrinsically safe components

Intrinsically safe components must be replaced.

Cabling

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

Detection of flammable refrigerants

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.
The following leak detection methods are deemed acceptable for all refrigerant systems.
Electronic leak detectors may be used to detect refrigerant leaks but, in the case of FLAMMABLE REFRIGERANTS, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.
Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.
If a leak is suspected, all naked flames shall be removed/extinguished.
If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. Removal of refrigerant shall be according to Removal and evacuation.

Removal and evacuation

When breaking into the refrigerant circuit to make repairs – or for any other purpose –conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration. The following procedure shall be adhered to:

– safely remove refrigerant following local and national regulations;
– evacuate;
– purge the circuit with inert gas (optional for A2L);
– evacuate (optional for A2L);
– continuously flush or purge with inert gas when using flame to open circuit; and
– open the circuit.

The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.
For appliances containing flammable refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum (optional for A2L). This process shall be repeated until no refrigerant is within the system (optional for A2L). When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.
The outlet for the vacuum pump shall not be close to any potential ignition sources, and ventilation shall be available.

Charging procedures

In addition to conventional charging procedures, the following requirements shall be followed.

- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
- Cylinders shall be kept in an appropriate position according to the instructions.
- Ensure that the REFRIGERATING SYSTEM is earthed prior to charging the system with refrigerant
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the REFRIGERATING SYSTEM.
  Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.

a) Become familiar with the equipment and its operation.
b) Isolate system electrically.
c) Before attempting the procedure, ensure that:
   - mechanical handling equipment is available, if required, for handling refrigerant cylinders;
   - all personal protective equipment is available and being used correctly;
   - the recovery process is supervised at all times by a competent person;
   - recovery equipment and cylinders conform to the appropriate standards.
d) Pump down refrigerant system, if possible.
e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
f) Make sure that cylinder is situated on the scales before recovery takes place.
g) Start the recovery machine and operate in accordance with instructions.
h) Do not overfill cylinders (no more than 80 % volume liquid charge).
i) Do not exceed the maximum working pressure of the cylinder, even temporarily.
j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
k) Recovered refrigerant shall not be charged into another REFRIGERATING SYSTEM unless it has been cleaned and checked

Labelling

Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing FLAMMABLE REFRIGERANTS, ensure that there are labels on the equipment stating the equipment contains FLAMMABLE REFRIGERANT.

Recovery

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of the flammable refrigerant. If in doubt, the manufacturer should be consulted. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition.
The recovered refrigerant shall be processed according to local legislation in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.
If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The compressor body shall not be heated by an open flame or other ignition sources to accelerate this process. When oil is drained from a system, it shall be carried out safely.

Note:

- The products covered by this report are indoor units of split-type air conditioner rated at 208/230 V, 1 phase, 60 Hz, intended for household use and permanently connected to supply. the products are evaluated as PARTIAL UNIT of EVAPORATOR UNIT, These units are PARTIAL UNIT AIR CONDITIONER, complying with PARTIAL UNIT requirements of this Standard, and must only be connected to CONDENSING UNIT that have been confirmed as complying to corresponding PARTIAL UNIT requirements of this Standard, UL60335-2-40/CSA C22.2 No. 60335-2-40. Each indoor unit may be installed electric heater kit. The electric heater kit can only be installed as an accessory in the field and connected to power supply separately. Each indoor unit must be used with connection the duct base according to the installation instructions.

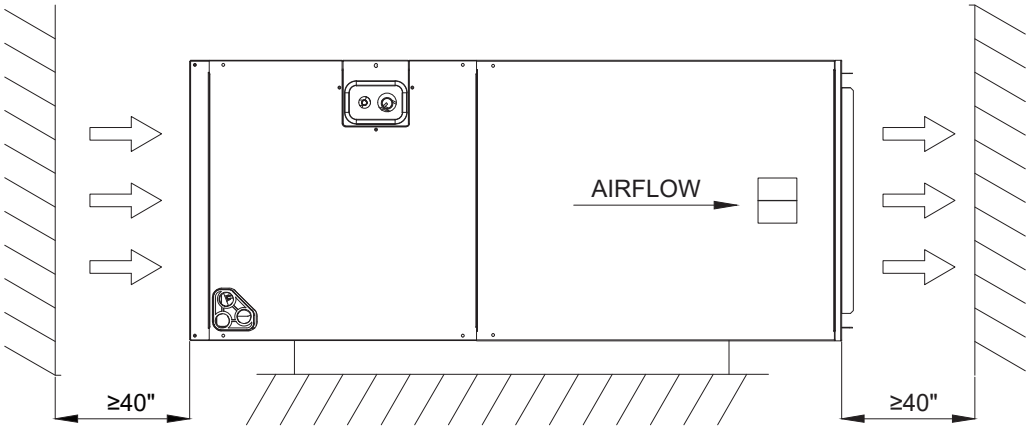
2. General

The device can return air at the bottom at the upward airflow position, return air from left to right at the horizontal position and return air at the top at the downward airflow position.

This air handler provides the flexibility to be installed in any upward, downward or horizontal airflow application.

Please refer to section 5 for high and low voltage wiring.

To ensure proper installation, please choose a firm and flat site. Make sure enough clearance is reserved for installation and maintenance.



Clearances in the Horizontal Position

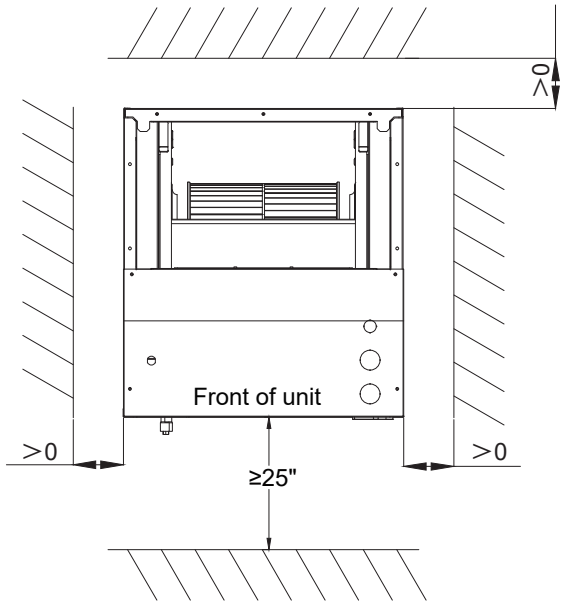


Figure 2.1 Required clearance

Note:

- As shown in Figure 2.1, the installed device must have the required clearance. Failure to follow these instructions may result in equipment damage and/or premature equipment failure.

Warning: Fire risk

- Keep flammable materials and vapors (such as gasoline) away from air handlers. Failure to follow these instructions may result in death, explosion or fire.

2.1 Installation in High Humidity Environment

When the unit is installed in a hot and humid place, if the temperature in the installation space exceeds 86 ˚F and the RH (relative humidity) exceeds 80%, it is recommended to insulate the outside of the cabinet. Use glass wool or polyethylene foam as insulation material; The thickness should be greater than 2 inches, and it must be suitable for the installation space opening.

Condensate may also be produced on the insulation surface. Ensure that insulation materials designed for HVAC systems are used. In the process of refrigeration, condensate may be produced on the surface. It is also recommended to use an auxiliary drain pan and fix the equipment firmly to prevent it from falling. See Figure 2.2, 2.3, 2.4 and 2.5.

For the use of auxiliary drainage tray, please refer to local regulations.

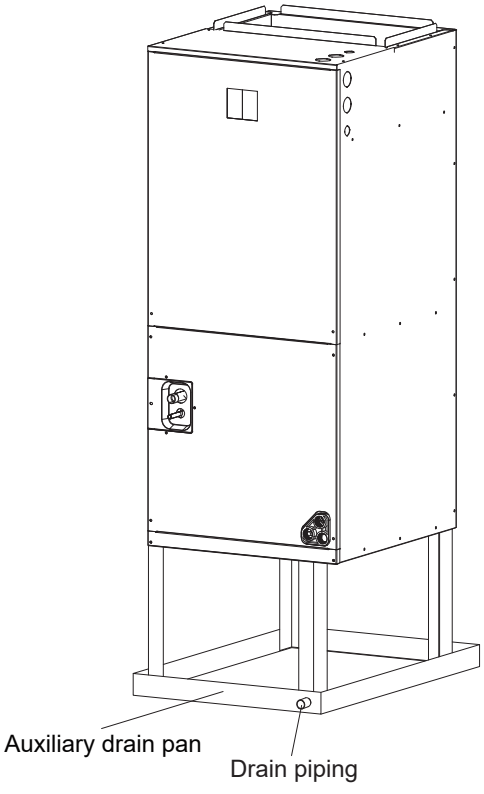


Figure 2.2 Vertical airflow installed

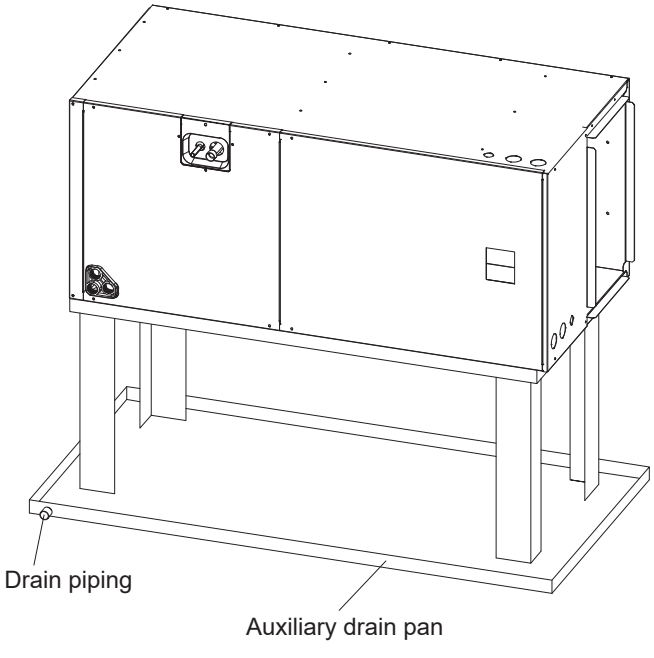


Figure 2.3 Horizontal installation on the right side

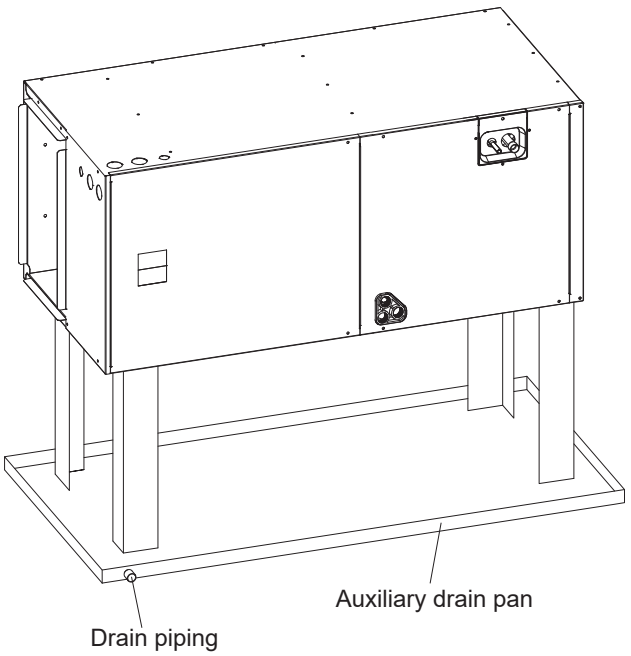


Figure 2.4 Horizontal installation on the left side

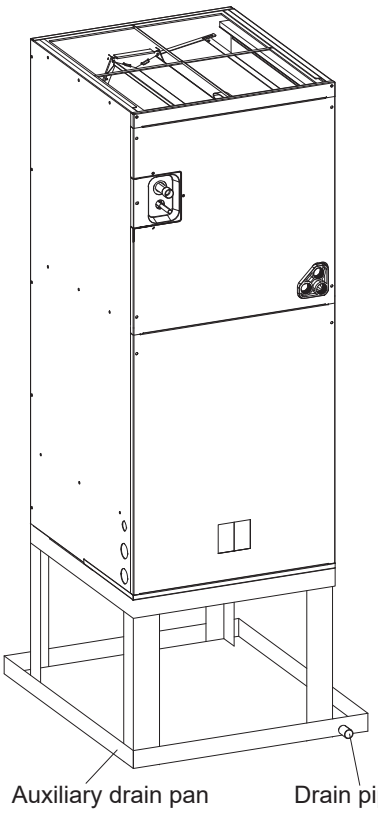


Figure 2.5 Vertical downward airflow installed

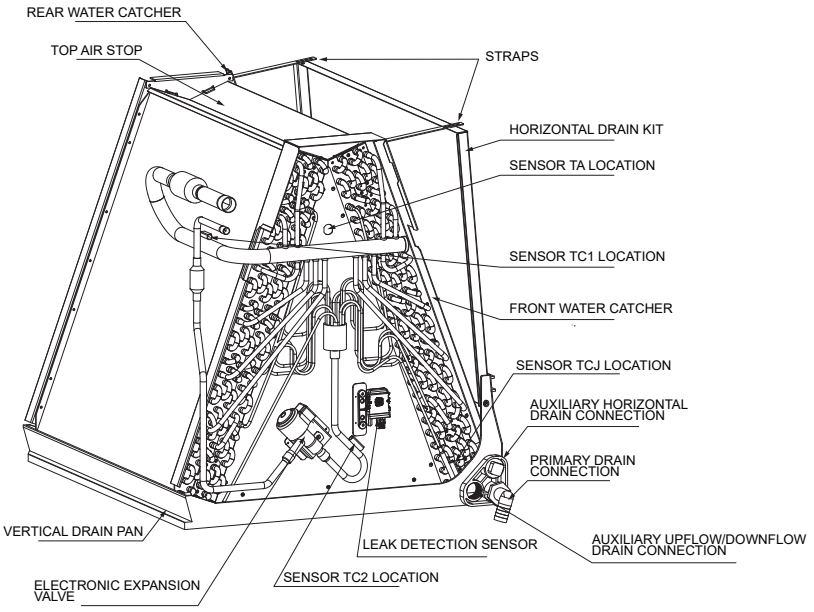
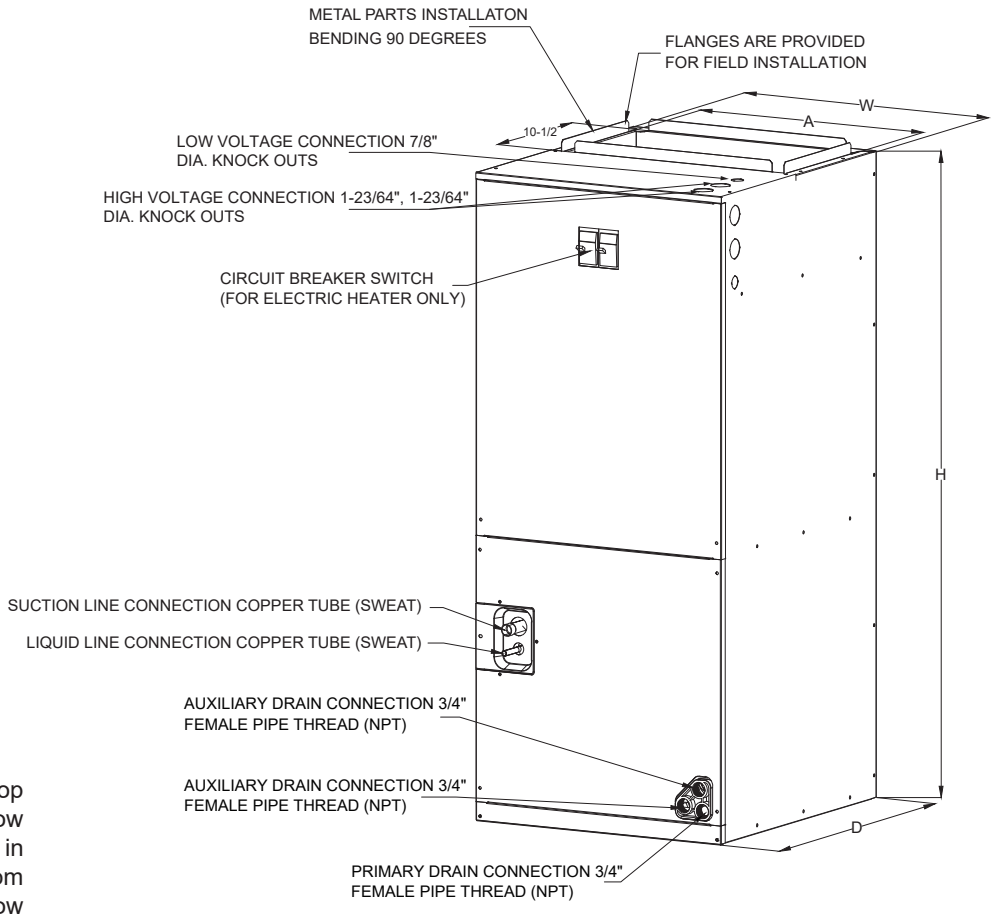


Figure 2.6 Indoor coil of inverter unit

2.2 Unit Dimension

The front of the unit requires a clearance of 25 inches for the maintenance of filters and coils.



Upward airflow unit shown:

The unit can be positioned for top air return in downward airflow position, left and right air return in the horizontal position, or bottom air return in the upward airflow position.

Figure 2.7

Table 2.1 Unit Dimension

Model	Dimension Inches [mm]				
	Height "H"	Width "W"	Dimension "D"	Air outlet "A"	Liquid Line / Suction Line
9K/12K/18K/24K /30K/36K/42K	45-3/4 [1162]	19-5/8 [500]	22 [560]	17-7/8 [454]	3/8 / 3/4 [9.5]/[19]
48K/60K	53-1/8 [1350]	22 [560]	24 -1/2[623]	19-1/2 [496]	3/8 / 7/8 [9.5]/[22]

3. Application

3.1 Vertical Upward Airflow

- The vertical upward airflow configuration is the factory default configuration of all models (see Figure 2.7).
- If the return air is to be ducted, the duct should be installed flush with the ground. Use 1/8 to 1/4 inch thick fireproof elastic gasket between ducts, unit and floor.

Torque applied to the drainage connection should not exceed 15 foot-pounds. For vertical upward air flow and horizontal right installation, dimensions of pipe and drain pipe can be found in Figure 3.1.

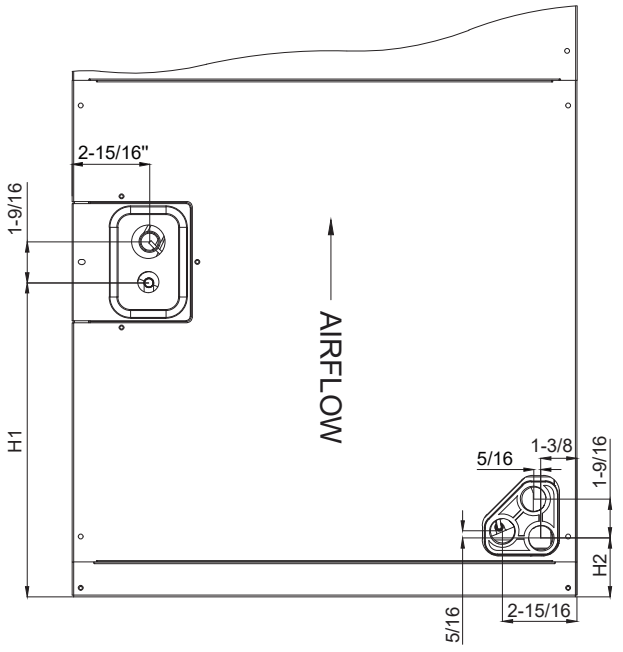


Figure 3.1 Dimension of air handler (coil part)

Table 3.1

Model	"H1" inch [mm]	"H2" inch [mm]
9K/12K/18K/24K/30K/36K/42K	12-1/4 [311]	2-1/4[57]
48K/60K	19[483]	1-25/32[45]

3.2 Vertical Downward Airflow

Convert to Vertical Downward airflow Position:

The vertical upward airflow position can be converted into the vertical downward airflow position. Remove the coil (evaporator) access panel and coil, and reinstall it by rotating 180 ° from the original position. See Figure 3.2 and 3.4.

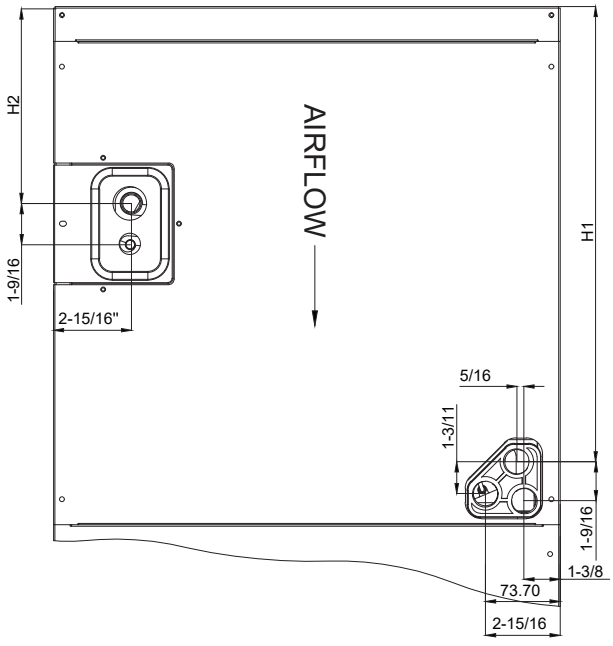


Figure 3.2 Dimension of air handler (coil part)

Table 3.2

Model	"H1" inch [mm]	"H2" inch [mm]
9K/12K/18K/24K/30K/36K/42K	17-11/16 [449]	7-9/16 [192]
48K/60K	21-11/16 [551]	4-13/32 [112]

3.3 Horizontal

Horizontal right installation is the default factory configuration for all models.

Switch to Horizontal Left Installation:

- By removing the indoor coil assembly and reinstalling the coil, the vertical upflow position can be converted into a horizontal left position, See Figure 3.3 and 3.4.
- Rotate the device by 90° to the horizontal left position, with the coil segment on the right and the blower segment on the left.
- Re-install the indoor coil by rotating 180° from the original position. Ensure that the fixing groove is fully engaged with the coil guide rail. See figs. 3.4.
- When configured to be placed horizontally above the ceiling and/or living space, it is recommended to use an additional field supplied drain pan.

Steps to Change Cabinet Direction to Vertical Downward or Horizontal Left Direction

1. Remove the screws and the front panel, and disconnect the plug of TA sensor、TC1 sensor、TC2 sensor、TCJ sensor、electronic expansion valve and leak detection sensor wire from the circuit board (Figure 3.3, Step 1).
2. Pull out the coil with sensor wire (do not disconnect TA sensor、TC1 sensor、TC2 sensor、TCJ sensor、electronic expansion valve and leak detection sensor from the coil). (Figure 3.3, Step 2)
3. Install the coil in the correct direction and fix it in place. Reinsert those sensor wire in PCBA through the gap on the cabinet cover (Figure 3.3, Step 3).

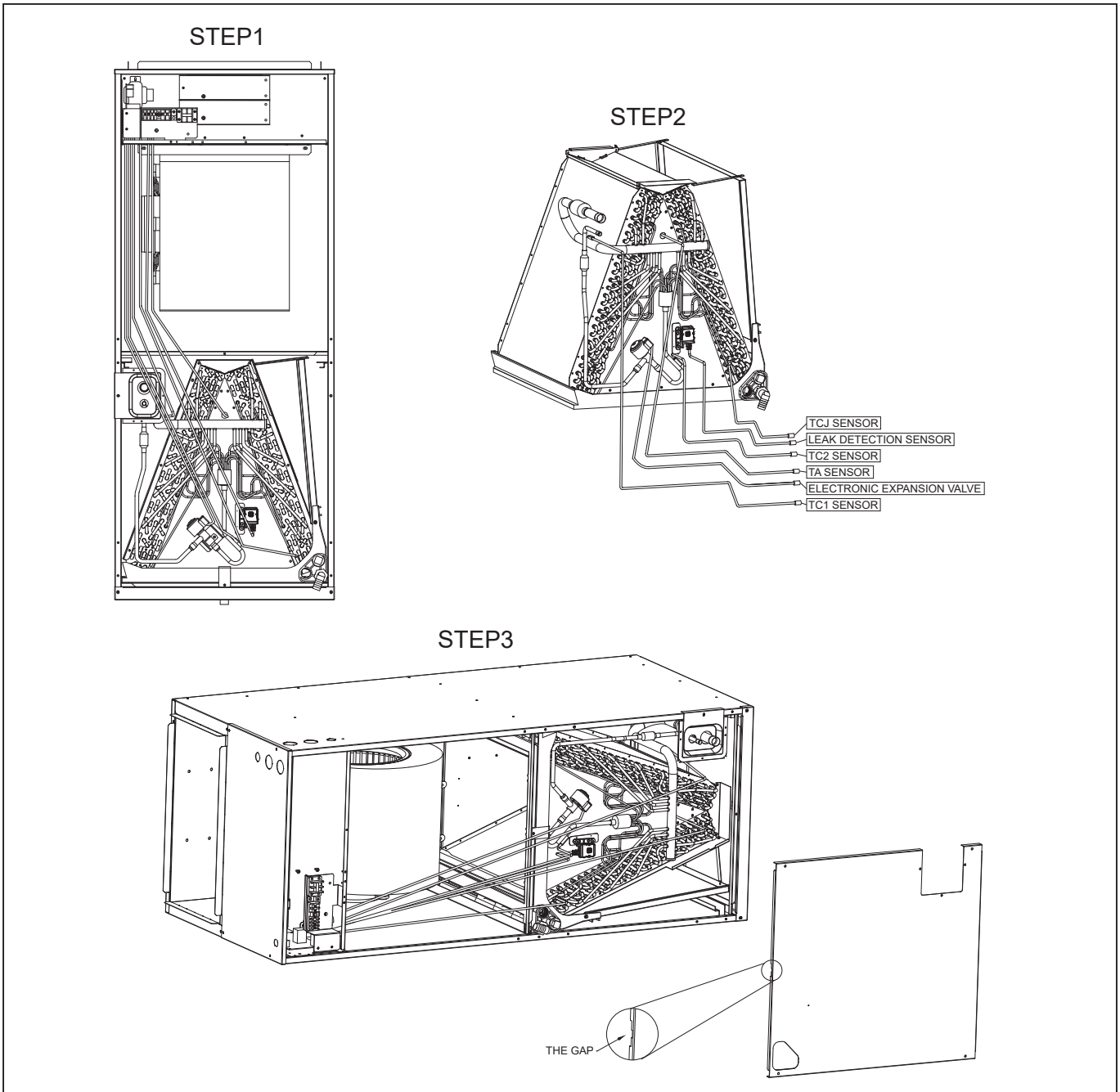


Figure 3.3 Vertical downward and horizontal left application conversion

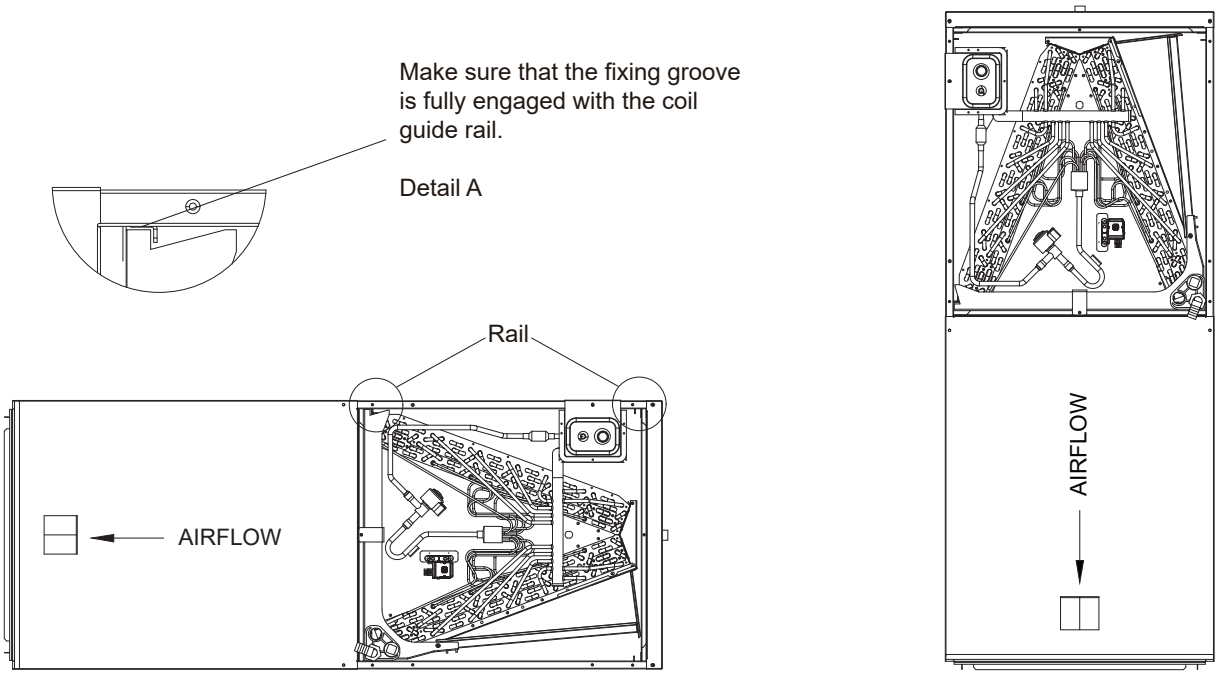


Figure 3.4 Vertical downward and horizontal left application

Note:

- Horizontal units must be configured for right hand air supply or left hand air supply. Horizontal drain pan must be located under indoor coil.
- Failure to use the drain pan will result in property damage.

Horizontal Conversion:

Remove the indoor coil and reinstall it by 180 ° from the original position. The horizontal right air outlet can be changed to the horizontal left air outlet.

3.4 Install in unconditioned space.

Note:

- There are two pairs of coil guide rails in the air handler, which are used for upward and downward air supply applications. If the air handler is installed in an unconditioned space, two unused coil guide rails should be removed to minimize condensate on the surface of the air handler. Unscrew 6 mounting screws from both sides of the cabinet to easily remove the coil guide rail.

3.5 Steps to replacing the leak detection sensor

GENERAL SPECIFICATIONS of LEAK DETECTION SENSOR:

MODEL: DRT-BGS148I-M3-A(1)

MINIMUM LIFETIME: 15 YEARS

It needs to be replaced with the same model. If in doubt, please consult the manufacturer for assistance.

1. Remove the screws and the front panel, and disconnect the plug of leak detection sensor wire from the circuit board (Figure 3.5, Step 1).
2. Remove the screws and pull out the leak detection sensor with the wire (Figure 3.5, Step 2)
3. Replace the new leak detection sensor and screw it to the triangular plate, plug and tie the wires to the electronic control board in the same way as before. Install the access panels, make sure there is no outstanding gap to allow refrigerant escape in case of leakage.

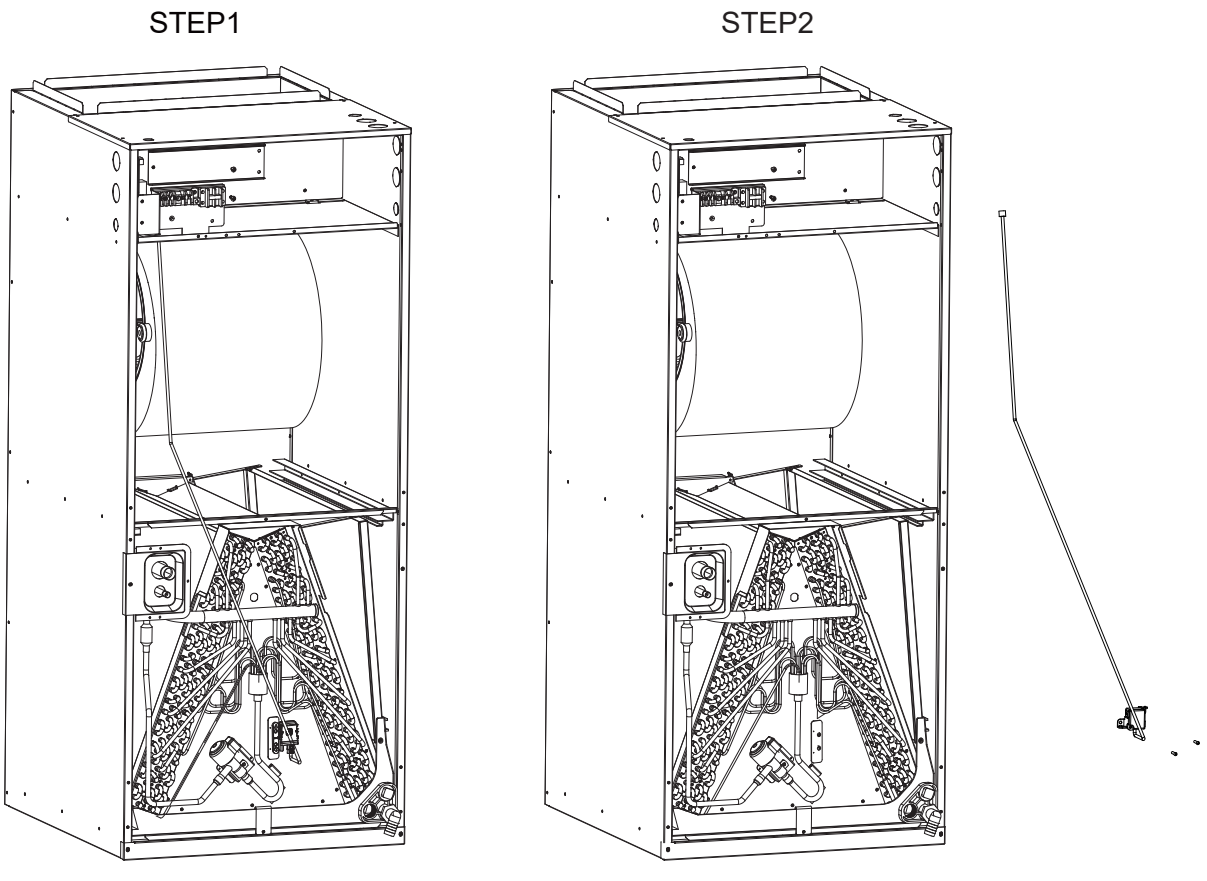


Figure 3.5 Steps to replacing the leak detection sensor

3.6 Precautions for four-way installation

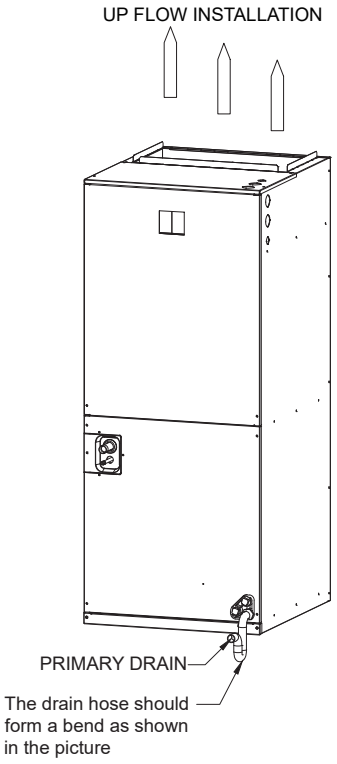


Figure 3.6-1

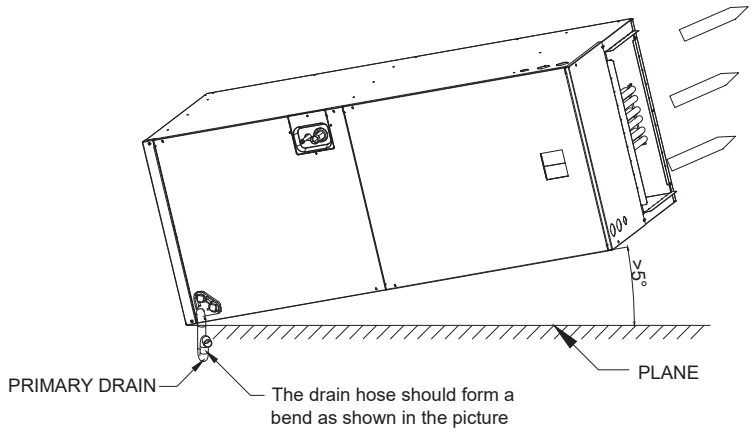


Figure 3.6-2

INSTALLATION NOTES:

1. Plug the unused drain holes with the plugs provided in the accessory bag comes with the unit.
2. The unit must be put the horizontal angel of the formation of greater than or equal to 5°.

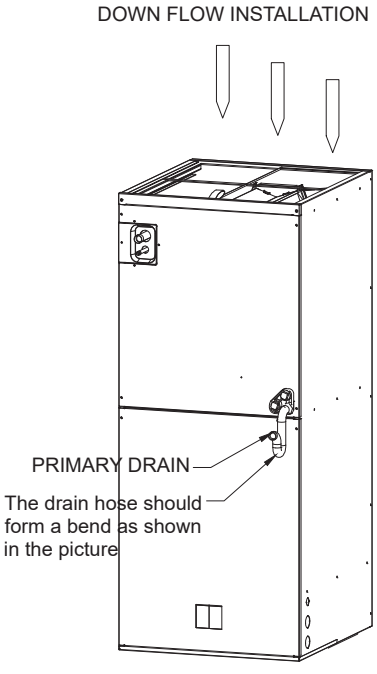


Figure 3.6-3

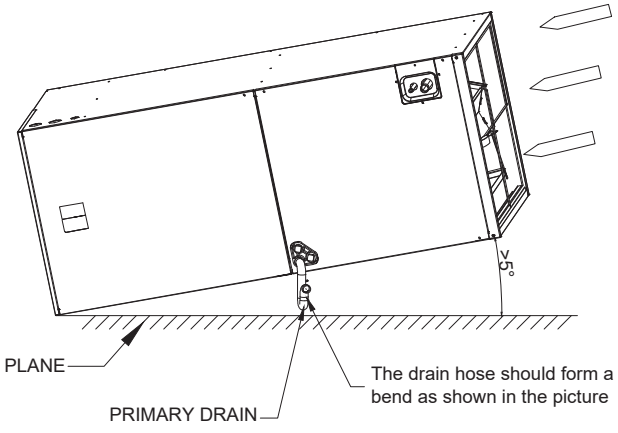


Figure 3.6-4

INSTALLATION NOTES:

1. Plug the unused drain holes with the plugs provided in the accessory bag comes with the unit.
2. The unit must be put the horizontal angel of the formation of greater than or equal to 5°.

4. Indoor Unit Connection Capacity Limit

For the indoor unit, the capacity code is decided at each capacity rank(Table 4.1).

When one or more units of [009type], [012type], or [018type] of this product are connected, the “Total capacity code of connectable indoor units” will change.

The “Total capacity code of connectable indoor units” should follow Table 4.2 according to the outdoor units to be connected.

If [009type], [012type], or [018type] are mixed, match the smallest Total capacity code of connectable indoor units.

For more information, please read the Installation Manual provided with the outdoor unit.

Table 4.1

Indoor unit capacity type	Capacity code
	Equivalent to capacity
009type	9.5
012type	12
018type	18
024type	24
030type	30
036type	36
042type	42
048type	48
060type	60

When connecting with the following outdoor units, follow Table 4.2.

MCY-MUB***8HS2P-UL

Table 4.2

MMD-U****1 VHN-UL	Outdoor unit capacity type	Capacity code	No. of connectable indoor units	Total capacity code of connectable indoor	
		Equivalent capacity		Min.	Max.
009 type	036 type	36	2 to 4	18	38
	048 type	48	2 to 5	24	51
	060 type	60	2 to 6	30	63
012 type	036 type	36	2 to 4	18	47
	048 type	48	2 to 5	24	63
	060 type	60	2 to 6	30	78
018 type	036 type	36	2 to 4	18	46
	048 type	48	2 to 6	24	61
	060 type	60	2 to 6	30	77

Adding refrigerant

When connecting with the following outdoor units, follow table 4.3 for “Additional amount of refrigerant for indoor unit” for this model.

MCY-MUB***8HS2P-UL

Table 4.3

Indoor unit capacity type		009	012	018	024	030	036	042	048	060
Indoor unit capacity code		9.5	12	18	24	30	36	42	48	60
Additional amount of refrigerant	lbs	0.88		1.32			1.76		2.20	
	kg	0.4		0.6			0.8		1.0	

5. Electrical Wiring

The wiring on site must comply with the National Electric Code (C.E.C. in Canada)and any applicable local regulations.

Warning: Electric shock

- Before installation or maintenance, please disconnect all power supply of the device. More than one disconnect switch may be required to cut off the power of the equipment. Dangerous voltage can cause serious personal injury or death.

5.1 Power Supply Wiring

It is important to have a suitable power supply connected to the device being installed. For more detailed requirements, please refer to the device rating label, wiring diagram and electrical data in the installation instructions.

- If necessary, install a branch circuit breaker of sufficient size, which is located within sight and easy to install.

When installing an electric heater, the device may be equipped with one or two 30-60 amp circuit breakers. These circuit breakers protect internal lines and act as disconnecting devices when short circuit occurs. The circuit breaker installed in the device does not provide overcurrent protection for the power connection, so its size may be larger than that of the branch circuit protection.

- The power supply line of the circuit must be a minimum 221°F copper conductor. For current carrying capacity, wire size and circuit protector requirements, please refer to electrical data in this section. The power supply protection device can be a fuse or a "HACR" type circuit breaker.
- High-voltage wires can pass through the tapping holes on the right, left or top of the device.
- Two 1-23/64" diameter tapped holes can be used to connect high-voltage wires to the device.
- The high-voltage wires must be connected to the "L1" and "L2" in the control part of the air handler.

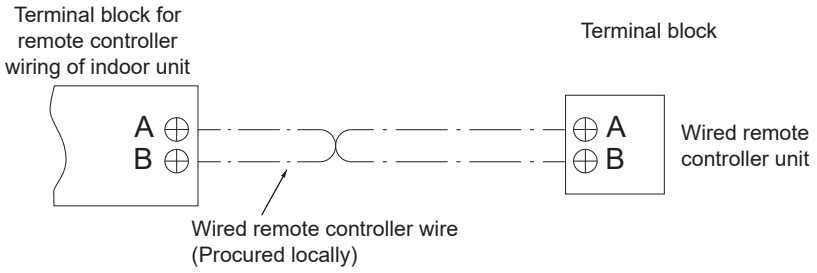
5.2 Control Wiring

- The low-voltage control line should not run in the conduit together with the high-voltage line. Keep the distance between the two catheters according to local codes.
- During on-site installation, the communication line of the indoor unit and the weak wire connecting the wire controller should be installed with the catheter.

- Scenes less than 100 feet in length should use 18 AWG colored low-voltage wires. 16 AWG wire should be used for scenes with a length of more than 100 feet.
- See Figure 2.7 for the connection position of low-voltage wires.
- For the correct wiring instructions, please refer to the wiring diagram located back side of the air handler blower access panel.
- After installation, make sure that the low-voltage and high-voltage wiring are kept separate.
- For the communication line, communication wiring between the indoor and outdoor units, please refer to the outdoor manual.
- Set up the addresses as per the installation manual supplied with the outdoor unit.

5.3 Wired remote controller wiring

As the wired remote controller wire has non-polarity, there is no problem if connections to indoor unit terminal blocks A and B are reversed.



Wiring diagram

5.4 Grounding

Danger: Electric shock

- The device must be permanently grounded. Otherwise, it will cause electric shock, personal injury or death.

- When installed according to existing electrical codes, grounding can be through wires or metal conductors.
- Grounding can also be achieved by connecting the grounding wire to the ground lug (ground lug) on the machine.
- When multiple power supply circuits are used, each circuit needs to be grounded plate separately.
- The grounding plate is located at the upper right of the cabinet.

5.5 Electrical Data

Table 5.1 Electrical data

Model	Voltage	Hertz	HP	Fan speed	MOC(A)	MCA(A)	MOP(A)
9K	208/230	60	0.33	4	2.6	4	6
12K	208/230	60	0.33	4	2.6	4	6
18K	208/230	60	0.33	4	2.6	4	6
24K	208/230	60	0.33	4	2.6	4	6
30K	208/230	60	0.5	4	3.8	5	6
36K	208/230	60	0.5	4	3.8	5	6
42K	208/230	60	0.75	4	5.4	7	10
48K	208/230	60	0.75	4	5.4	7	10
60K	208/230	60	0.75	4	5.4	7	10

5.6 MCA/MOP data of electric heat kit

Table 5.2 Applicable heat kits for AHU multi position installation

Heat kit model	AHU model	electric heat(kW) 208/230VAC	Current (A) 208/230VAC	MCA (A) 208/230VAC	MAX.Fuse or Breaker (HACR) Ampacity		Fan speed			
					208 VAC	230 VAC	2	3	4	5
21-4444-06	9K	2.8/3.4	13.46/14.8	17/19	20	30	●	●	●	●
21-4444-01		3.8/4.6	18.27/20	23/25	30	40	●	●	●	●
21-4444-06	12K	2.8/3.4	13.46/14.8	17/19	20	30	●	●	●	●
21-4444-01		3.8/4.6	18.27/20	23/25	30	40	●	●	●	●
21-4444-06	18K	2.8/3.4	13.46/14.8	17/19	20	30	●	●	●	●
21-4444-01		3.8/4.6	18.27/20	23/25	30	40	●	●	●	●
21-4444-02		5.6/6.9	26.92/30	34/38	40	50	●	●	●	●
21-4444-06	24K	2.8/3.4	13.46/14.8	17/19	20	30	●	●	●	●
21-4444-01		3.8/4.6	18.27/20	23/25	30	40	●	●	●	●
21-4444-02		5.6/6.9	26.92/30	34/38	40	50	●	●	●	●
21-4444-06	30K	2.8/3.4	13.46/14.8	17/19	20	30	●	●	●	●
21-4444-01		3.8/4.6	18.27/20	23/25	30	40	●	●	●	●
21-4444-02		5.6/6.9	26.92/30	34/38	40	50	●	●	●	●
21-4444-06	36K	2.8/3.4	13.46/14.8	17/19	20	30	●	●	●	●
21-4444-01		3.8/4.6	18.27/20	23/25	30	40	●	●	●	●
21-4444-02		5.6/6.9	26.92/30	34/38	40	50	●	●	●	●
21-4444-06	42K	2.8/3.4	13.46/14.8	17/19	20	30	●	●	●	●
21-4444-01		3.8/4.6	18.27/20	23/25	30	40	●	●	●	●
21-4444-02		5.6/6.9	26.92/30	34/38	40	50	●	●	●	●
21-4444-03		7.5/9.2	36.1/40	46/50	50	60	●	●	●	●
21-4444-06	48K	2.8/3.4	13.46/14.8	17/19	20	30	●	●	●	●
21-4444-01		3.8/4.6	18.27/20	23/25	30	40	●	●	●	●
21-4444-02		5.6/6.9	26.92/30	34/38	40	50	●	●	●	●
21-4444-03		7.5/9.2	36.1/40	46/50	50	60	●	●	●	●
21-4444-06	60K	2.8/3.4	13.46/14.8	17/19	20	30	●	●	●	●
21-4444-01		3.8/4.6	18.27/20	23/25	30	40	●	●	●	●
21-4444-02		5.6/6.9	26.92/30	34/38	40	50	●	●	●	●
21-4444-03		7.5/9.2	36.1/40	46/50	50	60	●	●	●	●

● Heat kit applicable for AHU 4-way position installation.

● Ampacities for MCA and Fuse/breaker including the blower motor

Table 5.3 Heater Kit Accessories

Model	Description	9K	12K	18K	24K	30K	36K	42K	48K	60K
21-4444-06	3.75kW heating kit, single-pole circuit breaker	●	●	●	●	●	●	●	●	●
21-4444-01	5kW heating kit, single-pole circuit breaker	●	●	●	●	●	●	●	●	●
21-4444-02	7.5kW heating kit, single-pole circuit breaker	×	×	●	●	●	●	●	●	●
21-4444-03	10kW heating kit, single-pole circuit breaker	×	×	×	×	×	×	●	●	●

● indicates availability, and × indicates unavailability

Warning:

- This product is used with A2L type refrigerant, the electric heater must meet the requirements of the UL 60335-2-40 standard for A2L type refrigerant.
- The electric heating must be installed by qualified personnel. Refer to current regulations and laws for installation location.
- This appliance is not intended for use by persons (including children) 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 to ensure that they do not play with the appliance.
- The appliance shall be installed in accordance with national wiring regulations.

6. Airflow Performance

The air flow data is based on the cooling performance of coil and without filter. Performance table, select the appropriate product.

External static pressure ESP should be kept within the minimum and maximum limits shown in the following table to ensure the normal operation of cooling, heating and electric heating.

Table 6.1 Air flow performance

Model size of air processor	Motor speed		SCFM									
			External Static Pressure-Inch Water Column [kPa]									
			0[0]	0.1[.025]	0.2[.050]	0.3[.075]	0.4[.100]	0.5[.125]	0.6[.150]	0.7[.175]	0.8[.200]	0.9[.225]
9K	Tap (2)	SCFM	732	630	510	387	278	141	-	-	-	-
		Watts	38	43	48	53	58	63	-	-	-	-
	Tap (3)	SCFM	766	667	562	440	326	209	-	-	-	-
		Watts	47	53	58	64	70	75	-	-	-	-
	Tap (4)	SCFM	775	680	578	459	347	234	128	-	-	-
		Watts	43	48	54	60	65	69	72	-	-	-
	Tap (5)	SCFM	896	811	728	631	529	429	338	-	-	-
		Watts	61	67	73	79	85	92	97	-	-	-
12K	Tap (2)	SCFM	774	676	574	453	340	224	-	-	-	-
		Watts	43	48	53	59	64	69	-	-	-	-
	Tap (3)	SCFM	809	715	619	502	395	285	178	-	-	-
		Watts	47	53	58	64	70	75	79	-	-	-
	Tap (4)	SCFM	827	737	647	531	424	325	219	-	-	-
		Watts	50	56	61	68	73	79	84	-	-	-
	Tap (5)	SCFM	946	868	791	706	605	514	425	-	-	-
		Watts	71	77	83	90	97	103	109	-	-	-
18K	Tap (2)	SCFM	836	753	675	561	468	371	269	-	-	-
		Watts	56	61	67	73	78	84	89	-	-	-
	Tap (3)	SCFM	910	831	759	656	568	482	397	-	-	-
		Watts	68	74	80	87	93	99	105	-	-	-
	Tap (4)	SCFM	985	911	846	774	668	593	514	-	-	-
		Watts	84	91	98	104	112	118	124	-	-	-
	Tap (5)	SCFM	1097	1026	970	907	840	736	671	-	-	-
		Watts	113	120	127	134	141	150	156	-	-	-
24K	Tap (2)	SCFM	808	723	622	540	462	371	263	-	-	-
		Watts	61	67	73	78	81	86	92	-	-	-
	Tap (3)	SCFM	971	895	826	738	667	600	535	-	-	-
		Watts	98	104	111	119	125	129	133	-	-	-
	Tap (4)	SCFM	1012	939	873	791	752	685	626	-	-	-
		Watts	110	117	124	131	145	150	154	-	-	-
	Tap (5)	SCFM	1127	1060	1004	939	865	806	749	-	-	-
		Watts	149	156	163	171	180	187	193	-	-	-
30K	Tap (2)	SCFM	1059	994	936	869	759	691	632	557	479	398
		Watts	111	118	125	132	141	146	152	160	165	172
	Tap (3)	SCFM	1163	1099	1046	991	927	822	760	704	641	574
		Watts	142	150	157	164	173	181	187	195	200	208
	Tap (4)	SCFM	1289	1230	1182	1132	1082	1023	923	866	812	762
		Watts	188	197	206	213	222	231	241	247	255	263
	Tap (5)	SCFM	1372	1314	1268	1225	1179	1128	1065	965	914	866
		Watts	225	235	241	251	260	270	282	287	294	303

Model size of air processor	Motor speed		SCFM									
			External Static Pressure-Inch Water Column [kPa]									
			0[0]	0.1[.025]	0.2[.050]	0.3[.075]	0.4[.100]	0.5[.125]	0.6[.150]	0.7[.175]	0.8[.200]	0.9[.225]
36K	Tap (2)	SCFM	1059	994	936	869	759	691	632	557	479	398
		Watts	111	118	125	132	141	146	152	160	165	172
	Tap (3)	SCFM	1163	1099	1046	991	927	822	760	704	641	574
		Watts	142	150	157	164	173	181	187	195	200	208
	Tap (4)	SCFM	1289	1230	1182	1132	1082	1023	923	866	812	762
		Watts	188	197	206	213	222	231	241	247	255	263
	Tap (5)	SCFM	1372	1314	1268	1225	1179	1128	1065	965	914	866
		Watts	225	235	241	251	260	270	282	287	294	303
42K	Tap (2)	SCFM	1324	1270	1182	1177	1133	1087	1045	971	922	881
		Watts	213	219	229	238	247	255	264	273	281	290
	Tap (3)	SCFM	1476	1426	1384	1344	1303	1264	1225	1188	1146	1078
		Watts	285	297	307	317	325	336	346	355	365	378
	Tap (4)	SCFM	1616	1569	1530	1488	1454	1419	1383	1350	1315	1281
		Watts	366	379	389	400	412	423	434	448	457	471
	Tap (5)	SCFM	1796	1751	1714	1679	1647	1614	1581	1551	1518	1488
		Watts	496	510	522	535	549	562	571	590	599	614
48K	Tap (2)	SCFM	1528	1462	1405	1349	1297	1239	1185	1081	1019	968
		Watts	201	211	223	233	245	254	264	282	290	297
	Tap (3)	SCFM	1706	1646	1592	1542	1494	1447	1395	1344	1294	1191
		Watts	273	286	298	310	322	334	345	355	365	387
	Tap (4)	SCFM	1862	1804	1754	1706	1659	1617	1574	1524	1479	1438
		Watts	348	362	377	390	403	416	430	441	454	465
	Tap (5)	SCFM	2056	2001	1955	1914	1866	1826	1791	1749	1705	1665
		Watts	469	483	497	513	528	543	557	574	584	597
60K	Tap (2)	SCFM	1644	1581	1526	1476	1425	1373	1324	1274	1182	1111
		Watts	967	930	898	868	838	808	779	749	696	653
	Tap (3)	SCFM	1798	1733	1683	1638	1591	1545	1505	1452	1409	1365
		Watts	320	331	344	357	371	384	399	410	424	439
	Tap (4)	SCFM	2062	2010	1964	1920	1879	1838	1798	1759	1719	1682
		Watts	473	490	505	522	536	552	569	586	601	617
	Tap (5)	SCFM	2255	2201	2161	2122	2084	2044	2008	1966	1919	1872
		Watts	620	635	652	670	686	705	722	737	747	757

Note:

1. The air distribution system has the greatest influence on air flow. Therefore, the contractor should only use the procedures recognized by the industry.
2. The design and construction of air duct should be done carefully. Poor design or process will lead to a significant decline in system performance.
3. The air supply duct should be set along the periphery of the air-conditioned space with appropriate size. Improper location or insufficient airflow may lead to insufficient ventilation or noise in the ductwork.
4. The installer should balance the air distribution system to ensure that all rooms in the room have proper quiet airflow. The speedometer or airflow hood can be used to balance and verify the branch duct and system airflow (CFM).

7. Ductwork

On-site ductwork must comply with National Fire Protection Association NFPA 90A, NFPA 90B and any applicable local ordinance(s).

Warning: Fire and carbon monoxide

- Under no circumstances should the return ductwork be connected to any other heat-producing equipment, such as mantelpiece, stove, etc. Unauthorized use of such equipment may cause fire, carbon monoxide poisoning, explosion, personal injury or property damage.

The metal ductwork operating in the air-conditioned space must be insulated and covered with a moisture-proof layer. If the construction and installation are carried out according to SMACNA glass fiber duct construction standard, the fiber duct system can be used. The ductwork must meet the U/L standard 181 test of Class I air duct by National Fire Protection Association of America. Check the local regulations of ductwork and insulation requirements.

- The duct system must be designed within the external static pressure range of the designed operation of the device. Adequate airflow in the system is very important. Ensure that the supply and return ductwork, grid, special filter screen, accessories, etc. are included in the total resistance. Please refer to the airflow performance table in Section 5 of this manual.
- Design the ductwork according to "ACCA" manual "D" residential air conditioning design and equipment selection in winter and summer. The latest version can be obtained from "ACCA" American Air Conditioning Contractors Association, 1513 16th Street NW, Washington, DC, 20036. If the ductwork contains flexible air pipes, make sure that the system takes into account the pressure drop information (straight line length plus all turns) shown in "ACCA" manual "D".
- The air duct connector should be connected to the 3/4 "flange on the equipment. Install a flange around the air outlet.

If the duct connector has an elbow, its size should not be smaller than that of the flange on the outlet of the device.

The front flange on the return duct (if connected to the fan casing) must not be screwed into the area where the power cord is located. Drill bits or sharp screw tips can damage the insulation of the internal wires of the equipment.

- Use appropriate fasteners suitable for the type of duct used, fix the outlet and return ducts to the flanges of the device, and connect the ducts to the device with adhesive tape as needed to prevent air leakage.

8. Refrigerant Pipe Connection

Before the refrigerant pipe connection is completed, keep the coil sealed. Please refer to the installation, operation and maintenance manual of the external machine for detailed information on refrigerant line size, duct installation and filling amount.

Pull out the rubber plugs and check whether there is nitrogen flowing out.

Warning: Personal injury hazard

- Failure to follow this warning could result in personal injury.
- Wear eye protection.

Note:

- Factory nitrogen charge may escape past rubber plugs during storage. This does not indicate a leaking coil nor warrant return of the coil.

Care should be taken to connect the refrigerant pipe so that it will not obstruct the maintenance channel in front of the equipment.

Before brazing, the metal 1 and 2 need to be uninstalled. See Figure 8.1;

Pull out the evaporator (6 inches) so that longer refrigerant line could be exposed for wet rag and brazing.

During brazing, nitrogen should flow through the refrigerant pipe.

Use a brazing shield to protect the paint of the cabinet, and use a wet rag to protect the rubber gasket of the pipeline from being damaged by the torch flame. During the brazing process, protect the temperature sensing bulb of TXV with wet cloth or approved heating paste. See Figure 8.1.

Field-made refrigerant joints indoors shall be tightness tested. The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the MAXIMUM ALLOWABLE PRESSURE. No leak shall be detected.

After completion of field piping for split systems, the field pipework shall be pressure tested with an inert gas and then vacuum tested prior to refrigerant charging. The minimum test pressure for the system shall be the low side design pressure (See nameplate for detail).

After brazing, pull in the evaporator and put the metal 1 and 2 back to the cabinet.

After the refrigerant pipeline connection is completed, seal and fill the surrounding gaps with pressure-sensitive gaskets.

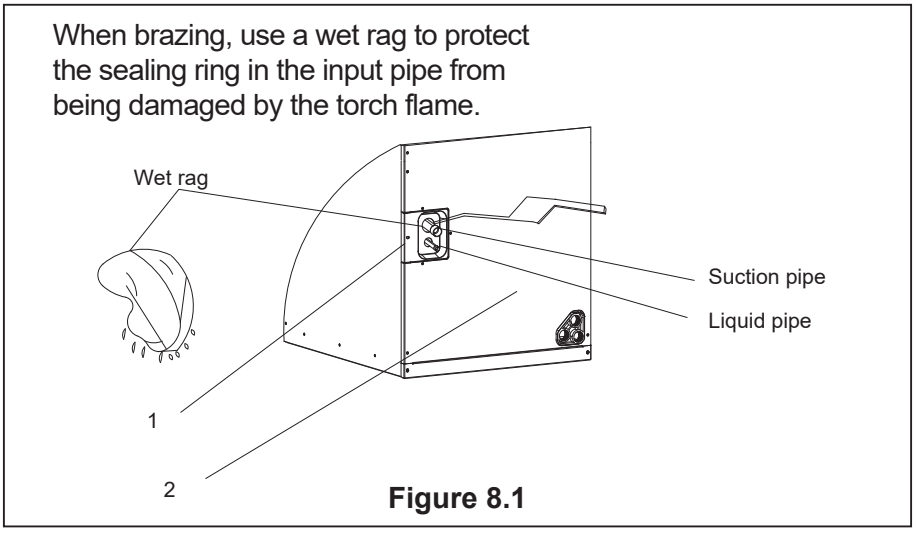


Figure 8.1

After brazing, make sure that there is no refrigerant leakage. After checking the vapor leakage, make sure that the pipeline is insulated, as shown in Figure 8.2.

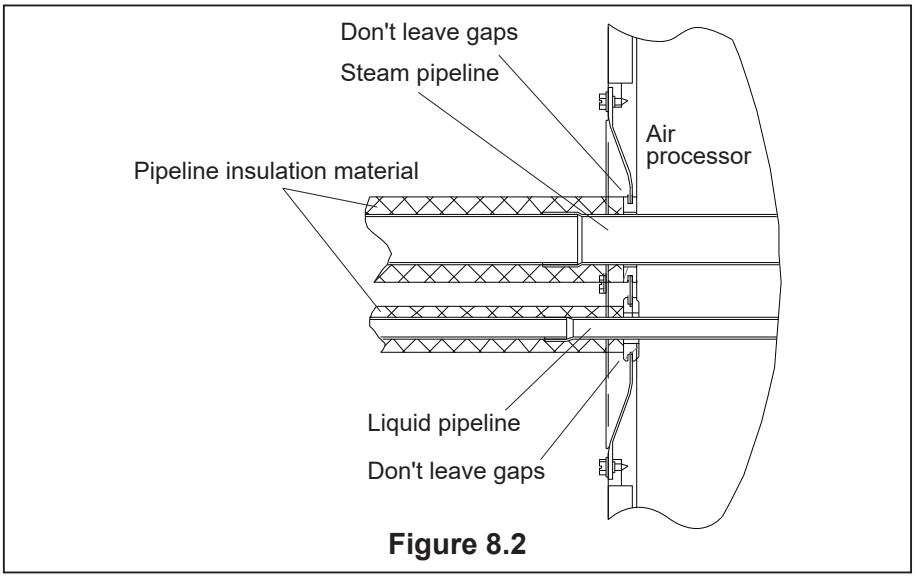


Figure 8.2

8.1 Condensate Drain Connection

For specific requirements, please consult local codes.
For the required condensate trap installation, please refer to Figure 8.3 and the following information.

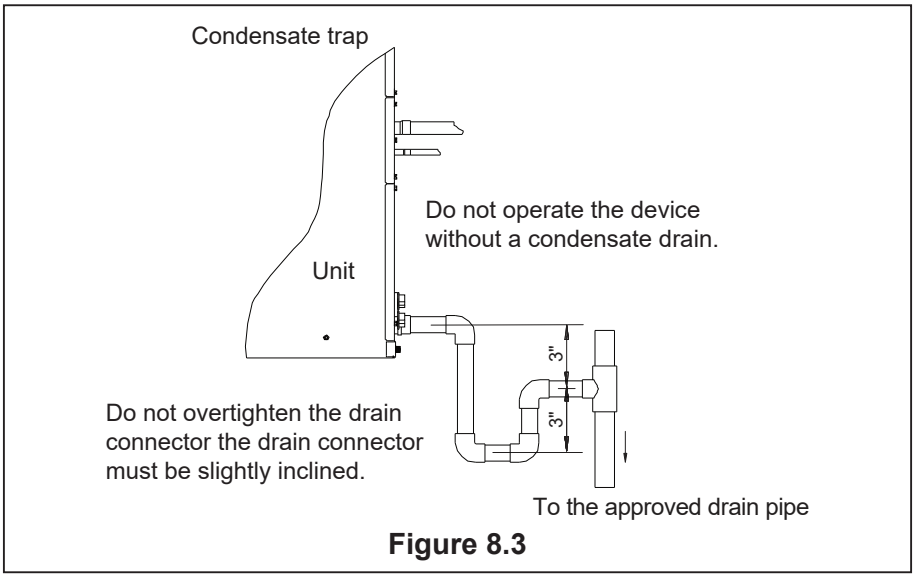


Figure 8.3

1. When connecting the drain connector to the drain pan, use a thin layer of PTFE paste, silicone or PTEF, and tighten it by hand.
2. When connecting the drain connector to the drain pan, don't over tighten it. Tight fittings will crack the pipe connection on the drain pan.

- Make sure that the drainage pipe will not block the inlet in front of the device. The minimum clearance required for removal and maintenance of filter screen, coil or fan is 24 inches.
- Make sure that the machine is placed horizontally or slightly inclined to the main drain outlet, so that water can be completely drained from the machine.
- Do not reduce the drain pipe size to less than the connection size provided on the condensate drain pan.
- All horizontal drainage pipes must be inclined downward at a slope of at least 1/8 inch per foot to ensure proper drainage.
- Do not connect the condensate drain line to the closed or open sewage pipe. Drain the condensate to an open drainage pipe or to a safe outdoor area.
- Where necessary, the drainage pipeline should be insulated to prevent damage caused by condensation water formed on the outer surface of the pipeline.
- If necessary, be prepared to disconnect and clean the main drainage pipe. Install a 3-inch elbow on the main drainage pipe as close as possible to the unit. Make sure that the top of the elbow is lower than the joint of the drain pan to allow the drain pan to drain completely (see Figure 8.3).
- Auxiliary drainage pipes should be extended to places where condensate can be easily seen. If the condensed water starts to flow out from the auxiliary drain pipe, the homeowner should pay attention to the possible problems.
- Plug the unused drain connector with the plug in the parts package provided with the equipment. Use a thin layer of Teflon paste, silicone or Teflon tape to form a waterproof seal.
- After installation, test the condensate drain pan and drain pipe. Pour water into the drain pan, enough to fill the drain traps and pipes. Check to ensure that the drain pan completely drains water, no leakage is found in the drain pipe fittings, and water is discharged from the main drain pipe terminal.

9. Air Filter (Not Factory Installed)

The filter is not included in the device and must be provided on site.

The size of external filters or other filtering devices must meet the maximum flow rate of 300ft/min, or meet the recommended value of filter type.

The application and placement of filter is very important for airflow, which may affect the performance of heating and cooling system. Reduced airflow will shorten the life of the main components of the system, such as motors, components, thermal relays, evaporator coils or compressors. Therefore, we recommend that the return air duct system has only one filter position. For systems without return air filter grids, multiple filter grids can be installed at each return air opening.

If a high-efficiency filter screen or electronic air filtration system is used, it is very important that the air flow rate is not reduced. If the air flow decreases, the overall performance and efficiency of the device will decrease. It is strongly recommended to contact professional installation technicians to ensure the correct installation of such filtration systems.

Do not double filter the return air system. Do not filter the air supply duct system. This will change the performance of the device and reduce the airflow.

Warning: Fire risk

- Do not operate the system without a filter. Part of the dust suspended in the air may temporarily stay on the duct and the air outlet of the room. Any circulating dust particles may be heated and burnt due to contact with AHU elements. This residue will stain the ceiling, walls, curtains, carpets and other items in the house. When some types of candles, oil lamps or igniters burn, soot may be generated in the filter.

10. Installation Size of Filter

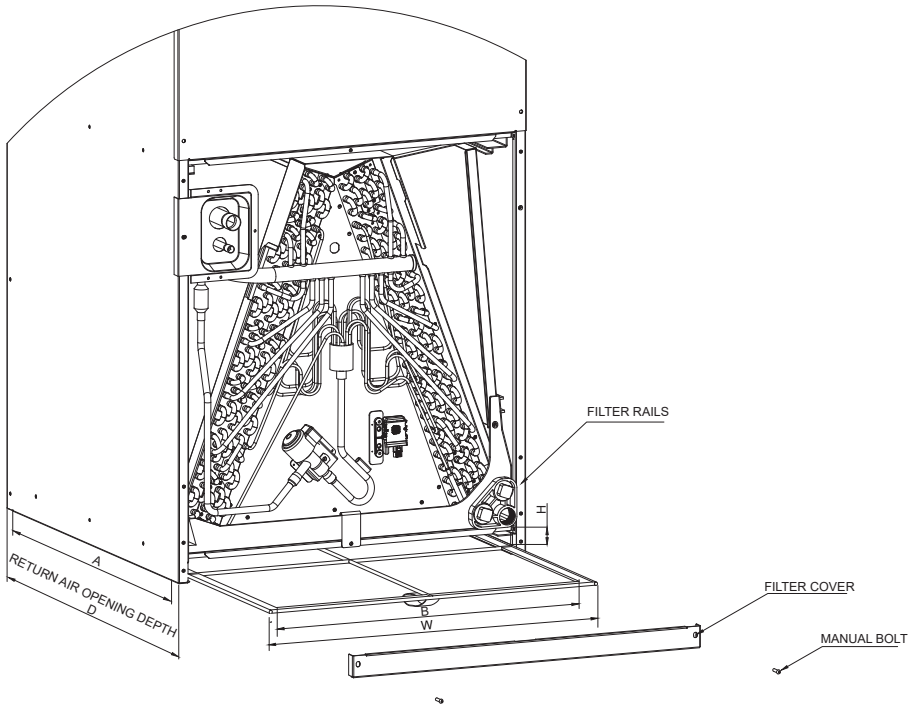


Figure 10.1 Installation of filter

The filter is included in the device and must be provided on site.

When installing the indoor unit, regardless of the installation method, make sure that the filter is installed as shown in Figure 10.1.

Table 10.1 Size number

Model	Filter size inches [mm]	"W" Inch [mm]	"D" Inch [mm]	"H" Inch [mm]	Return Width "A" inch [mm]	Return Length "B" inch [mm]
9K/12K/18K/24K/ 30K/36K/42K	18.1×21.4[460×544]	18.3 [466]	21.6 [548]	1 [25.4]	20.8 [528]	16.3 [414]
48K/60K	20.5×23.8[521×605]	20.7 [526]	23.9 [608]	1 [25.4]	23 [584]	18.8 [478]

Removal/Installation of Air Filter

- Manually remove the bolts and remove the filter cover, as shown in Figure 10.1.
- Hold the edge of the strainer and pull it out.
- Install a new filter so that the arrow on the filter screen is consistent with the airflow direction.
- If a reusable filter is used, please clean it according to the manufacturer's specifications before reinstalling it.
- The filter needs to meet UL 900 standare.

11. Wiring Diagram

Warning: Electric shock

● Before repairing or installing this device, please disconnect all power supplies. There may be multiple power sources. Otherwise, property damage, personal injury or death may result.

Danger: Electric shock

● The device must be properly grounded and protected by a circuit breaker or fuse.

Warning: Electric shock

● These devices must be wired and installed according to all national and local safety codes.

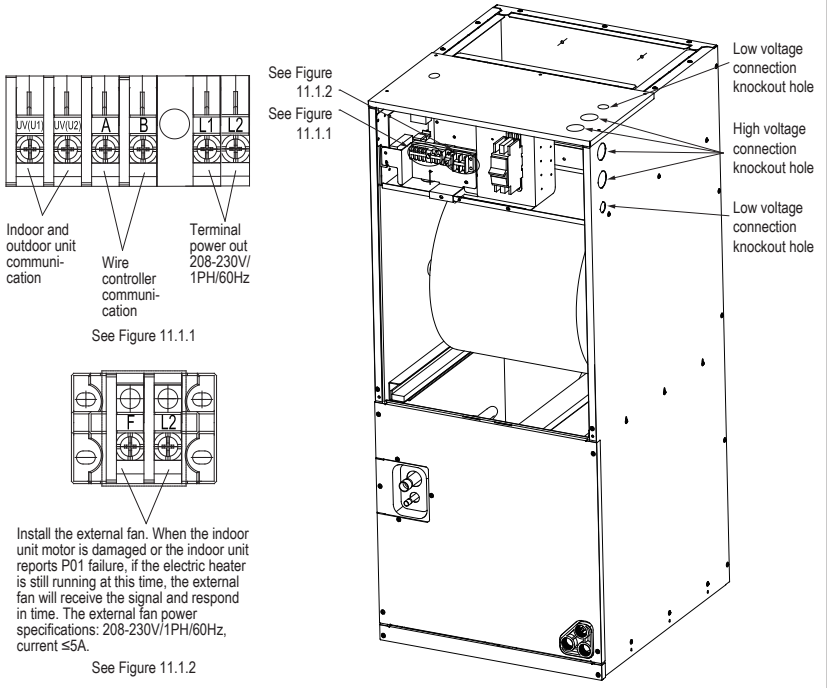
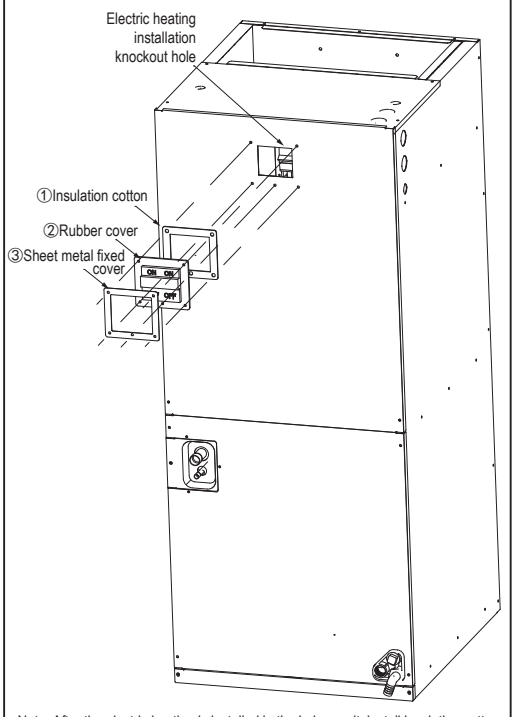


Figure 11.1



Note: After the electric heating is installed in the indoor unit, install insulation cotton, rubber cover, and sheet metal fixing cover in the sequence of ①, ② and ③. To prevent condensation inside the indoor unit, ensure good sealing performance after installation. Materials ① and ③ are placed in the attachment of the indoor unit. Material ② has been installed on the front panel of the indoor unit.

Figure 11.2

● To avoid electric shock, make sure:

1) Equipment is properly grounded.

2) The main power plug of the device has been connected to the ground wire (do not change it).

3) To avoid the circuit breaker of electric heating, route the power cable from above the circuit breaker.

The factory status of the indoor unit wind gear cable is shown in Figure 11.3:

The wind gear is 2-3-4 and the static pressure is standard static pressure.

If user want to adjust the indoor unit to the maximum static pressure, see Figure 11.4: change the wind gear to 3-4-5.

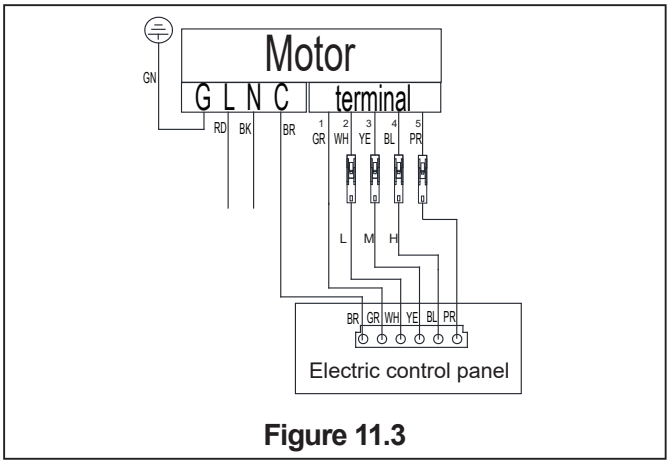


Figure 11.3

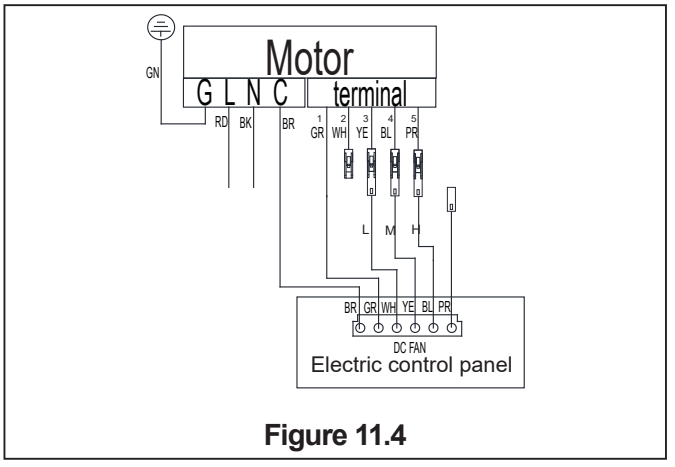
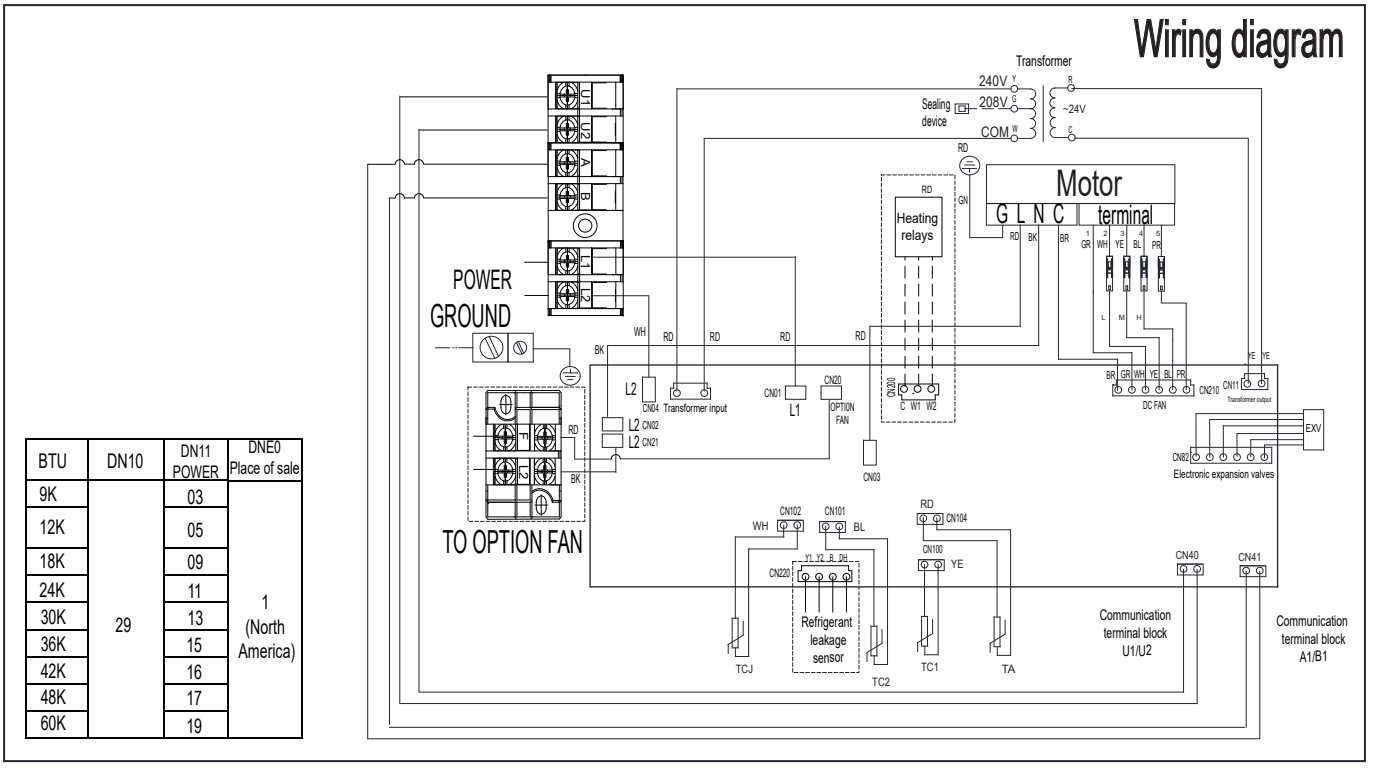


Figure 11.4

Table 11.1 Wire gauge of high voltage system

Type (Btu/ hour)			9K	12K	18K	24K	30K	36K	42K	48K	60K
Power		Phase	Single								
		Voltage/frequency	208/230VAC, 60 Hz								
Wire gauge	Indoor unit power cord	Line quantity	3								
		Wire diameter (AWG)	16								



BTU	DN10	DN11 POWER	DNE0 Place of sale
9K	29	03	1 (North America)
12K		05	
18K		09	
24K		11	
30K		13	
36K		15	
42K		16	
48K		17	
60K		19	

NOTE: *For reference only, the actual wiring diagram shall prevail*

12. Applicable Controls

PC Board Option Switch/Connector Specification (ACD-006)

Function	Connectior	Pin	Function	Remarks
Power supply	CN01	1	AC230V	This is the input of the power supply.
	CN04	1	AC230V	
Fan power supply	CN02	1	AC230V	This is the input of the fan power supply.
	CN03	1	AC230V	
Transformer power input	CN10	1	AC230V	This is the input of the transformer power supply.
		3	AC230V	
Transformer output	CN11	1	AC24V	This is the output of the transformer.
		2	AC24V	
Optional fan output	CN20	1	Optional fan output	When the electric heating is running and fan P01 error occurs, it will be turned on.
	CN21	1	AC230V	-
Fan output	CN32	1	DC12V(COM)	Factory default setting : ON when indoor unit in operation and OFF when indoor unit at rest.
		2	Fan output	
Main bus communication	CN40	1	Main BUS	This is used for communication between indoorunit and outdoor unit.
		2	Main BUS	
Sub bus communication	CN41	1	Sub BUS	This is used for communication between indoorunit and remote controller.
		2	Sub BUS	
Optional output	CN60	1	DC12V(COM)	-
		2	Defrost output	ON during defrost.
		3	Thermo output	ON while thermo ON.
		4	Cooling output	ON during cooling.
		5	Heating output	ON during heating.
		6	Fan output	ON while fan ON.
HA	CN61	1	ON/OFF input	Can be selected by I.DN[2E] J01:Connect - Pulse(factory default setting)/ Cut - Static input select
		2	0V(COM) for pin1,3	-
		3	Remote control disabling input	Enables/disables start/stop control via remote control.
		4	In-operation output	ON during operation.
		5	DC12V for pin4,6	-
		6	Alarm output	ON while alarm ON.
CHK operation check	CN71	1	Check mode input	Used for indoor operation check (prescribed operational status output, such as indoor fan"H", to be generated without communication with outdoor unit or remote controller).
		2	0V	
DIS display mode	CN72	1	Display mode input	Product display mode - Communication just between indoor unit and remote control becomes available (upon turning on of power). Timer short-circuited out (always)."
		2	0V	
FS unit	CN81	1	DC12V(COM)	This is connected to the FS unit. Can be selected by I.DN[FD](Priority of operating mode) and I.DN[FE](System address) I.DN[FD]=0 Priority heating(Factory default setting) I.DN[FD]=1 Priority cooling I.DN[FD]=2 heating only I.DN[FD]=3 cooling only I.DN[FE]=99 not connected I.DN[FE]System address setting range: 1~64.
		2	EP valve	
		3	Balance valve	
		4	Intake valve	
		5	Discharge valve	

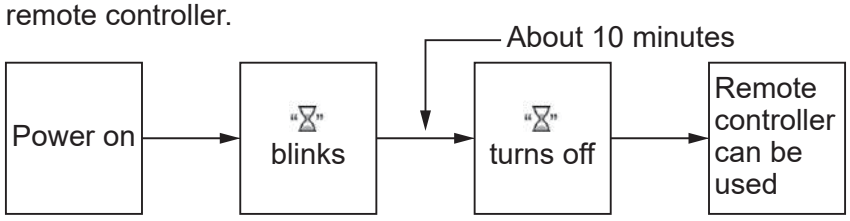
Function	Connectior	Pin	Function	Remarks
PMV output	CN82	1	PMV output A	This is connected to the PMV coil for controlling PMV opening.
		2	PMV output B	
		3	PMV output /A	
		4	PMV output /B	
		5	DC12V(COM)	
		6	DC12V(COM)	
TC1 input	CN100	1	TC1 temperature sensor input	This is for connecting the TC1 (heat exchanger outlet) temperature sensor.
		2	0V	
TC2 input	CN101	1	TC2 temperature sensor input	This is for connecting the TC2 (middle of the heat exchanger) temperature sensor.
		2	0V	
TCJ input	CN102	1	TCJ temperature sensor input	This is for connecting the TCJ (heat exchanger inlet) temperature sensor.
		2	0V	
TA input	CN104	1	TA temperature sensor input	This is for connecting the TA (ambient) temperature sensor.
		2	0V	
Electric heater output or Secondary heating output	CN200	1	AC24V(COM)	-
		2	Heater 1 output	Can be selected by I.DN := 1)Electrical heater output (I.DN[301]=0)-Factory default setting 2)Secondary heating output* (I.DN[301]=1) *Normal mode or Flip of secondary can be selected by I.DN[C5]
		3	Heater 2 output	
		4	Heater 3 output	
		5	Heater 3 output	
Fan output	CN210	1	-	-
		2	FAN tap "HH" output	Fan speed(High).
		3	FAN tap "H" output	Fan speed(Med).
		4	FAN tap "L" output	Fan speed(Low).
		5	-	-
		6	AC24V(COM)	-
Refrigerant leak sensor input	CN220	1	0V	-
		2	Life status input	The Pulse Width Modulation (PWM) period is 375 ms. The PWM duty cycles are: 0%, 20%, 60%, 80%, 100% 0% Initial operation Up to 2 seconds, until first measurement is ready. 20% Normal operation 60% ASC warning Measurements are still reliable, but the sensor should be replaced at the next scheduled maintenance. 80% ASC limit measurements may no longer be reliable, and the sensor needs to be replaced (PWM 80%). 100% Power supply OFF
		3	Alarm status input	The Pulse Width Modulation (PWM) period is 375 ms. The PWM duty cycles are: 0%, 20%, 60%, 80%, 100% 0% Initial operation Up to 2 seconds, until first measurement is ready. 20% Normal operation - monitoring 60% Alarm Concentration of refrigerant above 10'000 ppm. The Alarm signal is on while a concentration above 10'000 ppm is detected and stays on for 30seconds after the concentration has returned below 10'000 ppm. 80% Sensor fault Sensor reading may not be accurate. This can be due to a permanent error, due to a temporary condition (e.g., ambient conditions outside operating range), or due to a temporary internal error. 100% Power supply OFF
		4	5V	-

Requirement

When the unit is used for the first time, it takes a while for the remote controller to recognize operation input after the power is turned on, This is not a malfunction.

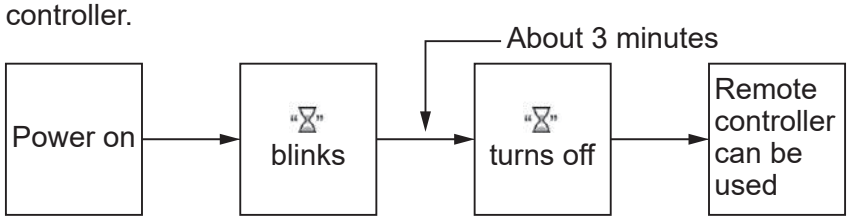
Turning on the power the first time after installation

It takes approximately 10 minutes until you can operate the remote controller.



Turning on the power the 2nd time after onward

It takes approximately 3 minutes until you can operate the remote controller.



- Normal settings were made when the indoor unit was shipped from factory.

  Change the indoor unit settingsas required.

- Use the built-in remote controller to change thesettings.

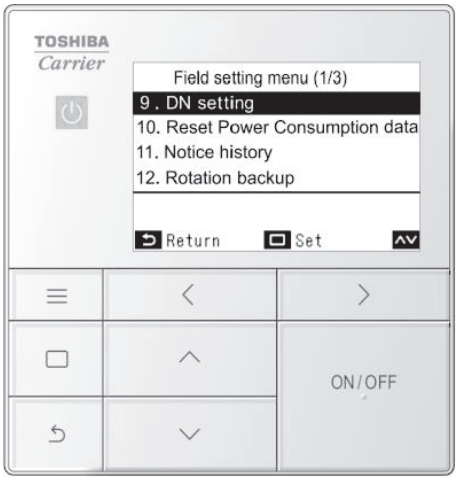
  *The settings cannot be changed using the wireless remote controller, simplified wired remote controller, or remote-controller-less system (for central remote controller only).

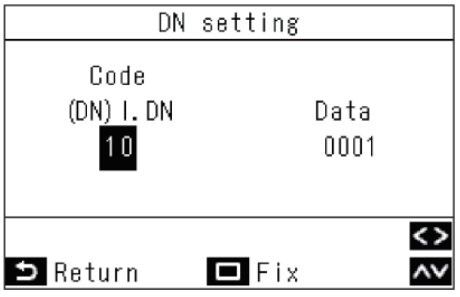
Basic procedure for changing settings

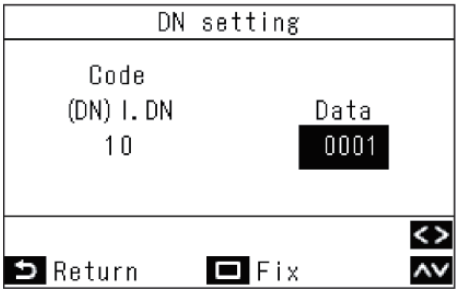
Change the settings while the air conditioner is not working.
(Stop the air conditioner before making settings.)
The display content for setting differs from that on the former types of remote controller (RBC-AWSU52-UL)

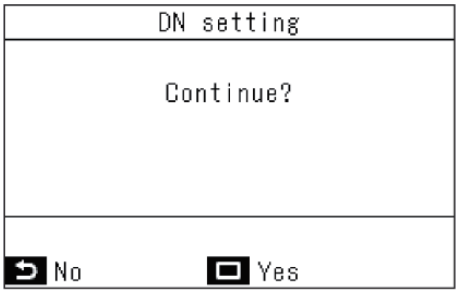
Caution:

- Set only the "Code(DN)" shown in the following table: Do not set any other "Code(DN)".
- If a "Code(DN)" not listed is set, it may not be possible to operate the air conditioner or other trouble with the product may result.









1. In the "Fleld setting menu" screen, press [ ] and [ ] to select "DN setting", and then press [Set/Fix]
2. Press [ ] and [ ] to select "Indoor unit" or "Outdoor unit", and the press [Set/Fix]

   →If "Indoor unit" was selected, the fans and louvres of the indoor units operate.

   When doing group connections:

   →The fans and louvres of the selected indoor units operate.
3. Press [ ] to black highlight the item code (DN), and then press [ ] and [ ] to set the item code.
4. Press [ ] to black highlight the data, and then press [ ] and [ ] to set the data.
5. After finishing setting the data of the item code(DN), press [Set/Fix]

   →"Continue?" is displayed.
6. To set the data of other item codes (DN), press [Set/Fix]

   To not do other settings, press [Return]

   →The changes are fixed, and the "Field seting menu" screen returns.

   →" " appears while data is chanaing.

   When doing group connections:

   →Press [Return] to open the unit selection screen. In the unit selection screen, press [Return] to briefly display " ", and then return to the "Field setting menu" screen.

I.DN	Item	Description	At shipment
01	Filter display delay timer	0000: None 0001: 150H 0002: 2500H 0003: 5000H type 0004: 10000H	0000: None
02	Dirty state of filter	0000: Standard 0001: High degree of dirt (Half of standard time)	0000: Standard
03	Central control address	0001: No.1 unit to 0064: No.64 unit 0001: No.1 unit to 0128: N0.128 unit...TT2C-LINK 00Un: Unfixed (When ussing U series remote controller) 0099: Unfixced (Other thain U series remote controller)	00Uh/0099: Unfixed *1
04	Specific indoor unit priority	0000: No priority 0001: Priority	0000: No priority
05	Fan control of during Heating mode thermo-	0001: "L" tap control 0012: Operate in remote control setting fan speed	0001: "L" tap control
06	Heating temp. shift	0000: ±0˚F(±0˚C)-No shift 0001: +1.8˚F(+1˚C) 0002:+3.6˚F(+2˚C) to 0010: +18˚F(+10˚C) Up to +10.8˚F(+6˚C)recommended	0002: +3.6˚F(+2˚C)
0D	Existence of [AUTO] mode	0000: Provided 0001: Not provided (Automatic selection from connected outdoor unit)	0001: Not provided
0E	Group setting (FS unit)	0000: Indivisual (1 FS unit: 1 indoor unit) 0001: Group/Multiple (1 FS unit: Multiple indoor units)	0000: Indivisual
0F	Cooling only	0000: Heat pump 0001: Cooling only (No display of [AUTO] [HEAT])	0000: Heat pump
10	Type	0029: Vertical Air Handling unit	0029: Vertical Air Handling unit
12	Line address	0001: No.1 unit to 0064: No.30 unit TCC-LINK 0001: No.1 unit to 0128. No.128 unit TU2C-LINK 00Un: Unfixed (When using U series remote controller) 0099: Unfixed (Other than U series remote controler)	00Un/0099: Unfixed *1

I.DN	Item	Description	At shipment
13	Indoor unit address	0001: No.1 unit to 0064: No.30 unit TCC-LINK 0001: No.1 unit to 0128: No.128 unit TU2C-LINK 00Un: Unfixed (When using U series remote controller) 0099: Unfixed (Other than U series remote controler)	00Un/0099: Unfixed *1
14	Group address	0000: Individual 0001: Header unt of group 0002: Follower unit of group 00Un: Unfixed (When using U series remote controller) 0099: Unfxed (Other than U series remote controller)	
28	Automtic restart of power failure	0000: None 0001: Restart	0001: Restart
2E	HA terminal (CN61) select	0000: Usual 0001: Card input setup 1 aind 3 0002: External prevenioninput (Normal open) 0003: Card input setup.2 and 4 0004: Notice code (201) signal (Notice code: TU2C-LINK only) 0005: Card input setup. 5	00Un/0099: Unfixed *1
31	Ventilating fan control	0000: Unavailable 0001: Available	0000: Unavailable
32	Control sensor select	0000: Body TA sensor 0001: Remote control sensor	0000: Body TA sensor
33	Temperature unit select	0000: ˚C 0001: ˚F	0001: ˚F
60	Timer setting (wired remote controller)	0000: Available (can be performed) 0001: Unavailable (cannot be performed)	0000: Available
77	Dual set point	0000: Unavailable 0001: Available	0000: Unavailable
79	Alarm output setup of the header unit	0000: Not including the state of following unit 0001: Including the state of following unit	0000: Not including the state of following unit
92	Alarm clearance condition	0000: Operation stop 0001: Release signal received	0000: Operation stop
9A	Fan control of during Cooling mode thermo-off	0000: Operate in remote control setting fan speed 0002: Fan OFF*2 0003: "L" tap control	0000: Operate in remote control setting fan speed
9B	Prevention of cold air discharge control	0000: Prevention control of cold air discharge "Enable" 0001: Prevention control of cold air discharge without "Fan OFF" zone 0002: Operate in remote control setting fan speed (Prevention control of cold air discharge "Disable")	0000: Enable
C5	Secondary heating mode select	0000: Normal mode (VRF primary) 0001: Flip of secondary heating (VRF secondary)	0000: Normal mode
FC	Communication protocal *3	0000: TCC-LINK 0003: TU2C-LINK	0000: TCC-LINK
FD	Priority operation mode (FS unit)	0000: Heating 0003: Cooling	0000: Heating
FE	Branching system address (FS unit)	0000: No.1 unit to 0064: No.30 unit…TCC-LINK 0001: No.1 unit to 0128: No.128 unit…TU2C-LINK 00Un: Unfixed (When using U series remote controller) 0099: Unfxed (Other than U series remote controller)	00Un/0099: Unfixed *1

I.DN	Item	Description	At shipment
180	Notice code number 01	0000: None 0001~0255: Notice code 0129: Notice code (201) 0130: Notice code (202) (0001~0255: TU2C-LINK only)	0000: None
181	Notice code number 02		0000: None
182	Notice code number 03		0000: None
183	Notice code number 04		0000: None
184	Notice code number 05		0000: None
185	Notice code number 06		0000: None
186	Notice code number 07		0000: None
187	Notice code number 08		0000: None
188	Notice code number 09		0000: None
189	Notice code number 10		0000: None
1FB	Central device control state	0000: No central device control (Remote controller use is possible) 0001: Central device control (Remote controller use ie impossible)	0000: No central device control
1FC	Indoor Unit terminating resistance	0000: OFF 0001: ON	0000: OFF
301	External output select (CN200-pin)	0000: Electrical heater output 0001: Secondary heating output	0000: Electrical heater
302	Electrical heater output ON set temo. *4 (Detected by Body TA sensor)	0018: 64°F to 0026：79°F	0000: Operate in remote control setting fan speed

*1. Display order of “00Un” and “0099” varies depengding on remote controller models or conmmunication types.

*2. Sensitivity of Body TA sensor may be delayed because there is no circulation around TA sensor during Thermo-off.

*3. Communication protocal can be automatically switched with the setup in the outdoor unit during installation.

For Central control address (DN [03]), Indoor unit address (DN [13]), FS unit address (DN [FE])

Remote controller	Communication type	Display order
U series	TU2C-LINK	… ⇔ 0128 ⇔ 00Un ⇔ 0001 ⇔ …
	TCC-LINK	… ⇔ 0064 ⇔ 00Un ⇔ 0001 ⇔ …
Other than U series	TCC-LINK	… ⇔ 0064 ⇔ 0099 ⇔ 0001 ⇔ …

For Line address (DN [12])

Remote controller	Communication type	Display order
U series	TU2C-LINK	… ⇔ 0128 ⇔ 00Un ⇔ 0001 ⇔ …
	TCC-LINK	… ⇔ 0030 ⇔ 00Un ⇔ 0001 ⇔ …
Other than U series	TCC-LINK	… ⇔ 0030 ⇔ 0099 ⇔ 0001 ⇔ …

For Group address (DN [14])

Remote controller	Communication type	Display order
U series	TU2C-LINK	… ⇔ 0002 ⇔ 00Un ⇔ 0001 ⇔ …
	TCC-LINK	
Other than U series	TCC-LINK	… ⇔ 0002 ⇔ 0099 ⇔ 0001 ⇔ …

*4. Electrical heater output works during Heating mode thermo-off and only when the conditions are met.

13. Test Run

13.1 Before Test Run

● Before turning on the power supply, carry out the following procedure.

1) Using 500V-megger, check that resistance of 1MΩ or more exists between the terminal block of the power supply and the earth (grounding).

   If resistance of less than 1MΩ is detected, do not run the unit

2) Check the valve of the outdoor unit being opened fully.

● To protect the compressor at activation time, leave power-ON for 12 hours or more be for operating.

● Never press the electromagnetic contactor to forcibly perform a test run. (This is very dangerous because the protective device does not work.)

● Before starting a test run, be sure to set address following the installation manual supplied with the outdoor unit.

Requirements for turning thermostat OFF

Cooling operation

● When the outdoor/suction air temperature is lower than or equal to 66.2˚F (19˚C).

● When the outdoor/suction air temperature is lower than or equal to 37.4˚F (3˚C) above the set temperature

Heating operation

● When the outdoor/suction air temperature is lower than or equal to 14˚F (-10˚C).

● When the outdoor/suction air temperature is higher than or equal to 59˚F(15˚C).

● When the outdoor/suction air temperature is higher than or equal to 37.4˚F (3˚C) above the set temperature.

Execute a test run

Use the remote controller to check operations. For the operation procedures, refer to the Owner's Manual provided. You can do forced operations by using the test mode function in the following procedure, under conditions that the thermostat is off.

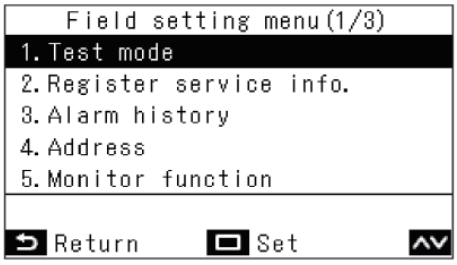
This test mode function will automatically stop after 60 minutes, to prevent continuous forced operation, and do normal operation (operation according to set temperature).

● Thermostat off: When the temperature of the room reaches the set temperature, the compressor of the outdoor unit stops, and operation switches from "Cool" or "Heat" to "Fan". The indoor unit is operatng. but the outdoor unit repeatedly turns on/off in response to the room temperature.

Caution:

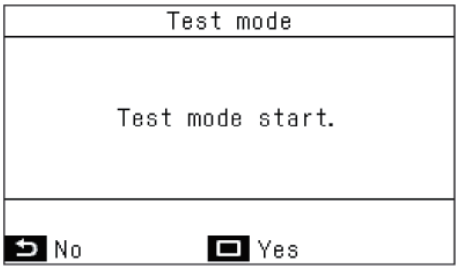
● This test mode function does forced operation that ignores the set temperature, so be aware of the room temperature and be sure to do a stop / end operation when your work is finished.

● This test mode function puts a higher than normal load on the equipment, so only use it for inspections and to check operations.

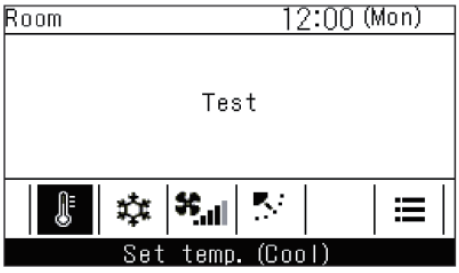


1. In the "Fleld setting menu" screen, press [ ] and [ ] to select "Test setting", and then press [Set/ Fix]

→Test mode is set, and returns to the “Field setting menu” screen. Press the [Return] button 2 times, to open screen (2).



(1)



2. Press [ON/OFF ON/OFF]

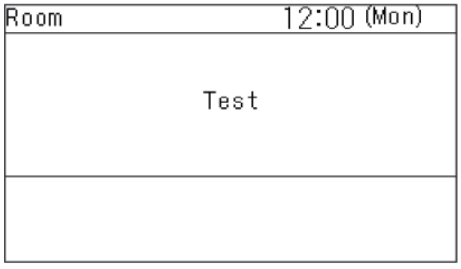
→Operation starts, and in test mode screen (1) opens. (While stopped, it is screen (2))

→Test mode is done while the operating mode is set to "Cool" or "Heat".

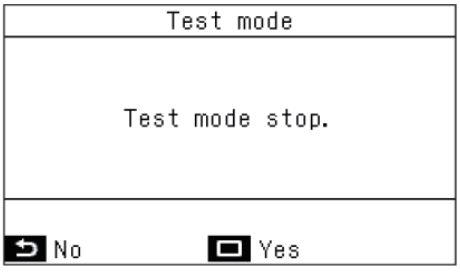
→The temperature cannot be set in test mode.

→Check codes are displayed in the normal way.

(2)



(3)



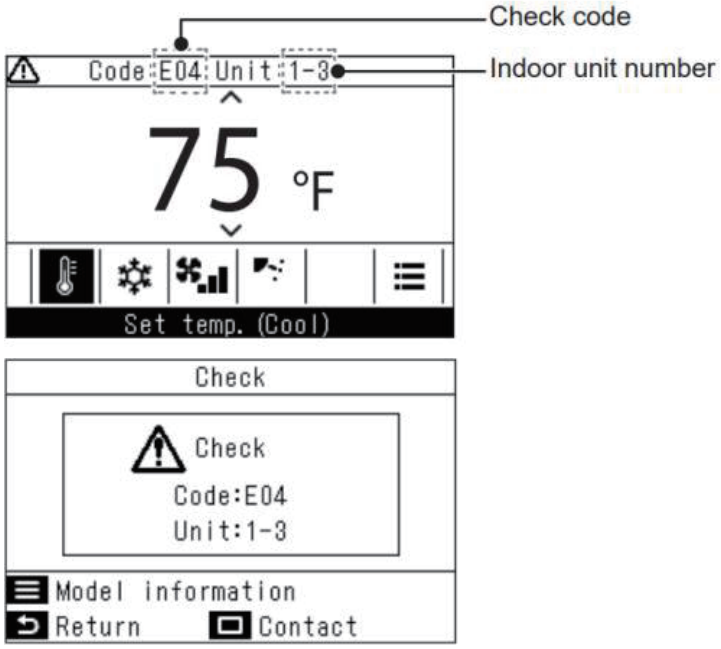
3. After completing test mode, in the "Field setting menu" screen, press[ ] and [ ] to select "Test mode", and then press [Seti/Fix].

→Screen (3) appears.

→Press [Set/Fix] to end test mode and do normal operation.

14. Trouble Shooting

14.1 Confirmation and check



When an error occurs in the air conditioner, the check code and the indoor unit number flash on the display of the remote controller.

*The check code is only displayed during the operation.

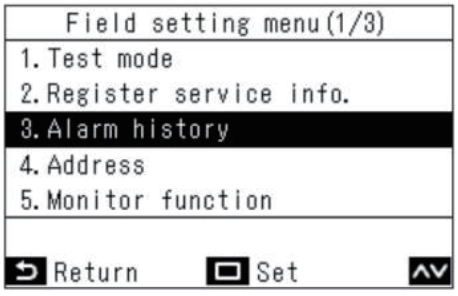
When the check code and indoor unit number are displayed, pressing [Return] opens the "Check" screen.

In the "Check" screen, press [Set/Fix] to show the contacts.

Press [Menu] to display "Model information".

14.2 Confrming an alarm history

Ten check codes in the past, troubled unit, and date when trouble occured are displayed on “Alarm history” screen.

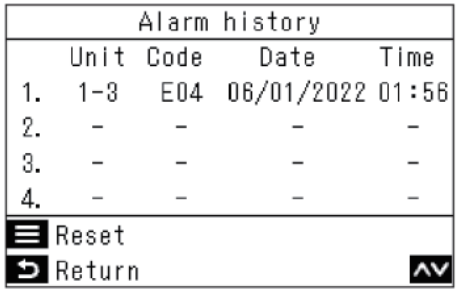


1. In the “Field setting menu” screen, press [ ] and [ ] to select "Alarm history", and then press [Set/Fix]

   List of latest 10 alarm data is displayed.

   *The oldest data are deleted in order to record the new ones.

   →The date and time when the check code occurred for the frst time is displayed for the repeated alarm.



1. Press [Menu] while the “Alarm history” screen is displayed

   →"Reset all alarm data." is displayed.

2. Press [Set/Fix]

   →Delete the Alarm history in each remote controller when the dual remote controller systemis used.

Check method

On the wired remote controller, central control remote controller and the interface P.C. Board of the outdoor unit (I/F), a check display LCD (Remote controller) or 7-segment display (on the outdoor interface P.C. Board) to diaplay the operation is provided. Therefore the operation status can be known. Using this self-diagnosis function, a trouble or position with error of the air conditioner can be found as shown in the following table.

Check code list

The following list shows each check code. Find the check contents from the list according to part to be checked.
In case of check from indoor remote controller: See “Wired remote controller display” in the list.
In case of check from outdoor unit: See “Outdoor unit 7-segment display” in the list.
In case of check from indoor unit with a wireless remote controller: See “Sensor block display of receiving unit” in the list.

○: Lighting, ◌: Flashing, ●: Goes off
ALT: Flashing is alternately when there are two flashing LED.
SIM: Simultaneous flashing when there are two flashing LED.
Inverter: Compressor / Fan inverter P.C. Board
I/F: Interface P.C. Board

Check code			Wireless remote controller				Check code name	Judging device
Wired remote controller display	Outdoor unit 7-segment display		Sensor block display of receiving unit					
		Auxiliary code	Operation	Timer	Ready	Flash		
E01	--	--	◌	●	●		Communication trouble between indoor unit and remote controller (Detected at remote controller side)	Remote controller
E02	--	--	◌	●	●		Remote controller transmission trouble	Remote controller
E03	--	--	◌	●	●		Communication trouble between indoor unit and remote controller (Detected at indoor unit side)	Indoor unit
E04	--	--	●	●	◌		Communication circuit trouble between indoor / outdoor unit (Detected at indoor unit side)	Indoor unit
E06	E06	No. of indoor units in which sensor has been normally received	●	●	◌		Decrease of No. of indoor units	I/F
--	E07	--	●	●	◌		Communication circuit trouble between indoor / outdoor unit (Detected at outdoor unit side)	I/F
E08	E08	Duplicated indoor unit address	◌	●	●		Duplicated indoor unit addresses	Indoor unit •I/F
E09	--	--	◌	●	●		Duplicated master remote controllers	Remote controller
E10	--	--	◌	●	●		Communication trouble between indoor unit MCU	Indoor unit
E11	--	--	◌	●	●		Communication trouble between Application control kit and indoor unit	Indoor unit Application control kit
E12	E12	01: Indoor/Outdoor units communication 02: Outdoor/Outdoor units communication	◌	●	●		Automatic address start trouble	I/F
E15	E15	--	●	●	◌		No indoor unit during automatic addressing	I/F
E16	E16	00: Capacity over 01: No. of connected units	●	●	◌		Capacity over / No. of connected indoor units	I/F
E17	--	--	◌	●	●		Communication trouble between indoor unit anid Flow Selector unit	Indoor unit
E18	--	--	◌	●	●		Communication trouble between header and folllower units Indoor unit	Indoor unit
E19	E19	00: Heater is not detected 02: Two or more heater units	●	●	◌		Outdoor header units quantity trouble	I/F
E20	E20	01: Outdoor unit of other line connected 02: Indoor unit of other line connected	●	●	◌		Other line connected during automatic address	I/F
E23	E23	--	●	●	◌		Sending trouble in communication between outdoor units Trouble in number of heat storage units (trouble with reception)	I/F
E25	E25	--	●	●	◌		Duplicated follower outdoor address	I/F
E26	E26	No. of outdoor units which received signal normally	●	●	◌		Decrease of No. of connected outdoor units	I/F
E28	E28	Detected outdoor unit number	●	●	◌		Follower outdoor unit trouble	I/F
E31	E31	*1 Inverter quantity information	●	●	◌		Inverter communicaton trouble	I/F
F01	--	--	◌	◌	●	ALT	Indoor unit TCJ sensor trouble	Indoor unit
F02	--	--	◌	◌	●	ALT	Indoor unit TC2 sensor trouble	Indoor unit
F03	--	--	◌	◌	●	ALT	Indoor unit TC1 sensor trouble	Indoor unit
F04	F04	--	◌	◌	○	ALT	TD1 sensor trouble	I/F
F05	F05	--	◌	◌	○	ALT	TD2 sensor trouble	I/F
F06	F06	01: TE1 sensor 02: TE2 sensor 03: TE3 sensor	◌	◌	○	ALT	TE1, TE2 or TE3 sensor trouble	I/F
F07	F07	01: TL1 sensor 02: TL2 sensor 03: TL3 sensor	◌	◌	○	ALT	TL1, TL2 or TL3 sensor trouble	I/F

Check code			Wireless remote controller				Check code name	Judging device
Wired remote controller display	Outdoor unit 7-segment display		Sensor block display of receiving unit					
		Auxiliary code	Operation	Timer	Ready	Flash		
F08	F08	--	○	○	○	ALT	TO sensor trouble	Remote controller
F09	F09	01: TG1 sensor 02: TG2 sensor 03: TG3 sensor	○	○	○	ALT	TG1, TG2, or TG3 sensor trouble	I/F
F10	--	--	○	○	●	ALT	Indoor unit TA sensor trouble	Indoor unit
F11	--	--	○	○	●	ALT	TF sensor troublr	Indoor unit
F12	F09	01: TG1 sensor 02: TG2 sensor 03: TG3 sensor	○	○	○	ALT	TS1 or TS3 sensor trouble	I/F
F13	F13	1 *: Comp. 1 side 2 *: Comp. 2 side	○	○	○	ALT	TH sensor trouble	Inverter
F15	F15	--	○	○	○	ALT	Outdoor unit temp. sensor miswiring (TE, TL)	I/F
F16	F16	--	○	○	○	ALT	Outdoor unit pressure sensor miswiring (Pd. Ps)	I/F
F22	F22	--	○	○	○	ALT	TD3 sensor trouble	I/F
F23	F23	--	○	○	○	ALT	Ps sensor trouble	I/F
F24	F24	--	○	○	○	ALT	Pd sensor trouble	I/F
F29	--	--	○	○	●	SIM	Indoor unit other trouble	Indoor unit
F30	F30	--	○	○	○	SIM	Occupancy sensor trouble	Indoor unit
F31	F31	--	○	○	○	SIM	Indoor unit EEPROM trouble	I/F
H01	H01	1 *: Comp. 1 side 2 *: Comp. 2 side	●	○	●		Compressor break down	Inverter
H02	H02	1 *: Comp. 1 side 2 *: Comp. 2 side	●	○	●		Compressor trouble (lock)	Inverter
H03	H03	1 *: Comp. 1 side 2 *: Comp. 2 side	●	○	●		Current detect circuit system trouble	Inverter
H04	H04	--	●	○	●		Comp. 1 case thermostat operation	I/F
H05	H05	--	●	○	●		TD1 sensor miswiring	I/F
H06	H06	--	●	○	●		Low pressure protective operation	I/F
H07	H07	--	●	○	●		Oil level down detective protection	I/F
H08	H08	01: TK1 sensor trouble 02: TK2 sensor trouble 03: TK3 sensor trouble 04: TK4 sensor trouble 05: TK5 sensor trouble	●	○	●		Oil level detective temp. sensor trouble	I/F
H14	H14	--	●	○	●		Comp. 2 case thermostat operaton	I/F
H15	H15	--	●	○	●		TD2 sensor miswiring	I/F
H16	H16	01: TK1 oil circuit system trouble 02: TK2 oil circuit system trouble 03: TK3 oil circuit system trouble 04: TK4 oil circuit system trouble 05: TK5 oil circuit system trouble	●	○	●		Oil level detective crcuit trouble	I/F
H17	H17	1 *: Compressor 1 side 2 *: Compressor 2 side	●	○	●		Compressor trouble (Step out)	I/F
H25	H25	--	●	○	●		TD3 sensor miswinng	I/F
J02	--	--	●	○	○	SIM	Communication trouble between control boards in Flow Selector unit	Indoor unit
J03	--	--	●	○	○	SIM	Duplicated Flow Selector uinit addresses	Indoor unit
J10	J10	Detected indooor unit address	●	○	○	SIM	Flow Selector unit overflow trouble	Indoor unit
J11	--	--	●	○	○	SIM	Flow Selector unit temperature sensor (TCS) trouble	
J29	--	--	●	○	○	SIM	Refrigerant leak detection sensor trouble	Indoor unit
J30	J30	Detected indoor unit address *Not displayed depending on the DN code (I.DN) setting	●	○	○	SIM	Refrigerant leak detection	Indoor unit
J31	--	--	●	○	○	SIM	Refrigerant leak detection sensor exceeding its life of the product	Indoor unit
L02	L02	Detected indoor unit address	○	●	○	SIM	Model mismatch of indoor and outdoor unit Indoor unit incompatible with refrigerant	I/F
L03	--	--	○	●	○	SIM	Indoor unit centre unit duplicated	Indoor unit
L04	L04	--	○		○	SIM	Outdoor unit line address duplicated	I/F
L05	--	--	○	●	○	SIM	Duplicated indoor unitswith priority (Displayed in indoor unit with priority)	I/F

Check code			Wireless remote controller				Check code name	Judging device
Wired remote controller display	Outdoor unit 7-segment display		Sensor block display of receiving unit					
		Auxiliary code	Operation	Timer	Ready	Flash		
L06	L06	No. of indoor units with priority	○	●	○	SIM	Duplicated indoor units with priority Displayed in unit other than indoor unit with priority)	I/F
L07	–	--	○	●	○	SIM	Group line in individual indoor unit	Indoor unit
L08	L08	--	○	●	○	SIM	Indoor unit group/Address unset	Indoor unit, I/F
L09	–	--	○	●	○	SIM	Indoor unit capacity unset	Indoor unit
L10	L10	--	○	○	○	SIM	Outdoor unit capacity unset	I/F
L11	L11	Detected indoor unit address	○	○	○	SIM	Flow Selector unit not connected	I/F
L12	L12	01: Flow Selector unit installation trouble	○	○	○	SIM	Fiow Selector unit systenn trouble	I/F
L13	L13	Detected indoor unit address	○	○	○	SIM	Safety device setting unmatch	I/F
L14	L14	Detected indoor unit address	○	○	○	SIM	Batety devlce nonconfomity	I/F
L17	L17	--	○	○	○	SIM	Outdoor unit type mismatch trouble	I/F
L18	L18	Detected indoor unit address	○	○	○	SIM	Flow Selector unit troubl	I/F
L20	–	--	○	○	○	SIM	Duplicated central control addresses	Indoor unit
L22	–	--	○	○	○	SIM	There is a DX-kit (heat source capacity command) non-compliant machine in the group (DDC control, TA control and TF controlare mixed)	Indoor unit
L24	L24	01: Duplication of FlowSelector unit address 02: Indoor unit operation mode priority setting	○	○	○	SIM	Flow Selector unit setting trouble	I/F
L28	L28	--	○	○	○	SIM	Too many outdoor units connected	I/F
L29	L29	*1 Inverter quantity information	○	○	○	SIM	No. of inverter trouble	I/F
L30	L30	Detected indoor unit address	○	○	○	SIM	Indoor unit outside interlock	Indoor unit
–	L31	--		--	○	SIM	Extended I/C trouble	I/F
P01	P01	--	●	○	○	ALT	Indoor fan motor trouble	Indoor unit
P03	P03	--	○	●	○	ALT	Discharge temp. TD1 trouble	I/F
P04	P04	1*: Comp. 1 side 2*: Comp. 2 side	○	●	○	ALT	High-pressure SW system operation	Inverter
P05	P05	1*: Comp. 1 side 2*: Comp. 2 side	○	●	○	ALT	Phase missing detection/Power failure detection Inverter DC voltage trouble(comp.)	I/F
P07	P07	1*: Comp. 1 side 2*: Comp. 2 side	○	●	○	ALT	Heat sink overheat trouble	Inverter, I/F
		04: Heat sink					Heat sink dew condensation trouble	
P10	P10	Detected indoor unit address	●	○	○	ALT	Indoor unit overflow trouble	Indoor unit
P11	P11	--	●	○	○	ALT	Outdoor heat exchanger freezing trouble	I/F
P12	–	--	●	○	○	ALT	Indoor unit fan motor trouble	Indoor unit
P13	P13	--	●	○	○	ALT	Outdoor liquid back detection trouble	I/F
P15	P15	01: TS condition 02: TD bondition	○	●	○	ALT	Gas leak detection	I/F
P16	P16	01: PMV5 02: PMV6 03: SV7	○	●	○	ALT	Injection circuit trouble	I/F
P17	P17	--	○	●	○	ALT	Discharge temp. TD2 trouble	I/F
P18	P18	--	○	●	○	ALT	Discharge temp. TD3 trouble	I/F
P19	P19	0#: 4-way valves 1#: 4-way valve1 2#: 4-way valve2 *Put in outdoor unit No. in [#] mark.	○	●	○	ALT	4-wav valve inverse trouble	I/F
P20	P20	--	○	●	○	ALT	High-pressure protective operation	I/F
P22	P22	1*: Compressor 1 side 2*: Compressor 2 side	○	●	○	ALT	Oudoor unit fan inverter trouble	Inverter
P26	P26	1*: Comp. 1 side 2*: Comp. 2 side	○	●	○	ALT	IPM short protection trouble	Inverter
P29	P29	1*: Comp. 1 side 2*: Comp. 2 side	○	●	○	ALT	Comp. position detective circuit system trouble	Inverter
P31	–	--	○	●	○	ALT	Other indoor unit trouble (Group follower indoor unit trouble)	Indoor unit

● For details about check codes determined with an Interface P.C. Board or an Inverter P.C.Board, refer to the Installation Manual of the outdoor unit.

***1 Inverter quantity information**
(Super Modular Multi System e and u series (SMMU-e, SMMS-u, SHRM-u))

No.	Comp. Inverter		Fan Inverter		Trouble
	1	2	3	4	
01	○				Comp. 1
02		○			Comp. 2
03	○	○			Comp. 1 + Comp. 2
08			○		Fan1
09	○		○		Comp. 1 + Fan1
0A		○	○		Comp. 2 + Fan1
0B	○	○	○		Comp. 1 + Comp. 2 + Fan1
10				○	Fan2
11	○			○	Comp. 1 + Fan2
12		○		○	Comp. 2 + Fan2
13	○	○		○	Comp. 1 + Comp. 2 + Fan2
18			○	○	Fan1 + Fan2
19	○		○	○	Comp. 1 + Fan1 + Fan2
1A		○	○	○	Comp. 2 + Fan1 + Fan2
1B	○	○	○	○	All
○ : Inverter trouble					

Trouble detected by central control device

Check code			Wireless remote controller				Check code name	Judging device
Central control device indication	Outdoor unit 7-segment display		Sensor block display of receiving unit					
		Auxiliary code	Operation	Timer	Ready	Flash		
C05	--	--	--				Sending trouble in central control device	Central control device
C06	--	--	--				Receiving trouble in central control device	Central control device
C12	--	--	--				Batch alarm of general-purpose equipment control interface	General-purpose equipment I/F
P30 (L20)		Differs according to trouble contents of unit with occurrence of alarm					Group contral follower unin trouble	Central control device
	--	--	(L20 is displayed.)				·Duplication addresses of indoor units in central control device ·With the combination of air condtioning systerm, the indoor unit may detect the check code of L20	
S01	--	--	--				Receiving trouble in central control device	Central control device

802044007508 V2

Design, material, performance specifications and components subject to change without notice.

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