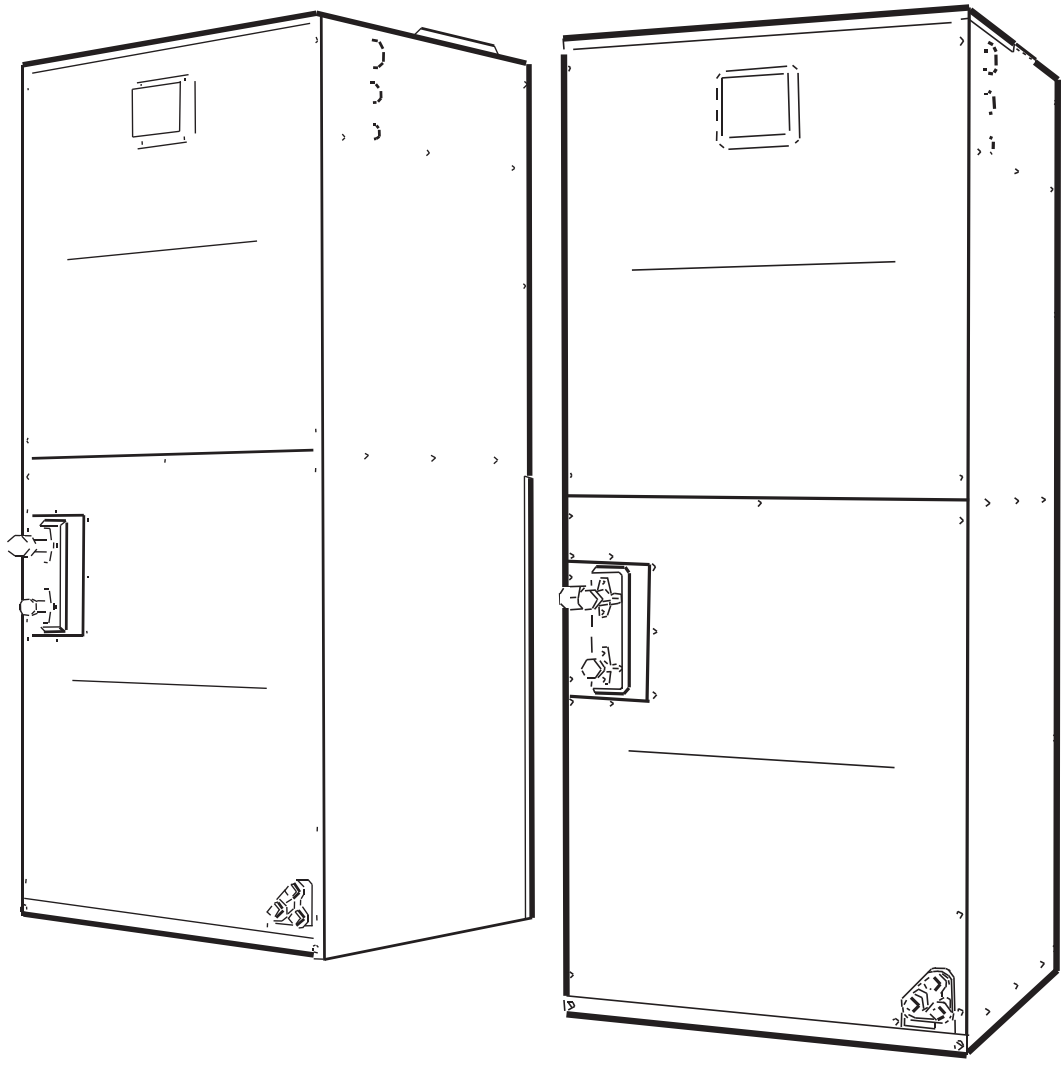
TRUINVERTER AIR HANDLER

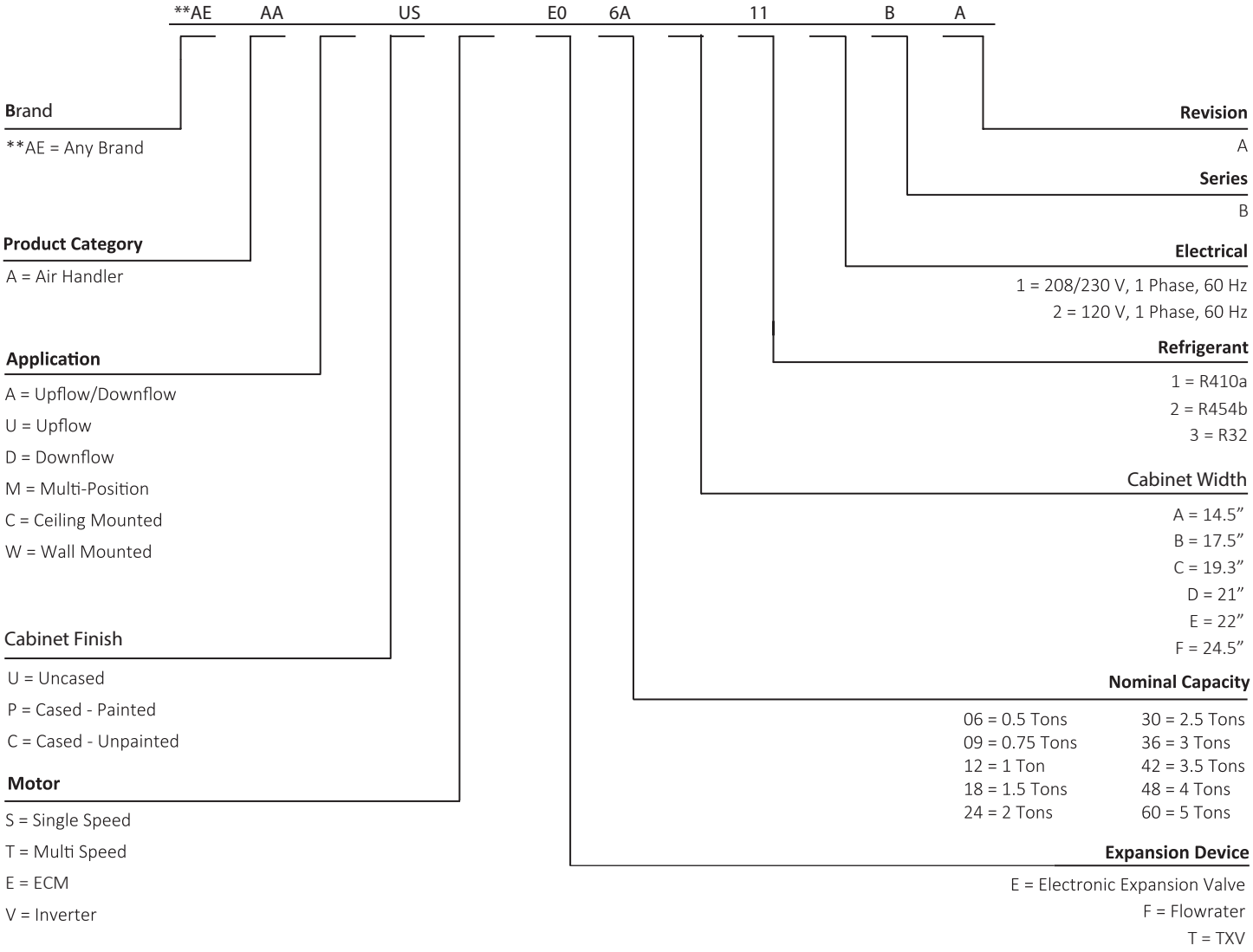


Installation Manual

Outdoor Split System Unit 2, 3, 4, & 5 Ton R454B	*Split System Heat Pump*	*Version Date:* *9 / 15 / 26*

Initial Release	2 / 12 / 26
Revision A	9 / 15 / 26

Nomenclature – Air Handler



Thank you for purchasing our high quality air handler. To ensure prolonged, consistent operation, ***read this Owner's & Installation Manual carefully before servicing it***. After reading the manual thoroughly, store it in a safe place for future reference. Consult this manual if you have questions about regular operation or irregularities.

This air handler is intended for residential use.

⚠ WARNING ⚠

1. Do not use any means other than those recommended by the manufacturer to accelerate the defrosting process or to clean the unit.
2. Do not store this appliance near continuously operating fuel sources (e.g. open flames, operating gas appliances, operating electric heaters.)
3. Do not pierce or burn
4. Be aware that refrigerants may not emit an odor.

Keep the following points in mind as you work with this appliance:

1. Use a flammable gas detector to check for gas leaks before unloading and opening the container.
2. Do not place near a fire source. Do not smoke near this unit.
3. Protect the pipework from physical damage, and in the case of using **FLAMMABLE REFRIGERANTS**, do not install in an unventilated space if that space is smaller than A_{min} in **Table 2-3**. In case of a field charge, the effect on **REFRIGERANT CHARGE** caused by the different pipe length has to be quantified.
4. Compliance with national gas regulations must be observed.
5. Mechanical connections made in accordance with this manual must be accessible for maintenance purposes.
6. The pipework, including piping material, pipe routing, and installation, must be protected from physical damage during operation and service. Pipework must also be in compliance with national and local codes and standards, such as ASHRAE 15, ASHRAE 15.2, IAPMO Uniform Mechanical Code, ICC International Mechanical Code, or CSA B52. All field joints must be accessible for inspection prior to being covered or enclosed.
7. After completion of field piping for split systems, the field pipework must be pressure tested with an inert gas and then vacuum tested prior to refrigerant charging, according to the following requirements.
8. This appliance must be stored in a way to prevent mechanical damage from occurring.
9. Every working procedure that affects safety may only be carried out by competent persons according to Annex HH, such as working personnel for maintenance, service, and repair operations. Examples include:
    - Breaking into the refrigerating circuit
    - Opening sealed components
    - Opening ventilated enclosures

i. SAFETY RULES AND RECOMMENDATIONS FOR INSTALLERS

1. Read this guide **before** installing and using the appliance.
2. During the installation of the indoor and outdoor units, **do not allow children access** to the working area. Serious accidents may occur.
3. Make sure that the base of the unit is firmly fixed.
4. Check that air cannot enter the refrigeration system and for refrigerant leaks before turning on the appliance.
5. Carry out a test cycle after installing the air conditioner and record the operating data.
6. Protect the unit with a fuse of suitable capacity for the maximum input current or with another overload protection device.
7. Ensure that the mains voltage corresponds to the voltage on the rating plate. Keep the switch or power terminal clean. Connect the power terminal correctly and firmly into the socket to avoid the risk of electric shock or fire due to insufficient contact.

8. Check that the socket is suitable for the plug. If it is unsuitable, have the socket changed.
9. The appliance must be equipped with devices capable of disconnection from the mains power supply, and have a contact separation in all poles to provide full disconnection under "over voltage category III conditions." These devices must also be incorporated into the fixed wiring in accordance with the wiring rules.
10. Do not try to install this appliance alone. Contact specialized technical personnel. Installation may only be performed by licensed or certified HVAC professionals authorized to work with flammable refrigerants. **Installation by unqualified persons may result in fire, electric shock, serious injury, or death, and will void the warranty**.
11. Do not install the appliance less than 20 inches from flammable substances (alcohol, etc.) or pressurized containers (e.g. spray cans).
12. If the appliance is used in areas without the possibility of ventilation, precautions must be taken to prevent refrigerant gas leaks from remaining in the environment and creating a fire hazard.
13. The packaging materials are recyclable and should be disposed of appropriately. When no longer usable, dispose of the appliance at a specialized waste collection center.
14. Only use the appliance as instructed in this manual. These instructions are not intended to cover every possible condition and situation. As with any electrical household appliance, **common sense and caution are recommended** for installation, operation, and maintenance.
15. The installer is solely responsible for ensuring that installation complies with all applicable national, state, and local electrical, mechanical, fire, and building codes. **The manufacturer assumes no responsibility for damage, malfunction, or injury resulting from non-compliant installation**.
16. Before accessing the terminals, all power circuits must be disconnected from the power supply. Do not pull out the power terminal to switch off the appliance when it is in operation, as this could create a spark and cause a fire.
17. Cleaning and maintenance must be carried out by specialized technical personnel. Disconnect the appliance from the mains electricity supply before carrying out any cleaning or maintenance.
18. Do not pull out the plug to turn off the appliance when it is in operation. This could cause a spark and start a fire.
19. This appliance is made for heating and cooling residential environments and must not be used for any other purposes, such as for drying clothes, cooling, food, etc.
20. Always use this appliance with the air filter mounted. Using this appliance without an air filter could cause an excessive accumulation of dust and/or lead to inner parts function failure.
21. The user is responsible for having the appliance installed by a qualified technician, who must check that earthing/grounding is done in accordance with current legislation and insert a thermal magnetic circuit breaker.
22. The batteries in the remote controller must be recycled or disposed of properly. For disposal of scrap batteries, follow any and all local regulations.
23. If the appliance creates smoke or there is a burning smell, immediately cut off the power supply and contact the Service Center. Prolonged use in such conditions could cause fire or electric shock.
24. Have repairs carried out only by an authorized Service Center of the manufacturer. Incorrect repair could expose the user to the risk of electric shock, etc.
25. Unhook the automatic switch if you will not use the device for an extended time. The airflow direction must be properly adjusted.
26. The flaps must be directed downwards in the heating mode and upwards in the cooling mode.
27. Ensure that the appliance is disconnected from the power supply when it will be inoperative for an extended period and before cleaning or maintenance.
28. Select the most suitable temperature to prevent damage to the appliance.
29. Do not remain directly exposed to cold air flow for a long time as it could be dangerous for your health. Take particular care in rooms where there are children, elderly, or sick people.
30. This appliance may be used by children over 8 years old and persons with reduced physical, sensory, or mental capacities **ONLY** under continuous supervision and after receiving instruction on safe use. **DO NOT** let children play with the appliance or perform cleaning, maintenance, or inspection of the appliance.
31. For minimum installation height and minimum room area (operating or storage), refer to installation manual.
32. Mount with the lowest moving parts at least 8.25 ft (2.5 m) above floor or grade level.

ii. SAFETY RULES AND PROHIBITIONS

1. Do not bend, tug, or compress the power cord. This could cause damage. Damaged power cords are often the cause of electrical shock and fire. Only specialized technical personnel should inspect damaged power cords.
2. Do not use extensions or gang modules.
3. Do not touch the appliance when barefoot, or if parts of your body are wet or damp.
4. Do not obstruct the air inlet or outlet of the indoor or outdoor units. The obstruction of these openings causes a reduction in the operating efficiency of the air conditioner with possible consequent failures or damages.
5. Do not alter the characteristics of the appliance in any way.
6. Do not install appliance in environments where air could contain flammable gas, oil, or sulfur, or near heat sources.
7. This appliance may be used by children over 8 years old and persons with reduced physical, sensory, or mental capacities **ONLY** under continuous supervision and after receiving instruction on safe use. **DO NOT** let children play with the appliance or perform cleaning, maintenance, or inspection of the appliance.
8. Do not climb or place any heavy or hot objects on top of the appliance.
9. Do not leave windows or doors open for an extended when the mini split is operating.
10. Do not remain directly exposed to the flow of cold air for a long time. Do not direct the airflow onto plants or animals. The direct and prolonged exposure to cold air could be dangerous for your health. Particular care should be taken in the rooms where children, elderly, and sick people are.
11. Do not put the appliance in contact with water as it could damage the electrical insulation and cause electrocution.
12. Do not climb onto or place any objects on the outdoor unit.
13. Do not insert sticks or similar objects into the appliance as it could cause injury.
14. This unit is equipped with a refrigerant leak sensor for safety. To be effective, the unit must be electrically powered at all times after installation, other than during servicing. This sensor can only be replaced with a manufacturer approved sensor. If it is replaced as part of the component assembly, the component should be labeled.
15. This appliance must be installed according to the manufacturer's instructions, and the ventilation pipe must not exceed the maximum length and number of turns specified by the manufacturer.
16. Appliances that can be installed in different locations should be tested in all locations permitted by the manufacturer. The intake or exhaust openings should not be covered and the manufacturer's recommended air filter should be installed according to the instructions.
17. Leak detection system installed. Unit must be powered except for service.
18. **Risk of fire**. Auxiliary devices that may be ignition sources must not be installed in the ductwork, other than the auxiliary devices listed for use with the specific appliance. See instructions.
19. **Risk of electric shock.** Can cause injury or death. Disconnect all remote electric power supplies before servicing.
20. **Risk of fire due to flammable refrigerant used.**
    - Follow handling instructions carefully in compliance with all applicable federal, state, and local regulations
    - Consult repair manual/owner's guide **before** attempting to service this product. Follow all safety precautions.
    - To be repaired only by trained service personnel. Do not puncture refrigerant tubing.

NOTICE
The manufacturer is not liable for malfunction, damage, or injury caused by abnormal environmental conditions, including but not limited to flooding, lightning, power surges, earthquakes, corrosive atmospheres, or unstable power supply.

iii. DISPOSAL GUIDELINES



Risk of fire. This appliance contains flammable refrigerant and electronic components that must be disposed of in accordance with all applicable federal, state, and local regulations. Improper disposal may result in environmental harm, fire risk, and legal penalties.

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Abbreviation	Meaning
Mc	Actual refrigerant charge in the system
A	Actual room area where the appliance is installed
A_{min}	Required minimum room area
M_{max}	Allowable maximum refrigerant charge in a room
Q_{min}	Minimum circulation airflow
Anv_{min}	Minimum opening area for connected rooms
TA_{min}	Total area of conditioned space for appliances serving one or more rooms with an air duct system
TA	Total area of the conditioned space connected by air ducts



Caution: Risk of Fire



Caution: Risk of Fire



Read the operator's manual



Read operating instructions



Read technical manual

1. Check this manual for the space needed for proper installation, including the minimum distances allowed between adjacent structures
2. The appliance must be installed, operated, and stored in a room with a floor area larger than 13ft^2 (4m^2)
3. The installation of pipework must be kept to a minimum
4. Pipework must be protected from physical damage and must not be installed in an unventilated space if the space is smaller than 13ft^2 (4m^2)
5. The compliance with national gas regulations must be observed
6. The mechanical connections must be accessible for maintenance purposes
7. Follow instructions in this manual for the handling, installing, cleaning, maintaining, and disposing of refrigerant
8. Make sure the ventilation openings are clear of obstructions
9. **Notice:** The servicing must be performed only as recommended by the manufacturer
10. **Warning:** You must store the appliance in a well-ventilated area corresponding to the size specified for operation
11. **Warning:** The appliance must be stored in a room without continuously operating open flames (e.g. an operating gas appliance) and ignition sources (e.g. an operating electric heater)
12. The appliance must be stored to prevent mechanical damage from occurring
13. Anyone called to work on a refrigerant circuit must hold a valid and up-to-date certificate from an assessment authority accredited by the industry and recognizing their competence to handle refrigerants, in accordance with the assessment specification recognized in the industrial sector concerned. Service operations should only be carried out according to the recommendations of the equipment manufacturer. Maintenance and repair operations that require the assistance of other qualified persons must be conducted under the supervision of the person competent for the use of flammable refrigerants
14. Every working procedure that affects safety means may only be carried out by competent persons
15. **Repairs to Seal Components**: Sealed electrical components must be replaced
16. **Repairs to Intrinsically Safe Components**: Intrinsically safe components must be replaced

⚠ WARNING ⚠

1. Do not use any means other than those recommended by the manufacturer to accelerate the defrosting process or to clean the unit.
2. Do not store this appliance near continuously operating fuel sources (e.g. open flames, operating gas appliances, operating electric heaters.)
3. Do not pierce or burn
4. Be aware that refrigerants may not emit an odor.

1. 1 Servicing Information

I. Check the Area

Before working on systems with flammable refrigerants, perform safety checks to minimize the risk of ignition. Before repairing the refrigerating system, take these precautions.

II. Work Procedure

Perform work in a controlled procedure to reduce the risk of flammable gas or vapor being present.

III. General Work Area

Instruct all maintenance staff and others working in the local area on the nature of the work being carried out. Avoid work in confined spaces. Section off the area around the workspace. Ensure that the conditions within the area have been made safe by the control of flammable material.

IV. Checking for the Presence of Refrigerant

Check the area with an appropriate refrigerant detector before and during work, to alert the technician to potential flammable atmospheres. Leak detection equipment must be **suitable for use with flammable refrigerants** (i.e. non-sparking, adequately sealed, or intrinsically safe).

V. Presence of a Fire Extinguisher

If any hot work is to be conducted on the refrigeration equipment or any associated parts, keep appropriate fire extinguishing equipment, like a dry powder or CO_2 fire extinguished, adjacent to the charging area.

VI. Ignition Source

No person carrying out work in relation to a refrigeration system involving exposing pipework may use any sources of ignition in a way that may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, must be kept sufficiently away from the site of installation, repairing, removing, and disposal, during which refrigerant could be released to the surrounding space. The area around the equipment must be surveyed for flammable hazards or ignition risks before work takes place. You must display "No Smoking" signs.

VII. Ventilated Area

Ensure that the area is in the open or adequately ventilated before opening the system or conducting any work that will produce heat. Ensure ventilation continues while work is carried out. Ventilation should safely disperse any released refrigerant and expel it into the atmosphere.

VIII. Checks to the Refrigerant Equipment

Any electrical components changed must be the correct specification and fit for the intended purpose. At all times, the manufacturer's maintenance and service guidelines **must be followed**. If in doubt, consult the manufacturer's technical department for assistance.

You must complete the following checks on installations using flammable refrigerant:

- The charge size is in accordance with the room size where the refrigerant containing parts are installed
- The ventilation machinery and outlets are operating adequately and are not obstructed
- If an indirect refrigerating circuit is used, you **must check** the secondary circuit for refrigerant
- Marking on the equipment must be **visible and legible**. You must correct markings and signs that are illegible
- Refrigeration pipe or components are installed where they are unlikely to be exposed to any substance that may corrode refrigerant containing components, unless the components are constructed of materials that are inherently resistant or are suitably protected against corrosion

IX. Checks to Electrical Devices

Repair and maintenance to electrical components must include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, do not connect electrical supply to the circuit until it is dealt with satisfactorily. If the fault cannot be corrected immediately but it is necessary to continue operation, use an adequate temporary solution. Report this to the owner of the equipment so all parties are properly advised.

Initial safety checks **must** include:

- That capacitors are discharged. This must be done in a safe manner to avoid the 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

1. 2 Cabling

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

1. 3 Detection of Flammable Refrigerants

Under no circumstances may potential sources of ignition be used to searching for or detect refrigerant leaks. **Do not** use a halide torch (or any other detector using a naked flame).

1. 4 Leak Detection Methods

The following leak detection methods are acceptable for systems containing flammable refrigerants:

- Use electronic leak detectors to detect flammable refrigerants. The sensitivity may not be adequate, or may need re-calibration in a **refrigerant-free area**. Calibrate it to the refrigerant employed. Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Set leak detection equipment at a percentage of the LFL of the refrigerant. Confirm the appropriate percentage of gas (25% maximum). Leak detection fluids are suitable for use with most refrigerants, but a**void detergents containing chlorine** as the chlorine may react with the refrigerant and corrode the copper pipework. If a leak is suspected, remove or extinguish all naked flames. If a refrigerant leak is found that requires brazing, recover all refrigerant from the system, or isolate it (by shut off valves) in a part of the system remote from the leak. Purge oxygen free nitrogen (OFN) through the system both before and during the brazing process.

1. 5 Removal and Evacuation

When breaking into the refrigerant circuit to make repairs, or for any other purpose, use conventional procedures. Due to flammability, you must follow best practice. You **must** adhere to the following process:

1. Remove refrigerant
2. Purge the circuit with inert gas
3. Evacuate
4. Purge again with inert gas
5. Open the circuit by cutting or brazing

The refrigerant charge must be recovered into the correct recovery cylinders. The system must be flushed with OFN to render the unit safe. This process may need to be repeated several times.

DO NOT use compressed air or oxygen for this task.

Achieve flushing by breaking the vacuum in the system with OFN, continuing to fill until working pressure is achieved, venting to the atmosphere, then pulling down to a vacuum. Repeat this process until no refrigerant is within the system. When the final OFN charge is used, the system must be vented down to atmospheric pressure to enable work to take place. This operation is absolutely vital for brazing operations on the pipework.

Ensure that the outlet for the vacuum pump is not close to any ignition sources and ventilation is available.

1. 6 Decommissioning

Before decommissioning, the technician must be completely familiarized with the equipment and all its details. It is recommended good practice that all refrigerants are recovered safely. Prior to starting this task, take an oil and refrigerant sample in case analysis is required before re-using the reclaimed refrigerant. Electrical power must be available before beginning the task.

1. Become familiar with the equipment and its operation
2. Isolate the system electrically
3. 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

4. Pump down refrigerant system, if possible
5. If a vacuum is not possible, make a manifold so refrigerant can be removed from various parts of the system
6. Make sure that the cylinder is situated on the scales before recovery takes place
7. Start the recovery machine and operate in accordance with the manufacturer's instructions
8. Do not overfill cylinders (No more than 80% volume liquid charge)
9. Do not exceed the maximum working pressure of the cylinder, even temporarily
10. When the cylinders have been filled correctly and the process is completed, make sure that the cylinders and the equipment are removed from the site promptly and all isolation valves on the equipment are closed off
11. Recovered refrigerant must not be charged into another refrigeration system unless cleaned and checked

1. 7 Labeling

Label equipment stating that it has been de-commissioned and emptied of refrigerant. The label must be dated and signed. Ensure that labels are on the equipment stating the equipment contains flammable refrigerant.

1. 8 Recovery

When removing refrigerant from a system, for servicing or decommissioning, follow these safety principles:

- When transferring refrigerant into cylinders, only employ appropriate refrigerant recovery cylinders. Ensure that the correct number of cylinders for holding the total system charge are available. Designate all cylinders to be used for the recovered refrigerant and label for that refrigerant (i.e. special cylinders for refrigerant recovery). Cylinders must be complete with pressure-relief valves and associated shut-off valves in good working order.
- Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
- The recovery equipment must be in good working order with instructions for the equipment on hand, and must be suitable for the recovery of all appropriate refrigerants, including, when applicable, flammable refrigerants. In addition, a set of calibrated weighing scales must be available and in good working order. Hoses must be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained, and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. If in doubt, consult the manufacturer.
- The recovered refrigerant must be returned to the refrigerant supplier in the correct recovery cylinder with the relevant waste note attached. Do not mix refrigerants in recovered units, especially not in the cylinders.
- If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level so that flammable refrigerant does not remain within the lubricant.
- The evacuation process must be carried out before returning the compressor to the suppliers.
- Only electric heating to the compressor body can be employed to accelerate this process. When oil is drained from a system, it must be carried out safely.

1. 9 Safety Instructions for Transportation and Storage

1. Do not transport or store with any fire source. Do not smoke near the appliance
2. This appliance must be transported and stored in accordance with local rules and laws

⚠ IMPORTANT CONSIDERATIONS ⚠

1. The appliance must be installed by professional personnel and the installation manual is intended only for the professional installation personnel. The installation specifications are subject to our after-sale service regulations.
2. When filling the combustible refrigerant, rough handling operations may cause serious injury or injuries to people and objects.
3. A leak test must be done after the installation is completed.
4. You must complete a **safety inspection** before maintaining or repairing the appliance with combustible refrigerant to minimize fire risk.
5. Operate machine under controlled procedure to ensure any risk from combustible gas or vapor is at a minimum.
6. Follow requirements for the total weight of filled refrigerant and the area of the room to be equipped with an air conditioner (Tables GG.1 and GG.2)

2. 1 Refrigerant Charge and Room Area Limitations

In UL/CSA 60335-2-40, R454B refrigerant is classified as class A2L, mildly flammable. R454B refrigerant is suitable for systems needing additional refrigerant charge, and which will limit the area of the rooms served by the system. The total amount of refrigerant in the system must be less than or equal to the allowable maximum refrigerant charge. The allowable maximum refrigerant charge depends on the area of the rooms served by the system.

The maximum charge and the required minimum floor area:
m_1 = (6 m^3) x LFL, m_2 = (52 m^3) x LFL, m_3 = (260 m^3) x LFL
Where LFL is the lower flammable limit in kg/m^3, R454B LFL is 0.296 kg/m^3

For the appliances with a charge amount m_1 < M = m_2:
The maximum charge in a room must be in accordance with the following equation:

M_{max} = 0.5 x LFL x 2.2 x A

The required minimum floor area A_{min} to install an appliance with refrigerant charge M(kg) must be in accordance with the following equation:

Q_{min} = 30 x Mc / LFL

2. 2 Room Calculation Requirements

CAUTION
Considered space is any space with refrigerant-containing parts or into which refrigerant could be released. **The room area (A) of the smallest, enclosed, occupied space** must be used to determine refrigerant quantity limits.

To determine the room area (A) when used to calculate the refrigerant charge limit:

- The room area (A) is defined as the room area enclosed by the projection to the base of the walls, partitions, and doors of the space in which the appliance is installed
- Spaces connected by only drop ceilings, ductwork, or similar connections must not be considered a single space

Units mounted higher than 70 55/64 inches and spaces divided by partition walls no higher than 62 63/64 inches may be considered a single space.

Rooms on the same floor and connected by an open passageway between the spaces can be considered a single room when determining compliance to A_{min}, if the passageway complies with all of the following:

1. It is a permanent opening
2. It extends to the floor
3. It is intended for people to walk through

The area of the connected rooms, on the same floor, connected by permanent openings in the walls and/or doors between occupied spaces, including gaps between the wall and the floor, can be considered a single room when determining compliance to A_{min}, provided all the following conditions are met as in **Fig. 2-1**:

Low Level Opening

1. The opening must not be less than Anv_{min} in **Table 2-1**
2. **DO NOT** consider the area of openings above 11 13/16 inches from the floor to determine compliance with Anv_{min}
3. At least 50% of the opening area of Anv_{min} must be below 7 7/8 inches from the floor
4. The bottom of the opening is not more than 3 15/16 inches from the floor
5. The opening is a permanent opening that cannot be closed
6. For openings extending to the floor, the height must not be less than 25/32 inches above the floor covering surface

High Level Opening

1. The opening must not be less than 50% of Anv_{min} in **Table 2-2**
2. The opening is a permanent opening that cannot be closed
3. The opening must be at least 59 inches above the floor
4. The height of the opening is not less than 25/32 inches

Room Size Requirement

1. Rooms refrigerant can leak into plus the connected adjacent room(s) must have a total area no less than A_{min}. A_{min} is shown in **Table 2-3**
2. The room area in which the unit is installed must not be less than 20% of A_{min}. A_{min} is shown in **Table 2-3**

The minimum opening for natural ventilation (Anv_{min}) in connected rooms is related to the room area (A). The actual refrigerant charge of refrigerant in the system (Mc), and the allowable **MAXIMUM REFRIGERANT CHARGE** in the system (M_{max}), Anv_{min} can be determined according to **Table 2-1**.

NOTE: The requirement for the second opening can be met by drop ceilings, ventilation ducts, or similar arrangements that provide an airflow path between the connected rooms.

Fig. 2-1 Opening Conditions for Connected Rooms

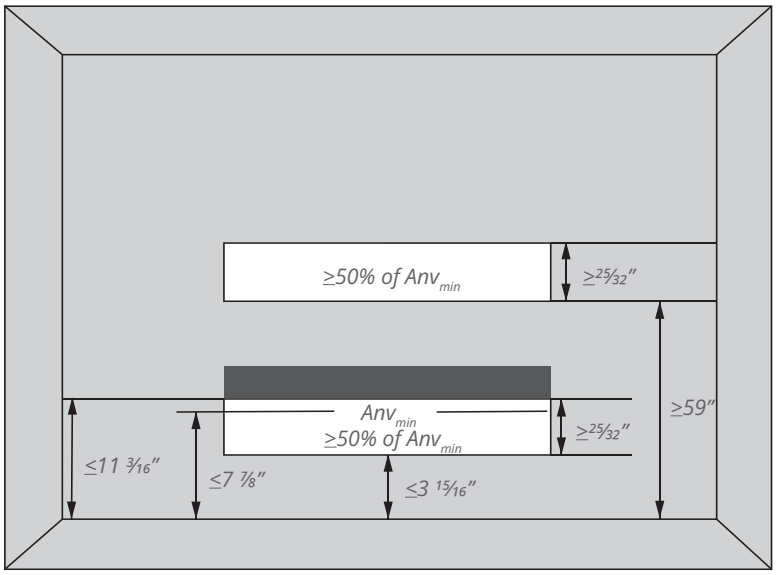


Table 2-1: The Minimum Opening Area for Connected Rooms

A ($ft^{2)}$	Mc (lbs-oz)		M_{max} (lbs-oz)		Anv_{min}(ft^2)
	lbs	oz	lbs	oz	
40	9	9	2	10	0.9
50	9	9	3	5	0.8
60	9	9	4	0	0.7
70	9	9	4	10	0.6
80	9	9	5	5	0.6
90	9	9	6	0	0.5
100	9	9	6	10	0.4
110	9	9	7	5	0.3
120	9	9	8	0	0.2
130	9	9	8	10	0.2
140	9	9	9	5	0.1
150	9	9	10	0	0.0
160	9	9	10	10	0.0

NOTICE

Take Mc=9 lbs 9 oz as an example.
For appliances serving one or more rooms with an air duct system, calculate the room area based on the total area of the conditioned space (TA) connected by ducts taking into consideration that the circulating airflow distributed to all the rooms by the appliance integral indoor fan will mix and dilute the leaking refrigerant before entering any room

2. 3 Allowed Max. Refrigerant Charge and Required Min. Room Area

If the fan in the appliance is continuously operated or operation is initiated by a **REFRIGERANT DETECTION SYSTEM** with a sufficient **CIRCULATION AIRFLOW** rate, the allowable maximum refrigerant charge (M_{max}) and the required minimum room area (A_{min}/TA_{min}) is shown in **Table 2-2** and **Table 2-3**.

NOTICE

The maximum refrigerant limit described applies to unventilated areas. If adding additional measures, such as areas with mechanical ventilation or natural ventilation, the maximum refrigerant charge can be increased, or the minimum room area can be reduced. The R454B refrigerant leakage sensor is configured for the indoor unit, meets the incorporated circulation airflow requirements, the maximum refrigerant charge, or minimum room area can be determined according to **Table 2-2** or **Table 2-3**.

CAUTION

The allowable maximum refrigerant charge of **Table 2-2** or the required minimum room area of **Table 2-3** is available only if the following conditions are met:

1. Minimum velocity of 3.28 ft/s, which is calculated as the indoor unit airflow divided by the nominal face area of the outlet. The grill area should not be deducted.
2. Minimum airflow rate must meet the corresponding values in **Table 2-4**, related to the actual refrigerant charge of the system (Mc).
3. R454B refrigerant leakage sensor is configured.

CAUTION

If the actual room area, air outlet height, and refrigerant charge amount are not reflected in the following tables, more severe cases need to be considered according to the data in **Tables 2-1, 2-2, 2-3, & 2-4**

Table 2-2 The Allowable Maximum Refrigerant Charge

A/TA (ft^2)	M_{max} (lbs-oz)		A/TA (ft^2)	M_{max} (lbs-oz)	
	lbs	oz		lbs	oz
40	2	10	160	10	10
50	3	5	170	11	5
60	4	0	180	12	0
70	4	10	190	12	10
80	5	5	200	13	5
90	6	0	210	14	0
100	6	10	220	14	10
110	7	5	230	15	5
120	8	0	240	16	0
130	8	10	250	16	10
140	9	5	260	17	5
150	10	0			

Table 2-3 The Required Minimum Room Area

Mc (lbs-oz)		A_{min} / TA_{min} (ft^2)	Mc (lbs-oz)		A_{min} / TA_{min} (ft^2)
lbs	oz		lbs	oz	
4	6	66.1	11	0	165.3
4	13	72.7	11	7	171.9
5	4	79.3	11	14	178.5
5	11	86.0	12	5	185.1
6	2	92.6	12	12	191.7
6	9	99.2	13	3	198.4
7	0	105.8	13	10	205.0
7	7	112.4	14	1	211.6
7	15	119.0	14	8	218.2
8	6	125.6	14	15	224.8
8	13	132.2	15	6	231.4
9	4	138.8	15	14	238.0
9	11	145.5	16	5	244.6
10	2	152.1	16	12	251.2
10	9	158.7	17	3	257.9

Table 2-4 The Minimum Circulation Airflow

Mc (lbs-oz)		Q_{min} (CFM)	Mc (lbs-oz)		Q_{min} (CFM)
lbs	oz		lbs	oz	
4	6	119	11	0	298
4	13	131	11	7	310
5	4	143	11	14	322
5	11	155	12	5	334
6	2	167	12	12	346
6	9	179	13	3	358
7	0	191	13	10	370
7	7	203	14	1	382
7	15	215	14	8	394
8	6	227	14	15	405
8	13	239	15	6	418
9	4	251	15	14	430
9	11	263	16	5	442
10	2	275	16	12	454
10	9	287	17	3	466

2. 4 Installation Safety Principles

Site Safety	 *Open Flames Prohibited*  *Ventilation Necessary*
Operation Safety	 *Mind Static Electricity*  *Must Wear Protective Clothing and Anti-Static Gloves*  *Don't Use Mobile Phone*
Installation Safety	• Refrigerant Leak Detector • Appropriate Installation Location  *A schematic diagram of a refrigerant leak detector*

Note:

1. The installation site should be well-ventilated
2. The sites for installing and maintaining an air conditioner using Refrigerant R454B should be free from open fires or welding, smoking, drying ovens, or any other heat source higher than (396°C) that easily produces open fire
3. When installing an air conditioner, take appropriate anti-static measures like wearing anti-static clothes and gloves
4. Choose a site convenient for installation or maintenance where the air inlets and outlets of the indoor and outdoor units are not surrounded by obstacles or close to any heat source or combustible/explosive environments
5. If the indoor unit suffers a refrigerant leak during the installation, immediately turn off the valve of the outdoor unit. All personnel should go out until the refrigerant leaks completely for 15 minutes. If the product is damaged, you must take the damaged product back to the maintenance station. It is prohibited to weld the refrigerant pipe or conduct other operations on the user's site
6. Avoid places where the inlet and outlet air of the indoor unit is even
7. Avoid places where there are other electrical products, power switch plugs and sockets, kitchen cabinets, beds, sofas, and other valuables right under the lines on two sides of the indoor unit

Table 2-5 Suggested Tools

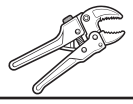
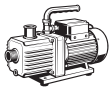
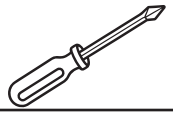
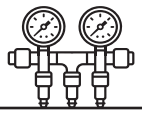
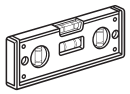
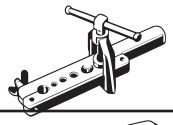
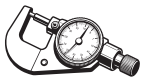
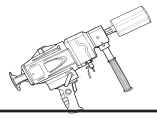
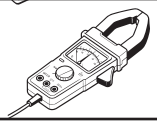
Tool	Picture	Tool	Picture	Tool	Picture
Standard Wrench		Pipe Cutter		Vacuum Pump	
Adjustable/ Crescent Wrench		Screwdrivers (Phillips & Flat Blade)		Safety Glasses	
Torque Wrench		Manifold & Gauges		Anti-Static Gloves	
Hex Keys or Allen Wrenches		Level		Refrigerant Scale	
Drill & Drill Bits		Flaring Tool		Micron Gauge	
Hole Saw		Clamp on Amp Meter		Welding Gun	

Table 2-6 Dedicated Distribution Device and Wire for Air Conditioner

Min. Circuit Ampacity of Air Conditioner (A)	Minimum Wire Cross-sectional Area (mm^2)	Specification of Socket or Switch (A)	Fuse Specification (A)
≤8	0.75	15	15
>8 and ≤10	1.0	15	15
>10 and ≤15	1.5	20	25
>15 and ≤24	2.5	25	40
>24 and ≤28	4.0	35	45
>28and ≤32	6.0	40	55

NOTICE

This table is only for reference. The installation must meet the requirements of local laws and regulations.

NOTICE

25" clearance is required in the front of the unit for filter and coil maintenance

Fig. 3-1 Air Handler Dimensions

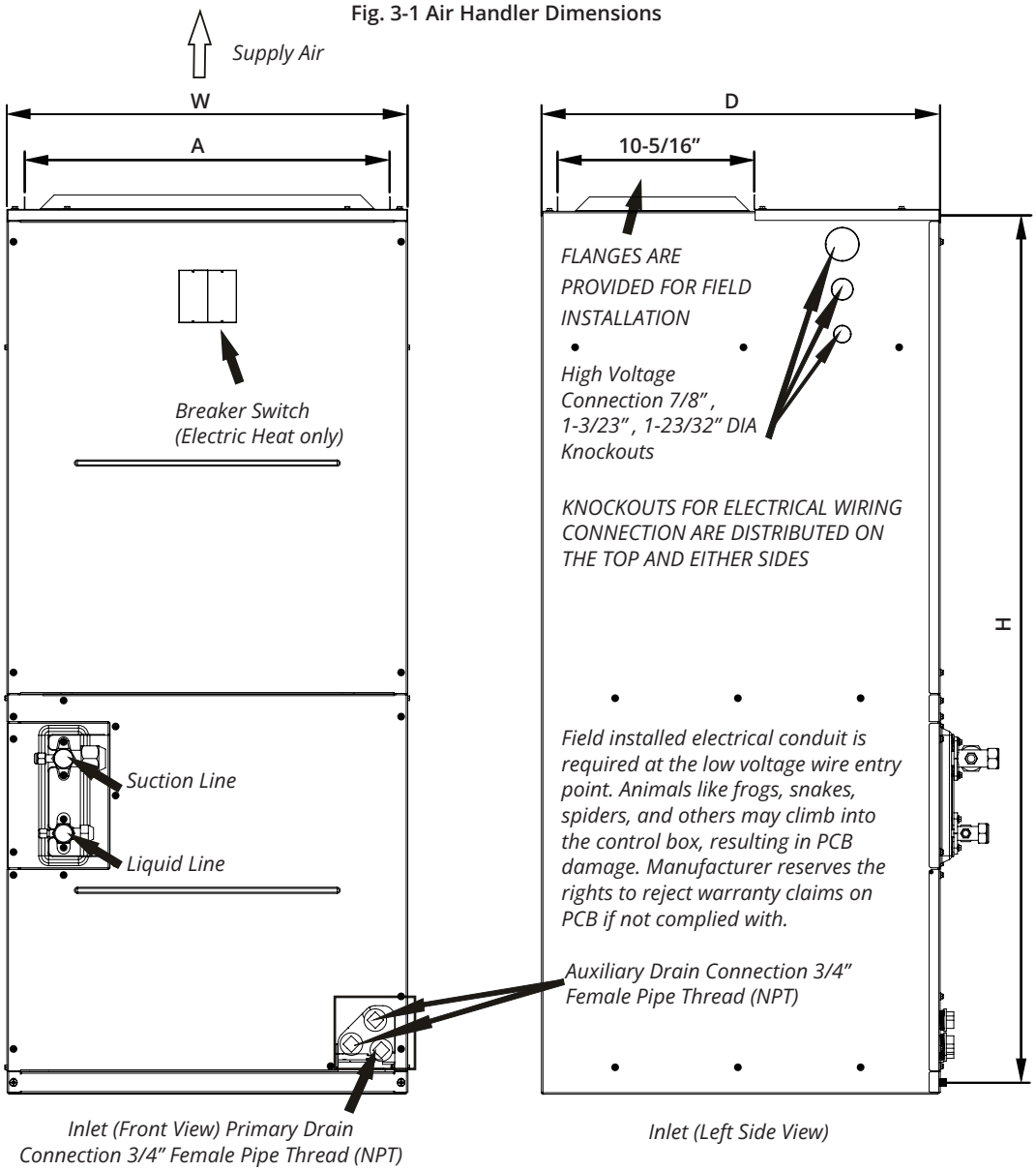


Table 3-1 Unit Dimensions

Model	Dimensions (in.)					
	H	W	D	A	Liquid Line Connection	Suction Line Connection
**AEAMPVT24D21BA	46-1/2	21	21	19-1/4	3/8	3/4
**AEAMPVT36D21BA						
**AEAMPVT48F21BA	56	24-1/2	21	22-3/4	3/8	7/8
**AEAMPVT60F21BA						

1. Select a solid and level site, keep enough space for proper installation and maintenance.

2. Adjust motor speed tap on indoor main control board (MCB) to select correct air flow according to blower performance table.

Fig. 3-2 Horizontal Position

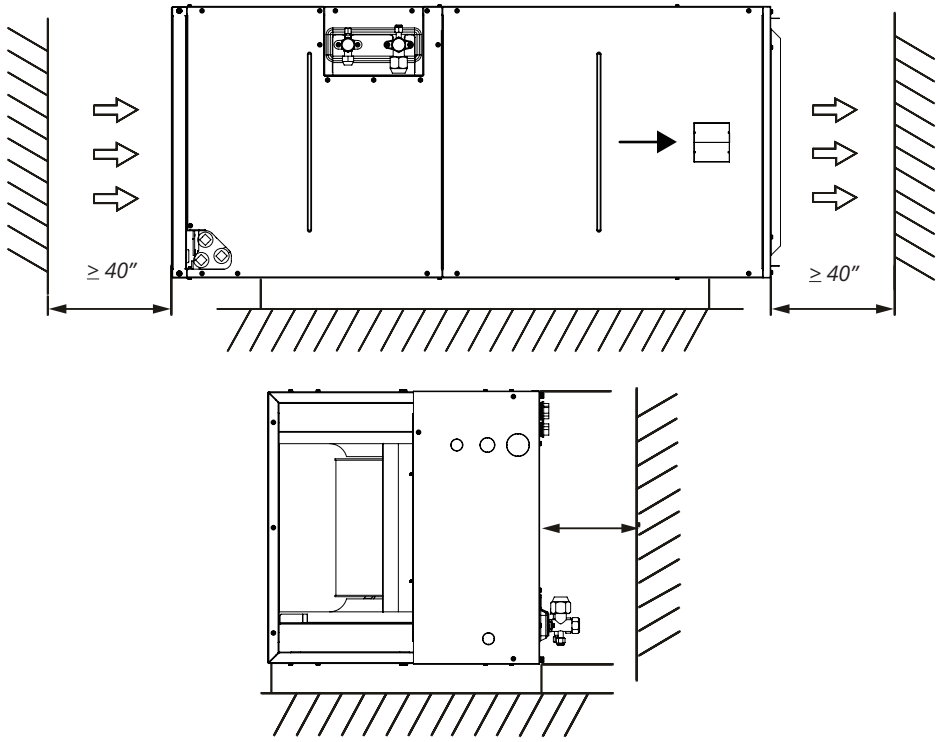
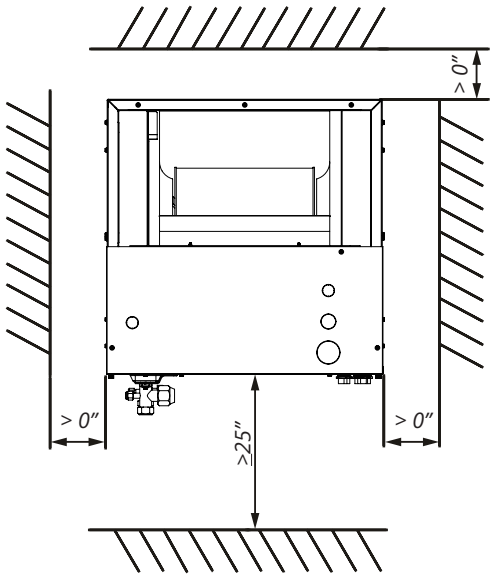


Fig. 3-3 Vertical Position Clearance Requirement



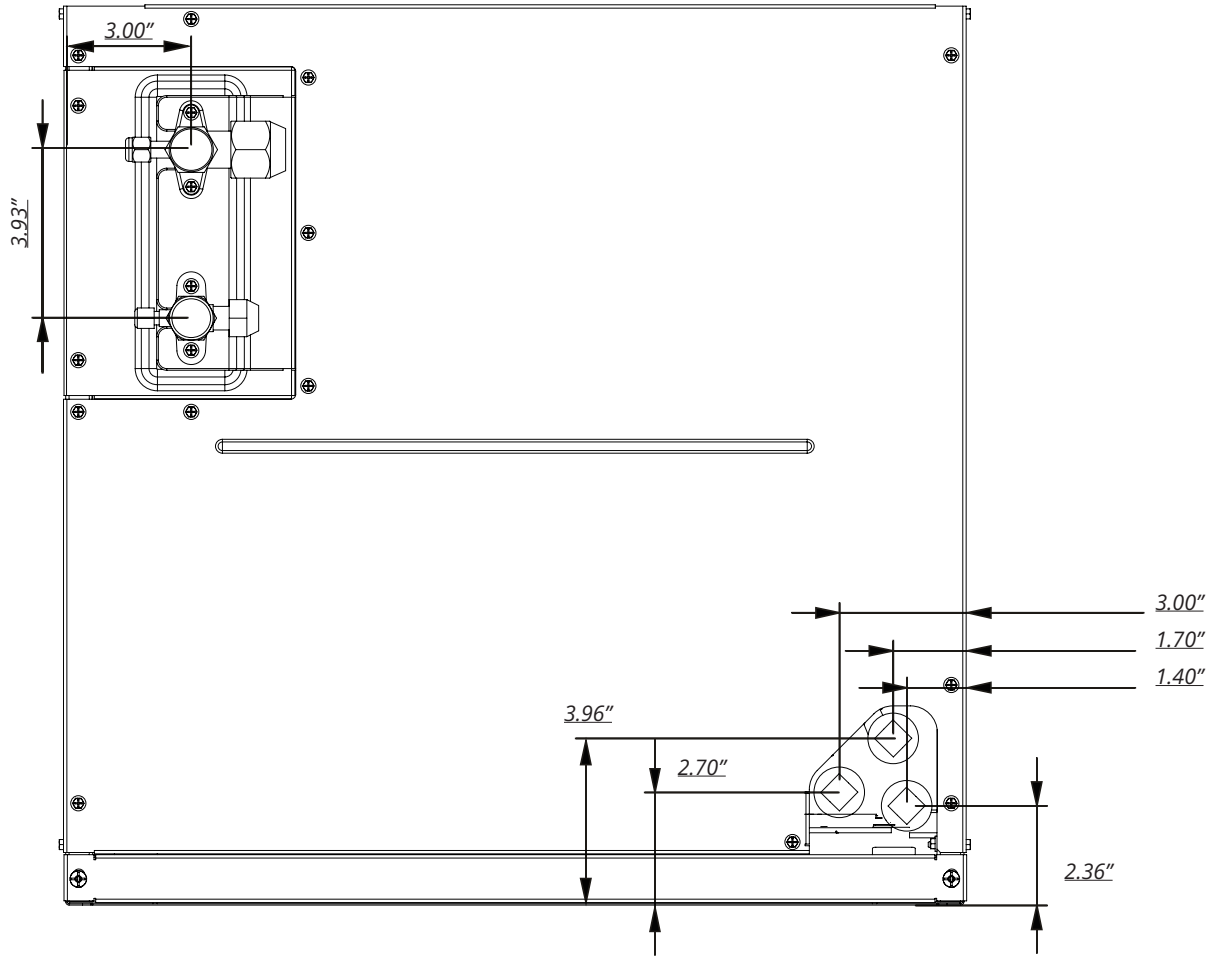
4. 1 Vertical Up-Flow & Horizontal Right-Flow (Left-Flow)

Vertical up-flow and horizontal right-flow configurations are the factory settings on all models. If return air is to be ducted, install duct flush with floor. Use fireproof resilient gasket 1/8" to 1/4" thick between the ducts, unit, and floor. Set unit on floor over opening.

CAUTION

Lightly tighten the drain connections so they do not leak. Using excessive force **may cause damage** to the drain connections. Torque applied to drain connections should not exceed 10.ft.lbs.

Fig. 4-1 Dimensions for Front Connection Coil



NOTICE

The units can be installed in a Vertical (down and up) and Horizontal (right and left) configuration. For a downward air outlet installation, you need to purchase after-sales parts from the dealer and have a professional install them.

Fig. 4-2 Vertical Up Installations (Up Flow)

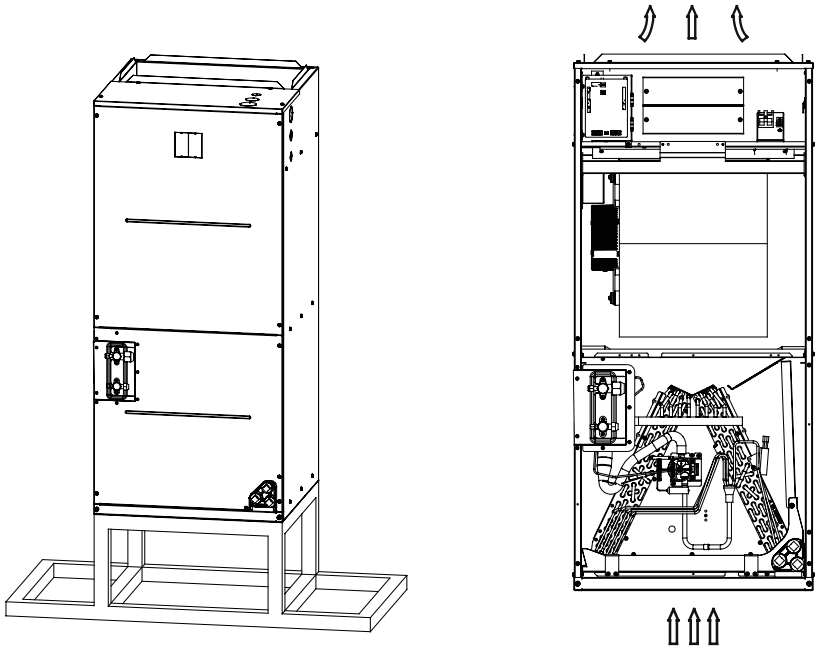
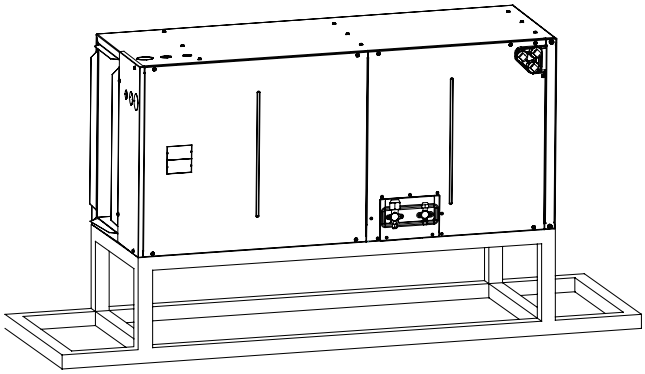
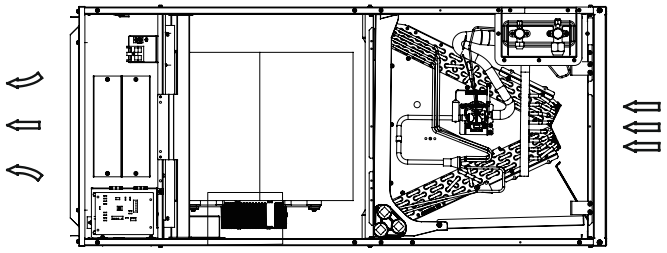


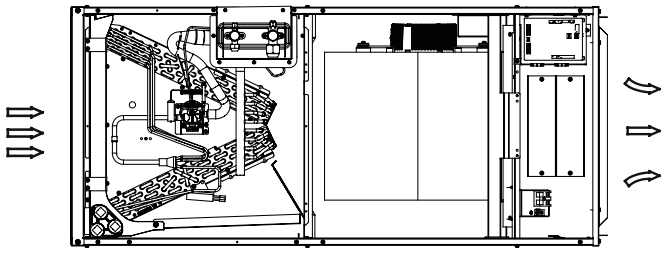
Fig. 4-3 Horizontal Installations



Horizontal Left Flow



Horizontal Right Flow

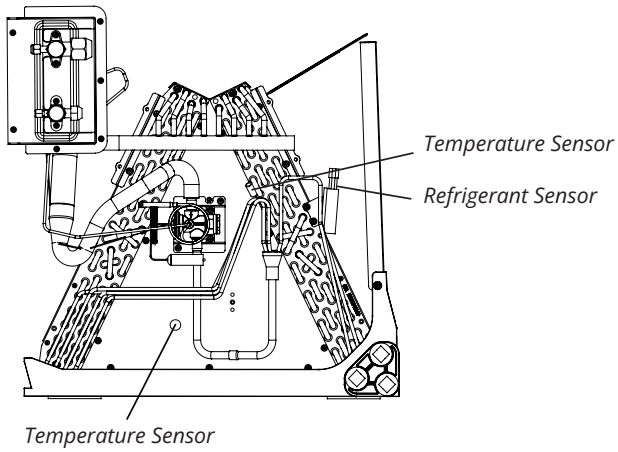


To perform Vertical up installation and Horizontal right installation:

1. Open the upper cover.
2. Open the cover of the electronic control box.
3. Connect the wire according to the wiring diagram.
4. Connect the pipes.
5. Install the drainage pipes.

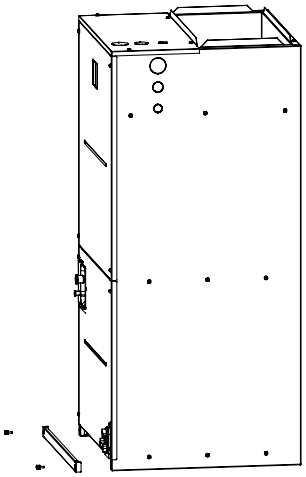
The unit may be installed in one of the up-flow, down-flow, horizontal left, or horizontal right orientations.

Fig. 4-4 Indication of the Position of Each Temperature Sensor of the Evaporator

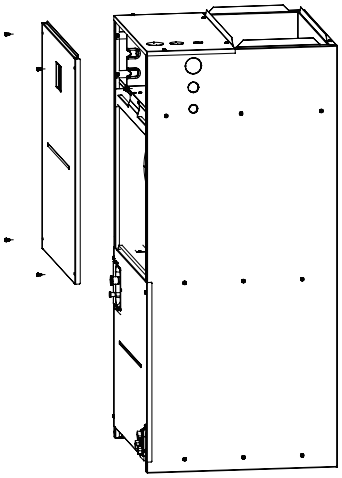


4. 1. 1 How to Disassemble & Reinstall the Evaporator Assembly for Horizontal Installation

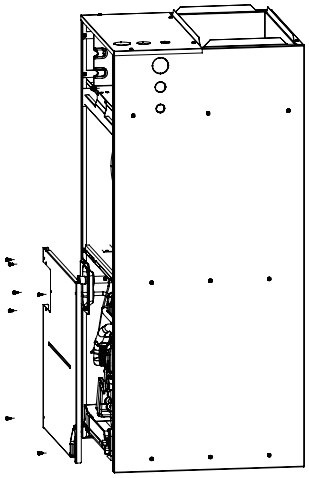
1 Remove the fixed plate of the filter, then take the filter off.



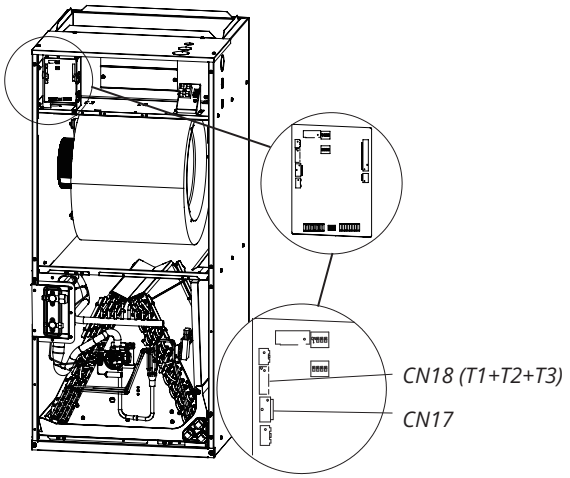
2 Remove the upper cover assembly.



3 Remove evaporator cover plate.

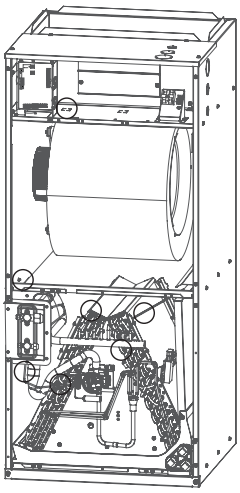


4 Remove the plug of the CN17 refrigerant sensor and the plug o f the CN18 temperature sensor.

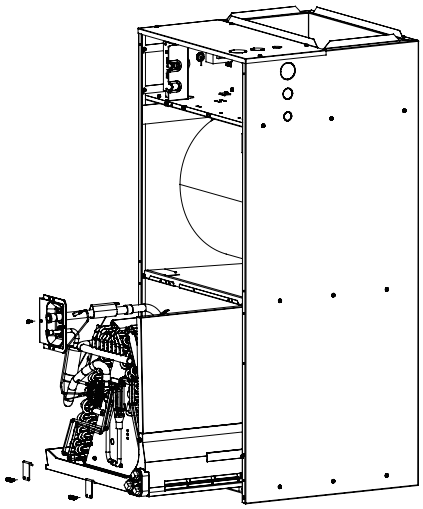


CN17: Refrigerant Sensor COM
CN18: Temperature Sensor COM

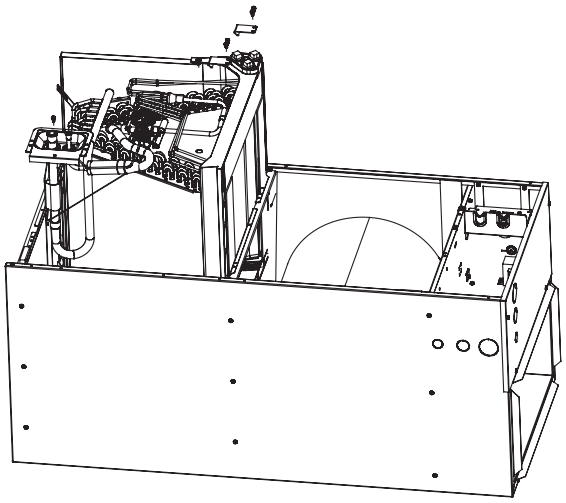
5 Remove CN17/CN18 cable ties.



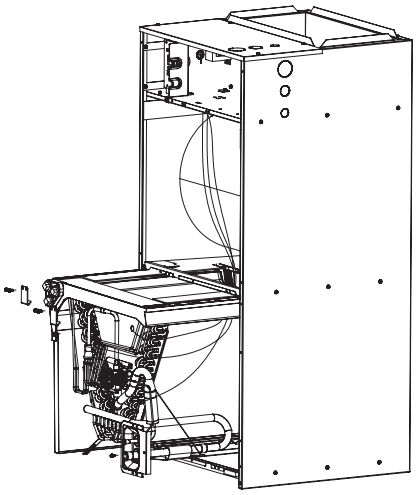
6 Take out the evaporator and drain pan and rotate 180°.

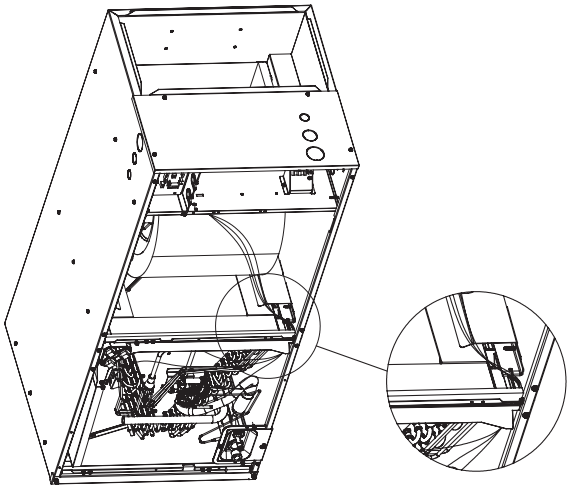


7 Reinstall the evaporator.



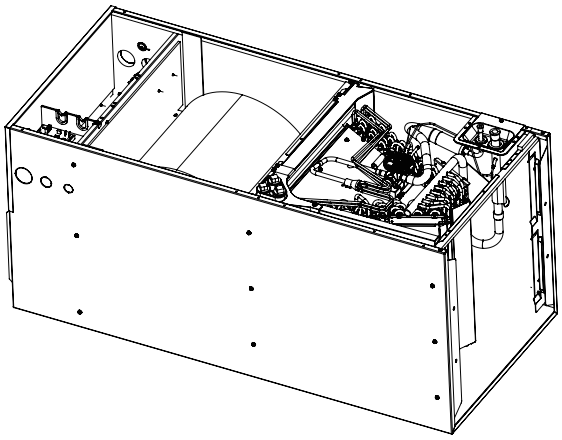
8 Reinstall CN17/CN18 plug and tie up the sensor wires.

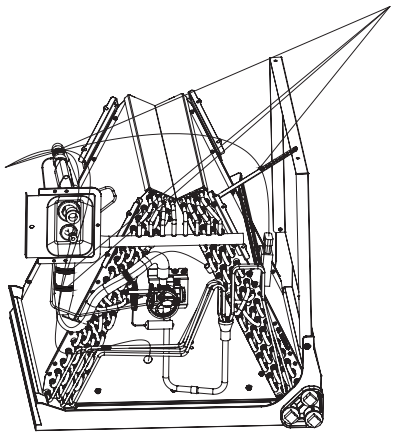




Notice: The wire body needs to pass through the wire groove from the water receiving tray and be stuck on the hook of the water receiving tray.

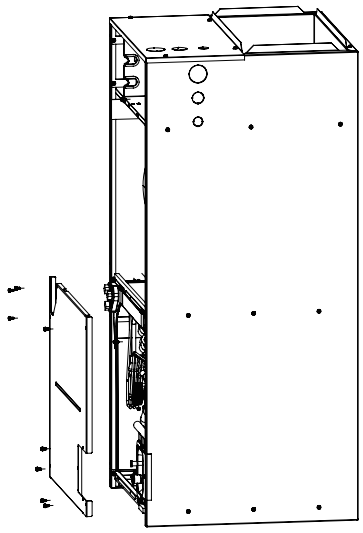
9 Reinstall the drain pan fixed plate and auxiliary support plate.



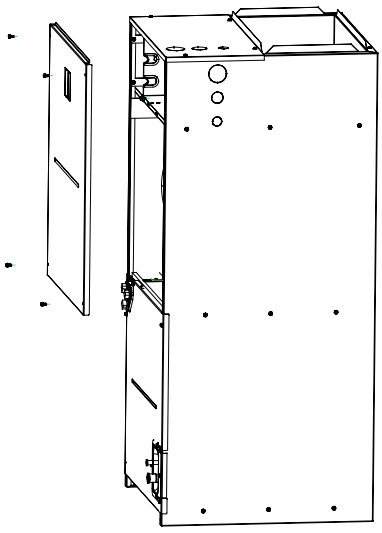


Use cable ties to bind and fix the environmental temperature sensitive bag as shown in the figure.

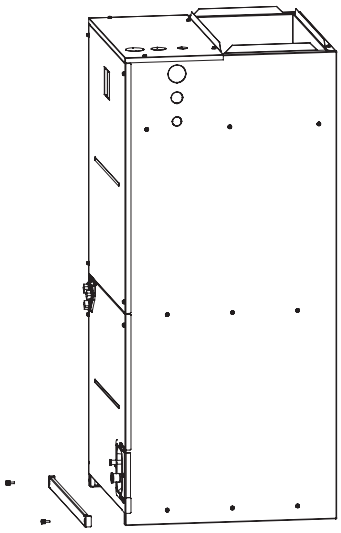
10 Reinstall evaporator cover plate.



11 Reinstall the upper cover assembly.



12 Reinstall the filter and filter plate.



13 Connect the wire according to the wiring diagram.

NOTICE

This unit is compatible with the No-Vac Quick Connect Line Set, enabling a Do-It-Yourself installation.

For installation with the No-Vac Quick Connect Line Set, refer to **page 23**

NOTICE

The unit model has been pre-filled with refrigerant (refer to the machine name plate for the specific refrigerant amount. Ensure the pipes are connected and there is no air inside the connecting pipe before using an Allen wrench to open the shut-off valve.

CAUTION

- Do not install the connecting pipe until both indoor and outdoor units have been installed. Insulate both the gas and liquid piping to prevent water leakage.
- Be extra careful not to damage, dent, or deform the pipe while cutting. This will drastically reduce the heating efficiency of the unit.

1 Cut Pipes

When preparing refrigerant pipes, take extra care to cut and flare them properly. This will ensure efficient operation and minimize the need for future maintenance.

1. Use the piping kit accessory or pipes purchased locally
2. Measure the distance between the indoor and the outdoor unit
3. Cut the pipes a little longer than the measured distance

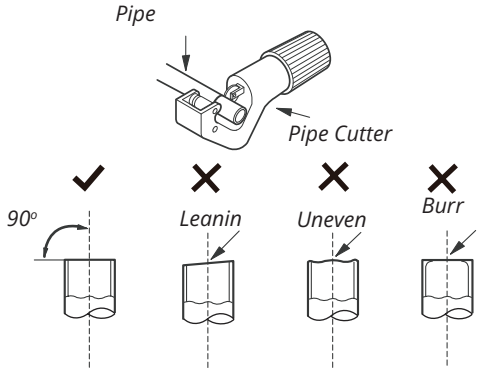


Fig. 5-1 Cut Pipes

2 Remove Burrs

Burrs can affect the air-tight seals of the refrigerant piping connection. They must be completely removed.

1. Completely remove all burrs from the cut section of pipe/tube
2. Put the end of the copper tube/pipe in a downward direction as you remove burrs in order to avoid dropping burrs into the tubing

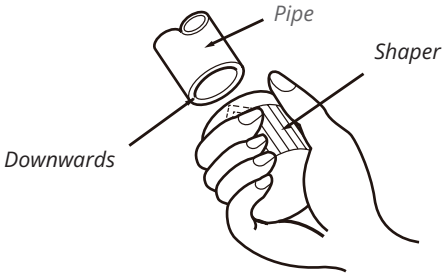


Fig. 5-2 Remove Burrs

3 Flaring Work

Carry out flaring work using flaring tool as shown in **Table 7-3 & Figure 7-3**.

Firmly hold the copper pipe in a die in the dimension show in **Table 7-3**.

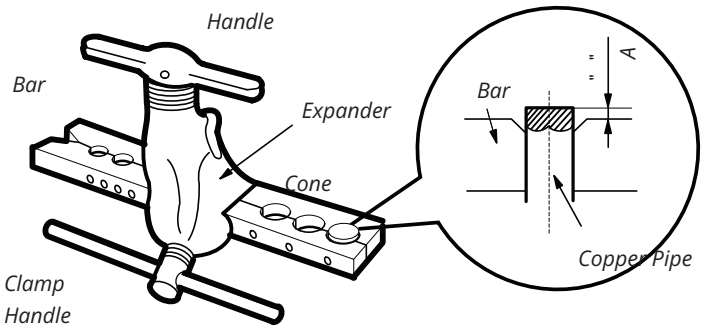


Fig. 5-3 Flaring Work

Table 5-1 Flaring Work Dimension

Outside Diameter	A
Inch	Inch
3/8″	0.03″~0.04″
3/4″	0.02″~ 0.03″
7/8″	0.02″~0.03″

4 Check

1. Compare the flared work with **Figure 7-4**
2. If the flare is defective, cut off the flared section and do the flaring work again

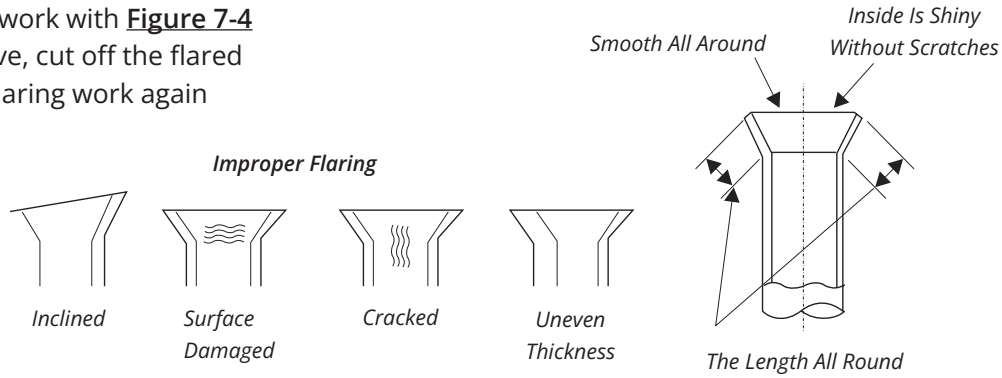


Fig. 5-4 Check Pipe

***NOTE**: Connect the copper pipes to the indoor unit first, then connect it to the outdoor unit.*

5 Pipe Connection

You should first connect the low-pressure pipe, then the high-pressure pipe.

1. Align the center of the two pipes that you will connect
2. Tighten the flare nut as tightly as possible by hand
3. Using a wrench, grip the nut on the unit tubing

***NOTE**: Use two wrenches to connect the pipe with the indoor/ outdoor pipes to avoid the copper pipe cracking.*

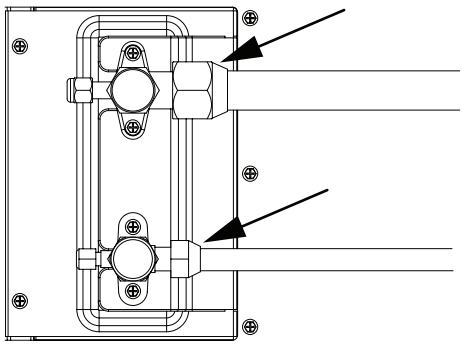


Fig. 5-5 Pipe Connection

4. While firmly gripping the nut, use a torque wrench to tighten the flare nut according to the torque values listed in Table 5-2.
5. Insert the connecting pipe of the indoor unit into the reamer transfer nozzle flaring of the outdoor unit, and braze the connecting port.

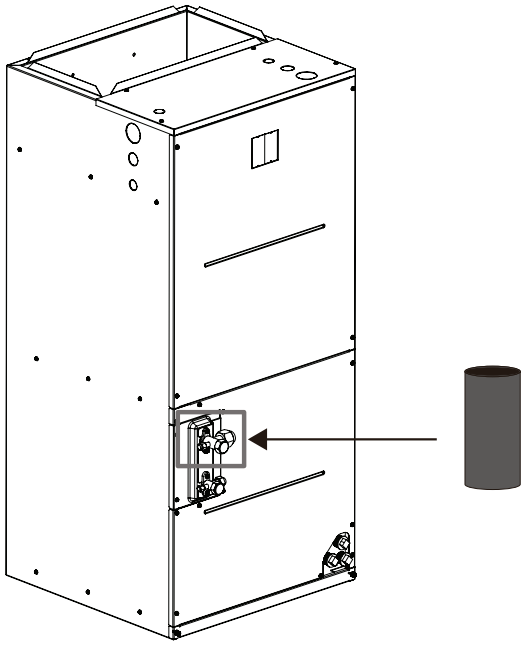
Table 5-2 Torque Values

Connecting Pipe Size	Torque Values (lbf-in)
3/8"	327-372
3/4"	620-664
7/8"	690-735

CAUTION

- Make sure to wrap insulation around the piping. Direct contact with the bare piping may result in burns or frostbite.
- Make sure the pipe is properly connected. Over tightening may damage the bell mouth and under tightening may lead to leakage.

Fig. 5-6 Applying Insulation Sleeve



6. Insulate all the piping, including the gas valve of the outdoor unit.
7. Open the stop valves of the outdoor unit to start the flow of the refrigerant between the indoor and outdoor unit.
8. After ensuring that the prototype is running properly, take out the insulation sleeve from the accessory bag and cut it to the appropriate length according to the actual installation situation to wrap around the shut-off valve. Secure it with zip ties to reduce the condensation issue at the shut-off valve.

CAUTION

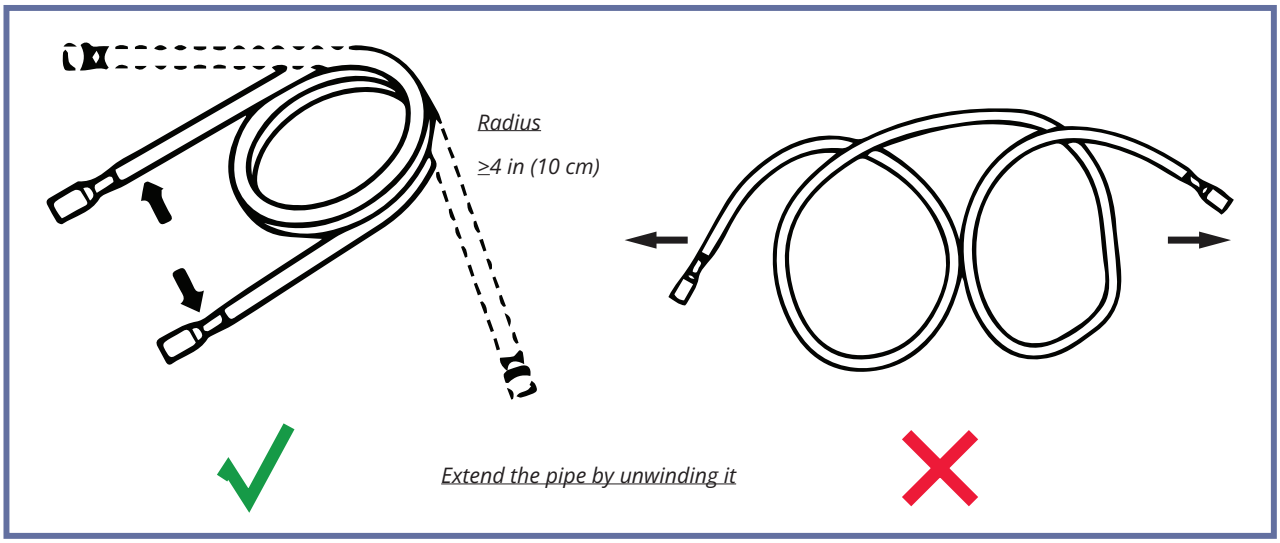
Check to make sure there is no refrigerant leak after completing the installation work. If there is a refrigerant leak, ventilate the area immediately and evacuate the system (refer to the Air Evacuation section of this manual).

6 Pipe Bending

1. Use your hands to bend the pipes. Work carefully not to collapse the pipes during bending.
2. If the pipe is repeatedly bent or extended, it will become hard and difficult to manipulate. Avoid bending or extending the pipe more than **3 times**.
   DO NOT bend the pipes in at an angle greater than 90°
   DO NOT bend the pipes excessively. Otherwise it will break.
   Refer to **Fig. 5-6.**

MINIMUM BEND RADIUS
When bending connective refrigerant piping, the minimum bending radius is 4 in (10 cm). **Refer to Fig. 5-6.**

Fig. 5-7 Pipe Unwinding



As shown in **Fig. 5-7**, use a sharp cutter to cut the pipe insulation and bend the pipe after it is exposed. After bending the pipe to the desired angle, place the insulation back on the pipe and secure it with adhesive tape.

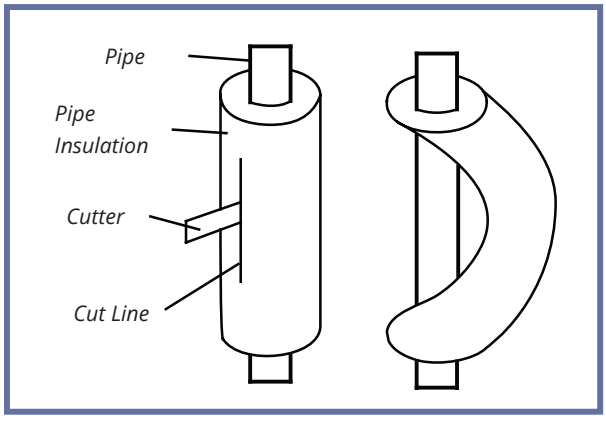


Fig. 5-8 Pipe Cutting

FOR INSTALLATION WITH A NO-VAC® QUICK CONNECT® LINE SET, REFER TO THE NEXT SECTION

This unit is compatible with the No-Vac® Quick Connect® Line Set, enabling a Do-It-Yourself installation.*

Installation Option with MRCOOL No-Vac® Quick Connect® Line Set*

INSTRUCTIONS FOR USE WITH NO-VAC® QUICK CONNECT® LINE SET SOLD SEPARATELY. KINK RESISTANT, PRECHARGED, SIMPLE SECURE QUICK CONNECT, 100% CONNECTION GUARANTEE*

Read and follow the instructions and diagram below*:
Connections must be made exactly as specified to avoid system leaks and/or damage.

1. Take out matching male connectors M1 and M2.
2. Remove protective cap with the copper gasket at each stop valve on the **CONDENSER** and ensure the threads are clean and complete.
3. Tighten the M1 connector to the cutoff valve *1 with a tightening force of 37 ft/lb (50 Nm). Tighten the M2 connector to the cutoff valve *2 with a tightening force of 52 ft/lb (70 Nm).
4. Repeat step 3 for **AIR HANDLER** at the other end of the **LINE SET**.
5. Unroll and route the **LINE SET** between the **AIR HANDLER** and the **CONDENSER**. Bend the line set piping by hand to route the line set to suit your application. Use care when bending the line set. Refer to the **Pipe Bending** section on **page 22** for more detailed instructions on how to properly and safely bend the line set refrigerant piping, as well as the correct bend radius.
6. Remove protective caps of the valves at both ends of the **LINE SET**. Verify all threads are clean and complete.
7. Tighten the LINE SET F1 valve to the M1 Connector (attached in Step 3) with a force of 33 ft/lb (45 Nm). Tighten the LINE SET F2 valve to the M2 Connector (attached in Step 3) with a tightening force of 33 ft/lb (45 Nm).
8. Repeat this process for the **AIR HANDLER** at the other end of the **LINE SET**.
9. At the **OUTDOOR UNIT** remove the protective cap at the cutoff valve switch and open the stop/cutoff valve with a hex wrench to release refrigerant into the system. If there is any fizz, grease, or other leakage, close the valve immediately and check that steps 3 & 7 were done properly. Otherwise, using a sponge or spray bottle, apply a soapy water solution to the connection points to check for micro leaks. If any bubbles form, it indicates there is a leak. If this occurs, close the valve immediately and check that steps 3 & 7 were done properly and re-tighten the valves and line set if necessary.
10. After the correct connection, re-tighten the cutoff valve's protection cap and cover the M1, M2, and F1, F2 connections with the gray insulating sleeve to help prevent condensation.

NOTE ON WRENCHES
The wrench sizes needed for tightening the No-Vac® Quick Connect® Line Set are listed below. Based on the availability of the wrench sizes needed, it is recommended to use two large crescent (adjustable-type) wrenches. Using one to hold the valve while using the other wrench to tighten the line set connector.

IMPORTANT
The stop/cutoff valves on the unit must be opened AFTER connecting the lines and BEFORE turning on the unit. Otherwise, operation can cause leakage and/or damage to the unit.

Fig. 6-1 Complete System Replacement Using the No-Vac® Quick Connect® Line Sets

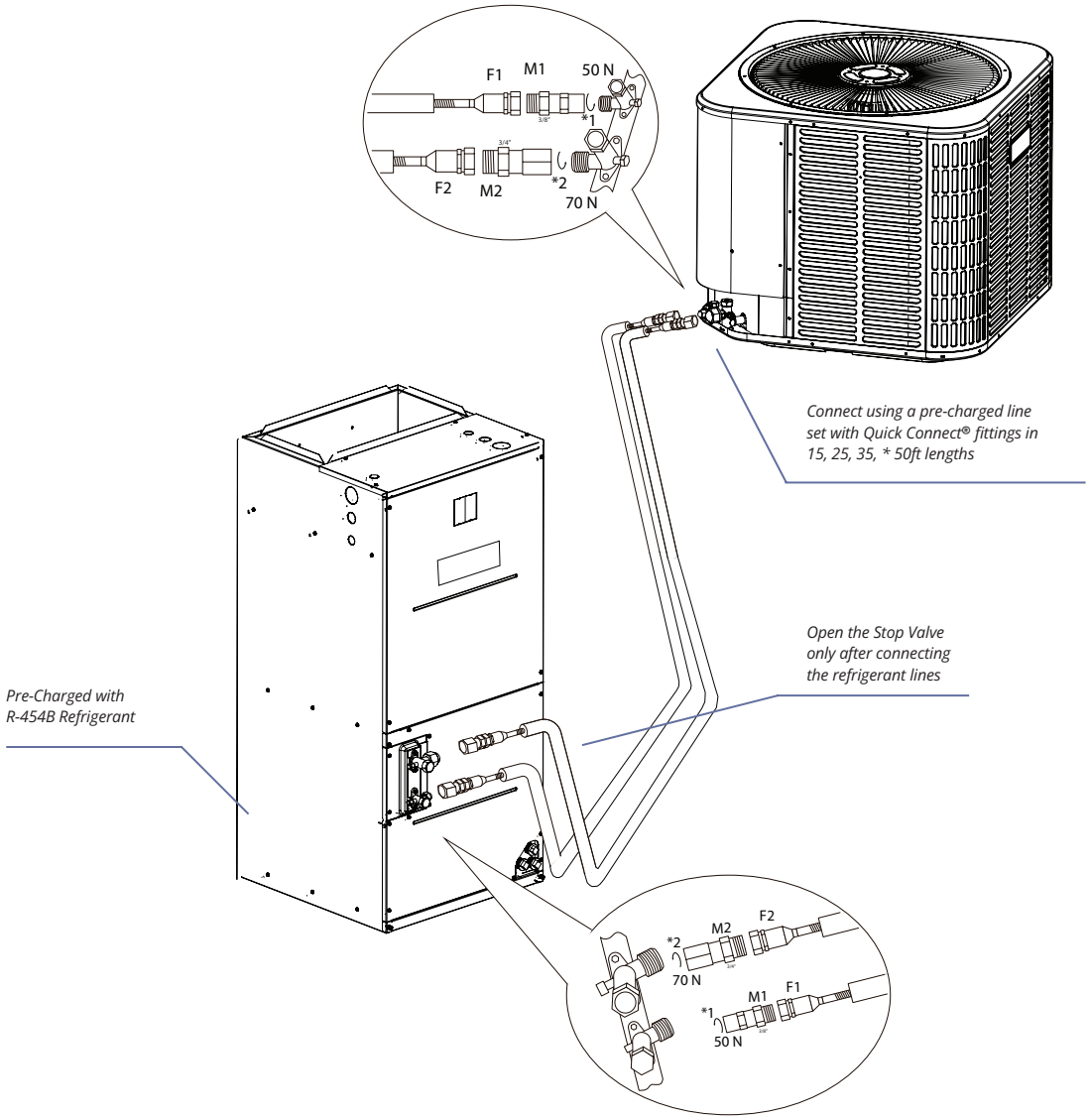


Table 6-1 Pipe & Wrench Sizing

Piping Size (Stamp on Piping)	Wrench Size Required	
	Standard	Metric
3/8″	1″	25mm
3/4″	1-3/8″	35mm
Or 2x large crescent (adjustable-type) wrenches		

Table 6-2 Allen/Hex Sizing

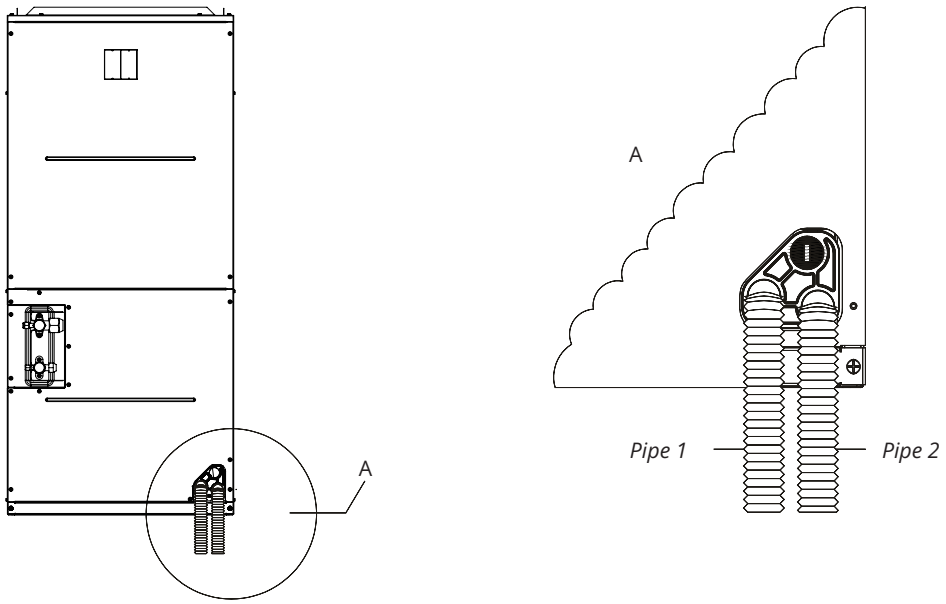
Allen/Hex Wrench Sizes Needed to Open Stop/Cutoff Valves	
Piping/Valve Size (Stamped on Piping	Allen Wrench Size
3/8″	5mm
3/4″	8mm

**Failure to follow the instructions provided could result in severe harm to you, this product, or other property. The manufacturer, distributer, and seller are not responsible for any harm resulting from the failure to follow instructions and the failure to these instructions will void any and all warranties express or limited.*

7. 1 Installation of Drain Pipe

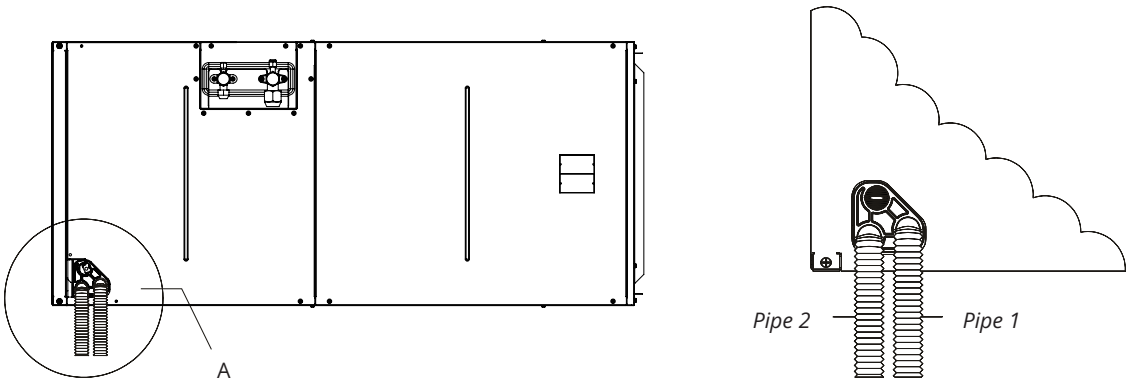
1. When the air handler is installed vertically, please block the upper drainage hole with a cover. The lower right of the drainage hole is connected with the drainage pipe, and the lower left of the drainage hole is connected with the overflow pipe that should be exposed to the air; If the pipe 1 is draining, which means the pipe 2 is blocked. Contact maintenance personnel as soon as possible.

Fig. 7-1 Vertical Drain Pipe Installation



2. When installing the air handler lying down, the upper drainage hole is covered the lower left of the drainage hole is connected with the drainage pipe, the lower right of the drainage hole is connected with the overflow pipe that should be exposed to the air. If the pipe 1 is draining, which means the pipe 2 is blocked. Contact maintenance personnel as soon as possible.

Fig. 7-2 Horizontal Drain Pipe Installation



7. 2 Installation in an Unconditioned Space

There are two pairs of coil rails in the air handler for default and counter flow application. If the air handler is installed in an unconditioned space, the two unused coil rails should be removed to minimize air handler surface sweating. The coil rails can be easily removed by taking off the 6 mounting screws from both sides of the cabinet.

Field wiring must comply with the National Electric Code (C.E.C. in Canada) and any applicable local ordinance.

⚠ WARNING ⚠

Disconnect all power to unit before installing or servicing. More than one disconnect switch may be required to de-energize the equipment. Hazardous voltage can cause severe personal injury or death. Ground the condensing unit according to National, State, and Local code requirements.

Fig. 8-1 Electrical Wiring

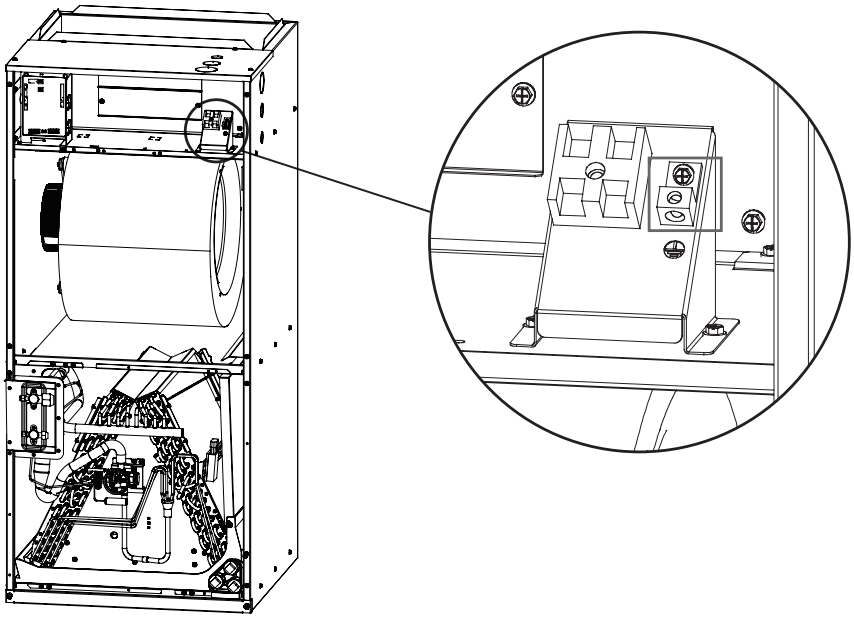


Table 8-1 Minimum Cross-Sectional Area of Power and Signal Cables

Wiring Material Ampacities	AWG
4	22
7	20
10	18
13	16
18	14
25	12
30	10
40	8
55	6
70	4

- *The ampacities shown apply to appliance wiring materials with insulation rated not less than 90°C (194°F).*
- *Supply circuit power wiring must be copper conductors .*

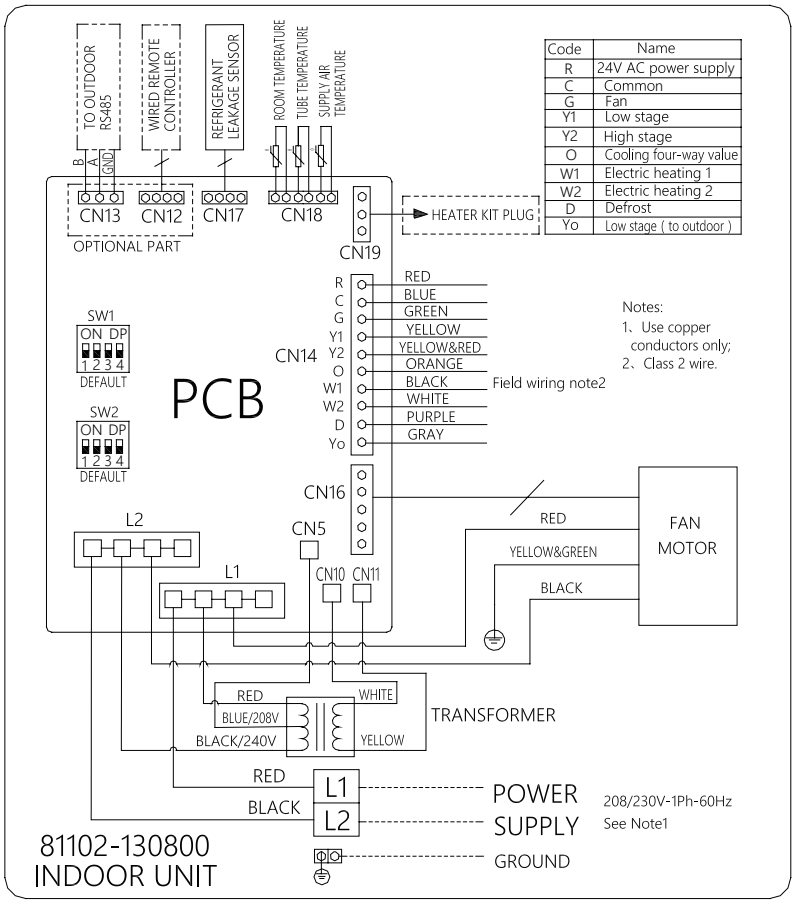
8. 1 Power Wiring

It is important that proper electrical power is available for connection to the unit model being installed.

Refer to the unit nameplate, wiring diagram and electrical data in the installation instructions:

- If required, install a branch circuit disconnect of adequate size, located within sight of, and readily accessible to the unit.
- When the electric heat is installed, units may be equipped with one or two 30~60 amp circuit breakers. These breakers protect the internal wiring in the event of a short circuit and serve as a disconnect. Circuit breakers installed within the unit do not provide overcurrent protection of the supply wiring and therefore may be sized larger than the branch circuit protection.
- Supply circuit power wiring must be 167°F minimum copper conductors at least. Refer to electrical data in this section for ampacity, wire size and circuit protector requirements. Supply circuit protective devices may be either fuses or 'HACR" type circuit breakers.

Fig. 8-2 Wiring Diagram



8. 2 Control Wiring

Class 2 low voltage control wiring should not be run in conduit with main power wiring and must be separated from power wiring, unless class 1 wire of proper voltage rating is used.

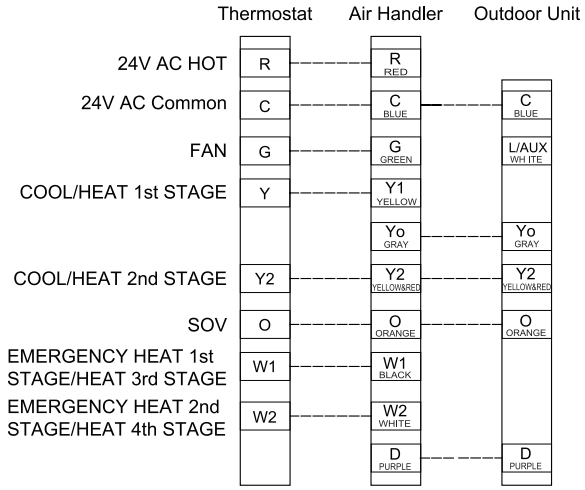
- Low voltage control wiring should be color-coded 18 AWG.
- Refer to wiring diagrams attached to indoor and outdoor sections to be connected.
- Make sure separation of control wiring and power wiring has been maintained.

Table 8-2 Thermostat Terminal Definitions

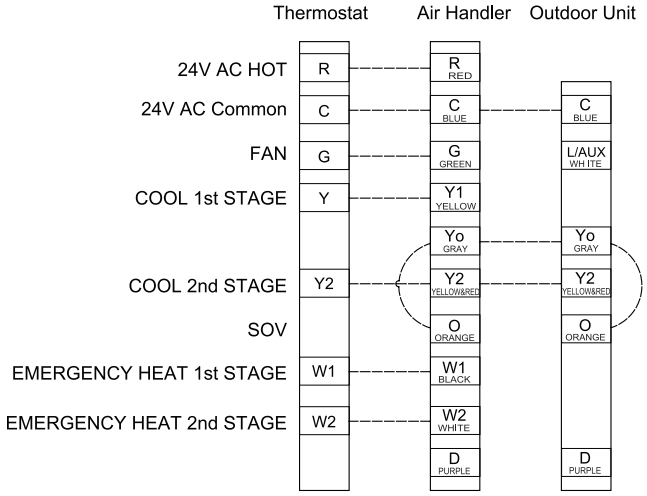
Unit Terminal	Thermostat Terminal Definition
R	24VAC power supply for thermostat from secondary transformer.
C	Common wire.
G	Fan motor relay.
Y1	Compressor stage 1, low load-output control.
Y2	Compressor stage 2, high load-output control.
O	Cooling four-way valve.
W1	Heating stage 1, electrical heater low load-output control.
W2	Heating stage 2, electrical heater high load-output control.
Yo	Outdoor Compressor
D	Defrost signal (receiving the outdoor unit defrost signal)

Fig. 8-3 Control Wiring Connection
Schematic Diagram

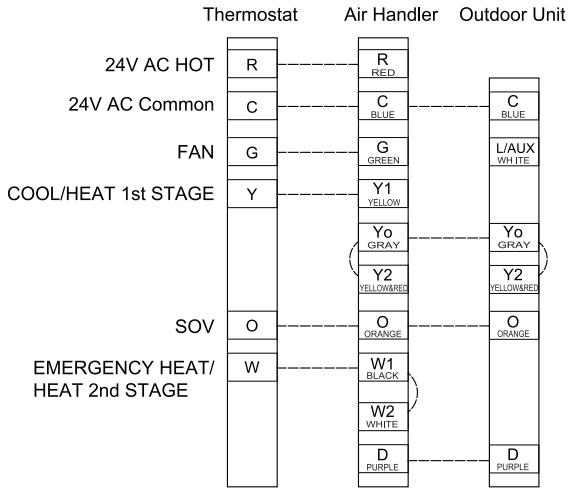
2 Heat / 2 Cool, Heating Pump



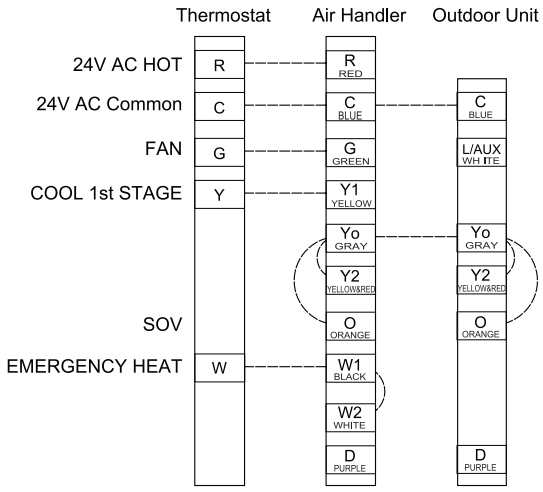
2 Cool / 2 Electric Heat, Cooling Only



1 Heat / 1 Cool, Heating Pump



1 Cool, Cooling Only



NOTES

1. Be sure power supply agrees with equipment nameplate.
2. Power wiring and grounding of equipment must comply with local codes.
3. Low voltage wiring to be No. 18 AWG minimum conductor.
4. Some thermostats may use W2/AUX for heat pump.
5. The electrical heater may not be available for some models.
6. For single stage thermostat with Y/Y1 terminal only, place both Y1 and Y2 wire together to Y/Y1 terminal.
7. When the communication method between the indoor and outdoor units is selected as 24V communication, the above wiring method is required

8. 3 Grounding

⚠ WARNING ⚠

The unit must be grounded.

Failure to do so can result in electrical shock causing personal injury or death.

- Grounding may be accomplished by grounding metal conduit to the unit cabinet when installed in accordance with electrical codes. Grounding may also be accomplished by attaching ground wire(s) to ground lug(s) provided in the unit wiring compartment.
- Use of multiple supply circuits require grounding of each circuit to lug(s) provided in the unit.

8. 4 Electrical Data

Table 8-3 Electrical Data

Model	Voltage-Phase-Hz	Power Supply Wiring Gauge	Motor HP	Motor Steps	Minimum Circuit AMPS	Fuse (A)
**AEAMPVT24D21BA	208/230/240~ 1Ph-60Hz	14 AWG	1/2	7	5.0	15
**AEAMPVT36D21BA			1/2		5.0	
**AEAMPVT48F21BA			3/4		7.0	
**AEAMPVT60F21BA			3/4		7.0	

Note: The parameters in the table do not include electric heating.

8. 5 Electric Heat Data

Table 8-4 Electric Heat Data

Kit Model	Model	Electric Heat (kW)	MIN. Circuit Ampacity			MAX. Fuse or Breaker (HACR) Ampacity		
			208V	230V	240V	208V	230V	240V
**AEHFD5X1BA	**AEAMPVT24D21BA	5	21	23	24	25	30	30
**AEHFD10X1BA		10	42	46	48	50	60	60
**AEHFD5X1BA	**AEAMPVT36D21BA	5	21	23	24	25	30	30
**AEHFD10X1BA		10	42	46	48	50	60	60
		5+10	21+42	23+46	24+48	25+50	30+60	30+60
**AEHFD5X1BA	**AEAMPVT48F21BA	5	21	23	24	25	30	30
**AEHFD10X1BA		10	42	46	48	50	60	60
**AEHFD15X1BA		5+10	21+42	23+46	24+48	25+50	30+60	30+60
**AEHFD20X1BA		10+10	42+42	46+46	48+48	50+50	60+60	60+60
**AEHFD5X1BA	**AEAMPVT60F21BA	5	21	23	24	25	30	30
**AEHFD10X1BA		10	42	46	48	50	60	60
**AEHFD15X1BA		5+10	21+42	23+46	24+48	25+50	30+60	30+60
**AEHFD20X1BA		10+10	42+42	46+46	48+48	50+50	60+60	60+60

**MCA and Max Fuse Ampacity contains the motor amps*

- Electric heat kits are suitable for air handler multiple position installation.
- Means available x means unavailable
  Safety Cautions: All electric work must be performed by qualified personnel.

****AEHFD** series is designed and approved to be installed in the **IV 18** or **TOP AHU**

- Check the ****AEHFD** label to confirm ****AEHFD** size based on room load under lowers ambient temperature.
- Inspect all heating elements and whether heater element wires. Contact local distributor immediately if there is any damage

⚠ WARNING ⚠

- Disconnect all external power supplies before performing installation and servicing. Turn off accessory heater power switch if applicable. Failure to do so may cause serious injury.
- ****AEHFD** must be properly grounded and use copper supply wires. Follow national electric code and local regulations.
- When installing it in an enclosed area such as a garage, heater elements should have a minimum clearance of 18” from the floor to ensure proper ventilation.

8. 6 Auxiliary Electric Heater

When unit is installed with auxiliary electric heater, the fan speed selection must meet the following static pressure requirements. The parts in gray boxes are not allowed to use auxiliary electric heating.

Table 8-5 Auxiliary Electric Heater

Air Handler Model	Motor Speed / CFM	SCFM								
		External Static Pressure - Inches W. C. [Psi]								
		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
		[0]	[.003]	[.005]	[.007]	[.014]	[.018]	[.021]	[.025]	[.028]
**AEAMPVT24D21BA	Tap (7)	1173	1130	1065	1021	956	909	838	791	720
	Tap (6)	1139	1095	1028	983	916	867	795	747	675
	Tap (5)	1105	1059	990	944	875	826	752	703	629
	Tap (4)	1072	1024	953	906	835	785	709	695	583
	Tap (3)	1038	989	916	868	795	743	666	615	538
	Tap (2)	1004	954	879	829	754	702	623	571	492
	Tap (1)	970	919	842	791	714	661	580	527	446
**AEAMPVT36D21BA	Tap (7)	1539	1510	1467	1438	1395	1360	1306	1271	1218
	Tap (6)	1440	1407	1358	1325	1276	1237	1179	1140	1082
	Tap (5)	1340	1304	1248	1211	1156	1114	1052	1010	947
	Tap (4)	1241	1200	1139	1098	1036	992	924	879	812
	Tap (3)	1173	1130	1065	1021	956	909	838	791	720
	Tap (2)	1105	1059	990	944	875	826	752	703	629
	Tap (1)	1038	989	916	868	795	743	666	615	538
**AEAMPVT48F21BA	Tap (7)	1871	1836	1784	1749	1697	1654	1589	1545	1481
	Tap (6)	1779	1746	1696	1663	1613	1572	1510	1469	1408
	Tap (5)	1687	1655	1608	1577	1529	1490	1432	1393	1335
	Tap (4)	1502	1474	1432	1404	1362	1327	1275	1241	1188
	Tap (3)	1410	1377	1329	1296	1248	1210	1154	1116	1060
	Tap (2)	1317	1281	1225	1189	1133	1093	1032	992	932
	Tap (1)	1225	1184	1122	1181	1019	976	911	867	802
**AEAMPVT60F21BA	Tap (7)	2056	2017	1960	1922	1864	1817	1745	1698	1627
	Tap (6)	1871	1836	1784	1749	1697	1654	1589	1545	1481
	Tap (5)	1687	1655	1608	1577	1529	1490	1432	1393	1335
	Tap (4)	1502	1474	1432	1404	1362	1327	1275	1241	1188
	Tap (3)	1410	1377	1329	1296	1248	1210	1151	1116	1060
	Tap (2)	1317	1281	1225	1189	1133	1093	1032	992	931
	Tap (1)	1225	1184	1122	1081	1019	976	911	867	802

8. 7 Installation Instructions

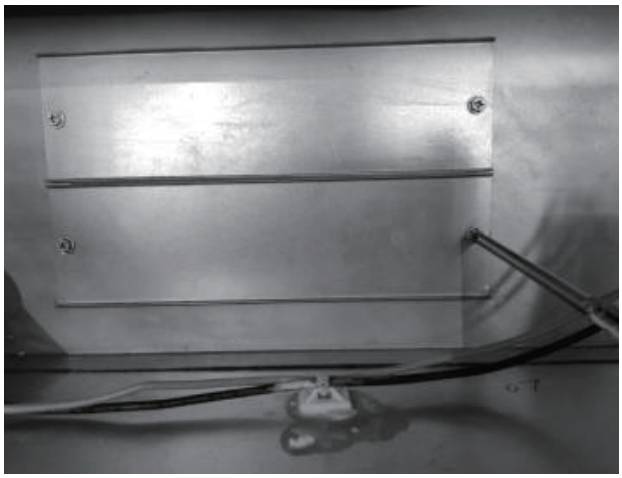
ATTENTION: **AEHFD ELECTRIC HEAT KITS FOR USE IN AIR HANDLERS INSTALLING PERSONNEL

Prior to installation, thoroughly familiarize yourself with this installation manual. Observe all safety warnings. During installation or repair, caution is to be observed. It is your responsibility to install the product safely and to educate the customer on its safe use.

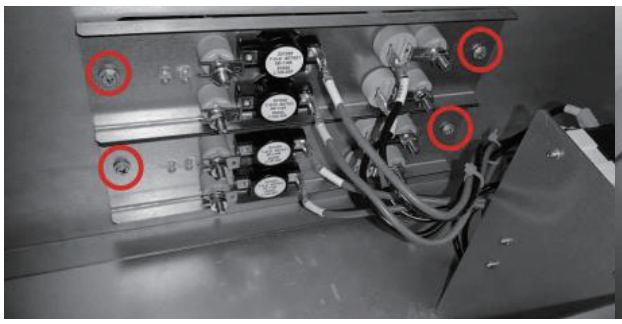
1. Unfasten 4 screws to take away the blower access panel of the air handler.

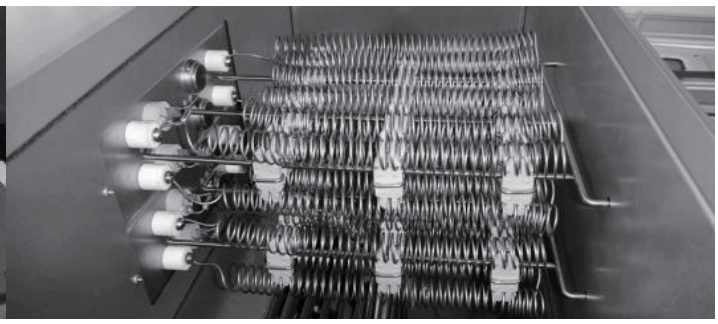


2. Remove the cover plate from the air handler.



3. Slide the heater kit into the slot and secure element plate with previously removed screws .





When sliding the heater kit into the slot ensure that it is installed in the correct orientation described below. Thermostat will be on the left hand side and the fuse will be on the right hand side.

When two elements are being used ensure that “UPPER” and “LOWER” elements are installed in the correct slots and orientations.

Fig. 8-4 5KW Electrical Heat Kit

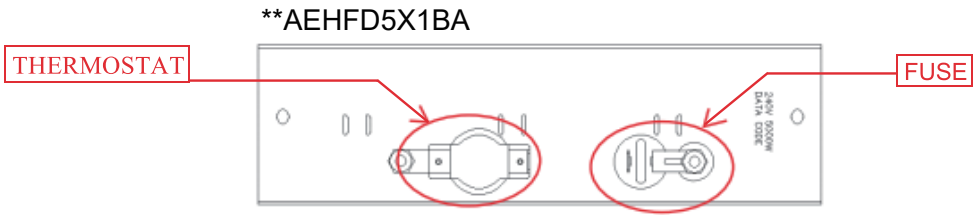


Fig. 8-5 10KW Electrical Heat Kit

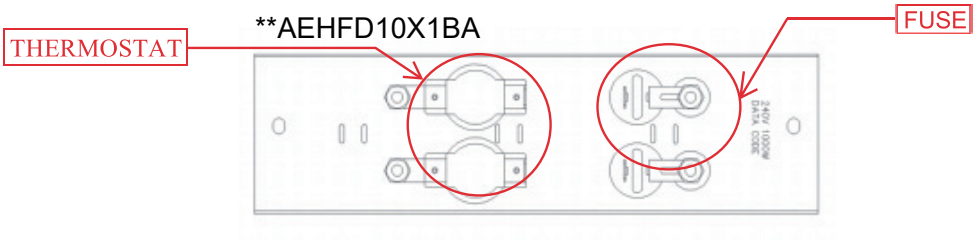


Fig. 8-6 15KW Electrical Heat Kit

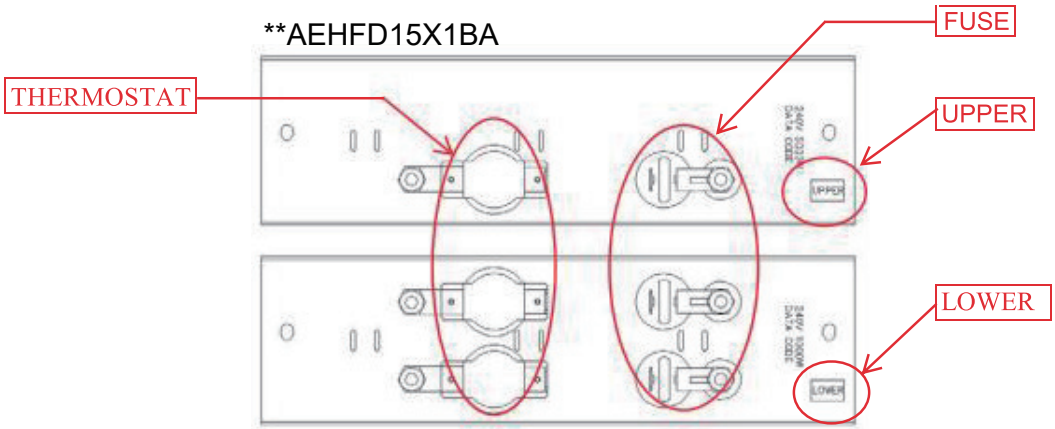
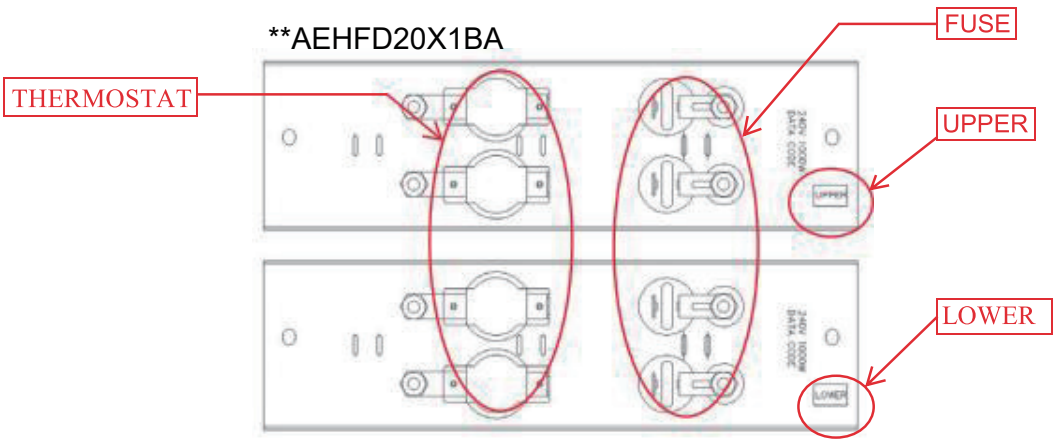
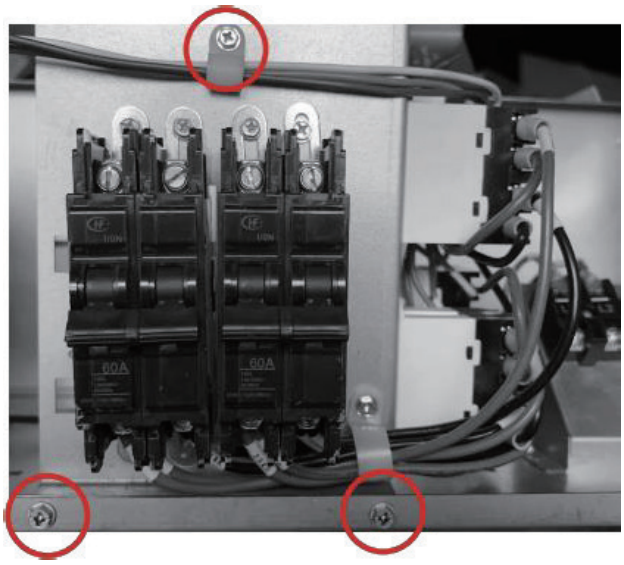


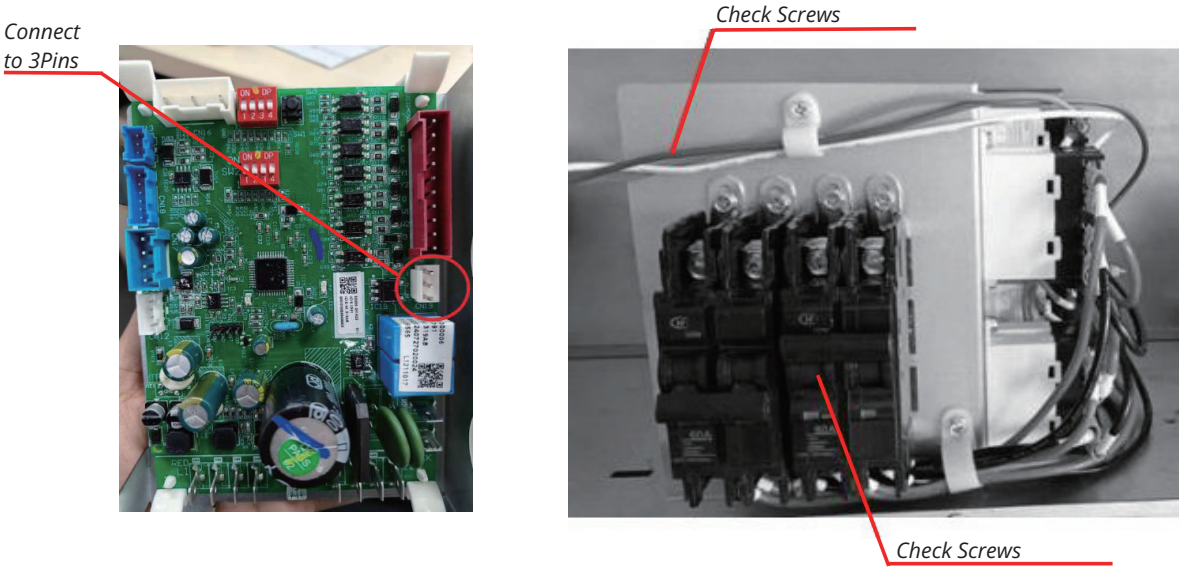
Fig. 8-7 20KW Electrical Heat Kit



4 Align the attachment clip and the hole and fasten the loose wires by using wire tie.



5 Install the circuit breaker into the mounting rail, break out appropriate area of the plastic circuit breaker cover on the access panel of the air handler.



6 The labels for the circuit diagram of the electric heater are to be pasted in this area.



⚠ WARNING: FIRE, ELECTRICAL SHOCK, HAZARD ⚠

After connecting all wires, check all screws of breaker and make sure all screws are properly tight. Failure to do so will result in breaker malfunction, fire, death, personal injury and property damage.

- When indoor control board receives W1/W2 signal, electric heater will be energized and indoor blower will be turned on.
- When W1/W2 signal is off, indoor blower will be turned off.
- Blower motor runs when “c” is energized, and off when “c” is de-energized.

Fig. 8-8 Wiring Diagram for 5KW Electric Heat

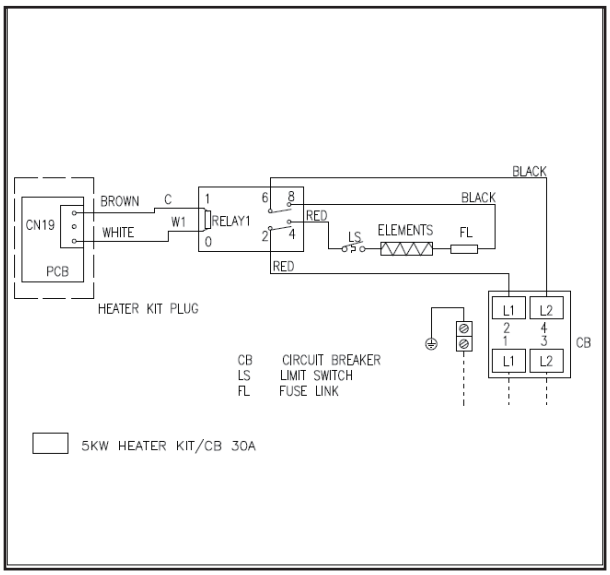


Fig. 8-9 Wiring Diagram for 10KW Electric Heat

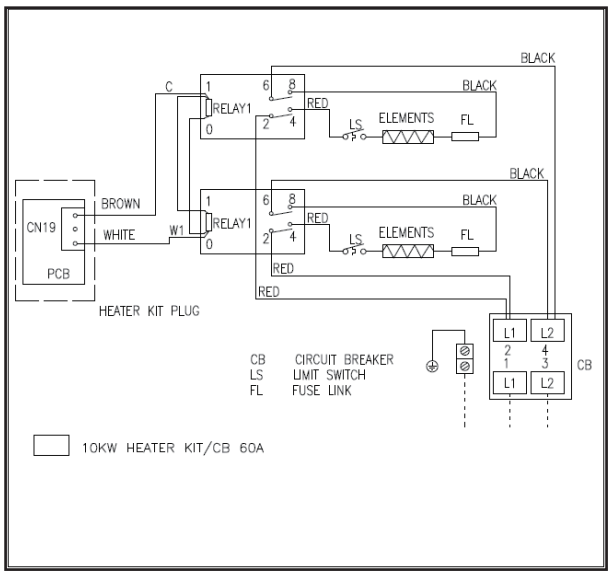


Fig. 8-10 Wiring Diagram for 15KW Electric Heat

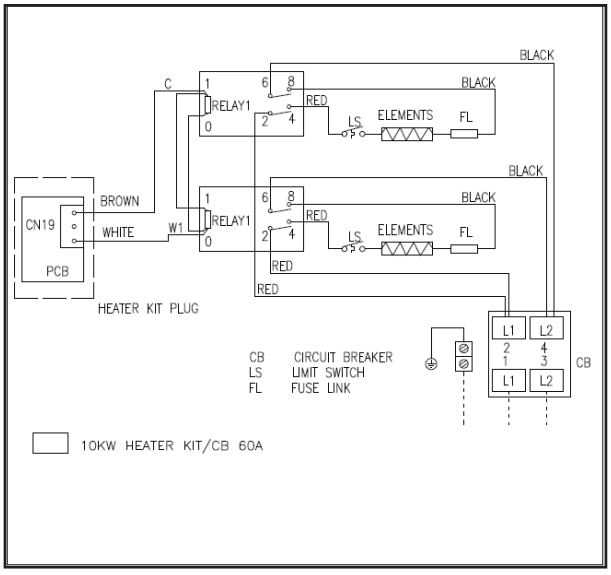
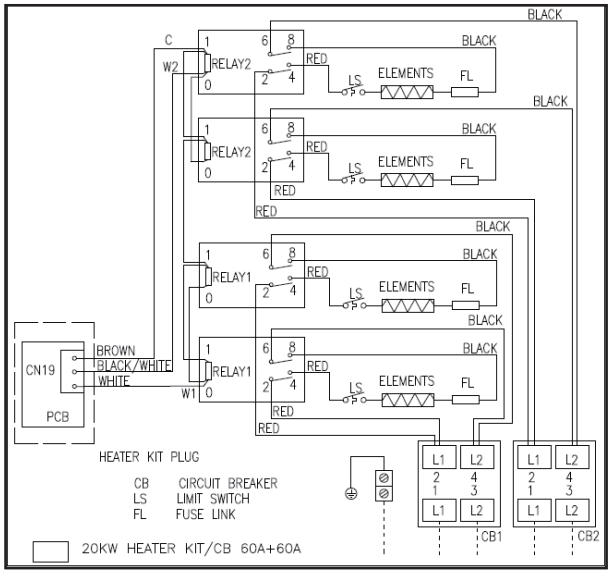


Fig. 8-11 Wiring Diagram for 20KW Electric Heat



Airflow performance data is based on cooling performance with a coil and no filter in place. Check the table for appropriate unit size selection. External static pressure should stay within the minimum and maximum limits shown in **Table 6-1** in order to ensure proper airflow.

NOTE

Airflow based upon cooling performance at 230V with no electric heat and no filter. Airflow at 208V is approximately the same as 230V because the multi-tap ECM motor is a constant torque motor. The torque doesn't drop off at the speeds in which the motor operates. The air distribution system has the greatest effect on airflow. For this reason, the contractor should use only industry-recognized procedures to finish ductwork. Heat pump systems require a specified airflow. Each ton of cooling requires between 300 and 450 cubic feet per minute (CFM). Duct design and construction should be carefully done. System performance can be lowered dramatically through bad planning or workmanship. Air supply diffusers must be selected and located carefully. They must be sized and positioned to deliver treated air along the perimeter of the space. Return air grilles must be properly sized to carry air back to the blower as well. Failure to follow these may cause abnormal noise and drafts. The installers should balance the air distribution system to ensure proper quiet airflow to all rooms in the home. This ensures a comfortable living space. An air velocity meter or airflow hood can give a reading of system CFM.

Table 9-1 Airflow Performance Data

Model	Motor Speed		SCFM								
			External Static Pressure - Inches W. C.								
			0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
**AEAMPVT24D21BA	Super grade	SCFM	1173	1130	1065	1021	956	909	838	791	720
	Top grade	SCFM	1139	1095	1028	983	916	867	795	747	675
	Mid and high grade	SCFM	1105	1059	990	944	875	826	752	703	629
	Mid-range	SCFM	1072	1024	953	906	835	785	709	695	583
	Mid and low grade	SCFM	1038	989	916	868	795	743	666	615	538
	Low grade	SCFM	1004	954	879	829	754	702	623	571	492
	Mute tone	SCFM	970	919	842	791	714	661	580	527	446
**AEAMPVT36D21BA	Super grade	SCFM	1539	1510	1467	1438	1395	1360	1306	1271	1218
	Top grade	SCFM	1440	1407	1358	1325	1276	1237	1179	1140	1082
	Mid and high grade	SCFM	1340	1304	1248	1211	1156	1114	1052	1010	947
	Mid-range	SCFM	1241	1200	1139	1098	1036	992	924	879	812
	Mid and low grade	SCFM	1173	1130	1065	1021	956	909	838	791	720
	Low grade	SCFM	1105	1059	990	944	875	826	752	703	629
	Mute tone	SCFM	1038	989	916	868	795	743	666	615	538
**AEAMPVT48F21BA	Super grade	SCFM	1871	1836	1784	1749	1697	1654	1589	1545	1481
	Top grade	SCFM	1779	1746	1696	1663	1613	1572	1510	1469	1408
	Mid and high grade	SCFM	1687	1655	1608	1577	1529	1490	1432	1393	1335
	Mid-range	SCFM	1502	1474	1432	1404	1362	1327	1275	1241	1188
	Mid and low grade	SCFM	1410	1377	1329	1296	1248	1210	1154	1116	1060
	Low grade	SCFM	1317	1281	1225	1189	1133	1093	1032	992	932
	Mute tone	SCFM	1225	1184	1122	1181	1019	976	911	867	802
**AEAMPVT60F21BA	Super grade	SCFM	2056	2017	1960	1922	1864	1817	1745	1698	1627
	Top grade	SCFM	1871	1836	1784	1749	1697	1654	1589	1545	1481
	Mid and high grade	SCFM	1687	1655	1608	1577	1529	1490	1432	1393	1335
	Mid-range	SCFM	1502	1474	1432	1404	1362	1327	1275	1241	1188
	Mid and low grade	SCFM	1410	1377	1329	1296	1248	1210	1151	1116	1060
	Low grade	SCFM	1317	1281	1225	1189	1133	1093	1032	992	931
	Mute tone	SCFM	1225	1184	1122	1081	1019	976	911	867	802

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

⚠ WARNING ⚠

Do not, under any circumstances, connect return ductwork to any other heat producing device such as fireplace insert, stove, etc. Unauthorized use of such devices may result in fire, carbon monoxide poisoning, explosion, personal injury or property damage.

Sheet metal ductwork run in unconditioned spaces must be insulated and covered with a vapor barrier. Fibrous ductwork may be used if constructed and installed in accordance with SMACNA Construction Standard on Fibrous Glass Ducts. Ductwork must comply with National Fire Protection Association as tested by U/L Standard 181 for Class I Air Ducts. Check local codes for requirements on ductwork and insulation.

- Duct system must be designed within the range of external static pressure the unit is designed to operate against. It is important that the system airflow be adequate. Make sure supply and return ductwork, grilles, special filters, accessories, etc. are accounted for in total flow resistance. Refer to the airflow performance table in this manual.
- Design the duct system in accordance with “ACCA” Manual “D” Design for Residential Winter and Summer Air Conditioning and Equipment Selection. Latest editions are available from: “ACCA” Air Conditioning. Contractors of America, 1513 16th Street, N.W., Washington, D.C. 20036. If duct system incorporates Xair duct, be sure that the pressure drop Information (straight length plus all turns) shown in “ACCA” Manual “D” is accounted for in system.
- Supply plenum is attached to the 3/4” duct flanges supplied with the unit. Attach flanges around the blower outlet.
- Secure the supply and return ductwork to the unit flanges, using proper fasteners for the type of duct used and tape the duct-to-unit joint as required to prevent air leaks.

CAUTION

If an elbow is included in the plenum close to the unit, it must not be smaller than the dimensions of the supply duct flange on the unit.

The front flange on the return duct connected to the blower casing must not be screwed into the area where the power wiring is located. Drills or sharp screw points can damage insulation on wires located inside unit.

Filter application and replacement are critical to airflow, which may affect the heating and cooling system performance. Reduced airflow can shorten the life of the system's major components, such as motor, heat relays, evaporator coil, or compressor. Units should be sized for a maximum of 300 feet/min. air velocity or what is recommended for the filter typer installed.

Ensure the airflow is in the range of 300-450 CFM if adding high efficiency filters or electronic air filtration systems.

Note that the overall performance and efficiency of the unit will be reduced because of pressure drop by filters.

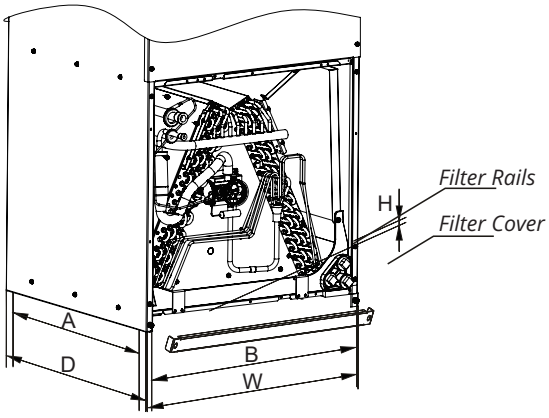
CAUTION

- Do not double filter the return air duct.
- Do not filter the supply air duct which will change the performance of the unit and reduce airflow.

⚠ WARNING ⚠

- Do not operate the system without filters. A portion of the dust suspended in the air may temporarily lodge in the duct. Any circulated dust suspended in the air may temporarily lodge in the duct. Any circulated dust particles could be heated and charred by contact with the air handler elements.
- This residue could soil ceilings, walls, drapes, carpets, and other articles in the house. Soot damage may occur without filters in place when certain types of candles, oil lamps, or standing pilots are burned.

Fig. 11-1 Filter Installation & Cleaning



Air Filter Clean/Replacement:

1. Remove bolts to take the filter cover away
2. Hold the edge of the air filter and take it out
3. Clean the air filter or replace with a new one

Note:

The air filter is not factory installed, and is not equipped with a filter. You must purchase and install it yourself. Refer to the label on the filter cover to install the correct filter size.

Table 11-1 Airflow Performance Data

Model	Dimensions (in.)					
	Filter Size	W	D	H	A	B
**AEAMPVT24D21BA	18×20	19-3/4	21	1	16	13-7/8
**AEAMPVT36D21BA						
**AEAMPVT48F21BA	22×20	23-1/4	21	1	16	15-1/4
**AEAMPVT60F21BA						

12. Refrigerant Sensor

1. The refrigerant sensor must be maintained by a professional and only the specified sensor by the manufacturer can be replaced.

2. The design life of the refrigerant sensor is 15 years, please replace the sensor within the range of the service life.

3. The refrigerant sensor automatically detects the condition of the machine while in operation, and will automatically start the circulating air flow and stop the compressor when the concentration reaches the alarm range.

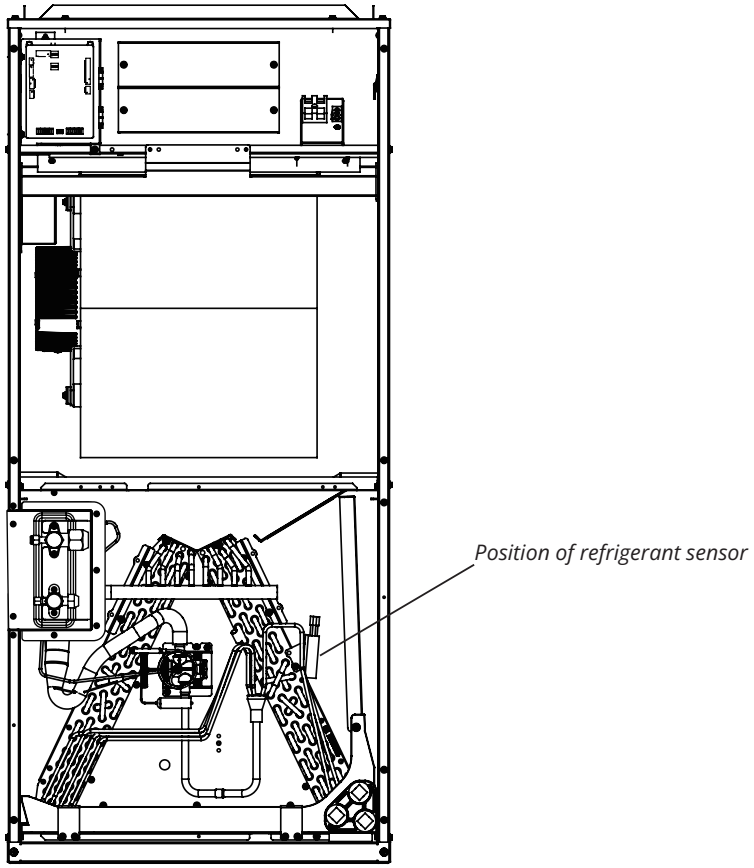
4. The alarm signal of the refrigerant sensor is as follows in Table 9-1.

Table 12-1 Sensor Communication

	24V Communication	485 Communication
Refrigerant Leak Protection	The red light is steady on	Display “Hd”
The communication of the refrigerant sensor is abnormal	The red light blinks once and turns off once	Display “Fd”

5. The installation position of the refrigerant sensor is shown in the figure below (for example, the appearance of different cabinets may be different).

Fig. 12-1 Refrigerant Sensor Position



13. 1 Communication Function Dip Switch

According to the actual installation requirements, you can choose 24V ON/OFF mode or RS485 communication mode to control the unit.

Table 13-1 Communication Function

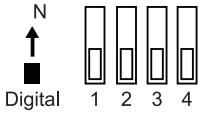
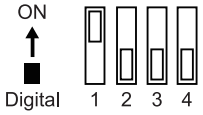
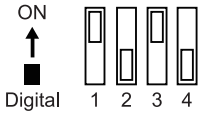
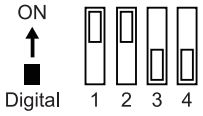
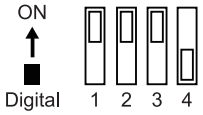
Dip Bit	Dip Code	Function Description
SW2-1		Factory default, 24V ON/OFF control, using 24V thermostat control unit operation.
		RS485 communication control, the need to purchase wire controllers and communication lines from the manufacturer to meet the use of accessories.

13. 2 Wind Gear Adjustment Dip Switch

1. When the SW1-1 is located at the digital end (factory default), the fan runs in 5th level for high speed and 2nd level for low speed. If you want to adjust the fan speed by yourself, change it to the “ON” end

2. Set SW1-1 to “ON” end. Then combining the SW1-2 and SW1-3 to get different fan speeds. The fan speed operation obtained by the combination is shown in **Table 10-2**.

Table 13-2 Wind Gear Adjustment

Combination	SW1 Setting	Low Speed	High Speed
1 (Default)		Mid and High Grade	Super Grade
2		Mid-Range	Super Grade
3		Mid and Low Grade	Top Grade
4		Low Grade	Mid-Range
5		Mute Tone	Mid-Range

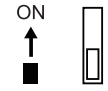
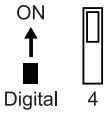
Note: The DIP switch of SW1 takes effect only when SW2-1 is on the digital end. When the SW2-1 dip switch is ON, the wind gear is directly controlled and adjusted by the wire controller.

13. 3 Anti-Cold Air Dip Switch

In 24V ON/OFF control mode, you can use SW1-4 DIP switch to adjust how anti-cold air function takes effect.

1. The default DIP switch position of SW1-4 is on the digital end. The cold air protection function takes effect. When the heat pump is started, the unit will first run in accordance with the lower wind gear for a period of time to prevent the cold air from blowing into the room at the initial stage of heating operation and affecting the comfort, and then adjust the speed according to the temperature control wind gear. The unit determines the defrosting status of the outdoor unit according to the signal of terminal D. During the defrosting operation of the outdoor unit, the indoor air conditioner stops running to prevent cold air from blowing into the room during the defrosting process and affecting the comfort. The unit exits the defrosting process and adjusts the rotational speed according to the temperature control air gear after the anti-cold air is finished. In the electric heating operation state, the unit will control the fan operation according to the temperature control wind gear, and do not perform the anti-cold wind action.
2. You can turn off the anti-cold air function by switching the SW1-4 dip switch to the ON end, and the unit controls the fan operation according to the control wind gear of the thermostat, and does not implement the anti-cold risk control system.

Table 13-3 Anti-Cold Air

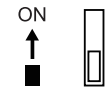
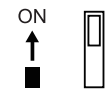
Dip Bit	Dip Code	Function Description
SW1-4		The cold air protection function takes effect.
		The cold air protection function fails.

Note: The DIP switch of SW1 takes effect only when SW2-1 is on the digital end. When the SW2-1 dip switch is located at the ON end, the unit is intelligently controlled and the cold air protection function is always effective.

13. 4 Dip Switch of the Lower Outlet Air Gear Control Function

SW2-2 DIP switches are installed at the digital end by default before delivery. When the unit is installed at the bottom air outlet, adjust the SW2-2 DIP switches to ON. The unit will intelligently control the upper limit of the air gear to prevent the condensate from being blown into the air duct due to excessive air volume.

Table 13-4 Lower Outlet Air Gear Control

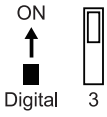
Dip Bit	Dip Code	Function Description
SW2-2		The installation form of the unit is dialed to this position when the upper air is discharged or the left and right horizontal air is discharged.
		The installation form of the unit is dialed to this position when the air is discharged.

13. 5 Cold Air Prevention

In 24V ON/OFF control mode, you can use SW2-3 DIP switches to adjust whether the exhaust air temperature control function takes effect.

1. The default DIP switch position of SW2-3 is on the digital end, and the exhaust air temperature control function takes effect. When the unit is running in the heat pump, if the air flow temperature after the heat exchanger is detected to be too high, the electric auxiliary heat will be controlled not to start, to prevent the electric heating temperature from being too high and triggering overheating protection.
2. If you need to further increase the air temperature of the equipment, you can adjust the SW2-3 dip switch position to the ON end, the air temperature control function fails, and the electric heating in this state runs according to the control of the thermostat, which is not affected by the air temperature of the heat pump.

Table 13-5 Cold Air Prevention

Dip Bit	Dip Code	Function Description
SW2-3		The exhaust air temperature control function takes effect.
		The exhaust air temperature control function fails.

Note: In emergency heating mode, when the external unit of the heat pump is not running, the electric heating runs according to the control of the temperature controller, and is not affected by the outlet air temperature of the heat pump.

13. 6 SW2-4 Dip Switches Remain in Factory Status

SW2-4 DIP switches remain in factory status (digital end). Do not adjust them at will.

14. Fault Indication

Blinking definition: The Led light on 200ms and then off 200ms, defined as a Led light flashing.

Table 14-1 Fault Indication

LED Light Color	LED Light Status	Failure
Green light	Turn Off	Standby mode
Green light	Stay Lit	In operation
Green light	Beat 1	Anti-cold air running (blink once, off for 1s)
Green light	Beat 2	Electric auxiliary hot running (blink twice, off for 1s)
Green light	Beat 3	Commodity inspection status (blink 3 times, off for 1s)
Green light	Beat 3	Self-check status (blink 4 times, off for 1s)
Red light	Turn Off	Trouble-free
Red light	Stay Lit	Refrigerant leak protection
Red light	Beat 1	The communication of the refrigerant sensor is abnormal (blink once, and then off for 1s).
Red light	Beat 2	Internal fan fault (Blinking twice, off for 1s)
Red light	Beat 3	Internal coil temperature sensing packet fault (blink 3 times, off for 1s)
Red light	Beat 4	The supply air temperature sensing packet is faulty (blinks four times, and then disappears for 1s).
Red light	Beat 5	EEPROM fault (blink 5 times, off for 1s)
Red light	Beat 6	Indoor/Outdoor 485 Communication failure (blinking six times, off for 1s)
Red light	Beat 7	Controller 485 Communication failure (blinking 7 times, off for 1s)

This only works with 24V communication; 485 Communication is not displayed, the online controller displays the fault code.

CAUTION

If one of the following conditions occurs, switch off the power supply immediately and contact your dealer for further assistance:

- The operation light continues to flash rapidly after the unit has been restarted
- The unit continually trips fuses or circuit breakers
- A foreign object or water enters the air conditioner
- The indoor unit leaks
- Other abnormal situations

15. 1 Common Problems

The following symptoms are not a malfunction and in most situations will not require repairs.

Table 15-1 Common Problems

Problem	Possible Cause
Abnormal noises of outdoor unit	The unit will make different sounds based on its current operating mode.
Both the indoor and outdoor units make noises	The air conditioner may hum during operation. This is a normal phenomenon, which is caused by refrigerant gas flowing through the indoor and outdoor units.
	When the air conditioner is turned on, and just stopped or defrosted, a hiss may be heard. This noise is normal and is caused by refrigerant gas stopping or turning.
Unit does not turn on when pressing ON/ OFF button	The unit has a 3-minute protection feature that prevents the unit from overloading. The unit cannot be restarted within three minutes of being turned off.
	Cooling and Heating Models: If the Operation light and PRE-DEF (Pre-heating/ Defrost) indicators are lit up, the outdoor temperature is too cold and the unit's anti-cold wind is activated in order to defrost the unit.
The unit changes from COOL mode to FAN mode	The unit changes its setting to prevent frost from forming on the unit. Once the temperature increases, the unit will start operating again.
	The set temperature has been reached, at which point the unit turns off the compressor. The unit will resume operating when the temperature fluctuates again.
Both the indoor and outdoor units emit white mist	When the unit restarts in HEAT mode after defrosting, white mist may be emitted due to moisture generated from the defrosting process.
Dust is emitted from either the indoor or outdoor unit	The unit may accumulate dust during extended periods of non- use, which will be emitted when the unit is turned on. Mitigate this by covering the unit during long periods of inactivity
The unit emits a bad odor	The unit may absorb odors from the environment (such as furniture, cooking, cigarettes, etc.) which will be emitted during operations.
	The unit filters have become moldy and should be cleaned.
The fan of the outdoor unit does not operate	During operation, the fan speed is controlled to optimize product operation.

15. 2 Troubleshooting Advice

When troubles occur, please check the following points before contacting a repair company.

Table 15-2 Troubleshooting

Problem	Possible Cause	Solution
The unit is not working	Power failure	Wait for the power to be restored
	The power switch is off	Turn on the power
	The fuse is burned out	Replace the fuse
	The unit's 3-minute protection has been activated	Wait three minutes after restarting the unit
Poor cooling performance	Temperature setting may be higher than the ambient room temperature	Lower the temperature setting
	The heat exchanger on the indoor or outdoor unit is dirty	Clean the affected heat exchange
	The air filter is dirty	Remove the filter and clean it according to instructions
	The air inlet or outlet of either unit is blocked	Turn the unit off, remove the obstruction and turn it back on
	Doors and windows are open	Make sure that all doors and windows are closed while operating the unit
	Excessive heat is generated by sunlight	Close windows and curtains during periods of high heat or bright sunshine
	Low refrigerant due to leak or long-term use	Check for leaks, re-seal if necessary and top off refrigerant
The unit starts and stops frequently	There's too much or too little refrigerant in the system	Check for leaks and recharge the system with refrigerant
	There is air, incompressible gas or foreign material in the refrigeration system.	Evacuate and recharge the system with refrigerant
	System circuit is blocked	Determine which circuit is blocked and replace the malfunctioning piece of equipment
	The compressor is broken	Replace the compressor
	The voltage is too high or too low	Install a monostatic to regulate the voltage
Poor heating performance	The outdoor temperature is lower than 44.5°F	Check for leaks and recharge the system with refrigerant
	Cold air is entering through doors and windows	Make sure that all doors and windows are closed during use
	Low refrigerant due to leak or long-term use	Check for leaks, re-seal if necessary and top off refrigerant

MULTI-POS. AIR HANDLER			**AE-AMPVT24D21BA	**AE-AMPVT36D-21BA	**AEAMPVT48F-21BA	**AEAMPVT60F-21BA
Rated Cooling (95˚F/35˚C)	Capacity	Btu/h	24000	34000	47000	53000
	Cooling Capacity Range	Btu/h	7000~25000	8000~36000	9000~48000	9400~53000
	SEER2 / EER2	Btu/h.W	18.0 / 10.0	19.0 / 10.0	18.0 / 9.0	17.0 / 7.5
Rated Heating (47˚F/8.3˚C	Capacity	Btu/h	24000	36000	47000	53000
	HSPF2-4	Btu/h.W	8.5	9.0	9.0	8.5
Electrical Data	Voltage-Phase-Hz		208/230V / 1Ph / 60Hz	208/230V / 1Ph / 60Hz	208/230V / 1Ph / 60Hz	208/230V / 1Ph / 60Hz
	Min. Circuit Ampacity	A	5	5	7	7
	Max.Overcurrent Protection	A	15	15	15	15
	Min / Max Volts	V	187/253	187/253	187/253	187/253
Dehumidification		kg/h	2.5	3.8	5.0	6.1
Sound Pressure Rating		dB(A)	57	58	60	62
Max Allowed Pressure		MPa	4.3	4.3	4.3	4.3
Indoor Motor	Brand / Type / Motor Mode		Broad-Ocean / DC / ZW511D000018L	Broad-Ocean / DC / ZW511D000018L	Broad-Ocean / DC / ZW511D000018L	Broad-Ocean / DC / ZW511D000018L
	Fin Spacing / Thickness / Type	mm	1.2/0.095/ Hydrophilic Aluminium Louvered	1.4/0.095/ Hydrophilic Aluminium Louvered	1.4/0.095/ Hydrophilic Aluminium Louvered	1.4/0.095/ Hydrophilic Aluminium Louvered
	Tube Outside Dia. and Type	mm	7mm / Aluminum Tube	7mm / Aluminum Tube	7mm / Aluminum Tube	7mm / Aluminum Tube
Indoor Fan Air Flow		CFM / m3/h	850 / 1445	1150 / 1955	1600 / 2720	1700 / 2890
External Static Pressure (Up to)		in. WC	0.8	0.8	0.8	0.8
		Pa	200	200	200	200
Throttle Type	Throttle Type / Model		TXV / 3TR	TXV / 3TR	TXV / 5TR	TXV / 5TR
Pre-Charged Refrigerant Type		Type/ oz/g	R454B / 3.52 / 100	R454B / 3.52 / 100	R454B / 3.52 / 100	R454B / 3.52 / 100
Valve Size	Liquid - Suction	inch	3/8-3/4	3/8-3/4	3/8-3/4	3/8-3/4
Line Set Size	Liquid - Gas	inch	3/8-3/4	3/8-3/4	3/8-7/8	3/8-7/8
Lineset Length (Min - Max)		ft (m)	25(7.5)~100(30)	25(7.5)~100(30)	25(7.5)~100(30)	25(7.5)~100(30)
Max. Pipe Elevation		ft (m)	50(15)	50(15)	50(15)	50(15)
Outdoor Unit	Dimension (W x H x D)	inch	21" x 46-1/2" x 21"	21" x 46-1/2" x 21"	24"-1/2" x 56" x 21"	24"-1/2" x 56" x 21"
	Packing (W x H x D)	inch	22-3/4" x 52-1/2 "x26-1/3"	22-3/4" x 52-1/2 "x26-1/3"	28-2/3" x 62" x 27"	28-2/3" x 62" x 27"
Weight (Net / Gross)		lbs	126.8/162	126.8/162	161/204	161/204

TRUINVERTER AIR HANDLER

Installation Manual

Scan here to download warranty documents or go to warrantyzonepro.com

The design and specifications of this product and/or manual are subject to change without prior notice. Consult with the manufacturer for details.