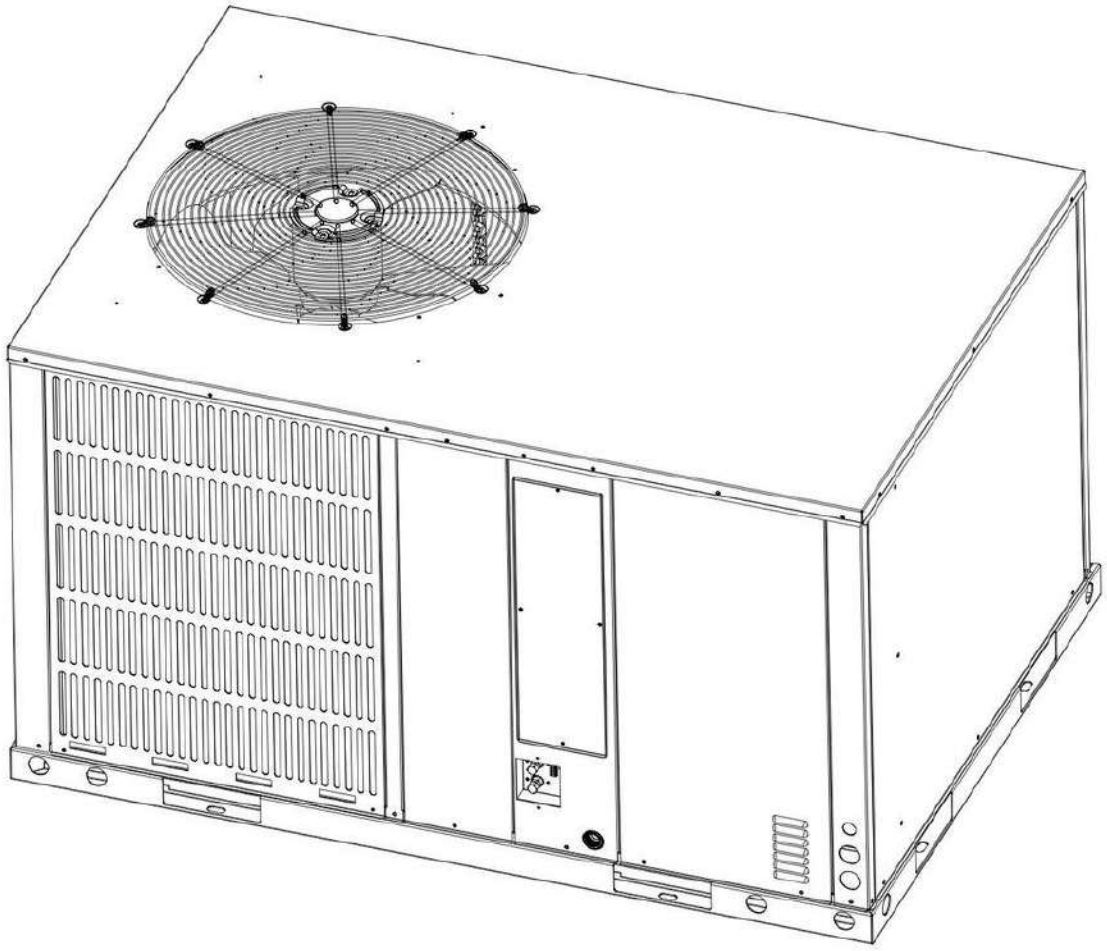
Installation and Operating Instructions

ROOFTOP PACKAGED AIR CONDITIONER

Plus Series Packaged Unit

13.4 SEER2 | 2~5 Ton Capacity | R32



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AHRI Standard 210/240
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Table of Contents

1 Key to Symbols and Safety Instructions 4
1.1 Key to Symbols 4
1.2 Explanation of Symbols Displayed on the Unit 4
1.3 Safety 4

2 Component Location 10
2.1 3 Ton Model 10
2.2 5 Ton Model 11

3 Dimensions 12
3.1 3 Ton Model 12
3.1.1 Unit Dimensions 12
3.1.2 Dimensions - Back and Bottom 13
3.1.3 Dimensions - Left and Top 14
3.2 5 Ton Model 15
3.2.2 Dimensions - Back and Bottom 16
3.2.3 Dimensions - Left and Top 17

4 Installation 18
4.1 Pre-Installation 18
4.2 Rigging and Lifting 18
4.3 Location Restrictions 18
4.4 Refrigerant Charge and Room Area Limitations 20
4.4.1 The Room Area Calculation Requirements 20
4.4.2 The Allowed Maximum Refrigerant Charge and Required Minimum Room Area 21

5 Airflow Performance 23

6 Ductwork 24

7 Condensate Drain Connection 25
7.1 Install Drain Pipe 25

8 Air Filter (Not Factory-Installed) 25

9 Electrical Wiring 26
9.1 Power Wiring 26
9.2 Grounding 26
9.3 Control Wiring 26

10 System Charge Adjustment 29
10.1 Charging: Weigh-In Method (Recommended) 29
10.2 Subcooling Charging and Refrigerant Adjustment In Cooling (Above 55°F Outdoor Temp.) 29

11 System Operation and Troubleshooting 30
11.1 Control Logic Description 30
11.2 Sensors 30
11.3 Compressor Crankshaft Heater Control Function 30
11.4 Four-way valve operate condition 30
11.5 R32 Refrigerant Sensor Description 30
11.6 Protection Functions 30
11.7 Operation Limits 31
11.8 LED display function of the outdoor unit main PCB and fault table 32
11.9 Control Board Overviews 32
11.9.1 Outdoor Unit Control Board for 2-5 Ton Model 32
11.9.2 Indoor Unit Control Board for 2-4 Ton Model 33
11.9.3 Indoor Unit Control Board for 5 Ton Model 33
11.10 Troubleshooting of Fault Codes 34

12 Wiring Diagram 37
12.1 Applicable for 24k heating only type 37
12.2 Applicable for 30k heating only type 37
12.3 Applicable for 36k heating only type 38
12.4 Applicable for 42k heating only type 38
12.5 Applicable for 48k heating only type 39
12.6 Applicable for 60k heating only type 39

13 Maintenance 40
13.1 Cleaning Precautions 40
13.2 Regular Maintenance 40

14 Disposal 40

1 Key to Symbols and Safety Instructions

1.1 Key to Symbols

Warnings

In warnings, signal words at the beginning of a warning are used to indicate the type and seriousness of the ensuing risk if measures for minimizing danger are not taken.

The following keywords are defined and can be used in this document:

DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor to moderate injury.

NOTICE

NOTICE is used to address practices not related to personal injury.

Important information

The info symbol indicates important information where there is no risk to people or property.

1.2 Explanation of Symbols Displayed on the Unit

Symbol	
	WARNING This symbol shows that this appliance used a flammable refrigerant. If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire.
	WARNING This symbol shows that appliance shall be installed, operated and stored in a room with a floor area not less than the minimum room area.
	CAUTION This symbol shows that the operation manual should be read carefully.
	CAUTION This symbol shows that a service personnel should be handling this equipment with reference to the installation manual.
	CAUTION This symbol shows that information is available such as the operating manual or installation manual.

Table 1

1.3 Safety

Please read safety precautions before installation

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 server personal injury or death.

This document is customer property and is to remain with this unit. Please return to service information pack upon completion of work.

These instructions do not cover all variations in systems or provide for every possible contingency to be met in connection with the installation.

Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to your installing dealer or local distributor.

This document contains a wiring diagram and service information. This is customer property and is to remain with this unit. Please return to service information pack upon completion of work. installation.

WARNING

Personal injury, product damage!

This information is intended for use by individuals possessing adequate backgrounds of electrical and mechanical experience. Any attempt to repair a central air conditioning product may result in personal injury and/or property damage.

WARNING

Hazardous voltage!

Failure to follow this warning could result in property damage, severe personal injury, or death.

Disconnect all electric power, Including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized.

WARNING

Refrigerant oil!

Attempting to repair central air-conditioning products may result in property damage, serious personal injury or death. These units use R-32 refrigerant, These devices use R32 refrigerant, with a safety level of A2L.Use only the service equipment approved by R-32. The refrigerant cylinder is painted "ashen" to indicate the type of refrigerant, and may contain a "dip" tube to allow liquid refrigerant to be filled into the system. All R-32 systems use POE oil , which can easily absorb moisture from he atmosphere. In order to limit this "moisture absorption" effect, the system should be sealed as much as possible. If the system is exposed to the atmosphere for more than 4 hours, the compressor oil must be changed.

WARNING

Hot surface!

May cause minor to severe burning. Failure to follow this Caution could result in property damage or personal injury.

Do not touch high temperature components such as the compressor.

WARNING

Contains refrigerant!

Failure to follow proper procedures can result in personal illness or injury or severe equipment damage.System contains oil and refrigerant under high pressure. Recover refrigerant to relieve pressure before opening system. Flammable refrigerant used.

WARNING

Contains lead!

This product can expose you to chemicals including Lead and Lead components, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www. P65Warnings.ca.gov.

CAUTION

Grounding required!

Failure to inspect or use proper service tools may result in equipment damage or personal injury. Reconnect all grounding devices. All parts of this product that are capable of conducting electrical current are grounded. If grounding wires, screws, straps, clips, nuts, or washers used to complete a path to ground are removed for service, they must be returned to their original position and properly fastened.

WARNING

Service valves!

Failure to follow this warning will result in abrupt release of system charge and may result in personal injury and/ or property damage. Extreme caution should be exercised when opening the Liquid Line Service valve. Turn valve stem counterclockwise only until the stem contacts the rolled edge.

WARNING

Brazing required!

Failure to inspect lines or use proper service tools may result in equipment damage or personal injury. If using existing refrigerant lines make certain that all joints are brazed, not soldered.

If refrigerant gas leaks during installation, ventilate the area immediately.

Comply with national gas regulations.

WARNING

High current leakage!

Grounding is required before connecting electrical supply. Failure to follow this warning could result in property damage, severe personal injury, or death.

WARNING

Risk of fire!

Mildly flammable refrigerant used.

Follow handling instructions carefully in compliance with national regulations.

DANGER

Fire, explosion!

Store in a well ventilated room without continuously operating flames or other potential ignition.

WARNING

Risk of electric shock!

Can cause injury or death.Disconnect all remote electric power supplies before servicing.

WARNING

Risk of fire!

Flammable refrigerant used. To be repaired only by trained service personnel. Do not puncture refrigerant tubing.

Dispose of properly in accordance with federal or local regulations. Flammable refrigerant used.

Flammable refrigerant used. Consult repair manual/owner's guide before attempting to service this product. All safety precautions must be followed.

Auxiliary devices which may be ignition sources shall not be installed in the ductwork, other than auxiliary devices listed for use with the specific appliance. See instructions.

WARNING

Personal injury!

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or persons who lack experience andknowledge, unless they are supervised or have been given instructions concerning the use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

Any person who is involved with working on or opening a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority,which authorizes their competence to handle refrigerants safely in accordance with an industry recognized assessment credential.

Servicing shall only be performed as recommended by the equipment manufacturer.

Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of a person competent in the use of flammable refrigerants.

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to minimize the risk of ignition.

WARNING

Flammable refrigerant!

The appliance shall be stored in a room that does not have continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).

Do not pierce or burn the unit.

Be aware that refrigerants may not contain an odour.

WARNING

Safe handling of flammable refrigerant!

When use a refrigerant tank with siphon to add refrigerant, the refrigerant tank should be placed upright. When use a refrigerant tank without siphon to add refrigerant, the refrigerant tank should be placed upside down. Ensure that the refrigeration system is grounded prior to charging the system with refrigerant.

In general, R32 doesn't have a siphon tube or dip tube into tank. For this situation, they must be charged in liquid form to prevent fractionation of the blended refrigerant and that requires the jug to be inverted during charging.

Label the system when charging is complete (if it is not already labeled). Take extreme care not to overfill the refrigeration system.
Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

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

When removing refrigerant from a system, either for servicing or decommissioning, it isrecommended that all refrigerants are removed safely.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of the flammable refrigerant. If in doubt,the the manufacturer should be consulted. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition.

The recovered refrigerant shall be processed according to local legislation in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

Before cleaning, be sure to stop the operation, turn the breaker off or unplug the supply cord. Otherwise, electric shock and injury may occur.

WARNING

Flammable refrigerant!

The appliance uses R32 refrigerant.



WARNING

Personal injury!

The pipe-work including piping material, pipe routing, and installation shall include protection from physical damage in operation and service, and 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 shall be accessible for inspection prior to being covered or enclosed.

WARNING

Personal Injury, flammable refrigerant!

When repairing the refrigerating system, comply with the following precautions prior to conducting work on the system:

- Work shall be undertaken according to controlled procedures to minimize the risk of the presence of flammable gases or vapors while the work is being performed.
- All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.
- The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable environment. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e., non-sparking, adequately sealed or intrinsically safe.
- If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available and easily accessible. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.
- When carrying out work in relation to a refrigerating system that involves exposing any pipe work, no sources of ignition shall be used in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repair, or removal and disposal of the unit, during which refrigerant can possibly be released into the surrounding space. Prior to beginning work, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be clearly displayed.

WARNING

Personal Injury, flammable refrigerant!

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

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

- The actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed.
- The ventilation machinery and outlets are operating adequately and are not obstructed.
- If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant.
- Equipment marking must remain visible and legible. Markings and signs that are illegible shall be corrected.

WARNING

Personal Injury, flammable refrigerant!

Refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substances which may corrode refrigerant containing components, unless the components are constructed of materials that are inherently resistant to corrosion or are suitably protected against corrosion.

Repair and maintenance of electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until the fault has been dealt with.

- That capacitors are discharged: this shall 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 grounding.

WARNING

Flammable refrigerant!

Sealed electrical components shall be replaced.

Intrinsically safe components must be replaced.

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

Under no circumstances shall potential sources of ignition be used while searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated for the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.

If a leak is suspected, all naked flames shall be removed/extinguished.

If a leakage of refrigerant which requires brazing is found, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.

Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.

Examples of leak detection fluids are:

- bubble method,
- fluorescent method agents.

⚠ WARNING

Flammable refrigerant!

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

- safely remove refrigerant following local and national regulations.
- evacuate.
- purge the circuit with inert gas.
- evacuate.
- continuously flush or purge with inert gas when using flame to open circuit, and.
- open the circuit.

The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.

For appliances containing flammable refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system. When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.

The outlet for the vacuum pump shall not be close to any potential ignition sources, and ventilation shall be available.

Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant they contain.

Cylinders shall be kept upright. Ensure that the refrigeration system is grounded prior to charging the system with refrigerant.

Label the system when charging is complete (if it is not already labeled).

Take extreme care not to overfill the refrigeration system.

⚠ WARNING

Flammable refrigerant!

Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

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

a. Become familiar with the equipment and its operation.

b. Isolate system electrically.

c. Before attempting the procedure ensure that:

   - mechanical handling equipment is available, if required, for handling refrigerant cylinders.
   - all personal protective equipment is available and being used correctly.
   - the recovery process is supervised at all times by a competent person.
   - recovery equipment and cylinders conform to the appropriate standards.

d. Pump down refrigerant system, if possible.

e. If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.

f. Make sure that the cylinder is situated on the scales before recovery takes place.

g. Start the recovery machine and operate it in accordance with the manufacturer's instructions.

h. Do not overfill cylinders. (No more than 80% volume liquid charge).

i. Do not exceed the maximum working pressure of the cylinder, even temporarily.

j. When the cylinders have been filled correctly and the process has been completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.

k. Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

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

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended that all refrigerants are removed safely.

When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

WARNING

Flammable refrigerant!

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of the flammable refrigerant. If in doubt, the manufacturer should be consulted. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition.

The recovered refrigerant shall be processed according to local legislation in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The compressor body shall not be heated by an open flame or other ignition sources to accelerate this process. When oil is drained from a system, it shall be carried out safely.

Do not use the air conditioner for other purposes. In order to avoid any quality deterioration, do not use the unit for the cooling of precision instruments, food, plants, animals or works of art. Before cleaning, be sure to stop the operation, turn the breaker off or unplug the supply cord. Otherwise, electric shock and injury may occur.

To avoid electric shock or fire, make sure that a leak detector is installed. Never touch the air outlet or the horizontal blades while the swing flap is in operation. Fingers may be come caught or the unit may break down.

Never put any objects into the air inlet or outlet. Objects touching the fan at high speed can be dangerous. Never inspect or service the unit by yourself. Ask a qualified service person to perform this task.

Do not dispose of this product as unsorted municipal waste. This waste should be collected separately for special treatment. Do not dispose of electrical appliances as unsorted municipal waste. Use separate collection facilities. Contact your local government for information regarding the connection systems available.

If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, hazardous to one's health and well-being.

To prevent refrigerant leak, contact your dealer.

When the system is installed and operates in a small room, it is required to maintain the concentration of the refrigerant below the limit, in case a leak occurs. Otherwise, oxygen in the room may be affected, resulting in a serious accident.

The refrigerant in the air conditioner is safe and normally does not leak.

If the refrigerant leaks into the room and encounters the fire of a burner, a heater or a cooker, a harmful gas could be released.

Turn off any combustible heating devices, ventilate the room, and contact the dealer where the unit was purchased.

Do not use the air conditioner until a service person confirms that the refrigerant leak is repaired.

Keep ventilation openings clear of obstruction.

WARNING

Product damage, personal injury!

This outdoor unit must combine the indoor unit with refrigerant leak detection device.

These instructions are exclusively intended for qualified contractors and authorized installers. Work on the refrigerant circuit with mild flammable refrigerant in safety group A2L may only be carried out by authorized heating contractors. These heating contractors must be trained in accordance with UL 60335-2-40, Section HH. The certificate of competence from an industry accredited body is required.

Work on electrical equipment may only be carried out by a qualified electrician.

Before initial commissioning, all safety – related points must be checked by the particular certified heating contractors. The system must be commissioned by the system installer or a qualified person authorized by the installer.

WARNING

The minimum test pressure for the low side of the system shall be the low side design pressure and the minimum test pressure for the high side of the system shall be the high side design pressure, unless the high side of the system, cannot be isolated from the low side of the system in which case the entire system shall be pressure tested to the low side design pressure.

2 Component Location

2.1 2-3 Ton Model

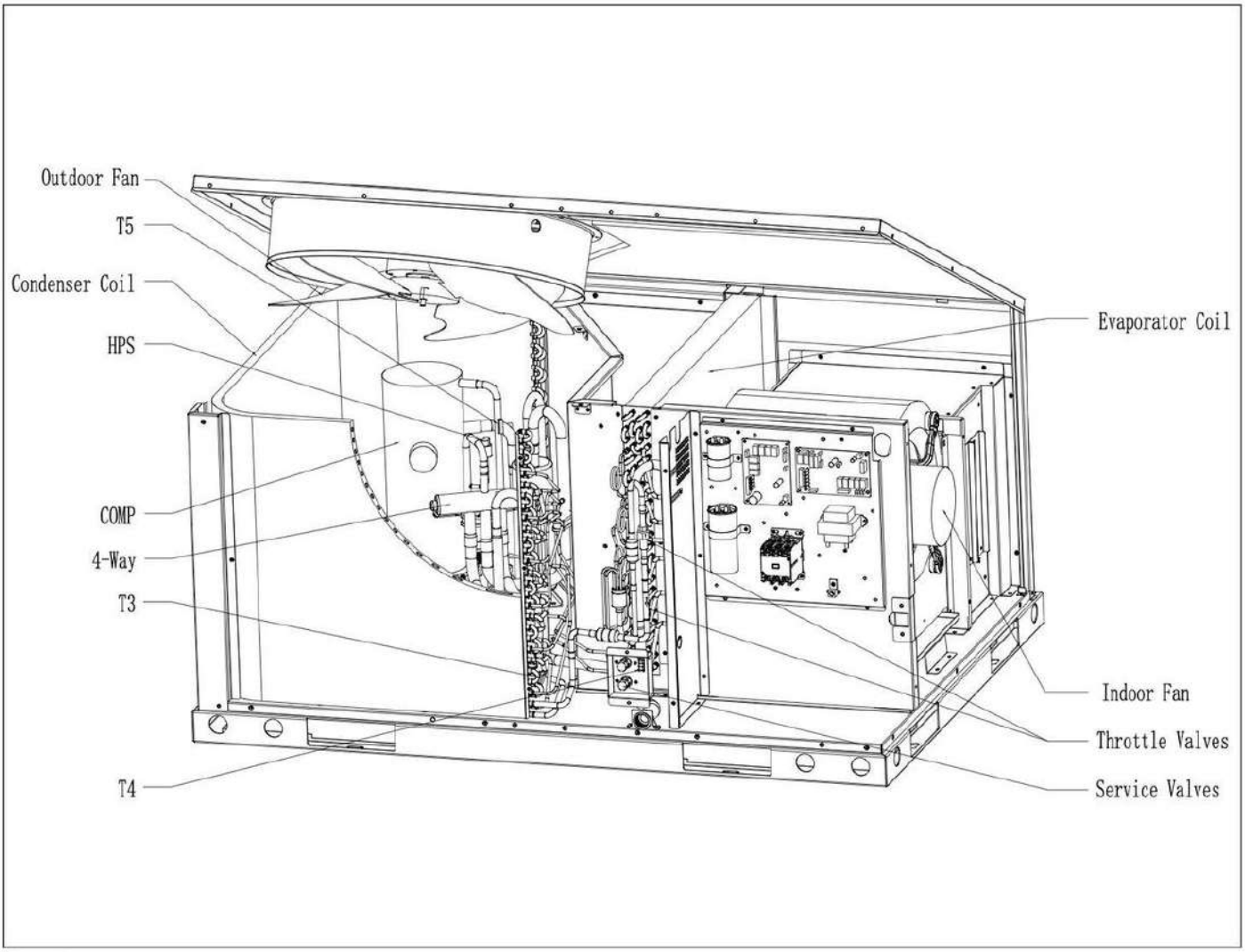


Figure 1

Component	Descriptions	Component	Descriptions
LPS (3T)	Low pressure switch	T4	Ambient temp. sensor
HPS	High pressure switch	T5	Comp. discharge temp. sensor
T3	Condenser temp. sensor	4-Way	Four-Way Valve
		COMP	Compressor

Table 2 Component Descriptions

2.2 4-5 Ton Model

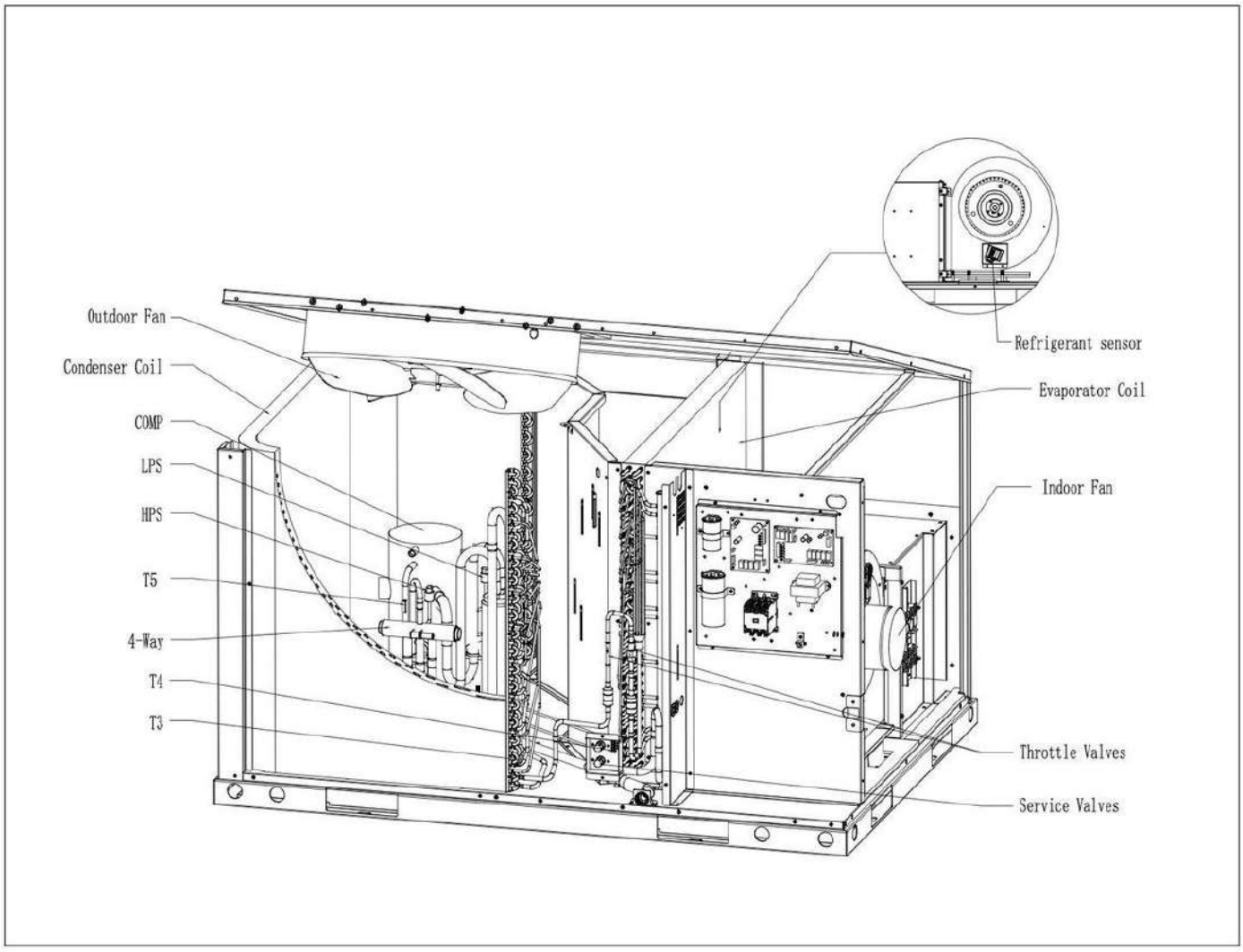


Figure 2

Component	Descriptions	Component	Descriptions
LPS	Low pressure switch	T4	Ambient temp. sensor
HPS	High pressure switch	T5	Comp. discharge temp. sensor
T3	Condenser temp. sensor	4-Way	Four-Way Valve
		COMP	Compressor

Table 3 Component Descriptions

3 Dimensions

3.1 2-3 Ton Model

3.1.1 Unit Dimensions

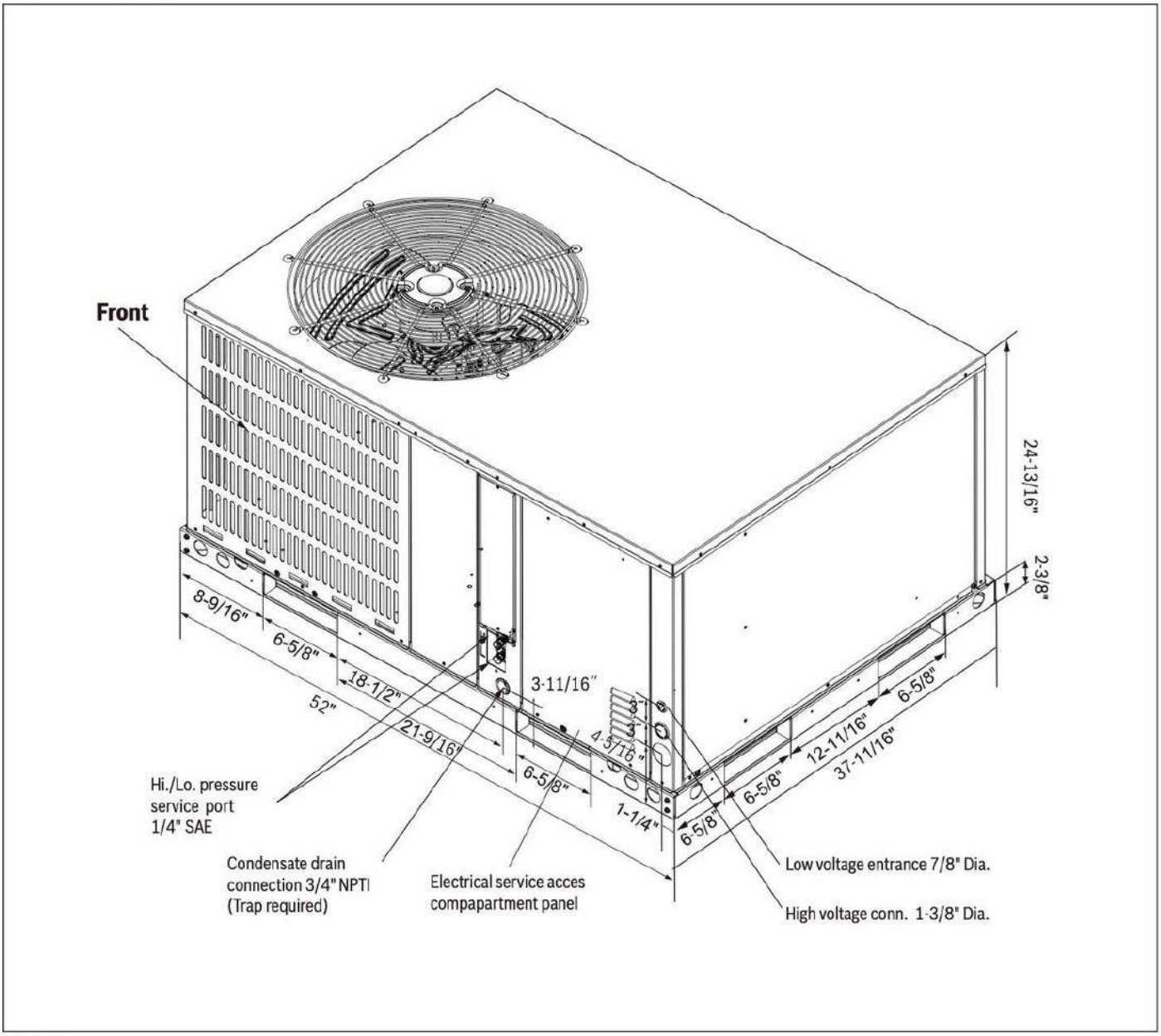
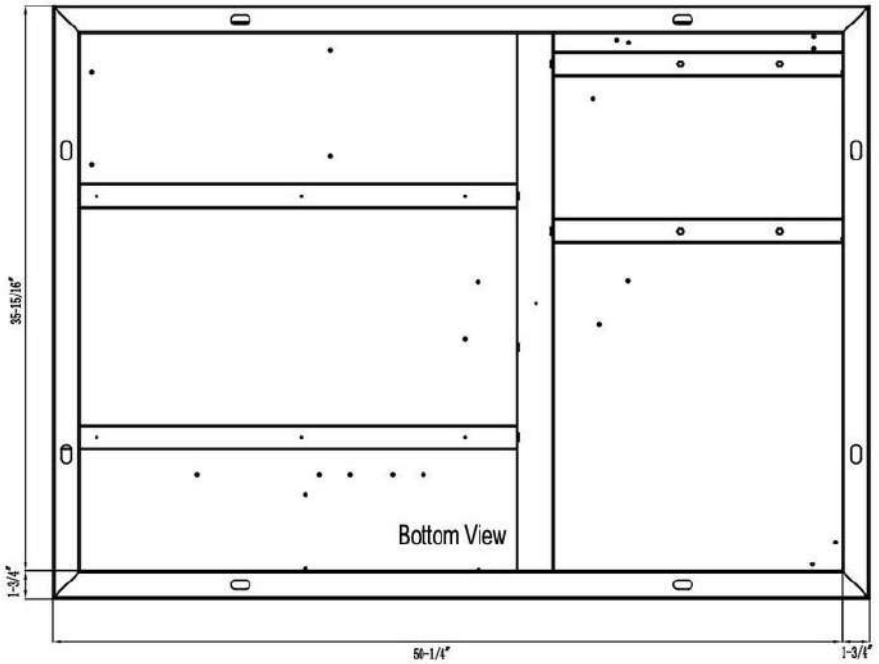


Figure 3

Heat Pump Model	L	W	H
2-3 Ton Model	52"	37-11/16"	24-13/16"

Table 4 2-3 Ton Unit Dimensions

3.1.2 Dimensions - Back and Bottom



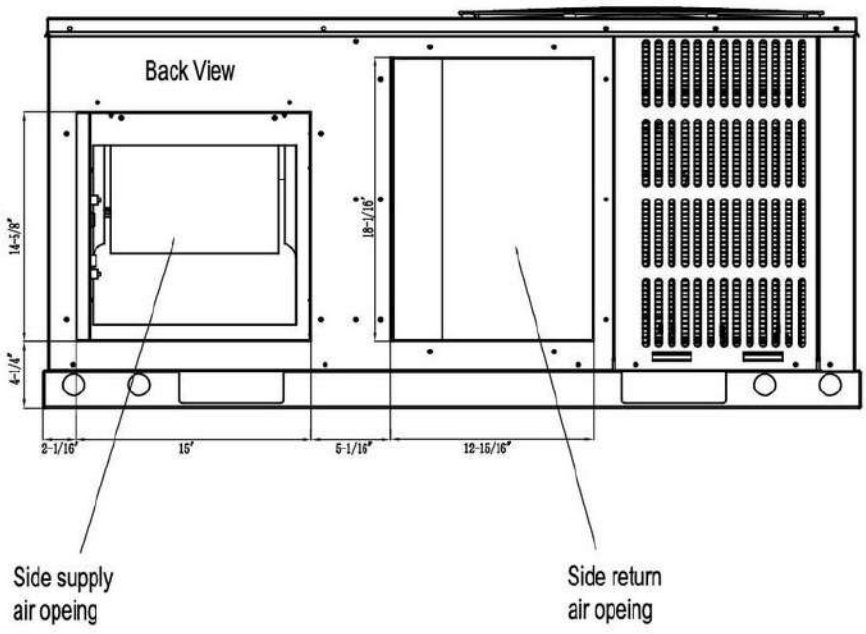
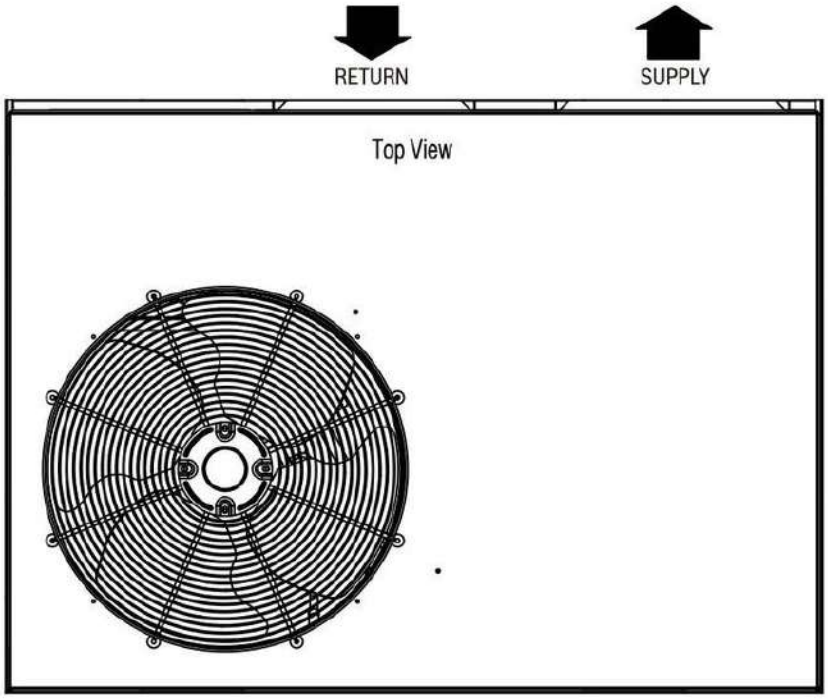
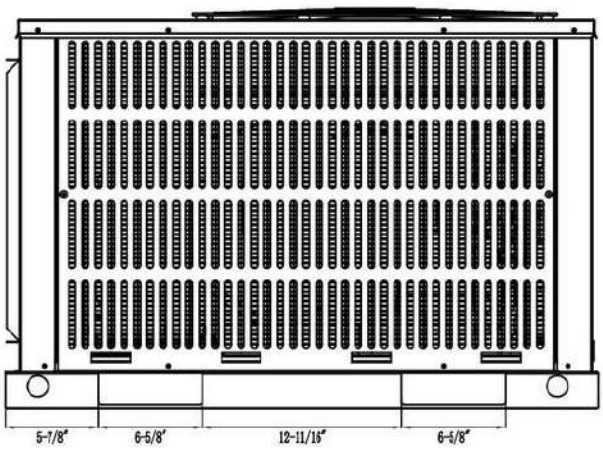


Figure 4

3.1.3 Dimensions - Left and Top





Left Side View

Figure 5

3.2 4-5 Ton Model

3.2.1 Unit Dimensions

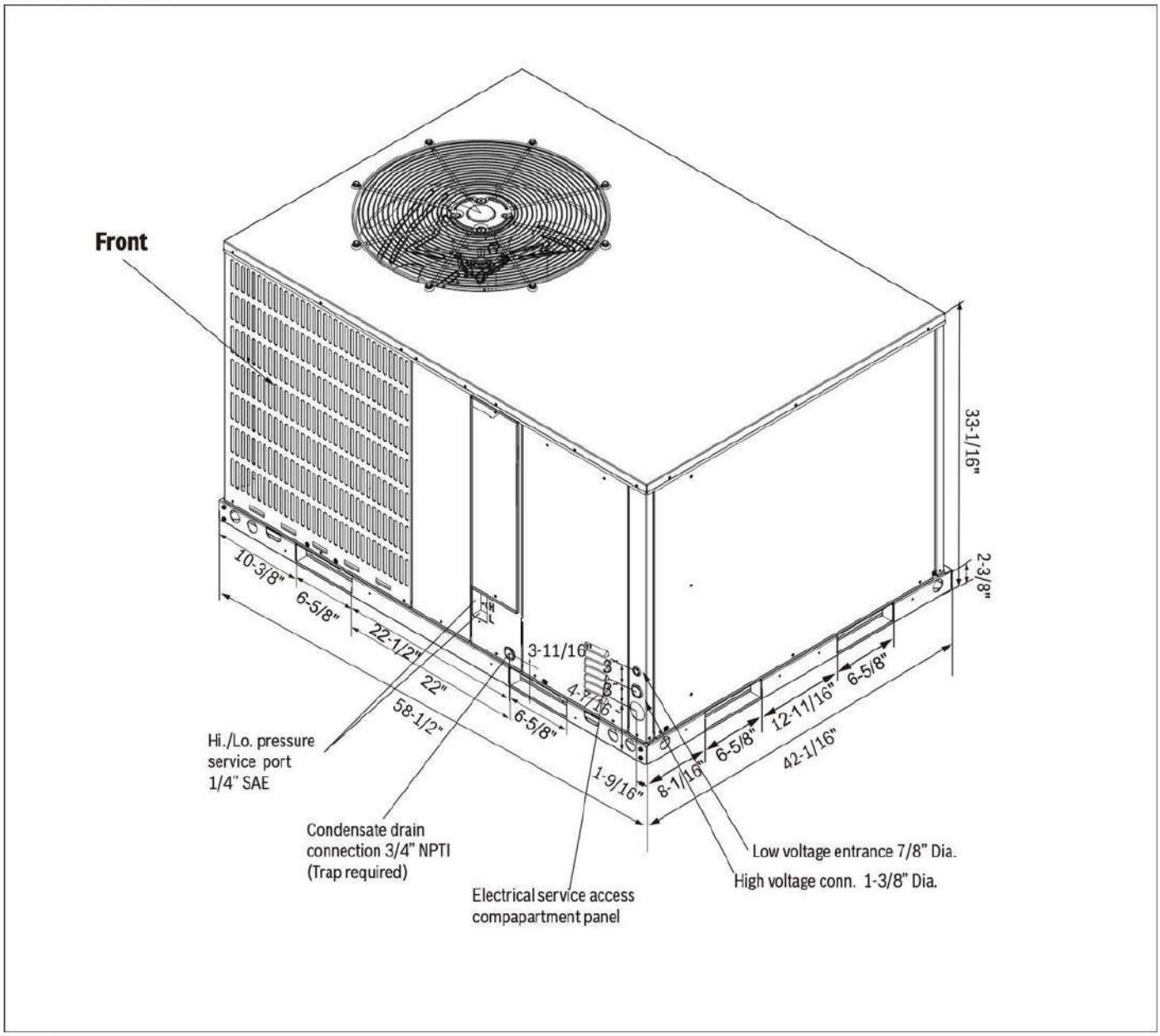
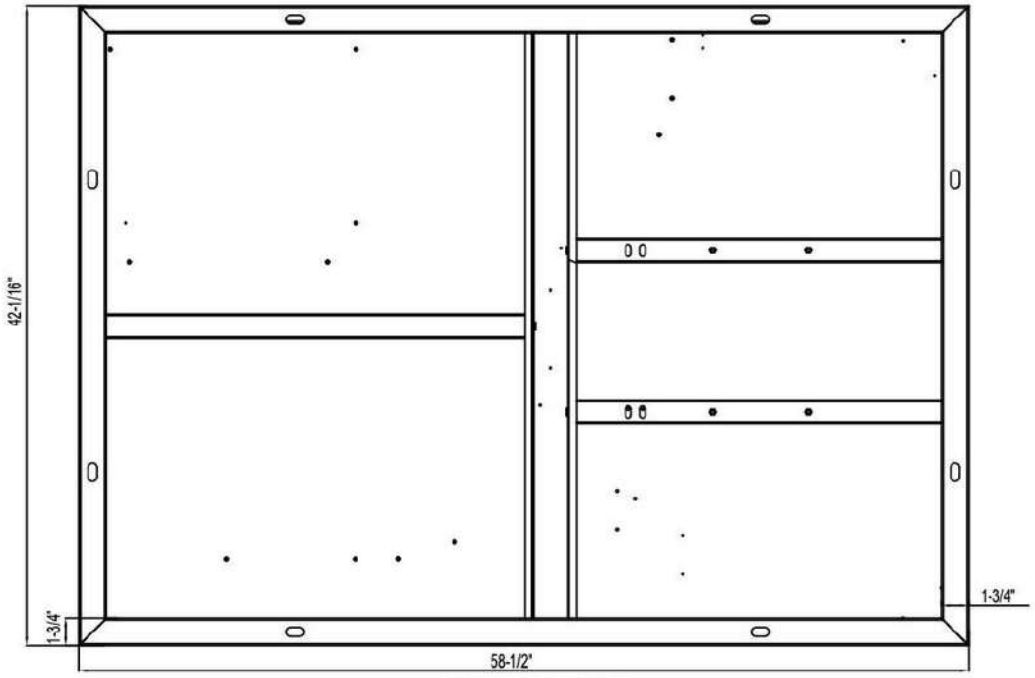


Figure 6

Heat Pump Model	L	W	H
4-5 Ton Model	58-1/2"	42-1/16"	33-1/16"

Table 5 4-5 Ton Unit Dimensions

3.2.2 Dimensions - Back and Bottom



BOTTOM VIEW

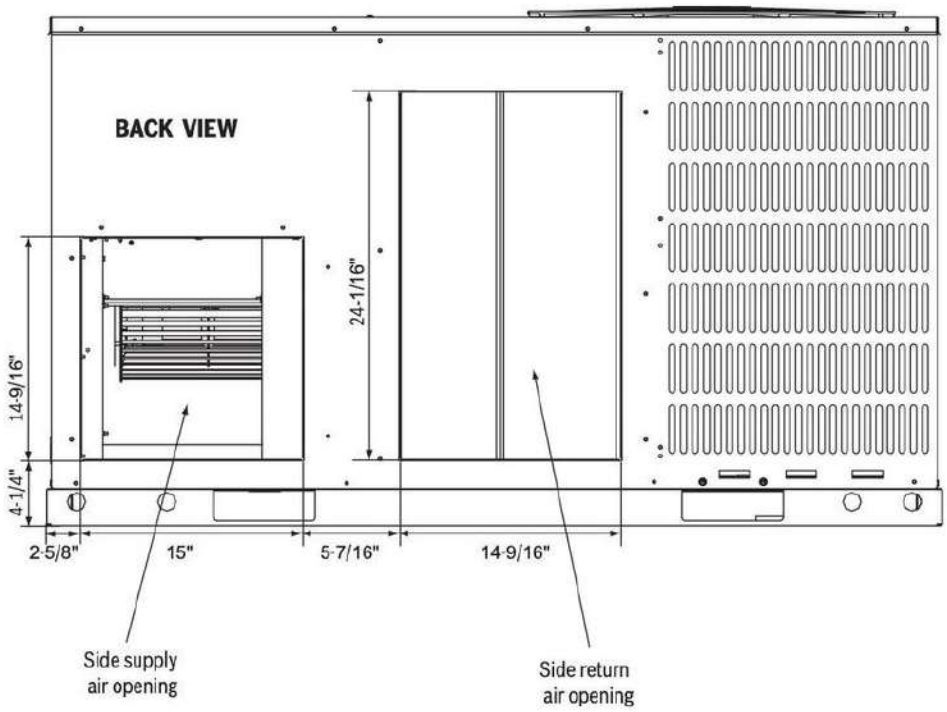
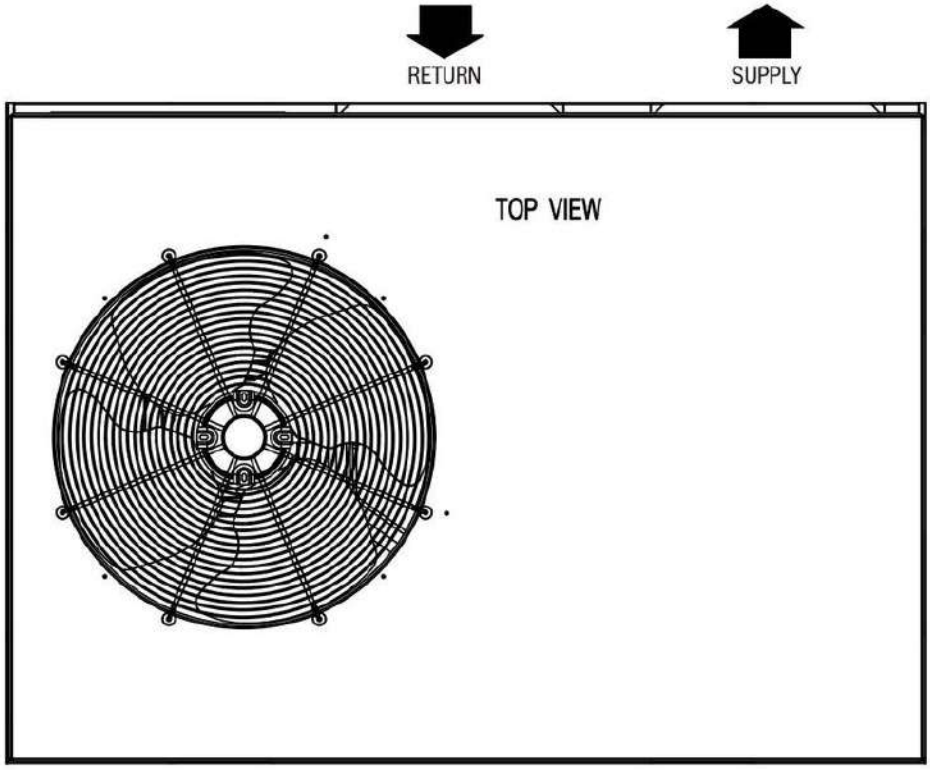
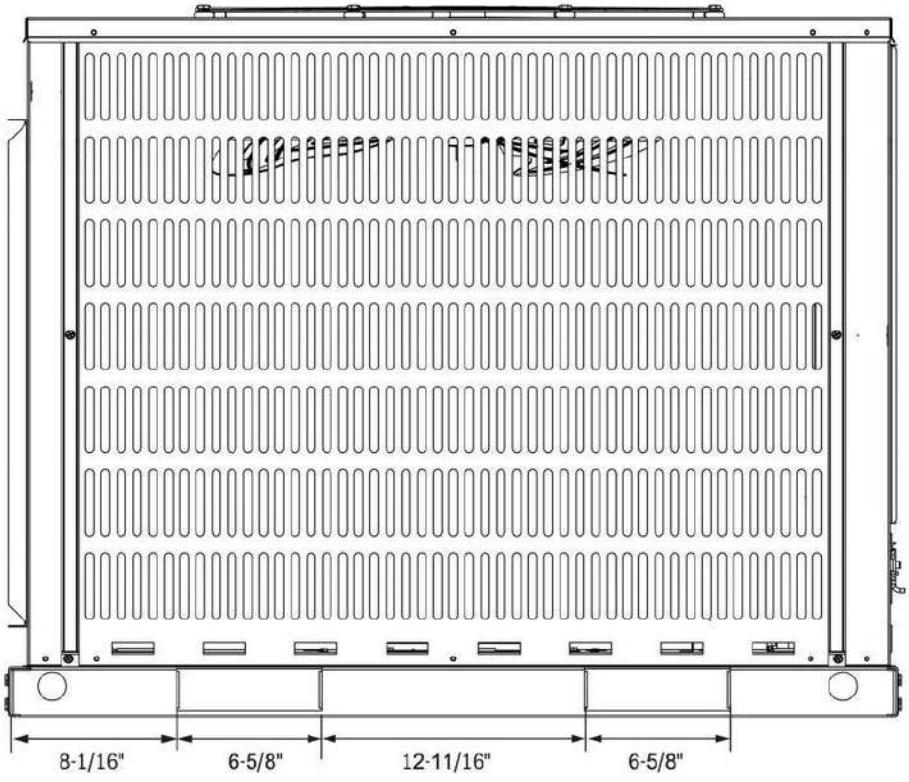


Figure 7

3.2.3 Dimensions - Left and Top





LEFT SIDE VIEW

Figure 8

4 Installation

4.1 Pre-Installation

Before installation, carefully check the following:

1. Unit should be installed in accordance with national and local safety codes, including but not limited to ANSI/NFPS No. 70, local plumbing and wastewater codes and any other applicable codes.
2. For rooftop installation, be sure the structure has enough strength to support the weight of unit. Unit must be installed on a field supplied roof curb or rack and leveled.
3. For ground level installation, a field supplied level slab must be used.
4. Condenser airflow should not be restricted.
5. On applications when a roof curb is used, the unit must be positioned on the curb so the front of the unit is tight against the curb.

4.2 Rigging and Lifting

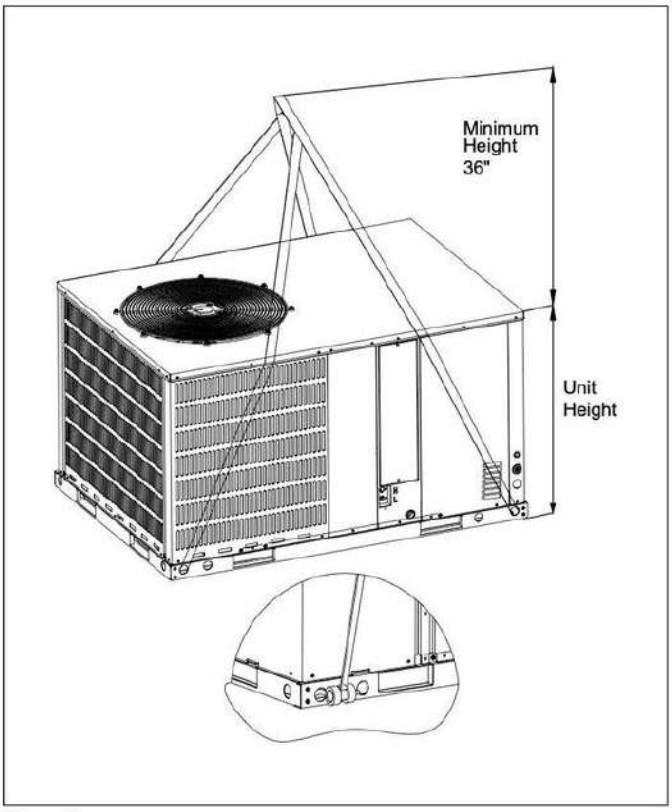


Figure 9

Exercise care when moving the unit. Do not remove any packaging until the unit is near the place of installation. Rig the unit by attaching chain or cable slings to the lifting holes provided in the base rails. Spreader bars, whose length exceeds the largest dimension across the unit, MUST be used across the top of the unit.

When rigging/lifting the unit, the minimum height between the top of the rigging cables' connection point and top of unit should be 36 inches. Refer to Figure 9.

⚠ CAUTION

Before lifting, make sure the unit weight is distributed equally on the rigging cables so it will lift evenly.

⚠ CAUTION

All panels must be secured in place when the unit is lifted. The condenser coils should be protected from rigging cable damage with plywood or other suitable material.

4.3 Location Restrictions

Ensure the top discharge area is unrestricted for at least 60 inches above the unit.

Do not locate outdoor unit near bedrooms since normal operational noise levels may be disturbing to building occupants.

Position unit to allow adequate space for unobstructed airflow, wiring, and serviceability.

Do not restrict outdoor airflow. An air restriction at either the outdoor air inlet or the fan discharge may be detrimental to compressor life.

Do not place the unit where water, ice, or snow from an overhang or roof will damage or flood the unit. Do not install the unit on carpeting or other combustible materials. Slab mounted units should be at least 2 inches (51 mm) above the highest expected water and runoff levels. Do not use unit if it has been under water.

Maintain a distance of 24 inches between units. Position unit so water,snow, or ice from roof or overhang cannot fall directly on unit.

See Figure 11 and Figure 12 for minimum clearance requirements.

Cold climate considerations

NOTICE

Precautions must be taken for units being installed in areas where snow accumulation and prolonged below-freezing temperatures occur.

- Units should be elevated 3-12 inches above the pad or rooftop, depending on local weather. This additional height will allow drainage of snow and will permit condensate water to drain when the unit is in defrost mode. Ensure that drain holes in unit base pan are unobstructed, preventing drainage of defrost water (See Figure 13).
- If possible, avoid locations that are prone to snow drifts. If not possible, a snow drift barrier should be installed around the unit to prevent a build-up unit to prevent a build-up of snow on the sides of the unit.

Ensure that Condensate Drain side is pitched lower than the opposite side (see Figure 10).

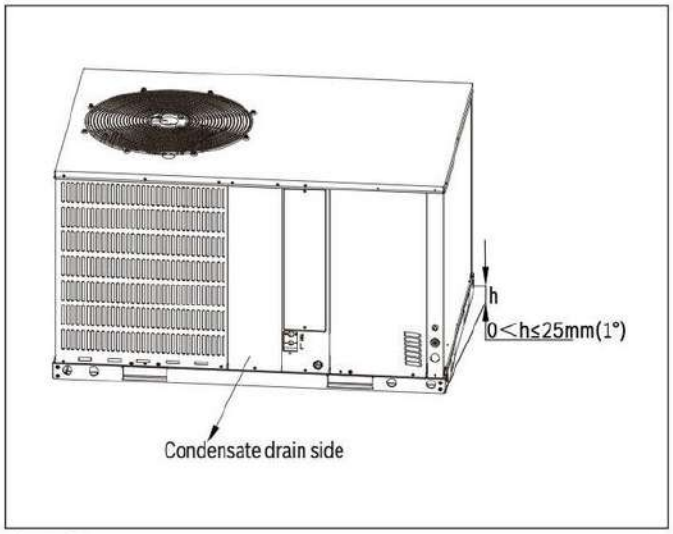


Figure 10

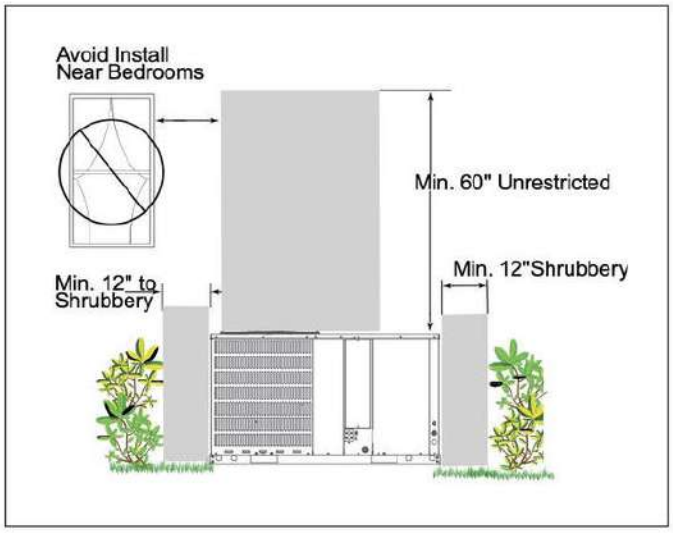


Figure 11

A minimum clearance of 24" should be maintained adjacent to all access/service panels. Refer to local code requirements for additional clearance requirements.

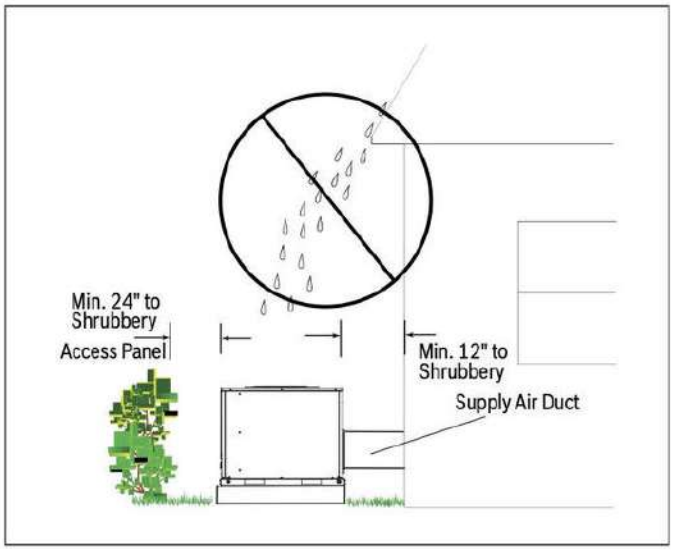


Figure 12

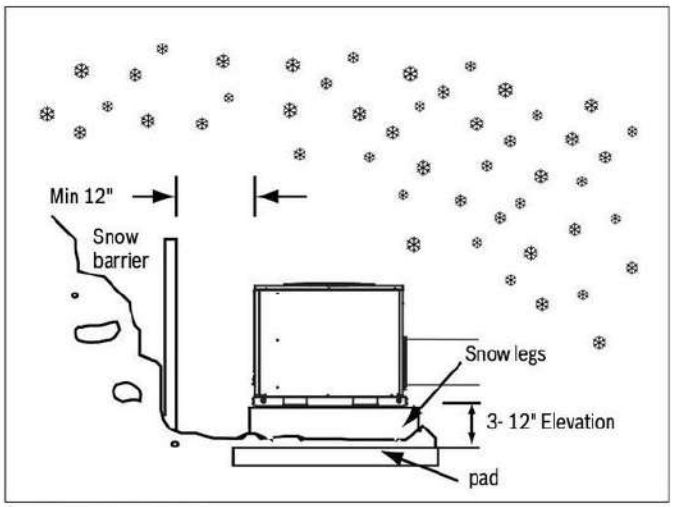


Figure 13 Insulation Layer

Corrosive Environment

Exposure to a corrosive environment may shorten the life of the equipment, corrode metal parts, and/or negatively affect unit performance. Corrosive elements include, but are not limited to: sodium chloride, sodium hydroxide, sodium sulfate, and other compounds commonly found in ocean water, sulfur, chlorine, fluorine, fertilizers, and various chemical contaminants from industry/manufacturing plants. If installed in areas which may be exposed to corrosive environments, special attention should be given to the equipment placement and maintenance.

- Lawn sprinklers/hoses/wastewater should not spray directly on the unit cabinet for prolonged periods of time.
- In coastal areas: locate the unit on the side of the building or roof away from the waterfront.
- Fencing or shrubbery may provide some shielding protection to the unit, however minimum unit clearances must still be maintained.
- Every three months, wash the outdoor coil and any exposed cabinet surfaces.

4.4 Refrigerant Charge and Room Area Limitations

In UL/CSA 60335-2-40, R32 refrigerant is classified as class A2L, which is mildly flammable. Therefore, R32 refrigerant is suitable for systems needing additional refrigerant charge and which will limit the area of the rooms being served by the system.

Similarly, the total amount of refrigerant in the system shall be less than or equal to the allowable maximum refrigerant charge. The allowable maximum refrigerant charge depends on the area of the rooms being served by the system.

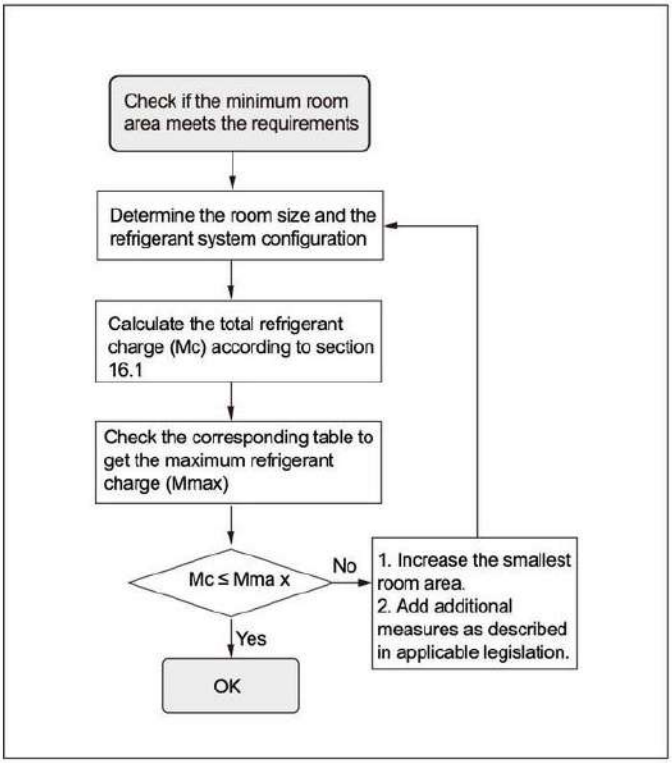


Figure 14

The terms in this section are explained as follows:

- Mc: The actual refrigerant charge in the system.
- A: the actual room area where the appliance is installed.
- Amin: The required minimum room area.
- Mmax:The allowable maximum refrigerant charge in a room.
- Qmin: The minimum circulation airflow.
- Anvmin:The minimum opening area for connected rooms.
- TAmin: The total area of the conditioned space (For appliances serving one or more rooms with an air dut system).
- TA: The total area of the conditioned space connected by air ducts.

4.4.1 The Room Area Calculation Requirements

CAUTION

Flammable Refrigerant!

The space considered shall be any space which contains refrigerant-containing parts or into which refrigerant could be released.

The room area (A) of the smallest, enclosed, occupied space shall be used in the determination of the refrigerant quantity limits.

For determination of room area (A) when used to calculate the refrigerant charge limit, the following shall apply.

The room area (A) shall be 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 shall not be considered a single space.

Units mounted higher than 70-55/64 inches and spaces divided by partition walls that are no higher than 62-63/64 inches shall 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 Amin, 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 opening 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 Amin, provided all of the following conditions are met as shown in Figure 14.

Low level opening:

4. The opening shall not be less than Anvmin in Table 8.
5. The area of any openings above 11-13/16 inches from the floor shall not be considered in determining compliance with Anvmin.
6. At least 50% of the opening area of Anvmin shall be below 7-7/8 inches from the floor.
7. The bottom of the opening is not more than 3-15/16 inches from the floor.
8. The opening is a permanent opening that cannot be closed.
9. For openings extending to the floor the height shall not be less than 25/32 inches above the surface of the floor covering.

High level opening:

1. The opening shall not be less than 50% of Anvmin in Table 8.
2. The opening is a permanent opening that cannot be closed.
3. The opening shall 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. The room into which refrigerant can leak, plus the connected adjacent room(s) shall have a total area not less than Amin. Amin is shown in Tables 10-12.

2. The room area in which the unit is installed shall be not less than 20% Amin. Amin is shown in Tables 10-12.

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.

The minimum opening for natural ventilation (Anvmin) 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 (Mmax), Anvmin can be determined according to Table 8.

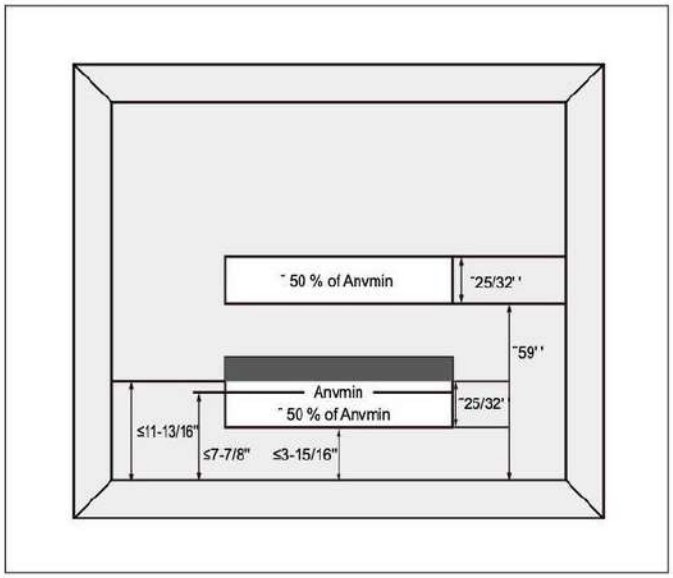


Figure 15

The minimum opening area for connected rooms:

A		Mc(□lb□oz)		Mmax(□lb□oz)		Anvmin(ft²)
ft²	m²	lb	oz	lb	oz	
45	4.2	6	10	3	2	0.4
50	4.6	6	10	3	7	0.4
55	5.1	6	10	3	13	0.4
60	5.6	6	10	4	2	0.3
65	6.0	6	10	4	8	0.3
70	6.5	6	10	4	13	0.2
75	7.0	6	10	5	3	0.2
80	7.4	6	10	5	8	0.1
85	7.9	6	10	5	14	0.1
90	8.4	6	10	6	3	0.1

Table 6

Note: Take the Mc=6lb 10oz as an example.

For appliances serving one or more rooms with an air duct system, The room area calculation shall be determined 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.

WARNING

Room height must be greater than 2.2m.

4.4.2 The Allowed Maximum Refrigerant Charge and Required Minimum Room Area

If the fan incorporated to an appliance is continuously operated or operation is initiated by a REFRIGERANT DETECTION SYSTEM with a sufficient CIRCULATION AIRFLOW rate, the allowable maximum refrigerant charge (Mmax) and the required minimum room area (Amin/TAmin) is shown in Table 6 and Tables 7-9.

The allowable maximum refrigerant charges:

A/TA(ft²)		Mmax(□lb□oz)	
ft²	m²	lb-oz	kg
30	2.8	2-1	0.9
35	3.3	2-7	1.1
40	3.7	2-12	1.3
45	4.2	3-2	1.4
50	4.6	3-7	1.6
55	5.1	3-13	1.7
60	5.6	4-2	1.9
65	6.0	4-8	2.0
70	6.5	4-13	2.2
75	7.0	5-3	2.3
80	7.4	5-8	2.5
85	7.9	5-14	2.7
90	8.4	6-3	2.8

Table 7

The required minimum room area:

Mc(□lb□oz)		Amin/TAmin(ft²)
lb	oz	
2	3	32.0
2	7	35.2
2	10	38.4
2	14	41.6
3	1	44.8
3	5	48.0
3	8	51.2
3	12	54.4
3	15	57.6
4	3	60.8
4	7	64.0
4	10	67.2
4	14	70.4
5	8	79.9
5	12	83.1
5	15	86.3
6	3	89.5

Table 8

If the installation height cannot exceed 2000m, the required minimum room area follow as Table 9.

	Altitude(m)							
	201-400	401-600	601-800	801-1000	1001-1200	1201-1400	1401-1600	above 1600
Charge lb	Minimum Conditioned Space(m^2)							
2	2.7	2.7	2.7	2.8	2.9	3.0	3.0	3.1
3	4.0	4.0	4.1	4.2	4.3	4.4	4.5	4.6
4	5.4	5.4	5.5	5.6	5.7	5.9	6.0	6.2
5	6.7	6.7	6.9	7.1	7.2	7.4	7.5	7.7
6	8.1	8.1	8.2	8.5	8.6	8.9	9.0	9.3
7	9.4	9.4	9.6	9.9	10.1	10.3	10.5	10.8
8	10.7	10.7	11.0	11.3	11.5	11.8	12.0	12.4
9	12.1	12.1	12.3	12.7	12.9	13.3	13.5	13.9
10	13.4	13.4	13.7	14.1	14.4	14.8	15.0	15.4
11	14.8	14.8	15.1	15.5	15.8	16.3	16.5	17.0
12	16.1	16.1	16.4	16.9	17.2	17.7	18.1	18.5
13	17.5	17.5	17.8	18.3	18.7	19.2	19.6	20.1
14	18.8	18.8	19.2	19.7	20.1	20.7	21.1	21.6
15	20.1	20.1	20.6	21.2	21.6	22.2	22.6	23.2
16	21.5	21.5	21.9	22.6	23.0	23.6	24.1	24.7
17	22.8	22.8	23.3	24.0	24.4	25.1	25.6	26.3
18	24.2	24.2	24.7	25.4	25.9	26.6	27.1	27.8
19	25.5	25.5	26.0	26.8	27.3	28.1	28.6	29.3
20	26.9	26.9	27.4	28.2	28.7	29.5	30.1	30.9

Table 9

The minimum circulation airflow:

Mc(□lb□oz)		Qmin(CFM)
lb	oz	
2	3	58
2	7	63
2	10	69
2	14	75
3	1	81
3	5	87
3	8	92
3	12	98
3	15	104
4	3	110
4	7	115
4	10	121
4	14	127
5	8	144
5	12	150
5	15	156
6	3	161

Table 10

CAUTION

Min. room area and airflow required!

The allowable maximum refrigerant charge in Table 7 or the required minimum room area in Tables 8-9 is available only if the following conditions are met:

- Minimum velocity of 3.28ft/s, which is calculated as the indoor unit airflow divided by the nominal face area of the outlet. And the grill area shall not be deducted.
- Minimum airflow rate must meet the corresponding values in Table 10, which is related to the actual refrigerant charge of the system (Mc).
- R32 refrigerant leakage sensor is configured.

The maximum refrigerant limit described above 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.

R32 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 7 or Tables 8-9.

CAUTION

Min. room area and airflow required!

If the actual room area, air outlet height, and refrigerant charge amount are not re lected in the above table, more severe cases need to be considered according to the data in the tables 6-10.

5 Airflow Performance

Airflow performance data is based on cooling performance with a coil and no filter in place. Select performance table for appropriate unit size. External static applied to unit allows operation within the minimum and maximum limits shown in table below for both cooling and electric heat operation

Airflow Performance

Size (Tons)	Blower Speeds	External Static Pressure (in.w.c.)								
		0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
24 (2.0)	L	810	790	780	750	720	680	640	560	480
	M-Factory Default	1040	1010	980	940	910	860	820	730	650
	H	1340	1280	1230	1180	1120	1050	990	890	790
30 (2.5)	L	810	790	780	750	720	680	640	560	480
	M	1040	1010	980	940	910	860	820	730	650
	H-Factory Default	1340	1280	1230	1180	1120	1050	990	890	790
36 (3.0)	L	810	790	780	750	720	680	640	560	480
	M	1040	1010	980	940	910	860	820	730	650
	H-Factory Default	1340	1280	1230	1180	1120	1050	990	890	790
42 (3.5)	L-Factory Default	1670	1620	1550	1470	1380	1280	1190	1040	910
	M	1880	1870	1840	1770	1680	1560	1440	1240	1040
	H	2030	2070	2060	2000	1910	1770	1630	1370	1110
48 (4.0)	L	1670	1620	1550	1470	1380	1280	1190	1040	910
	M-Factory Default	1880	1870	1840	1770	1680	1560	1440	1240	1040
	H	2030	2070	2060	2000	1910	1770	1630	1370	1110
60 (5.0)	1	1230	1186	1140	1081	1022	922	869	816	763
	2	1404	1360	1316	1267	1219	1170	1136	1051	964
	3	1585	1544	1503	1467	1431	1388	1344	1288	1231
	4	1730	1689	1655	1621	1587	1549	1514	1457	1416
	5-Factory Default	1887	1852	1815	1780	1745	1707	1681	1599	1517

Table 11

1. The advanced airflow must be used as the rated airflow for the full-load operation of the machine.
2. The rated airflow of a system without an electric heater kit requires 300 to 450 cubic feet of air per minute (CFM).
3. The rated airflow of a system with an electric heater kit requires 350 to 450 cubic feet of air per minute(CFM).
4. The air distribution system has the greatest influence on air flow. Therefore, the contractor should only use the procedures recognized by the industry.
5. The design and construction of air duct should be done carefully. Poor design or process will lead to a significant decline in system performance.
6. The air supply duct should be set along the periphery of the air-conditioned space with appropriate size. Improper location of insufficient airflow may lead to insufficient ventilation or noise in the pipeline system.
7. The installer should balance the air distribution system to ensure that all rooms in the room have proper quiet airflow. The speedometer or airflow hood can be used to balance and verify the branch pipe and system airflow (CFM).

6 Ductwork

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

WARNING

Fire Hazard and Carbon Monoxide!
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, grills, special filters, accessories, etc. are accounted for in total resistance. See airflow performance tables in Section 5 of this manual.
- f 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 flexible air duct, be sure pressure drop information (straight length plus all turns) shown in "ACCA" Manual "D" is accounted for in system.

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.

NOTICE

The front flange on the return duct (if 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.

- The unit is provided with flanges on the supply and return air openings. All ductwork should be secured to the flanges using proper fasteners for the type of duct used and tape the duct-to unit joint as required to prevent air leaks.

NOTICE

When fastening ductwork to the side duct flanges on the unit, insert the screws through the duct flanges only. DO NOT insert the screws through the casing. Outdoor ductwork must be insulated and waterproofed.

Be sure to note supply and return openings. Refer to Figure 3 for information concerning supply and return air duct dimensions.

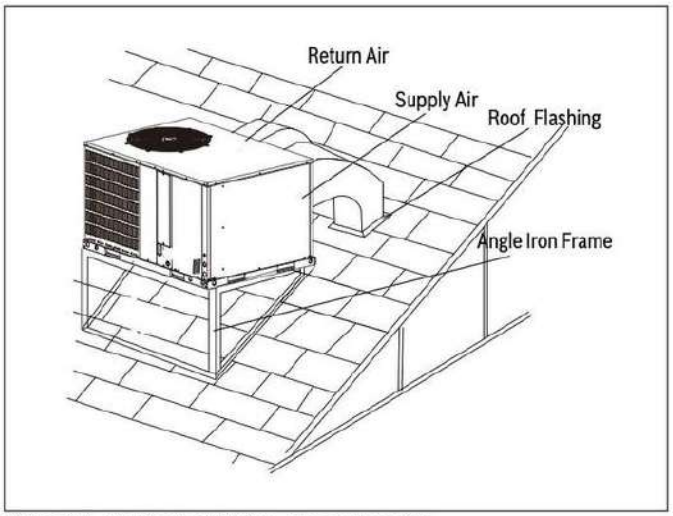


Figure 16 Rooftop Installation - Frame Mounting

NOTICE

A unit with electric heaters with an inlet or outlet duct that penetrates the building structure supporting the unit shall be provided with a mounting base of noncombustible material so designed that, after the unit is installed, there will be no open passages through the supporting structure that would permit flame or hot gases from a fire originating in the space below the supporting structure to travel to the space above that structure. If the unit is intended to be installed on a supporting structure of combustible material, the base shall be so designed that the required clearance will be maintained between the supporting unit mounting base, and shall extend not less than 76 mm(3 in) below the upper surface of the supporting structure, except that, in a unit designed for use only in a mobile home, the distance shall be not less than 19 mm(3/4 in).

WARNING

If appliances connected via an air duct system to one or more rooms are installed in a room with an area less than shown in section 4.4 Table 9, that room shall be without continuously operating open flames (e.g. an operating gas appliance) or other potential ignition sources (for e.g. an operating electric heater, hot surfaces). A flame-producing device may be installed in the same space if the device is provided with an effective flame arrest.

For appliances connected via an air duct system to one or more rooms, auxiliary devices which may be a potential ignition source shall not be installed in the duct work. Examples of such potential ignition sources are hot surfaces with a temperature exceeding 700 °C and electric switching devices.

For appliances connected via an air duct system to one or more rooms, only auxiliary devices approved by the appliance manufacturer or declared suitable with the refrigerant shall be installed in connecting ductwork.

7 Condensate Drain Connection

Unit should be installed in accordance with national and local safety codes, including but not limited to ANSI/NFPS No. 70, local plumbing and wastewater codes and any other applicable codes.

7.1 Install Drain Pipe

4. Ensure drain lines do not block access to front of the unit. Minimum clearance of 24 inches is required for filter, coil or blower removal and service access.
5. Make sure unit is leveled or pitched slightly towards primary drain connection so that water will drain completely from the pan.
6. Do not reduce drain line size to less than connection size provided on condensate drain pan.
7. All drain lines must be pitched downward away from the unit at a minimum of 1/8" per foot of line to ensure proper drainage.
8. Do not connect condensate drain line to a closed or open sewer pipe. Run condensate to an open drain or run line to a safe outdoor area.
9. The drain line should be insulated where necessary to prevent sweating and damage due to condensate forming on the outside surface of the line.
10. Make provisions for disconnecting and cleaning of the primary drain line should it become necessary. Install a 2 inch trap in the primary drain line as close to the unit as possible. Make sure that the outlet of the trap is at least 1 inch lower than the drain pan condensate connection to allow proper drainage of the pan.

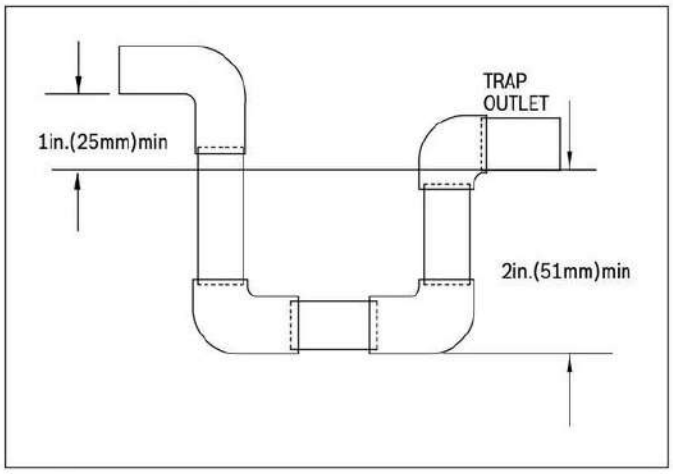


Figure 17

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

When making drain fitting connections to drain pan, do not overtighten. Over tightening fittings can split pipe connections on the drain pan.

8 Air Filter (Not Factory-Installed)

Filters and filter racks are not included with the unit and must be field supplied.

An external filter or other means of filtration must be properly sized for a maximum of 300 feet/min. air velocity or what is recommended for the type of filter installed.

Filter application and placement 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, elements, heat relays, evaporator coil or compressor. Consequently, we recommend that the return air duct system have only one filter location. For systems without a return air filter grill, multiple filter grills can be installed at each of the return air openings.

If adding high efficiency filters or electronic air filtration systems, it is very important that the air flow is not reduced. If air flow is reduced the overall performance and efficiency of the unit will be reduced. It is strongly recommended that a professional installation technician is contacted to ensure such filtration systems are installed correctly.

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

WARNING

Fire hazard!

Do not operate the system without filters. A portion of the dust suspended in the air may temporarily lodge in the duct runs and at the supply registers. 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 with filters in place, when certain types of candles, oil lamps or standing pilots are burned.

Heat Pump Model	No.	Size Recommended
2-3 Ton Model	1	20"x20"x1"
3.5-5 Ton Model	1	24"x36"x1"

Table 12

9 Electrical Wiring

Field wiring must comply with the National Electric Code (NEC) and any applicable local ordinance.

WARNING

Electrical shock!

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.

9.1 Power Wiring

1. It is important that proper electrical power is available for connection to the unit being installed. See the unit nameplate, wiring diagram, and electrical data in the installation instructions for more detailed requirements. Voltage tolerance should not be over 10% from rating voltage.
2. If any of the wiring must be replaced, replacement wiring must be the same type as shown in nameplate, wiring diagram and electrical data sheet.
3. Install a branch circuit disconnect of adequate size to handle starting current, located within sight, and readily accessible to the unit.
4. **Electric Heater:** If the optional Electric Heat Kit is installed, the unit should be equipped with suitable circuit breakers or fuse. Refer to Tables 13 for more information. These breaker(s) 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 over-current protection of the supply wiring and therefore may be sized larger than the branch circuit protection.
   - Supply circuit power wiring must be 221 °F minimum copper conductors only. Refer to Tables 13 for ampacity, wire size and circuit protector requirements. Supply circuit protective devices may be either fuses or "HACR" type circuit breakers.1-3/8" knockouts inside the cabinet are provided for connection of power wiring to electric heater.
   - Power wiring is connected to the power terminal block in unit electric cabinet. See Electric Heater Kit Installation Instructions for details.
5. See wiring diagram located on inside of control board access panel for proper wiring instructions.

9.2 Grounding

WARNING

Electrical shock!

The unit must be permanently grounded. Failure to do so can result in electrical shock causing personal injury or death.

- The unit must be electrically grounded in accordance with local codes and the National Electric Code (NEC).
- Grounding may be accomplished by attaching ground wire(s) to ground lug(s) provided in the unit wiring compartment.

9.3 Control Wiring

WARNING

Fire hazard!

Low voltage control wiring should not be run in conduit with high voltage wiring. Keep distance between the two conduits per local codes.

- 18 AWG. color-coded low voltage wire should be used for lengths less than 50 ft. For wire lengths longer than 50 ft., 16 AWG. wire should be used.
- 7/8" knockout hole should be used to route control wires into the unit.
- After installation, ensure separation of low voltage and high voltage wiring is maintained.

Refer to Figure 18 for thermostat wiring diagrams.

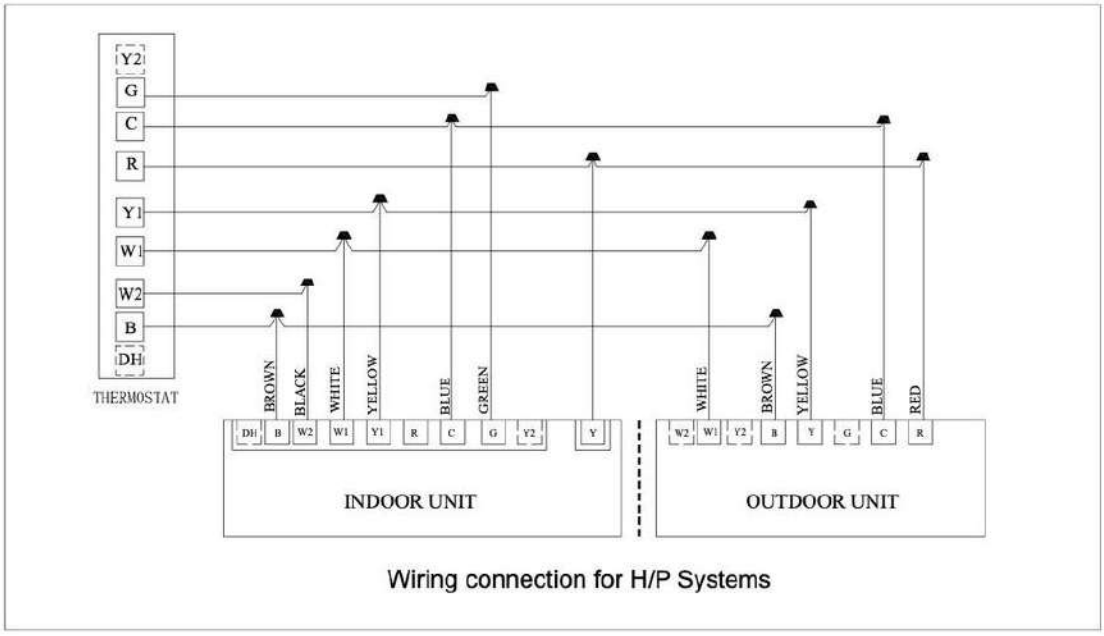


Figure 18 Wiring connection for H/P Systems

WARNING

Electrical shock!

Label all wiring prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

Size (Tons)	Volt	Compressors		OD Fan Motors	Supply Blower Motor	Unit Circuit	
		RLA		RLA	RLA	MCA1 (Amps)	Max Fuse2 Breaker3 Size(Amps)
24 (2.0)	208/230-1-60	9.9		1.0	1.9	15.67	20
30 (2.5)	208/230-1-60	9.5		1.0	1.9	17.32	20
36 (3.0)	208/230-1-60	14.8		1.0	1.9	21.90	30
42 (3.5)	208/230-1-60	18.4		1.5	3.5	28.20	35
48 (4.0)	208/230-1-60	17.5		1.5	3.5	29.70	40
60 (5.0)	208/230-1-60	30.7		1.5	3.5	43.40	60

Table 13 Electrical Data Without Electric Heat

WARNING

Electrical shock, fire hazard!

Any power supply and circuits must be wired and protected in accordance with federal, state and local electrical codes.

The power supply to unit and to Electric Heat Kit must be separated (dual point).

Heater Kit Model	Size (Tons)	Electric Heater (kW)	Heater Ampacity		MCA (Min. Circuit Ampacity)		MOP (Max. Fuse or Breaker (HACR) Ampacity)		Fan Speed (AC/HP)				
			208V	230V	208V	230V	208V	230V	1 (Low)	2	3 (Medium)	4	5 (High)
AEHK-05(FRTU)	24 (2.0)	5	22.8	24.9	22.8	24.9	25	30	●	/	●	/	●
AEHK-08(FRTU)		7.5	34.8	37.9	34.8	37.9	35	45	●	/	●	/	●
AEHK-10(FRTU)		10	45.4	49.8	45.4	49.8	50	60	×	/	●	/	●
AEHK-05(FRTU)	30 (2.5)	5	22.8	24.9	22.8	24.9	25	30	●	/	●	/	●
AEHK-08(FRTU)		7.5	34.8	37.9	34.8	37.9	35	45	●	/	●	/	●
AEHK-10(FRTU)		10	45.4	49.8	45.4	49.8	50	60	×	/	●	/	●
AEHK-15(FRTU)		15	34.8/34.8	37.9/37.9	34.8/34.8	37.9/37.9	35/35	45/45	×	/	×	/	●
AEHK-05(FRTU)	36 (3.0)	5	22.8	24.9	22.8	24.9	25	30	●	/	●	/	●
AEHK-08(FRTU)		7.5	34.8	37.9	34.8	37.9	35	45	●	/	●	/	●
AEHK-10(FRTU)		10	45.4	49.8	45.4	49.8	50	60	×	/	●	/	●
AEHK-15(FRTU)		15	34.8/34.8	37.9/37.9	34.8/34.8	37.9/37.9	35/35	45/45	×	/	×	/	●
AEHK-05(FRTU)	42 (3.5)	5	22.8	24.9	22.8	24.9	25	30	●	/	●	/	●
AEHK-08(FRTU)		7.5	34.8	37.9	34.8	37.9	35	45	●	/	●	/	●
AEHK-10(FRTU)		10	45.4	49.8	45.4	49.8	50	60	●	/	●	/	●
AEHK-15(FRTU)		15	34.8/34.8	37.9/37.9	34.8/34.8	37.9/37.9	35/35	45/45	●	/	●	/	●
AEHK-20(FRTU)		20	45.4/45.4	49.8/49.8	45.4/45.4	49.8/49.8	50/50	60/60	×	/	●	/	●
AEHK-05(FRTU)	48 (4.0)	5	22.8	24.9	22.8	24.9	25	30	●	/	●	/	●
AEHK-08(FRTU)		7.5	34.8	37.9	34.8	37.9	35	45	●	/	●	/	●
AEHK-10(FRTU)		10	45.4	49.8	45.4	49.8	50	60	●	/	●	/	●
AEHK-15(FRTU)		15	34.8/34.8	37.9/37.9	34.8/34.8	37.9/37.9	35/35	45/45	●	/	●	/	●
AEHK-20(FRTU)		20	45.4/45.4	49.8/49.8	45.4/45.4	49.8/49.8	50/50	60/60	×	/	●	/	●
AEHK-05(FRTU)	60 (5.0)	5	18.2	19.9	22.8	24.9	25	30	×	×	×	●	●
AEHK-08(FRTU)		7.5	27.8	30.3	34.8	37.9	35	45	×	×	×	●	●
AEHK-10(FRTU)		10	36.3	39.8	45.4	49.8	50	60	×	×	×	●	●
AEHK-15(FRTU)		15	27.8/27.8	30.3/30.3	34.8/34.8	37.9/37.9	35/35	45/45	×	×	×	●	●
AEHK-20(FRTU)		20	36.3/36.3	39.8/39.8	45.4/45.4	49.8/49.8	50/50	60/60	×	×	×	●	●

Table 14 MCA/MOP data of electric heat kit

NOTE:
Heat kit suitable for RTU 4-way position installation.
Ampacities for MCA and Fuse/breaker including the blower motor.
Heat pump systems require a specified airflow. Each ton of cooling requires between 350 and 450 cubic feet of air per minute (CFM), or 400 CFM nominally.

Model	Description	Ref.Air Handler Use
AEHK-05(FRTU)	5kW heater kit, double pole circuit breaker	24/30/36/42/48/60
AEHK-08(FRTU)	7.5kW heater kit, double pole circuit breaker	24/30/36/42/48/60
AEHK-10(FRTU)	10kW heater kit, double pole circuit breaker	24/30/36/42/48/60
AEHK-15(FRTU)	15kW heater kit, double pole circuit breaker	30/36/42/48/60
AEHK-20(FRTU)	20kW heater kit, double pole circuit breaker	42/48/60

Table 15 Electrical Heater Kits

10 System Charge Adjustment

10.1 Charging: Weigh-In Method (Recommended)

Weigh-in method is recommended anytime a system charge is being replaced. Weigh-in method can also be used when power is not available to the equipment site or operating conditions (indoor/outdoor temperatures) are not in range to verify with the subcooling charging method.

10.2 Subcooling Charging and Refrigerant Adjustment In Cooling (Above 55°F Outdoor Temp.)

1. Check the outdoor ambient temperatures.

Subcooling (**in cooling mode**) is the only recommended method of charging above 55°F outdoor ambient temperatures. For outdoor ambient temperatures below 55°F, use weigh-in charge method.

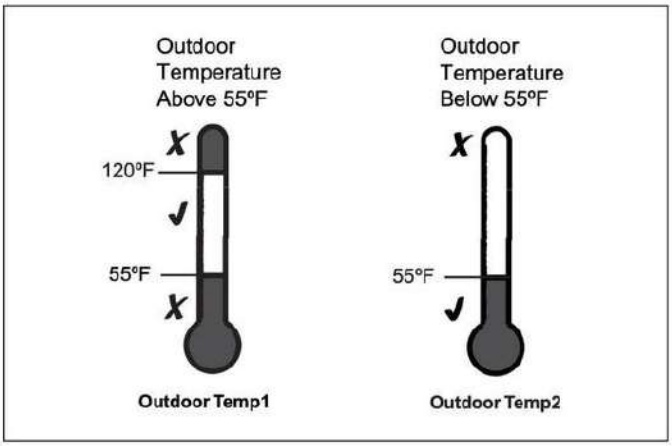


Figure 19

For best results the indoor temperature should be kept between 70°F to 80°F.

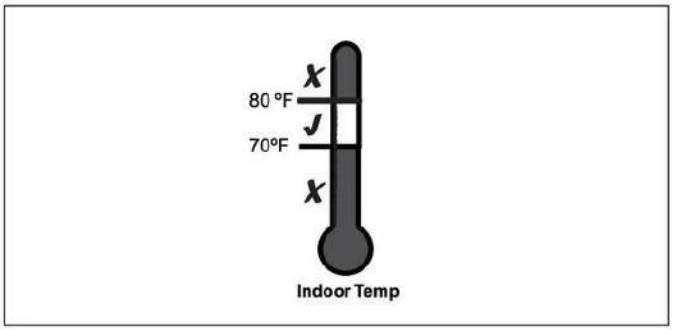


Figure 20

2. Stabilize the system.

After a twenty (20) minute stabilization period operating at 100% capacity, maintain continuous operation while adjusting refrigerant charge. After adjusting, operate system for a minimum of five (5) minutes for system to stabilize.



Figure 21

When the outdoor ambient temperature is higher than 55°F, be sure to return in spring or summer, so as to accurately charge the system in cooling mode.

Add refrigerant if the subcooling reading is lower than the designed value (Nameplate).

- Connect gauges to refrigerant bottle and unit .
- Purge all hoses.
- Open tank.
- Stop adding refrigerant when subcooling matches the charging value Final Subcooling value.

Recover refrigerant if the subcooling reading is higher than the designed value (Nameplate).

3. Record System Information for reference . Record system pressures and temperatures after charging is complete.

11 System Operation and Troubleshooting

11.1 Control Logic Description

- The system adopts the same 24VAC control as any conventional heat pump.

11.2 Sensors

T3- Outdoor unit coil temperature(Table 16.2)

T4- Ambient temperature(Table 16.3)

T5- Compressor exhaust temperature(Table 16.4)

HPS- High pressure switch

LPS- Low pressure switch

Unit will run defrost mode in below condition:
(1)Unit run in heating mode;
(2)Compressor is running and running time is more than 60 minutes, or after the unit starts up, the time for the compressor to enter the PI control regulation is more than 35 minutes;
(3)The demand defrost control monitors the outdoor unit coil temperature using thermistor T3, outdoor temperature using thermistor T4, Te and Tc which are the saturation temperatures corresponding to the pressures of the low-pressure sensor and the high-pressure sensor respectively.

When the unit meets any one of the blow five conditions, the unit will run defrost mode. Condition 1: When T3<-1°C, T4≥-7°C, T3<(0.8*T4-8.8°C) and remains 3 minutes ,unit will defrost;
Condition 2: When T3<-13°C, T4<-7°C and compressor runs foe 88 mins, unit will defrost; Condition 3: When T3<0°C and keeps 3 mins, and compressor runs for 360 mins, unit will defrost;
Condition 4: When -10°C<T4≤-2°C, the opening degree of the electronic expansion valve is lower than 200 pls , the compressor speed is higher than 40 rps, Tc<28°C keeps 20 minutes after the unit starts up, unit will defrost;
Condition 5: When -2°C≤T4<10°C and Te<(T4-15°C) keeps 20 mins, unit will defrost;

(4) Quit defrost condition:
Compressor is running, outdoor unit meets any below condition, unit will quit defrost mode:
Condition 1: Defrost time is last 8 mins.
Condition 2: When T3>15°C and keeps 60 seconds.
Condition 3: Pc>2.5MPa.

11.3 Compressor Crankshaft Heater Control Function

The crankshaft heater logic is below:
①Crankshaft heater ON condition:
When unit meet any below condition, crankshaft heater will ON:
Condition 1: Meet 3 conditions at same time below:
a) T5<23°C or T5 sensor is abnormal.
b) Outdoor unit is in standby mode, and T4 was lower 10°C before.
c) Outdoor unit stop time ≥3h.
Condition 2:
a) Outdoor unit power on, and T5<23°C;
b) Outdoor unit is in defrost mode , and T5<23°C.
②Crankshaft heater OFF condition
T5≥28°C and no T5 error

11.4 Four-way valve operate condition

Four-way valve will power on in heating mode, and power of f in cooling mode.The input voltage of four-way valve is 220V.

During a heat call on first time operation the unit will run about 1 minute in cooling to build up pressure for reversing valve to change.

11.5 R32 Refrigerant Sensor Description

The 3.5-5 Ton unit comes with a factory installed R32 Refrigerant leakage sensor. Before powering on the unit, verify that the sensor is plugged into the CN34 port on the indoor control board. See the figure below for reference.

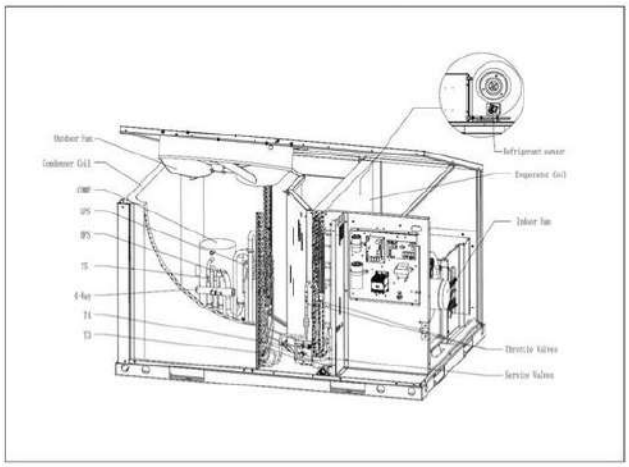


Figure 22

CAUTION

Fire Hazard!

The refrigerant leakage sensor can only use the factory model or the specified model indicated in the corresponding manual.

The R32 refrigerant leakage sensor must be used to activate the refrigerant shutoff device,the alarm device, incorporated circulation airflow or other emergency controls, which shall give an electrical signal at a predetermined alarm setpoint in response to leaked refrigerant.

The location of leakage sensors shall be chosen in relation to the different installation scenarios.Please refer to the indoor unit installation manual for specific requirements.

The installation of the refrigerant leakage sensor shall allow access for checking, repair or replacement by an authorized person.

The refrigerant leakage sensor shall be installed so its function can be verified easily.

The refrigerant leakage sensor shall be protected to prevent tampering or unauthorized resetting of the pre-set value.

To be effective, the refrigerant leakage sensor must be electrically powered at all times after installation, other than when servicing.

If the refrigerant leakage sensor detects a refrigerant leak, the fan will be turned on to the maximum, the compressor will stop running. Immediately leave the leak area and notify a professional for handling.

The service life of the refrigerant sensor is 15 years, and it should be replaced after the service life.

⚠ WARNING

Fire, explosion, personal injury!

LEAK DETECTION SYSTEM installed on indoor unit. Unit must be powered except for service.

NOTICE

Product damage!

R32 refrigerant leakage sensor is configured for the indoor unit. The operation of fan can be initiated by the R32 refrigerant sensor, which meets the incorporated circulation airflow requirements.

The allowed maximum refrigerant charge (Mmax) and the required minimum room area (Amin) can be determined according to Table 7 and Tables 8-9.

⚠ CAUTION

-instruction for installation of the critical-to-safety wiring connection of the leak detection sensor or leak detection system to the furnace assembly. The wiring shall be not less than 18 AWG with a minimum insulation thickness of 1.58 mm or protected from damage. Critical-to-safety wiring is any field installed wiring necessary to fulfill the requirements of Annex GG in the event of detection of a leak;

-shall not be installed on furnaces with an inductive electrical greater than Le as calculated in Clause 22.116:and

-detection of a leak shall turn on the indoor fan at the highest available speed or turn it on to not less than Q_{min} as determined in Annex GG. Consult furnace manufacturer.

LEAK DETECTION SYSTEM INSTALLED. UNIT MUST BE POWERED EXCEPT FOR SERVICE.			
The LED And The Buzzer'S Status			
Model	Green LED	Red LED	Buzzer Status
NormalOperation	On	Off	Inactive
Refrigerant Sensor Fault	On	Flash 3 Times And Then Be Off For 3Seconds	Active
Refrigerant Sensor Communition Fault	On	Flash 4 Times And Then Be Off For 3Seconds	Active
Refrigerant Leak Alarm	On	Flash 5 Times And Then Be Off For 3Seconds	Active
IF A REFRIGERANT LEAKAGE ALARM IS OBSERVED, DO NOT OPEN THE UNIT OR TURN IT OFF.			

Table 16 R32 refrigerant leakage sensor fault indication

11.6 Protection Functions

- Outdoor coil temperature protection (T3)
  - i. If T3 > 147 °F, compressor is de-energized.
  - ii. If T3 < 129°F, compressor is energized.
- Ambient temperature protection (T4)
  - i. If 23°F ≤ T4 < 120 °F, unit can operate in cooling.
  - ii. If 0 °F ≤ T4 < 86°F, unit can operate in heating.
  - iii. If T4 < 0 °F for 3 minutes, heat pump will provide 24V control to indoor unit energizing electric heat (if installed).

See Product Specification for extended performance data.

- Discharge Temperature (DT) protection (T5)
  - i. If DT > 230°F during cooling mode, the compressor will stop.
  - ii. If DT < 185°F during cooling mode, the compressor will restart.
  - iii. If DT > 230°F during heating mode, the compressor will stop.
  - iv. If DT < 185°F during heating mode, the compressor will restart.
- High Pressure (HP) protection (mechanical open/close pressure switch)
  - i. High Pressure Switch opens at P > 580 PSIG, the compressor and outdoor fan stop.
  - ii. High Pressure Switch closes at P < 435 PSIG, the compressor and outdoor fan restart.
- Low Pressure (LP) protection
  - i. If Low Pressure < 21.8 PSI for 5 minutes during cooling mode, the compressor and outdoor fan will stop.The system will attempt to run again after 3 minutes.
- Module (inverter) protection (TF)
  - i. If TF > 203 °F, the compressor and outdoor fan will stop.
  - ii. If TF < 158 °F, the compressor and outdoor fan will restart.

11.7 Operation Limits

Mode \ Temperature	Cooling operation	Heating operation
Room temperature	63°F～86°F	63°F～86°F
Outdoor temperature	59°F～118°F	5 °F～90°F

NOTICE:Ton=5°F,Toff=2°F

Table 17 Operation Limits

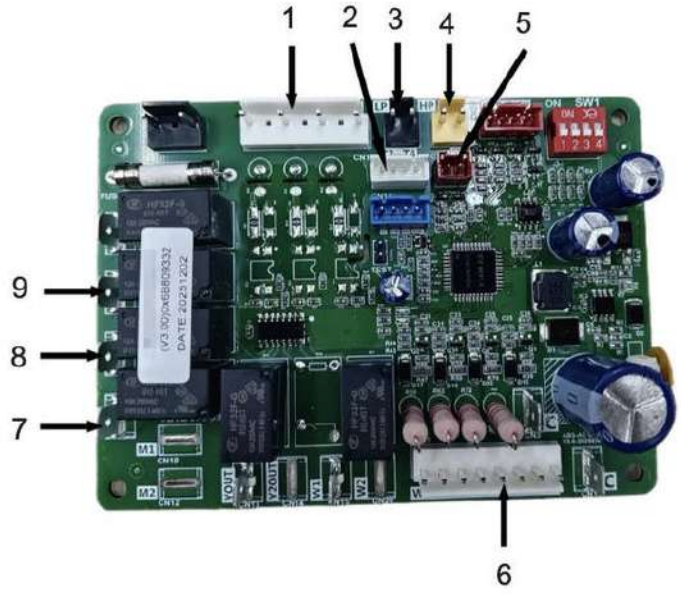
11.8 LED display function of the outdoor unit main PCB and fault table

Display content		State description
No alarm: Green light flashes Red light off	Green light slow fashes	Normal standby
	Green light normally on	Normal operation
System alarm: Red light on Green light flashes	High pressure alarm	Green light flashes **1** times every 8 seconds
	(T3)Temperature sensor fault	Green light flashes 2 times every 8 seconds
	Outdoor low-temperature protection function(CUT-OUT/CUT-IN)	Green light flashes 3 times every 8 seconds
	High exhaust temperature peotection	Green light flashes 5 times every 8 seconds
	Low pressure alarm	Green light flashes 6 times every 8 seconds(If the compressor is turned on, then there will be a 60-second delay.)
	Fan feedback fault	Green light flashes 7 times every 8 seconds (Applied to DC fans)
	(T5)Temperature sensor fault	Green light flashes 8 times every 8 seconds
	(T4)Temperature sensor fault	Green light flashes 9 times every 8 seconds
	(T3)High temperature protevtion	Green light flashes 10 times every 8 seconds
System has locked up: Green light off Red light flashes	Three high/low pressure alarm within 20 minutes	The machine can only operate when it is powered on again
	Three instances of excessively high exhaust temperature within 20 minutes	
	Three instances of T3high-temperature protection within 20 minutes (**HP only**)	

Table 18 Fault Code Table

11.9 Control Board Overviews

11.9.1 Outdoor Unit Control Board for 2-5 Ton Model

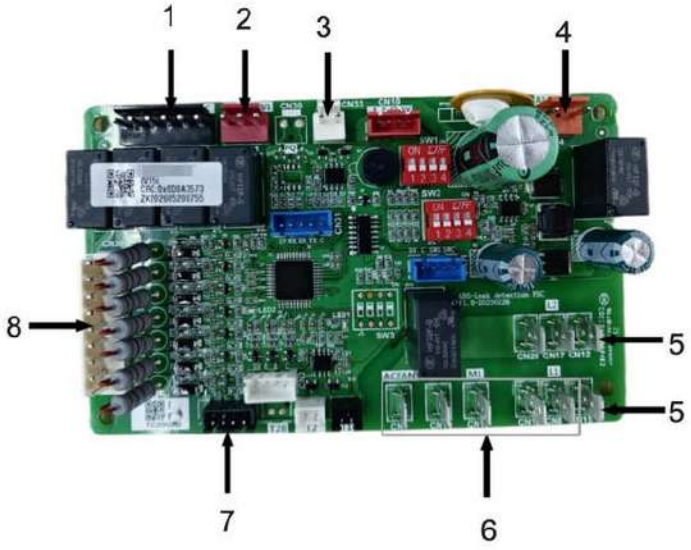


No.	Functional description
1	Communication port
2	T3/T4 sensor port
3	Low pressure switch port
4	High pressure switch port
5	T5 sensor port
6	Communication port
7	Four-way valve port
8	Crankshaft heating port
9	Outdoor motor port

Figure 23 2-5T Outdoor Unit Control Board

NOTE: The picture is for reference only. The actual control panel should be based on the physical one.

11.9.2 Indoor Unit Control Board for 2-4 Ton Model

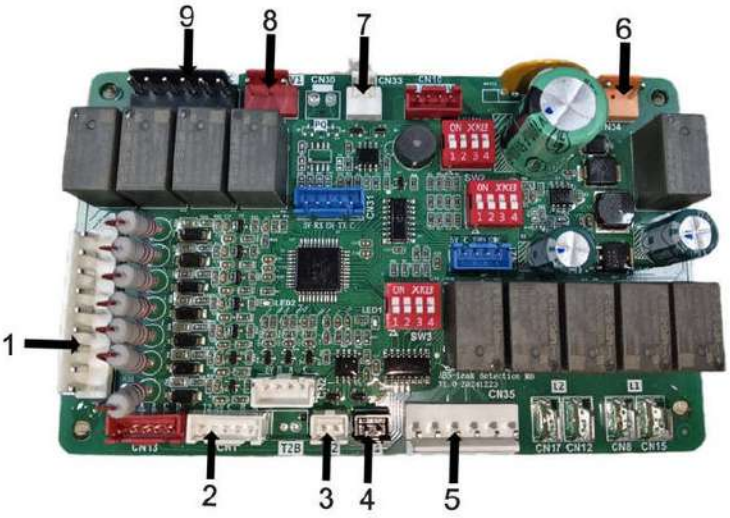


No.	Functional description
1	Communication port
2	Electric Heat Kit signal port(Reserved)
3	Transformer port(VH)
4	Alarm output(Reserved)
5	Transformer port(250)
6	Blower motor port
7	R32 refrigerant sensor port
8	Communication port

Figure 24 2-4T Indoor Unit Control Board

NOTE: The picture is for reference only. The actual control panel should be based on the physical one.

11.9.3 Indoor Unit Control Board for 5 Ton Model



No.	Functional description
1	Thermostat wire connection terminal
2	R32 refrigerant sensor port
3	T2 sensor port
4	T1 sensor port
5	Blower motor port
6	Alarm output(Reserved)
7	Transformer port
8	Electric Heat Kit signal port(Reserved)
9	Communication port (To ODU board)

Figure 25 5T Indoor Unit Control Board

NOTE: The picture is for reference only. The actual control panel should be based on the physical one.

11.10 Troubleshooting of Fault Codes

WARNING

Dangerous voltage

When measuring resistance, make sure the unit is powered off and wait 3 min before taking measurement.

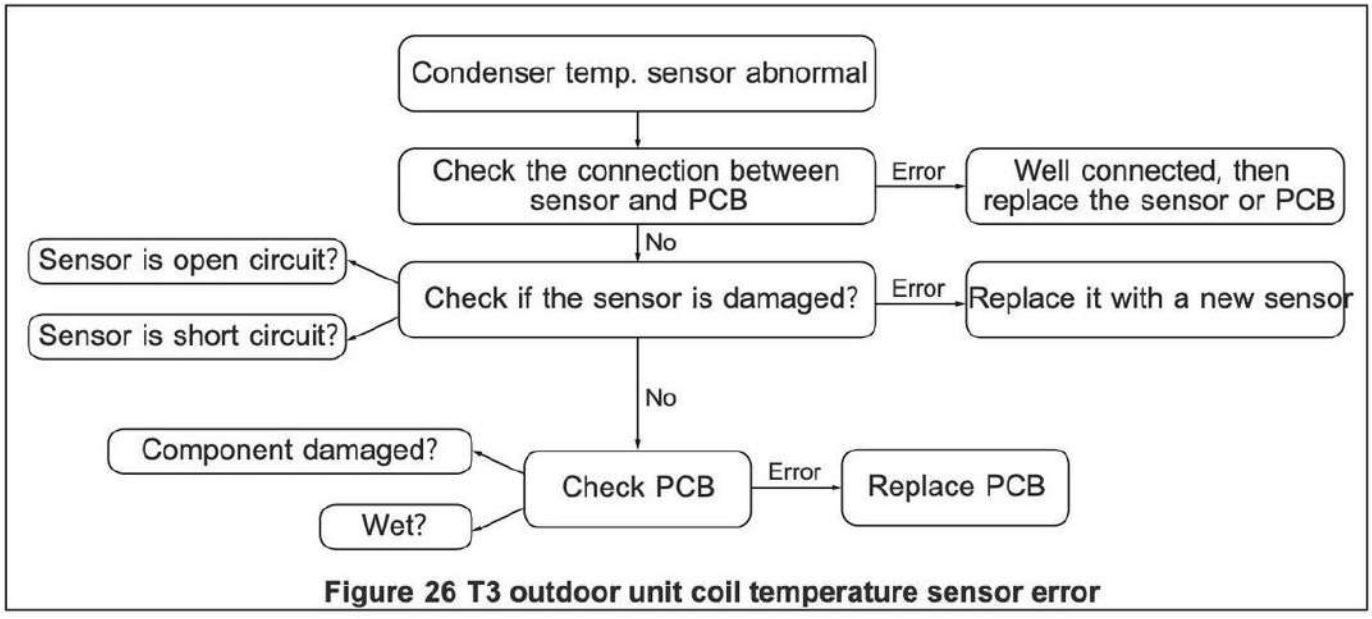


Figure 26 T3 outdoor unit coil temperature sensor error

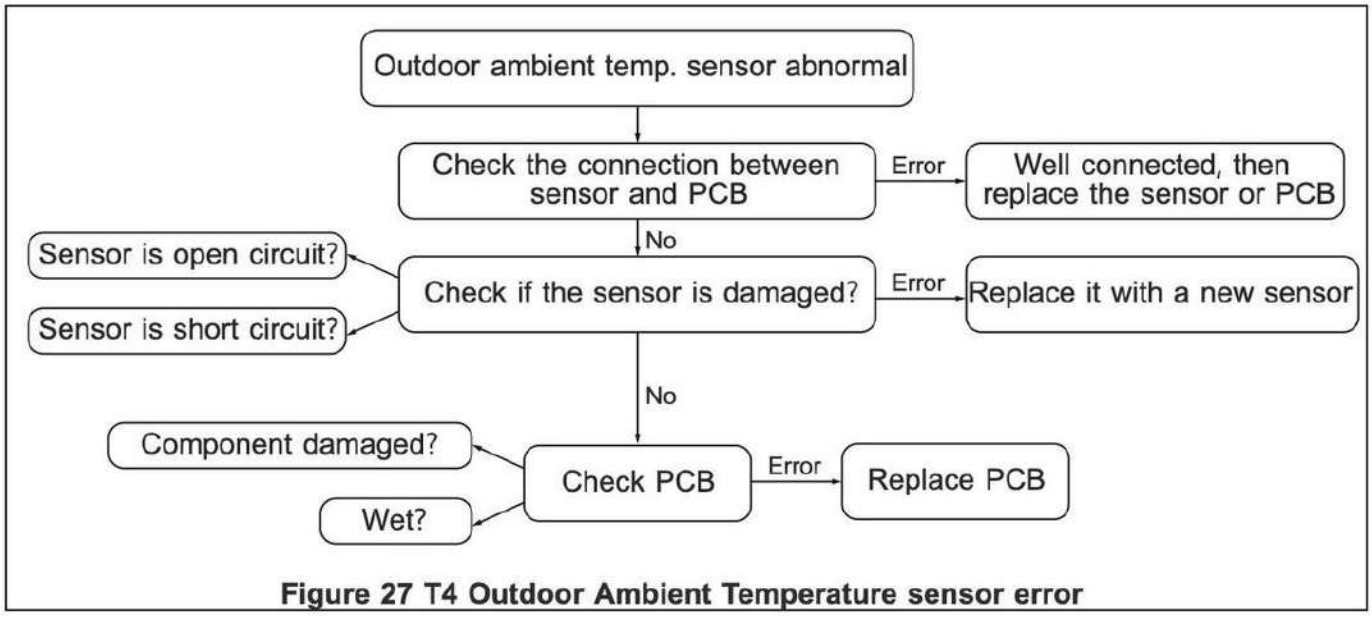


Figure 27 T4 Outdoor Ambient Temperature sensor error

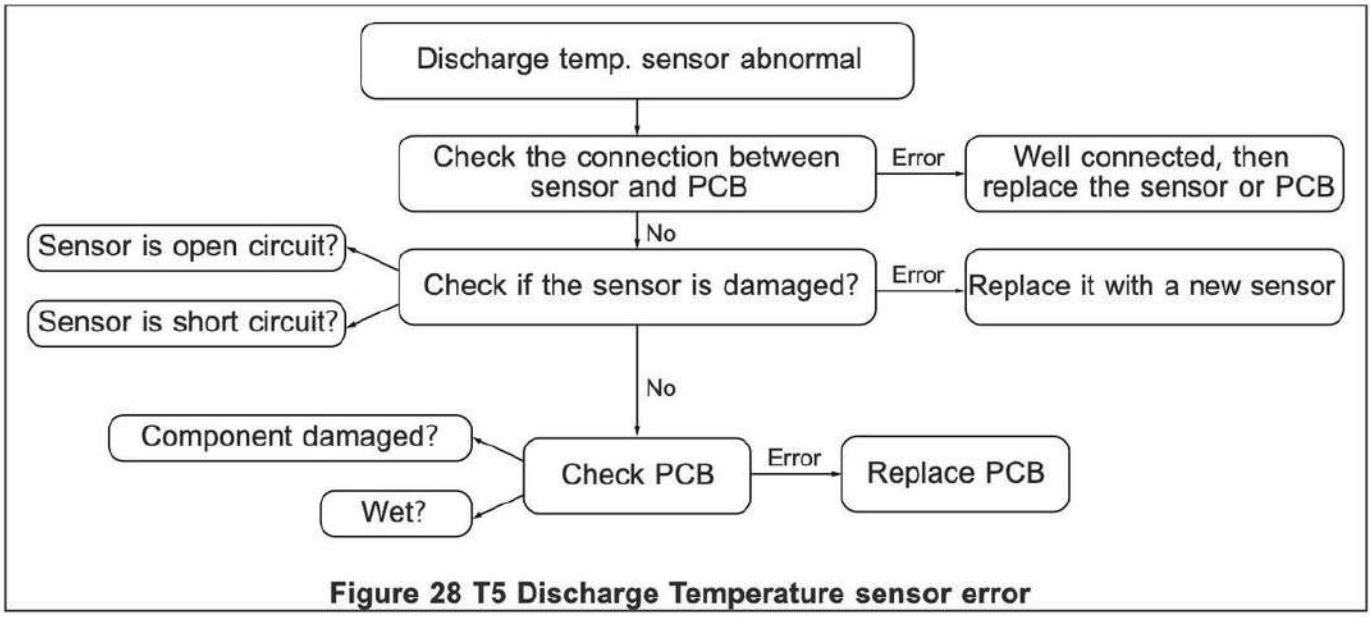


Figure 28 T5 Discharge Temperature sensor error

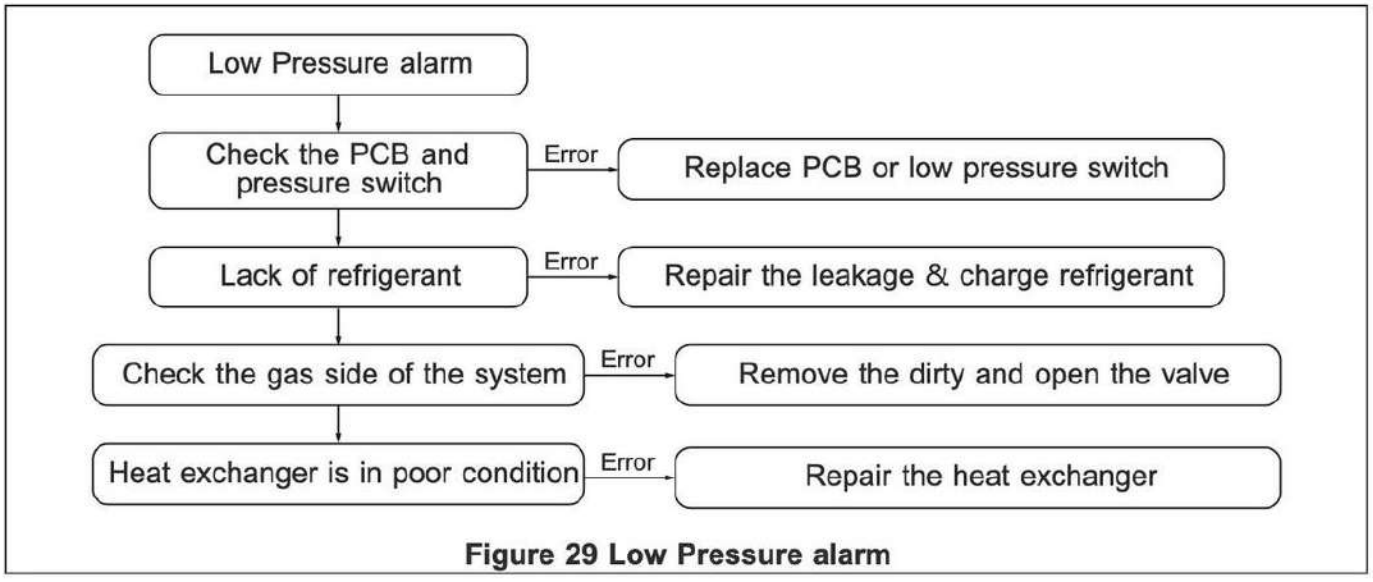


Figure 29 Low Pressure alarm

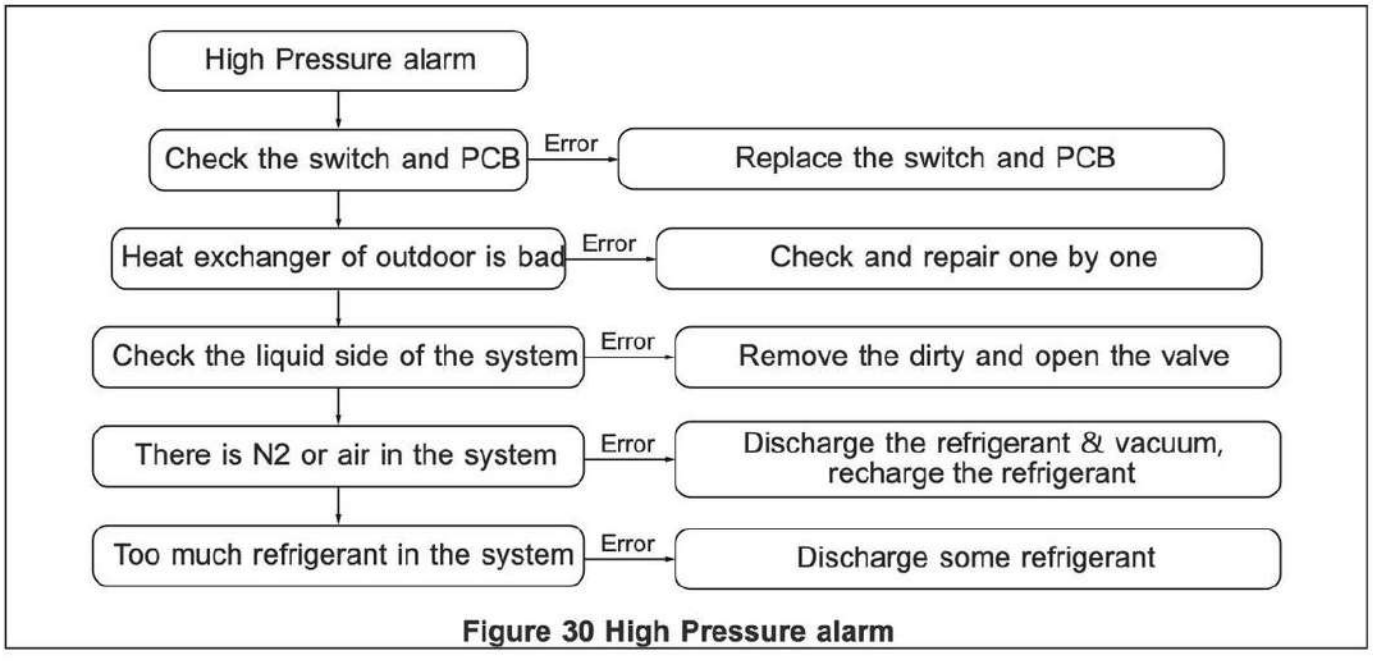


Figure 30 High Pressure alarm

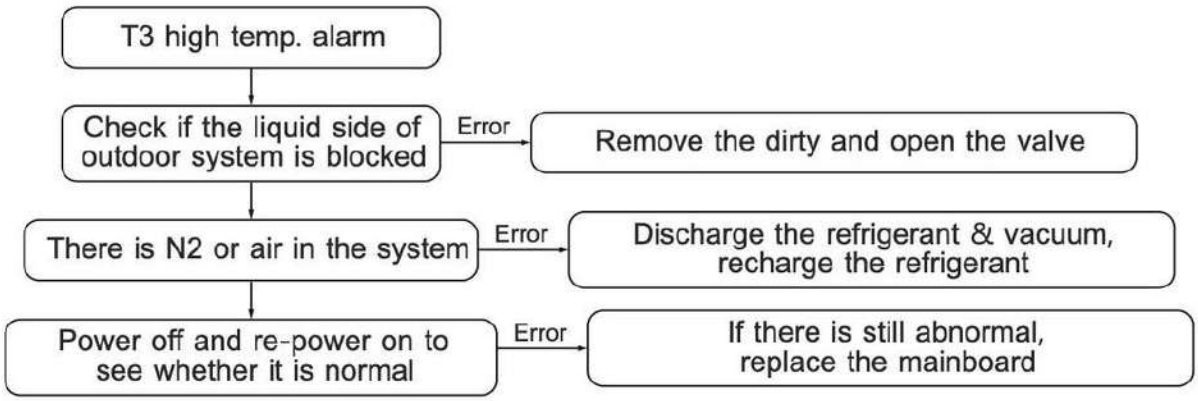


Figure 31 T3 high temperature alarm

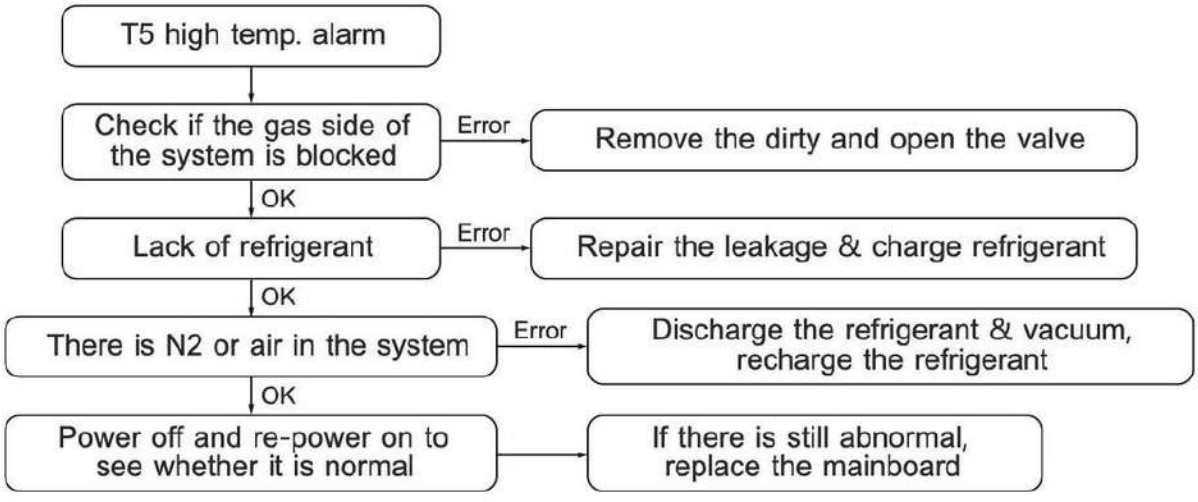
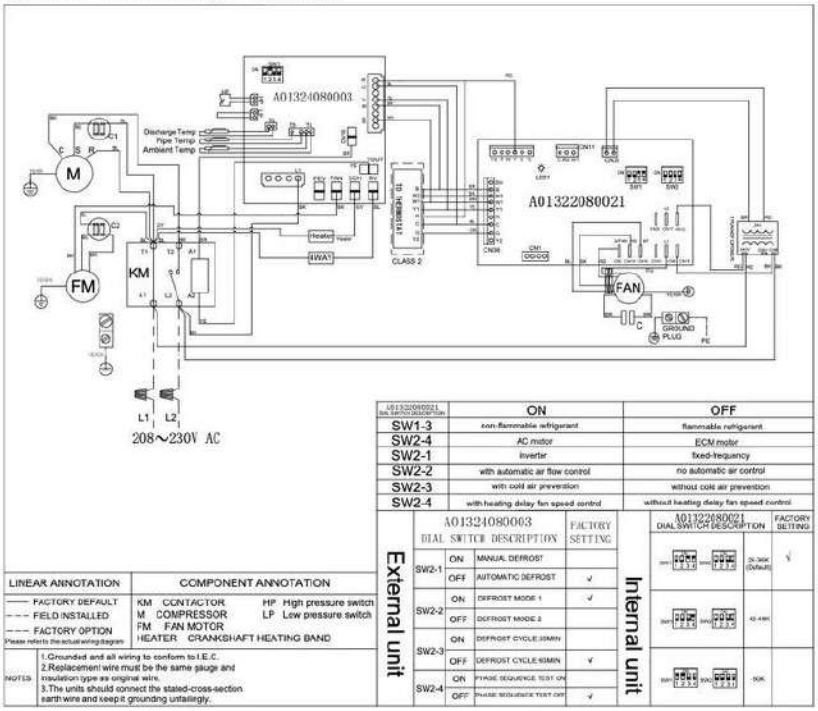


Figure 32 T5 high temperature alarm

12 Wiring Diagram

12.1 Applicable for 24k cooling & heatin type



A01322080021 DIAL SWITCH DESCRIPTION	ON	OFF
SW1-3	non-flammable refrigerant	flammable refrigerant
SW2-4	AC motor	ECM motor
SW2-1	inverter	fixed-frequency
SW2-2	with automatic air flow control	no automatic air control
SW2-3	with cold air prevention	without cold air prevention
SW2-4	with heating delay fan speed control	without heating delay fan speed control

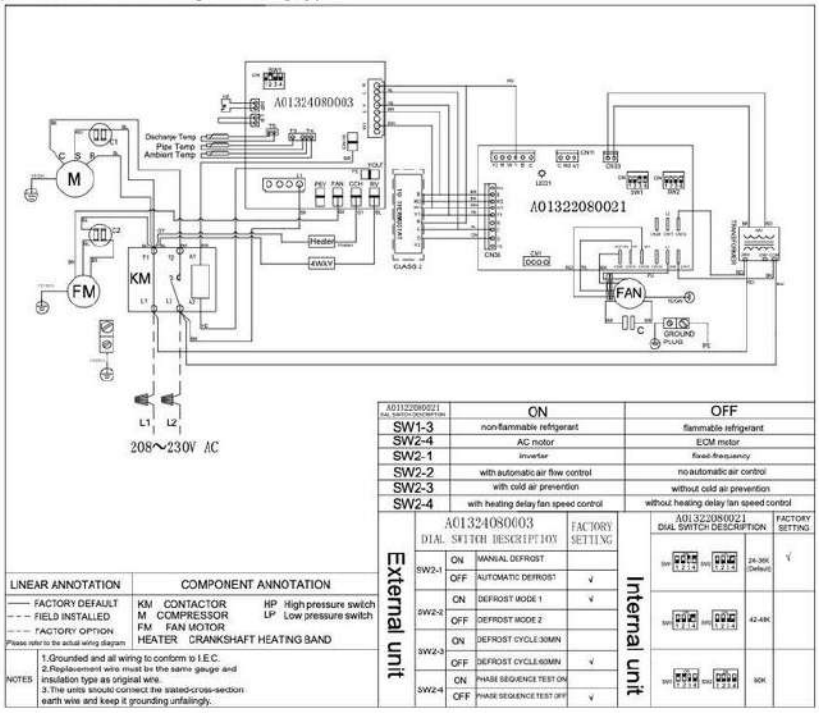
A01324080003 DIAL SWITCH DESCRIPTION			FACTORY SETTING
SW2-1	ON	MANUAL DEFROST	
	OFF	AUTOMATIC DEFROST	√
SW2-2	ON	DEFROST MODE 1	√
	OFF	DEFROST MODE 2	
SW2-3	ON	DEFROST CYCLE:30MIN	
	OFF	DEFROST CYCLE:60MIN	√
SW2-4	ON	PHASE SEQUENCE TEST ON	
	OFF	PHASE SEQUENCE TEST OFF	√

A01322080021 DIAL SWITCH DESCRIPTION	FACTORY SETTING
24-36K (Default)	√
42-48K	
60K	

Figure 33 24k Wiring Diagram

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

12.2 Applicable for 30k cooling & heating type



A01322080021 DIAL SWITCH DESCRIPTION	ON	OFF
SW1-3	non-flammable refrigerant	flammable refrigerant
SW2-4	AC motor	ECM motor
SW2-1	inverter	fixed-frequency
SW2-2	with automatic air flow control	no automatic air control
SW2-3	with cold air prevention	without cold air prevention
SW2-4	with heating delay fan speed control	without heating delay fan speed control

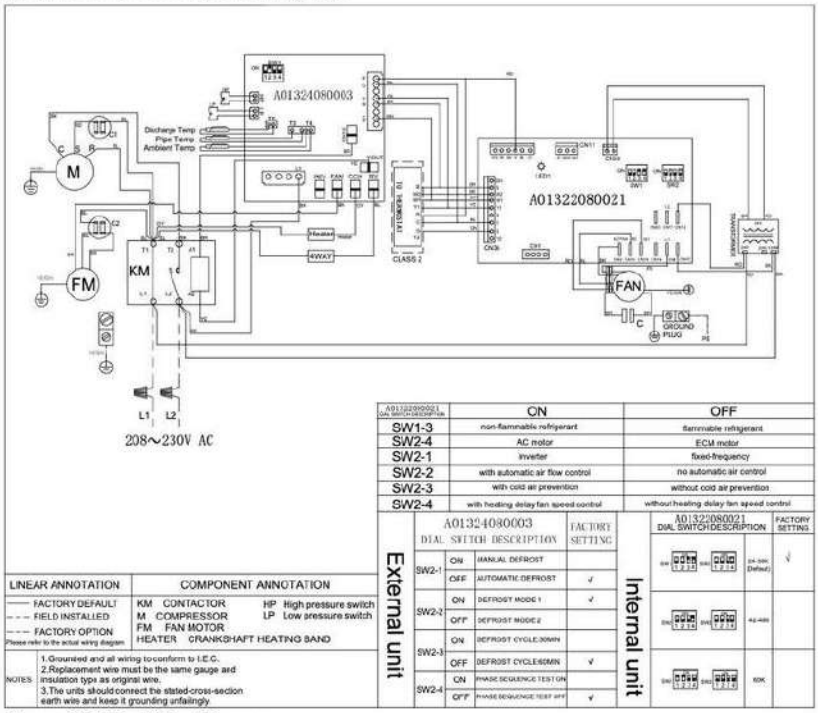
A01324080003 DIAL SWITCH DESCRIPTION			FACTORY SETTING
SW2-1	ON	MANUAL DEFROST	
	OFF	AUTOMATIC DEFROST	√
SW2-2	ON	DEFROST MODE 1	√
	OFF	DEFROST MODE 2	
SW2-3	ON	DEFROST CYCLE:30MIN	
	OFF	DEFROST CYCLE:60MIN	√
SW2-4	ON	PHASE SEQUENCE TEST ON	
	OFF	PHASE SEQUENCE TEST OFF	√

A01322080021 DIAL SWITCH DESCRIPTION	FACTORY SETTING
24-36K (Default)	√
42-48K	
60K	

Figure 34 30k Wiring Diagram

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

12.3 Applicable for 36k cooling & heating type



	ON	OFF
SW1-3	non-flammable refrigerant	flammable refrigerant
SW2-4	AC motor	ECM motor
SW2-1	inverter	fixed-frequency
SW2-2	with automatic air flow control	no automatic air control
SW2-3	with cold air prevention	without cold air prevention
SW2-4	with heating delay fan speed control	without heating delay fan speed control

External unit — A01324080003 DIAL SWITCH DESCRIPTION

			FACTORY SETTING
SW2-1	ON	MANUAL DEFROST	
	OFF	AUTOMATIC DEFROST	√
SW2-2	ON	DEFROST MODE 1	√
	OFF	DEFROST MODE 2	
SW2-3	ON	DEFROST CYCLE:30MIN	
	OFF	DEFROST CYCLE:60MIN	√
SW2-4	ON	PHASE SEQUENCE TEST ON	
	OFF	PHASE SEQUENCE TEST OFF	√

Internal unit — A01322080021 DIAL SWITCH DESCRIPTION

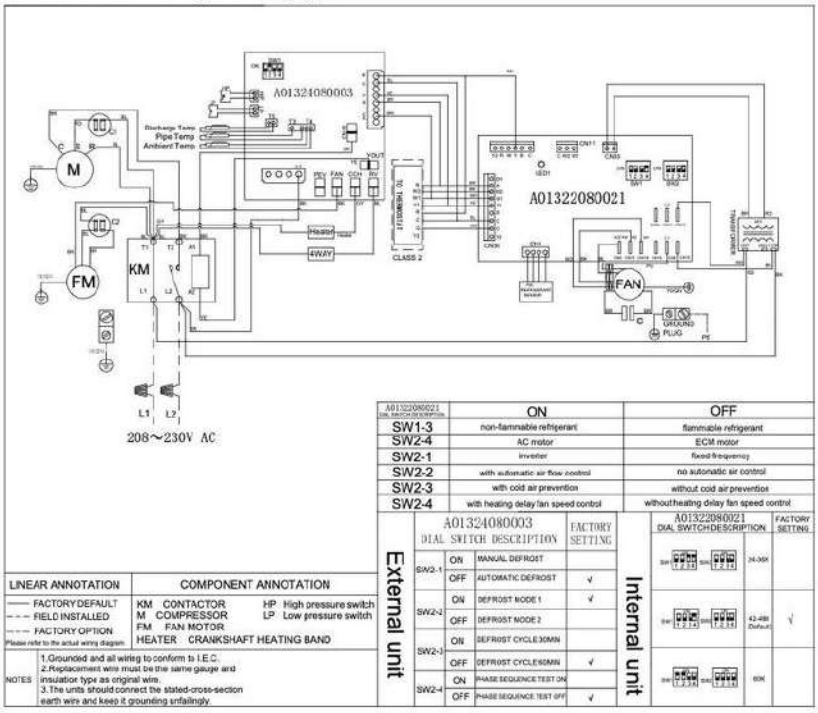
		FACTORY SETTING
24-36K Default		√
42-48K		
60K		

LINEAR ANNOTATION	COMPONENT ANNOTATION
—— FACTORY DEFAULT - - - FIELD INSTALLED — — — FACTORY OPTION Please refer to the actual wiring diagram	KM CONTACTOR HP High pressure switch M COMPRESSOR LP Low pressure switch FM FAN MOTOR HEATER CRANKSHAFT HEATING BAND
NOTES	1.Grounded and all wiring to conform to I.E.C. 2.Replacement wire must be the same gauge and insulation type as original wire. 3.The units should connect the stated-cross-section earth wire and keep it grounding unfailingly.

Figure 35 36k Wiring Diagram

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

12.4 Applicable for 42k cooling & heating type



	ON	OFF
SW1-3	non-flammable refrigerant	flammable refrigerant
SW2-4	AC motor	ECM motor
SW2-1	inverter	fixed-frequency
SW2-2	with automatic air flow control	no automatic air control
SW2-3	with cold air prevention	without cold air prevention
SW2-4	with heating delay fan speed control	without heating delay fan speed control

External unit — A01324080003 DIAL SWITCH DESCRIPTION

			FACTORY SETTING
SW2-1	ON	MANUAL DEFROST	
	OFF	AUTOMATIC DEFROST	√
SW2-2	ON	DEFROST MODE 1	√
	OFF	DEFROST MODE 2	
SW2-3	ON	DEFROST CYCLE:30MIN	
	OFF	DEFROST CYCLE:60MIN	√
SW2-4	ON	PHASE SEQUENCE TEST ON	
	OFF	PHASE SEQUENCE TEST OFF	√

Internal unit — A01322080021 DIAL SWITCH DESCRIPTION

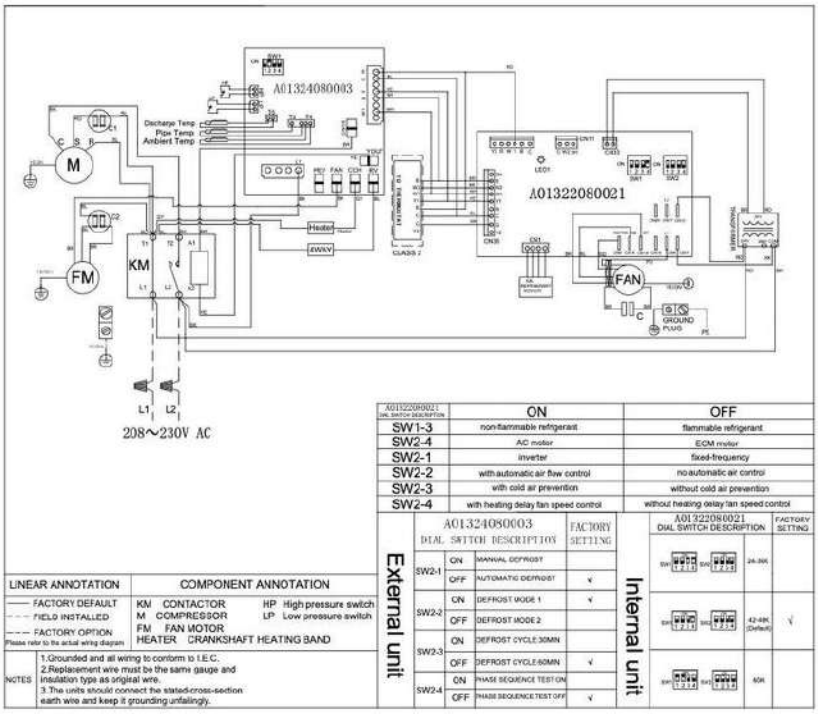
		FACTORY SETTING
24-36K		
42-48K Default		√
60K		

LINEAR ANNOTATION	COMPONENT ANNOTATION
—— FACTORY DEFAULT - - - FIELD INSTALLED — — — FACTORY OPTION Please refer to the actual wiring diagram	KM CONTACTOR HP High pressure switch M COMPRESSOR LP Low pressure switch FM FAN MOTOR HEATER CRANKSHAFT HEATING BAND
NOTES	1.Grounded and all wiring to conform to I.E.C. 2.Replacement wire must be the same gauge and insulation type as original wire. 3.The units should connect the stated-cross-section earth wire and keep it grounding unfailingly.

Figure 36 42k Wiring Diagram

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

12.5 Applicable for 48k cooling & heating type



A01322080021 DIAL SWITCH DESCRIPTION	ON	OFF
SW1-3	non-flammable refrigerant	flammable refrigerant
SW2-4	AC motor	ECM motor
SW2-1	inverter	fixed-frequency
SW2-2	with automatic air flow control	no automatic air control
SW2-3	with cold air prevention	without cold air prevention
SW2-4	with heating delay fan speed control	without heating delay fan speed control

External unit

A01324080003 DIAL SWITCH DESCRIPTION			FACTORY SETTING
SW2-1	ON	MANUAL DEFROST	
	OFF	AUTOMATIC DEFROST	√
SW2-2	ON	DEFROST MODE 1	√
	OFF	DEFROST MODE 2	
SW2-3	ON	DEFROST CYCLE:30MIN	
	OFF	DEFROST CYCLE:60MIN	√
SW2-4	ON	PHASE SEQUENCE TEST:ON	
	OFF	PHASE SEQUENCE TEST:OFF	√

Internal unit

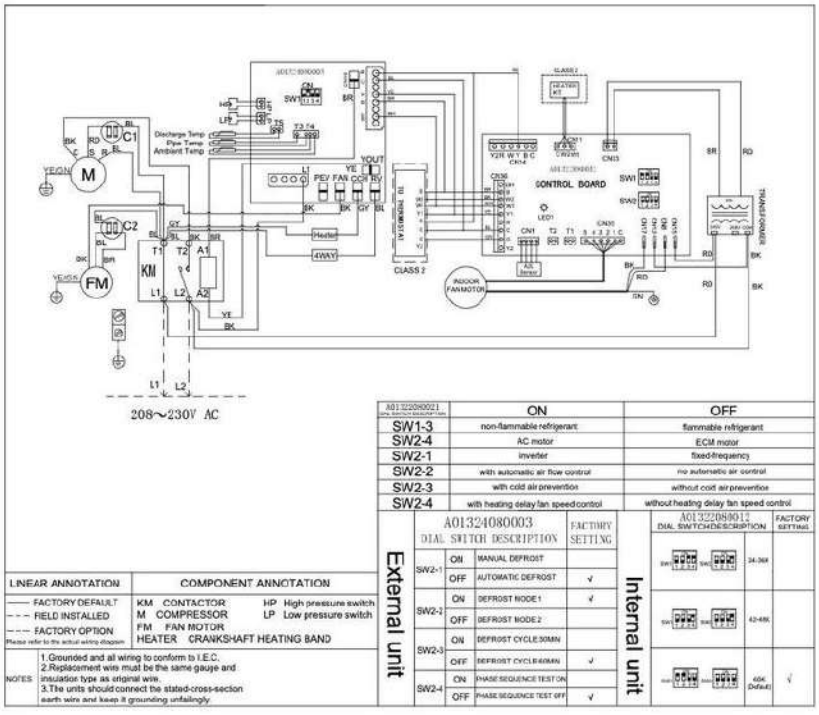
A01322080021 DIAL SWITCH DESCRIPTION		FACTORY SETTING
SW1	24-36K	
SW2	42-48K (Default)	√
SW3	60K	

LINEAR ANNOTATION	COMPONENT ANNOTATION
—— FACTORY DEFAULT - - - FIELD INSTALLED – – – FACTORY OPTION Please refer to the actual wiring diagram	KM CONTACTOR HP High pressure switch M COMPRESSOR LP Low pressure switch FM FAN MOTOR HEATER CRANKSHAFT HEATING BAND
NOTES	1.Grounded and all wiring to conform to I.E.C. 2.Replacement wire must be the same gauge and insulation type as original wire. 3.The units should connect the stated-cross-section earth wire and keep it grounding unfailingly.

Figure 37 48k Wiring Diagram

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

12.6 Applicable for 60k cooling & heating type



A01322080021 DIAL SWITCH DESCRIPTION	ON	OFF
SW1-3	non-flammable refrigerant	flammable refrigerant
SW2-4	AC motor	ECM motor
SW2-1	inverter	fixed-frequency
SW2-2	with automatic air flow control	no automatic air control
SW2-3	with cold air prevention	without cold air prevention
SW2-4	with heating delay fan speed control	without heating delay fan speed control

External unit

A01324080003 DIAL SWITCH DESCRIPTION			FACTORY SETTING
SW2-1	ON	MANUAL DEFROST	
	OFF	AUTOMATIC DEFROST	√
SW2-2	ON	DEFROST MODE1	√
	OFF	DEFROST MODE2	
SW2-3	ON	DEFROST CYCLE:30MIN	
	OFF	DEFROST CYCLE:60MIN	√
SW2-4	ON	PHASE SEQUENCE TEST:ON	
	OFF	PHASE SEQUENCE TEST:OFF	√

Internal unit

A01322080012 DIAL SWITCH DESCRIPTION		FACTORY SETTING
SW1	24-36K	
SW2	42-48K	
SW3	60K (Default)	√

LINEAR ANNOTATION	COMPONENT ANNOTATION
—— FACTORY DEFAULT - - - FIELD INSTALLED – – – FACTORY OPTION Please refer to the actual wiring diagram	KM CONTACTOR HP High pressure switch M COMPRESSOR LP Low pressure switch FM FAN MOTOR HEATER CRANKSHAFT HEATING BAND
NOTES	1.Grounded and all wiring to conform to I.E.C. 2.Replacement wire must be the same gauge and insulation type as original wire. 3.The units should connect the stated-cross-section earth wire and keep it grounding unfailingly.

Figure 38 60k Wiring Diagram

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

13 Maintenance

For continuing high performance and to minimize possible equipment failure, periodic maintenance must be performed on this equipment.

13.1 Cleaning Precautions

WARNING

Any unit repairs must be performed by qualified service personnel only.

WARNING

Electrical shock!

Always turn off your heat pump and disconnect its power supply before cleaning or maintenance.

CAUTION

When removing filter, do not touch metal parts in the unit. The sharp metal edges can cut you.

NOTICE

- Do not use chemicals or chemically treated cloths to clean the unit.
- Do not use benzene, paint thinner, polishing powder or other solvents to clean the unit.
- Do not operate the system without a filter in place.

13.2 Regular Maintenance

Your heat pump must be inspected regularly by a qualified service technician.

1. Inspect the air filter every ninety days or as often as needed. If blocked or obstructed, clean or replace at once.

Your annual system inspection must include:

2. Inspection and/or cleaning of the blower wheel housing and motor.
3. Inspection and cleaning of indoor and outdoor coils as required.
4. Inspection and/or cleaning of the indoor coil drain pan and drain lines, as well as auxiliary drain pan and lines.
5. Check all electrical wiring and connections. Correct as needed, referring to the wiring diagram. (Refer to Figure 18).

14 Disposal

WARNING

Disposal!

Disposal of unit or components must be performed by qualified service personnel only.

Components and units must be properly disposed in accordance with federal or local regulations.

Components and accessories from the units are not part of ordinary domestic waste.

Complete units , compressors, motors etc. are only to be disposed of via qualified disposal specialists.

This unit uses hydrogen fluorocarbons. Please contact the dealer when you want to dispose of this unit. Law requires that the collection, transportation and disposal of refrigerants must conform with the regulations governing the collection and destruction of hydrofluorocarbons.