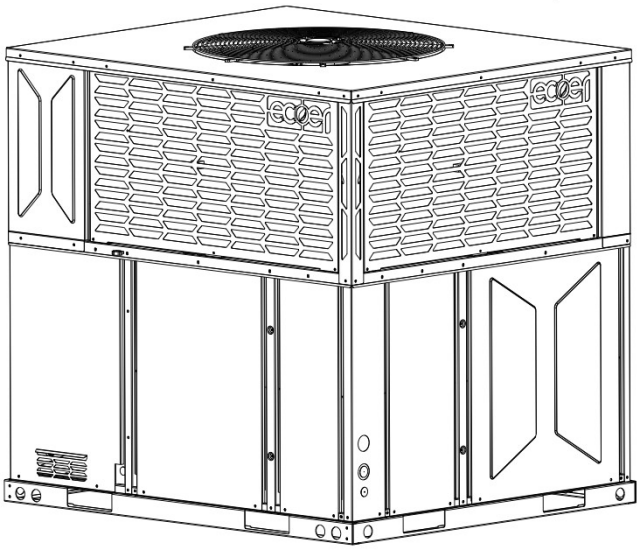
Making your home Green & Smart



Installation Manual

Inverter Ducted Packaged 5 Ton R-454B Heat Pump

NOTE: Appearance of unit may vary.

Installation must be performed in accordance with the requirements of NEC and CEC by authorized personnel only.

Contents

AHRI CERTIFIED® www.ahridirectory.org
Unitary Small HP
AHRI Standard 210/240
Certification applies only when the complete system is listed with AHRI.

ETL LISTED c US Intertek

All phases of this installation must comply with National, State and Local Codes.

This document is customer's property and is to remain with this unit. Please return it to customer with service information 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.

⚠ SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all pre-cautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

1. Safety

Read the following safety instructions before installing the unit or doing servicing work.
NOTE: R454B refrigerant is a blend and should only be added to the system in liquid state.

⚠ **WARNING** may cause personal death or serious injury.
⚠ **CAUTION** may lead to injury or structural damage under some conditions.

⚠ WARNING

HAZARDOUS VOLTAGE
Failure to follow this warning could result in property damage, severe personal injury, or death.
Disconnect all electric power, including remote disconnections before servicing. Follow proper lockout/ tagout procedures to ensure the power cannot be inadvertently energized.

REFRIGERANT OIL
Any attempt to repair central air conditioner and heat pump products may result in property damage, severe personal injury, or death.
Use only R-454B approved service equipment. All R-454B systems with variable speed compressors use variable speed compressor oil that readily absorbs moisture from the atmosphere. To limit this "hygroscopic" action, the system should remain sealed whenever possible. If a system has been open to the atmosphere for more than 4 hours, the compressor oil must be replaced. Never break a vacuum with air and always change the driers when opening the system for component replacement.

SERVICING/RISK OF FIRE
Flammable refrigerant used. Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorises their competence to handle refrigerants safely in accordance with an industry recognised assessment specification.

SERVICE PORT
Failure to follow this warning will result in abrupt release of system charge and may result in personal injury and/or property damage.

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

CHEMICAL COMPONENTS
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

AUTHORIZED PERSONNEL ONLY

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

HOT SURFACE

May cause minor to severe burning.

Failure to follow this caution could result in property damage or personal injury.

Do not touch top of compressor.

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, it must be returned to their original position and properly fastened.

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.

MOBILE HOMES

A manufactured (mobile) home installation must conform with the Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280, or when this Standard is not applicable, the Standard for Manufactured Home Installations (Manufactured Home Sites, Communities and Set-Ups), ANSI/NCS A225.1, and/or MH Series Mobile Homes, CAN/CSA Z240.

VENTILATION

Ensure that the area is in the open or that it is ad-equately ventilated before breaking into the system or conducting any hot work.

CHECKING FOR PRESENCE OF REFRIGERANT

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

⚠ CAUTION

INSTALLATION

Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorises their competence to handle refrigerants safely in accordance with an industry recognised assessment specification. Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.

1. That the installation of pipe-work shall be kept to a minimum.
2. That pipe-work shall be protected from physical damage.
3. Where refrigerant pipes shall be compliance with national gas regulations.
4. That mechanical connections shall be accessible for maintenance purposes.
5. Be more careful that foreign matter(oil, water,etc) does not enter the piping. Also, when storing the piping, securely seal the opening by pinching, taping, etc.
6. All working procedure that affects safety means shall only be carried by competent persons.
7. Appliance shall be stored in a well ventilated area where the room size corresponds to the room area as specifiec for operation.
8. Joints shall be tested with detection equipment with a capability of 5 g/year of refrigerant or better, with the equipment in standstill and under operation or under a pressure of at least these standstill or operation conditions after installation. Detachable joints shall NOT be used in the indoor side of the unit (brazed, welded joint could be used).
9. In cases that require mechanical ventilation, ventilation openings shall be kept clear of obstruction.

THE REQUIREMENTS FOR INSTALLATION SPACE OF APPLIANCE AND/OR VENTILATION REQUIREMENTS

1. The requirements for installation space of appliance and/or ventilation requirements are determined according to the mass charge amount(M) used in the appliance,the installation location,the type of ventilation of the location or of the appliance.
2. 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. 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.
3. That protection devices, piping, and fittings shall be protected as far as possible against adverse environmental effects, for example. the danger of water collecting and freezing in relief pipes or the accumulation of dirt and debris.
4. That piping in refrigeration systems shall be so designed and installed to minimize the likelihood of hydraulic shock damac.na the system.
5. That steel pipes and components shall be protected against corrosion with a rustproof coating before applying any insulation.
6. That precautions shall be taken to avoid excessive vibration or pulsation.
7. The minimum floor area of the room shall be mentioned in the form of a table or a single figure without reference to a formula.

⚠ CAUTION

8. After completion of field piping for split systems, the field pipework shall be pressure tested with an inert gas and then vacuum tested prior to refrigerant charging, according to the following requirements.
9. Field-made refrigerant joints indoors shall be tightness tested according to the following requirements: The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure. No leak shall be detected.

QUALIFICATION OF WORKERS

Any maintenance, service and repair operations must be required qualification of the working personnel. Every working procedure that affects safety means shall only be carried out by competent persons that joined the training and achieved competence should be documented by a certificate. The training of these procedures is carried out by national training organizations or manufacturers that are accredited to teach the relevant national competency standards that may be set in legislation. All training shall follow the ANNEX HH requirements of UL 60335-2-40 4th Edition.
Examples for such working procedures are:
• breaking into the refrigerating circuit;
• opening of sealed components;
• opening of ventilated enclosures.
In addition,this appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure they do not play with the appliance.

WORK PROCEDURE

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

PRESENCE OF FIRE EXTINGUISHER

If any hot work is to be conducted on the refrigerating equipment or any associated parts, the appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

NO IGNITION SOURCES

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

⚠ CAUTION

CHECKS TO THE REFRIGERATION EQUIPMENT

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

1. The actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed.
2. The ventilation machinery and outlets are operating adequately and are not obstructed.
3. If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant.
4. Markings on the equipment should be visible and legible. Markings and signs that are illegible shall be corrected.
5. Refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

CHECKS TO ELECTRICAL DEVICES

For systems containing refrigerant, all repair and maintenance to electrical components shall include initial safety checks and component inspection procedures such as that capacitors are discharged in a safe manner to avoid possibility of sparking, that no live electrical components and wiring are exposed while charging, recovering, or purging the system, and that there is continuity of earth bonding. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used that is reported to the owner of the equipment, so all parties are advised.

NOTE –Sealed electrical components shall be replaced, not repaired.

NOTE – Intrinsically safe components must be replaced, not repaired.

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

DETECTION OF FLAMMABLE REFRIGERANTS

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used. The following leak detection methods are deemed acceptable for all refrigerant systems. Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and that 12.5 % refrigerant is confirmed. Leak

⚠ CAUTION

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_x0002_work. If a leak is suspected, all naked flames shall be removed/extinguished. If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.

REMOVAL AND EVACUATION

When breaking into the refrigerant circuit to make repairsor for any other purpose – conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed and, since flammability is a consideration, procedures such as safely remove refrigerant following local and national regulations, purging the circuit with inert gas, evacuating (optional for A2L), purging with inert gas (optional for A2L), or opening the circuit by cutting or brazing be adhered to. The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems. For appliances containing flammable refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum (optional for A2L). This process shall be repeated until no refrigerant is within the system (optional for A2L). When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to be able to perform the required work. Ensure that the outlet for the vacuum pump is not close to any potential ignition sources and working area is well ventilated.

CABLING

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

CHARGING PROCEDURES

In addition to conventional charging procedures; the following requirements shall be followed:

- Works shall be undertaken with appropriate tools only (In case of uncertainty,please consult the manufacturer of the tools for use with flammable refrigerants) .
- 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 contained in them.
- Cylinders shall be kept upright.
- Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete(if not already).
- Extreme care shall be taken not to overfill the refrigeration system.
- Prior to recharging the system it shall be pressure tested with oxygen free nitrogen (OFN), The system shall be leak tested on completion of charging but prior to commissioning.

⚠ CAUTION

• A follow up leak test shall be carried out prior to leaving the site.

DECOMMISSIONING

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

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 protetive equipment is available and being used correctly;

• the recovery process is supervised at all times by a competent person;

• recovery equipment and cylinders conform to the appropriate standards.

d. Pump down refrigerant system, if possible.

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

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

g. Start the recovery machine and operate in accordance with instructions.

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

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

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

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

LABELLING

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

RECOVERY

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

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

⚠ CAUTION

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.

UNVENTILATED AREAS

For appliances containing more than any refrigerating circuit, the manual shall include a statement advising that an unventilated area where the appliance using FLAMMABLE REFRIGERANTS is installed shall be so constructed that should any refrigerant leak, it will not stagnate so as to create a fire or explosion hazard. This shall include:

1. A warning that if appliances with A2L REFRIGERANTS connected via an air duct system to one or more rooms are installed in a room with an area less than >Amin as determined in Clause GG.2, that room shall be without continuously operating open flames (for example an operating gas appliance) or other POTENTIAL IGNITION SOURCES (for example an operating electric heater, hot surfaces). A flame_x0002_producing device may be installed in the same space if the device is provided with an effective flame arrest.

2. For appliances using A2L REFRIGERANTS connected via an air duct system to one or more rooms, a warning with the substance of the following: "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 X °C and electric switching devices".

NOTE X is the maximum allowable surface temperature as defined in 22.117.

The manufacturer should specify other potential continuously operating sources known to cause ignition of the refrigerant used.

The appliance shall be stored so as to prevent mechanical damage from occurring.

3. For appliances using A2L refrigerants connected via an air duct system to one or more rooms, a warning that only auxiliary devices approved by the appliance manufacturer or declared suitable with the refrigerant shall be installed in connecting ductwork. The manufacturer shall list in the instructions all approved auxiliary devices by manufacturer and model number for use with the specific appliance, if those devices have a potential to become an ignition source.

4. A warning that if appliances connected via an air duct system to one or more rooms with A2L REFRIGERANTS are installed in a room with an area less than 4 minutes as determined in Clause GG.2. or installed in a room with an EFFECTIVE DISPERSAL VOLUME VED less than the minimum as determined by Clause 101.DVN.8, that room shall be without continuously operating open flames

⚠ CAUTION

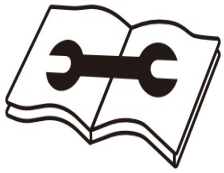
(e.g. an operating gas appliance) or other POTENTIAL IGNITION SOURCES (for e.g. an operating electric heater hot surfaces). A flame-producing device may be installed in the same space if the device is provided with an effective flame arrest.
5. For REFRIGERANT DETECTION SYSTEMS, the function and operation and required servicing measures.
6. For LIMITED LIFE REFRIGERANT SENSORS Used in REFRIGERANT DETECTION SYSTEMS, the specified end-of-life and replacement instructions.
7. REFRIGERANT SENSORS for REFRIGERANT DETECTION SYSTEMS Shall Only be replaced with sensors specified by the appliance manufacture; and instructions to verify actuation of mitigation actions per Annex GG or Annex 101.DVN as applicable.
For appliances using FLAMMABLE REFRIGERANTS with safety features that depend upon the proper function of a leak detection system used for leak mitigation, the instructions and unit markings shall contain the substance of the following:
"LEAK DETECTION SYSTEM installed. Unit must be powered except for service." If any remote located REFRIGERANT SENSOR is employed to detect leaked refrigerant, such a remote located REFRIGERANT SENSOR shall also apply to this marking or be accompanied by such instructions.

TRANSPORTATION,MARKING AND STORAGE

a. General
The following information is provided for units that employ FLAMMABLE REFRIGERANTS.
b. Transport of equipment containing flammable refrigerants
Attention is drawn to the fact that additional transportation regulations may exist with respect to equipment containing flammable gas. The maximum number of pieces of equipment or the configuration of the equipment permitted to be transported together will be determined by the applicable transport regulations.
c. Marking of equipment using signs
Signs for similar appliances used in a work area are generally addressed by local regulations and give the minimum requirements for the provision of safety and/or health signs for a work location.
All required signs are to be maintained and employers should ensure that employees receive suitable and sufficient instruction and training on the meaning of appropriate safety signs and the actions that need to be taken in connection with these signs:
The effectiveness of signs should not be diminished by too many signs being placed together.
Any pictograms used should be as simple as possible and contain only essential details.
d. Disposal of equipment using flammable refrigerants
See national regulations.
e. Storage of equipment/appliances
The storage of the appliance should be in accordance with the applicable regulations or instructions,whichever is more stringent.
f. Storage of packed (unsold) equipment
Storage package protection should be constructed in such a way that mechanical damage to the equipment inside the package will not cause a leak of the REFRIGERANT CHARGE.

⚠ CAUTION
The maximum number of pieces of equipment permitted to be stored together will be determined by local regulations.
AUTHORIZED PERSONNEL ONLY This information is intended for use by individuals possessing adequate backgrounds of electrical and mechanical experience. Any attempt to repair central air conditioner or heat pump products may result in personal injury and/or property damage.
INDOOR UNIT REQUIRMENT It is recommended to equip indoor units with adjustable TXV/EEV for R-454B heat pump. The model of TXV/EEV should be suitable for the system capacity and should be with internal check valves for heat pump, which can be verified to work properly by checking superheat in cooling. No micro channel coil shall be used for heat pump. Micro channel coils are suitable for cooling only system.
FUSIBLE RELIEF VALVE SAFETY INSTRUCTIONS Fusible Relief Valve are precision safety devices. Users must never attempt to dismantle or replace them on their own, as this may result in system explosion or refrigerant leakage risks. Ensure that no flammable materials (such as curtains, paper, etc.) are placed near the air conditioner to prevent fire hazards caused by high-temperature gas discharge when the Fusible Relief Valve is activated.

Explanation of symbols displayed on Packaged unit

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

2 Unit Dimensions

2.1 Unit Dimensions

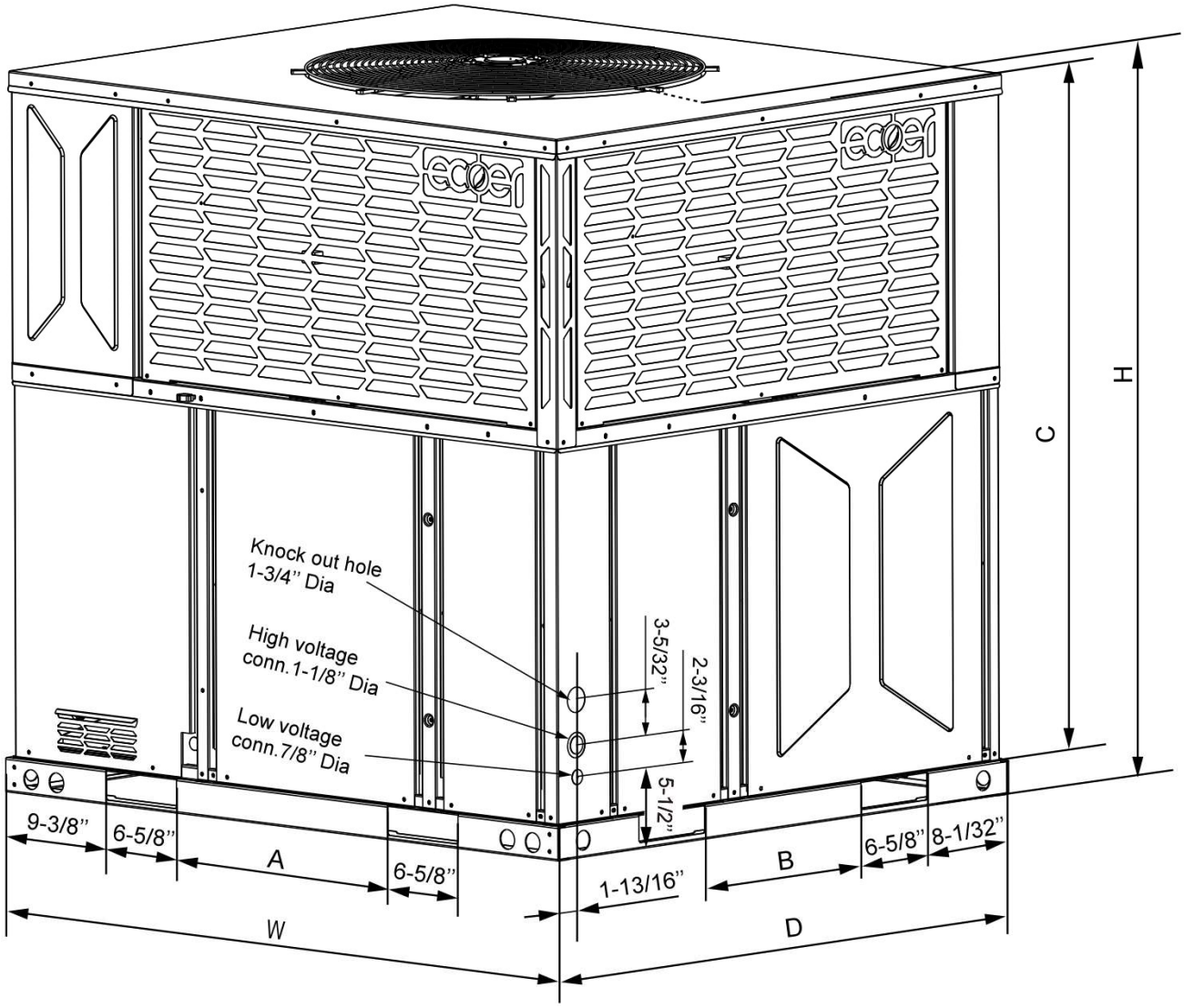


Figure 2.1 External dimensions

Model	Dimensions (Inch [mm])					
	A	B	C	D	H	W
ERDA19H-60ABA	19-11/16 [500]	15-1/2 [394]	47-11/64 [1198]	44-7/8 [1140]	50-19/32 [1285]	51-19/32 [1310]

Table 2.1 Unit Dimensions

Model	Net Weight	Gross Weight
ERDA19H-60ABA	606 lbs [275kg]	640 lbs [290 kg]

Table 2.2 Unit Weights

2.2 Dimensions - Back and Bottom

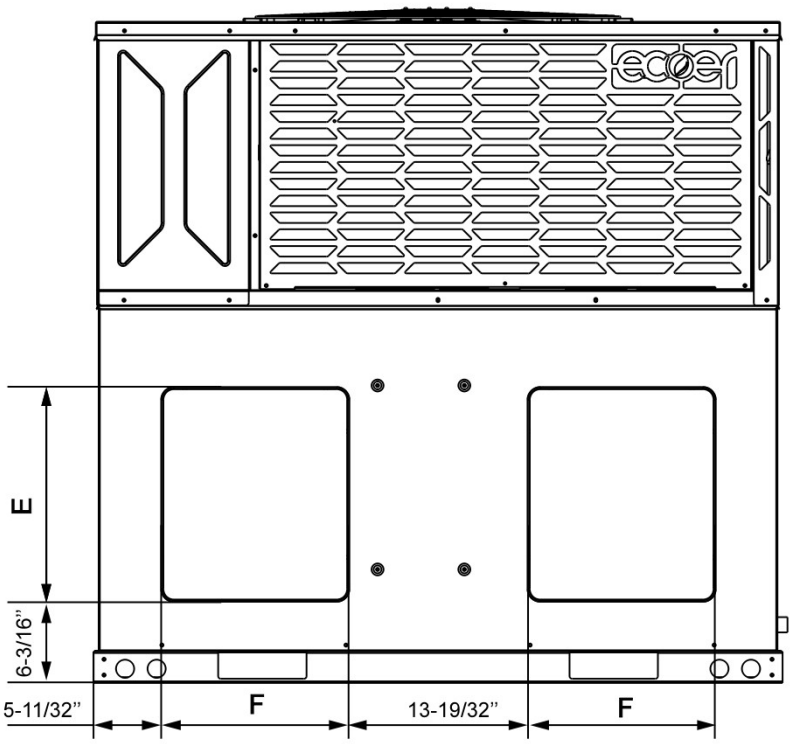


Figure 2.2 Back

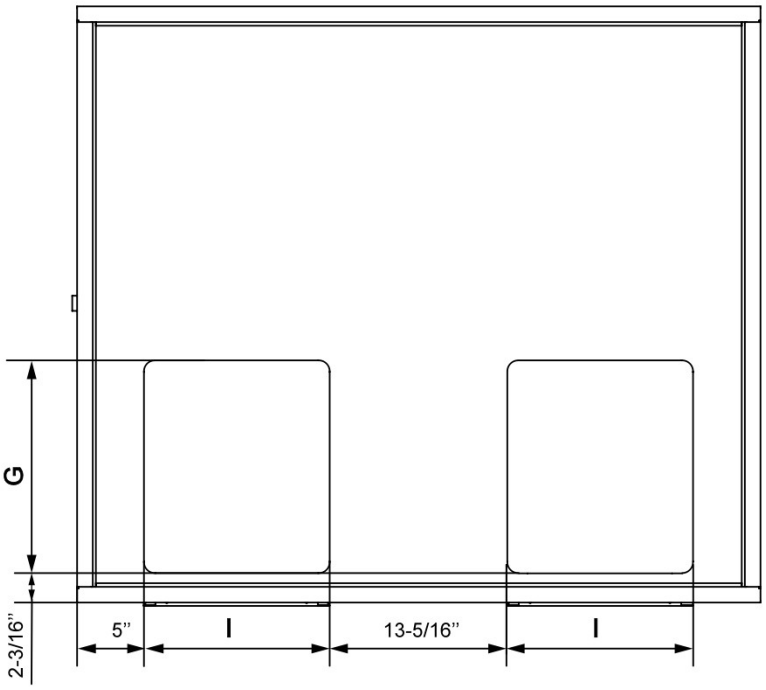


Figure 2.3 Bottom

Model	Dimensions (Inch [mm])			
	E	F	G	I
ERDA19H-60ABA	15-27/32 [402]	13-13/16 [352]	16-3/32 [409]	14-3/32 [358]

Table 2.3 Dimensions - Back and Bottom

2.3 Dimensions - Left and Top

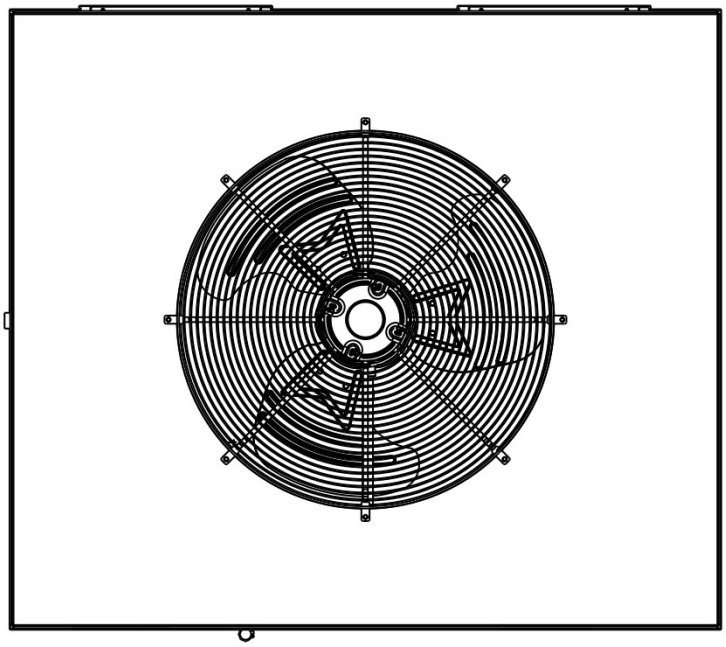


Figure 2.4 Top

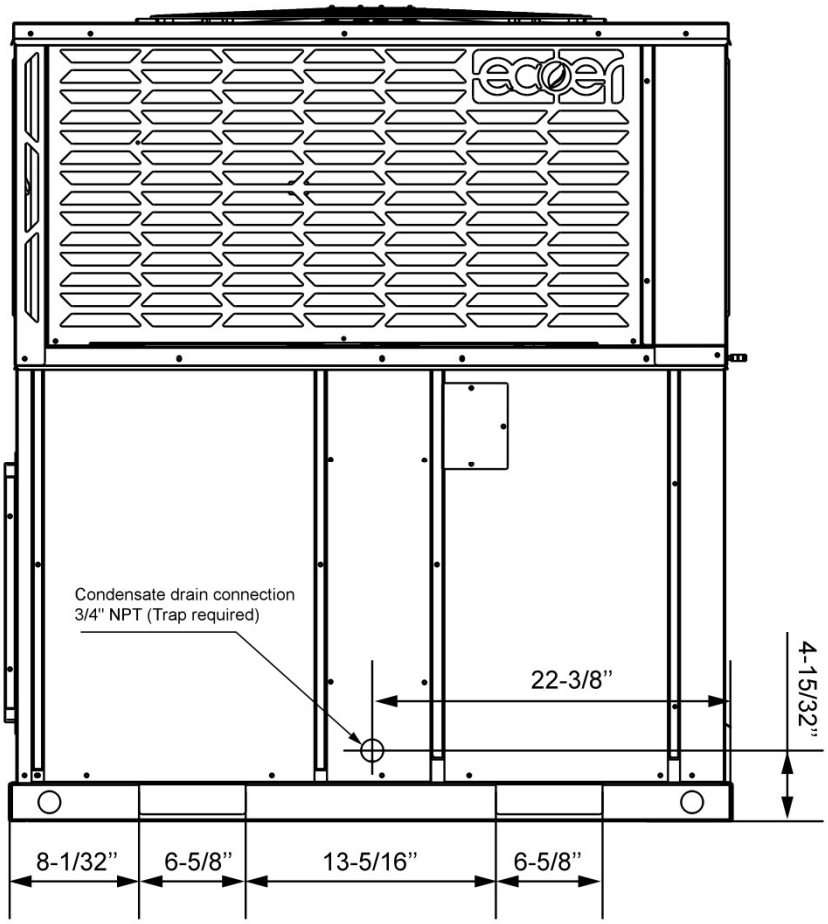


Figure 2.5 Left

3. Installion

3.1 Inspect Units

Units are packaged for shipment to avoid damage during normal transit and handling. It is the receiving party's responsibility to inspect the equipment upon arrival. Any obvious damage to the carton box should be reported on the bill of lading and a claim should be filed with the transportation company, and the factory should be noticed.

All units should be stored in the factory shipping carton with internal packaging in a dry place until installation. Carefully remove the packaging and inspect for hidden damage. Any hidden damage should be recorded and the factory should be notified. The gauge port can be used to check the refrigerant charge has been retained during shipment.

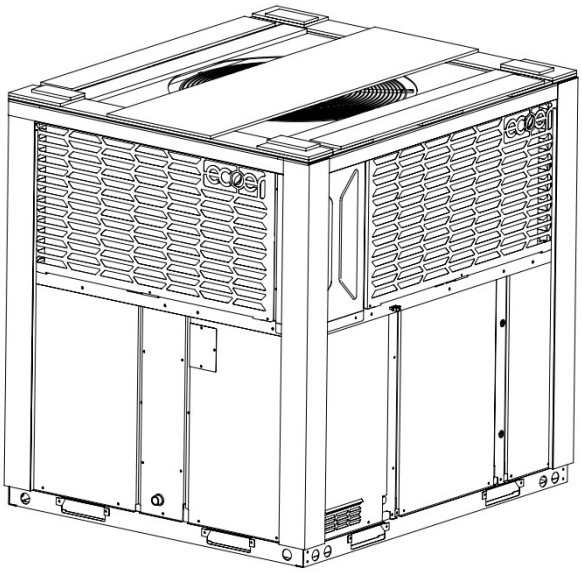


Figure 3.1 Check damage

3.2 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. If the unit is to be mounted on a curb in a downflow application, refer to Figure 3.11, and convert panels prior to rigging and lifting. The panel removal process may require the unit to be on the ground.

3.3 Rigging and Lifting

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 3.2.

⚠ CAUTION

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

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.

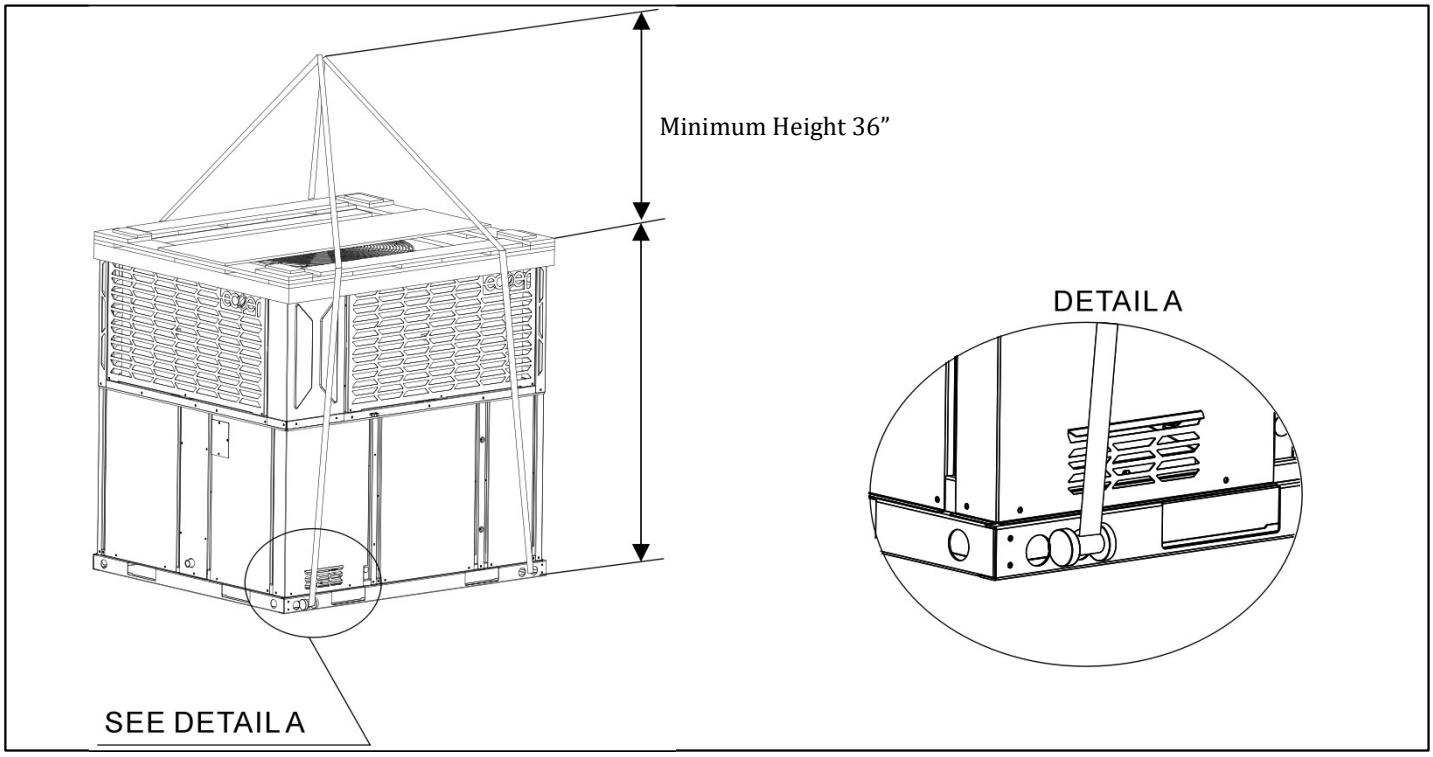


Figure 3.2

3.4 Location Restrictions

⚠ WARNING

Flammable refrigerant!

Appliance shall be installed, operated in a room that meets special requirements and has an area limit as shown in Section 3.9.

The unit shall be located in a well-ventilated location other than the occupied space, such as in the open air.the area shall be so constructed that should any refrigerant leak, it will not stagnate so as to create a fire or explosion hazard.

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 exposed to corrosive environments, special attention should be given to the equipment placement and maintenance.

- Lawn sprinklers/waste water should not spray directly on the unit cabinet for prolonged periods.
- In coastal areas: The outdoor unit should be installed at a location that is at least 1000 feet away from the coast and on the side of the building that is farthest from the coast.

Ensure that Condensate Drain side is pitched lower than the opposite side (see Figure 3.3).

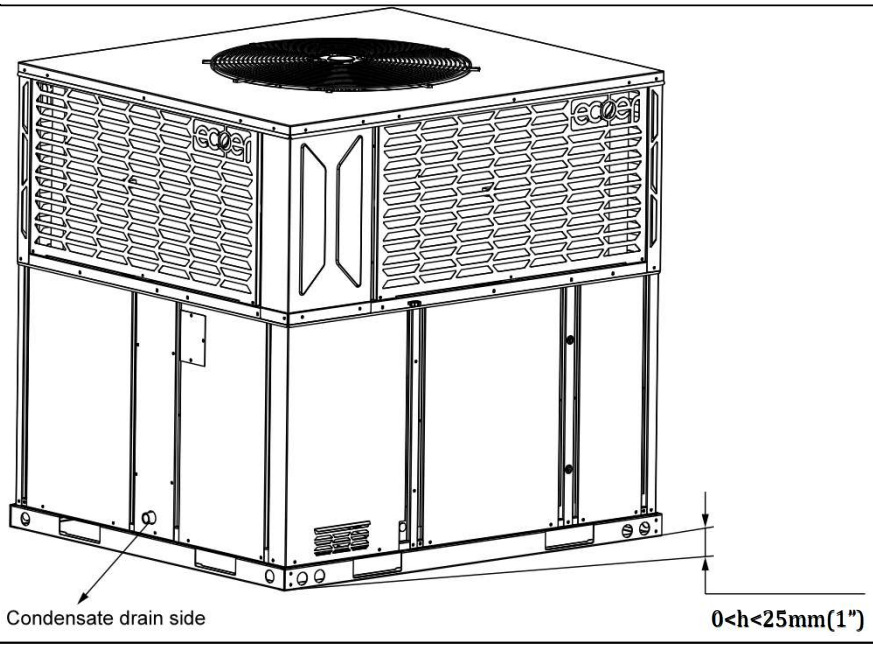


Figure 3.3

Installation Clearance Requirement

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

Do not locate condensing unit near bedrooms because normal operational sounds may be annoying. Position unit to allow adequate space for unobstructed airflow, wiring, and serviceability.

Allow a minimum of 12 in. clearance on one side of access panel to a wall and a minimum of 24 in. on the adjacent side of access panel. **Maintain a distance of 24 in. between units.**

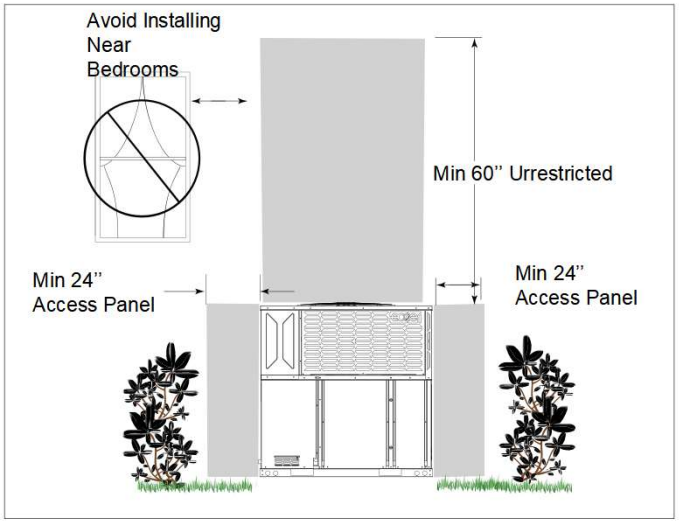


Figure 3.4 Clearance requirement

Position unit so water, snow, or ice from roof or overhang cannot fall directly on unit.

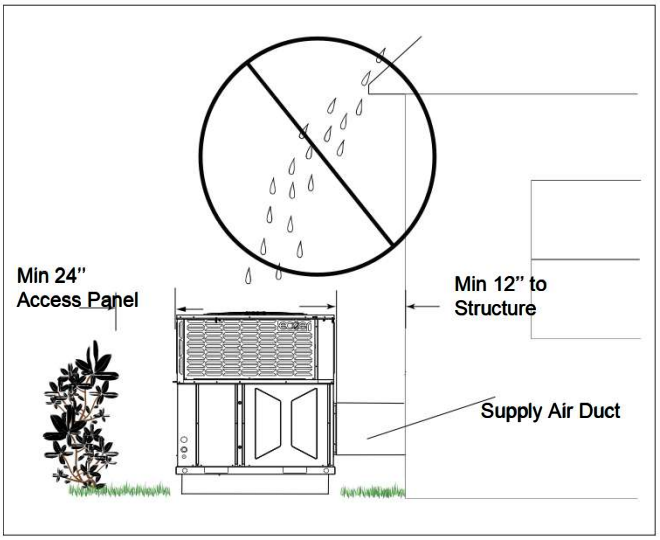


Figure 3.5 Unit location

Cold Climate Considerations

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

Elevate unit per local climate and code requirements.

- Where snowfall is anticipated, raise the unit above the base pad to prevent ice buildup and coil damage.
- If unit must be elevated because of anticipated snowfall, secure unit and elevating stand such that unit and/or stand will not tip over or fall off.

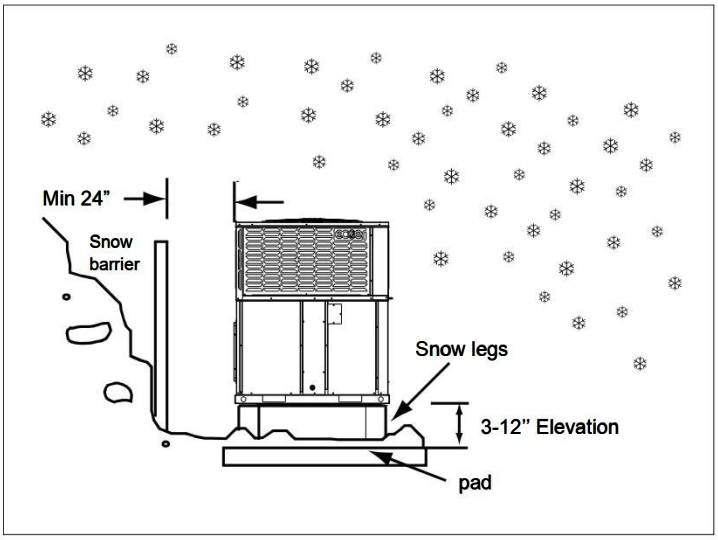


Figure 3.6 Consideration to prevent refreezing

3.5 Rooftop Installation - Curb Mountin

The manufacturer does not supply roof curbs, they must be field supplied. Refer to Figure 3.7 for recommended roof curb dimensions. 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.

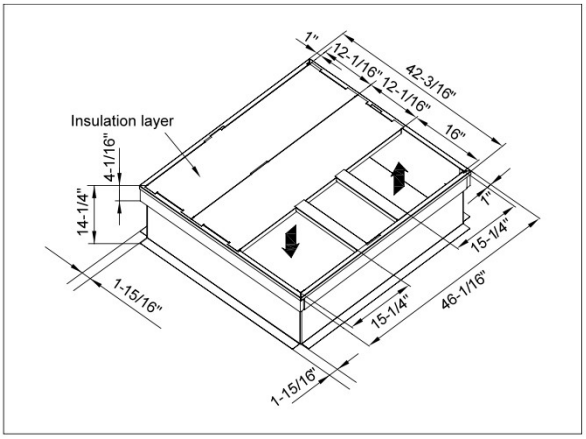


Figure 3.7 roof curb

The default orientation from the factory is for horizontal airflow. Convert the unit to downflow using the following procedure:
1. Before moving the unit onto the curb, the forklift protective plates at the bottom of the unit must be removed.
2. Remove sheet metal screws from both the supply air and return air panels.
3. Add foam tape on the perimeter of the non painted side of each panel.
4. Move and re-secure the panels to the horizontal airflow location using the sheet metal screws from step 2.
For more information, refer to the Conversion Kit Manual included with each heat pump unit.
Install the field-supplied roof mounting curb according to the Installation Instructions supplied with the curb. Install insulation, cant strips, roofing, and flashing. Ductwork must be attached to curb.

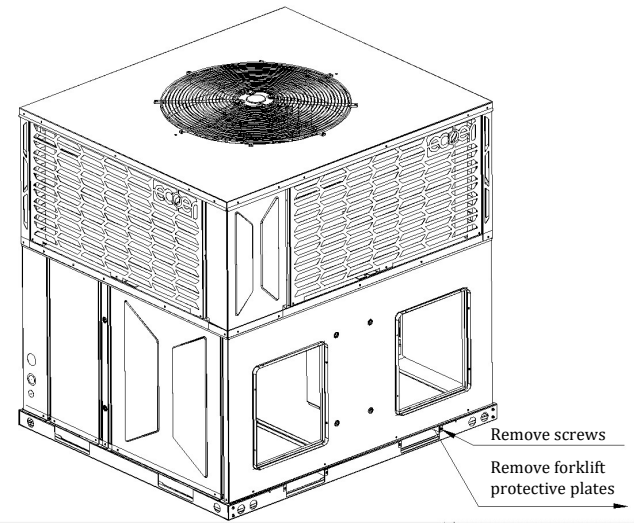


Figure 3.8 Remove forklift protective plates

Note: For units applied with a roof curb, the minimum clearance may be reduced from 1 inch to 1/2 inch between combustible roof curb material and supply air duct.

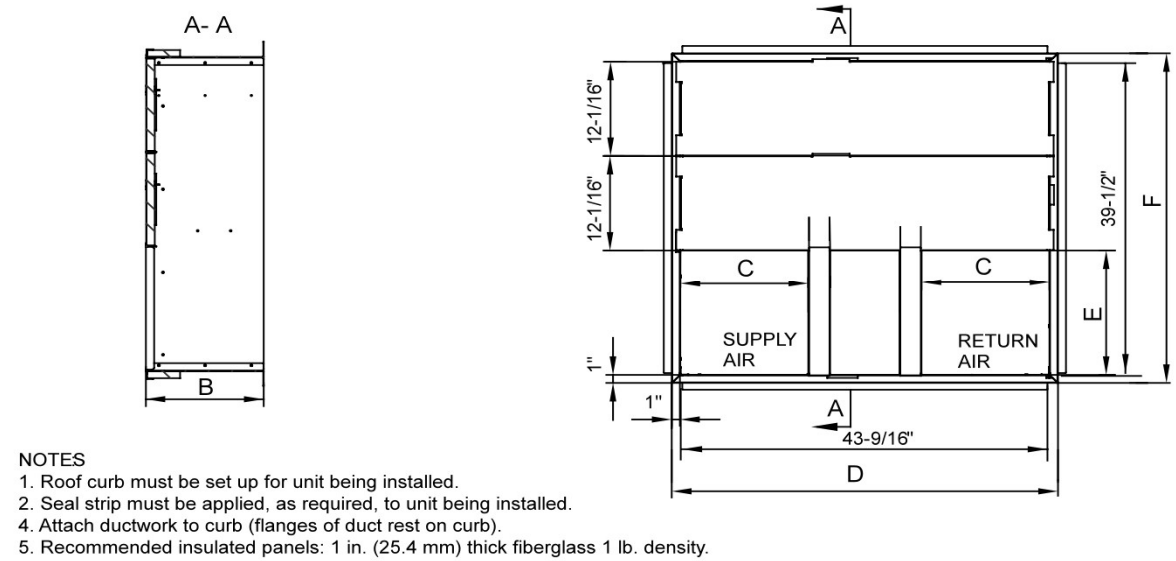


Figure 3.9 Roof Curb Details

	B	C	D	E	F
CURB	14-1/4"	14"	46-1/16"	16"	30-5/8"

Table 3.1 Roof Curb Details - inches

⚠ CAUTION

The gasketing of the unit to the roof curb is critical for a water tight seal. Install gasketing material supplied with the field supplied roof curb. Improperly applied gasketing also can result in air leaks and poor unit performance.

The unit must be secured to the curb by installing screws through the bottom of the curb flange and into the unit base rails.
Failure to follow this caution may result in property damage. Ensure there is sufficient clearance for saw blade when cutting the outer horizontal flange of the roof curb so there is no damage to the roof or flashing.

The unit must be secured to the curb by installing screws through the bottom of the curb flange and into the unit base rails.

3.6 Ductwork

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

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.

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.

⚠ WARNING

FIRE HAZARD AND CARBON MONOXIDE

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.

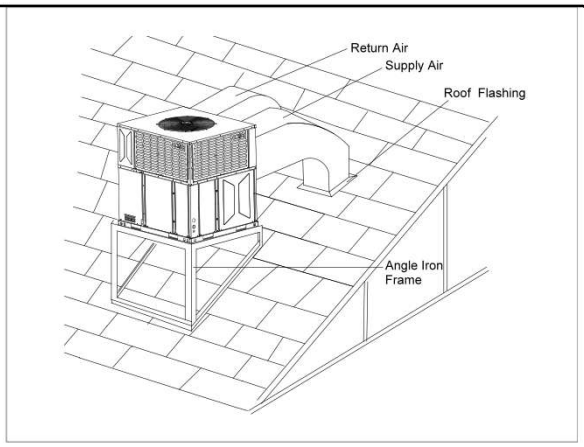


Figure 3.10 Rooftop Installation - Frame Mounting

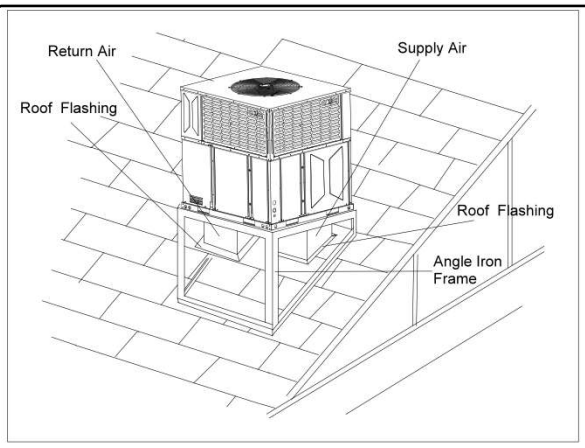


Figure 3.11 Rooftop Installation - Frame Mounting

Note:
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.

Note:
Be sure to note supply and return openings. Refer to Figure 2.2 and Figure 2.3 for information concerning supply and return air duct dimensions.

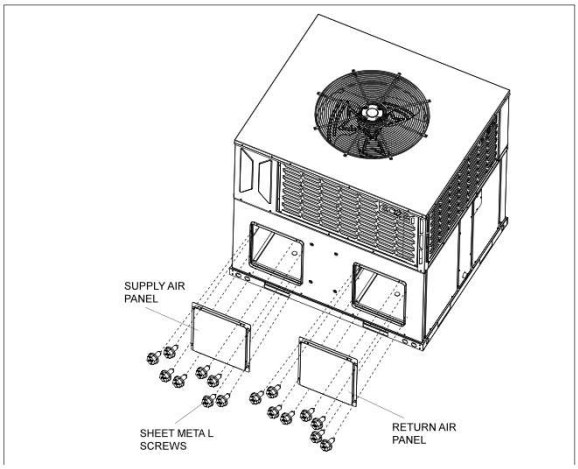


Figure 3.12 Typical Rooftop Downflow Application with Frame

⚠ CAUTION

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.

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.

3.7 Install Drain Pipe

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.

1. 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.
2. Make sure unit is leveled or pitched slightly towards primary drain connection so that water will drain completely from the pan.
3. Do not reduce drain line size to less than connection size provided on condensate drain pan.
4. 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.
5. 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.
6. The drain line should be insulated where necessary to prevent sweating and damage due to condensate forming on the outside surface of the line.
7. Make provisions for disconnecting and cleaning of the primary drain line should it become necessary. Install a 3 inch trap in the primary drain line as close to the unit as possible. Make sure that the top of the trap is below connection to the drain pan to allow complete drainage of pan.

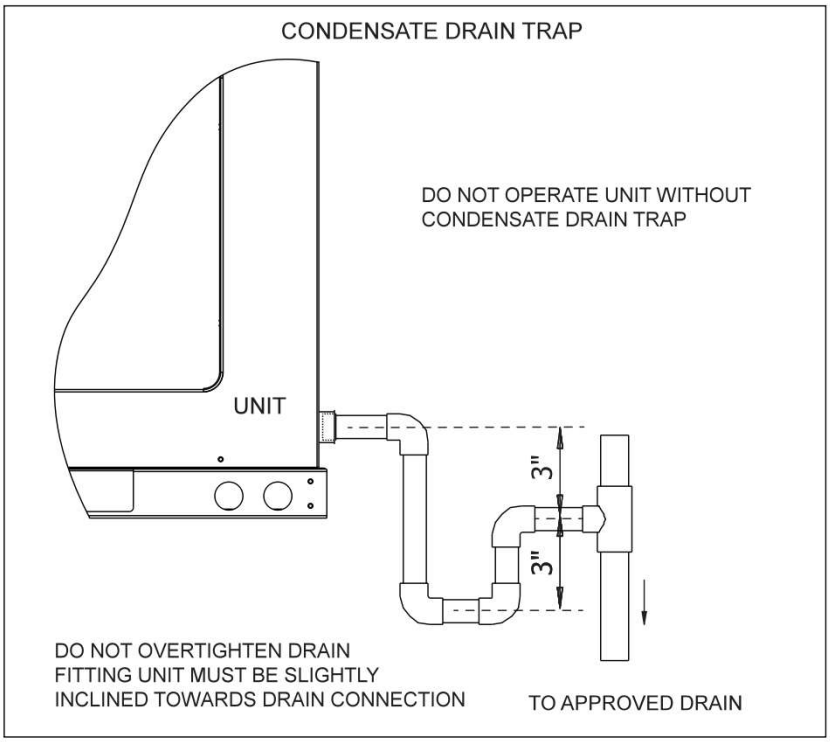


Figure 3.13

Note:
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.

3.8 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 airflow 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.

Note:
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

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.

3.9 Refrigerant Charge and Room Area Limitations

3.9.1 Opening conditions for connected rooms

The appliances are connected via an air duct system to one or more rooms, the bottom of the air outlet of the air duct in the room should be at a height ≥7.3ft/2.2m from the floor. In UL/CSA 60335-2-40, the R454B refrigerant belongs to mildly flammable refrigerants, which will limit the room area of the system service. Similarly, the total amount of refrigerant in the system should be less than or equal to the maximum allowable refrigerant charge, which depends on the room area serviced by the system.

Note: For minimum room areas at higher installation heights, see instructions (note is optional).

Installation method:

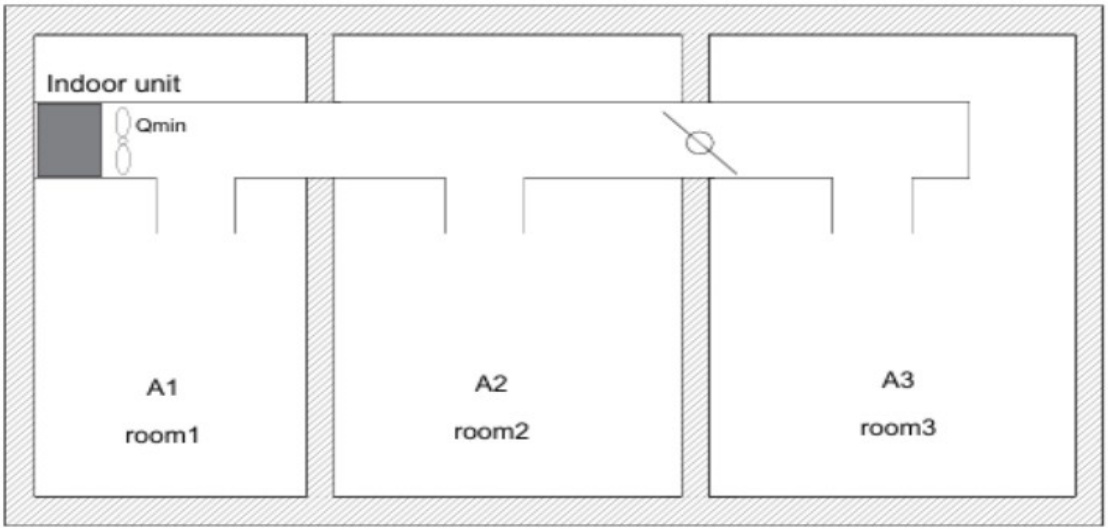


Figure 3.14

Make sure that the applied room space area TA is larger than the TAmin.

3.9.2 R454B refrigerant charge amount and minimum room area

Mc [oz/kg]	TAmin [ft^2/m^2]	Mc [oz/kg]	TAmin [ft^2/m^2]	Mc [oz/kg]	TAmin [ft^2/m^2]	Mc [oz/kg]	TAmin [ft^2/m^2]
56.5/1.6	51/4.74	134/3.8	126/11.67	211.6/6.0	198/18.43	289.2/8.2	271/25.18
63.5/1.8	60/5.53	141.1/4	132/12.29	218.7/6.2	205/19.04	296.3/8.4	278/25.8
70.5/2	66/6.14	148.1/4.2	139/12.9	225.8/6.4	212/19.66	303.4/8.6	284/26.41
77.6/2.2	73/6.76	155.2/4.4	145/13.51	232.8/6.6	218/20.27	310.4/8.8	291/27.63
84.6/2.4	79/7.37	162.2/4.6	152/14.13	239.9/6.8	225/20.88	317.5/9.0	298/27.64
91.7/2.6	86/7.99	169.3/4.8	159/14.74	246.9/7.0	231/21.5	324.5/9.2	304/28.26
98.8/2.8	93/8.6	176.4/5	165/15.36	254/7.2	238/22.11	331.6/9.4	311/28.87
105.8/3	99/9.21	183.4/5.2	172/15.97	261/7.4	245/22.73	338.6/9.6	317/29.48
112.9/3.2	106/9.83	190.5/5.4	179/16.58	268.1/7.6	251/23.34	345.7/9.8	324/30.10
119.9/3.4	112/10.44	197.5/5.6	185/17.2	275.1/7.8	258/23.96	352.7/10.0	331/30.71
127/3.6	119/11.06	204.6/5.8	192/17.81	282.2/8.0	264/24.57		
Area formula	**TA**min is the required minimum room area in ft^2 / m^2 **M**c is the actual refrigerant charge in the system in oz/kg **h**inst is the height of the bottom of the appliance relative to the floor of the room after installation. **WARNING**: The minimum room area or minimum room area of conditioned space is based on releasable charge and total system refrigerant charge. Note: TA=A1+A2+A3+…+An (If there is a damper in the duct. When damper is open, the room area TA is the sum of all room area connected by ductwork. If it is closed, TA is the sum of the room areas before the damper.) Note: Calculate Mc by considering the length of pipeline connections,0.59 oz/ft.							

Table 3.2

When the unit detects a refrigerant leak, the minimum airflow of the indoor unit is as follows:
(The output air volume is based on the machine's full load air volume)

Model	60
QminA [m^3/h(SCFM)]	1136(669)
Qmin [m^3/h(SCFM)]	1953(1150)
Note: Qmin refers to the Minimum airflow of the indoor unit (see Table 5.1 for details), which is not less than QminA .	

Table 3.3

4. Electrical Requirement

Power wiring must comply with National, State and Local codes.

> **⚠ 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.

4.1 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 Table 4.1 and 4.2 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 Table 4.1 and 4.2 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.

6. In order to get full warranty coverage on the compressor, it's mandatory to install a surge protector to prevent the unit from damaging caused by abnormal electrical spikes.

7. We recommend the Installation of a GFIC (install the GFIC as per your local codes).

4.2 Grounding

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.

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

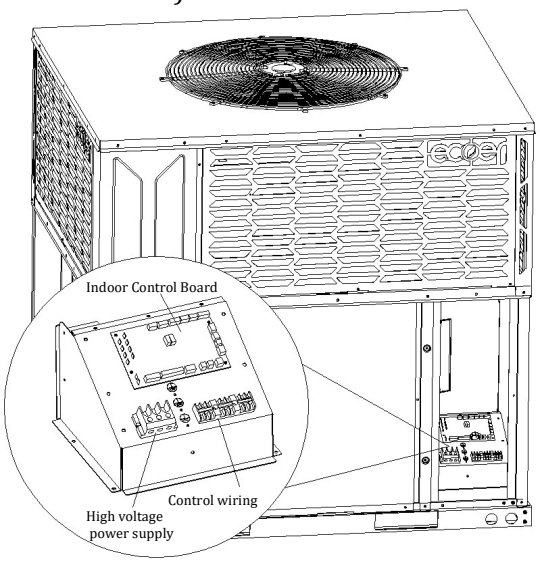


Figure 4.1

4.3 Power Supply

⚠ WARNING

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

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

HEAT PUMP CIRCUIT(without electric heater)							
Model	Voltage - Phase - Frequency	Compressor		OD Fan Motor	Supply Blower Motor	Unit Circuit	
		RLA (A)	LRA (A)	FLA (A)	FLA (A)	MCA[1] (A)	Max Fuse[2]/ Breaker[3] Size (A)
ERDA19H-60ABA	208/230-1-60	24.0	58.1	2.5	6.0	38.5	50

Table 4.1 Electrical Data Without Electric Heater

1. Minimum Circuit Ampacity.
2. Maximum Over Current Protection per Standard UL 60335.
3. Fuse or HACR circuit breaker size field installed.

* Max Fuse/Breaker Sizes are for electric heater ONLY (dual point electric heat). DOES NOT include breaker size for the unit.

**Max Fuse/Breaker Sizes include breaker size for the unit AND electric heat (single point electric heat).

OPTIONAL HEATER CIRCUIT(without units)									
HEATER KIT MODEL	NOMINAL POWER(kW)	POWER(kW)		HEATER AMPS		MIN. CIRCUIT AMPS		MAX FUSE OR BREAKER (HACR' AMPS	
	240 V	230 V	208V	230 V	208V	230 V	208V	230 V	208V
EHK-05J	5	4.6	3.8	20.8	18.1	27	23	30	25
EHK-08J	7.5	6.9	5.6	31.3	27.1	40	34	40	35
EHK-10J	10	9.2	7.5	41.7	36.2	53	46	60	50
EHK-15J	15	9.2+4.6	7.5+3.8	41.7+20.8	36.2+18.1	53+27	46+23	60+30	50+25
EHK-20J	20	9.2+9.2	7.5+7.5	41.7+41.7	36.2+36.2	53+53	46+46	60+60	50+50

Table 4.2 Electrical Data of Electric Heater

Note:
Refer to Electric Heat Kit Installation Manual, some heater kits include fuses from the manufacturer.

4.4 Low voltage signal wiring

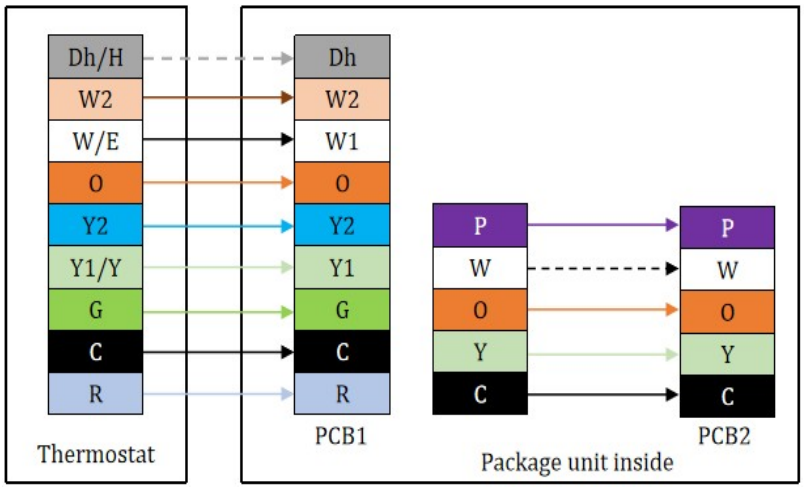
Class 2 low voltage control wiring should not be run in conduit with main power wiring and must be separated from power wiring, unless class 1 wire of proper voltage rating is used.

- Low voltage control wiring should be color-coded 18 AWG. For lengths longer than 150 ft., 16 AWG. wire shall be used and maximum 225 ft.
- Refer to wiring diagrams attached to indoor and outdoor sections to be connected.
- 7/8" knockout hole should be used to route control wires into the unit.
- Make sure separation of control wiring and power wiring has been maintained.

⚠ WARNING

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

Wiring for 4H2C thermostat(support auto airflow)



W* for E-heater

To activate the E-heater. Drive PCB W terminal outputs 24Vac once the system needs it.

a. Work when the HP cannot to be started because of Ta < the value of n01 setting in heating.
b. Work when the E-heater is called because n02 setting is ON (E-Aux) and Ta < the value of n03 setting in heating.
c. Work when the HP is in defrosting.

Wiring for 2H1C thermostat (support auto airflow)

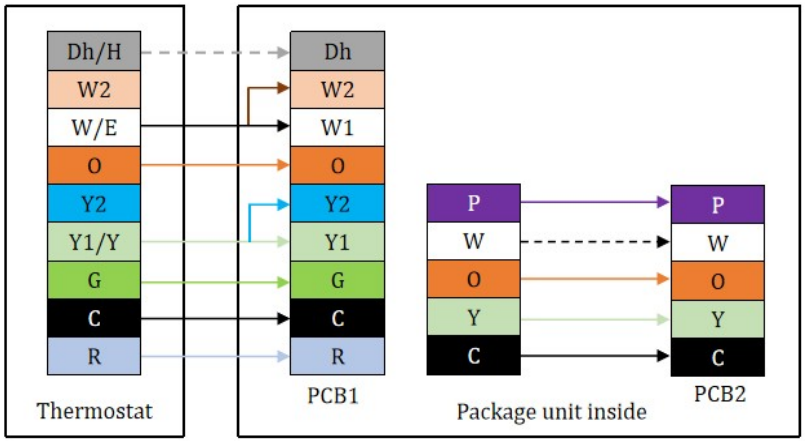


Figure 4.2

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. "------ " means to connect according to site requirements.

* Some thermostats may use W2/AUX for heat pump, if single stage of E-heater, conncet W* and W2 signal wires together.

5. Airflow Performance

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

Airflow motor speed mode setting (SW1-1)					Variable airflow mode (Default)			2-stage airflow mode			
Model	Airflow setting	Airflow Dip-Switch			Max Airflow (CFM)	/ (CFM)	Min Airflow (CFM)	High Airflow (CFM)	Low Airflow (CFM)	Max available Static Pressure (in wc)	Remark
		SW2-1	SW2-2	SW2-3	W1/W2*	G*	/	Y2/W1/W2**	Y1/G**		
ERDA 19H-60ABA	Airflow 1	0	0	0	1650	1155	660	1650	1155	1.2	
	Airflow 2	0	0	1	1700	1190	680	1700	1190	1.2	
	Airflow 3	0	1	0	1750	1225	700	1750	1225	1.2	Default
	Airflow 4	0	1	1	1800	1260	720	1800	1260	1.2	

*In Variable airflow mode, when the heat pump is operational, the airflow will adjust automatically. When the auxiliary heat (W1/W2) is activated, the system will run at maximum airflow. However, when only the blower is operating (G), the airflow will be fixed.
**In 2-stage airflow mode, the airflow will adjust according to the settings of the stages.

Table 5.1

NOTES: The airflow performance is based upon cooling performance at 230V with no electric heater and no filter. In 208V, 230V has the same airflow performance, because it has a constant airflow motor, which maintains its constant airflow output within the range of use, of course, when the maximum load of the motor may decline.

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.

6. Indoor Blower control function

6.1 Airflow motor speed mode

Model	Airflow motor speed mode setting by SW1		Remark
	SW1-1	Airflow motor mode setting	
ERDA19H-60ABA	ON	2-stage airflow mode	/
	OFF	Variable airflow mode	Default

Table 6.1

The unit supports the 2-stage fan control which requires a two stage thermostat (Y1/Y2) and the variable speed control by Y1.

6.2 Anti-cold airflow delay function in heating (optional setting)

Model	Anti-cold airflow delay setting in heating by SW1		Remark
	SW1-2	Anti-cold airflow delay	
ERDA19H-60ABA	ON	Disable	/
	OFF	Enable	Default

Table 6.2

Model	Type	Delay entry meets the conditions	Action	Remark
ERDA19H-60ABA	Enter	Heating start or heating operation & The coil temperature is lower than 87°F & W*=off	Fan motro delayed start,or running low speed when fan motor is on.	/
	Quit	Heating stops，or The coil temperature is more than 95°F, or W*=on	Return to normal fan speed	/

Table 6.3

The unit supports the fan motor delay in heating according to the coil temperature.
This function requires that the DIP switch of SW1-2 need be set to the OFF by default, it can be canceled by setting of SW1-2=ON .

6.3 Aux-E heater support

Model	Aux-E heater support setting by SW1		Remark
	SW1-3	Aux-E heater support setting	
ERDA19H-60ABA	ON	Disable	/
	OFF	Enable	Default

Table 6.4

Aux-E heater support is enable by default, the fan motor will shut off in defrosting when it is disable.

6.4 O/B signal support

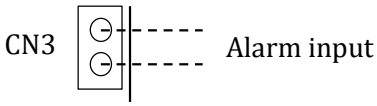
Model	O/B signal support setting by SW1		Remark
	SW1-4	Airflow motor speed setting	
ERDA19H-60ABA	ON	B signal enable	/
	OFF	O signal enable	Default

Table 6.5

The PCB supports the O/B signal setting by SW1, , but no adjustment is allowed here, keep the OFF position.

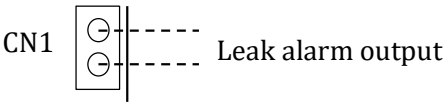
6.5 Alarm input

Supports alarm input to shut down the HVAC system. When the CN3 receives a 24v alarm input signal, the indoor unit shuts down all control components.



6.6 Lackage Alarm output

An alarm output(CN1) can be utilized if actionsare required when a fault is present. This is apassive outlet port, so you will need to input avoltage signal (24v). The relay is normally-open fornormal operation, and closed when a faultcondition is active.

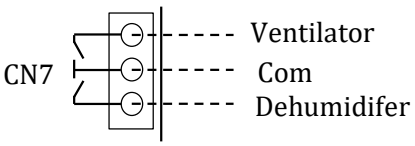


6.7 Lackage Alarm Sound

When the R454B leaks or the leak sensor fails, the indoor unit is ventilated, the ODU stops running, and a continuous warning sound is emitted.

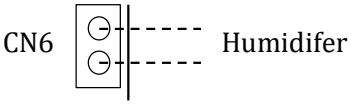
6.8 Dehumidifer support

When matched with the EST02 thermostat, the PCB supports control of the ventilator and dehumidifier.
This is apassive outlet port, so you will need to input avoltage signal (24v). The relay is normally-open without demand, and closed with demand.



6.9 Humidifer support

When matched with the EST02 thermostat, the PCB supports control of the humidifier.
When humidification is required, the CN6 terminal will output a 24v signal.



7. Start-up

Prior to start-up the unit, connect IoT device if equipped with. Refer to IoT IM and Registration Guide via ESS Pro App. At the same time, ensure installation actions have been completed.

1. Set the thermostat to OFF.

Figure 7.1

2. Turn on disconnect switch to apply power to the indoor and outdoor units.

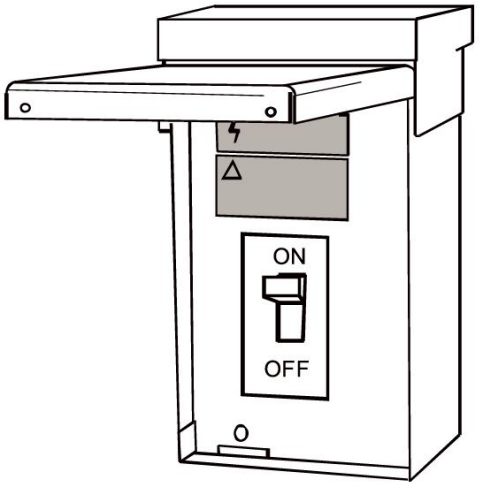


Figure 7.2

3. Wait an hour before starting the unit if the outdoor ambient temperature < 59 ℉.

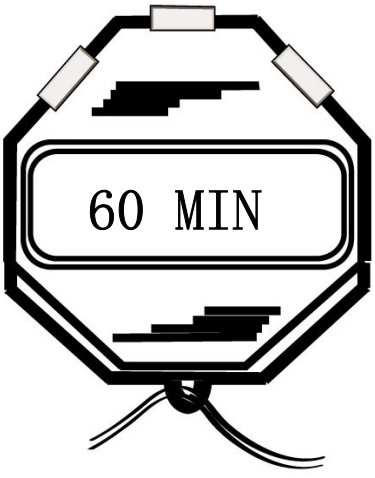


Figure 7.3

4. Set the thermostat to ON.

Figure 7.4

NOTE:

It may take up to **45 minutes** in the first time for heating operation to exit start-up control. This is normal function to preheat lubricants in the bottom of compressor.

8. System Charge Adjustment

8.1 Weigh-in method

Weigh-in method can be used for the initial installation, or anytime a system charge needs to be replaced.
Weigh-in method can also be used when power is not available on the job site or the ambient temperature is improper to use refrigerant coefficient and sub-cooling charge method.

When use weigh-in method in heating mode, be sure the compressor discharge superheat (DSH) meets the target value.
Basically, the liquid line sub-cooling (SC) shall not exceed 30°F.

Use **gauge port** to charge the system in heating mode, query live data by BS3 button to calculate DSH (The difference between parameter "11" and "18") or check SC/DSH via ESS Pro App.

Model	Refrigerant charging
	Factory charge
ERDA19H-60ABA	The data on nameplate

Table 8.1 Charge amount table

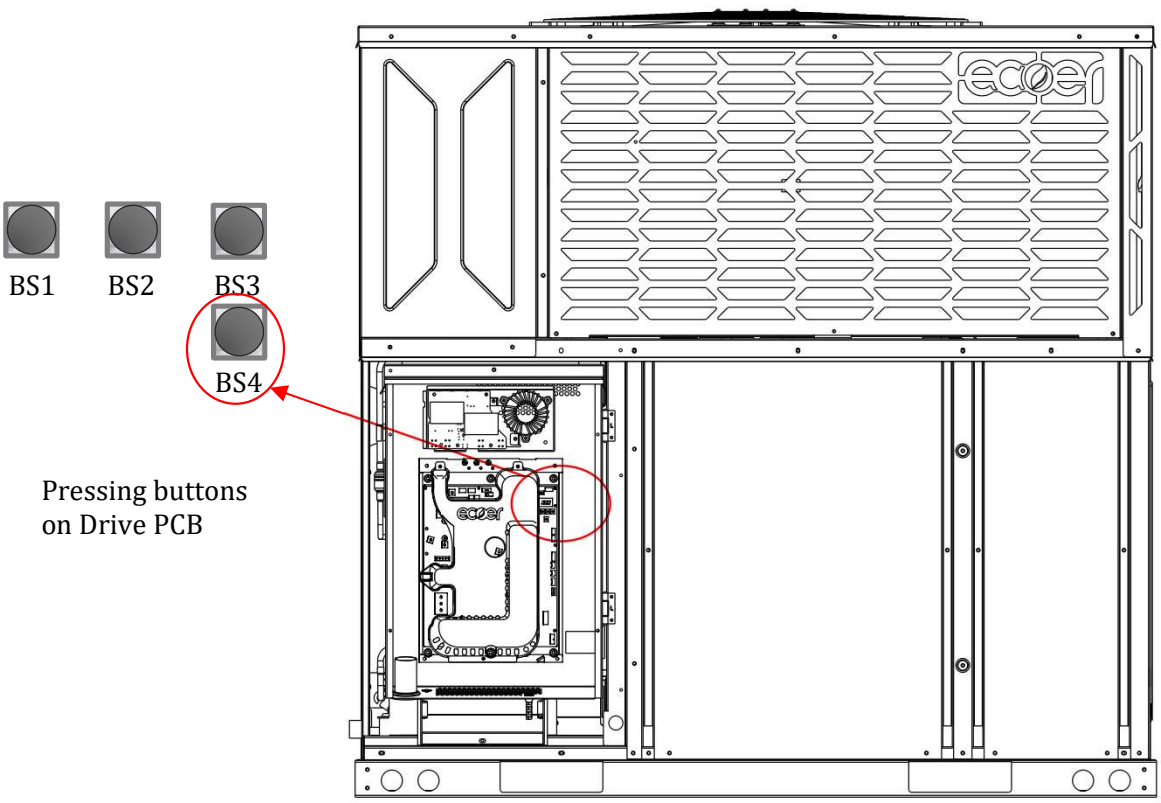


Figure 8.1 Buttons guide

8.2 Auto charge mode

NOTES:

1. This AUTO charge mode is suitable for ambient temperature between 50°F and 115°F. But for the best results, indoor temperature should be kept between 70°F and 80°F. For outdoor ambient temperature is below 50°F, use weigh-in charge method only.

a) Outdoor ambient b) Indoor ambient

Figure 8.2 Temperature limit for AUTO charge mode

2. Start-up control is enforced to complete prior to activate the AUTO charge mode. It may take 4 to 10 minutes to exit start-up control procedure and fix the compressor speed (RPS).
3. The service valve is usually closed except in charge mode. If you need to know the suction pressure, you can log in to ESS Pro, or read the parameter of "07" from Spot check.

Enter the charge mode

Turn on the power supply for the system, select **cooling mode** at thermostat. Make sure the setting temperature is lower than indoor temperature for at least 5°F to finish this charge mode ***NOTE1**.
Press and hold BS4 button for five (5) seconds until SEG1 displays blinking 7. After one minute, the system will go into AUTO charge mode ***NOTE2**.

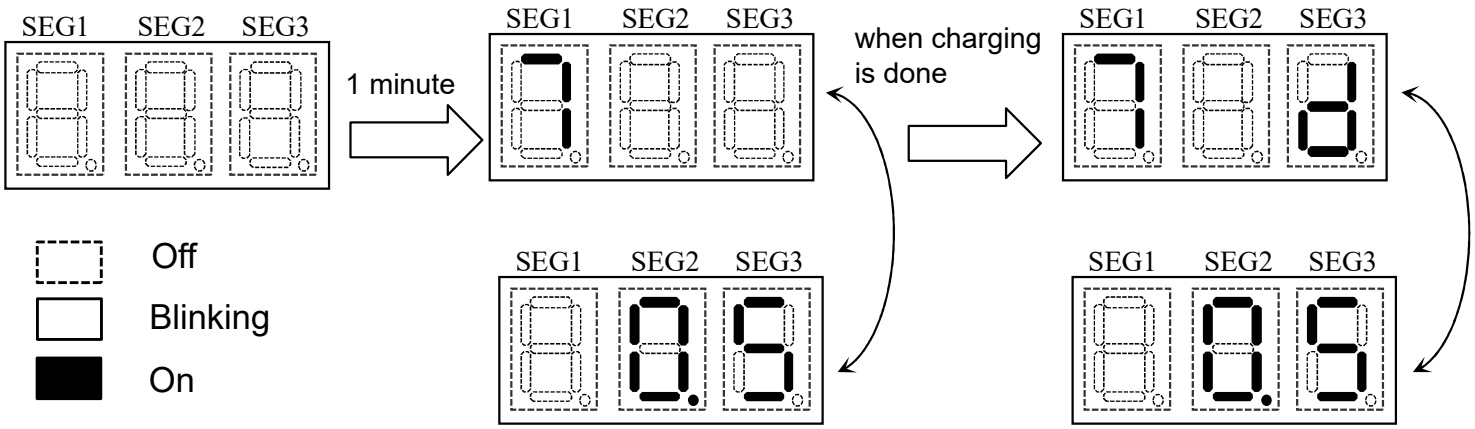
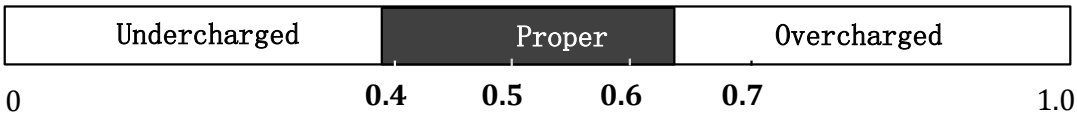


Figure 8.3 LED display in AUTO charge mode

Run the system for more than 15 minutes and will show the **refrigerant coefficient** number (here short for "X", 0 < X < 1) from the LED display. If keep X > 0.5 for more than 5 minutes, the LED display will show more "d", which means "done"; or X < 0.5, the system will add more refrigerant through **Fully Automatic Refrigerant Charging** control (when the refrigerant tank is connected) until the charging is done. Kindly, if X < 0.4, refrigerant charging is recommended. Basically, charging is in the case of 9°F ≤ SSH ≤ 20°F, otherwise automatic charging may be affected, if it occurs need to check the cooling throttling device.
When the LED displays "--" for more than 20 minutes, stop charging and check that the evaporator throttle valve of the indoor unit is working correctly.

Refrigerant coefficient

The refrigerant coefficient is used to evaluate the refrigerant level in the ecoer system.



Use either way below to end AUTO charge mode

Press **BS4 once/** After 2 hours running (Automatically EXIT)/ Turn off the system at thermostat

Fully automatic refrigerant charging:

Refrigerant charging if the unit is undercharged:

1. Connect the refrigerant tank to the service gauge port of the unit and open all the service valves.
2. Power on the system and set the thermostat to the cooling mode.
3. Press and hold the BS4 button for 5 seconds until the display starts blinking "7.".
4. Wait for at least 1 hour, and the system will automatically charge the refrigerant to the appropriate level.
5. Remove the refrigerant tank.

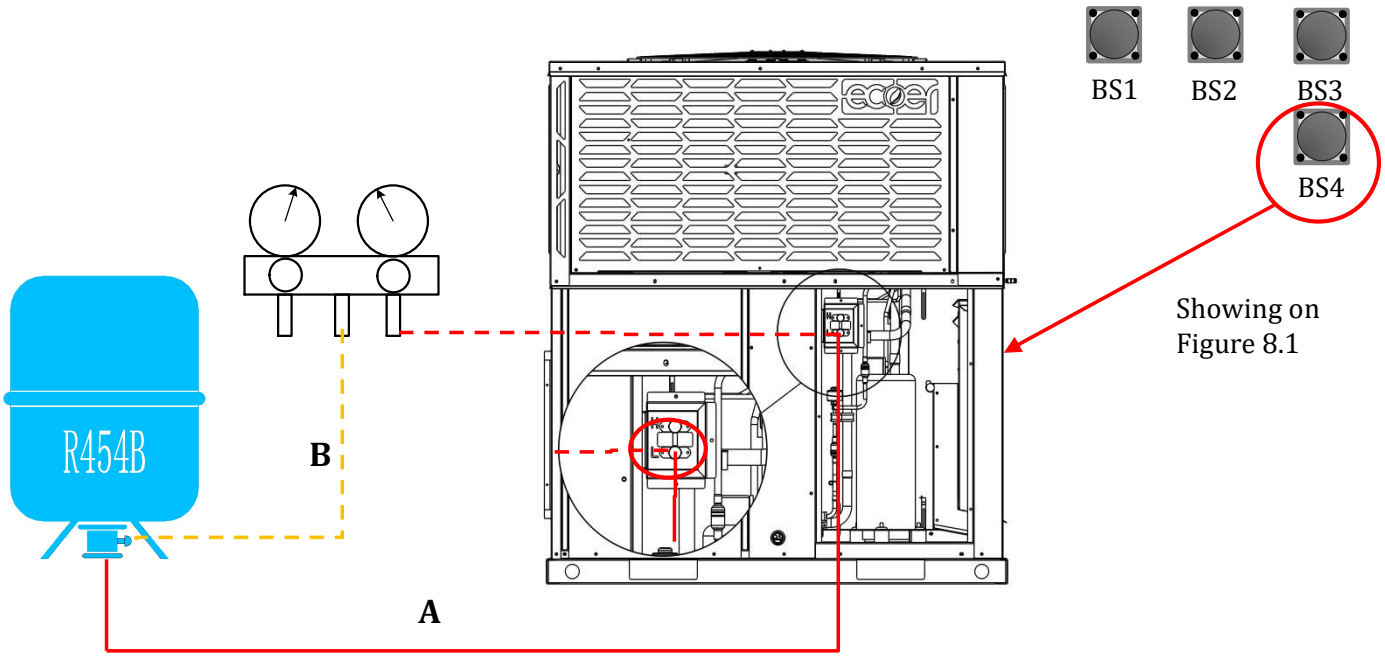


Figure 8.4

Note:

1. Prior to opening the service valves, ensure to purge all the hoses.
2. Make sure to place the refrigerant tank upside down before connecting it.
3. Only one hose (Connection A) is needed for the refrigerant charge. If you want traditional connection, you can also use a pressure gauge (Connection B).

8.3 Sub-cooling check

Refer to the following steps to charge refrigerant by sub-cooling degree in cooling charge mode.

STEP1 CALCULATE SUPERHEAT ON SUCTION LINE

Measured suction line temperature = _____°F

Measured suction line pressure = _____PSIG

Calculated superheat value = _____°F

Note: The temperature is measured on line between Evaporater Coil and Reversing value.

Suction line TEMP (℉)	Final Superheat (℉)							
	8	10	12	14	16	18	20	22
	Suction Gauge Pressure (PSIG)							
40	91	88	84	80	77	74	71	67
42	95	91	88	84	80	77	74	71
44	99	95	91	88	84	80	77	74
46	103	99	95	91	88	84	80	77
48	107	103	99	95	91	88	84	80
50	111	107	103	99	95	91	88	84
52	116	111	107	103	99	95	91	88
54	120	116	111	107	103	99	95	91
56	125	120	116	111	107	103	99	95
58	129	125	120	116	111	107	103	99
60	134	129	125	120	116	111	107	103
62	139	134	129	125	120	116	111	107
64	144	139	134	129	125	120	116	111
66	149	144	139	134	129	125	120	116
68	154	149	144	139	134	129	125	120
70	160	154	149	144	139	134	129	125
72	166	160	154	149	144	139	134	129

Table 8.2 Superheat calculation on gas service valve

STEP2 CALCULATE SUB-COOLING ON LIQUID LINE

Measured liquid line temperature = _____°F

Measured liquid line pressure = _____PSIG

Calculated sub-cooling value = _____°F

Add refrigerant if calculated sub-cooling value is lower than the designed one. Repeat the steps above.

Note: The temperature is measured on line between Condenser Coil and EEV value.

Liquid line TEMP (℉)	Final Sub-cooling (℉)							
	6	7	8	9	10	11	12	13
	Liquid Gauge Pressure (PSIG)							
55	164	167	170	173	176	178	182	184
60	178	182	184	188	191	194	197	200
65	194	197	200	203	207	210	213	216
70	210	213	216	220	224	227	231	234
75	227	231	234	238	242	245	249	252
80	245	249	252	256	261	264	268	271
85	264	268	271	276	280	284	288	292
90	284	288	292	296	301	305	310	313
95	305	310	313	318	323	327	332	336
100	327	332	336	341	346	351	356	360
105	351	356	360	366	371	376	381	385
110	376	381	385	390	396	400	406	411
115	400	406	411	417	423	428	434	439
120	428	434	439	445	451	456	463	468
125	456	463	468	474	481	486	493	498

Table 8.3 Sub-cooling calculation on liquid service valve

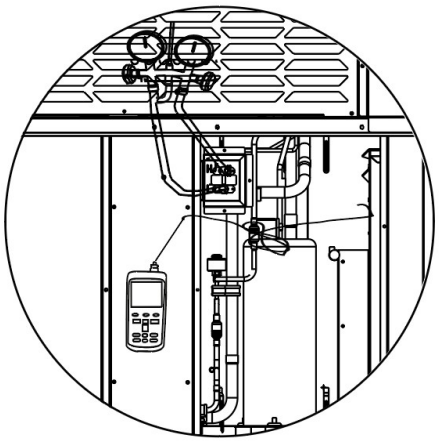


Figure 8.5 Measure the superheat or sub-cooling

Model	Designed sub-cooling degree (SC)
ERDA19H-60ABA	10°F (±2°F)

Table 8.4 Designed sub-cooling degree

STEP3 STABILIZE THE SYSTEM RECORD

1. Wait twenty (20) minutes for the unit to stabilize. When the sub-cooling matches the chart, the system is properly charged.
2. Only the discharge pressure (HP) can be measured, and the suction pressure (LP) is in the normally closed state. It is recommended to confirm the subcooling and superheat (or more parameter) through ESS Pro APP or spot inspection on PCB.

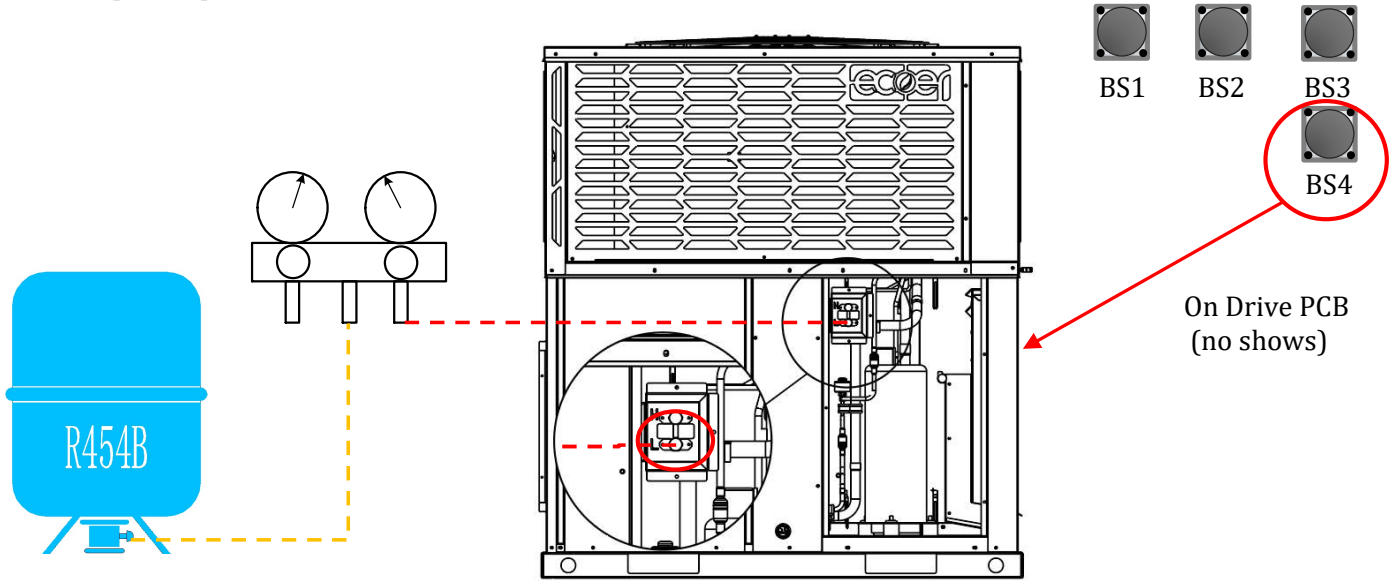


Figure 8.6

packaged unit model	
packaged unit SN	
Measured outdoor ambient temperature	°F
Measured indoor ambient temperature	°F
Discharge gauge pressure	PSIG
Suction gauge pressure (Non-measurement, obtained from the unit)	PSIG
Suction side temperature	°F
Liquid side temperature	°F

Table 8.5

9. System Operation

9.1 Default display

LED on main control board can display the operating status of outdoor unit (ODU).

SEG1: Normally blank, but it displays codes "0 to 9" accordingly if there is damaged sensor and command response.

SEG1 Code	Description
0	Software is updating through IoT device
1	High pressure sensor (HP) fault backup running
2	Low pressure sensor (LP) fault backup running
3	Compressor discharge temperature sensor (TD) fault backup running
4	IPM module temperature sensor (TF) fault backup running
5	Ambient temperature sensor (TA) fault backup running
6	Defrost sensor (TH) fault backup running
7	Compressor suction temperature sensor (TS) fault backup running
8	Liquid line temperature sensor (TL) fault backup running
9	IoT command response

SEG2: Normally blank, but it will display code accordingly as below if outdoor unit is running under limited condition.

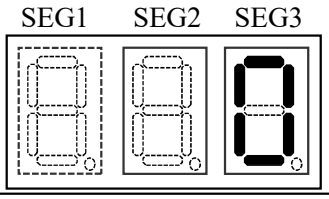
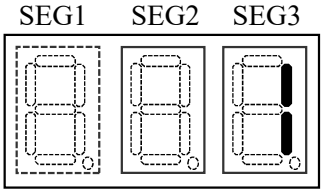
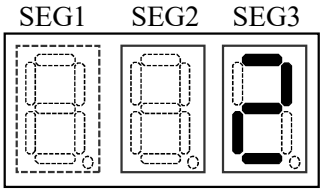
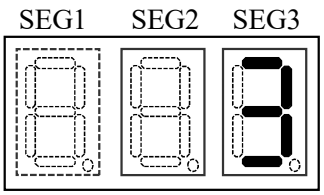
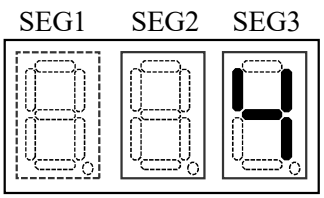
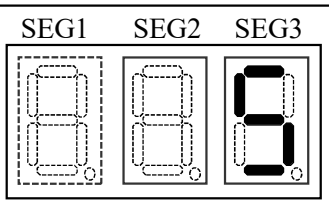
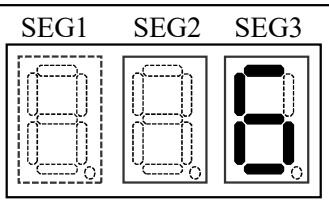
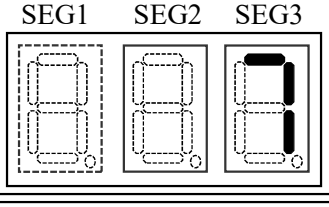
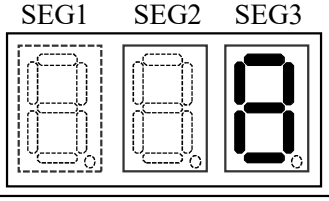
SEG2 Code	Description
0	Running under high pressure limit
1	Running under low pressure limit
2	Running under discharge temperature limit
3	Running under IPM module temperature limit
4	Running under compressor current limit

SEG3: It displays outdoor unit's operation mode.

SEG3 Code	Description
0	Stop (Y signal de-energized)
1	Ready to start-up ***NOTE**
2	Cooling
3	Heating
4	Oil return
5	Defrost
6	Manual defrost
7	AUTO charge mode in cooling
8	Pump down

NOTE: Compressor waits three to eight (8) minutes to restart.

Mode list (SEG3 Display)

Stop or standby	
Ready to start-up	
Cooling	
Heating	
Oil return	
Defrost	
Manual defrost	
AUTO charge mode in cooling	
Pump down	

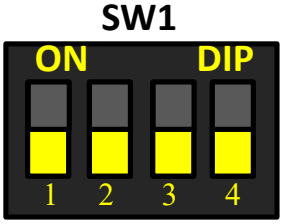
9.2 Field setting in drive PCB

Outdoor condensing units' functions can be applied by dipping switch and pressing buttons.

9.2.1 Setting by dip switches

SW1 Dip switch		Description	
NO.	Setting item	Status	Content
1	Snow Sensor Control	ON	Disable
		OFF (factory)	Enable
2	Capacity selection	ON	2 or 4 Ton
		OFF (factory)	3 or 5 Ton
3	AC only / Heat pump	ON	AC only
		OFF (factory)	Heat pump
4	Command [a] response for IoT	ON	Disable
		OFF (factory)	Enable

Table 9.1

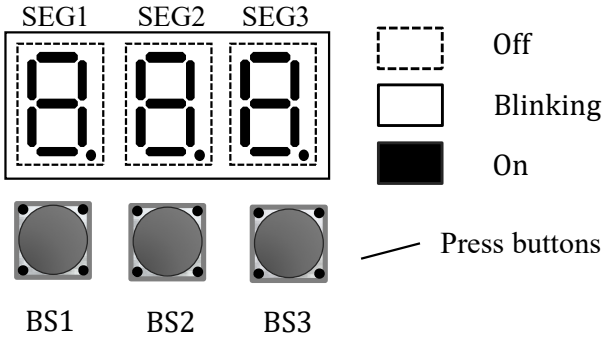


Use minor straight screwdriver to dip switch. Must power off the unit for at least two minutes to activate the change.

a. Remote field setting, troubleshooting, software programming etc.

9.2.2 Setting by pressing buttons

Query and setting operation can be done by pressing buttons on main control board.



BS1: Menu or back button

BS2: UP button

BS3: Spot check and confirm button

Remarks:
Press or tip any directions are valid.

Figure 9.1

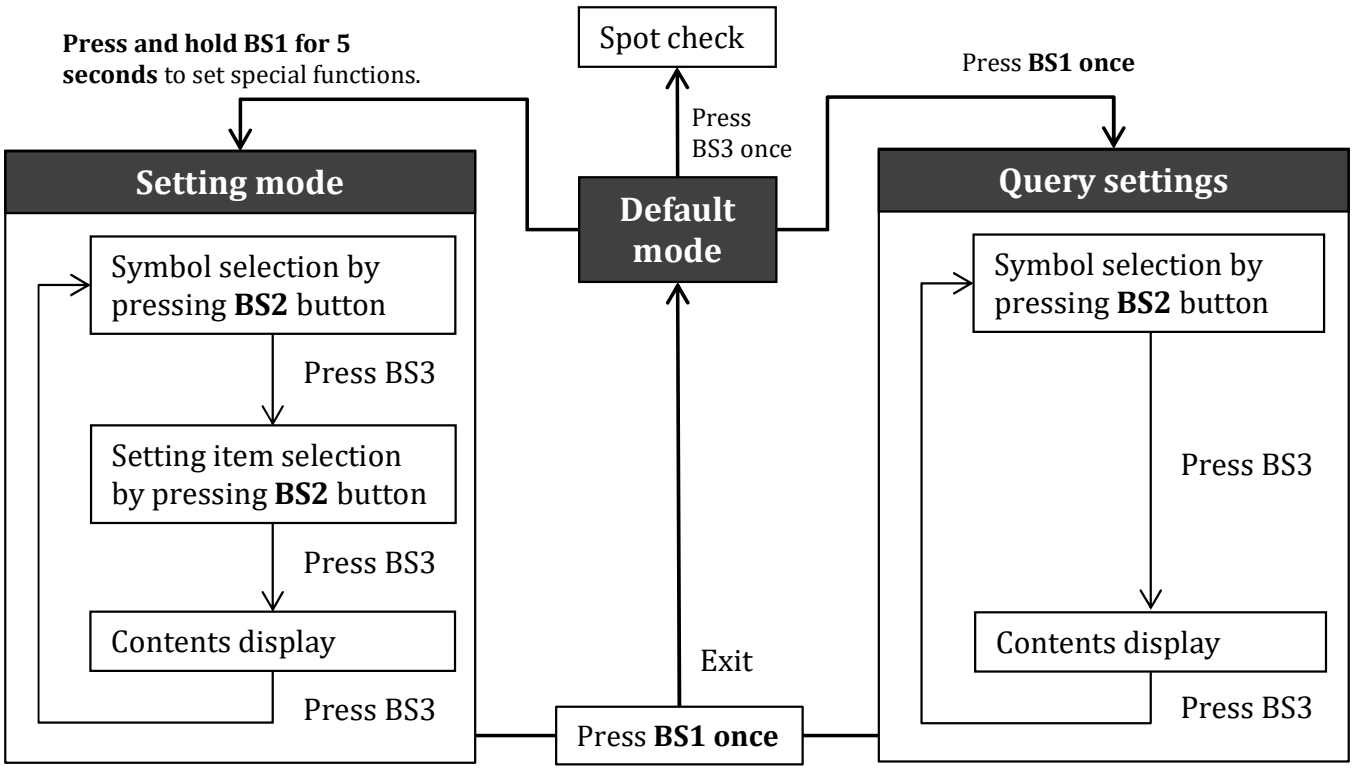
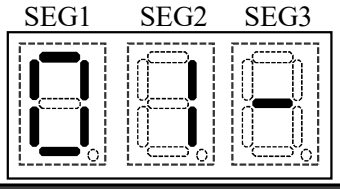


Figure 9.2

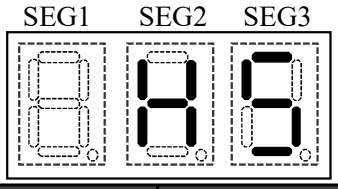
Default mode (Spot check)

System states can be showed on the 7 segments display (LED) of outdoor unit. Press **BS3** button to get the code number and corresponding information with an interval of one second.

Example: Code number



Detailed information



No.	Number content	Example	Description
Default	Refer to default display instructions	902	9: Command/Troubleshooting 0: Running under high pressure limit 2: Cooling mode
01-	Outdoor unit type and capacity	H5	H: Heat pump C: AC only 5: 5Ton
02-	Liquid line sub-cooling	10	10°F
03-	Compressor suction superheat	18	18°F
04-	Compressor speed	56	56RPS
05-	Electronic expansion valve opening	360	360pls
06-	Step of fan	8	The 8th step
07-	Low pressure (LP sensor)	145	145psig
08-	High pressure (HP sensor)	350	350psig
09-	Outdoor ambient temp. (TA)	95	95°F
10-	Compressor suction temp. (TS)	70	70°F
11-	Compressor discharge temp. (TD)	170	170°F
12-	Defrost sensor temp. (TH)	80	80°F
13-	Liquid line temp. (TL)	70	70°F
14-	Inverter module temp. (TF)	150	150°F
15-	Target evaporating temp. (Tes)	43	43°F
16-	Current evaporating temp. (Te)	45	45°F
17-	Target condensing temp. (Tcs)	104	104°F
18-	Current condensing temp. (Tc)	112	112°F
19-	Compressor DC current	10.1	10.1A
20-	Undercharged refrigerant signal	1	0: None 1: Level 1 2: Level 2
21-	Main software version	307	Ver 307
22-	Inverter software version	38	Ver 38
23-	Current fault	E1	Display up to 5 * codes
24-	The last fault	F1	--: none
25-	Fault before the last fault	F2	--: none
26-	Product series	4	4 : RTi 2 series

Remarks: When multi-error codes exist at the same time, each code will be displayed one by one with an interval of one (1) second.

Setting mode

Press and hold **BS1** button for five (5) seconds to enter the parameter setting interface. The latest setting will be taken as the final one.

Symbol	Function	Item	Description
n00	Mode choice	0 (factory)	Normal (Energy Saving) mode
		1	Dry mode *1
		2	High capacity mode *2
n01	Forced heat pump stop when ambient temperature is lower than specified value. Switching to heat by gas furnace or electric heater in cold winter.	0	Stop heat pump when TA<-22℉
		1 (factory)	Stop heat pump when TA<-3℉
		2	Stop heat pump when TA<15 ℉
		3	Stop heat pump when TA<30 ℉
		4	Stop heat pump when TA<40℉
		5	Stop heat pump when TA<20℉
		6	Stop heat pump when TA<25℉
		7	Stop heat pump when TA<35℉
		8	Stop heat pump when TA<50℉
n02	Indoor second heater for outdoor unit outputs 24VAC at W terminal (CN5).	0 (factory)	ON (Electric auxiliary heater)
		1	OFF (Furnace or Boiler)
n03	Outdoor unit outputs 24VAC at W terminal (CN5) when ambient temperature is lower than specified value to start indoor electric auxiliary heater.	0 (factory)	TA<15℉ (24VAC output)
		1	TA<30℉ (24VAC output)
		2	TA<40℉ (24VAC output)
		3	TA<-3℉ (24VAC output)
		4	OFF
		5	TA<20℉ (24VAC output)
		6	TA<25℉ (24VAC output)
		7	TA<35℉ (24VAC output)
		8	TA<50℉ (24VAC output)
n04	Defrost mode setting *3	0	Defrost in heavy snow area
		1 (factory)	Standard mode
		2	Defrost in light snow area
n05	Silent mode setting	0 (factory)	None silent mode
		1	Silent mode (level 1)
		2	Super silent mode (level 2)
		3	Night silent mode (level 1)
		4	Night super silent mode (level 2)
n06	Night silent setting- start time	0	17:00
		1 (factory)	18:00
		2	19:00
		3	20:00
		4	21:00
n07	Night silent setting- end time	0	5:00
		1 (factory)	6:00
		2	7:00
		3	8:00
		4	9:00
n08	Forced defrost	0 (factory)	OFF
		1	ON *4
n18	Production series	4	RTi 2 series

Remarks:

1. The evaporating temperature of evaporation coil can drop down to 28℉.
2. The evaporating temperature of evaporation coil can drop down to 28℉ in cooling mode, and the condensing temperature can go up to 125℉ in heating mode.
3. Reduce about 10% heating time for heavy snow area, increase about 10% heating time for light snow area.
4. System enters defrost after the heating start-up and an extra five minutes.

9.3 Major components function

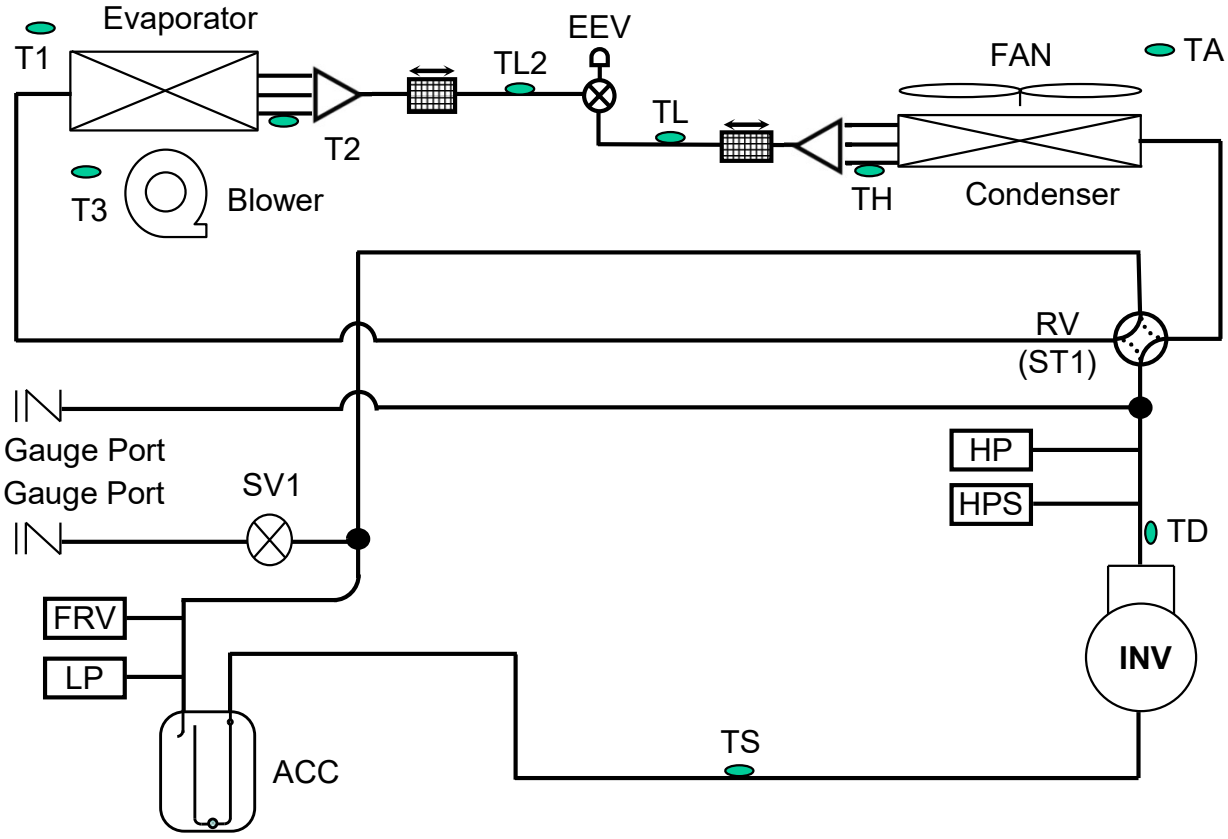


Figure 9.3 Refrigerant Circuit

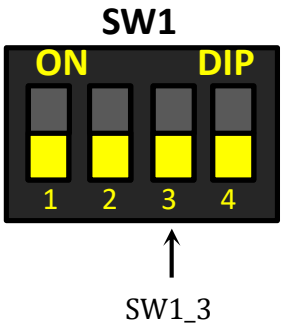
Name	Symbol	Function
Inverter compressor	INV	Adjusts refrigerant flow rate by changing the speed (RPS) based on objective pressure.
High Pressure Switch	HPS	The compressor oil is collected and returned to the compressor.
Outdoor fan	FAN	Outputs heat exchanger capacity by adjusting the motor rotation speed based on operating pressure.
Blower	Blower	Supply airflow to the room.
Electronic expansion valve	EEV	1) Fully open in cooling mode and defrost operation. 2) Control compressor discharge superheat in heating mode.
Reversing valve	RV (ST1)	Switches the operation mode between heating and cooling (including defrost control).
Solenoid valve 1	SV1	(Normally close) Control charging on and off when in charging mode.
Temperature sensor	TH	Uses to control defrost during heating operation.
	TA	Uses to detect outdoor air temperature and control fan speed.
	TS	Uses to detect compressor suction temperature and calculate compressor suction superheat (SSH).
	TL	Uses to detect liquid line temperature and calculate sub-cooling (SC).
	TD	Uses to detect compressor discharge temperature and calculate discharge superheat (DSH).
	T1	The suction airflow temperature.
	T2	The evaporation coil temperature.
	T3	The supply airflow temperature.
High pressure sensor	HP	Uses to detect high pressure.
Low pressure sensor	LP	Uses to detect low pressure.
Accumulator	ACC	Uses to store excess refrigerant.
Fusible Relief Valve	FRV	Release of refrigerant into the atmosphere (high temperature trigger) – only for some models

9.4 Control logic description

9.4.1 Operation mode

SW1_3=OFF (factory), the system uses Y/O/C signal to operate heat pump function.

SW1_3=ON has been set, the system uses Y/C signal to run cooling only.

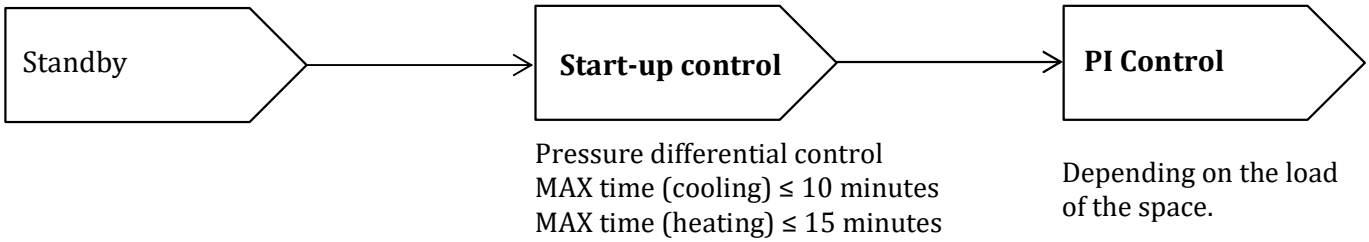


Normal operation:

Compressor control / EEV control / Fan motor control / Protection control

More detailed information can be found on the service manual.

9.4.2 Compressor control



Pressure differential control
MAX time (cooling) ≤ 10 minutes
MAX time (heating) ≤ 15 minutes

Depending on the load of the space.

Outdoor Capacity	5 Ton
Cooling/Heating Min RPS	18
Cooling Max RPS	76
Heating Max RPS	98

9.4.3 Electronic expansion valve (EEV) control

Cooling: 360pls→200pls
Heating: 360pls→0pls

Cooling: PI control
Heating: Temperature differential control

Cooling: PI control by SSH
Heating: PI control by DSH.
*NOTE

NOTE:

- **SSH=Suction Supperheat temperature.**
- **DSH=Discharge Supperheat temperature.**

9.4.4 Defrost control

This system carries out demand defrost control if any one of the following conditions satisfy.

I. The calculated temperature difference between ambient temperature (TA) and defrost temperature (TH) is called Delta T. After Delta T is achieved and continues for 5 minutes.

a) TA is between 41°F and 59°F: TH ≤ 30°F, Delta T = 18°F
b) TA is between 19°F and 41°F : TH ≤ 30°F, Delta T = 12~18°F
c) TA is less than 19°F : TH < 9°F, accumulative compressor run time ≥ 80 minutes

TH back-up running: TA < 59°F and LP ≤ 90PSIG, accumulative compressor run time ≥ 60 minutes

II. After "Minimum Run Time" (MRT) is achieved.

a) MRT is 3.5 hours if TA is less than 23°F
b) MRT is 2 hours if TA is between 23°F and 43°F

III. The high pressure drops below 245PSIG for 20 minutes if TA is between 14°F and 28°F.

EXIT :

Defrost will be terminated once defrost temperature sensor (TH) reaches 64°F for one (1) minute or the defrost time has exceeded eight (8) minutes.

SETTING :

Defrost mode setting (n04) offers termination options for different geographical conditions.

a) Defrost in heavy snow area will extend defrost for one (1) minute, but reduce the heating time to execute more defrost cycles.
b) Defrost in light snow area will reduce defrost for 30 seconds.

9.4.5 Manual Defrost

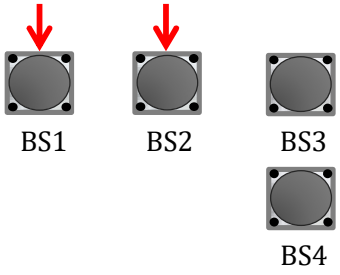
Manual defrosting mode can be used when verifying defrosting or forcing defrosting.

Note: After 5-10 minutes of continuous heating operation, the unit can respond to manual defrosting in time; otherwise, the unit will enter after meeting the requirements.

Enter in either way:

a. n08 setting;

b. Hold on BS1+BS2 for more than 5 seconds, release and wait about 1 minute.,



Exit in either way:

Defrost exit automatically/Heating demand off/Power off

10. Troubleshooting

If the system does not operate properly besides any malfunctions. Check the system based on the following procedures.

Symptoms	Possible causes	Solutions
System does not start-up but the digital tube shows normally	• No 24 VAC for Y signal from thermostat. • Incompatible thermostat	• Be sure Y/O/C wirings are connected correctly and the cooling/heating setting temperature at thermostat is proper • Use other traditional 24VAC thermostats
System operates mode reversely	• Incorrect O/B signal selection	• Choose **O for cooling** at thermostat
System cannot cool well	• Outside temperature is too high • Outside temperature is too low • Dirty air filter or blocked duct • Lack of refrigerant • Refrigerant has been blocked in the condenser coil	• Normal protection control to limit RPS • Ensure the cooling loads • Replace the air filter and eliminate any obstacles. • Check refrigerant amount or any leaks. • Checi the EEV bloaked (Make sure the refrigerant coefficient is 0.6)
System cannot heat well	• Outside temperature is too low but no third-party heat inside • The outdoor coil is dirty or has been covered by heavy snow • Dirty air filter • Lack of refrigerant	• Install auxiliary heat for backup ***Dual-heating** is recommended • Clean the outdoor coil • Replace the air filter • Check refrigerant amount or any leaks

Remarks:
Systems are compatible with most traditional 24VAC thermostats.

⚠ CAUTION

Reversing valve is energized (208/230VAC) in heating mode.

Error codes List for Condensing Unit

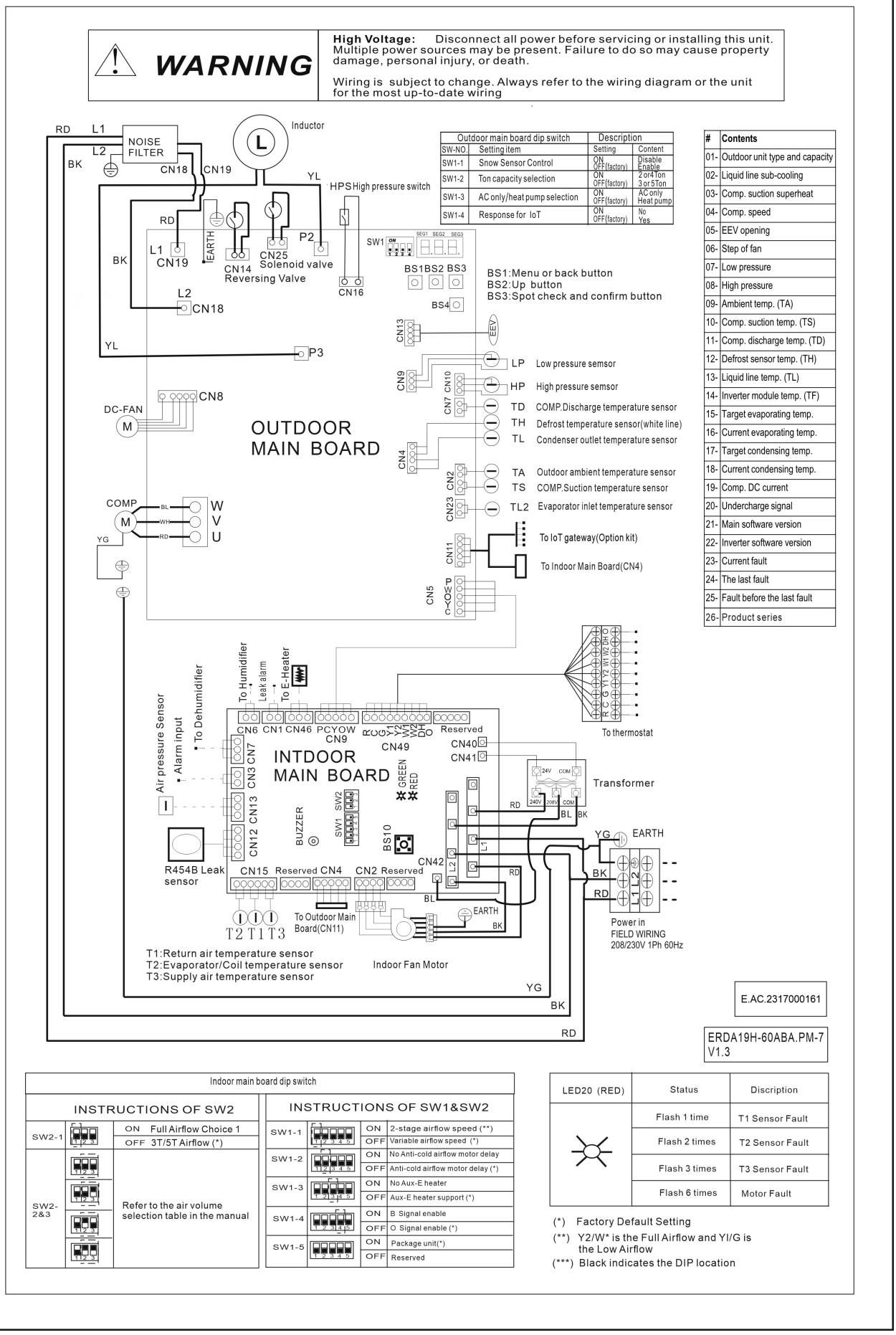
Error codes can be inquired by BS3 button, and seen on Ecoer Smart Service Pro App. **Sign in App >Files >Service, refer to the service manual for troubleshooting details.**

Code	Description	Legend
P1	High pressure protection	
E1	System locks up when P1 has occurred six times in 3 hours.	Cannot restart *1
P2	Low pressure protection in cooling mode	
E2	System locks up when P2 has occurred six times within 3 hours.	Cannot restart *1
P3	Compressor discharge temperature (TD) protection	
E3	System locks up when P3 has occurred six times within 3 hours.	Cannot restart *1
P4	Compressor discharge temperature (TD) sensor error	
P5	Inverter module temperature (TF) protection	
E5	System locks up when P5 has occurred six times within 3 hours.	Cannot restart *1
P6	Compressor over-current protection	
E6	System locks up when P6 has occurred six times within 3 hours.	Cannot restart *1
P7	Liquid slugging protection	
E7	System locks up when P7 has occurred three times within 5 hours.	Cannot restart *1
P8	Low compressor voltage protection	
E8	System locks up when P8 has occurred three times within an hour.	Cannot restart *1
P9	Incorrect compressor line sequence	Cannot restart *1
PA	DC fan motor over-load protection	Cannot restart *1
F1	Ambient temperature (TA) sensor fault	Backup running*2
F2	Compressor suction temperature (TS) sensor fault	Backup running*2
F3	Liquid line temperature (TL) sensor fault	Backup running*2
F4	Defrost temperature (TH) sensor fault	Backup running*2
F5	Compressor discharge temperature (TD) sensor fault	Backup running*2
F6	Inverter module temperature (TF) sensor fault	Backup running*2
F7	High pressure (HP) sensor fault	Backup running*2
F8	Low pressure (LP) sensor fault	Backup running*2
Fb	Liquid line temperature (TL2) sensor fault	
E4	Communication fault between main chip and INV drive chip	Cannot restart *1
H0	Heavy undercharge limit operation	
H1	Ambient temperature limit operation in cooling	
H2	Ambient temperature limit operation in heating	
H3	Abnormal switch alarm for reversing valve	Alarm
H4	Defrost temperature (TH) sensor error	
H5	EEPROM fault	
H6	Low voltage alarm	
HF	Abnormal function control	Alarm
H8	Indoor refrigerant leakage alarm	Alarm
C0-CC	Compressor INV module protection	
E0	System locks up when C0~CA has occurred three times within an hour.	Cannot restart *1

Remarks:

1. Disconnect power supply switch for 5 minutes to reset, then turn on power supply for the unit.
2. Unit goes to backup running under sensors fault varies from 7 to 120 days. Allow up to two (2) sensors backup running at the same time.

11. Wiring Diagram



Outdoor main board dip switch		Description	
SW-NO.	Setting item	Setting	Content
SW1-1	Snow Sensor Control	ON OFF(factory)	Disable Enable
SW1-2	Ton capacity selection	ON OFF(factory)	2 or 4 Ton 3 or 5 Ton
SW1-3	AC only/heat pump selection	ON OFF(factory)	AC only Heat pump
SW1-4	Response for IoT	ON OFF(factory)	No Yes

#	Contents
01-	Outdoor unit type and capacity
02-	Liquid line sub-cooling
03-	Comp. suction superheat
04-	Comp. speed
05-	EEV opening
06-	Step of fan
07-	Low pressure
08-	High pressure
09-	Ambient temp. (TA)
10-	Comp. suction temp. (TS)
11-	Comp. discharge temp. (TD)
12-	Defrost sensor temp. (TH)
13-	Liquid line temp. (TL)
14-	Inverter module temp. (TF)
15-	Target evaporating temp.
16-	Current evaporating temp.
17-	Target condensing temp.
18-	Current condensing temp.
19-	Comp. DC current
20-	Undercharge signal
21-	Main software version
22-	Inverter software version
23-	Current fault
24-	The last fault
25-	Fault before the last fault
26-	Product series

Indoor main board dip switch

INSTRUCTIONS OF SW2		
SW2-1	ON	Full Airflow Choice 1
	OFF	3T/5T Airflow (*)
SW2-2&3		Refer to the air volume selection table in the manual

INSTRUCTIONS OF SW1&SW2		
SW1-1	ON	2-stage airflow speed (**)
	OFF	Variable airflow speed (*)
SW1-2	ON	No Anti-cold airflow motor delay
	OFF	Anti-cold airflow motor delay (*)
SW1-3	ON	No Aux-E heater
	OFF	Aux-E heater support (*)
SW1-4	ON	B Signal enable
	OFF	O Signal enable (*)
SW1-5	ON	Package unit(*)
	OFF	Reserved

LED20 (RED)	Status	Discription
	Flash 1 time	T1 Sensor Fault
	Flash 2 times	T2 Sensor Fault
	Flash 3 times	T3 Sensor Fault
	Flash 6 times	Motor Fault

(*) Factory Default Setting
(**) Y2/W* is the Full Airflow and YI/G is the Low Airflow
(***) Black indicates the DIP location

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