

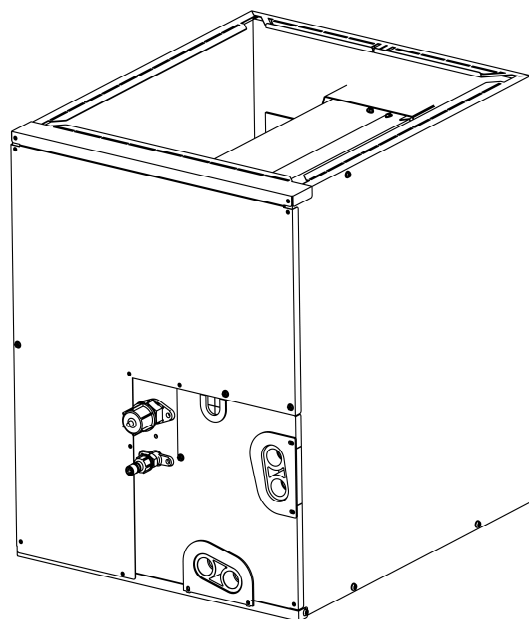


Installation Manual

TDi 2 Cased Coil

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NOTE: Appearance of unit may vary.
Installation must be performed in accordance with the requirements of NEC and CEC by authorized personnel only.

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 are intended as an assist to qualified and licensed personnel for proper installation, adjustment and operation of ECM air handler units. Read it thoroughly before attempting installation or service work. **Failure to follow these instructions may result in fire, electrical shock, property damage, personal injury or death.**

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



1. Safety Instructions

1.1 Safety

Read the following safety instructions before installing the unit or doing service work.

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

⚠ **WARNING**

Disconnect all power to unit before installing or servicing. More than one disconnecting switch may be required to de-energize the equipment. Hazardous voltage can cause severe personal injury or death.

Installation and maintenance must be performed by authorized personnel only.
Consumer service is recommended only for filter cleaning/replacement. Never operate the unit with the access panels removed.

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

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

PROPOSITION 65: This appliance contains fiberglass insulation. Respirable particles of fiberglass are known to the State of California to cause cancer. All manufacturer products have to meet current federal OSHA Guidelines for safety.

California Proposition 65 warnings are required for certain products that are not covered by the OSHA standards. It requires warnings for products sold in California that contain or produce any of over 600 listed chemicals known to the State of California to cause cancer or birth defects such as fiberglass insulation, lead in brass, and combustion products from natural gas.

All “new equipment” shipped for sale in California will have labels stating that the product contains and /or produces Proposition 65 chemicals. Although we have not changed our processes, having the same label on all our produced facilitates manufacturing and shipping. We cannot always know “when or if” products will be sold in the California market. You may receive inquiries from customers about chemicals found in, or produced by, some of our heating and air-conditioning equipment, or found in natural gas used with some of our products. Listed below are those chemicals and substances commonly associated with similar equipment in our industry and other manufacturers.

- Glass Wool (Fiberglass) Insulation
- Carbon Monoxide (CO).
- Formaldehyde
- Benzene

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



WARNING

The first 6 inches of supply air plenum and ductwork must be constructed of sheet metal as required by NFPA 90B. The supply air plenum or duct must have a solid sheet metal bottom directly after the air handler unit with no openings, registers or flexible air ducts located in it. If flexible supply air ducts are used, they may be located only in the vertical walls of rectangular plenum, a minimum of 6 inches from the solid bottom. Metal plenum or duct may be connected to the combustible floor base, if not, it must be connected to the unit supply duct exposed to the supply air opening from the down-flow unit.

Exposing combustible (non-metal) material to the supply opening of a down-flow unit may cause a fire resulting in property damage, personal injury or death.

Personal injury, product damage!

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

Hazardous voltage!

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

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

Grounding required!

Failure to inspect or use proper service tools may result in equipment damage or personal injury.

Reconnect all grounding devices. All parts of this product that are capable of conducting electrical current are grounded. If grounding wires, screws, straps, clips, nuts, or washers used to complete a path to ground are removed for service, they must be returned to their original position and properly fastened.

 WARNING**Brazing required!**

Failure to inspect lines or use proper service tools may result in equipment damage or personal injury. If using existing refrigerant lines make certain that all joints are brazed, not soldered. If refrigerant gas leaks during installation, ventilate the area immediately. Comply with national gas regulations.

High current leakage!

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

Risk of fire!

Flammable refrigerant used. To be repaired only by trained service personnel. Do not puncture refrigerant tubing. Dispose of properly in accordance with federal or local regulations. Flammable refrigerant used. Flammable refrigerant used. Consult repair manual/owner's guide before attempting to service this product. All safety precautions must be followed. Auxiliary devices which may be ignition sources shall not be installed in the ductwork, other than auxiliary devices listed for use with the specific appliance. See instructions.

Fire, explosion!

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

Risk of electric shock!

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

Personal injury!

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or persons who lack experience and knowledge, unless they are supervised or have been given instructions concerning the use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

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

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

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

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

 WARNING**Flammable refrigerant!**

Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.

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

Do not pierce or burn the unit.

Be aware that refrigerants may not contain an odour.

Safe handling of flammable refrigerant!

Be sure the air conditioner is grounded. In order to avoid electric shock, make sure that the unit is grounded and that the earth wire is not connected to a gas or water pipe, lightning conductor or telephone earth wire.

Do not operate the air conditioner with a wet hands. An electric shock may happen.

Do not operate the air conditioner when using a room fumigation - type insecticide. Failure to observe this precaution could cause the chemicals to become deposited in the unit, which could endanger the health of those who are hypersensitive to chemicals.

To avoid oxygen deficiency, ventilate the room sufficiently if equipment with a burner is used together with the air conditioner.

Arrange the drain hose to ensure smooth drainage. Incomplete drainage may cause wetting of the building, furniture, etc.

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.

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.

Storage package protection should be constructed such a way that mechanical damage to the equipment inside the package will not cause a leak of the REFRIGERANT CHARGE.

The maximum number of pieces of equipment permitted to be stored together will be determined by local regulations.

Do not place appliances which produce open flame in places exposed to the air flow from the unit or under the indoor unit. It may cause incomplete combustion or deformation of the unit due to the heat.

Do not install the air conditioner in a location where flammable gas may leak out. If the gas leaks out and stays around the air conditioner, a fire may break out.

 WARNING**Flammable refrigerant!**

The appliance can use R32 /R454B refrigerant.

**Personal Injury, flammable refrigerant!**

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

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

Personal Injury, flammable refrigerant!

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

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

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

 WARNING**Personal Injury, flammable refrigerant!**

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

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

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

Flammable refrigerant!

Sealed electrical components shall be replaced.

Intrinsically safe components must be replaced.

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

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

Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need recalibration. (Detection equipment shall be calibrated in a refrigerant-free area.)

Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated for the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed. If a leak is suspected, all naked flames shall be removed/extinguished.

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

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

Examples of leak detection fluids are:

- bubble method,
- fluorescent method agents.

 WARNING**Flammable refrigerant!**

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

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

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

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

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

Ensure that contamination of different refrigerants does not occur when using charging equipment.

Hoses or lines shall be as short as possible to minimize the amount of refrigerant they contain.

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

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

Take extreme care not to overfill the refrigeration system.

Product damage, personal injury!

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

These instructions are exclusively intended for qualified contractors and authorized installers. Work on the refrigerant circuit with mild flammable refrigerant in safety group A2L may only be carried out by authorized heating contractors.

These heating contractors must be trained in accordance with UL 60335-2-40, Section HH. The certificate of competence from an industry accredited body is required.

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

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

 WARNING**Flammable refrigerant!**

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

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

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

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

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

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

 WARNING**Flammable refrigerant!**

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

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

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

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

To avoid electric shock or fire, make sure that a leak detector is installed. Never touch the air outlet or the horizontal blades while the swing flap is in operation. Fingers may be caught or the unit may break down. Never put any objects into the air inlet or outlet. Objects touching the fan at high speed can be dangerous. Never inspect or service the unit by yourself. Ask a qualified service person to perform this task.

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

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

To prevent refrigerant leak, contact your dealer.

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

The refrigerant in the air conditioner is safe and normally does not leak. If the refrigerant leaks into the room and encounters the fire of a burner, a heater or a cooker, a harmful gas could be released.

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

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

Keep ventilation openings clear of obstruction

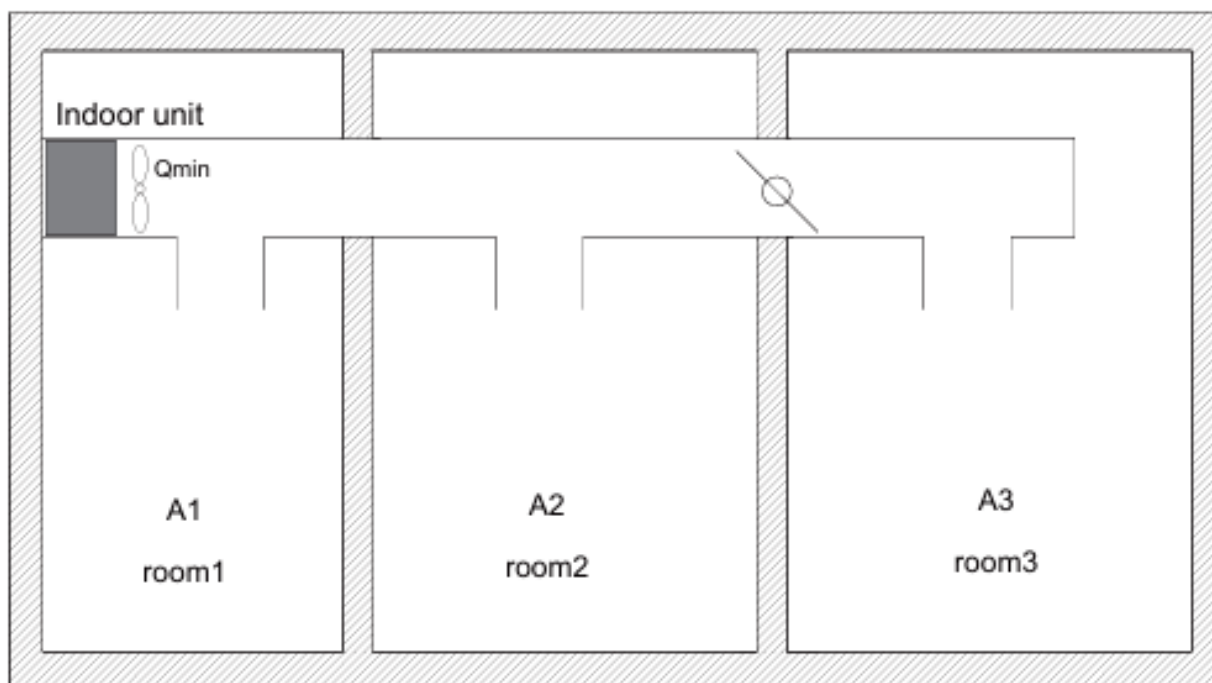
WARNING

Room size restriction

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 $\geq 7.3\text{ft}/2.2\text{m}$ from the floor. In UL/CSA 60335-2-40, the R32/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:



Make sure that the applied room space area T_A is larger than the T_{Amin} .

For R454B/R32 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

TAmin is the required minimum room area in ft² / m²
Mc is the actual refrigerant charge in the system in oz/kg
hinst 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.

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	24K	36K	48K	60K
Qmin [m ³ /h(SCFM)]	791(466)	791(466)	1136(669)	1136(669)
QminA [m ³ /h(SCFM)]	832(490)	1248(735)	1783(1050)	1953(1150)

Note: Qmin refers to the Minimum airflow of the **Gas Furnace (see Installation Manual of the gas furnace for details)**, which is not less than QminA.

1.2 Explanation of symbols displayed on the indoor unit

	WARNING	This symbol shows that this appliance used a flammable refrigerant. If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire.
	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. Dimensions

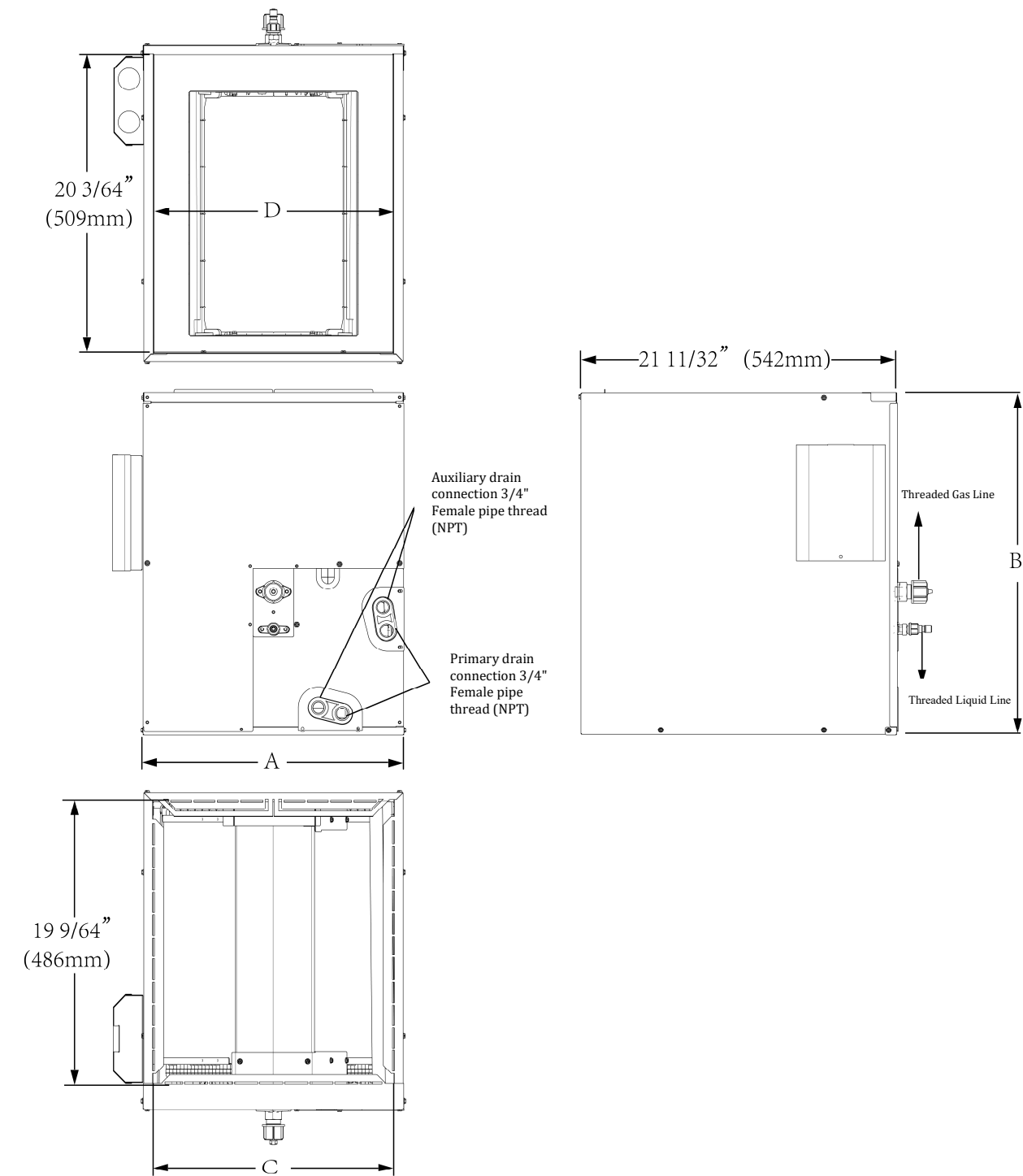


Figure 2-1 Unit Dimensions

Model	Dimensions (in.)					
	A	B	C	D	Liquid Line Connection	Gas Line Connection
2430B	17.5	23	16.2	16.2	3/8	3/4
3036B	17.5	23	16.2	16.2	3/8	3/4
4248C	21	29.5	19.7	19.6	3/8	7/8
4660C	21	29.5	19.7	19.6	3/8	7/8

2.1 Installation Position Requirements

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

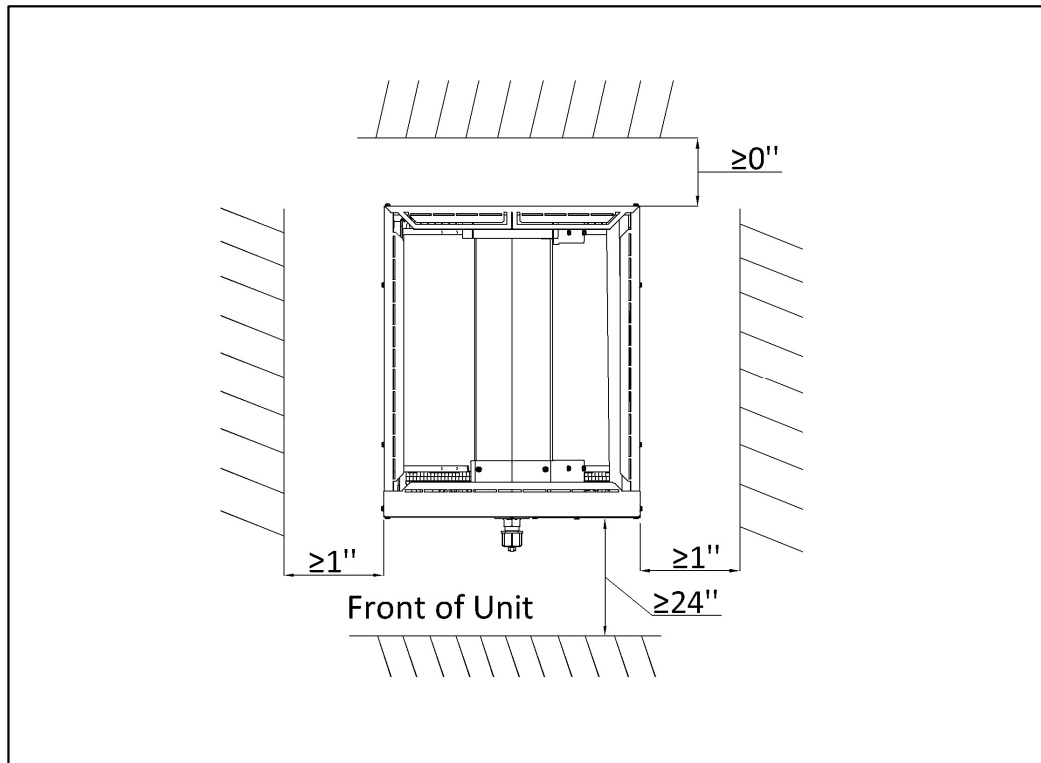


Figure2-2 Clearance -top view (including air duct)

3. Applications

3.1 Installation and Trap Connection

The units can be installed in a vertical (down and up) and Horizontal (right and left) configuration.

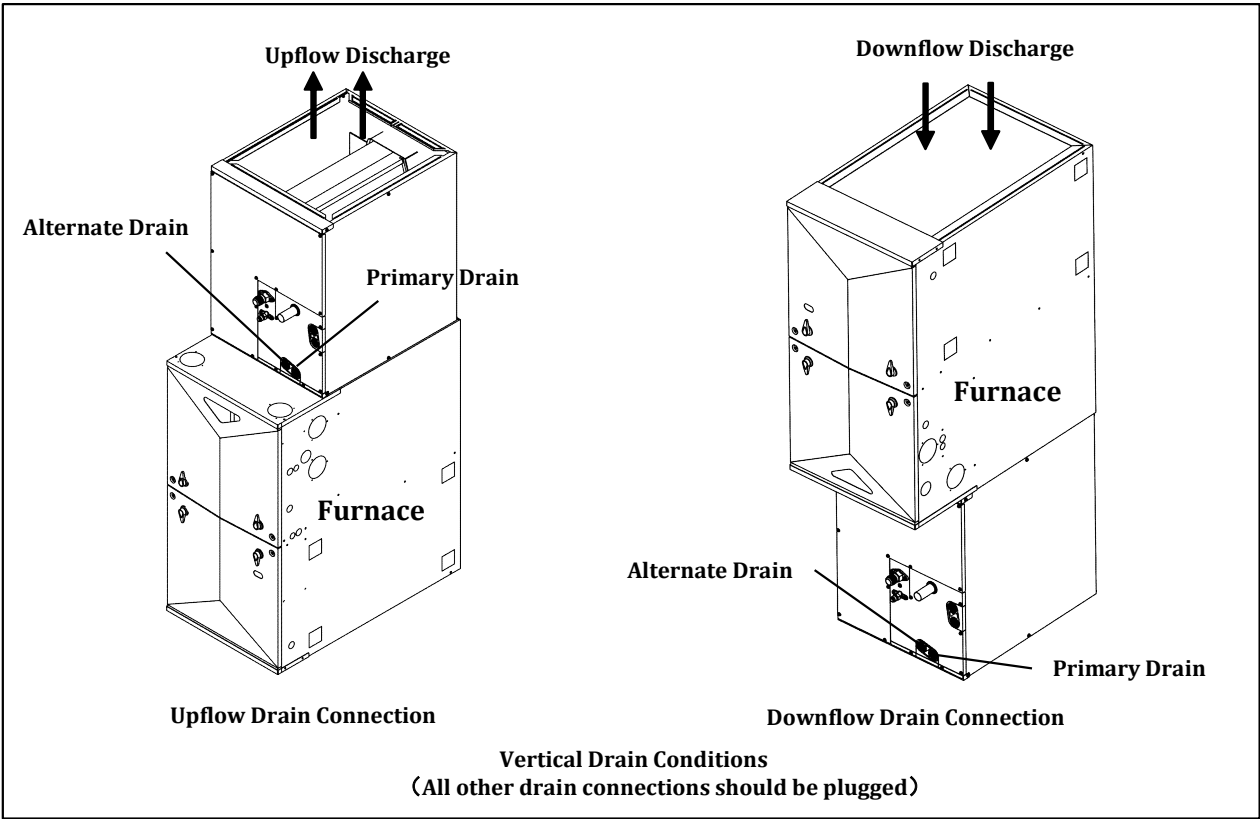


Figure3-1

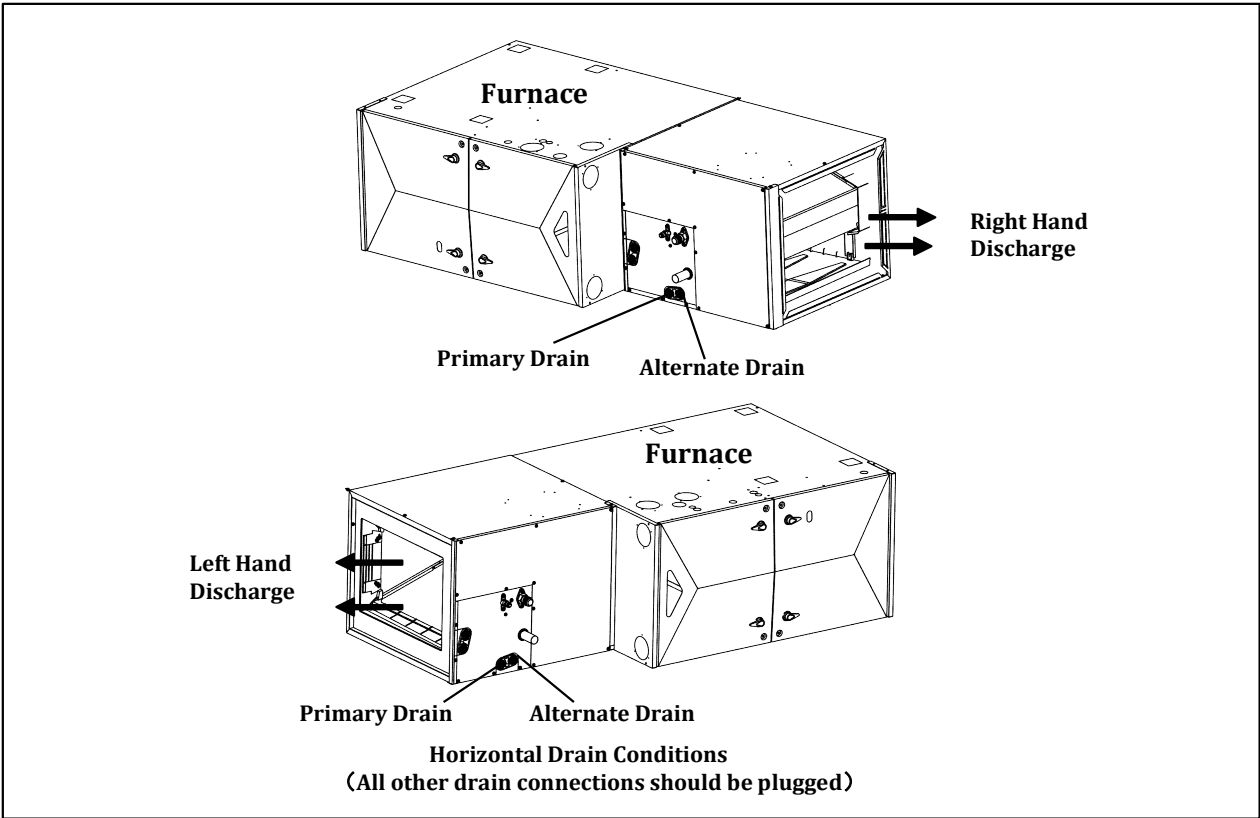


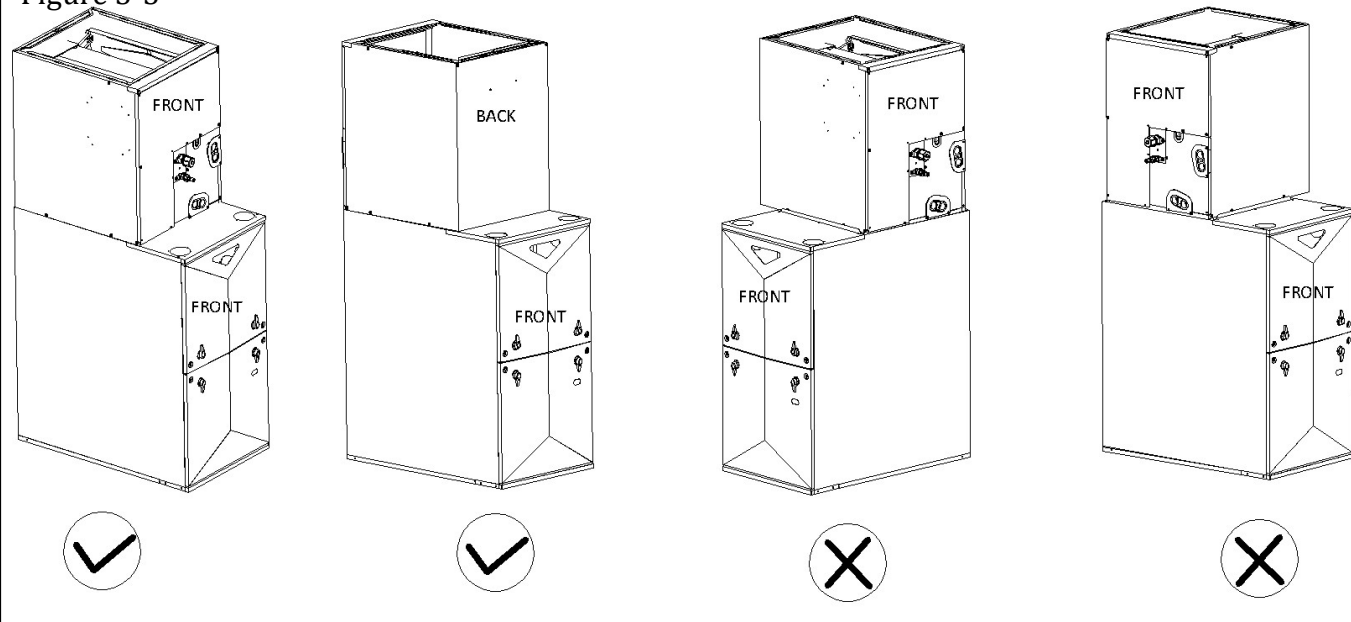
Figure3-2

⚠ WARNING

The cased coil should be installed with the front of the cased coil facing the front of the furnace (see Figures 2 & 3). This ensures proper airflow through the coil and allows for optimal serviceability of the coil cleanings, and coil removal. In some applications where the cased coil must be installed 180 degrees from the front of the furnace (facing the back), proper airflow directed through the coil will still be maintained. However, serviceability of the coil cleaning, and coil removal may be difficult unless access to the rear of the furnace is provided.

Never install the cased coil at a 90-degree angle to the front or back of the furnace (see Figure 3-3).

Figure 3-3



The factory default configuration for the cased coil is for upflow discharge / right hand discharge. For installations requiring downflow discharge / left hand discharge, the two sensors indicated must be swapped (See Figure 3-4). After swapping, the sensor ports must be properly sealed using the supplied sponge rubber seal included with the unit, or by applying a suitable non-corrosive sealant.

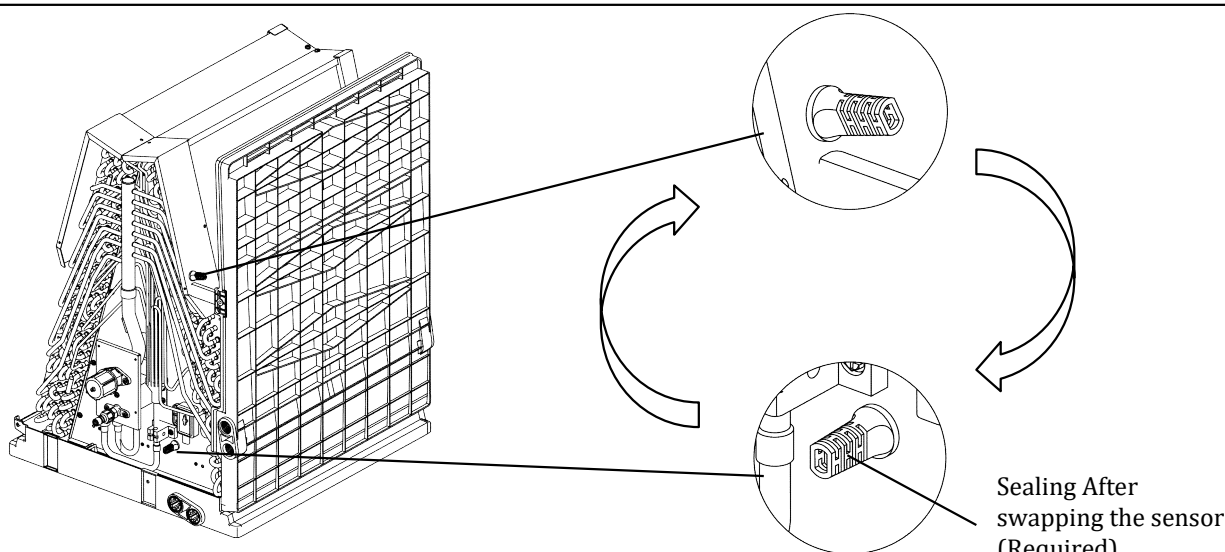


Figure 3-4

3.2 Control Box Installation

1 .Choose Install Location

Figure 3-2-1: Vertical Installation(you can choose front or side)

Figure 3-2-2: Horizontal Installation(you can choose front or top)

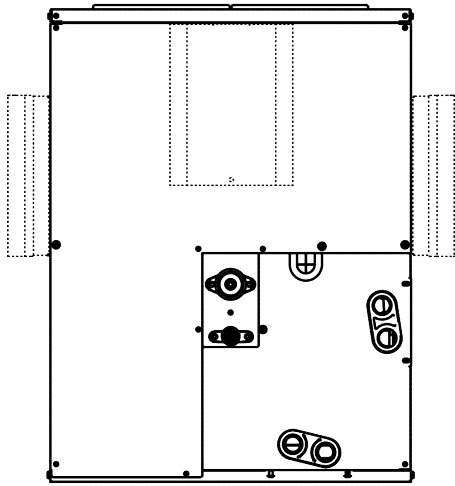


Figure 3-2-1

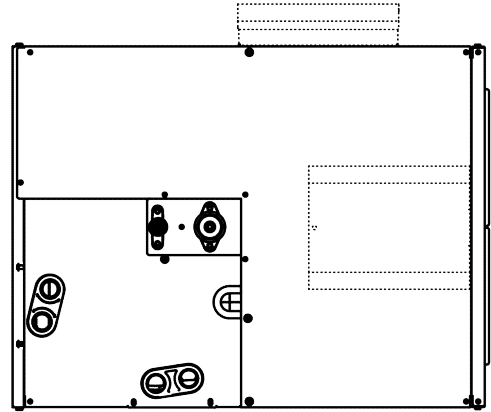


Figure 3-2-2

2.Dismantling the control box

Using a screwdriver,As shown in Figure 3-2-3 , unscrew the screw and open the cover of the control box.

3.Fixed control box

Fix 4 screws which require drilling as shown in Figure 3-2-4(There are drill holes for positioning on the sheet metal).

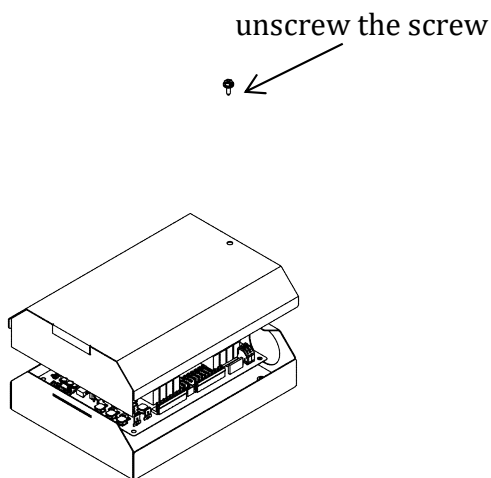


Figure 3-2-3

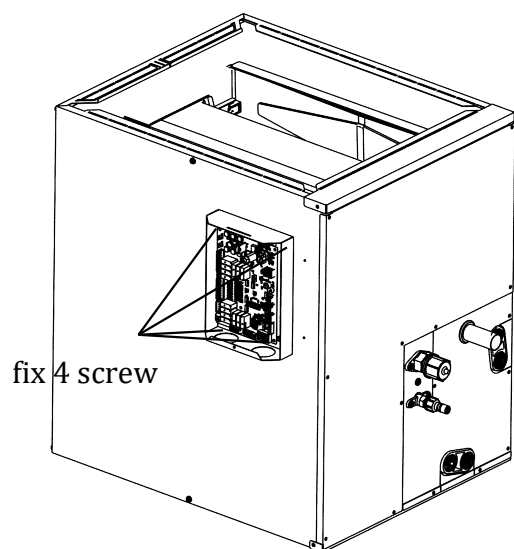


Figure 3-2-4

4. Electrical Wiring

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

WARNING

Disconnect all power to unit before installing or servicing. More than one disconnect switch may be required to de-energize the equipment. Hazardous voltage can cause severe personal injury or death.

4.1 Wiring Diagram

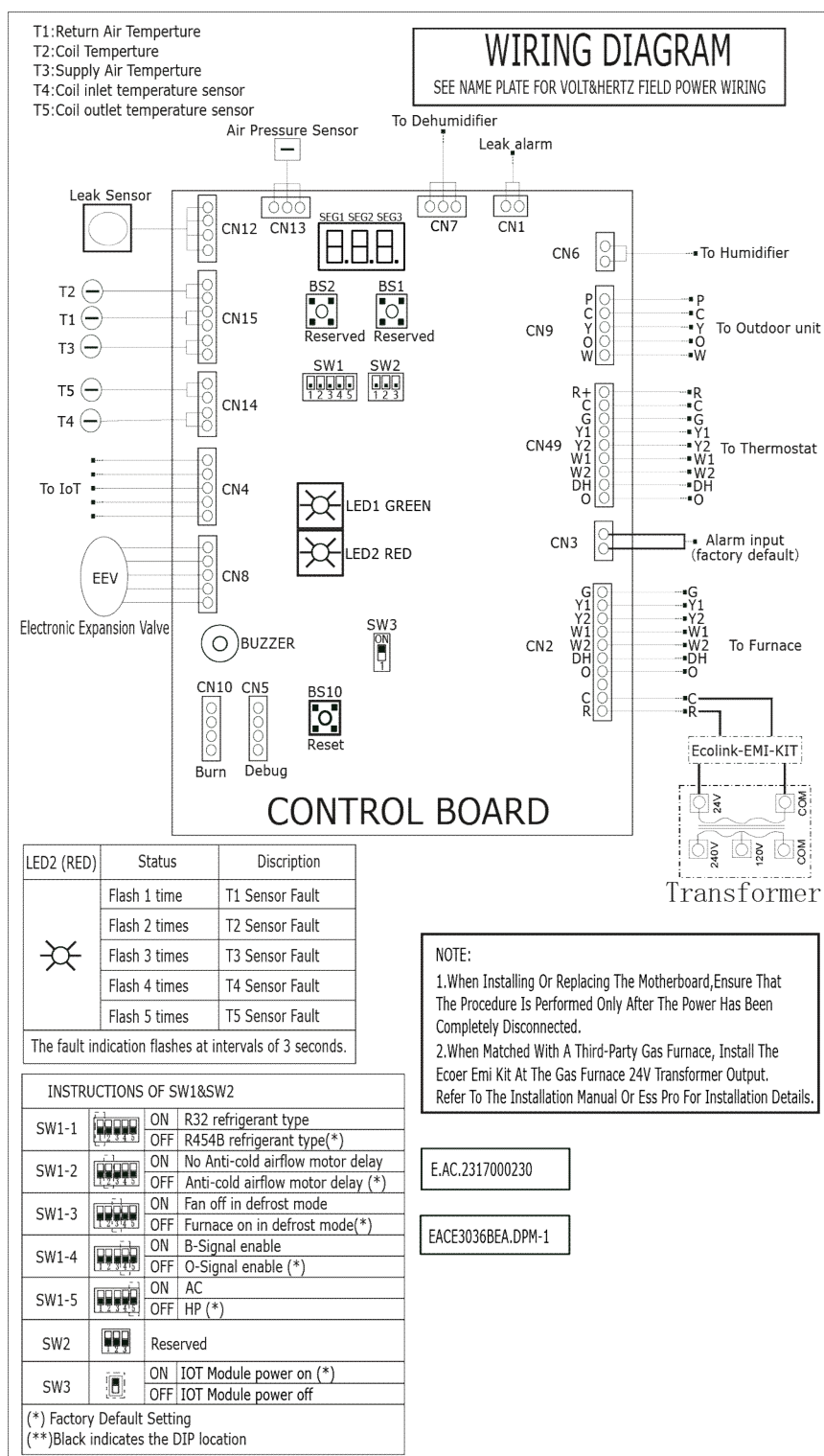


Figure 4-1 Indoor unit Wiring Diagram

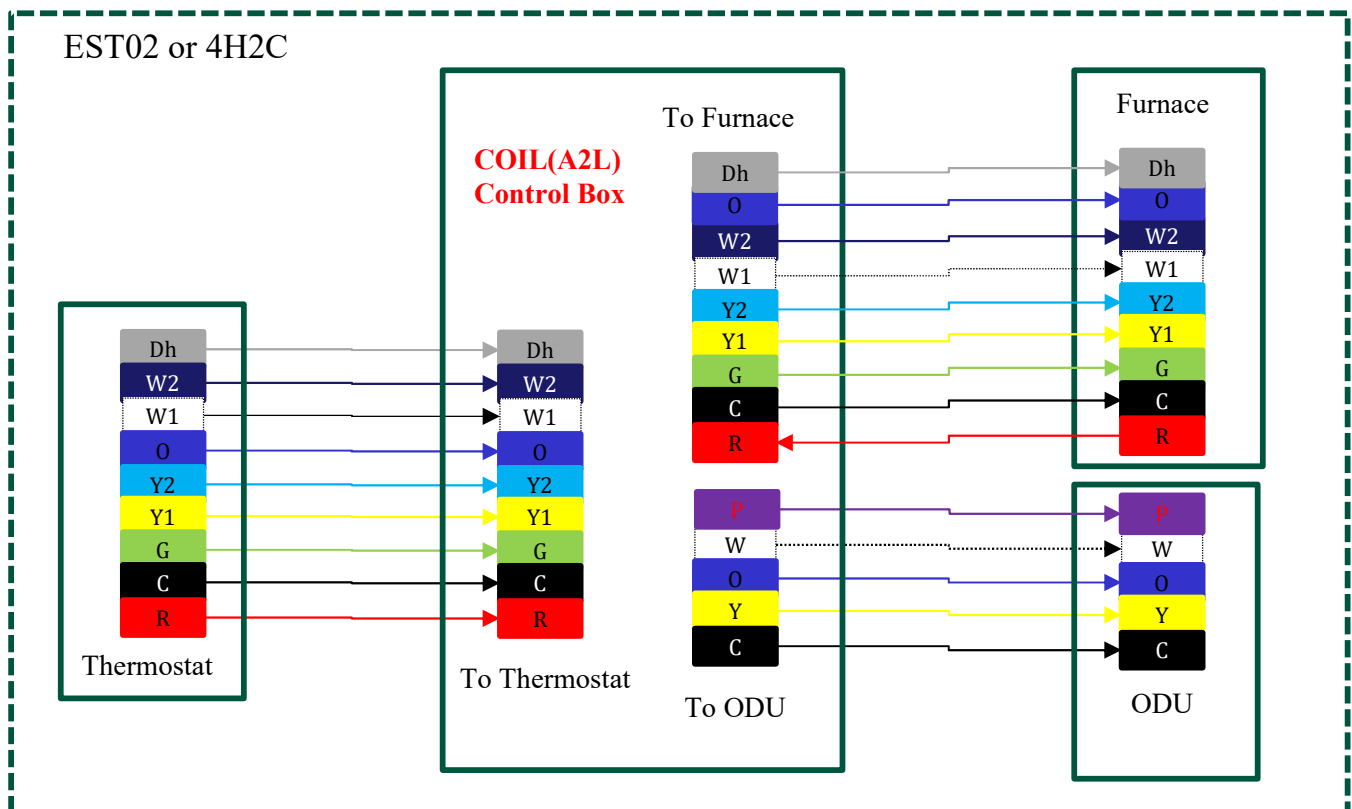
4.2 Control Wiring

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

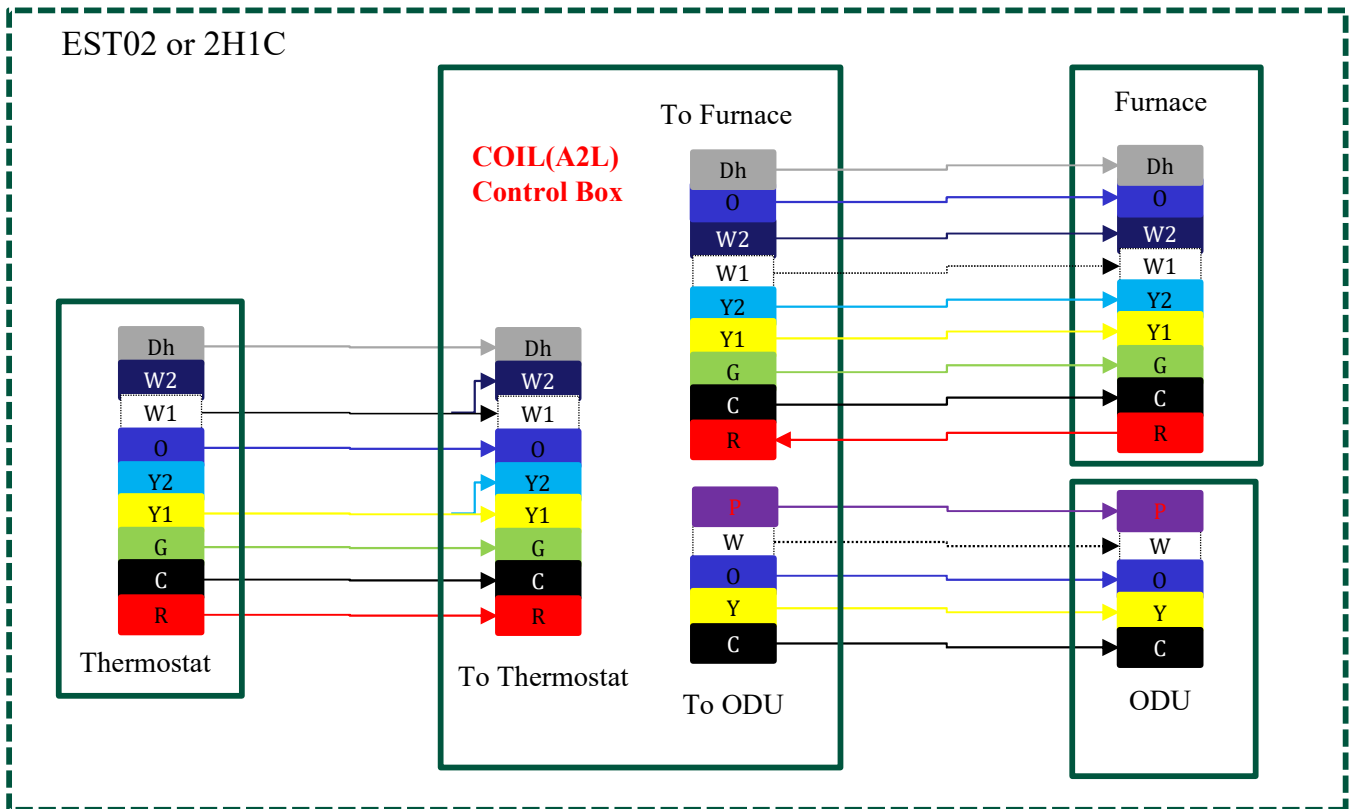
- Low voltage control wiring should be color-coded **18 AWG**. For lengths longer than 150 ft. 16 AWG. wire shall be used and maximum 225 ft.
- Refer to wiring diagrams attached to indoor and outdoor sections to be connected.
- Make sure separation of control wiring and power wiring has been maintained.

4.2.1 Signal Wiring Diagrams : With ECOER HeatPump

- Wiring for 4H2C thermostat

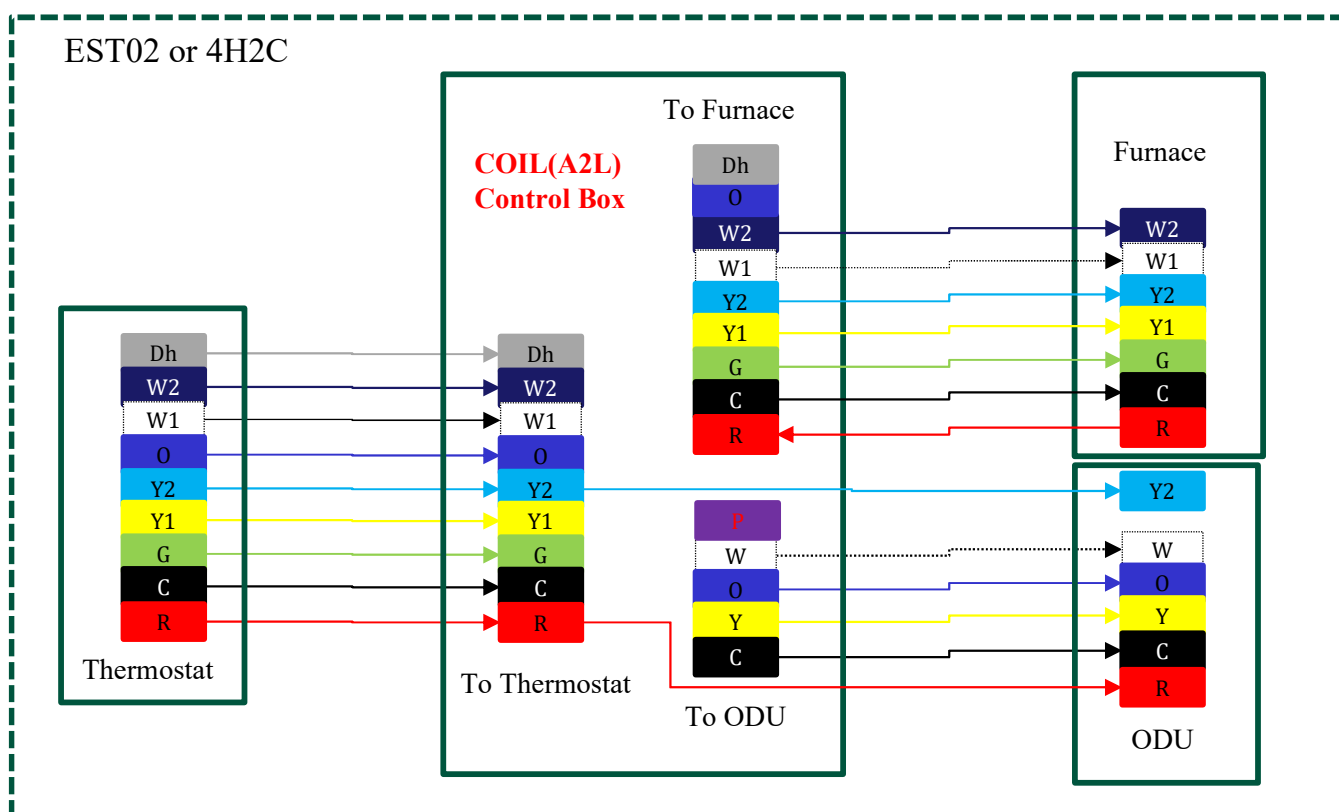


- Wiring for 2H1C thermostat (support auto airflow)

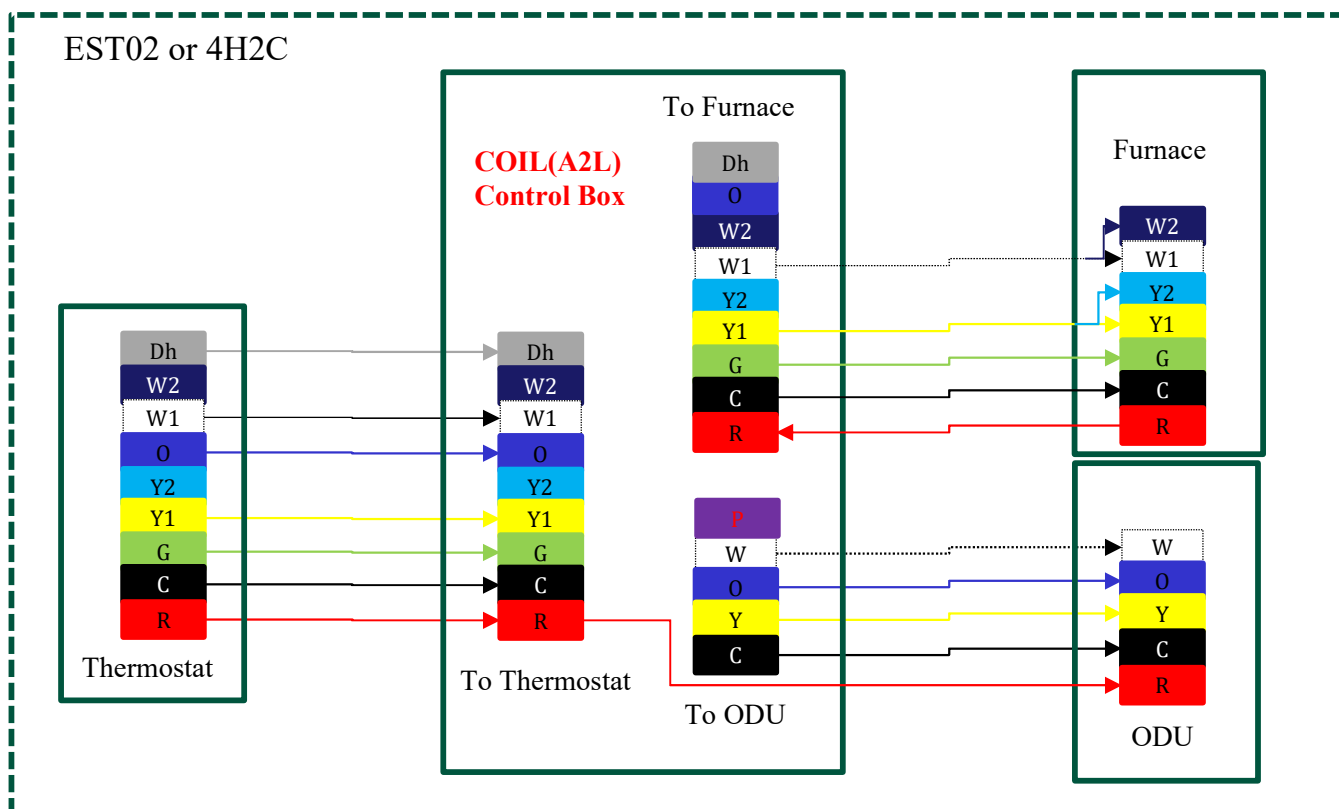


4.2.2 Signal Wiring Diagrams : With the third-party Heat Pump/Furnace

- Wiring for 4H2C thermostat



- Wiring for 2H1C thermostat

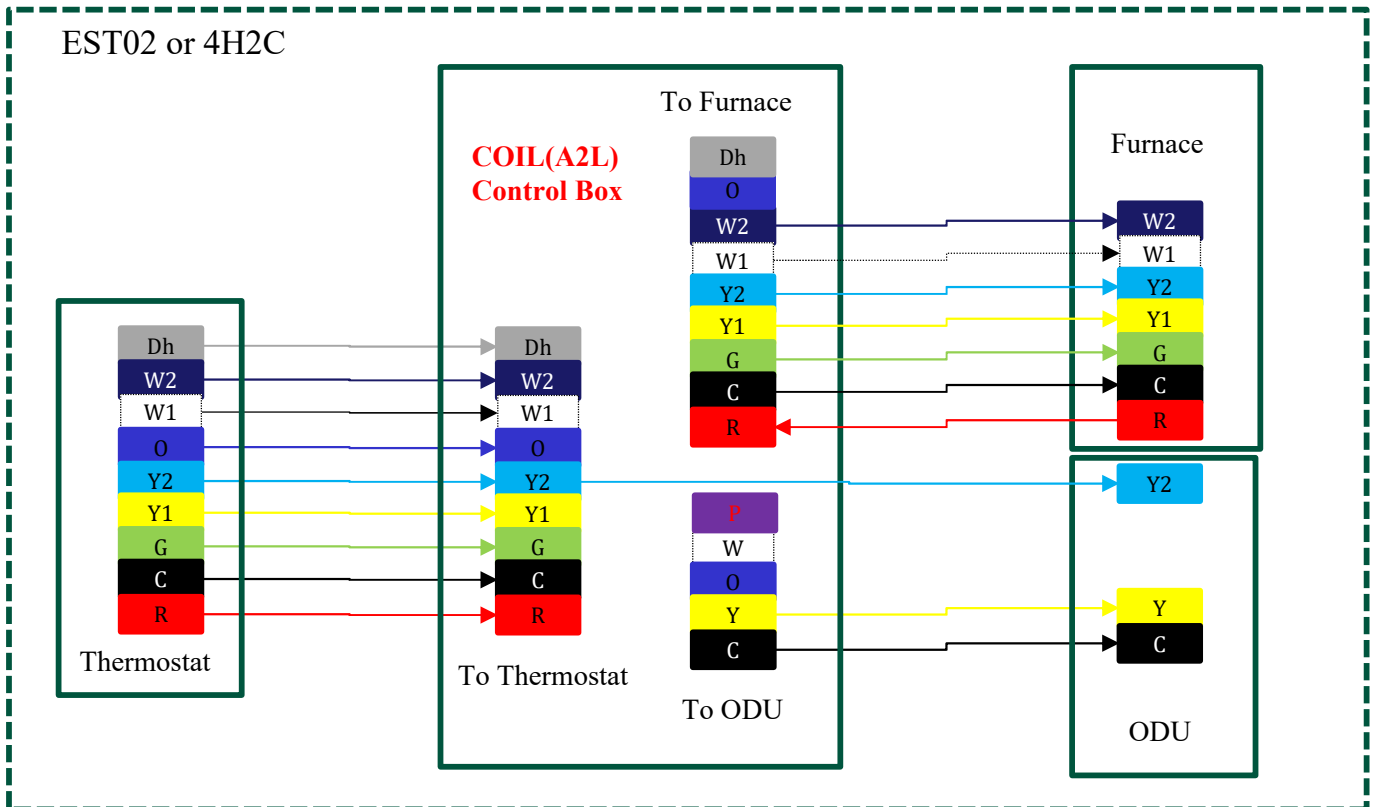


NOTICE

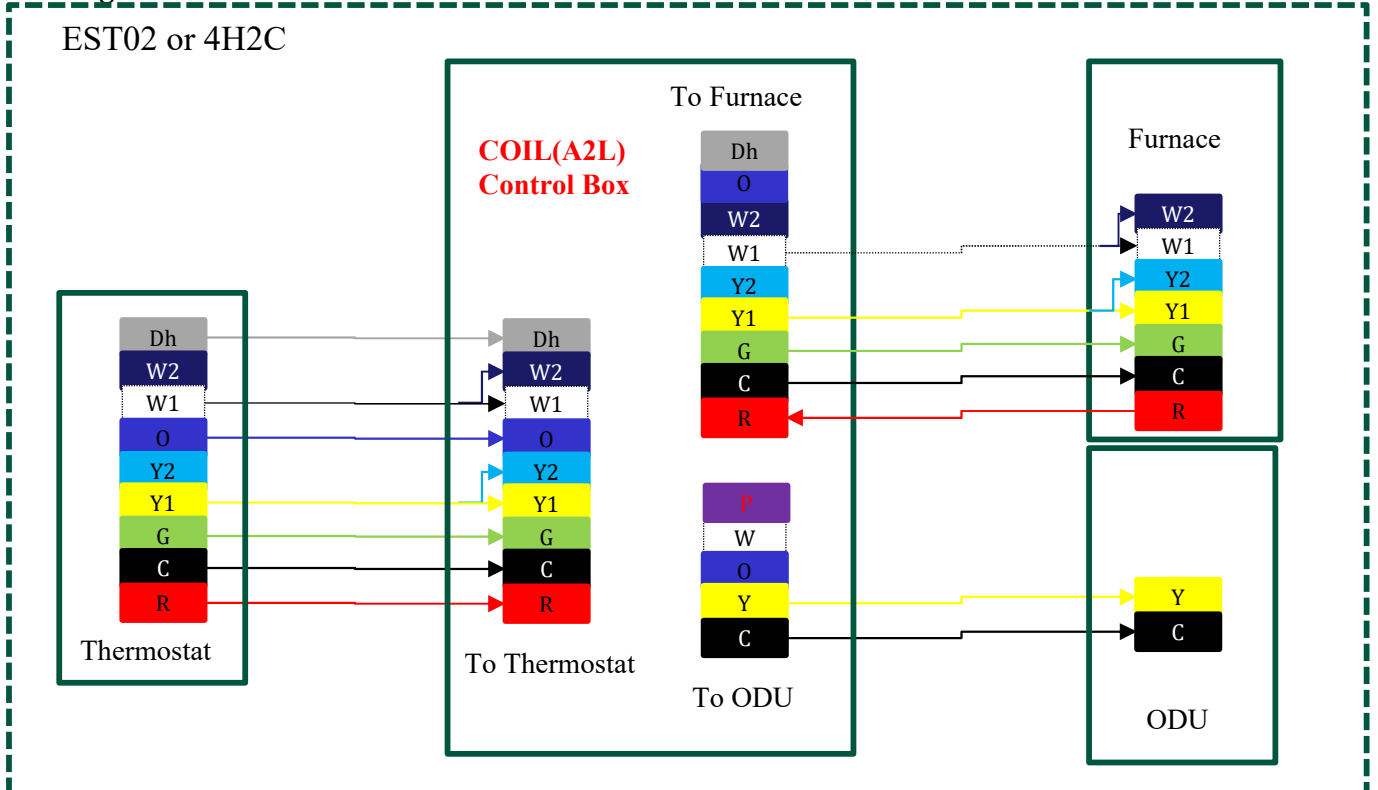
If the third-party ODU does not support capacity adjustment, select 2-stage air volume control by switch

4.2.3 Signal Wiring Diagrams : With the third-party Condenser/Furnace

- Wiring for 4H2C thermostat



- Wiring for 2H1C thermostat



Note:

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. See the installation instructions and requirements of third-party devices on site.

Install the ECOER EMI FILTER at the gas furnace 24V transformer output. Refer to the Figure 4-2.

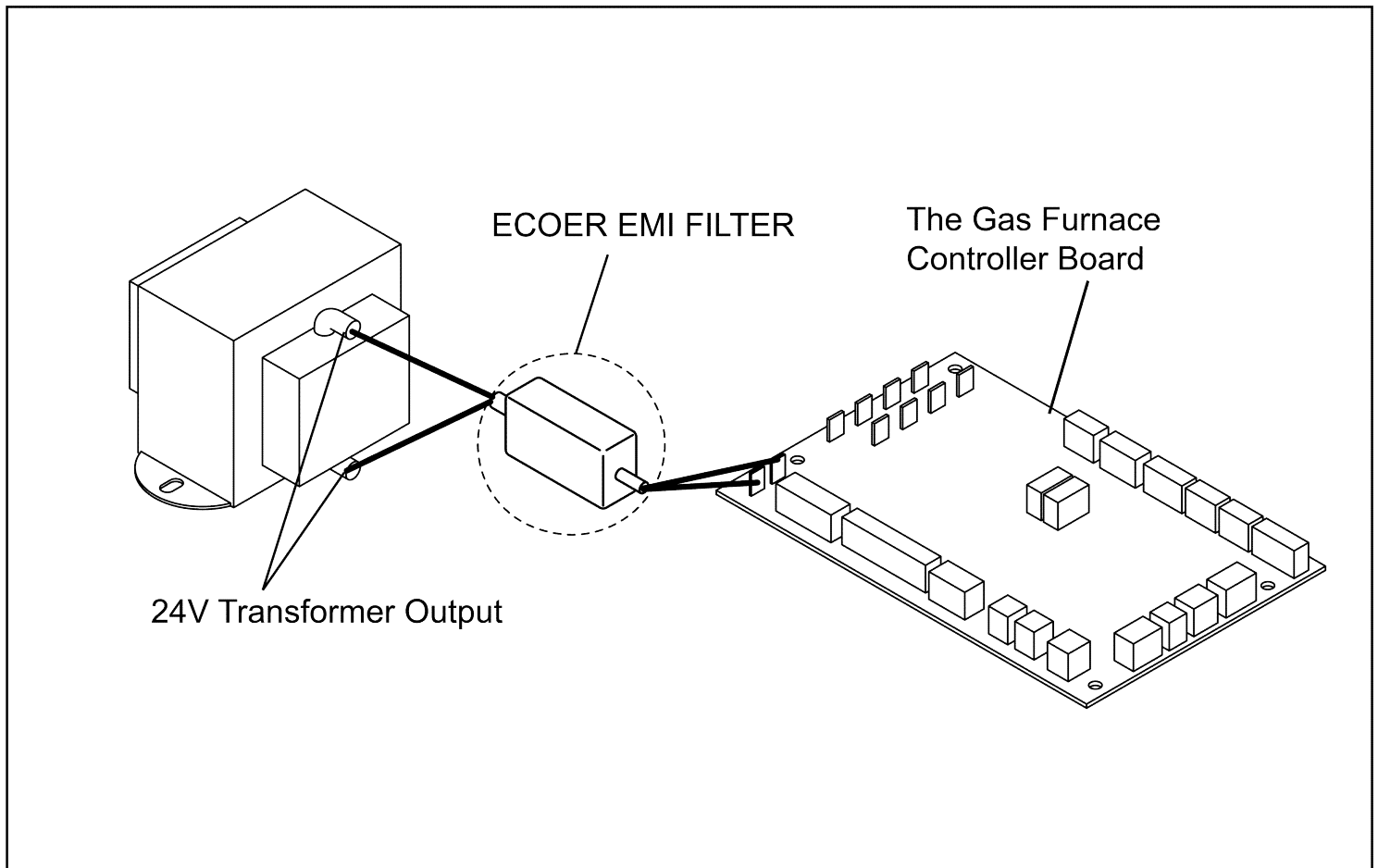


Figure 4-2 ECOER EMI FILTER Installation Instructions

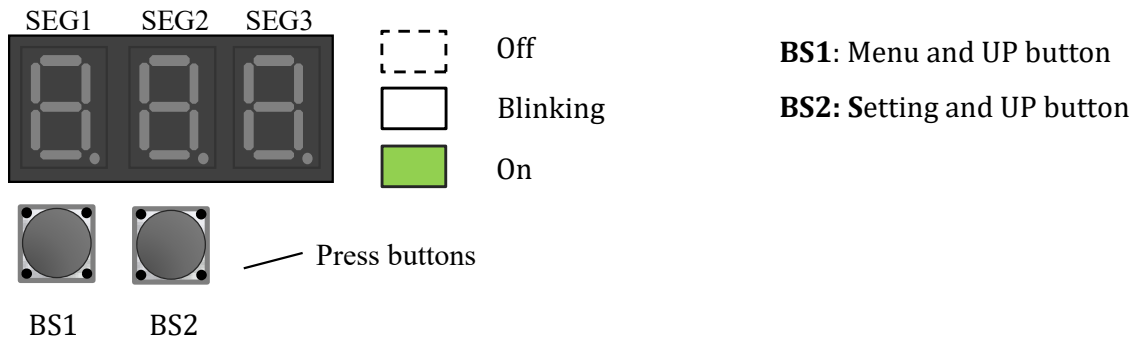
CAUTION

If the rated power of the 24V transformer of the gas Furnace exceeds 40VA, please contact the customer service for assistance before installation.

5. Coil (A2L) Control Function

5.1 Display and buttons

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



5.1.1 Status display

SEG1+SEG3:

It displays codes accordingly if there is damaged sensor and operation status.

SEG1 Code	Description
0	Software is updating through IoT device
1	T1 (T1) fault backup running
2	T2 (T2) fault backup running
3	T3 (T3) fault backup running
4	T4 (T4) fault backup running
5	T5 (T5) fault backup running
C	Cooling mode
H	Heating mode
F	Furnace mode

SEG3 Code	Description
0	Standby
1	Stage 1 (with SEG1)
2	Stage 2 (with SEG1)
2	Fault (without SEG1)



5.1.2 Error code display and list

SEG2+SEG3:

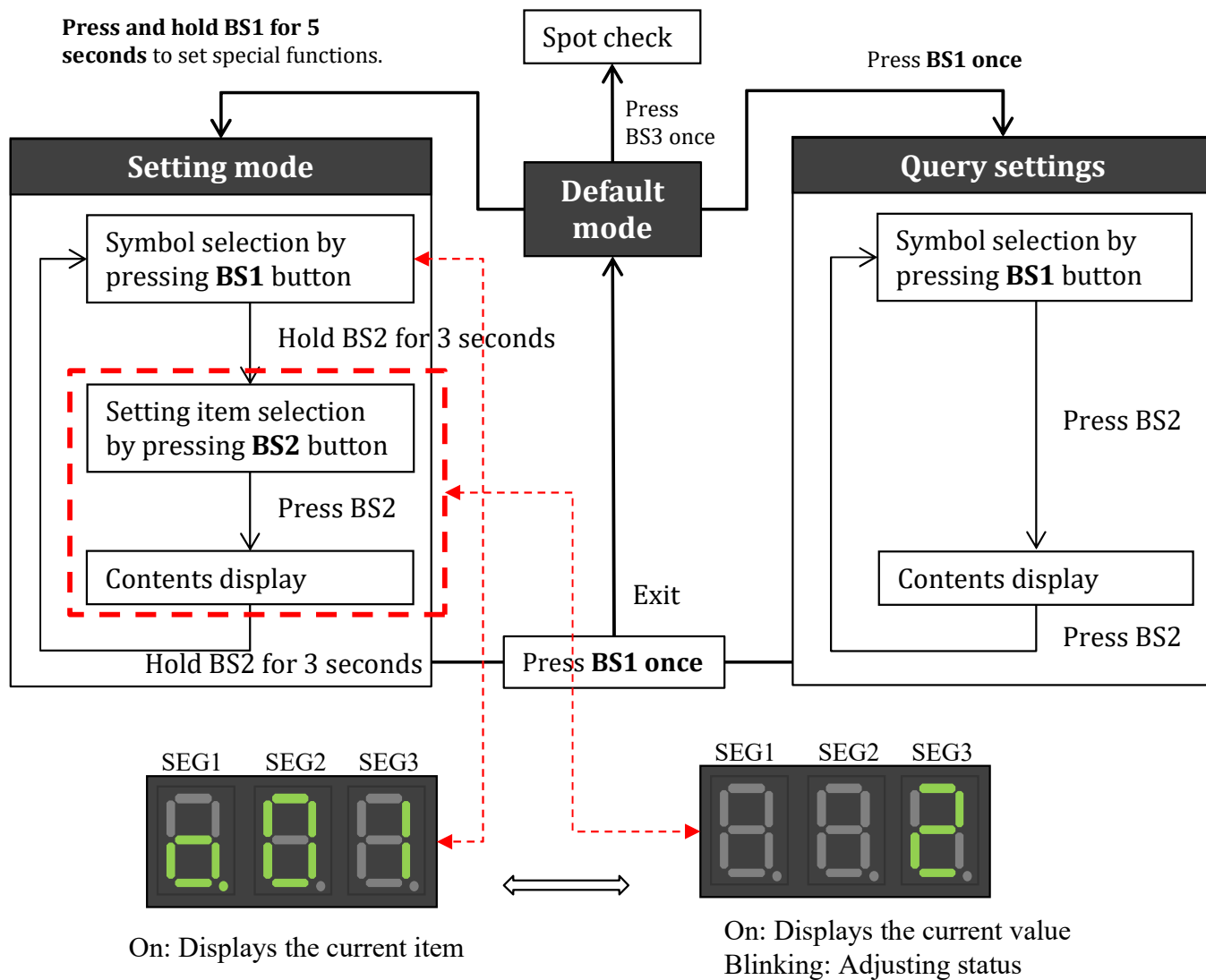
It displays error codes.



Code	Description	Legend
P3	RDS communication fault	Alarm
F1	Return air temperature (T1) sensor fault	Backup running*2
F2	Coil temperature (T2) sensor fault	Backup running*2
F3	Supply air temperature (T3) sensor fault	Backup running*2
F4	Coil inlet temperature (T4) sensor fault	Backup running*2
F5	Coil outlet temperature (T5) sensor fault	Backup running*2
F6	Refrigerant detection (RDS) sensor fault	Alarm
H0	Overflow switch alarm	Alarm
H1	RDS Leakage fault	Alarm
H2	High static pressure(supply air) alarm	
H3	Low static pressure(return air) alarm	

5.1.3 Setting or query by pressing buttons

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



5.1.4 Setting mode

Press and Hold BS1 button for five(5) seconds to enter the parameter setting interface.

Symbol	Function	Item	Description
a01	Dualfuel changepoint Temp.	0	Changepoint temp. is 50°F
		1 (factory)	Changepoint temp. is 40°F
		2	Changepoint temp. is 35°F
		3	Changepoint temp. is 30°F
		4	Changepoint temp. is 25°F
		5	Changepoint temp. is 20°F
		6	Changepoint temp. is 15°F
		7	Changepoint temp. is -3°F
		8	Changepoint temp. is -22°F
a02	HVAC equipment AC/HP	0 (factory)	HP
		1	AC
a18	Product series	0	Defrost in heavy snow area
		1 (factory)	Standard mode
		2	Defrost in light snow area
a19	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)
a20	Night silent setting- start time	0	17:00
		1 (factory)	18:00
		2	19:00
		3	20:00
		4	21:00
a21	Night silent setting- end time	0	5:00
		1 (factory)	6:00
		2	7:00
		3	8:00
		4	9:00

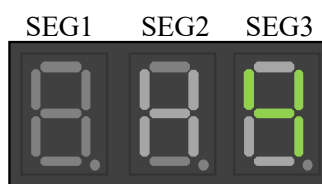
5.1.5 Query mode(spot check)

Example: Code number

Press BS3 button to enter the parameter query mode.



Detailed information



No.	Number content	Example	Description
Default	Refer to default display instructions	C 1	C: Cooling 0: Blank 1: Stage1
01-	Operation State	4	Cooling
02-	Evap superheat	18	18°F
03-	Electronic expansion valve opening	360	360pls
04-	Return room temp. (TRA)	75	75°F
05-	Coil temp. (TIC)	50	50°F
06-	Supply airflow temp. (TSA)	55	55°F
07-	Coil inlet temp. (TICi)	52	52°F
08-	Coil outlet temp. (TICo)	55	55°F
09-	Evap superheat setting(ESHs)	1.5	1.5°F
10-	Refrigent dectect sensoer. (RDS)	0.5	0.5LFL
11-	Product series	2	2 series
12-	Main software version	25	Ver 1025
13-	Current fault	E1	Display up to 5 * codes
14-	The last fault	F1	--: none
15-	Fault before the last fault	F2	--: none

5.2 Coil (A2L) Control Function setting

NOTICE: When the switch is adjusted, it is necessary to power on again or press the reset button on PCB.

SW1 Dip switch		Description	
NO.	Setting item	Status	Content
1	Refrigerant type	ON	R32
		OFF (factory)	R454B
2	Anti-cold airflow delay	ON	Disable
		OFF (factory)	Enable
3	Defrosting operation	ON	Stop the fan signal
		OFF (factory)	Gas compensation
4	O/B signal	ON	B
		OFF (factory)	O
5	Hvac equipment	ON	AC
		OFF (factory)	HP

5.2.1 Refrigerant type setting

Model	Refrigerant type setting by SW1		Remark
	SW1-1	Airflow motor mode setting	
All	ON	R32	/
	OFF	R454B	Default

This unit is compatible with various refrigerants and can be set as needed. However, this is not the only method..

5.2.2 Anti-cold airflow delay in heating

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

Model	Type	Delay entry meets the conditions	Action	Remark
All	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	/

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 .

5.2.3 Defrosting operation setting

Model	Defrosting operation setting in heating		Remark
	SW1-3	Defrosting operation setting	
All	ON	Stop the air supply	/
	OFF	Gas compensation	Default

For the setting of the two response methods, during defrosting, the gas heating is activated, or or the fan signal is turned off.

5.2.4 O/B signal support

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

The unit supports the O/B signal setting by SW1.

5.2.5 HVAC equipment setting

Model	HVAC equipment setting by SW1		Remark
	SW1-5	HVAC equipment setting	
All	ON	Air conditioner	/
	OFF	Heat Pump	Default

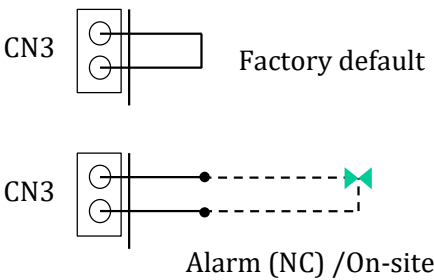
This unit supports the configuration of HVAC equipment types, and it must be set correctly.

5.2.6 Alarm input

Support's overflow switch alarm input to shut down the HVAC system. The CN3 terminal is in the normally closed state.

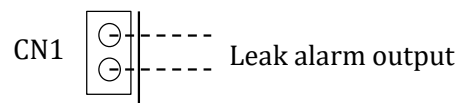
If overflow switch needs to be connected, please replace the normally closed terminal wire with the connecting terminal wire in the accessory bag, and then connect the overflow switch.

Note that the overflow switch should be a normally-closed type switch.



5.2.7 Refrigerant Leak Alarm output

An alarm output(CN1) can be utilized if actions are required when a fault is present. This is a passive outlet port, so you will need to input a voltage signal (24V). The relay is normally open for normal operation, and closed when a fault condition is active.



5.2.8 Refrigerant Leak Alarm Sound

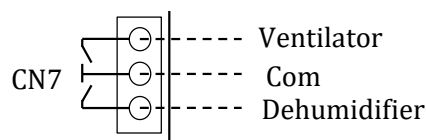
When the R32/R454B leaks or the leak sensor fails, the indoor unit is ventilated, the ODU stops running, and a continuous warning sound is emitted.



5.2.9 Dehumidifier support

When paired with the EST02 thermostat, the PCB supports control of the ventilator and dehumidifier.

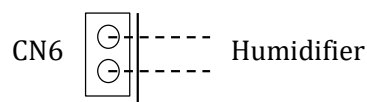
This is a passive outlet port, so you will need to input voltage signal (24 V). The relay is normally open without demand and closed with demand.



5.2.10 Humidifier support

When paired with the EST02 thermostat, the PCB supports control of the humidifier.

When humidification is required, the CN6 terminal will output a 24V signal.



6. Airflow Performance

6.1 Airflow Performance [CFM vs Pressure Drop]:

Model	Pressure Drop(Inchs of Water)								
	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45
EACE2430BEA	337	527	670	792	900	995	1091	1171	1256
EACE3036BEA	337	527	670	792	900	995	1091	1171	1256
EACE4248CEA	461	700	881	1032	1176	1303	1418	1521	1620
EACE4860CEA	461	700	881	1032	1176	1303	1418	1521	1620

NOTE
Data based on wet coil with entering air at 80°F DB / 67°F WB without air filter.

Model	Maximum airffow setting(CFM)			
	Upffow	Horizontal Right	Horizontal Left	Downffow
EACE2430BEA	1200	1200	1200	1100
EACE3036BEA	1200	1200	1200	1100
EACE4248CEA	1700	1700	1700	1600
EACE4860CEA	1700	1700	1700	1600

Note
The recommended rated airflow should be no less than 300 CFM per ton, or the specified value for the model combination.

WARNING
Water blow-off could occur in certain installation positions if the airflow setting exceeds the maximum values listed.

7. Ductwork

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

WARNING

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

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

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

IMPORTANT

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

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

8. Pipe Connections

8.1 Condensate Drain Connection

1. Use a thin layer of Teflon paste, silicone or Teflon tape when making drain fitting connections.
2. Do not over tighten fittings resulting in splitting pipe connections on the drain pan.

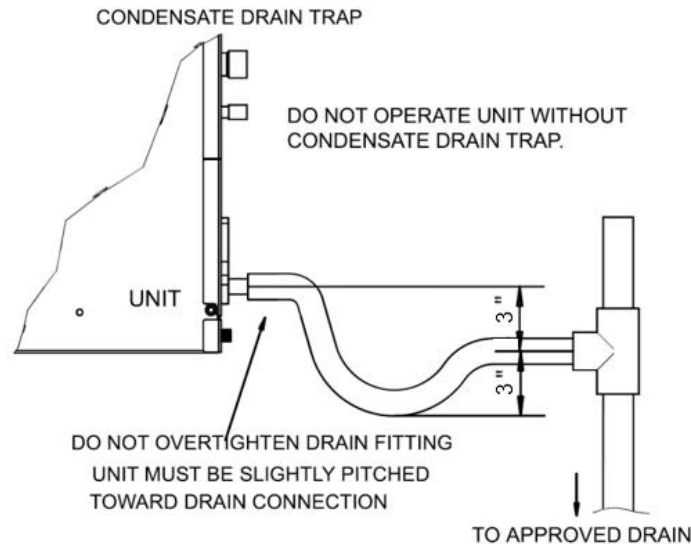


Figure 8-1 Condensate drain trap

- Make sure the drain pipes layout do not block service access. Minimum clearance of 24 inches is required for filter, coil or blower removal and service access.
- Ensure the unit is level or pitched slightly toward primary drain connection so that water will drain smoothly from the pan. All horizontal drain pipes must be pitched downward away from the unit a minimum of 1/8" per foot of line to ensure proper drainage.
- Do not reduce drain pipe size less than connection size provided on condensate drain pan.
- Do not connect condensate drain pipe to a closed or open sewer pipe.
- The drain pipe should be insulated where necessary to prevent sweating and damage due to condensate forming on the outside surface of the line.
- Make provisions for disconnecting and cleaning of the primary drain pipe if it become necessary. Install a 3-inch trap in the primary drain pipe as close as possible to the unit. Make sure that the top of the trap is below connection to the drain pan to allow complete drainage of pan.
- Auxiliary drain pipe should be connected to a place where it will be noticeable. Homeowner should be warned that a problem exists if water begins running from the auxiliary drain pipe.
- Test condensate drain pan and drain pipe after installation is complete. Pour enough water into drain pan, make sure that the drain pan is draining completely, no leaks are found in drain pipe fittings, and no water is draining from the termination of the primary drain pipe.
- Install a trap in the drain line below the bottom of the drain pan. If using a copper drain line, solder a short piece of pipe to the connector before installing a drain fitting. DO NOT over torque the 3/4" copper connector to the plastic drain connection. Use a wet rag or heatsink material on the short piece to protect plastic drain pan, complete the drain line installation (Fig.9). Use (Fig.10) as a template for typical drain pipe routing. This figure shows how to avoid interference with vent piping.

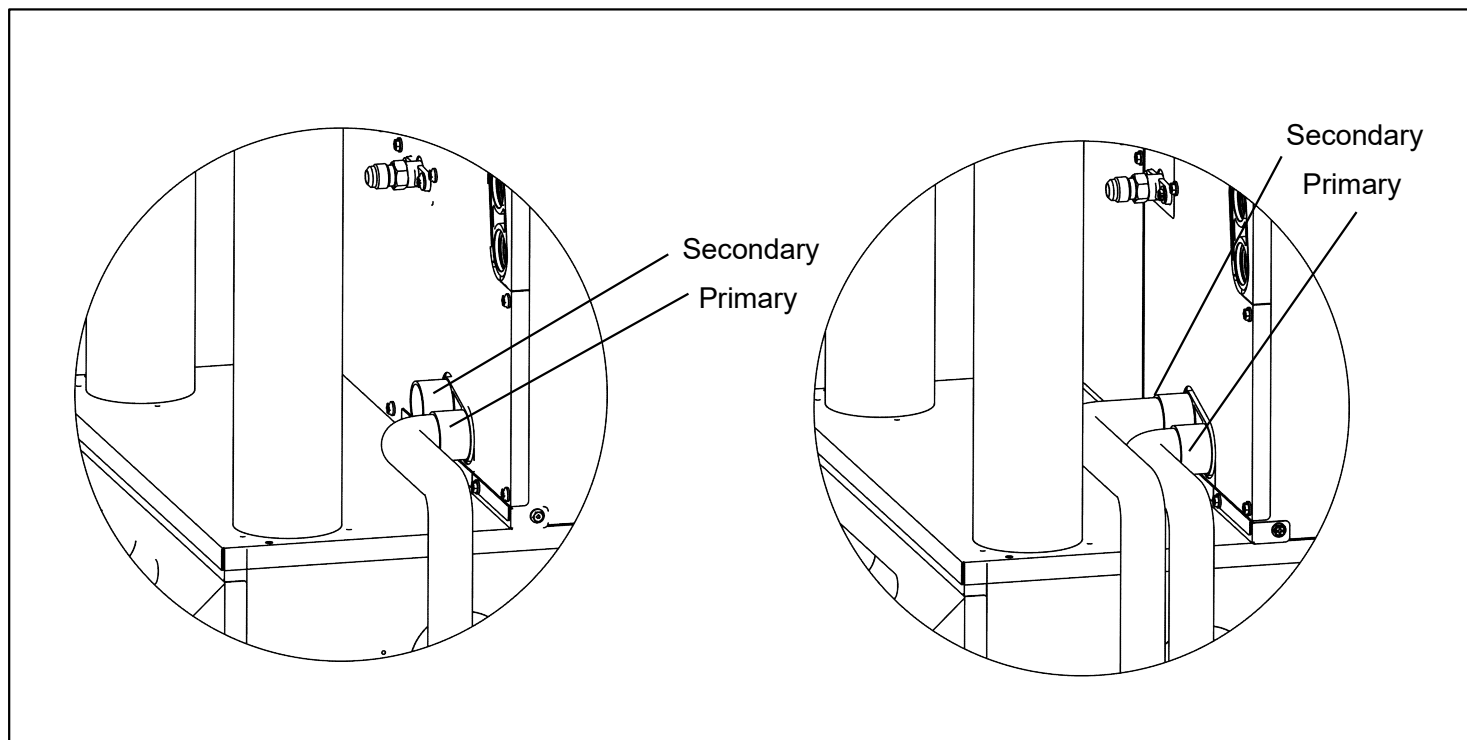


Figure 9、10

8.2 Refrigerant piping connection

WARNING

All field piping must be completed by a licensed technician and must comply with the local and national regulations.

- When the air conditioner is installed in a small room, measures must be taken to prevent the refrigerant concentration in the room from exceeding the safety limit in the event of refrigerant leakage. If the refrigerant leaks and its concentration exceeds its proper limit, hazards due to lack of oxygen may result.
- When installing the refrigeration system, ensure that air, dust, moisture or foreign substances do not enter the refrigerant circuit. Contamination in the system may cause poor operating capacity, high pressure in the refrigeration cycle, explosion or injury.
- Ventilate the area immediately if there is refrigerant leakage during the installation. Leaked refrigerant gas is both toxic and may be flammable. Ensure there is no refrigerant leakage after completing the installation work

Dimension specification of connecting pipe

Name	Model	Pipe specification		Remark
		Liquid Side	Gas Side	
Connecting pipe assembly	EACE2430BEA	Φ3/8in(Φ9.52mm)	Φ3/4in(Φ19mm)	Pipes are not included in the accessories and you need to purchase it separately from the local dealer
	EACE3036BEA	Φ3/8in(Φ9.52mm)	Φ3/4in(Φ19mm)	
	EACE4248CEA	Φ3/8in(Φ9.52mm)	Φ7/8in(Φ22mm)	
	EACE4860CEA	Φ3/8in(Φ9.52mm)	Φ7/8in(Φ22mm)	

Air-Handler Air Conditioners Refrigerant Piping Connection

The machine is equipped with two refrigerant connection pipes assemblies, which support both brazing and ZoomLock connection methods during installation.

Option 1: Refrigerant Line Brazing Connection

Remove the two plastic nuts on top of the machine to release the nitrogen stored inside the evaporator (see Figure 7-2).

Secure the refrigerant connection pipe assembly to the machine's pre-installed threaded joints using a threaded connection method .(Tightening torque is shown in Table)

The copper pipes can rotate 360 degrees, and the brazing ends of the copper pipes can be adjusted to meet the installation requirements (see Figure 7-3).

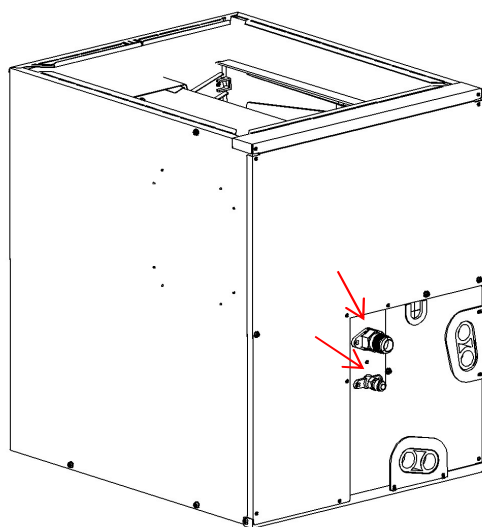


Figure 7-2

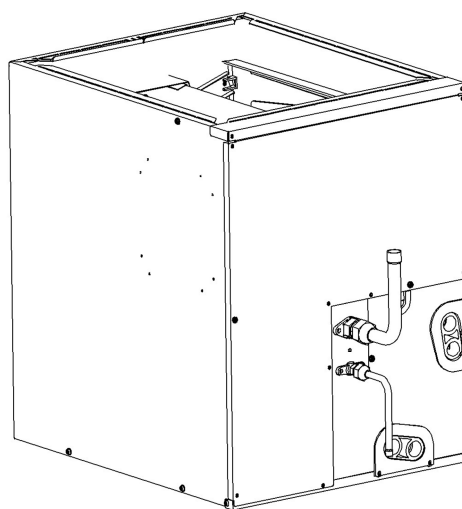


Figure 7-3

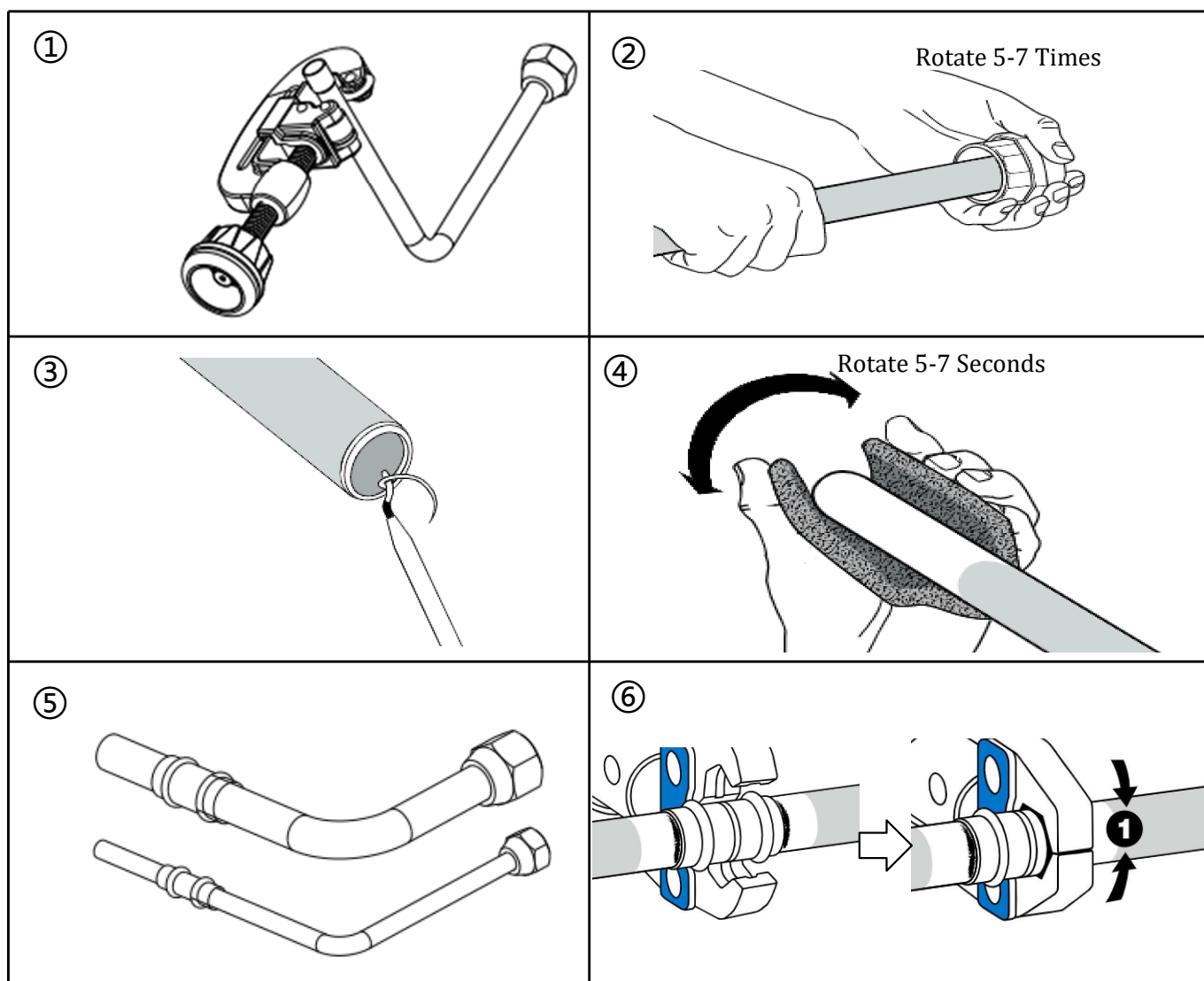
Tightening torque

Pipe gauge	Tightening torque
$\Phi 3/8\text{in}(\Phi 9.52\text{mm})$	32~39 N.m (320~390kgf.cm)
$\Phi 3/4\text{in}(\Phi 19\text{mm})$	67~87N.m (670~870kgf.cm)
$\Phi 7/8\text{in}(\Phi 22\text{mm})$	75~95N.m (750~950kgf.cm)

Option 2: Refrigerant Line Press Fitting Connection

This Press Fitting connection operation is for reference only. Please follow the official instructions provided by Press Fitting Tools for operation.

1. Use a rotary tube cutter to cut off the flaring structure of the copper tube.
 2. Using a reamer or deburring tool, remove all burrs from the cut section of the pipe.
 3. Use a pencil type deburrer on internal tube edges.
 4. Thoroughly clean the tube end using a general purpose hand pad or sand cloth in a rotating motion.
 5. Insert the tube fully into the fitting. Ensure tube is fully inserted prior to pressing
 6. Align jaws squarely on the fitting, complete the joint with the approved tool. Press once only.
- The Press Fitting connection has been completed.



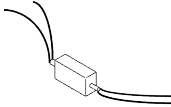
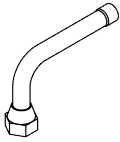
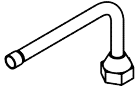
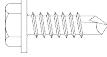
NOTICE

Do not deform pipe while cutting. Be extra careful not to damage, kink, or deform the pipe while cutting. This will drastically reduce the heating performance. The on-site operations should comply with the requirements of local standards.

9. ACCESSORIES

The air conditioning system comes with the following accessories. Use all of the installation parts and accessories to install the air conditioner. Improper installation may result in water leakage, electrical shock and fire, or equipment failure.

9.1 ACCESSORIES (packed with the indoor unit)

No	Name	Picture	Quantity	Remark
1	Installation Manual		1	
2	Ecoer Emi Filter		1	For installation on the gas furnace
3	Fitting Nut Assembly#1		1	Φ3/4in For EACE2430BEA/EA CE3036BEA, Φ7/8in For EACE4248CEA/EA CE4860CEA
4	Fitting Nut Assembly#2		1	Φ3/8in(Φ9.52mm)
5	Alarm Signal Input Line		1	
6	Alarm Signal Output Line		1	
7	Screw		4	ST4.2*16 (For the installation of the control box)
8	Sponge Rubber Seal		1	

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