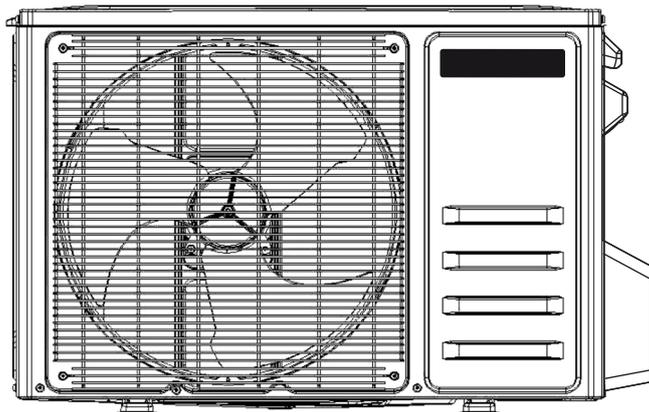
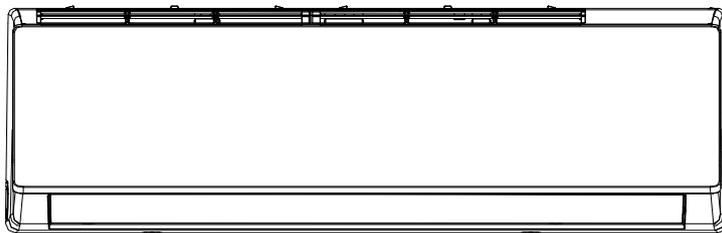


**INSTALLATION MANUAL**

**115V SINGLE ZONE SYSTEM  
SPLIT-STYLE HEAT PUMP**

DREW09S2AL/ DRE1U09S2A,  
DREW12S2AL/ DRE1U12S2A

**R-454B 115V 1ph 60 HZ**



Model Number:

Serial Number:

Purchase Date:

Installing Contractor Company Name:



**TIP**

Capture relevant information about your Durastar mini-split equipment before it is installed and write it above for future reference.

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## INTRODUCTION

To better serve you, please do the following before contacting customer service:

- If you received a damaged product, immediately contact the retailer or dealer that sold you the product.
- Read and follow this manual carefully to help you use and maintain your air handler.
- Read the troubleshooting section of this manual as it will help you diagnose and solve common issues.
- Visit us on the web at [www.durastar.com](http://www.durastar.com) to download product guides and up-to-date information.
- If you need warranty service, our friendly customer service representatives are available via email at [questions@durastar.com](mailto:questions@durastar.com) or by telephone at 1-888-320-0706.

## SYMBOLS USED IN THIS MANUAL



**WARNING:** The warning symbol indicates personal injury or loss of life is possible. Extra care and precautions should be taken to ensure the user's safety.



**CAUTION:** The caution symbol indicates property damage or other serious consequences could occur.



**NOTE:** The pencil indicates any manufacturer notes relating to surrounding content. These may include further clarifications or call-outs.



**TIP:** A light bulb symbol indicates suggested manufacturer tips for the user to get the most out of the Durastar equipment and to accommodate the best user experience.



Refrigerant  
Safety Group  
A2L

**WARNING:**

RISK OF FIRE DUE TO FLAMMABLE MATERIALS  
Follow handling instructions carefully in compliance with national regulations.

### Explanation of symbols displayed on the unit

	<b>CAUTION</b>	This symbol shows that the operation manual should be read carefully.
	<b>CAUTION</b>	This symbol shows that a service personnel should be handling this equipment with reference to the installation manual.
	<b>CAUTION</b>	This symbol shows that information is available such as the operating manual or installation manual.

**WARNING**

Turn off the air conditioner and disconnect the power before installing, cleaning, or repairing the air conditioner. Failure to do so can cause electric shock.

## IMPORTANT SAFETY PRECAUTIONS

Improper handling can cause serious damage or injury. Please read the following safety information in its entirety.



### Operation, Cleaning, and Maintenance Safety Precautions

- Children and people with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, should only use, clean, or maintain this air conditioner if they are given supervision or instructions concerning use of the air conditioner in a safe way and understand the hazards involved. Children should not play with the air conditioner.
- Maintenance or repair must be performed by qualified professionals. Otherwise, you may experience personal injury or damage to the air conditioner and surrounding property.
- Disconnect the power supply by turning it off at the circuit breaker when cleaning, maintaining, or repairing the air conditioner. Otherwise, you could risk electric shock.
- When turning the unit on or off via the emergency operation switch, press the switch with an insulated object other than metal.
- If the below problems occur, please turn off the air conditioner and disconnect power at the circuit breaker immediately. Then contact your dealer or a qualified professional for service.
  - The power cord is overheating or damaged.
  - There is an abnormal sound during operation.
  - The circuit breaker trips frequently.
  - The air conditioner gives off a burning smell.
  - The indoor unit is leaking.
- Do not block the air outlet or air inlet. This could cause a malfunction.
- Never stick fingers or any other body parts into the air conditioner openings. The internal fan may be rotating at high speeds, and may result in injury.
- Do not spill water on the remote control as this can permanently damage the remote.
- Do not spray water on the indoor unit. This could cause electric shock or a unit malfunction.
- Do not clean the air conditioner with excessive amounts of water.
- Do not clean the air conditioner with combustible cleaning agents; they can cause fire or deformation.
- After removing the filter, do not touch the fins in order to avoid injury.
- Do not use fire or a hair dryer to dry the filter. This could cause a deformation or fire hazard.
- Do not step on the top panel of the unit, or put heavy objects on the top panel. This could cause damage or personal injury.
- Do not use flammable materials such as hair spray, lacquer, or paint near the air conditioner as they may catch fire.
- Do not operate the air conditioner in places near combustible gases. Emitted gases may collect around the air conditioner and cause an explosion.
- Do not operate your air conditioner in a wet room such as a bathroom or laundry room. Too much exposure to water can cause electrical components to short circuit.
- If the air conditioner is used together with burners or other heating devices, thoroughly ventilate the room to avoid oxygen deficiency.



### **Electrical Safety**

- Do not modify the length of the power supply cord or use an extension cord to power the unit.
- If the supply cord is damaged, it must be replaced by the manufacturer, a service agent, or a similarly qualified person in order to avoid a safety hazard.
- Keep power plug clean. Remove any dust or grime that accumulates on or around the plug. Dirty plugs can cause fire or electric shock.
- Do not pull power cord to unplug unit. Hold the plug firmly and pull it from the outlet. Pulling directly on the cord can damage it, which can lead to fire or electric shock.
- Do not share the electrical outlet with other appliances. Improper or insufficient power supply can cause fire or electrical shock.
- The product must be properly grounded at the time of installation, or electrical shock may occur.
- For all electrical work, follow all local and national wiring standards and regulations. Connect cables tightly, and clamp them securely to prevent external forces from damaging the terminal. Improper electrical connections can overheat and cause fire, and may also cause shock. All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.
- All wiring must be properly arranged to ensure that the control board cover can close properly. If the control board cover is not closed properly, it can lead to corrosion and cause the connection points on the terminal to heat up, catch fire, or cause electrical shock.
- If connecting power to fixed wiring, an all-pole disconnection device which has at least 3mm clearances in all poles, and have a leakage current that may exceed 10mA, the residual current device(RCD) having a rated residual operating current not exceeding 30mA, and disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.
- The air conditioner's circuit board (PCB) is designed with a fuse to provide over-current protection. The specifications of the fuse are printed on the circuit board.



### **Installation Safety**

- Installation must be performed by an authorized dealer or specialist. Improper installation can cause water leakage, electrical shock, or fire. (In North America, installation must be performed in accordance with NEC and CEC requirements by authorized personnel only.)
- Installation must be performed according to the installation instructions. Improper installation can cause water leakage, electrical shock, or fire.
- This air conditioner shall be installed in accordance with national and local wiring regulations.
- Contact an authorized service technician for repair or maintenance of this unit.
- Only use the included accessories, parts, and specified parts for installation. Using non-standard parts can cause water leakage, electrical shock, fire, and can cause the unit to fail.
- Install the unit in a firm location that can support the unit's weight. If the chosen location cannot support the unit's weight, or the installation is not done properly, the unit may fall and cause serious injury and damage.
- Install drainage piping according to the instructions in the installation manual. Improper drainage may cause water damage to your home and property.
- For units that have an auxiliary electric heater, do not install the unit within 3 feet (1 meter) of any combustible materials.
- Do not install the unit in a location that may be exposed to combustible gas leaks. If combustible gas accumulates around the unit, it may cause a fire.

- Do not turn on the power until all work has been completed.
- When moving or relocating the air conditioner, consult experienced service technicians for disconnection and re-installation of the unit.
- Be careful when opening or closing valves below freezing temperatures. Refrigerant may spurt out from the gap between the valve stem and the valve body, resulting in injuries.

**WARNING: REFRIGERANT SAFETY (A2L)**

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

**A2L REFRIGERANT SAFETY PRECAUTIONS****1. Installation (Where Refrigerant Pipes Are Allowed)**

- 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 authorizes their competence to handle refrigerants safely in accordance with an industry recognized 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.
- That the installation of pipe-work shall be kept to a minimum.
- That pipe-work shall be protected from physical damage.
- Where refrigerant pipes shall be compliance with national gas regulations.
- That mechanical connections shall be accessible for maintenance purposes.
- 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.
- All working procedure that affects safety means shall only be carried by competent persons.
- Appliance shall be stored in a well ventilated area where the room size corresponds to the room area as specific for operation.
- Joints shall be tested with detection equipment with a capability of 0.18 oz (5 g) per 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).
- In cases that require mechanical ventilation, ventilation openings shall be kept clear of obstruction.

**2. Because a FLAMMABLE REFRIGERANT is used**, 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.
- 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.
- 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;
- that piping in refrigeration systems shall be so designed and installed to minimize the likelihood of hydraulic shock damaging the system;
- that steel pipes and components shall be protected against corrosion with a rustproof coating before applying any insulation;
- that precautions shall be taken to avoid excessive vibration or pulsation;
- 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;
- After completion of field piping for split systems, the field pipework shall be pressure tested with OXYGEN-FREE NITROGEN (OFN) and then vacuum tested prior to refrigerant charging, according to the following requirements:
  1. Pressure test the refrigerant piping to 500 PSI.
  2. The test pressure after removal of pressure source shall be maintained for at least 1 hour with no decrease of pressure indicated by the test gauge, with test gauge resolution not exceeding 5% of the test pressure.
  3. During the evacuation test, after achieving a vacuum level specified in the manual or less, the refrigeration system shall be isolated from the vacuum pump and the pressure shall not rise above 1500 microns within 10 min. The vacuum pressure level shall be specified in the manual, and shall be the lessor of 500 microns or the value required for compliance with national and local codes and standards, which may vary between residential, commercial, and industrial buildings.
- Field-made refrigerant joints indoors shall be tightness tested according to the following requirements: The test method shall have a sensitivity of 0.18 oz (5 g) per year of refrigerant or better under a pressure of at least 125% of the maximum allowable pressure. No leak shall be detected.

### **3 . Qualifications Of Workers**

Any maintenance, service and repair operations must be performed by qualified personnel. Any working procedure that impacts safety must be performed only by qualified individuals who have completed the necessary training and obtained certification to demonstrate their competence. 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.

#### **4. Checks To The Area**

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized. For repair to the refrigerating system, the following precautions shall be complied with prior to conducting work on the system.

#### **5. Work Procedure**

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

#### **6. General Work Area**

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

#### **7. 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 flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. no sparking, adequately sealed or intrinsically safe.

#### **8. Presence Of Fire Extinguisher**

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

#### **9. 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.

#### **10. Ventilated Area**

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any work that could produce ignition. Keep ventilation openings clear of obstruction. Ventilation continue during the period that the work is carried out. Proper ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

#### **11. 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:

- 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 circuits shall be checked for the presence of refrigerant;
- marking to the equipment continues to be visible and legible, marking and signs that are illegible shall be corrected;
- refrigeration 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.

## **12. Checks To Electrical Devices**

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

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

## **13. Wiring**

Check that wiring 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.

## **14. 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 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 to a sensitivity of 0.18 oz (5 g) per year. (Detection equipment shall be calibrated in a refrigerant free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.
- Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.

**Note**

Examples of leak detection fluids are bubble method and fluorescent method agents.

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. See the following instructions for removal of refrigerant.

## 15. Evacuation

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

The following procedure shall be adhered to:

- safely remove refrigerant following local and national regulations; evacuate;
- purge the circuit with NITROGEN
- evacuate (requirement);
- continuously flush or purge with NITROGEN 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 (OFN) 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, refrigerant purging shall be achieved by breaking the vacuum in the system with OXYGEN-FREE NITROGEN (OFN) and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum (requirement). This process shall be repeated until no refrigerant is within the system (requirement). 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.

## 16. 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 grounded 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.
- A follow up leak test shall be carried out prior to leaving the site.

## 17. Decommissioning

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

- Become familiar with the equipment and its operation.
- Isolate system electrically
- Before attempting the procedure ensure that:
  1. mechanical handling equipment is available, if required, for handling refrigerant cylinders;
  2. all personal protective equipment is available and being used correctly;
  3. the recovery process is supervised at all times by a competent person;
  4. recovery equipment and cylinders conform to the appropriate standards.
- Pump down refrigerant system, if possible.
- If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
- Make sure that cylinder is situated on the scales before recovery takes place.
- Start the recovery machine and operate in accordance with instructions.
- Do not overfill cylinders (no more than 80 % volume liquid charge)
- Do not exceed the maximum working pressure of the cylinder, even temporarily.
- 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.
- Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

## 18. Labeling

Equipment shall be labeled stating that it has been decommissioned 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.

## 19. 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 labeled for that refrigerant (i. e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

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

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

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

## 20. Unventilated Areas

- 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.
- 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  $A_{min}$ , that room shall be without continuously operating open flames (e.g. an operating gas appliance) or other POTENTIAL IGNITION SOURCES (for e.g. an operating electric heater, hot surfaces). A flame-producing device may be installed in the same space if the device is provided with an active flame arrest.
- Auxiliary devices which may be a POTENTIAL IGNITION SOURCE shall not be installed in the duct work. Examples of such POTENTIAL IGNITION SOURCES are hot surfaces with a temperature exceeding 700 °C and electric switching devices.
- Only auxiliary devices (such as certificated heater kit) approved by the appliance manufacturer or declared suitable with the refrigerant shall be installed in connecting ductwork.
- For duct connected appliances, false ceilings or drop ceilings may be used as a return air plenum if a REFRIGERANT DETECTION SYSTEM is provided in the appliance and any external connections are also provided with a sensor immediately below the return air plenum duct joint.
- REFRIGERANT SENSORS for REFRIGERANT DETECTION SYSTEMS shall only be replaced with sensors specified by the appliance manufacture.
- LEAK DETECTION SYSTEM installed. Unit must be powered except for service.

## 21. Transportation, Marking and Storage for Units That Employ Flammable Refrigerants

The following information is provided for units that employ FLAMMABLE REFRIGERANTS

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.

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.

Disposal of equipment using flammable refrigerants: See national regulations.

Storage of equipment/appliances: The storage of the appliance should be in accordance with

the applicable regulations or instructions, whichever is more stringent.

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



### **Additional Precautions**

- Turn off the air conditioner and disconnect the power if you are not going to use it for a long time.
- Turn off the unit during electrical storms to avoid damaging the unit.
- Make sure that water condensation can drain unhindered from the unit.
- Do not operate the air conditioner with wet hands. This may cause electric shock.
- Do not use this device for any other purpose than its intended use.
- Do not climb onto or place objects on top of the outdoor unit.
- Do not allow the air conditioner to operate for long periods of time with doors or windows open, or if the humidity is very high.
- If the air handler is used together with burners or other heating devices, thoroughly ventilate the room to avoid oxygen deficiency and carbon monoxide build up.
- In certain environments, such as kitchens, server rooms, etc., the use of specially designed air-conditioning units is highly recommended.
- As with any mechanical equipment, contact with sharp sheet metal edges can result in personal injury. Take care while handling this equipment and wear gloves and protective clothing.
- Excessive Weight Hazard – Use two (2) or more people when moving and installing the unit. Failure to do so can result in back or other type of injury.

### **Specifications of R-454B Refrigerant**

- **Application: R-454B is not a drop-in replacement for R-410A.** The equipment design must accommodate the A2L safety group of R-454B. It cannot be used in R-410A systems.
- **Physical Properties:** R-454B has an atmospheric bubble point of -59.6 °F (-50.9 °C) and an atmospheric dew point of -58.0 °F (-50.0 °C). Its bubble point saturation pressure at 77 °F (25 °C) is 213 psig (1469 kPa) and dew point saturation pressure at 77 °F (25 °C) is 205 psig (1415 kPa).
- **Composition:** R-454B is classified as safety group A2L per ASHRAE Standard 34. Verify that service equipment and instruments are certified for use with group A2L refrigerants, and in particular with R-454B is a non-azeotropic mixture of 68.9% by weight difluoromethane (HFC-32) and 31.1 % by weight 2,3,3,3-tetrafluoro-1-propene (HFO-1234yf).

## R-454B ROOM AREA GUIDELINES



### WARNING

DO NOT EXCEED THE MAXIMUM REFRIGERANT PIPING LENGTHS LISTED LATER IN THIS MANUAL AND THE REFRIGERANT CHARGES IN THE TABLE BELOW!



### NOTE

In line with UL standard 60335-2-40, this system does not include a refrigerant leak mitigation sensor. This is explained below.

R-454B UL guidelines mandate that refrigerant dissipation measures may be needed in the event of a leak, determined by the total area of the installation and the overall system charge. The total system charge includes any component that holds refrigerant, including line sets, indoor coils, and outdoor units. The UL standard outlines three different refrigerant mass thresholds, defined as follows (where LFL is the Lower Flammable Limit of R-454B = 0.303 kg/m<sup>3</sup> under ASHRAE 34 and UL 60335-2-40):

$$m_1 = 6 \times \text{LFL}$$

$$m_1 = 6 \text{ m}^3 \times 0.303 \text{ kg/m}^3 = 1.818 \text{ kg}$$

$$M \text{ (from the table below)} = 0.935 \text{ kg} < m_1$$

As specified in UL Standard 60335-2-40, when the maximum R-454B releasable charge at the maximum refrigerant line length (i.e., releasable charge M) is less than  $m_1$ , the implementation of a leak mitigation system is not required. In accordance with the table provided below, proper installation of these units ensures that the system refrigerant charge remains below the prescribed limits and a refrigerant detection sensor is not necessary.

System	DREW09S2AL/ DRE1U09S2A		DREW12S2AL/ DRE1U12S2A	
<b>Standard R-454B Refrigerant Charge</b>	1lb 7.28oz	660g	1lb 14.34oz	860g
<b>Maximum R-454B Refrigerant Charge (M)</b>	1lb 9.93oz	735g	2lb 0.98oz	935g

### Required Room Height

R-454B UL guidelines require the **room height be  $\geq 7.2\text{ft} / 2.2\text{m}$** . It is recommended to mount the indoor unit  $>5.9\text{ ft} (1.8\text{m})$  from the floor.

### Minimum Room Area

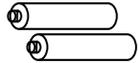
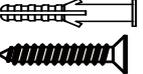
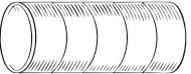
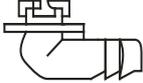
The minimum room area for operating and storing the unit should be as specified in the following table. Use the graphic on the rating label to add and note the total system refrigerant charge.

Maximum Releasable Charge		Minimum Room Area	
M (kg)	M (lbs, oz)	A <sub>min</sub> (m <sup>2</sup> )	A <sub>min</sub> (ft <sup>2</sup> )
0.5	1, 1	1.9	21
0.6	1, 5	2.3	25
0.7	1, 8	2.6	28
0.8	1, 12	3	33
0.9	1, 15	3.4	37
1.0	2, 3	3.8	41

# ACCESSORIES

## INCLUDED INSTALLATION ACCESSORIES

The heat pump system includes the following accessories packaged with both the indoor and outdoor units. Some accessories intended for the outdoor unit may be packed with the indoor unit, and vice versa.

Accessory	Quantity	Image	Accessory	Quantity	Image
Manual	2		Remote Control and Holder	1	
Mounting Plate	1		Batteries	2	
Wall Anchors and Screws	6		Indoor Unit Drain Pipe	1	
Pipe Tape	1		Flexible 5/8" Drain Pipe	1	
Sealant	1		Insulation	1	
Wall Sleeve	1		Wall Sleeve Cover	1	
Drain Joint	1		Carbon Filter	2	

## FIELD SUPPLIED INSTALLATION ACCESSORIES

The following installation accessories may be required and must be purchased separately.

- Refrigerant piping (line set)
- Indoor and outdoor connection wire
- Outdoor power supply cord
- Drain pipe
- Pipe and cable wrapping tape
- Wall hole sleeve and cover
- Putty
- Wiring u-lugs

## TOOLS NEEDED

The following tools are required for installation.

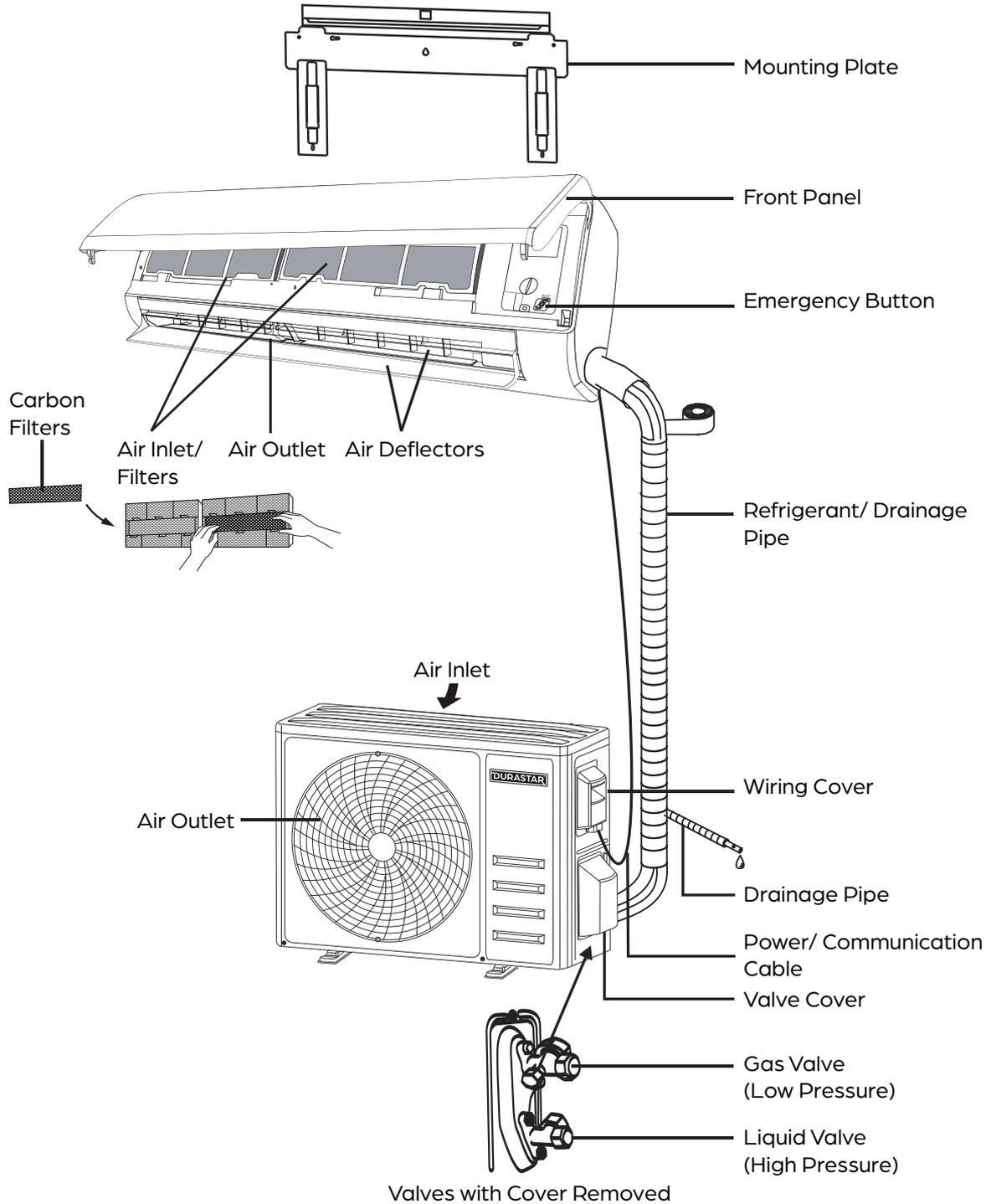
- Phillips screwdriver
- Drill with 2 1/2" or 3 1/2" (indoor unit model depending) core bit
- Vacuum pump
- HVAC manifold gauge set
- Micron Gauge
- Refrigerant leak detector
- Copper pipe cutter
- Flaring tool
- Burr reamer
- Crescent or spanner wrench
- Hexagonal wrench set
- Torque wrench
- Multimeter
- Electroprobe
- Level
- Hammer
- Wire strippers
- Wire crimper

## PARTS IDENTIFICATION



### NOTE

The installation must be performed in accordance with the required local and national standards. The installation may be slightly different in different areas.



### NOTE

Illustrations in this manual are for explanatory purposes. The actual shape of your mini-split equipment may vary slightly.

## SPECIFICATION OVERVIEW

The table below includes basic specifications for this unit. For more detailed specifications please refer to the submittals on DURASTAR.COM. Durastar reserves the right to change specifications without notice.

MODEL	BTUH	LIQUID PIPE in (mm)	SUCTION PIPE in (mm)	NET WEIGHT lbs (kg)	MCA Amps	MAX FUSE Amps	DIMENSIONS		
							W In (mm)	H In (mm)	D In (mm)
DREW09S2AL	9,000	1/4 (6.4)	3/8 (9.5)	20 (9)	0.6	15	31-15/16 (811)	11-1/2 (292)	8 (203)
DRE1U09S2A	9,000	1/4 (6.4)	3/8 (9.5)	52 (24)	16	25	28-1/8 (715)	19-5/8 (498)	11-7/16 (290)
DREW12S2AL	12,000	1/4 (6.4)	3/8 (9.5)	20 (9)	0.6	15	31-15/16 (811)	11-1/2 (292)	8 (203)
DRE1U12S2A	12,000	1/4 (6.4)	3/8 (9.5)	60 (27)	17	25	28-1/8 (715)	19-5/8 (498)	11-7/16 (290)

## OPERATING TEMPERATURES

Your air conditioner is designed to operate in the following indoor and outdoor temperatures. When your air conditioner is used outside of the following temperature ranges, certain safety features may activate and turn off the unit to protect it from damage.

After switching the operation mode or restoring power following an outage, the unit may require 2–5 minutes to start up in order to protect the compressor and/or allow for preheating.

### TEMPERATURE RANGES

	HEAT mode	COOL mode	DRY mode
<b>Indoor Air Temperature</b>	32°F - 86°F (0°C - 30°C)	63°F - 90°F (17°C - 32°C)	
<b>Outdoor Air Temperature</b>	-4°F - 86°F (-20°C - 30°C)	5°F - 122°F (-15°C - 50°C)	

To further optimize the performance of your unit, do the following:

- Keep doors and windows closed.
- Limit energy usage by using ECO and SLEEP features.
- Do not block air inlets or outlets.
- Regularly inspect and clean air filters.

#### NOTE



When outdoor air temperatures are at or below 32°F (0°C), we strongly recommend keeping the unit plugged in at all times to ensure smooth ongoing performance.

#### NOTE



Keep the room's relative humidity below 80%. If the air conditioner operates in excess of this, the surface of the air conditioner may attract condensation. To help prevent condensation from forming and dripping, set the vertical airflow louver to its maximum angle (vertically to the floor) and set the fan to HIGH.

## INDOOR UNIT INSTALLATION

### STEP 1: SELECT INSTALLATION LOCATION

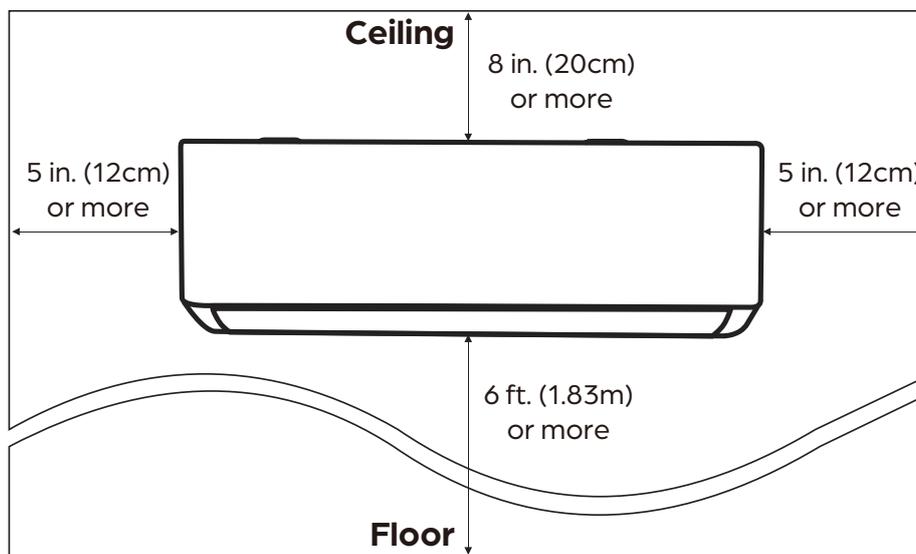
Before installing the indoor unit, you must choose an appropriate location. The following standards must be met for an appropriate location for the unit:

- Good air circulation
- Convenient drainage
- Noise from the unit will not disturb other people
- Firm and solid – the location will not vibrate
- Strong enough to support the weight of the unit
- A location at least three feet (one meter) from all other electrical devices (e.g., TV, radio, computer)

DO NOT install unit in the following locations:

- Near any source of heat, steam, or combustible gas
- Near flammable items such as curtains or clothing
- Near any obstacle that might block air circulation
- Near a doorway
- In a location subject to direct sunlight

Refer to the following diagram to ensure proper distance from walls and ceiling:



#### NOTE



If there is no pre-existing refrigerant piping, when choosing a location, leave ample room for a wall hole (see *Step 3: Drill Wall Hole for Connective Piping*) for the signal cable and refrigerant piping that connect the indoor and outdoor units. The default position for all piping is the right side of the indoor unit (while facing the unit). However, the unit can accommodate piping to either the left or right.

### STEP 2: ATTACH MOUNTING PLATE TO WALL

1. Remove the mounting plate from the back of the indoor unit by undoing the clips located at the bottom of the mounting plate. The mounting plate is the bracket on which you will mount the indoor unit.

- Secure the mounting plate to the wall with the anchors and screws provided. Make sure that mounting plate is flat against the wall, and is level.

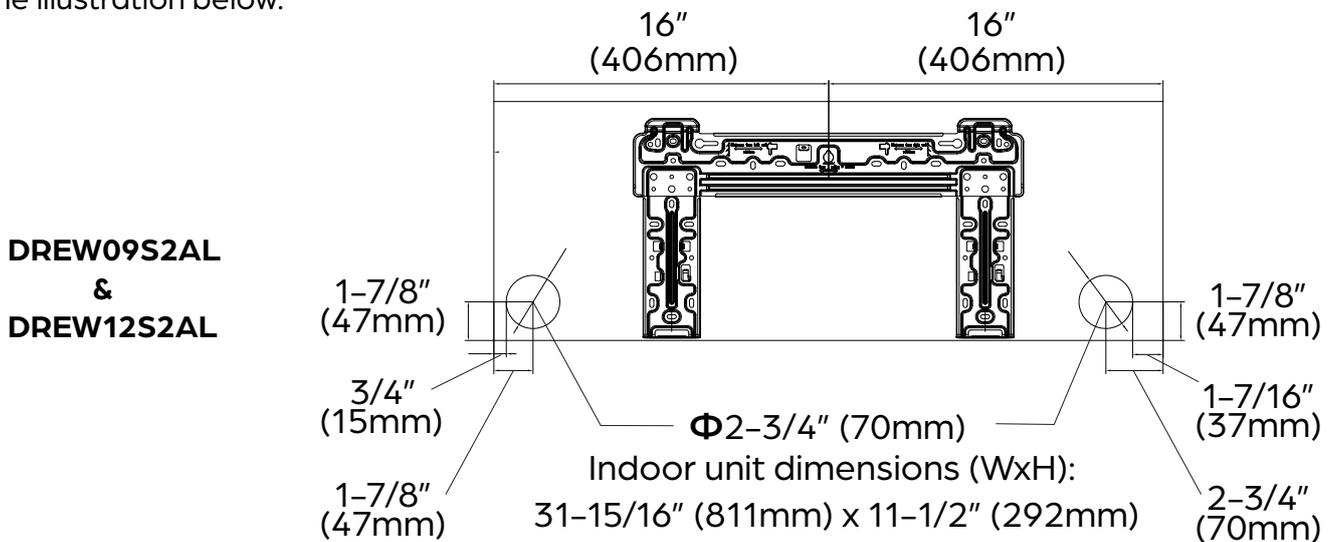
**NOTE**



If the wall is made of brick, concrete, or similar material, drill 5mm-diameter (0.2in diameter) holes in the wall and insert the sleeve anchors provided. Then secure the mounting plate to the wall by tightening the screws directly into the clip anchors.

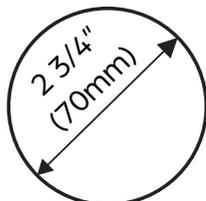
**STEP 3: DRILL WALL HOLE**

Determine the location of the wall hole based on your unit's mounting plate dimensions. Use the installation template provided with the indoor unit to correctly position the wall hole, or refer to the illustration below.



- Using a 2-3/4" (70mm) core bit, drill a hole in the wall. Make sure that the hole is drilled at a slight downward angle, so that the outdoor end of the hole is lower than the indoor end by about 1/4" - 1/2" (6mm to 12mm). This will ensure proper water drainage.
- Place the protective wall hole sleeve provided into the hole. This protects pipes and cables from sharp edges and will help seal the opening when you finish the installation process. After the sleeve is inserted through the wall, connect the provided wall hole cover to the wall sleeve on the outside end. Make sure the cover is flush with the outside wall.

Wall Hole Diameter



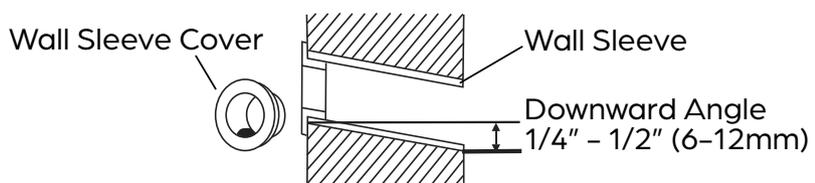
Indoor

Outdoor

Wall Sleeve Cover

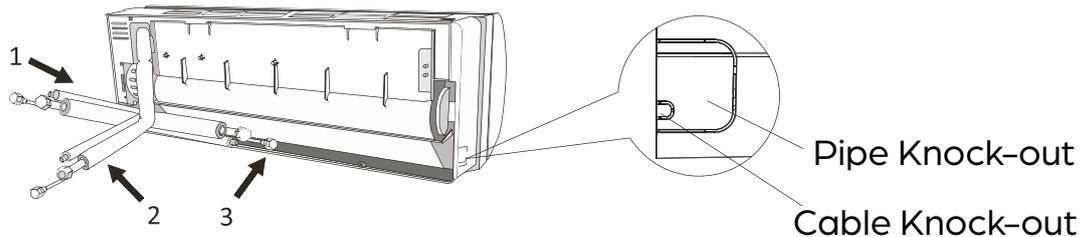
Wall Sleeve

Downward Angle  
1/4" - 1/2" (6-12mm)

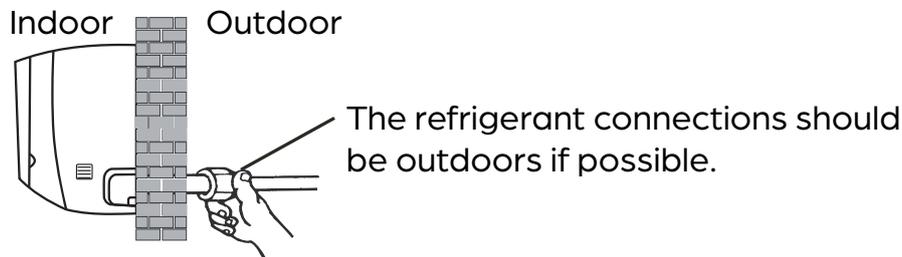


## STEP 4: PREPARE REFRIGERANT PIPING

1. Determine the direction from which the piping will exit the unit (left, right or behind).
2. If the wall hole is behind the unit, do not remove the knock-out panel. If the wall hole is to the side of the indoor unit, remove the plastic knock-out panel from that side of the unit. This will create a slot through which your piping can exit the unit. Use needle nose pliers or cutters if the plastic panel is too difficult to remove by hand. Grooves have been made in the knock-out panel in order to cut it to size conveniently. The size of the piece removed is determined by the diameter of the piping.



3. If pre-existing connective piping is already embedded in the wall, verify if the flare on the piping is in good shape and re-fabricate it if necessary using the steps under *Flare Pipe Connections* section later in this manual for detailed instructions.
4. If there is no pre-existing piping, position the piping to align with the wall hole in one of the configurations shown above.
5. The connector should be outdoors if possible.



6. Connect the indoor unit's refrigerant piping to the connective piping that will join the indoor and outdoor units. Refer to the *Refrigerant Piping Connections* later in this manual for detailed instructions.



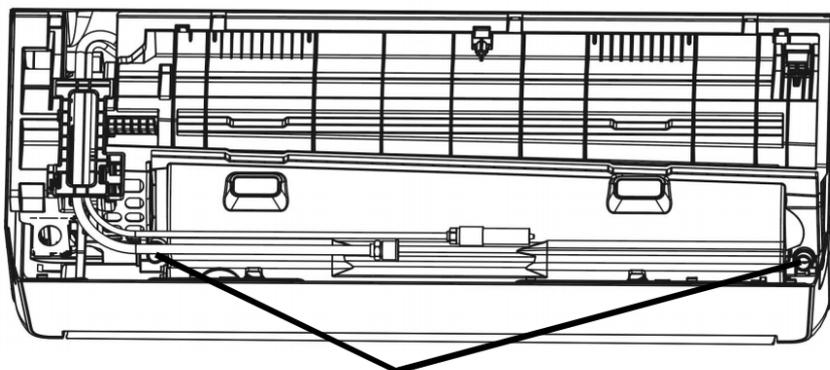
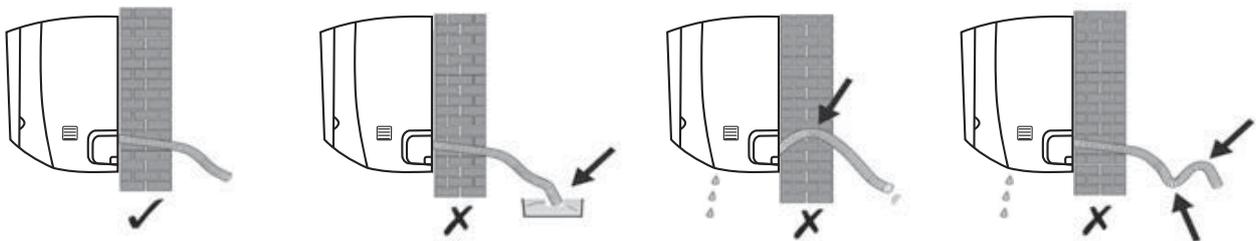
### WARNING

Be extremely careful not to dent or damage the piping while bending them away from the unit. Any dents in the piping will affect the unit's performance.

### STEP 5: CONNECT THE DRAIN PIPE

By default, the unit's drain pipe is attached to the left-hand side of unit (when you're facing the back of the unit). However, it can also be attached to the right-hand side. To ensure proper drainage, attach the drain pipe on the same side that your refrigerant piping exits the unit. Attach any drain pipe extension (purchased separately) to the end of the drain pipe. Any drain pipe extension must have an inner diameter of 5/8" (16mm) and tightly fit the unit's existing drain pipe.

- Wrap the connection point firmly with Teflon tape to ensure a good seal and to prevent leaks.
- Make sure there are no twists or sharp bends in the drain pipe. The drain pipe should slope steadily downward of the entirety of the run.
- For the portion of the drain pipe that will remain indoors, wrap it with foam pipe insulation to prevent condensation.
- Plug the unused drain port with the rubber plug provided in the other port.
- Remove the air filter and pour a small amount of water into the drain pan to make sure that water flows from the unit smoothly.
- Make sure to arrange the drain pipe according to the following illustration.



Drainage Ports



**WARNING**

**PLUG THE UNUSED DRAIN HOLE.** To prevent unwanted leaks you must plug the unused drain hole with the rubber plug provided.

**STEP 6: CONNECT SIGNAL CABLE****BEFORE PERFORMING ANY ELECTRICAL WORK, READ THESE REGULATIONS**

1. All wiring must comply with local and national electrical codes and regulations, and must be installed by a licensed electrician.
2. All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.
3. If there is a serious safety issue with the power supply, stop work immediately and contact a licensed electrician. Do not continue with the installation until the safety issue is properly resolved.
4. Power voltage should be within 90–110% of rated voltage. Insufficient power supply can cause malfunction, electrical shock, or fire.
5. If connecting power to fixed wiring, install a surge protector and main power switch with a capacity of 1.5 times the maximum current of the unit.
6. If connecting power to fixed wiring, a switch or circuit breaker that disconnects all poles and has a contact separation of at least 1/8" (3mm) must be incorporated in the fixed wiring. A qualified technician must use an approved circuit breaker or switch.
7. Only connect the unit to an individual branch circuit, do not connect another appliance to that outlet.
8. Make sure to properly ground the air conditioner.
9. Every wire must be firmly connected. Loose wiring can cause the terminal to overheat, resulting in product malfunction and possible fire.
10. Do not let wires touch or rest against refrigerant tubing, the compressor, or any moving parts within the unit.
11. If the unit has an auxiliary electric heater, it must be installed at least 40" away from any combustible materials.
12. To avoid getting an electric shock, never touch the electrical components soon after the power supply has been turned off. After turning off the power, always wait 10 minutes or more before you touch the electrical components.

**WARNING**

Before performing any electrical or wiring work, turn off the main power to the system.

**WARNING****DO NOT MIX UP LIVE AND NULL WIRES**

This is dangerous, and can cause the air conditioning unit to malfunction.

The signal cable enables communication between the indoor and outdoor units. You must first choose the right cable size before preparing it for connection. Run a continuous length of cable and avoid splicing the cable.

## CABLE SIZING

### USE THE RIGHT CABLE

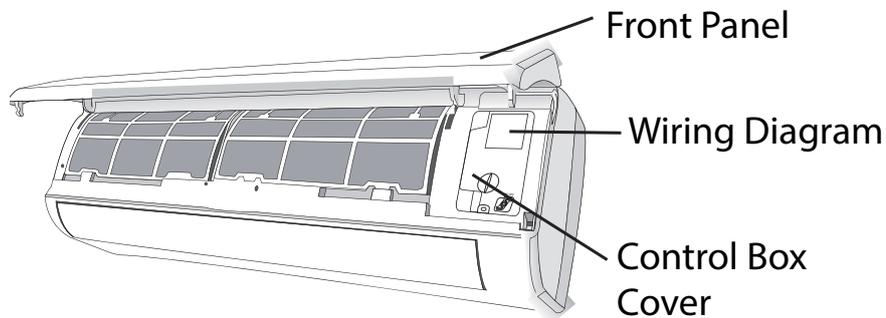
- Indoor Power/ Signal Cable: 14/4 stranded, unshielded
- Outdoor Power Cable: Determined by amperage of system and the local codes in your area.

### Choose the correct size of cable

The size of the power supply cable, fuse, and switch needed is determined by the maximum current of the unit. The maximum current is indicated on the nameplate located on the side panel of the unit. Refer to this nameplate to choose the right cable, fuse, or switch.

### Wiring the Indoor Unit

1. Open front panel of the indoor unit.
2. Using a screwdriver, open the wire box cover on the right side of the unit. This will reveal the terminal block.
3. Unscrew the cable clamp below the terminal block and place it to the side.
4. Facing the back of the unit, feed the communication cable through the left side of the unit to the terminal block, from the back of the unit to the front.



5. Connect a spade u-lug onto the end of each wire
6. Facing the front of the unit, connect the wire according to the indoor unit's wiring diagram and firmly screw each wire lug to its corresponding terminal.
7. Pay extra attention to make sure the wire color/ terminal pairings match the outdoor unit.
8. After checking to make sure every connection is secure, use the cable clamp to fasten the signal cable to the unit. Screw the cable clamp down tightly.
9. Replace the control box cover on the front of the unit.



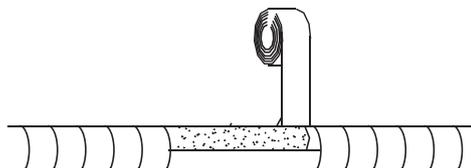
#### **WARNING**

All wiring must be performed strictly in accordance with the wiring diagram located on the back of the indoor unit's front panel.

## STEP 7: WRAPPING THE PIPE AND CABLES

Before passing the piping, drain pipe, and the signal cable through the wall hole, you must bundle them together to save space, protect them, and insulate them.

1. Bundle the drain pipe, refrigerant pipes, and signal cable as shown below:



**NOTE**  
The drain pipe **MUST** be at the bottom of the bundle. Putting the drain pipe at the top of the bundle can cause the drain pan to overflow, which can lead to fire or water damage.

**NOTE**  
DO NOT intertwine the signal cable with any of the other wires while bundling these items together.

2. Using adhesive vinyl tape, attach the drain pipe to the underside of the refrigerant pipes.
3. Using insulation tape, wrap the signal wire, refrigerant pipes, and drain pipe tightly together. Double-check that all items are bundled.

**NOTE**  
When wrapping the bundle, keep the ends of the piping unwrapped. You need to access them to connect the refrigerant pipes and test for leaks later (refer to **Refrigerant Piping Connections** and **Gas Leak Checks** sections of this manual).

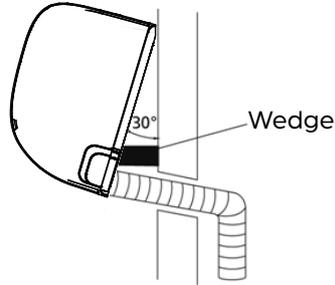
## STEP 8: MOUNT INDOOR UNIT

If you installed new connective piping to the outdoor unit, do the following:

1. If you have already passed the refrigerant piping through the hole in the wall, proceed to #4.
2. Double-check that the ends of the refrigerant pipes are sealed to prevent dirt or foreign materials from entering the pipes.
3. Slowly pass the wrapped bundle of refrigerant pipes, drain pipe, and signal wire through the hole in the wall.
4. Hook the top of the indoor unit on the upper hook of the mounting plate.
5. Check that the unit is hooked firmly on the mounting by applying slight pressure to the left- and right-hand sides of the unit. The unit should not jiggle or shift.
6. Using even pressure, push down on the bottom half of the unit. Keep pushing down until the unit snaps onto the hooks along the bottom of the mounting plate.
7. Again, check that the unit is firmly mounted by applying slight pressure to the left and the right-hand sides of the unit.

If refrigerant piping is already embedded in the wall, do the following:

1. Hook the top of the indoor unit on the upper hook of the mounting plate.
2. Use a bracket or wedge to prop up the unit, giving you enough room to connect the refrigerant piping, signal cable, and drain pipe.



**NOTE**



We recommend a second person is present to assist with supporting the indoor unit while the first person makes all applicable connections.

3. Connect drain pipe and refrigerant piping (refer to the Refrigerant Piping Connections section of the outdoor unit installation manual for instructions).
4. Keep pipe connection point exposed to perform the leak test (refer to Electrical and Gas Leak Checks section of the outdoor unit's installation manual).
5. After the leak test, wrap the connection point with insulation tape.
6. Remove the bracket or wedge that is propping up the unit, if applicable.
7. Using even pressure, push down on the bottom half of the unit. Keep pushing down until the unit snaps onto the hooks along the bottom of the mounting plate.

**NOTE**



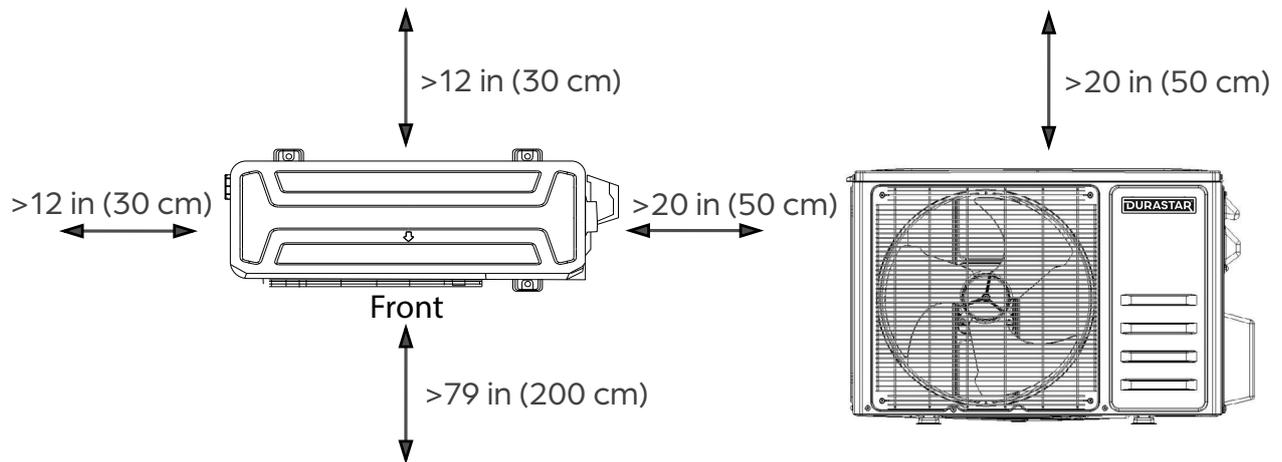
The indoor unit is adjustable. The hooks on the mounting plate are smaller than the holes on the back of the unit. If you find that you don't have ample room to connect embedded pipes to the indoor unit, the unit can be adjusted left or right by about 1" (25mm).



## OUTDOOR UNIT INSTALLATION

### Installation Instructions

Install the unit following local codes and regulations. These may differ slightly between regions.



### STEP 1: SELECT INSTALLATION LOCATION

Before installing the outdoor unit, you must choose an appropriate location. The following are standards that will help you choose an appropriate location for the unit.

#### Proper installation locations meet the following standards:

- Meets all spatial requirements shown in installation space requirements above.
- Good air circulation and ventilation.
- Firm and solid location—the location can support the unit's weight and will not vibrate.
- Noise from the unit will not disturb others.
- Protected from prolonged periods of direct sunlight or rain.



#### NOTE

Where snowfall is anticipated, raise the unit above the base pad to allow free drainage to prevent ice buildup and coil damage. Mount the unit high enough to be above the average accumulated area snowfall. The minimum height must be 18 inches.

#### DO NOT install unit in the following locations:

- Near an obstacle that will block air inlets and outlets.
- Near a public street, crowded areas, or where noise from the unit will disturb others.
- Near animals or plants that will be harmed by hot air discharge.
- Near any flammable items or source of combustible gas.
- In a location that is exposed to large amounts of dust.
- In a location exposed to an excessive amount of salty air.
- In a location 10 ft. (3 m) or closer to TV or radio antennas. Operation of the unit may interfere with antenna reception in areas where the signal is weak. An amplifier may be needed for affected devices.

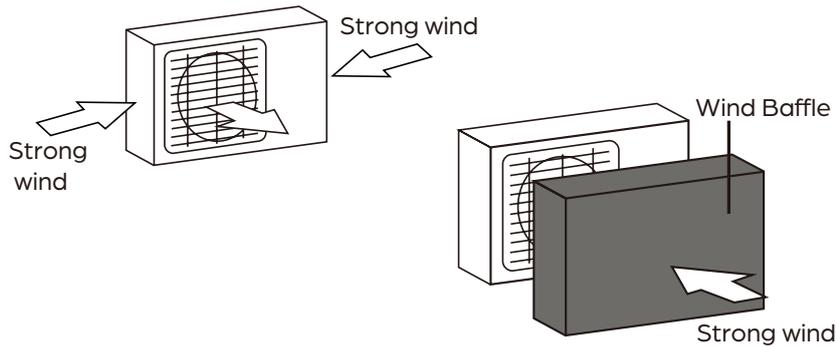


**NOTE**

If a line set is not already installed, keep in mind the positioning of the line set before mounting the unit.

**Special considerations for extreme weather**

If the unit is exposed to heavy wind, install unit so that the air outlet fan is at a 90° angle to the direction of the wind. If needed, build a barrier in front of the unit to protect it from extremely heavy winds. See figures below.



**If the unit is frequently exposed to heavy rain or snow**

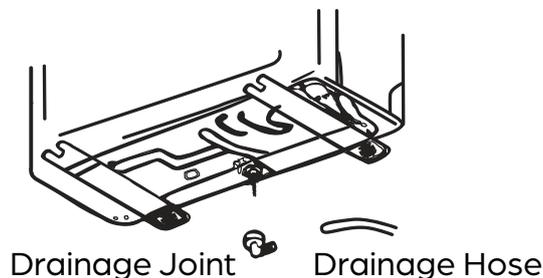
Build a shelter above the unit to protect it from rain or snow. Be careful not to obstruct airflow around the unit.

**Installing multiple outdoor units**

If installing multiple outdoor units, refer to the diagram on the previous page for proper clearances. Make sure the units have >120 in between them when facing each other.

**STEP 2: INSTALL THE DRAIN JOINT**

1. Insert the drain joint into the hole in the base pan of the unit.
2. Rotate the drain joint 90° until it clicks in place facing the front of the unit.
3. Connect a drain hose extension (not included) to the drain joint to redirect water from the unit during heating mode.



**NOTE**

In cold climates, make sure that the drain hose is as vertical as possible to ensure swift water drainage. If water drains too slowly, it can freeze in the hose and flood the unit.

## STEP 3: MOUNT THE OUTDOOR UNIT

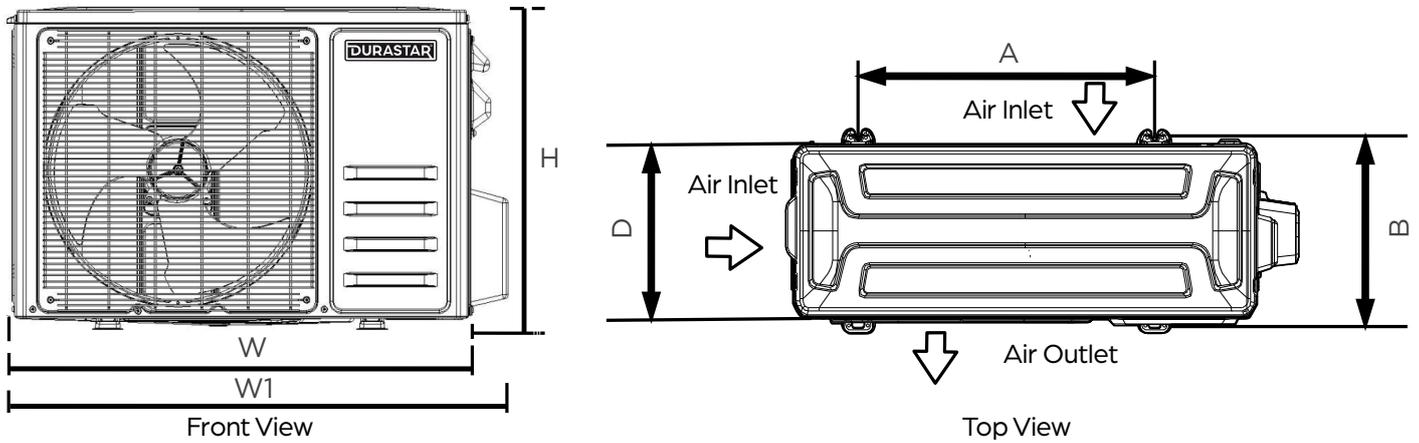
### Anchoring the Unit

The outdoor unit can be anchored to the ground or to a wall-mounted bracket (sold separately) with bolts (M10). Mount the unit on a cement slab, condenser mounting pad, or other level surface able to support the unit's weight. **Do not place the unit directly on the ground.** If using a wall-mounting bracket, make sure the attached structure can support at least four times the unit's weight.

Use the provided rubber anti-vibration pads under the unit to limit noise and vibration.

### Unit Mounting Dimensions

The distance between their mounting feet varies by outdoor unit. Prepare the installation base of the unit according to the dimensions below. In most cases, it may be easier to place the outdoor unit in its correct location and mark the exact placement for the anchor holes.



MODEL	OUTDOOR UNIT DIMENSIONS								MOUNTING DIMENSIONS			
	W		W1		H		D		A		B	
	In	mm	In	mm	In	mm	In	mm	In	mm	In	mm
DRE1U09S2A	28-1/8	715	31	787	19-5/8	498	11-7/16	290	16-5/16	415	11-1/4	263
DRE1U12S2A	28-1/8	715	31	787	19-5/8	498	11-7/16	290	16-5/16	415	11-1/4	263

#### **STEP 4: CONNECT THE SIGNAL AND POWER CABLES**

The outside unit's terminal block is protected by an electrical wiring cover on the side of the unit. A comprehensive wiring diagram is printed on the inside of the wiring cover.

**WARNING**

Before performing any electrical or wiring work, turn off the main power to the system.

#### **USE THE RIGHT CABLE**

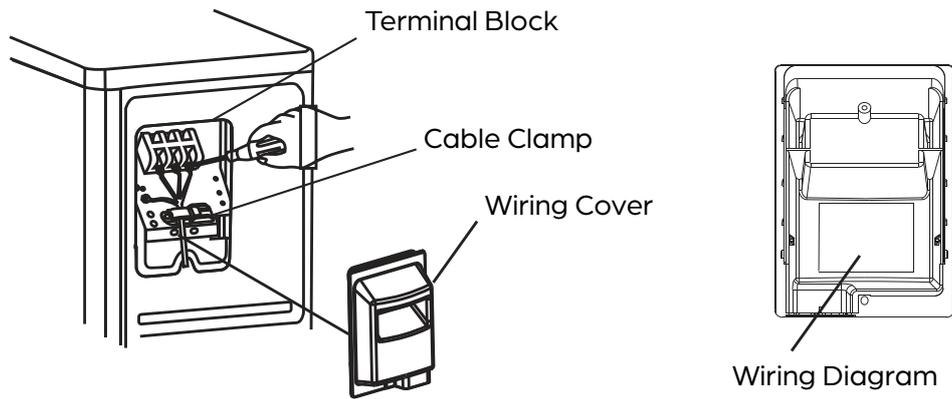
- Indoor Power / Signal Cable: 14 AWG /4 stranded, unshielded
- Outdoor Power Cable: Determined by the amperage of system and the local codes in your area.

#### **Choose the Correct Size of Cable**

The size of the power supply cable, fuse, and switch needed is determined by the maximum current of the unit. The maximum current is indicated on the nameplate located on the side panel of the unit. Refer to this nameplate to choose the right cable (stranded wire preferred), fuse, or switch.

#### **Prepare The Cable And Wires For Connection:**

- Using wire strippers, strip the rubber jacket from both ends of cable to reveal about 1.5" (38-40mm) of the wires inside.
- Strip the insulation from the ends of the wires.
- Using a wire crimper, crimp u-lugs on the ends of the wires.



### WARNING

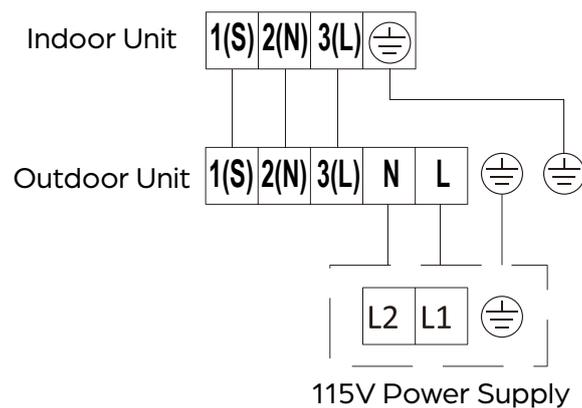
Pay attention to the live wire. While crimping wires, make sure you clearly distinguish the Live ("L") Wire from other wires.



### CAUTION

All wiring work must be performed strictly in accordance with the wiring diagram located inside the terminal cover of the outdoor unit.

1. Remove the electrical wiring cover.
2. Remove the caps on the conduit panel.
3. Temporarily mount the conduit tubes (sold separately) onto the conduit panel.
4. Properly connect both the power supply and low voltage lines to the corresponding terminals on the terminal block.
5. Ground the unit in accordance with local codes.
6. Be sure to cut the wire several inches longer than the required length for future maintenance.
7. Permanently secure the wires in the cable clamp.
8. Replace the wire cover on the side of the unit, and screw it in place.



## REFRIGERANT PIPING CONNECTIONS



### WARNING

When connecting refrigerant piping, do not let substances or moisture other than specified refrigerant enter the unit or pipes. Run nitrogen through the refrigerant tubing when brazing to avoid carbon build up. The presence of foreign materials will lower the unit's capacity and can cause abnormally high pressure in the refrigeration system. This can result in explosion and personal injury.

### REFRIGERANT PIPE LENGTH

The length of refrigerant piping will affect the performance and efficiency of the unit. Nominal efficiency is tested with a pipe length of 25 feet (7.5 meters). A minimum pipe run of 10 feet (3 meters) is required to minimize vibration and excessive noise.

Refer to the table below for specifications on the maximum length and drop height of refrigerant piping.

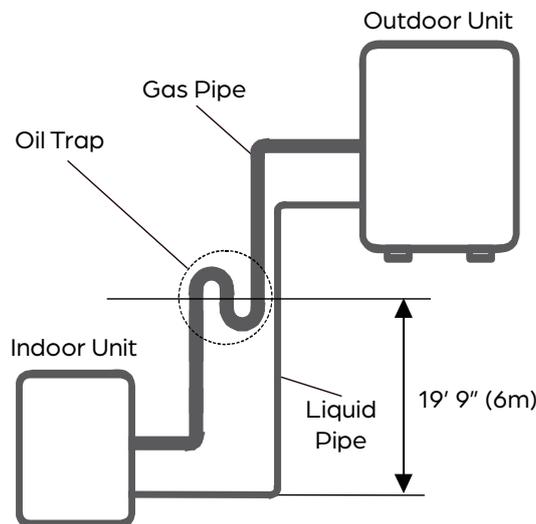
Capacity (BTU/h)	Maximum Length Feet (Meters)	Maximum Drop Height Feet (Meters)
9,000 - 12,000	49 ft. (15 m)	33 ft. (10 m)

### OIL TRAPS

Oil traps are necessary for the continued performance of the system if the indoor and outdoor units are installed at significantly different heights.

#### If the outdoor unit is installed higher than the indoor unit:

Proper oil return to the compressor must be maintained with the suction gas velocity. If velocities drop below 1500fpm, oil return will be decreased and lead to deterioration of performance and shorten the life of the compressor. Oil traps in the rising gas piping can prevent this and should be installed every 20ft (6m) of vertical rise.



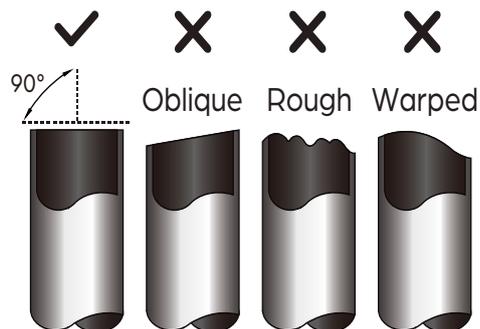
Required distance between oil traps when the outdoor unit is installed higher than the indoor unit.

## REFRIGERANT PIPE CONNECTION INSTRUCTIONS

### STEP 1: CUT PIPES

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

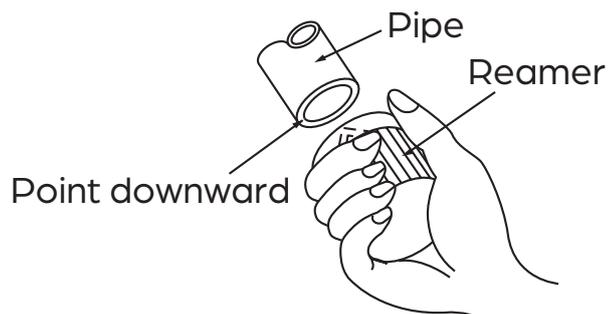
1. Measure the distance between the indoor and outdoor units.
2. Using a pipe cutter, cut the pipe length a little longer than the measured distance.
3. Make sure that the pipe is cut at a perfect 90° angle.
4. Do not damage, deform, or dent the pipe while cutting.



### STEP 2: REMOVE BURRS

Burrs can affect the airtight seal of the refrigerant piping connection and must be completely removed.

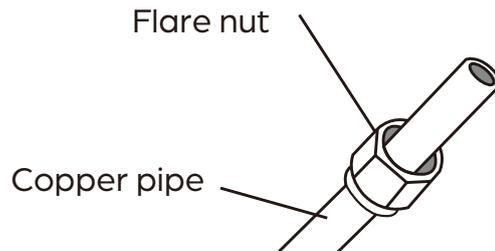
1. Hold the pipe at a downward angle to prevent burrs from falling into the pipe.
2. Using a reamer or deburring tool, remove all burrs from the cut section of the pipe.



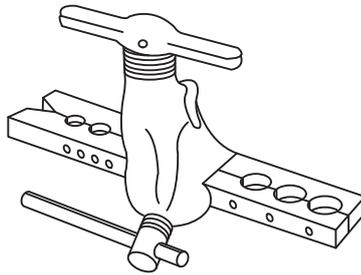
### STEP 3: FLARE PIPE ENDS

Proper flaring is essential to achieve an airtight seal.

1. After removing burrs from cut pipe, seal the ends with PVC tape to prevent foreign materials from entering the pipe.
2. Sheath pipe with insulating material.
3. Place flare nuts on both ends of the pipe. Make sure they are facing in the right direction as you cannot change their orientation after flaring.

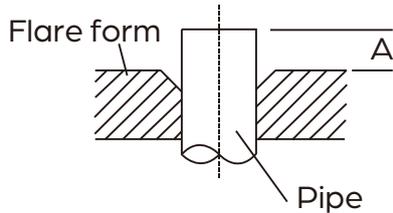


4. Remove PVC tape from ends of pipe when ready to perform flaring.
5. Clamp flare form on the end of the pipe. The end of the pipe must extend beyond the edge of the flare form in accordance with the pipe extension table on the next page.



## PIPE EXTENSION BEYOND FLARE FORM

Outer Diameter of Pipe Inches (mm)	"A" Minimum Extension Inches (mm)	"A" Maximum Extension Inches (mm)
∅ 1/4" (6.4mm)	0.0275" (0.7mm)	0.05" (1.3mm)
∅ 3/8" (9.5mm)	0.04" (1.0mm)	0.063" (1.6mm)



### TIP: THICKNESS COMPARISON

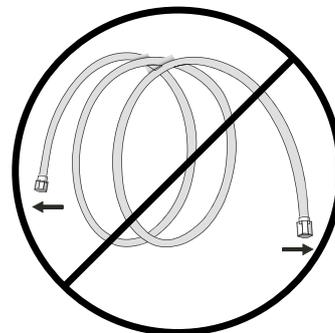
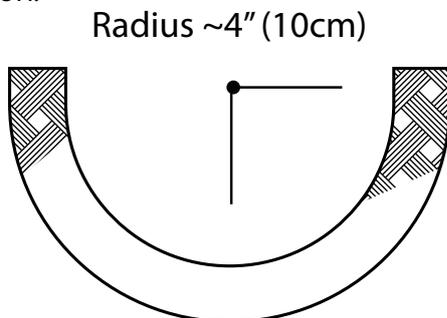
- 0.0275" = A Thumbnail
- 0.04" = A Dime
- 0.078" = A Nickle

- Place flaring tool onto the form.
- Turn the handle of the flaring tool clockwise until the pipe is fully flared.
- Remove the flaring tool and flare form, then inspect the pipe for cracks and even flaring.

## STEP 4: CONNECT PIPES

When connecting refrigerant pipes, be careful not to use excessive torque or to deform the piping in any way. You should first connect the low-pressure pipe, then the high-pressure pipe.

When bending connective refrigerant piping, the minimum bending radius is 4 inches (10cm). Do not leave coils in the refrigerant line sets. Remove excess line length to ensure proper system operation.

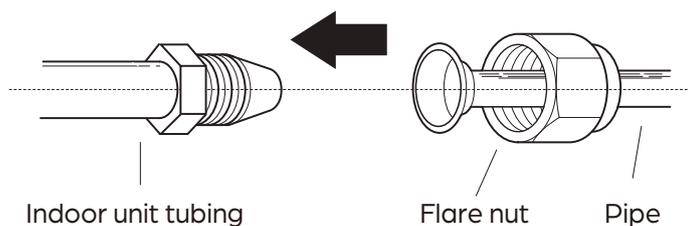


### CAUTION

Do not leave coils in the refrigerant line sets. All excess line length must be removed to ensure proper system operation.

## CONNECTING PIPING TO INDOOR UNIT

- Align the center of the two pipes that you will connect.



2. Tighten the flare nut as tightly as possible by hand.
3. Using a spanner, grip the nut on the unit tubing.
4. While firmly gripping the nut on the unit tubing, use a torque wrench to tighten the flare nut according to the torque values in the table below. Loosen the flaring nut slightly, then tighten again.



Outer Diameter of Pipe Inches (mm)	Tightening Torque lb-ft (Nm)	Flare Dimension "B" Inches (mm)	Flare Shape
Ø 1/4" (6.4mm)	11.1~14.8 (15~20)	0.33~0.34 (8.4~8.7)	
Ø 3/8" (9.5mm)	22.9~25.8 (31~35)	0.52~0.53 (13.2~13.5)	

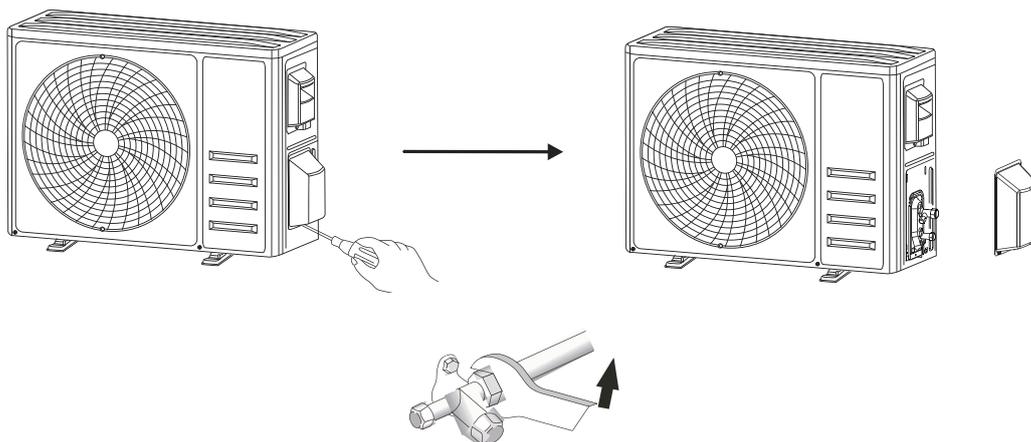


**CAUTION**

Do not use excessive torque. Excessive force can break the nut or damage the refrigerant piping. You must not exceed the torque requirements shown in the table above.

**CONNECTING PIPING TO OUTDOOR UNIT**

1. Remove the valve cover on the side of the outdoor unit.
2. Remove the protective caps from the ends of the valves.
3. Align flared pipe end with each valve and tighten the flare nut as tightly as possible by hand.
4. Using a spanner, grip the body of the valve. Do not grip the nut that seals the service valve.
5. While firmly gripping the body of the valve, use a torque wrench to tighten the flare nut according to the correct torque values in the table above.
6. Loosen the flare nut slightly, then tighten again.
7. Repeat steps 3-6 for the remaining pipe.



## SYSTEM EVACUATION



### CAUTION

This unit is not equipped with a refrigerant sensor. Please take extra precaution to check for refrigerant leaks.

### PREPARATIONS AND PRECAUTIONS

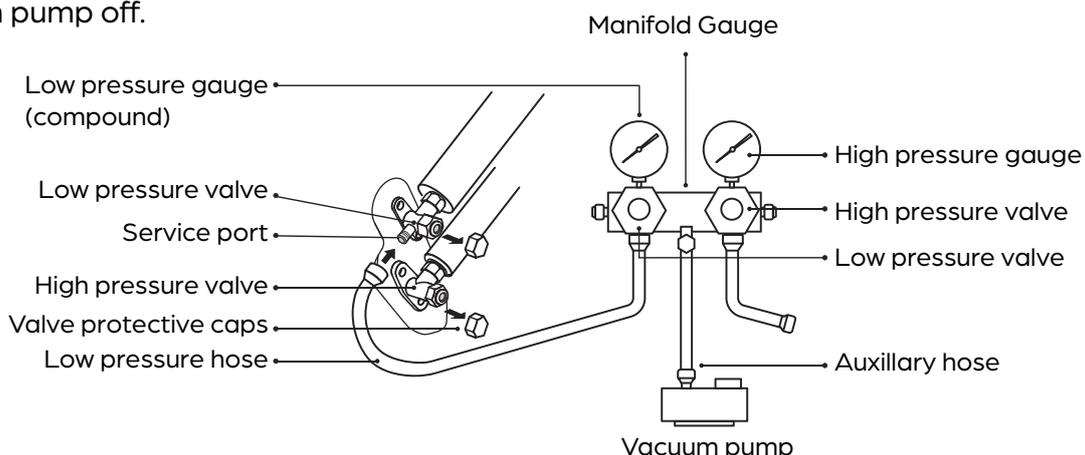
Air and foreign matter in the refrigerant system can cause abnormal rises in pressure, which can damage the air conditioner, reduce energy efficiency, and cause injury. Use a vacuum pump and manifold gauge to evacuate the refrigerant system, removing any non-condensable gas and moisture from the system. Evacuation should be performed upon initial installation and if unit is relocated.

### BEFORE PERFORMING EVACUATION

1. Check to make sure the refrigerant pipes connecting the indoor and outdoor units are connected properly and leak free.
2. Check to make sure all wiring is connected properly.

### EVACUATION INSTRUCTIONS

1. Connect the high pressure side hose of the manifold gauge to the service port on the outdoor unit's service valve.
2. Connect the hose from the auxiliary port of the manifold gauge to the nitrogen tank.
3. Open the high pressure side of the manifold gauge. Keep the low pressure side closed.
4. Open the nitrogen tank valve and pressurize the system to 600PSIG.
5. Close nitrogen tank valve and high pressure side of the manifold gauge.
6. Wait 15 minutes, then check that there has been no change in pressure.
7. If pressure loss is greater than 5 PSIG, a leak may be present. Using the Soap and Bubble Method, locate and fix all leaks. Start back at step 1 once all leaks have been fixed.
8. If there is no change in pressure, remove the auxiliary port of the manifold gauge from the nitrogen tank.
9. Release the pressure in the system by opening up the high side of the manifold gauge.
10. Once pressure has been released, remove the high pressure side hose of the manifold gauge from the service port and replace it with the low pressure side hose.
11. Connect the hose of the auxiliary port of the manifold gauge to the vacuum pump and a MICRON GAUGE.
12. Turn on the vacuum pump to evacuate the system.
13. Run the vacuum until the micron gauge reads 250 microns.
14. Once the micron gauge reads 250 microns, close the low pressure side of the manifold gauge and turn off the vacuum pump. System must hold below 500 microns for 15 minutes with the vacuum pump off.



15. If there is a change in pressure, a leak may be present. Using the Soap and Bubble Method, locate and fix all leaks. Start back at step 1 once all leaks have been fixed. If there is no change in pressure, remove the manifold gauge auxiliary hose from the vacuum pump.
16. Remove the caps from the unit's valve bodies, and open the system's valves gently with a hex wrench by turning it counterclockwise until they reach their stopping point. Do not try to force the valves to open further.

**NOTE ON ADDING ADDITIONAL REFRIGERANT**

Each outdoor unit is factory charged with enough refrigerant to support up to 25' (7.5m) per zone. This is based on a one way liquid line measurement from the outdoor unit to the indoor unit. Systems with line sets that exceed this length will require additional refrigerant (see the following chart). The refrigerant should be charged from the service port on the outdoor unit's low pressure valve. Additional refrigerant information can be found in the **SUBMITTAL DOCUMENTS** at **WWW.DURASTAR.COM**. Additional refrigerant can be calculated using the following formula:

<b>R454B Liquid Side <math>\varnothing</math> 1/4" (6.35mm)</b>
(Actual pipe length in feet – 25 ft) x 0.11 oz/ft
or
(Actual pipe length in meters – 7.5 m) x 10 g/m



**CAUTION**  
DO NOT mix refrigerant types.

## FINAL CHECKS

### BEFORE THE TEST RUN

Only perform the test run after you have completed the following steps:

- Electrical Safety Checks – Confirm that the unit's electrical system is connected and operating correctly.
- Gas Leak Check – Check all flare nut connections and confirm the system is not leaking.
- Confirm that the low and high pressure valves are fully open.
- Check grounding work by measuring the grounding resistance by visual detection and with a multimeter. The grounding resistance must be less than 0.1  $\Omega$ .

### ELECTRICAL SAFETY CHECKS

After installation, confirm that all electrical wiring is installed in accordance with local and national regulations, and according to this installation manual.

### DURING TEST RUN

Using your multimeter, verify the voltage of the main power entering the system. If the main power voltage is greater than  $\pm 10\%$  of the name plate voltage, turn off the unit and immediately call a licensed electrician to find and resolve the cause.



**WARNING**  
RISK OF ELECTRICAL SHOCK – All wiring must comply with local and national electrical codes, and must be installed by a licensed electrician.

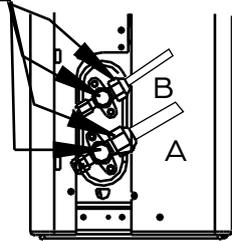
## GAS LEAK CHECK

There are two methods to check for gas leaks:

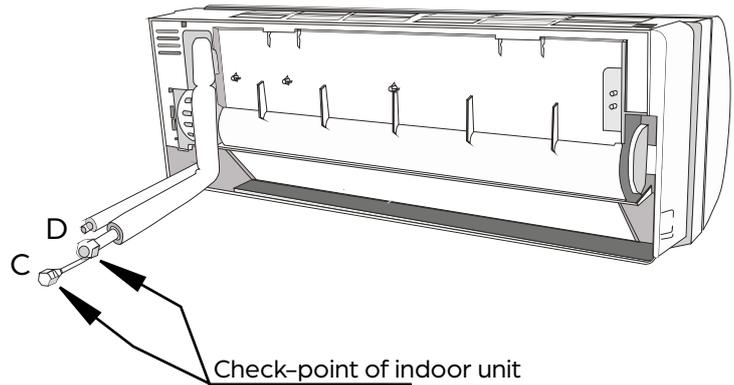
1. Soap and Water Method – Using a soft brush, apply a soapy water or liquid detergent to all pipe connection points on the indoor and outdoor unit. The presence of bubbles indicates a leak.
2. Leak Detector Method – If using a leak detector, refer to the device's operation manual for proper usage instructions.

## GAS LEAK CHECK POINTS

Check-point of outdoor unit



A: Low pressure stop valve  
B: High pressure stop valve  
C & D: Indoor unit flare nuts



Check-point of indoor unit



### TIP

Use the Durastar Job Site Information Sheet at the end of this manual as a commissioning report to record your start up readings.

## TEST RUN

### TEST RUN INSTRUCTIONS

You should perform the test run for at least 30 minutes.

1. Connect power to the unit.
2. Press the ON/OFF button on the remote controller or wired thermostat to turn the unit on.
3. Press the MODE button to scroll through the following functions, one at a time:
  - COOL – Select lowest possible temperature.
  - HEAT – Select highest possible temperature.
4. Let each function run for 8 minutes and perform the following checks:

LIST OF CHECKS TO PERFORM	[ X ]
No electrical leakage	[ ]
Unit is Properly Grounded	[ ]
All Electrical Terminals are Properly Covered	[ ]
Indoor and Outdoor Units are Solidly Installed	[ ]
All Pipe Connection Points Do Not Leak, Indoor and Outdoor	[ ]
Water Drains Properly from Drain Hose	[ ]
All Piping is Properly Insulated	[ ]
Unit Performs COOL Function Properly	[ ]
Unit Performs HEAT Function Properly	[ ]
Indoor Unit Louvers Move Properly	[ ]
Indoor Unit Responds to Remote Controller or Thermostat	[ ]

5. Double check all pipe connections. During operation, the pressure of the refrigerant system will increase. This may reveal leaks that were not present during the initial leak check. Take time during the test run to recheck all pipe connection points. Refer to *Gas Leak Check* section for instructions.
6. If the ambient temperature is below 63°F (17°C) you can not use the remote controller to turn on the COOL function. In this instance, you can use the MANUAL CONTROL button on the indoor unit to test the COOL function. Refer to the indoor unit owner's manual for the button location.

## TROUBLESHOOTING

### SAFETY PRECAUTIONS

If ANY of the following conditions occurs, turn off your unit immediately!

- The power cord is damaged or abnormally warm
- You smell a burning odor
- The unit emits loud or abnormal sounds
- A power fuse blows or the circuit breaker frequently trips
- Water or other objects fall into or out of the unit

DO NOT ATTEMPT TO FIX THESE YOURSELF! CONTACT AN AUTHORIZED SERVICE PROVIDER IMMEDIATELY!

### COMMON ISSUES

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

ISSUE	POSSIBLE CAUSES
<b>Unit does not turn on when pressing ON/OFF button</b>	Verify that the unit has power.
	The unit has a protection feature that prevents the unit from overloading. The unit cannot be restarted within 2–5 minutes of being turned off.
	Verify that the TIMER-ON function is active.
<b>The unit changes from COOL/HEAT mode to FAN mode</b>	The unit may change its setting to prevent frost from forming on the unit. Once the temperature increases, the unit will start operating in the previously selected mode again.
	The set temperature has been reached, at which point the unit turns off the compressor. The unit will continue operating when the temperature fluctuates again.
<b>The indoor unit emits white mist</b>	In humid regions, a large temperature difference between the room's air and the conditioned air can cause white mist.
<b>Both the indoor and outdoor units emit white mist</b>	When the unit restarts in HEAT mode after defrosting, white mist may be emitted due to moisture generated during the defrosting process.
<b>The indoor unit makes noises</b>	A rushing air sound may occur when the louver resets its position.
	A squeaking sound may occur after running the unit in HEAT mode due to expansion and contraction of the unit's plastic parts.

ISSUE	POSSIBLE CAUSES
<b>Both the indoor unit and outdoor unit make noises</b>	Low hissing sound during operation: This is normal and is caused by refrigerant gas flowing through both indoor and outdoor units.
	Low hissing sound when the system starts, has just stopped running, or is defrosting: This noise is normal and is caused by the refrigerant gas stopping or changing direction.
	Squeaking sound: Normal expansion and contraction of plastic and metal parts caused by temperature changes during operation can cause squeaking noises.
<b>The outdoor unit makes noises</b>	The unit will make different sounds based on its current operating mode.
<b>Dust is emitted from either the indoor or outdoor unit</b>	The unit may accumulate dust during extended periods of non-use, which will be emitted when the unit is turned on. This can be mitigated by covering the unit during long periods of inactivity.
<b>The unit emits a bad odor</b>	The unit may absorb odors from the environment (such as furniture, cooking, cigarettes, etc.) which will be emitted during operations.
	The unit's filters have become moldy and should be cleaned.
<b>The fan of the outdoor unit does not operate</b>	During operation, the fan speed is controlled to optimize product operation.
<b>Operation is erratic, unpredictable, or unit is unresponsive</b>	Interference from cell phone towers and remote boosters may cause the unit to malfunction. In this case, try the following: <ul style="list-style-type: none"> <li>• Disconnect the power, then reconnect.</li> <li>• Press ON/OFF button on remote control to restart operation.</li> </ul>
<b>The display is not showing.</b>	Activate the DISPLAY function
	Verify that the unit has power.
<b>Switch off the air conditioner immediately and cut off the power supply in the event of:</b>	Strange noises during operation.
	Faulty electronic control board
	Faulty fuses or switches
	Spraying water or objects inside the unit
	Overheated cables or plugs
	Very strong smells coming from the unit

**NOTE**



If problem persists, contact a local dealer or your nearest customer service center. Provide them with a detailed description of the unit malfunction as well as your model number.

## TROUBLESHOOTING

When troubles occur, check the following points. Contact a trained contractor to service the unit.

PROBLEM	POSSIBLE CAUSES	SOLUTION
<b>Poor Cooling Performance</b>	Temperature setting may be higher than ambient room temperature	Lower the temperature setting
	The heat exchanger on the indoor or outdoor unit is dirty	Clean the affected heat exchanger
	The air filter is dirty	Remove the filter and clean it according to instructions
	The air inlet or outlet of either unit is blocked	Turn the unit off, remove the obstruction and turn it back on
	Doors and windows are open	Make sure that all doors and windows are closed while operating the unit
	Excessive heat is generated by sunlight	Close windows and curtains during periods of high heat or bright sunshine
	Low refrigerant due to leak or long-term use	Check for leaks, re-seal if necessary and top off refrigerant
	Excessive heat is generated by sunlight	Block sunlight in installation area
<b>Poor Heating Performance</b>	Too many sources of heat in the room (people, computers, electronics, etc.)	Reduce amount of heat sources
	The outdoor temperature is extremely low	This model is designed to work down to -13°F, however, heating performance is impacted at temperatures below freezing
	Cold air is entering through doors and windows	Make sure that all doors and windows are closed during use
<b>The unit starts and stops frequently</b>	Low refrigerant due to leak or long-term use	Check for leaks, re-seal if necessary, and top off refrigerant
	There's too much or too little refrigerant in the system	Check for leaks and recharge the system with refrigerant
	Incompressible gas or moisture has entered the system	Evacuate and recharge the system with refrigerant
<b>The unit is not working</b>	The voltage is too high or too low	Install a manostat to regulate the voltage
	Power failure	Wait for the power to be restored
	The power is turned off	Turn on the power
	The fuse is burned out	Replace the fuse
	Remote control batteries are dead	Replace batteries
	Remote is not close enough to the unit.	Stand closer to the unit.
	There are obstructions between the unit and the remote.	Remove the obstructions
	The unit's 2-5 minute protection has been activated	Wait 2-5 minutes after restarting the unit
Timer is activated	Turn timer off	

PROBLEM	POSSIBLE CAUSES	SOLUTION
<b>Indicator lamps continue flashing or error code appears</b>	The unit may stop operation or continue to run safely. If the indicator lamps continue to flash or error codes appear, wait for about 10 minutes. The problem may resolve itself. If not, disconnect the power, then connect it again. Turn the unit on. If the problem persists, disconnect the power and contact your nearest customer service center.	



**NOTE**

If your problem persists after performing the checks and diagnostics above, turn off your unit immediately and contact an authorized service center.



**WARNING**

DO NOT ATTEMPT TO FIX THESE YOURSELF! CONTACT AN AUTHORIZED SERVICE PROVIDER! INJURY, DAMAGE TO THE EQUIPMENT AND/OR VOIDING THE WARRANTY COULD OCCUR.

## ERROR AND OPERATING CODES

Error Code	Operation or Malfunction Description	Items to check
E0	IDU & ODU Communication failure	The IDU & ODU wiring connection correct?
E1	IDU Room Temperature sensor failure (indoor unit)	IDU sensor and PCB.
E2	IDU Coil temperature sensor failure (indoor unit)	IDU sensor and PCB.
E3	ODU Coil temperature sensor failure	ODU coil sensor and ODU PCB
E4	AC Cooling system abnormal	Gas leakage? 2-way or 3-way valve blocked
E6	IDU PG Fan motor / DC fan motor works abnormal	Fan motor, fan blade and PCB.
E7	ODU Ambient Temperature sensor failure	ODU ambient sensor and ODU PCB.
E8	ODU Discharge Temperature sensor failure	ODU discharge sensor and ODU PCB.
E9	IPM / Compressor driving control abnormal	ODU PCB , compressor, etc.
EA	ODU Current Test circuit failure	ODU PCB broken?
Eb	The communication abnormal of Main PCB and Display board	Display board and main PCB.
EE	ODU EEPROM failure	1. ODU PCB broken? 2. Try to re-power on AC unit
EF	ODU DC fan motor failure.	Fan motor, ODU PCB.
EU	ODU Voltage test circuit abnormal.	ODU PCB
P0	IPM module protection.	ODU PCB
P1	Over / under voltage protection.	1. ODU PCB broken? 2. Power supply abnormal?
P2	Over current protection.	1. ODU PCB broken? 2. Power supply abnormal?
P4	ODU Discharge pipe Over temperature protection	Please check the service manual for detail.
P5	Sub-cooling protection on Cooling mode.	Please check the service manual for detail.
P6	Overheating protection on Cooling mode.	Please check the service manual for detail.

Error Code	Operation or Malfunction Description	Items to check
P7	Overheating protection on Heating mode.	Please check the service manual for detail.
P8	Outdoor Over temperature/ Under temperature protection	Please check the service manual for detail.
P9	Compressor driving protection (Load abnormal).	Please check the service manual for detail.
F0	Infrared customer feeling test sensor failure. (IDU failure)	Query with the remote controller
F1	Electric Power test module failure. (IDU failure)	Query with the remote controller
F2	Discharge temperature sensor failure PROTECTION	Please check the service manual for detail.
F3	ODU coil temperature failure PROTECTION	Please check the service manual for detail.
F4	Cooling system gas flow abnormal PROTECTION	Please check the service manual for detail.
F5	PFC PROTECTION	Please check the service manual for detail.
F6	The Compressor lack of phase / Anti-phase PROTECTION	Please check the service manual for detail.
F7	IPM Module temperature PROTECTION	Please check the service manual for detail.
F8	4-Way Value reversing abnormal.	Please check the service manual for detail.
F9	The module temperature test circuit failure	ODU PCB
FA	The compressor Phase-current test circuit failure	ODU PCB
Fb	Limiting/ reducing frequency for overload protection on Cooling/ Heating mode	Query with the remote controller
FC	Limiting/ reducing frequency for High power consumption protection	Query with the remote controller
FE	Limiting/ reducing frequency for Module current protection (phase current of compressor)	Query with the remote controller
FF	Limiting/ reducing frequency for Module temperature protection	Query with the remote controller
FH	Limiting/ reducing frequency for Compressor driving protection.	Query with the remote controller
FP	Limiting/ reducing frequency for anti-condensation protection..	Query with the remote controller
FU	Limiting/ reducing frequency for anti-frost protection.	Query with the remote controller
Fj	Limiting/ reducing frequency for Discharge over temperature protection	Query with the remote controller
Fn	Limiting/Reducing frequency for ODU AC Current protection.	Query with the remote controller
Fy	Gas leakage protection	Please check the service manual for detail.
bf	TVOC sensor failure (IDU failure, optional)	Query with the remote controller
bc	PM2.5 sensor failure (IDU failure, optional)	Query with the remote controller
bj	Humidity sensor failure. (IDU failure, optional)	Query with the remote controller
Fd	Refrigerant detector failure (only if unit has refrigerant sensor)	Refrigerant detector failure or PCB is not receiving a response from the refrigerant detector
Hd	Refrigerant leakage protection (only if unit has refrigerant sensor)	The detector detects refrigerant leakage

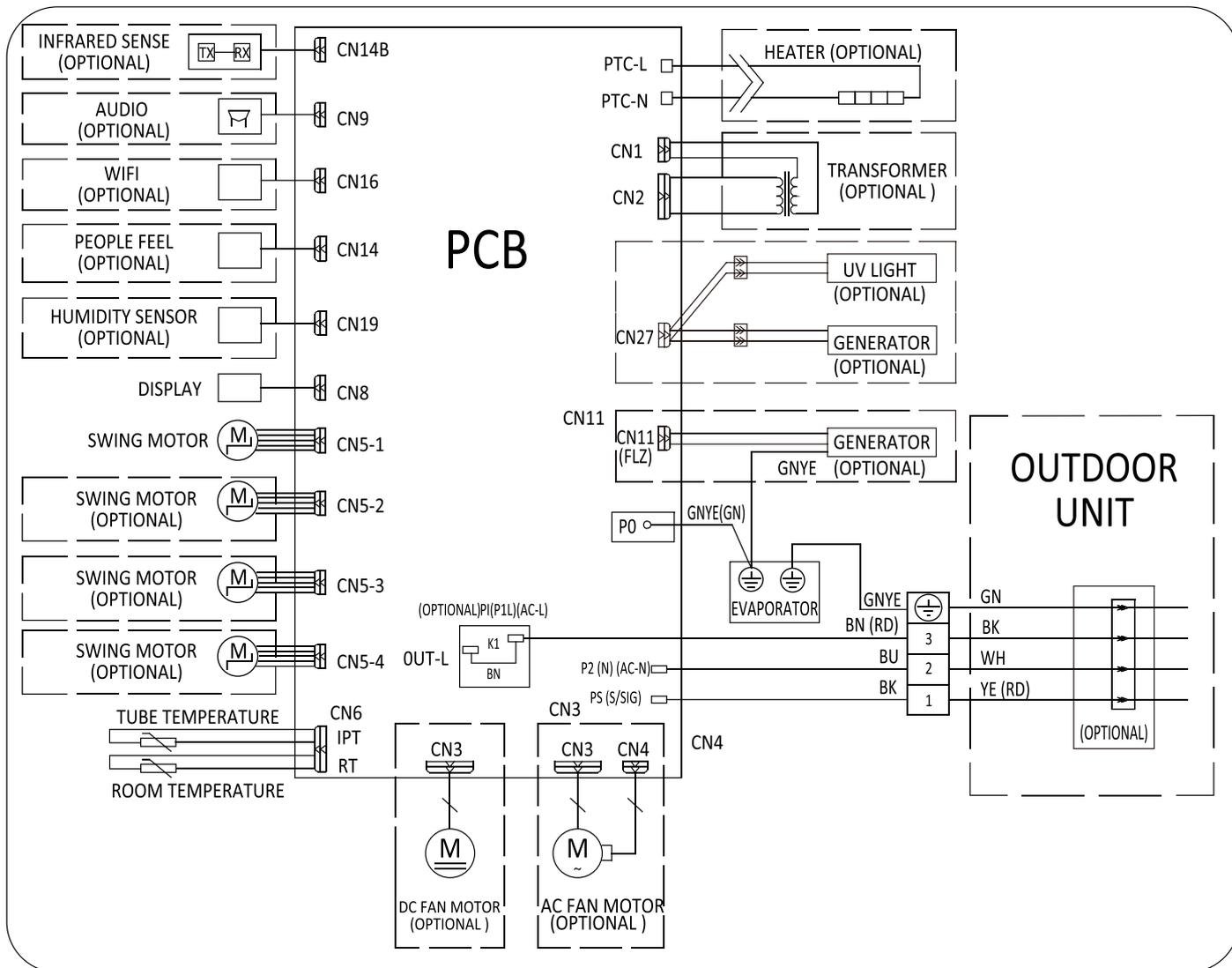
**NOTE**



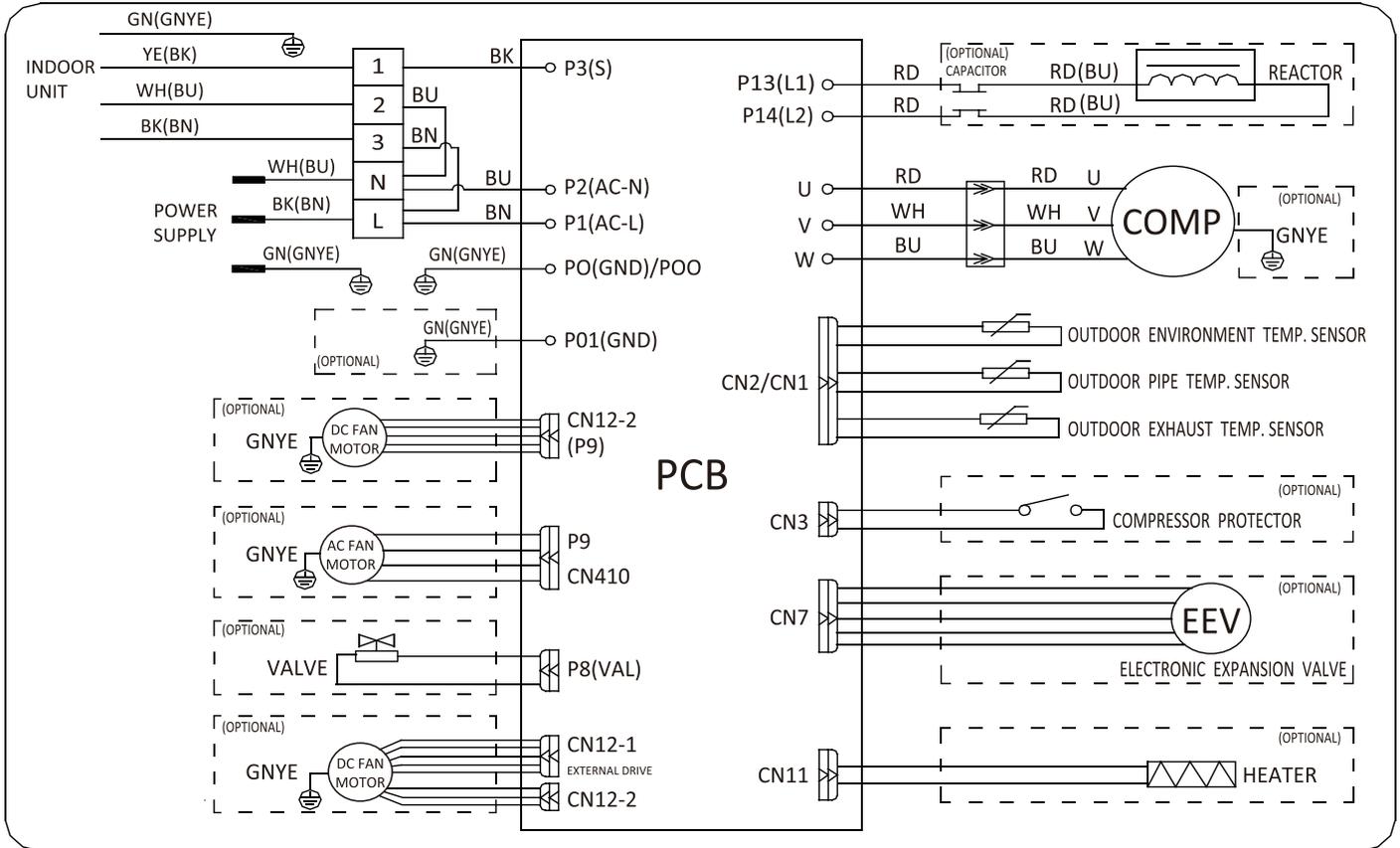
**ONLY FOR TRAINED TECHNICIANS, SETTING CHANGES COULD DAMAGE EQUIPMENT:**  
As shown in the chart above, some of the codes (Fb~bj) require using the remote control for inspection. While the unit is on, press the ECO button 8 times within 8 seconds, the buzzer will beep 2 times, you can then inspect the failure codes.

# WIRING DIAGRAMS

## 115V INDOOR UNIT: DREW09S2AL DREW12S2AL



## 115V OUTDOOR UNIT: DRE1U09S2A DRE1U12S2A





# JOB SITE INFORMATION SHEET

## Site Information

Job Name: \_\_\_\_\_ Installation Date: \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Email: \_\_\_\_\_

## Contractor Information

Contractor Name: \_\_\_\_\_ Technician Name: \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Email: \_\_\_\_\_

## Outdoor Unit (ODU) Information

ODU Model #: \_\_\_\_\_ ODU Serial #: \_\_\_\_\_

Unit Location: \_\_\_\_\_

## Indoor Unit (IDU) Information

IDU Model #: \_\_\_\_\_ IDU Serial #: \_\_\_\_\_

Unit Type: \_\_\_\_\_ Unit Location: \_\_\_\_\_

Refrigerant Line Size (Circle Liquid and Gas Line):    1/4"    3/8"    1/2"    5/8"

Line Set Length: \_\_\_\_\_

**Outdoor Electrical Readings**

Line Power Wire Color: L1 \_\_\_\_\_ L2 \_\_\_\_\_ G \_\_\_\_\_

Line Voltage (Power Off): L1 to L2 \_\_\_\_\_ L1 to G \_\_\_\_\_ L2 to G \_\_\_\_\_

Line Voltage (Power On): L1 to L2 \_\_\_\_\_ L1 to G \_\_\_\_\_ L2 to G \_\_\_\_\_

**Outdoor to Indoor Electrical Readings**

IDU Power/Control Wire Color: 1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_

Voltage Readings: 1-2 \_\_\_\_\_ AC      2-3 \_\_\_\_\_ DC

**Outdoor Thermal Readings**

ODU Discharge: \_\_\_\_\_ °F      OD Ambient: \_\_\_\_\_ °F

Gas Line Saturation: \_\_\_\_\_ °F      Liquid Line Saturation: \_\_\_\_\_ °F

**Indoor Electrical Readings**

IDU Power/Control Wire Color: 1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_

Voltage Readings: 1-2 \_\_\_\_\_ AC      2-3 \_\_\_\_\_ DC

**Indoor Thermal Readings**

Return Air: \_\_\_\_\_ °F      Supply Air: \_\_\_\_\_ °F      Room Air: \_\_\_\_\_ °F

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