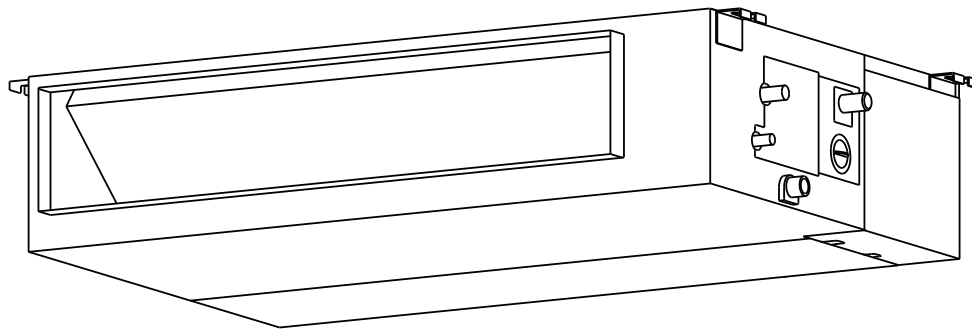


INSTALLATION MANUAL**SLIM DUCTED INDOOR UNIT**

DRADL0612F2A, DRADL18F2A

DRADH0912F2A, DRADH18F2A, DRADH24F2A

R-454B, 208/230V, 1ph 60HZ



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.

TABLE OF CONTENTS

INTRODUCTION	3
SYMBOLS USED IN THIS MANUAL.....	3
IMPORTANT SAFETY PRECAUTIONS	4
OPERATING TEMPERATURES.....	16
ACCESSORIES.....	17
PARTS IDENTIFICATION	19
UNIT DIMENSIONS.....	20
INDOOR UNIT INSTALLATION	21
STEP 1: SELECT INSTALLATION LOCATION	21
STEP 2: CONFIGURE THE UNIT	22
STEP 3: HANG INDOOR UNIT	25
STEP 4: DRILL WALL HOLE FOR CONNECTIVE PIPING.....	25
STEP 5: DUCT AND ACCESSORIES INSTALLATION.....	26
STEP 6: CONNECT DRAIN PIPE.....	27
STEP 7: WIRING THE INDOOR UNIT	29
STEP 8: INSTALL WIRED THERMOSTAT	31
STEP 9: PREPARE REFRIGERANT PIPING.....	32
STEP 10: WRAP PIPES AND CABLE.....	32
INDOOR UNIT BTU SETTING (FOR MULTI-ZONE)	33
SETTING STATIC PRESSURE.....	33
FINAL CHECKS.....	34
TROUBLESHOOTING.....	35
WIRING DIAGRAM.....	39
ERROR CODES – INDOOR UNIT	40

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 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 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.



R-454B

A2L

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

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

**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.

LEAK DETECTION SYSTEM installed. Unit must be powered except for service. For the unit with refrigerant sensor, when the refrigerant sensor detects refrigerant leakage, the indoor unit will display a error code and emit a buzzing sound, the compressor of outdoor unit will immediately stop, and the indoor fan will start running. The service life of the refrigerant sensor is 15 years. When the refrigerant sensor malfunctions, the indoor unit will display the error code "FHCC". The refrigerant sensor can not be repaired and can only be replaced by the manufacturer. It shall only be replaced with the sensor specified by the manufacturer.

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).

R454B REQUIRED MINIMUM ROOM AREA

Required Room Height

For indoor units that are connected via an air duct system to one or more rooms, R454B UL guidelines UL/CSA 60335-2-40 require that the **height to the bottom of the air outlet diffuser be $\geq 7.2\text{ft} / 2.2\text{m}$** .

Minimum Room Area

R454B UL guidelines mandate that refrigerant dissipation measures be implemented 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 minimum room area for operating and storing the unit should be as specified in the following table.

TA_{\min} : REQUIRED MINIMUM ROOM AREA: ft^2 (m^2)

M_c or M_{REL} [oz/kg]	TA_{\min} [ft^2/m^2]	M_c or M_{REL} [oz/kg]	TA_{\min} [ft^2/m^2]	M_c or M_{REL} [oz/kg]	TA_{\min} [ft^2/m^2]	M_c or M_{REL} [oz/kg]	TA_{\min} [ft^2/m^2]
$\leq 62.7/1.7$	12/1.1	134/3.8	126/11.67	211.6/6.0	198/18.43	289.2/8.2	271/25.18
63.5/1.8	60/5.53	141.1/4	132/12.29	218.7/6.2	205/19.04	296.3/8.4	278/25.8
70.5/2	66/6.14	148.1/4.2	139/12.9	225.8/6.4	212/19.66	303.4/8.6	284/26.41
77.6/2.2	73/6.76	155.2/4.4	145/13.51	232.8/6.6	218/20.27	310.4/8.8	291/27.63
84.6/2.4	79/7.37	162.2/4.6	152/14.13	239.9/6.8	225/20.88	317.5/9.0	298/27.64
91.72/6	86/7.99	169.3/4.8	159/14.74	246.9/7.0	231/21.5	324.5/9.2	304/28.26
98.8/2.8	93/8.6	176.4/5	165/15.36	254/7.2	238/22.11	331.6/9.4	311/28.87
105.8/3	99/9.21	183.4/5.2	172/15.97	261/7.4	245/22.73	338.6/9.6	317/29.48
112.9/3.2	106/9.83	190.5/5.4	179/16.58	268.1/7.6	251/23.34	345.7/9.8	324/30.10
119.9/3.4	112/10.44	197.5/5.6	185/17.2	275.1/7.8	258/23.96	352.7/10.0	331/30.71
127/3.6	119/11.06	204.6/5.8	192/17.81	282.2/8.0	264/24.57		
Variable Definitions	TA_{\min} : the required minimum room area in ft^2 (m^2) M_c : the actual refrigerant charge in the system in lbs (kg) M_{REL} : the refrigerant releasable charge in lbs (kg) WARNING: The minimum room area or the minimum room area of conditioned space is based on releasable charge and total system refrigerant charge.						

When the unit detects a refrigerant leak, the minimum airflow of the indoor unit is as follows :

Low Static Models

Model	DRADL0612F2A	DRADL0612F2A	DRADL0612F2A	DRADL18F2A
BTU	6K	9K	12K	18K
Nominal Air Volume	294 CFM (500 m ³ /h)	294 CFM (500 m ³ /h)	353 CFM (600 m ³ /h)	588 CFM (1000m ³ /h)

High Static Models

Model	DRADH0912F2A	DRADH0912F2A	DRADH18F2A	DRADH24F2A
BTU	9K	12K	18K	24K
Nominal Air Volume	324 CFM (550 m ³ /h)	382 CFM (650 m ³ /h)	647 CFM (1100 m ³ /h)	824 CFM (1400 m ³ /h)

TAKE NOTE OF THE FUSE SPECIFICATIONS

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 , for example : T3.15AL/250VAC, T5AL/250VAC, T3.15A/250VAC, T5A/250VAC, T20A/250VAC, T30A/250VAC,etc.



Note

Only a blast-proof ceramic fuse can be used.

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.

TEMPERATURE RANGES


	COOL mode	HEAT mode	DRY mode
Indoor Air Temperature	60°F – 90°F (16°C – 32°C)	32°F – 86°F (0°C – 30°C)	50°F – 90°F (10°C – 32°C)
Outdoor Air Temperature	-13°F / -22°F* – 122°F (-25°C / -30°C* – 50°C)	-13°F / -22°F* – 75°F (-25°C / -30°C* – 24°C)	32°F – 122°F (0°C – 50°C)

* The minimum operating temperature depends on the outdoor unit. Low ambient Sirius Heat™ models have a minimum operating temperature in heat mode of -22°F (-30°C).


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

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

NOTE

 Your Durastar air conditioner's outdoor unit is equipped with a base pan heater, allowing it to continue to operate at freezing temperatures as low as -22°F (-30°C). 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.


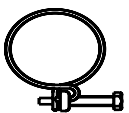

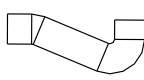

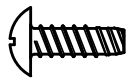

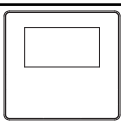
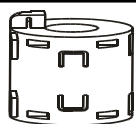
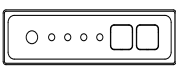
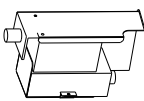
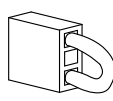
NOTE

 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.

ACCESSORIES

INCLUDED INSTALLATION ACCESSORIES

The air conditioning system comes with the following accessories.

Accessory	Quantity	Image	Accessory	Quantity	Image
Manual	1-2		Drain Pipe Worm Clamp	2-3	
Ref. Pipe Insulation Sheath	2		Rubber Tude (Optional for External Pump)	1	
Brass Flare Nut	2		Self-Tapping Screws	5	
Drain Pipe Insulated Connector Tube	1		Wired Thermostat (DRSTAT101)	1	
Magnetic Ring (Some Models)	1-2		Display Panel (DRPDRAD09F1A16)	1	
External Drain Pump (For Low Static Units)	1		Water Sensor Jumper (Plugged into CN5) (Optional)	1	

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
- Suspension bolts and necessary hardware to hang indoor unit
- Wiring u-lugs

**WARNING**

Ensure that all service equipment and instruments are certified for use with group A2L refrigerants, specifically R-454B. Recovery equipment, pumps, hoses, and related components must be rated for the appropriate design pressures for R-454B. Manifold sets should accommodate pressures up to 800 psig on the high side and 250 psig on the low side, with a 550 psig low-side retard. Hoses must have a service pressure rating of 800 psig, while recovery cylinders should be rated for 400 psig, meeting DOT 4BA400 or DOT 4BW400 standards.

TOOLS NEEDED

The following tools are required for installation.

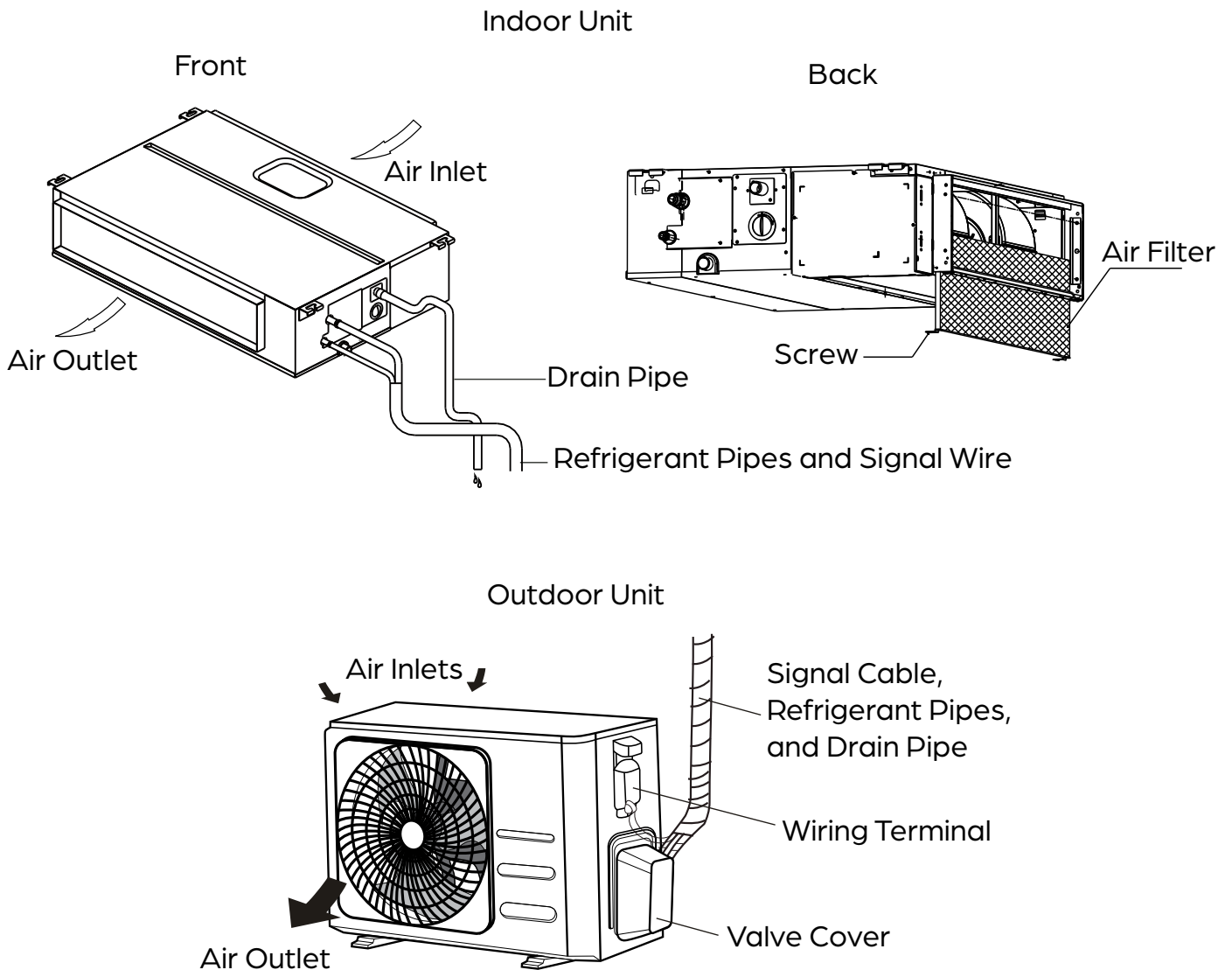
- Vacuum pump
- HVAC manifold gauge set
- Micron Gauge
- Refrigerant leak detector
- Copper pipe cutter
- Phillips screwdriver
- Drill with 2 1/2" or 3 1/2" (indoor unit model depending) core bit
- Flaring tool
- Burr reamer
- Crescent or spanner wrench
- Hexagonal wrench set
- Torque wrench
- Multimeter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

PARTS IDENTIFICATION



NOTE

The installation must be performed in accordance with the required local and national codes. The installation may be slightly different based on the model and market.

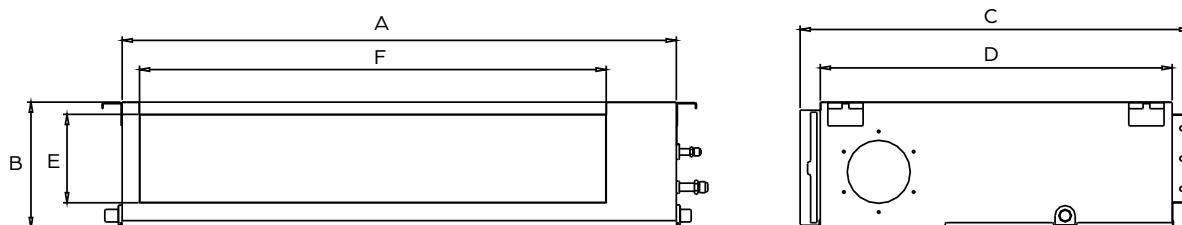


NOTE

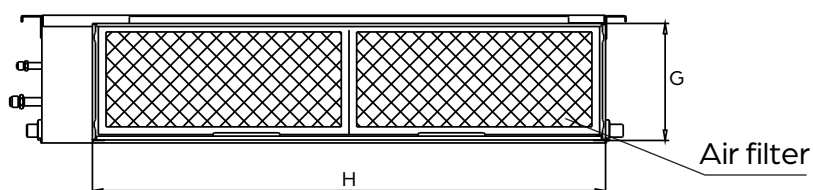
Illustrations in this manual are for explanatory purposes. The actual shape of your mini-split equipment may vary slightly.

UNIT DIMENSIONS

Unit and air outlet dimensions



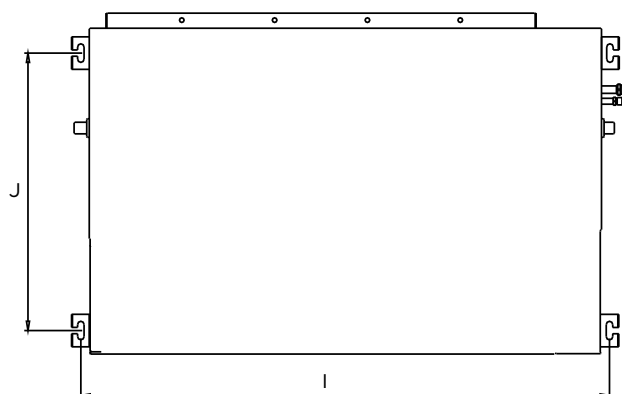
Air inlet dimensions



Model	A	B	C	D	E	F	G	H
DRADL0612F2A	27 9/16" (700mm)	7 7/8" (200mm)	19 15/16" (506mm)	17 3/4" (450mm)	6" (152mm)	21 1/8" (537mm)	7 5/16" (186mm)	23 9/16" (599mm)
DRADL18F2A	34 5/8" (880mm)	8 1/4" (210mm)	26 9/16" (674mm)	23 5/8" (600mm)	5 3/8" (136mm)	27 13/16" (706mm)	7 1/2" (190mm)	30 13/16" (782mm)
DRADH0912F2A	27 9/16" (700mm)	9 11/16" (245mm)	31 5/16" (795mm)	29 9/16" (750mm)	7" (178mm)	20 3/4" (527mm)	8 3/8" (212mm)	23 5/16" (592mm)
DRADH18F2A	39 3/8" (1000mm)	9 11/16" (245mm)	31 5/16" (795mm)	29 9/16" (750mm)	7" (178mm)	32 9/16" (827mm)	8 3/8" (212mm)	35 1/8" (892mm)
DRADH24F2A	39 3/8" (1000mm)	9 11/16" (245mm)	31 5/16" (795mm)	29 9/16" (750mm)	7" (178mm)	32 9/16" (827mm)	8 3/8" (212mm)	35 1/8" (892mm)

Model	I	J
DRADL0612F2A	29 3/16" (740mm)	14 3/16" (360mm)
DRADL18F2A	36 1/4" (920mm)	20" (508mm)
DRADH0912F2A	29 3/16" (740mm)	25 1/4" (640mm)
DRADH18F2A	41" (1040mm)	25 1/4" (640mm)
DRADH24F2A	41" (1040mm)	25 1/4" (640mm)

Mounting dimensions for ceiling bolts



INDOOR UNIT INSTALLATION

STEP 1: SELECT INSTALLATION LOCATION

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

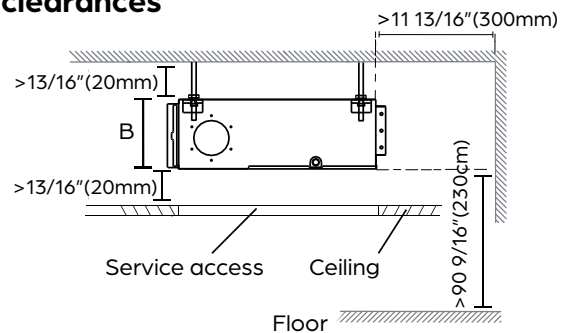
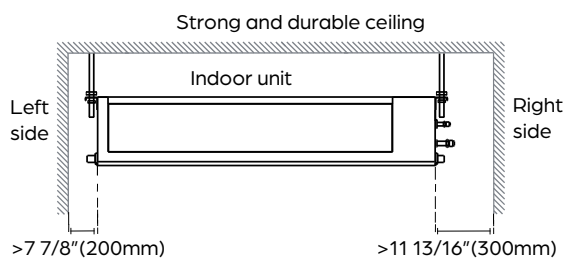
- Good air circulation
- Convenient drainage
- Noise from the unit will not disturb other people
- Firm and solid – the location will not vibrate
- Strong enough to support the weight of the unit
- A location at least three feet (one meter) from all other electrical devices (e.g., TV, radio, computer)

DO NOT install unit in the following locations:

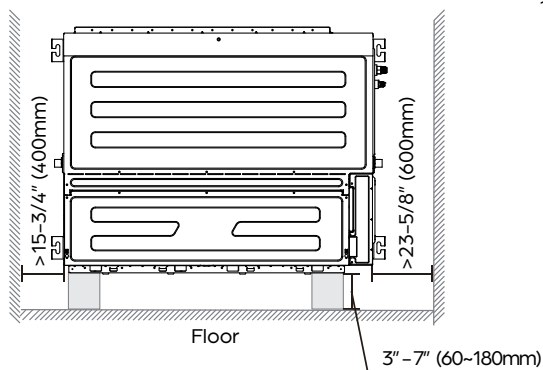
- Near any source of heat, steam, or combustible gas
- Near flammable items such as curtains or clothing
- Near any obstacle that might block air circulation
- Near a doorway
- In a location subject to direct sunlight

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

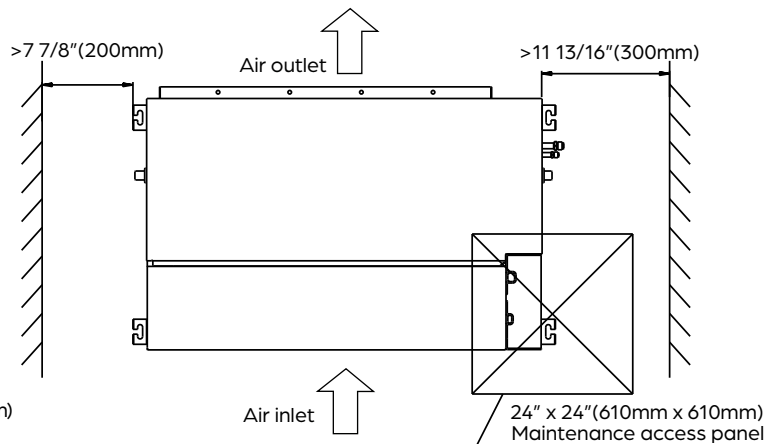
Ceiling mount clearances



Wall mount (vertical) clearances



Maintenance access panel clearance



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.

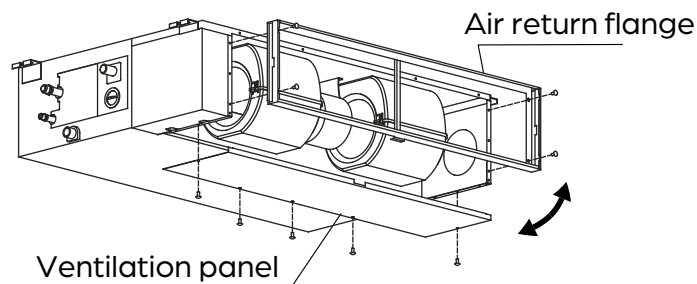
STEP 2: CONFIGURE THE UNIT

All units except for the DRADL0612F2A come with an internal pump. See instructions below for installing the external pump on the DRADL0612F2A if necessary.

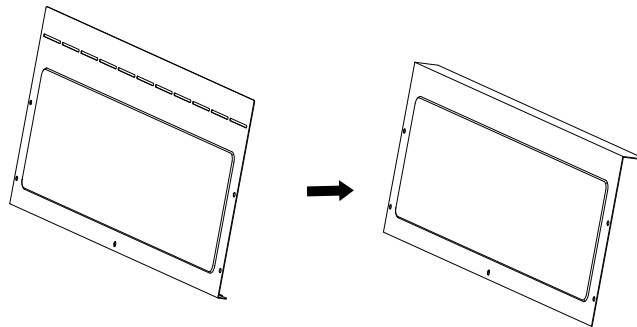
In addition, this unit can be converted for vertical wall mount installation. Use the following steps to rotate the pump and (if necessary) change the air inlet position. Instructions vary slightly depending on the unit.

CHANGING THE AIR INLET DIRECTION (REAR TO UNDERSIDE)

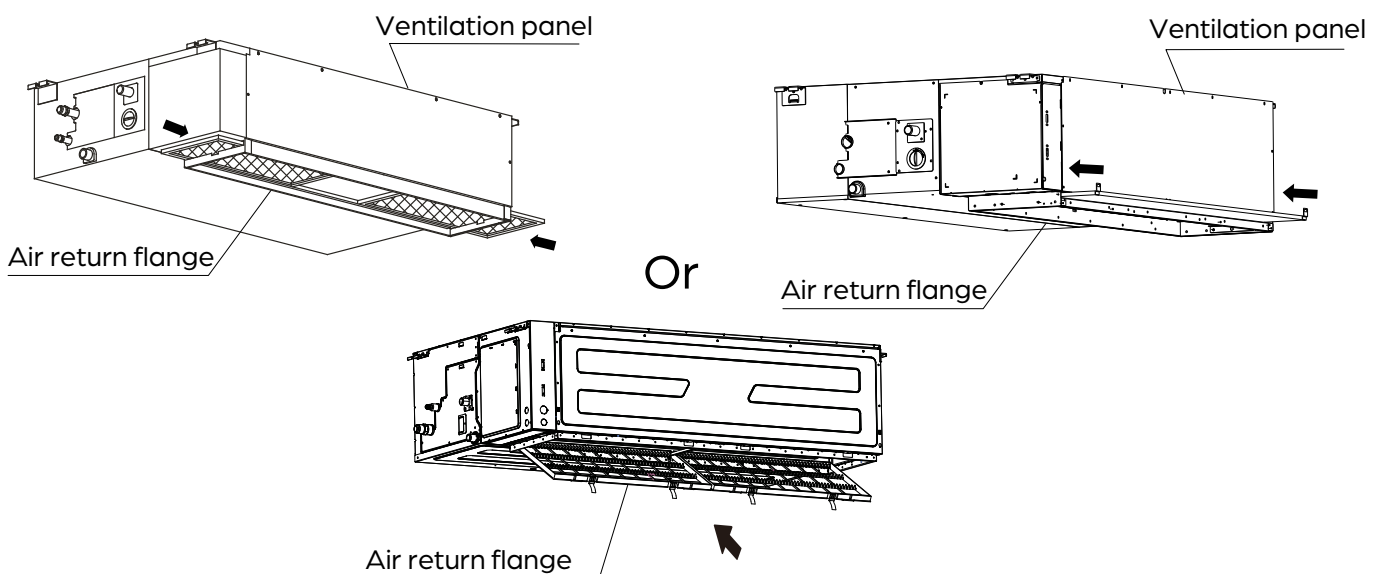
1. Remove the ventilation panel and air return flange.



2. Bend the rear ventilation panel 90° along the dotted line (only necessary for DRADL0612F2A and DRADL18F2A).

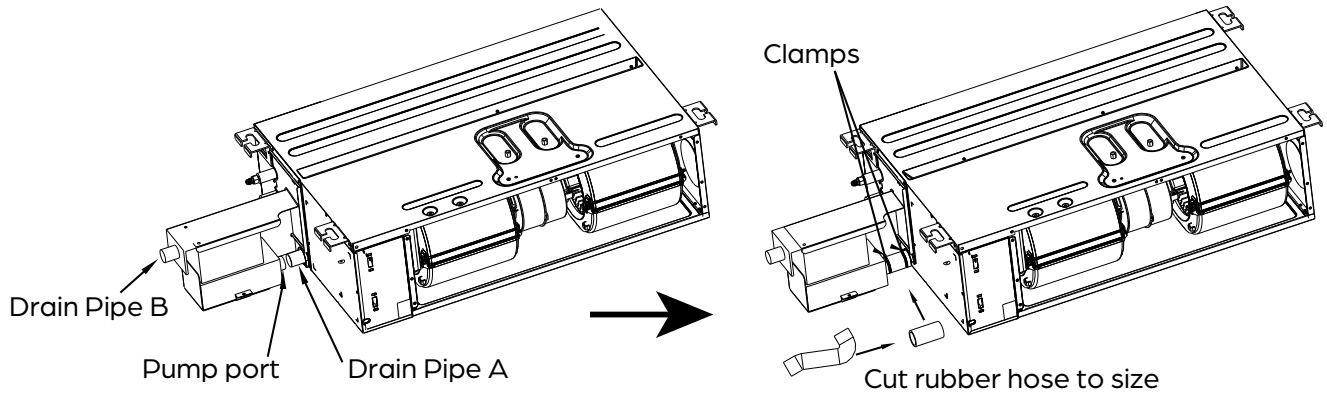


3. Swap the mounting positions of the ventilation panel and air return flange.
4. Install the filter mesh. The filter installs in different methods depending on the model as illustrated below.



INSTALLING THE EXTERNAL PUMP ON THE DRADL0612F2A:

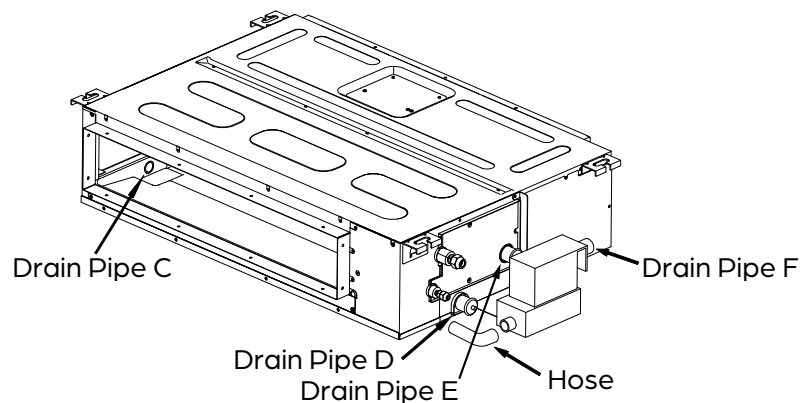
1. Cut the rubber hose provided to the proper size and use it to connect the drain pipe on the unit (Pipe A) to the pump port inlet port.
2. Attach the pump to the unit.
3. Secure the pipe with the clamps provided.



4. Plug the external pump to the "PUMP" port CN13 on the control board. Remove the plug shorting CN5 and plug the water level sensor into CN5 on the control board.
5. Attach the drain pipe to pipe B per the instructions mentioned later in this manual.

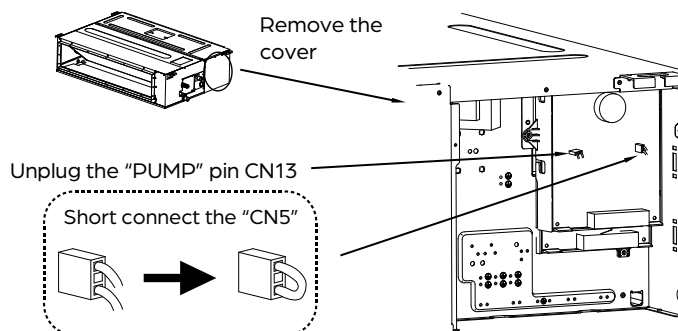
INSTALLING THE EXTERNAL PUMP ON THE DRADL18F2A:

1. Drain caps are covering drain pipe C, D and E out of the box.
2. Remove the drain cap from drain pipe D.
3. Use the rubber hose provided to connect the inlet pipe of the pump to drain pipe D on the unit.
4. Attach the pump to the unit.
5. Secure the pipe with the clamps provided.
6. Plug the external pump to the "PUMP" port CN13 on the control board. Plug the water level sensor into CN5 on the control board.
7. Attach the drain pipe to pipe F per the instructions mentioned later in this manual.



CONVERTING THE DRAIN PUMP FOR VERTICAL INSTALLATION

If the pump is not needed in vertical configuration, unplug the CN13 and CN5 from the control board. Use the provided short plug to short out the water level sensor plug CN5. This short plug comes attached to the board.

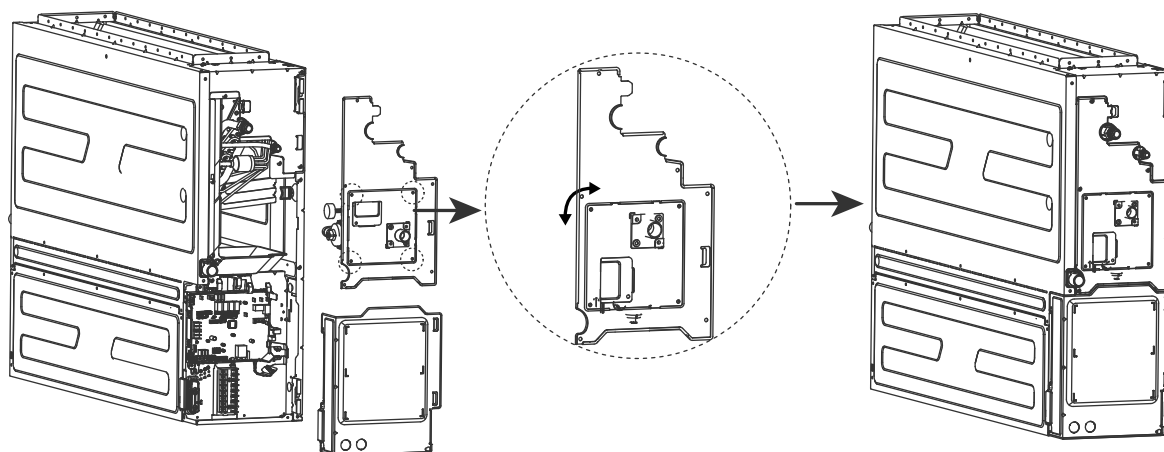


For units with an external pump (DRADL0612F2A and DRADL18F2A):

1. The **pump does not work** in the vertical configuration. Remove the pump, unplug CN13 and CN5 from the board and use the jumper provided to short the water sensor plug CN5.
2. Connect the field supplied PVC pipe to drain pipe A or E (shown on the previous page depending on the model) per the instructions mentioned later in this manual.

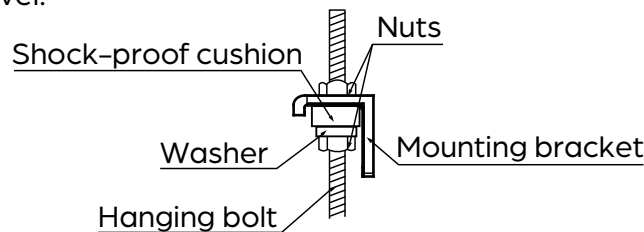
For units with an internal pump (DRADH0912F2A, DRADH18F2A and DRADH24F2A):

1. Remove the electrical control box cover, unplug the pump and water level switch terminals from the main control board.
2. Remove the 4 screws holding the pump assembly to the unit.
3. Pull out the pump (a zip-tie holding the internal tube and/or wiring may need to be cut).
4. Rotate the water pump components by 90° and fix them to the water pump mounting plate again.
5. Reinstall the pump parts to the unit and connect the wiring.



STEP 3: HANG INDOOR UNIT

1. Refer to the following diagrams for unit dimensions and locations for the four suspension bolt holes required to hang the indoor unit.
2. Before drilling the holes in the ceiling and mounting the unit, align the refrigerant pipes, drain pipe, and electric cable connection points with the direction they will be drawn out and connected to the outdoor unit through the wall hole (see *Step 3: Drill Wall Hole For Connective Piping*).
3. Drill four holes 4" deep in the internal ceiling for each of the required suspension bolt anchors (field supplied). Make sure to hold the drill at a 90° angle to the ceiling.
4. Using a hammer, insert the suspension bolt anchors into the pre-drilled holes.
5. Install the four suspension bolts.
6. Mount the indoor unit. Using two people to lift and secure it, insert the suspension bolts into the unit's hanging bracket holes and secure in place with washers and nuts (see diagram below). Make sure the unit is level.

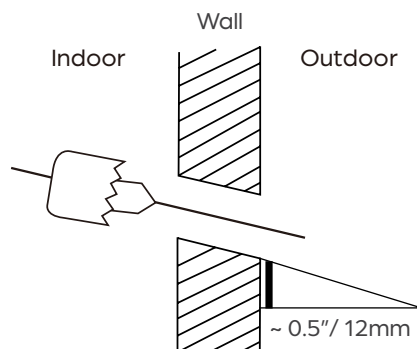


CAUTION

Ensure that the indoor unit is completely level. Improper installation can cause the drain pipe to back up into the unit and water leaks.

STEP 4: DRILL WALL HOLE FOR CONNECTIVE PIPING

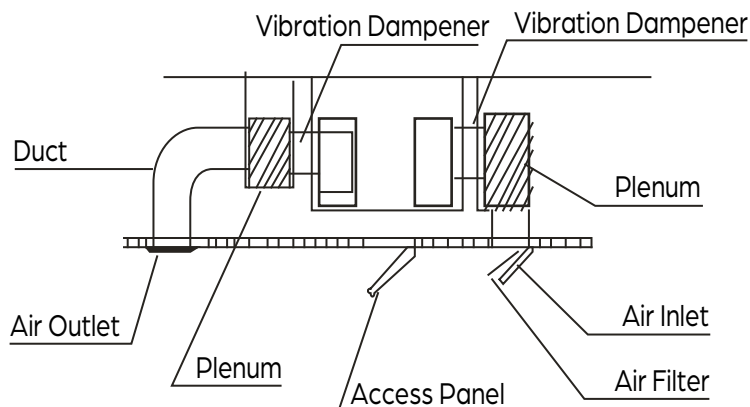
1. Determine the location of the wall hole based on the location of the outdoor unit.
2. Using a 2 1/2" (65mm) core drill for units with a gas side connective pipe less than 5/8" (16mm), or 3 1/2" (90mm) for units with a gas side pipe greater than or equal to 5/8" (16mm), drill a hole in the wall. Make 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 3/16 - 1/4" (5mm to 7mm). This will ensure proper water drainage.



3. Place the protective wall hole sleeve (field supplied) 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 wall hole sleeve cover to the wall sleeve on the outside end. Make sure the cover is flush with the outside wall.

STEP 5: DUCT AND ACCESSORIES INSTALLATION

Once the unit is hung, you may install any additional ducting required. The diagram below illustrates one example of installing the unit with hidden ducting. The unit may also be installed exposed, depending on your needs.



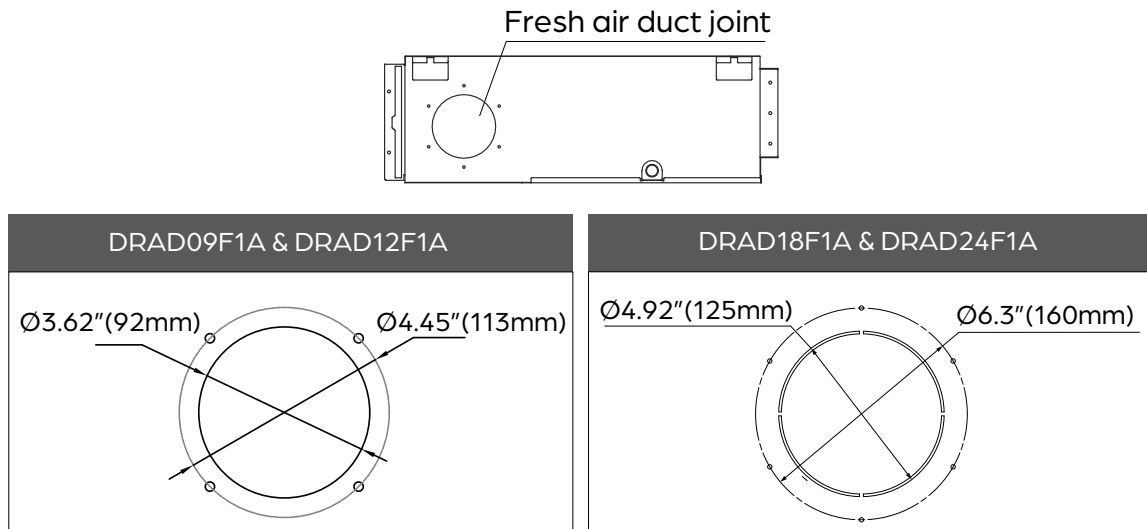
INSTALLATION TIPS

- Air filters help remove dust and particles from the circulating air. They should be installed on the air inlet side according to the size of the inlet on the unit.
- Vibration dampeners are recommended to be installed between the unit and the ductwork. They will decrease vibrations and noise coming from the unit. They also provide some flexibility when installing and positioning the ductwork.
- The air inlet and air outlet should be far enough apart to avoid short-circuiting the air flow and provide proper circulation in the room.
- Do not place the connecting duct weight on the unit. Provide proper support for the ductwork independent of the unit supports.
- All ductwork should be properly insulated to prevent condensation.
- Refer to the following static pressure guidelines when installing the indoor unit. The static pressure can be adjusted using methods explained later in the manual:

Model	Static Pressure (in. wc / Pa)
DRADL0612F2A	0 - 0.4 / 0 - 100
DRADL18F2A	0 - 0.4 / 0 - 100
DRADH0912F2A	0 - 0.8 / 0 - 200
DRADH18F2A	0 - 0.8 / 0 - 200
DRADH24F2A	0 - 0.8 / 0 - 200

FRESH AIR DUCT INSTALLATION

This unit allows for a fresh air duct to be installed. Duct location and dimensions are shown below.



STEP 6: CONNECT DRAIN PIPE

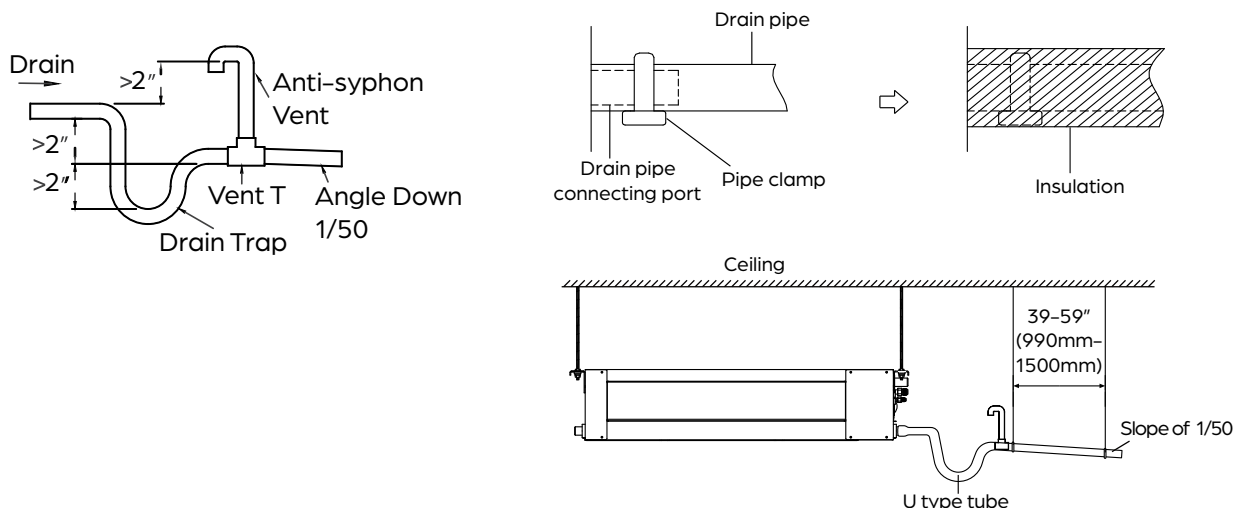
The drain pipe is used to drain condensate water away from the unit. Improper installation may cause leaks and unit or property damage.

NOTE

The outside diameter of the drain outlet tube is 1" (25mm). A FxF insulated drain adapter tube is provided to connect the drain outlet to 1" OD PVC pipe. It is recommended to use stiff PVC pipe to avoid the drain line sagging.

Gravity draining:

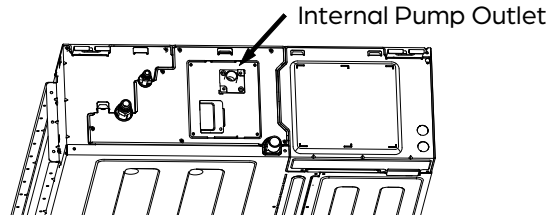
1. Install the drain pipe to the lower drain connecting port using the insulated connector tube and metal worm clamps provided.
2. Maintain a downward slope of at least a 1/50 gradient to prevent water from flowing back into the unit. To keep the drain pipe from sagging, install hanging wires every 39 – 59".
3. Wrap the remaining indoor portion of the drain pipe with foam pipe insulation to prevent condensation.



Using the included pump:

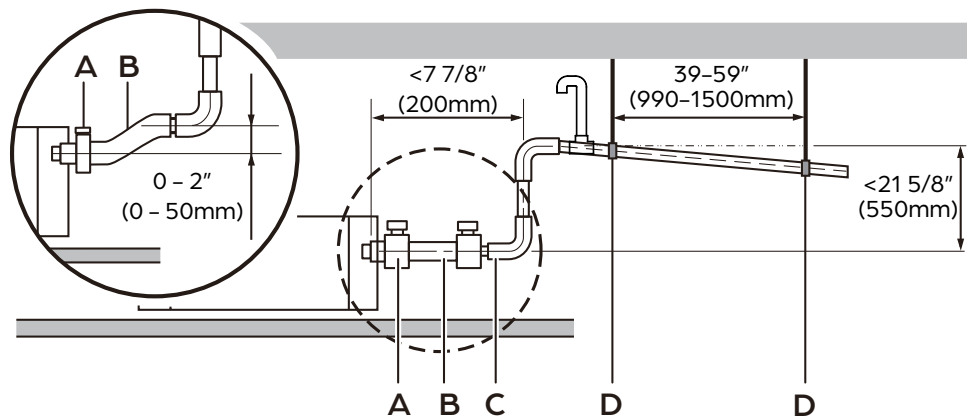
A drain pump allows the outlet of the drain pipe to be higher than the pipe's connecting port.

1. For pump assisted draining, install the drain pipe to the upper connecting port shown below or to the external pump outlet using the insulated connector tube and metal worm clamps provided.



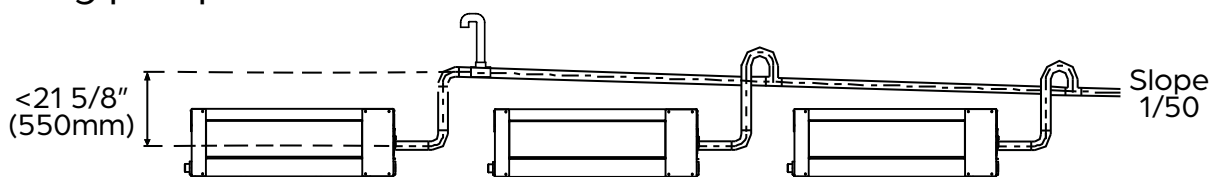
2. The vertical lift pipe must be installed no higher than 21 5/8" (550mm) from the drain connection port with a maximum distance of 7 7/8" (200mm) between the unit and the lift pipe.
3. To prevent air bubbles, make sure the pipe between the unit and the lift pipe is level or slightly tilted up (0 - 2"). Install hanging wires every 39 - 59" to keep the drain pipe from sagging.
4. Wrap the indoor portion of the pipe with foam pipe insulation to prevent condensation. Incorrect installation can cause water to flow back into the unit and leaks.

- A:** Metal clamps (provided)
B: Insulated drain pipe connector (provided)
C: Drain pipe (field supplied)
D: Pipe hangers (field supplied)

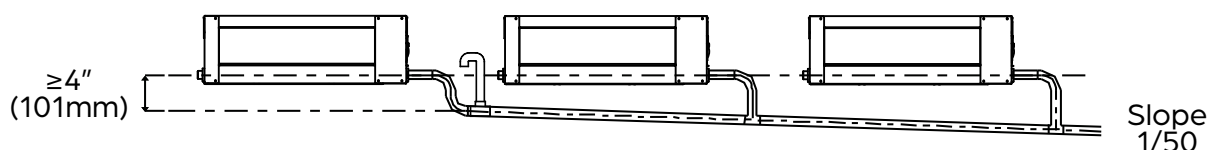


If connecting multiple drain pipes: Install the pipes as illustrated below.

Using pump



Not using pump



5. Pass the drain pipe through the wall hole to the outside. The end of the pipe should be at least 2" (50mm) above the ground. If it touches the ground, the pipe may become blocked. Make sure the water drains to a safe location where it will not cause water damage or a slipping hazard.

STEP 7: WIRING THE INDOOR UNIT

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 outlet. 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.

The signal cable enables communication between the indoor and outdoor units. You must first choose the right cable size before preparing it for connection.

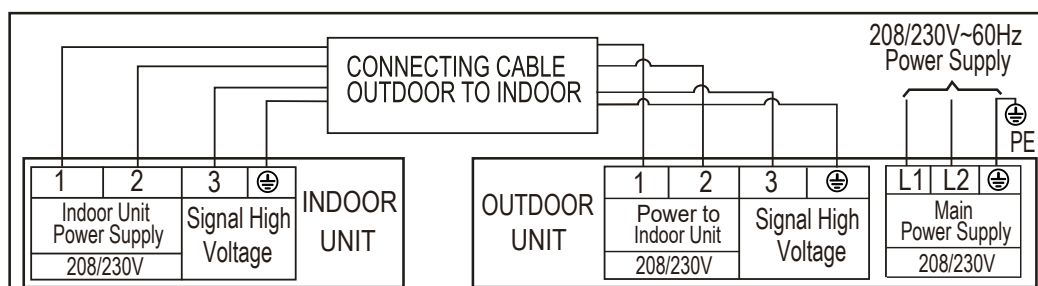
USE THE RIGHT CABLE

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

CABLE SIZING

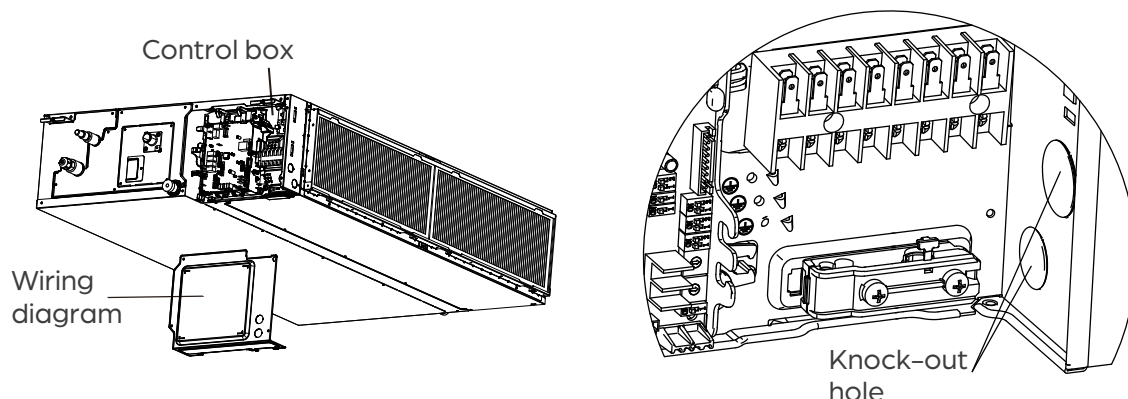
Use a minimum of 14 AWG for power and signal cables connected to and between the indoor and outdoor units.

The size of the power supply cable, signal 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.



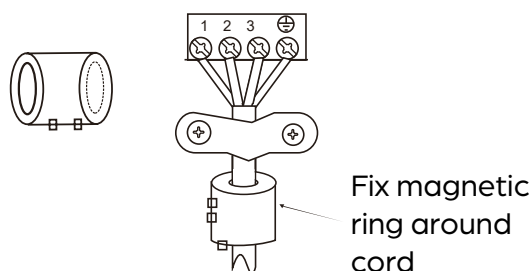
CONNECT THE SIGNAL CABLE

1. Prepare the cable for connection:
 - Using wire strippers, strip the jacket from both ends of the cable to reveal about 6" of the wires.
 - Strip the insulation from the ends of the wires.
 - Using a wire crimper, crimp u-lugs to the ends of the wires.
2. Open the control box lid of the indoor unit and locate the wiring diagram on the panel.



3. Unscrew the cable clamp below the terminal block and place it to the side.
4. Feed the cable through the magnetic ring (some models) and secure the ring in place.

Magnetic ring (if supplied with accessories)



5. Refer to the wiring diagram and connect the u-lugs to the terminal block. Firmly screw the u-lug of each wire to its corresponding terminal.
6. 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.
7. Replace the control box lid.

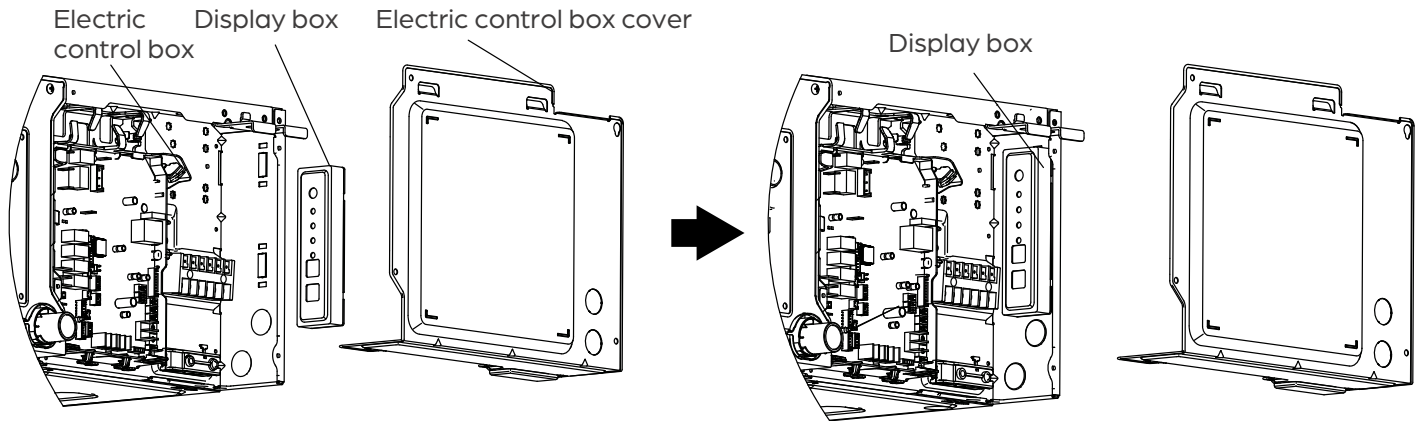


WARNING

All wiring must be performed strictly in accordance with the wiring diagram located on the inside of the control box lid.

CONNECTING THE DISPLAY PANEL AND THERMOSTAT

We recommend using the display panel (DRPDRAD09F1A16), so the unit can be controlled during service in an attic or crawl space. If using this setup, connect the 20' lead to the 5-pin connector leading to the display panel. Then connect the 10-pin wire from the display panel to port CN10A on the board. The provided plug adapter DRPDRAD09F1A17B may need to be used, depending on the plug size.



STEP 8: INSTALL WIRED THERMOSTAT

Before you connect the thermostat, consider that **the wire connecting the thermostat and indoor unit can be no longer than 65.5 ft (20m).**

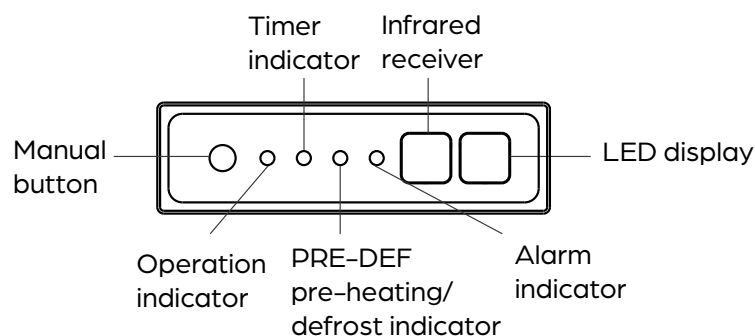
The unit includes a DRSTAT101 wired programmable thermostat. Refer to the instructions provided with that thermostat for installation. The wired thermostat connects via the non-polar HA/HB terminals on the control board.

DISPLAY PANEL

The optional plug-in display control panel DRPDRAD09F1A16 is intended for testing purposes and emergency operation in cases such as the DRAD units, where the indoor unit does not have its own manual operation. Please do not use the optional control panel, unless the wired thermostat is unresponsive and it is absolutely necessary. The unit must be turned off before manual operation.

To operate your unit manually:

1. Locate the MANUAL button on the optional display panel.
2. Press the MANUAL button one time to activate FORCED AUTO mode.
3. Press the MANUAL button again to activate FORCED COOLING mode.
4. Press the MANUAL button a third time to turn the unit off.



STEP 9: PREPARE REFRIGERANT PIPING

1. If pre-existing refrigerant piping is already embedded in the wall, begin the outdoor unit installation. Refer to the *Refrigerant Piping Connections* section of the outdoor unit's installation manual for detailed instructions.
2. If there is no pre-existing piping, 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* section of the outdoor unit's installation manual for detailed instructions.

**CAUTION**

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.

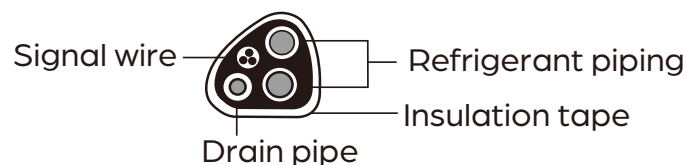
**IMPORTANT NOTE:**

The TOTAL SYSTEM CHARGE WEIGHT should be noted on the label adjacent to the unit rating label on the outdoor unit.

STEP 10: WRAP PIPES AND CABLE

Before passing the refrigerant 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 hose, refrigerant pipes, and signal cable as shown below:

**NOTE**

The drain hose **MUST** be at the bottom of the bundle. Putting the drain hose 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 hose to the underside of the refrigerant pipes.
3. Using insulation tape, wrap the signal wire, refrigerant pipes, and drain hose 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 test for leaks at the end of the installation process (refer to *Electrical and Gas Leak Checks* section of the outdoor unit's installation manual).

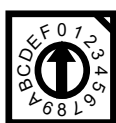
INDOOR UNIT BTU SETTING (FOR MULTI-ZONE)

The units in the chart below have the ability to operate in multiple BTU settings. These units come in the default setting "0" for automatic BTU identification in single zone applications. However, in multi-zone applications, **the BTU setting must be determined by the position of rotary switch ENC1** on the indoor unit board. Make sure to adjust this switch to the desired BTU capacity. If the indoor unit model number is not listed below, this step is not necessary.

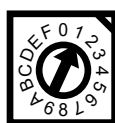


CAUTION

UNIT MUST BE POWERED OFF BEFORE ADJUSTING ROTARY SWITCH



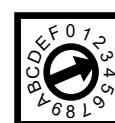
Default setting "0"



Change to "1" for
6,000 BTU/H



Change to "2" for
9,000 BTU/H



Change to "3" for
12,000 BUT/H

Indoor Unit Model	Description	ENC1 Rotary Switch Settings (If Available)		
		6,000 BTU	9,000 BTU	12,000 BTU
DRADL0612F2A	Low-static Slim-ducted	1	2	3
DRADH0912F2A	High-static Slim-ducted	N/A	2	3

SETTING STATIC PRESSURE



NOTE

Before adjusting the static pressure make sure that all diffusers are open and the filter is clean. Make sure the coil is dry. If the coil is not dry, run in FAN mode for 2 hr.

The static pressure can be set using two methods with the DRSTAT101. Make sure the air conditioner is turned off. Press and hold the COPY button for three (3) seconds to select from QUERY modes.



If the thermostat is only connected to one unit, P:00 will display and press OK. If the thermostat is connected to multiple units select the correct unit.

Using the Automatic Airflow Adjustment Function: This function automatically adjusts the fan speed for proper airflow based on the static pressure of your ductwork system.

1. After pressing and holding COPY, press the up and down buttons to find "AF".
2. Press OK.
3. The automatic airflow adjustment will run for 3–6 minutes, then the AF function will turn off.
4. Press BACK to exit.



Using the manual Static Pressure Adjustment Function: This function allows for manual static pressure adjustment.

1. After pressing and holding COPY, press the up and down buttons to find "SP".
2. Press OK.
3. Press the up and down arrow buttons to adjust the SP: ("0": No airflow change)
(Low static models adjust from "SP1" - "SP4"; High static models adjust from "SP1" - "SP8".
Airflow increases progressively).
4. Press OK to select the desired setting.
5. Press BACK to exit.

**NOTE**

Air flow and static pressure charts are available on service.durastar.com or Durastar.com.

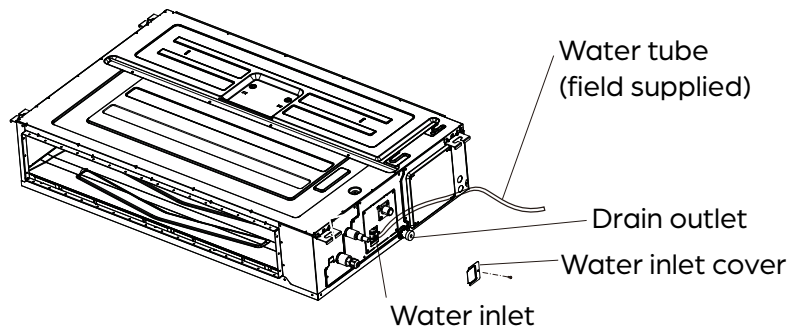
FINAL CHECKS

Along with performing the final checks section of the installation manual, check the following items.

- Verify the unit is level
- Check that all inlet and outlet grilles are connected securely
- Verify condensate drains properly and perform the drain pump leak test explained below.
- Check that the drain outlet plug is secure

CHECK THAT THE DRAIN PUMP IS OPERATING PROPERLY

Make sure the unit is connected to power. The unit will need to be powered on and in cooling mode to test the pump operation.



1. Remove the water inlet cover. Fill the water pan with approximately 1 liter of water careful not to spill the water (more may be necessary depending on the size of the unit).
2. Start cooling operation, you will hear the drain pump.
3. Check whether water is draining properly. There may be a delay depending on the length of the drain pipe.
4. Check that none of the joints are leaking

COMMON MAINTENANCE

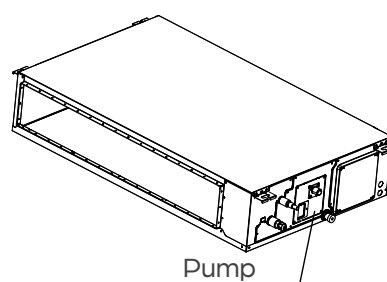
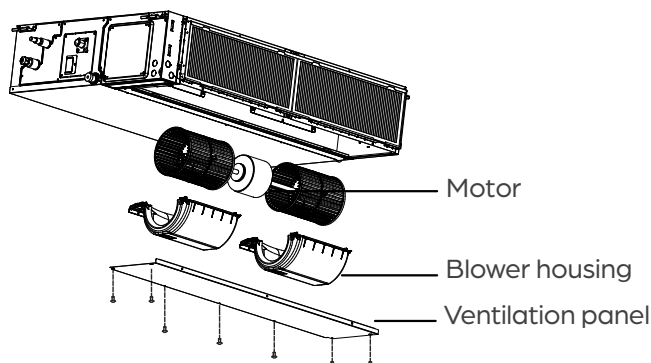
It is proper to regularly clean the unit. Some common maintenance locations are listed below.

Motor maintenance

1. Take off the ventilation panel
2. Take off the blower housing
3. Remove the motor
4. Rinse the blower wheel

Pump maintenance

1. Remove four screws from the drain pump
2. Unplug the pump power and water sensor wires.
3. Detach the pump



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
Unit does not turn on when pressing ON/OFF button	The Unit has a 3-minute protection feature that prevents the unit from overloading. The unit cannot be restarted within three minutes of being turned off.

ISSUE	POSSIBLE CAUSES
The unit changes from COOL/HEAT mode to FAN mode	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.
The indoor unit emits white mist	In humid regions, a large temperature difference between the room's air and the conditioned air can cause white mist.
Both the indoor and outdoor units emit white mist	When the unit restarts in HEAT mode after defrosting, white mist may be emitted due to moisture generated during the defrosting process.
The indoor unit makes noises	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.
Both the indoor unit and outdoor unit make noises	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.
The outdoor unit makes noises	The unit will make different sounds based on its current operating mode.
Dust is emitted from either the indoor or outdoor unit	The unit may accumulate dust during extended periods of non-use, which will be emitted when the unit is turned on. This can be mitigated by covering the unit during long periods of inactivity.
The unit emits a bad odor	The unit may absorb odors from the environment (such as furniture, cooking, cigarettes, etc.) which will be emitted during operations.
	The unit's filters have become moldy and should be cleaned.
The fan of the outdoor unit does not operate	During operation, the fan speed is controlled to optimize product operation.
Operation is erratic, unpredictable, or unit is unresponsive	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"> • Disconnect the power, then reconnect. • Press ON/OFF button on remote control to restart operation.

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

PROBLEM	POSSIBLE CAUSES	SOLUTION
Poor Cooling Performance	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	Excessive heat is generated by sunlight
	Too many sources of heat in the room (people, computers, electronics, etc.)	Reduce amount of heat sources
Poor Heating Performance	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
	Low refrigerant due to leak or long-term use	Check for leaks, re-seal if necessary, and top off refrigerant
The unit starts and stops frequently	There's too much or too little refrigerant in the system	Check for leaks and recharge the system with refrigerant
	Incompressible gas or moisture has entered the system	Evacuate and recharge the system with refrigerant
	The compressor is broken	Replace the compressor
	The voltage is too high or too low	Install a manostat to regulate the voltage

PROBLEM	POSSIBLE CAUSES	SOLUTION
The unit is not working	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
	The Unit's 3-minute protection has been activated	Wait three minutes after restarting the unit
	Timer is activated	Turn timer off
Indicator lamps continue flashing or error code appears	<p>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.</p> <p>If the problem persists, contact your nearest service technician.</p>	



NOTE

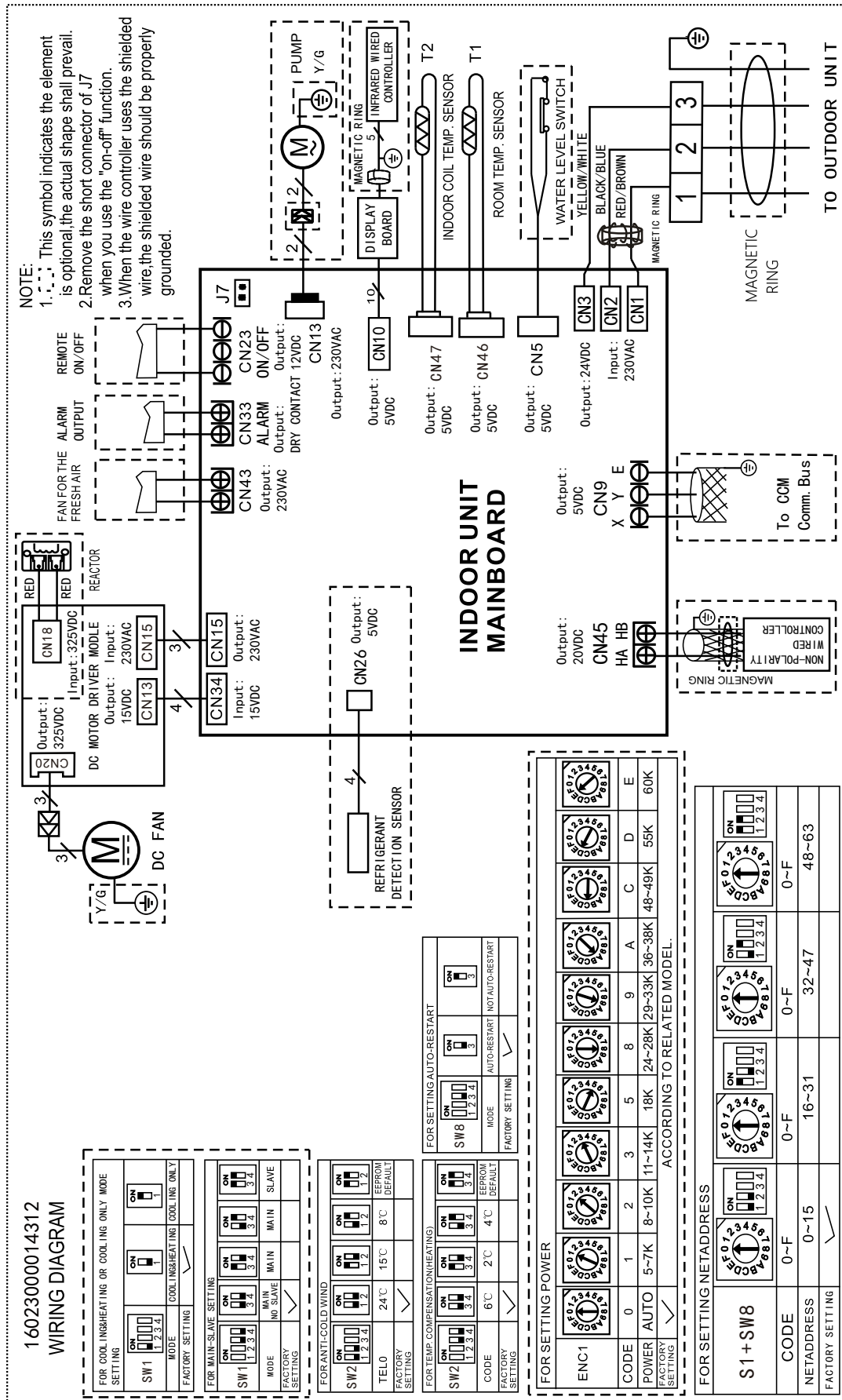
If your problem persists after performing the checks and diagnostics above, turn off your unit immediately and contact an authorized service center.



WARNING

If error codes EHC1 or EHC2 flash, a refrigerant leak is detected. A buzzer will continue to beep for 5 to 6 minutes before stopping. You can also press any button on the remote controller to stop the buzzer. The unit will go into Turbo to mitigate the leak. Check connections and perform a leak test as described in the outdoor unit installation manual.

WIRING DIAGRAM



ERROR CODES– INDOOR UNIT

CODE DISPLAYED	OPERATION OR ERROR DESCRIPTION
dF	Defrost (not an error code)
FC	Forced cooling (not an error code)
EC07	ODU fan speed out of control
EC51	ODU EEPROM parameter error
EC52	ODU coil temp. sensor (T3) error
EC53	ODU ambient temp. sensor (T4) error
EC54	COMP. discharge temp. sensor (TP) error
EC56	IDU coil outlet temp. sensor (T2B) error
ECC1	Other IDU refrigerant sensor detects leakage (Multi-zone)
EH00	IDU EEPROM malfunction
EH03	IDU fan speed out of control
EH0A	IDU EEPROM parameter error
EH0E	Water-level alarm malfunction
EH12	Main unit or secondary units malfunction
EH3A	External fan DC bus voltage is too low protection
EH3b	External fan DC bus voltage is too high fault
EH60	IDU room temp. sensor (T1) error
EH61	IDU coil temp. sensor (T2) error
EHbA	Communication error between the indoor unit and the external fan module
EHC1	Refrigerant sensor detects leakage
EHC2	Refrigerant sensor is out of range and leakage is detected
EHC3	Refrigerant sensor is out of range
EL01	IDU & ODU communication error
EL0C	System lacks refrigerant
EL11	Communication malfunction between main unit and secondary units
FHCC	Refrigerant sensor error
PC00	ODU IPM module protection
PC01	ODU voltage protection
PC02	Compressor top (or IPM) temp. protection
PC03	Pressure protection (low or high pressure)
PC04	Inverter compressor drive error
PC0L	Low ambient temperature protection
----	IDUs mode conflict (Multi-zone)