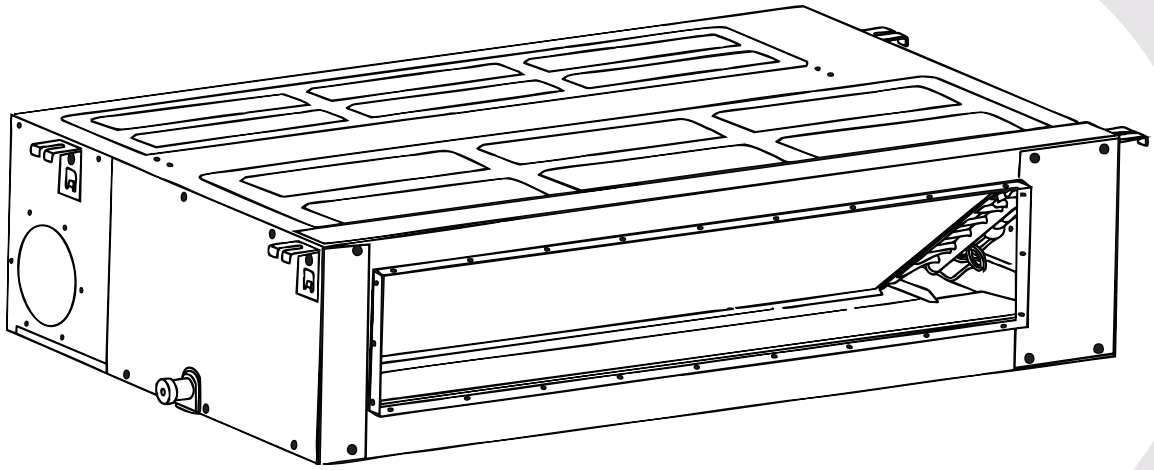
DUCTED MINI SPLIT SYSTEM AIR CONDITIONER / HEAT PUMP

PIONEER®

RYT-24 Inverter Series

For 9,500-22,000 BTU/hr Systems

Quantum Ultra (R-454B) - RT Indoor and YN Outdoor



Installation & User Manual

Note
Intended for use with **Single-Zone Split Systems**. If the indoor sections will be installed as part of a **Multi-Zone System**, refer to the supplemental instructions provided with the Multi-Zone Outdoor Unit for complete and accurate guidance. Certain specifications—such as minimum floor area requirements—may differ, and are outlined in more detail within the **Multi-Zone Section** documentation.

IMPORTANT NOTICE:
Read this manual carefully before installing or operating your new air conditioning system. Be sure to save this manual for future reference.

CONTENTS

1. Safety Precautions 3
2. Product Overview 17
3. Unpacking & Packing 23
4. Installation Overview 24
5. Installation 26
6. Leak Checks and Test Run 61
7. Operating Instructions 64
8. Wiring Diagrams 78
9. Additional Leakage Sensor 80
10. Pioneer Airlink App 81
A. Appendix 82

Read this Manual

The manual provides helpful hints on using and maintaining the air conditioner properly. Performing preventive care can save time and money over the lifespan of the air conditioner. These instructions may not cover every possible condition of use, so common sense and attention to safety is required when installing, operating, and maintaining this product.

Safety Precautions

1

It is important to read this section before operating and installing the system. Incorrect installation due to ignoring instructions can cause serious damage or injury. The seriousness of potential damage and injuries is classified as either a warning or caution.

Explanation of Symbols



WARNING

This symbol indicates that ignoring the related instructions may cause death or serious injury.



CAUTION

This symbol indicates that ignoring the related instructions may cause moderate injury to nearby individuals and/or damage to the appliance or other property.



DANGER

This symbol indicates that you must never perform the action shown.

WARNING

- Do not power the system with an extension cable or with wiring smaller than the specified gauge. Do not share the electrical outlet with other appliances. Improper or insufficient power supply can cause undesirable operation, fire, or electrical shock.

- When connecting the refrigerant piping, do not allow foreign substances or gases other than the specified refrigerant to enter the unit. The presence of other gases or substances will reduce the unit's capacity and cause abnormally high pressure in the refrigeration cycle. This may lead to permanent equipment failure, explosions, or severe injury. Ensure the system remains completely free of dust, moisture, and air.

- Do not allow children to play with or around the air conditioner. Supervise them near the unit at all times.

Safety Precautions

1

WARNING

- Installation must be completed by trained personnel following applicable codes. Defective installation risks water leakage, electrical shock, or fire. Proper tools are required.

- Perform the installation according to the instructions. Improper installation can cause water leakage, undesirable performance, electrical shock, or fire. In North America, authorized personnel must perform the installation in accordance with the requirements of the NEC and CEC.

- If the unit requires repairs or maintenance, contact a qualified, licensed HVAC technician.

- Use only the included accessories, parts, and specified items for installation. Using non-standard components may cause water leaks, electrical shock, fire, or complete unit failure.

- Install the unit on a firm structure that can fully support its weight. If the location cannot support the unit, or if the installation is performed improperly, the unit may fall and cause serious injury or damage.

- Follow all local and national wiring regulations. Power must be supplied through an independent circuit and a dedicated breaker. Do not connect other appliances to the same circuit. Inadequate electrical capacity or poor workmanship may result in electrical shock or fire.

- Use the specified cables for all electrical work. Connect them tightly and clamp them securely to prevent external forces from damaging the terminals. Improper electrical connections can overheat, causing fires or electrical shocks.

- Properly arrange the wiring to ensure that the control board cover can close correctly. If the control board is not closed properly, it can lead to corrosion and cause the connection points at the terminals to heat up, catch fire, or cause electrical shock.

- Use specially designed air conditioners for functional environments, such as kitchens, server rooms, etc.

- If a part of the electrical wiring is damaged, a certified service agent or similarly qualified technicians must replace the wiring in order to avoid a hazard.

- Children aged 8 and above, as well as individuals with lack of experience or reduced physical, sensory, or mental capabilities can use the appliance if supervision or instruction is given. Do not allow children to play with or near the appliance. Children or untrained personnel should be restricted from cleaning and performing maintenance on the appliance, unless they're given supervision.

Safety Precautions

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CAUTION

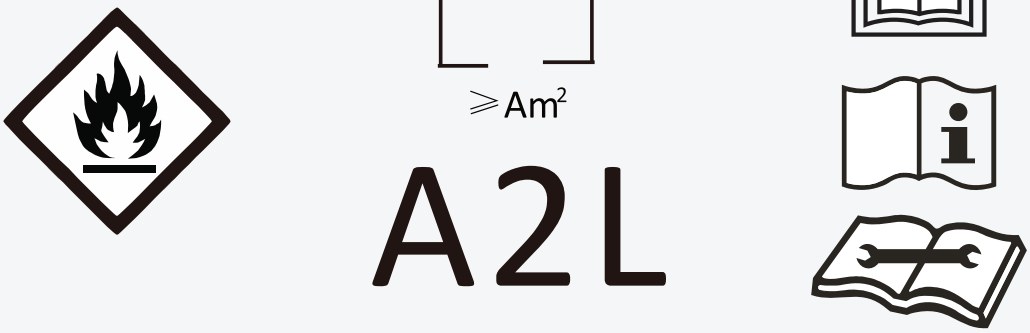
- If the unit has an auxiliary electric heater, keep it at least 3 feet (1 m) away from combustible materials.
- Do not install the unit in a location that may be exposed to combustible gas leaks. Gas accumulation around the unit can cause a fire.
- Do not operate the air conditioner in highly humid spaces, such as bathrooms or laundry rooms. Exposure to high humidity or water can cause electrical components to short-circuit.
- The product must be properly grounded during installation to prevent electrical shock.
- Install the drainage piping according to the manual's instructions. Improper installation may cause water damage to your home and property.

Notes about Fluorinated Gases

- This air conditioner contains fluorinated gases. Refer to the label on the unit for the specific gas type and amount.
- Qualified and well-trained personnel must complete the installation, repair, servicing, and maintenance of the unit.
- A certified HVAC technician must remove and recycle the product.
- If the system includes a leak-detection feature, test its functionality at least once every 12 months.
- When checking the unit for leaks, log and record all findings.

Safety Precautions

1



Safety Information for A2L Refrigerants

Because the system contains R-454B refrigerant, read and observe the following notices. Venting any type of refrigerant into the atmosphere is always illegal and punishable under federal and local regulations. Always read and obey all applicable local EPA laws.

- Refer to this manual for the required installation space dimensions, including the minimum clearance distances from adjacent structures.
- Install, operate, and store the appliance in a room that meets the minimum room area requirements.
- Keep the refrigerant piping length to a minimum.
- Protect the refrigerant piping from physical damage. Additionally, if the space is smaller than the minimum required area, ensure it is ventilated.
- Ensure the installation complies with all applicable national refrigerant regulations.
- Ensure all mechanical connections remain accessible for maintenance.
- Follow this manual's instructions to properly handle, install, clean, maintain, and dispose of the refrigerant.
- Confirm that all ventilation openings remain unobstructed.

Only service the equipment in accordance with the manufacturer's recommendations.

Store the appliance in a well-ventilated room that meets the minimum size requirements for operation.

Store the appliance in a room free of continuously operating open flames (e.g., an operating gas appliance) and ignition sources (e.g., an operating electric heater).

- Individuals working on refrigerant circuits must hold a valid certification from an industry-accredited assessment authority. They must prove their competence in handling refrigerants according to the recognized specifications of their industrial sector.
- Perform service operations strictly in accordance with the manufacturer's recommendations.
- If maintenance and repairs require assistance from additional qualified personnel, conduct the tasks under the supervision of a certified professional competent in handling flammable refrigerants.

Safety Precautions

1

Service Information for A2L Refrigerants

- Store the appliance in a manner that prevents mechanical damage.
- Competent personnel must carry out any work procedures affecting safety measures.

WARNING

- Do not attempt to accelerate the defrosting process or remove frost manually.
- Follow the manufacturer's recommended procedures.
- Store the appliance in a room free of continuously operating ignition sources (e.g., open flames, active gas appliances, operating electric heaters).
- Do not pierce or incinerate the appliance or its components.
- Be aware that refrigerants may be odorless.
- **Area Inspection:**
  - Before servicing systems containing flammable refrigerants, perform safety checks to minimize the risk of ignition. When repairing the refrigeration system, observe all the following precautions before beginning any work.
- **Work Procedure:**
  - Conduct all work under a controlled process to minimize the risk of flammable gases or vapors from being present during service.
- **General Work Area:**
  - Notify all maintenance staff and individuals in the area about the work being performed.
  - Avoid working in confined spaces whenever possible.
  - Section off the work area to prevent unauthorized access.
- **Area Ventilation:**
  - Keep the area free of flammable materials and maintain controlled conditions for a safe working environment.
- **Checking for Refrigerant Presence:**
  - Monitor the work area for refrigerant leaks using an appropriate refrigerant detector before and during service.
  - Ensure that the leak detection equipment used is suitable for flammable refrigerants (i.e., non-sparking, adequately sealed, or intrinsically safe).
- **Presence of Fire Extinguisher:**
  - When performing hot work on refrigeration equipment or its components, ensure appropriate fire extinguishing equipment is readily available. Position a dry powder or CO_2 fire extinguisher adjacent to the charging area.
- **Elimination of Ignition Sources:**
  - Do not use ignition sources that could pose a fire or explosion risk when conducting any work involving the exposure of refrigeration system piping.
  - Keep all potential ignition sources, including smoking materials, away from installation, repair, removal, and disposal areas where refrigerant could accidentally escape.
  - Before starting work, inspect the area for flammable materials and ignition sources.
  - Clearly display "No Smoking" signs in the work area.

Safety Precautions

1

- **Ventilated Area:**

  - Ensure the work is conducted either in an open area or in a space with adequate ventilation before breaking into the system or performing any heat-producing tasks.
  - Maintain ventilation throughout the duration of the work.
  - Ensure the ventilation system effectively disperses any released refrigerant and directs it safely to the outside atmosphere, if possible.

- **Inspection of Refrigeration Equipment:**

  - When replacing electrical components, ensure that they meet the correct specifications and are suitable for their intended purpose.
  - Follow the manufacturer's maintenance and service guidelines.
  - If unsure, consult the manufacturer's technical support department for guidance.

- **Inspections for Installations Using Flammable Refrigerants:**

  - Ensure that the refrigerant charge size complies with the minimum room size requirements when installing components that contain refrigerant.
  - Verify that the ventilation equipment and exhaust outlets are functioning properly and are free from obstructions.
  - If using an indirect refrigerant circuit, inspect the secondary circuit for any presence of refrigerant.
  - Confirm that all equipment markings remain visible and legible. Replace or correct any illegible markings or signs.
  - Install refrigeration piping and components away from corrosive substances. If exposure is unavoidable, verify that all components are either made from corrosion-resistant materials or adequately protected.

- **Inspection of Electrical Devices:**

  - Ensure that the repair and maintenance of electrical components include initial safety checks and a thorough inspection.
  - If the fault cannot be corrected immediately but work must continue, implement a temporary solution that is safe and effective.
  - Report any temporary measures to the equipment owner, ensuring that all relevant parties are informed.

- **Initial Safety Checks:**

  - Fully discharge the capacitors in a controlled manner to prevent sparking.
  - Verify that no live electrical components or exposed wiring are present during system charging, refrigerant recovery, or purging.
  - Confirm that earth bonding continuity is maintained.

- **Repairs to Sealed Components:**

  - Replace sealed electrical components, rather than repair them.

- **Repairs to Intrinsically Safe Components:**

  - Replace intrinsically safe components, rather than repair them.

Safety Precautions

1

- **Cabling:** Do not expose the cabling to wear, corrosion, excessive pressure, vibration, sharp edges, or other adverse environmental factors. Consider the long-term effects of aging and continuous vibration from components such as compressors or fans.

- **Detection of Flammable Refrigerants:** Never use potential sources of ignition for refrigerant leak detection.

- **Leak Detection Methods:** The following methods are approved for detecting leaks in systems containing flammable refrigerants:

  - **Electronic Leak Detectors:** Use this method for detecting flammable refrigerants. They may require recalibration to maintain adequate sensitivity.

    -- Calibrate the detection equipment in a refrigerant-free area.

    -- Ensure the detector does not pose an ignition risk and is compatible with the refrigerant.

    -- Set the detector to a percentage of the refrigerant's Lower Flammability Limit (LFL), and calibrate it to confirm that the gas concentration does not exceed 25% of the LFL.

  - **Leak Detection Fluids:** This method is suitable for most refrigerants, but the system must not contain chlorine. Chlorine can react with the refrigerant and corrode copper piping.

  - **Safety Precautions:** If a leak is suspected, remove or extinguish all open flames. If a refrigerant leak requiring brazing is detected, fully recover the refrigerant or isolate it using the shut-off valves to prevent accidental release.

  - **Oxygen-Free Nitrogen (OFN):** Purge OFN through the system before and during brazing.

- **Removal & Evacuation:** Follow industry-standard practices when accessing the refrigerant circuit, adding extra precautions for flammability:

1. Recover the refrigerant into approved recovery cylinders.

2. Purge the circuit using an inert gas, such as OFN.

3. Evacuate the system.

4. Purge the circuit again using inert gas.

5. Open the circuit by cutting or brazing.

-- Flush the system with OFN to ensure safety. Repeat this process multiple times if needed.

-- Do not use compressed air or oxygen for flushing.

- **Flushing:** Follow this flushing procedure:

1. Break the system vacuum with OFN.

2. Fill the system until the working pressure is reached.

3. Vent the system to atmospheric pressure.

4. Pull the system down to vacuum.

5. Repeat this process until no refrigerant remains in the system.

6. Once the final OFN charge is introduced, vent the system to atmospheric pressure to ensure a safe workspace. This step is critical before brazing any pipework.

Position the vacuum pump outlet away from ignition sources and ensure adequate ventilation.

Safety Precautions

1

Decommissioning Information for A2L Refrigerants

Before starting the decommission process, the technician must be fully familiar with the equipment and its components. Safely recover all refrigerant as a standard best practice. Prior to decommissioning, collect an oil and refrigerant sample for analysis if reclaimed refrigerant is intended for reuse. Ensure electrical power is available before beginning the decommissioning process.

1. Familiarization: Understand the equipment, its operation, and the decommissioning process before beginning work.

2. Electrical Isolation: Disconnect the system from the electrical supply to prevent accidental activation during the procedure.

3. Pre-Procedure Safety Checks: Before proceeding, ensure the following:

- Mechanical handling equipment is available to transport refrigerant cylinders if needed.
- All required personal protective equipment (PPE) is present and correctly used.
- A competent person supervises the entire refrigerant recovery process.
- Recovery equipment and cylinders comply with all relevant safety and regulatory standards.

4. Pump Down the Refrigerant System: If possible, perform a pump-down procedure to remove refrigerant from the system.

5. Alternative Method if Vacuum is Not Possible: If a complete vacuum cannot be achieved, create a manifold to facilitate refrigerant removal from multiple points in the system.

6. Cylinder Positioning: Ensure the recovery cylinder is placed on a scale before starting the refrigerant recovery process.

7. Recovery Machine Operation: Start the recovery machine and follow the manufacturer's instructions for proper operation.

8. Cylinder Fill Limits: Do not exceed 80% of the cylinder's total volume when filling with liquid refrigerant, to allow for expansion.

9. Maximum Pressure Precautions: Do not exceed the maximum working pressure of the recovery cylinder at any time, even temporarily.

10. Finalizing the Recovery Process:
Once the cylinders are correctly filled and the process is complete:

- Promptly remove the cylinders and recovery equipment from the site.
- Close all isolation valves on the equipment to prevent leaks.

11. Handling Recovered Refrigerant: Recovered refrigerant must not be recharged into another refrigeration system unless it has been properly cleaned and tested to ensure compliance with safety and performance standards.

12. Labeling: Label the equipment to indicate it has been decommissioned and emptied of refrigerant. The label must include the decommissioning date and the signature of the responsible technician. Ensure that the equipment preserves all labels indicating the presence of flammable refrigerant, even after decommissioning.

Safety Precautions

1

Recovery Information for A2L Refrigerants

When removing refrigerant from a system for servicing or decommissioning, observe the following best practices to ensure safety and compliance:

1. Safe Refrigerant Removal: Safely remove all refrigerants from the system following proper handling procedures.

2. Use of Appropriate Recovery Cylinders: Only use approved refrigerant recovery cylinders.

- Ensure enough cylinders are available to hold the system's total refrigerant charge.
- Designate and label each cylinder for the specific refrigerant being recovered. (e.g., cylinders specifically designed for refrigerant recovery).
- Equip recovery cylinders with a pressure-relief valve and functioning shut-off valves.
- Evacuate empty recovery cylinders. If possible, pre-cool the recovery cylinders before the process begins.

3. Recovery Equipment Requirements: The recovery equipment must be:

- In good working condition.
- Accompanied by manufacturer-provided operating instructions.
- Suitable for recovering all appropriate refrigerants, including flammable refrigerants when applicable.
- Ensure a calibrated weighing scale is available to monitor refrigerant recovery accurately.
- Equip hoses with leak-free disconnect couplings and ensure they're in good conditions.
    - Before using the recovery machine, verify that it is in proper working order and has been properly maintained.
    - Ensure that any associated electrical components are sealed to prevent ignition in case of a refrigerant leak.
    - If in doubt, consult the manufacturer.

4. Handling Recovered Refrigerant:

- Return the recovered refrigerant to the supplier in the correct recovery cylinder.
- Arrange a waste transfer note for proper documentation and disposal.
- Do not mix refrigerants in recovery units or cylinders under any circumstances.

5. Compressor & Oil Removal:

If compressors or compressor oils need to be removed:

- Evacuate the compressor to an acceptable level to eliminate any remaining flammable refrigerant within the lubricant.
- Complete the evacuation process before returning the compressor to the supplier.
- Only use electric heating to accelerate the evacuation of refrigerant from the compressor body. Do not use open flames or ignition sources.
- When draining oil from a system, conduct the process safely and in accordance with best practices.

Safety Precautions

1

⚠ Compliance

- **Minimum Installation Requirements:** Install the equipment within the minimum height and room area (for both operation and storage) specified in the installation manual.
- **Mounting Clearance:** Mount the system so that its lowest moving part is at least 8 feet (2.5 m) above the floor or grade level.
- **Risk of Electric Shock:** Serious injury or death may occur. Disconnect all remote electric power supplies before servicing.
- **Flammable Refrigerant:** Flammable refrigerant is used. Ensure proper handling and disposal. Trained service personnel must perform maintenance and repairs. Do not puncture the refrigerant tubing.
- **Proper Disposal Requirements:** Dispose of the system according to all applicable federal and local regulations.
- **Service Precautions:** Flammable refrigerant is used. Refer to the service manual before attempting to service this product.
- **Compliance with Regulations:** Follow all handling instructions and comply with national regulations when working with flammable refrigerants.

Safety Precautions

1

Usage Statement

- Use a flammable gas detector to check for potential leaks before unloading and opening the container.
- Do not allow fire sources or smoking in the vicinity.
- Protect the pipework from physical damage. For flammable refrigerants, do not install pipes in an unventilated space if it is smaller than the minimum requirements in Annex GG. For A2L refrigerants, you must install pipes that comply with 22.116. If field charging is necessary, technicians must quantify the impact of different pipe lengths on the refrigerant charge.
- Ensure the compliance of all national gas regulations.
- Ensure that mechanical connections made in accordance with 22.118 remain accessible for maintenance.
- Protect all pipework — including piping materials, routing, and installation — from physical damage during operation and servicing. It must comply with all national and local codes and standards, including:
    - ASHRAE 15
    - ASHRAE 15.2
    - IAPMO Uniform Mechanical Code
    - ICC International Mechanical Code
    - CSA B52
    - All field joints must be accessible for inspection before being covered or enclosed.
- After completing the field piping installation for split systems, the field pipework must undergo:
    - Pressure testing with an inert gas.
    - Vacuum testing before refrigerant charging, following the required standards.
- Store the appliance in a way that prevents mechanical damage.
- Qualified personnel must carry out maintenance, service, and repair operations according to Annex HH.
- Only competent individuals should perform safety-critical procedures, including:
    - Breaking into the refrigerant circuit
    - Opening sealed components
    - Opening ventilated enclosures

Safety Precautions

1

Preparation for Working on Systems with A2L Refrigerants


No flammable sources


Ventilation necessary


Wear protective gear


Do not use electronics near system



Refrigerant Leakage Detector

A handheld leak detector can aid with tracing and isolating refrigerant leaks. It is recommended to have one handy whenever working on the system.

Determining Installation Location

Install the systems in suitable locations according to the guidelines below. For the best results, follow all the requirements for equipment placement in this manual.

Installation Site Requirements

1. Ensure Proper Ventilation

- Ventilate the installation site well to ensure safe operation and prevent refrigerant accumulation.

2. Keep Away from Heat & Fire Hazards

- When installing or maintaining R-454B air conditioners, keep the work site away from open flames and heat sources.
- To prevent ignition risks, technicians must avoid locations near welding activities, smoking areas, drying ovens, or any heat source exceeding 1,000°F (538°C).

3. Implement Anti-Static Precautions

- To prevent static discharge, wear anti-static clothing and gloves when handling and installing the unit.

4. Select an Accessible Installation Site

- The installation location must allow easy access for maintenance.
- Do not surround indoor and outdoor units with obstacles that restrict airflow.
- Keep away from heat sources and flammable or explosive materials.

5. Refrigerant Leak Emergency Actions

- If the indoor unit leaks refrigerant during installation, immediately shut off the outdoor unit valve.
- All personnel must evacuate the area for at least 15 minutes until the refrigerant fully dissipates.
- If the product is damaged, transport it to a maintenance station. On-site welding or refrigerant pipe repairs are strictly prohibited.

6. Ensure Even Airflow

- Choose a location where the indoor unit's air inlet and outlet remain unobstructed for even airflow.

7. Avoid Installing Near Sensitive Areas

- Do not install the indoor unit near:
    - Electric devices or power outlets.
    - Kitchen cabinets, beds, sofas, or valuable items.
    - Areas where airflow from both sides of the unit could directly impact important objects.

Safety Precautions

1

Charging Protocol for A2L Refrigerants - If Applicable

Important Considerations

1. Qualified personnel must install and service the air conditioner. Installers must comply with all manual instructions and local regulations.

2. Use caution when handling combustible refrigerants. Careless handling can cause serious injury or property damage.

3. Leak test the system after installation to ensure integrity.

4. Before maintaining or repairing air conditioners with combustible refrigerants, conduct safety inspections to minimize fire risks.

5. Operate the system under controlled conditions to reduce the risk of combustible gas or vapor hazards.

6. The specifications in Tables 1 and 2 outline the total weight of the refrigerant charge and minimum room area requirements for air conditioners.

Maximum Refrigerant Charge and Required Floor Area: The maximum charge is determined by the following equations:

$m_1 = (6m^3) \times LFL$, $m_2 = (52m^3) \times LFL$, $m_3 = (260m^3) \times LFL$

Where LFL is the lower refrigerant limit in kg/m^3.

For R-454B refrigerant, LFL = 0.303 kg/m^3.

For appliances with a charge amount $m_1 < M = m_2$:

The maximum refrigerant charge in a room must comply with: $M_{max} = 2.5 \times (LFL)^{5/4} \times h_0 \times A^{1/2}$

This value must not exceed: $M_{max} = SF \times LFL \times h_0 \times A$

Refer to Table 3 for specific factors and applications.

Minimum Floor Area Requirement: The required minimum floor area A_{min} for an appliance with a refrigerant charge M_c (kg) must be calculated as follows:

$A_{min} = [M_c / (2.5 \times LFL^{5/4} \times h_0]^2$

However, $A_{min} = M_c / (SF \times LFL \times h_0)$; SF = 0.5

Refer to Table 4 for specific values/factors.

Refrigerant = R-454B, LFL = 0.303 kg/m^3

Table 1 - Maximum Charge

h_0(m)	Floor Area	Charge Limit
(Installed Height)	43.1 ft² (4.0 m²)	38.4 oz (1.09 kg)
	75.3 ft² (7.0 m²)	67.4 oz (1.91 kg)
1.8 (6'0")	107.6 ft² (10.0 m²)	96.3 oz (2.73 kg)
	161.5 ft² (15.0 m²)	138.3 oz (3.92 kg)
	215.3 ft² (20.0 m²)	159.4 oz (4.52 kg)
	322.9 ft² (30.0 m²)	195.4 oz (5.54 kg)
	538.2 ft² (50.0 m²)	252.2 oz (7.15 kg)
2.5 (8'2")	43.1 ft² (4.0 m²)	53.6 oz (1.52 kg)
	75.3 ft² (7.0 m²)	93.5 oz (2.65 kg)
	107.6 ft² (10.0 m²)	133.7 oz (3.79 kg)
	161.5 ft² (15.0 m²)	191.9 oz (5.44 kg)
	215.3 ft² (20.0 m²)	221.5 oz (6.28 kg)
	322.9 ft² (30.0 m²)	271.6 oz (7.7 kg)
	538.2 ft² (50.0 m²)	350.6 oz (9.94 kg)
2.8 (9'2")	43.1 ft² (4.0 m²)	60.0 oz (1.7 kg)
	75.3 ft² (7.0 m²)	104.8 oz (2.97 kg)
	107.6 ft² (10.0 m²)	149.6 oz (4.24 kg)
	161.5 ft² (15.0 m²)	214.8 oz (6.09 kg)
	215.3 ft² (20.0 m²)	248.3 oz (7.04 kg)
	322.9 ft² (30.0 m²)	304.1 oz (8.62 kg)
	538.2 ft² (50.0 m²)	392.2 oz (11.12 kg)

Safety Precautions

1

Table 2 - Minimum Room Area

Refrigerant = R-454B, LFL = 0.303 kg/m^3

h_0(m)	Charge Limit	Min. Room Area
(Installed Height)	25.0 oz (0.71 kg)	28.0 ft^2 (2.6 m²)
	28.2 oz (0.8 kg)	31.5 ft^2 (2.93 m²)
1.8 (6'0")	35.3 oz (1.0 kg)	49.5 ft^2 (3.67 m²)
	45.5 oz (1.29 kg)	50.9 ft^2 (4.73 m²)
	55.0 oz (1.56 kg)	61.6 ft^2 (5.72 m²)
	63.5 oz (1.8 kg)	71.0 ft^2 (6.6 m²)
	70.5 oz (2.0 kg)	78.9 ft^2 (7.33 m²)
2.5 (8'2")	25.0 oz (0.71 kg)	20.2 ft^2 (1.88 m²)
	28.2 oz (0.8 kg)	22.7 ft^2 (2.11 m²)
	35.3 oz (1.0 kg)	28.4 ft^2 (2.64 m²)
	45.5 oz (1.29 kg)	36.7 ft^2 (3.41 m²)
	55.0 oz (1.56 kg)	44.3 ft^2 (4.12 m²)
	63.5 oz (1.8 kg)	51.1 ft^2 (4.75 m²)
	70.5 oz (2.0 kg)	56.8 ft^2 (5.28 m²)
2.8 (9'2")	25.0 oz (0.71 kg)	18.0 ft^2 (1.67 m²)
	28.2 oz (0.8 kg)	20.3 ft^2 (1.89 m²)
	35.3 oz (1.0 kg)	25.4 ft^2 (2.36 m²)
	45.5 oz (1.29 kg)	32.7 ft^2 (3.04 m²)
	55.0 oz (1.56 kg)	39.6 ft^2 (3.68 m²)
	63.5 oz (1.8 kg)	45.6 ft^2 (4.24 m²)
	70.5 oz (2.0 kg)	50.7 ft^2 (4.71 m²)

Table 3 - Minimum Room Area

The calculated minimum allowable room area for all capacities is as follows:

Model (BTU)	Minimum Allowable Room Area (Assumes 25 ft. lineset and 6 ft. install height)
9K	28 ft^2 (2.6 m^2)
12K	39.5 ft^2 (3.67 m^2)
18K	50.9 ft^2 (4.73 m^2)
23K	61.6 ft^2 (5.72 m^2)

Table 4 - Maximum Charge

The standard factory refrigerant charge amount as well as the maximum allowable charge are as follows:

Model (BTU)	R-454B Refrigerant (Standard Charge)	R-454B Refrigerant (Maximum Charge)
9K	1.6 lbs/25.0 oz (710 g)	1.7 lbs/27.7 oz (785 g)
12K	2.2 lbs/35.3 oz (1,000 g)	2.4 lbs/37.9 oz (1,075 g)
18K	2.8 lbs/45.5 oz (1,290 g)	3.0 lbs/48.1 oz (1,365 g)
23K	3.4 lbs/55.0 oz (1,560 g)	3.6 lbs/57.7 oz (1,635 g)

(!) Determining Refrigerant Amount

Use the above figures when charging an empty system. The proceeding pages will also inform the reader in determining the additional refrigerant charging amounts for adjusting the factory charge when using non-standard piping length.

Suggested Tools:

Tool	Illustration	Tool	Illustration	Tool	Illustration
Standard wrench		Pipe cutter		Vacuum pump	
Adjustable / Crescent wrench		Screw drivers (Phillips & Flathead)		Safety glasses	
Torque wrench		Manifold gauge		Work gloves	
Hex keys or Allen wrenches		Level		Refrigerant scale	
Drill & Drill bits		Flaring tool		Micron gauge	
Hole saw		Clamp-on amp meter		Leak detector	

Product Overview

2

Model Numbers

Note

The serial number is located behind the electric control box cover on each unit.

Model	Full System	Indoor Unit	Outdoor Unit
9.5K	RYT009GLSI24RL	RT009GLSILCFHG	YN009GLSI24RPG
11K	RYT012GLSI24RL	RT012GLSILCFHG	YN012GLSI24RPG
17K	RYT018GLSI24RL	RT018GLSILCFHG	YN018GLSI24RPG
22K	RYT024GLSI24RL	RT024GLSILCFHG	YN024GLSI24RPG

Product Overview

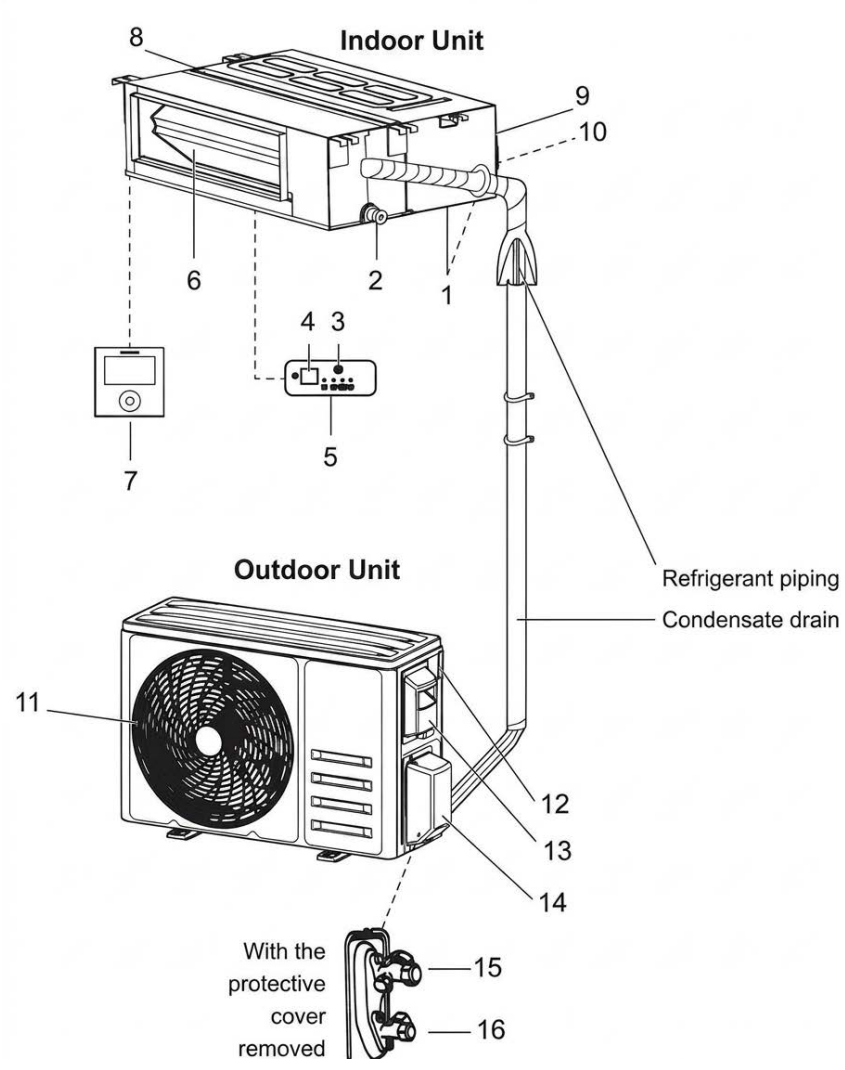
2

Part Names

Note

Illustrations in this manual are for explanatory purposes. The actual shape of the indoor unit may be slightly different. The actual shape shall prevail.

The system consists of two units connected by insulated copper pipes and an electrical communication cable. Mount the indoor unit on a wall inside the room selected for air conditioning. Install the outdoor unit on the ground or on the wall using suitable mounting brackets.



No.	Description
1	Return air filter locations
2	Drain outlet stub
3	Manual emergency button
4	LED display
5	Indoor unit display board
6	Supply air outlet
7	Wired controller
8	Air handler hanging hooks
9	Return air inlet
10	Interior condensate pump
11	Air outlet grille
12	Outdoor unit nameplate
13	Terminal block cover
14	Valve protection cover
15	Gas (Suction) line valve
16	Liquid line valve

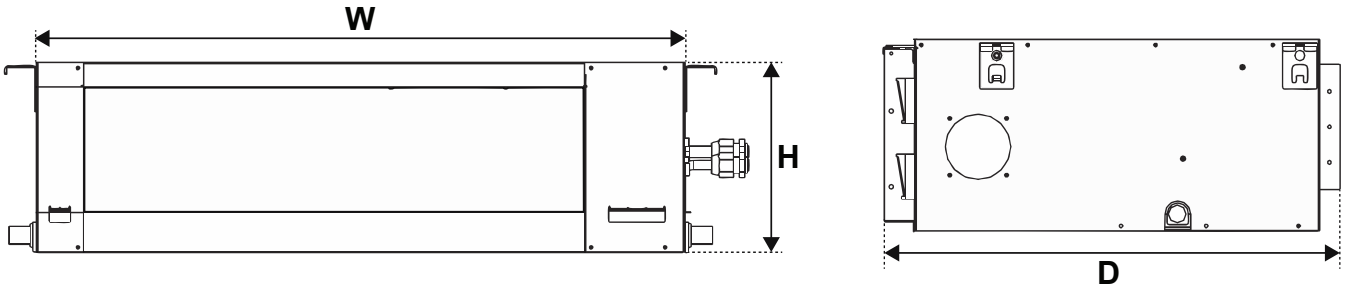
Product Overview

2

Dimensions & Weight

Indoor Unit:

Before proceeding, it is important to select the installation space according to the below dimensions:



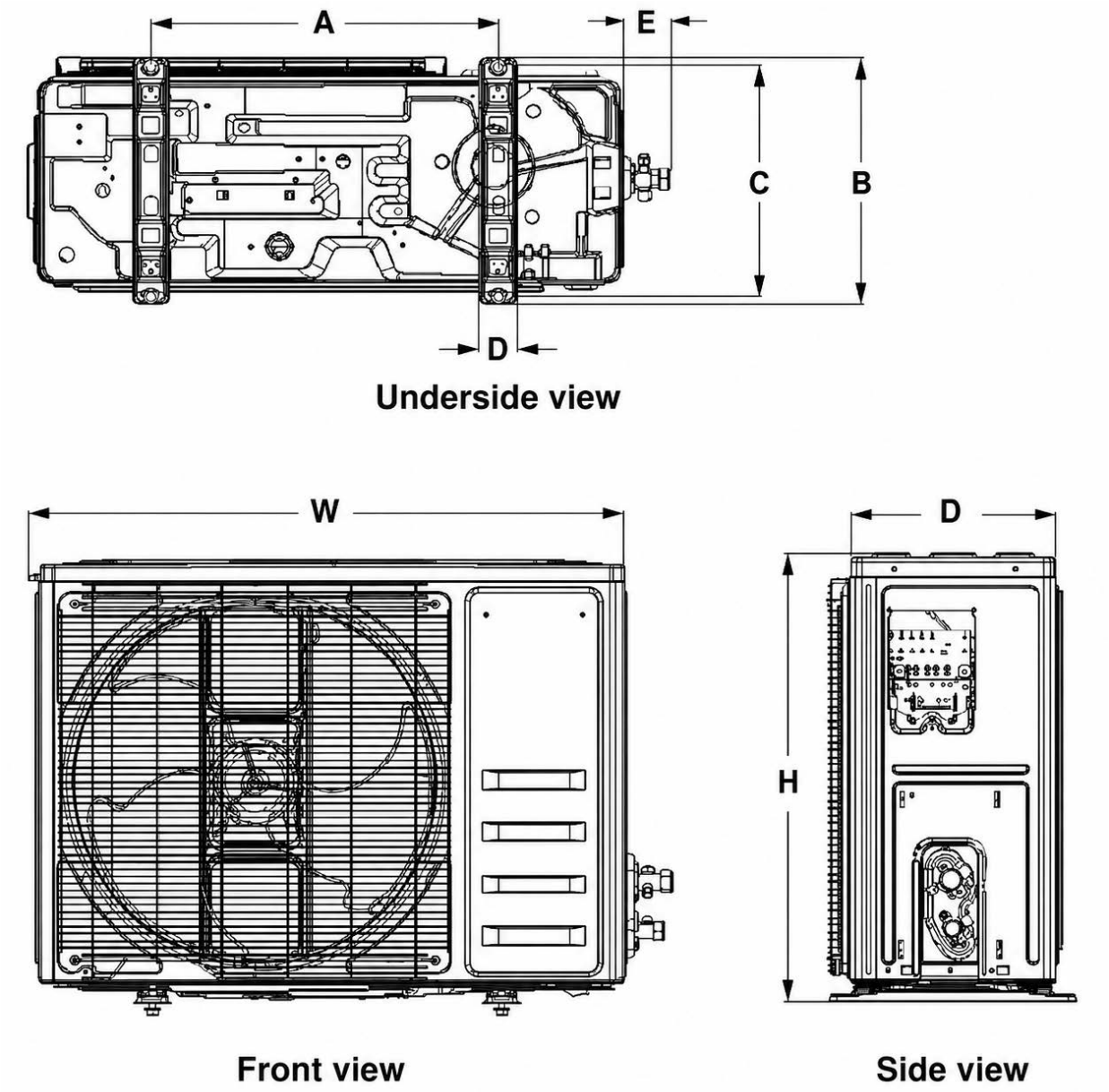
Indoor Unit	Dimensions		
	W	D	H
RT009GLSILCFHG	27-1/2 in	19-1/4 in	7-7/8 in
	698.5 mm	489 mm	200 mm
RT012GLSILCFHG	27-1/2 in	19-1/4 in	7-7/8 in
	698.5 mm	489 mm	200 mm
RT018GLSILCFHG	35-1/2 in	19-1/4 in	7-7/8 in
	902 mm	489 mm	200 mm
RT024GLSILCFHG	43-1/4 in	17-3/4 in	7-7/8 in
	1,098.5 mm	451 mm	200 mm

Indoor Unit	Net Unit Weight
RT009GLSILCFHG	33.1 lbs
	15 kgs
RT012GLSILCFHG	33.1 lbs
	15 kgs
RT018GLSILCFHG	39.7 lbs
	18 kgs
RT024GLSILCFHG	50.7 lbs
	23 kgs

Product Overview

2

Outdoor Unit:



Outdoor Unit	Dimensions							
	W	D	H	A	B	C	D	E
YN009GLSI24RPG	31-7/8 in	12 in	21-5/8 in	17-1/8 in	12 in	11-1/4 in	1-7/8 in	2-1/4 in
	810 mm	305 mm	549 mm	435 mm	305 mm	286 mm	48 mm	57 mm
YN012GLSI24RPG	31-7/8 in	12 in	21-5/8 in	17-1/8 in	12 in	11-1/4 in	1-7/8 in	2-1/4 in
	810 mm	305 mm	549 mm	435 mm	305 mm	286 mm	48 mm	57 mm
YN018GLSI24RPG	36-1/2 in	15 in	27-1/2 in	23-1/8 in	14-3/4 in	13-3/4 in	2-1/8 in	2-1/4 in
	927 mm	381 mm	698.5 mm	587 mm	375 mm	349 mm	54 mm	57 mm
YN024GLSI24RPG	38-1/2 in	16-5/8 in	31-5/8 in	23-7/8 in	16-5/8 in	15-3/8 in	2-3/8 in	2-1/2 in
	978 mm	422 mm	803 mm	606 mm	422 mm	390.5 mm	60 mm	63.5 mm

Product Overview

2

Outdoor Unit	Net Unit Weight
YN009GLSI24RPG	52.7 lbs
	23.9 kgs
YN012GLSI24RPG	58.4 lbs
	26.5 kgs
YN018GLSI24RPG	90.4 lbs
	41 kgs
YN024GLSI24RPG	104.7 lbs
	47.5 kgs

Product Overview

2

Operating Temperatures

The system is designed to run within a certain range of temperatures, which are listed below. The system has built-in protections that may stop the appliance when the ambient temperatures goes outside of these ranges.

Operating Temperatures	°F / °C
Temperature Setting Range	62~86°F
	17~30°C
Ambient Temperature Range for Cooling	5~131°F
	-15~55°C
Ambient Temperature Range for Heating	-13~86°F
	-25~30°C

Testing and rating agencies develop standard rating conditions to obtain full system-rated capacity and efficiency. Within certain limitations, variable speed compressors compensate the deviations from the rating conditions, especially the atmospheric conditions.

Heat pump systems function by exchanging energy between the indoor air and outdoor ambient air (atmospheric) in the form of heat. The system's net cooling or heating capacities and efficiencies change by atmospheric conditions, as well as the indoor air conditions, such as temperatures and humidity levels.

Professional individuals use detailed calculations to determine the capacity of the system required for a specific area or application, which are based on several internal and external factors.

To further optimize the performance of the unit, complete the following:

- Keep doors and windows closed.
- Use Timer On and Timer Off functions to limit energy usage.
- Do not block air inlets or outlets.
- Regularly inspect and clean air filters.

Unpacking & Packing

3

Instructions for unpacking and packing the unit:

Unpacking:

Indoor Unit:

1. Cut the packing belt.
2. Unpack the package.
3. Take out the packing cushion and support.
4. Remove the packing film.
5. Take out the accessories.
6. Lift the machine out and lay it flat.

Outdoor Unit:

1. Cut the packing belt.
2. Take the unit out of the package.
3. Remove the foam from the unit.
4. Remove the packing film from the unit.

Packing:

Indoor Unit:

1. Put the indoor unit into the packing film.
2. Put the accessories in.
3. Place the packing cushion and support into the package.
4. Put the indoor unit into the package.
5. Close the package and seal it.
6. Use the packing belt if necessary.

Outdoor Unit:

1. Put the outdoor unit into the packing film.
2. Put the bottom foam into the box.
3. Put the outdoor unit into the package, then put the upper packaging foam on the unit.
4. Close the package and seal it.
5. Use the packing belt if necessary,

Note

Keep all the packaging items in case they're needed in the future.

Installation Overview

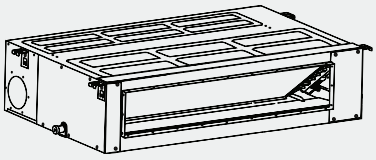
4

Installation Summary

1

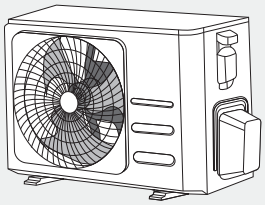
Select the installation locations

2



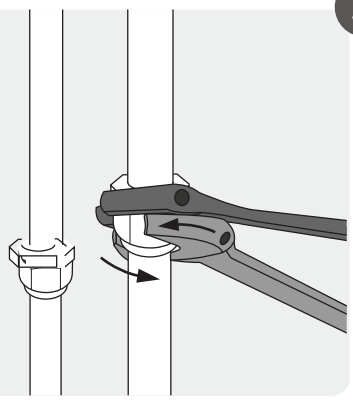
Install the indoor unit

3



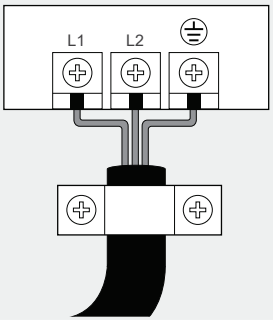
Install the outdoor unit

4



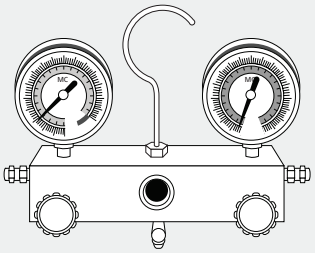
Connect the refrigerant pipes

5



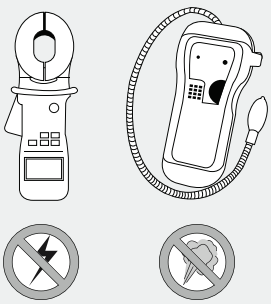
Connect the wires

6



Evacuate the refrigeration system

7



Perform a test run

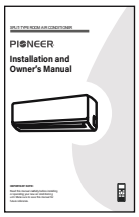
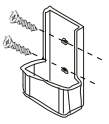
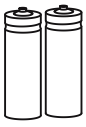
Installation Overview

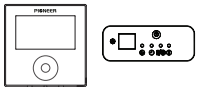
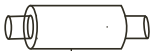
4

Accessories

The system comes with the following general accessories. Use all of the installation parts and accessories to properly install the air conditioner. The included items may vary slightly depending on the model. Pioneer reserves the right to modify the included components for product improvement without notice.

Improper installation may result in water leakage, electrical shock and fire, or equipment failure. The items that are not included with the air conditioner must be purchased separately.

Name		Appearance
1x	Installation & User manual	
1x	Warranty card	
1x	Communication/Signal cable*	
1x	Insulated copper pipe*	
1x	Remote controller	
1x	Remote controller holder	
2x	Remote controller batteries	

Name		Appearance
1x	Wired system interface kit (Controller, Display Module, or both)	
1x	Drain pipe assembly	
1x	Plastic drain joint plug for the outdoor unit (Use only for wall-mounted condensers)	
1x	Condensate drain hose*	
1x	Wrapping tape*	
1x	Wall-hole packing sealant*	
1x	Wall sleeve*	
1x	Allen wrench for opening service valves	

Note

Items with an asterisk * may be sold separately and are sometimes supplied by the installer. Therefore, some items may differ in appearance, shape, or length, depending on the particular installation.

Installation

5

5.1. Select the Installation Locations

Before installing the indoor and outdoor units, choose the appropriate locations.

Notes

- Before starting, refer to the label on the product box to make sure that the model number of the indoor unit matches the model number of the outdoor unit.
- We recommend understanding the guidelines for selecting ideal locations for the indoor and outdoor units.
- Refrain from exerting force on other parts of the unit, especially the refrigerant piping, water discharge piping, and plastic parts.

Indoor Unit

Select an indoor unit installation location that meets these standards:



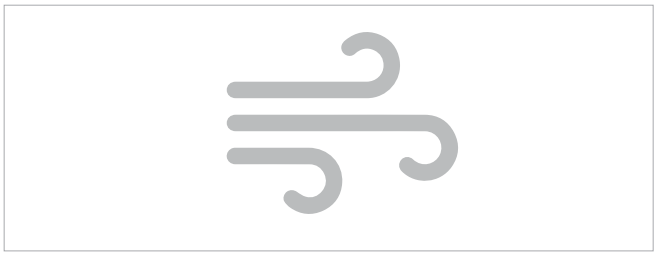
☑ Sufficient space for installation and maintenance.

☑ Sufficient space to connect the refrigerant pipes and condensate drain hose.

☑ Minimize the distance between the indoor and outdoor units.

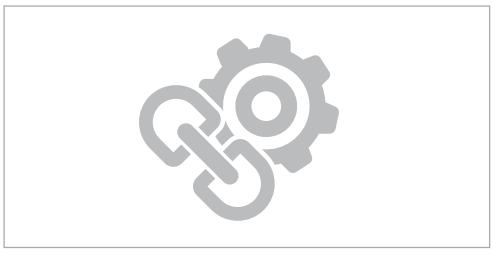


☑ No direct radiation from heaters.



☑ The air inlet and outlet are not blocked.

☑ The airflow can fill the entire room.



☑ Firm and solid — the location can support the unit and will not vibrate.

Installation

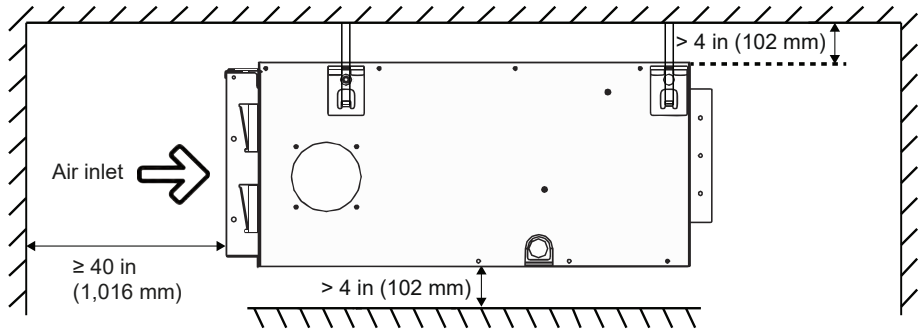
5

Do not install the unit in the following locations:

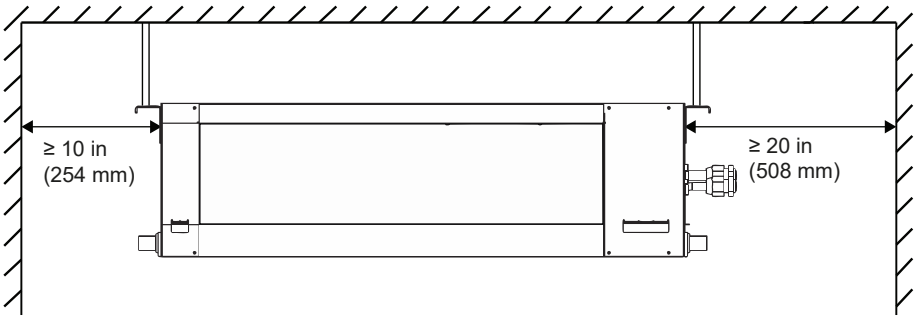
- ⊘ Areas with oil drilling or fracking.
- ⊘ Coastal areas with high salt content in the air.
- ⊘ Areas with caustic gases in the air, such as hot springs.
- ⊘ Areas that experience power fluctuations, such as factories.
- ⊘ Areas that are exposed to direct sunlight.
- ⊘ Enclosed spaces, such as cabinets.
- ⊘ Kitchens that use natural gas.
- ⊘ Areas with strong electromagnetic waves
- ⊘ Areas that store flammable materials or gas.
- ⊘ Rooms with high humidity, such as bathrooms or laundry rooms.

Installation Diagram

Consider the following height and length restrictions:



Side View

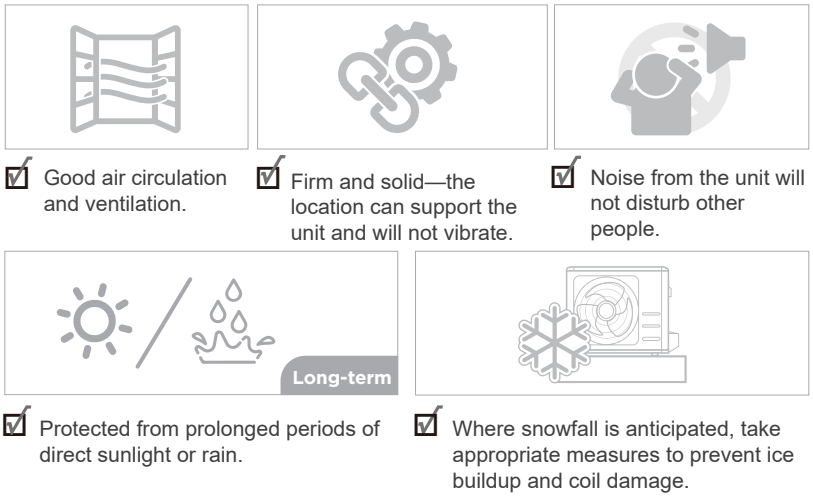


Front View

Installation 5

Outdoor Unit

Select an outdoor unit installation location that meets these standards:



☑ Good air circulation and ventilation.

☑ Firm and solid—the location can support the unit and will not vibrate.

☑ Noise from the unit will not disturb other people.

☑ Protected from prolonged periods of direct sunlight or rain.

☑ Where snowfall is anticipated, take appropriate measures to prevent ice buildup and coil damage.

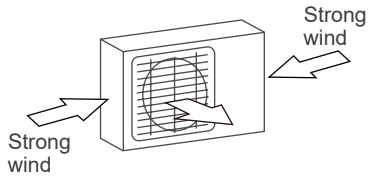
⚠ CAUTION:

Special Considerations for Extreme Weather

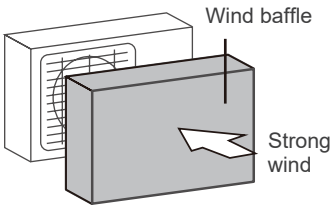
If the unit is exposed to heavy wind:
Install the unit so that the air outlet fan is at a 90-degree angle to the wind direction. If necessary, build a barrier in front of the unit to protect it from extremely strong winds.

If the unit is frequently exposed to heavy rain or snow:
Build a shelter above the unit to protect it from rain or snow, ensuring the airflow is not obstructed.

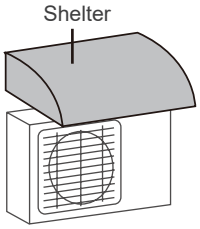
If the unit is frequently exposed to salty air (seaside):
Use an outdoor unit specifically designed for corrosion resistance.



90-degree angle to the direction of the wind



Build a wind baffle to protect the unit



Build a shelter to protect the unit

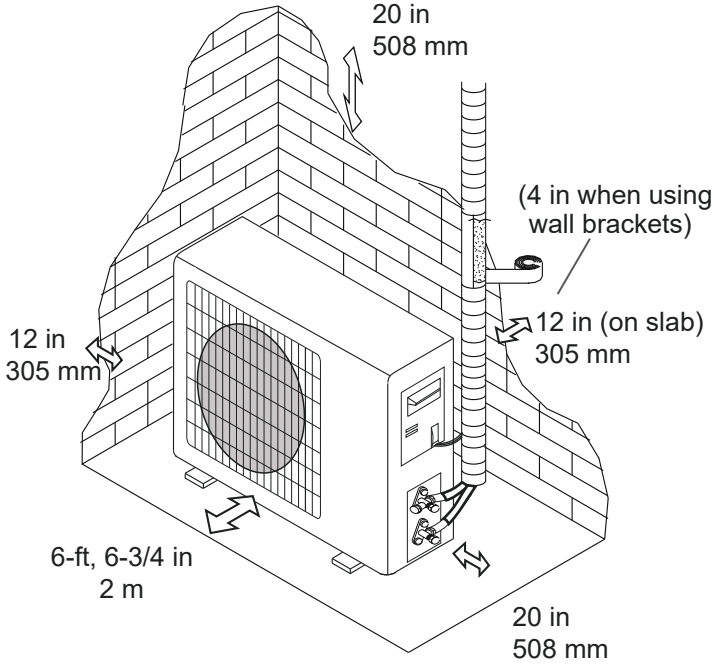
Installation

5

Do not the install the outdoor unit in the following locations:

- Near an obstacle that will block air inlets and outlets.
- Near public streets, crowded areas, or places where noise from the unit will disturb others.
- Near animals or plants that will be harmed by hot air discharge.
- Near any source of combustible gas.
- A location that is exposed to large amounts of dust.
- A location exposed to an excessive amount of salty air.

Installation Diagram



Installation

5

5.2. Indoor Unit Installation

A. Return Air Inlet Configuration

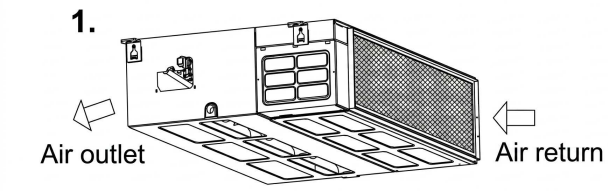
This indoor unit is configured for rear air return but can be modified for downward (bottom) air return. Follow these steps to convert the air return direction.

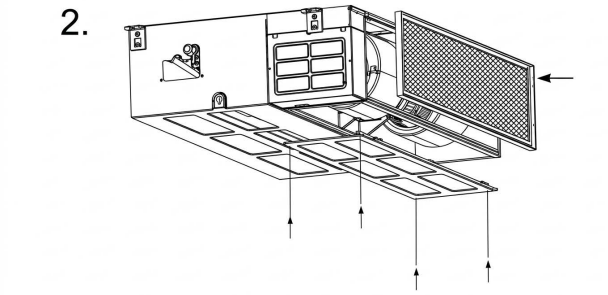
1. Rear Air Return (Factory Default)
The air return is configured to draw air from the rear of the unit.

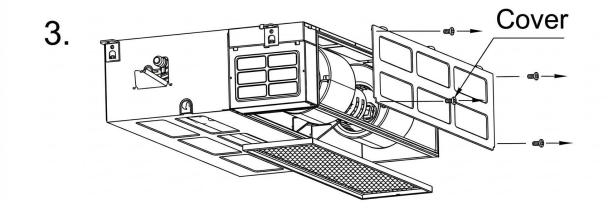
2. Disassemble the Filter and Bottom Panel
Loosen the screws to remove the mesh filter and filter frame from the rear panel. Then, loosen the mounting nuts to remove the bottom panel cover.

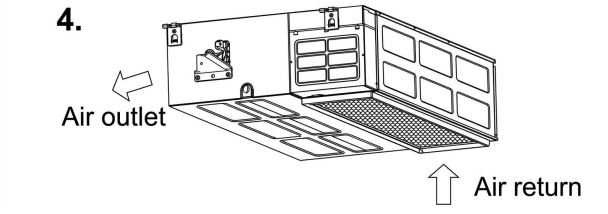
3. Reinstall the Filter for Downward Air Return
Mount the mesh filter and frame onto the bottom air return opening. Attach the cover to the rear return opening to seal it.

4. Downward Air Return Configuration Complete
The unit is now configured for downward air return operation.









Installation

5

B. Hanging Bolts Installation

1. Set up the four field-provided 3/8-inch threaded hanging bolts according to thB installation diagram and measurements.

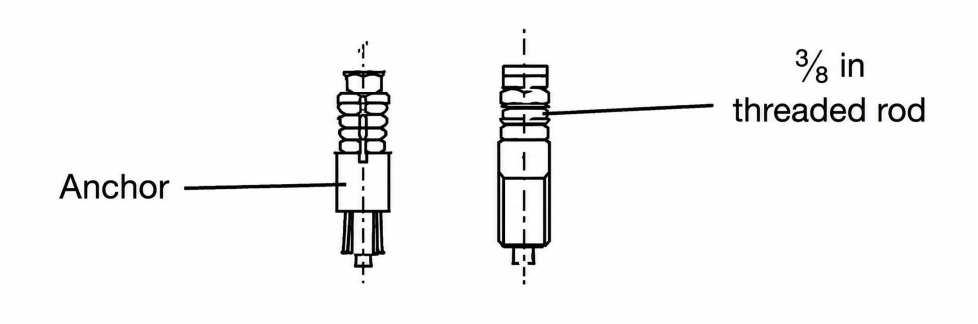
2. Ensure the center-to-center distance between the bolts matches the specifications for the unit size.

Ceiling Structure Mounting Methods

Finished Concrete (Brick or Slab)

Secure the hanging hooks directly into the concrete using expansion bolts.

Drill to a depth of 1-¾ - 2 inches (45-50 mm) to ensure secure anchoring.

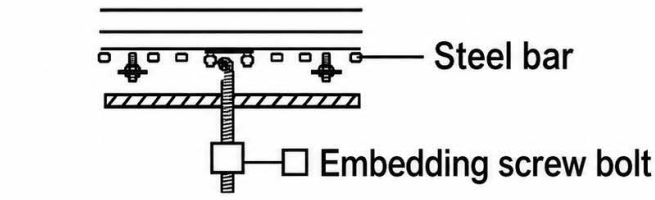


New Concrete Bricks

Use one of the following methods to embed the screw bolts:

- Blade-type insertion
- Slide-in channel insertion

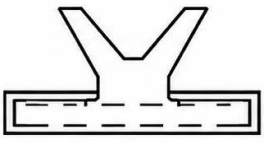
Anchor the screw bolts firmly into the embedded steel reinforcement bars.



Pipe hanging & embedding screw bolt



Blade-type insertion



Slide-in channel insertion

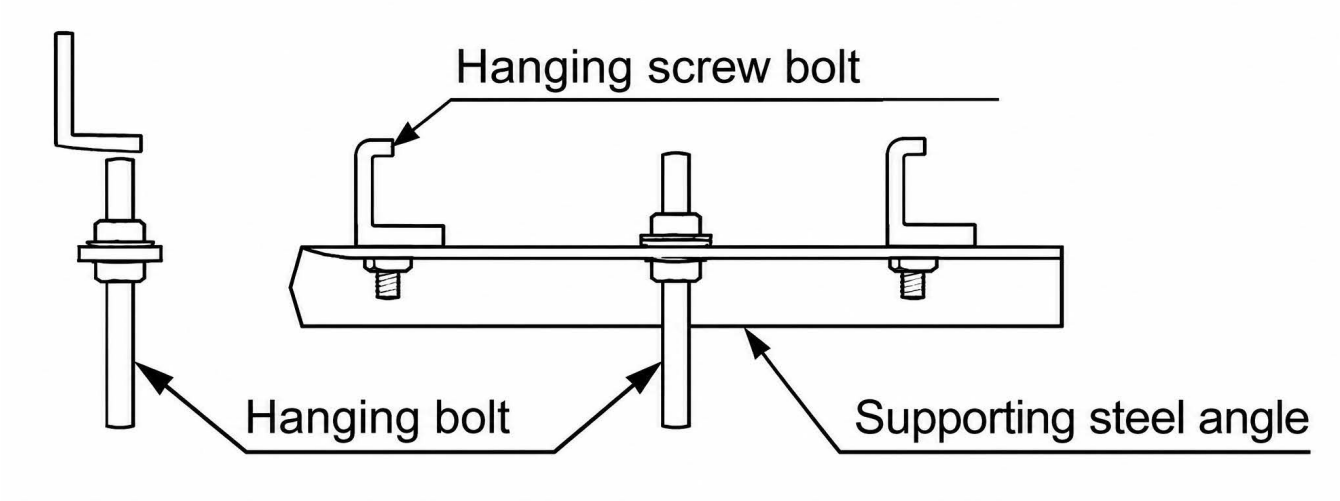
Installation

5

Steel Roof Beam Structure

Install supporting angle steel brackets.

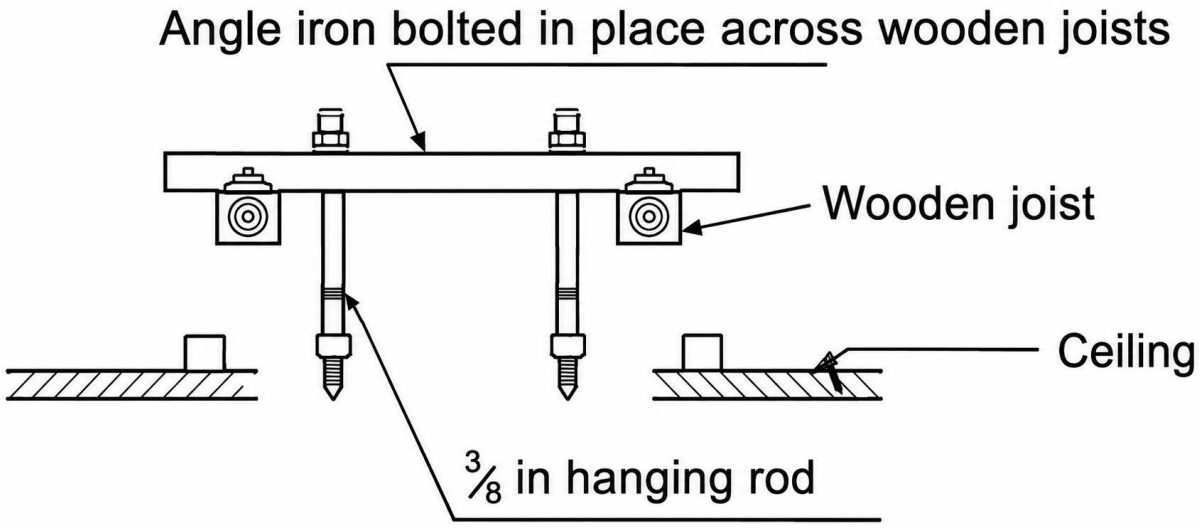
Mount the hanging bolts through the brackets and secure them.



Wooden Construction

Secure the angle iron across the wooden joints.

Secure the hanging screw bolts through the channel and into the ceiling structure.



Installation

5

C. Hang the Air Handler Unit

Ensure sufficient space for installation and repairs. It is recommended to leave an air gap of 4 inches (102 mm) or greater between the air handler and the roof.

1. After setting the hanging bolts in place, slide one nut and one washer onto each bolt. Position the nuts slightly above the final resting place of the four suspension brackets. Use tape to keep the washers in place.

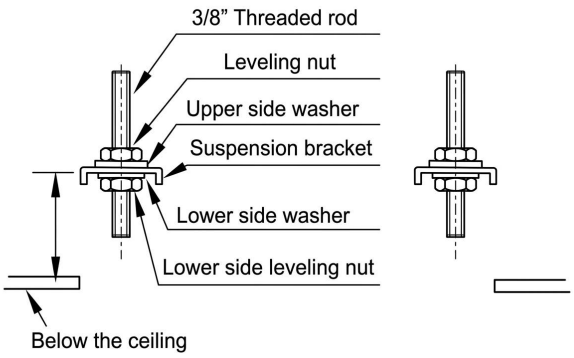
2. Align the four field-provided hanging bolts with the T-grooves on the indoor unit's hanging bracket, then slide them into place.

3. Carefully lift and suspend the indoor unit. This step requires two people or a mechanical lifting device.

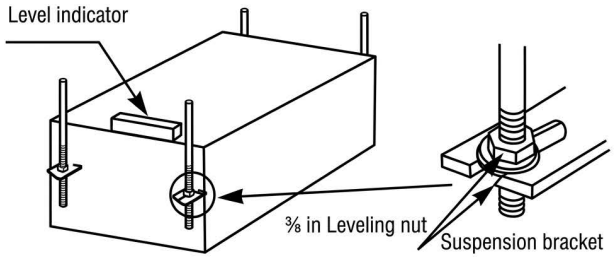
4. Use a bubble level or built-in level indicator to ensure the unit is perfectly level.

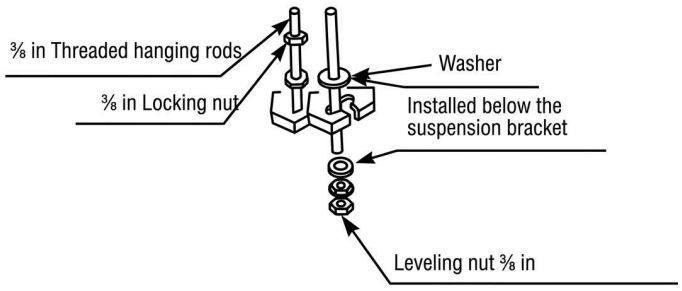
Assembly Notes:
Attach components in the following order:

- Nut (upper)
- Gasket (upper)
- Suspension bracket
- Gasket (lower)
- Nut (lower)



Use a ⅜-inch locking nut to secure the final assembly. Fine-tune the adjustment until the cassette is level. Tighten all nuts firmly to ensure a stable, vibration-free installation, then re-check the level.





When installing the unit in a location with a Sheetrock (plasterboard) ceiling, provide an access panel at a suitable location. This facilitates the final connection of the refrigerant piping, condensate drain, and electrical wiring, while allowing future maintenance access.

If installing an access panel is not possible, ensure that all final connections are completed prior to installing the cassette cover panel. If installing the cassette body in a location that is above 80°F (27°C) with more than 80% RH, add a 0.4-inch (10 mm) insulation layer of polyethylene or similar material around the unit.

- Complete all piping and wiring connections before installing the panel.
- Verify that the indoor unit and ceiling opening dimensions are correct prior to panel installation.
- Seal all connection gaps between the panel, ceiling, and indoor unit.

Installation

5

D. Install the Condensate Drain Hose

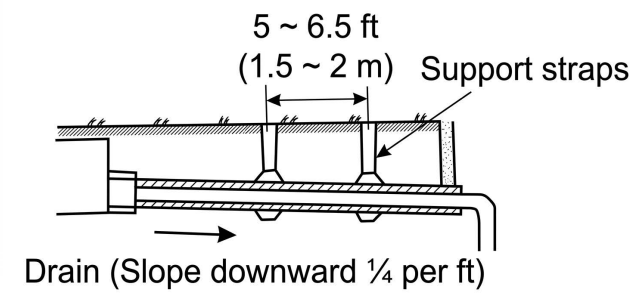
The condensate drain hose, also called a drain line, directs water away from the unit. Improper installation may cause property damage.

⚠CAUTION

- Ensure the drain line installation complies with all local and national codes and regulations.
- Verify that the drain line is insulated to prevent condensation and potential water damage. If it is not, insulate it properly.
- If the drain line is bent or installed incorrectly, water may leak and cause a water-level switch malfunction.
- Do not pull the drain line forcefully. This could disconnect it.

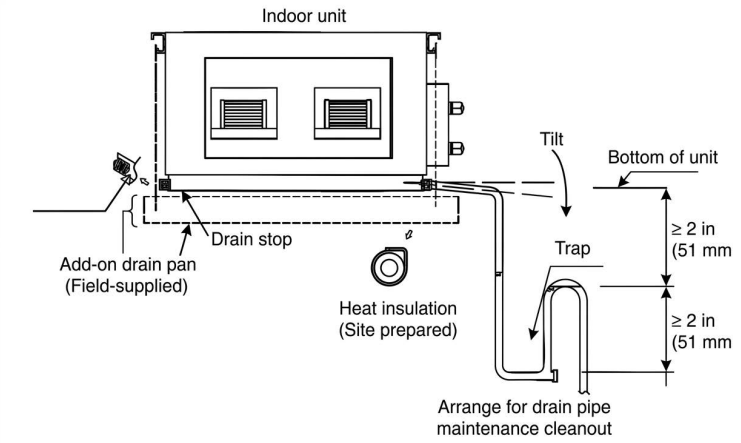
Notes

- When using an extended drain line, tighten the indoor connection with an additional protection tube to prevent accidental disconnection.
- Maintain a continuous downward slope greater than ¼ inch per foot (minimum 1/50 ratio) with no dips, sags, or reverse slopes.
- Install support straps or brackets every 5-6.5 feet (1.5 to 2 m) along horizontal runs to maintain the proper slope and prevent sagging.
- Keep the total horizontal pipe length under 65 feet (20 m).
- When installing parallel pipes side-by-side, maintain a gap of approximately ⅜ inch (10 mm) between them.
- The maximum vertical rise of the drain line must not exceed 2.5 feet (0.8 m).
- The horizontal extension from the indoor unit drain outlet must not exceed 4 inches (102 mm) prior to the rise.



Installation

5



1. Plan the Drain Line Layout

Before beginning the installation, plan the drain line layout and connection.

2. Cut the Drain Line (If Needed

If necessary, cut the drain line to fit your layout and connection.

3. Insulate the Drain Line (If Needed

Verify that the drain line is insulated to prevent condensation and potential water damage. If it is not, insulate it properly. Insufficient insulation may allow dew to form due to low condensate temperatures, resulting in potential water damage.

Insulate the drain line before beginning the connection, excluding the joint sections. These will be insulated at the end of the procedure.

Ensure the insulation material is fitted tightly with no gaps. Do not over-tighten the insulation material. This may compress the air out of the material, causing poor insulation and early aging.

The insulation material must be made of flame-retardant material. Select a material that complies with local regulations.

The thickness of the insulation material must be more than ⅜ of an inch (10 mm).

Apply specialized adhesive to the insulation seams, then secure them with tape. Ensure the tape is at least 2 inches (51 mm) wide and applied firmly to prevent condensation.

4. Connect the Drain Hose

Attach the drain hose to the indoor unit's drain line connection.

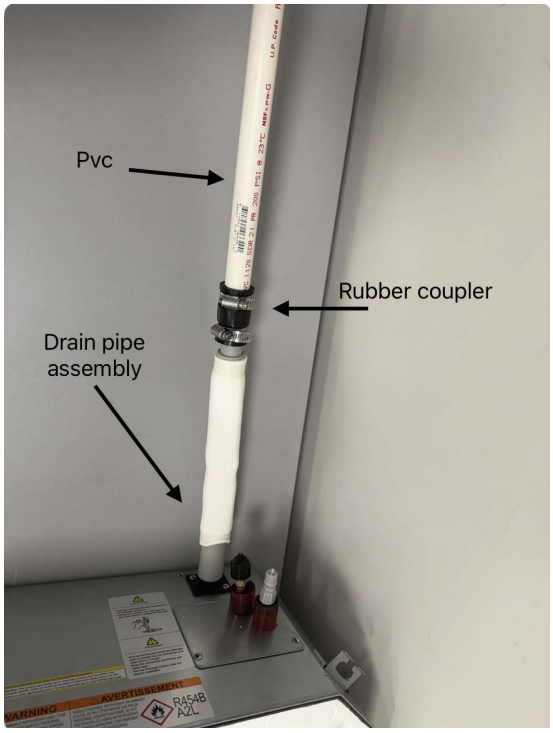
Unlike wall-mounted systems, ceiling concealed units and other light commercial air conditioning systems require a PVC drain line. The flexible drain hoses are not suitable for these applications.

Use a rubber coupler to connect the drain hose to the PVC drain line, ensuring a secure, water-tight seal. The rubber coupler and PVC drain line are sold separately from the system.

Installation

5

This is how the drain line assembly should look when attached to the PVC line with the rubber coupler:



5. Pass the Drain Line Through the Wall Hole

When passing the drain line through the wall hole, make sure the water drains to a safe location where it will not cause water damage or a slipping hazard.

The drain line outlet should be at least 1-⅞ inches (50 mm) above the ground. If it touches the ground, the unit may become blocked, potentially leading to a malfunction.

If the water is discharged directly into the sewer, ensure the drain has a U or S pipe to prevent odors from coming back into the house.

Installation

5

6. Complete a Drainage Test

Ensure the condensate drains to a suitable location by completing the drainage test. New buildings should perform this test before finishing the ceiling.

a. Remove the test cover.

b. Add 68 ounces (2,000 ml) of water to the tank through the attached tube.

c. Turn on the main power switch and run the appliance in Cooling mode.

d. Listen for any unusual noises coming from the drain pump.

e. Confirm the water is discharging to the proper location. It may take up to a minute for the unit to begin draining, depending on the drain line.

f. Ensure there are no leaks in the drain line.

g. Stop the appliance. Turn off the main power switch and reinstall the test cover.

7. Insulate the Joint Sections

The pipe joint insulation should be 2~4 inches (51~102 mm) longer than the gap to ensure a proper seal.

Insert the pipe joint insulation into the gap of the existing insulation.

Ensure the pipe joint insulation is securely fastened to the suction and liquid pipes to prevent gaps. Use glue to paste together the linking part. Do not over-tighten the insulation material. This may compress the air out of the material, causing poor insulation and early aging.

Installation

5

E. Duct Selection

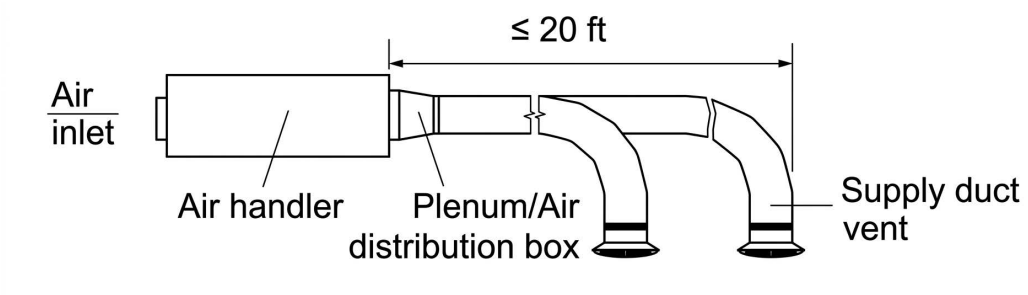
This unit supports both rectangular and round duct connections. Follow the instructions below to ensure proper airflow and system performance. Pioneer does not make specific ducting recommendations, as every project and scenario is unique.

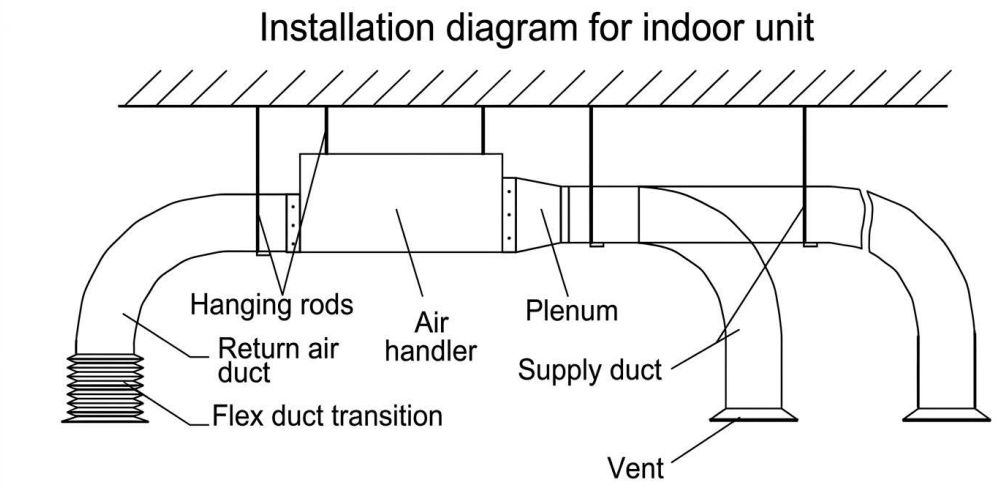
Rectangular Ducting

Rectangular air ducts can be connected directly to the indoor unit's discharge outlet using rivets or other secure fasteners. Refer to the unit's outline drawing for the correct outlet dimensions and mounting positions.

Round Ducting

Round ducts must be connected using a transition adapter between the round duct and the unit's rectangular outlet. The outlet can then branch to one or more supply air grilles or air outlet windows.





Important Guidelines

- Balance the airflow to multiple outlet grilles by using airflow diverters or branch dampers as needed.
- Ensure consistent air velocity at each outlet to maintain uniform comfort throughout the conditioned space.
- Always comply with local building codes and ducting best practices when routing and insulating ducts.

Installation

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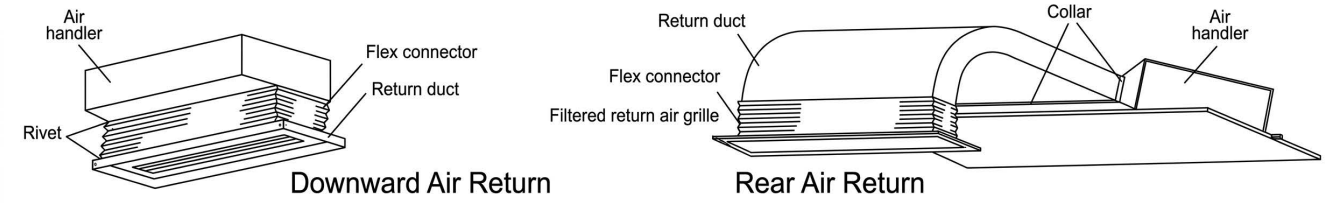
Downward Return Configuration

Use a section of pleated canvas duct as a flexible connection between the unit's return air opening and the return air grille. Secure the duct to both the unit and the grille using rivets or other approved fasteners.

This flexible canvas connection allows for adjustment based on ceiling height. It also absorbs vibration, reduces noise, and prevents ceiling panel movement during operation.

Rear Return Configuration

Secure a fabricated or pre-made rigid return air duct to the unit's return air opening using rivets. Connect the other end of the duct to the return grille or air return window. Install a flexible duct connector at the grille end to allow slight movement and isolate noise.



Note

Regardless of the configuration, ensure all connections are airtight and structurally supported to prevent air leakage, vibration, and noise during operation.

F. Wire the Indoor Air Handler

Open the electrical junction box to access the wiring terminals. Route all connecting wires through the rubber inlet grommet to ensure a proper seal.

Connect the wires according to the wiring diagram on the indoor unit. Verify that all wire strands are fully inserted and securely clamped at the terminals. Ensure all connections are tight and secure.

Installation

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G. Wrap the Lines & Seal Air Gaps

Note

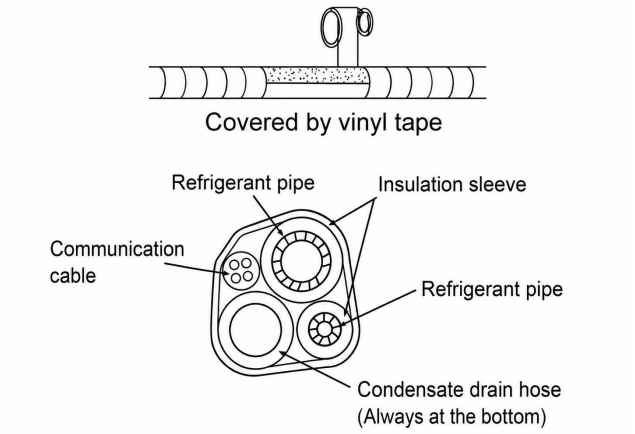
Before wrapping the lines and sealing the air gaps, install the indoor and outdoor drain line, refrigerant piping, and communication cable.

1. Arrange the pipes, cable, and drain line correctly. Keep the drain line at the bottom so that the water can flow freely.

2. Lag the pipe joints with insulation material and secure them with vinyl tape as depicted in the figure.

3. Route the bundle through the wall hole and be sure not to kink the drain pipe when binding.

4. Ensure all connections between the panel and the ceiling, as well as between the panel and the indoor unit, are properly sealed. Even small gaps can result in air or water leakage, or cause condensation to form.



Installation

5

5.3. Outdoor Unit Installation

A. Install the Drain Joint (Optional)

The outdoor condensate drain hose is optional. It is only needed if the user does not want to use the default bottom drainage port.

If a drain hose is required, install the drain joint into the outdoor unit's base pan hole before mounting. This installation is unnecessary when mounting the unit on a slab.

There are two types of drain joints for the outdoor unit: one with a rubber seal and one without.

If the drain joint comes with a rubber seal (Figure A), follow these steps:

1. Fit the rubber seal on the end of the drain joint connecting to the outdoor unit.

2. Insert the drain joint into the hole of the unit's base pan.

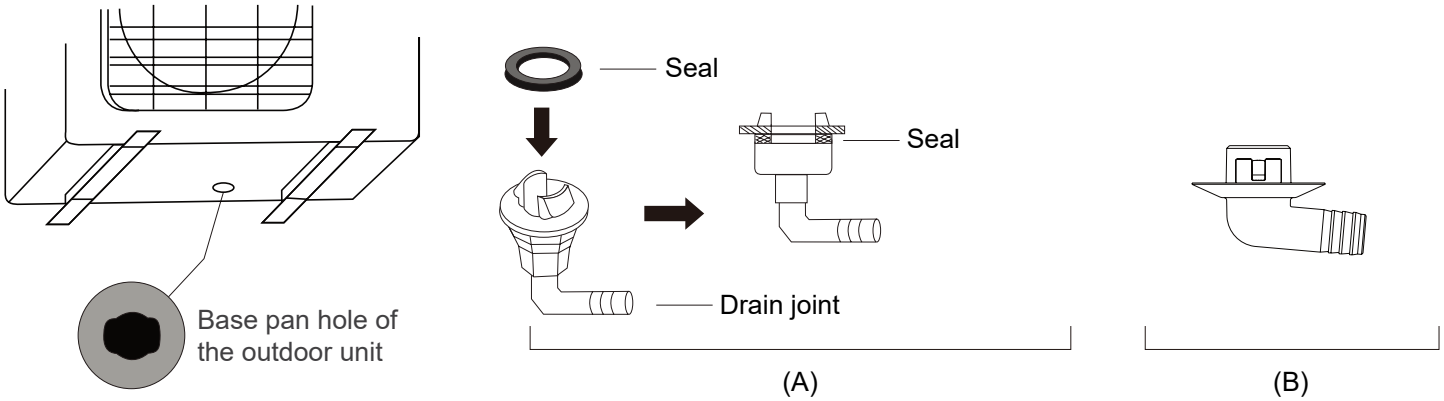
3. Rotate the drain joint 90-degrees until it clicks into place facing the front of the unit.

4. Connect a drain hose extension (not included) to the drain joint in order to redirect water from the unit during Heating mode.

If the drain joint does not come with a rubber seal (Figure B), follow these steps:

1. Insert the drain joint into the base pan hole, then press firmly to ensure it is properly installed and does not become loose.

2. Connect a drain hose extension (not included) to the drain joint in order to redirect water from the unit during Heating mode.



In Cold Climates

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

Installation 5

B. Mount the Outdoor Unit

⚠ WARNING

When drilling into concrete, eye protection is recommended at all time.

Notes

Before mounting the outdoor unit, read these notes:

General Notes

- Before connecting any pipes or cables, install the outdoor unit on a pad or solid wall using suitable mounting brackets.
- Decide the best position on the wall or ground and leave enough space in order to carry out maintenance easily.
- Follow all national regulations when installing the unit.

Mounting on Slabs

- The installation of the drain joint and tubing is not necessary when mounting the unit on slabs.

Wall Mounting

- Before mounting the unit on the wall, make sure the wall is made of solid brick, concrete, or a similarly strong material. The wall must be able to support at least four times the weight of the unit.
- Fasten the supporting brackets to the wall using hardware that is particularly suited for the type of wall. Use the appropriate amount of hardware for the application. Installing four rubber pads is optional.
- If allowed, install the wall-mounted unit with rubber gaskets to reduce vibration and noise.

Choose the best location on the wall or ground, leaving enough space for easy maintenance. The outdoor unit can be mounted to the ground or on wall brackets. The following list shows different outdoor unit sizes and the distance between their mounting feet. Prepare the installation base for each unit according to the dimensions found on **Page 20** in the *Product Overview* section.

Installation

5

Ground/Concrete Mounting Platform

1. Mark the positions for the four bolts based on the dimensions.

2. Pre-drill holes for the bolts.

3. Clean the concrete dust away from the holes.

4. Place a nut on the end of each bolt.

5. Hammer the bolts into each hole.

6. Remove the nuts from the bolts and place the outdoor unit onto the bolts.

7. Put washers onto each expansion bolt, then replace each of the nuts.

8. Use a wrench to tighten each nut until snug.

Wall-Mounted Bracket

1. Mark the positions for the bracket holes based on the dimensions.

2. Pre-drill holes for the bolts.

3. Clean the concrete dust away from the holes.

4. Place a washer and nut on the end of each bolt.

5. Thread expansion bolts through the holes in the mounting bracket. Then, put the mounting bracket in position and hammer the expansion bolts into the wall.

6. Confirm the mounting bracket is level.

7. If the feet of the outdoor unit have rubber pads already installed and are using a local dealer's wall-mounting bracket, remove them before attempting to mount the condenser to the bracket. The mounting bracket has rubber isolating pads on it that will take the place of these.

8. Carefully lift the unit and place its mounting feet on the brackets.

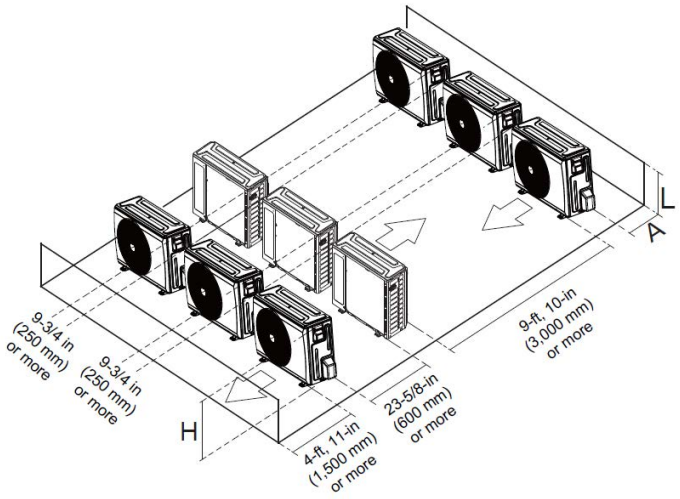
9. Bolt the unit firmly to the brackets.

Installation

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Multiple Outdoor Units

If multiple outdoor units are being installed in a row, follow these guidelines:



	L	A
L ≤ H	L ≤ 1/2H	9-¾ in (250 mm) or more
	1/2H < L ≤ H	11-¾ in (300 mm) or more
L > H	Cannot be installed	

H: Unit height
L: Height of the wall behind the unit
A: Distance between the unit and wall

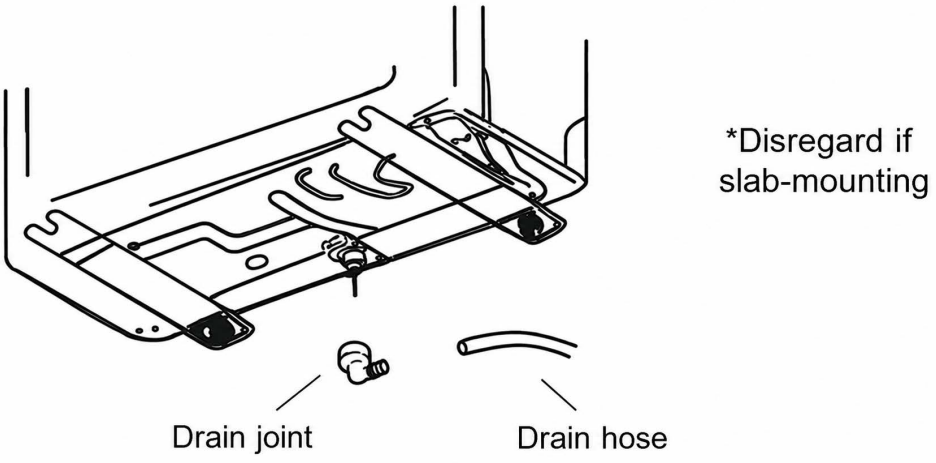
C. Install the Condensate Drain Hose (Optional)

The outdoor condensate drain hose is optional. It is only needed if the user does not want to use the default bottom drainage port. Installing a drain hose is unnecessary if the unit is slab-mounted.

Instructions for planning the drain line layout, cutting the hose, and adding insulation are on **Page 34** in the *Installation* section. Revisit this page if necessary.

1. Connect the condensate drain hose to the drain joint at the bottom of the unit.

2. Ensure the water drains to a suitable location.



Installation

5

5.4. Refrigerant Piping Connection

Prerequisite:

- Do not install the connecting pipe until both the indoor and outdoor units have been installed.

Notes

- Confirm the refrigerant piping is insulated. All refrigerant piping from Pioneer arrives pre-insulated. If you purchase refrigerant piping from another dealer that is not insulated, ensure that you insulate them correctly.
- Confirm the refrigerant piping is flared. All refrigerant piping from Pioneer arrives pre-flared. If you purchase refrigerant piping from another dealer that is not pre-flared, ensure that you flare them correctly.
- The length of the refrigerant piping will affect the performance and energy efficiency of the unit.
- Nominal efficiency is tested on units with a pipe length of 16 feet (4.9 m).
- The factory precharge supports up to 25 feet (7.6 m) of connected lineset.
- The total piping length should not be less than 10 feet (3 m).
- If the factory precharge is modified, make a note of the charge modification amount.

Installation

5

Refrigerant Piping Specifications

Refer to this table for refrigerant piping specifications, such as maximum length and drop height.

RYT-24	9.5K BTU	11K BTU	17K BTU	22K BTU
Liquid Pipe Diameter	Φ 1/4 in (6.4 mm)	Φ 1/4 in (6.4 mm)	Φ 1/4 in (6.4 mm)	Φ 1/4 in (6.4 mm)
Gas Pipe Diameter	Φ 3/8 in (9.5 mm)	Φ 3/8 in (9.5 mm)	Φ 1/2 in (12.7 mm)	Φ 5/8 in (15.9 mm)
Max. Length of Pipe with Standard Charge	25 ft / 7.6 m			
Max. Length Between Indoor and Outdoor Unit	50 ft / 15.2 m	50 ft / 15.2 m	65 ft / 19.8 m	65 ft / 19.8 m
Adjustment Refrigerant Charge (For each additional foot after 25 ft.)	0.11oz/ft			
Max. Drop Height Between Indoor and Outdoor Unit	33 ft / 10 m	33 ft / 10 m	50 ft / 15.2 m	50 ft / 15.2 m
Type of Refrigerant	R-454B			

Installation 5

A. Plan the Piping Layout

Before beginning the installation, plan the refrigerant piping layout and connection. Run the piping in the direction of the wall hole.

Oil Traps

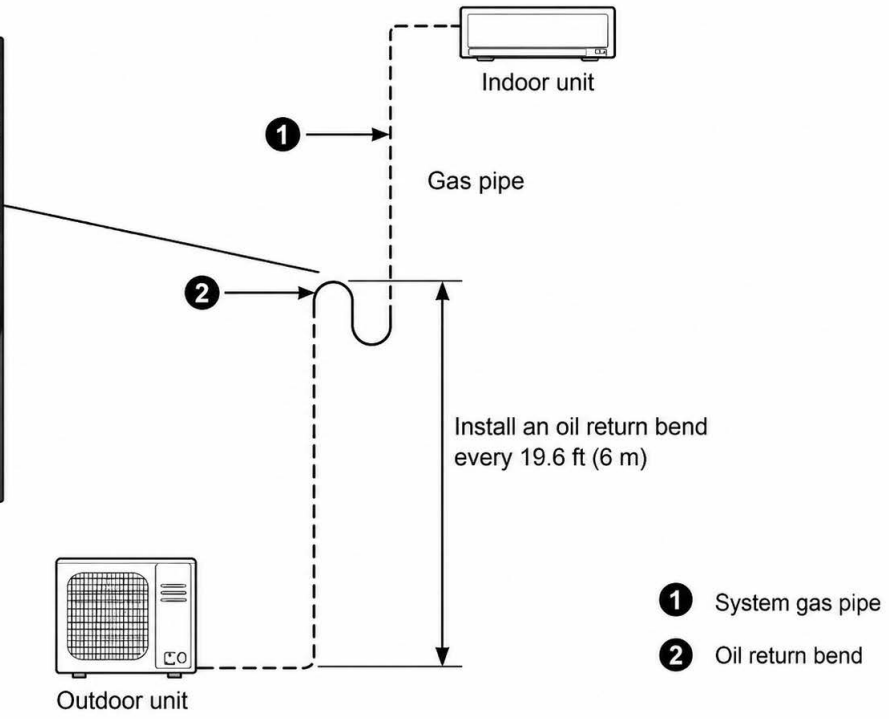
CAUTION

If oil flows back into the outdoor unit's compressor, this might cause liquid compression or deterioration of the oil return. Oil traps in the rising gas piping can prevent this.

Outdoor Unit is Beneath the Indoor Unit

Install an oil return bend every 19-feet, 8-¼-inches (6 m). There is no need to add a non-return bend at the lowest and highest positions of the vertical pipe.



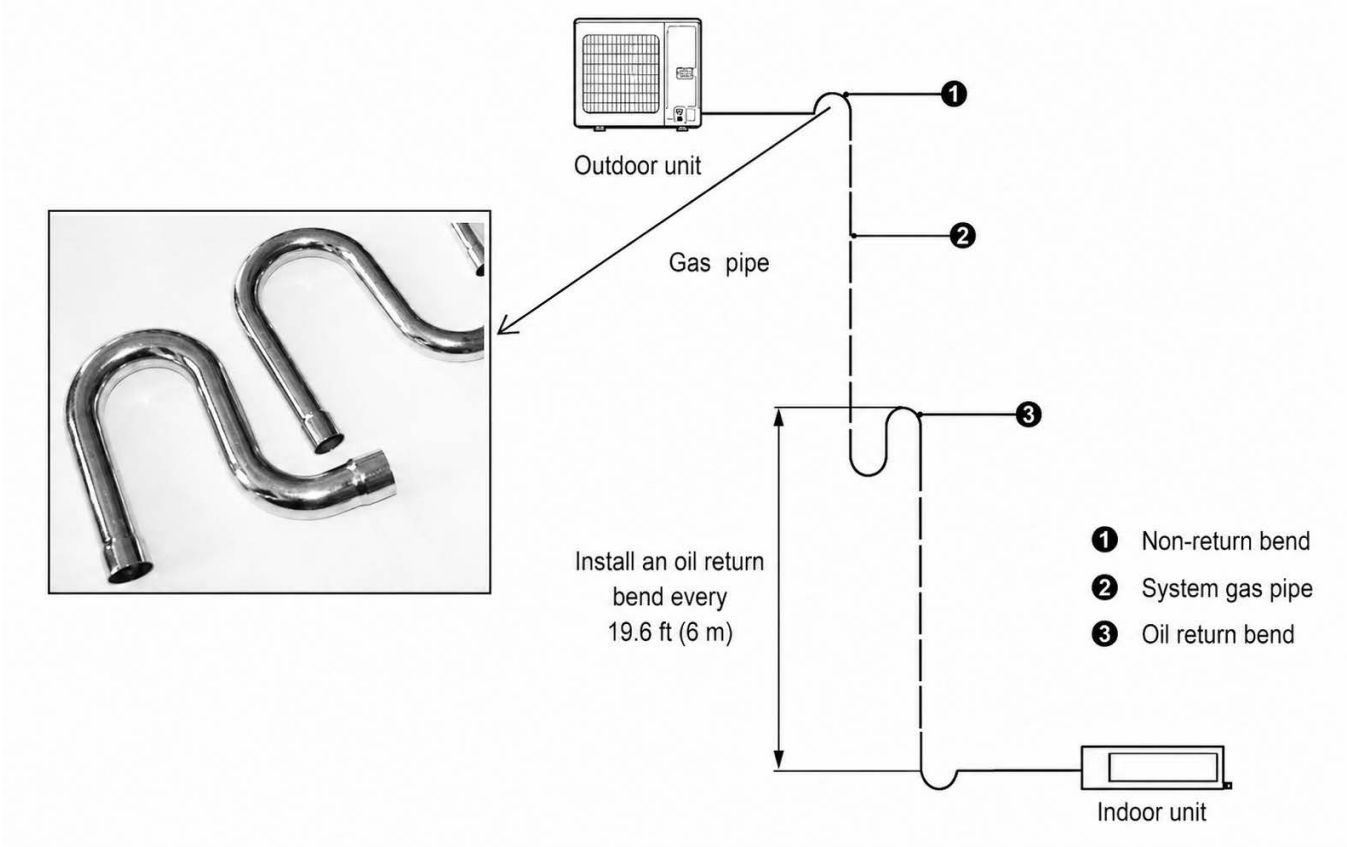


Installation

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Outdoor Unit is Above the Indoor Unit

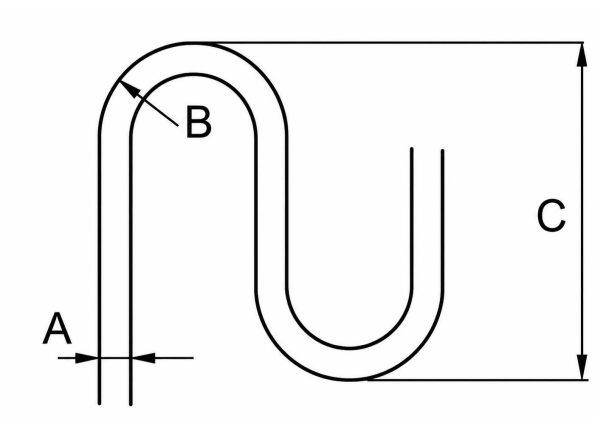
Install an oil return bend every 19-feet, 8-¼-inches (6 m). Add the oil return bend and non-return bend at the lowest and highest positions of the vertical pipe.



Oil Trap Dimensions

The dimensions for creating the oil return bend are as follows:

A	B	C
Ø 3/8 in	≥ 3/4 in (20 mm)	≤ 5-7/8 in (150 mm)
Ø 1/2 in	≥ 1 in (26 mm)	≤ 5-7/8 in (150 mm)
Ø 5/8 in	≥ 1-1/4 in (33 mm)	≤ 5-7/8 in (150 mm)

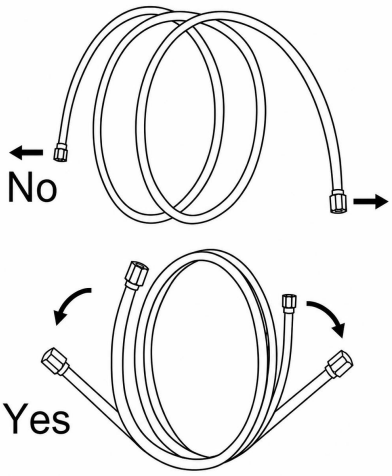


Installation 5

B. Unwind the Piping

Gently unwind the refrigerant piping against a flat surface instead of pulling the ends.

- Do not remove the seal caps from the pipe ends until it is time to connect them, to prevent contaminants from entering.
- Do not bend the pipe more than three times at any single point. Be extremely careful not to kink the piping.
- When bending refrigerant piping, the minimum bending radius is 4 inches (102 mm).



C. Adjust the Piping Length (Optional)

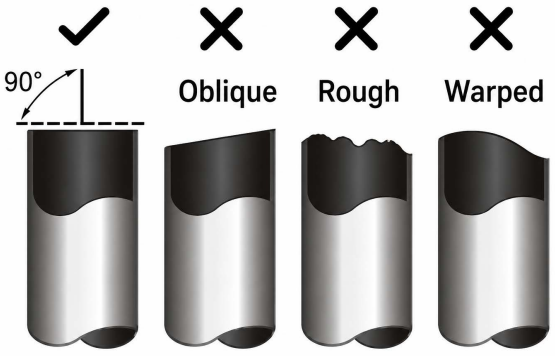
If needed, precisely cut the refrigerant pipes to the appropriate length to meet the installation requirements. This guarantees efficient operation and minimizes future maintenance.

Next, remove the burrs from the piping after cutting. This maintains an airtight seal on the refrigerant connections.

Once the piping is cut and the burrs are removed, flare the pipe ends. Proper flaring is essential to achieve an airtight seal. If pre-flared refrigerant piping arrives damaged, it can be re-flared.

Cut the Pipes

1. Measure the distance between the indoor and outdoor units.
2. Use a pipe cutter to cut the pipe a little longer than the measured distance.
3. Make sure the pipe is cut at a perfect 90-degree angle.



Note

Be careful not to damage, dent, or deform the pipe while cutting. This will drastically reduce the heating efficiency.

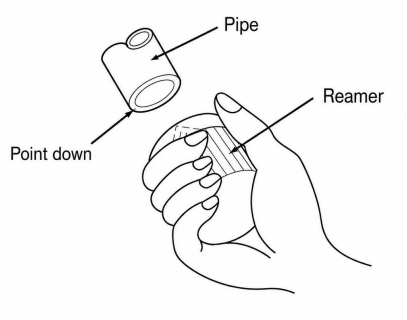
Installation

5

Remove Burrs

1. Hold the pipe at a downward angle to prevent burrs from falling into the pipe.

2. Use a reamer or deburring tool to remove all the burrs from the cut section of the pipe.



Flare Pipe Ends

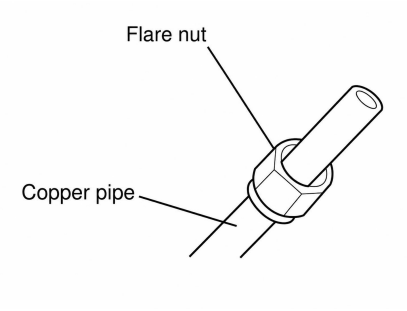
1. Seal the pipe ends with PVC tape to prevent foreign materials from entering.

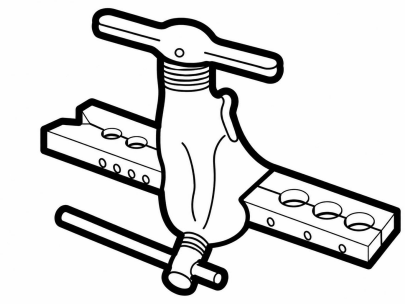
2. Confirm the pipe was sheathed properly with insulation material.

3. Place the flare nuts on both ends of the pipe. Make sure they are facing the correct direction, because it is not possible to change their direction after flaring.

4. Remove the PVC tape from the ends of the pipe when ready to perform the flaring work.

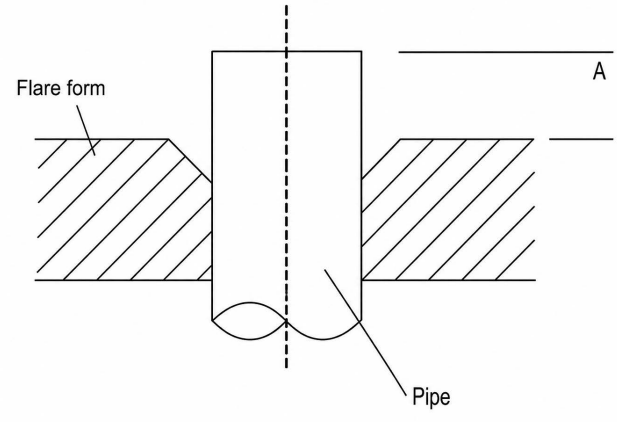
5. Clamp the flare form on the end of the pipe. The end of the pipe must extend beyond the edge of the flare form in accordance with the dimensions shown in the tables:





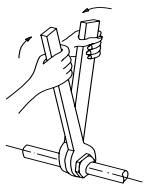
Piping Extension Beyond Flare Form

Pipe Diameter inch / mm	Flare Dimension A inch / mm	
	Min	Max
Ø1/4 / Ø6.4	0.33 / 8.4	0.34 / 8.7
Ø3/8 / Ø9.5	0.52 / 13.2	0.53 / 13.5
Ø1/2 / Ø12.7	0.64 / 16.2	0.65 / 16.5
Ø5/8 / Ø15.9	0.76 / 19.2	0.78 / 19.7
Ø3/4 / Ø19	0.91 / 23.2	0.93 / 23.7
Ø7/8 / Ø22.2	1.04 / 26.4	1.06 / 26.9



Installation

5

Pipe Diameter inch / mm	Torque N.m (lb.ft)	Sketch Map
Ø1/4 / Ø6.4	18~20 (13.3~14.8)	
Ø3/8 / Ø9.5	32~39 (23.6~28.8)	
Ø1/2 / Ø12.7	49~59 (36.1~43.5)	
Ø5/8 / Ø15.9	57~71 (42~52.4)	
Ø3/4 / Ø19	67~101 (49.4~74.5)	
Ø7/8 / Ø22.2	85-110 (62.7-81.1)	

6. Place the flaring tool onto the form.

7. Turn the flaring tool's handle clockwise until the pipe is fully flared.

8. Remove the flaring tool and flare form, then inspect the end of the pipe for cracks and flaring.

D. Connect the Pipes

Connect the copper pipes to the indoor unit first, then connect it to the outdoor unit. Connect the low-pressure pipe, then the high-pressure pipe. Use both a spanner and torque wrench when connecting or disconnecting pipes to the unit.

Once the copper piping kit is unwound, refer to the instructions below:

Installation 5

Indoor Unit

1. Bring the ends of both the copper line and the indoor unit line together. Align the centers of the pipes that will be connected.

2. Remove the indoor unit piping cap and check that no debris is inside. Some gas may be heard escaping, but it is dry nitrogen to keep the lines clean.

3. Use any available leak guard or flare sealer on the piping flares.

4. Attach the flare nut and tighten as much as possible by hand. Torque correctly to the specifications found in the table below using two wrenches.

5. Repeat the process for the other copper line.

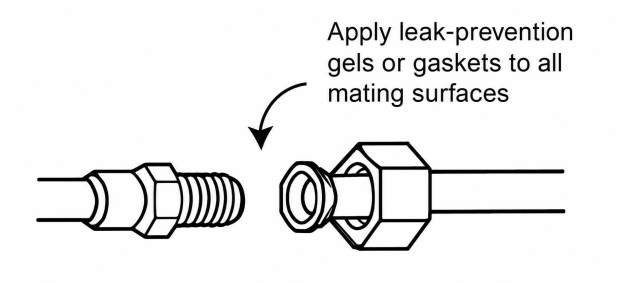
6. After connecting the copper pipes to the indoor unit, wrap the communication cable, drain line, and refrigerant piping together with binding tape. When bundling these items, do not intertwine or cross the communication cable with any other wiring. Keep the drain line at the bottom so that the water can flow freely. Ensure the bundle is exiting at a continuous downward pitch.

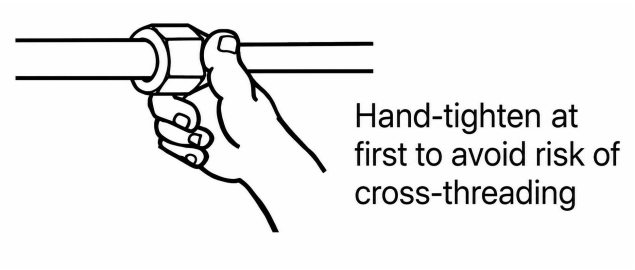
7. Thread this pipeline through the wall and connect it to the outdoor unit. The next page explains how to connect the pipes to the outdoor unit.

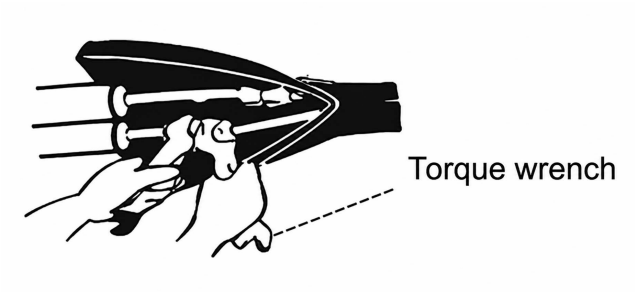
8. Optional: Attach the water receiver (supplied in the accessories box) to the indoor unit using a screw.

Do Not Use Excessive Torque

Excessive force can break the flare nut or damage the refrigerant piping. Do not exceed the torque requirements shown in the table.







Tightening Torque for Protection Caps & Flange Connection

Pipe Diameter	Tightening Torque [N x m]	Tightening Torque [ft-lbf]	Corresponding Stress (Using a 20 cm wrench)
Φ 1/4" (6.4 mm)	15 - 20	11 - 15	Wrist Strength
Φ3/8" (9.5 mm)	31 - 35	23 - 26	Arm Strength
Φ1/2" (12.7 mm)	45 - 50	33 - 37	Arm Strength
Φ 5/8" (15.9 mm)	60 - 65	44 - 48	Arm Strength

Tightening Torque [N x m] (ft-lbf)	
Service Port Nut	[7 - 9] (5-7)
Protection Caps	[25 - 30] (18-22)

Installation

5

Outdoor Unit

1. Unscrew the cover from the packed valve side of the outdoor unit.

2. Remove the protective caps from the valve ends.

3. Align the flared pipe end with each valve and tighten the flare nut as tightly as possible by hand.

4. Use a spanner to grab the body of the valve. Do not grab 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.

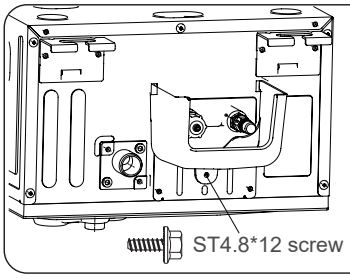
6. Loosen the flaring nut slightly, then tighten again.

7. Repeat the process for the remaining pipe.

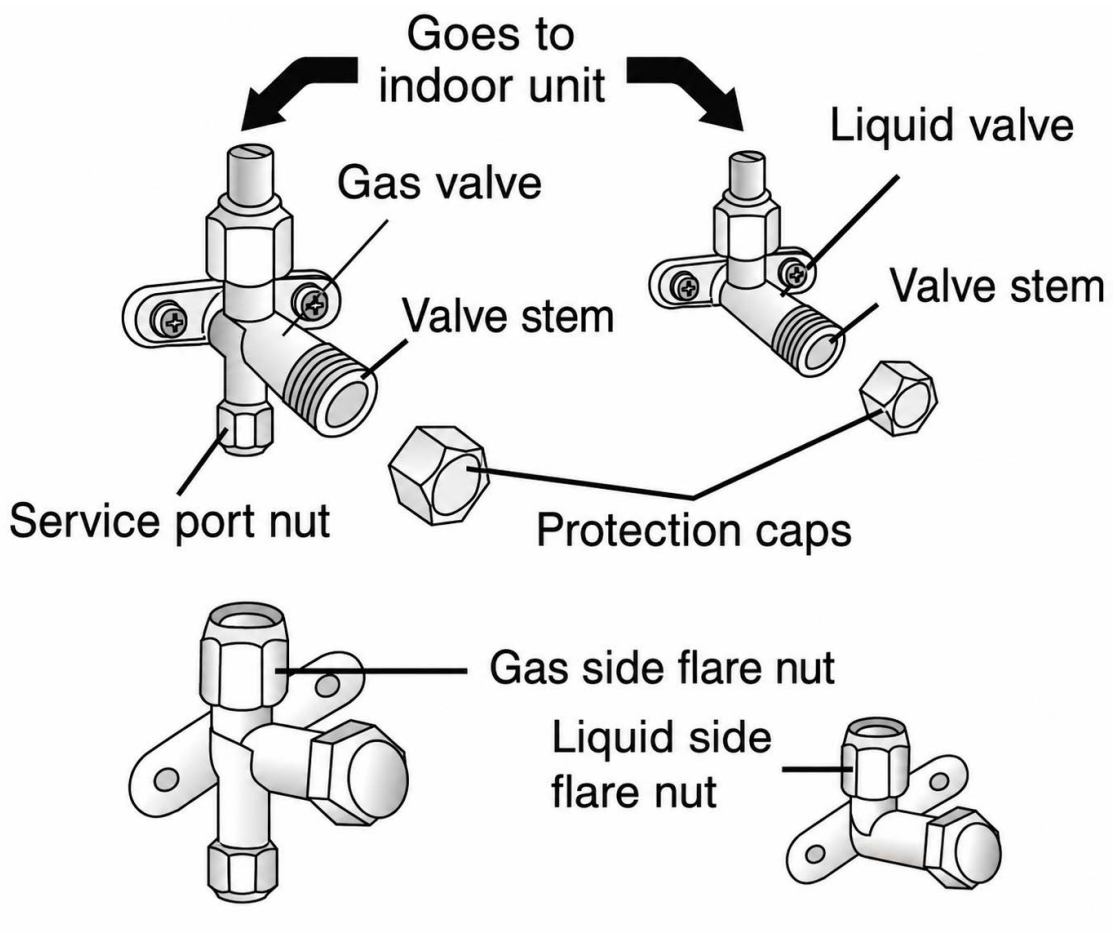
8. Open the stop valves of the outdoor unit to start the flow of the refrigerant.

CAUTION

After completing the refrigerant piping connection, check for refrigerant leaks. If a leak is detected, ventilate the area immediately and evacuate the system. Refer to **Page 59** in the *Installation* section in this manual for more information.



Note:
Two ST4.8*12 screws are supplied, one of which is spare.



Installation

5

E. Charge Additional Refrigerant (If Needed)

CAUTION

Do not mix different types of refrigerant.

Some systems require additional charging depending on the pipe lengths. In North America, the standard pipe length is 25 feet (7.5 m). Charge the refrigerant from the service port on the outdoor unit's low-pressure valve.

F. Insulate the Refrigerant Piping Joints

Notes

- Only insulate the refrigerant piping joints after the refrigerant circuit has been properly vacuumed. Refer to **Page 59** in the *Installation* section for more information.
- While Pioneer piping comes pre-insulated, installers must still insulate the joints after evacuating the refrigerant circuit.

The joint insulation should be 2~4 inches (51~102 mm) longer than the gap to ensure a proper seal.

Insert the joint insulation into the gap of the existing insulation.

Ensure the joint insulation is securely fastened to the suction and liquid pipes to prevent gaps. Use glue to paste together the linking part. Do not over-tighten the insulation material. This may compress the air out of the material, causing poor insulation and early aging.

Installation

5

5.5. Communication Cable Connection

⚠ WARNINGS

Before performing any electrical work, read these warnings:

General Warnings

- All wiring must comply with local and national electrical codes and regulations. A licensed electrician must install all the wiring.
- All electrical connections must be made according to the electrical connection diagrams located on the panels of the indoor and outdoor units.
- If there is a serious safety issue with the power supply, stop work immediately. Explain the reasoning to the client and refuse to continue the installation until the safety issue is properly resolved.

Power Warnings

- The power voltage must be within 90-110% of the rated voltage. Insufficient power supply can cause a malfunction, electrical shock, or fire.
- Only connect the unit to an individual branch circuit. Do not connect other equipment to the same power circuit.

Wiring Warnings

- Firmly connect every wire. Loose wiring can cause the terminal to overheat, resulting in product malfunction and possible fire.
- Keep the wiring away from the copper tube, as the refrigerant circuit can become extremely hot.
- Do not let wires touch or rest against the refrigerant tubing, compressor, or any moving parts.
- Do not cross the electrical wiring with the signal wiring. This may cause distortion, interference, or possibly damage the circuit boards.
- Do not house wires of different voltages within the same wire tube. Avoid using metal wire tubes in environments prone to acid or alkali corrosion; use plastic wire tubes instead.
- Do not place wire connect joints inside the tubing. If a wire connect joint is necessary, use a connection box at the point of the joint.

Installation

5

Prerequisites:

- ☑ Turn off the main power to the system. After powering off the system, wait 10 minutes or more before touching the electrical components in order to avoid electrical shock.
- ☑ Properly ground the system.
- ☑ If the unit has an auxiliary electric heater, install it at least 3-feet, 3-⅜-inches (1 m) away from any combustible materials.
- ☑ Install an external surge suppressor at the outdoor disconnect (recommended).
- ☑ When connecting power to fixed wiring, incorporate a properly rated, HACR-type circuit breaker or current leakage protection switch. It must disconnect all poles with a contact separation of at least 1/8 inch (3 mm). Use only an approved switch or circuit breaker with a capacity of 1.5 times the unit's maximum current.

The 4-lead communication cable provides two power supply wires, one signal wire, and one ground wire. The wires are individually insulated and bundled together inside the outer protective jacket. These wires are also pre-fitted with U-lugs on their ends.

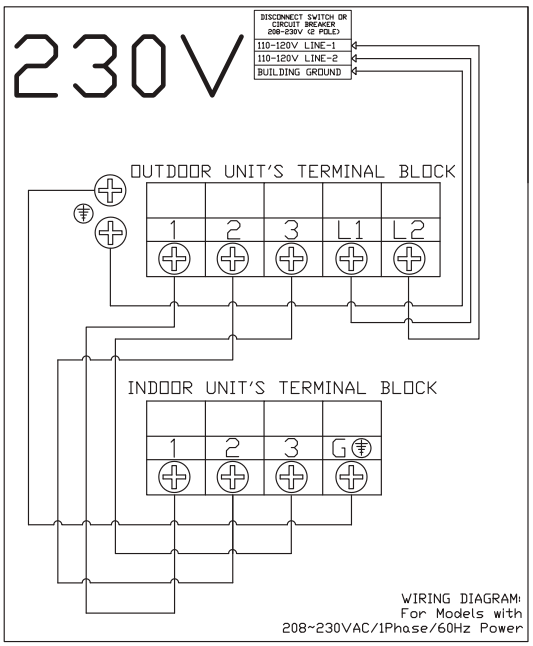
Communication Cable Specifications (All Models): AWG #16 x 4 Core TC-ER cable.

When connecting the communication cable consult the nameplate on the system for detailed electrical specifications.

The 230V systems require a double-pole breaker. The tandem-type will not work.



Double-Pole
230V Breaker



Installation

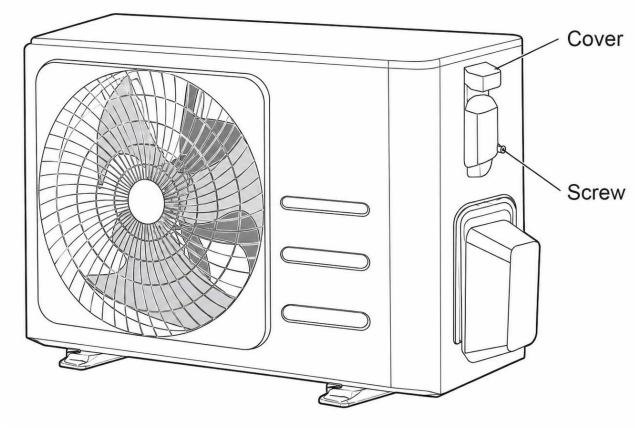
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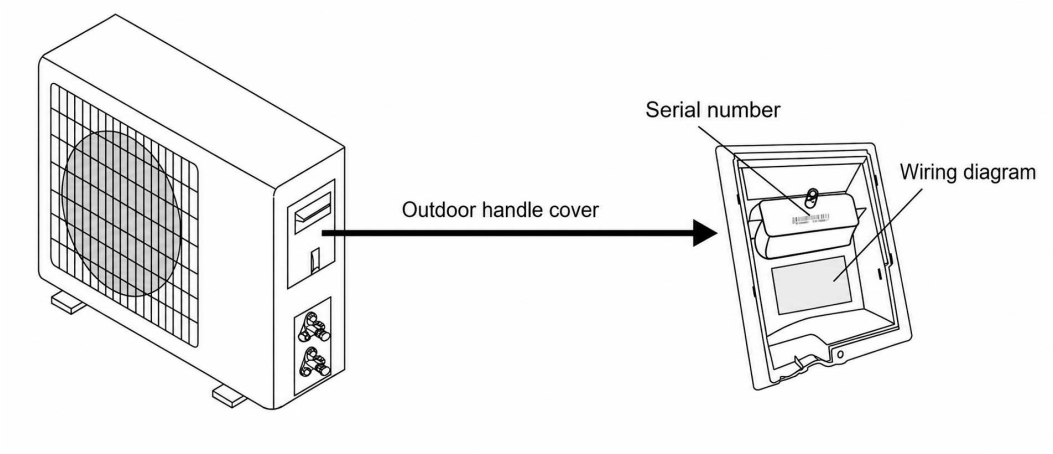
Note

Connect the outdoor unit wires before the indoor unit wires.

A. Outdoor Unit Wiring

1. Unscrew and remove the electrical wiring cover that protects the terminal block on the side of the unit. A comprehensive wiring diagram is printed on the inside of the cover.





2. Connect the U-lugs to the terminals, matching the numbers with those on the terminal block. There are three terminals (1, 2, 3) and ground (G). Firmly screw each U-lug to its corresponding terminal. Strictly follow the wiring diagram inside the electrical box cover when connecting the wires.

Select different wire colors according to the relevant regulations. Ensure the wire colors for the outdoor unit and terminals match those used for the indoor unit.

Do not connect the power wire to the signal wire terminal. If power and signal wires run parallel, place them in separate conduits and maintain a distance of at least 11-¾ inches (300 mm).

3. Secure the cable with the clamp. Ensure it is tight and does not pull on the U-lugs.

4. Reattach the cover.

Installation

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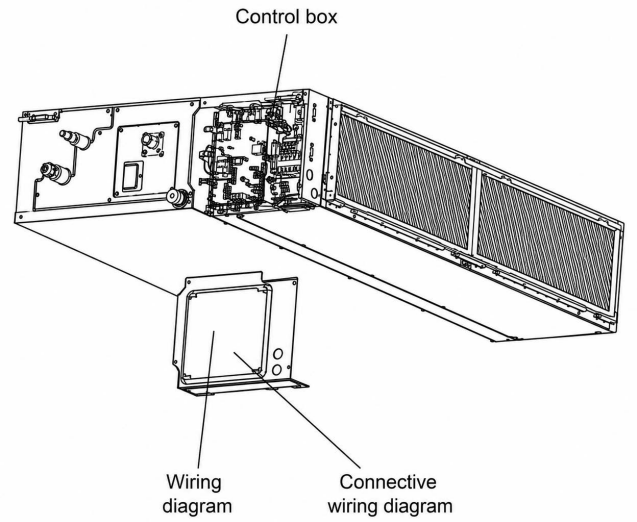
B. Indoor Unit Wiring

1. Remove the electronic control box's cover on the indoor unit.

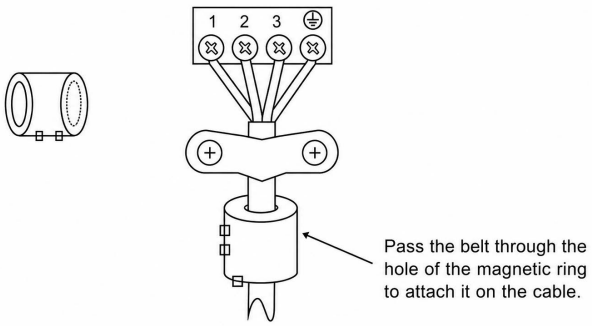
2. Connect the U-lugs to the terminals, matching the numbers with those on the terminal block. There are three terminals (1, 2, 3) and ground (G). Firmly screw each U-lug to its corresponding terminal. Strictly follow the wiring diagram inside the electrical box cover when connecting the wires.

Select different wire colors according to the relevant regulations. Ensure the wire colors for the outdoor unit and terminals match those used for the indoor unit.

Do not connect the power wire to the signal wire terminal. If power and signal wires run parallel, place them in separate conduits and maintain a distance of at least 11-¾ inches (300 mm).

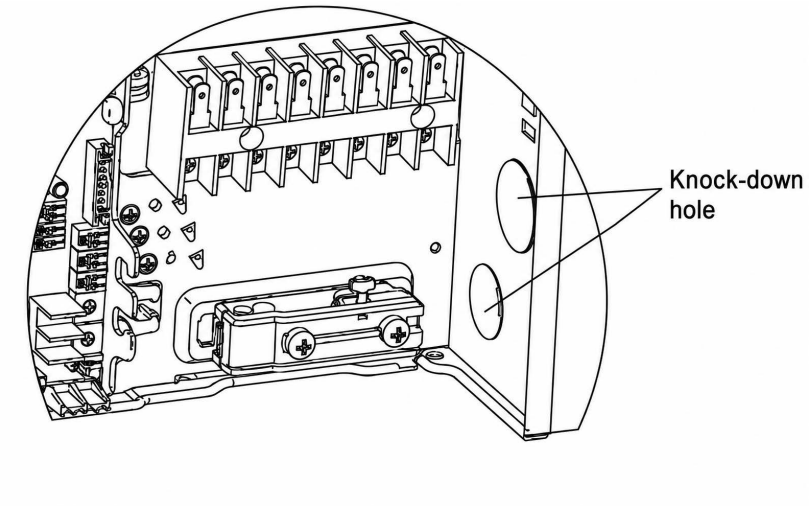


Magnetic ring (if supplied with the accessories)



3. Secure the cable with the clamp. Ensure it is tight and does not pull on the U-lugs.

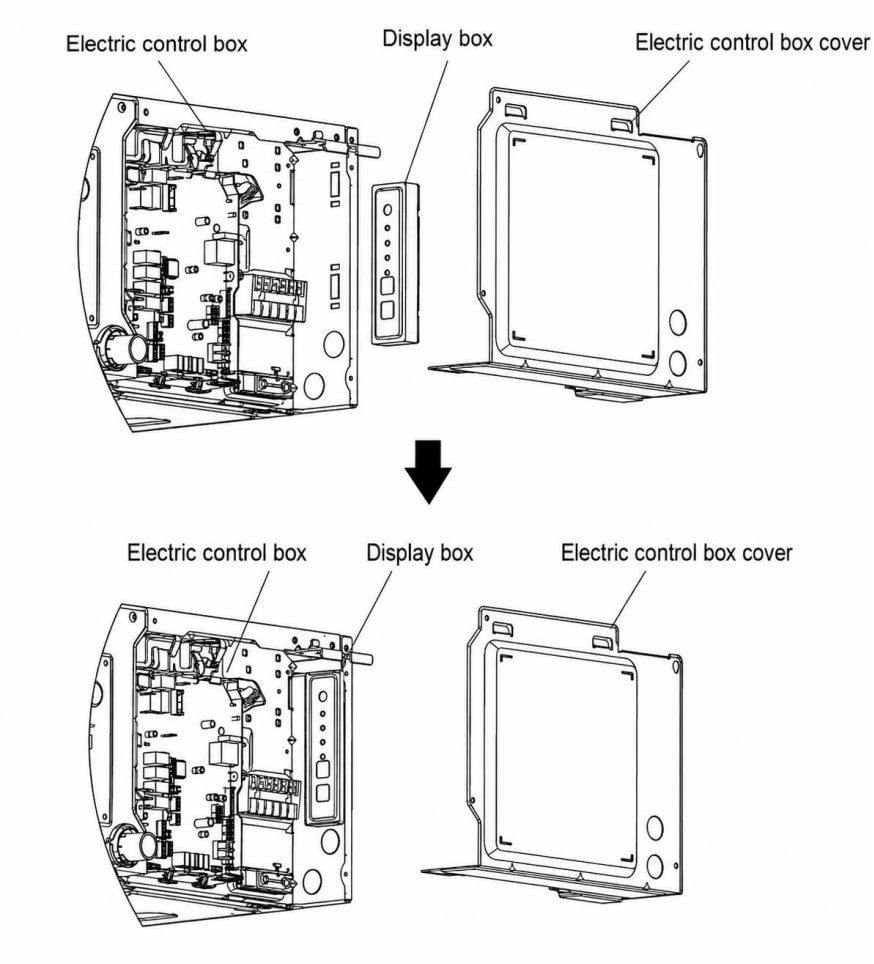
4. Pass the wire through the knock-down hole on the electric control box.



Installation

5

5. Reattach the electric box cover. If the indoor unit is equipped with a display box, it needs to be installed in the electric control box.



Reminder: Wrap the Lines & Seal Air Gaps

Once the drain line, refrigerant piping, and communication cable are installed, remember to wrap the lines and mount the indoor unit.

For instructions, refer to **Page 40** in the *Installation* section.

Installation

5

5.6. Evacuate the Refrigerant Circuit

⚠CAUTION

Qualified and well-trained personnel must complete the evacuation of the refrigerant circuit.

Prerequisites:

- ☑ Confirm the pipes connecting the indoor and outdoor units are properly attached.
- ☑ Ensure all electrical wiring is connected properly.

Note:
When opening valve stems, turn the supplied Allen wrench until the valve stem comes into contact with the stopper. Do not try to force the valve to open further.

Air and foreign matter in the refrigerant circuit can lead to abnormal rises in pressure, which can damage the air conditioner, reduce its efficiency, and cause injury.

Use a vacuum pump and manifold gauge to evacuate the refrigerant circuit, removing any non-condensable gas and moisture from the system.

Perform the evacuation after the initial installation and when relocating the unit.

1. Discharge the oxygen-free nitrogen. Evacuate the system to 8,000 microns (8 Torr) using all service valves.

2. Break the vacuum by introducing nitrogen into the port connections (liquid and gas lines) until achieving positive pressure.

3. Evacuate the system to a reading of 5,000 Microns (5 Torr).

4. Break the vacuum again by introducing nitrogen into the port connections (liquid and gas lines) until achieving positive pressure.

5. Evacuate the system to a reading of 500 Microns (0.5 Torr).

6. Hold the vacuum without movement for a minimum of 4 hours to ensure a moisture-free system.

7. If the vacuum fails to hold, repeat the steps until it does.

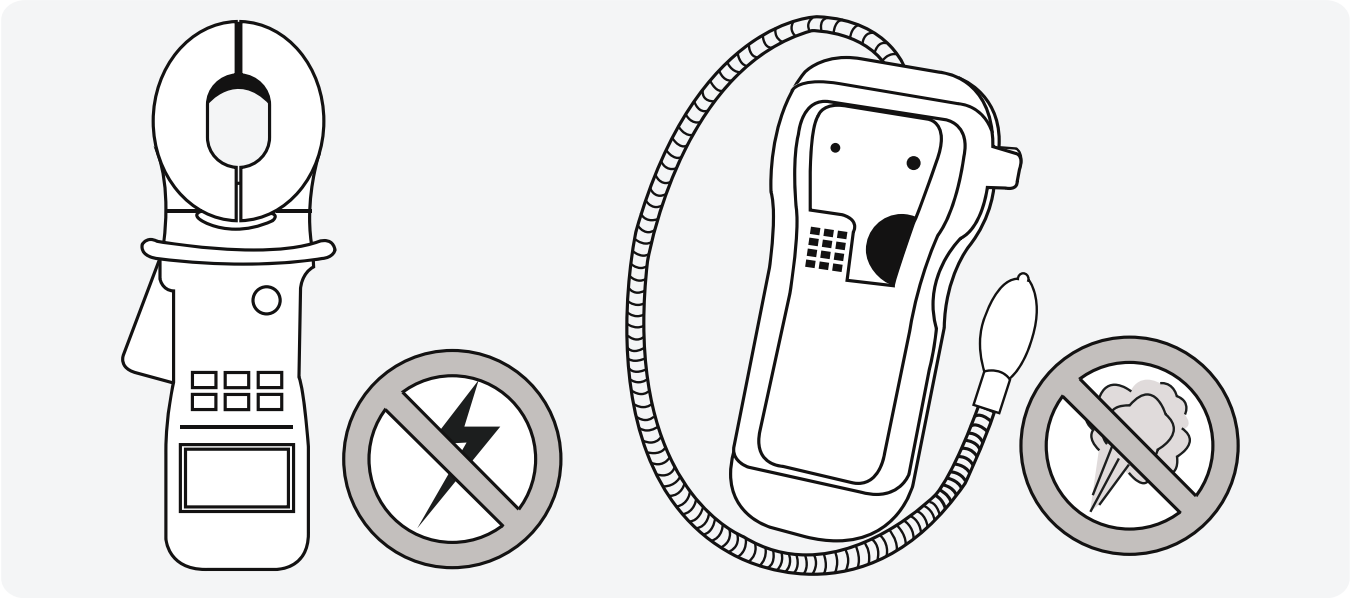
Reminder: Insulate the Refrigerant Piping Joints

Once the refrigerant circuit is evacuated, remember to insulate the refrigerant piping joints.

For instructions, refer to **Page 54** in the *Installation* section.

Leak Checks & Test Run

6



6.1. Electrical Leak Checks

After installation, confirm that the unit's electrical system is safe and operating properly. Electrical leak checks are required before and during the test run.

Before Test Run

- ☑ Check grounding work.
- ☑ Measure the grounding resistance with a grounding resistance tester. Grounding resistance must be less than 4Ω.

  This may not be required in some locations.

During Test Run

- ☑ Check for electrical leakage.
- ☑ During the test run, use an electroprobe and multimeter to perform a comprehensive electrical leakage test.
- ☑ If electrical leakage is detected, turn off the unit immediately and call a licensed electrician to find and resolve the cause of the leakage.

  This may not be required in some locations.

⚠ Warning – Risk of Electric Check

All electrical wiring must comply with the installation manual and local and national regulations. All work must be performed by a licensed electrician.

Leak Checks & Test Run

6

6.2. Gas Leak Checks

Confirm the system is not leaking gas. Gas leak checks are required before and during the test run.

Before Test Run

- ☑ Check all flare nut connections to ensure the system is leak-free.
- ☑ Confirm that both the gas and liquid valves (high/low) are **100% fully opened**.

During Test Run

- ☑ During operation, the pressure of the refrigerant circuit will increase. This may reveal leaks that were not present during the initial leak check. Take time to double-check that all copper pipe connection points are leak free.

After Test Run

- ☑ After confirming that all the pipe connection points do not leak, replace the valve cover on the outdoor unit.

Gas Leak Checks

There are two methods to check for gas leakage:

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

Leak Checks & Test Run

6

6.3. Test Run

Perform the test run only after the system is fully installed and the electrical and gas leak checks are complete.

Before Test Run

☑ **Electrical Safety Checks**
Confirm the unit's electrical system is safe and operating properly.

☑ **Gas Leak Checks**
Check all flare nut connections and confirm the system is not leaking.

☑ **Valve Checks**
Confirm that both the gas and liquid valves (high/low) are **100% fully opened**.

Test Run Instructions

Perform the following test run for 30 minutes:

1. Connect power to the unit.

2. Press the On/Off button on the remote controller to turn it on.

3. Press the Mode button to scroll through the following functions, one at a time.
   - Cooling - Select the lowest temperature.
   - Heating - Select the highest temperature.

4. Let each function run for 5 minutes and perform the following checks:

Pass/Fail?

- **No electrical leaks or abnormal noises**
- **Unit is properly grounded**
- **All electrical terminals are properly covered**
- **Indoor and outdoor units are securely installed**
- **All pipe connections points do not leak**
- **Water drains from the drain line properly**
- **All piping is properly insulated**
- **Indoor unit responds to the remote controller**
- **Indoor unit louvers work properly**
- **System works in both Heating & Cooling mode**

After Test Run Completion

After the 10 boxes above have been checked and marked as passed, perform the following operation:

1. Use the remote control to return the system to a normal desired operating temperature.
2. Use insulation tape to wrap the indoor unit's refrigerant pipe connections that were left uncovered during the installation process.

If Ambient Temperatures Are Too High to Run a Heating Test:

If outside temperatures are too high to permit Heating mode on the remote controller, do the following:

1. Turn the unit on and put it in Heating mode using the emergency button.
2. Run the Heating mode test as normal and turn the unit back off using the button when complete.

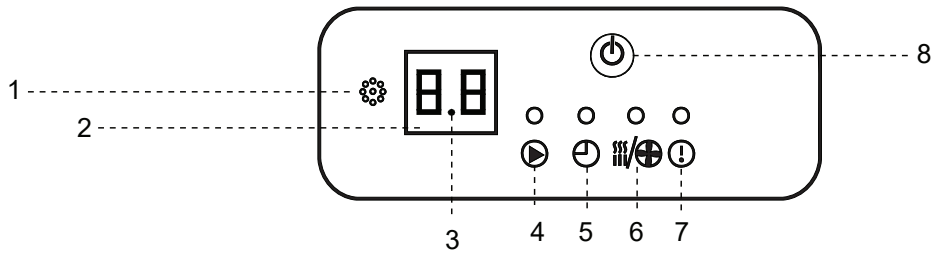
Operating Instructions

7

A. Wired Display Board

Notes

- Different models have different front panels and display windows. The indicators described below may not be available for your air conditioner.
- The shape and position of the switches and indicators may vary by model; however, their functions remain the same.
- Do not obstruct the front panel, as this may prevent it from receiving infrared commands from the remote control. Ensure the panel is free of paint or adhesive layers, and keep all signal-emitting devices away.



No.	LED Icon	Symbol	Description
1	Tone Emitter		Emits confirmation tones when receiving command signals
2	Signal Receptor		Receives signals from the handheld remote controller
3	Digital Display		Displays temp. settings, error codes, and operational status
4	Operation Light		Indicates that the system is operating normally
5	Timer Indicator		Shows that a timer function has been activated
6	Defrost Indicator		Indicates that the unit is either in Defrost mode or preheating
7	Alert Indicator		Illuminates to indicate a system fault or abnormal condition
8	Manual Button		Manually turns the unit on/off without using the remote controller

Operating Instructions

7

This optional display panel provides visual feedback for system status, operations, and troubleshooting.

Indicator Light Functions

- Running Light
  - Initial power-on: Light blinks; display is off.
  - Normal operation: Light is steady on; display shows ambient temperature.
  - Shutdown: Light and display turn off.

Timing Light

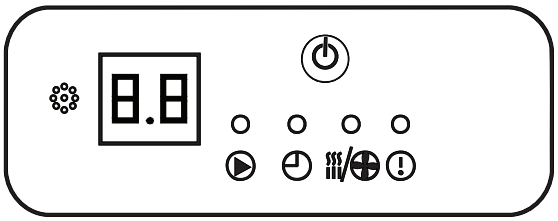
- Lights up when a timer is set.
- Display flashes the timer setting for 5 seconds, then reverts to ambient temperature.
- Turns off if no timer is active.

Defrosting / Preheat Light

- Lights up during defrost, oil return, or cold draft prevention.
- Display shows setpoint temperature.
- One-to-one systems do not indicate oil return mode.

Warning Light

- Lights up when an error occurs.
- Running light turns off.
- Display shows an E* or P* error code.



Digital Display Functions (Outdoor Unit)

Standby Mode:
Displays the number of connected and communicating indoor units.

Compressor Running:
Displays the inverter compressor frequency.

Defrost Mode:
Displays codes in the format Dxx.

Oil Return Mode:
Displays codes in format Cxx.

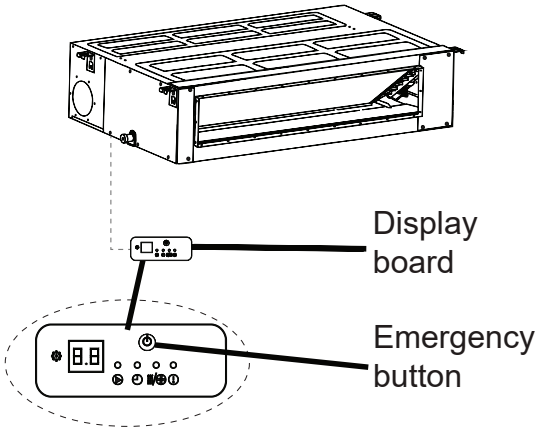
Troubleshooting:
If an error is detected, the display will show a diagnostic code. Refer to the troubleshooting table for interpretation.

Operating Instructions

7

B. Emergency Manual Button & Auto-Restart Function

The emergency button is located on the display module that is wired to the air handler



Emergency Manual Button

If the remote controller fails to operate the system, follow these steps:

1. Open and lift the front panel at an angle to access the emergency button.

2. Press the manual button once to start the unit in Cooling mode.

3. Press the button again within 3 seconds to start the unit in Heating mode.

4. Press the button a third time within 5 seconds to turn off the unit.

Auto-Restart Feature

This appliance is programmed with an Auto-Restart function.

In the event of a sudden power failure, the control module retains its previous settings.

When power returns, the unit automatically restarts with its previous settings intact.

C. Remote Controller

Notes

- Although button shapes and positions vary by model, their features and functions remain identical.
- The display and functional features of the remote controller may vary depending upon the specific system model.
- The unit beeps to confirm each button command.
- There may be a difference between the number of digits shown on the remote control (3) and the number on the indoor unit (2).

Operating Instructions

7

Remote Buttons Overview

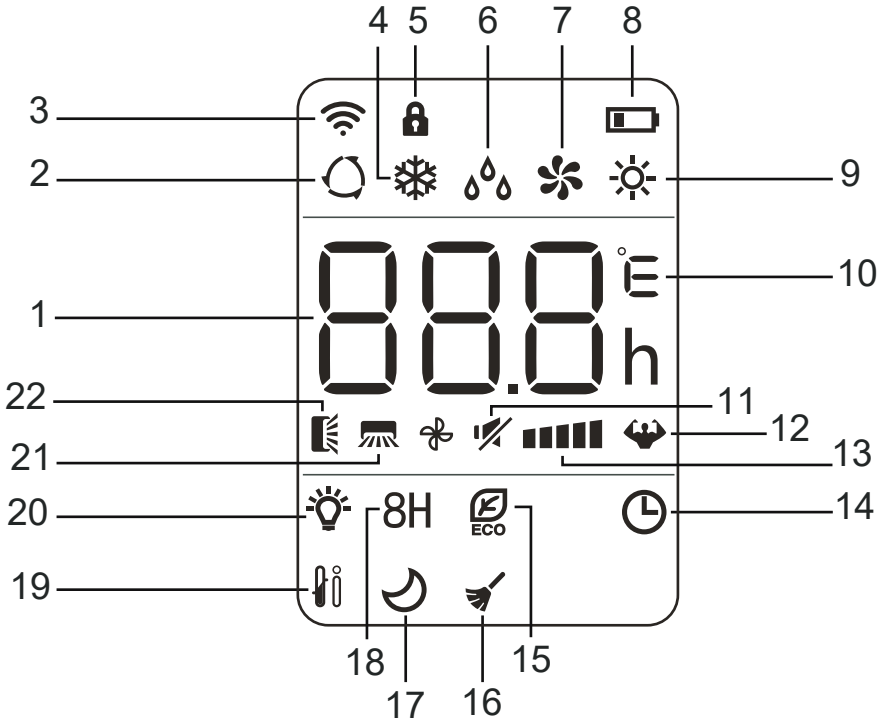
Button	Description
⏻	Turn the air conditioner on or off
TURBO	Activate/deactivate the Turbo feature to allow the system to rapidly reach set temperatures
MUTE	Put the system into Silent mode
MODE	Select the mode of operation (Auto, Cool, Dry, Fan, and Heat modes)
ECO	Activate/deactivate the ECO feature
	Long press to activate the 46°F “Away from Home” freeze protection setting
TIMER	Configure the automatic on/off times
∧	Increase set temperature and timing, as well as navigate the functional menu
∨	Decrease set temperature and timing, as well as navigate the functional menu
FAN	Configure the fan speed (Auto, Low, Mid, and High)
	Activate/deactivate the up-down louver motor
	Activate/deactivate the left-right louver motor
DISPLAY	Turn the LED display on or off
SLEEP	Toggle the system’s Sleep mode
I FEEL	Activate/deactivate the system’s Follow Me mode
MEMORY	Recall saved temperature/mode/fan settings
CLEAN	Activate/deactivate Self-Clean mode
ACC	Reserved for future usage
[LOCK]	Hold MODE+TIMER for child-lock



Operating Instructions

7

Remote Controller LED Screen & Icons



No.	Icon	Description
1	88	Temperature indicator
2		Auto mode
3		Signal transmit indicator
4		Cooling mode
5		Child lock indicator
6		Dry mode
7		Fan Only mode
8		Battery level indicator
9		Heating mode
10		Unit of temperature (°C/°F)
11		Mute function

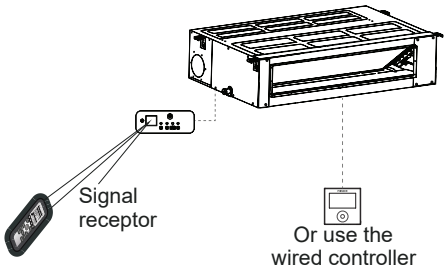
No.	Icon	Description
12		Turbo mode
13		Fan speed (Auto or Fixed)
14		Timer active indicator
15	ECO	ECO mode
16		Self-Clean function
17		Sleep function
18	8H	8°C (46°F) Heating function
19		I Feel/Follow Me mode
20		LED display on/off
21		Left-Right swing indicator
22		Up-Down swing indicator

Operating Instructions

7

Operate the Remote Controller

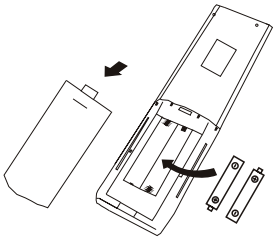
- Ensure no objects obstruct the path between the remote control and the receiver.
- Keep the remote at least 3 feet (1 m) from televisions and other electrical appliances.
- Always direct the remote controller toward the air conditioner.
- Do not leave the remote control exposed to direct sunlight.



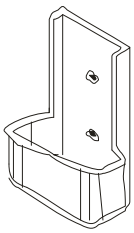
Replace Batteries

Slide the battery cover on the rear of the remote down in the direction of the arrow. Install the batteries matching the positive (+) and negative (-) markings inside. Slide the cover back into place.

Use two AAA batteries. Do not use rechargeable batteries. Replace the old batteries with new ones of the same type when the display stops working. Do not dispose of batteries as unsorted municipal waste; separate collection is required. If the system will not be used for a long time, remove the batteries to prevent leakage.



Remove batteries to avoid leakage damage when the device is not in use for a long time.



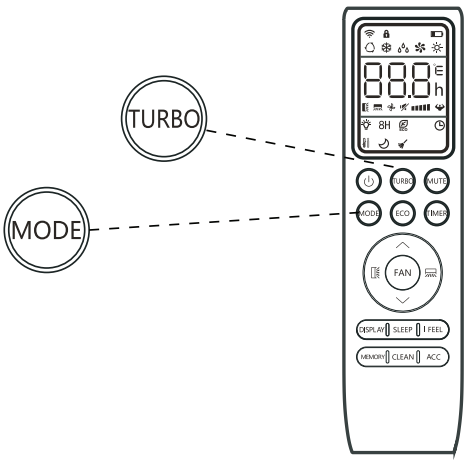
Place the remote control in the cradle when not in use (sold separately).

Configure Remote Controller Settings (Some Models)

Depending on the system, the controller buttons can configure the control type (Cooling Only or Heat Pump) and temperature unit (°C or °F).

Complete the configuration immediately after inserting the remote batteries. If needed, remove and re-insert the batteries to restart the programming process.

Press and Hold	Functional Result
Mode	When ❄ flashes, Cooling Only mode
Mode	When ☼ flashes, Heating Only mode
Turbo ↓ Turbo (press)	After 5 seconds, enter Change mode ↓ Switch between °C and °F units



Operating Instructions

7

D. Control the Airflow

CAUTION

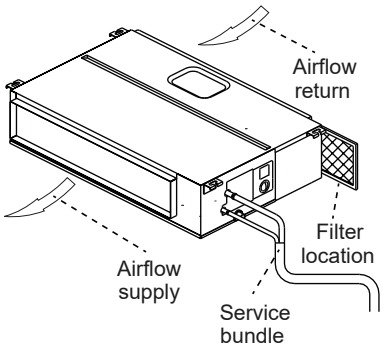
- Do not adjust the louvers manually, as serious damage may occur.
- Only adjust the deflector when the system is turned off.
- Never poke fingers, sticks, or other objects into the air inlet/outlet vents.

Notes

- When using the wired controller, refer to its separate manual for details.
- Refer to the Appendix for static pressure adjustments. This procedure is restricted to trained personnel.
- In some cases, the wired controller may fail to receive commands from the handheld remote.

The air pulled in by the fan (the return air) enters the grille and passes through the filter. The air is then cooled, dehumidified, or heated by the heat exchanger.

Motorized louvers control the vertical airflow, while manual deflectors adjust it horizontally. Some models feature a "dual-swing" capability for fully automated horizontal and vertical airflow.

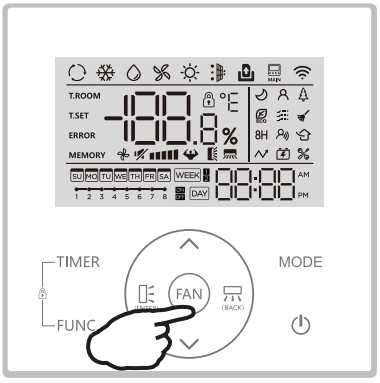


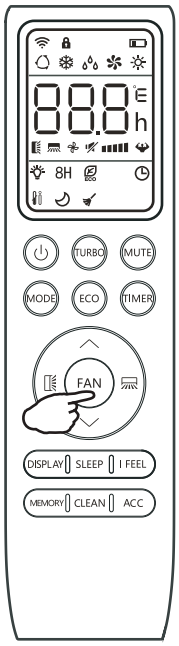
Refer to the wired controller manual for full usage details. Press the "FAN" button on the handheld remote controller to cycle through the air handler fan speeds. The sequence is: Mute > Low > Medium-Low > Medium > Medium-High > High > Turbo > Auto.

Press the "FAN" button on the wired controller to cycle through the fan speed sequence. The current fan speed will display on the screen.

By default, the return air temperature is detected at the indoor unit. Activate the I Feel setting to base system performance on the room temperature detected by the remote controller.

Poorly designed return air ducting can cause a room to overcool or overheat. In these situations, using the I Feel mode may yield better results.





Operating Instructions

7

E. Operating Modes

Note

As a compressor protection measure, a 3-minute restart delay is activated upon changing the mode or cycling the power.

Cooling Mode

This mode utilizes the heat pump to cool the room while reducing air humidity.

To put the system into Cooling mode, press the MODE button until the ❄ symbol appears on the remote controller's display.

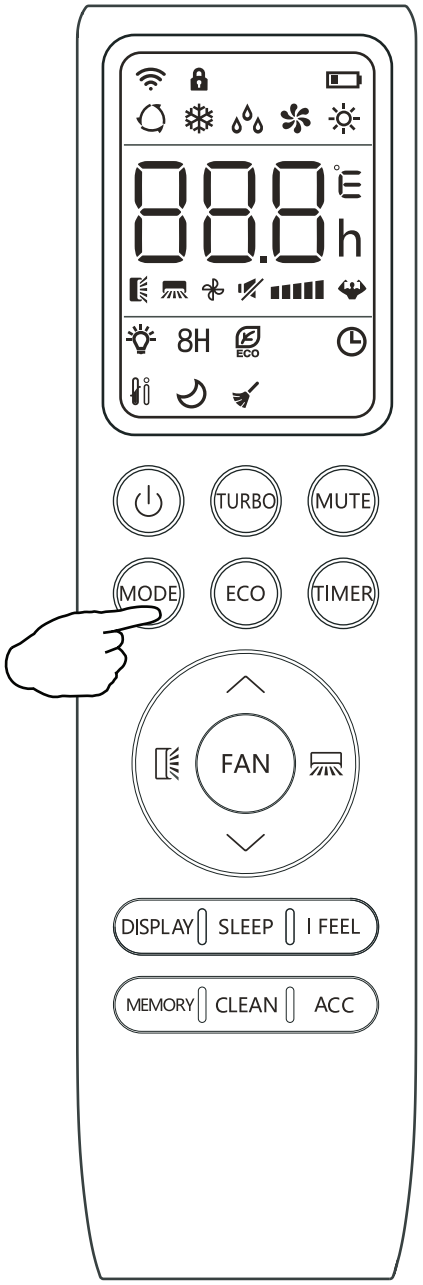
Use the ∧ and ∨ buttons to set a temperature lower than that of the room.

Heating Mode

This mode utilizes the heat pump to warm the air in the room by reversing the cooling cycle.

To put the system in Heating mode, press the MODE button until the ☼ symbol appears on the remote controller's display.

Use the ∧ and ∨ buttons to set a temperature higher than that of the room.



Notes on Heating Mode

- In Heating mode, the appliance periodically enters a defrost cycle to remove frost from the condenser and restore heat exchange efficiency. This normal process lasts between 2 and 10 minutes.
- During defrosting, the indoor unit's fan will stop. Once completed, the system will automatically resume its normal Heating mode operation. Press the ECO button 10 times in 8 seconds to trigger a forced defrost.
- The system may take up to 10 minutes to deliver heat, which allows the coil to warm up and prevents cold airflow.
- Unlike in Cooling mode, the fan speed cannot be set manually. Instead, the fan speed adjusts automatically in proportion to the temperature of the heat exchanger.

Operating Instructions

7

Dry Mode

This mode is a specialized function that rapidly reduces the room humidity and moisture.

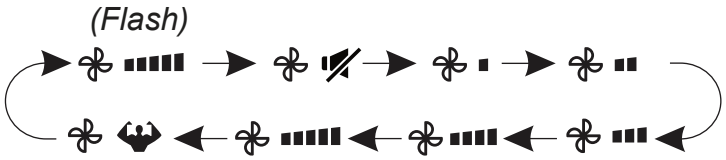
To put the system into Dry mode, press the MODE the symbol appears on the remote controller's display.

Fan-Only Mode

Use this mode to run the ventilation system without heating or cooling.

To put the system in Fan-Only mode, press the MODE button until the symbol appears on the remote controller's display.

Use the FAN button to set the desired fan speed. The system will cycle from ***Auto > Mute > Low > Low-Mid > Mid > Mid-High > High > Turbo.***



Auto Mode

In this mode, the system selects Cooling, Heating, or Fan-Only mode based on delta-T (△T) — the difference between the room and set temperatures.

ΔT (RT-ST)	ΔT>2°F	-2°F ≤ ΔT ≤ 2°F	ΔT<2°F
→MODE	Cooling	Fan-Only	Heating

To put the system in Auto mode, press the MODE button until the symbol appears on the remote controller's display. Use the and buttons to set the desired room temperature.



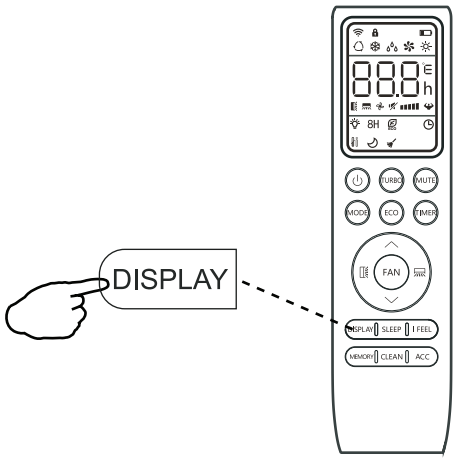
Operating Instructions

7

Turn the LED Display On or Off

The LED display on the indoor unit's front panel can be turned on or off.

Press the DISPLAY button in order to switch off the LED display on the front panel. Press the button again to turn the LED display back on.

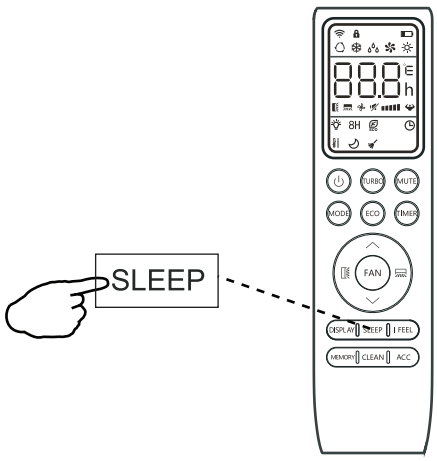


Sleep Mode

This mode is designed for periods with lower heating or cooling requirements, such as typical sleeping hours. This mode reduces energy consumption and can be activated via the remote controller or wired thermostat.

After 10 hours, the air conditioner will revert back to the previously set mode.

Press the SLEEP button and the symbol will appear on the display. Press this button again to exit from this mode.

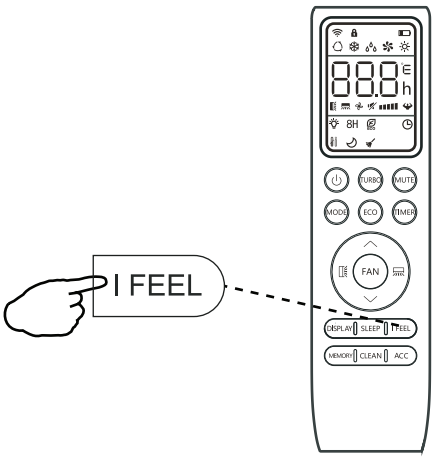


I Feel Feature

This feature enables the remote controller to act as a temperature sensor and relay the current air temperature from its physical location in the room. In some cases, this helps reduce thermal drift between the set temperature and the actual room temperature.

In order to activate this feature, press the I FEEL button and the icon will appear on the display.

This feature will automatically deactivate itself 8 hours later (or 2 hours on some models).



Operating Instructions

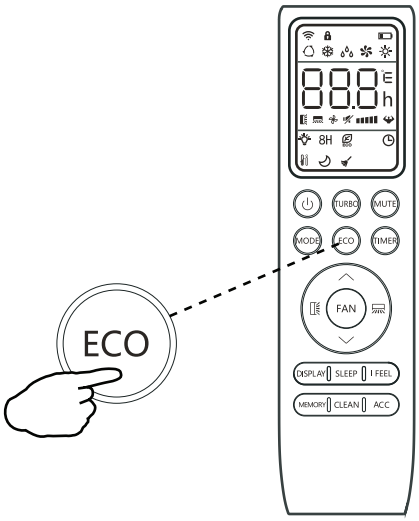
7

Energy Saver (ECO) Option

In this mode, the appliance will automatically manage its operations to conserve energy.

To turn the ECO feature on, press the (ECO) button on the remote controller and the ECO icon will appear. The system is now running in ECO mode. The process can be repeated to turn it off.

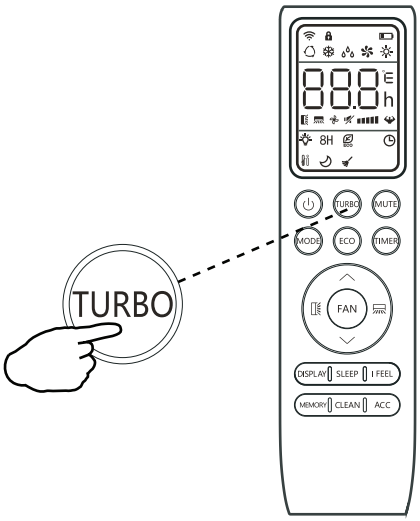
The ECO feature is available in both Cooling and Heating mode.



Turbo Option

In this mode, the appliance uses the highest fan speed to maximize output and reach the set temperature quickly.

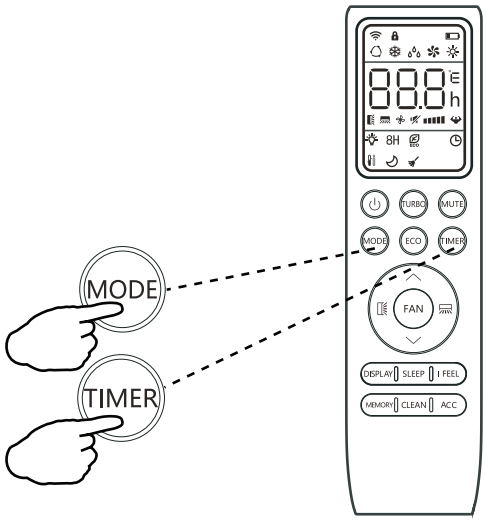
To turn the Turbo feature on, press the (TURBO) button on the remote controller and the icon will appear. The system is now running in Turbo mode. Repeat the process to turn off the feature.



Child-Lock Function

Press the (MODE) and (TIMER) buttons together to activate the child-lock function. When this function is turned on, the icon will display and no single button will be active.

Press the (MODE) and (TIMER) buttons together once more to deactivate the child-lock function.



Operating Instructions

7

Timer On

The Timer feature allows the user to set a time delay for the system to turn itself on or off.

To set a timer for the system to turn on in a specified number of hours, follow these steps.

1. Begin by pressing the TIMER button while the system is powered off. The ◷ symbol will then display flashing. The default setting is 6 hours.

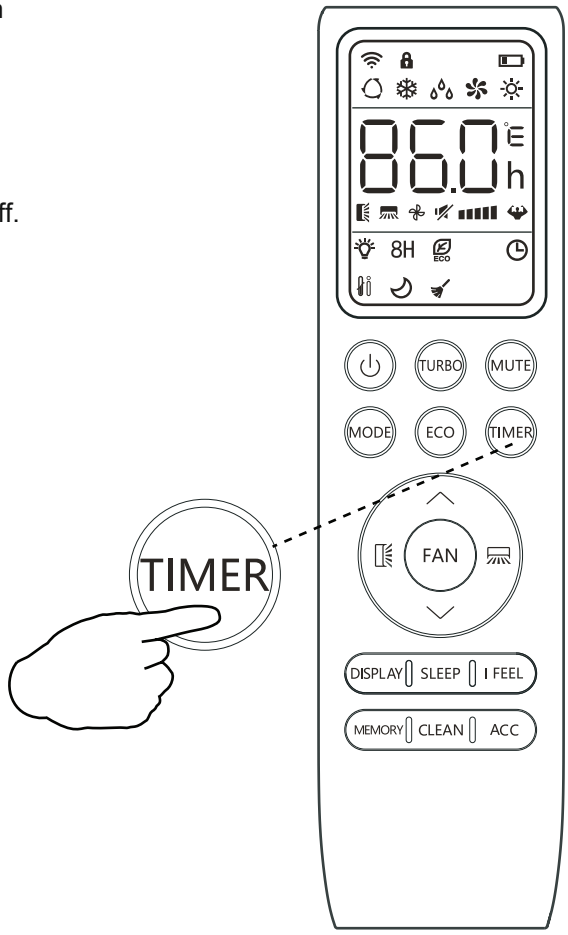
2. Use the ∧ and ∨ buttons to set the needed time delay in 30 minutes increments.

3. Press the TIMER button a second time to confirm.

4. Press the MODE button to select the desired operating mode that the unit should start up in.

5. Press the FAN button to set the desired fan speed that the unit should start up in.

6. Use the ∧ and ∨ buttons to set the desired operation temperature. The unit is now primed.



Timer Off

The Timer Off feature allows the appliance to turn off automatically after a set number of hours. The symbol ◷ will appear. To set a timer for the system to turn off automatically in a specified number of hours, follow these steps:

1. Confirm that the appliance is on and running.

2. Press the TIMER button to enter the prompt for switch system. Use the ∧ ∨ buttons to configure setting.

3. Press the TIMER button again to confirm. Press it once more t cancel the setting.

Press the TIMER button to cancel at any time in Timer Off.

The programming will cancel if no buttons are pressed after 5 seconds. This may require restarting the process.

Operating Instructions

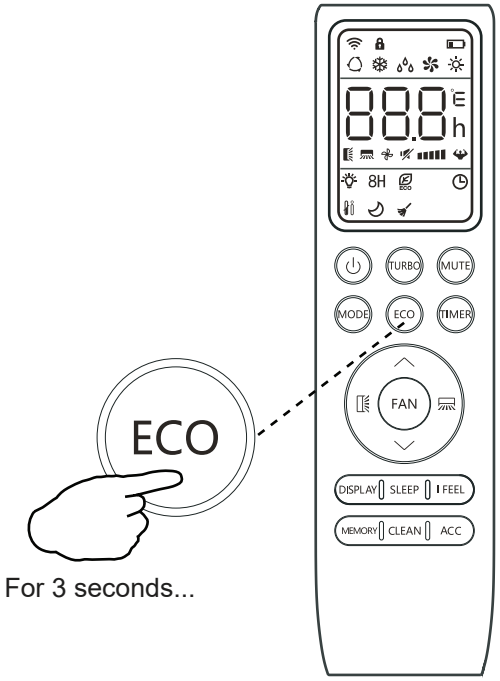
7

46°F Freeze Protection Function

Use this feature to prevent freezing while the user is away from home. When turned on, this feature sets the system to maintain a temperature of 46°F (8°C). If the unit is in standby mode, the heating mode will automatically start when the room temperature drops to 46°F (8°C) or lower. The system will then return to standby mode once the room temperature reaches 48°F (9°C)

If the room temperature reaches 64°F (18°C) or higher, the appliance automatically cancels or prevents this feature.

Press and hold the ECO button for 3 seconds to activate this feature. Repeat this to deactivate the feature. Once activated, 46°F (8°C) will appear on the display.



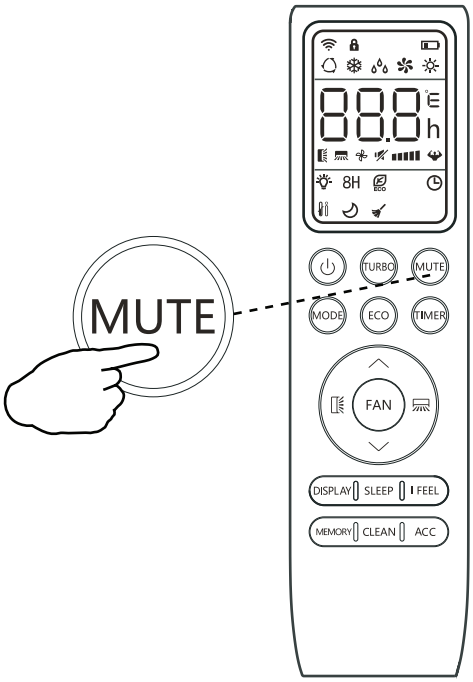
Mute Mode

When the system is muted, the remote controller will display the auto fan speed and the indoor unit will operate at its lowest fan speed in order to minimize operation noise.

Press the MUTE button in order to activate this mode. The icon will display to indicate that the system is muted.

Press either the Fan, Turbo, or Sleep button to cancel this mode.

The Mute feature cannot be activated when the system is in Dry mode.



Operating Instructions

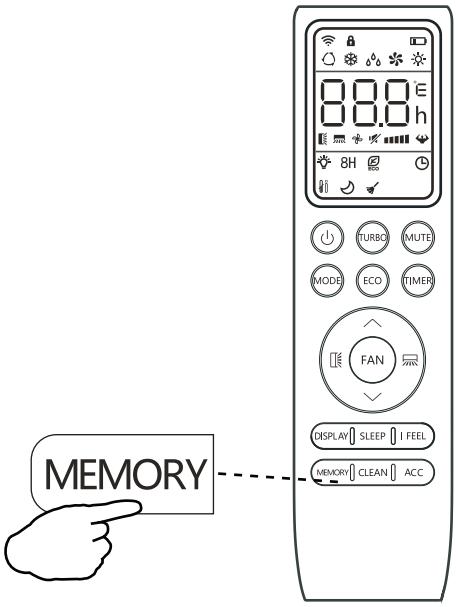
7

Memory Feature

This feature allows users to store their favorite settings and reconfigure the system to those exact parameters with a single button press. Each mode (Heating, Cooling, Fan, and Dry) can store a unique profile.

To use this feature, enter the desired mode and set the system to the preferred configuration. Press and hold the MEMORY button for 3 seconds to store the configuration. The system will flash "AU" to acknowledge that the configuration has been stored successfully.

Enter the desired mode (Heating / Cooling / Fan / Dry) and press the MEMORY button to activate the stored configuration.



Self-Clean Feature

This feature helps remove accumulated dust, dirt, bacteria, and other microbes from the indoor evaporator.

To activate this feature, press the CLEAN button until a beep is heard from the unit. The icon displays on the unit and remote controller. This procedure will operate for 30 minutes before returning to the preset mode.

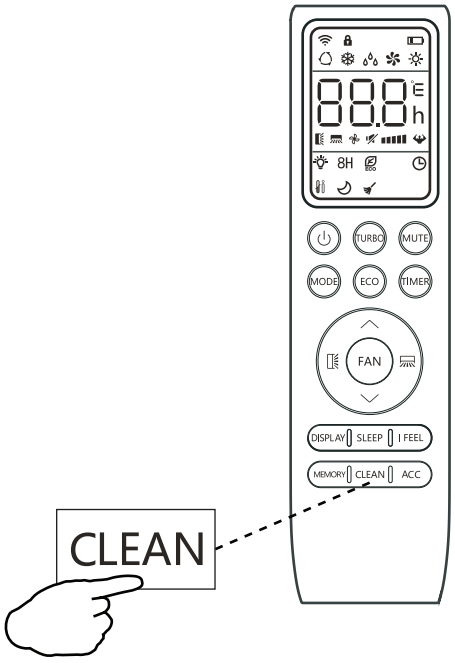
Press the button to cancel this feature during the process. Two beeps will be emitted from the machine when it is finished or canceled.

This procedure can cause uncommon noises from the machine. These noises are normal, resulting from plastic parts expanding and contracting due to temperature changes.

Only use this function when the indoor temperature is below 86°F (30°C) and the outdoor temperature is between 41-68°F (5-20°C).

It is suggested to run this feature once every 3 months.

This feature does not replace the need for regular maintenance and cleaning, especially in dusty or high-particle environments.

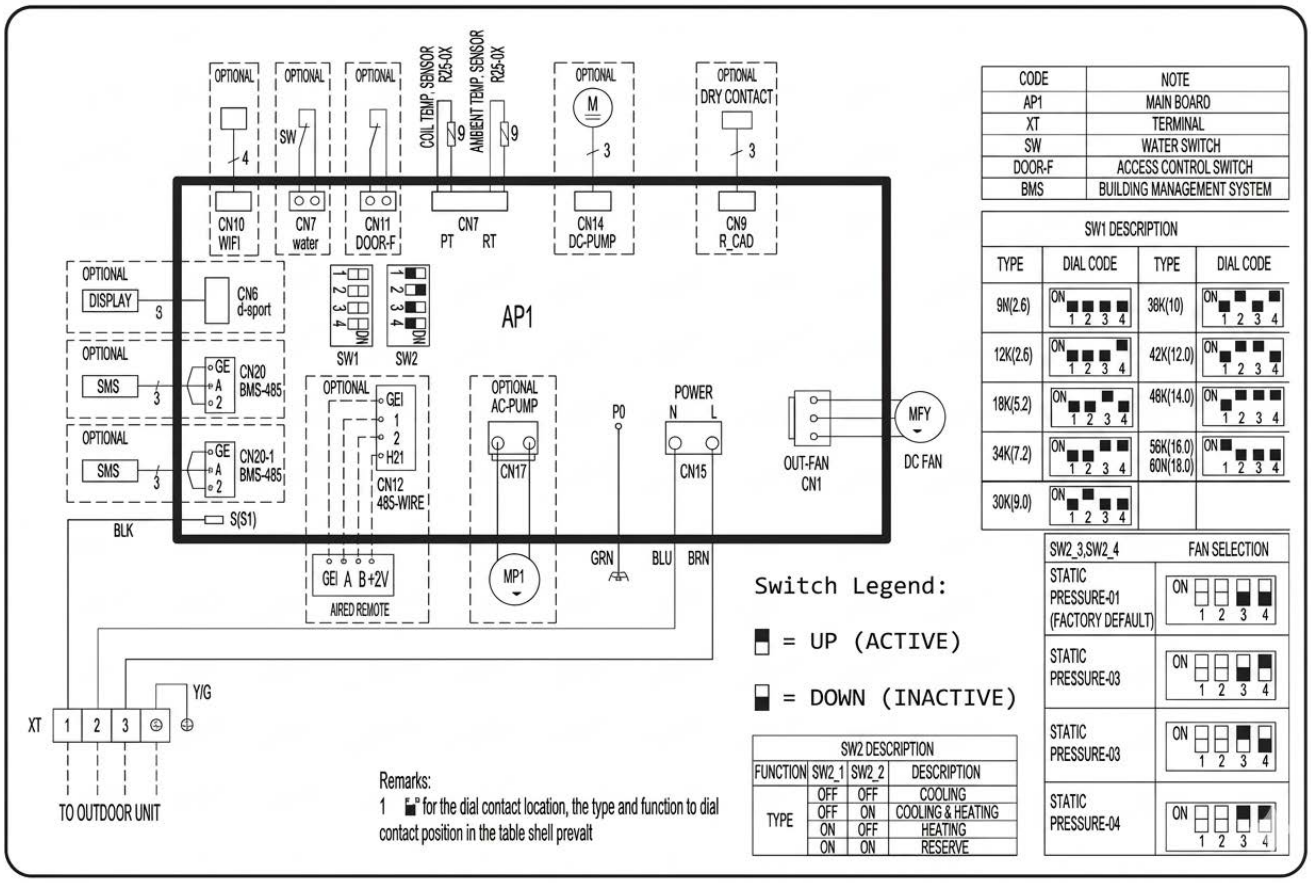


Wiring Diagrams

8

Control Board Wiring Diagrams

Indoor Unit: RT009GLSILCFHG, RT012GLSILCFHG, RT018GLSILCFHG, RT024GLSILCFHG



Adjusting Static Pressure Settings (SW2-3 & SW2-4)

Purpose: Modify the unit's external static pressure setting to optimize airflow performance in ducted applications.

Factory Default Setting:

- Static Pressure-01
- DIP Switches: SW2-3 = Down, SW2-4 = Down

Static Pressure Level	SW2-3	SW2-4
01 (Default)	Down	Down
02	On	Up
03	Up	Down
04	Up	Up

How to Adjust
Locate DIP switches SW2-3 and SW2-4 on the indoor unit's control board. Adjust them according to the desired static pressure.

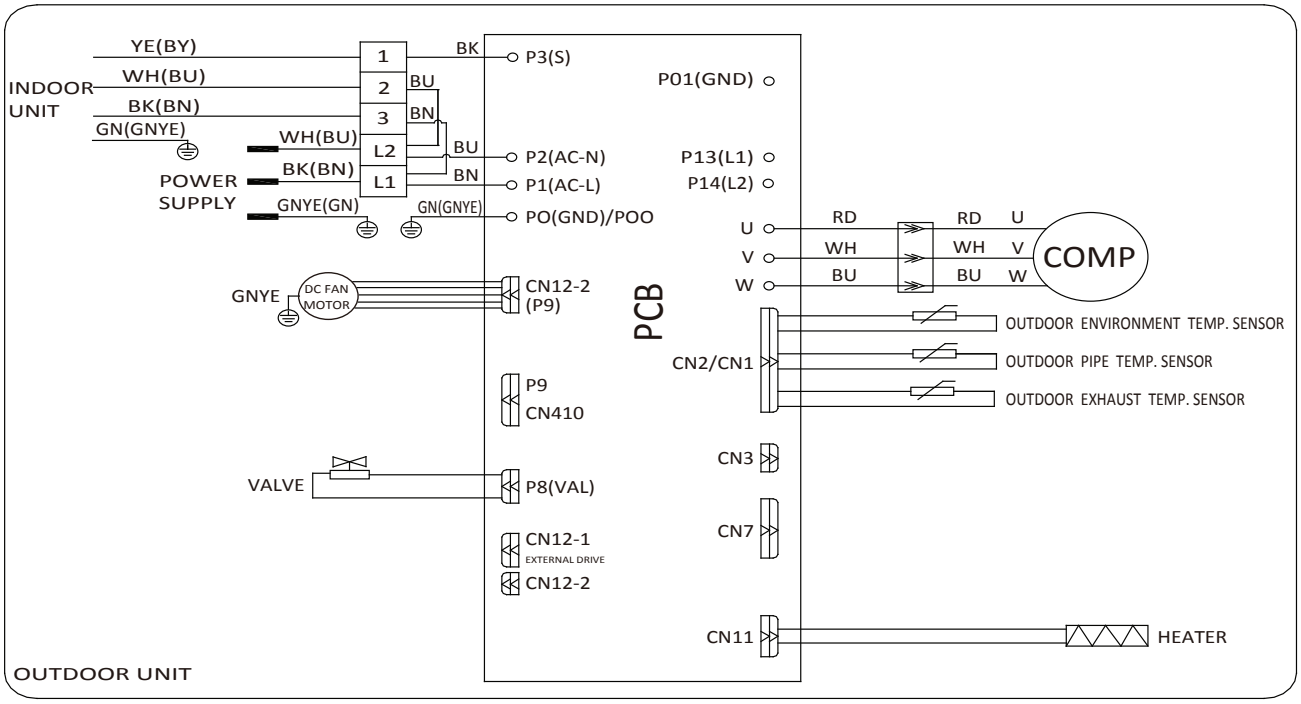
- Always power off the unit before adjusting DIP switches.
- After applying changes, restore power to activate the new settings.
- Match the static pressure selection to the duct design to maintain proper airflow and system performance.

Wiring Diagrams

8

Outdoor Unit: YN009GLSI24RPG, YN012GLSI24RPG, YN018GLSI24RPG, YN024GLSI24RPG

If pairing with a multi-circuit outdoor unit, see the **Addendum manual** for other diagrams.



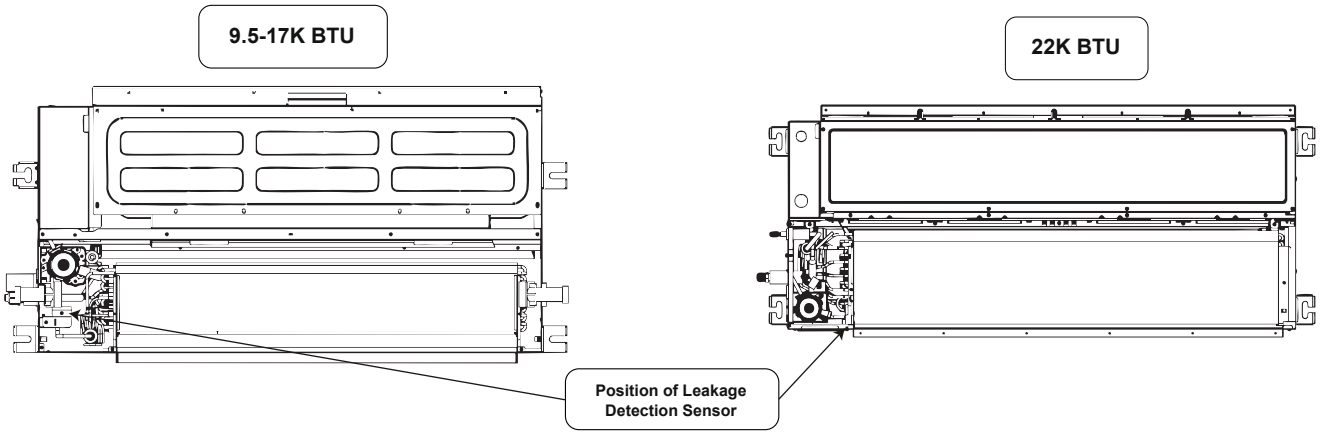
Additional Leakage Sensor

9

- Use the auxiliary refrigerant leak sensor only in specific installation scenarios. While all indoor units possess built-in leak sensing abilities, certain installations require this separate, external sensor. Qualified personnel must maintain the sensor. Use only manufacturer-specified replacements.
- The refrigerant sensor's design life is 15 years. Replace the sensor within its service life.
- The sensor automatically monitors system operation. If the refrigerant concentration exceeds the alarm threshold, the system stops the compressor and starts the circulation fan for safety.
- The alarm indicators for the refrigerant sensor are shown below:

Condition	Error Code
Refrigerant Leak Detected	Display "Hd"
Communication Error with Refrigerant Sensor	Display "Fd"

- The sensor's installation position is illustrated below. The actual location may vary depending on the model and cabinet design.



- The unit is equipped with a refrigerant leak detector for safety. The unit must remain electrically powered at all times after installation, except during service.
- Only use manufacturer-approved sensors as replacements.

Pioneer Airlink App

10

For Systems with a Wireless Internet Module - If Applicable

Instructions for getting your system connected to Pioneer® Airlink

Search for "Pioneer Airlink" in the Google Play Store (for Android users) or the App Store (for iOS users).
A 2.4GHz Wi-Fi connection is needed to use the Wi-Fi control feature.

Download Android App

Download iOS App

Begin by ensuring the Internet module is securely plugged into the indoor air handler. Next download the app from the store and enter the setup phase in the app where it asks to reset the system. After doing so, complete the following:

1. Turn off the unit using the remote controller.

2. Turn off the circuit breaker that is powering the outside unit for 10 seconds. Then turn it back on.

3. Turn on the unit using the remote controller.

4. Press the "DISPLAY" button on the remote controller six times in a row within 6 seconds.

5. The indoor unit will flash "AP" (Access Point) or "CF" (Config) on the LED display.

6. The unit is ready to pair. Proceed through the prompts within the application.

7. The unit will be paired. Repeat these steps for any other units.

Appendix A

Product Disposal Guidelines

This appliance contains refrigerant and other potentially hazardous materials. When disposing of the appliance, the law requires special collection and treatment. Do not dispose of this product as household waste or unsorted municipal waste.

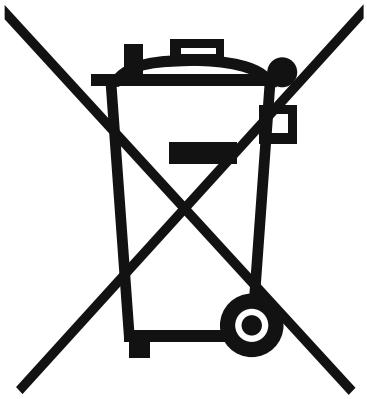
Remove all refrigerant and oil prior to disposal as outlined within this manual.

When disposing of this appliance, the following options are available:

- Dispose of the appliance at a designated municipal electronic waste collection facility.
- When purchasing a new appliance, customers can have the retailer take back the old one free of charge.
- Sell the appliance to certified scrap metal dealers.

Note

Disposing of this appliance improperly, or in other natural surroundings, endangers your health and is bad for the environment. Hazardous substances may leak into the ground water and enter the food chain. Follow proper disposal protocols.



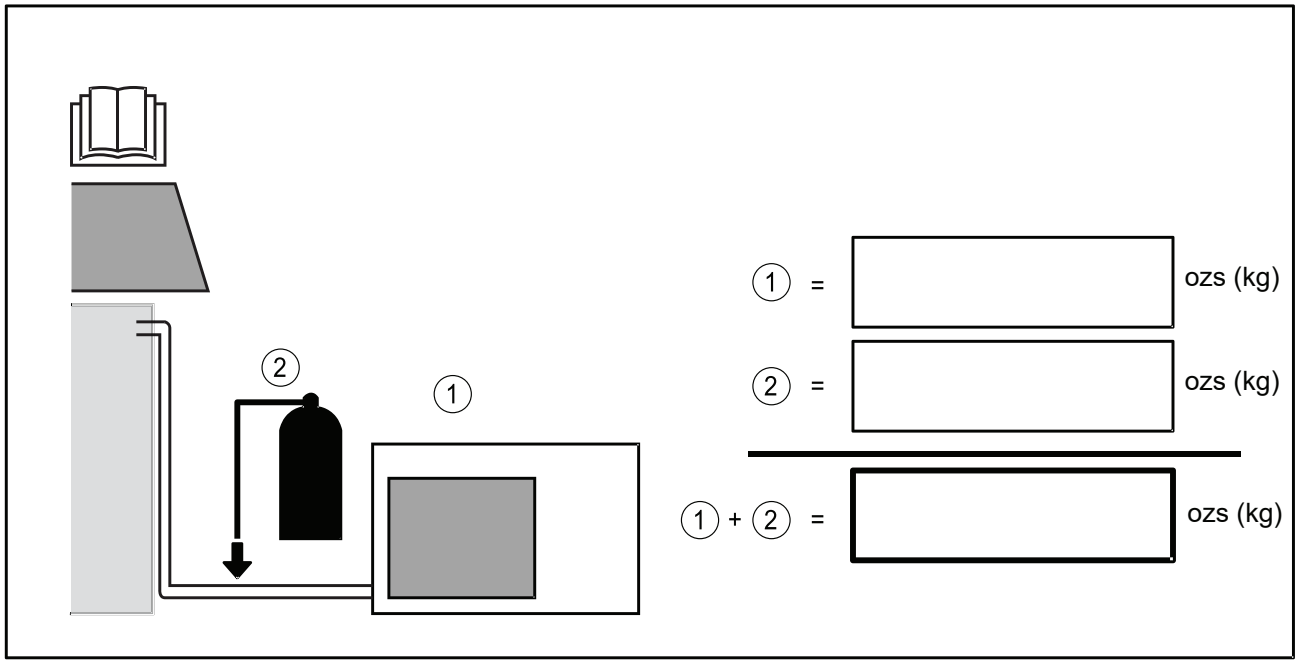
Appendix

A

If Refrigerant Has Been Added to the System During Installation

(For the Installer) fill in the following:

1) The factory refrigerant charge of the product (located on the outdoor unit nameplate).
2) The additional refrigerant charged into the product.
1+2) The total refrigerant charge.



We recommend keeping this information handy for future service and maintenance needs.

System Notes

The design and specifications of this product are subject to change without prior notice as development continues. Consult with the sales agency or manufacturer for details. Refer to the equipment nameplate for all other applicable specifications.

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E-mail : info@pdhvac.com
Website: www.pdhvac.com

Pioneer product line, parts, and supplies are available online for convenient ordering at:
www.highseer.com
www.pioneerminisplit.com

Scan the below code to visit our support page where you can find more installation materials:

SCAN ME

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