

Installation Instructions



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NOTE: Read the entire instruction manual before starting the installation.

PARTS LIST

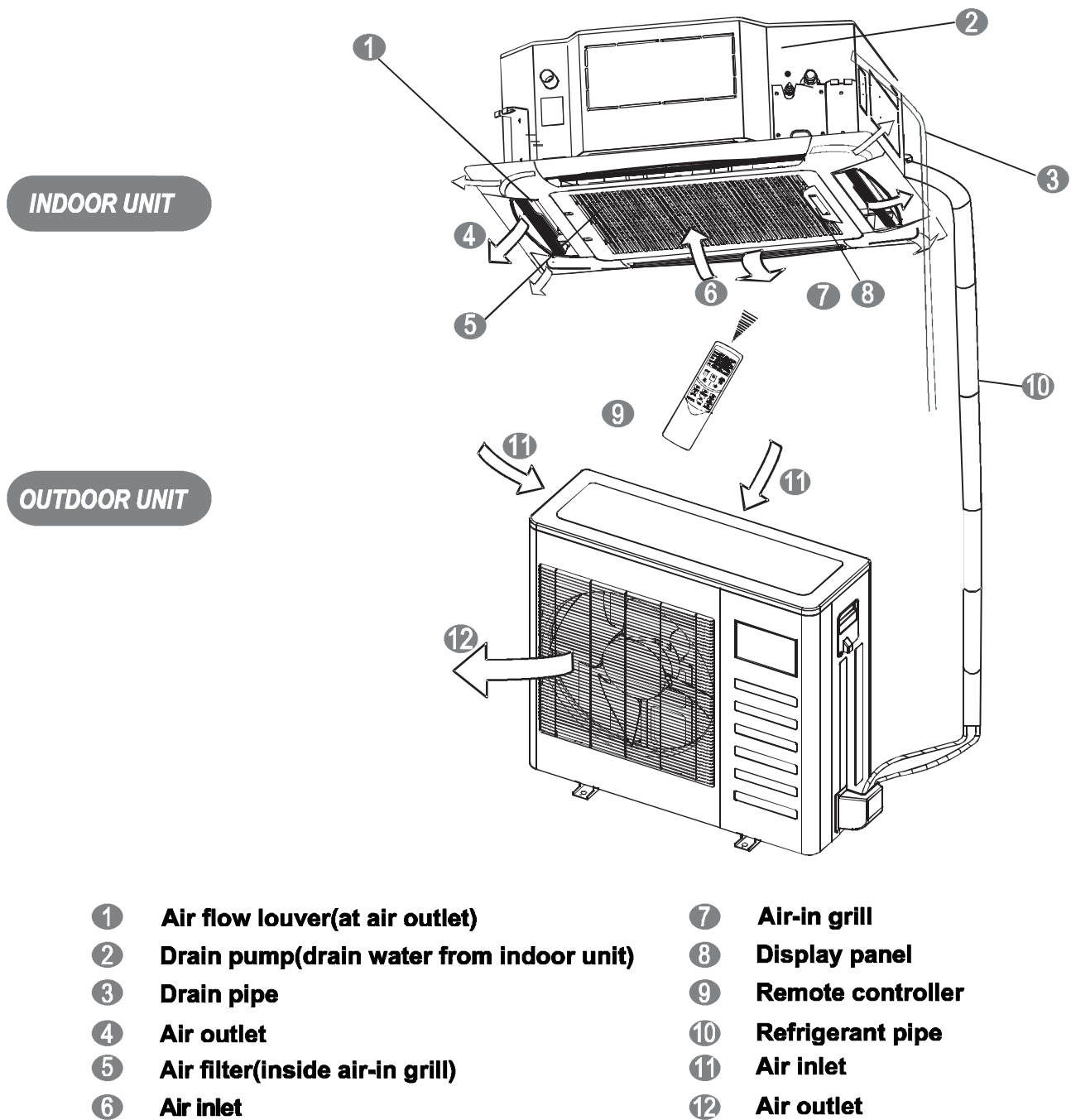


Fig. 1 – Parts List

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Note:

- If the outdoor unit is higher than the indoor unit, prevent rain from flowing into the indoor unit along the connection pipe by creating a downward arc in the connection pipe before it enters the wall to the indoor unit. This will ensure that rain drips from the connection pipe before entering the wall.
- Piping and the interconnecting wiring are field supplied.
- Fig.1 is only a sketch. Different models may be slightly different.

SAFETY CONSIDERATIONS

Installing, starting up, and servicing air-conditioning equipment can be hazardous due to system pressures, electrical components, and equipment location (roofs, elevated structures, etc.).

Only trained, qualified installers and service mechanics should install, start-up, and service this equipment.

Untrained personnel can perform basic maintenance functions such as cleaning coils. All other operations should be performed by trained service personnel.

When working on the equipment, observe precautions in the literature and on tags, stickers, and labels attached to the equipment.

Follow all safety codes. Wear safety glasses and work gloves. Keep quenching cloth and fire extinguisher nearby when brazing. Use care in handling, rigging, and setting bulky equipment.

Read these instructions thoroughly and follow all warnings or cautions included in literature and attached to the unit. Consult local building codes and National Electrical Code (NEC) for special requirements. Recognize safety information. This is the safety-alert symbol . When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury. Understand these signal words: DANGER, WARNING, and CAUTION. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices which **may** result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.



WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury or death.

Before installing, modifying, or servicing system, main electrical disconnect switch must be in the OFF position. There may be more than 1 disconnect switch. Lock out and tag switch with a suitable warning label.



WARNING



EXPLOSION HAZARD

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

Never use air or gases containing oxygen for leak testing or operating refrigerant compressors. Pressurized mixtures of air or gases containing oxygen can lead to an explosion.



CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

Do not bury more than 36 in. (914 mm) of refrigerant pipe in the ground. If any section of pipe is buried, there must be a 6 in. (152 mm) vertical rise to the valve connections on the outdoor units. If more than the recommended length is buried, refrigerant may migrate to the cooler buried section during extended periods of system shutdown. This causes refrigerant slugging and could possibly damage the compressor at start-up.

SYSTEM REQUIREMENTS

Allow sufficient space for airflow and servicing unit. See Fig. 5 for minimum required distances between unit and walls or ceilings.

Piping

IMPORTANT: Both refrigerant lines must be insulated separately.

- Minimum refrigerant line length between the indoor and outdoor units is 10 ft. (3 m).
- Table 1 lists the maximum lengths.

Table 1—Piping Lengths

SYSTEM SIZE			9K	12K	18K
Piping	Min. Piping Length	ft(m)	10 (3)	10 (3)	10 (3)
	Standard Piping Length	ft(m)	25 (7.6)	25 (7.6)	25 (7.6)
	Max. outdoor–indoor height difference (OU higher than IU)	ft(m)	32 (10)	32 (10)	65 (20)
	Max. outdoor–indoor height difference (IU higher than OU)	ft(m)	32(10)	32(10)	65(20)
	Max. Piping length with no additional refrigerant charge	ft(m)	25 (7.6)	25 (7.6)	25 (7.6)
	Max. Piping Length	ft(m)	82 (25)	82 (25)	98 (30)
	Additional refrigerant charge (between standard–Max piping length)	Oz/ft(g/m)	0.27 (25)	0.27 (25)	0.43 (40)
	Gas Pipe (size–connection type)	in(mm)	3/8 (9.52)	1/2 (12.7)	1/2 (12.7)
	Liquid Pipe (size–connection type)	in(mm)	1/4 (6.35)	1/4 (6.35)	1/4 (6.35)
Refrigerant	Refrigerant Type		R410A	R410A	R410A
	Charge Amount	Lbs(kg)	2.76 (1.25)	2.76 (1.25)	4.19 (1.90)

- Above charge is for piping runs up to 25 ft. (7.6 m).
- For piping runs greater than 25 ft. (7.6 m), add refrigerant up to the allowable length as specified in Table 1.

The outdoor unit has an electronic expansion valve to manage the refrigerant flow of the fan coil connected.

All wires must be sized per NEC (National Electrical Code) or CEC (Canadian Electrical Code) and local codes. Use the Electrical Data table MCA (minimum circuit amps) and MOC (maximum over current protection) to correctly size the wires and the disconnect fuse or breakers respectively.

Per the caution note, only stranded copper conductors with a 600 volt rating and double insulated copper wire must be used. The use of BX cable is not recommended.

IMPORTANT: The use of BX cable is not recommended.

Recommended Connection Method for Power and Communication Wiring - Power and Communication Wiring:

The main power is supplied to the outdoor unit. The field supplied 14/3 power/communication wiring from the outdoor unit to indoor unit consists of four (4) wires and provides the power for the indoor unit. Two wires are high voltage AC power. One wire is communication wiring and the other is a ground wire.

Recommended Connection Method for Power and Communication Wiring (To minimize communication wiring interference)

Power Wiring:

The main power is supplied to the outdoor unit. The field supplied connecting cable from the outdoor unit to the indoor unit consists of three (3) wires and provides the power for the indoor unit. Two wires are high voltage AC power and one is a ground wire.

Communication Wiring:

A separate shielded stranded copper conductor only, with a 600 volt rating and double insulated copper wire, must be used as the communication wire from the outdoor unit to the indoor unit. Please use a separate shielded 16GA stranded control wire.



CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

- Wires should be sized based on NEC and local codes.
- Use copper conductors only with a 600 volt rating and double insulated copper wire.

DIMENSIONS - INDOOR

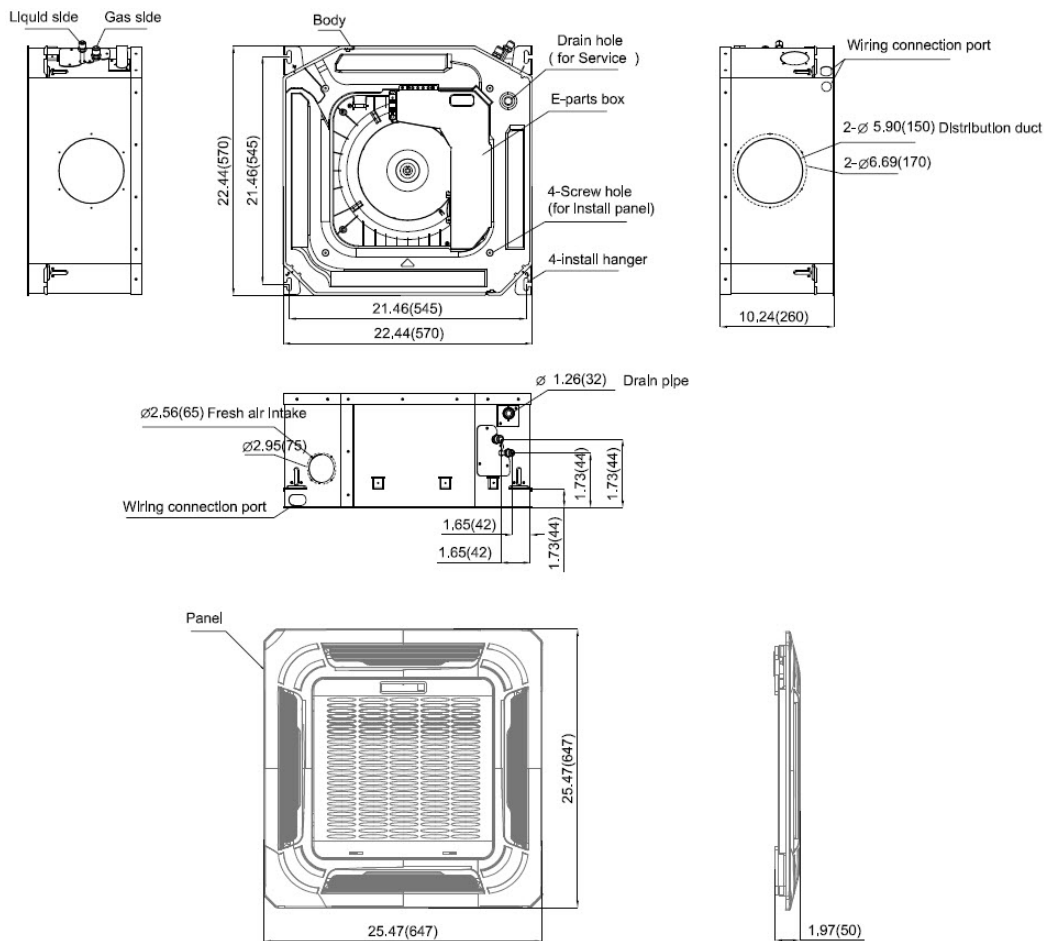


Fig. 2 – Indoor Unit
Table 2—Dimensions Indoor

UNIT SIZE		9K		12K		18K	
		BODY	PANEL	BODY	PANEL	BODY	PANEL
Dimensions							
Height	in(mm)	10.24 (260)	1.97 (50)	10.24 (260)	1.97 (50)	10.24 (260)	1.97 (50)
Width	in(mm)	22.44 (570)	25.47 (647)	22.44 (570)	25.47 (647)	22.44 (570)	25.47 (647)
Depth	in(mm)	22.44 (570)	25.47 (647)	22.44 (570)	25.47 (647)	22.44 (570)	25.47 (647)
Packing							
Height	in(mm)	11.42 (290)	4.84 (123)	11.42 (290)	4.84 (123)	11.42 (290)	4.84 (123)
Width	in(mm)	25.79 (655)	28.15 (715)	25.79 (655)	28.15 (715)	25.79 (655)	28.15 (715)
Depth	in(mm)	25.79 (655)	28.15 (715)	25.79 (655)	28.15 (715)	25.79 (655)	28.15 (715)
Weight – Gross	lbs(kg)	41.88 (19)	9.92 (4.5)	41.88 (19)	9.92 (4.5)	46.3 (21)	9.92 (4.5)
Weight – Net	lbs(kg)	35.27 (16)	5.51 (2.5)	35.27 (16)	5.51 (2.5)	39.68 (18)	5.51 (2.5)

DIMENSIONS - OUTDOOR

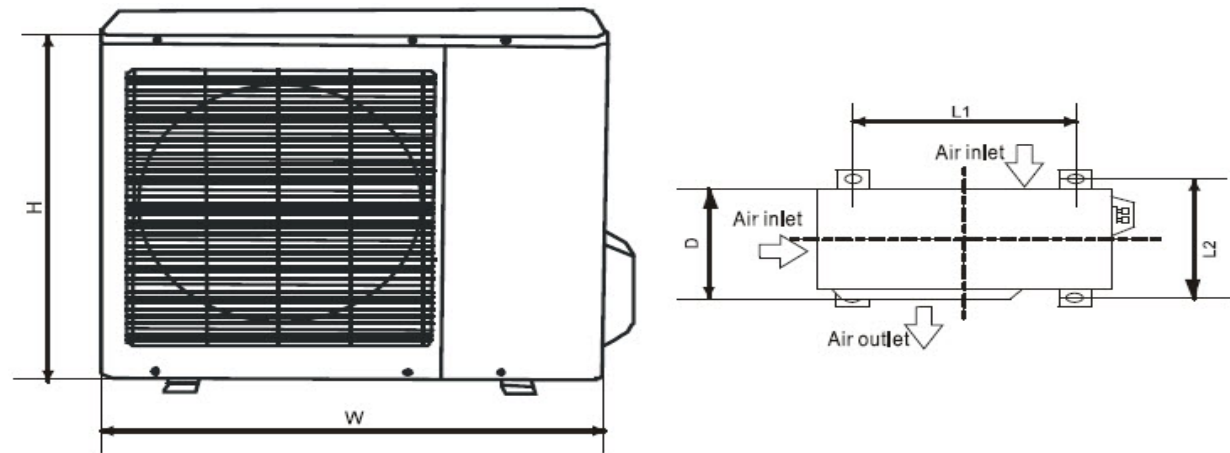


Fig. 3 – Outdoor Unit

Table 3—Dimensions Outdoor

MODEL	W in (mm)	D in (mm)	H in (mm)	L1 in (mm)	L2 in (mm)	OPERATING WEIGHT lb (kg)
9K/12K	32.0 (810)	12.2 (310)	22.0 (558)	20.9 (530)	11.4 (290)	82.5 (37.4)
18K	32.3 (845)	12.6 (320)	27.6 (700)	22.1 (560)	13.2 (335)	102.5 (46.5)

CLEARANCES - INDOOR

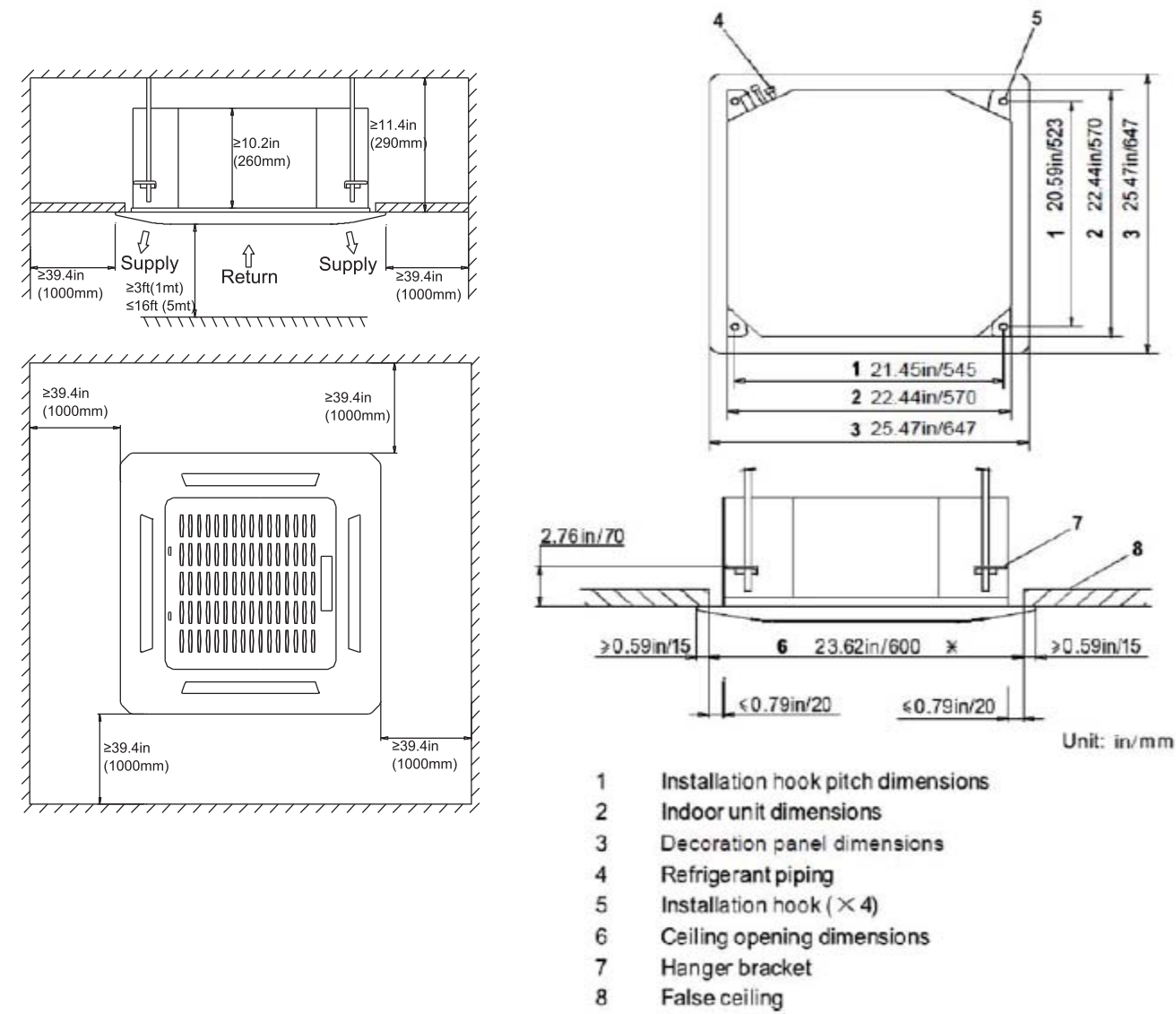
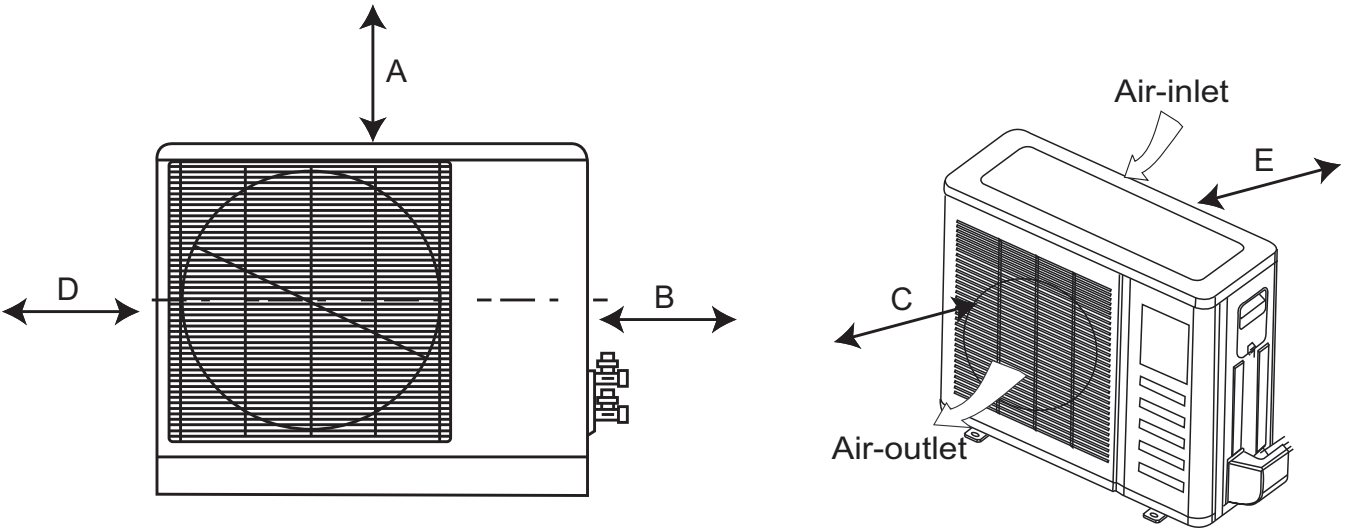


Fig. 4 – Cassette Unit Clearance

CLEARANCES - OUTDOOR



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Fig. 5 – Outdoor Unit Clearance

Table 4—Outdoor Unit Clearance Dimensions

UNIT	MINIMUM VALUE in. (mm)
A	24 (610)
B	24 (610)
C	24 (610)
D	4 (101)
E	4 (101)

INSTALLATION TIPS

Indoor Unit

Installation locations include:

- A location where there are no obstacles near the inlet and outlet areas.
- A location which can bear the weight of the indoor unit is critical.
- Do not install indoor units near a direct source of heat such as direct sunlight or a heating appliance.
- A location which provides appropriate clearances as outlined in Fig. 4.

Outdoor Unit

- A location which is convenient to installation and not exposed to strong wind.
- A location which can bear the weight of outdoor unit and where the outdoor unit can be mounted in a level position.
- A location which provides appropriate clearances as outlined in Fig. 5.
- Do not install the indoor or outdoor units in a location with special environmental conditions. For those applications, contact your Ductless Split representative.

INDOOR UNIT INSTALLATION

1. Obstructions should be removed from the indoor unit's intake or outlet vents so air can flow throughout the room.
2. Ensure the installation is in accordance with the schematic diagram's required clearances.
3. Select a location that can withstand four times the weight of the indoor unit and would not increase the operating noise.
4. Ensure the unit is level.
5. Select a location where condensated coagulated water can drain easily away from the outdoor unit.
6. Ensure there is enough space for care and maintenance. Ensure the height between the indoor unit and ground is $\geq 3\text{ft. (1mt)}$ or $\leq 16\text{ft. (5mt)}$.
7. Check if the install site can withstand a weight 4 times of the unit's. If not, reinforce the site prior to installation. Refer to the install cardboard to determine where the location should be reinforced.

IMPORTANT: To guarantee a good performance, the unit must be installed by professional personnel in accordance with this manual.

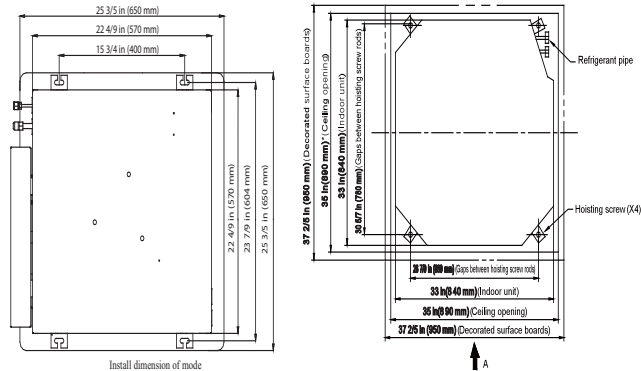


Fig. 6 – Dimension of ceiling opening and location of the hoisting screw (M10)

IMPORTANT: Drilling holes in the ceiling must be performed by professional personnel.

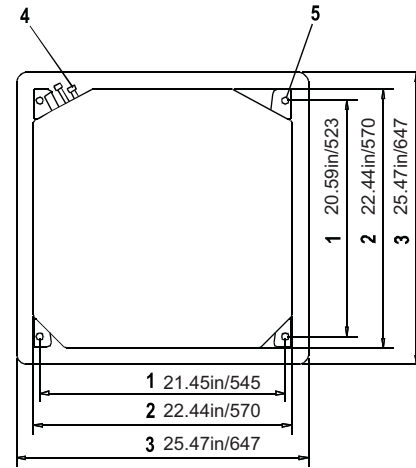
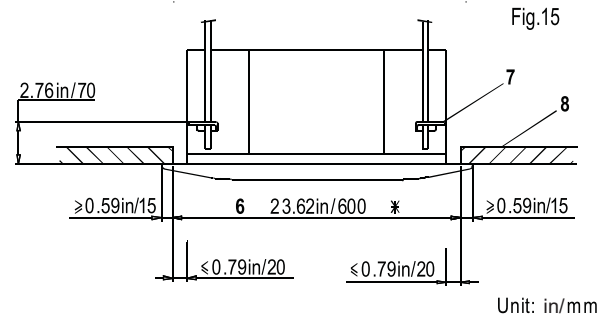
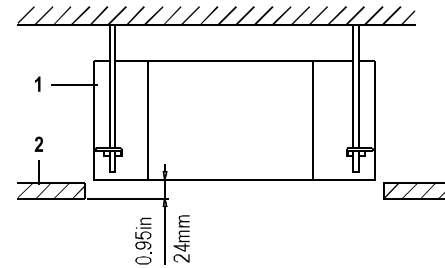


Fig. 7 – Drilling Holes



Unit: in/mm

Fig. 8 – Drilling Holes



- 1 Indoor unit
- 2 False ceiling

Fig. 9 – Drilling Holes

NOTE: Installation is possible with a ceiling dimension of 23.62 in. (600mm) (marked with *). However to achieve a ceiling-panel overlapping dimension of 0.59 in (15mm), the spacing between the ceiling and the unit should be 0.79 in. (20mm) or less. If the spacing between the ceiling and the unit is over 0.79 in. (20mm), attach the sealing material in the part or recover the ceiling.

INDOOR UNIT MAIN BODY INSTALLATION

1. Prepare the ceiling opening needed for installation where applicable (for existing ceilings).
 - a. Create the ceiling opening required for installation. From the side of the opening to the casing outlet, implement the refrigerant and drain piping and wiring for the remote controller (unnecessary for wireless type). Refer to each piping or wiring section.
 - b. After creating an opening in the ceiling, it may be necessary to reinforce the ceiling beams to keep the ceiling level and to prevent it from vibrating. Consult the builder for details.
2. Install the installation hooks. Use either a M8 or M10 size bolt.
 - a. Use expansible hooks, sunken anchors or other field supplied parts to reinforce the ceiling to bear the unit's weight.
 - b. Adjust the clearance from the ceiling before proceeding further. For an installation example, see Fig. 10.

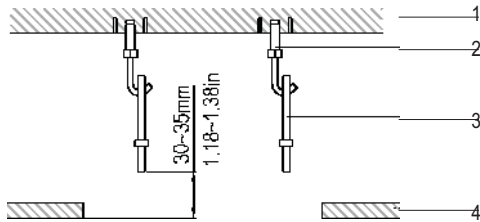


Fig. 10 – Installation Clearances

- (1.) Ceiling slab
- (2.) Expansible hook (optional)
- (3.) Installation hook (optional)
- (4.) False ceiling

NOTE: For an installation other than a standard installation, contact your dealer for details.

When installing optional accessories, review the list of optional accessories in the installation manual. Depending on field conditions, it may be easier to install optional accessories before the indoor unit is installed (except for the decoration panel). However, for an existing ceiling, install the fresh air inlet component kit and branch duct before installing the unit.

3. Install the indoor unit temporarily.
 - a. Attach the hanger bracket to the suspension bolt. Be sure to fix it securely by using a nut and washer from the upper and lower sides of the hanger bracket.
 - b. Secure the hanger bracket (see Fig. 11).

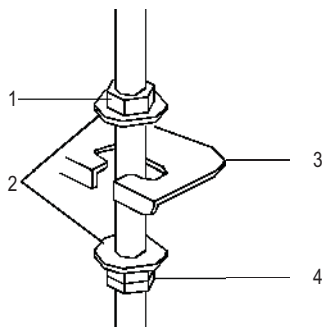


Fig. 11 – Secure the Hanger Bracket

- (1.) Nut (field supply)
 - (2.) Washer (field supply)
 - (3.) Hanger bracket
 - (4.) Double nuts (field supply, tighten)
4. Secure the paper pattern for installation (for new ceilings only).
 - The paper pattern for installation corresponds with the measurements of the ceiling opening. Consult the builder for details.
 - The center of the ceiling opening is indicated on the paper pattern for installation.
 - After removing the packaging material from the paper pattern for installation, attach the paper pattern to the unit with the attached screws (see Fig. 12).

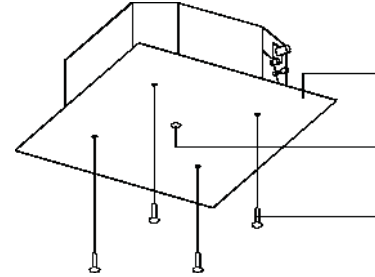


Fig. 12 – Attach Screws

- (1.) Paper pattern for installation (on some models)
 - (2.) Center of the ceiling opening
 - (3.) Screws (supplied with the decoration panel)
5. Adjust the unit to the right position for installation. Refer to the chapter “*Preparations Before Installation*”.
 6. Check if the unit is horizontally leveled.
 - a. Do not install the unit tilted. The indoor unit is equipped with a built-in drain pump and a float switch.

NOTE: If the unit is tilted against the direction of the condensate flow (the drain piping side is raised), the float switch may malfunction and cause water to drip.

- b. Check if the unit is level at all four corners with a water level or a water-filled vinyl tube (see Fig. 13).

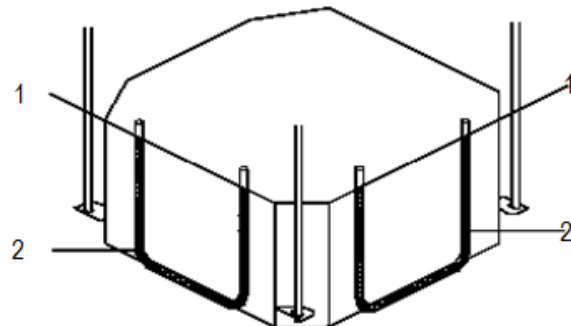


Fig. 13 – Ensure unit is level

- (1.) Water level
- (2.) Vinyl tube

DRAIN PIPING WORK

Drain Piping Installation

Install the drain piping as shown in Fig. 14 and take steps to eliminate condensation. Improperly rigged piping could lead to leaks and eventually wet furniture and belongings.

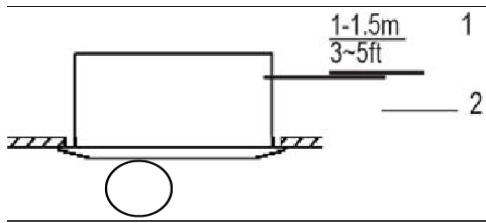


Fig. 14 – Drain Piping Installation

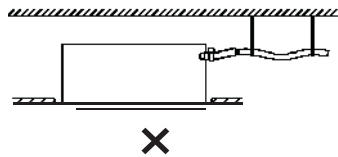


Fig. 15 – Hanging Bar

- (1.) Hanging bar
- (2.) $\geq 1/100$ gradient

Install the Drain Pipes

- Keep piping as short as possible and slope it downwards at a gradient of at least $1/100$ so that air does not remain trapped inside the pipe.
- Keep the pipe size equal to or greater than that of the connecting pipe (PVC pipe, nominal diameter 0.79 in. (20mm)), outside diameter 0.98 in. (25mm).
- Push the drain hose as far as possible over the drain socket, and tighten the metal clamp securely.

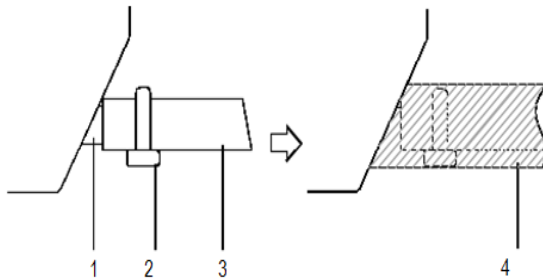


Fig. 16 – Push the Drain Hose

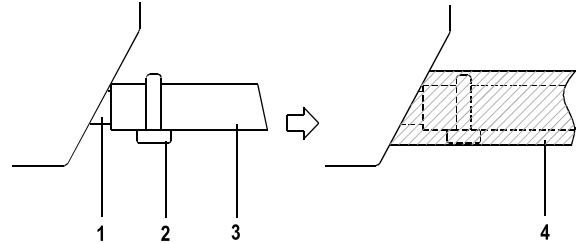
7. Remove the paper pattern for installation (for new ceilings only).
 - (1.) Drain socket (attached to the unit)
 - (2.) Metal clamp
 - (3.) Drain hose
 - (4.) Insulation (field supply)
 - a. Insulate the drain hose inside the building.
 - b. If the drain hose cannot be sufficiently set on a slope, fit the hose with the drain raising piping (field supplied).
 - c. Ensure the heat insulation work is executed on the following two spots to prevent any possible water leakage due to dew condensation:
 - (1.) Indoor drain pipe
 - (2.) Drain socket.

DRAINAGE HOSE

IMPORTANT: Observe all local sanitary codes when installing condensate drains.

1. Install the drain hose.

- The drain hose diameter should be equal or larger than the connection pipe's. The diameter of the polythene pipe: Outer diameter 1 in. (25 mm) Surface thickness ≥ 0.06 in. (1.5 mm).
- The drain hose should be short and the drooping gradient should be less than $1/100$ to prevent the formation of an air bubble. If the drain hose does not have enough of a drooping gradient, a drain raising pipe should be added.
- To prevent a bend in the drain hose, the distance between the hoisting stand should be 3 to 5 ft. (1 to 1.5 m) (see Fig. 17).



- 1 Drain socket (attached to the unit)
- 2 metal clamp
- 3 Drain hose
- 4 Insulation (field supply)

Fig. 17 – Drain Hose

- Use the drain hose and clamp attached. Insert the drain hose into the drain vent, and then tighten the clamp.
- Entwine the big sponge on the drain hose clamp to insulate heat.
- Heat insulation should be applied to the indoor drain hose.

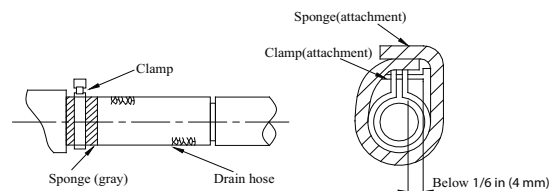
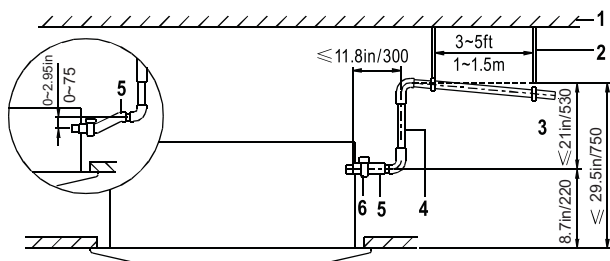


Fig. 18 – Drain Hose

NOTE: Drain Setup pipe

- The install height of the drain raising pipe should be less than 21 in. (530 mm).
- The drain raising pipe should form a right angle with the unit, and the distance to the unit should not exceed 11.81 in. (300 mm).



Unit: in/mm

- 1 Ceiling slab
- 2 Hanger bracket
- 3 Adjustable range
- 4 Drain raising pipe
- 5 Drain hose
- 6 Metal clamp

Fig. 19 – Drain Setup Pipe

INSTRUCTION

The slant gradient of the attached drain hose should be within 3 in. (75 mm) so that the drain hole does not have to endure unnecessary outside force.

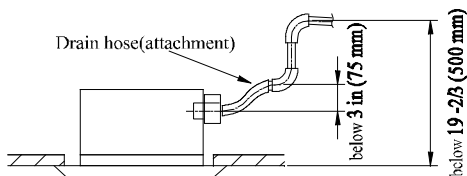
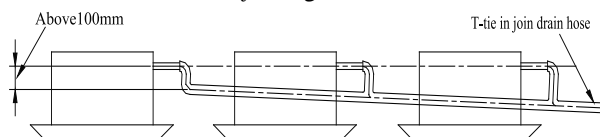


Fig. 20 – Slant Gradient

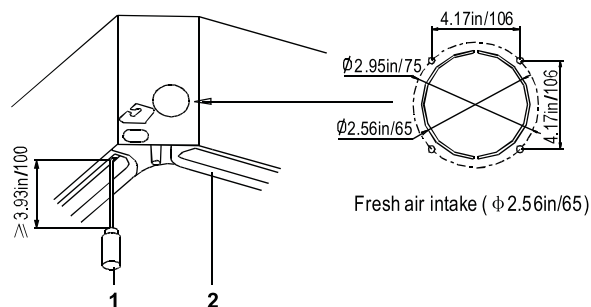
1. Install the drain hose according to the following process if several drain hoses join together.



The specs of the selected join drain hose should fits the running capacity of the unit.

Fig. 21 – Slant Gradient

2. Check the smoothness of the drain after the installation.
3. Check the drain state by draining 36 3/5 in. 3 (600 cc) of water slowly from the outlet vent or test hole.
4. Check the drain in the state of refrigerating after installing the electric circuit.



Unit: in/mm

Fig. 22 – Drain

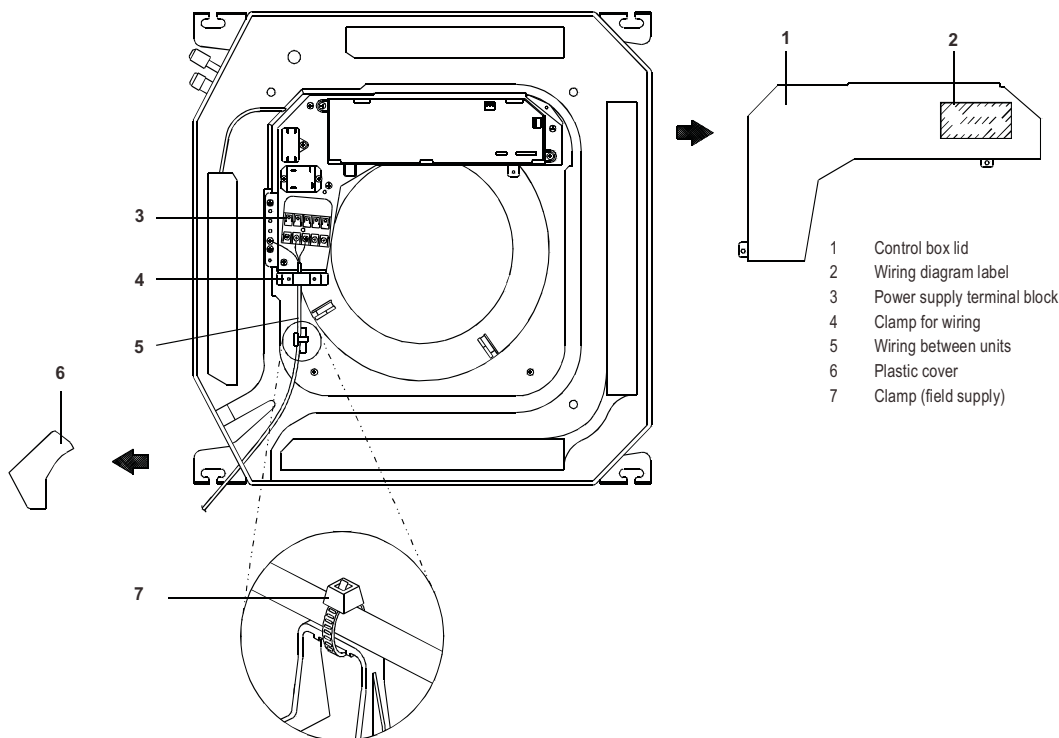
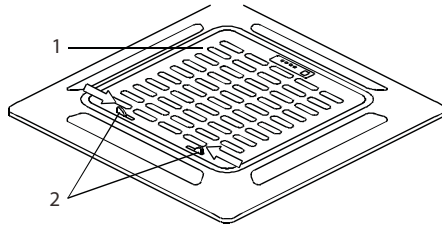


Fig. 23 – Cassette

INSTALLATION OF THE DECORATION PANEL

Detach the intake grill

1. Slide the two grille hooks toward the middle of the decoration panel.



- 1 Intake grille
- 2 Grille hook

Fig. 24 – Intake Grille

2. Open the intake grille and remove.

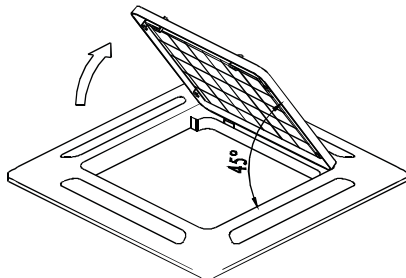
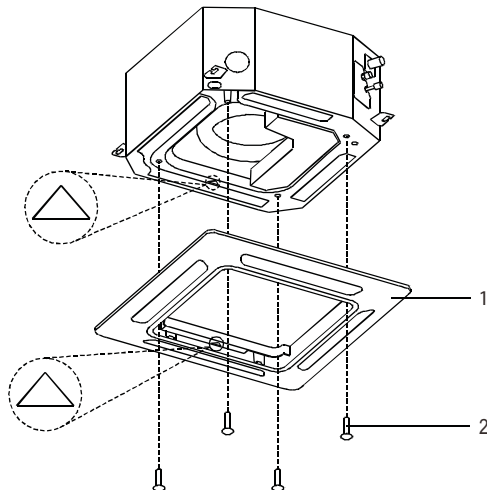


Fig. 25 – Open Intake Grille

Install the decoration panel

1. Align the indication marks “△” on the decoration panel to the indication marks “△” on the unit.
2. Attach the decoration panel to the unit with the supplied screws (see Fig. 26).



- 1 Decoration panel
- 2 Screws (M5)(supplied with the panel)

Fig. 26 – Attach the Decoration Panel

3. After installing the decoration panel, ensure there is no space between the unit body and the decoration panel. Otherwise air may leak through the gap and cause dewdrops (see Fig. 27).

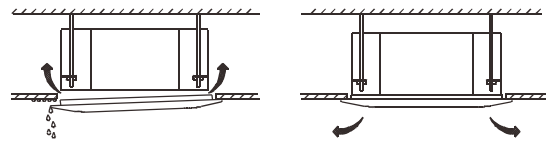


Fig. 27 – Eliminate Space

4. Mount the intake grille. Ensure the buckles at the back of the grille are properly seated in the panel's groove.

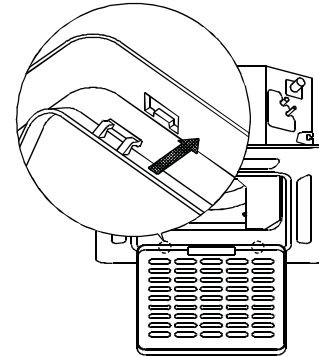


Fig. 28 – Mount the Intake Grille

5. Connect the decoration panel's two wires to the unit's mainboard.

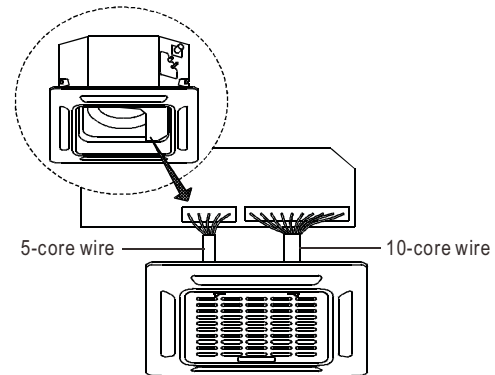


Fig. 29 – Connect two wires

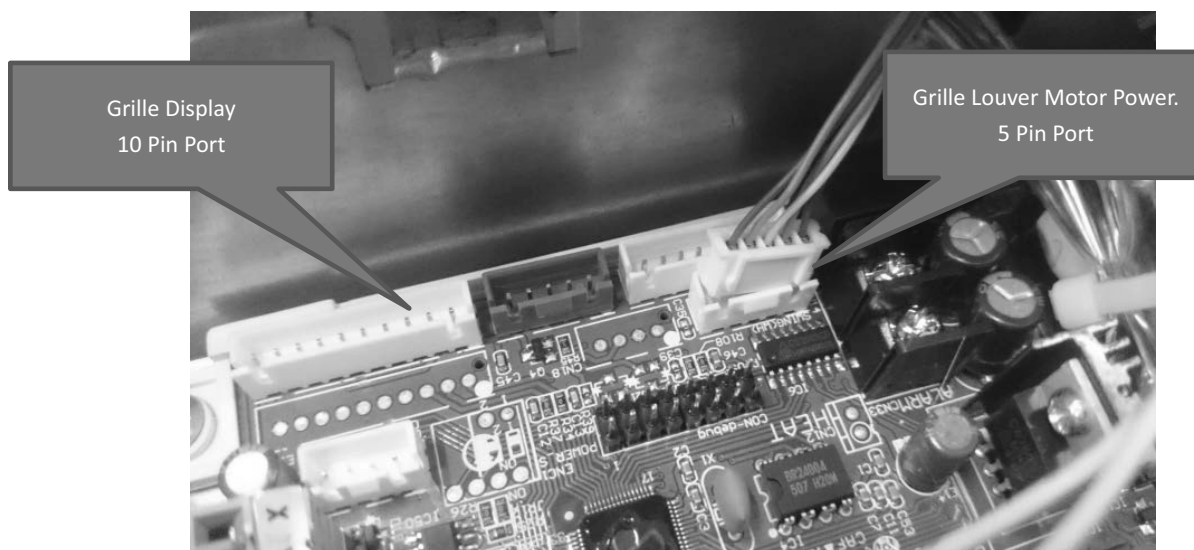


Fig. 30 – Panel Cassette

6. Fasten the control box lid with two screws.

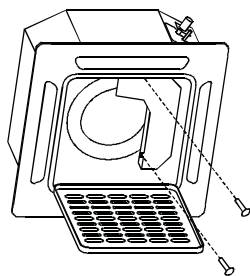


Fig. 31 – Fasten the Control Box Lid

7. Close the intake grille, and close the two grille hooks.

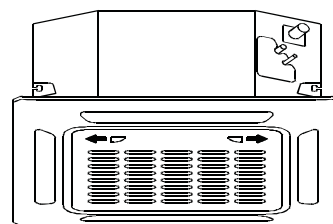


Fig. 32 – Close the Intake Grille

OUTDOOR UNIT INSTALLATION

1. Use a rigid base to support the unit in a level position.
2. Locate the outdoor unit and connect the piping and wiring.



CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

In regions with snowfall and cold temperatures, avoid installing the outdoor unit in areas where it can be covered by snow. If the outdoor unit is installed in areas where heavy snow is expected, a field supplied ice or snow stand and/or field supplied-installed wind baffle should be installed to protect the unit from snow accumulation and/or blocked air intake. Blocking the air intake may result in reduced airflow, significantly reduced performance and damage to the equipment.

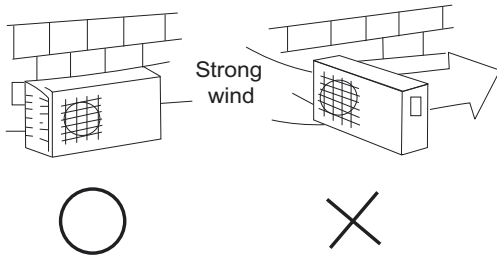


Fig. 33 – High Wind Installation

A07350

MAKE REFRIGERANT PIPING CONNECTIONS (OUTDOOR UNIT)

IMPORTANT: Use refrigeration grade tubing **ONLY**. No other type of tubing may be used. Use of other types of tubing will void the manufacturer's warranty.

Do not open service valves or remove protective caps from tubing ends until all the connections are made. Bend the tubing with bending tools to avoid kinks and flat spots.

Keep the tubing free of dirt, sand, moisture, and other contaminants to avoid damaging the refrigerant system.

Avoid sags in the suction line to prevent the formation of oil traps. Insulate each tube with minimum 3/8-in. (10 mm) wall thermal pipe insulation. Inserting the tubing into the insulation before making the connections will save time and improve installation quality.

1. Remove the service valve cover if provided with the unit.
2. Cut the tubing with a tubing cutter. Remove the service connection if provided with unit.
3. Install the correct size flare nut onto the tubing and make the flare connection.
4. Apply a small amount of refrigerant oil to the flare connection on the tubing.
5. Properly align the tubing with the service valve.
6. Tighten the flare nut and finish the installation using two wrenches as shown in Fig. 34.

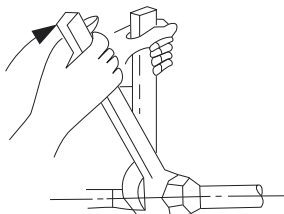


Fig. 34 – Tighten Flare Nut

A07354

Table 5— Tightening Torque

Pipe Diameter Inch (mm)	Tightening Torque	
	Ft-lb	N-m
Ø1/4" (6.35)	10 to 13	13.6 to 17.6
Ø3/8" (9.52)	23 to 31	32.5 to 42.0
Ø1/2" (12.7)	37 to 46	50.1 to 62.3
Ø5/8" (15.88)	60 to 60	67.7 to 81.3



CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

Excessive torque can break flare nut depending on installation conditions.

INSTALL ALL POWER AND INTERCONNECTING WIRING TO OUTDOOR UNITS

1. Mount the outdoor power disconnect.
2. Run the power wiring from the main box to disconnect per NEC and local codes.
3. Remove the field wiring cover from the unit by loosening the screws.
4. Remove the caps on the conduit panel.
5. Connect the conduit to the conduit panel (see Fig. 35).
6. Properly connect both the power supply and the control lines to the terminal block per the connection diagram for the appropriate unit capacity and voltage.
7. Ground the unit in accordance with NEC and local electrical codes.
8. Use lock nuts to secure the conduit.
9. Reinstall the field wiring cover.



CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

- Comply with local codes while running wire from indoor unit to outdoor unit.
- Every wire must be connected firmly. Loose wiring may cause the terminal to overheat or result in unit malfunction. A fire hazard may also exist. Be sure all wiring is tightly connected.
- No wire should be allowed to touch the refrigerant tubing, compressor or any moving parts.
- Disconnecting means must be provided and shall be located within sight and readily accessible from the air conditioner.
- Connecting cable with conduit shall be routed through hole in the conduit panel.

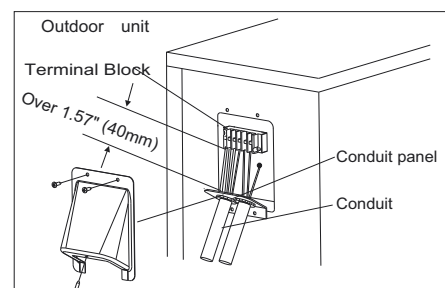


Fig. 35 – Field Wiring

A07455

ELECTRICAL DATA

Table 6—Electrical Data

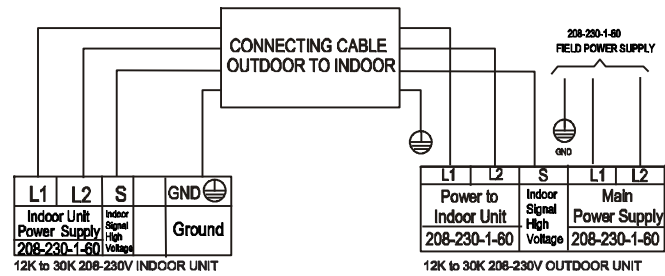
UNIT SIZE	OPER. VOLTAGE MAX / MIN*	COMPRESSOR		OUTDOOR FAN				INDOOR FAN				MCA	MAX FUSE CB AMP
		V/PH/HZ	RLA	V/PH/HZ	FLA	HP	W	V/PH/HZ	FLA	HP	W		
9K	253 / 187	208–230/1/60	5.3	208–230/1/60	0.42	0.053	40	208–230/1/60	0.146	0.061	46	15	15
12K			5.7		0.42	0.053	40					15	15
18K			7.3		0.85	0.067	50					13	20

*Permissible limits of the voltage range at which the unit will operate satisfactorily.

LEGEND

FLA – Full Load Amps
MCA – Minimum Circuit Amps
RLA – Rated Load Amps

CONNECTION DIAGRAMS

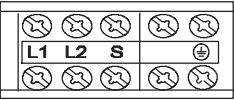


A150634

Fig. 36 – Connection Diagrams

Notes:

1. Do not use thermostat wire for any connection between indoor and outdoor units.
2. All connections between indoor and outdoor units must be as shown. **The connections are sensitive to polarity and will result in a fault code.**



A150635

Fig. 37 – Control and Power Wiring on Indoor Unit

NOTE: For applications where gravity cannot be used for drainage, a condensate pump accessory is available. Consult the condensate pump installation instructions for more information.

REMOTE CONTROL INSTALLATION

Mounting Bracket (if installed on the wall)

1. Use the two screws supplied with the control to attach the mounting bracket to the wall in a location selected by the customer and within operating range.
2. Install the remote control batteries.
3. Place the remote control into the remote control mounting bracket.
4. For remote control operation, refer to the unit owner's manual.



CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

Never use the system compressor as a vacuum pump.

Refrigerant tubes and indoor coil should be evacuated using the recommended deep vacuum method of 500 microns. The alternate triple evacuation method may be used if the procedure outlined below is followed. Always break a vacuum with dry nitrogen.

SYSTEM VACUUM AND CHARGE

Using Vacuum Pump

1. Completely tighten flare nuts A, B, C, D and connect the manifold gage charge hose to a charge port of the low side service valve (see Fig. 38).
2. Connect the charge hose to the vacuum pump.
3. Fully open the low side of the manifold gage (see Fig. 39).
4. Start the vacuum pump.
5. Evacuate using either the deep vacuum or triple evacuation method.
6. After evacuation is complete, fully close the low side of the manifold gage and stop the vacuum pump operation.
7. The factory charge contained in the outdoor unit is good for up to 25 ft. (8 m) of the line length. For refrigerant lines longer than 25 ft. (8 m), add refrigerant, up to the allowable length, as specified in the *System Requirements* section.
8. Disconnect the charge hose from the charge connection of the low side service valve.
9. Fully open service valves B and A.
10. Securely tighten the service valve caps.

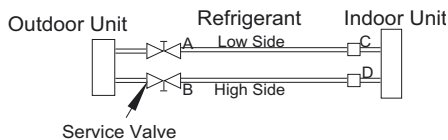
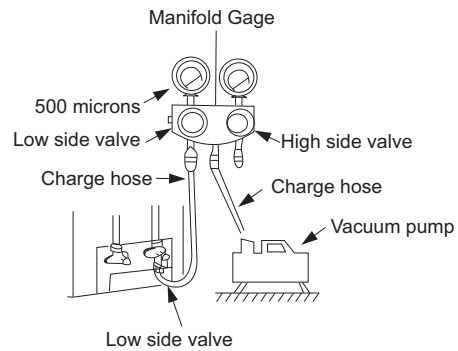


Fig. 38 – Service Valve

A07360

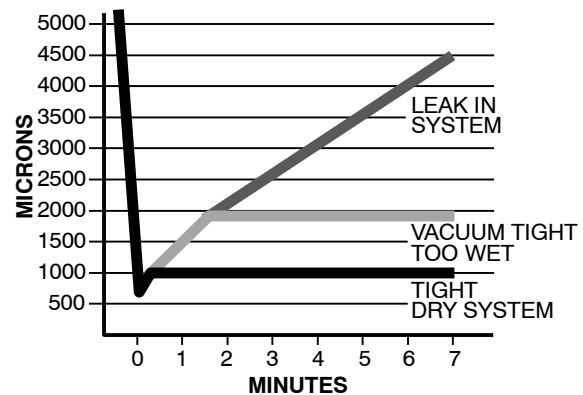


A07361

Fig. 39 – Manifold

Deep Vacuum Method

The deep vacuum method requires a vacuum pump capable of pulling a vacuum of 500 microns and a vacuum gage capable of accurately measuring this vacuum depth. The deep vacuum method is the most positive way of assuring a system is free of air and liquid water (see Fig. 40).



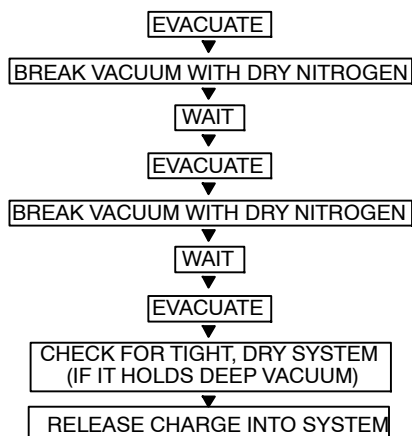
A95424

Fig. 40 – Deep Vacuum Graph

Triple Evacuation Method

The triple evacuation method should only be used when the vacuum pump is only capable of pumping down to 28 in. of mercury vacuum and the system does not contain any liquid water. Refer to Fig. 41 and proceed as follows:

1. Pump the system down to 28 in. of mercury and allow the pump to continue operating for an additional 15 minutes.
2. Close the service valves and shut off the vacuum pump.
3. Connect a nitrogen cylinder and regulator to the system and open until the system's pressure is 2 psig.
4. Close the service valve and allow the system to stand for 1 hr. During this time, dry nitrogen will be able to diffuse throughout the system absorbing moisture.
5. Repeat this procedure as indicated in Fig. 41. The system will then be free of any contaminants and water vapor.



A95425

Fig. 41 – Triple Evacuation Method

Final Tubing Check

IMPORTANT: Ensure certain factory tubing on both the indoor and outdoor unit has not shifted during shipment. Ensure the tubes are not rubbing against each other or any sheet metal. Pay close attention to feeder tubes, making sure wire ties on the feeder tubes are secure and tight.

START-UP

Test Operation

Perform a test operation after completing a gas leak and electrical safety check.

1. Press the “ON/OFF” button on the remote control to begin testing.

NOTE: A protection feature prevents air conditioner from being activated for approximately 3 to 4 minutes.

2. Press MODE and select COOLING, HEATING, FAN mode to check if all functions work correctly.
3. To run the test using the manual button in the indoor unit:
 - (3.) Open the indoor unit’s front panel;
 - (4.) Press the manual switch once to energize the unit.
The set conditions of manual operation are as follows:
 - Preset set point: 76°F (24°C)
 - Fan speed: AUTO
 - Discharge air direction: Pre-set position based on operation in “Cool” or “Heat” mode.
4. Be sure to set the manual switch to “OFF” (by pressing it twice again) after finishing the test operation.

SYSTEM CHECKS

1. Conceal the tubing where possible.
2. Ensure the drain tube slopes downward along its entire length.
3. Ensure all tubing and connections are properly insulated.
4. Fasten the tubes to the outside wall, when possible.
5. Seal the hole through which the cables and tubing pass.

INDOOR UNIT

1. Do all the remote control buttons function properly?
2. Do the display panel lights work properly?
3. Does the air deflection louver function properly?
4. Does the drain work?

OUTDOOR UNIT

1. Are there unusual noises or vibrations during operation?

Explain Following Items To Customer (with the aid of the Owner’s Manual):

1. How to turn air conditioner on and off; selecting COOLING, HEATING and other operating modes; setting a desired temperature; setting the timer to automatically start and stop air conditioner operation; and all other features of the remote control and display panel.
2. How to remove and clean the air filter.
3. How to set air deflection louver.
4. Explain care and maintenance.
5. Present the owner’s manual and installation instructions to customer.

TROUBLESHOOTING

For ease of service, the systems are equipped with diagnostic code display LEDs on both the indoor and outdoor units. The outdoor diagnostic display consists of two LEDs (Red and Green) on the outdoor unit board and is limited to a few errors. The indoor diagnostic display is a combination of flashing LEDs on the

display panel or the front of the unit. If possible, always check the diagnostic codes displayed on the indoor unit first.

The diagnostic codes displayed in the indoor and outdoor units are listed in the tables below.

INDOOR UNIT DIAGNOSTIC GUIDES

Table 7—Indoor Unit Diagnostic Guides

Operation Lamp	Timer Lamp	Display	LED Status
☆1 time	X	E0	Indoor unit EEPROM error
☆2 times	X	E1	Communication malfunction between indoor and outdoor units
☆4 times	X	E3	Indoor fan speed has been out of control
☆5 times	X	E4	Indoor room temperature sensor T1 open circuit or short circuit
☆6 times	X	E5	Evaporator coil temperature sensor T2 open circuit or short circuit
☆7 times	X	EC	Refrigerant leakage detection
☆8 times	X	EE	Water – level alarm malfunction
☆1 time	O	F0	Current overload protection
☆2 times	O	F1	Open circuit or short circuit of outdoor ambient temperature sensor T4
☆3 times	O	F2	Open circuit or short circuit of condenser coil temperature sensor T3
☆4 times	O	F3	Open circuit or short circuit of Compressor discharge temperature sensor T5
☆5 times	O	F4	Outdoor unit EEPROM error
☆6 times	O	F5	Outdoor fan speed has been out of control
☆7 times	O	F6	T2B sensor error
☆8 times	O	F7	Lifting – panel communication error
☆9 times	O	F8	Lifting – panel malfunction
☆10 times	O	F9	Lifting – panel is not closed
☆1 time	☆	P0	IPM malfunction
☆2 times	☆	P1	Over voltage or over low voltage protection
☆3 times	☆	P2	High temperature protection of compressor top
☆4 times	☆	P3	Outdoor low temperature protection
☆5 times	☆	P4	Inverter compressor drive error
☆6 times	☆	P5	Mode conflict
☆7 times	☆	P6	Compressor low – pressure protection
☆8 times	☆	P7	Outdoor IGBT temperature sensor error

O (light) X (off) ☆ (flash)

For additional diagnostic information, refer to the *Service Manual*.

OUTDOOR UNIT DIAGNOSTIC GUIDES

Table 8—Outdoor Unit Diagnostic Guides

LED2 (Green)	LED1 (Red)	Indoor Unit display	Failure Mode
O	X		Standby, normal
X	O		Operation, normal
O	☆	E5	Compressor drive board EEPROM error
☆	X	P0	IPM malfunction or IGBT over – strong current protection
O	O	P1	Over voltage or too low voltage protection
X	☆	P4	Inverter compressor drive error
☆	O	P4	Inverter compressor drive error
☆	☆	P4	Communication malfunction between main control board and driver board

☆ = Flashing, X = Off

For additional diagnostic information, refer to the *Service Manual*

