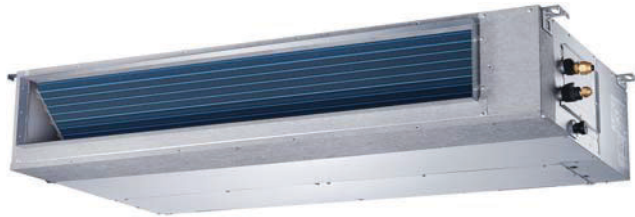


# Installation Instructions



**Fig. 1 — Sizes 09K - 48K**

**NOTE:** The 09K-48K units can be mounted vertically as well as horizontally.



**Fig. 2 — Size 58K**

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

**NOTE:** Images are for illustration purposes only. Actual models may differ slightly.

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## SAFETY CONSIDERATIONS

Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock, or other conditions which may cause death, personal injury or property damage.

Consult a qualified installer, service agency, or your distributor or branch for information or assistance. The qualified installer or agency must use factory-authorized kits or accessories when modifying this product. Refer to the individual instructions packaged with kits or accessories when installing.

Follow all safety codes. Wear safety glasses, protective clothing and work gloves. Have a fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions included in the literature and attached to the unit. Consult local building codes and the current editions of the National Electrical Code (NEC) NFPA 70.

In Canada, refer to the current editions of the Canadian Electrical Code CSA C22.1. Recognize safety information.

This is the safety-alert symbol . When you see this symbol on the unit and in instruction manuals, be alert to the potential for personal injury.



### WARNING

#### ELECTRICAL OPERATION HAZARD

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

Before installing or servicing unit, always turn off all power to the unit. There may be more than one disconnect switch. Turn off the accessory heater power if applicable. 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 a system shutdown. This causes refrigerant slugging and could possibly damage the compressor during the start-up process.



### CAUTION

#### CUT HAZARD

Failure to follow this caution may result in personal injury. Sheet metal parts may have sharp edges or burrs. Use caution and wear appropriate protective clothing and gloves when handling parts.

## INTRODUCTION


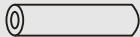







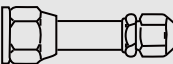
The **Ducted Slim** models are R-410A fan coils designed with application flexibility in mind. The **9K-48K** sizes can be mounted horizontally or vertically (upflow) while the **58K** size can be mounted horizontally **only**. A rear and bottom return is available for field modification on the **9K-48K** sizes to match the different applications.

All these fan coils have a DC fan motor with variable speeds for efficiency and comfort. The static pressure can be manually set up or use the constant air volume control. The ducted fan coil unit is shipped with a condensate lift pump providing a maximum lift of 29.5in (750mm).

## ACCESSORIES

The system is shipped with the following accessories. Use all of the installation parts and accessories to install the system. Improper installation may result in water leakage, electrical shock and fire, or cause the equipment to fail. Keep the installation manual in a safe place and do not discard any other accessories until the installation work has been completed.

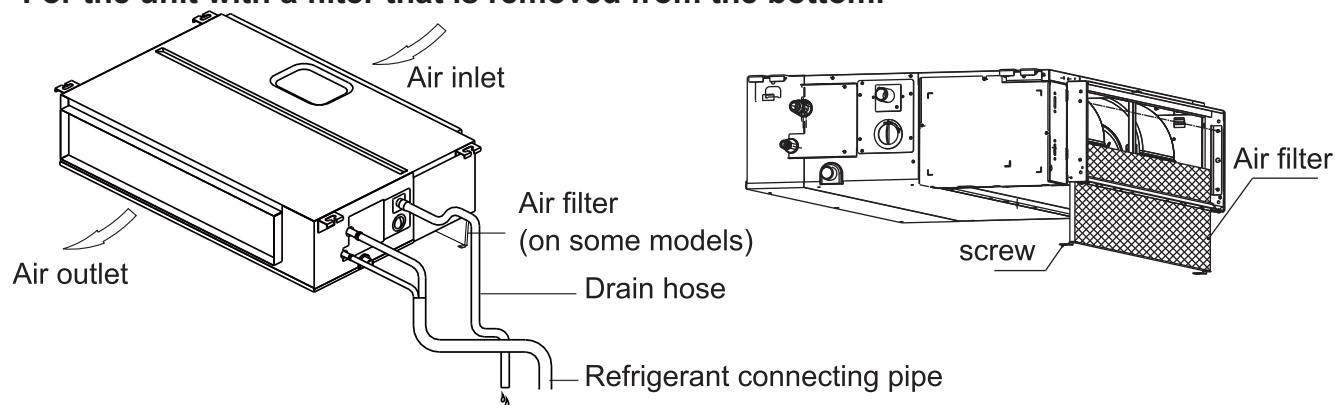
**Table 1 — ACCESSORIES**

ACCESSORY NAME	QTY.	SHAPE
Manual	2-4	
Sound Proof Insulation Sheath	2	
Brass Nut	2	
Drain Adapter	1	
Outlet Pipe Clasp	1-2	
Magnetic Ring (place it on the connective cable between the indoor and outdoor units after installation)	1	
Cord protection rubber ring	1	
Display Panel (for testing purposes)	1	
Reducer (1/2" - 5/8") (FOR 18K ONLY)	1	<p><b>NOTE: If the indoor and outdoor units' connecting pipes do not match, one of these connectors need to be added.</b></p>  
Reducer (1/4" - 3/8") (FOR 18K ONLY)	1	

**NOTE: Return Air Extension-part number 17401204A00001 (sold separately)**

## UNIT SPECIFICATIONS AND FEATURES

**For the unit with a filter that is removed from the bottom.**



**Fig. 3 — Unit Specifications**

1. Put the filter into the flange subassembly through the bottom side.
2. Lock the screw.

### NOTES:

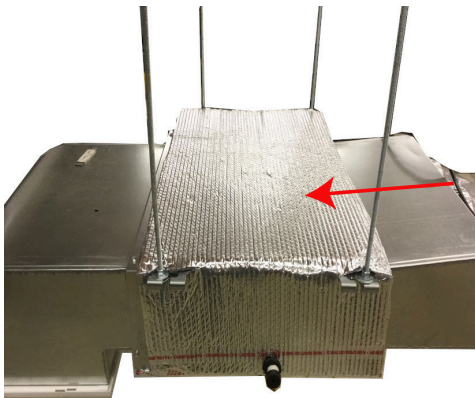
- If the outdoor unit is higher than the indoor unit, prevent rain from flowing into the indoor unit along the connection pipe by creating a downward arc in the connection pipe before it enters the wall and enters the indoor unit. Doing so helps ensure rain drips from the connection pipe before it enters the wall.
- Piping and the interconnecting wiring are field supplied.

## INSTALLATION REQUIREMENTS

- Confirm that the ceiling or wall can support the unit's weight.
- Confirm there is enough room within the false ceiling for installation and maintenance.

**NOTE: The false ceiling should be horizontal and leveled.**

- Install the unit in a location within the room that allows uniform airflow in all directions.
- Do not install the indoor units near a direct source of heat such as direct sunlight or a heating appliance.
- Allow sufficient space for airflow and unit servicing. See Fig. 7 — on page 8 for the minimum required distances between the unit and the walls or ceilings.
- All wiring and refrigerant lines must be at least 3 ft. (1m) away from all electromagnetic interference (televisions, radios, etc.) sources. Interference is still possible even if this distance is maintained.
- Ensure the hanger is strong enough to withstand the unit's weight.
- If the indoor unit is installed in an unconditioned space, running for long periods of time when the temperatures are outside the recommended indoor unit operation ranges, you are advised to seal all the corners of the indoor unit to prevent any leakage and add insulation material (1/2 to 3/4 in (10-20 mm)) to the entire surface of the indoor unit to avoid condensation or heat transfer.



**Fig. 4 — Insulation Material**

**NOTE: Nuisance sweating may occur if the unit is installed in a high humidity environment with low airflow.**

**Table 2 — Operating Range**

OPERATING RANGE MIN/MAX °F (°C)		
	Cooling	Heating
Indoor DB	63 / 90 (17 / 32)	32 / 86 (0 / 30)
Indoor WB	59 / 84 (15 / 29)	

If the unit is installed outside the operating range it is recommended to install a return air temperature extension sensor.

**NOTE: DO NOT install the indoor or outdoor units in a location with special environmental conditions. For those applications, contact your Ductless representative.**



## WARNING

### PRODUCT INSTALLATION

- Installation must be performed by an authorized dealer or specialist. A defective installation can cause water leakage, electrical shock, or fire.
- The installation must be performed according to the installation instructions. Improper installation can cause water leakage, electrical shock, or fire. (In North America, installation must be performed in accordance with the requirements of NEC or CEC by authorized personnel only.)
- Contact an authorized service technician for repair or maintenance of this unit. This appliance must be installed in accordance with local codes.
- Only use the included accessories, parts, and specified parts for installation. Using non-standard parts can cause water leakage, electrical shock, fire, or unit failure.
- Install drainage piping according to the instructions in this manual. Improper drainage may cause water damage to your home and property.
- For units that have an auxiliary electric heater, **DO NOT** install the unit within 3 feet (1 meter) of any combustible materials.
- **DO NOT** install the unit in a location that may be exposed to combustible gas leaks. If combustible gas accumulates around the unit, it may cause a fire.
- **DO NOT** turn on the power until all work has been completed.
- When moving or relocating the system, consult experienced service technicians for the disconnection and re-installation of the unit.



## WARNING

Securely install the indoor unit on a structure that can sustain its weight. If the structure is too weak, the unit may fall and cause personal injury, unit and property damage, or death.



## CAUTION

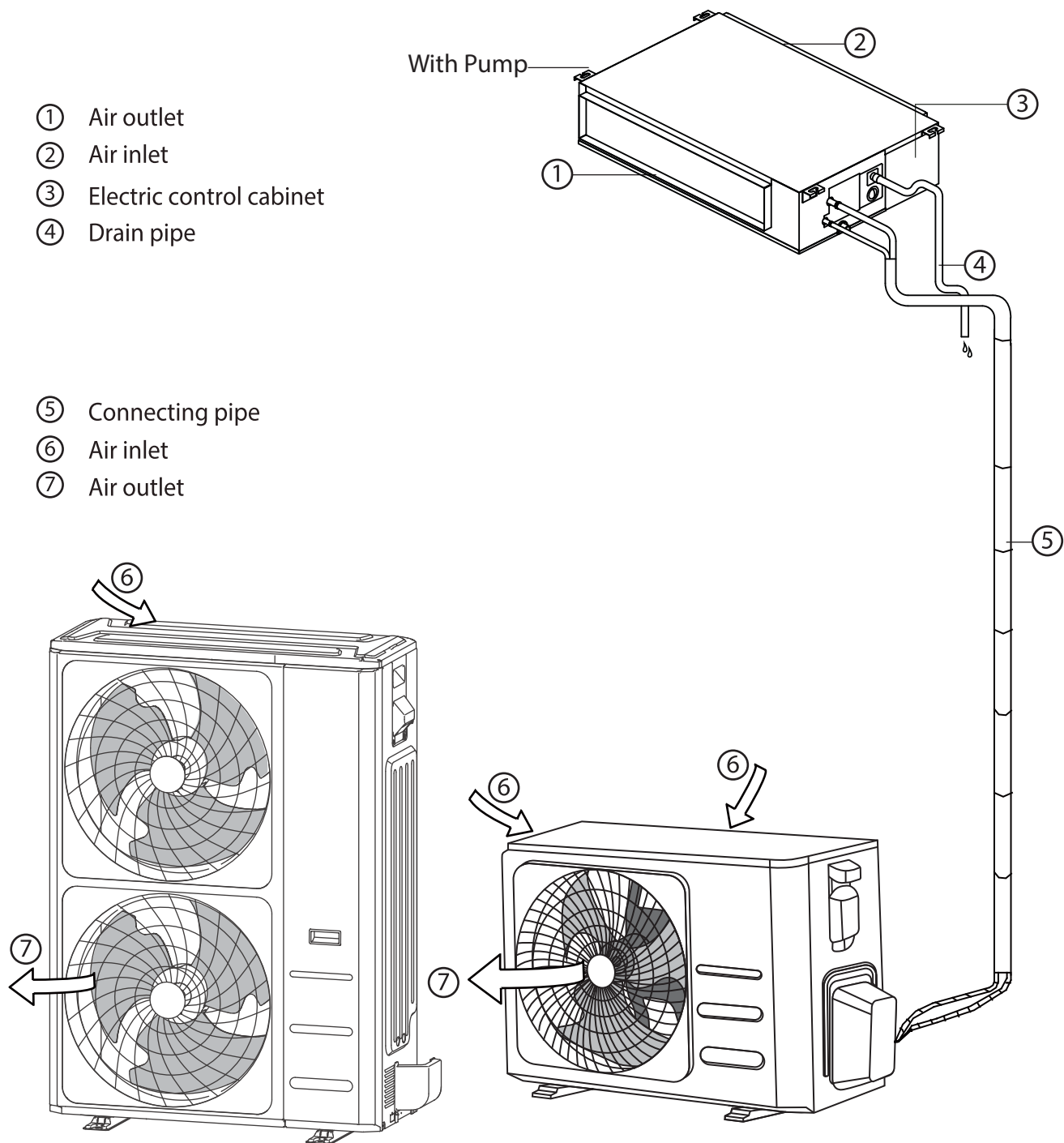
Install the indoor and outdoor units, cables and wires at least 3.2 ft (1m) from televisions or radios to prevent static or image distortion.

Depending on the appliances, a 3.2 ft (1m) distance may not be sufficient. If the indoor unit is installed on metal, it must be electrically grounded.

**Table 3 — Indoor Unit Model Numbers**

KBTUH	V-PH-HZ	ID MODEL NO.
9	208/230-1-60	40MBDAQ09XH3
12		40MBDAQ12XH3
18		40MBDAQ18XH3
24		40MBDAQ24XH3
36		40MBDAQ36XH3
48		40MBDAQ48XH3
58		40MBDAQ58XH3

## UNIT PARTS

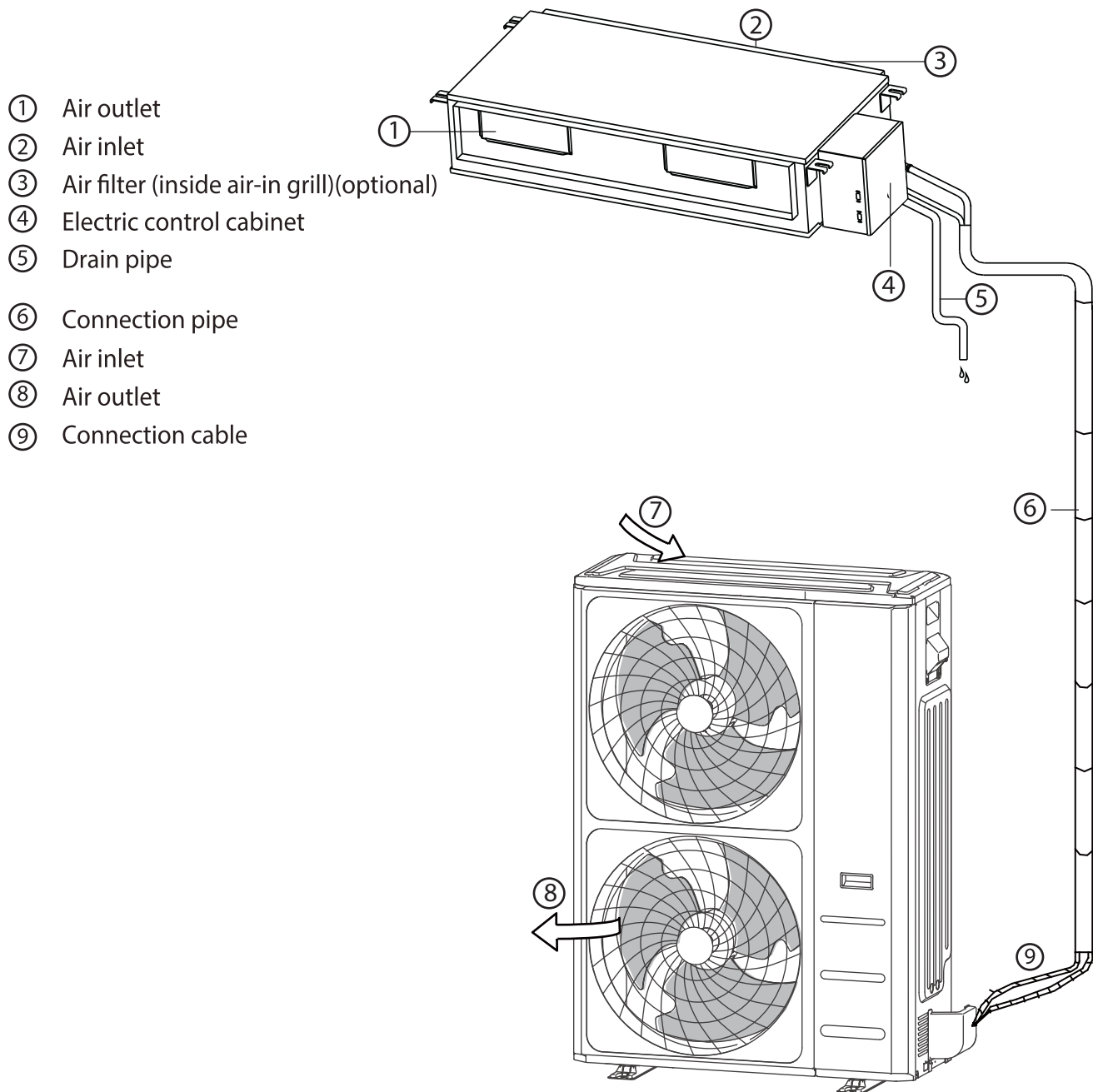


**Fig. 5 — Sizes 9K- 48K**

**NOTES:** 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 and enters the indoor unit. Doing so helps ensure rain drips from the connection pipe before it enters the wall. Piping and the interconnecting wiring are field supplied.

**NOTE:** Figures 5 and 6 are illustrations. Different models may differ slightly.

## UNIT PARTS (CONT)



**Fig. 6 — Size 58K**

## CLEARANCE AND DIMENSIONS

### INDOOR UNIT INSTALLATION

**NOTE:** Panel installation should be performed after piping and wiring are complete.

#### Step 1: Select the Installation Location

Before installing the indoor unit, select an appropriate location. The following are standard to help select an appropriate location.

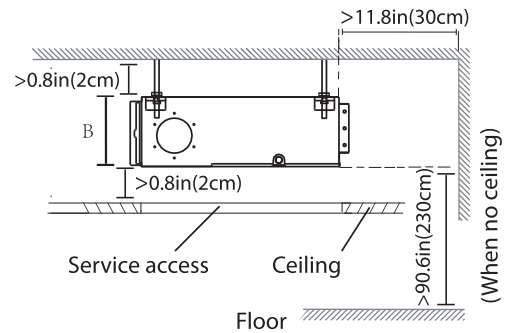
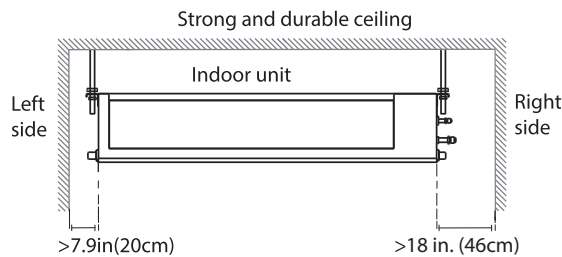
Proper installation locations meet the following standards:

- Enough room exists for installation and maintenance
- Enough room exists for pipe and drainpipe connection
- The ceiling is horizontal and its structure can sustain the indoor unit's weight
- The air inlet and outlet are not blocked
- The airflow can fill the entire room
- There is no direct radiation from heaters
- Models with a cooling capacity of 9000 Btu to 18000 Btu only apply to one room

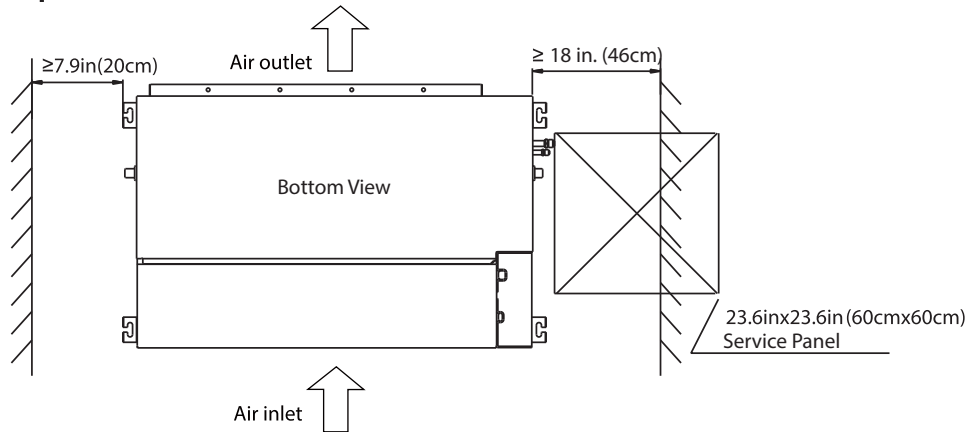
#### Do not install in the following locations:

- Areas with oil fracking or drilling
- 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
- Enclosed spaces such as cabinets
- Kitchens that use natural gas
- Areas with strong electromagnetic waves
- Areas that store flammable materials or gases
- Rooms with high humidity such as bathrooms or laundry rooms

#### Installation Location



#### Maintenance space



**Fig. 7 — Installation Location and Maintenance Space**

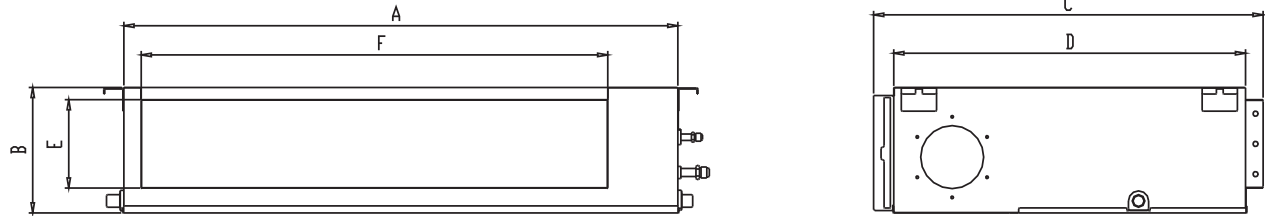


## Step 2: Hang the Indoor Unit

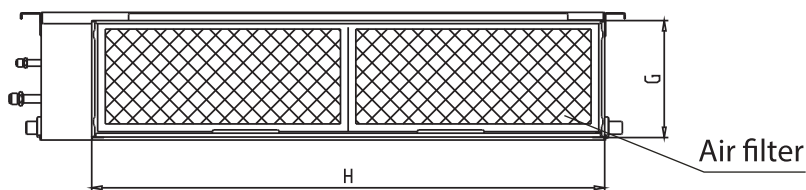
### Dimensions 9K - 48K

Please refer to the following diagram to locate the four positioning screw bolts on the ceiling. Be sure to mark the places where you will drill the ceiling hook holes.

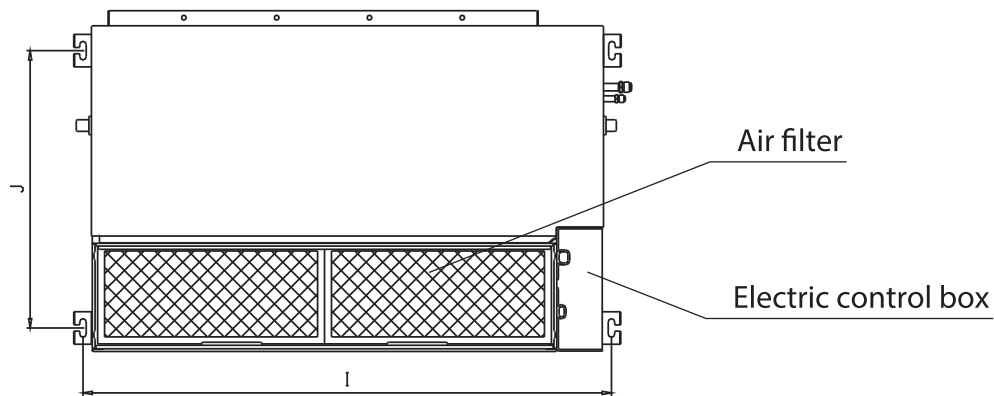
#### Air outlet dimensions



#### Air inlet dimensions



#### Descending ventilation opening and mounted hook



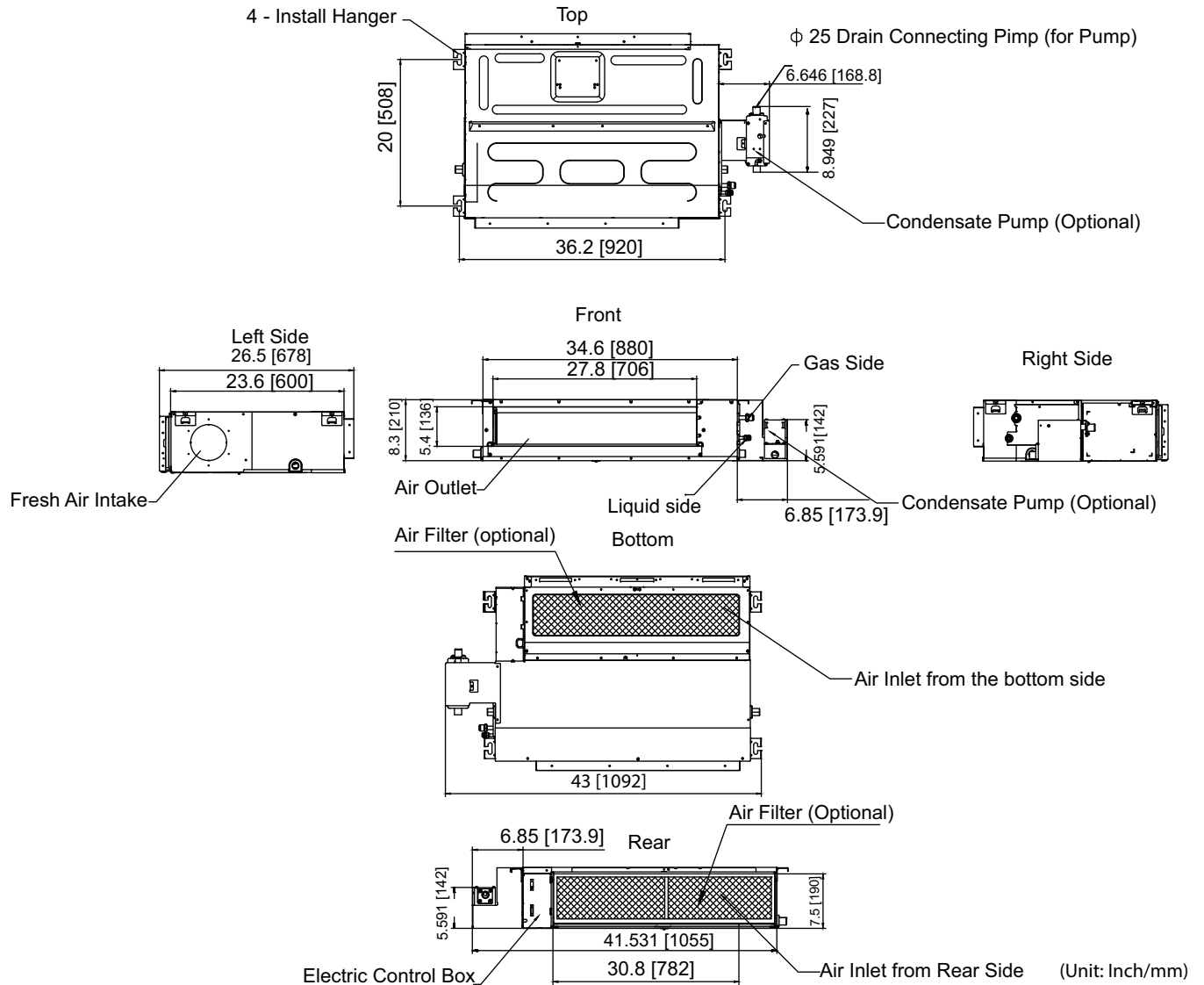
(Unit: Inch/mm)

**Fig. 8 — Dimensions**

**Table 4 — Dimensions Size 9K - 48K**

MODEL (BTHU/H)	OUTLINE DIMENSIONS				AIR OUTLET OPENING SIZE		AIR RETURN OPENING SIZE		MOUNTED LUG SIZE	
	A	B	C	D	E	F	G	H	I	J
<b>9K</b>	34.6/880	8.3/210	26.5/674	23.6/600	5.4/136	27.8/706	7.5/190	30.8/782	36.2/920	20/508
<b>18K-24K</b>	43.3/1100	9.8/249	30.5/774	27.6/700	6.9/175	36.5/926	8.9/228	39.4/1001	44.9/1140	23.5/598
<b>36K-48K</b>	47.2/1200	11.8/300	34.4/874	31.5/800	8.9/227	41.1/1044	11/280	43.3/1101	48.8/1240	27.4/697

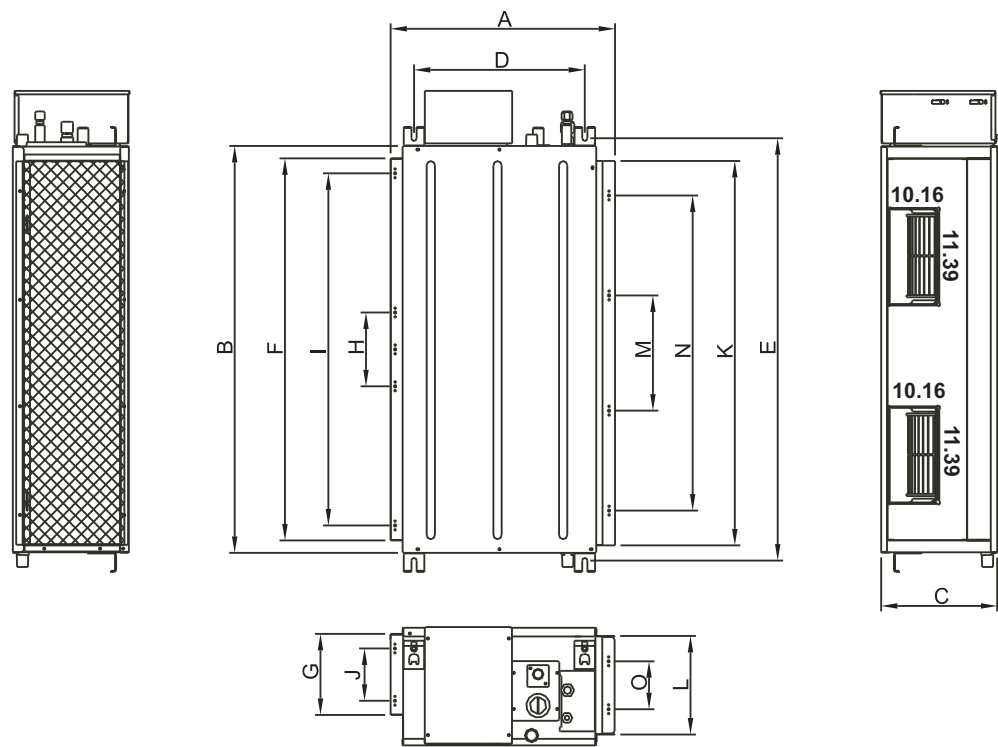
## Additional Dimensions (Size 9K)



**Fig. 9 — Additional Dimensions - 9K**

Dimensions 58K

Figure 10 shows the unit with an air filter.



unit: inch/mm

Fig. 10 — Dimensions

Table 5 — Dimensions Size 58K

MODEL (BTU/H)	OUTLINE DIMENSION			MOUNTED LUG SIZE		AIR OUTLET OPENING SIZE (SYMMETRY OF AIR OUTLET OPENING)					AIR INLET OPENING SIZE (SYMMETRY OF AIR INLET OPENING)				
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
58K	33.8/858	55.1/1400	18.1/460	27.5/700	56.5/1436	46.7/1188	15/385	20/500	39.3/1000	11/280	46.7/1188	15/385	20/500	39.3/1000	11/280

**NOTE: If installed above a fixed ceiling, utilize a ceiling access panel the length and width of the unit, otherwise the blower components and/or entire unit cannot be removed.**

If a single access panel is desired, the minimum dimensions should be:

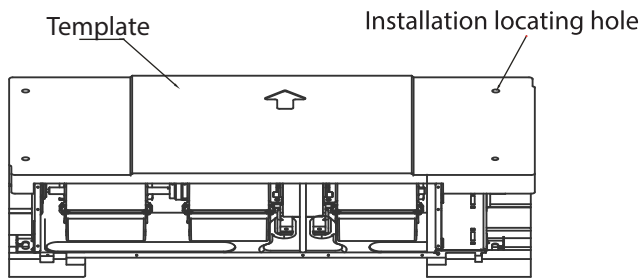
- **Single Access Panel Width:** The width of the unit plus 2-inches on both sides
- **Single Access Panel Length:** The length of the unit plus 18-inches on the connection end and 2-inches on the opposite end.

### Ceiling Mounting Options

Different ceiling types call for different mount applications.

#### **Wood**

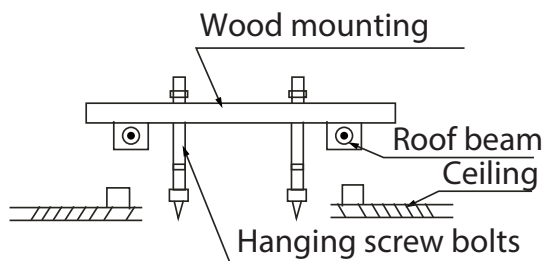
Use the template to locate the position of hangers, bolts or all-thread. If the template is damaged, the spacing between the actual lifting lugs shall be the standard.



Place the wood mounting across the roof beam, then install the hanging screw bolts.

**Fig. 11 — Wood Installation**

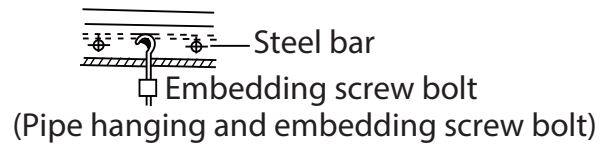
Place the wood mounting across the roof beam, then install the hanging screw bolts.



**Fig. 12 — Wood Mounting**

### Original Concrete Bricks

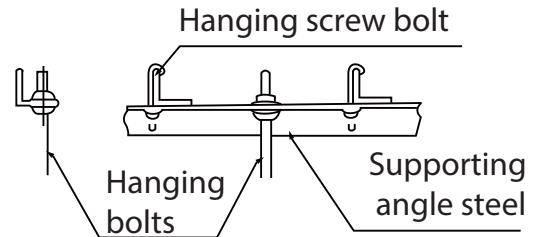
Use an embedding screw bolt, or all-thread.



**Fig. 13 — Original Concrete Bricks**

### Steel Roof Beam Structure

Install and use the supporting steel angle.



**Fig. 14 — Steel Roof Beam**



## **CAUTION**

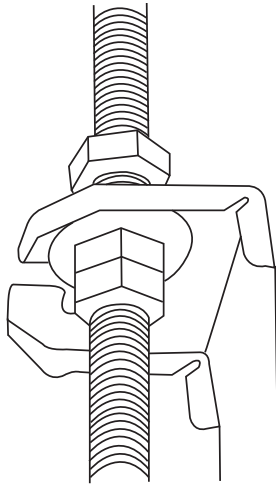
The unit body must be completely aligned with the hole. Ensure the unit and the hole are the same size before moving on.

1. Install and fit the pipes and wires after installing the main body. After deciding where to start, determine the pipe direction so it may be draw out (especially in cases where there is a ceiling involved, align the refrigerant pipes, drain pipes, and indoor and outdoor lines with their connection points before mounting the unit.
2. Install the hanging screw bolts
  - Cut off the roof beam
  - Strengthen the point at which the cut was made. Consolidate the roof beam
3. After selecting an installing location, align the refrigerant pipes, drain pipe, as well as the indoor and outdoor wires with their connection points before mounting the unit.
4. Drill four holes 4"(10cm) deep at the ceiling hook positions in the internal ceiling.

**NOTE: Hold the drill at a 90 degree angle to the ceiling.**

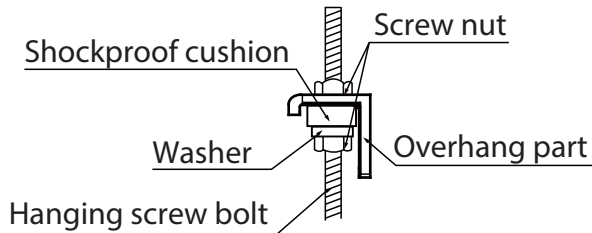
5. Secure the bolt using the washers and nuts provided.
6. Install the four suspension bolts.

7. Mount the indoor unit with at least two people to lift and secure it. Insert suspension bolts into the unit's hanging holes. Fasten them using washers and nuts provided.



**Fig. 15 — Suspension bolt**

8. Mount the indoor unit onto the hanging screw bolts with a block. Position the indoor unit with a level indicator to prevent leaks.

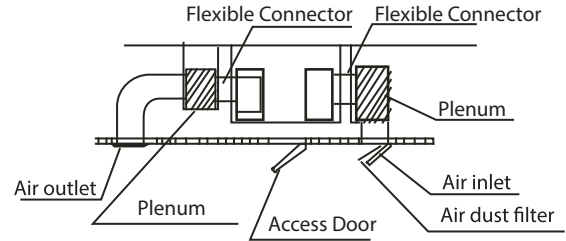


**Fig. 16 — Secure the Unit**

**NOTE:** Confirm the drain line is pitched a minimum 1/8" per foot (1cm per meter).

## Step 3: Duct and Accessories Installation

1. Install the filter (optional) according to the size of the air inlet.
2. Install the canvas tie-in between the body and the duct.
3. The air inlet and air outlet should be far enough apart enough to avoid an air passage short circuit.
4. Connect the duct according to Figure 17.



**Fig. 17 — Connect the duct**

**NOTE:** The minimum length of the duct should be 40 inches (1m) and secure on the air inlet by screws. Ensure that no screws penetrate the filter box.

5. Refer to the following static pressure guidelines when installing the indoor unit.

**Table 6 — Static Pressure Guidelines**

MODEL (BTU/H)	STATIC PRESSURE (IN.WG/PA)
9K	0~0.2/0~50
12K	0~0.2/0~50
18K	0~0.4/0~100
24K	0~0.64/0~160
30K~36K	0~0.64/0~160
48K~58K	0~0.64/0~160

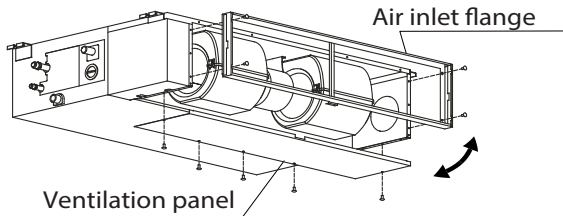
Change the fan motor static pressure according to the external duct static pressure.

**NOTE:** DO NOT place the connecting duct weight on the indoor unit. When connecting the duct, use a non-flammable flexible connector to prevent vibrating. Insulate the ductwork according to industry standards and the local codes.

## Step 4: Adjust Air Inlet Direction

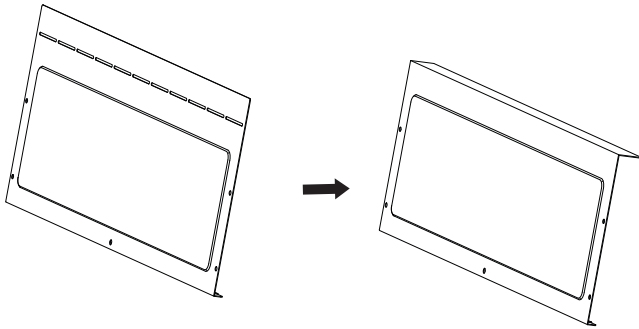
### (Rear Side to Under Side)

1. Remove the ventilation panel and flange.



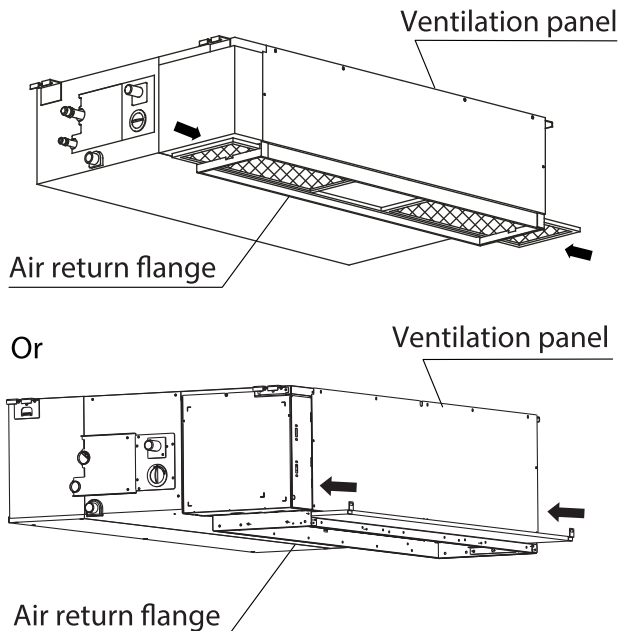
**Fig. 18 — Remove the Air Inlet Flange**

2. Bend the rear ventilation panel 90 degrees along the dotted line into a descending ventilation panel.



**Fig. 19 — Bend the Ventilation Panel**

3. Change the mounting positions of the ventilation panel and air return flange.
4. When installing the filter mesh, fit it into the flange (see Figure 20).



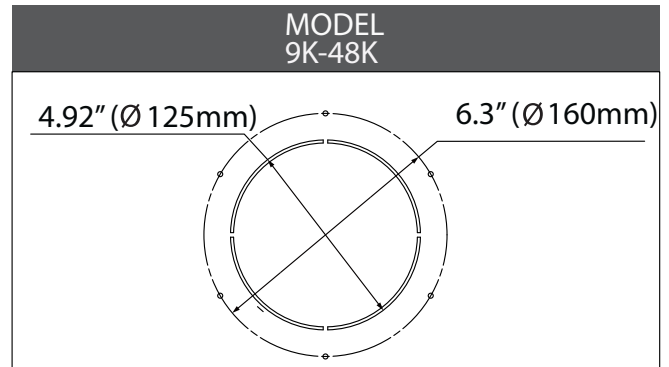
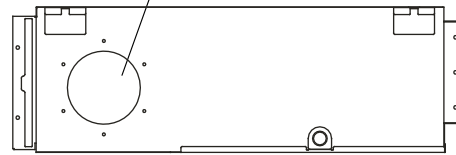
**Fig. 20 — Change the Rear Return**

## Step 5: Fresh Air Duct Installation

If fresh air is required, remove the knockout section in the middle then install the duct work according to sizing (see Figure 21).

**NOTE:** The 58K unit does not a knockout.

Dimension : Duct joint for fresh air

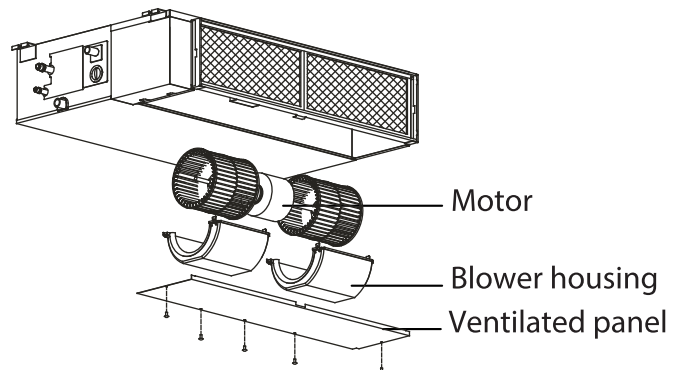


**Fig. 21 — Installing Duct**

## Step 6: Motor and Drain Pipe Maintenance

### Motor Maintenance:

1. Remove the ventilated panel
2. Remove the blower housing
3. Remove the motor



**Fig. 22 — Remove the motor, housing, and panel**

## Pump Maintenance:

1. Remove the four screws from the drain pump,
2. Unplug the pump power supply and water level switch cable.
3. Detach the pump.

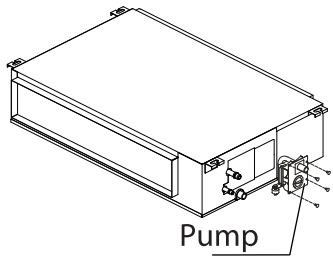


Fig. 23 — Pump Maintenance

## Step 7: Drill Wall Hole for Connective Piping

1. Determine the location of the wall hole vases on the location of the outdoor unit.
2. Using a 2.5in(65mm) or 3.54in(90mm) drill a hole in the wall. Ensure the hole is drilled at a slight downward angle, so the outdoor end of the hole is lower than the indoor end by amount 0.5in”(12mm). This ensures proper water drainage.
3. Place the protective wall cuff in the hole. This protects the edges of the hole and helps seal it when the installation is complete.



## CAUTION

When drilling the wall hole, be sure to avoid wires, plumbing, and other sensitive components.

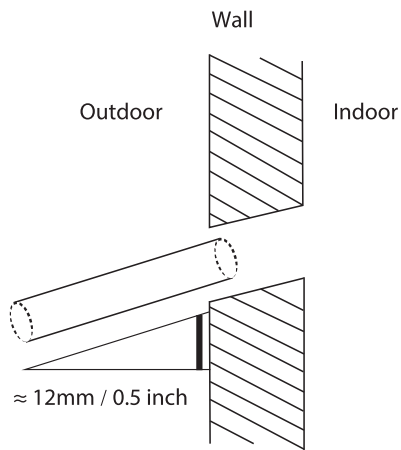


Fig. 24 — Drill a hole in the wall

## Step 8: Connect the Drain Hose

The drainpipe is used to drain water away from the unit. Improper installation may cause unit and property damage.



## CAUTION

Insulate all piping to prevent condensation, which could lead to water damage.

If the drainpipe is bent or installed incorrectly, water may leak and cause a water-level switch malfunction.

In the **HEAT** mode, the outdoor unit discharges water. Ensure the drain hose is placed in an appropriate area to avoid water damage and slippage.

**DO NOT** pull the drainpipe forcefully; doing so may disconnect it.

**NOTE ON PURCHASING:** Installation requires a polyethylene tube (exterior diameter = 3.7-3.9cm, interior diameter = 3.2cm, which can be obtained at the local hardware store.

## INDOOR DRAINPIPE INSTALLATION

Install the drainpipe as illustrated in Figure 25.

1. Cover the drainpipe with heat insulation to prevent condensation and leaks.
2. Attach the mouth of the drain hose to the unit's outlet pipe. Sheath the mouth of the hose and clip it firmly with a pipe clasp.

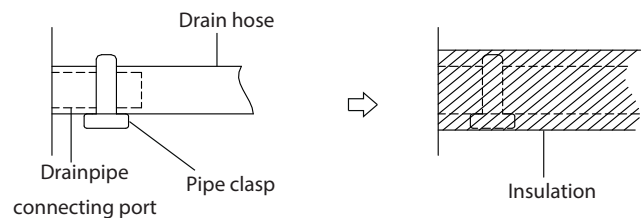


Fig. 25 — Indoor Drainpipe Installation

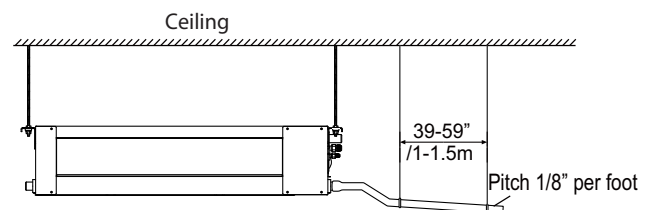
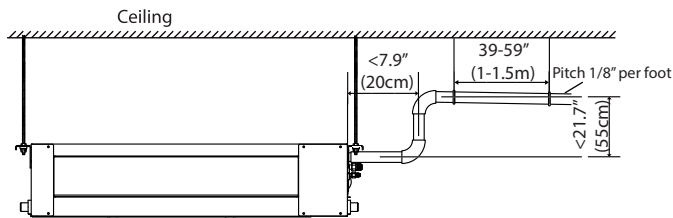


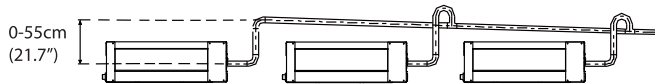
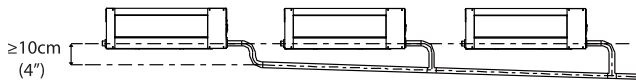
Fig. 26 — Condensate piping without a pump

**NOTE ON DRAINPIPE INSTALLATION**

- When using an extended drainpipe, tighten the indoor connection with an additional protection tube. This prevents it from pulling loose.
- The drainpipe should slope downward at a gradient of at least 1/100 to prevent water from flowing back into the air conditioner.
- To prevent the pipe from sagging, space hanging wires every 39-59".
- If the drainpipe's outlet is higher than the body's pump joint, use a lift pipe for the indoor unit's exhaust outlet. The lift pipe must be installed no higher than 21.7" (55cm) from the ceiling board. The distance between the unit and the lift pipe must be less than 7.9in(20cm). Incorrect installation could cause water to flow back into the unit and flood.
- To prevent air bubbles, keep the drain hose level or slightly tilted upward (<3in/75mm).

**Fig. 27 — Drainpipe installation for units with a pump**

**NOTE:** When connecting multiple drainpipes, install the pipes as shown in Figure 28 (follow local codes).

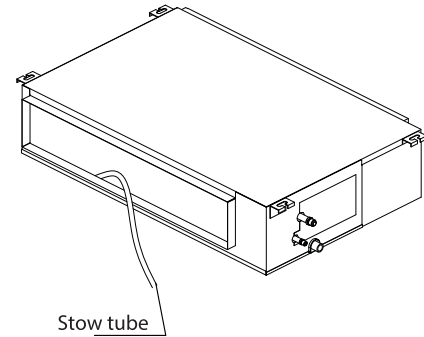
**Units with a pump****Units without a pump****Fig. 28 — Units with a pump and without a pump**

3. Pass the drain hose through the wall hole. Ensure the water drains are in a safe location where it will not cause water damage or a slipping hazard.

**NOTE:** The drainpipe outlet should be at least 1.9in(5cm) above the ground. If the outlet touches the ground, the unit may become blocked and malfunction. If the water discharges directly into a sewer, ensure that the drain has a U or S pipe to catch odors that might otherwise enter the house.

**DRAINAGE TEST****Units without a pump**

Check whether the drainpipe is unhindered. This test should be performed on newly built houses before the ceiling is paved.

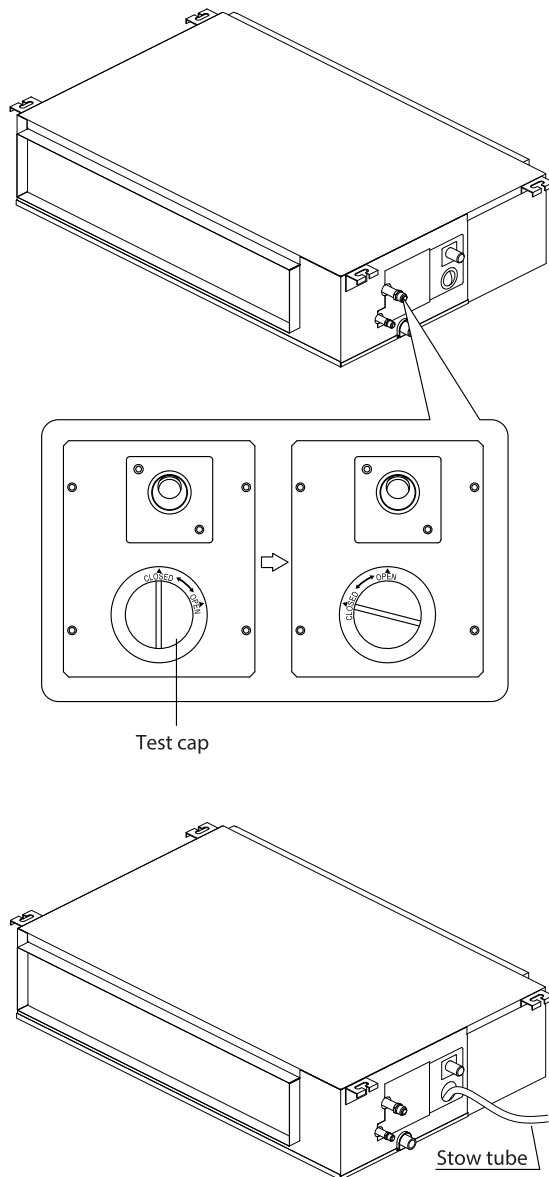
**Units without a pump.****Fig. 29 — Units without a pump**

1. Fill the water pan with 0.5 gallons (2 liters) of water. Ensure the drainpipe is not blocked.

**Units with a pump**

1. Remove the test cover.
2. Fill the water pan with 0.5 gallons (2 liters) of water.





**Fig. 30 — Units with a pump**

3. Turn on the unit in the **COOLING** mode, You will hear the drain pump. Check whether the water is discarded properly (a one minute lag is possible, depending on the length of the drain pipe). Check whether water leaks from the joints.
4. Turn off the air conditioner and replace the cap.

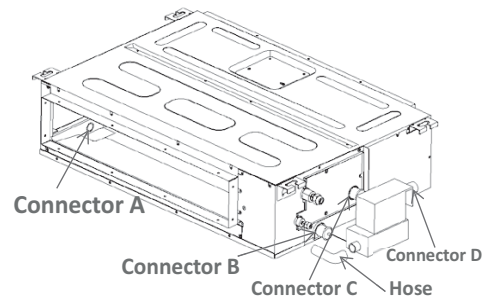
## CONDENSATE DRAIN AND CONDENSATE LIFT PUMP INSTALLATION (HORIZONTAL INSTALLATION)

For size 9 the condensate lift pump is provided in a separate box. Use the following steps to install the External Condensate Lift Pump for a horizontal installation of the indoor unit.

**NOTE:** Drain connections A, B and C are covered with caps.

**For size 09K:**

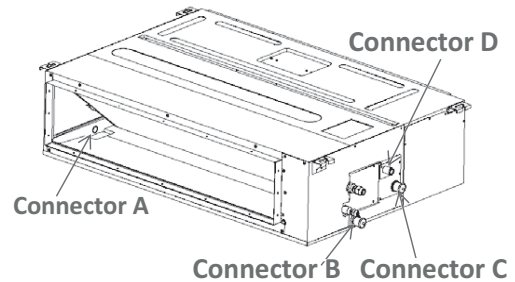
- a. Remove the cap on drain connector B.
- b. Connect drain connector B and the condensate lift pump using the L rubber hose and secure it with clamps on both ends.
- c. Connect the drainpipe to connector D (see Fig. 31).
- d. Plug the power cable of the external pump to CN13 / “PUMP” pin and plug the water level sensor cable to CN5 / “WATER” to enable the pump (see Fig. 34).



**Fig. 31 — Condensate lift pump installation size 09K**

5. Sizes 12K - 58K have a built-in condensate lift pump. Drain connections (A, B and C) are covered with caps.

Connect the drainpipe to connector D (see Fig. 32).

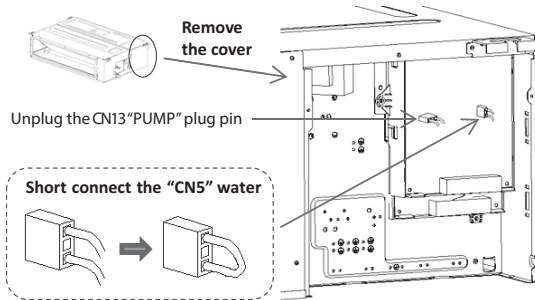


**Fig. 32 — Connection of drain pipe to condensate lift pump sizes 12K-58K**

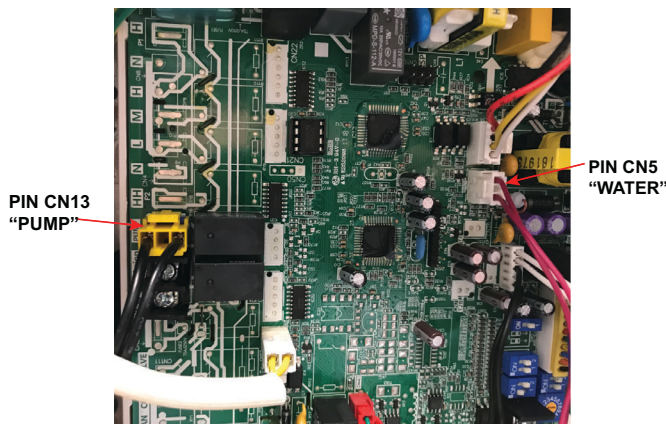
## Disabling the Condensate Lift Pump

The pump must be disabled while the unit is installed vertically (upflow) or the lift pump assembly is removed from its original position:

- Open the Control Box assembly cover, unplug the “CN13 PUMP” pin to disable the pump function, and short-connect the “CN5 WATER” plug to disable the water level sensor by either splicing the wires coming out of the CN5 WATER plug or by using a jumper plug Replacement Component part number 17401204000333 (optional in some units otherwise sold separately) (see Figures 33 and 34).



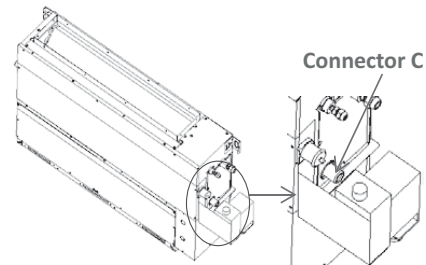
**Fig. 33 — Disable condensate lift pump**



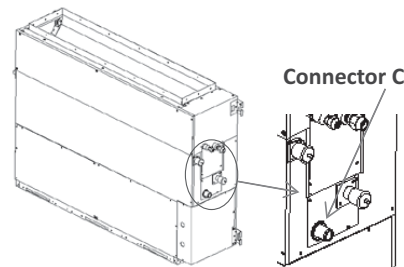
**Fig. 34 — Condensate Lift Pump Connectors**

Remove the cap from connector C and connect the condensate drain pipe to drain connector C (see Fig. 36).

**NOTE:** For size 9K, the external condensate lift pump should be removed (see Fig. 35).



**Fig. 35 — Size 9K (External Lift Pump), with an Internal Condensate Lift Pump**



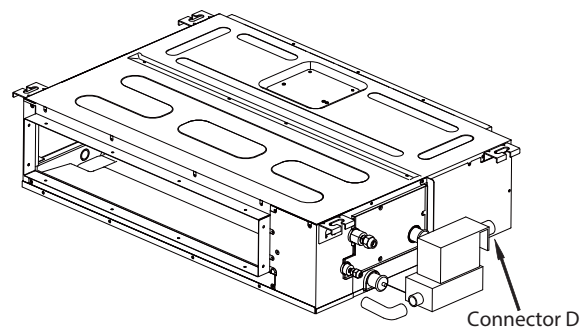
**Fig. 36 — Sizes 12K-58K with a Built-in Condensate Internal Lift Pump**

## Step 8a: Additional Installation Steps

### Horizontal Installation

#### (External 9K Models Only)

1. Remove the cap off of drain connector B.
2. Connect the external pump to drain connector B with a hose and two hose clamps.
3. Connect the drainpipe to the connector D (see Fig. 37).

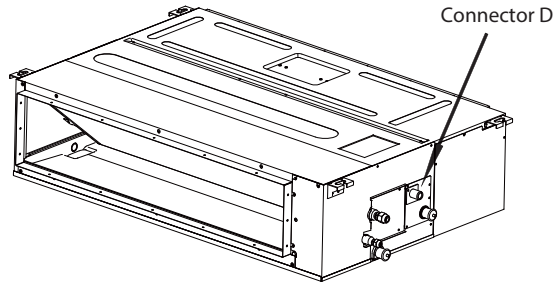


**Fig. 37 — Connect the drainpipe to the connector D**

4. Plug the external pump to the “PUMP” pin and the water level sensor to the “CN5” to enable the pump (see Fig. 33).

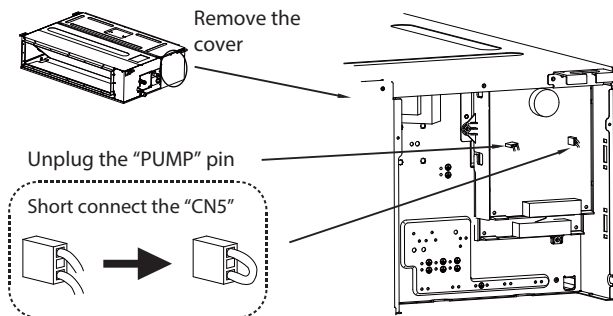
**With Built-in pump (12K, 18K, 24K, 36K, 48K models)**

1. Connect the drainpipe to the connector D (see Fig. 37).

**Fig. 38 — Connect the drainpipe to the connector D****Vertical Installation****No Pump Needed (Disable the Pump)**

**NOTE:** The pump must be disabled while the unit is installed vertically or the pump assembly is removed from its original position.

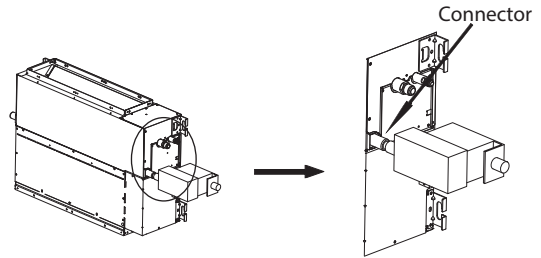
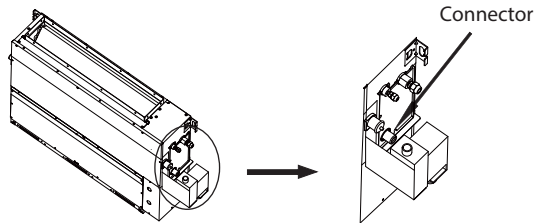
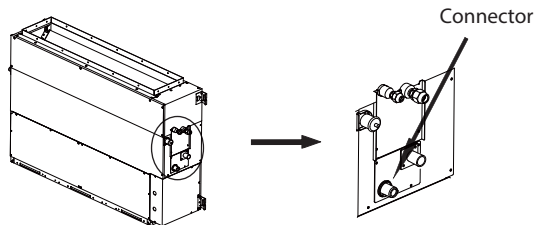
1. Open the cover of E-Parts Box assembly.
2. Unplug the "PUMP" pin to disable the pump function, and short connect the "CN5" plug to disable the water level sensor (see Fig. 39)

**Fig. 39 — Short connect the CN5 plug****Drain Pipe Connecting**

**NOTE:** When installed vertically (up flow), the pump must be disabled first as described in "No Pump Needed (Disable the Pump)" on page 19.

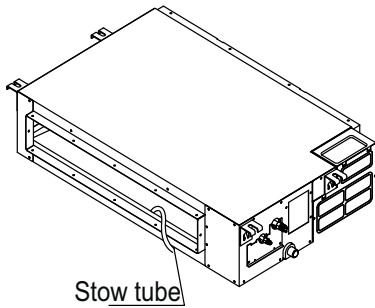
For units with an external pump (9K models), the whole pump assembly can be removed.

1. Remove the drain connector cap off.
2. Connect the drainpipe to the drain connector (see Figures 40, 41, 42).

**Fig. 40 — Drain Connector****Fig. 41 — Drain Connector****Fig. 42 — Drain Connector**

## DRAINAGE TEST FOR UNITS WITHOUT A CONDENSATE LIFT PUMP

1. Ensure the drainpipe is unobstructed.
2. Fill the drain pan with 0.5 gallons (2 liters) of water.



**Fig. 43 — Units without a pipe**

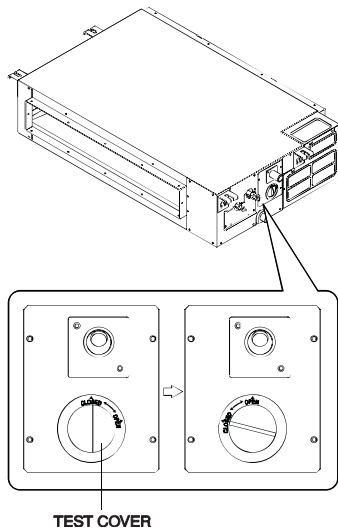
## CONDENSATE LIFT PUMP AND DRAINAGE TEST

Follow these steps to perform the test:

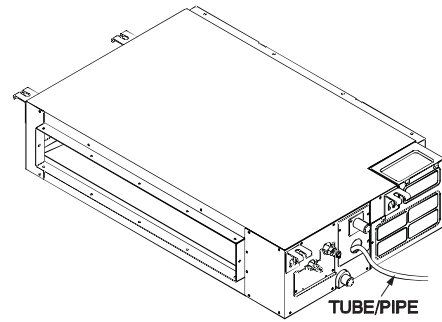
1. Remove the test cover by rotating it counter-clockwise (see Fig. 44).
2. Using a piece of tubing or pipe to fill the condensate lift pump reservoir with 70 oz. of water (see Fig. 45).
3. Turn the unit **ON** in the **COOLING** mode and the condensate lift pump turns on. Watch the end of the drain pipe for any water.

**NOTE: It may take some time for the water to travel, depending on the length of the drain pipe.**

4. During this test, check all bends or joints for leakage.



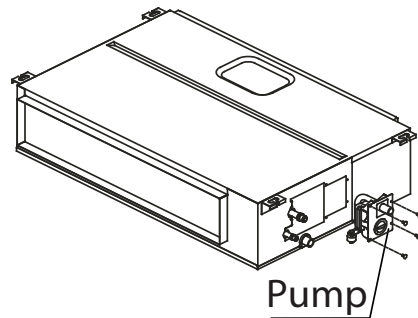
**Fig. 44 — Check the Bends and Joints for Leakage**



**Fig. 45 — Tube Pipe Insert**

## Condensate Lift Pump Maintenance

1. Remove the four screws from the drain pump (sizes 24K to 48K).
2. Unplug the pump power supply and the water level switch cable.
3. Detach the pump.



**Fig. 46 — Detach the Pump**

## ELECTRICAL CONNECTIONS

Before proceeding with electrical connections, make certain that the supply voltage, frequency, phase, and ampacity are as specified on the unit rating plate. Review the unit wiring label for proper field high and low voltage wiring.

Ensure all electrical connections are in accordance with the NEC and any local codes or ordinances that may apply. Use copper wire only.



### CAUTION

#### PROPERTY DAMAGE HAZARD

Failure to follow this caution may result in product or property damage.

If a disconnect switch is to be mounted on the unit, select a location where the drill or fastener will not contact electrical or refrigerant components.



### WARNING

#### ELECTRICAL SHOCK HAZARD

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

Field wires on the line side of the disconnect found in the fan coil unit remain live, even when the pull-out is removed.

Service and maintenance to incoming wiring cannot be performed until the main disconnect switch (remote to the unit) is turned off.



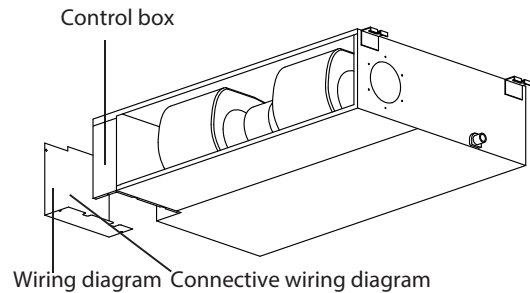
### CAUTION

#### EQUIPMENT DAMAGE HAZARD

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

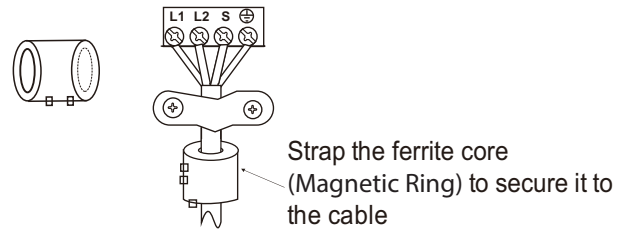
Size the wires in accordance with NEC and local codes.

1. Run a interconnecting wiring from the outdoor unit to the indoor unit.
2. Connect the wiring from the outdoor unit per the connection diagram (See Fig. 49 — on page 23 and See Fig. 51 — on page 23).
3. Prepare the cable for connection.
  - a. Use wire strippers to strip the rubber jacket from both ends of the signal cable to expose roughly 5.9in(15cm) of wire.
  - b. Strip the insulation from both ends of the wires.
  - c. Use a wire crimper to crimp the u-lugs to the end of the wires.
4. Remove the electric control box cover of the indoor unit.
5. Connect the u-lugs to the terminals. Match the wire colors/labels with the labels on the terminal block. Firmly screw the u-lug of each wire to its corresponding terminal. Refer to the serial number and wiring diagram located on the cover of the electric control box.



**Fig. 47 — Control Box**

**Ferrite Core (Magnetic Ring)** - If supplied and packed with the accessories, wrap the signal wires between the indoor unit and outdoor unit after installation and around the Ferrite core twice.



**Fig. 48 — Ferrite Core (Magnetic Ring)**

6. Clamp the cable with the cable clamp. Ensure the cable is not loose as to not pull on the u-lugs.
7. Replace the indoor unit field wiring cover.

## WIRING

Size all wires per the NEC (National Electrical Code) or CEC (Canadian Electrical Code) and local codes. Use the electrical data from the outdoor unit (MCA - minimum circuit amps and MOCP - maximum over current protection), to correctly size the wires and the disconnect fuse or breakers respectively.

### SIZES 09-24 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 the indoor unit, consists of four (4) wires and provides the power for the indoor unit. Two wires are high voltage AC power, one is communication wiring and the other is a ground wire.

**To minimize communication interference:** If installed in a high Electromagnetic field (EMF) area and communication issues arise, a 14/2 stranded shielded wire can be used to replace L2 and (S) between the outdoor and indoor units - landing the shield onto the ground in the outdoor unit only.

**Table 7 — Wiring Sizes 09-24**

CABLE	CABLE SIZE	REMARKS
Connection Cable	14AWG	3 wire + Ground 1Φ 208/230 V (Stranded wire is required)

### SIZES 36-58 RECOMMENDED CONNECTION METHOD FOR POWER AND COMMUNICATION WIRING

**Power and Communication Wiring:** The main power is supplied to the outdoor unit. The field supplied power wiring 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. To minimize voltage drop, the factory recommended wire size is 14/2 stranded with a ground.

**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. Use a separate shielded 16GA stranded control wire. Ground shield at the outdoor unit only.

**Table 8 — Wiring Sizes 36-58**

CABLE	CABLE SIZE	REMARKS
Power Connection Cable	14AWG	2 wire + Ground 1Φ 208/230 V
Communication Cable	16AWG	2 wire stranded shielded control wire



## CAUTION

### EQUIPMENT DAMAGE HAZARD

Be sure to comply with local codes while running wire from the indoor unit to the outdoor unit.

Every wire must be connected firmly. Loose wiring may cause the terminal to overheat or result in a unit malfunction. A fire hazard may also exist. Ensure all wiring is tightly connected.

No wire should touch the refrigerant tubing, compressor or any moving parts.

Disconnecting means must be provided and located within sight and readily accessible from the system.

Route the connecting cable with conduit through the hole in the conduit panel.

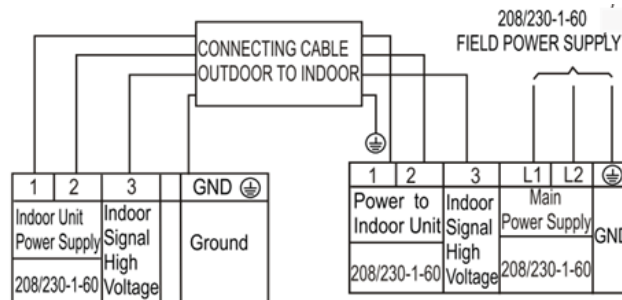
**NOTE:** The main power is supplied to the outdoor unit. When disconnecting the power of the outdoor unit, the indoor unit would lose power. A disconnect switch is not required on the Indoor unit side on the wiring between the Outdoor and Indoor unit. A 3 pole disconnect may be used for extra protection between the Indoor and Outdoor Unit.

## ELECTRICAL DATA

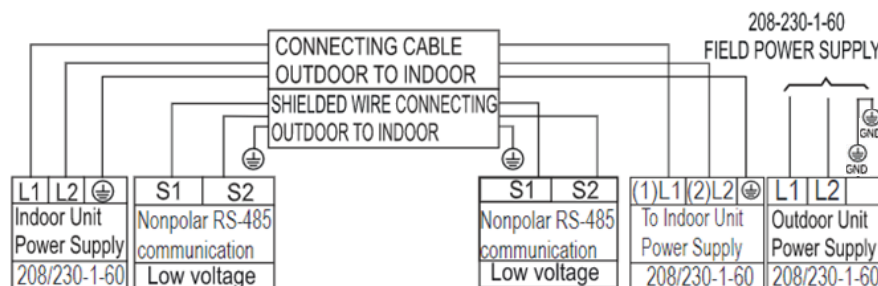
**Table 9 — Electrical Data**

UNIT SIZE	V-PH-HZ	INDOOR FAN			MAX FUSE CB AMP
		FLA	HP	W	
09	208-230/1/60	1.11	0.18	130	Refer to outdoor unit installation instructions – Indoor unit powered by the outdoor unit
12		1.11	0.18	130	
18		1.2	0.27	200	
24		1.2	0.27	200	
36		2.45	0.56	420	
48		3.2	0.75	560	
58		3.65	0.952	1,000	

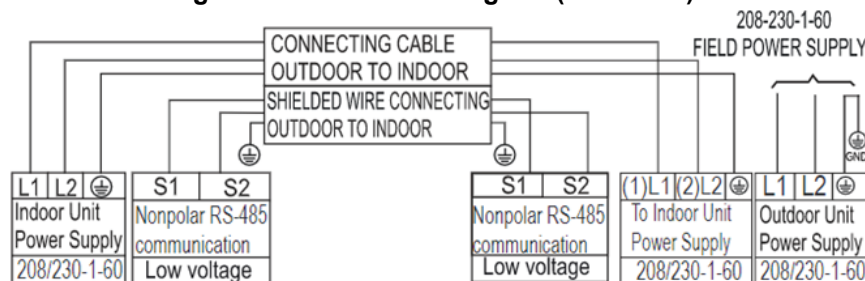
## CONNECTION DIAGRAMS



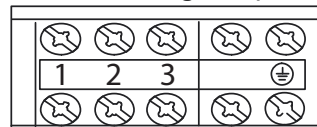
**Fig. 49 — Connection Diagram (sizes 09K to 24K)**



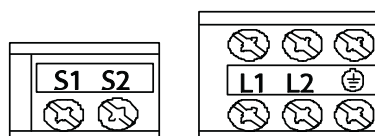
**Fig. 50 — Connection Diagram (sizes 36K)**



**Fig. 51 — Connection Diagram (sizes 48K to 58K)**



**Fig. 52 — Control and Power Terminals on Indoor Unit (sizes 09K to 24K)**



**Fig. 53 — Control and Power Terminals on Indoor Unit (sizes 36K to 58K)**



## REFRIGERANT PIPING

**IMPORTANT:** Both refrigerant lines must be insulated separately.

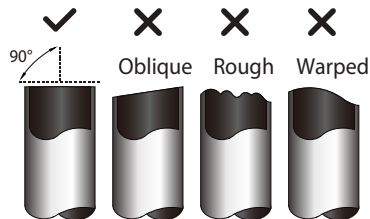
- The minimum refrigerant line length between the indoor and outdoor units is 10 ft. (3 m).
- Table 10 lists the pipe sizes for the indoor unit. Refer to the outdoor unit's installation instructions for the additional allowed piping lengths and refrigerant information.
- Refer to the outdoor unit's installation manual for details regarding the allowable pipe length and height difference.

**Table 10 — Piping Size**

		9K	12K	18K	24K	36K	48K	58K
Gas Pipe (Connection Size)	In (mm)	3/8 (9.52)	1/2 (12.7)	1/2 (12.7)	5/8 (16)	5/8 (16)	5/8 (16)	3/4 (19)
Liquid Pipe (Connection Size)	In (mm)	1/4 (6.35)	1/4 (6.35)	1/4 (6.35)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)

Use the following steps to connect the refrigerant piping:

- Run interconnecting piping from the outdoor unit to the indoor unit.
- Connect the refrigerant piping and drain line outside the indoor unit. Complete the pipe insulation at the flare connection then fasten the piping and wiring to the wall as required. Completely seal the hole in the wall.
- Piping:
  - Cut the pipe, with a pipe cutter, at 90 degrees (see Fig. 54).
  - Remove the service connection (if provided with the unit).

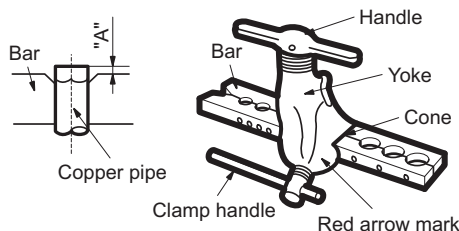


**Fig. 54 — Pipe Cutting**

- Remove all the burrs from the cut cross section of the pipe, avoiding any burrs from inside the tubes.
- Remove the flare nuts attached to the indoor and outdoor units.
- Install the correct size flare nut onto the tubing and make the flare connection. Refer to Table 11 for the flare nut spaces.

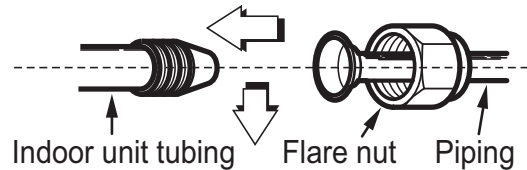
**Table 11 — Flare Nut Spacing**

OUTER DIAM. IN (MM)	A IN/(MM)	
	MAX.	MIN.
Ø 1/4"(6.35)	0.05(1.3)	0.03(0.7)
Ø 3/8"(9.52)	0.06(1.6)	0.04(1.0)
Ø 1/2"(12.7)	0.07(1.8)	0.04(1.0)
Ø 5/8"(15.88)	0.09(2.2)	0.08(2.0)
Ø 3/4" (19)	0.1(2.5)	0.08(2.0)



**Fig. 55 — Flare Nut Spacing**

- Apply a small amount of refrigerant oil onto the flare connection on the tubing.
- Align the center of the pipes and/or the service valve.

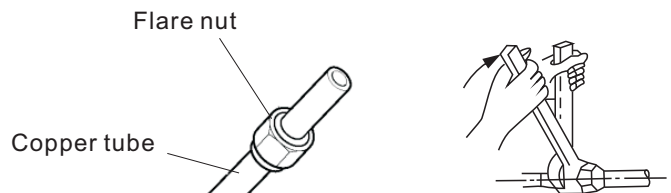


**Fig. 56 — Align Pipe Center**

- Connect both the liquid and gas piping to the indoor unit.
- Tighten the flare nut with a torque wrench (see Table 12).

**Table 12 — Tightening Torque**

BRASS FLARE SIZE	RECOMMENDED SEATING TORQUE FOR BRASS FLARE NUTS	N-M
Ø1/4	8-10 Ft. - Lbs.	10.8 to 13.6
Ø3/8	15-18 Ft. - Lbs.	20.3 to 24.4
Ø1/2	28-32 Ft. - Lbs.	38.0 to 43.4
Ø5/8	38-42 Ft. - Lbs.	51.5 to 56.9
Ø3/4	50-55 Ft. - Lbs.	68.0 to 74.6



**Fig. 57 — Tighten the flare nut**

- Connect the drain line. Ensure there are absolutely no traps in the drain line anywhere in its length. Ensure the drain line pitches down and insulated up to the outside wall.

**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.



## CAUTION

### UNIT DAMAGE HAZARD

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

Refrigerant tubes and the indoor coil should be evacuated using the recommended 500 Microns Deep Vacuum method. The alternate Triple Evacuation Method may be used if the procedure outlined below is followed. Review the unit's service manual for the 500 Microns Deep Vacuum or the Triple Evacuation Method.

**NOTE:** Always break a vacuum with dry nitrogen.

### Final Tubing Check

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

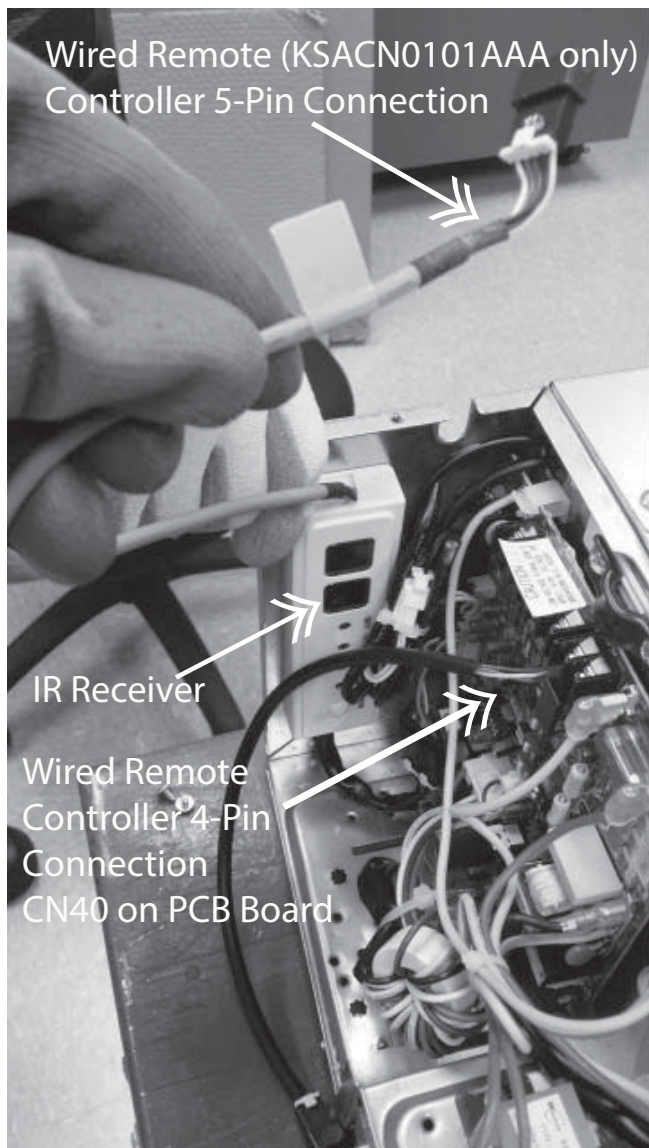


## WIRELESS REMOTE CONTROLLER INSTALLATION

### Mounting Bracket (if installed on the wall)

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

**NOTE:** If a wireless remote controller is used, relocate the IR receiver within the line of sight of the remote location using the 6 ft. cable included. The factory location of the IR receiver is inside the remote controller box (see Fig. 58).



**Fig. 58 — Control Box**

## WIRED REMOTE CONTROLLER INSTALLATION

To connect the included wired remote controller (7 Day Programmable KSACN\*\*) to the indoor unit, the 4-pin adapter cable supplied with the controller and plug it into CN40 located on the control board.

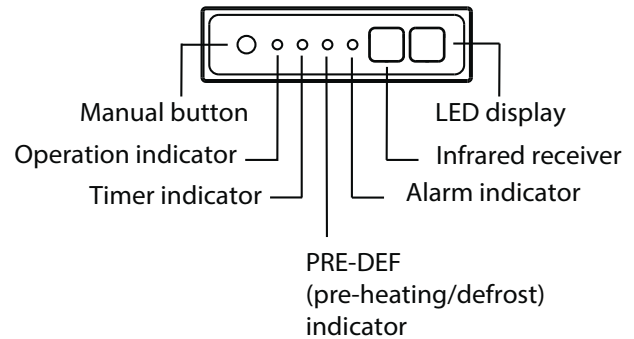
To connect the wired remote controller (Timer Function KSACN0101AAA sold separately) to the indoor unit, use a 5-core shielded cable supplied with the wired controller to plug into the 5-pin connector from the IR receiver located in the control box (see figure 58).

For setup instructions, refer to the wired remote controller installation manual.

## START-UP

### Test Operation

After completing the gas leak and electrical safety check, perform the test operation (see Fig. 59).



**Fig. 59 — IR Receiver Display Panel**

### IR Receiver Display Panel

1. Press **MANUAL** on the IR Receiver Display Panel located in the control box to begin testing.

**NOTE:** A protection feature prevents the system from starting for approximately 3 to 4 minutes.

2. Push **MODE**, select **COOLING**, **HEATING**, and **FAN** mode to verify that all the functions work as designed.
3. To run the test using the **MANUAL** option on the indoor unit:
  - a. Open the front panel of the indoor unit;
  - b. Press **MANUAL** once to energize the unit.

The set conditions of the manual operation are as follows:

  - Preset the set point: 76°F (24°C)
  - Fan speed: **AUTO**
  - Discharge the air direction: Pre-set position based on an operation in the **COOL** or **HEAT** mode.

Set the **MANUAL** option to **OFF** (by pushing it twice again) after completing the test.

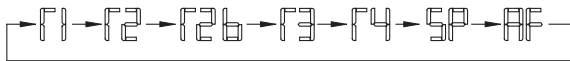
## WHEN USING THE KSACN\*\* WIRED CONTROLLER:

- The external static pressure can be manually changed to the fan curves SP1, SP2, SP3, SP4.
- Use the Automatic Airflow “AF” Adjustment function to automatically identify the static pressure and regulate the airflow amount.

Follow these instructions to configure:

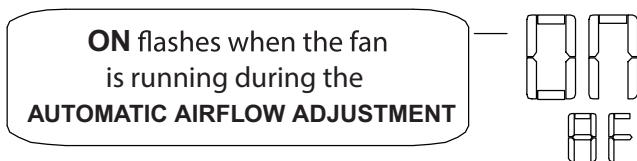
- Ensure the test run is done with a dry coil. If the coil is not dry, run the unit for 2 hours in the **FAN ONLY** mode to dry the coil.
- Check that both the power supply wiring and the duct installation have been completed. Check that dampers are properly positioned. Check that the air filter is properly attached to the air inlet side passage of the unit.
- If there is more than one air inlet and/or outlet, adjust the dampers so that the airflow rate of each air inlet and outlet conforms to the designed airflow rate. Ensure the unit is in **FAN ONLY** mode. Press and set the **Airflow Adjustment “AF”** on the remote controller to adjust the airflow rate from **H** to **L**. Turn the indoor unit **OFF** with the Wired Controller.
- Set the parameters for airflow adjustment. When the system is **OFF**, perform the following steps:
  - Press and hold **COPY** for approximately 4 seconds
  - Press “+” or “-” to scroll through the menu and make a selection, either **SP** or **AF**.

**NOTE: T1, T2, T2b, T3, T4 are sub-menus for thermistors. DO NOT select to set the external static pressure.**



**Fig. 60 — Wired Controller Menu Selection**

- If setting the external static pressure manually, select **SP** and press **CONFIRM**. Select the **SP** number (SP1, SP2, SP3, SP4). Power down the unit to lock in the selection.
- If choosing the **AUTOMATIC AIRFLOW ADJUSTMENT** function, select **AF** and press **CONFIRM**. The system starts the fan for the airflow automatic adjustment. The **ON** indicator flashes when the fan runs during the **AUTOMATIC AIRFLOW ADJUSTMENT**. After 3 to 6 minutes, the system stops operating once the **AUTOMATIC AIRFLOW ADJUSTMENT** is complete.



**Fig. 61 — Automatic Airflow ON signal**

**NOTE: The external static pressure can also be selected using the wireless remote controller (RG10B(B1)/BGEFU1), included with the indoor unit, by pointing it toward the indoor unit's Infrared Receiver typically located inside the control box. Refer to the wireless remote controller service manual for further instructions.**



## CAUTION

Do not use the **AUTOMATIC AIRFLOW ADJUSTMENT** with the remote control if using booster fans, an outdoor air processing unit, or a HRV via duct.

If the ductwork or static pressure have been changed, reset the **AUTOMATIC AIRFLOW ADJUSTMENT** following steps 3 and 4.

## WHEN USING THE 24V INTERFACE KSAIC\*\*

The wireless remote controller, wired controllers KSACN\*\* and Wi-Fi kits would be disabled. Since a wired controller is required to setup the static pressure of the indoor ducted units, the 24V interface must be temporarily bypassed using the steps below:

- Turn off the power to the unit
- On the 24V interface, disconnect the plugs from the CN11 (to Outdoor) and CN12 (to Indoor) connections.
- Sizes:**
  - For sizes 9K-24K only:** Add a jumper between the indoor S terminal to the outdoor S terminal.
  - For sizes 36K-58K only:** Disconnect S1 and S2 from the 24V interface (CN8 and CN9) and splice together S1 from outdoor to S1 from indoor and S2 from outdoor to S2 from indoor.
- Connect the Wired Controller (KSACN\*\*) and follow the external static pressure setup.
- Once the static pressure is adjusted, disconnect the wired controller
- Sizes:**
  - For sizes 9K-24K only:** Remove the S jumper from the terminal block.
  - For sizes 36K-58K only:** Remove the splice and reconnect S1 and S2 back to the 24V interface accordingly.
- Reconnect the plugs back to CN11 (to outdoor) and CN12 (to indoor) accordingly.
- Restore power to the unit.

**NOTE: When a system uses the 24V interface, the indoor unit's fan speed defaults to AUTO with the indoor unit's default logic.**



## CAUTION

### DUCT SIZING

Duct work must be properly sized using the standard duct sizing program practices. Failure to do so could result in inadequate airflow to the target area. It is recommended to follow the standard practices listed on the ACCA Manual D for designing Duct Systems.

## FAN PERFORMANCES AT VARYING STATIC PRESSURES

The factory default setting is SP1. Airflows and fan curves applicable starting on production of Week 28 Year 2020 (serial number 2820V10001). For previous serial numbers refer to previous revision of this document.

**Table 13 — 9K**

		In.w.g CFM	0	0.04	0.08	0.12	0.16	0.2	0.24	0.28	0.32	0.36	0.4	0.44	0.48	0.52	0.56	0.6
9K	SP4	H												659	575	494	416	317
		M												599	524	450	367	195
		L												538	480	401	315	149
	SP3	H								655	569	477	393	318	211			
		M								583	502	421	329	234				
		L								509	458	374	284	168				
	SP2	H				598	540	486	431	348	265							
		M				577	517	460	397	303	188							
		L				545	484	432	359	254	122							
	SP1	H	467	418	360	278	184											
		M	436	393	323	213	111											
		L	417	359	292	158												

**Table 14 — 12K**

		In.w.g	0	0.04	0.08	0.1	0.12	0.14	0.16	0.18	0.2	0.24	0.26	0.28	0.3	0.32	0.36	0.4	0.42	0.44	0.46	0.48	0.52	0.56	0.58	0.6
		CFM																								
12K	SP4	H																		927	892	851	757	646	554	434
		M																		886	848	803	700	579		328
		L																901	863	820	777	722	614	487		153
	SP3	H												895	856	816	726	628	561	493	377	263				
		M										905	873	836	796	758	666	552	463	370	264					
		L										858	823	780	742	698	596	466	378	267	138					
	SP2	H						771	732	695	616	564	510	427	334											
		M							724	681	643	546	474	411	319	240										
		L								672	624	584	468	391	299	221	144									
	SP1	H	774	713	633	590	544	476	416	305	115															
		M	690	627	540	487	430	370	290																	
		L	655	573	477	419	348	280	184																	

**Table 15 — 18K**

		In.w.g CFM	0	0.04	0.08	0.12	0.16	0.2	0.24	0.28	0.32	0.36	0.4	0.44	0.48	0.52	0.56	0.6	0.64	0.68
18K	SP4	H																		
		M																		
		L																		
	SP3	H													968	912	826	742	589	403
		M											963	901	828	749	659	517	333	
		L										961	895	820	737	949	530	366		
	SP2	H						1006	956	896	828	760	663	555	341					
		M					973	915	862	793	712	624	483	307						
		L				969	916	853	798	719	632	519	322							
	SP1	H	961	906	849	789	723	639	552	396										
		M	902	842	780	718	643	548	384											
		L	823	752	686	612	520	371												

>350 CFM - Airflow above 350 CFM

LEGEND  
H = High  
M = Med  
L = Low

# FAN PERFORMANCES AT VARYING STATIC PRESSURES (CONT.)

## Table 16 — 24K

		In.w.g CFM	0	0.04	0.08	0.12	0.16	0.2	0.24	0.28	0.32	0.36	0.4	0.44	0.48	0.52	0.56	0.6	0.64	0.68	0.72	0.76	0.8
24K	SP4	H																			979	929	856
		M																	998	951	882	805	725
		L																945	892	807	730	610	490
	SP3	H													1043	987	921	856	792	710	564	364	
		M												978	912	843	765	678	537	361			
		L										931	861	787	699	582	420						
	SP2	H								1024	962	908	838	759	639	511	348						
		M								1006	956	896	828	760	663	555	408						
		L					973	915	862	793	624	496	315										
	SP1	H		1033	983	929	873	806	743	657	557	343											
		M	961	906	849	789	723	639	552	341													
		L	849	792	728	658	576	454	250														

## Table 17 — 36K

		In.w.g CFM	0	0.04	0.08	0.12	0.16	0.2	0.24	0.28	0.32	0.36	0.4	0.44	0.48	0.52	0.56	0.6	0.64	0.68	0.72	0.76	0.8
36K	SP4	H																	1740	1672	1575	1436	1219
		M														1748	1667	1576	1487	1366	1184	1009	862
		L												1762	1657	1575	1475	1361	1207	1059	909	739	
	SP3	H											1726	1677	1613	1510	1376	1216	1038	892	679		
		M							1769	1683	1597	1519	1424	1303	1130	977	815						
		L						1701	1615	1543	1464	1373	1254	1065	903	733							
	SP2	H				1775	1723	1662	1586	1505	1430	1347	1224										
		M			1695	1628	1548	1466	1384	1284	1186	1042	830										
		L		1650	1586	1510	1431	1345	1245	1134	1033	777											
	SP1	H		1541	1473	1390	1293	1194	1091	941													
		M	1410	1332	1237	1139	1043	901	685														
		L	1208	1105	1004	888	711	501															

## Table 18 — 48K

48K		In.w.g CFM	0	0.04	0.08	0.12	0.16	0.2	0.24	0.28	0.32	0.36	0.4	0.44	0.48	0.52	0.56	0.6	0.64	0.68	0.72	0.76	0.8	
	SP4	H																		1825	1763	1680	1588	
		M																	1732	1660	1572	1448	1202	1048
		L														1729	1657	1592	1493	1377	1154	1009	846	648
	SP3	H														1931	1857	1780	1683	1604	1494	1388	1260	1121
		M										1788	1713	1624	1536	1444	1350	1239		1082	899	743		
		L							1742	1679	1599	1516	1436	1335	1148	983	827							
	SP2	H							1921	1862	1786	1707	1627	1543	1448	1356	1177	1009						
		M				1852	1782	1721	1644	1564	1489	1416	1318	1210	1072									
		L		1669	1607	1530	1454	1371	1271	1175	1059	816	657											
	SP1	H		1865	1825	1765	1690	1615	1541	1454	1373	1284	1152											
		M		1541	1473	1390	1293	1194	1108	959														
L		1289	1195	1094	992	877	632																	

## Table 19 — 58K

		In.w.g CFM	0	0.08	0.16	0.24	0.32	0.4	0.48	0.56	0.64	0.72	0.8
58K	SP4	H					2931	2805	2672	2514	2335	2178	2014
		M	2941	2843	2725	2599	2452	2292	2097	1911	1700	1474	1266
		L	2593	2470	2321	2178	2007	1829	1682	1416	1167	960	769
	SP3	H			2869	2745	2609	2459	2285	2098	1913	1731	1486
		M	2660	2543	2397	2242	2057	1861	1677	1410	1075	738	437
		L	2440	2312	2147	1965	1758	1539	1314	917	663	248	
	SP2	H	2815	2666	2579	2431	2273	2078	1917	1697	1449	1178	720
		M	2364	2230	2053	1860	1648	1403	1129	763	548		
		L	2041	1872	1669	1427	1164	756	522	295			
	SP1	H	2604	2481	2339	2177	1984	1780	1588	1284	942	644	295
		M	2095	1931	1730	1500	1245	865	610	366	194		
		L	1772	1579	1328	1027	625	362	168				

**LEGEND**  
**H = High**  
**M = Med**  
**L = Low**

>350 CFM - Airflow above 350 CFM

## 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 controller buttons function properly?
2. Do the display panel lights work properly?
3. Does the air deflection louver function properly?
4. Does the drain work?

Explain the following items to customer (with the aid of the owner's manual):

1. How to turn the system **ON** and **OFF**;
2. How to select **COOLING**, **HEATING** and other the operating modes;
3. How to set a desired temperature;
4. How to set the timer to automatically start and stop the system's operation;
5. How to control all the other features of the remote controller and display panel.
6. How to remove and clean the air filter.
7. How to set the air deflection louver.
8. Unit care and maintenance.

Present the owner's manual and installation instructions to the customer.

## CARE AND MAINTENANCE

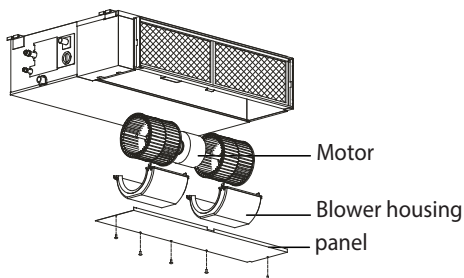
To continue high performance and minimize possible equipment failure, it is essential that periodic maintenance be performed on this equipment. Consult your local dealer as to the proper frequency of maintenance contract.

The ability to properly perform maintenance on this equipment requires certain mechanical skills and tools. If you do not possess these, contact your dealer for maintenance. The only consumer service recommended or required is filter replacement or cleaning on a monthly basis.

## FAN MOTOR MAINTENANCE

### Sizes 09K-48K:

1. Remove the panel.
2. Remove the blower housing.
3. Remove the motor.

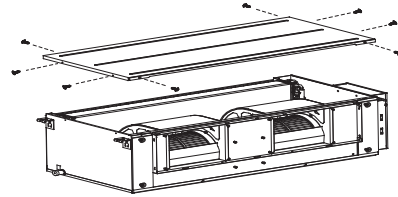


**Fig. 62 — Motor Maintenance sizes 09K-48K**

### Size 58K:

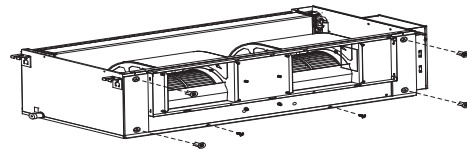
Two methods available:

1. Remove the front side plate from the top.
  - a. Remove the top cover.



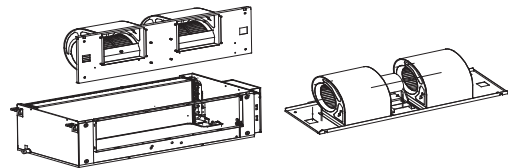
**Fig. 63 — Remove the top cover**

- b. Loosen the four bolts and two screws that secure the front side plate.



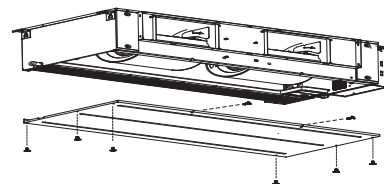
**Fig. 64 — Loosen the four bolts and two screws**

- c. Remove the motor cord, take off the front side plate and repair the motor.



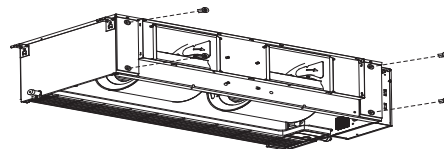
**Fig. 65 — Remove the motor cord**

2. Remove the front side plate from the bottom.
  - a. Remove the bottom base.



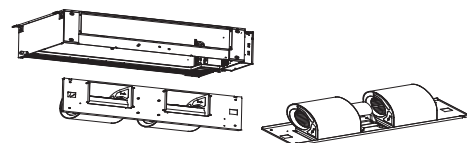
**Fig. 66 — Remove the bottom base**

- b. Loosen the four bolts and two screws that secure the front side plate. Be careful, the front side plate may fall down.



**Fig. 67 — Loosen the four bolts**

- c. Remove the motor cord, take off the front side plate and repair the motor.



**Fig. 68 — Remove the motor cord**

## 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 before consulting a service technician. The diagnostic codes, displayed in the indoor and outdoor units, are listed in Table 20.

### INDOOR UNIT DIAGNOSTIC GUIDES

**Table 20 — Indoor Unit Diagnostic Guides**

RUNNING LAMP	TIMER LAMP	DISPLAY	MALFUNCTION AND PROTECTION DEFINITION
★ 1 time	X	E0	Indoor EEPROM malfunction
★ 2 times	X	E1	Indoor and outdoor unit communication malfunction
★ 4 times	X	E3	Indoor fan speed malfunction
★ 5 times	X	E4	Indoor room temperature sensor error
★ 6 times	X	E5	Evaporator coil temperature sensor leak
★ 7 times	X	EC	Refrigerant leak detection system malfunction
★ 8 times	X	EE	Water level alarm malfunction
★ 11 times	X	Ed	Wrong outdoor unit
★ 1 time	●	F0	Overload protection
★ 2 times	●	F1	Outdoor temperature sensor error
★ 3 times	●	F2	Outdoor condenser pipe sensor error
★ 4 times	●	F3	Discharge air temperature sensor error
★ 5 times	●	F4	Outdoor EEPROM error
★ 6 times	●	F5	Outdoor fan speed (DC fan motor only) malfunction
★ 7 times	●	F6	T2b sensor error
★ 8 times	●	F7	Auto-lifting panel communication error
★ 9 times	●	F8	Auto-lifting panel malfunction
★ 10 times	●	F9	Auto-lifting panel is open
★ 1 time	★	P0	Inverter module IPM protection
★ 2 times	★	P1	High/Low voltage protection
★ 3 times	★	P2	Compressor top overheating protection
★ 4 times	★	P3	Outdoor low temperature protection
★ 5 times	★	P4	Compressor drive error
★ 6 times	★	--	Mode conflict
★ 7 times	★	P6	Compressor low-pressure protection
★ 8 times	★	P7	Outdoor IGBT sensor error

● (light) X (off) ★ (flash)

For additional diagnostic information, refer to the indoor unit service manual.

## ADVANCED SERVICE AND INSTALLATION FUNCTIONS

Refer to the Wireless Remote Controller service manual for access to advanced functions such as:

- Auto-Start
- Temperature Compensation
- Filter Reminder
- Indoor Fan Motor Speed Control (after set temperature is reached)
- Lowest or Highest Temperature Setting
- Static Pressure Setting

All changes should be performed **ONLY** by authorized professionals.