

## Split System (R-410A)

*Pro Series*

*Inverter System*

18,000 Btu/h to 48,000 Btu/h

Ducted Type Models:

Indoor: 4UXD2018A10N0AA  
4UXD2024A10N0AA  
4UXD2030A10N0AA  
4UXD2036A10N0AA  
4UXD2042A10N0AA  
4UXD2048A10N0AA

Outdoor: 4TXU2018A10N0AA  
4TXU2024A10N0AA  
4TXU2030A10N0AA  
4TXU2036A10N0AA  
4TXU2042A10N0AA  
4TXU2048A10N0AA

Up to 20 SEER

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# Warnings and Cautions

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**Warnings and Cautions.** Notice that warnings and cautions appear at appropriate intervals throughout this manual. Warnings are provided to alert installing contractors to potential hazards that could result in personal injury or death, while cautions are designed to alert personnel to conditions that could result in equipment damage.

Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

**Attention:** Warnings and Cautions appear at appropriate sections throughout this literature. Read these carefully.



**WARNING:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



**CAUTION:** Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

**NOTICE:** Indicates a situation that could result in equipment or property-damage only accidents.



## **WARNING**

This equipment is to be serviced by professionally trained personnel **ONLY**. Under **NO** circumstances should an unqualified person service it. This equipment contains refrigerant under **PRESSURE** and operates at **HIGH VOLTAGE**. Improperly installed, adjusted or altered equipment by an unqualified person poses safety hazards including **FIRE, ELECTROCUTION, or EXPLOSION**, which could result in death or serious injury.



## **WARNING**

### **Electrocution and Fire Hazards with Improperly Installed and Grounded Field Wiring!**

Improperly installed and grounded field wiring poses **FIRE & ELECTROCUTION** hazards. To avoid these hazards, you **MUST** follow requirements for field wiring installation and grounding as described in the National Electrical Codes (NEC) and your local/state electrical codes. All field wiring **MUST** be performed by qualified personnel.

**Failure to follow these requirements could result in death or serious injury.**



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## 1 Safety Precautions

Warnings, Cautions and Notices: Warnings, cautions and notices appear at appropriate intervals throughout this manual. Warnings are provided to alert installing contractors to potential hazards that could result in serious injury or death. Cautions are designed to alert personnel to conditions that could result in minor to moderate injury. Notices alert to the possibility of equipment and/or property damage.

Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

 <b>WARNING!</b>	This mark indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 <b>CAUTION!</b>	This mark indicates a potentially hazardous situation which, if not avoided could result in minor or moderate injury. It may also be used to alert against unsafe practices
<b>NOTICE!</b>	This mark indicates a situation which could result in equipment and/or property damage.

 <b>WARNING!</b>
(1). Installation should be left to the dealer or another professional. Improper installation may cause water leakage, electrical shock, or fire.
(2). Install the air conditioner according to the instructions given in this manual. Incomplete installation may cause water leakage, electrical shock, or fire.
(3). Be sure to use the supplied or specified installation parts. Use of other parts may cause the unit to come loose, resulting in water leakage, electrical shock, or fire.
(4). Install the air conditioner on a solid base that can support the weight of the unit. An inadequate base or incomplete installation may cause injury or property damage in the event the unit falls off of the base.
(5). Electrical work should be carried out in accordance with the installation manual and local, state and National Electric Code (NEC). Insufficient capacity or incomplete electrical work may cause electrical shock or fire.
(6). Be sure to use a dedicated power circuit. Never use a power supply shared by another appliance.
(7). For wiring, use a cable that is long enough to cover the entire distance without a splice. Do not use an extension cord. Do not put other loads on the power supply, use a dedicated power circuit. (Failure to do so may cause abnormal heat, electric shock or fire.)
(8). Use the specified types of wires for electrical connections between the indoor and outdoor units. Firmly clamp the interconnecting wires so their terminals receive no external stresses. Incomplete connections or clamping may cause terminal overheating or fire.

(9). After connecting the interconnecting and supply wiring, be sure to shape the cables so that they do not put undue force on the electrical covers or panels. Install covers over the wires. Incomplete cover installation may cause terminal overheating, electrical shock, or fire.
(10). After all installation is complete, check to make sure that there is no refrigerant leakage.
(11). If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid electrical risk during and after replacement.
(12). If any refrigerant has leaked out during the installation work, ventilate the room. (The refrigerant produces a toxic gas if exposed to flames.)
(13). When installing or relocating the system, be sure to keep the refrigerant circuit free from substances other than the specified refrigerant (R410A), such as air. (Any presence of air or other foreign substance in the refrigerant circuit can cause an abnormal pressure rise or rupture, resulting in injury.)
(14). During pump-down, stop the compressor before removing the refrigerant piping. If the compressor is still running and the stop valve is open during pump-down, air will be sucked in when the refrigerant piping is removed, causing abnormal pressure in the refrigerant cycle which could lead to breakage and even injury.
(15). During installation, attach the refrigerant piping securely before running the compressor. If the compressor is not attached and the stop valve is open during pump-down, air will be sucked in when the compressor is run, causing abnormal pressure in the refrigerant cycle which could lead to breakage and even injury.
(16). Be sure to establish a ground. Do not ground the unit to a utility pipe, arrester, or telephone ground. Incomplete ground may cause electrical shock, or fire. A high surge current from lightning or other sources may cause damage to the air conditioner.
(17). Be sure to follow your local, state and National Electric Codes when grounding this unit.
(18). This appliance is not intended for use by persons with a lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
(19). Children should be supervised to ensure that they do not play with the appliance.
(20). If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
 <b>CAUTION!</b> <b>This air handling unit is intended for free-air discharge or for connection to a duct supplying only one room. Improper installation could contribute to the spread of smoke or flame in the event of a fire.</b>
Do not install the air conditioner in a place where there is danger of exposure to flammable gas leakage. If gas leaks and builds up around the unit, it may result in fire.

<b>NOTICE!</b>
(1) Establish drain piping according to the instructions of this manual. Inadequate piping may cause flooding.
(2) Tighten the flare nut according to the specified method such as with a torque wrench. If the flare nut is tightened too hard, the flare nut may crack and cause refrigerant leakage.

## 2 Outline of the Unit and Main Parts

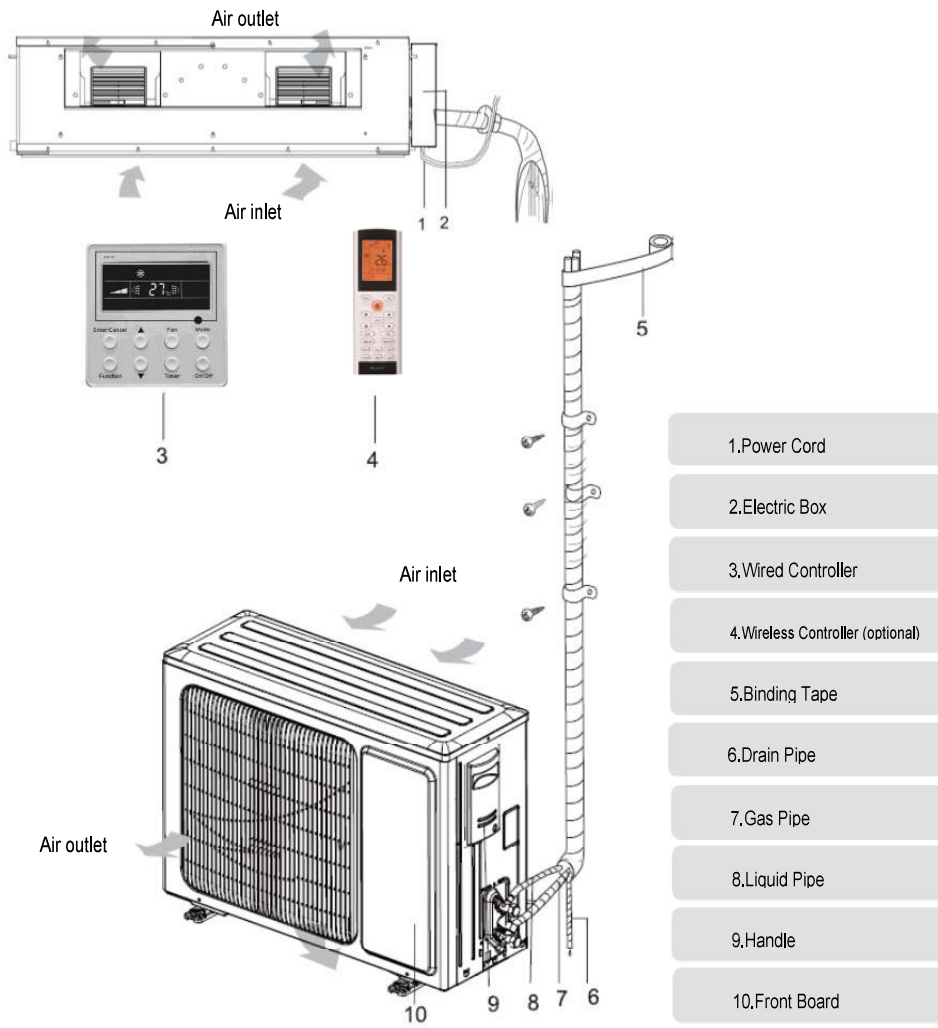


Fig. 2.1

NOTE	
(1)	The connection pipe and duct for this unit should be prepared by the user.
(2)	The unit is standard equipped with rectangular duct.

### 3 Preparation for Installation

#### 3.1 Standard Accessory Parts

The standard accessory parts listed below are furnished and should be used as required.

Table 3.1



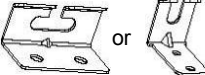










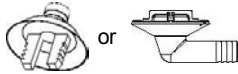
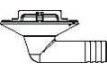


Indoor Unit Accessories				
No.	Name	Appearance	Q'ty	Usage
1	Wired Controller		1	To control the indoor unit
2	Wireless Controller + Batteries		1	To control the indoor unit (Optional Accessory)
3	Hanger	 or	4	To fix the indoor unit
4	Nut with Washer		8	To fix the hook on the cabinet of the unit
5	Nut with Washer		4	To fix the hook on the cabinet of the unit
6	Nut		4	To be used together with the hanger bolt for installing the unit
7	Washer		4	To be used together with the hanger bolt for installing the unit
8	Insulation		1	To insulate the gas pipe
9	Insulation		1	To insulate the liquid pipe
10	Fastener		4	To fasten the sponge
11	Flare Nut		1	To connect liquid pipe
12	Flare Nut		1	To connect gas pipe

Table 3.2

Outdoor Unit Accessories				
No.	Name	Appearance	Q'ty	Usage
1	Drain Plug		2 or 3	To plug the unused drain holes
2	Drainage Connector	 or 	1	To connect with the hard PVC drain pipe

### 3.2 Selection of the Installation Location

 <b>WARNING!</b>
Each unit must be installed on a surface that is strong enough to support the weight of that respective unit and the forces that occur during normal operation. The location must allow the unit to be securely attached. If the unit is attached insufficiently, it could topple or fall, resulting in possible injury or property damage.
 <b>CAUTION!</b>
(1) Do not install the unit where there is the danger of combustible gas leakage
(2) Do not install the unit near a heat source, steam, or flammable gas.
(3) Children must be instructed not to operate the unit unless supervised by an adult.

Decide the installation location with the customer as follows:

#### 3.2.1 Indoor Unit

Select an installation site where the following conditions are fulfilled and meet your customer's approval.

1. The air intake or outlet vent of the indoor unit should be clear of obstructions so that the airflow can be circulated throughout the room.
2. Make sure that the installation meets the requirements of the installation diagram space allowances. Ensure proper service and airflow clearances are allowed.
3. Select a place that can withstand 5 times of the weight of the indoor unit to minimize operating noise and vibration and avoid possible structure and/or equipment damage.
4. Make sure the unit is leveled properly to ensure adequate drainage of condensate water.



5. Select a location where the proper draining of condensate water can be ensured and the indoor unit can connect easily with the outdoor unit.
6. Make sure that there is enough space for care and maintenance, and the clearance between the bottom of the indoor unit and ground is a minimum of 71 in. (1800mm).
7. When installing the suspension bolt, check if the installation location can withstand 5 times of the weight of the unit. If not, reinforce it before installation.

**Note:** Avoid installing the indoor unit in areas where there would be greasy buildup, such as the kitchen. This could reduce the capacity of the heat exchanger, lead to leakage and cause abnormal operation of the water pump.

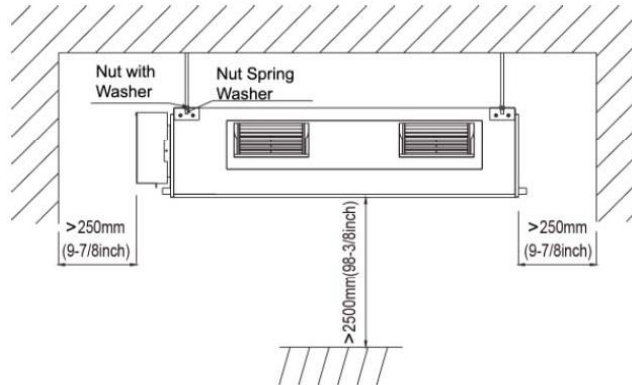



Fig. 3.1

### 3.2.2 Outdoor Unit

<div style="text-align: center;">  <b>WARNING!</b> </div>
(1) Install the unit where it will not be tilted by more than 5°.
(2) If the location is subject to strong winds, the additional force must be accounted for and the unit must be fixed securely to the base.

1. Install the outdoor unit in a place where it will be free from excessive dust and rain when possible.
2. Install the outdoor unit where it is convenient to connect the indoor unit.
3. Install the outdoor unit where the condensate water can be drained out freely during heating operation.
4. Do not locate animals and plants in the path of the warm air.
5. Install the outdoor unit on a solid surface that is capable of withstanding the weight of the unit and generates as little noise and vibration as possible.

Provide the space shown in Fig. 3.2, so that the air flow is not blocked. For efficient operation, leave three of four directions of peripheral constructions open.

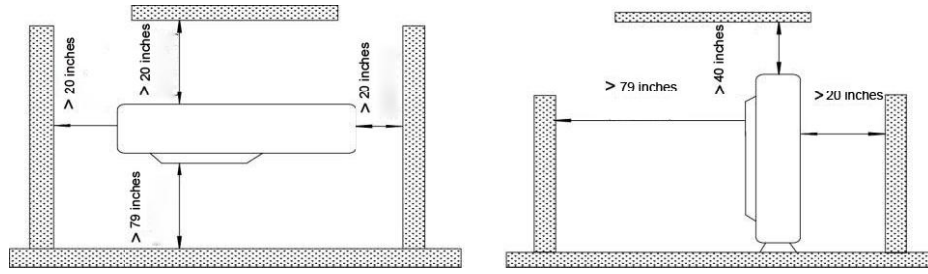


Fig. 3.2

### 3.3 Connection Pipe Requirement

#### NOTICE!

The maximum length of the connection pipe is listed in the Table below. Do not place the units such that the distance between them exceeds the maximum length of the connection pipe.

Table 3.3

Item Model	Size of Fitting Pipe(Inch)		Max. Pipe Length Ft. (m)	Max. Height Difference between Indoor Unit and Outdoor Unit Ft. (m)	Drainage pipe (Outer Diameter × wall thickness) In. (mm)
	Liquid	Gas			
4TXU2018A 4UXD2018A	1/4	1/2	165(50)	49.2 (15)	Φ1.2X0.06 (Φ30X1.5)
4TXU2024A 4UXD2024A	3/8	5/8	165 (50)	49.2 (15)	Φ0.8X0.06 (Φ20X1.2)
4TXU2030A 4UXD2030A	3/8	5/8	165 (50)	49.2 (15)	Φ0.8X0.06 (Φ20X1.2)
4TXU2036A 4UXD2036A	3/8	5/8	230 (70)	49.2 (15)	Φ0.8X0.06 (Φ20X1.2)
4TXU2042A 4UXD2042A	3/8	5/8	230 (70)	49.2 (15)	Φ0.8X0.06 (Φ20X1.2)
4TXU2048A 4UXD2048A	3/8	5/8	230 (70)	49.2 (15)	Φ0.8X0.06 (Φ20X1.2)

The connection pipe should be insulated with proper water-proof insulating material.  
Shorter connecting pipe lengths result in greater thermal efficiency, so it is preferable to reduce connecting pipe lengths where possible.

### 3.4 Electrical Requirement

#### Fuse Capacity.

Table 3.4

Indoor Models	Power Supply	Fuse Capacity A	Maximum Over Protection (MOP)
4UXD2018A	208V/230V ~ 60Hz	5	15
4UXD2024A		5	15
4UXD2030A		5	15
4UXD2036A		5	15
4UXD2042A		5	15
4UXD2048A		5	15

#### Note:

1. The fuse is located on the main board.
2. Install a separate disconnect at the indoor unit. The power supply, wiring and grounding of equipment must comply with local, state and National Electric Code (NEC) guidelines.

Table 3.5

Outdoor Models	Power Supply	Maximum Over Protection (MOP)	Minimum Current Amperage (MCA)
4TXU2018A	208V/230V ~ 60Hz	25	17
4TXU2024A		40	24
4TXU2030A		40	24
4TXU2036A		45	29
4TXU2042A		50	31
4TXU2048A		70	45

#### Note:

1. Install a separate disconnect at the outdoor unit. The power supply, wiring and grounding of equipment must comply with National, State and/or Local Codes. The power supply must agree with the equipment nameplate.
2. The specifications of the MCA and MOP listed in the table above are determined based on the

maximum power (maximum amps) of the unit.

3. Improperly installed and grounded field wiring poses fire & electrocution hazards. For high voltage connections, flexible electrical conduit is recommended whenever vibration transmission may create a noise problem within the structure. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in the National Electrical Codes (NEC) and your local/state electrical codes. All field wiring MUST be performed by qualified personnel. Failure to follow these requirements could result in death or serious injury.
4. The communication wiring between the indoor and outdoor units should be 18 AWG stranded, twisted and shielded wire with an absolute maximum length of 230.0 ft. (70m). Shorter line lengths between the indoor and outdoor units allow for more reliable communication and reduce the risk of electrical interference. Please select the appropriate line length as per the actual installation conditions. The communication lines cannot be spliced together
5. For the two-wire wired controller: The communication distance between the main board and the wired controller can be up to 65 ft. (the standard distance is 26 ft.) To splice in the additional length required, use 18 AWG two conductor twisted, stranded shielded wire.
6. The wire size of the communication line should be no less than 18 AWG. It's recommended to use 18 AWG stranded, twisted and shielded wire as the communication line.

#### 4 Installation of the Unit

##### 4.1 Installation of the Indoor Unit

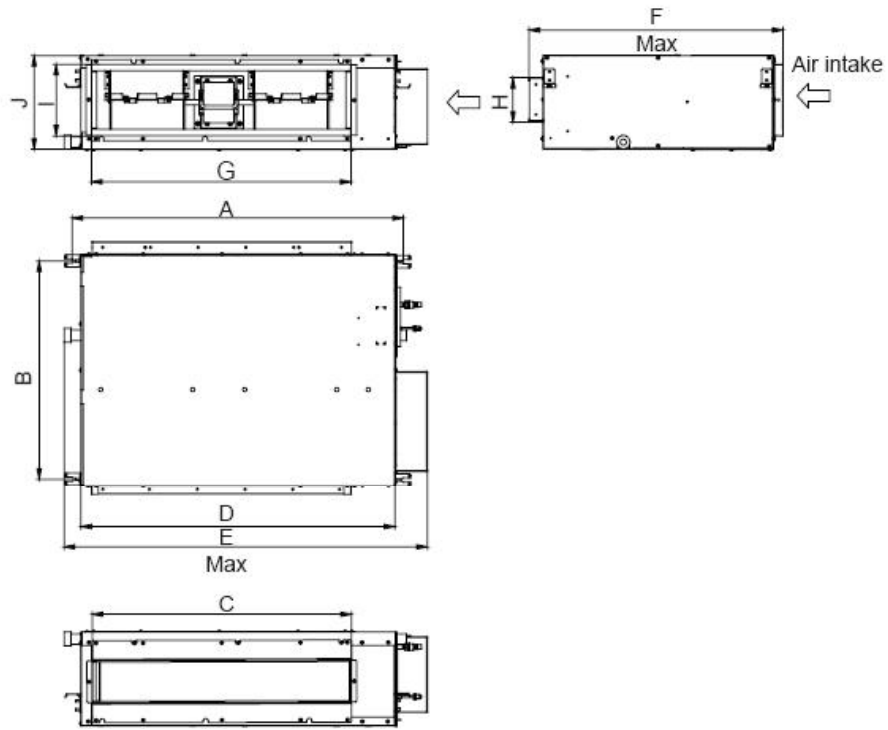
##### 4.1.1 Indoor unit dimensions



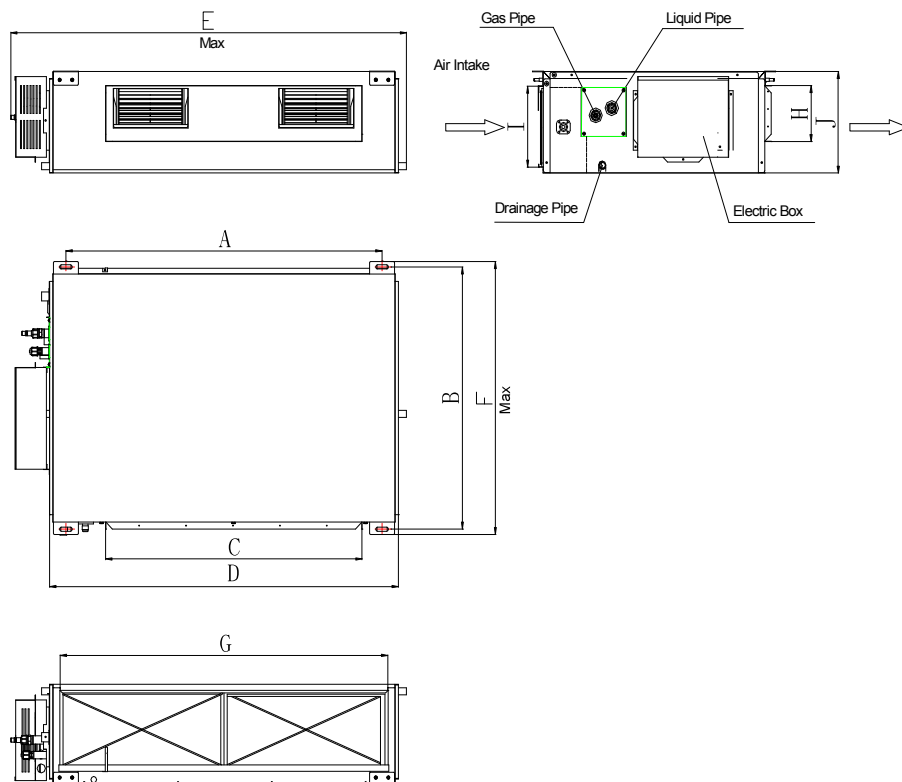
#### WARNING!

- (1) Install the indoor unit in a location which can withstand a load of at least five times the weight of the main unit and which will not amplify sound or vibration.
- (2) If the installation location is not strong enough, the indoor unit may fall and cause injuries.
- (3) If the job is done with the ceiling panel frame only, there is a risk that the unit will come loose. The unit must be adequately supported.

For the units: 18K



For the units: 24K~42K



For the units: 48K

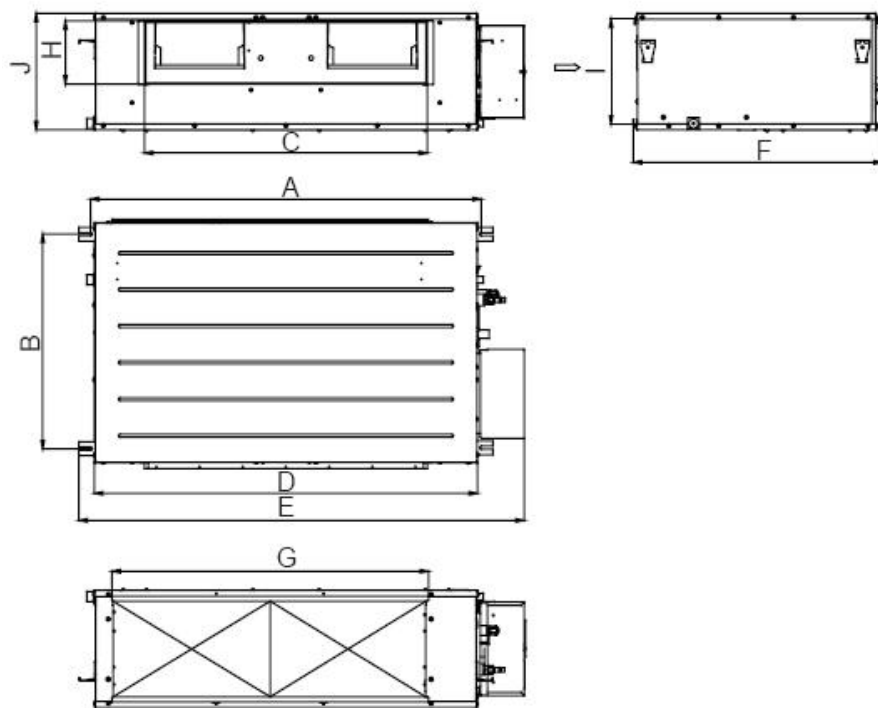


Fig. 4.1

Table 4.1

Units: In. (mm)

Item Model	A In. (mm)	B In. (mm)	C In. (mm)	D In. (mm)	E In. (mm)	F In. (mm)	G In. (mm)	H In. (mm)	I In. (mm)	J In. (mm)
4UXD2018A	37.2 (945)	24.3 (618)	29.1 (738)	35.1 (892)	40.8 (1037)	28.4 (721)	29.1 (738)	4.9 (125)	8.0 (203)	10.5 (266)
4UXD2024A	43.3 (1101)	20.4 (517)	32.3 (820)	45.6 (1159)	50.4 (1279)	22.0 (558)	39.4 (1002)	6.3 (160)	9.3 (235)	10.6 (268)
4UXD2030A										
4UXD2036A	39.8 (1011)	29.4 (748)	32.3 (820)	43.9 (1115)	48.3 (1226)	30.5 (775)	38.5 (979)	6.3 (160)	9.1 (231)	11.4 (290)
4UXD2042A										
4UXD2048A	46.3 (1177)	25.4 (646)	33.5 (852)	45.3 (1150)	52.8 (1340)	29.5 (750)	37.5 (953)	7.5 (190)	12.4 (316)	13.8 (350)

#### 4.1.2 Drilling Holes for Bolts and Installing the Bolts

Using the installation template, drill holes for bolts (four holes). (Fig. 4.2)

#### 4.1.3 Installing the Suspension Bolts

1. Install the bolts to the ceiling at a location strong enough to hang the unit. Mark the bolt positions from the installation template. Drill four 12.7mm (1/2") diameter holes. (Fig. 4.3)
2. Insert the anchor bolts into the drilled holes, and drive the pins completely into the anchor bolts with a hammer. (Fig. 4.4)
3. Install the hanger to the unit. (Fig. 4.5)
4. Pass the unit hangers over the bolts installed to the ceiling and install the unit with the special nut. (Fig. 4.6)

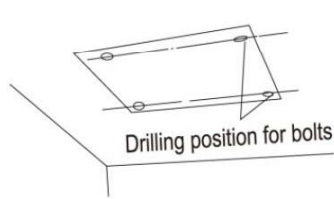


Fig. 4.2

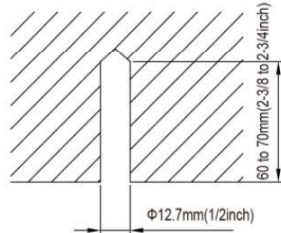


Fig. 4.3

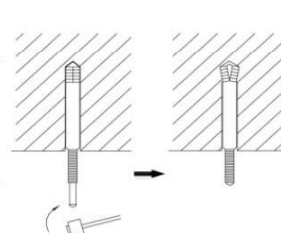


Fig. 4.4

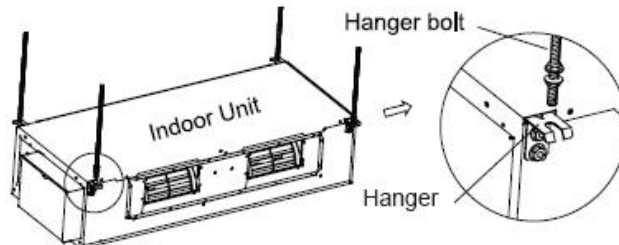


Fig. 4.5

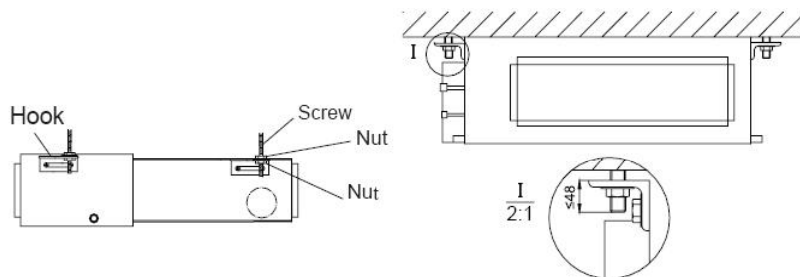


Fig. 4.6

#### 4.1.4 Leveling

The water level test must be done after installing the indoor unit to make sure the unit is horizontal, as shown below.

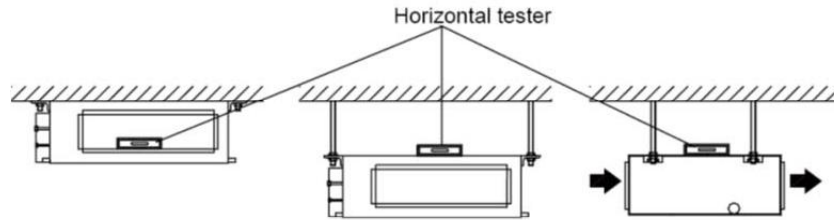



Fig. 4.7

#### 4.2 Installation of the Outdoor Unit

 <b>WARNING</b>
(1) Install the unit where it will not be tilted by more than 5°.
(2) If the location is subject to strong winds, the additional force must be accounted for and the unit must be fixed securely to the base.

##### 4.2.1 Outdoor Unit Dimensions

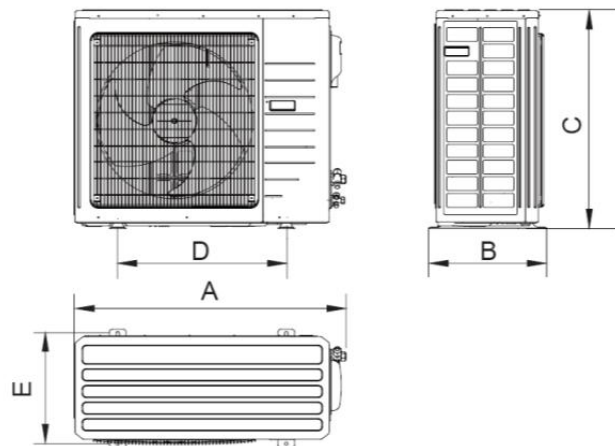


Fig. 4.8



Table 4.2

Item Model	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)
4TXU2018A	37.60 (955)	15.60 (396)	27.56 (700)	22.05 (560)	14.17 (360)
4TXU2024A	38.58 (980)	16.81 (427)	31.10 (790)	24.02 (610)	15.55 (395)
4TXU2030A	38.58 (980)	16.81 (427)	31.10 (790)	24.02 (610)	15.55 (395)
4TXU2036A	43.58 (1107)	17.32 (440)	43.31 (1100)	24.85 (631)	15.75 (400)
4TXU2042A	37.72 (958)	16.22 (412)	53.11 (1349)	22.52 (572)	14.80 (376)
4TXU2048A	37.72 (958)	16.22 (412)	53.11 (1349)	22.52 (572)	14.80 (376)

#### 4.2.2 Condensate Drainage of the Outdoor Unit (Fig. 4.8)

1. It is required to install a drain pipe for the outdoor unit to drain out the condensate water during heating operation.
2. When installing the drain pipe, apart from the drain pipe mounting hole, all other holes should be plugged so as to avoid water leakage.
3. Installation Method: Insert the drain pipe fitting into the drain pipe mounting hole located at the base plate of the unit and then connect the drain pipe to the pipe joint.

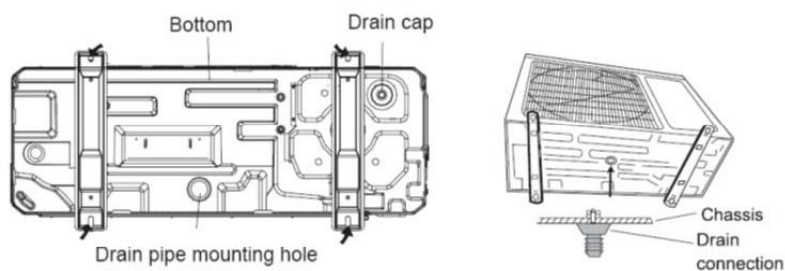


Fig. 4.9

#### 4.3 Installation of the Connection Pipe

##### 4.3.1 Flare Processing

1. Cut the connection pipe with the pipe cutter and remove the burrs.
2. Hold the pipe downward to prevent cuttings from entering the pipe.
3. Remove the flare nuts at the stop valve of the outdoor unit and inside the accessory bag of the indoor unit, then put them onto the connection pipe as shown in Figure 4.10, after that, flare the connection pipe with a flaring tool.
4. Check if the flare part is spread evenly and there are no cracks (see Fig. 4.10).

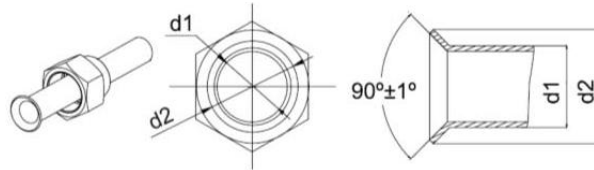


Fig. 4.10

##### 4.3.2 Bending Pipes

1. The pipes are shaped by your hands. Be careful not to collapse them.

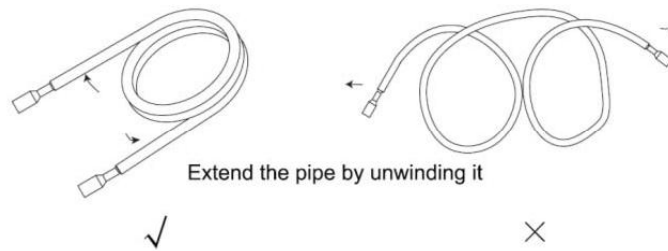


Fig. 4.11

2. Do not bend the pipes in an angle more than 90°.
3. When pipes are repeatedly bent or stretched, the material will harden, making it difficult to

bend or stretch them any more. Do not bend or stretch the pipes more than three times.

4. Do not bend the pipe while it is incased in the insulation. In this case, cut the insulation with a sharp cutter as shown in Fig. 4.12, and bend it after exposing the pipe. After bending the pipe as you want, be sure to put the heat insulating pipe back on the pipe, and secure it with tape.

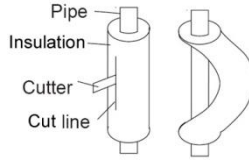


Fig. 4.12

<b>NOTICE!</b>	
(1)	To prevent breaking of the pipe, avoid sharp bends. Bend the pipe with a radius of curvature of 5.9 in. (150mm) or more.
(2)	If the pipe is bent repeatedly at the same place, it will break.

#### 4.3.3 Connecting the Pipe at the Indoor Unit

Detach the caps and plugs from the pipes.

<b>NOTICE!</b>	
(1)	Be sure to connect the pipe to the port on the indoor unit correctly. If the centering is improper, the flare nut cannot be tightened smoothly. If the flare nut is forced to turn, the threads will be damaged.
(2)	Do not remove the flare nut until the connection pipe is to be connected so as to prevent dust and impurities from coming into the pipe system.

1. While centering the pipe against the port on the indoor unit, turn the flare nut with your hand.
2. When connecting the pipe to the unit or removing it from the unit, please use both the spanner and the torque wrench. (Fig. 4.13)
3. When connecting, smear both inside and outside of the flare nut with refrigeration oil, tighten it by hand and then tighten it with the spanner.
4. Refer to Table 4.3 before tightening to determine the appropriate torque (too tight would damage the nut and lead to leakage).

5. Examine the connection pipe to see if it leaks, then apply the thermal insulation for the liquid and gas lines, as shown in the Fig. 4.12.
6. Use the medium-sized sponge to insulate the coupler of the gas pipe.

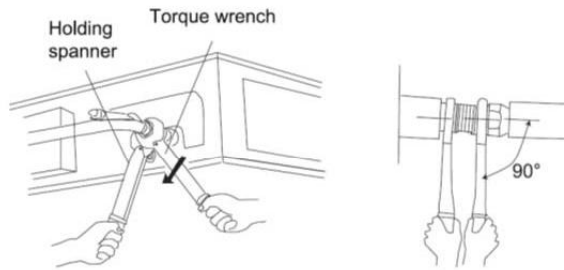


Fig. 4.13

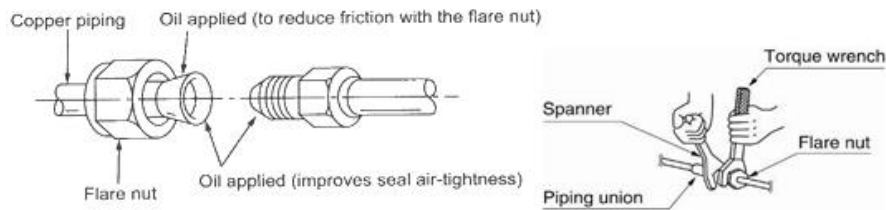


Fig. 4.14

Table 4.3 Flare nut tightening torque

Pipe Diameter (inches)	Tightening Torque (N-m)
1/4"	15-30
3/8"	35-40
1/2"	45-50
5/8"	60-65
3/4"	70-75
7/8"	80-85



**CAUTION!**

Be sure to connect the gas pipe after connecting the liquid pipe completely.

#### 4.3.4 Connecting the Pipe at the Outdoor Unit

Tighten the flare nut of the connection pipe at the outdoor unit valve connector. The tightening method is the same as the method at the indoor unit.

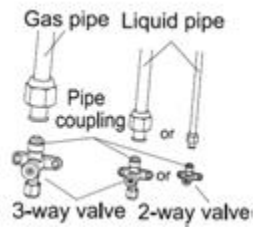


Fig. 4.15

#### 4.3.5 Checking the Pipe Connections for Gas Leakage

Use a gas leakage detector at the joints for both the indoor and outdoor units when the pipes are connected.

#### 4.3.6 Insulation on the Pipe Joints (Indoor Side Only)

Use the large and small insulation sleeves to insulate the gas and liquid connections, respectively.

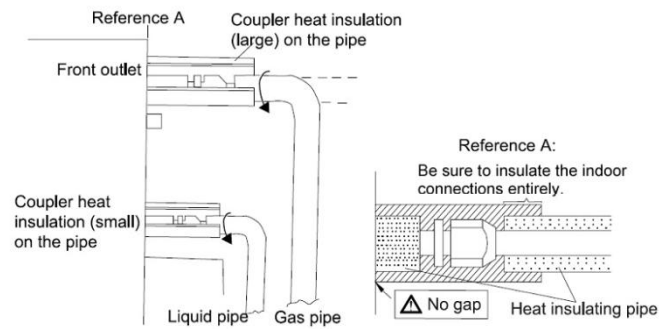


Fig. 4.16

#### 4.3.7 Liquid Pipe and Drain Pipe

If the outdoor unit is installed lower than the indoor unit (See Fig. 4.17)

1. A drain pipe should be above ground and the end of the pipe should not dip into water.
2. Taping pipes must be done from bottom to top.
3. All pipes are bound together by tape and secured to the wall by saddles.

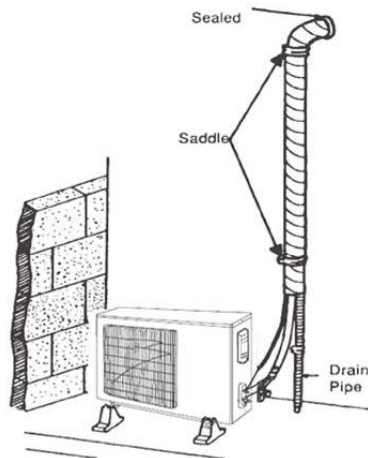


Fig. 4.17

If the outdoor unit is installed higher than the indoor unit (See Fig. 4.18)

1. Taping should be done from lower to the upper part.
2. All pipes are bound and taped together and also should be trapped to prevent water from returning to the room.
3. Secure all pipes to the wall with saddles.

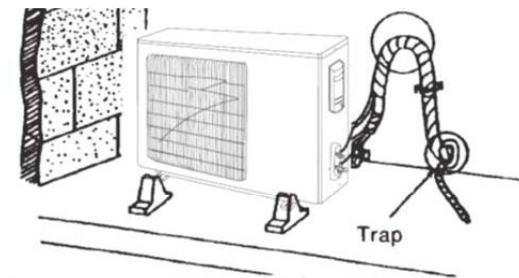


Fig. 4.18

#### 4.4 Vacuum and Gas Leakage Inspection

##### **NOTICE!**

Do not purge the air with refrigerants but use a vacuum pump to vacuum the installation! There is no extra refrigerant in the outdoor unit for air purging!

#### 4.4.1 Vacuum

1. Remove the caps of the liquid valve, gas valve and also the service port.
2. Connect the hose at the low pressure side of the manifold valve assembly to the service port of the unit's gas valve. The gas and liquid valves should be kept closed in case of refrigerant leakage.
3. Connect the hose used for evacuation to the vacuum pump.
4. Evacuate until the micron gauge reads no higher than 350 microns. **Important:** Do not open the service valves until the refrigerant lines and indoor coil leak check and evacuation are complete.
5. Observe the micron gauge. Evacuation is complete if the micron gauge does not rise above 500 microns in one (1) minute.
6. When evacuation is complete blank off the vacuum pump and micron gauge, and close the valves on the manifold gauge set
7. Open the liquid valve slightly and let some refrigerant go to the connection pipe to balance the pressure inside and outside of the connection pipe, so that air will not come into the connection pipe when removing the hose. Note that the gas and liquid valve can be opened fully only after the manifold valve assembly is removed.
8. Put the caps back on the liquid valve, gas valve, and service port.

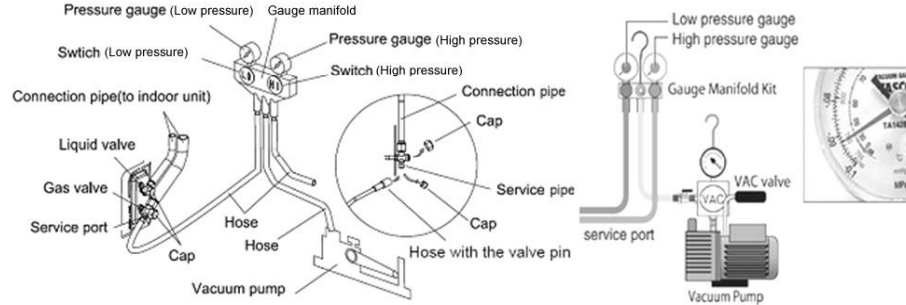


Fig. 4.19

**Note:** The larger units have a service port for both the gas valve and the liquid valve. During evacuation, it is possible to connect hoses from the manifold valve assembly to each of the service ports for faster evacuation.

#### 4.4.2 Additional Charge

Refrigerant suitable for a piping length of 24.93 ft. (7.6m) is charged in the outdoor unit at the factory. When the piping is longer than 31.17 ft. (9.5 m), additional charging is necessary.

For the additional amount, see Table 4.4.

Table 4.4

Item Model	Additional Refrigerant Amount for Extra Pipe
18K	0.32 oz./ft
24~48K	0.64 oz./ft

When the height difference between the indoor unit and outdoor unit is larger than 32.8 ft. (10 meters), an oil trap should be employed for every 19.7 ft. (6 meters).

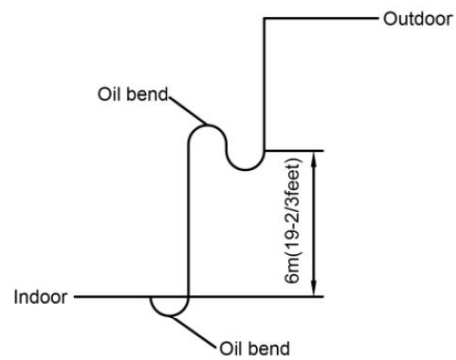


Fig. 4.20



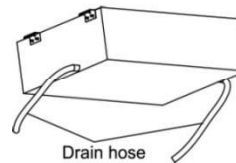
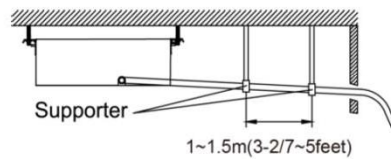
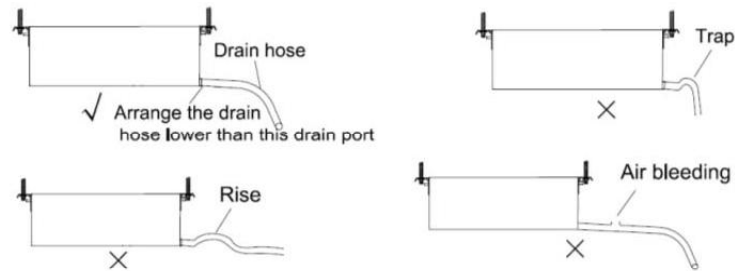
#### 4.5 Installation of the Drain Hose

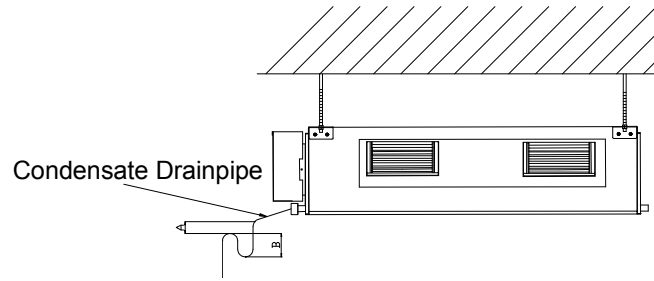
##### 4.5.1 Installation of Drain Piping

### NOTICE!

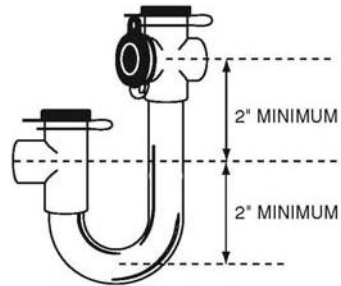
Install the drain hose in accordance with the instructions in this installation manual and keep the area warm enough to prevent condensation. Problems with the piping may lead to water leaks.

1. Keep piping as short as possible and install the drain hose with downward gradient (1/50 to 1/100) no risers or traps are used for the hose.(Fig. 4.21)
2. Be sure there is no crack or leak in the drain hose to avoid the formation of air pockets.(Fig. 4.21)
3. When the hose is long, install supports.(Fig. 4.22)
4. Always use a drain hose which has been insulated properly.

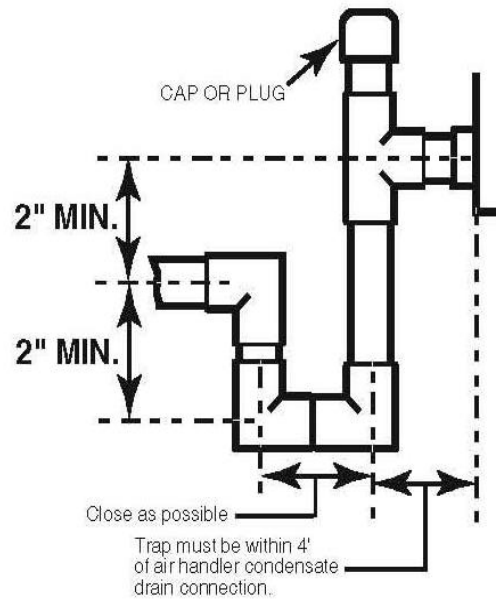




Manufactured Trap



Field Fabricated Trap



1. There is a drain port on both the left and right sides. Select the drain port best suited to the installation conditions.(Fig. 4.23)
2. When the unit is shipped from the factory, the drain port is defaulted to be on the left side (electric box side), the port on right side has been plugged.
3. When using the drain port on the right side of the unit, reinstall the drain cap to the left side drain port.(Fig. 4.25)

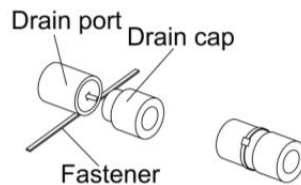


Fig. 4.25

**NOTICE!**

Always check that the drain cap is installed to the unused drain port and is fastened with the nylon fastener. If the drain cap is not installed, or is not sufficiently fastened by the nylon fastener, water may drip during the cooling operation.

1. Be sure to insulate where the drain port and the drain hose connect.(Fig. 4.26 )
2. The unused drain port also should be insulated properly.(Fig. 4.27)

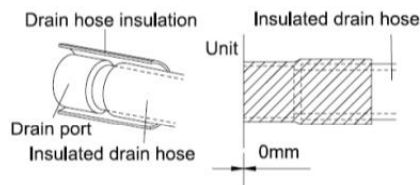


Fig. 4.26

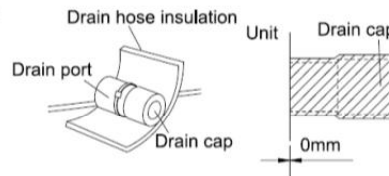


Fig. 4.27

3. There is adhesive on one side of the insulation so that after removing the protective paper over it the insulation can be directly attached to the drain hose.
4. Considerations for installing a condensate pump (field supplied):
  - 1). When a condensate pump is used, the drain hole on the left (the electrical box side) must be used.

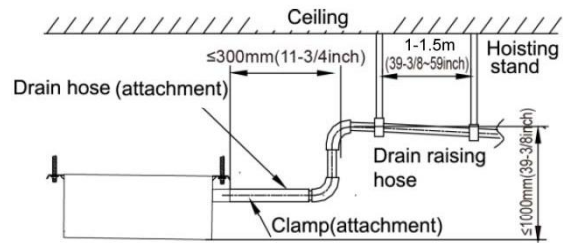


Fig. 4.28

2). The vertical height of the drain hose should be 3 in. (75mm) or less so that it is unnecessary for the drain port to withstand additional force.

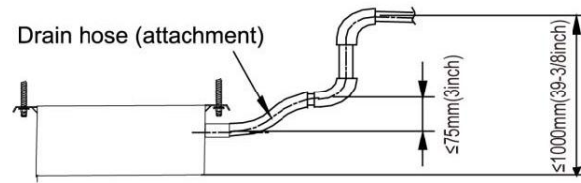


Fig. 4.29

3). When multiple drain hoses are used, their installation should be performed as shown in the figure below.

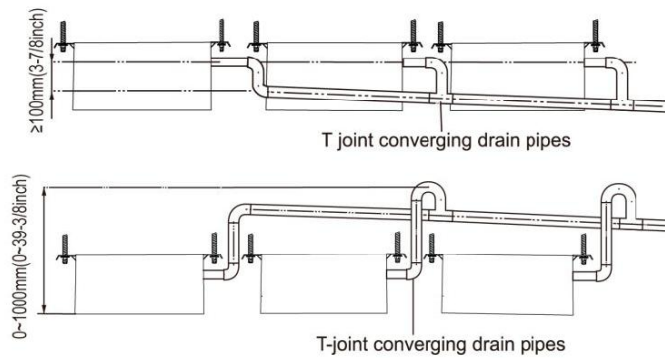


Fig. 4.30

#### 4.5.2 Testing of Drain Piping

After piping work is finished, check to ensure drainage flows smoothly.

Slowly add approximately 33.8 oz. (1 liter) of water to the drain pan shown in Fig 4.30 and check the drainage flow with the unit in cooling mode.

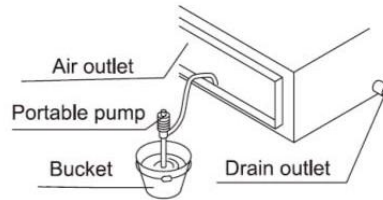


Fig. 4.31

#### 4.6 Installation of the Duct

##### 4.6.1 Dimensions of the Supply Air Outlet/Return Air Inlet

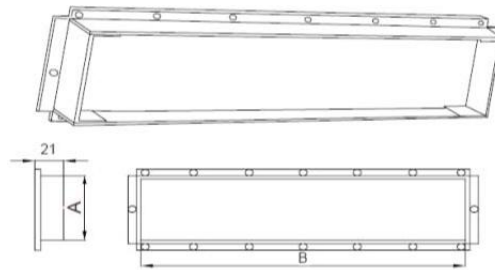


Fig. 4.32 Supply Air Outlet

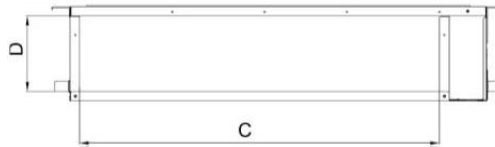


Fig. 4.33 Return Air Inlet

Table 4.5

Unit: In. (mm)

Item Model	Supply Air Outlet		Return Air Inlet	
	A	B	C	D
4UXD2018A	4.8 (123)	30.0 (736)	28.0 (710)	6.5 (166)
4UXD2024A	6.2 (158)	32.2 (818)	39.1 (994)	7.8 (195)
4UXD2030A	6.2 (158)	32.2 (818)	39.1 (994)	7.8 (195)
4UXD2036A	6.2 (158)	32.2 (818)	39.4 (1000)	8.11 (206)
4UXD2042A	6.2 (158)	32.2 (818)	39.4 (1000)	8.11 (206)
4UXD2048A	7.5 (190)	33.5 (850)	37.0 (940)	11.3 (286)

#### 4.6.2 Installation of the Supply Air Duct

##### (1). Installation of the Rectangular Duct.

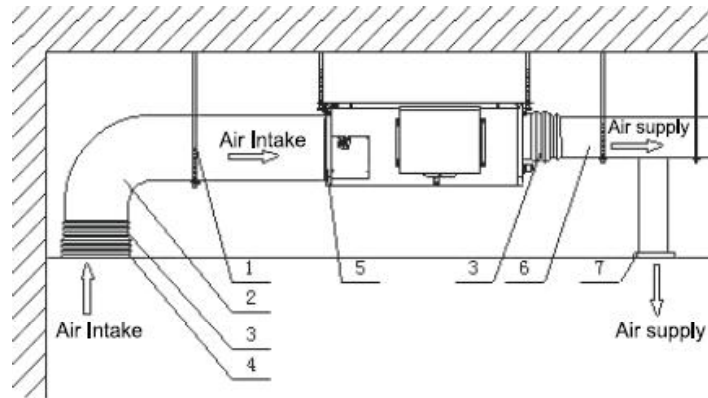


Fig. 4.34

No.	Name	No.	Name
1	Hanger	5	Filter
2	Air Intake Pipe	6	Main Air Supply Pipe
3	Canvas Air Pipe	7	Air Supply Outlet
4	Air Intake		



#### CAUTION!

This air handling unit is intended for free-air discharge or for connection to a duct supplying only one room. Improper installation could contribute to the spread of smoke or flame in the event of a fire.

#### NOTE:

(1). The maximum length of the duct means the maximum length of the supply air duct plus the maximum length of the return air duct. See CFM table below for reference

(2). The duct is rectangular and connected with the air inlet/outlet of the indoor unit. Among all supply air outlets, at least one should be kept open.

CFM Tables for Pro Series Ducted Units:

18K	CFM				
	Inches(Water)	Low	Medium	High	Super High
	0	720	900	1080	1180
	0.1	/	700	900	1000
	0.2	/	/	690	790
24K	CFM				
	Inches(Water)	Low	Medium	High	Super High
	0	1280	1520	1620	1770
	0.1	1050	1320	1430	1575
	0.2	/	1050	1095	1280
	0.3	/	/	770	930
30K	CFM				
	Inches(Water)	Low	Medium	High	Super High
	0	1290	1520	1610	1740
	0.1	1010	1270	1400	1510
	0.2	/	1020	1160	1280
	0.3	/	/	760	920
36K	CFM				
	Inches(Water)	Low	Medium	High	Super High
	0	1790	2080	2380	2500
	0.1	1560	1850	2140	2250
	0.2	1240	1530	1850	1980
	0.3	/	1170	1550	1700
	0.4	/	/	1200	1360
42K	CFM				
	Inches(Water)	Low	Medium	High	Super High
	0	1800	2060	2380	2500
	0.1	1540	1830	2130	2250
	0.2	1220	1530	1850	1970
	0.3	/	1150	1530	1680
	0.4	/	/	1180	1360
48K	CFM				
	Inches(Water)	Low	Medium	High	Super High
	0	2450	2790	3040	3150
	0.1	2040	2400	2560	2670
	0.2	/	2030	2300	2400
	0.3	/	1680	1950	2040
	0.4	/	/	/	1750
	0.5	/	/	/	1470

Bottom Return Air Installation ONLY - 18K Units.

1. The default installation location of the rectangular flange is at the back and the return air cover plate is at the bottom, as shown in Fig. 4.35 .

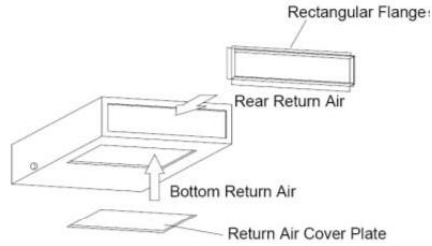


Fig. 4.35

2. If bottom return air is desired, change the place of the rectangular flange and the return air cover plate.
3. Connect one end of the return air duct to the return air outlet of the unit by rivets and the other to the return air louver.
4. More noise is likely to be produced in the bottom return air mode than the backward return air mode, so it is suggested to install a silencer and a static pressure box to minimize the noise.
5. The installation method should be chosen with considering the conditions of the building and maintenance etc., as shown in Fig. 4.36.

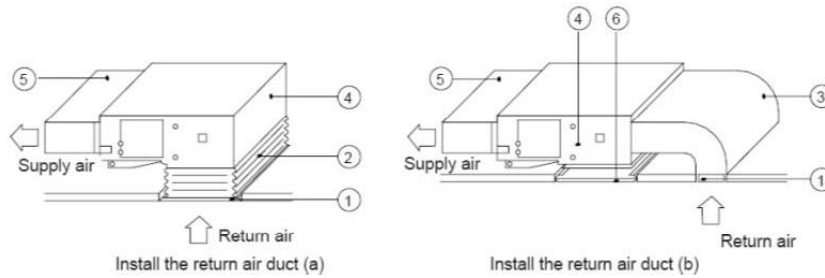


Fig. 4.36


Table 4.6 Installation of the return air duct

No.	Name	No.	Name
1	Return Air Inlet (with filter)	4	Indoor unit
2	Canvas Duct	5	Supply Air Duct
3	Return Air Duct	6	Grille



#### 4.7 Electrical Wiring

##### 4.7.1 Wiring Precautions

 <b>WARNING !</b>	
(1)	Before obtaining access to terminals, all supply circuits must be disconnected.
(2)	Improperly installed and grounded field wiring poses fire & electrocution hazards. For high voltage connections, flexible electrical conduit is recommended whenever vibration transmission may create a noise problem within the structure. To avoid these hazards, you <b>MUST</b> follow requirements for field wiring installation and grounding as described in the National Electrical Codes (NEC) and your local/state electrical codes. All field wiring <b>MUST</b> be performed by qualified personnel. Failure to follow these requirements could result in death or serious injury.
<b>NOTICE!</b>	
(1)	The power source capacity must be the sum of the air conditioner current and the current of other electrical appliances. When the current contracted capacity is insufficient, change the contracted capacity.
(2)	The rated voltage of the unit is as shown in Table 3.4 and Table 3.5
(3)	Before turning on, verify that the voltage is within the 187~252V range (for single phase unit).
(4)	Always use a grounded terminal and install a special receptacle to supply power to the air conditioner. For high voltage connections, flexible electrical conduit is recommended whenever vibration transmission may create a noise problem within the structure.
(5)	Use a dedicated breaker and receptacle matched to the capacity of the air conditioner.

##### 4.7.2 Electrical Wiring

For strand wiring (Fig. 4.37)

1. Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation about 10 mm (3/8").
2. Using a screwdriver, remove the terminal screw(s) on the terminal board.
3. Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.
4. Position the round terminal wire, and replace and tighten the terminal screw with a screwdriver.(Fig. 4.38)

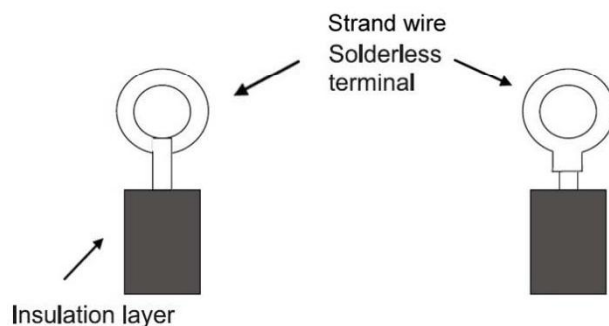


Fig. 4.37

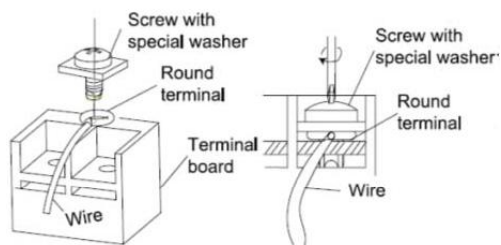


Fig. 4.38

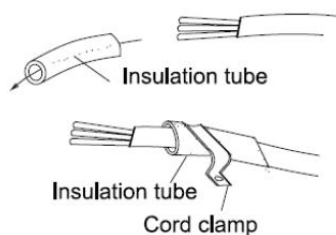



Fig. 4.39

Fix connection cord and power cord by cord clamp

After passing the connection cord and power cord through the insulation tube, fasten it with the cord clamp. (Fig. 4.39)

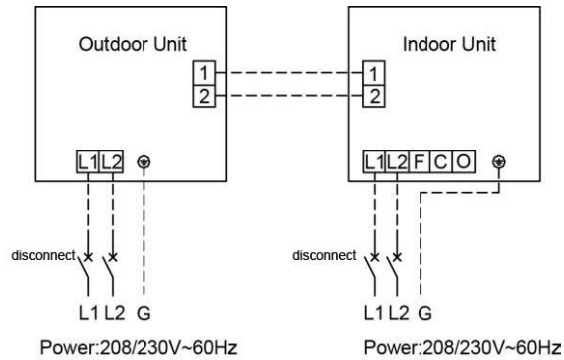
 <b>WARNING!</b>
(1) Before starting work, check that power is not being supplied to the indoor unit and outdoor unit.
(2) Improperly installed field wiring poses fire and electrocution hazards. Pay special attention to the wiring of the units.
(3) Connect the connection cords firmly to the terminal block. Improper installation may cause a fire.
(4) Always fasten the outside covering of the connection cord with cord clamps. (If the insulator is not clamped, electric leakage may occur.)
(5) Always connect the ground wire.

### NOTICE!

Match the terminal block numbers and connection cord colors with those of the indoor unit side.

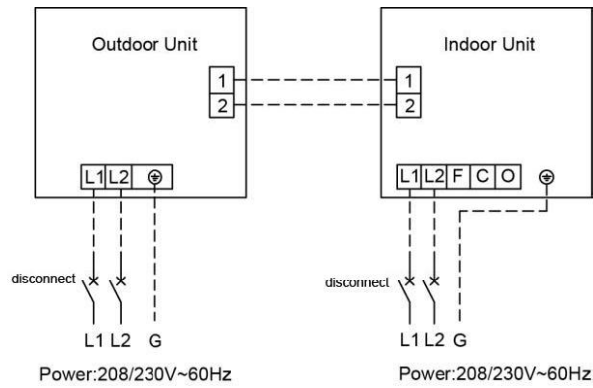
(1). Electric wiring between the indoor and outdoor units

Single-phase units (18K-30K)



Refer to the unit MCA and MOP to determine the correct wiring requirements. Electrical work should be carried out in accordance with the installation manual and local, state and National Electric Code (NEC). Insufficient capacity or incomplete electrical work may cause electrical shock or fire.

Single-phase units (36K-48K)



Refer to the unit MCA and MOP to determine the correct wiring requirements. Electrical work should be carried out in accordance with the installation manual and local, state and National Electric Code (NEC). Insufficient capacity or incomplete electrical work may cause electrical shock or fire.

Fig. 4.40

(2). Electric wiring of indoor unit side

Remove the electric box cover from the electric box sub-assembly and then connect the wire.

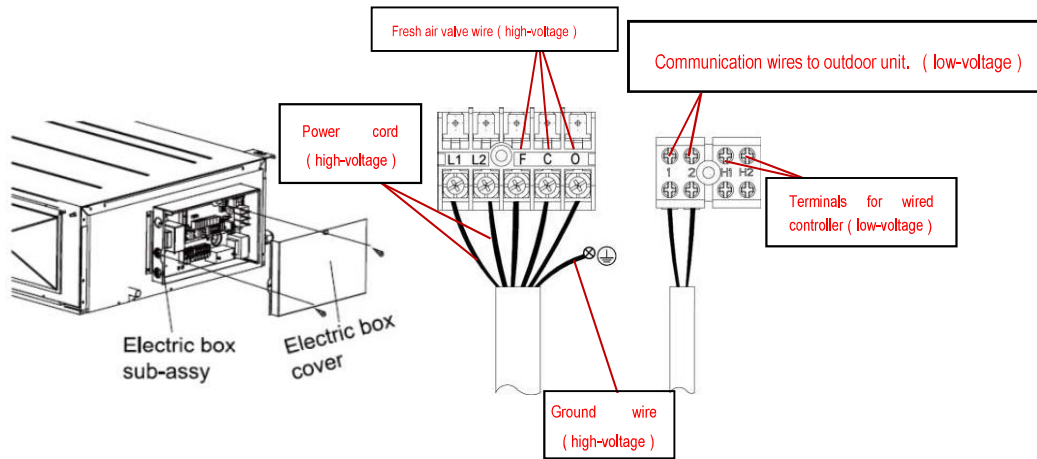



Fig. 4.41

 <b>CAUTION!</b>	
(1)	The high-voltage and low-voltage lines should pass through the rubber rings at different electric box covers.
(2)	The high-voltage and low-voltage lines should be fixed separately and securely, with internal big clamps for the former and small clamps for the latter.
(3)	Tighten the indoor/outdoor connection cord and power cord respectively on the terminal boards with screws. Faulty connection may cause a fire.
(4)	Connect the indoor unit power supply and communication cable properly based on the corresponding marks as shown in Fig. 4.39.
(5)	Ground both the indoor and outdoor units by attaching a ground wire.
(6)	Unit shall be grounded in compliance with the applicable local, state and national codes.
<b>NOTICE!</b>	
(1)	The high voltage power cable and the wire of the fresh air valve ( <b>not standard on this model</b> ) are high-voltage, while the communication cable and connection wire of the wired controller are low-voltage. They should run separately to avoid electromagnetic interference.
(2)	Do not bundle the connection wire of the wired controller and the communication cord together, or arrange them in parallel, otherwise improper operation would occur.
(3)	If the indoor unit communication cable (to the outdoor unit) and power supply are improperly wired, the air conditioner may be damaged.
(4)	Connect the indoor unit power supply and communication cable properly based on the corresponding marks as shown in Fig. 4.39.

#### Electric wiring of outdoor unit

**Note:** When connecting the power supply cord, make sure that the phase of the power supply matches with the exact terminal board. If not, the compressor will run improperly.

Remove the big handle (18~30K) /front board (36~48K) of the outdoor unit and insert the end of the communication cord and the power cable into the terminal board.

Single phase:

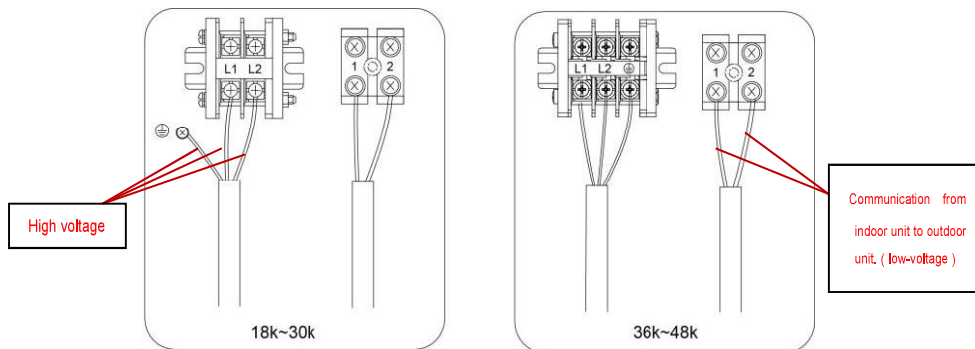


Fig. 4.42

**NOTICE:** Power lines should go along the right side plate and be fixed to the fixation hook with binding wires to keep out of contact with pipelines. Communication lines between indoor and outdoor units also should go along the right side plate and keep away from power lines.

## 5 Installation of Controllers

Refer to the Installation Manual of the controller for more details.

## 6 Test Running

### 6.1 Trial Operation and Testing

(1) The meaning of error codes as shown below:

Table 6.1

Number	Error code	Error	Remarks
1	E1	Compressor high pressure protection	
2	E2	Indoor anti-freeze protection	
3	E3	Compressor low pressure protection, low refrigerant protection and refrigerant collecting mode	
4	E4	Compressor high discharge temperature protection	
5	E6	Communication error	
6	E8	Indoor fan motor error	
7	E9	Full water protection	
8	F0	Indoor ambient temperature sensor error	
9	F1	Evaporator temperature sensor error	
10	F2	Condenser temperature sensor error	
11	F3	Outdoor ambient temperature sensor error	
12	F4	Discharge temperature sensor error	
13	F5	Temperature sensor error of wired controller	
15	C5	Capacity code error	
16	EE	Outdoor memory chip error	
17	PF	Electric box sensor error	
18	H3	Compressor overload protection	
19	H4	Overloading	
20	H5	IPM protection	
21	H6	DC fan motor error	
22	H7	Drive desynchronizing protection	

23	Hc	PFC protection	
25	Lc	Activation failure	
26	Ld	Compressor phase sequence protection	
27	LE	Compressor stalling protection	
28	LF	Power protection	
29	Lp	Indoor and outdoor mismatch	
30	U7	4-way valve direction changing protection	
31	P0	Drive reset protection	
32	P5	Over-current protection	
33	P6	Communication error between main control and drive	
34	P7	Drive module sensor error	
35	P8	Drive module over temperature protection	
36	P9	Zero passage protection	
37	PA	AC current protection	
38	Pc	Drive current error	
39	Pd	Sensor connecting protection	
40	PE	Temperature drift protection	
41	PL	Bus low voltage protection	
42	PH	Bus high voltage protection	
43	PU	Charge loop error	
44	PP	Input voltage abnormality	
45	ee	Drive memory chip error	

**Note:** When the unit is connected with the wired controller, the error code will be simultaneously shown on it.

(2). Instructions to the error indicating lamps on the panel of the duct type unit

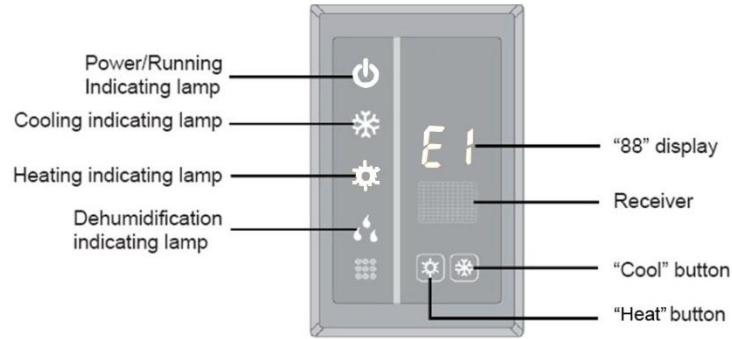


Fig. 6.1

## 7 Unit Function

### 7.1 Setting of Double Indoor Room Sensors

This series of ducted air-conditioning unit has two indoor room sensors. One is located at the air intake of the indoor unit and the other one is located inside the wired controller. The user can select either indoor temperature sensor based on the project requirements. (Refer to the section of wired controller instructions for detailed operation.)

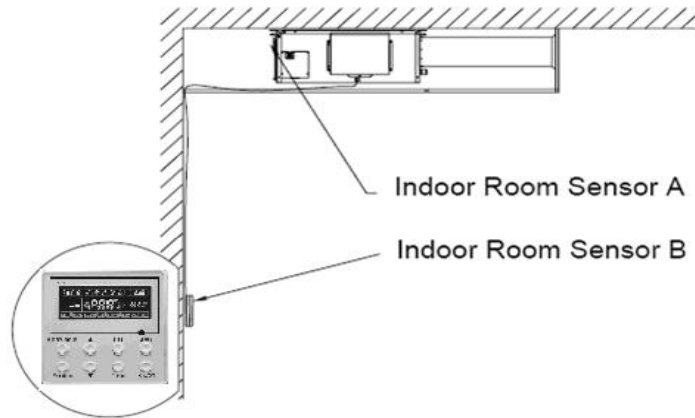


Fig. 7.1

### 7.2 Checking of Outdoor Ambient Temperature

The outdoor ambient temperature can be checked on the wired controller for the convenience of users before going out. (Refer to the section of wired controller instructions for detailed operation.)



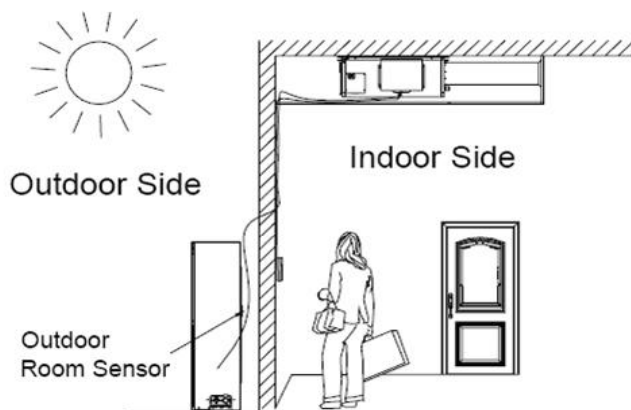


Fig. 7.2

## 8 Troubleshooting and Maintenance

### 8.1 Troubleshooting

If your air-conditioning unit suffers from abnormal operation or failure, please first check the following points before contacting your dealer or local service agency:

Failure	Possible Reasons
The unit cannot be started	<ol style="list-style-type: none"> <li>1. The power supply is not connected.</li> <li>2. Electrical leakage of the unit caused the circuit breaker to trip.</li> <li>3. The operating keys are locked.</li> <li>4. The control loop has a failure.</li> </ol>
The unit operates for a while and then stops	<ol style="list-style-type: none"> <li>1. There is an obstacle in front of the condenser.</li> <li>2. The control loop is abnormal.</li> <li>3. Cooling operation is selected when the outdoor ambient temperature is above 115°F (46.1°C).</li> </ol>
Poor cooling effect	<ol style="list-style-type: none"> <li>1. The air filter is dirty or blocked.</li> <li>2. There is a heat source or there are too many people in the room.</li> <li>3. The door or window is open.</li> <li>4. There is blockage at the air intake or outlet.</li> <li>5. The set temperature is too high.</li> <li>6. There is refrigerant leakage.</li> <li>7. The room temperature sensor is malfunctioning.</li> </ol>
Poor heating effect	<ol style="list-style-type: none"> <li>1. The air filter is dirty or blocked.</li> <li>2. The door or window is not firmly closed.</li> <li>3. The set room temperature is too low.</li> <li>4. There is refrigerant leakage.</li> <li>5. The outdoor ambient temperature is lower than 0°F (-18°C).</li> <li>6. Control loop is abnormal.</li> </ol>

**Note:** If the problem persists after checking the above items and taking appropriate measures, please stop operation of the unit immediately and contact your local service agency or dealer. Diagnostics and repairs should be completed by a professional service technician

## 8.2 Routine Maintenance

Only a qualified service person should perform maintenance.

Before accessing terminal devices, all power supply circuits must be disconnected.

Do not use water or air of 122°F (50°C) or higher for cleaning air filters and outside panels.

### Notes:

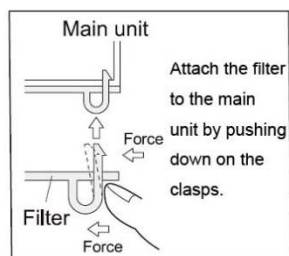
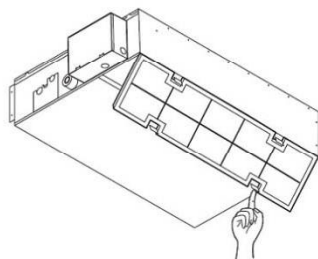
1. Do not operate the air conditioner without the filter installed to avoid dust entering the unit.
2. Do not remove the air filter except for cleaning. Unnecessary handling may damage the filter.
3. Do not clean the unit with gasoline, benzene, thinner, polishing powder or liquid insecticide, otherwise it would cause discoloration and deformation of the unit.
4. Do not allow the indoor unit to become wet. This could increase the risk of electric shock or fire hazard. Increase the frequency of cleaning if the unit is installed in a room where the air is extremely contaminated.

If dirt becomes impossible to clean, replace the air filter. (Air filter for exchange is optional.)

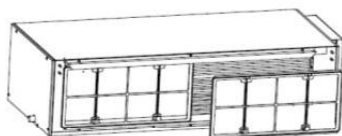
1. Remove the air filter.
2. Clean the air filter

Remove dust from the air filter using a vacuum cleaner and gently rinse in cool water. Do not use detergent or hot water to avoid filter shrinking or deformation. After cleaning, dry them in the shade.

18k:



24~48k:



Press the return air inlet filter downward against the guide groove sponge and take it off along the arrow direction. There are two return air inlet filters.

3. Replace the air filter  
Reinstall the filter as before.



CONFORMS TO  
UL STD. 1995  
CERTIFIED TO  
CSA STD. C22.2  
N0. 236



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Supersedes New

The manufacturer has a policy of continuous product and product data improvement and reserves the right to change design and specifications without notice. Only qualified technicians should perform the installation and servicing of equipment referred to in this manual.

