

619P/538P
High Wall Ductless Split System
Sizes 09 to 30



Installation Instructions



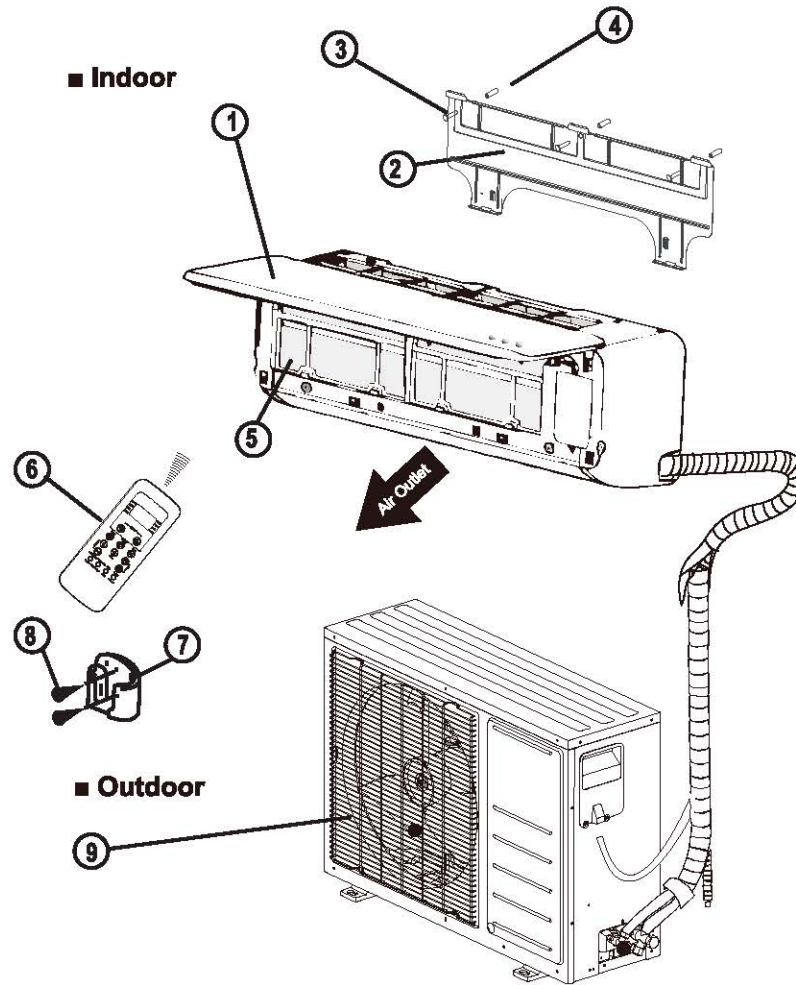
NOTE: Read the entire instruction manual before starting the installation.

TABLE OF CONTENTS

	PAGE
PARTS LIST	2
MODEL NUMBER NOMENCLATURE	3
SAFETY CONSIDERATIONS	4
DIMENSIONS	5
CLEARANCES	6
INSTALLATION INSTRUCTIONS.....	7
INDOOR UNIT INSTALLATION	8
OUTDOOR UNIT INSTALLATION	12
RUNNING TESTS.....	17

PARTS LIST

Part No.	Name of Part	Qty
1	Indoor Unit	1
2	Mounting Plate	1
3	Mounting Screw A ST3.9x25—C—H	5
4	Anchor	5
5	Air Filter	1
6	Remote Control	1
7	Remote Control Holder	1
8	Mounting Screw B ST2.0x10—C—H	2
9	Outdoor Unit	1

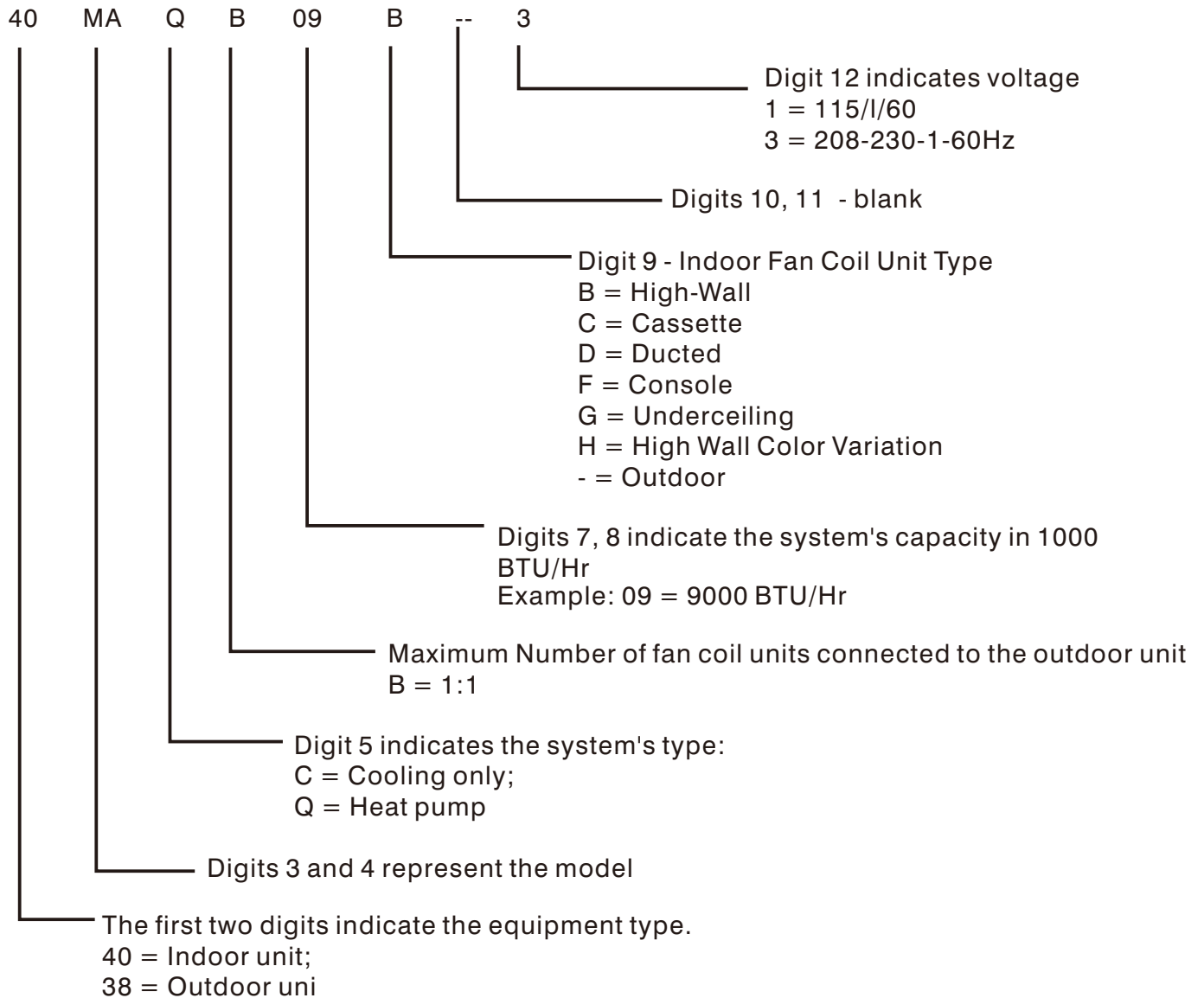


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Note:

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

MODEL NUMBER NOMENCLATURE



SAFETY CONSIDERATIONS

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

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

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

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

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

Read these instructions thoroughly and follow all warnings or cautions included in literature and attached to the unit. Consult local building codes and National Electrical Code (NEC) for special requirements. Recognize safety information. This is the

safety-alert symbol . When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury. Understand these signal words: DANGER, WARNING, and CAUTION. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices which **may** result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.



WARNING

ELECTRICAL SHOCK HAZARD

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

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



WARNING



EXPLOSION HAZARD

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

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



CAUTION

EQUIPMENT DAMAGE HAZARD

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

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

SYSTEM REQUIREMENTS

Allow sufficient space for airflow and servicing unit. See Fig. 1 for minimum required distances between unit and walls or ceilings.

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

Power Wiring:

The main power is supplied to the outdoor unit. The field supplied connecting cable from the outdoor unit to 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.

Consult your local building codes and the NEC (National Electrical Code) or CEC (Canadian Electrical Code) for special requirements.

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

Per caution note, only copper conductors with a minimum 300 volt rating and 2/64-inch thick insulation must be used.

Communication Wiring:

A separate shielded copper conductor only, with a minimum 300 volt rating and 2/64-inch thick insulation, must be used as the communication wire from the outdoor unit to the indoor unit.

To minimize voltage drop of the control wire, use the following wire size and maximum lengths shown in the chart below:

Wire Size	Length ft (m)
18 AWG	50 (15)
16 AWG	50 (15) to 100 (30)



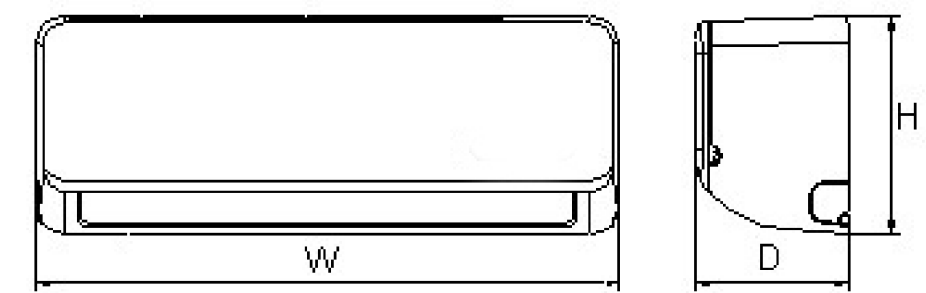
CAUTION

EQUIPMENT DAMAGE HAZARD

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

- Wires should be sized based on NEC and local codes.
- Use copper conductors only with a minimum 300 volt rating and 2/64 inch thick insulation.

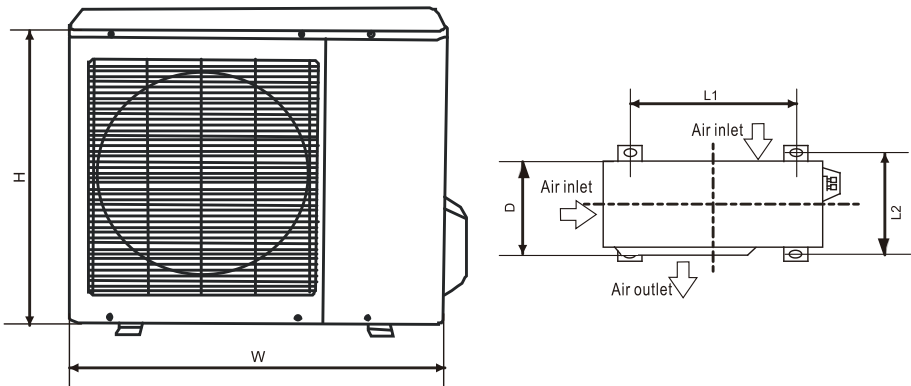
DIMENSIONS - INDOOR



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Unit Size	W in (mm)	D in (mm)	H in (mm)	Operating Weight lb (kg)
9K/12K	32.9 (835)	7.8 (198)	11.0 (280)	19.2 (8.7)
18K	39.0 (990)	8.6 (218)	12.4 (315)	26.5 (12.0)
24K/30K	46.7 (1186)	10.2 (258)	13.4 (343)	40.8 (18.5)

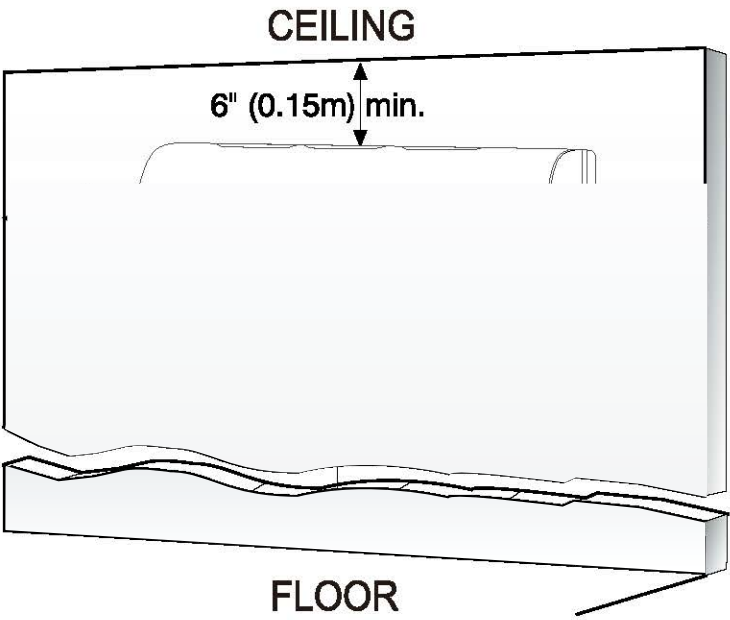
DIMENSIONS - OUTDOOR



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Model	W in (mm)	D in (mm)	H in (mm)	L1 in (mm)	L2 in (mm)	Operating Weight lb (kg)
9K/12K	32.0 (810)	12.2 (310)	22.0 (558)	20.9 (530)	11.4 (290)	82.5 (37.4)
18K	32.3 (845)	12.6 (320)	27.6 (700)	22.1 (560)	13.2 (335)	102.5 (46.5)
24K	37.2 (945)	15.6 (395)	31.9 (810)	25.1 (640)	15.9 (405)	137.6 (62.4)
30K	37.2 (945)	15.6 (395)	31.9 (810)	25.1 (640)	15.9 (405)	157.6 (71.5)

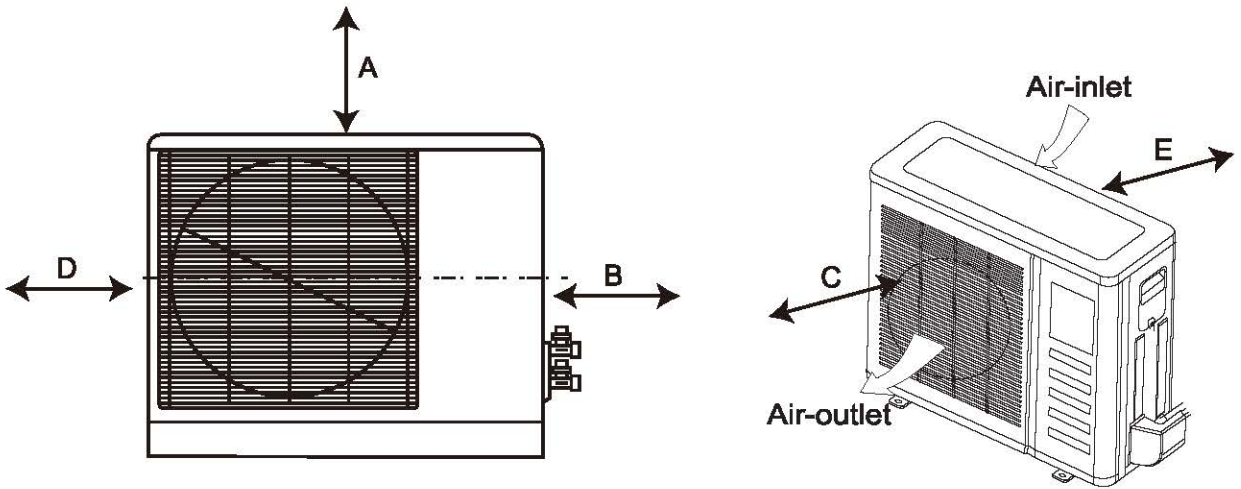
CLEARANCES - INDOOR



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Fig. 1 – Indoor Unit Clearance

CLEARANCES - OUTDOOR



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UNIT	Minimum Value In. (mm)
A	24 (610)
B	24 (610)
C	80 (2032)
D	12 (305)
E	24 (610)

Fig. 2 – Outdoor Unit Clearance

INSTALLATION INSTRUCTIONS

Selecting installation place

Read completely, then follow step by step.

Indoor unit

- There should not be any heat source, inflammable gas or stream near the unit.
- There should not be any obstacles blocking the air circulation.
- A place where air circulation in the room is good.
- A place where drainage can be easily done.
- A place where noise prevention is taken into consideration.
- Do not install the unit near the door way.
- Ensure the restrictions on installation specified in the indoor unit installation drawings are met.
- Select a location which is firm enough for installation so that the device is not subjected to vibrations.
- The device should be installed at a distance of at least 1m from all other electrical devices and installations, e.g. TV, radio, computer, etc.
- There should not be any direct sunlight. If unavoidable, sunlight prevention should be taken into consideration.

Outdoor unit

- If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed.
- There should not be any animal or plant which could be affected by hot air discharged.
- Make sure that there is sufficient space as specified in the installation drawings.
- Do not place any obstacles which may cause a short circuit of the discharged air.
- Select a location which avoids causing a nuisance to neighbours from noise and air emissions from device.
- Select a location which is sufficiently well ventilated.
- Never cover the air inlets and outlets.
- The location must be sufficiently firm for installation and the prevention of vibrations.
- There must be no risk presented by combustible gas or gas escaping as a result of corrosion.
- Avoid a location where there is a high salt content.
- Avoid a location which is heavily exposed to dust.
- Avoid a location to which the general public have access.

Tools needed for installation:

Level gauge
Screwdriver
Electric drill, Hole core drill $\phi 2.6$ in(65mm)
Flaring tool set
Specified torque wrenches: 1.8kgf.m,
4.2kgf.m, 5.5kgf.m, 6.6kgf.m
(different depending on model No.)
Spanner (half union)

Hexagonal wrench (4mm-6mm)
Gas-leak detector
Vacuum pump
Gauge manifold
Users manual
Thermometer
Multimeter
Pipe cutter
Measuring tape

INDOOR UNIT INSTALLATION

NOTE:

The mounting wall is strong and solid enough to prevent it from the vibration.

1. Installation Plate Mounting

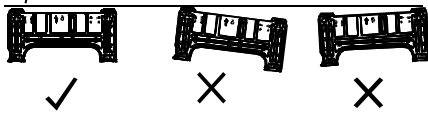
1. Fit the installation plate horizontally on structural parts of the wall with spaces around the installation plate.
2. If the wall is made of brick, concrete or the like, drill five or eight 5mm diameter holes in the wall. Insert Clip anchor for appropriate mounting screws.
3. Fit the installation plate on the wall with five or eight type "A" screws.

NOTE:

Mount the Installation Plate and drill holes in the wall according to the wall structure and corresponding mounting points on the installation plate. The installation plate provided with the machine differ from appliance to appliance.

(Dimensions are in "in (mm)" unless otherwise stated)

Correct orientation
of Installation Plate



Unit: mm(inch)

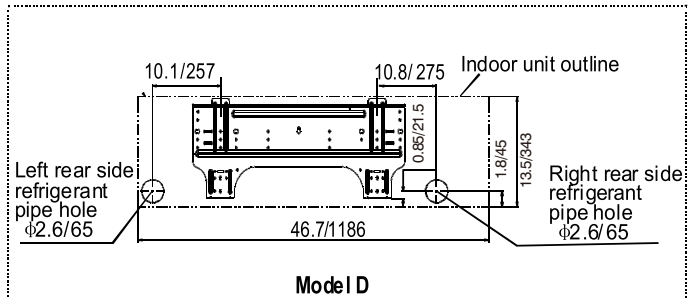
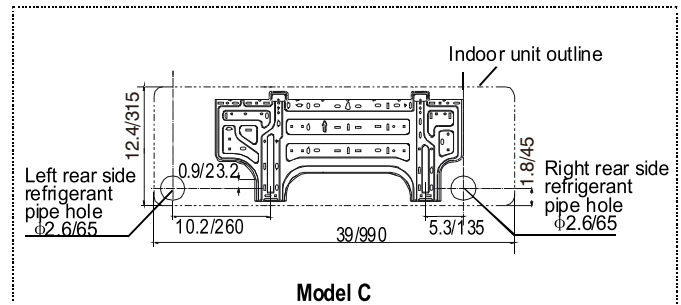
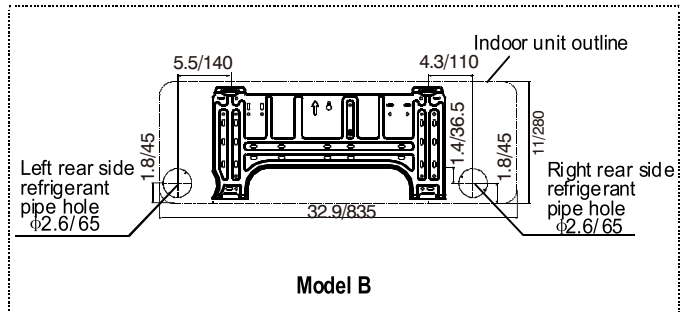
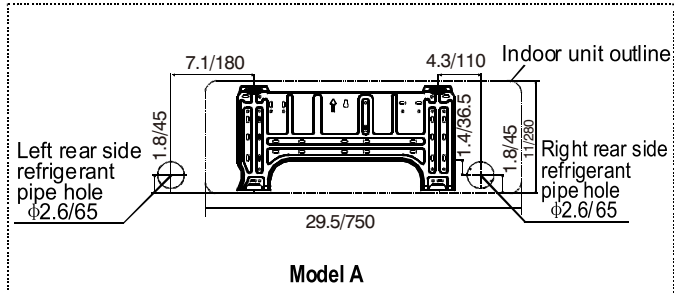


Fig.3

INDOOR UNIT INSTALLATION

2. Drill a hole in the wall

1. Determine hole positions according to left and right side of the installation plate. The hole center is obtained by measuring the distance as shown in the diagram of Fig.4.
2. Drill the piping plate hole with $\phi 2.6$ in hole-core drill.
3. Drill the piping hole at either the right or the left and the hole should be slightly slanted to the outdoor side, see Fig.4.
4. Always take precautions to protect the pipe when drilling using a metal grid, a metal plate or other protective material.

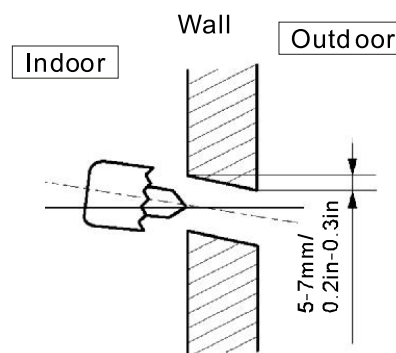


Fig.4

Alternate Connection Method for Power and Communication Wiring (May not prevent communication wiring interference)

The main power is supplied to the outdoor unit. The field supplied connecting cable from the outdoor unit to indoor unit consists of four (4) wires and provides the power and communication signals for the indoor unit. Two conductors are for power wiring (L1/L2, or L/N), one is a ground wire, and one is a DC communication wire.

Consult your local building codes and the NEC (National Electrical Code) or CEC (Canadian Electrical Code) for special requirements. All power wires must be sized per NEC or CEC and local codes. Use Electrical Data table MCA (minimum circuit amps) and MOCP (maximum over current protection) to correctly size the wires and the disconnect fuse or breakers respectively. Per caution note, only copper conductors with a minimum 300 volt rating and 2/64--inch thick insulation must be used.

INDOOR UNIT INSTALLATION

Indoor wire connection

1. Lift the indoor unit front panel.
2. Remove the indoor unit electrical cover and cord clamp by loosening the screws.
3. Pass the connecting wires from the back of indoor unit and connect to the indoor terminal block.

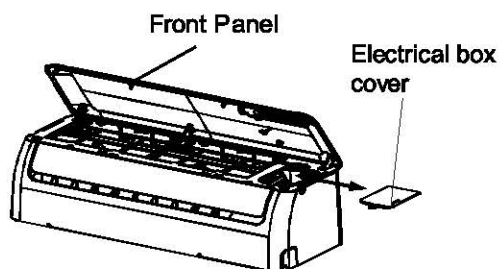
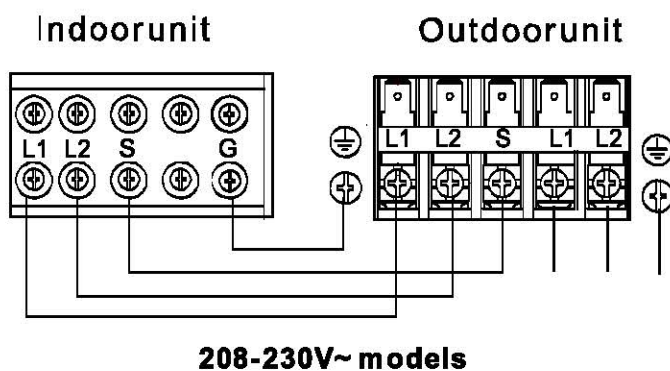
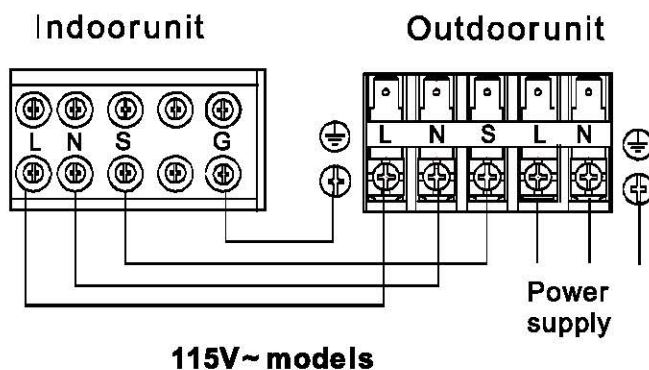


Fig.5



4.Connective Pipe and Drainage Installation

Drainage

1. Run the drain hose sloping downward.
Do not install the drain hose as illustrated in Fig.5.
2. When connecting extension drain hose, insulate the connecting part of extension drain hose with a shield pipe, do not let the drain hose slack.

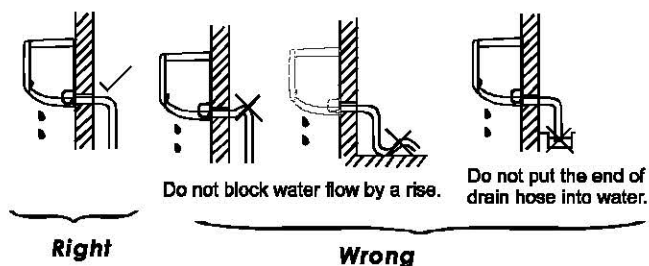


Fig.6

INDOOR UNIT INSTALLATION

Connective pipe installation

1. For the left-hand and right-hand piping, remove the pipe cover from the side panel.
2. For the right back and left back piping, install the piping as shown.

NOTE: For 9K/12K model, there is only one side drainage structure design. For ≥ 18 k model, one side drainage structure is standard. Both sides drainage structure is optional and can only be customized from factory. For both sides drainage structure, it can be chosen for right, left or both sides drainage connection. If choosing both sides drainage connection, another proper drain hose is needed as there is only one drain hose offered by factory. If choosing one side drainage connection, make sure the drain hole on the other side is well plugged. The connection of the drain hose is supposed to be done by qualified installer in case of water leakage.

3. Bundle the tubing, connecting cable, and drain hose with tape securely, evenly as shown in Figure on the right.

- Because the condensed water from rear of the indoor unit is gathered in ponding box and is piped out of room. Do not put anything else in the box.

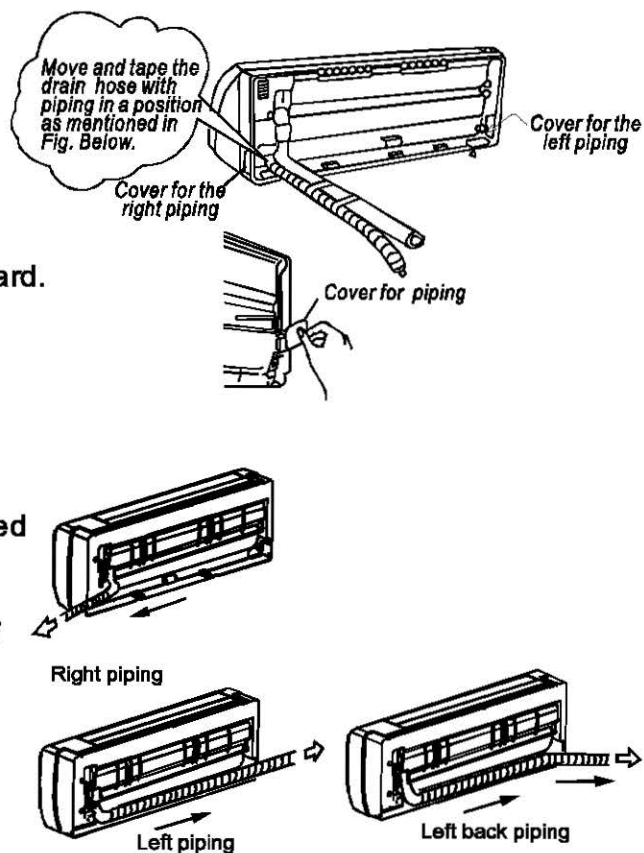


Fig.7

CAUTION

- Connect the indoor unit first, then the outdoor unit.
- Do not allow the piping to let out from the back of the indoor unit.
- Be careful not to let the drain hose slack.
- Heat insulation should be done to the extension drain hose of indoor unit.
- Be sure that the drain hose is located at the lowest side of the bundle. Locating at the upper side can cause drain pan to overflow inside the unit.
- Never intercross nor intertwist the power wire with any other wiring.

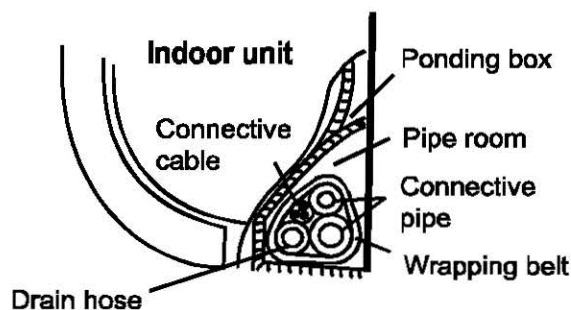


Fig.8

OUTDOOR UNIT INSTALLATION

Indoor unit installation

1. Pass the piping through the hole in the wall.
2. Hook the indoor unit onto the upper portion of installation plate (Engage the indoor unit with the upper edge of the installation plate). Ensure the hooks are properly seated on the installation plate by moving it in left and right.
3. Piping can easily be made by lifting the indoor unit with a cushioning material between the indoor unit and the wall. Get it out after finish piping.
4. Press the lower left and right side of the unit against the installation plate until hooks engages with their slots.

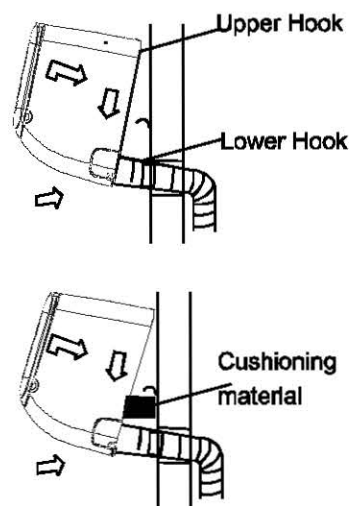


Fig.9

OUTDOOR UNIT INSTALLATION

Outdoor installation precaution

- Install the outdoor unit on a rigid base to prevent increasing noise level and vibration.
 - Determine the air outlet direction where the discharged air is not blocked. In the case that the installation place is exposed to strong wind such as a seaside, make sure the fan operating properly by putting the unit lengthwise along the wall or using a dust or shield plates.
 - Specially in windy area, install the unit to prevent the admission of wind. If need suspending installation, the installation bracket should accord with technique requirement in the installation bracket diagram.
 - The installation wall should be solid brick, concrete or the same intensity construction, or actions to reinforce, damping supporting should be taken. The connection between bracket and wall, bracket and the air conditioner should be
 - firm, stable and reliable.
- Be sure there is no obstacle which block radiating air.

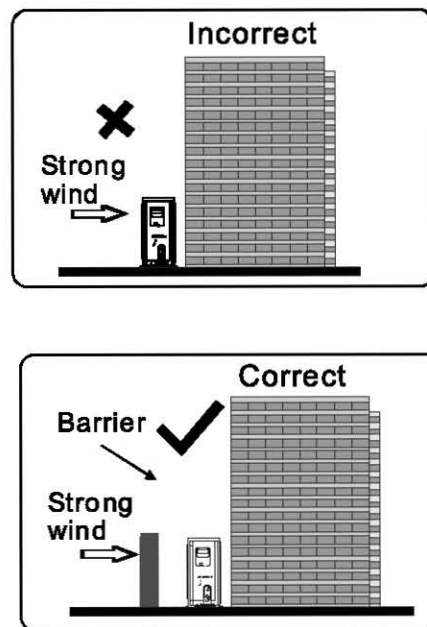


Fig.10

OUTDOOR UNIT INSTALLATION

Settlement of outdoor unit

- Anchor the outdoor unit with a bolt and nut $\phi 10$ or $\phi 8$ tightly and horizontally on a concrete or rigid mount.
NOTE: The outdoor unit you purchase may be like one of the following. Install the outdoor unit according to the dimension as indicated on the table.

Drain joint installation

NOTE: The drain joint is slightly different according to the different outdoor unit. For the drain joint with the seal (Fig.11 (A)), first fit the seal onto the drain joint, then insert the drain joint into the base pan hole of outdoor unit, rotate 90° to securely assemble them. To install drain joint as shown in Fig.11 (B), insert the drain joint into the base pan hole of outdoor unit until it remains fixed with a clicking sound. Connecting the drain joint with an extension drain hose (Locally purchased), in case of the water draining off the outdoor unit during the heating mode.

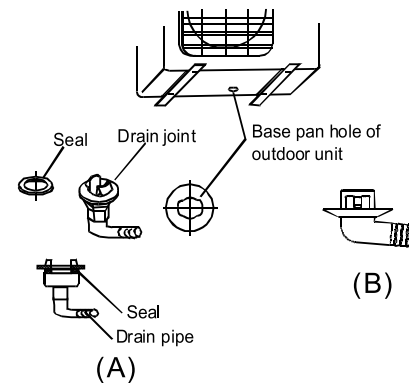


Fig.11

Refrigerant pipe connection

NOTE: Connective pipe length will affect the capacity and energy efficiency of the unit. The nominal efficiency is tested basing on the pipe length of 5 meters.

1. Flaring work

Main cause for refrigerant leakage is due to defect in the flaring work. Carry out correct flaring work using the following procedure:

A: Cut the pipes and the cable.

1. Use the piping kit accessory or pipes purchased locally.
2. Measure the distance between the indoor and the outdoor unit.
3. Cut the pipes a little longer than the measured distance.
4. Cut the cable 1.5m longer than the pipe length.

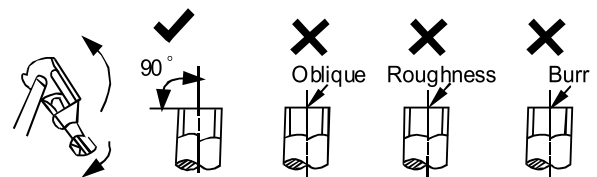


Fig.12

OUTDOOR UNIT INSTALLATION

B: Burr removal

1. Completely remove all burrs from the cut cross section of pipe/tube.
2. Put the end of the copper tube/pipe in a downward direction as you remove burrs in order to avoid dropping burrs into the tubing.

C: Putting nut on

Remove flare nuts attached to indoor and outdoor unit, then put them on pipe/tube having completed burr removal.(not possible to put them on after flaring work)

D: Flaring work

Firmly hold copper pipe in a die in the dimension shown in the table below.

Outer diam. (in/Mm)	A(in/mm)	
	Max.	Min.
$\phi 1/4/6.35$	0.05/1.3	0.03/0.7
$\phi 3/8/9.52$	0.06/1.6	0.04/1.0
$\phi 1/2/12.7$	0.07/1.8	0.04/1.0
$\phi 5/8/16$	0.09/2.2	0.08/2.0

E: Pipe length

Model	Capacity (Btu/h)	Max. Length of refrigerant pipe(ft/m)	Max. drop height (ft/m)
R410A inverter split air conditioner	<15000	82/25	32.8/10
	>15000~<24000	98/30	65.6/20
	>24000~<36000	164/50	82/25
	>36000~<60000	213/65	98/30

2. Tightening Connection

- Align the center of the pipes.
- Sufficiently tighten the flare nut with fingers, and then tighten it with a spanner and torque wrench as shown in Fig.16 & 17.

Outer diam. (in/Mm)	Tightening torque (lbf.in/N.cm)	Additional tightening torque(lbf.in/N.cm)
$\phi 1/4/6.35$	132.8/1500	141.59/1600
$\phi 3/8/9.52$	221.34/2500	230.02/2600
$\phi 1/2/12.7$	309.73/3500	318.56/3600
$\phi 5/8/16$	398.23/4500	415.93/ 4700

Caution

- Excessive torque can break nut depending on installation conditions.

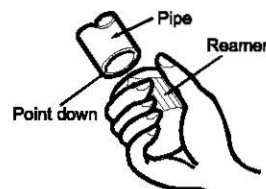


Fig.13

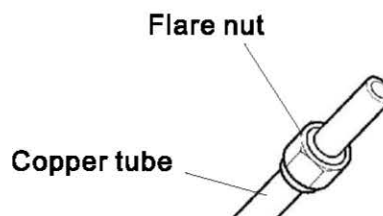


Fig.14

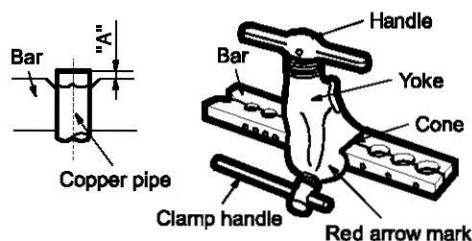


Fig.15

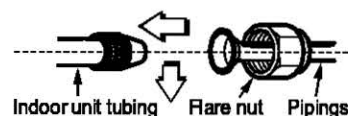


Fig.16



Fig.17

OUTDOOR UNIT INSTALLATION

Connect the cable to the outdoor unit

1. Remove the cover control from the unit by loosening the 3 screws. See Fig.18.
2. Dismount caps on the conduit panel.
3. Temporarily mount the conduit tubes(not included) on the conduit panel.
4. Properly connect both the power supply and low voltage lines to the corresponding terminals on the terminal block.
5. Ground the unit in accordance with local codes.
6. Be sure to size each wire allowing several inches longer than the required length for wiring.
7. Use lock nuts to secure the conduit tubes.

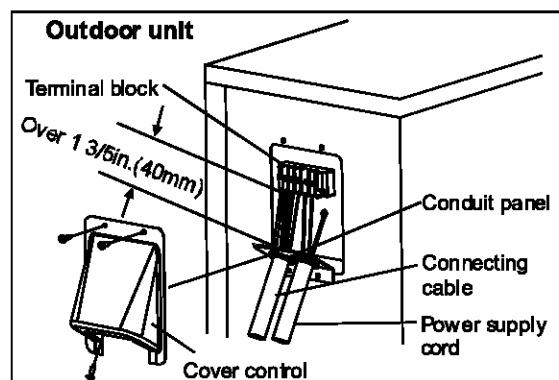


Fig.18

Air purging

Air and moisture in the refrigerant system have undesirable effects as indicated below:

- Pressure in the system rises.
- Operating current rises.
- Cooling or heating efficiency drops.
- Moisture in the refrigerant circuit may freeze and block capillary tubing.
- Water may lead to corrosion of parts in the refrigeration system.

Therefore, the indoor unit and tubing between the indoor and outdoor unit must be leak tested and evacuated to remove any noncondensables and moisture from the system.

1.Air purging with vacuum pump

- Preparation
Check that each tube(both liquid and gas side tubes) between the indoor and outdoor units have been properly connected and all wiring for the test run has been completed. Remove the service valve caps from both the gas and the liquid side on the outdoor unit. Note that both the liquid and the gas side service valves on the outdoor unit are kept closed at this stage.
- Pipe length and refrigerant amount:

Connective pipe length	Air purging method	Additional amount of refrigerant to be charged	
Less than 25ft(7.5m)	Use vacuum pump	—————	
More than 25ft(7.5m)	Use vacuum pump	Liquid side: $\phi 1/4$ in(6.35mm)	Liquid side: $\phi 3/8$ in(9.52mm):
		R410A: (Pipe length-7.5(25))x0.16oz/ft(15g/m)	R410A: (Pipe length-7.5(25))x0.32oz/ft(30g/m)

OUTDOOR UNIT INSTALLATION

- When relocating the unit to another place, perform evacuation using vacuum pump.
- Make sure the refrigerant added into the unit is in a liquid form.

Caution in handling the packed valve

- Open the valve stem until it hits against the stopper. Do not try to open it further.
- Securely tighten the valve stem cap with a spanner.
- Valve stem cap tightening torque (See Tightening torque table in previous page).

2. When Using the Vacuum Pump

(For method of using a manifold valve, refer to its operation manual.)

1. Completely tighten the flare nuts, A, B, C, D, connect the manifold valve charge hose to a charge port of the low-pressure valve on the gas pipe side.
2. Connect the charge hose connection to the vacuum pump.
3. Fully open the Suction valve of the manifold valve.
4. Operate the vacuum pump to evacuate. After starting evacuation, slightly loose the flare nut of the Lo valve on the gas pipe side and check that the air is entering (Operation) noise of the vacuum pump changes and a compound meter indicates 0 instead of minus.
5. After the evacuation is complete, fully close the Suction valve of the manifold valve and stop the operation of the vacuum pump. Perform evacuation for 15 minutes or more and check that the compound meter indicates 500 microns.
6. Turn the stem of the packed valve B about 45° counterclockwise for 6~7 seconds after the gas comes out, then tighten the flare nut again. Make sure the pressure display in the pressure indicator is a little higher than the atmosphere pressure.
7. Remove the charge hose from the Low pressure charge hose.
8. Fully open the packed valve stems B and A.
9. Securely tighten the cap of the packed valve.

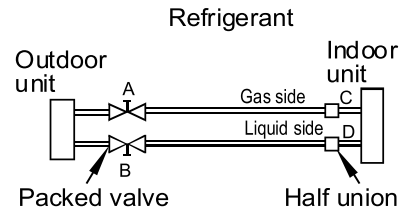


Fig.19

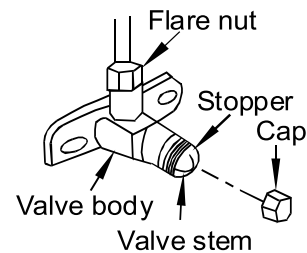


Fig.20

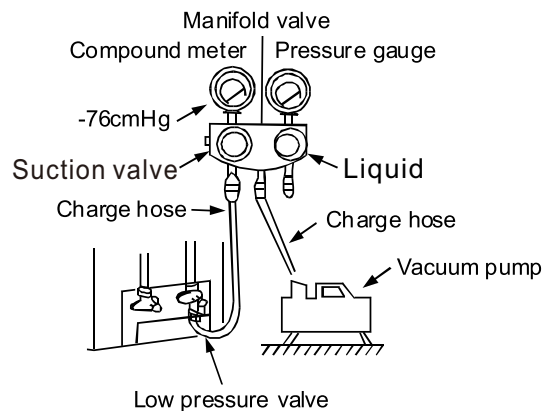


Fig.21

RUNNING TESTS

3.Safety and leakage check

● **Electrical safety check**

Perform the electric safe check after completing installation:

1. Grounding work

After finishing grounding work, measure the grounding resistance by visual detection and grounding resistance tester. Make sure the grounding resistance is less than 4 Ω .

2. Electrical leakage check (performing during test running)

During test operation after finishing installation, the serviceman can use the multimeter to perform the electrical leakage check. Turn off the unit immediately if leakage happens.

Check and find out the solution ways till the unit operate properly.

● **Gas leak check**

1. Soap water method:

Apply a soap water or a liquid neutral detergent on the indoor unit connections and outdoor unit connections by a soft brush to check for leakage of the connecting points of the piping. If bubbles come out, it indicates that the pipes have leakage.

2. Leak detector

Use the leak detector to check for leakage.

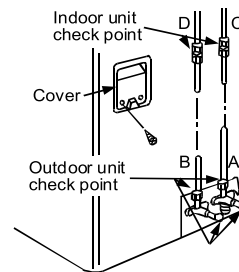


Fig.22

CAUTION

A: Suction valve B: Liquid valve

C and D are ends of indoor unit connection.

TEST RUNNING

Perform test operation after completing gas leak check at the flare nut connections and electrical safety check.

- Check that all tubing and wiring have been properly connected.

- Check that the gas and liquid side service valves are fully open.

1. Connect the power, press the ON/OFF button on the remote controller to turn the unit on.

2. Use the MODE button to select COOL, HEAT, AUTO and FAN to check if all the functions works well.

3. When the ambient temperature is too low(lower than 62°F), the unit cannot be controlled by the remote controller to run at cooling mode, manual operation can be taken. Manual operation is used only when the remote controller is disable or maintenance necessary.

- Hold the panel sides and lift the panel up to an angle until it remains fixed with a clicking sound.

- Press the Manual control button to select the AUTO or COOL, the unit will operate under Forced AUTO or COOL mode(see User Manual for details).

4. The test operation should last about 30 minutes.

