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# Vertical Fan Coil

## Installation and Maintenance Manual

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# 1. Preface

Thank you for choosing PHNIX vertical water fan coil for controlling the climate in you home. PHNIX products strictly comply with design and production standards to provide high quality operation, perfect performance, high reliability and good adaptability.

Please read this installation and maintenance manual carefully before installing and starting up the appliance. All repair or maintenance interventions must be performed by the technical service department or by professionally qualified personnel. Do not modify or intervene on the appliance as this could create dangerous situations and the manufacturer will not be responsible for any damage caused.

This instruction must be kept carefully and must always accompany the appliance. If it is lost or damaged, please contact the local PHNIX technical service centre.

1.1 Failure to comply with these recommendations will invalidate the warranty.

- PHNIX appliances must be installed by an authorized installer.
- All repair or maintenance interventions must be performed by the technical service department or by professionally qualified personnel.
- All repair or maintenance interventions must be performed in the specified period and times.
- Use the spare parts ONLY provided by PHNIX.

1.2 In case of water leaks, turn the master switch of the system to "OFF" and close the water taps. As soon as possible, call the PHNIX technical service department or else professionally qualified personnel and do not intervene personally on the appliance.

If the unit is not used for a long time, you should:


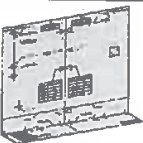


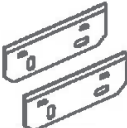







- Power off the unit.
- If there is no anti-freeze protection, please drain out the water.

1.3 Note:

- If the room temperature is too low it is damaging for the health and is also a useless waste of energy.
- Avoid prolonged contact with the direct air flow.
- Do not leave the room closed for long periods. Periodically open the windows to ensure a correct change of air.

1.4 Packing list



Fig.1

| Vertical Water Fan Coil   | Installation Template   | Manual   | Drain Pipe  |
|---|---|--|---|
|  |  |   |  |
| Brackets  | Toggle bolts  | Screw  | Screw cap   |
|  |  |   |  |
| electrothermal 3-way valve  | Remote controller (optional)  | Feet (optional)  | Bellows (optional)  |
|  |  |  |  |

## 2. Installation precautions

To prevent the users and others from the harm of this unit, and avoid damage on the unit or other property, please use the heat pump properly, please read this manual carefully and understand the following information correctly.




### 2.1 Mark Notes

| Mark   | Meaning   |
|--|---|
|  <b>WARNING</b>   | A wrong operation may lead to death or heavy injury on people.    |
|  <b>ATTENTION</b> | A wrong operation may lead to harm on people or loss of material. |








(1) The injury means no need to be in hospital and cure for a long time.

(2) The material lost means property and datum lost.

### 2.2 Icon Notes



| Icon  | Meaning  |
|---|--|
|  | Prohibition. What is prohibited will be nearby this icon.                |
|  | Compulsory implement. The listed action need to be taken.                |
|  | Attention(include warning)<br>Please pay attention to what is indicated. |




### 2.3 Waring

|                        |  |  |
|------------------------|--|--|
| <b>INSTALLATION</b>    | <br><b>PROFESSIONAL<br/>INSTALLER IS REQUIRED</b> | Entrust a specialized personnel installation, Other researchers installation may cause installation does not perfect, causing irrigation, personnel electric shock or fires.                             |
|                        | <br><b>EARTHING<br/>IS REQUIRED.</b>              | Confirm whether correct grounding, if is not perfect, may cause ground personnel shock.  |
| <b>OPERATION</b>       | <br><b>PROHIBITION</b>                            | Do not put fingers or others into the fans and evaporator of the unit, otherwise harm may be occurred.   |
|                        | <br><b>SHUT OFF<br/>THE POWER</b>                 | When there is something wrong or strange smell, the power supply need to be shut off to stop the unit. Continue to run may cause electrical shock or fire.   |
| <b>MOVE AND REPAIR</b> | <br><b>ENTRUST</b>                                | When the heat pump need to be moved or installed again, please entrust dealer or qualified person to carry it out. Improper installation will lead to water leakage, electrical shock, injury or fire.   |
|                        | <br><b>PROHIBIT</b>                               | It is prohibited to repair the unit by the user himself, otherwise electrical shock or fire may be occur.  |
|                        | <br><b>ENTRUST</b>                                | When the heat pump need to be repaired, please entrust dealer or qualified person to carry it out. Improper movement or repair on the unit will lead to water leakage, electrical shock, injury or fire. |

## 2. Safety precaution

### 2.4 Attention

| INSTALLATION  | Meaning   |
|---|---|
| <br>Fix the unit         | Make sure that the basement of the heat pump is strong enough to avoid any decline or fall down of the unit.        |
| <br>Need circuit breaker | Make sure that there is circuit breaker for the unit, lack of circuit breaker can lead to electrical shock or fire. |

| OPERATION  | Meaning  |
|--|--|
| <br>Check the installation basement | Please check the installation basement regularly to avoid any decline or damage on the basement, which may hurt people or damage the unit. |
| <br>Switch off the unit             | Please switch off the power for clean or maintenance.  |
| <br>Prohibit                       | Please use the suitable fuse.<br>If use copper or iron, it will cause failure, even the fire.  |



### **Warning:**

Remember that some fundamental safety rules should be followed when using a product that uses electricity and water, such as:

It is forbidden for the appliance to be used by children or unassisted-disabled persons.

It is forbidden to touch the appliance with wet hands or body when barefoot.

It is forbidden to carry out any cleaning before having disconnected the appliances from the electricity mains supply by turning the system master switch to OFF.

It is forbidden to modify the safety or adjustment devices or adjust without authorization and indication of the manufacturer.

It is forbidden to pull, cut or knot the electrical cables coming out of the appliance, even if it is disconnected from the mains supply.

It is forbidden to poke objects or anything else through the inlet or outlet grills.

It is forbidden to dispose of or leave in the reach of children the packaging materials which could become a source of danger.

It is forbidden to climb onto the appliance or rest any object on it.

It is forbidden to touch the unit with hands directly as the external parts of the appliance can reach temperatures of more than 158°F.

### 3.Specification

#### 3.1 Parameter list

| Unit Model                 |            | PFP-025(V)        | PFP-040(V) | PFP-060(V) | PFP-080(V) | PFP-100(V) |
|----------------------------|------------|-------------------|------------|------------|------------|------------|
| Heating capacity①          | W          | 2550              | 3950       | 5750       | 7200       | 9400       |
|                            | Btu/h      | 8700              | 13500      | 19600      | 24600      | 32000      |
| Water flow rate①           | gallon/min | 0.97              | 1.50       | 2.16       | 2.73       | 3.56       |
| Pressure drop①             | psig       | 1.54              | 1.77       | 3.80       | 3.99       | 4.09       |
| Heating capacity②          | W          | 1350              | 2500       | 3350       | 4300       | 5200       |
|                            | Btu/h      | 4600              | 8500       | 11400      | 14600      | 17800      |
| Water flow rate②           | gallon/min | 1.01              | 1.89       | 2.55       | 3.26       | 3.92       |
| Pressure drop②             | psig       | 1.57              | 1.90       | 3.99       | 4.05       | 4.13       |
| cooling capacity③          | W          | 1000              | 1900       | 2500       | 3500       | 4350       |
|                            | Btu/h      | 3400              | 6500       | 8500       | 12000      | 14800      |
| Water flow rate③           | gallon/min | 0.75              | 1.45       | 1.89       | 2.64       | 3.30       |
| Pressure drop③             | psig       | 1.61              | 1.93       | 4.02       | 4.10       | 4.44       |
| Air volume                 | m³/h       | 160               | 320        | 460        | 580        | 650        |
| Noise                      | dB(A)      | 30                | 32         | 37         | 39         | 41         |
| Power Supply               | /          | 110-120V~/60Hz    |            |            |            |            |
| Power Input                | W          | 12                | 16         | 20         | 24         | 30         |
| Water In/Out               | NPT        | 3/4               | 3/4        | 3/4        | 3/4        | 3/4        |
| Drain                      | inch       | 0.63              | 0.63       | 0.63       | 0.63       | 0.63       |
| Net Dimensions(L/W/H)      | Inch       | See below         |            |            |            |            |
| Shipping Dimensions(L/W/H) | inch       | See package label |            |            |            |            |
| Net weight                 | lb         | See nameplate     |            |            |            |            |
| Gross weight               | lb         | See package label |            |            |            |            |

Test conditions:

(1) Heating test conditions:

Based on entering water temp. at 158°F ,difference in temp. Have 50°F and entering air temp. at 68°F DB .

(2) Heating test conditions:

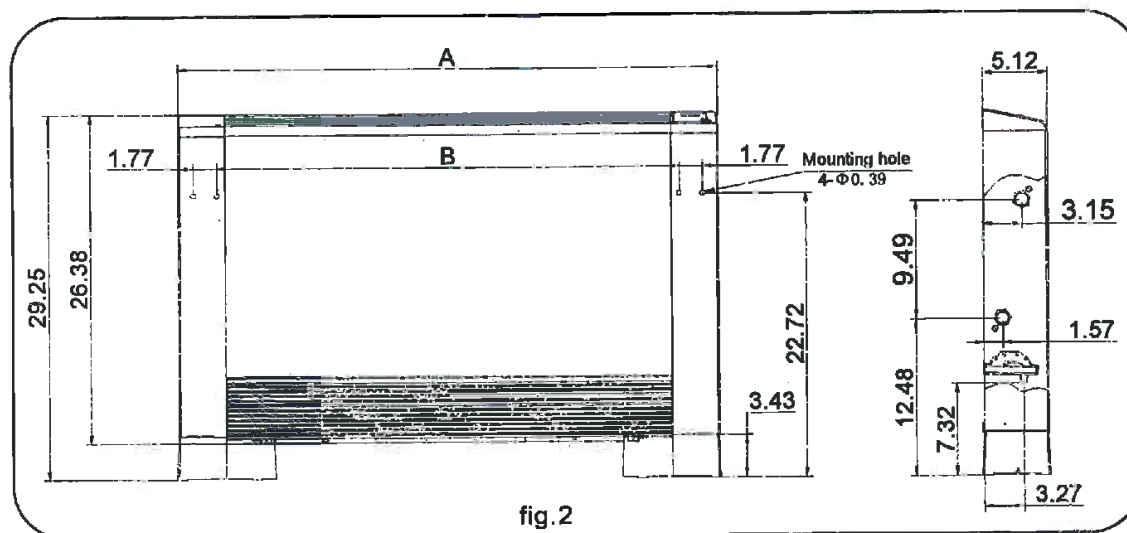
Based on entering water temp. at 122°F ,difference in temp. Have 41°F and entering air temp. at 68°F DB .

(3) Cooling test conditions:

Based on entering water temp.at 44.6°F ,difference in temp. Have 41°F and entering air temp.at 80.6°F DB/ 66.2°F DB.

(4) Above data is subject to our change without prior notification.

#### 3.2 Overall dimensions



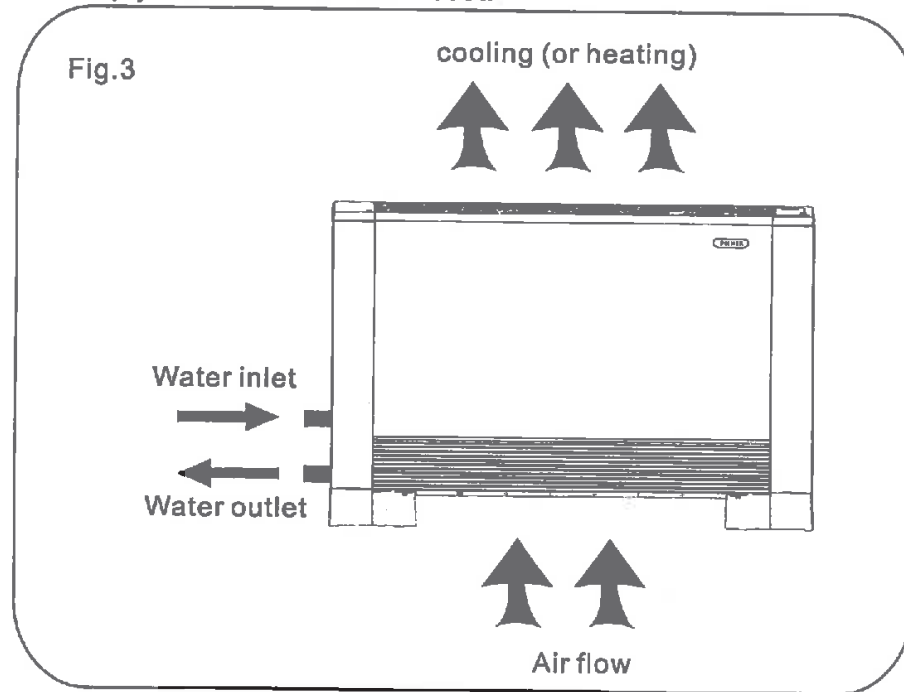
| Unit Model | PFP-025(V) | PFP-040(V) | PFP-060(V) | PFP-080(V) | PFP-100(V) |
|------------|------------|------------|------------|------------|------------|
| A(inch)    | 27.56      | 35.43      | 43.31      | 51.18      | 59.06      |
| B(inch)    | 14.41      | 22.28      | 30.16      | 38.03      | 45.91      |

## 3.Specification

### 3.3 The working principle of units

PHNIX moonlight treasure box series--Ultra-thin fan-coil unit in which water and cooling, heating medium of a new generation of air terminal product, ultra-thin with cooling and heating function, can apply to the room refrigeration, desiccant and heating ( fig.3 ) .

And the traditional fan-coil PHNIX compared ultra-thin fan coil, thinner, is more static, the more beautiful; The ultra-thin design meticulously PHNIX fan-coil every broke traditional fan coil installation modes, may realize the vertical, horizontal, hang wall and so on many kinds of installation, sharply reduced installation cost.



### 3.4 Unit characteristics

#### (1) Ultra-low mute

Using low noise tubular fan, combining advanced ventilation technology on internal exquisite layout, let the machine low db operation, let you sleep more comfortable

#### (2) Ultra-thin design

Internal parts ultra-thin precision contact, thickness, compared to the normal vertical 9.84inch thickness of the disk, PHNIX 5.12inch ultra-thin fan coil only the width, and palm, vie for you leave more valuable space.

#### (3) Appearance fashion

The appearance of the radian of noble fashion, white colour elegant and easy, no matter in any one place, will indoor become beautiful scenery.

(4) Using a new design of vertical wind disk controller, appearance vogue, interface contracted, operating more simple, more human nature.

## 4. Installation

### 4.1 Installation precautions

**4.1.1** To ensure that the installation is performed correctly and that the appliance will perform perfectly, carefully follow the instructions indicated in this manual. Failure to respect the rules indicated not only can cause malfunctions of the appliance but also invalidate the warranty and hence PHNIX shall not respond for any damage to persons, animals or property.

**4.1.2** It is important that the electrical installation is made according to the laws in force, respects the data indicated in the technical sheet and is correctly earthed.

**4.1.3** The appliance must be installed in a position that allows the routine maintenance, such as filter cleaning.

### 4.2 Positioning the unit

#### 4.2.1 Avoid installing the unit in proximity to:

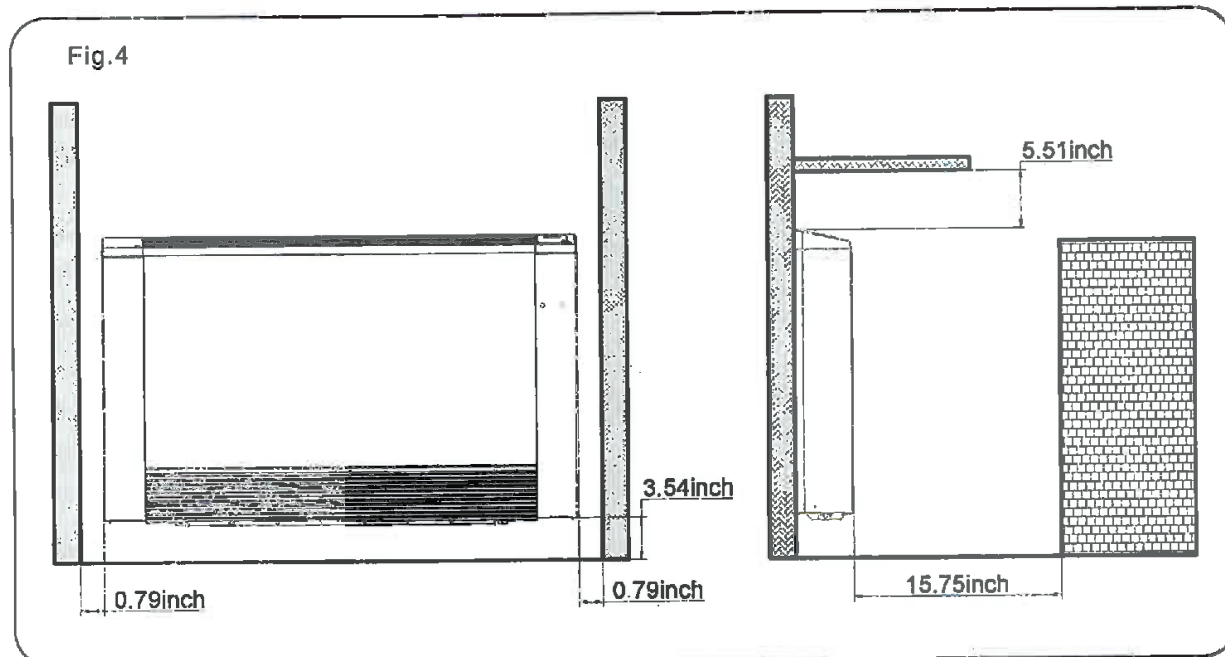
- positions subject to exposure to direct sunlight;
- in proximity to sources of heat;
- in damp areas or places with probable contact with water;
- in places with oil fumes
- places subject to high frequencies.

#### 4.2.1 Make sure that:

- the wall on which the unit is to be installed is strong enough to support the weight;
- the part of the wall interested does not have pipes or electric wires passing through;
- the interested wall is perfectly flat;
- there is an area free of obstacles which could interfere with the inlet and outlet air flow;
- the installation wall is preferably an outside perimeter wall to allow the discharge of condensation outside;

### 4.3 Minimum installation distances

**4.3.1** Figure indicates the minimum mounting distances between the wall-mounted cooler-convactor and furniture present in the room.

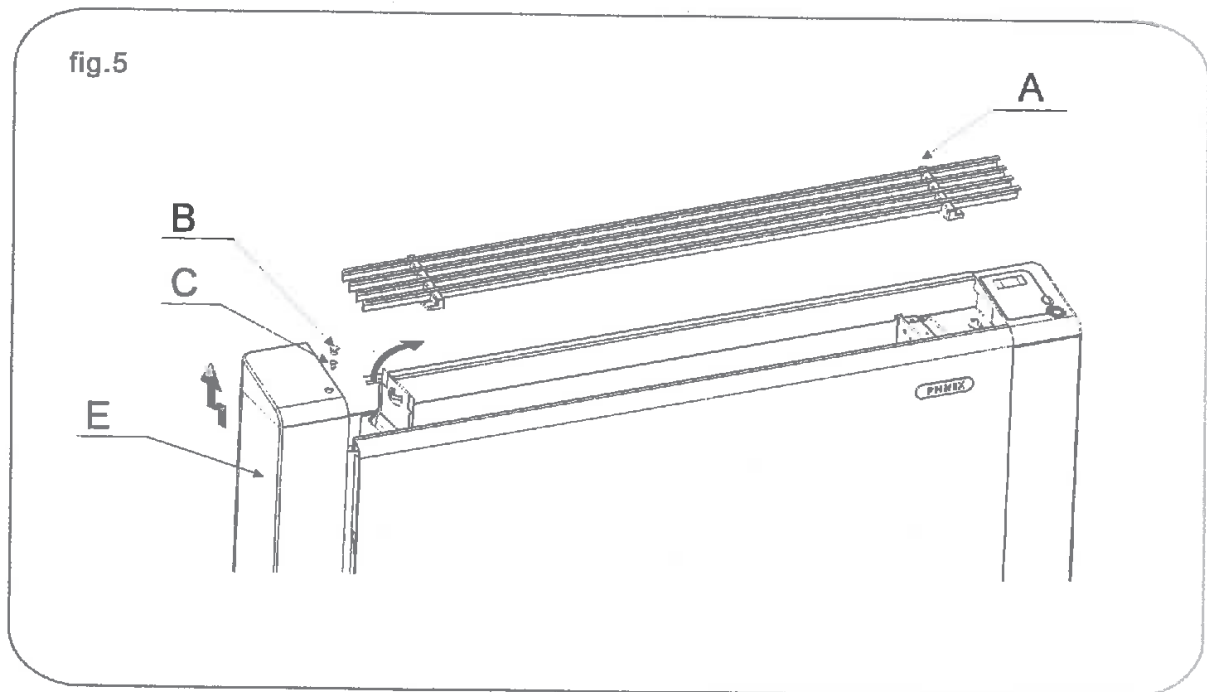




## 4.Installation

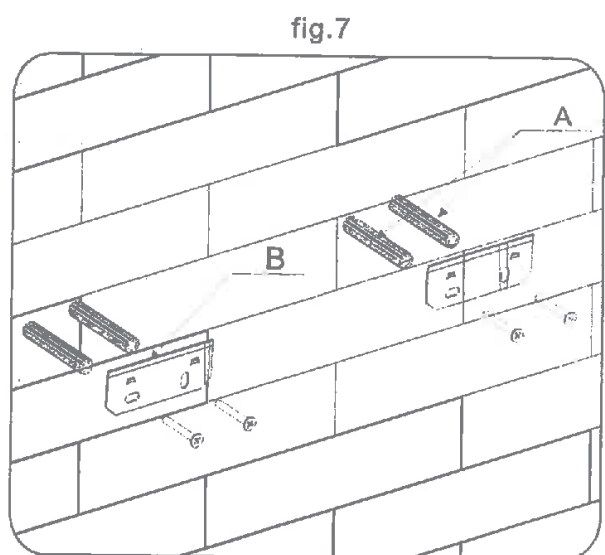
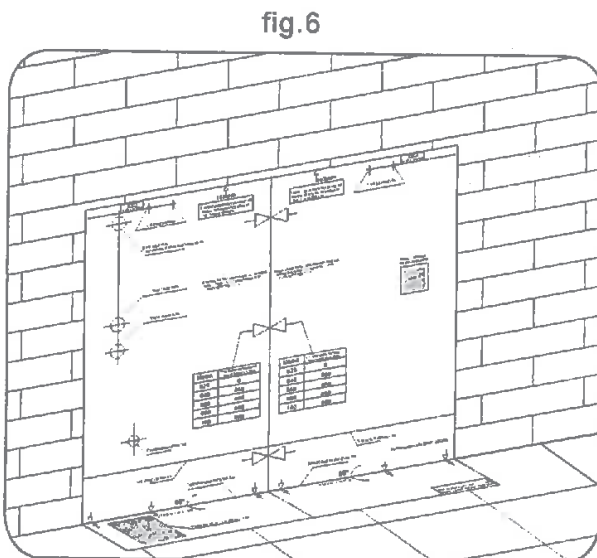
### 4.3.2 Side opening (fig.5)

- Dismount the upper grill (fig. ref.A) by unscrewing the fixing screws.
- Lift the cover (fig. ref. B) that protects the screw (fig. ref. C) and unscrew it. Move the side panel slightly and lift it out (fig. ref. E).



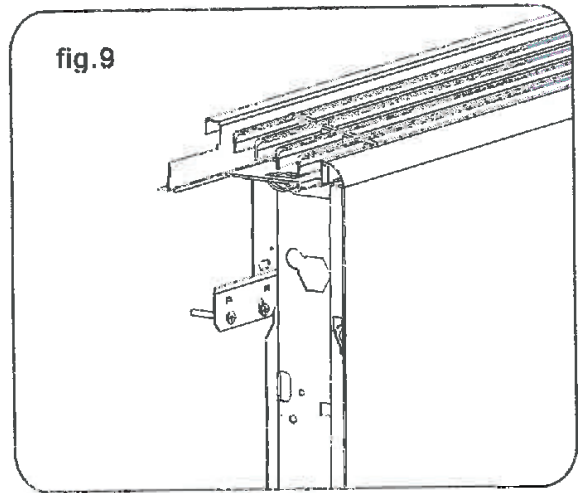
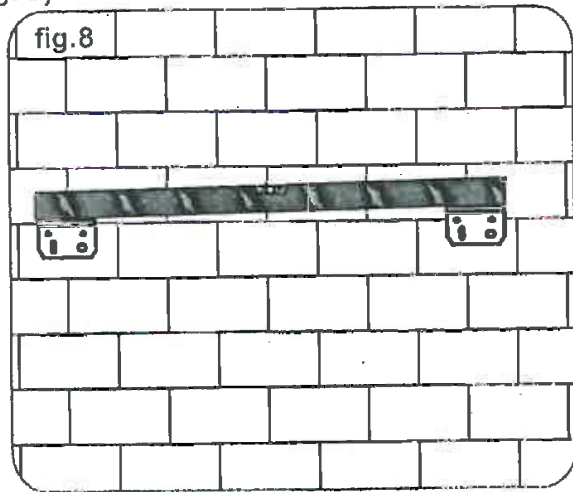
### 4.3.3 Vertical floor or wall installation

- When mounting on the floor with support feet, refer to the relative manual for the mounting of the feet(optional).
- Using the paper template, trace the position of the wall (fig.6). Use a suitable drill to make the holes with and insert the toggle bolts (2 for each bracket) (fig.7 ref. A); fix the two brackets (fig.7 ref. B).



## 4. Installation

- Do not over-tighten the screws so that the brackets can be adjusted with a spirit level (fig. 8).
- Then fully tighten the four screws to block the two brackets.
- Mount the unit, checking that it fits correctly onto the brackets and checking that it is stable (fig. 9).



### 4.4 Hydraulic connections

**4.4.1 Refer to fig.10 and fig.11 to connect the inlet and outlet lines. The hydraulic lines and joints must be thermally insulated.**



Attention;

- The hydraulic lines should be with the least resistance.
- Piping system should be clean, no rust slag and jam in the pipeline. There will be no leakage in the hydraulic lines and insult the lines after finish the connection.  
The hydraulic lines should be connect to the water tank and the height of the water should be 19.69inch higher.
- Y type filter should be installed in the water inlet of the unit.
- Air release valve should be arranged on top of the hydraulic lines to avoid air retention.
- Waterway system should be conducted the pressure test separately and not together with the Vertical Water Fan Coil.

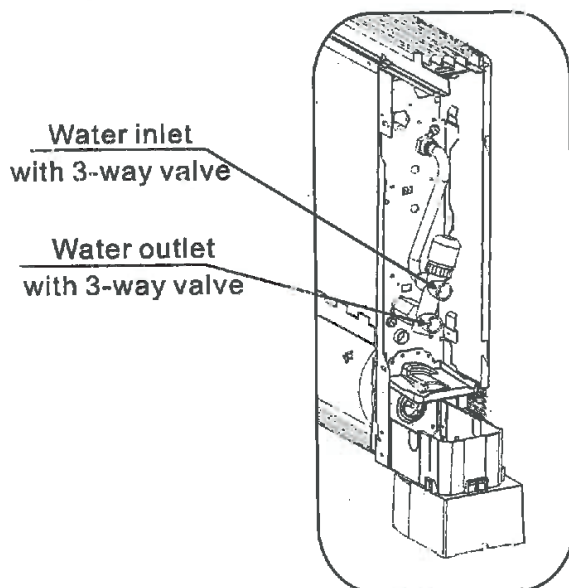


fig. 10

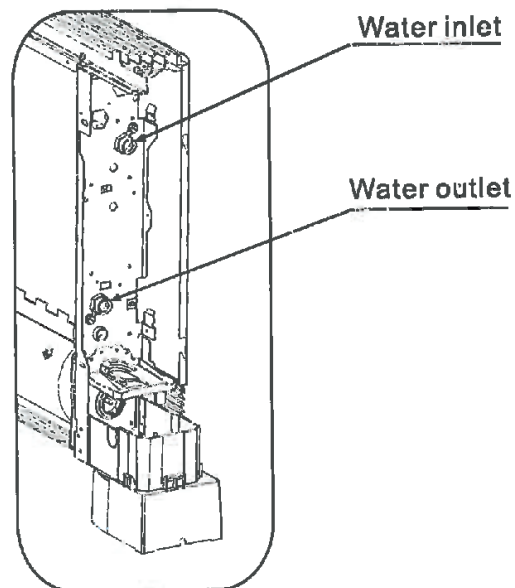


fig.11

## 4. Installation

### 4.4.2 Connection types for bellows

Connection types 1 with valve

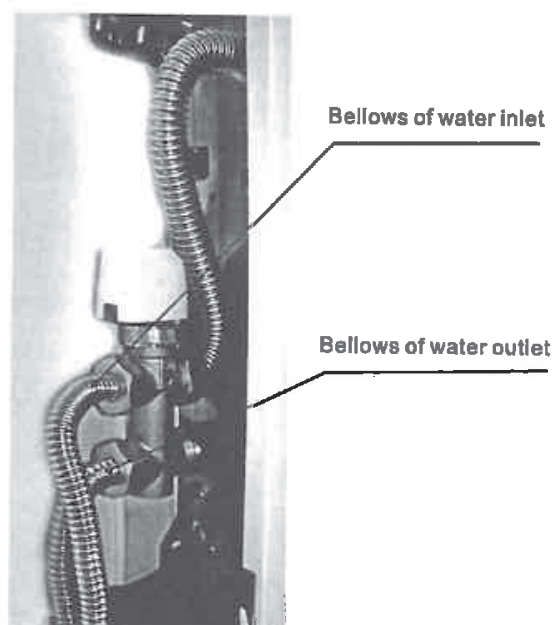


Fig. 12 Bellows connect downward to inlet/outlet

Connection types 2 with valve

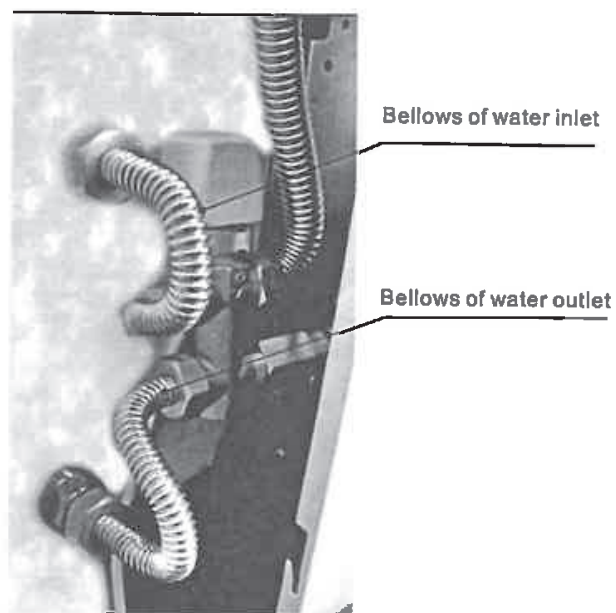


Fig. 13 Bellows connect backward to inlet/outlet

Connection types 1 without valve

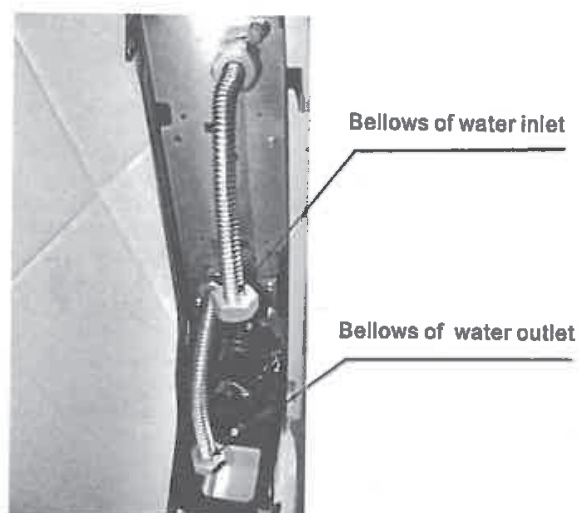


Fig. 14 Bellows connect downward to inlet/outlet

Connection types 2 without valve

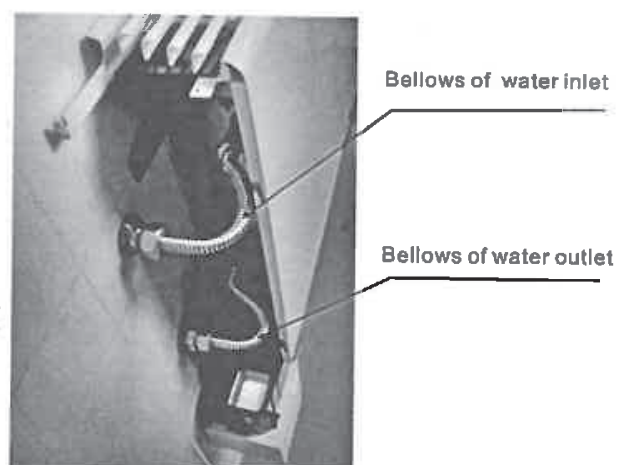


Fig. 15 Bellows connect backward to inlet/outlet

## 4. Installation

### 4.4.3 Condensation discharge

When mounting the condensation discharge device in the vertical version, connect to the condensation collection tray discharge union (fig. 16 ref. C) a pipe for the outflow of the liquid (fig. 16 ref. B) blocking it adequately. The condensation discharge network must be suitably sized (minimum inside pipe diameter 0.63inch).

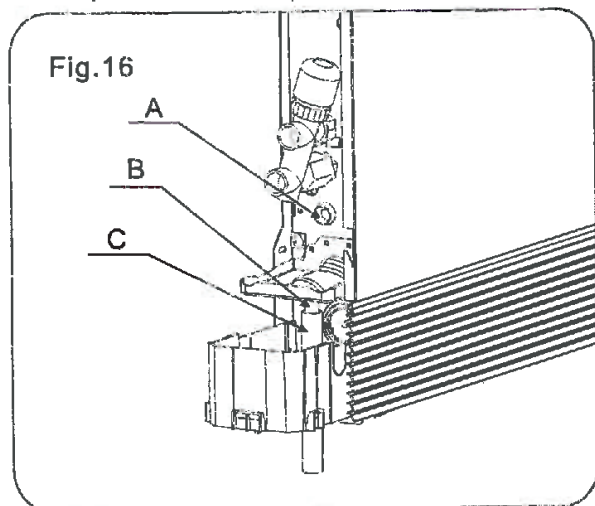


Fig. 16



Attention :

- -When discharging directly into the main drains, it is advisable to make a siphon to prevent bad smells returning up the pipe towards the room. The pipe towards the room. The curve of the siphon must be lower than the condensation collection bowl.
- -If the condensation needs to be discharged into a container, it must be open to the atmosphere and the tube must not be immersed in water to avoid problems of adhesiveness and counter-pressure that would interfere with the normal outflow.

### 4.4.4 Evacuating air while filling the system

If there is no electric power and the thermo-valve has already been powered use the special cap to press the valve stopper to open it.

Start the filling by slowly opening the system water filling tap. Use a screwdriver to unscrew the side battery breather (fig. 17 ref. A). When water starts coming out of the breather valves of the appliance, close them and continue filling until reaching the nominal value for the system. Check the hydraulic seal of the gaskets.

It is advisable to repeat these operations after the appliance has been running for a few hours and periodically check the pressure of the system.

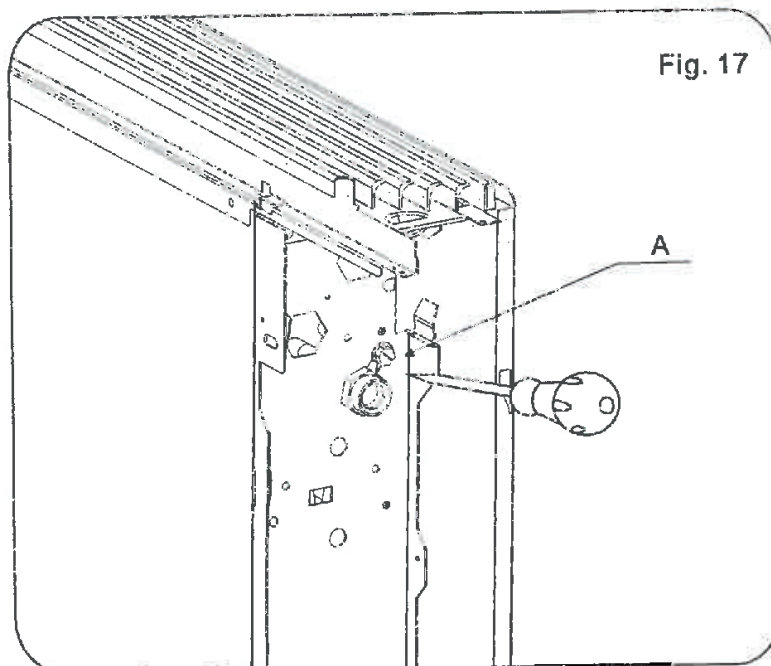
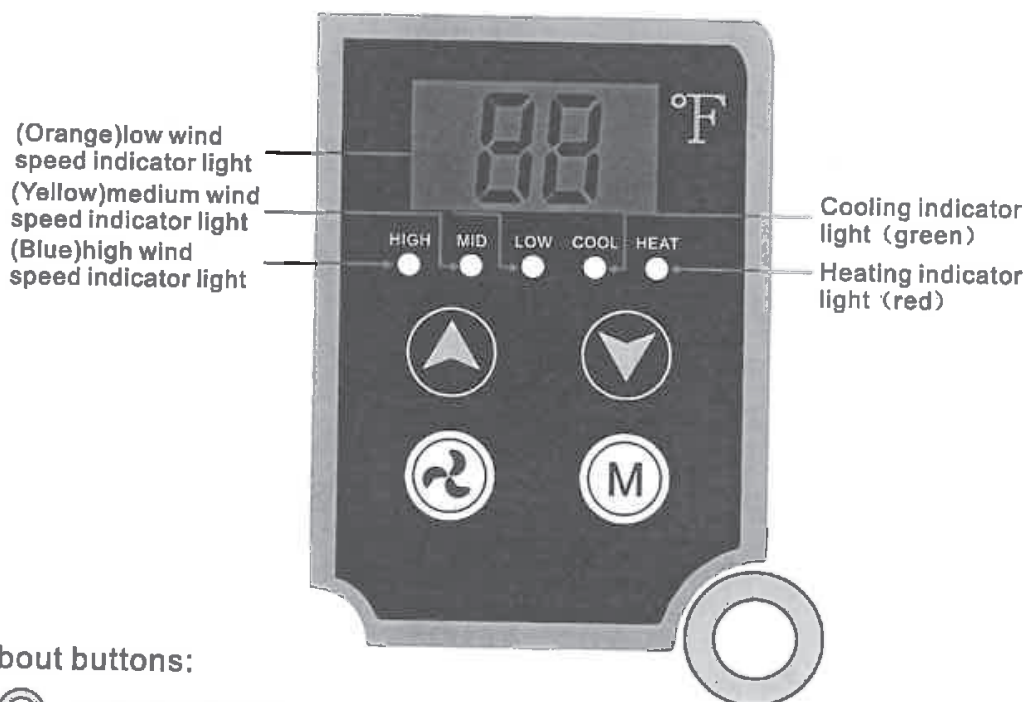


Fig. 17

## 5. Usage

### 5.1 Function description of wire controller



#### About buttons:



##### **ON/OFF BUTTON**

Pressing this button would start up or shut down the unit



##### **Press this button and select the mode you want to set.**

Cooling mode: cooling indicator light keeps on (green) ;

Heating mode: heating indicator light keeps on (red) ;

Automatic mode: cooling indicator light and heating indicator light flashes in turn.

Ventilating mode: cooling and heating indicator lights are off, the fan indicator light keeps on according to the chosen wind speed;

Dehumidifying mode: cooling indicator light keeps on for 2 seconds and off for 1 second, and over and over again.

Note: Changes of mode could only be done on main interface.



##### **Press this button and select the wind speed you want to set.**

High wind speed: High wind speed indicator light keeps on (blue) ;

Medium wind speed: Medium wind speed indicator light keeps on (yellow) ;

Low wind speed: Low wind speed indicator light keeps on (orange) ;

Automatic: high wind speed indicator light, medium wind speed indicator light and low wind speed indicator light flashes in turn;

Note: Changes of wind speed could only be done on main interface. You could not choose the automatic wind speed when in ventilating mode. When in dehumidifying mode, the wind speed is fixed in low speed.

Changes of wind speed could only be done on main interface.



**You could check the setting temperature of unit by pressing this button once.**

**You could increase the setting temperature by pressing this button again.**



**You could check the setting temperature of unit by pressing this button once.**

**You could decrease the setting temperature by pressing this button again.**

## 5. Usage

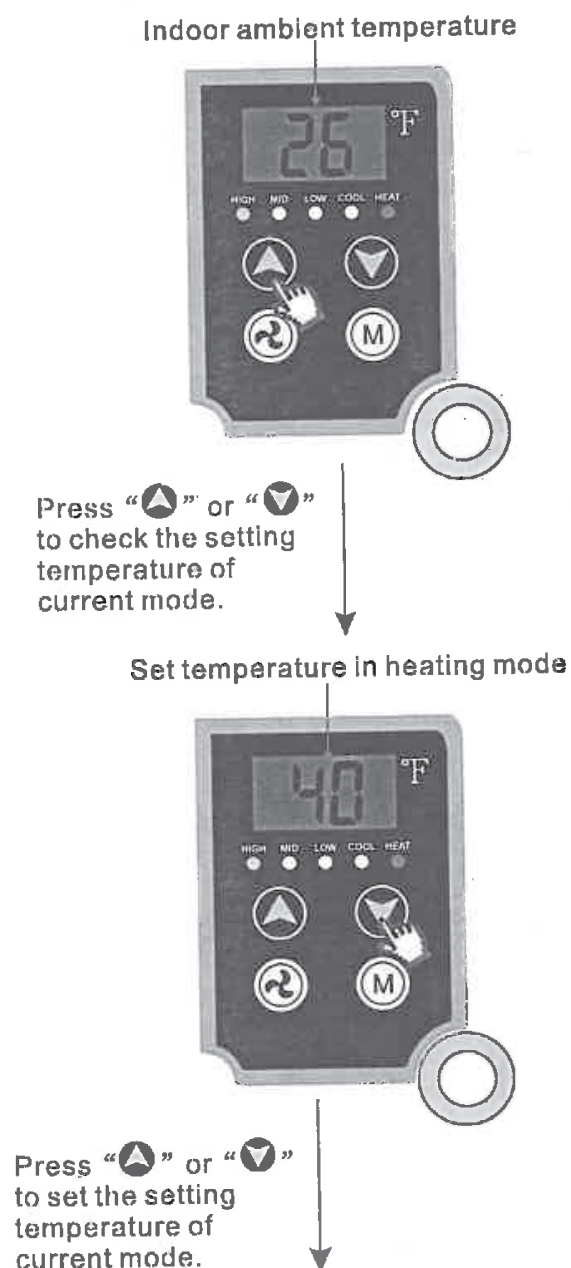
### 5.2 Usage of wire controlle

#### 2.1 Temperature setting

When on the main interface of heating, cooling and automatic mode, you can press “▲” or “▼” once to check the setting temperature. Press “▲” or “▼” again to increase or decrease the setting temperature. Press “M”, “🌀” or ON/OFF button to change mode, wind speed or shutdown the unit and save settings.

Note: System will save user's setting and return back to main interface if there is no operation on buttons in 5 seconds.

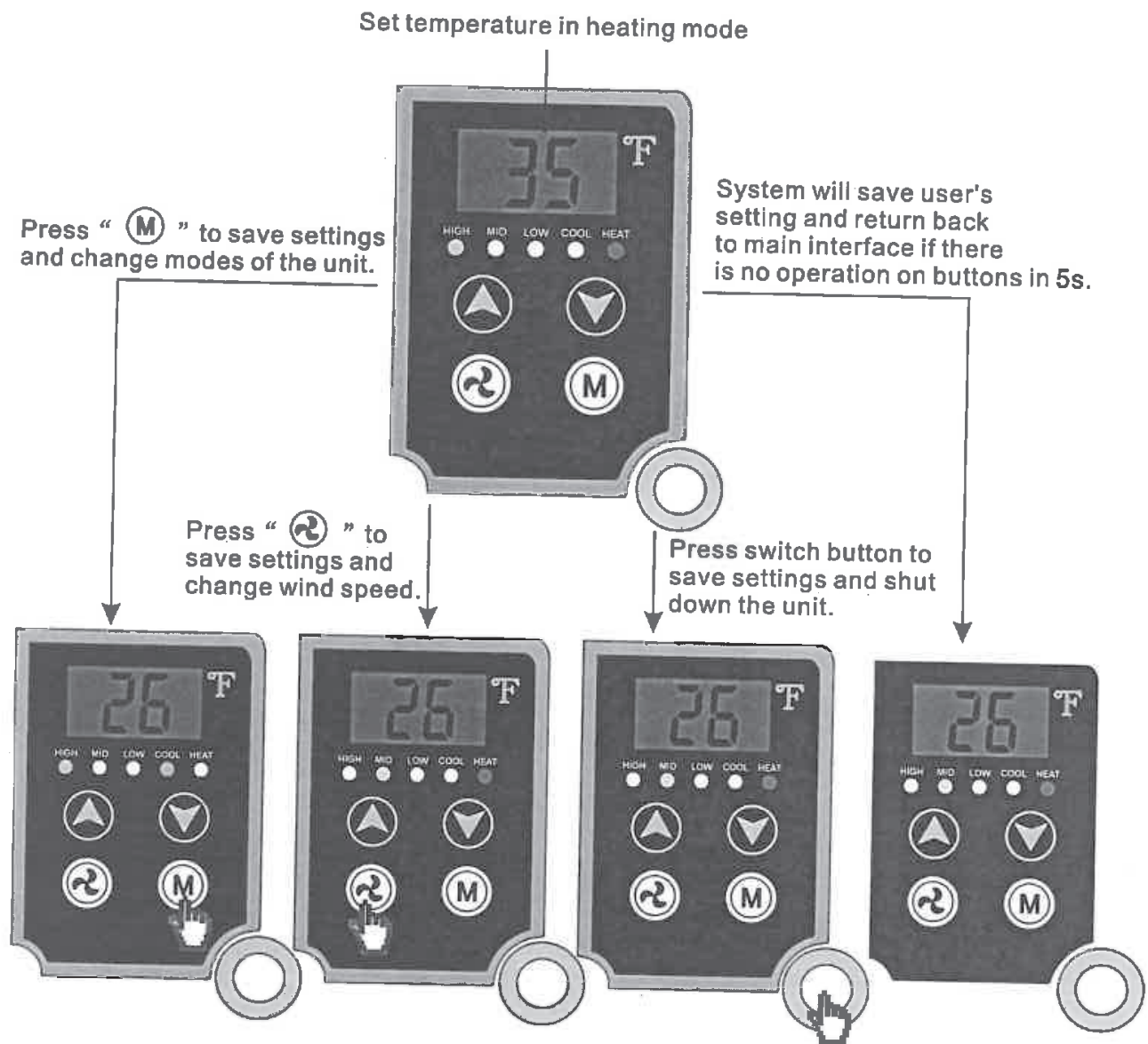
“▲” or “▼” is invalid when the unit is in ventilating mode or dehumidifying mode.





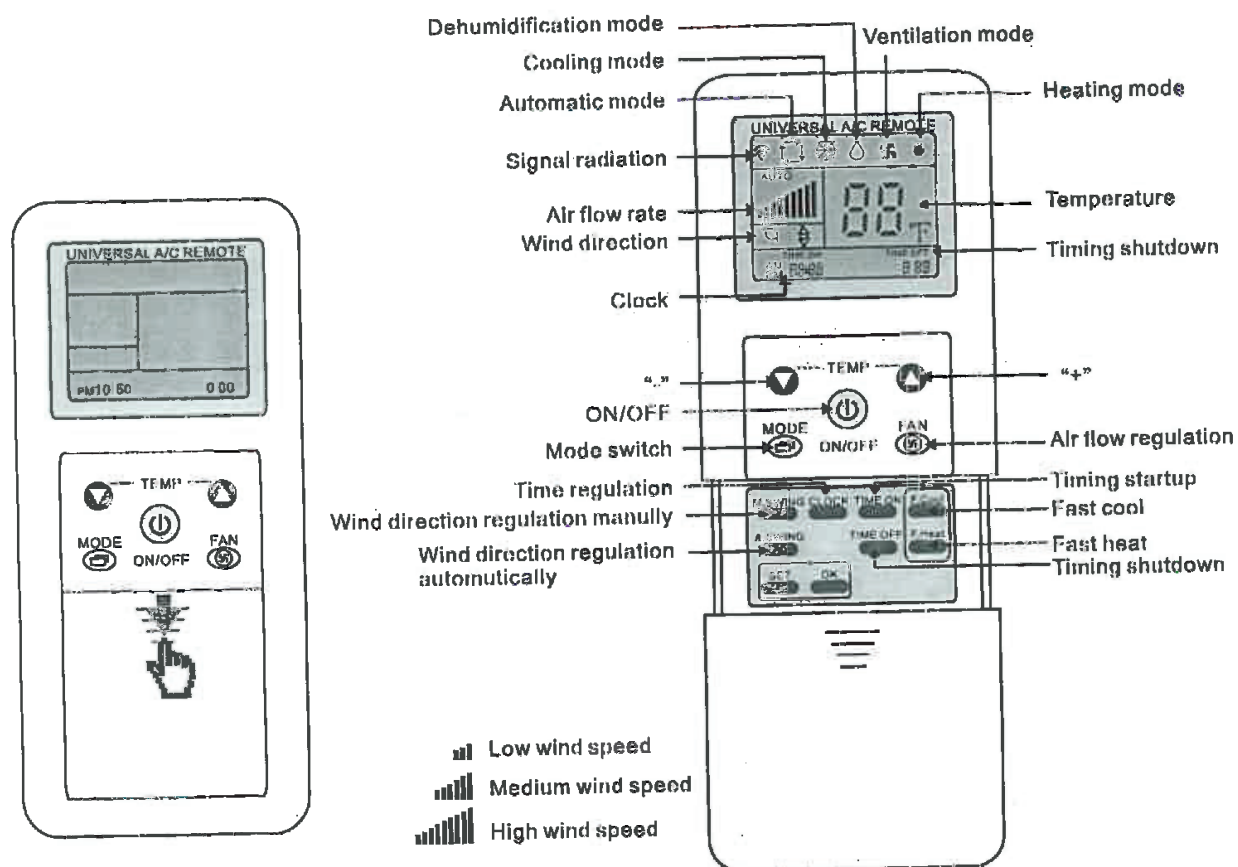
## 5.Usage

### 5.2 Usage of wire controlle



## 5. Usage

### 5.3 Functional description of remote controller



**ON/OFF**

Press this key to start up or shut down the unit.

**Mode switch**

You can select the mode of heating, cooling, automatic, dehumidifying and ventilating by pressing this key.

**Wind speed**

Press this key and select the wind speed you want to set. High wind speed, medium wind speed, low wind speed and automatic air supply are available.

**“+”**

Increase the setting temperature by pressing this key.

**“-”**

Decrease the setting temperature by pressing this key.

Note: The key “SET” and “OK” are designed only for the professionals.

Kindly reminder: 1、 Take out the batteries if you do not use the remote controller for a long time.

Take out the batteries for 35 minutes if there is failure in program in the remote controller which is caused by wrong operation. Put the batteries in again then you will find remote controller return to normal.



## 5.Usage

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### 5.4.1 Function of “F.Cool” and “F.Heat”

### 5.4. Usage of remote controller

Pressing the key “F.Cool” , the system will be automatically set to cooling mode with temperature of 69.8°F , high wind speed and automatic wind direction.

### 5.4.2 Setting of clock

Pressing the key “F.Heat” , the system will be automatically set to heating mode with temperature of 80.6°F, high wind speed and automatic wind direction.

Press the key “CLOCK” and hold till the relative light flashes, then you could start to set the time. Press the key “+” or “-” to increase or decrease the setting temperature. Press the key “CLOCK” again to save setting and return to main interface.

### 5.4.3 Setting of timing startup or shutdown

**TIME OFF** The key is available when the unit is on.

01            The number 01 means the unit will turn on automatically after 1 hour and so forth.

**TIME ON**        The key is available when the unit is on.

01            The number 01 means the unit will shut down automatically after 1 hour and so forth.

### 5.5 Parameter table

| Meaning                       | Default | Remark     |
|-------------------------------|---------|------------|
| Cooling temperature           | 75.2°F  | adjustable |
| Heating temperature           | 82.4°F  | adjustable |
| Automatic setting temperature | 71.6°F  | adjustable |

## 6. Maintenance

### 6.1 Maintenance and overhaul

● Routine maintenance is indispensable to keep the Vertical Water Fan Coil in perfect working condition, safe and reliable over the years. This can be done every six months for some interventions and annually for others, by the Technical Service Assistance.

● Before every cleaning and maintenance intervention, disconnect the appliance from the mains by switching off the master switch. Wait until the parts have cooled down to avoid the risk of burns.

● When necessary, clean the outer surfaces of the Vertical Water Fan Coil with a soft cloth damp cloth (fig. 18). Do not use abrasive sponges or abrasive or corrosive detergents to avoid damaging the painted surfaces.

● To ensure normal operation and perfect performance, routine maintenance should be made as followed: Lift and extract the mobile aspiration panel (fig. 19 ref. A). Extract the filter (fig. 20 ref. D), wash the filter with running water without using detergents or solvents, and leave to dry.

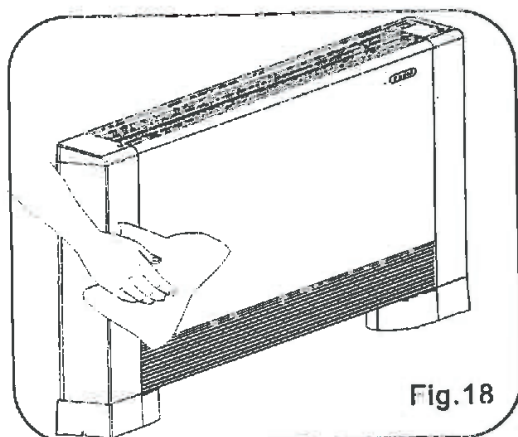


Fig. 18

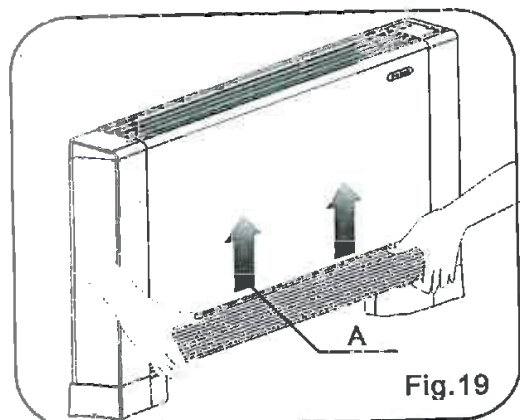


Fig. 19

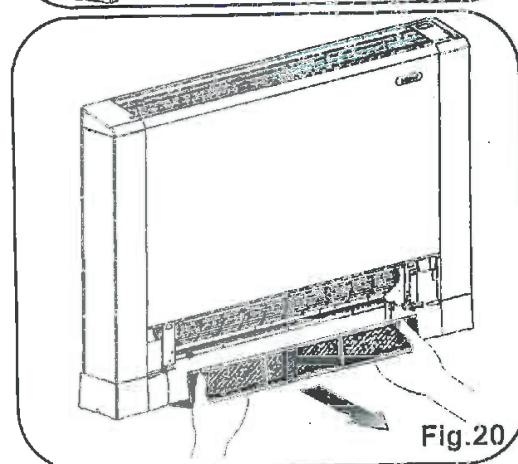


Fig. 20

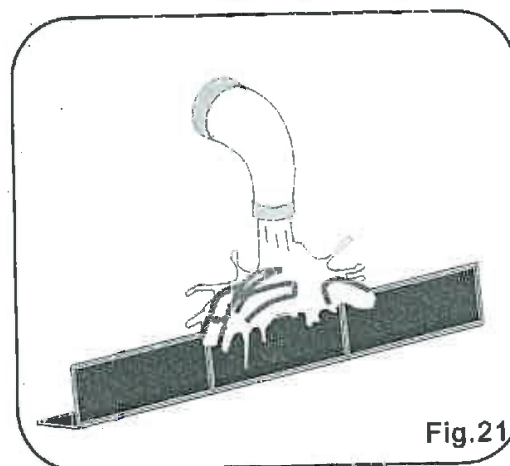


Fig. 21

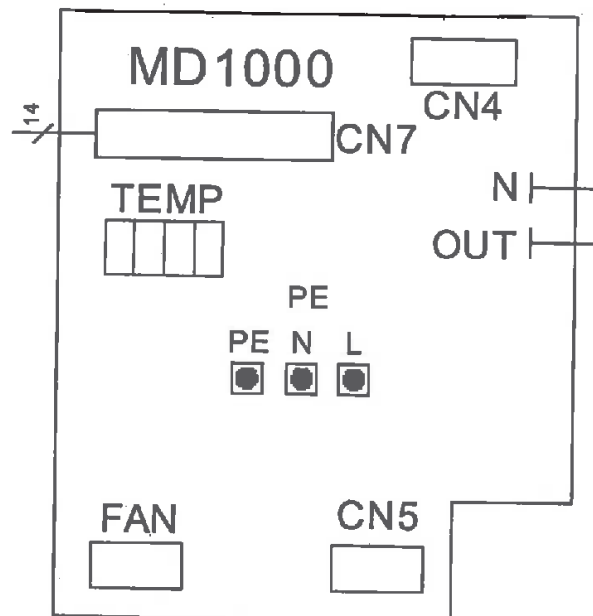
### 6.2 Common fault and the solving methods

You can according to wire control device, or remote fault display to judgment and troubleshooting

| Malfunction                       | Code | Cause  | Measures  |
|-----------------------------------|------|--|---|
| Indoor ambient temperature sensor | P4   | Ambient temperature sensor is in open circuit or short circuit | Check and replace the ambient temperature sensor<br>Check and replace the |
| Coil temperature sensor           | P5   | Coil temperature sensor is in open circuit or short circuit    | Coil temperature sensor   |
| Motor feedback signal             | E0   | Fan motor failure or feedback wire is not inserted well        | Check and replace the motor   |

## 7. Appendix

### 7.1 PCB I/O port



| NO. | Signal | meaning                         |
|-----|--------|---------------------------------|
| 1   | CN4    | Fan output                      |
| 2   | CN5    | Programming port                |
| 3   | CN7    | To wire controller              |
| 4   | FAN    | Fan input                       |
| 5   | TEMP   | To ambient and coil temperature |
| 6   | N OUT  | To valve                        |
| 7   | L      | Live wire                       |
| 8   | N      | Neutral wire                    |
| 9   | PE     | Earth wire                      |

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