



MODEL UT INSTALLATION, OPERATION & MAINTENANCE MANUAL

Low Temperature
ThinWall Heating/Cooling Fan Coil
Units up to 1 Ton Capacity



SECTION 1: INTRODUCTION	2	SECTION 5: START-UP AND OPERATION	
SECTION 2: SAFETY PRECAUTIONS	2	Control Function	8
SECTION 3: SPECIFICATIONS		Setting Temperature	9-10
Specification Table.....	3	Usage of Remote Control	11-12
Working Conditions	3	Adjustable Parameters	12
Overall Dimensions	3	SECTION 6: MAINTENANCE AND TROUBLE SHOOTING	
SECTION 4: INSTALLATION		Maintenance	13-14
Installation Precautions	4	Trouble Shooting	14
Installation: Positioning the Unit	4	SECTION 7: WIRING	
Minimum Clearances	4	Wiring Diagram.....	15-16
Floor Installation	5	SECTION 8: REPLACEMENT PARTS	17
Water Connections	6	WARRANTY	18
Condensate Discharge	7		
Venting Air	7		

Section 1: Introduction

Thank you for choosing the ThinWall water fan coil. The products strictly comply with design and production standards to provide high quality operation, perfect performance, high reliability and good adaptability.

These units are designed to operate at water temperatures below 160°F. Operating at temperatures above 160°F may result in severe damage to the product and void the warranty.

Read this installation and maintenance manual carefully before installing and starting up the appliance. All repair or maintenance work must be performed by the technical service department or by professionally qualified personnel. Do not modify or attempt to repair the appliance as this could cause serious injury and void the manufacturer's warranty.

This instruction manual must always accompany the appliance. If it is lost or damaged, contact the local manufacturer technical service center.

Failure to comply with these recommendations will void the warranty.

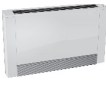



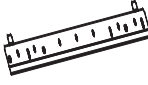

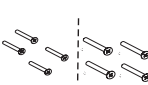




- This appliance must be installed by an authorized installer.
- All repair or maintenance work must be performed by a professionally qualified personnel.
- All repair or maintenance work must be performed in the manufacturer's specified period and times.
- Use genuine standard spare parts from the manufacturer for any necessary repairs.

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 manufacturer's technical service department @ 1-800-465-8558 or professionally qualified personnel. Do not attempt to personally repair 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, drain out the water.

Figure 1 Packing list

Vertical Water Fan Coil	Installation Template	Manual	Drain Pipe
			
Brackets	Toggle bolts	Screw	Screw cap
			
Remote controller	Feet (optional)	Flexible Water Connectors	
			

Section 2: Safety Precautions

To prevent injury to the users and others and avoid damage to the unit or other property, use the heat pump properly. Read this manual carefully and understand the following information.

The following terms are used throughout this manual and bring attention to the presence of potential hazards or to important information concerning the product:

⚠ DANGER Indicates an imminently hazardous situation which, if not avoided, will result in death, serious injury or substantial property damage.

⚠ WARNING Indicates an imminently hazardous situation which, if not avoided, will result in death, serious injury or substantial property damage.

⚠ CAUTION Indicates an imminently hazardous situation which, if not avoided, may result in minor injury or property damage.

NOTICE Used to notify of special instructions on installation, operation or maintenance which are important to equipment but not related to personal injury hazards.

Code Compliance

Fan coil unit installation must conform to the requirements of the local authority having jurisdiction, or in the absence of such requirements, to the National Board of Fire Underwriters regulations. Fan coil unit meets ETL listing requirement.

All electrical wiring must be in accordance with the National Electrical Code ANSI/NFPA No. 70-latest edition and any additional state or local code requirements. If an external electrical source is utilized, the fan coil unit, when installed, must be electrically grounded.

Section 3: Specifications

Specification Table

Model		UT-87	UT-135	UT-196	UT-246	UT-320
Heating Capacity*	BTU/H	8700	13500	19600	24600	32000
Water Flow Rate	GPM	1.0	1.5	2.2	2.8	3.5
Pressure Drop	PSI	1.5	1.8	3.8	4.0	4.1
Cooling Capacity**	TONS	1/4	1/2	3/4	1	1 1/4
Water Flow Rate	GPM	0.8	1.5	1.9	2.6	3.3
Pressure Drop***	PSI	1.6	1.9	4	4.1	4.4
Air Volume	CFM	94	188	270	340	381
Noise	DB (A)	30	32	37	39	41
Power Supply		120V/1PH/60Hz				
Power Input	W	12	16	20	24	30
Water In/Out	NPT	3/4				
Drain	INCH	5/8				
Net Dimensions	Length	INCH	27-1/2	35-1/2	43-3/8	51-1/8
	Width		5 1/8			
	Height		26 3/8			
Shipping Dimensions	Length	INCH	29-1/8	37	44-7/8	52-13/16
	Width		7-1/8			
	Height		28-11/16			
Net Weight	LBS	35	44	53	62	73
Ship Weight	LBS	40	51	60	68	79

* Heating: Entering Water Temp. 158°F

** Cooling: Entering Water Temp. 45°F

*** PSI x 2.31 = Ft/Head

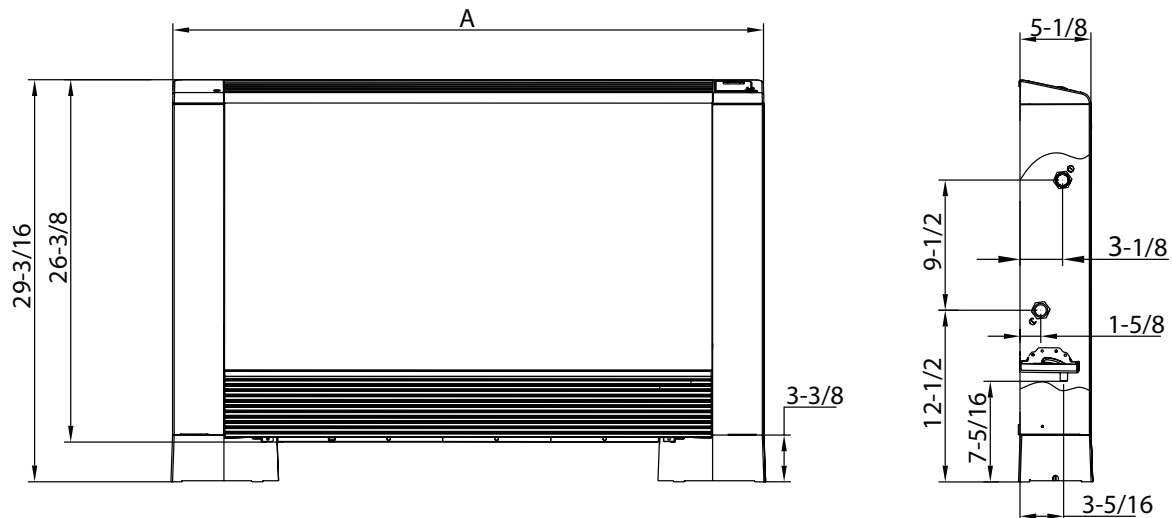
Working Conditions

(1) Heating ambient temperature: 41-84.2°F, Inlet water temperature: 95-158°F.

(2) Cooling ambient temperature: 48.2-95°F, Inlet water temperature: 41-68°F.

Overall Dimensions (Inches)

Figure 2 Product Model UT-87/135/196/246/320



Unit Model	UT-87	UT-135	UT-196	UT-246	UT-320
A (inch)	27-1/2	35-1/2	43-3/8	51-1/8	59-1/16

Dimensions shown include optional feet.

Section 4: Installation

Installation Precautions

To ensure that the installation is performed correctly carefully follow the instructions indicated in this manual. Failure to follow instructions indicated not only can cause malfunctions of the appliance but also void the warranty.

It is important that the electrical installation is made in accordance with local codes, respects the data indicated in the technical sheet and is correctly grounded.

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

The system inlet water temperature must not exceed 160°F. Failure to comply can severely damage the unit and will void the warranty.

Positioning the Unit

Avoid installing the unit in close proximity to:

- positions subject to exposure of 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

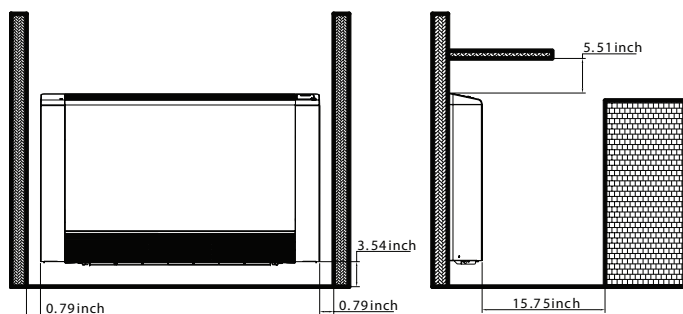
Make sure that:

- the wall on which the unit is to be installed on is strong enough to support the weight
- the part of the wall being used does not have pipes or electric wires passing through
- is free of obstacles which could interfere with the inlet and outlet air flow
- is preferably an outside perimeter wall to allow the discharge of condensation outside (for cooling).

Minimum Clearances

Figure 3 indicates the minimum mounting distances between the wall-mounted cooler-convactor and furniture present in the room.

Figure 3

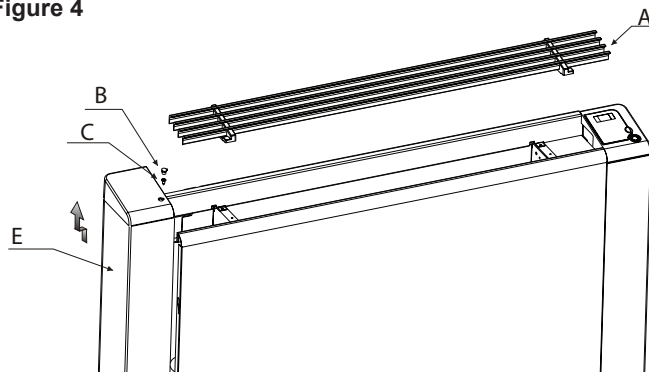


Removal of Side Panel (Fig. 4)

Dismount the upper grill (Fig. 4 Ref. A) by unscrewing the screws.

Lift the cover (Fig. 4 Ref. B) that protects the screw (Fig. 4 Ref. C) and unscrew it. Move the side panel slightly and lift it out.

Figure 4



Wall installation or vertical floor

Using the paper template, trace the position of the wall (Fig. 5). Use a suitable drill to make the holes with and insert the toggle bolts (2 for each bracket) (Fig. 6 Ref. A); affix the two brackets (Fig. 6 Ref. B).

Figure 5

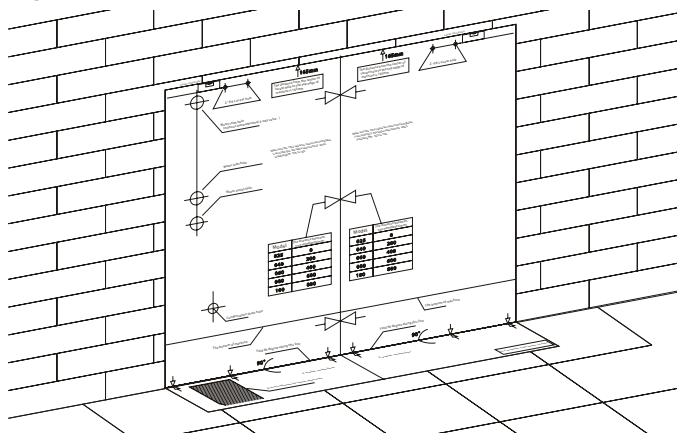
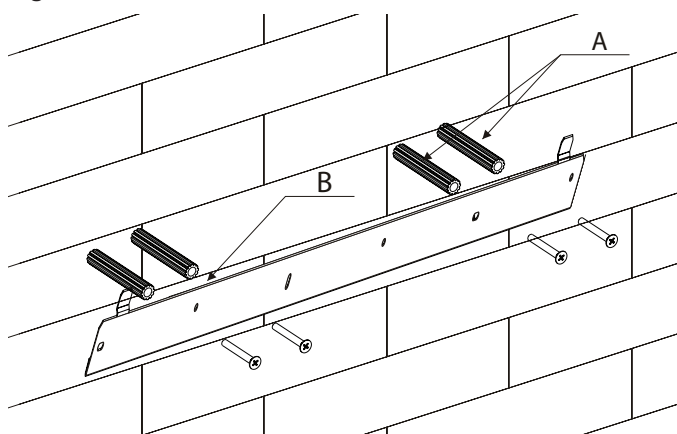


Figure 6

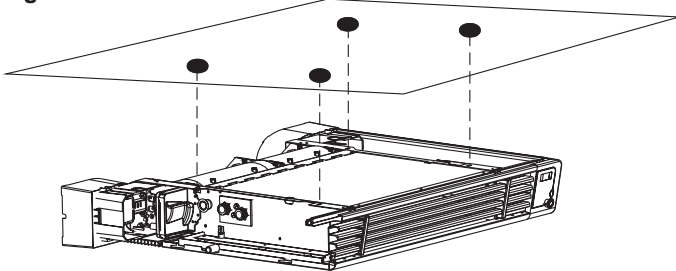


Section 4: Installation (continued)

Ceiling Mount

Ensure there is enough installation space around the unit, according to the installation dimension chart. Mark holes as indicated in Fig. 7A. Then secure to ceiling with anchors or mounting to ceiling joists.

Figure 7A



Adjust the unit installation angle and ensure that the condensation drain-pipe position is lowest, for better draining of the condensation water (Fig. 7B). Ensure unit fits properly on bracket and is stable (Fig. 7C).

Figure 7B

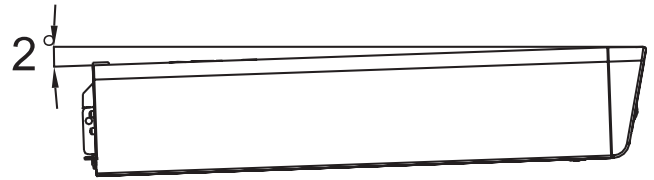
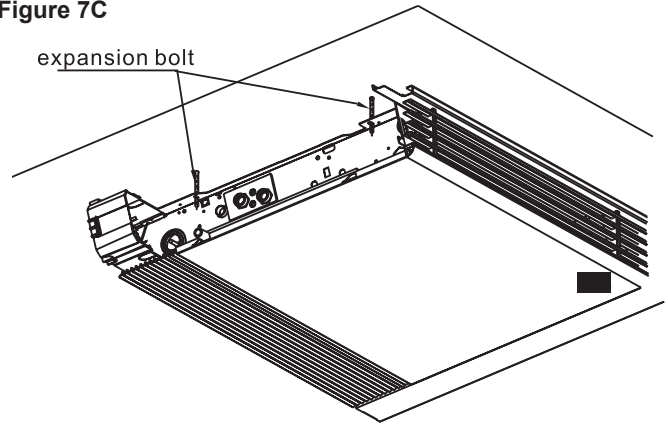


Figure 7C



Floor Installation

If installing the unit on the floor, the footing should be mounted (Feet sold separately as optional equipment): First, lay down the unit and match up the screw holes (Ref. Fig. 8 Item A/B/C/D), finally apply four screws to each side to affix the feet. (See Fig. 7D and Fig. 8).

Figure 7D

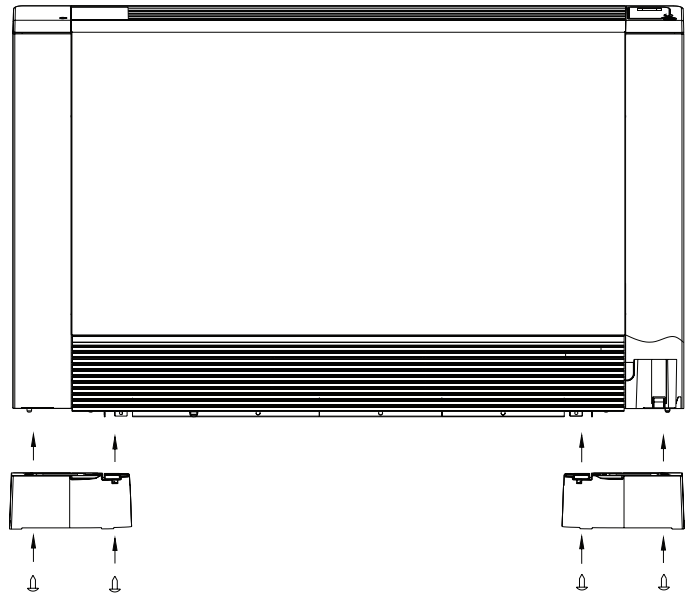
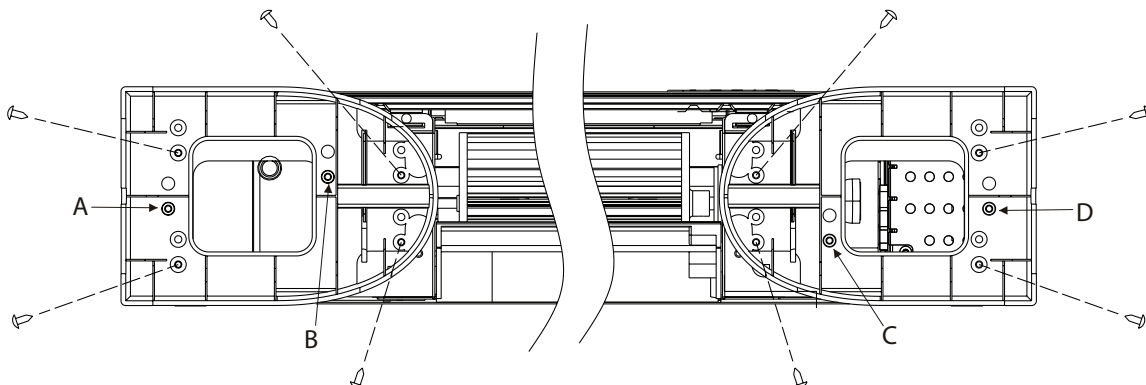


Figure 8



Section 4: Installation (continued)

Do not over-tighten the screws so that the brackets can be adjusted with a level (Fig. 9).

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. 10).

Figure 9

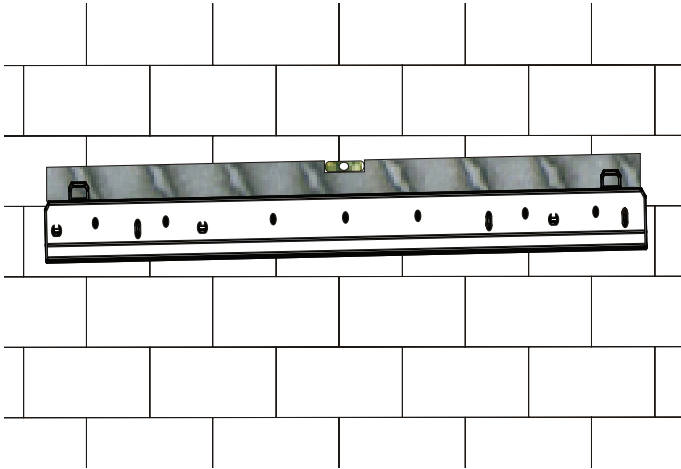


Figure 10

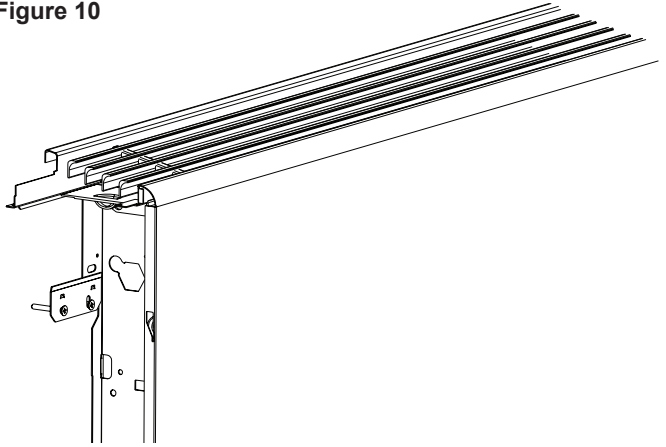
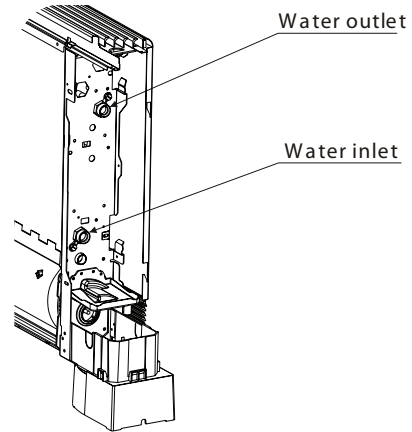


Figure 11



Water Connections

Refer to Fig. 11 to connect the inlet and outlet lines.

NOTICE

Piping system should be clean.

Insulate the lines after making the connections.

Ensure white o-ring gaskets are securely in place.

Connection methods for flexible water connectors

Figure 12 Connecting method I

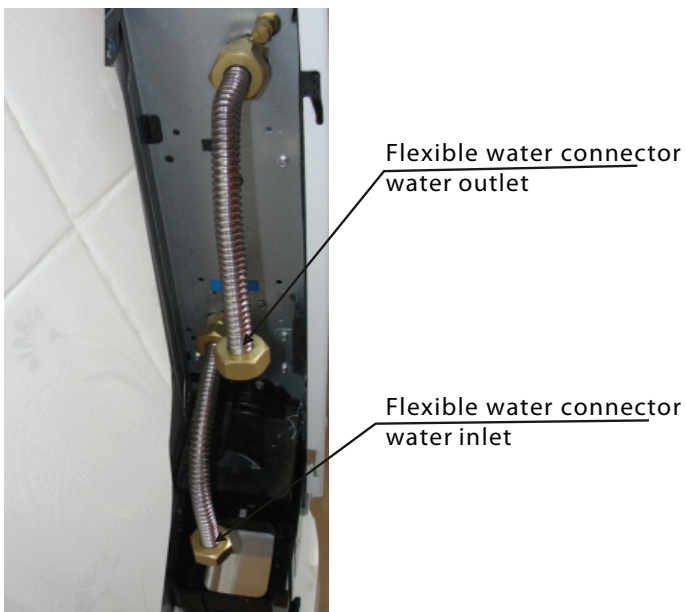
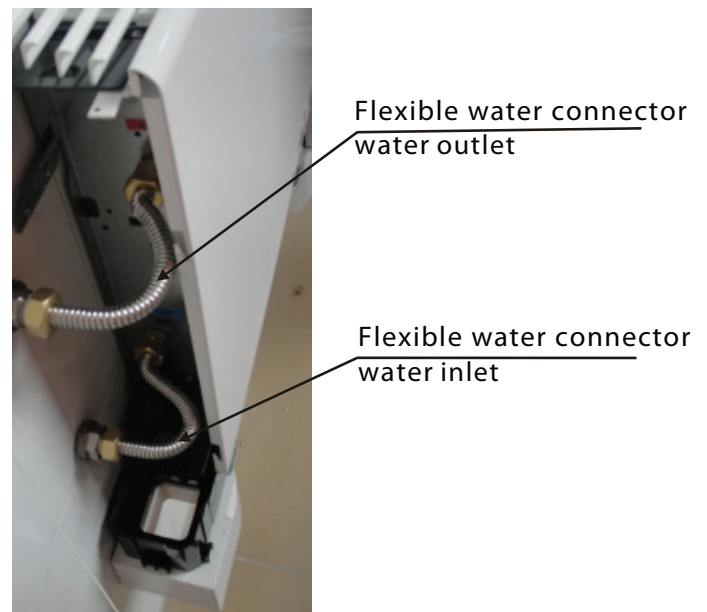


Figure 13 Connecting method II



Section 4: Installation (continued)

Condensate Discharge

When mounting the condensation discharge device, connect a pipe (Fig. 14 Ref. C) for the discharge of the liquid (Fig. 14 Ref. B) and sealing properly. The condensate discharge network must be suitably sized (minimum inside pipe diameter 5/8").

CAUTION If the condensation needs to be discharged into a container, it must be open to the atmosphere and the tube must not be submerged in water to avoid problems of adhesiveness and counter-pressure that would interfere with the normal outflow.

Evacuating air while filling the system

Start filling by slowly introducing water to the system. Use a screwdriver to unscrew the side air vent valve (Fig. 15 Ref. A). When water starts coming out of the air vent of the appliance, close it and continue filling until each reaching the desired pressure for the system.

Check the hydraulic seal of the gaskets for leaks.

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.

Figure 14

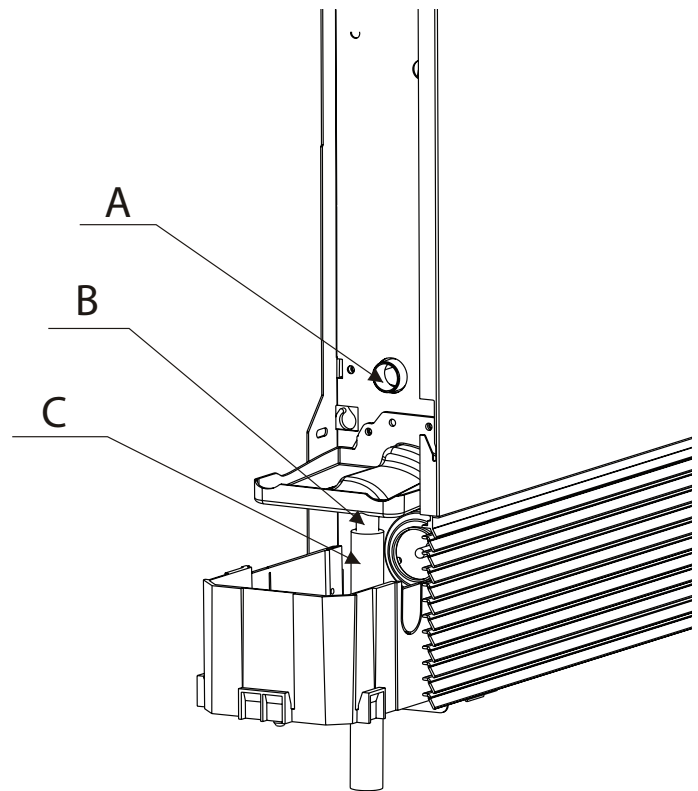
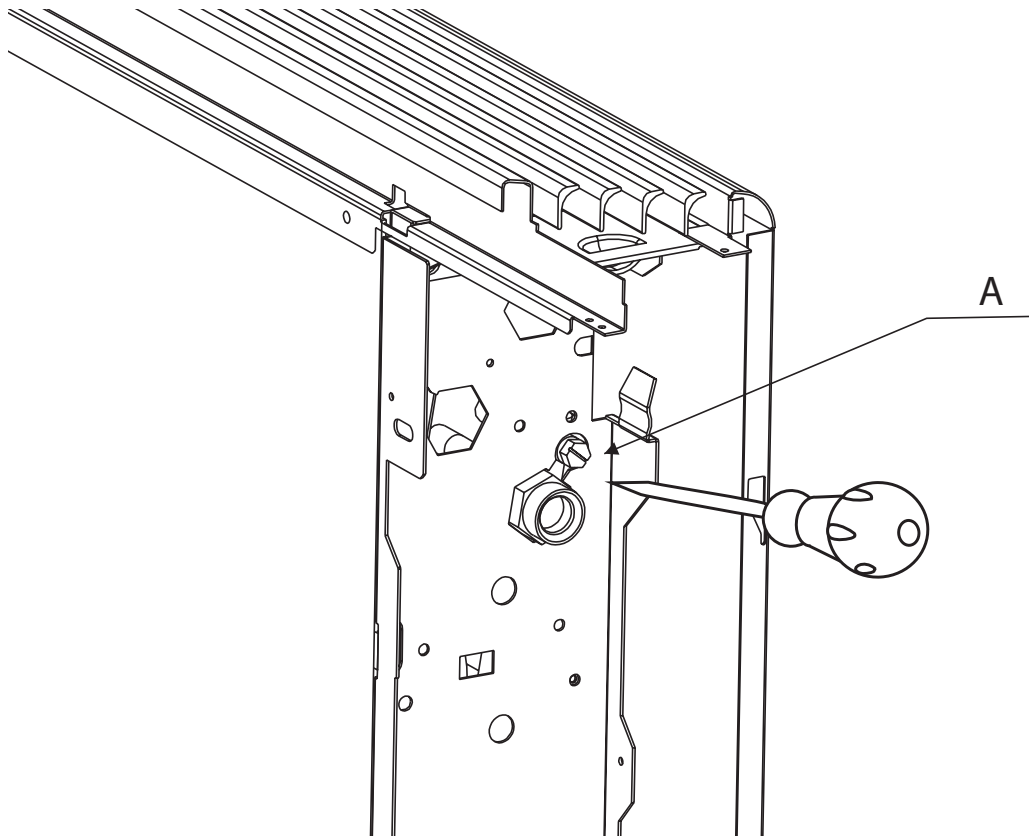
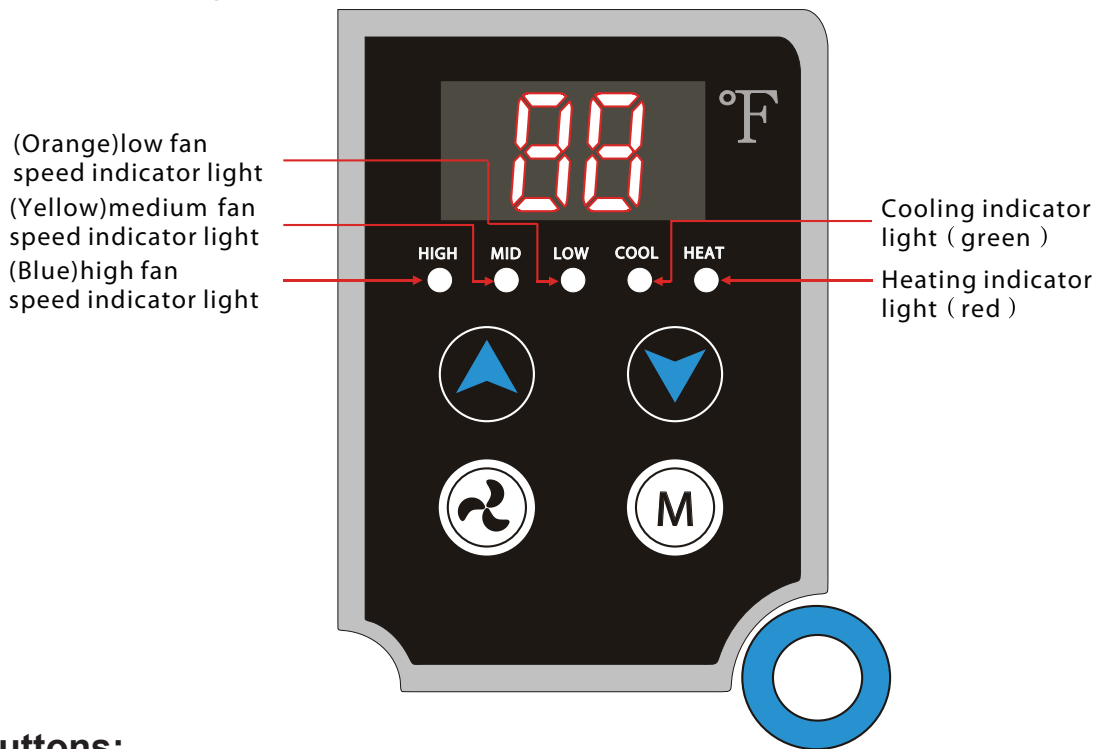


Figure 15



Section 5: Start-Up and Operation

Control Functionality



About buttons:



ON/OFF BUTTON.
Pressing this button will start up or shut down the unit.



Press this button and select the mode you want set:
Cooling mode: cooling indicator light stays on (green)
Heating mode: heating indicator light stays on (red)
Automatic mode: cooling indicator light and heating indicator light flashes in turn

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



Press this button to set the fan speed
High fan speed: high fan speed indicator light stays on (blue)
Medium fan speed: medium speed indicator light stays on (yellow)
Low fan speed: low speed indicator light stays on (orange)
Automatic: high fan speed indicator light, medium fan speed indicator light and low fan speed indicator light flashes in turn

Note: Changes of fan speed can only be done on main interface. You cannot choose the automatic fan speed when in ventilating mode. When in dehumidifying mode, the fan speed is fixed at low speed.



Check the set temperature of unit by pressing this button once.
Increase the set temperature by pressing this button again.



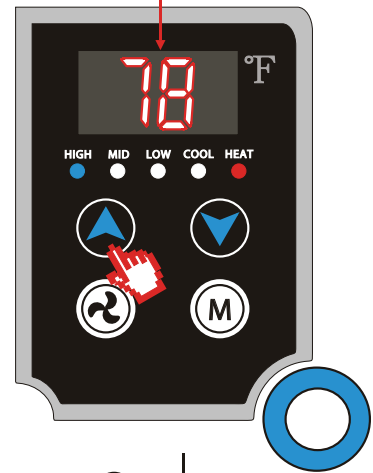
Check the set temperature of unit by pressing this button once.
Decrease the set temperature by pressing this button again.

Section 5: Start-Up and Operation (continued)

Temperature Setting

When on the main interface of heating, cooling and automatic mode, you can press ▲ or ▼ once to check the set temperature. Press ▲ or ▼ again to increase or decrease the set temperature. Press (M), (⌚) or ON/OFF button to change mode, fan speed or shut down the unit and save settings.

Indoor ambient temperature



Press “▲” or “▼”
to check the setting
temperature of
current mode.

Set temperature in heating mode



Press “▲” or “▼”
to set the setting
temperature of
current mode.

Section 5: Start-Up and Operation (continued)

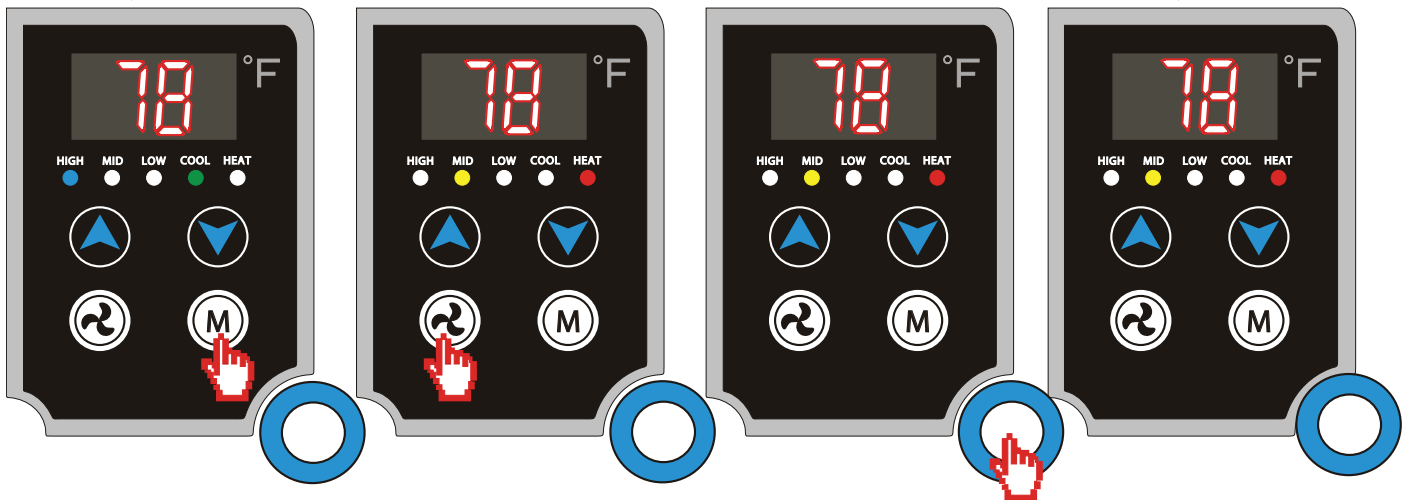
Set temperature in heating mode

Press **M** to save settings and change modes of the unit.

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

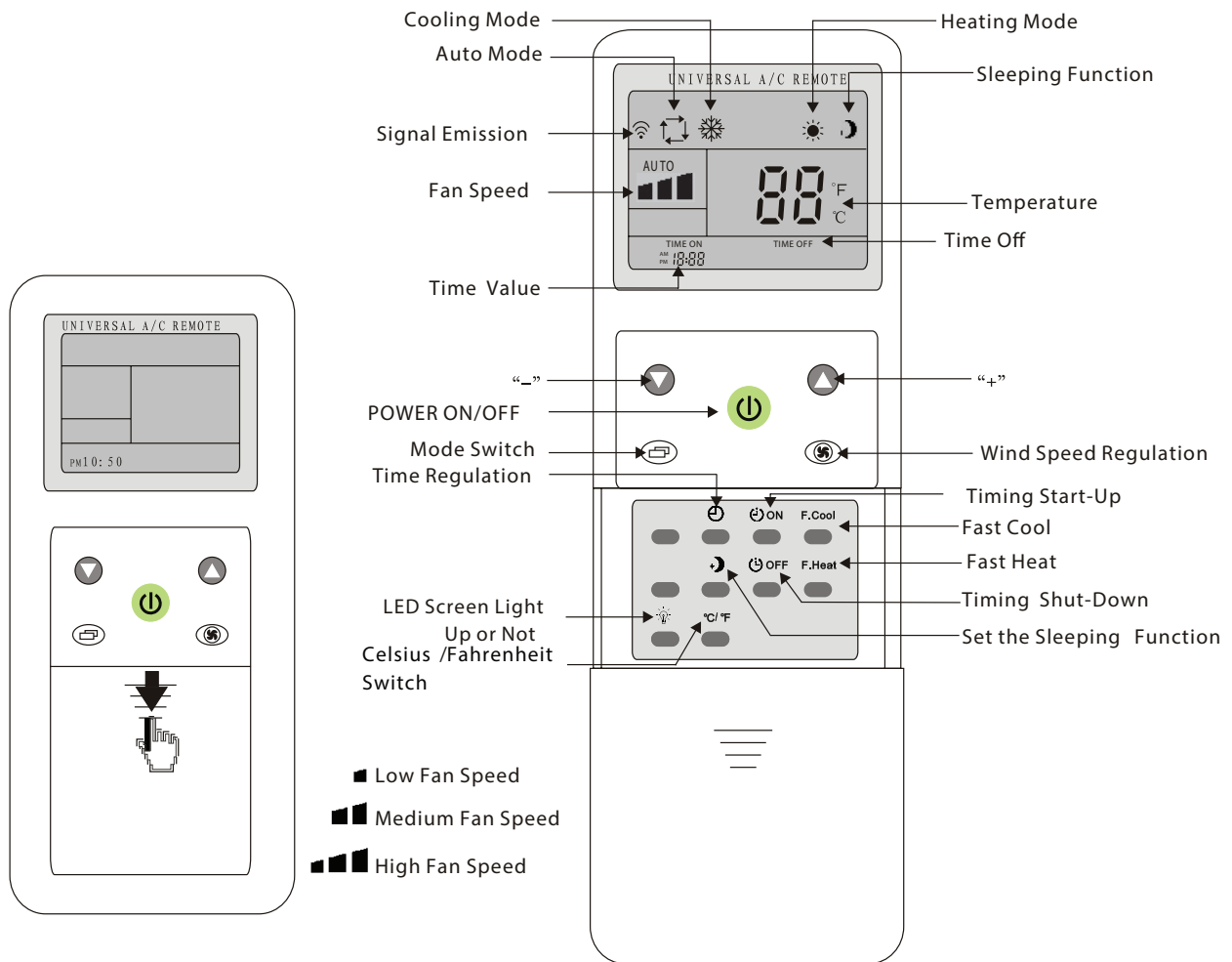
Press  to save settings and change fan speed.

Press switch button to save settings and shut down the unit.



Section 5: Start-Up and Operation (continued)

Using the Remote Control



POWER ON/OFF

Press this key to start up or shut down the unit

MODE



Mode Switch

Press this key to switch the mode among Auto, Cooling, Dehumidifying, Ventilating and Heating.

FAN



Fan Speed

Press this key to switch the fan speed among High, Medium, Low and Auto.



Press this button to increase the set value.



Press this button to decrease the set value.

NOTICE

Take out the batteries if you do not use the remote control for a long period of time. Take out the batteries for 35 minutes if there is a failure in the program of the remote controller. After 35 minutes, replace the batteries and the remote control should resume operation.



Section 5: Start-Up and Operation (continued)

Functioning of “F.Cool” and “F.Heat”


By pressing the key “F.Cool”, the system will automatically set to the cooling mode with high fan speed.

By pressing the key “F.Heat”, the system will automatically set to the heating mode with high fan speed.


Time Setting

Press and hold the key  until the time value flashes, then you can adjust the current time value by press the key “+” or “-”. To save the setting above, press the  key again.

Timing Start-Up or Timing Shut-Down

 **ON** This key is available only when the unit is POWER OFF, with no interruption of power supply.


TIME ON/1 One hour after setting Timing Start-Up, the unit will automatically start up. The number shown indicates amount of hours prior to start up.

 **OFF** This key is available when the unit is POWER ON.



TIME OFF/1 One hour after setting Timing Shut-Down, the unit will automatically shut down.


The range of timing is from 1 hour to 11 hours. If the setting value is over 11 hours, the time setting will be cancelled.

Sleep Function

(1) To start or cancel the sleep function, please press the key .

(2) The sleep function can only be set in the heating or cooling mode.


(3) When the sleep function is activated, the icon  will be shown at the top right corner of the LCD screen on the remote. Meanwhile, the “**TIME OFF**” and “**7**” will be shown at the lower right corner of the LCD screen. This means the unit will automatically shut down 7 hours after the setting. To change the timing number or to cancel the timing function, press the key  **OFF**.

(4) 1 hour after setting the sleep function, the fan speed will automatically change to the low fan speed. To change the fan speed press .

(5) 2 hours after setting the sleep function in the cooling mode, the set temperature will increase 1°C or about 2°F per hour.

(6) 3 hours after setting the sleep function in the heating mode, the set temperature will decrease 1°C or about 2°F per hour.

Switch to Celsius or Fahrenheit

Press the  key.

LED Screen Light Up or Not

To illuminate or shut off the LED Screen press the key .

Adjustable Parameters

To access parameter settings, hold “M” button (on unit) until unit “beeps”. Use arrow keys to navigate the menu's. To select a parameter press the “M” key. Once parameter is adjusted, allow controller to time out in order to save.

Parameter	Description	Range	Default	Details
1	Max Temp Set Point	15.8°F-204.8°F	86°F	Maximum Allowable Set-Point
2	Min Temp Set Point	15.8°F-204.8°F	46.4°F	Minimum Allowable Set-Point
3	Cooling Target Temp	Between Parameter 1 and 2	78.8°F	Set-Point for Cooling
4	Heating Target Temp	Between Parameter 1 and 3	68°F	Set-Point for Heating
5	Auto Mode Cooling Target Temp	Between Parameter 1 and 4	78.8°F	Auto Set-Points are only allowed to be set through the parameters. Not on front controller
6	Auto Mode Heating Target Temp	Between Parameter 1 and 5	68°F	
7	Coil Temp Limit for Fan (Heating)	41°F-104°F	77°F	The fan will not operate if coil temp reaches parameter 7 set-point
8	Coil Temp Limit for Fan (Cooling, Yes/No)	0-1	1	0=No 1=Yes; The fan will not operate if coil temp is higher than 68°F
9	Continuous Fan Speed	0-1	0	0=No 1=Yes; The fan will run continuous at the selected speed on controller
10	24v Output for Zone Valve	0-1	1	0=No 1=Yes; If No, then no 24v output will be available on board for zone valves. If Yes then 24v output will be available with max current of .25amps
11	In-Floor Radiant Present	0-1	0	0=No 1=Yes; If no then temp sensor will operate appropriately. If Yes; then temp sensor on coil will adjust to heat from floor
12	°C/°F	0-1	0	0=°C/ 1=°F
15	Lock set-points button	0-1	0	0=No 1=Yes; If Yes; then set-point buttons are locked at temperature set. If no then set-points can be adjusted
16	Remote Controller work with button locked?	0-1	1	0=No 1=Yes; Remote control will or will not be able to adjust set-points if buttons are locked.
20	Intermittent Fan in Standby Mode	0-1	1	0=No 1=Yes; If set to No then fan motor will stop when set-point is achieved. If set to Yes; then fan motor will run for 1 minute every 15 minutes to sample air and circulate until unit receives next demand call.

Section 6: Maintenance and Trouble Shooting

Maintenance

⚠ WARNING Cut off power supply before cleaning or maintaining the unit.

For reliable service and comfort, it is suggested to maintain and clean the unit every 6 months.

Take the following steps to clean up the filter regularly:

(1) Lift the grill (A) upward (Fig. 16), then pull out the grill (Fig. 17).

(2) Remove the grill (Fig. 18 and Fig. 19) and take out filter (Fig. 20), then wash the filter with water (Fig. 21).

Figure 16

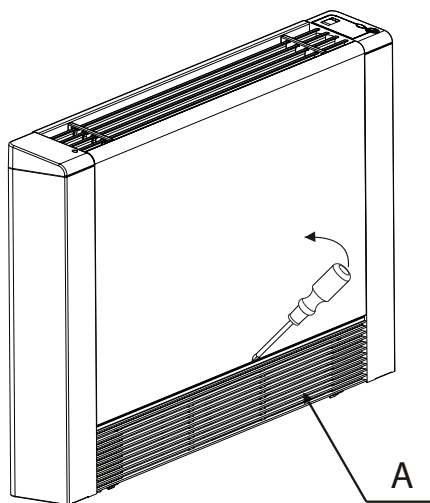


Figure 17

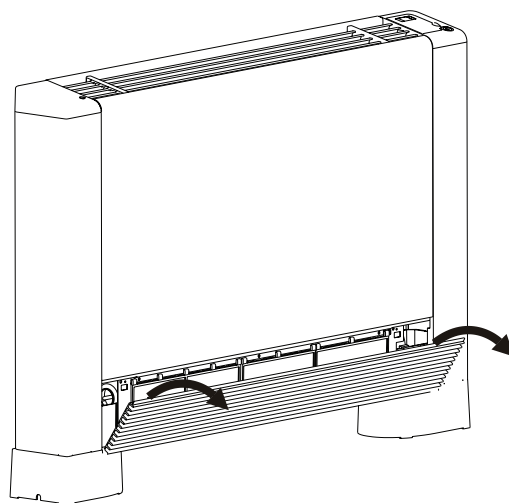


Figure 18

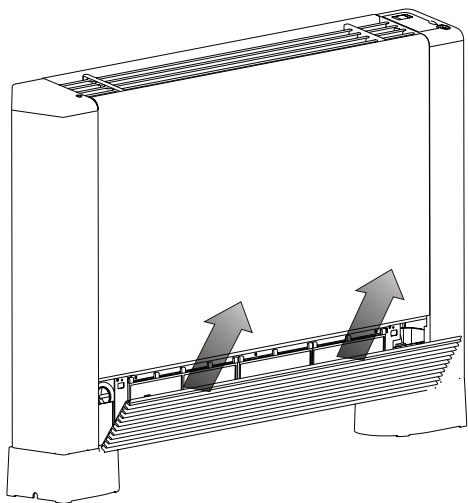


Figure 19

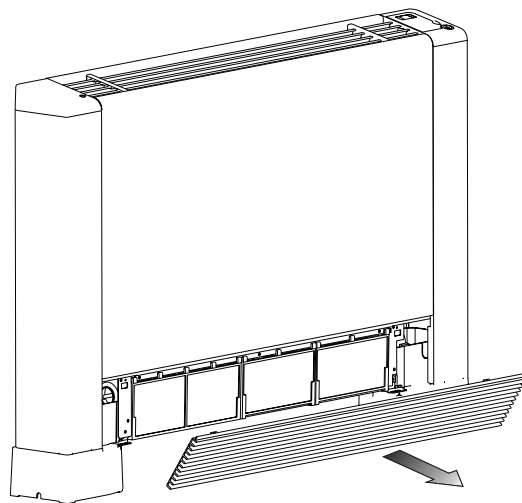


Figure 20

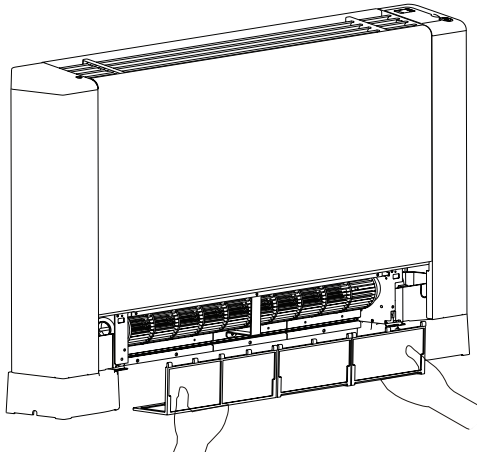
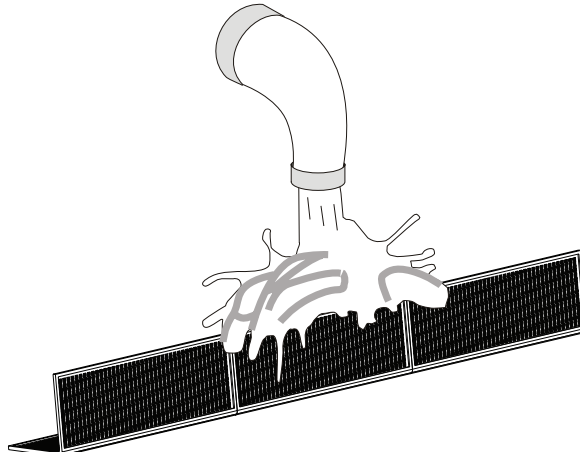


Figure 21



Section 6: Maintenance and Trouble Shooting (continued)

(3) Set the filter net and the air return grill to the original place. (Fig. 22).

(4) Clean up the outer unit with a soft, damp rag (Fig. 23). To protect the paint-coat of the unit, do not use a rough sponge or corrosive detergent.

Figure 22

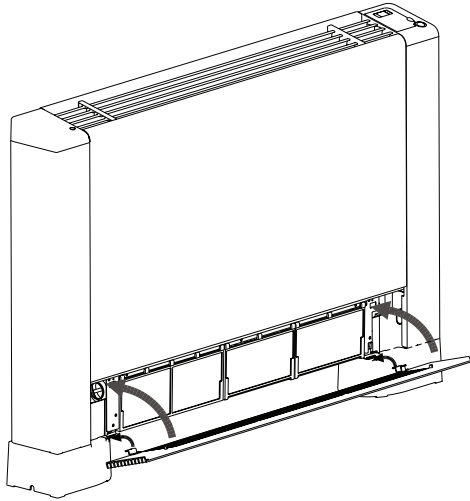
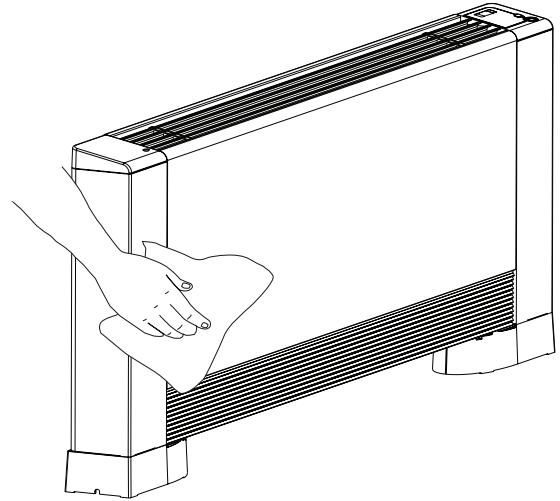


Figure 23

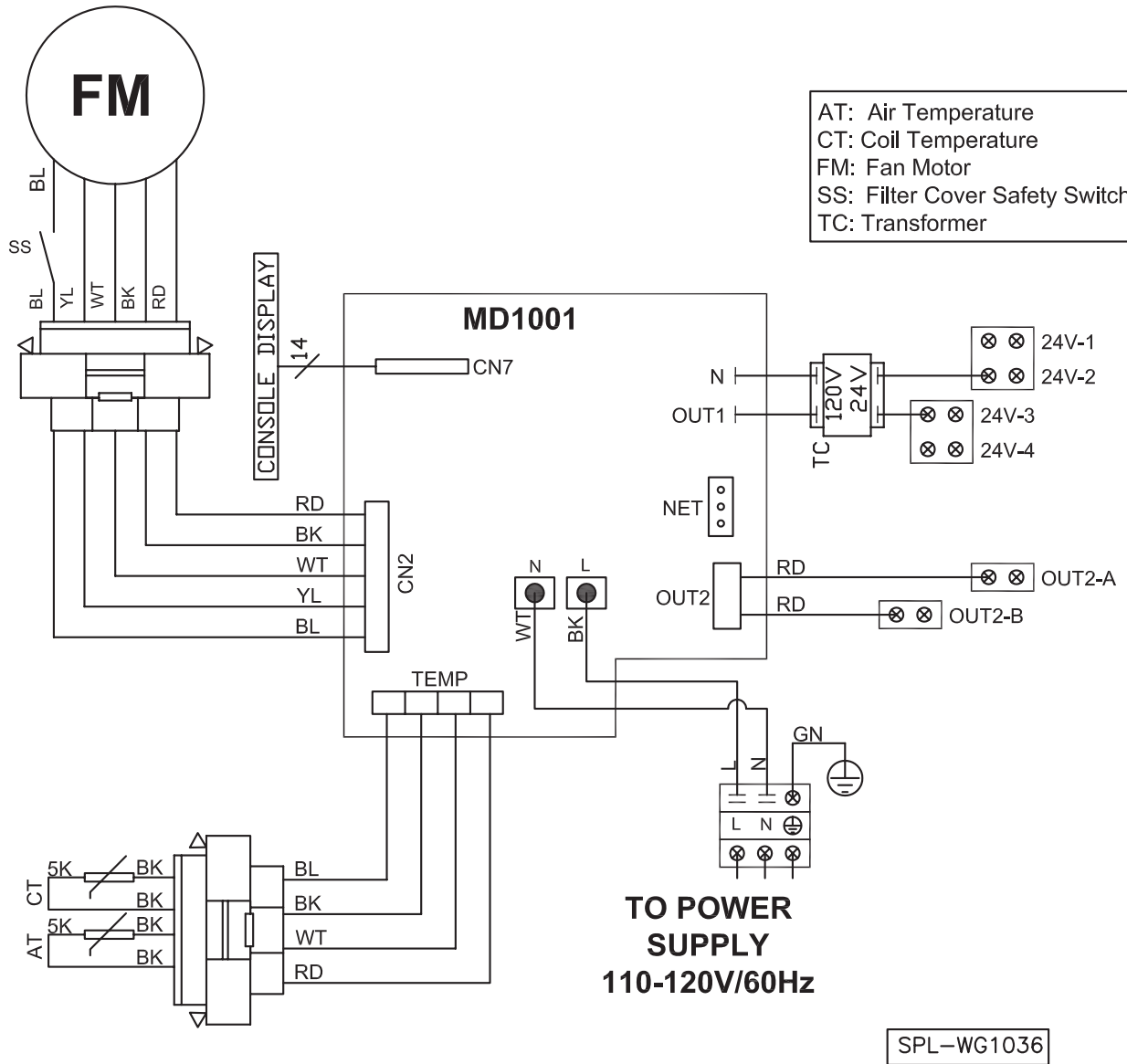


Trouble Shooting

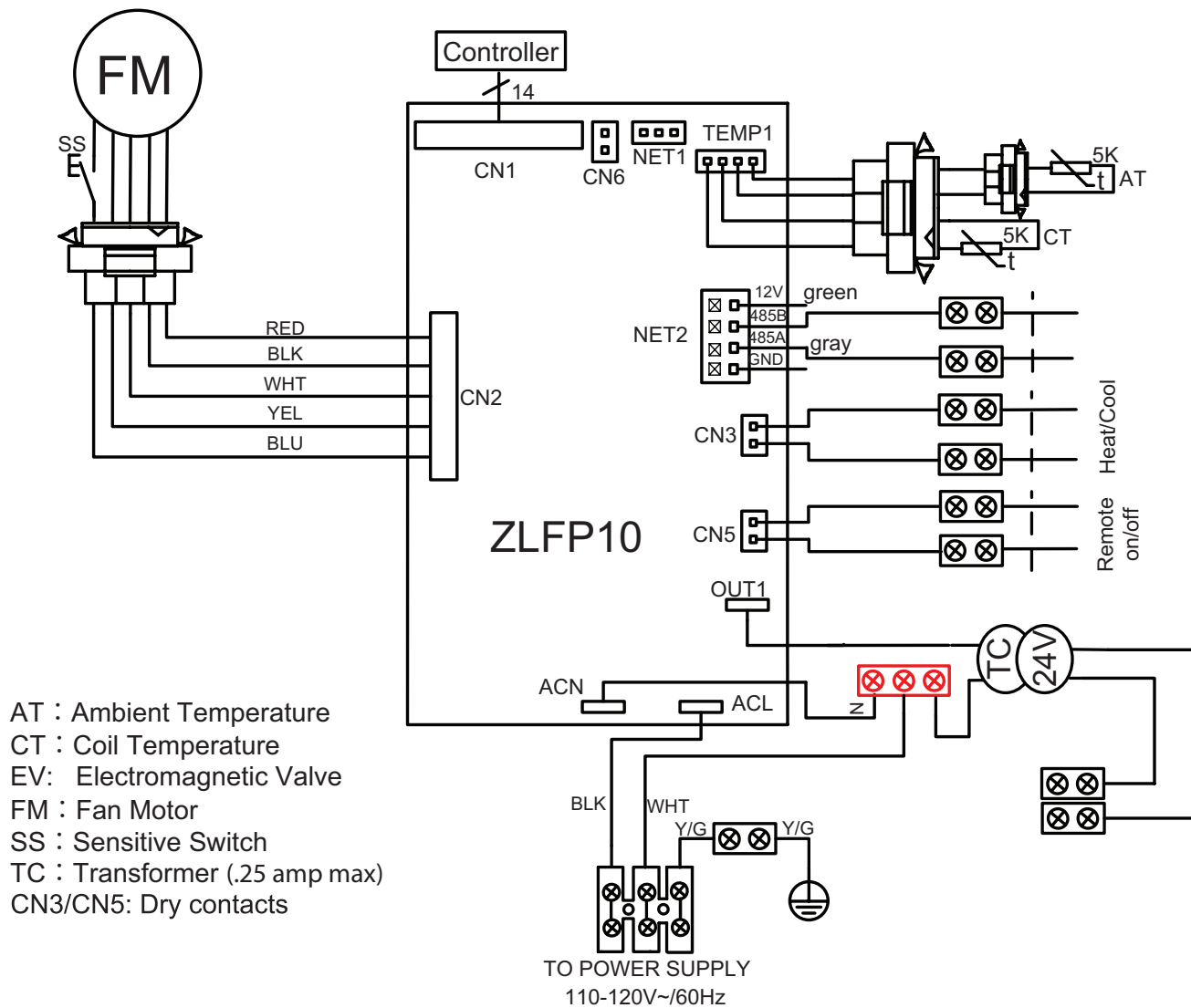
Code	Malfunction	Cause	Measures
P4	Indoor ambient temperature sensor	Ambient temperature sensor is in open circuit or short circuit	Check or replace the ambient temperature sensor
P5	Coil temperature sensor	Coil temperature sensor is in open circuit or short circuit	Check or replace the coil temperature sensor
E0	Filter cover safety	Missing or loose fan guard	Replace lower fan guard and ensure it's properly closed

Section 7: Wiring

Wire Connection for Units Manufactured with MD1001 Board Prior to 2016



Section 7: Wiring (continued)



45UT-87/135/196/246/320

Heating Demand: CN3=Will Close CN5=Will Close Out1=24v output
Cooling Demand: CN3=Will Open CN5=Will Close Out1=24v output

Section 8: Replacement Parts

Order Code	Description	UT-87	UT-135	UT-196	UT-246	UT-320
45W06-WG1066-01	Drain Pan	X				
45W50-WG1067-01	Hydronic Coil	X				
45W43-WG1068-01	Air Outlet Grill Left Bearing	X	X	X	X	X
45W43-WG1069-01	Air Outlet Grill	X				
45W43-WG1070-01	Air Outlet Grill Right Bearing	X	X	X	X	X
45W37-WG1071-01	Control Panel Cover	X	X	X	X	X
45W37-WG1072-01	Right Top Cover	X	X	X	X	X
45W37-WG1073-01	Right Panel	X	X	X	X	X
45W11-WG1074-01	Switch	X	X	X	X	X
45W31-WG1075-01	DC Fan Motor	X	X	X	X	X
45W34-WG1076-01	Blower Wheel	X				
45W55-WG1056-01	Filter	X	X	X	X	X
45W43-WG1078-01	Air Inlet Grill	X				
45W37-WG1079-01	Front Panel	X				
45W37-WG1080-01	Left Panel	X	X	X	X	X
45W06-WG1081-01	Small Drain Pan	X	X	X	X	X
45W11-WG1157-01	Control Board	X	X	X	X	X
45W14-WG1077-01	Transformer	X	X	X	X	X
45W11-WG1158-01	Control Display	X	X	X	X	X
45W09-WG1159-01	Switch Button	X	X	X	X	X
45W09-WG1160-01	Decorative Ring for Switch Button	X	X	X	X	X
45W09-WG1161-01	Overlay	X	X	X	X	X
45W06-WG1066-02	Drain Pan		X			
45W50-WG1067-02	Hydronic Coil		X			
45W43-WG1069-02	Air Outlet Grill		X			
45W34-WG1076-02	Blower Wheel		X			
45W55-WG1056-02	Filter		X	X	X	X
45W43-WG1078-02	Air Inlet Grill		X			
45W37-WG1079-02	Front Panel		X			
45W06-WG1066-03	Drain Pan			X		
45W50-WG1067-03	Hydronic Coil			X		
45W43-WG1069-03	Air Outlet Grill			X		
45W34-WG1076-03	Blower Wheel			X		
45W43-WG1078-03	Air Inlet Grill			X		
45W37-WG1079-03	Front Panel			X		
45W06-WG1066-04	Drain Pan				X	
45W50-WG1067-04	Hydronic Coil				X	
45W43-WG1069-04	Air Outler Grill				X	
45W34-WG1076-04	Blower Wheel				X	
45W43-WG1078-04	Air Inlet Grill				X	
45W37-WG1079-04	Front Panel				X	
45W06-WG1066-05	Drain Pan					X
45W50-WG1067-05	Hydronic Coil					X
45W43-WG1069-05	Air Outlet Grill					X
45W34-WG1076-05	Blower Wheel					X
45W34-WG1076-06	Blower Wheel					X
45W43-WG1078-05	Air Inlet Grill					X
45W37-WG1079-04	Front Panel					X



Limited Warranty **ThinWall Fan Coil**

The Manufacturer warrants to the original owner at the original installation site that the Product will be free from defects in material or workmanship for a period not to exceed five (5) years from startup. If upon examination by the Manufacturer the Product is shown to have a defect in material or workmanship during the warranty period, the Manufacturer will repair or replace, at its option, that part of the Product which is shown to be defective. This limited warranty does not apply:

- (a) if the Product has been subjected to misuse or neglect, has been accidentally or intentionally damaged, has not been installed, maintained or operated in accordance with the furnished written instructions, or has been altered or modified in any way.
- (b) to any expenses, including labor or material, incurred during removal or reinstallation of the Product.
- (c) to any workmanship of the installer of the Product.

This limited warranty is conditional upon:

- (a) shipment, to the Manufacturer, of that part of the Product thought to be defective. Goods can only be returned with prior written approval from the Manufacturer. All returns must be freight prepaid.
- (b) determination, in the reasonable opinion of the Manufacturer, that there exists a defect in material or workmanship.

Repair or replacement of any part under this Limited Warranty shall not extend the duration of the warranty with respect to such repaired or replaced part beyond the stated warranty period.

THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, AND ALL SUCH OTHER WARRANTIES, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED AND EXCLUDED FROM THIS LIMITED WARRANTY. IN NO EVENT SHALL THE MANUFACTURER BE LIABLE IN ANY WAY FOR ANY CONSEQUENTIAL, SPECIAL, OR INCIDENTAL DAMAGES OF ANY NATURE WHATSOEVER, OR FOR ANY AMOUNTS IN EXCESS OF THE SELLING PRICE OF THE PRODUCT OR ANY PARTS THEREOF FOUND TO BE DEFECTIVE. THIS LIMITED WARRANTY GIVES THE ORIGINAL OWNER OF THE PRODUCT SPECIFIC LEGAL RIGHTS. YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY BY EACH JURISDICTION.



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