



MODEL NUMBER: \_\_\_\_\_

SERIAL NUMBER: \_\_\_\_\_

DATE PURCHASED: \_\_\_\_\_

## OWNERS MANUAL

### CARAVAN AIR-CONDITIONER

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# BELAIR

MODEL

A3501

A3800


T3500




For your safety, please read this manual  
carefully before using the product.

## Safety Notices

Thank you for choosing a HOUGHTON caravan air-conditioner. For your ease of use and safety we have included the following symbols in this manual:

 All the contents with this "Warning" logo are about the safety of the user and the air-conditioner. The user shall operate the air-conditioner in strict compliance with the instructions.

 All the contents with this "Prohibition" logo are about the actions that shall be prohibited, or else the air-conditioner may be damaged or the user's personal safety may be endangered.

# Table of Contents

Safety Notes.....	1
Product Introduction.....	2
Packing List.....	3
Installation Guidance.....	5
Quick Start Guide .....	13
Remote Control Operation.....	14
Product Maintenance.....	24
Specifications.....	25
Exploded Diagram and Parts List.....	26
Trouble Shooting Guide.....	30
Circuit Diagram.....	31

## Safety Notes

- ❗ Make sure the external electric supply socket of the caravan air-conditioner is effectively grounded in accordance with your local regulations.
- ❗ Failure to ground the unit correctly may cause electric shock or fire.
- ❗ The caravan air-conditioner shall be switched on for electric leakage detection after installation.
- ❗ If you are not to use the air-conditioner for a long time, please isolate the power supply.
- ❗ Clean the filter of the air-conditioner regularly. A dirty filter will decrease air flow and lead to poor heating and cooling performance.
- ❗ Use the remote control to operate the air-conditioner.
- ❗ Install the air-conditioner in compliance with the instructions of this manual.
- ❗ Incorrect installation methods or alteration of the product may cause damage to the product or personal injuries to the user.
- ❗ Be careful when installing the unit on the roof of the caravan, crawl boards may be required.
- ❗ There may be wires between the roof and the ceiling. When cutting into the roof, make sure the power is isolated to prevent risk of electric shock.
- ❗ Installation and maintenance of the air-conditioner must only be performed by personnel with appropriate trade qualifications and holding current licenses for such work.
- ❗ Do not over-tighten the power connection terminals.
- ❗ Ensure that your electrical supply and wiring is correctly sized for the power demand of the air-conditioner. Refer to the product specifications.
- ❗ This appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge. Children are not to play with this appliance and should be supervised at all times.

- ⊘ Keep the air inlet and outlet of the inside and outside units of the air-conditioner clear.
- ⊘ Do not spray any paint or insecticide on the surface of the air-conditioner.
- ⊘ Immediately turn off the air-conditioner and isolate power supply if there is any unusual odour, smoke or fire detected. Contact after-sales service personnel in case of unit fault or fire.



# Product Introduction

## A. Purpose

HOUGHTON BELAIRE is designed to provide a comfortable environment inside a recreational vehicle or caravan.

## B. Achieving effective heating & cooling

Many factors will affect the total heat load within the caravan and many factors can also affect the working efficiency of the air-conditioner. Before purchasing HOUGHTON BELAIRE air-conditioners, the user shall consult with the caravan manufacturer to understand the total heat load of the caravan and to choose the correct air-conditioner for the application.

The following measures are very useful to reduce the heat load within a caravan or RV and improve the performance of the air-conditioner.

- Close all the doors, skylights and windows, draw the curtains and open the sunshade or awning.
- Adjust the caravan's position to make sure the sunshade is on the southern side in the northern hemisphere or on the northern side in the southern hemisphere. This will reduce the exposure to direct sunshine.
- Turn off unnecessary electrical appliances within the caravan to reduce the heat load.
- Cook outside of the caravan when possible.
- Park the caravan in shade if possible.
- In case of exceptionally high temperatures, turn on the air-conditioner in advance during the morning.
- Adjust the set temperature of the remote control to prevent frequent starting or stopping of the unit.

## C. Condensation

When warm, moist air within the caravan meets with a cold surface, condensation water may be formed. This is also known as "sweating". In this case, make sure the following measures are taken:

- Close and seal all the doors, skylights, windows to reduce the entry of warm, moist air.
- Operate the inside fan on high fan speed, avoid low and auto fan speeds.

During the operation of the air-conditioner, condensate water will be produced and allowed to drain onto the roof. This is normal. The amount of condensate water is a function of air humidity. High humidity inside the caravan will result in more condensate being generated. Close doors, windows and hatches to reduce this to a minimum.

**Please note that losses or damage caused by the condensate water are not within warranty scope.**

## D. Choosing and using a generator

- HOUGHTON BELAIRE requires a mains quality AC power source for correct operation. If you decide to supply power using a generator then you are strongly recommended to consult with the generator supplier to confirm suitability and sizing of the generator for your application.

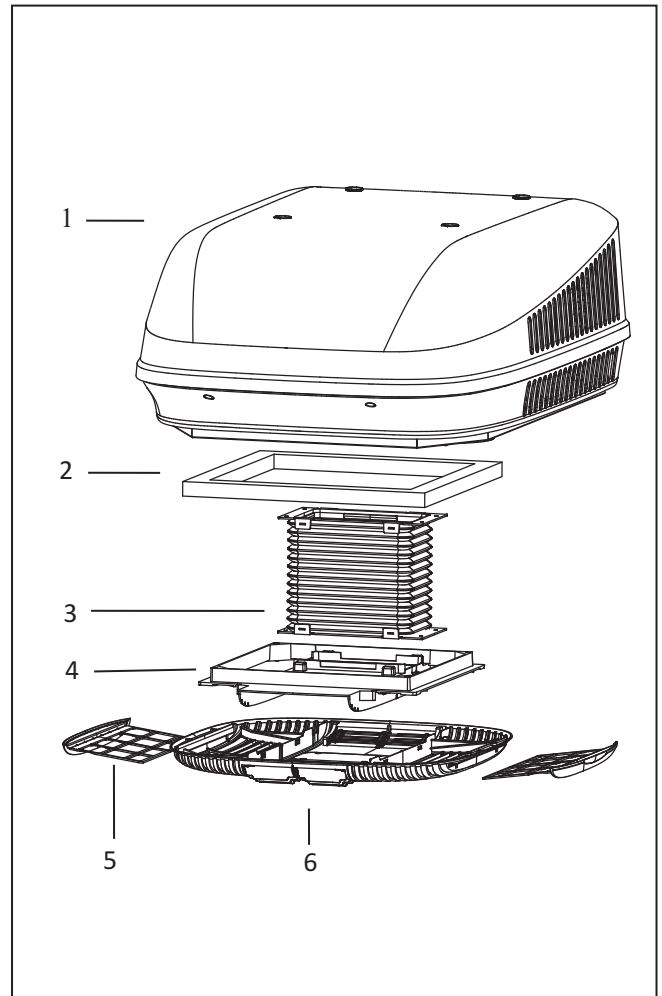
**Please note that losses caused to the product by the using of a generator are not within warranty scope.**

# Packing List

## Standard System installation parts list

Main parts:

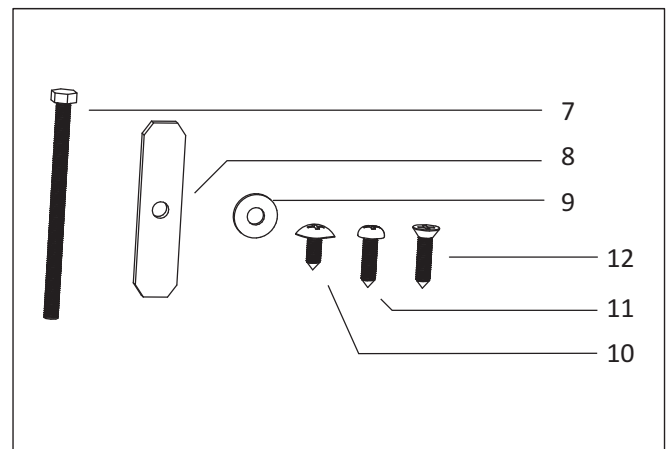
1. BELAIRE air-conditioner outdoor unit ×1
2. Outlet gasket ×1  
(In A3501/A3800 modes, the outlet gasket is fixed to the outdoor unit)
3. Outlet air duct ×1
4. Plenum mounting bracket ×1
5. Return air filters ×2
6. Plenum assembly ×1
7. M8 × 120mm hex head bolts ×4 (T3500)  
M8 × 180mm hex head bolts ×4 (A3501/A3800)
8. Metal clamping bars ×4
9. Large M8 washers ×4
10. Truss head tapping screws ST4×10 ×8
11. Plenum screw - ST4.2×19 pan head screws ×4
12. Countersunk head self tapping screws ST4.2×16 × 6



Not shown:

- Manual ×1
- Remote control & bracket ×1

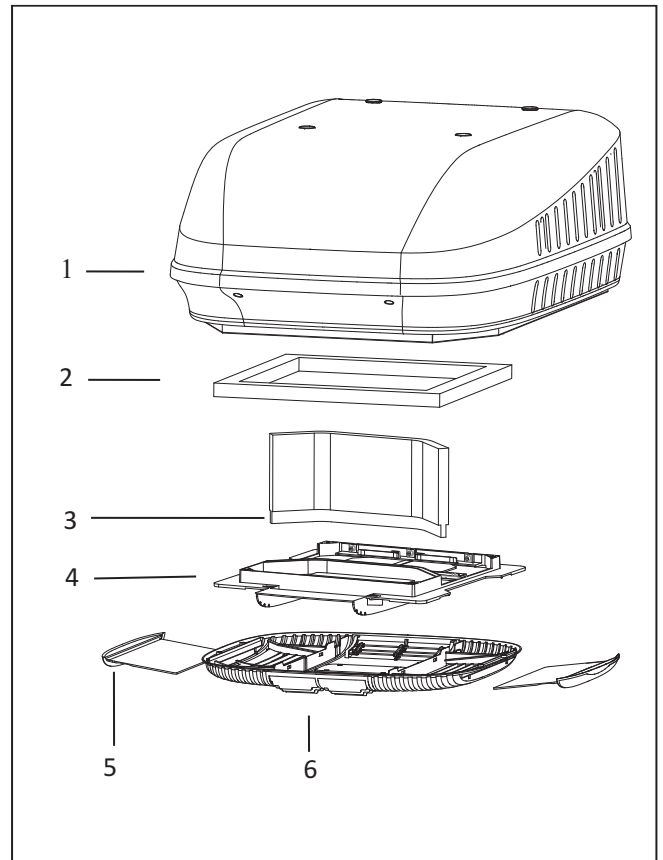
**If you note that any items are missing or damaged then please contact Houghton or the local distributor.**



## Ducted Air-Conditioning System installation parts list

### Main parts:

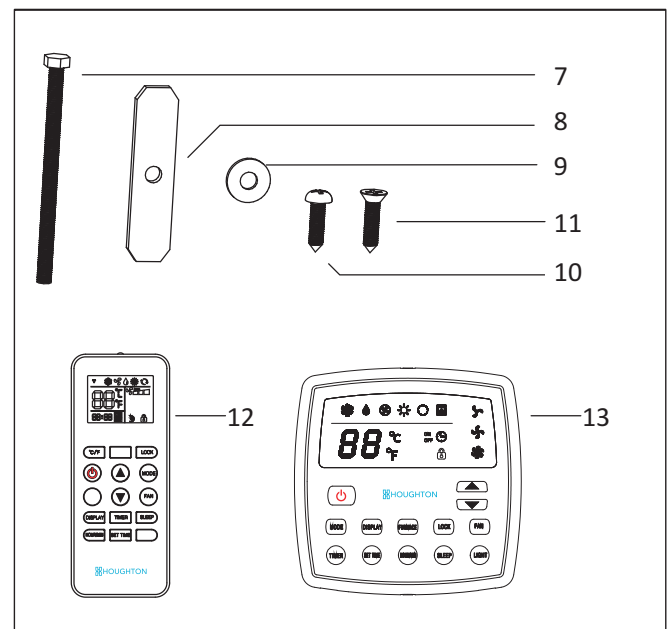
1. BELAIRE air-conditioner outdoor unit ×1
2. Outlet gasket ×1  
(In A3501/A3800 modes, the outlet gasket is fixed to the outdoor unit)
3. Air flow separation baffle ×1
4. Plenum mounting bracket ×1
5. Return air filters ×2
6. Plenum assembly ×1
7. M8 x 180mm hex head bolts ×4
8. Metal clamping bars ×4
9. Large M8 washers ×4
10. Plenum screw-ST4. 2×19 Pan head screws ×4
11. Countersunk head self-tapping screw -ST4. 2×16 ×6
12. Remote controller ×1 (Optional accessory)
13. Wall pad controller ×1 (Optional accessory)



### Not shown:

- Manual ×1
- Remote bracket ×1

**If you note that any items are missing or damaged then please contact Houghton or the local distributor.**



# Installation Guidance

## Installation instructions

- Thoroughly read and understand this manual before installation.
- Abide by the national wiring rules in your country.
- Do not add any other parts or modify the product in the installation.
- The installers shall be equipped with refrigeration technician qualification certificates and/or suitable electrical trade qualifications.
- Consult with HOUGHTON or the local distributor in the case of unusual applications or installation conditions that are not specifically covered by this manual.

## Installation requirements

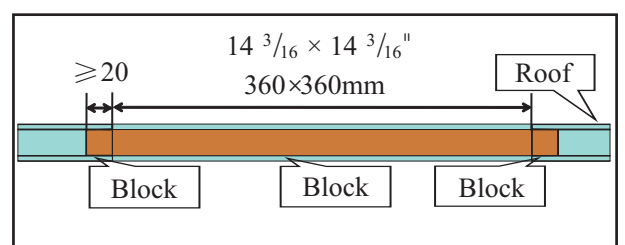
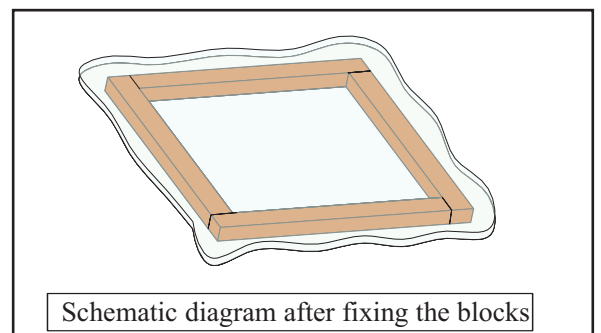
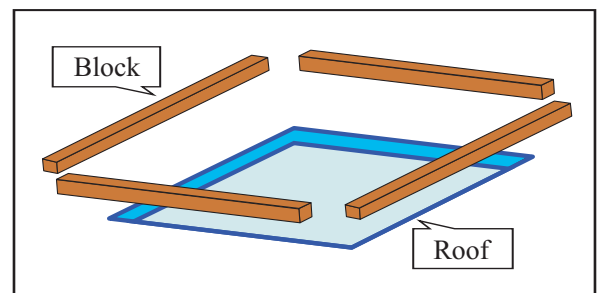
- The RV or caravan roof shall be able to support the air-conditioner's weight (40kg/88 lbs).

Model	Roof thickness	
	Minimum	Maximum
T3500	25mm / 1"	85mm / 3 3/8"
A3501 or A3800 Non-ducted Unit	25mm / 1"	145mm / 5 5/8"
A3501 or A3800 Ducted Unit	75mm / 3"	150mm / 6"

- If the roof's thickness is greater than the maximum specified, you can purchase a "Thick roof bolt kit" to suit your unit from HOUGHTON or the local distributor.

### Load bearing of roof

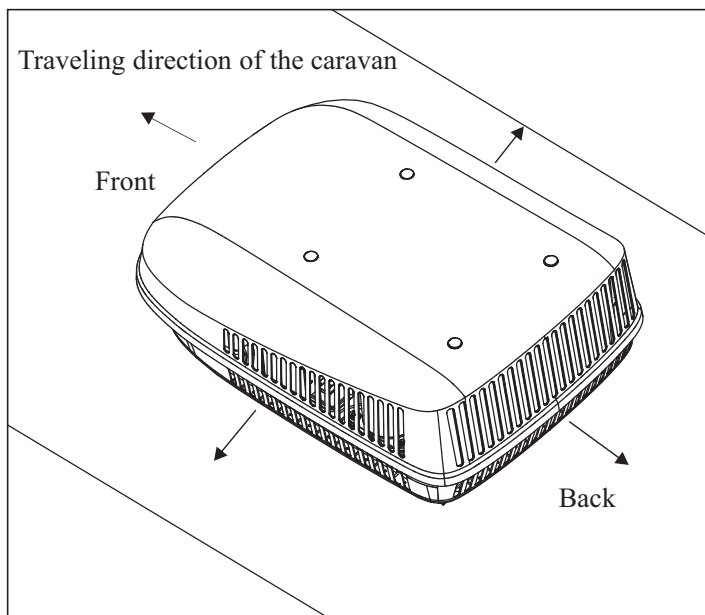
- The roof shall be able to bear the weight of the air-conditioner and shall be level without accumulating water. It is suggested that the caravan manufacturer confirms the suitability of the roof for load bearing.
- If the installation hole is not preexisting then consult your caravan manufacturer for the most suitable way to cut the installation hole.
- The  $360 \times 360 \text{mm} / 14 \frac{3}{16} \times 14 \frac{3}{16} \text{''}$  hole shall be boarded up with wood sections that are at least  $20 \text{mm} / \frac{3}{4} \text{''}$  thick. This boarding is to ensure that the roof will not crush from the installation bolts and that conditioned air does not enter the ceiling space.



## Installation position

Before the installation, consider the installation position:

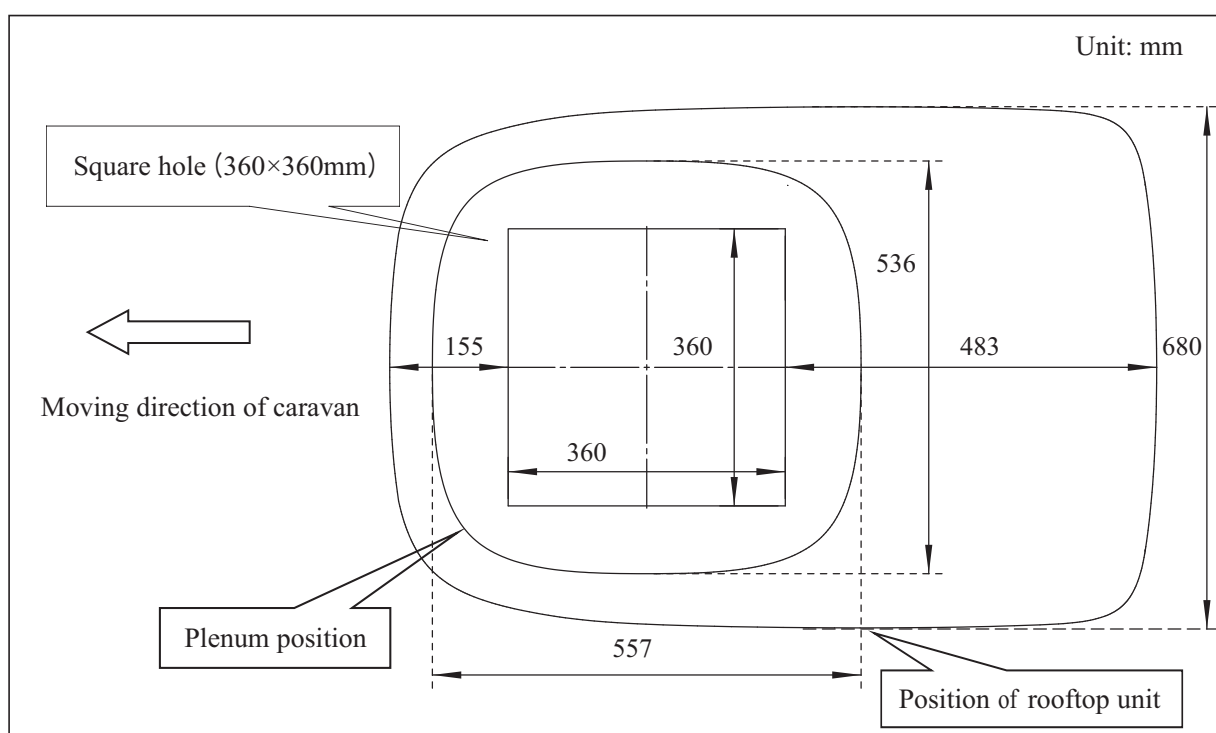
- At least 150mm/6" is needed on the left and right side.
- At least 200mm/8" is needed at the front and back area.
- At least 50mm/2" is needed for the height.
- Rooftop unit is to be put in the center of the roof to ensure even airflow distribution.
- The direction of the rooftop unit should be the same with moving direction of a caravan, otherwise, it will cause damage to the outdoor fan.
- It's suggested to install 2 or more units on a caravan which is more than 7 meters long to achieve desired cooling effect.
- Please confirm position of rooftop unit as per below drawing, and check the position of plenum in the inside of the caravan.
- Position of rooftop unit should avoid partitions, cupboards or lights to ensure the airflow is not distructed.

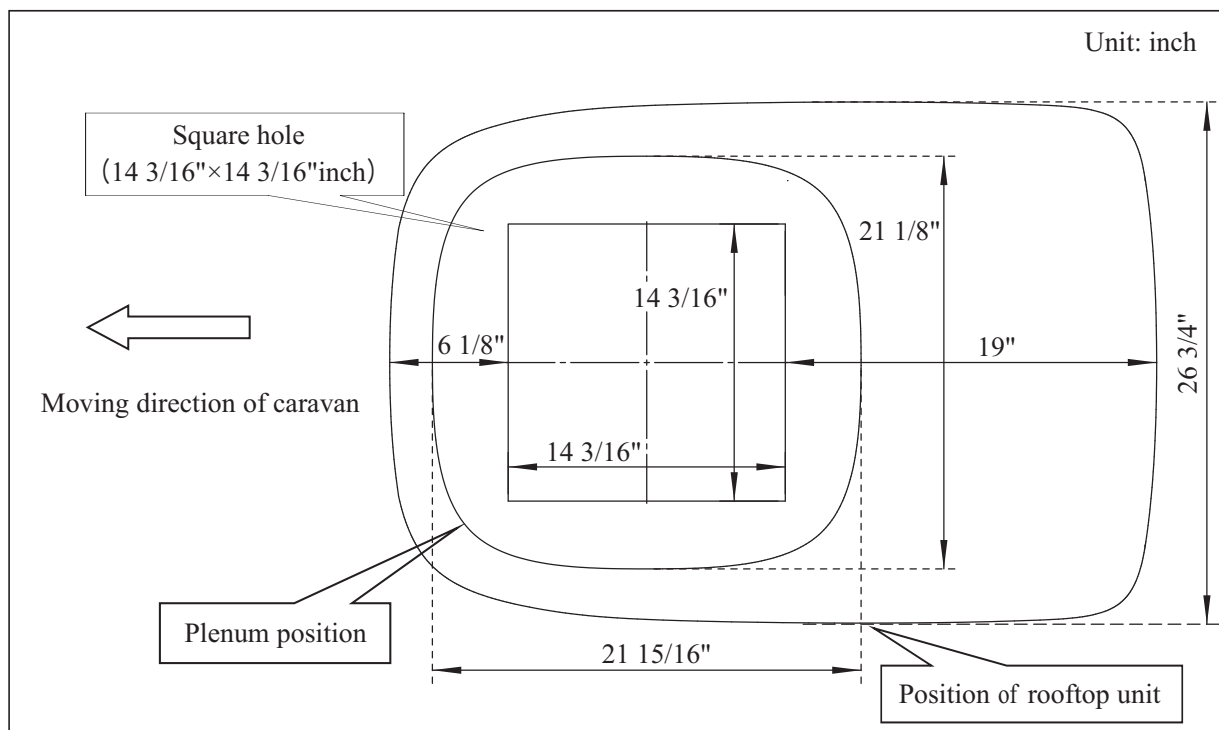


### Note

Angle of inclination of the air-conditioner shall not be greater than  $5^\circ$  and the rear of the air-conditioner shall not be higher than the front.

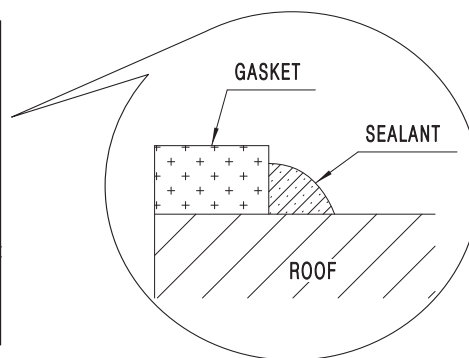
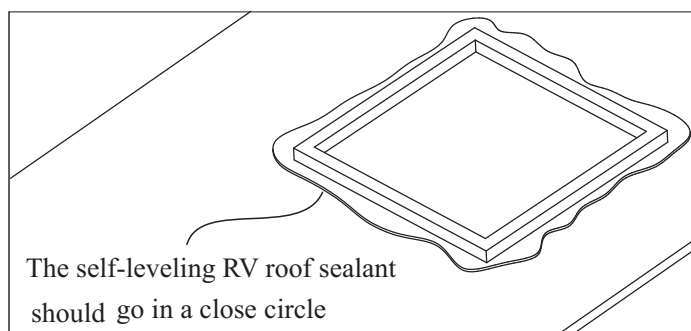
For advice on installations outside of these limits please contact HOUGHTON or the local distributor.



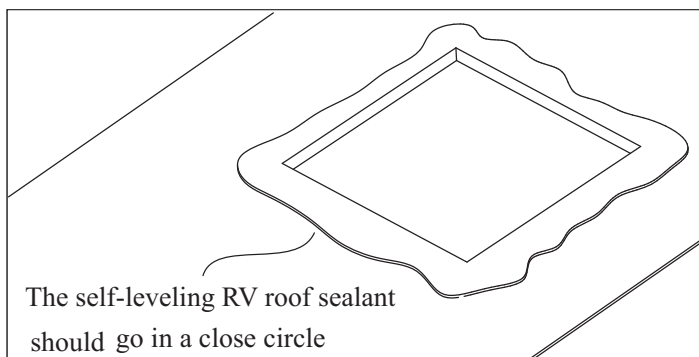


### Install outlet gasket(The outdoor unit without the outlet gasket)

- Make sure the roof is dry, clean and without oil before installation.
- Take off the paper from the back of the outlet gasket, and stick the outlet gasket onto the roof over the square hole.
- Press the outlet gasket to make sure the outlet gasket is closely adhered to the roof.
- Fill the self-leveling RV roof sealant around the outlet gasket to make sure no leakage happens. Please note the can't touch self-leveling RV Roof sealant the rooftop unit.



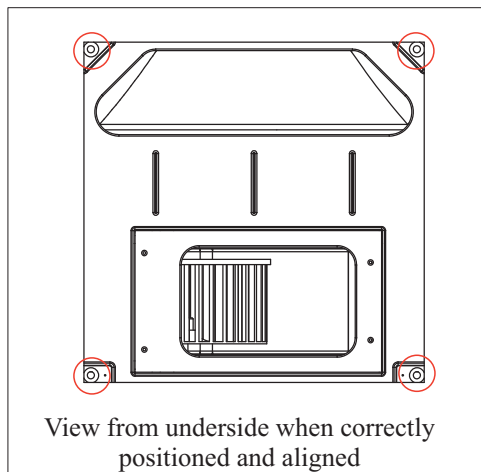
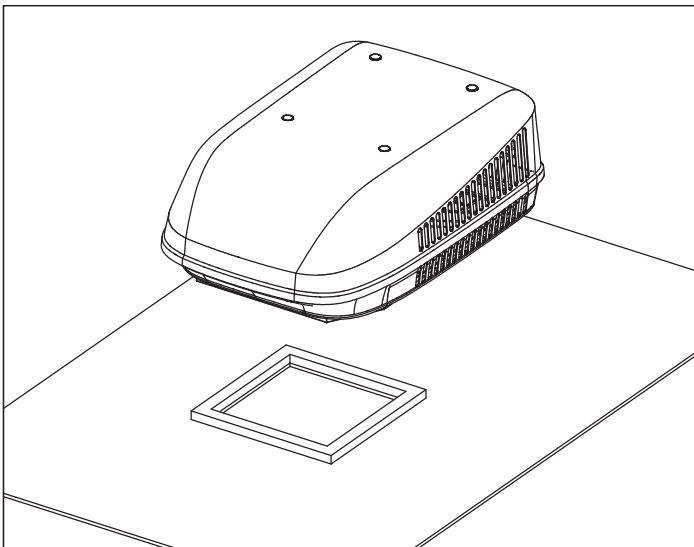
### Fill the self-leveling RV Roof sealant (The outdoor unit with the outlet gasket)



- Make sure the roof is dry, clean and without oil before installation.
- Fill the self-leveling RV Roof sealant around the square hole (360×360mm/14 3/16"×14 3/16") on the roof.

## Install outdoor unit

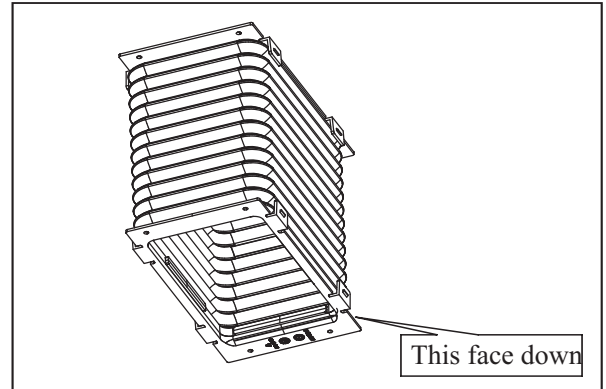
- Place the outdoor unit over the outlet gasket (The outdoor unit without the sealing gasket). Place the outdoor unit over the hole in the roof (The outdoor unit with the sealing gasket). Adjust position to make sure the 4 bolts under the outdoor unit are aligned with the 4 corners of the square hole (360×360mm/14 3/16"×14 3/16"). When the position of outdoor unit is being adjusted a person needs to go to the inside of caravan to ensure the alignment remains accurate.
- Do not push or pull the outdoor unit while it is resting on the gasket. Lift and align the unit before resting it back on the gasket. Sliding the unit across the gasket may cause damage to the outlet gasket and lead to leakage of air and water.
- The 4 holes which receives the M8 bolts on the base of the outdoor unit should align with the 4 corners of the square hole (360×360mm/14 3/16"×14 3/16") on the roof.



## Non-ducted Air Conditioning System: (Ducted Air Conditioning System-Skip To P11)

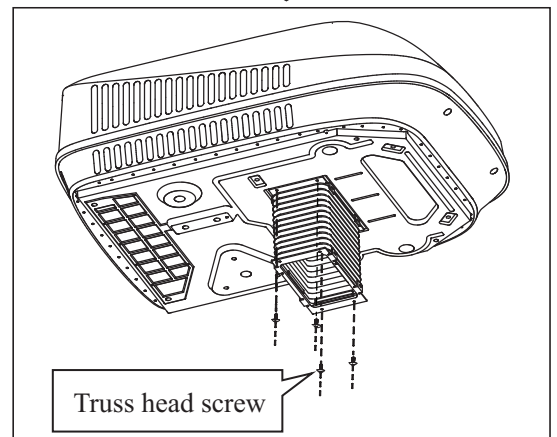
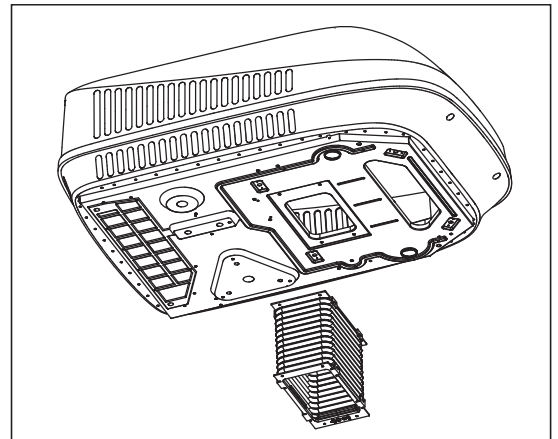
### Install outlet air duct

Cut the 4 cable ties and fix the outlet air duct(#3) to the outdoor unit from inside of caravan using 4 truss head screws(#10).



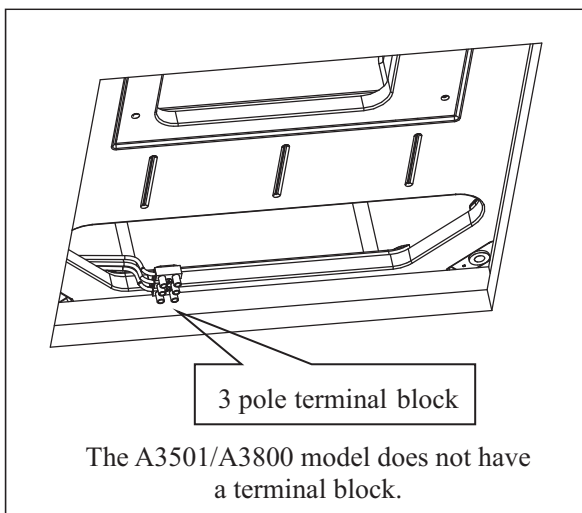
### Note

The outlet air duct has the up and down, left and right directions marked. There is only one way to connect the duct correctly.



### Connect the power

- It is the installers responsibility to ensure that local wiring regulations are followed when connecting to the mains supply.
- The air conditioner shall be connected to a dedicated supply circuit that can be isolated and has the correct capacity.
- Look upward from inside the caravan and locate the power cord as shown in the figure.
- Connect the external power lines and note the positions of the active, neutral and ground.

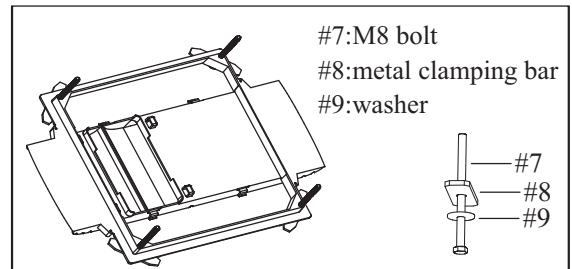


#### Note

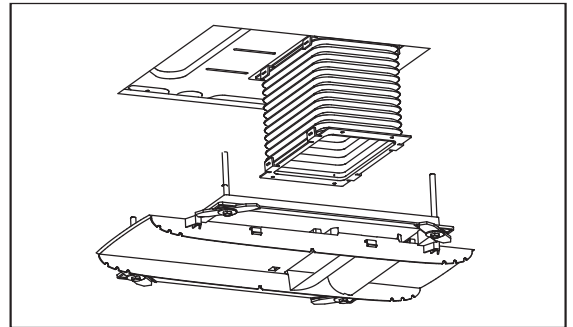
Match the corresponding active, neutral and ground wire and firmly tighten the screws to make sure the power line is not loose or improperly connected, otherwise a short circuit or fire could be caused.

### Install plenum mounting bracket

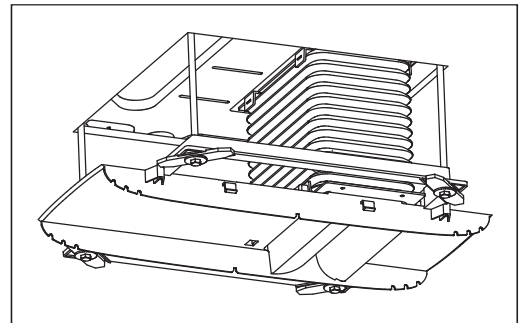
- Overlap M8 bolt(#7) with washer(#9) and metal clamping bars(#8), and insert bolts through the 4 corner holes on the plenum mounting bracket.
- Make sure the metal clamping are not fully tightened the bar angles during installation.



- Push the plenum mounting bracket upward to position into the square hole.



- Start bolts by hand to prevent cross thread.
- Tighten M8 bolt to make sure the plenum mounting bracket is connected with outdoor unit tightly.
- Torque the bolts to 7N.M.

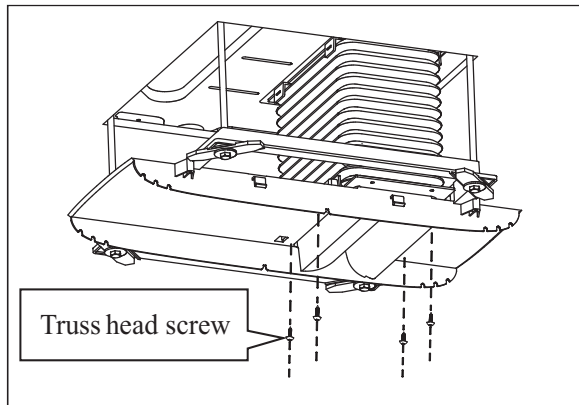
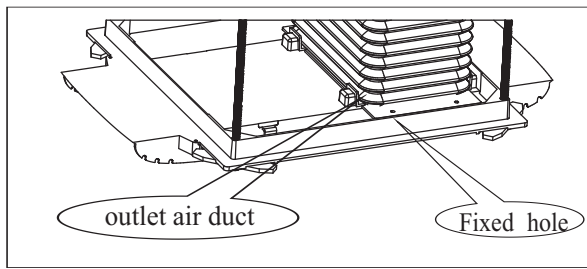


- Check that the plenum mounting bracket is completely embedded into the square hole.

### Connect outlet air duct

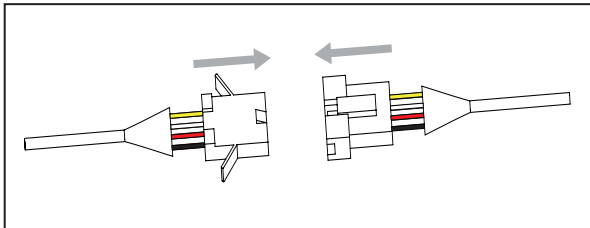
- Pull the outlet air duct down to engage with the plenum mounting bracket.
- Attach the outlet air duct to the plenum mounting bracket with 4 truss head screws (part #10) through aligned holes.



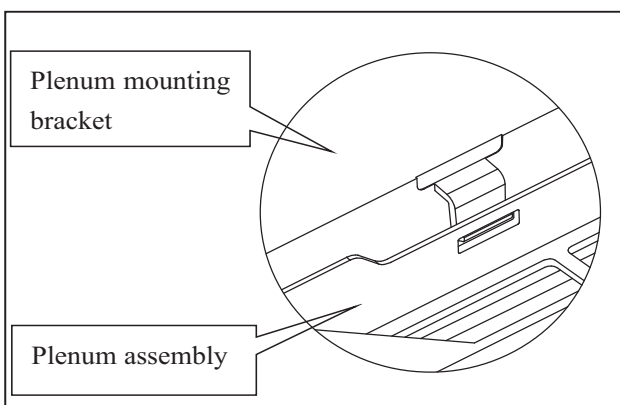


### Install plenum assembly

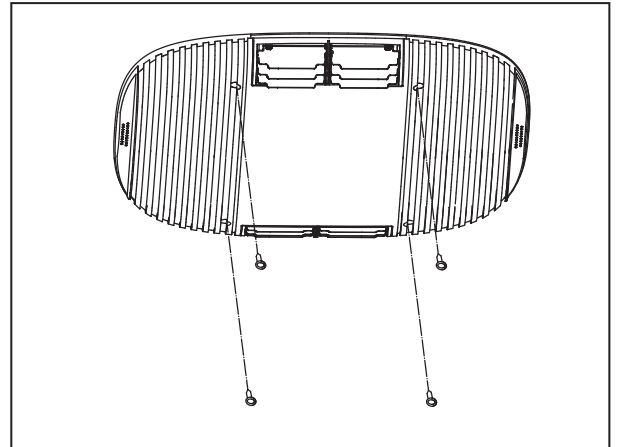
- Connect the control cable between the rooftop unit and the plenum assembly. please note that colors of the wires should be matching.



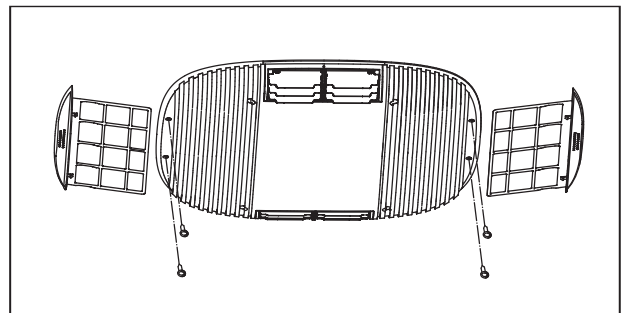
- Attach the plenum assembly to the plenum mounting bracket by engaging the two parts. You will hear four clicks as the parts connect together.



- Fix the plenum assembly on the plenum mounting bracket with the 4 provided pan head tapping screws.



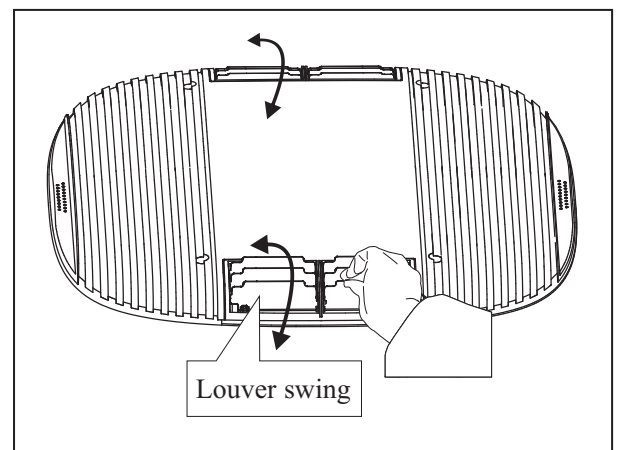
- Take out the return air filters and fix the plenum assembly to the ceiling with the 4 provided countersunk head tapping screws.



- Finally, fit both return air filters into the plenum properly and **the installation is all complete.**

### Adjust the louver

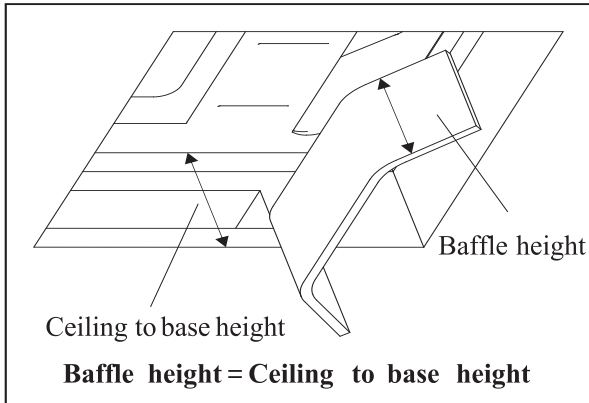
- Adjust direction and angle of louver. The 2 blades move together. Louvers on opposite sides are symmetrical.



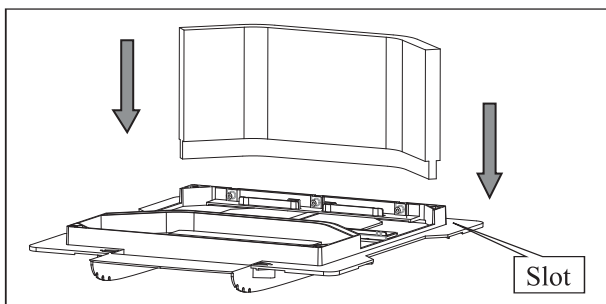
## Ducted Air-Conditioning System:

### Install air flow separation baffle

- Measure the height from ceiling to the steel base of the air conditioner and trim the baffle to this height.



- Insert the trimmed air flow separation baffle into the slot of the plenum mounting bracket.



### Connect the power

- It is the installers responsibility to ensure that local wiring regulations are followed when connecting to the mains supply.
- The air conditioner shall be connected to a dedicated supply circuit that can be isolated and has the correct capacity.
- Look upward from inside the caravan and locate the power cord as shown in the figure.
- Connect the external power lines and note the positions of the active, neutral and ground.

#### Note

Match the corresponding active, neutral and the ground wire and firmly tighten up the screws to make sure the power line is not loose or improperly connected, otherwise a short circuit or fire could be caused.

### +12V Power Connections (Applies To Units With Furnace)

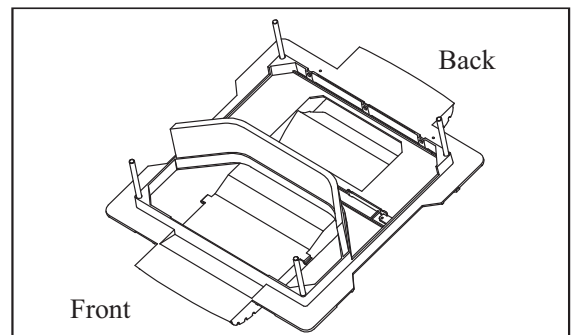
- Customer provided +12V to the red wire in the outdoor unit.
- Customer provided -12V return to the black wire in the outdoor unit.

### Furnace Connections (Applies To Units With Furnace)

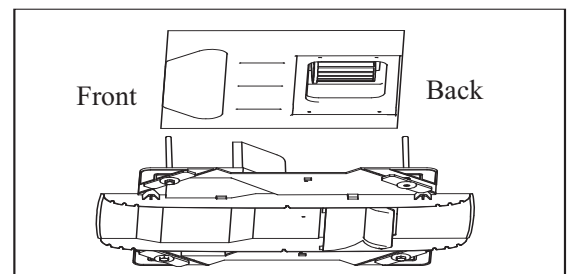
- Furnace output wire to one of the blue wires in the outdoor unit.
- Furnace input wire to the other blue wire in the outdoor unit.
- These two connections are interchangeable since the blue wires are connected to a relay contact in the outdoor unit.

### Install plenum mounting bracket

- Overlap M8 bolt(#7) with washer(#9) and metal clamping bars(#8), and insert bolts through the 4 corner holes on the plenum mounting bracket. Make sure the metal clamping are not fully tightened the bar angles during installation.

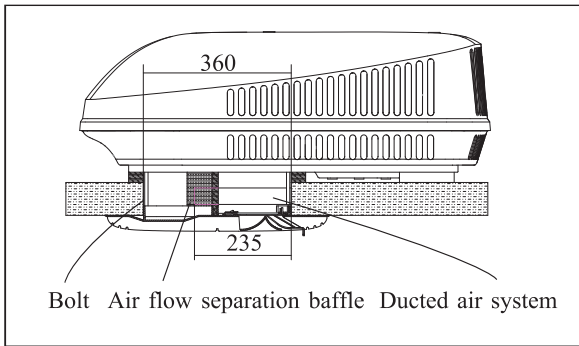


- Push the plenum mounting bracket upward to into the square installation hole.



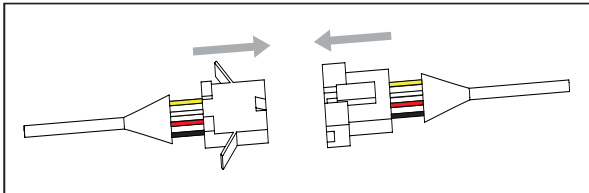
- Start bolts by hand to prevent cross thread.
- Tighten M8 bolt to make sure the plenum mounting bracket is connected with outdoor unit tightly.
- Torque the bolts to 7N.M.

- Check that the plenum mounting bracket is completely embedded into the square hole.

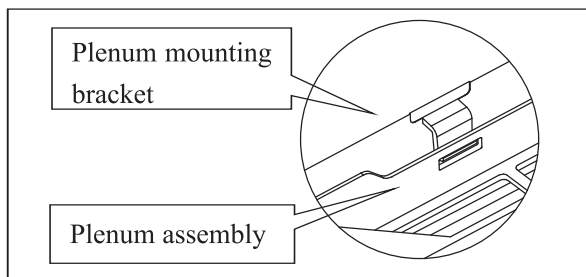


### Install plenum assembly

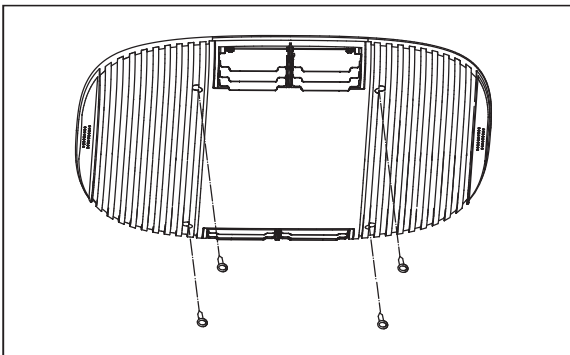
- Connect the control cable between the rooftop unit and the plenum assembly. please note that colors of the wires should be matching.



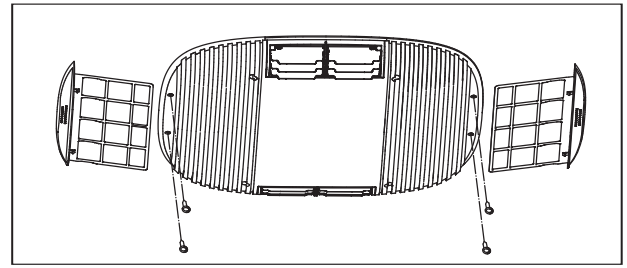
- Attach the plenum assembly to the plenum mounting bracket by engaging the two parts. You will hear four clicks to as the parts connect together.



- Fix the plenum assembly on the plenum mounting bracket with 4 provided pan head tapping screws.



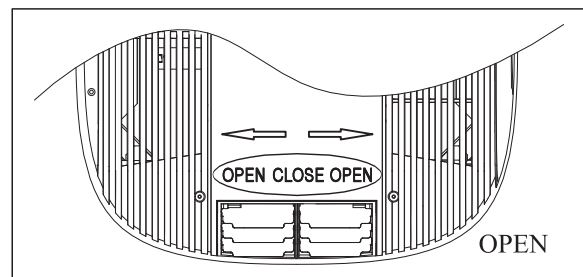
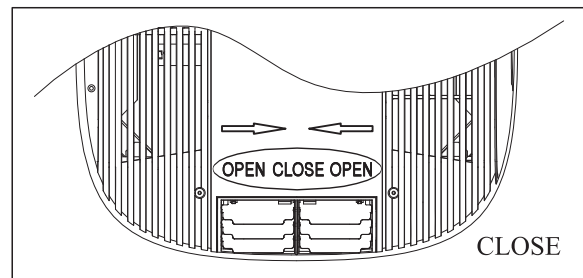
- Take out the return air filter and fix the plenum to the ceiling with 4 provided countersunk head tapping screws.



- Finally, fit both return air filter into the plenum properly and **the installation is complete.**

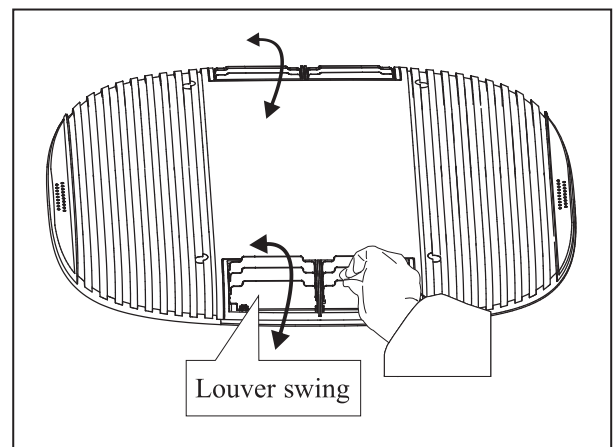
### Switch air outlet

- Adjust the air outlet on the plenum as required.




### Adjust the louver

- Adjust direction and angle of louver. The 2 blades move together. Louvers on opposite sides are symmetrical.



# Quick Start Guide

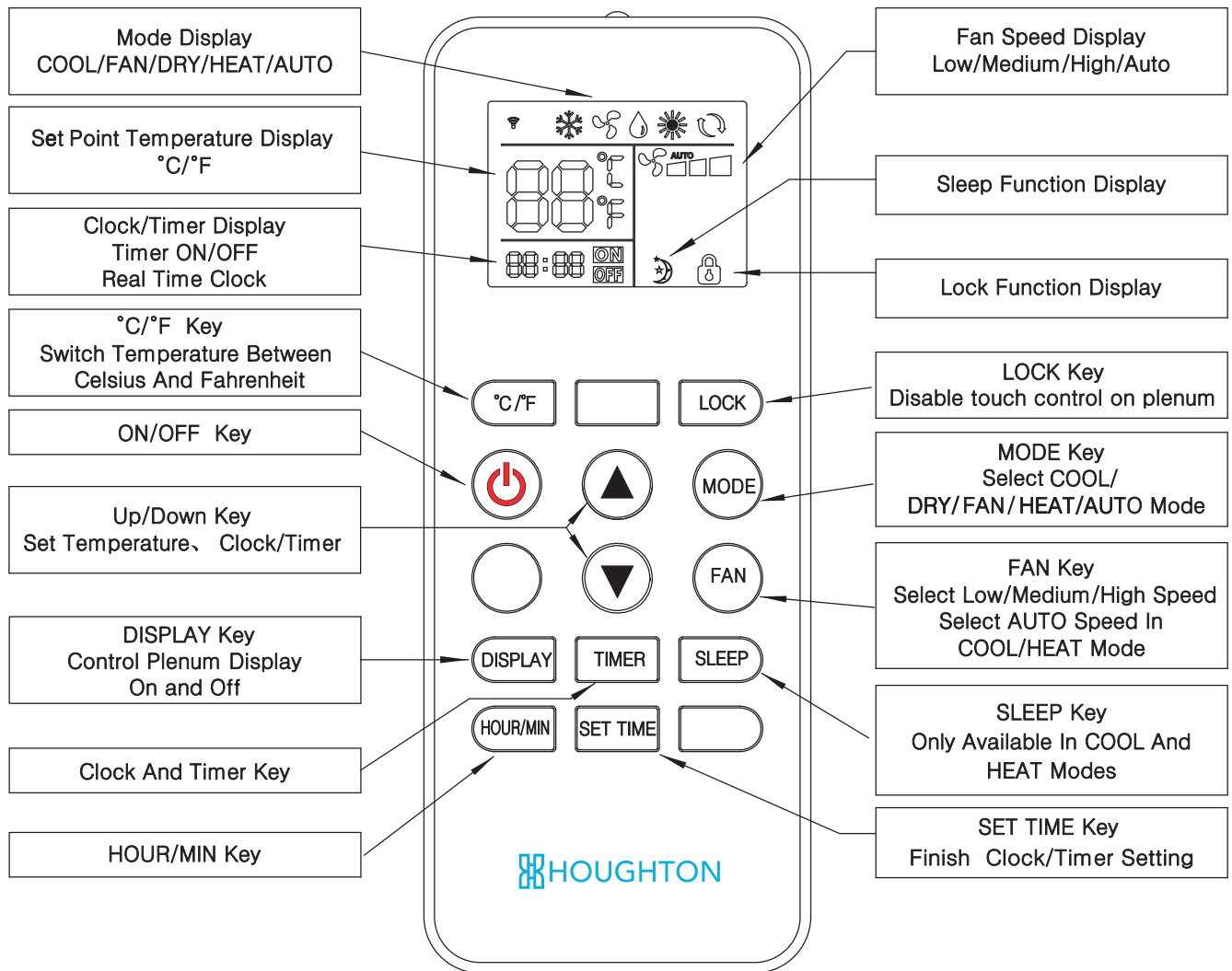
- Switch on the power to the air-conditioner at the isolation breaker.
- Using the remote control, start the air-conditioner by pressing "  " button and then select fan function by pressing the "MODE" button.
- Operate in low FAN, medium FAN and high FAN in turn to check normal operation.
- Select COOL mode, adjust the set point temperature to three degrees lower than the room temperature, the unit will start to blow cool air after the compressor starts.
- Select HEAT mode, adjust the setting temperature to three degrees higher than the room temperature, the unit will start to blow warm air after the compressor starts. (Valid only for heat pump units)

## Note

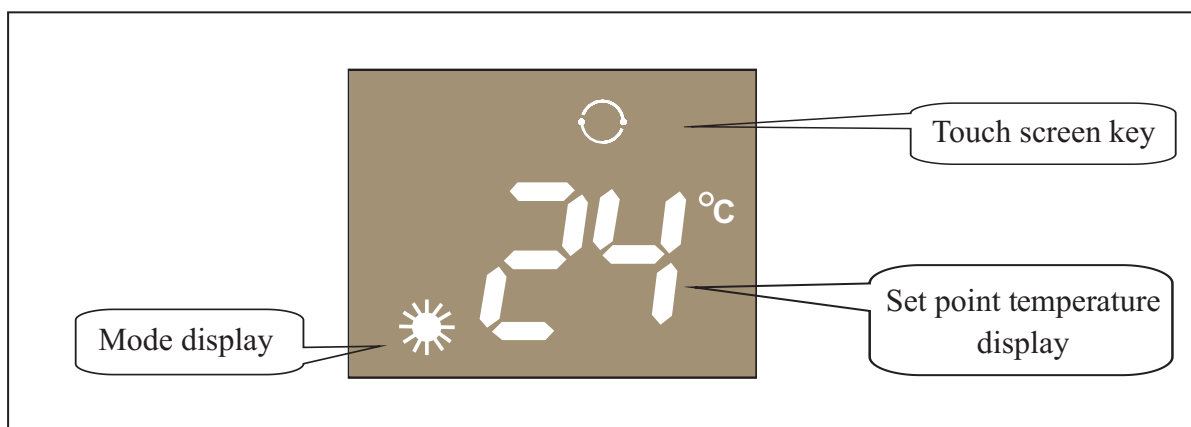
After selecting the COOL or HEAT mode, the compressor may delay starting for 3 minutes. This is a feature to protect the compressor.

# Remote control operation

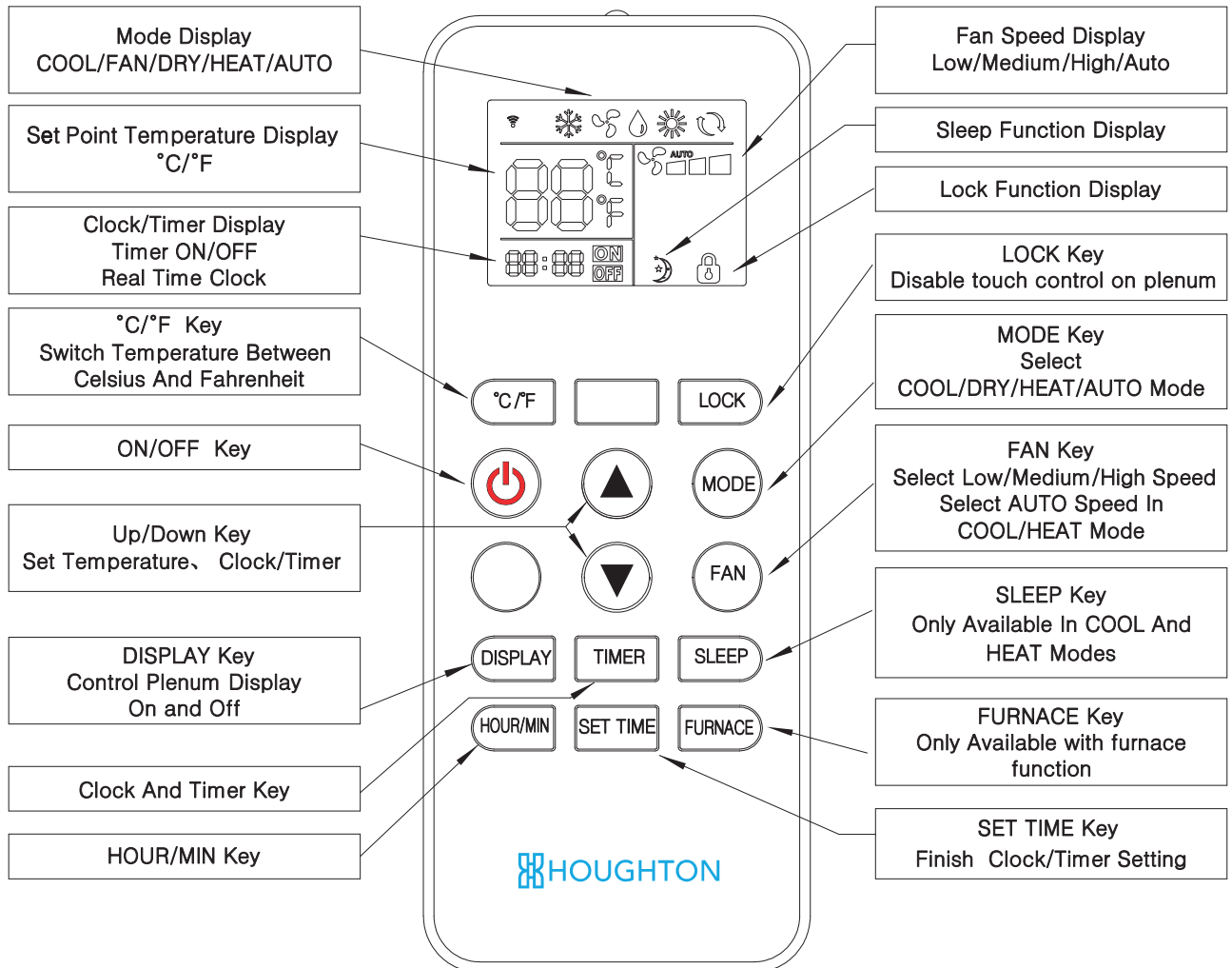
## Non-ducted and Ducted Air Conditioning System Remote Control



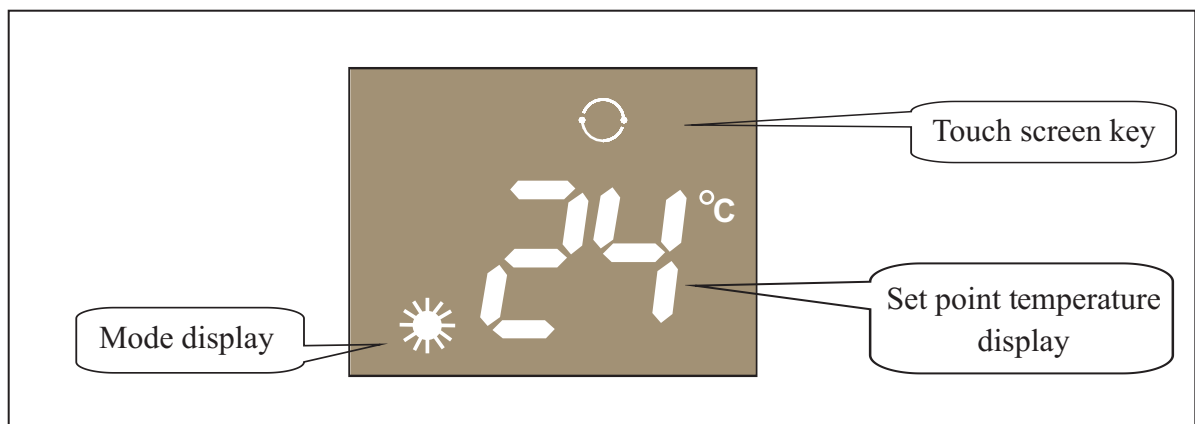
### Plenum display



## Ducted Air Conditioning System with Furnace Function Remote Control




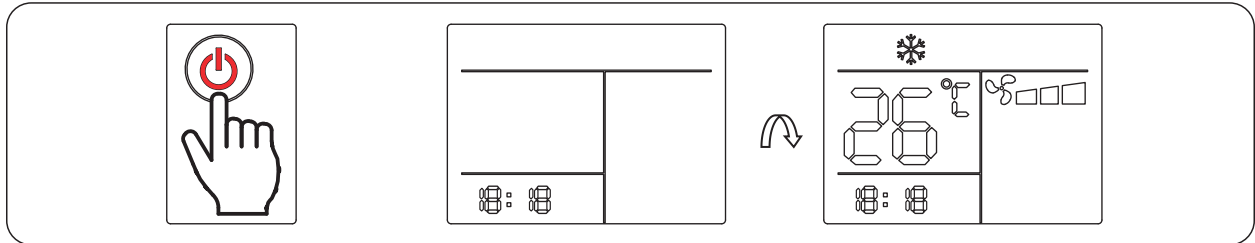
### Plenum display (Valid only for units with display plenum)





## 1. Operation of the remote control

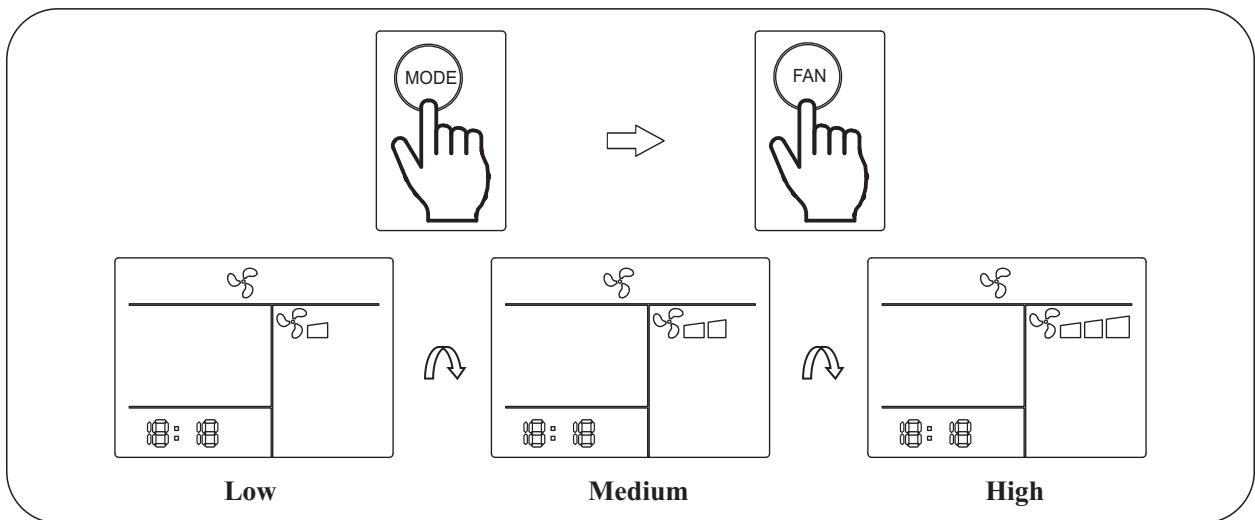
### Turn on

- Press the on/off "  " key, the unit turns on, the plenum buzzer beeps once and the running mode and temperature will be displayed.






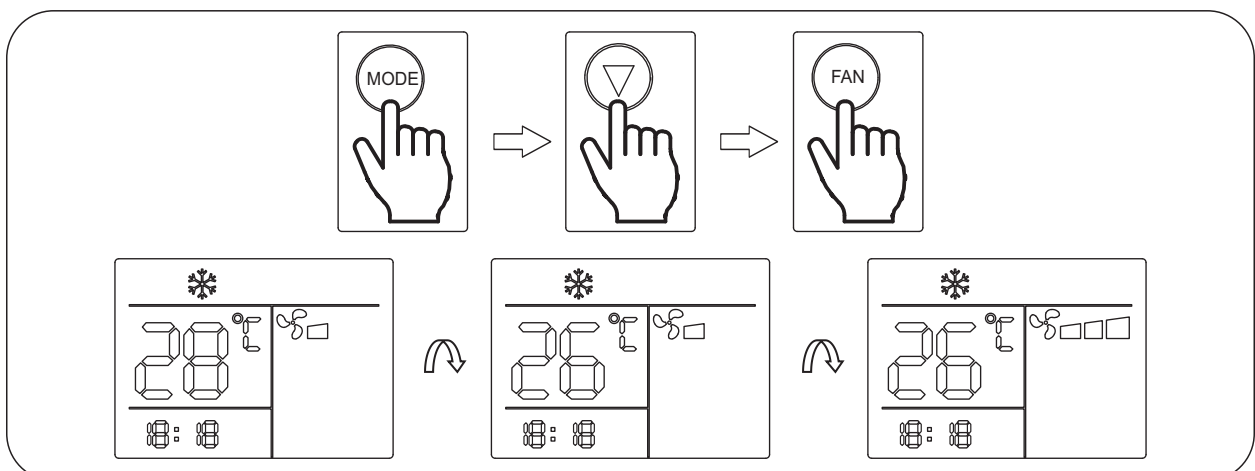
### FAN mode

- Press the " MODE " key, select the "  " mode. Press the " FAN " key to select Low/Medium/High fan speeds. The plenum will display "  " and the indoor environment temperature.



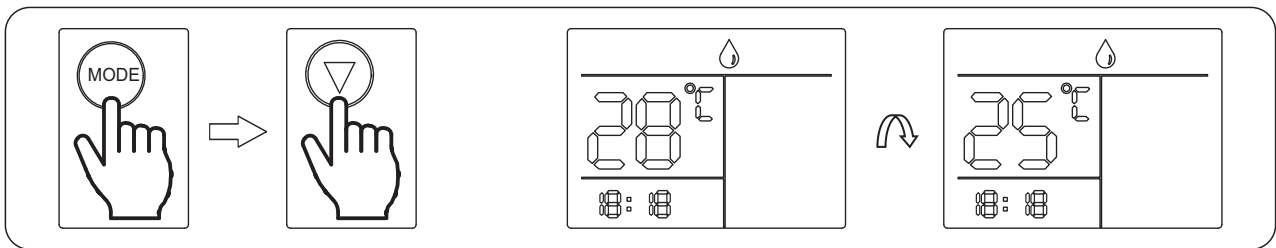
### COOL mode

- Press the " MODE " key, select the "  " mode. Press the down "  " key to decrease the set point temperature. Press the " FAN " key to select a different speed. The plenum will display "  " and the set point temperature.



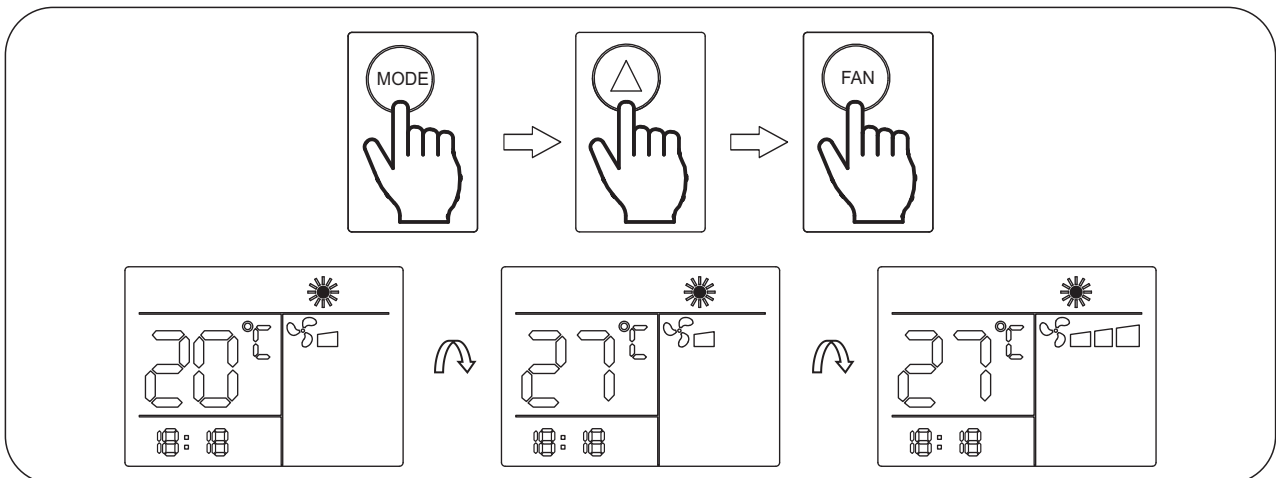
### **DRY mode**

- Press the "MODE" key, select the "💧" mode, Press the down "▼" key to set the set point temperature 1°C lower than the room temperature, and the plenum will display "❄️" and the set point temperature.



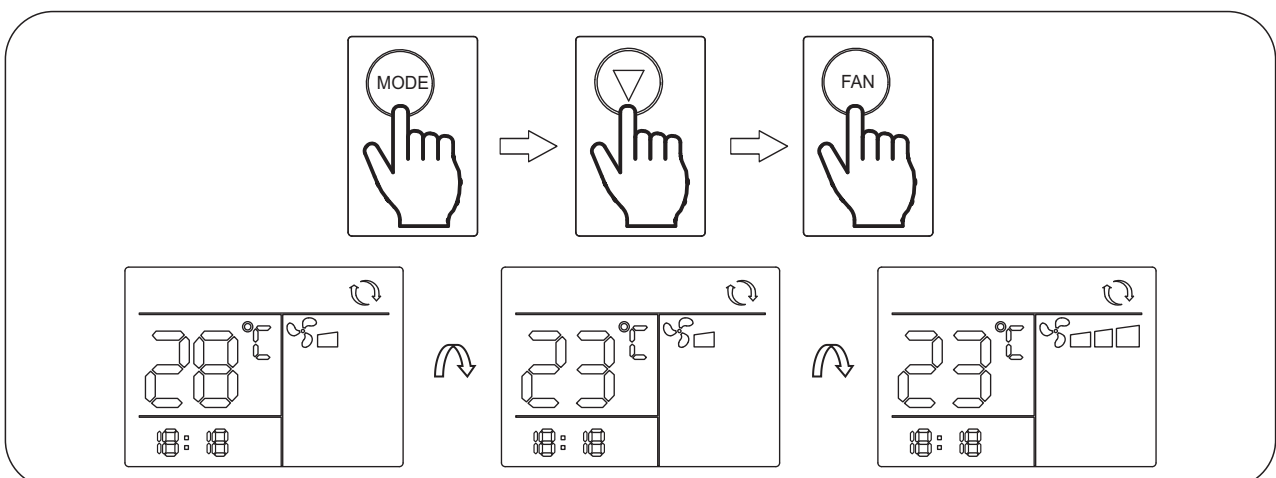
### **HEAT mode(Valid only for heat pump units)**

- Press the "MODE" key, select the "❄️" mode. Press the up "▲" key to increase the set point temperature. Press the "FAN" key to select different speed. The plenum will display "❄️" and the set point temperature.



### **AUTO mode(Valid only for heat pump units)**

- Press the "MODE" key, select the "🔄" mode. Press the up "▲" or down "▼" key to adjust the set point temperature. Press the "FAN" key to select different fan speed. The plenum will display "🔄" and "❄️" or "🔄" and "❄️" and the set point temperature.



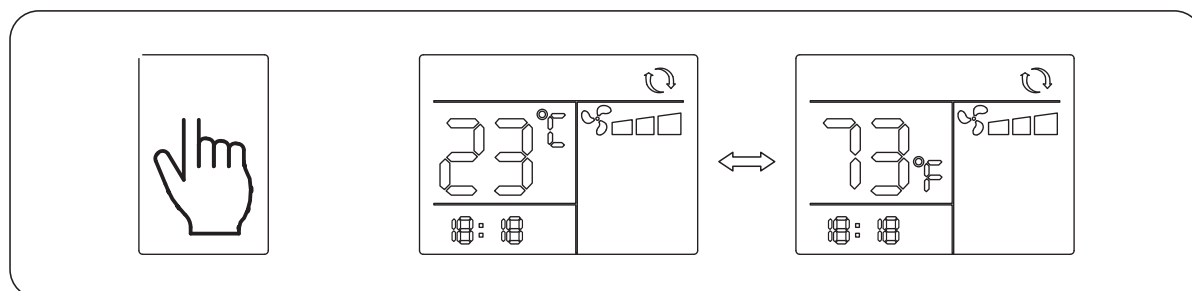


## Note

When in the AUTO mode, according to the difference between the set point temperature and the environmental temperature, the plenum will display "☉" and "❄" (automatic heating), or "☉" and "❄" (automatic cooling) in the same time.

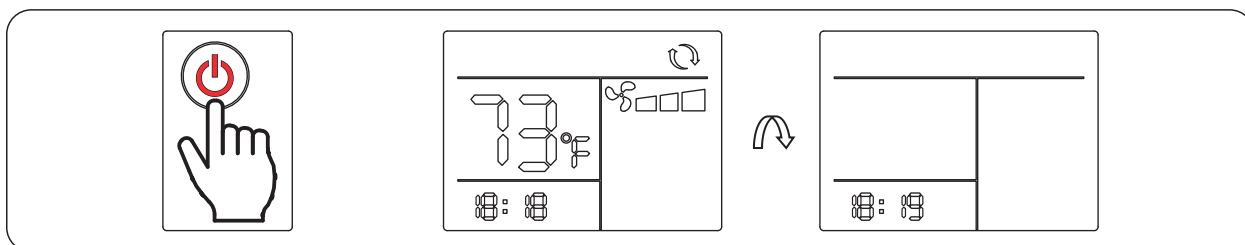
### Celsius and Fahrenheit degree change

- In any mode, press the "℃/℉" key to select temperature units of Celsius or Fahrenheit.



### Turn off

- Press the on/off "🔌" key again, unit turns off and the plenum and remote control will be blank.



### Timing function

#### SET CLOCK AND TIMER

##### TO SET CLOCK

- Press the "SET TIME" key, the Hour digit will flash. Press "▲" or "▼" key to set hour. Press the "HOUR/MIN" key, the Minute digit will flash. Press "▲" or "▼" key to set minute. Wait 10 sec. Clock setup is done.

##### TO SET ON TIMER

- Press the "SET TIME" key, until "ON" shows on the upper right side of the clock and hour digit flashes. Then press the "HOUR/MIN" key, and "▲" or "▼" key, wait 10 sec, ON timer set up is completed.

##### TO SET OFF TIMER


- Press the "SET TIME" key, until "OFF" shows on the lower right side of the clock and hour digit flashes. Then press the "HOUR/MIN" key, and "▲" or "▼" key, to set the desired time to turn the unit off.
  - Clock and timer is now set. Keep on pressing the "SET TIME" key to check again clock and programmed time to turn unit on and off. When all setup is done, after 10 flashes, it will return to clock display.
- Timing to turn on : Press the "TIMER" key until "ON" flashes and shows the time to turn on. When "ON" is displayed after its 10 flashes, and only current clock is displayed, then the setup of timing to turn the unit on is done.
  - Timing to turn off : Press the "TIMER" key until "OFF" flashes and shows the time to turn off. When "OFF" is displayed after its 10 flashes, and only current clock is displayed, then the setup of timing to turn the unit off is done.
  - Timing to turn on and off : Press the "TIMER" key until "ON" and "OFF" flashes simultaneously and shows the time to

turn off. When "On" and "OFF" are displayed after their simultaneous 10 flashes, and only current clock is displayed, then the setup of timing to turn the unit on and off is done.






- Turn off timing function: Press the "TIMER" key, when it only shows the clock, the timer function is turned off.
- Simple method to reset the timer function: remove battery from the remote control wait 30 sec and then replace. The remote control will be restored to the factory settings and the timer function is turned off.

## 2. Plenum operation

**Basic air-conditioning features can be accessed via the plenum touch control. This is useful if the remote control has been lost or is not functioning .**

- Press the touch screen "  " key on the plenum. The selected mode will cycle through " OFF ->COOL->FAN ->HEAT (Valid only for heat pump units)" modes with each touch. The set point temperature is 24°C with high fan speed.



- The plenum display will show symbols for each function:  
COOL "  ", DRY "  ", FAN "  ", HEAT "  ", AUTO "  " .

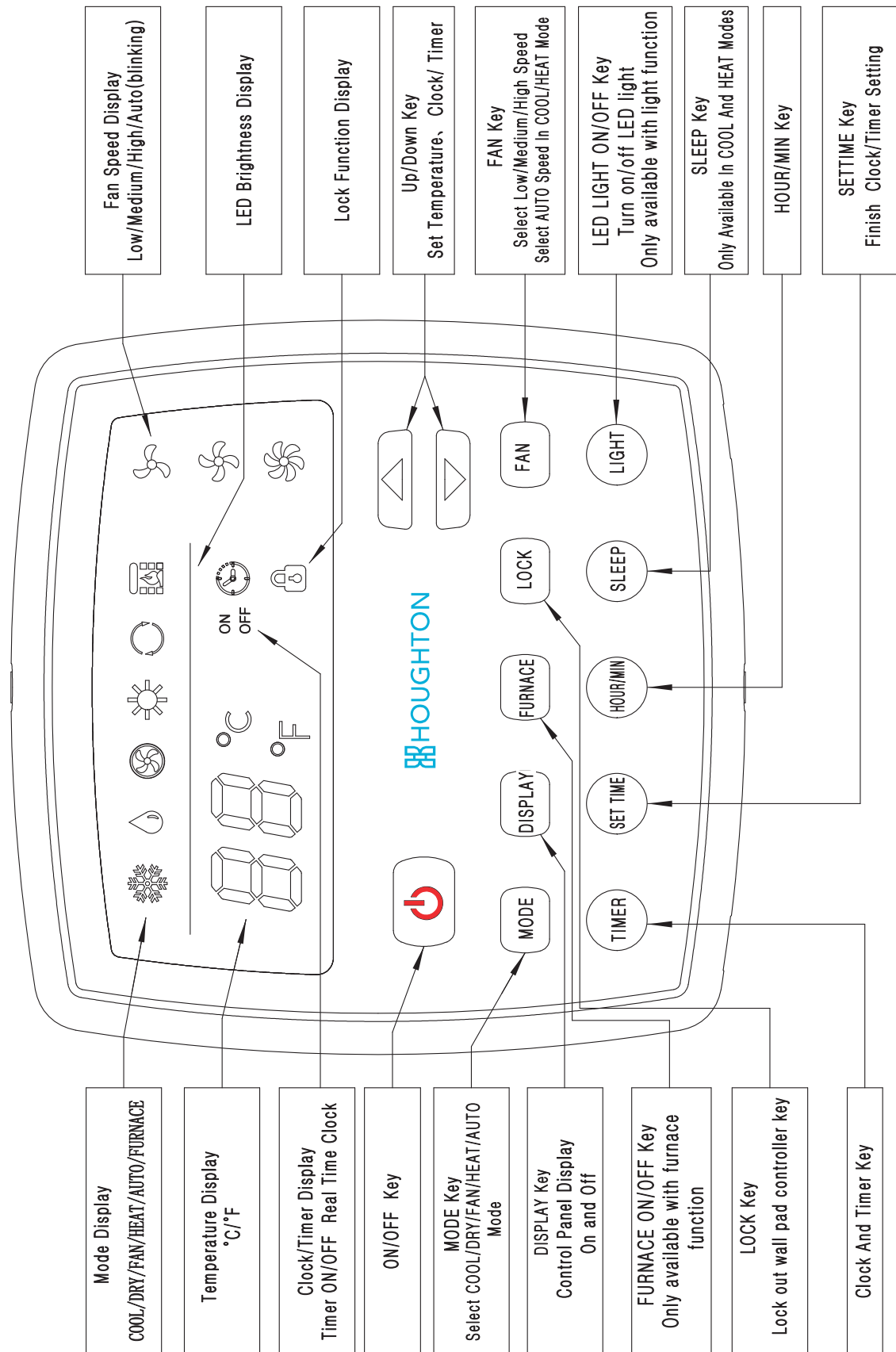
### Note

Operation of the air-conditioner using the plenum control can be prevented by pressing "LOCK" on the remote control. Press the "LOCK" key on the remote control again to unlock.

### Tips


- The remote control should be operated by directing it towards the plenum, which will beep once when a signal is received.
- When the unit is on, press the "DISPLAY" key on the remote control, the plenum control LED display can be turned on and off.
- When the unit is on, press the "LOCK" key on the remote control to prevent operation of the plenum touch key. Press "LOCK" again to unlock this function.
- When run on heating mode in low ambient temperatures the unit will periodically defrost the outside coil. The plenum will display "dF" during defrost operation and then return to heating once the defrost is completed.
- When the ambient temperature is lower than 0°C/32°F, the heating capacity is reduced.
- If the device is left unused for long time, remove the batteries from the remote control.
- The air-conditioner features power cut memory and will automatically re-start once power is restored.

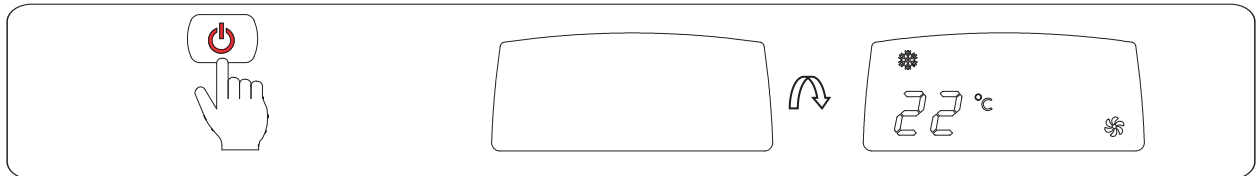
## Wall pad controller






## 1. Operation of the wall pad controller

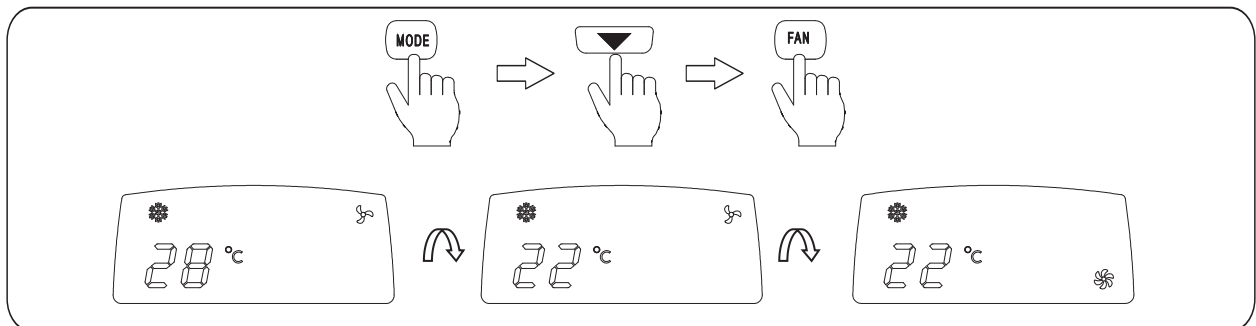
### Turn on

- Press the on/off "  " key, the unit turns on, the plenum buzzer beeps once and the running mode and room temperature will be displayed.






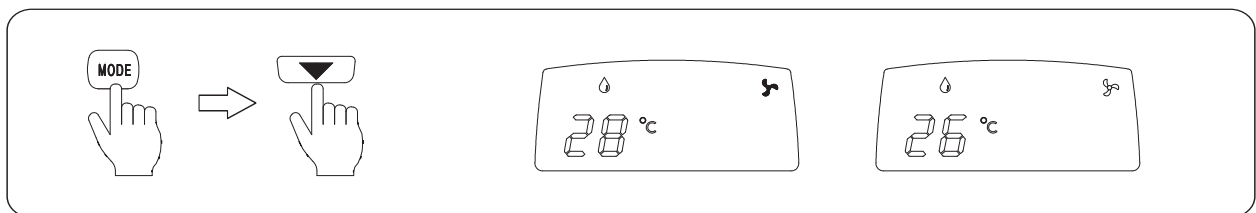
### COOL mode

- Press the " MODE " key, select the "  " mode. Press the down "  " key to decrease the set point temperature. Press the " FAN " key to select a different speed. The plenum will display "  " and the room temperature ( Initial 3 seconds flashing the set point temperature ) .





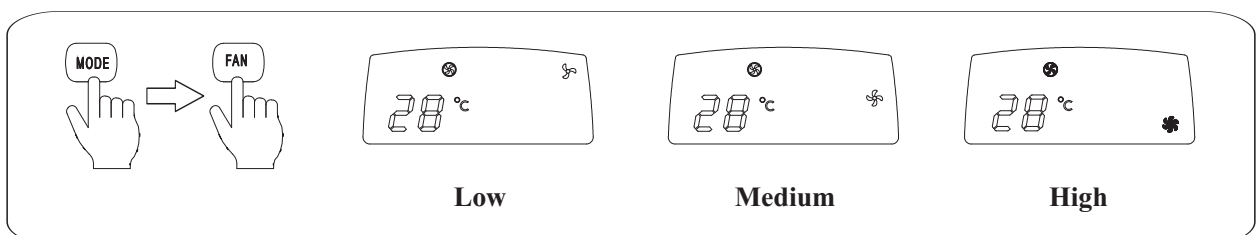
### DRY mode

- Press the " MODE " key, select the "  " mode, Press the down "  " key to set the set point temperature 1°C lower than the room temperature , and the plenum will display "  " and the indoor environment temperature ( Initial 3 sec flashing the set point temperature ) .



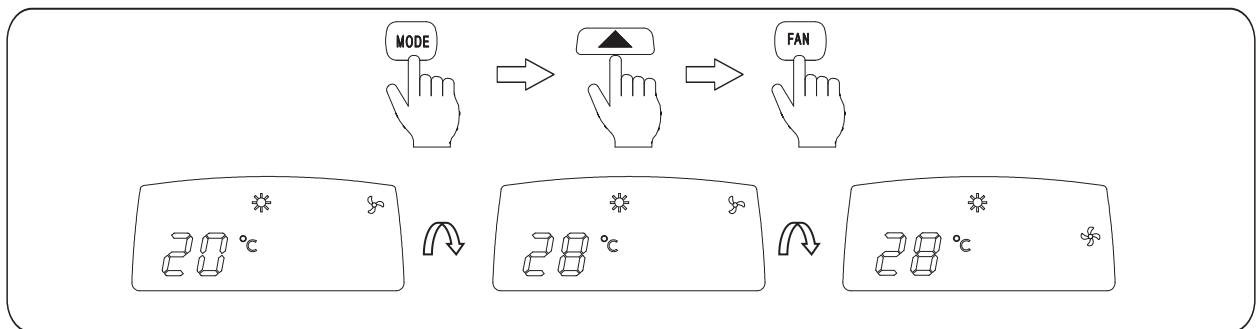
### FAN mode

- Press the " MODE " key, select the "  " mode, Press the " FAN " key to select Low/Medium/High fan speeds. The plenum will display "  " and the room temperature.



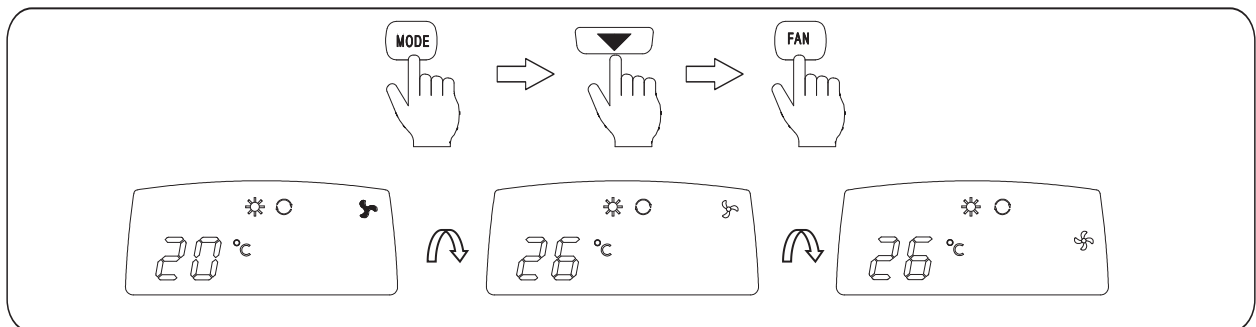
### **HEAT mode(Valid only for heat pump units)**

- Press the "MODE" key, select the "❄" mode. Press the up "▲" key to increase the set point temperature. Press the "FAN" key to select different speed. The plenum will display "❄" and the room temperature ( Initial 3 seconds flashing the set point temperature ) .



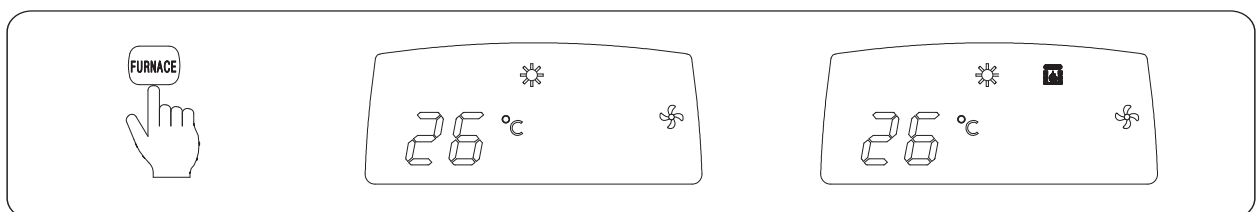
### **AUTO mode(Valid only for heat pump units)**

- Press the "MODE" key, select the "⌚" mode. Press the up "▲" or down "▼" key to adjust the set point temperature. Press the "FAN" key to select different fan speed. The plenum will display "⌚" and "❄" or "⌚" and "❄" and the room temperature ( Initial 3 seconds flashing the set point temperature ) .



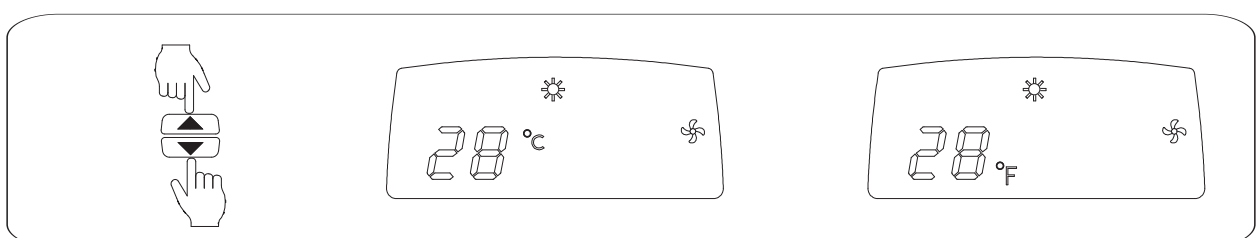
### **FURNACE mode**

- This function is available in heat pump & furnace model only. Press the "FURNACE" key to activate furnace as primary heating and the buzzer sounds once. Heat pump operation will stop. Press the same key again to disable this overriding function and the buzzer will sound twice.



### **Celsius and Fahrenheit degree change**

- In any mode , press up"▲" and down"▼" key at same time for 3 seconds. Switch temperature between Celsius and Fahrenheit units.

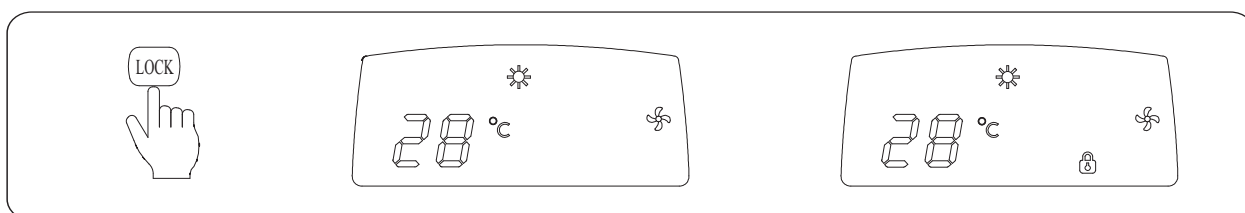


### SLEEP

- Only available in COOL and HEAT modes. Press the "SLEEP" key to enter or exit sleep mode. Sleep mode is selected when the buzzer sounds once. The buzzer will beep twice when Sleep mode is cancelled. Sleep mode allows the set point temperature to change slightly when you sleep. This promotes greater comfort so that you don't wake up too cold too hot.

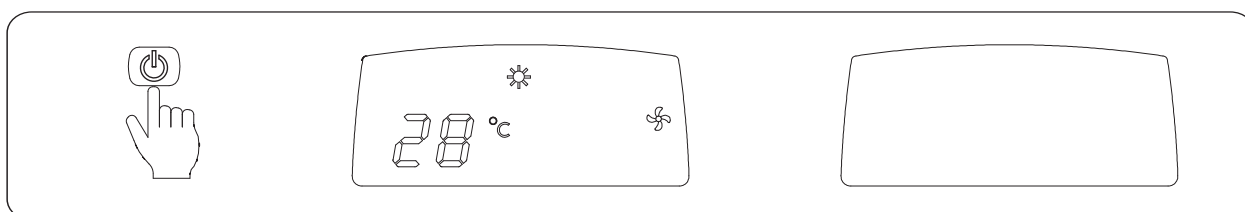
### LOCK

- Short press of the "LOCK" key and the "🔒" symbol will display. Long press of 3 seconds to unlock. The other keys on the wall pad are invalid except for the ON/OFF "🔌" key when the "🔒" symbol is displayed.



### Turn off

- Press the on/off "🔌" key again, unit turns off and the plenum and remote control will be blank.



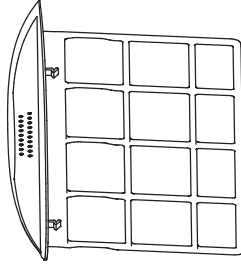
### Tips

- The remote controller should be operated by directing it toward the wall pad controller, which will beep once when a signal is received.
- The air-conditioner features power cut memory and automatic start up after power is restored.
- During operation in heating mode with low ambient temperatures the unit may occasionally enter an automatic defrost cycle to remove ice from the outside coil. Heating will temporarily cease, and the wall pad controller will show "dF". Heating will resume as soon as the coil is defrosted.
- When the environmental temperature is lower than 0°C / 32°F, the heating effectiveness is reduced.
- If the device is left unused for long time, please remove the batteries from the remote controller.

# Product Maintenance

## Filter

- The return air filter is the only component that needs periodic maintenance.
- Check and clean the filter each week when in use to prevent the filter from being blocked by dirt and lint.
- The filter should be washed frequently to ensure effective cooling and heating.
- Pull out the filter from the plenum before washing in warm water with a touch of detergent.
- Dry before replacing.



Replacement filter can be ordered separately.

## Bolt check

- It is recommended that the four bolts holding the unit to the roof are checked for tightness 3 months after the first installation of the product.
- These bolts should be regularly inspected every 12 months through-out the air-conditioner's life.

## Maintenance

- It is recommended that the air-conditioner is operated regularly to ensure good performance.
- In the case of a caravan that will not be used regularly then the unit should be operated for 20-30 minutes every 6 months.

# Specifications

Model	A3501	A3800	T3500
Power supply	115V/60Hz	115V/60Hz	220–240V/50Hz
Refrigerant charged	R410A/470g	R410A/650g	R410A/590g
Cooling capacity	13500BTU/H	15000BTU/H	3500W
Heating capacity	-----	15000BTU/H	3500W
Power input cooling (W)	1300	1500	1300
Power input heating (W)	-----	1300	1200
Current cooling (A)	12	14	5.6
Current heating (A)	-----	12	5.2
Maximum input power(W)	1550	1750	1500
Maximum current ( A)	14	16	6.5
Maximum design pressure	550PSIG	550PSIG	4500kpa
Minimum design pressure	236PSIG	236PSIG	3000kpa
Maximum air flow	351CFM	351CFM	150l/s
Installed weight	73.7+6.2( lbs)	80.3+6.2( lbs)	35.5+2.8 ( kg)
Outdoor unit dimension   Height 340mm/13 <sup>11</sup> / <sub>16</sub> "   Width 680mm /26 <sup>3</sup> / <sub>4</sub> "   Length 998mm /39 <sup>5</sup> / <sub>16</sub> " Plenum unit dimension   Height 43mm /1 <sup>11</sup> / <sub>16</sub> "   Width 536mm /21 <sup>1</sup> / <sub>8</sub> "   Length 557mm/21 <sup>15</sup> / <sub>16</sub> "			

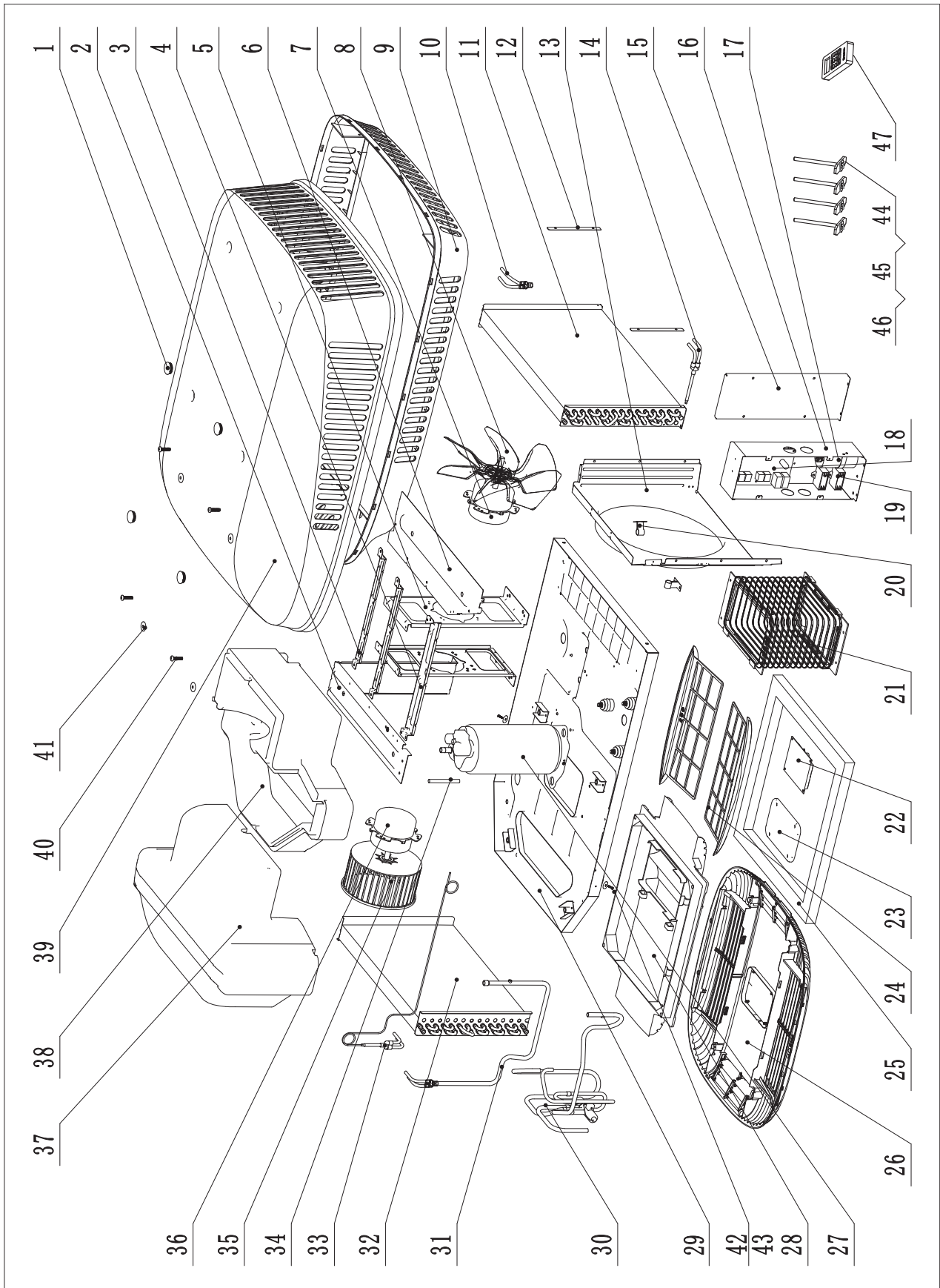
## Notes

1. All parameters listed are subject to change without notice and the specifications shown on unit data plates shall prevail;
2. E&OE. All values are approximate & subject to change.
3. Rated cooling test condition:   indoor   27°C/19°C      outdoor   35°C/24°C;  
      Rated heating test condition:   indoor   20°C/12°C      outdoor   7°C/6°C.



# Exploded Diagram and Parts List

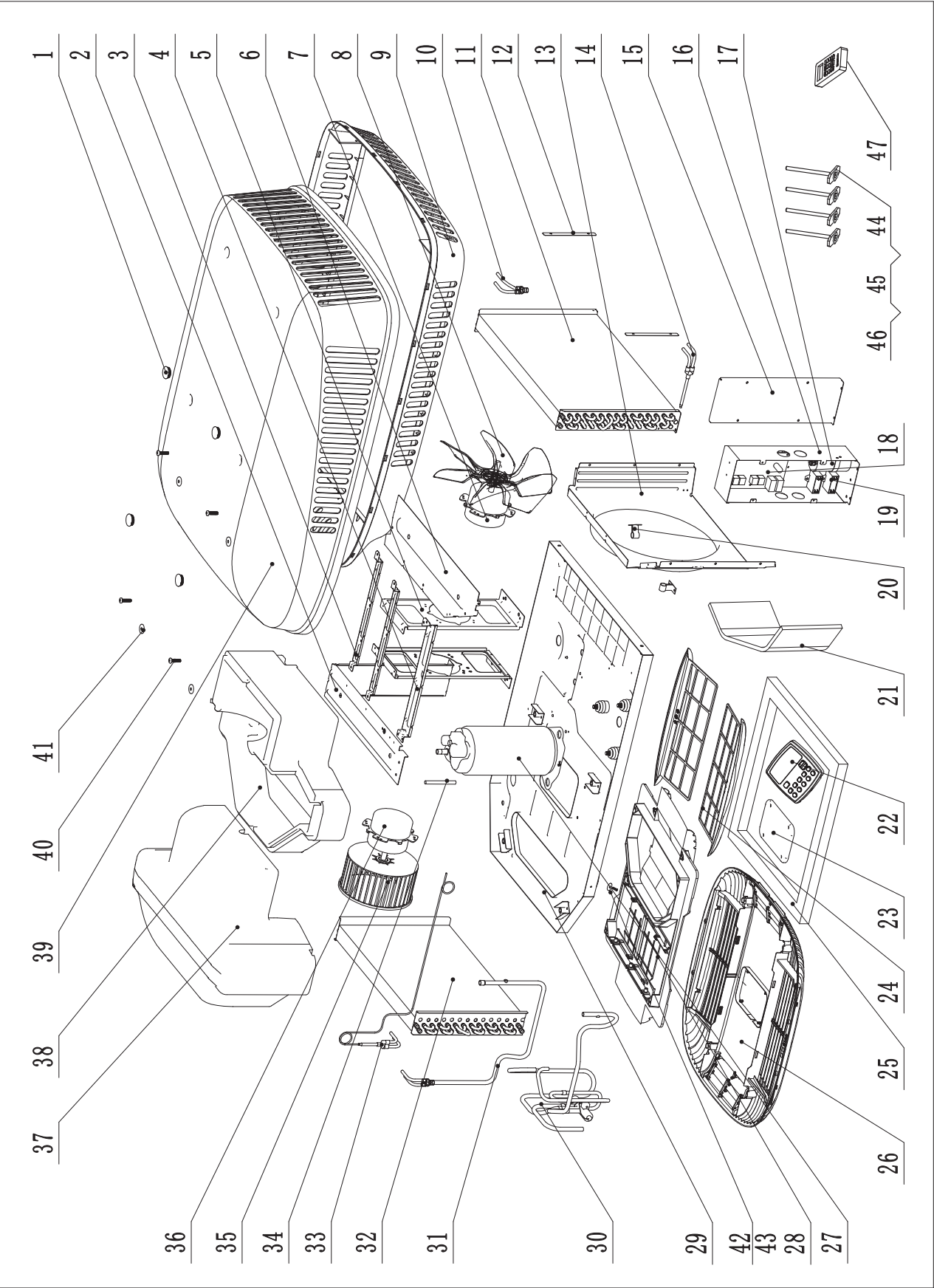
## Non-ducted Air Conditioning System:



No.	Figure No.	Name	Qty
1	7330-1000-21	Screw cap	4
2	7330-1000-02	Spiral case	1
3	7330-1000-10	Motor mounting plate	2
4	7330-1000-09	Compressor mounting plate	1
5	7330-1020-01	Motor bracket	2
6	7330-1000-07	Condensation cover	1
7	7270-1020-02	Outdoor motor	240V
	7280-1020-02	Outdoor motor	115V
8	7270-1000-06	Axial flow fan	1
9	7330-1080-02	Base	1
10	7330-1522-00	Condenser in tube assembly	1
11	7330-1521-00	Condenser assembly	1
12	7330-1080-09	lining board	2
13	7330-1070-01	Fan ring	1
14	7330-1523-00	Condenser out tube assembly	1
15	7330-1000-11	Control box cover	1
16	7330-1700-01	Control box	1
17	TDQ-04205	Compressor Capacitor	240V
	7280-1700-03ZH2	Compressor Capacitor	115V
18	7330-1700-08	Main board	240V
	7370-1700-08	Main board	115V
19	TDQ-04106	Fan capacitor	240V
	7280-1700-04	Fan capacitor	115V
20	7270-1000-17	Pipe clamp	2
21	7339-1000-02	Air duct interface	1
	7339-1000-03	Block	8
	7339-1000-05	Air duct	1
	7339-1000-09	Square duct ring	1
22	7339-1700-01	Display receiving board	1

No.	Figure No.	Name	Qty
23	7339-1010-07	Display mounting cover	1
24	7339-1010-06	Filter	2
25	7270-0000-08	Outlet gasket	1
26	7339-1010-01	Plenum assembly	1
27	7270-1000-01ZH1	Compressor	T3500
	7300-1000-01ZH2	Compressor	A3800
	7280-1000-01ZH2	Compressor	A3501
28	7339-1000-01	Plenum mounting bracket	1
29	7330-1010-00	Chassis base	1
30	7330-1500-00	Four way valve assembly	240V
	7370-1500-00	Four way valve assembly	115V
31	7330-1512-00	Evaporator out tube assembly	1
32	7330-1511-00	Evaporator assembly	1
33	7330-1513-00	Evaporator in tube assembly	1
34	7280-1000-08ZH1	Compressor locating rod	1
35	7330-1000-05	Centrifugal fan	1
36	7330-1030-02	Indoor motor	240V
	7340-1030-02	Indoor motor	115V
37	7330-1050-02	Upper foam	1
38	7330-1060-03	Lower foam	1
39	7330-1080-01	Canopy	1
40	18-10-60	Pan bolt	4
41	18-33-18	Large washer	4
42	18-11-31	Large flat head screw	2
43	18-33-11	Large washer	2
44	4709-1100-01	Metal clamping bar	4
45	18-10-62	Bolt, Hex head M8	4
46	18-33-17	Large M8 washer	4
47	7339-1700-02(GG)	Remote controller	1

Ducted Air-Conditioning System:



No.	Figure No.	Name	Qty
1	7330-1000-21	Screw cap	4
2	7330-1000-02	Spiral case	1
3	7330-1000-10	Motor mounting plate	2
4	7330-1000-09	Compressor mounting plate	1
5	7330-1020-01	Motor bracket	2
6	7330-1000-07	Condensation cover	1
7	7270-1020-02	Outdoor motor	240V
	7280-1020-02	Outdoor motor	115V
8	7270-1000-06	Axial flow fan	1
9	7330-1080-02	Base	1
10	7330-1522-00	Condenser in tube assembly	1
11	7330-1521-00	Condenser assembly	1
12	7330-1080-09	lining board	2
13	7330-1070-01	Fan ring	1
14	7330-1523-00	Condenser out tube assembly	1
15	7330-1000-11	Control box cover	1
16	7330-1700-01	Control box	1
17	TDQ-04205	Compressor Capacitor	240V
	7280-1700-03ZH2	Compressor Capacitor	115V
18	7330-1700-08	Main board	240V
	7370-1700-08	Main board	115V
19	TDQ-04106	Fan capacitor	240V
	7280-1700-04	Fan capacitor	115V
20	7270-1000-17	Pipe clamp	2
21	7379-1000-01	Wind separating baffle	1
	7379-1000-02	Insulation board	2
22	7379-1710-00	LED control panel	1
23	7339-1010-07	Display mounting cover	1

No.	Figure No.	Name	Qty
24	7339-1010-06	Filter	2
25	7270-0000-08	Outlet gasket	1
26	7339-1010-01	Plenum assembly	1
27	7270-1000-01ZH1	Compressor	T3500
	7300-1000-01ZH2	Compressor	A3800
	7280-1000-01ZH2	Compressor	A3501
28	7379-1010-00	Plenum mounting bracket	1
29	7330-1010-00	Chassis base	1
30	7330-1500-00	Four way valve assembly	240V
	7370-1500-00	Four way valve assembly	115V
31	7330-1512-00	Evaporator out tube assembly	1
32	7330-1511-00	Evaporator assembly	1
33	7330-1513-00	Evaporator in tube assembly	1
34	7280-1000-08ZH1	Compressor locating rod	1
35	7330-1000-05	Centrifugal fan	1
36	7330-1030-02	Indoor motor	240V
	7340-1030-02	Indoor motor	115V
37	7330-1050-02	Upper foam	1
38	7330-1060-03	Lower foam	1
39	7330-1080-01	Canopy	1
40	18-10-60	Pan bolt	4
41	18-33-18	Large washer	4
42	18-11-31	Large flat head screw	2
43	18-33-11	Large washer	2
44	4709-1100-01	Metal clamping bar	4
45	18-10-62	Bolt, Hex head M8	4
46	18-33-17	Large M8 washer	4
47	7339-1700-02 (GG)	Remote controller	1

# Trouble Shooting Guide

## No plenum display when unit turned ON

- Check whether the power is supplied to RV and circuit breakers are on?
- Check that the remote battery is OK?
- Check whether the remote control is off?
- Press " DISPLAY " on remote.

## Cooling not available

- Check that the cooling mode is selected and the plenum display shows " ❄ " .
- Use the remote control to set required temperature below the current room temperature.
- The compressor will delay a re-start for three minutes.

## Heating not available

- Check that the heating mode is selected and the plenum display shows " 🔥 " .
- Use the remote control to set required temperature above the current room temperature.
- More time would be needed for starting heating under extremely cold condition.
- When the unit is in heating mode and the outside temperature is very low the unit may automatically enter defrost mode. The heating will temporarily stop as the unit warms the outside coil to remove any frost & ice. Heating will resume once the outside coil has been cleared. During defrost the unit will display " dF " .

## Poor cooling capacity

- To make sure the filter is clean.
- Turn on the fan to high FAN to obtain the maximum capacity.

- Make sure all the doors and windows and the sunroof are closed.
- Curtains and awnings can be used to decrease the heating load.

## Fault codes displayed on the panel

Communication fault	E0
Room temperature sensor fault	E1
Indoor coil temperature sensor fault	E2
Outdoor coil temperature sensor fault	E3
No cooling effect	E4
Outdoor coil temperature too high	E5

- If there is " 0 " or a jumbled display while on generator supply this may indicate unstable voltage and current.

Before contacting Houghton for technical support please collect the following information.

- Are any error codes displayed ?
- Is the display panel in normal operation or not ? Does it display a temperature from 16 to 30 °C ?
- Can you adjust the setting temperature when in cool or heat mode?
- Is there a "0" shown in the display?
- Is the display showing a jumbled display?
- When in fan mode is there any air flow from the plenum outlets?
- Can you hear the compressor starting or stopping in heating or cooling mode?

Your help in collecting this information will greatly assist the Houghton service team in correcting any problems – Thank you.

# Circuit Diagram

