



MODEL NUMBER: _____

SERIAL NUMBER: _____

DATE PURCHASED: _____

OWNERS MANUAL

OF CARAVAN AIR - CONDITIONER

BELAIR
MODEL

H2000C

H2400

H2600



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

Safety Notices

Dear user, thank you for choosing a HOUGHTON caravan air-conditioner. For your ease of use and safe maintenance we have included the following symbols in this manual:



All the contents with this “Warning” logo are about the safety of the product and the user, the user shall operate in strict compliance with the instructions.



All the contents with this “Prohibition” logo are about the actions that shall be prohibited, or else the machine may be damaged or the user’s personal safety may be endangered.

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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 for 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 lead to poor heating and cooling performance.

 Use the remote controller 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 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.

 Keep the inlet and outlet of the inside and outside units of the caravan air conditioner smooth.

 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 odor,smoke or fire detected, Contact after-sales-service personnel in case of unit fault and fire.

Product Introduction

A. Purpose

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

B. How to provide an efficient operation

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, 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.
- 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 the unnecessary electrical appliances within the caravan to reduce the heat-load.
- Please cook outside of the caravan.
- Park the caravan at a shade place.
- In case of exceptional high temperature, turn on the air-conditioner in advance during the morning.
- Adjust the set temperature of the remote control to prevent from frequent start or stop of the unit.

C. Condensation

- For the areas where the air humidity is comparatively low, when the warm moist air within the caravan meets with the cold wind from the outlet, condensate water may be caused, which is also called as "sweating". In this case, make sure the following measures are taken:
- Close all the doors, skylights, windows and draw the curtains to reduce the warm moist air incoming.
- In the operation of the air-conditioner, a large number of condensate water will be produced on the roof as the warm moist air is exhausted by the operation of the air-conditioner. The size of the condensate water is decided by the air humidity. In this case, do not adjust the wind speed to low or auto mode but adjust it to high speed mode to increase the circulation of the air and reduce the condensation degree.
- Please be noted that losses caused by the condensate water are not within warranty scope.

D. Choosing and using of generator

- HOUGHTON BELAIRE requires an AC power source. and may require for generator driving in some remote areas. Requirements for generator include: efficient power source, stable currency, output waveform: sine wave, that shall meet the driving requirements of the compressor. The user shall consult with the generator supply and fully refer to their suggestions.

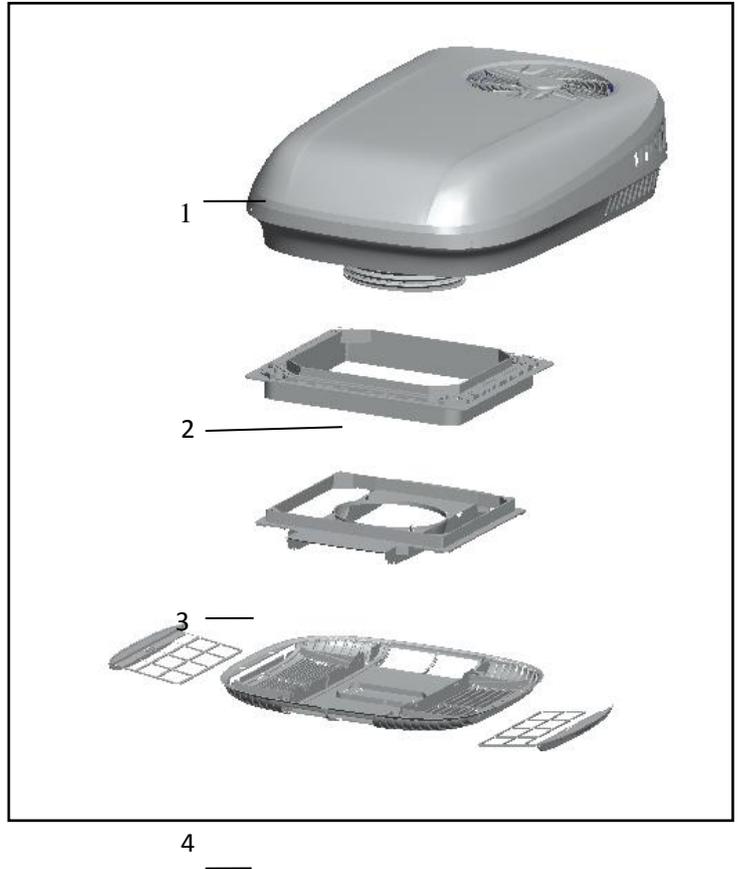
Please be noted that losses caused to the product by the using of the generator are not within warranty scope.

Packing List

Installation parts list

Main parts:

1. BELAIRE air-conditioner outdoor unit×1
2. Outlet air duct ×1
3. Chassis reinforced support ×1
4. Plenum mounting bracket ×1
5. Return air filter ×2
6. Plenum assembly ×1



5

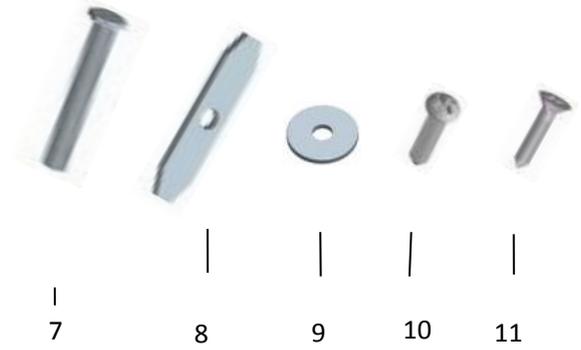
6

5

5

Accessories & fixing devices:

- 7. M8 x 120 mm bolts ×4
- 8. Fixing metal plate ×4
- 9. Large washer ×4
- 10. Plenum screw ×4
- 11. Countersunk head tapping screw ×4



Installation Guidance

Installation instructions

- Read this Manual thoroughly before installation and understand the guidance.
- Abide by the national circuit operation rules in the installation.
- Do not add other parts or restructure the product in the installation.
- The installers shall be equipped with refrigeration technician qualification certificates.

Installation requirements

- The RV or caravan roof shall be able to support the air-conditioner's weight (28kg).
- The opening part of the roof shall be able to support the air-conditioner's weight and allow for the corresponding operations.
- Minimum thickness of roof: $\geq 25\text{mm}$; maximum thickness of roof: $\leq 125\text{mm}$.

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.

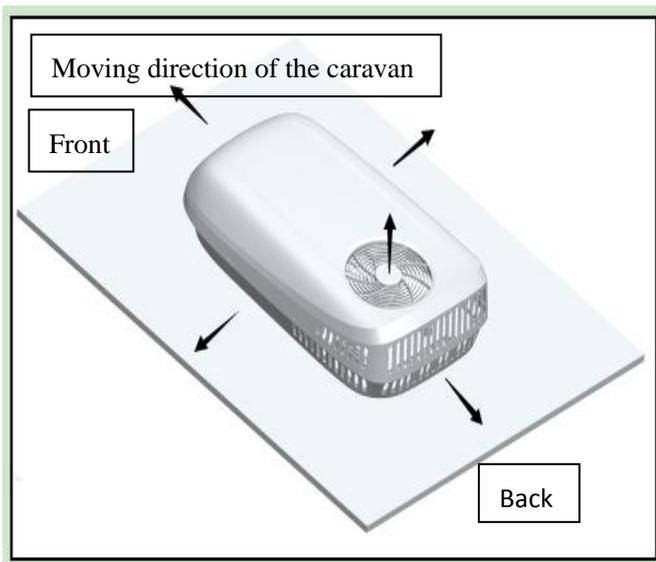
- If the roof is not preserved with holes, they shall be punched from the top of the roof to the inside and use them as leading to punch through the ceiling. It is suggested to consult with the caravan manufacturer to get the best punching method.

- The 400x400mm hole shall be boarded up with wood sections that are at least 20mm thick. This boarding is to ensure that the roof will not crush from the installation bolts and that air conditioned air does not enter the ceiling space.

Installation position

Before the installation, consider the installation position:

- The air-conditioner outdoor unit shall be installed at the center of the roof to make sure balance of the air flowing.
- The installation position of the outdoor unit shall be consistent with the traveling direction of the caravan.
- When installing ensure that there is sufficient room for the plenum assembly to be installed.
- The installation positions shall be kept away from the skylights, heaters or light positions that may affect the air flows.
- 400x 400mm cutting position shall be kept away from connecting position at the roof.
- There shall be a space of 100mm minimum all around the roof top unit to ensure suitable air flow and access for maintenance.

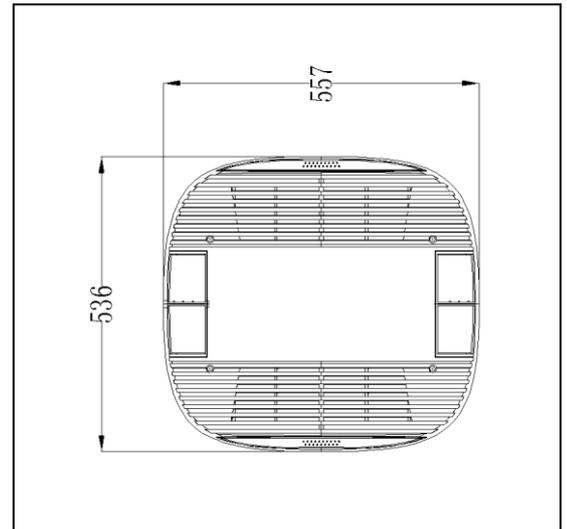
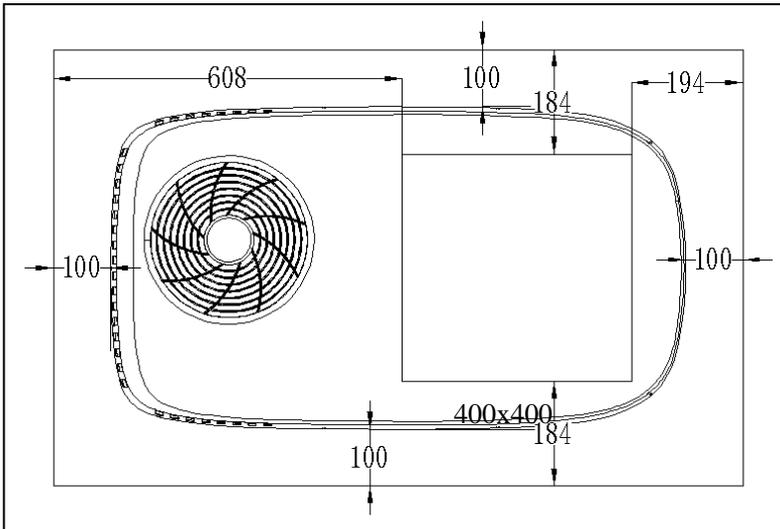


Note

shall not be larger than 5° and the back part of the art.

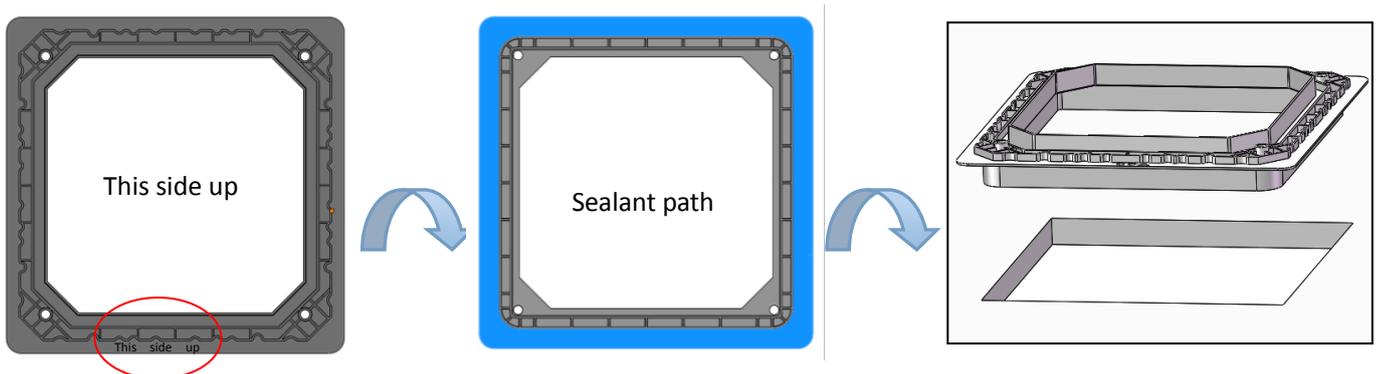
- The left lower figure shows the minimum clearance distance required between the BELAIRE air-conditioner and any obstructions on the roof.

- The right lower figure shows the minimum distance of the installation position of the panel, measure in reference to 400x400mm holes.



Installation of chassis reinforced

- Make sure the roof is clean and dry and free from oil & grease.
- Confirm orientation by starting with the “this side up” logo upwards.
- Turn the part over and on the reverse side of “this side up”, apply silicone sealant uniformly over the path shown.
- Turn the part over again and make sure “this side up” is up. Press down firmly over the 400×400mm hole and remove any sealant that has squeezed out to form an effective seal.



Installation of outdoor unit

- Remove the outdoor unit from the carton and move it to the installation position on the roof.
- Put the outdoor unit over the chassis reinforced support and properly adjust the position to make sure they mate and the four bolt holes on the corners align.



Note

The outdoor unit weighs 28Kg, lift the outdoor unit at the same time with another person .

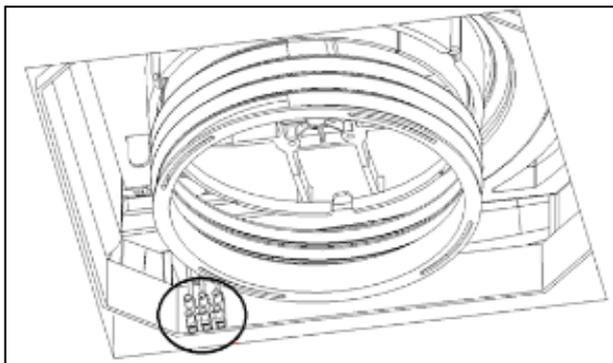
Use the M8 bolts and check if the holes are consistent with the holes of the plenum mounting bracket. If not then use a long screw

Connect the power supply

- Pay attention to the local wiring regulations that need to be followed when connecting to mains supply.
- Look upward from inside the caravan, and locate the terminal block as shown in the figure below.
- Connect the external power lines to the 3-pole terminal block and note the positions of the active, neutral and ground.

Note

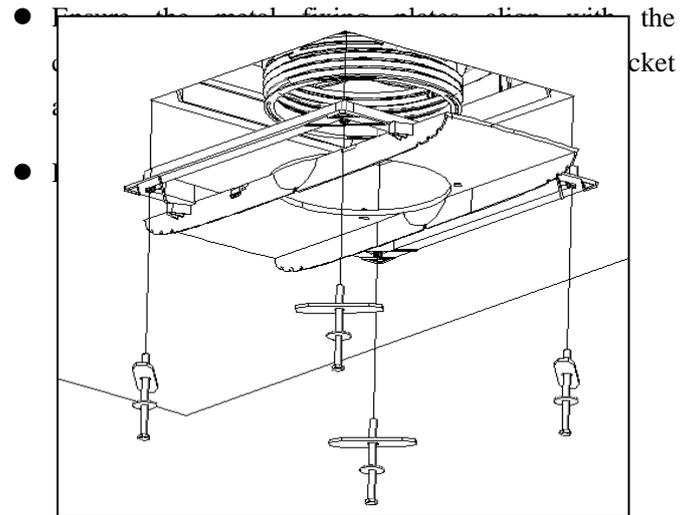
Match the corresponding active (brown), neutral (blue) and the ground wire (yellow green) and firmly tighten up the screws to make sure the power line is not loose or improperly connected, otherwise a short



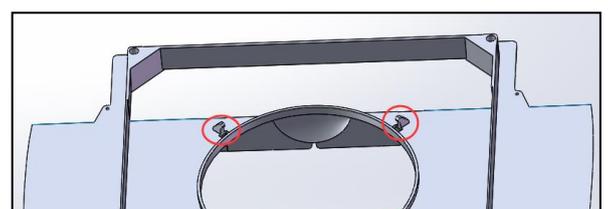
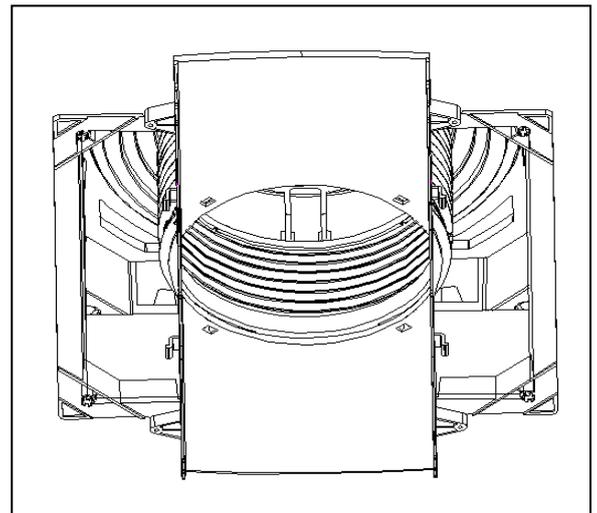
Installation of M8 bolts

3 Pole terminal block

- Connect M8 bolts, washers and fixing metal plates in order as the following figure.
- Lift the plenum mounting bracket toward the machine.
- Insert M8 bolts, washers and fixing plates to the holes of the 4 corners. Start the bolts off using finger effort.
- Ensure all bolts have started correctly for at least 2 or 3 rotations to avoid cross threading.



Connection of outlet air duct

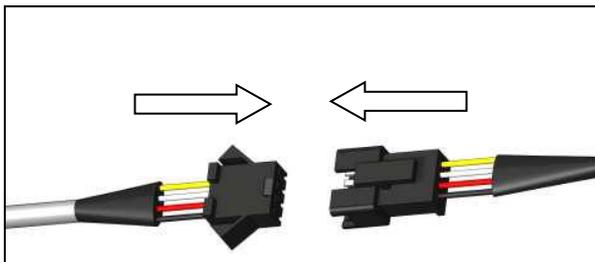
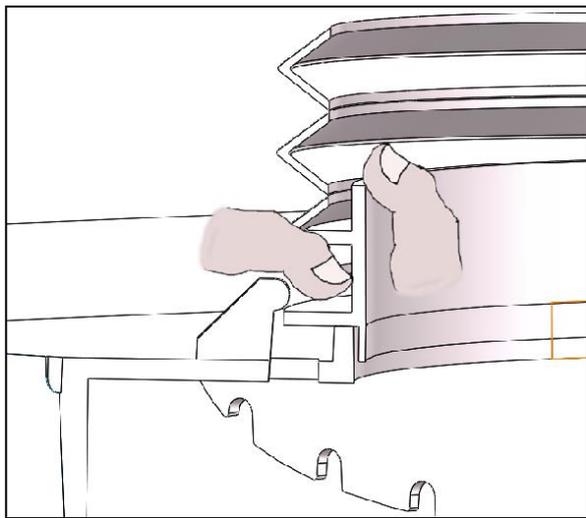
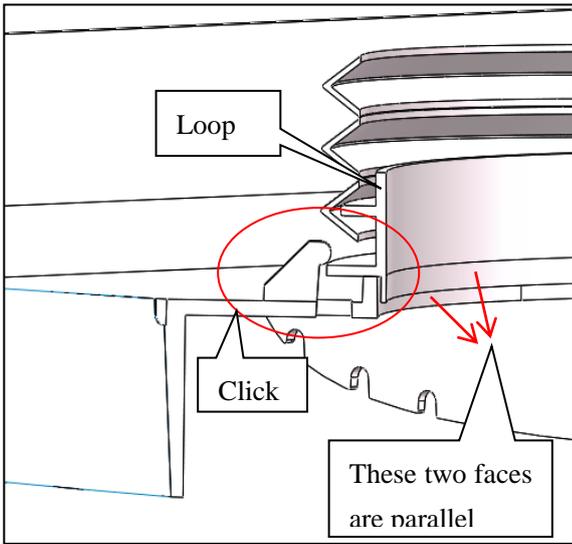


- Grasp the free end of the flexible air duct and pull it downwards towards the top of the mounting bracket.



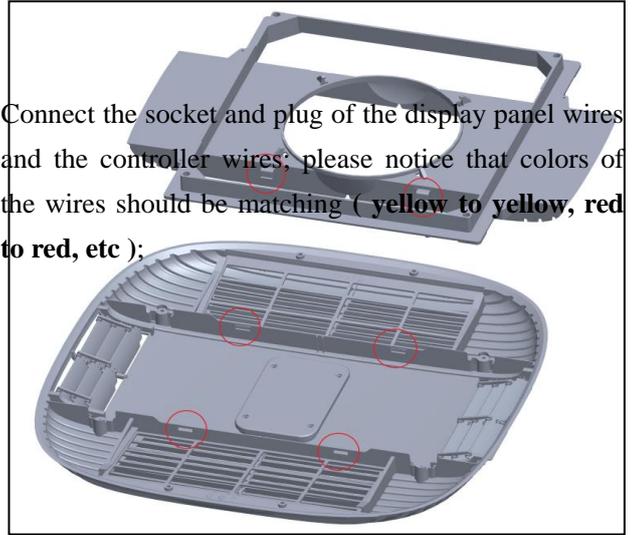
- Pull the air duct down until it engages with the plenum mounting bracket. The duct connects to the bracket with four catches that will click when secure.

- When you have heard 4 clicks and the end of the duct is firmly parallel to the top side of the bracket then you have successfully connected.

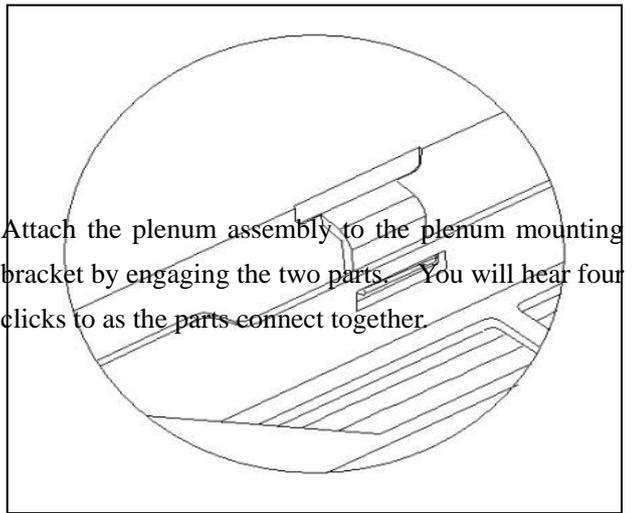


Installation of the plenum assembly

- Connect the socket and plug of the display panel wires and the controller wires; please notice that colors of the wires should be matching (**yellow to yellow, red to red, etc**);



- 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.



bracket with 4 provided pan head screws;

- Fix the plenum assembly on the plenum mounting

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

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



Instructions for Use

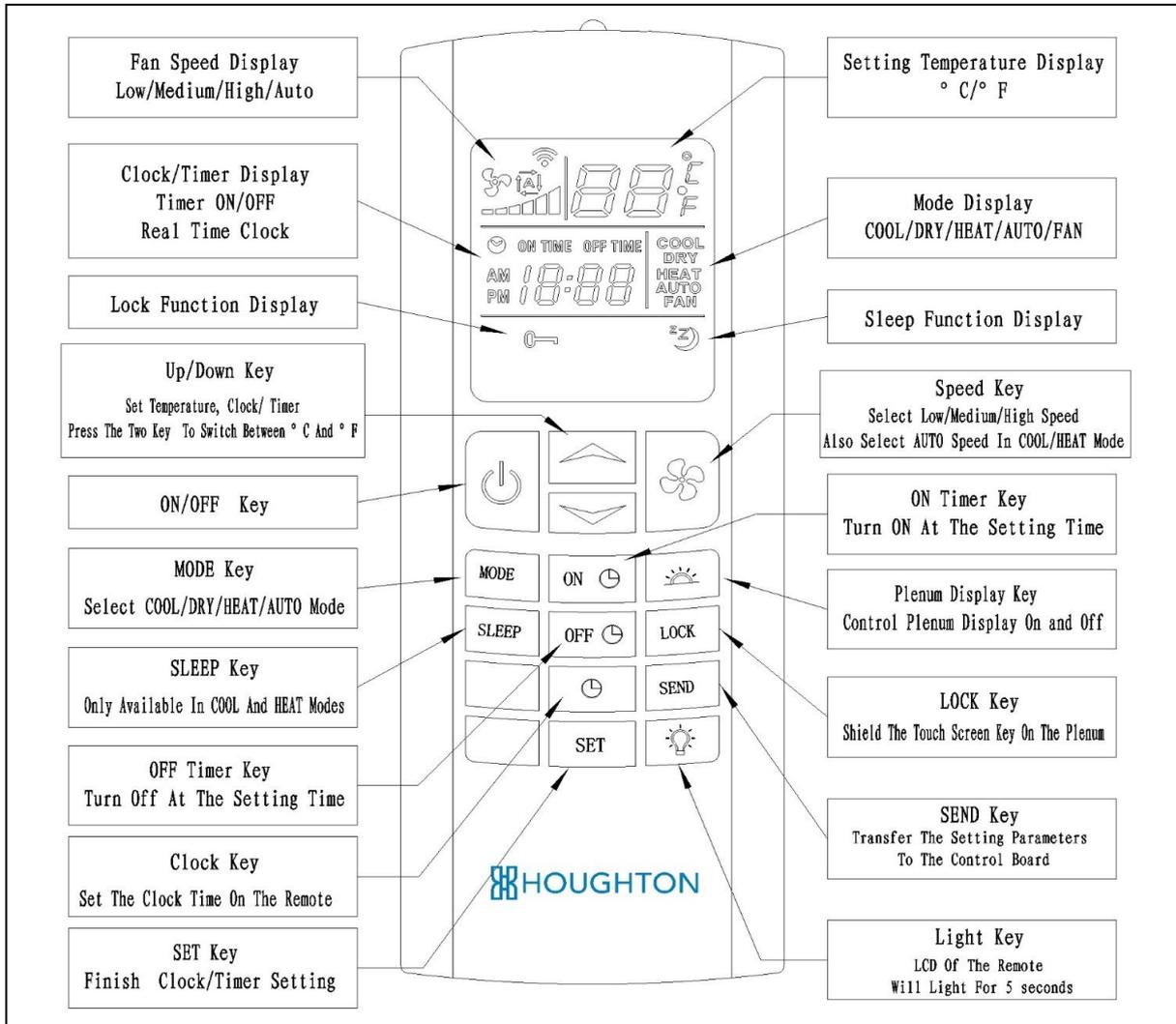
- Switch on the power to the air-conditioner at the isolation breaker.
- Start the air-conditioner by switching to FAN mode to select the fan speed;
- Operate in low speed, medium speed and high speed in turn to check normal operation;
- To select the COOL mode, adjust the set point temperature to three degrees lower than the room temperature, the unit will start to blow cold air after the compressor starts.
- To select the HEAT mode, adjust the setting temperature as three degrees higher than the room temperature, the device will start to blow hot wind soon.

Notice

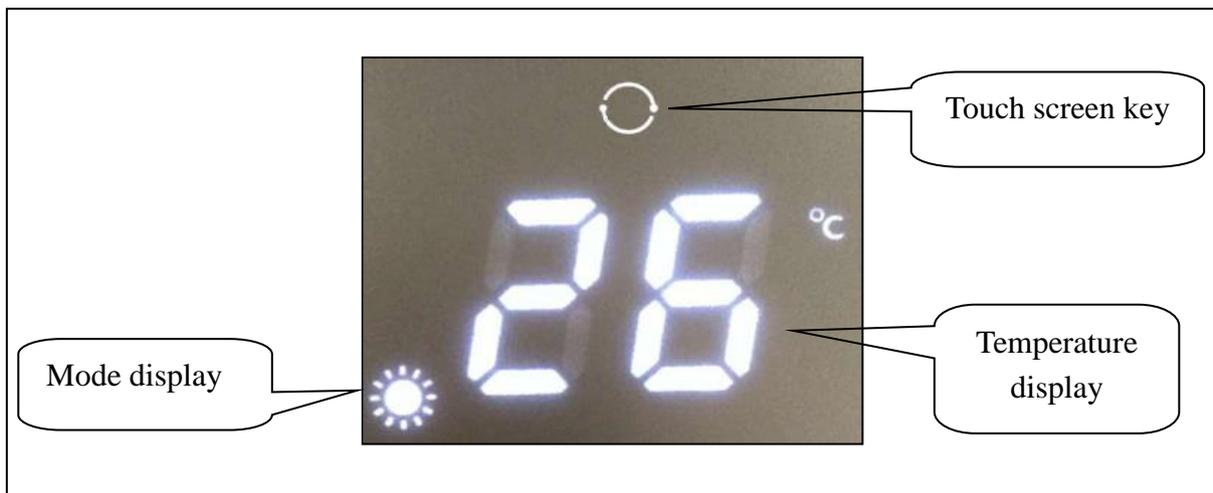
After selecting the COOL/HEAT mode, the compressor will have a

Operation Instruction of the Remote Controller

Remote controller

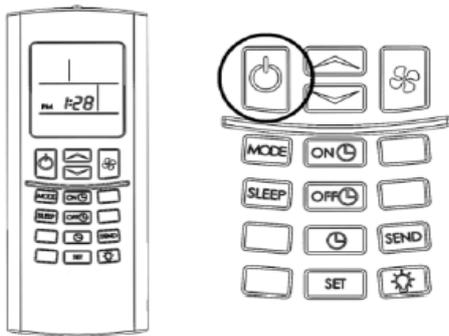


Plenum display



Turn unit on

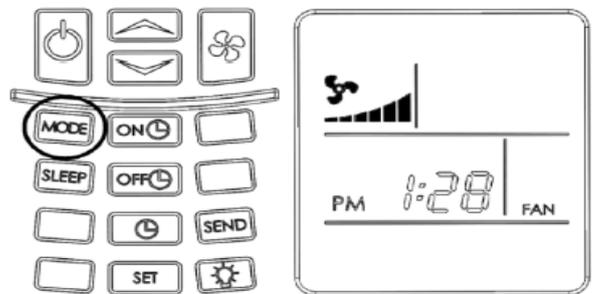
- Press the on/off key “”, the machine turns on, the buzzer of the plenum beeps one time and the running mode and temperature will be displayed.



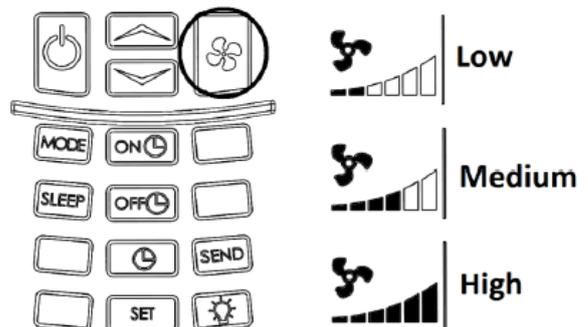
“FAN” mode

- Press the “MODE” key, select the “FAN” mode. The plenum will display “” and the indoor environment temperature.

1. Operation of the remote controller

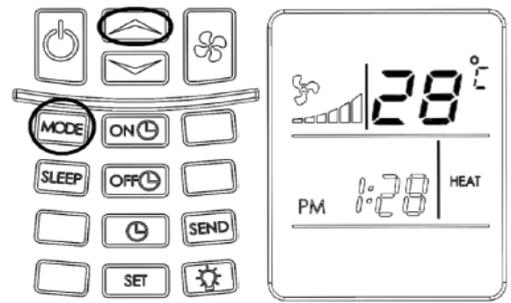


- Press the fan speed key, high/medium and low speed are available in succession.



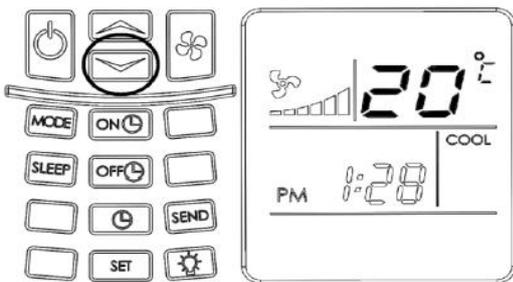
“COOL” mode

- Press the “MODE” key, select the “COOL” mode, and the internal unit panel will display “” and the set temperature.



Decrease the setting temperature

- Press the downward key to set the temperature lower than the room temperature.



“HEAT” mode

- Press the “MODE” key, select the “HEAT” mode, and the internal unit panel will display “☀” and the setting temperature. Press the upward key to set the temperature higher than the room temperature.

Notes

In the heat mode, the inner air blower features cold protection function and will have a time delay for starting up; when in a very low environment temperature, the inner air blower will possibly be on and off.

In cool, dry, heat and automatic modes, the setting temperature will be displayed; in the fan mode, the indoor environmental temperature will be displayed.

Press the upward/downward key in the same time to switch between centigrade

2. Plenum operation

- Press the touch screen key “☉” on the panel, the setting will be circularly from “off -> cooling -> fan -> heating” modes for every pushing. The setting

temperature is 24°C in high fan speed.



- Display symbols of panel modes are as:

cooling “❄️”, dry “❄️”, heating “☀️”,

automatic “🔄” and “🌀”.

Notes

In case the plenum touch screen key is locked by the remote controller, operations of the key would be not available. Press the lock

Tips

When in the automatic mode, according to the difference between the setting temperature and the environmental temperature, the panel will display “🔄” and “☀️” (automatic heating), or “🔄” and “❄️” (automatic cooling) in the same time.

The remote controller should be operated by directing at the plenum, which will beep once when received signal, otherwise operate after adjusting the distance and angle.

The unit will blow cold air in cool mode and hot air in heat mode.

Filter

- The return air filters are the only components that need to be cleaned.
- Check and clean the filter screen each week when the unit is used, or more often if the unit is used in a dusty environment.

Product Maintenance

- Pull out the filter from the panel before washing in water.



Maintenance

- It is recommended that the air-conditioner is operated for 15 minutes every 6 months.
- In the case of a caravan that will not be used regularly, it is recommended that the air-conditioner is operated for 15 minutes every 6 months.

Replacement filters can be ordered separately.

Bolt check

- It is recommended that the bolts holding the unit to the roof are checked for tightness 3 months after the first installation of the product.

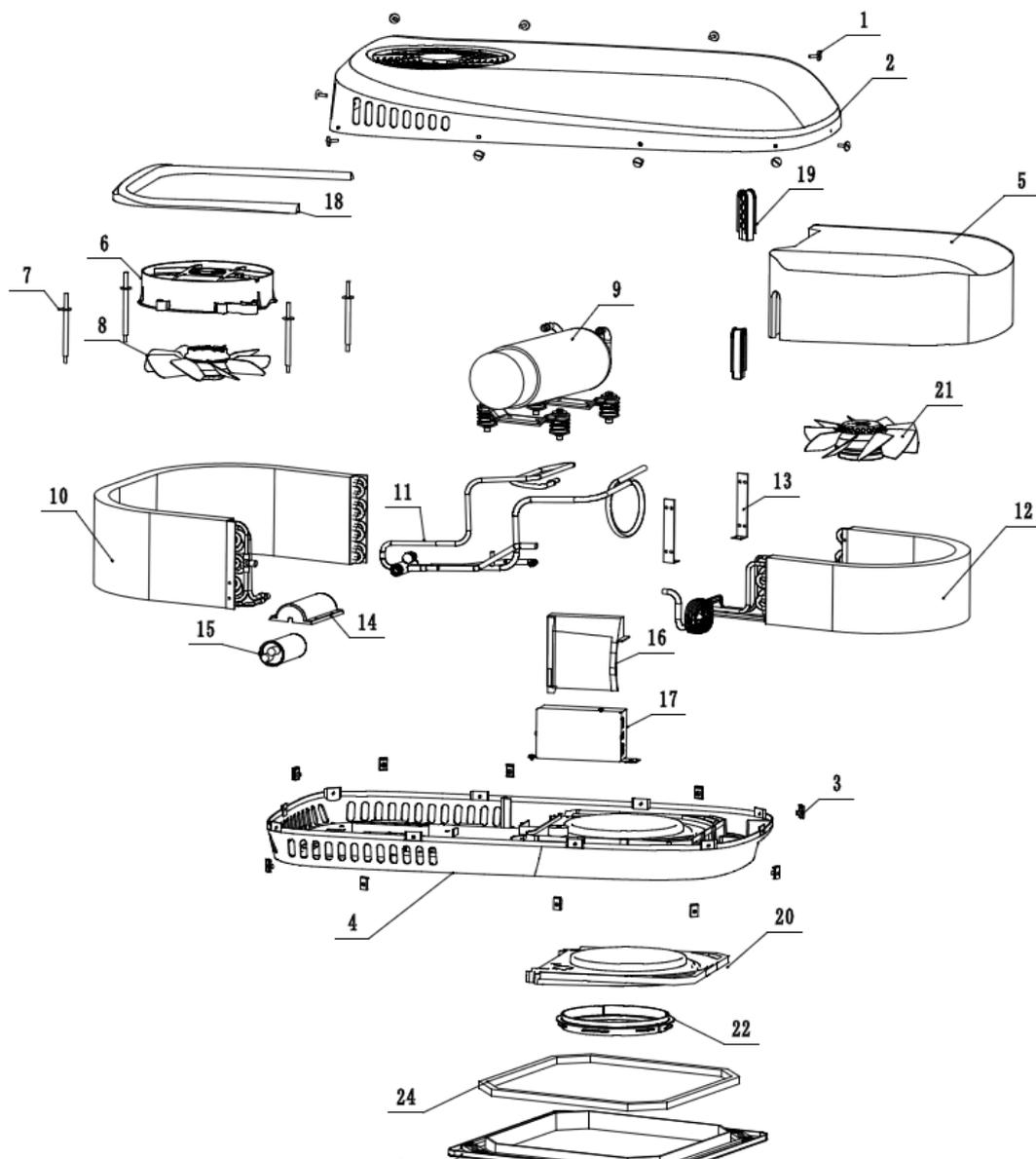
Specification F

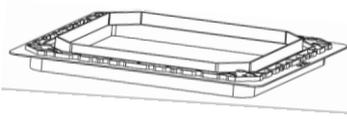
Model	H2000C	H2400	H2600
Power supply	220-240V/50Hz	220-240V/50Hz	220-240V/50Hz
Refrigerant charged	R407C/450g	R407C/450g	R407C/420g
Rated cooling capacity (W)	2000	2400	2600
Rated heating capacity (W)	---	2400	2600
Input power for cooling (W)	700	950	1150
Input power for heating (W)	---	850	1050
Rated current for cooling (A)	3.0	4.2	4.9
Rated current for heating (A)	---	3.8	4.5
Maximum input power(W)	800	1040	1250
Maximum current (A)	3.5	4.5	5.3
Maximum design pressure (kPa)	2900	2900	2900
Minimum design pressure (kPa)	1840	1840	1840
Maximum air flow (l/s)	110	110	110
Installed weight (kg)	28+2.8	29+2.8	30+2.8
Outdoor unit dimension	Height 215mm	Width 566mm	Length 1002mm
Plenum unit dimension	Height 43mm	Width 536mm	Length 557mm

Notes: 1. All parameters listed are subject to change without notice and the nameplates on the machine shall prevail;

2. E&OE All values are approximate & subject to change.

Exploded Diagram and Parts List





No four-way valve components for cooling only units!

No.	Figure No.	Name	Qty
1	18-12-13	Slotted large raised cheese head screw (white paint sprayed)	10
2	4728-1000-01	Canopy (silk-screen pattern)	1
3	4638-1000-10	B type plate spring nut	10
4	4728-1000-02	Chassis (with inserts)	1
5	4728-1000-08	Evaporator housing	1
6	4728-1000-07	External motor bracket	1
7	4728-1000-13	Motor screw	4
8	4728-1700-27	Outer rotor fan	1
9	4618-1000-06	Compressor	1(H2400)
	4718-1000-06	Compressor	1(H2000C)
	4738-1000-06	Compressor	1(H2600)
10	4728-1210-00	Condenser components	1
11	4728-1030-00	Four-way valve components	1
12	4638-1220-00	Evaporator components	1
13	4638-1230-04	Evaporator retaining plate	2
14	4728-1000-11	Compressor capacitor cap	1
15	TDQ-04202	Compressor operating capacitance(lotus form plug)	1
16	4728-1000-20	Plastic patch	1
17	4728-1240-00	Electronic control components	1
18	4728-1210-11	Condenser insulating layer	1
19	4708-1000-15	Pipe clamp	1
20	4728-1000-09	insulating foam	1
21	3068-1700-26	Outer rotor three-speed fan	1
22	4729-0000-05	Air duct loop 1	1
23	4709-0000-12	Air duct loop 2	1
24	4638-1000-17	Seal pad	1
25	4709-1000-07(E)	Reinforced support for chassis installation	1

26	4709-0000-04	Air duct	1
27	4729-0000-05	Plenum mounting bracket	1
28	18-10-59	M8 bolt	4
29	4709-1100-01	Fixing metal plate	4
30	4729-1000-00	Plenum assembly	1

Trouble sho

No display of the plenum when press the On/Off

Check whether the access to the power of the RV OK;

- Check whether the remote battery is OK;
- Check whether the remote control is off ;
- Poor connecting of the control line between the outdoor unit and the plenum, maybe fallen off.

Cooling not available

To make sure the mode is chosen as Cooling, and the light of cooling mode “❄” is on;

- The temperature setting value on the remote controller should be lower than the indoor temperature;
- The compressor has a delay start for three minutes.

Heating not available

- To make sure the mode is chosen as Heating, and the light of heating mode “☀” is on;

- The temperature setting value on the remote controller should be higher than the indoor temperature; the compressor has a delay start for three minutes;
- More time would be needed for starting heating under extremely cold condition.

Poor cooling capacity

- Ensure the filter is clean;
- Turn on the fan to high speed to obtain the maximum capacity;
- Make sure all the doors and windows, as well as 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
Inadequate coolants	E4
Temperature anomaly	E5

- In case there is “0” or any messy code when the generator supplies power, this may indicate unstable voltage and current.

E1: Room temperature sensor

Fault in connection to temperature sensor or other damage.

E2: Indoor coil temperature sensor

Fault in connection to temperature sensor or other damage.

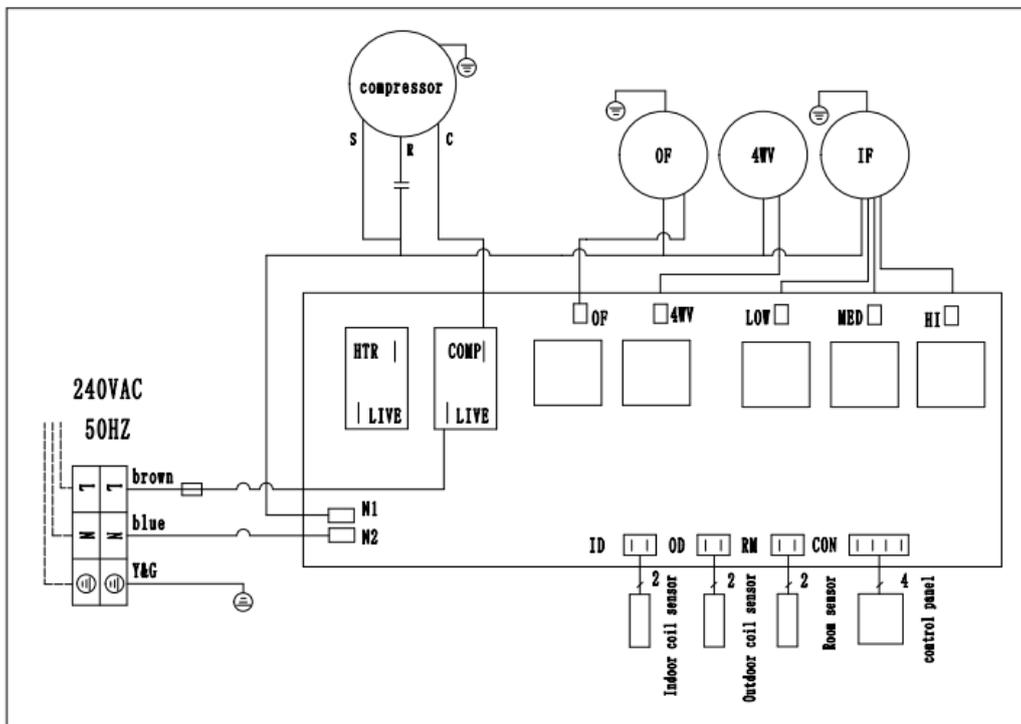
E3: Outdoor coil temperature sensor Fault in connection to temperature sensor or other damage.

E4: Insufficient refrigerant-capillary tube fracture leads to coolants leakage, compressor

Answer the following questions as far as possible when contacting for fault diagnosis:

- If any error code is displayed?
- Whether the display panel is in normal operation or not? Whether the temperature displays from 16 to 30°C?
- Whether the temperature can be freely adjusted from 16 to 30°C when in cool or heat mode?
- Whether there is “0” shown in the display?
- Whether any messy code on the display?
- Whether the switching of low, medium and

H2400 、 H2600



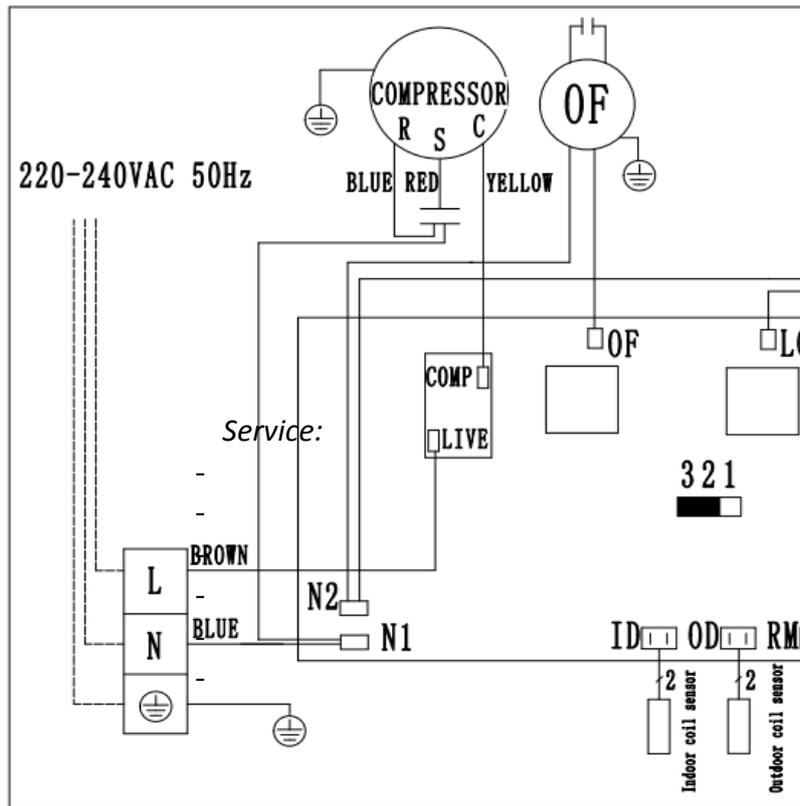
H2000C

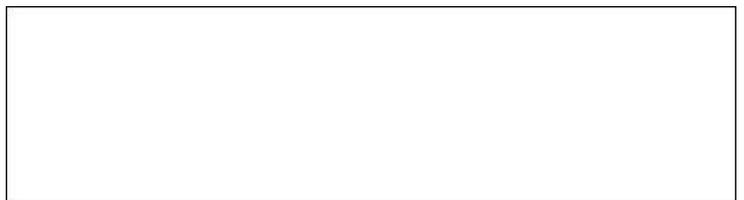
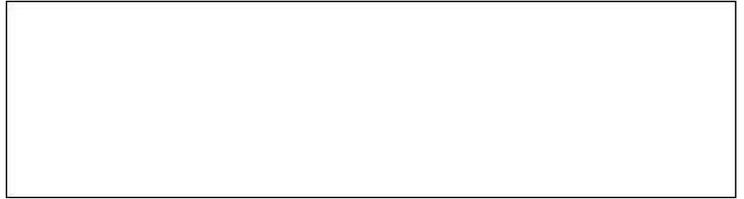
Service Book

*Service 1
(Within 12 months from mounting date)*

*Service 2
(Within 36 months from mounting date)*

*Service 3
(Within 60 months from mounting date)*





Clean below head cover of roof unit.
Control all cables and connectors.
Remove inner plenum and tighten 4 bolts with correct torque.
Check ventilator can move freely.
Test the unit performance in heat, cool and dry mode.
Test the unit for noise and vibrations.



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Service call: +61 8 72311891

Website: www.houghtonleisure.com.au