Thank you very much for purchasing our product,
Before using your unit, please read this manual carefully and keep it for future reference.
If you can't make sure that your house power supply is earthed well, please don't install the unit.
The unit must be installed by a licensed tradesperson and in accordance with:

- EcoSpring installation instructions.
- AS/NZS 3500.4-"National Plumbing and Drainage Code Hot Water Supply Systems-Acceptable Solutions".
- AS/NZS 3000-Wiring Rules.
- Local authority regulations.
- NZ Building Code.
- Local Occupational Health and Safety (OH&S) Regulations.

**NOTICE TO CUSTOMERS**

This water heater must be installed by a licensed person as required by the Building Code. Only a licensed person will give you a compliance certificate, showing that the work complies with all the relevant standards.

Please read and understand this booklet. If you have any questions, please contact our service representative on 0800 200 510.

**HOT WATER CAN BE DANGEROUS**

Warning – Hot water burns. As a safety precaution, young children should always be supervised around hot water fixtures.

Heat pump water heaters can store water at temperatures that can cause scalding. Water temperatures over 50°C can scald and care needs to be taken to ensure that injuries do not occur through incorrect use of your water heater.

As heat pump water heaters can generate water temperatures in excess of 60°C, regulations require that a tempering valve be fitted to the heater to prevent water temperatures going to the home exceeding a preset safe maximum. The tempering valve must be connected to the hot water outlet line from the water heater. The valve must be fitted by an authorized plumber at the time of installation or in retrofitting to existing systems.

Care should be taken to avoid coming into contact with any pipe work or fixtures associated with the water heater pipe lines. Under NO circumstances should any 'home handy man' type modifications be attempted.

- This appliance is not intended for use by persons (including children) with reduced physical sensory or mental capabilities, or lack of experience and knowledge, that prevents them from using the appliance safely without supervision or instruction. Children should be supervised by a responsible person for their safety to ensure that they do not play with the appliance.
- DANGER: Failure to operate the relief valve easing gear at least once every six months may result in the water heater exploding. Continuous leakage of water from the valve may indicate a problem with the water heater.
- THE INSTALLATION MUST COMPLY WITH THE REQUIREMENTS OF AS/NZS 3500.4, AS/NZS 3000, and all local codes and regulatory authority requirements. In New Zealand, the installation must conform to the New Zealand Building Code G12.

The power supply must be protected by an individual circuit breaker at the main electrical supply switchboard and rated to suit the booster size. The supply to the heat pump water heater can be operated directly from the switchboard or via a remotely mounted switch or time clock as requested by the customer. The heater must be provided with a suitable means for disconnecting the power supply.
NOTE

All pictures in this manual are for explanation purpose only. They may be slightly different from the heat pump water heater you purchased. The actual unit shall prevail.
1. BASIC OPERATION PRINCIPLE

We know from experience, the natural flow of heat, moves from a higher to a lower temperature source, a heat pump can transfer heat from a lower temperature source to a higher temperature source with high efficiency.

The advantage of a heat pump water heater is that it can supply more heat energy, normally 3:1 times than input electricity power by extracting the heat from ambient atmosphere in a free-of charge way and transfer to Sanitary Hot Water. Compared to a traditional water heater, such as electric water heater or gas burner water heater, their efficiency is normally less than 1:1, which means you can dramatically cut off the bill of family daily SHW by the application of heat pump water heater, the following examples will show more details.

Power consumption comparison under the same condition to heat 1 ton of water from 15˚C to 55˚C.

\[
Q = c \cdot m \cdot (T_1 - T_2) = 1 \cdot (kJ/kg \cdot ℃) \cdot 1000 \cdot (kg \cdot ℃) = 40000 \cdot kJ = 46.67 \cdot kW \cdot h
\]

Above calculations are based on ideal conditions, the final amount will be different the actual running will vary with conditions, such as running period, ambient temperature, etc.

### 2. SAFETY INFORMATION

Please read thoroughly all of the instructions before installing or operating the unit. The following safety warnings are very important, always read and obey all safety symbols:

![WARNING]

- The unit must be earthed effectively.
- This appliance must be installed in accordance to AS/NZS standards and the NZ Building code.
- A RCD breaker must be installed adjacent to the power supply.
- Do not remove, cover or deface any permanent instructions, labels, or the data label from either the outside of the unit or inside of unit panels.
- Only qualified persons should perform the installation of this unit in accordance with local national regulations and this manual.
- Improper installation may result in water leakage, electric shock or fire.
- Ask qualified person for relocating, repairing and maintaining the unit.
- Improper installation may result in water leakage, electric shock or fire.
- Electric connection work should comply with the instructions of local power company, local electric utility and this manual.
- Never use an incorrectly fuse rated, otherwise the unit may break down and risk of electrical fire.
- Do not insert fingers, rods or other objects into the air inlet or outlet. The fan is rotating at high speed, and may cause injury.
- Never use a flammable spray such as hair spray, lacquer paint near the unit. It may cause a fire.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance.
by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

- If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person.

- DISPOSAL: Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary. Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities. Contact your local government for information regarding the collection systems available.

### CAUTION

- The earthing pole of socket must be well grounded, make sure that power supply socket and plug are dry and connected tightly.

- Before cleaning, be sure to stop the operation and turn the breaker off or pull out the power plug. Otherwise, an electric shock and injury may be caused.

- Water temperature over 50℃ can cause severe burns instantly or death from scalds. Children, disabled and elderly are at highest risk of being scalded. Feel water before bathing or showering. Water temperature limiting valves are required as per NZ Building Code.

- Do not operate the unit with a wet hand. An electric shock may be caused.

- The installation height of power supply should be over 1.8m, if there is any water exposure, steps must be taken to separate the power supply from water.

- A one-way valve must be installed on the water inlet side, as well as an isolation valve.

- All valves installed must comply with ASNZS standards.

- It is normal for some water to be released from the PTR valve during operation. But, if there is a large volume of water, call your service agent for instructions. After long term use, check the unit base and fittings. If damaged, the unit may sink, resulting in injury. Arrange the drain pipe to ensure smooth draining. Improper drainage work may cause wetting of the building, furniture etc. Do not touch the inner parts of the controller or remove the front panel. Some parts inside are dangerous to touch, and damage may be caused.

- Do not turn off the power supply. System will stop or restart heating automatically. A continuous power supply for water heating is necessary, except service and maintenance.

### 3. BEFORE INSTALLATION

#### 3.1 Unpacking

##### 3.1.1 Accessories

<table>
<thead>
<tr>
<th>Accessory Name</th>
<th>Qty.</th>
<th>Sharp</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner’s &amp; Installation Manual</td>
<td>1</td>
<td></td>
<td>Installation and use instruction This manual</td>
</tr>
<tr>
<td>Drain pipe for water condensation</td>
<td>1</td>
<td></td>
<td>Use for draining the condensate water (Has been connected to the lower condensate drain port)</td>
</tr>
</tbody>
</table>

#### 3.1.2 How to transport

1) In order to avoid scratching or deforming the unit surface, apply guard boards to the contacting surfaces. No contact of fingers and other things with the vanes. Don’t incline the unit more than 45° in moving, and keep it vertical when installing.

2) This unit is heavy, it needs to be carried by two or more persons, otherwise might cause injury and damage.

#### 3.2 Location requirements

1) Enough space for installation and maintenance should be preserved.

2) The air inlet and outlet should be free from obstacles and strong wind.

3) The base surface should be flat, surface should be inclined no more than 2° and able to bear the weight of the unit and suitable for installing the unit without increasing noise or vibration.

4) The operating noise and air flow expelled should not affect neighbors.

5) No flammable gas nearby.

6) It should be convenient for piping and wiring.

7) If it is installed in indoor space, it might cause indoor temperature to decrease and noise disturbance. Please take preventive measures for this.

8) If the unit has to be installed on a metal part of building, make sure the electric insulation meets the relevant local electric
Do not install the unit near the following.

- Place like kitchen where oil permeates.
- Place where strong electromagnetic waves exist.
- Place where flammable gases or materials exist.
- Place where acid or alkali gases evaporate.
- Other special environments.

**Note:**

- Use appropriate tools and equipments to transport the unit, and ensure the unit is not damaged during transportation.
- If the unit has to be installed on a metal part of the building, electric insulation must be installed, and the installation must meet relevant AS/NZS standards for electric devices.

The installer will need to check on water quality before installation. This could have an impact on the operation of the unit and the warranty.

**Installation space and duct connection**

Before installing the unit, leave enough space for sufficient air flow and ease of maintenance as shown in figure 3-1 to 3-6 below.

**Indoor installation**
4. INSTALLATION

**WARNING**

- Ask your installer to install the air-source heat pump water heating unit. Incorrect installation performed may result in water leakage, electric shock, or fire.
- Unit installed in a complete unsheltered open area is not allowed.
- The unit must be securely fixed and level, or else may result in noise and vibration.
- Make sure that there is space around the unit.
- In places where there is strong wind such as seashore or hillside, fix the unit in a location protected from the wind.

- Carry the unit onto the site
  - In order to avoid scratch or deformation of the unit surface, apply guard boards to the contacting surface.
  - *Do not incline the unit more than 45° when moving, and keep it vertical when installing.*
  - This system is very heavy, it need to be carried by 2 or more people, otherwise may cause injury or unit damage.
- Install the unit.
  - The circulating air for every unit should be more than 700m³/h.
  - Make sure there is enough installation space.
  - Outline dimensional drawing (see Fig. 4-1, Fig. 4-2)

---

**Outdoor Installation**

Installation with cover

Outdoor water proof cover separate the inlet and outlet air.

**Fig. 3-7**

Duct Description

Air inlet and outlet both connect with ducts.

**Fig. 3-8**

Installation takes advantage of warmer air source and cooler air dispensed for other uses.

Different duct connection may result in slightly different system efficiency.

---

**ES300 Installation & Owner’s Manual**

7
5. PIPELINE CONNECTION

- Pipeline Connection Sketch

![Pipeline Connection Sketch]

- Pipeline Connection Explanation
  - Install the water inlet/outlet pipes/valves and pipe for TPR valve in accordance with the AS/NZS standards.

CAUTION

When installing the heat pump, please install an isolation valve at the drain line to the drain.

NOTE

- TPR valve should be checked by lifting the valve handle up every six months to ensure there is no blockage of the valve. Please beware of burn caused by the high temperature of water. The drainage pipe should be well installed, in order to avoid freezing in cold weather.

- Do not dismantle the TPR valve,
- Do not block off the drainage pipe,
Explosion and injury may be caused if installation do not comply with the above instruction.

- All installed valves including Pressure Limiting Valve, Filter, Non-return Valve, Cold Water Expansion Valve, and Tempering Valve, must be installed as per Australia and New Zealand Standards.

- For indoor installation, a water tray as suggested in Fig 5-2 is recommended to prevent leakage due to blockage during draining.

![Pipeline Connection Sketch]

![Fig.5-1]

![Fig.5-2]
6. DUCT CONNECTIONS

6.1 Indoor Installation

- Air inlet and outlet both connected with ducts. \( A+B \leq 10 \text{m} \)

![Diagram 1](image)

Fig. 6-1

Installation takes advantage of the warmer air source and ducts the cold air to other rooms where required.

Different duct connection may result in slightly different system efficiency

- Air inlet without duct, air outlet connected to duct. \( A \leq 10 \text{m} \)

![Diagram 2](image)

Fig. 6-2

Installation takes advantage of a warmer air source and discharges the cold air into the room.

- Air inlet connected to duct, air outlet without duct. \( A \leq 10 \text{m} \)

![Diagram 3](image)

Fig. 6-3

Installation that does not want to have the cooler air affect the temperature of the room.
6.2 Outdoor Installation

Installation with rain cover

Outdoor rain cover separates the inlet and outlet air flow.

Fig. 6-4

Installation uses outdoor air.

Different duct connection may result in slightly different system efficiency

<table>
<thead>
<tr>
<th>Duct Description</th>
<th>Dimension (mm)</th>
<th>Straight-line pressure drop (Pa/m)</th>
<th>Straight-line length (m)</th>
<th>Bend pressure drop(Pa/Bend)</th>
<th>Bend qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Round duct</td>
<td>Φ 190</td>
<td>≤2</td>
<td>≤10</td>
<td>≤2</td>
<td>≤5</td>
</tr>
<tr>
<td>Rectangle duct</td>
<td>190X190</td>
<td>≤2</td>
<td>≤10</td>
<td>≤2</td>
<td>≤5</td>
</tr>
<tr>
<td>Other shaped duct</td>
<td></td>
<td>Refer to above data</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**WARNING**

- Different duct connections may result in slightly different system efficiency.
- The diameter of the duct must ≥190mm, total length of the ducts should not be longer than 10m and the maximum static pressure should not exceed 50kPa. Bear in mind that the number of bends should not exceed five.
- For heat pump air outlet connected with duct, when heat pump is operating, condensed dew will be generated outside the air outlet duct. Please pay attention to the discharge of condensed water.
- Heat pump is not recommend to be installed outdoors where there is no rain cover or weathershed.
- There is a filter on the inlet. In terms of the heat pump connected with duct, additional filter may be put forward to the air inlet of duct to protect possible blockage. (Fig.6-9 and Fig.6-10)

![Diagram](attachment:fig6-9.png)

![Diagram](attachment:fig6-10.png)

![Diagram](attachment:fig6-6.png)

WARNING: In case of rain entering the internal components of the heat pump, components might be damaged hence causing physical danger. (Fig.6-6)

In cases where the heat pump is installed outdoors, a reliable water-resistant measure must be used to avoid water ingress into the heat pump. (Fig.6-7 and Fig.6-8)

![Diagram](attachment:fig6-7.png)

![Diagram](attachment:fig6-8.png)

To drain condensed water from evaporator, please install the heat pump on a level platform. The maximum allowed inclination angle of the unit to the ground should be no more than 2° to the drain vent side.

![Diagram](attachment:fig6-11.png)

![Diagram](attachment:fig6-12.png)
7. ELECTRIC CONNECTION

CAUTION

- The power supply for the unit must be specialized according to the rated voltage.
- Earthing must be included in the power circuit, and it must be connected with the effective external ground wire.
- The wiring must be performed by qualified electrician according to the circuit diagram.
- Electric leakage protector should be set according to the relevant AS/NZS electrical standards.
- The power cord and additional display connection cord shall be laid out neatly and properly without mutual interference or in contact with the connection pipes or valves.
- After wiring connection is finished, check again to ensure the installation is correct before power is supplied.

7.1 Specifications of Power Supply

Table. 7-1

<table>
<thead>
<tr>
<th>Model Name</th>
<th>Power Supply</th>
<th>Min. Diameter of Power Supply Line (mm²)</th>
<th>Earth Wire (mm²)</th>
<th>Manual Switch (A) Capacity/Fuse</th>
<th>Creepage Breaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSJ-35/300ORDN3-B</td>
<td>220-240V ~ 50Hz</td>
<td>4</td>
<td>4</td>
<td>15/5</td>
<td>30 mA 0.1sec</td>
</tr>
</tbody>
</table>

- Please select power cables according to above table, and it should comply with ASNZ standards.
- The power cord type designation is H05RN-F.

WARNING

The unit must be installed with an Creepage Breaker near the power and it must be effectively earthed.

7.2 Electric Wiring Illustration

[Diagram showing electrical connections and components with labels for TCO, TOD, T3, T4, T5U, T5L, TP, TH, EEV, CT2, etc., with wiring diagrams of tank inside and main control panel.]
8. OPERATING INSTRUCTIONS

8.1 Operating steps

Before turning on this Heat Pump, please follow the steps below.

Filling water: If the heat pump is used for the first time or used again after draining the tank, please make sure that the tank is full of water before power is turned on.

See Fig.8-1

Don’t operate the heat pump before filling water.

CAUTION

Operation without water in water tank may result in damage of electric element which is not covered by warranty.

Draining: If the heat pumps needs cleaning or moving, the tank should be emptied. Turn off the power supply. See Fig.8-2:

CAUTION

High temperature hot water may result in serious burn. Special attention should be paid to children, disabled and elderly in case of water burn.

After draining, close the drain pipe. Replace the nut of drainpipe if necessary.
8-2 Operating Steps

Control Panel Explanation

1. Wire controller
   If connected to a wire controller, the icon will illuminate, otherwise, the icon be extinguished.

2. Outdoor solar heat source
   If an outside solar heat source has been connected to the unit, this icon will flash with 0.5Hz frequency, otherwise it will be extinguished.

3. Vacation mode
   The icon will illuminate if the unit is under vacation mode, otherwise the icon will be extinguished. When setting vacation mode, the icon will flash with 2Hz frequency.
4. Compressor
   The icon will illuminate when compressor is running, otherwise it will be extinguished.

5. E-heater
   The icon will illuminate if E-heater is activated, otherwise, it will be extinguished. If E-heater is automatically activated by unit, the icon will illuminate. If E-heater is manually activated, it will flash with 0.5Hz frequency. When setting E-heater manually ON/OFF, it will flash with 2Hz frequency.

6. Disinfect
   The icon will illuminate when the unit is under disinfecting mode, otherwise it will be extinguished. The icon will illuminate if disinfect mode is automatically activated by unit. The icon will flash with 0.5Hz frequency, if disinfect mode is manually activated. It will flash with 2Hz frequency when setting this mode or setting disinfect timer.

7. High temperature Alarm
   If setting water temperature is higher than 50°C the icon will illuminate, otherwise it will be extinguished.

8. Alarm
   When unit is under protection /error, the icon will flash with 5Hz frequency and sound the buzzer. It will sound 3 times per mintues until protection/ error eliminated or hold "CANCEL" for 1 second.

9. Lock
   If button is locked, the icon will illuminate, otherwise it will be extinguished.

10. Temperature unit
    If setting temperature unit as Celsius, 'C' will be displayed, '888' will show Celsius degrees. If setting temperature unit as Fahrenheit, 'F' will be displayed, '888' will show Fahrenheit degree.

11. Invalid
    If button is under lock mode, press any button except unlock button, the icon will illuminate.

12. The icon will illuminate if screen is unlocked. It shows water temperature on normal mode. If on vacation mode, it shows remaining vacation days. Under setting mode, it shows setting temperature. If under query mode, it shows unit setting or running parameters, error or protection code.

13. Reserved

14. 1. Water temperature setting
    The icon will illuminate when setting water temperature or setting days for vacation.

14.2. Date setting
    The icon will illuminate when setting days for vacation. If under vacation mode, the icon will illuminate.

15. Timer
    There are six timers that can be set. If anyone of them has been set, the corresponding icon will illuminate when screen is unlocked. If no timers has been set, it will keep extinguished. If timer is being set, it will flash the corresponding icon with 2Hz frequency as well illuminate the timer which has been set.

16. Clock and clock setting
    The icon shows the clock. When setting the clock, will be illuminated.
Operation panel explanation

Notes: Display needs to be unlocked before any buttons to be effective.

**E-heater**
Turn on E-heater manually. If E-heater is off, follow these steps below to manually turn it on.
1. Press ‘E-HEATER’, icon will flash.
2. Press ‘ENTER’ to confirm manually turning on E-heater, the E-heater is then activated to heat pump water to the target temperature.
3. Repeat these steps if E-heater needs to be manually turned off.
* If E-heater is already on, press ‘E-HEATER’, the invalid icon shows on the display.

**Temperature unit shift**
Hold the ‘E-Heater’ key for 10 seconds, it shifts between ‘C’ and ‘F’
The default is ‘C’.

**INCREASE/UP & DECREASE/DOWN**
If screen is unlocked, corresponding value will increase by pushing ‘INCREMENT’ or ‘DECREASE’.
- When setting temperature, holding ‘INCREMENT’ / ‘DECREASE’ to increase/ decrease temperature value continuously.
- When setting clock/ timer, holding ‘INCREMENT’ / ‘DECREASE’ to increase/ decrease clock/ timer value continuously.
- When setting vacation days, holding ‘INCREMENT’ / ‘DECREASE’ to increase/ decrease day value continuously.
- Under query mode, pressing ‘INCREMENT’ / ‘DECREASE’ for page up/ down.

**CANCEL**
To cancel setting, quit setting, clear alarm, etc. Hold for 1 second to reset alarm noise.

**ON/OFF (with LED indicator)**
- Press ON/OFF to turn the unit on/ off.
- LED indicator will be on if the unit is on or standby, indicator will be off if the unit is off.

**ENTER (include CONFIRM/ UNLOCK)**
If the unit is unlocked, press to upload setting parameters after setting any parameter.
Press within 10 seconds, setting parameters will be uploaded to unit.
After 10 seconds, all parameters should be reset.
If the unit is locked, hold it for 3 seconds to unlock.
DISINFECT
Manually turn on disinfect function.

Press ‘DISINFECT’ button, the icon °C will flash.
Press ‘ENTER’ to confirm manually activate disinfection function. The unit will heat up water to 65°C at least for disinfection.

Disinfect clock setting

Press button ‘DISINFECT’ for 3 seconds to enter disinfect clock setting. Then icon °C will flash, and icon ► SET CLOCK will be lightened and the hour value of clock will flash slowly.
By pressing ‘UP’ or ‘DOWN’, set the hour value of clock.
Press ‘CLOCK’ button to confirm the hour setting. Then the minute value of clock will flash slowly.
By pressing ‘UP’ or ‘DOWN’, set the minute value of clock.
Press ‘ENTER’ to confirm the disinfect clock setting and quit out.

Notes:
Unit will automatically start disinfect function at the above-set clock every 7 days.
If without disinfect clock setting, unit will automatically start disinfect function at 23:00 every 7 days.
If unit is off or under disinfect mode, press ‘DISINFECT’ will lead to show “Invalid” on the display.

VACATION
In vacation mode, the setting target water temperature is 15°C as default and ‘888’ will show the remaining vacation days. On the last day of vacation, unit will automatically start disinfect function, and automatically reset the target temperature to the last one before vacation.
If unit has already been under vacation mode or off, press the button of ‘VACATION’, then it will lead to show invalid icon “Invalid” on the display.

Press ‘VACATION’ button to enter vacation setting. Icon” will flash. Icon ‘’ will be lightened.
‘DAY’ will show the last setting vacation days.
By pressing ‘UP’ or ‘DOWN’, set vacation days. The day’s range is 1~99 days, default as 14 days.
Press ‘ENTER’ to confirm vacation setting and quit out. The unit will immediately go into vacation mode.
Setting clock

Press button ‘CLOCK’ for 3 seconds to enter clock setting. Then icon ‘SET CLOCK’ will be lightened and the hour value of clock will flash slowly.

Press button ‘UP’ or ‘DOWN’ to set the hour value of clock.

Press ‘CLOCK’ to confirm the hour setting. Then the minute value of clock will flash slowly.

Press ‘UP’ or ‘DOWN’ to set the minute value of clock.

Press button ‘ENTER’, confirm the minute setting and quit clock setting.

Setting timer

Press ‘CLOCK’ to enter timer setting.

Push ‘UP’ or ‘DOWN’, select timer (1-6) which needs to be set. The timer icon will flash slowly if it is selected.

Press ‘CLOCK’, and confirm the selected setting timer. Then ‘SET CLOCK’ will be lightened. Then the hour value of timer will flash slowly.

By pressing ‘UP’ or ‘DOWN’ to set the hour value of timer.

Pressing ‘CLOCK’ to confirm the hour value of timer. Then the minute value of timer will flash slowly.

By pressing ‘UP’ or ‘DOWN’ to set the minute value of timer.

Pressing ‘CLOCK’, and confirm the minute value of timer. Then ‘ON’ or ‘OFF’ icon following the setting timer will flash slowly.

By pressing ‘UP’ or ‘DOWN’ to set the action (on or off) of the timer.

Push ‘CLOCK’, and confirm the action (on or off) of the timer. The display screen will automatically display different value at 888 by different action. It will display the last set temperature and icon ‘SET’, if the action is on, and will display ‘--’ if the action is off, by pressing ‘ENTER’, the setting timer will be exited.

Cancel timer

Press ‘CANCEL’ to cancel the timer setting.
The covers of the electric element should not be opened unless by a qualified electrician in order to prevent electric shock and other dangers.

**WARNING**

When ambient temperature does not meet the heat pump operational requirement (outside the range -7–43 ℃) for over 20 hours. “LA” will display at TEMP-SET screen and ALARM indicator flashes simultaneously to alarm that the temperature is not suitable for heat pump performance, only E-heater mode could be selected at such circumstance. Unit switches to E-heater mode automatically to ensure there is adequate hot water to be supplied. Note that if change of mode is done automatically, the desired mode will return automatically upon unit returning to normal working process.

- When an error occurs, the buzzer will sound 3 times every minute and the ALARM indicator will flash fast. Hold CANCEL for 3 seconds to stop the buzzer however the light will keep illuminating.

**Trouble Shooting**

- Display the error code

  ![Temp-Set Display](image)

  ![Cancel Key](image)

  ![Alarm Indicator](image)

  ![Error Code Explanation](image)

  **Error Code Explanation (See table. 8-21)**

  **Fig.8-18**

  **Fig.8-19**

  **Fig.8-20**

  **Fig.8-21**

  - The error code from the screen of TEMP-SET will display when a malfunction happens, the system will display error code after one minute, and when the key is pressed again and the screen will display set temperature.

  - When a malfunction happens in economy mode, the system may still be used when switched to E-heater mode. However, in this case, the system will not reach the expected efficiency.
### Table 8-21

<table>
<thead>
<tr>
<th>Code</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>E0</td>
<td>Error of sensor T5U.</td>
</tr>
<tr>
<td>E1</td>
<td>Error of sensor T5L.</td>
</tr>
<tr>
<td>E2</td>
<td>Tank and wired controller communication error</td>
</tr>
<tr>
<td>E4</td>
<td>Evaporator temperature sensor T3 error.</td>
</tr>
<tr>
<td>E5</td>
<td>Ambient temperature sensor T4 error.</td>
</tr>
<tr>
<td>E6</td>
<td>Compressor discharge temperature sensor TP error.</td>
</tr>
<tr>
<td>EB</td>
<td>Electric leakage error.</td>
</tr>
<tr>
<td>E9</td>
<td>Compressor suction temperature sensor TH error.</td>
</tr>
<tr>
<td>EE</td>
<td>E-heater open-circuit error.</td>
</tr>
<tr>
<td>EF</td>
<td>Clock chip charging or clock chip error.</td>
</tr>
<tr>
<td>E6</td>
<td>E-EPROM chip error.</td>
</tr>
<tr>
<td>P1</td>
<td>System high pressure protection.</td>
</tr>
<tr>
<td>P2</td>
<td>High discharge temperature protection.</td>
</tr>
<tr>
<td>P3</td>
<td>No current flowing in compressor.</td>
</tr>
<tr>
<td>P4</td>
<td>Compressor overloaded protection.</td>
</tr>
<tr>
<td>LA</td>
<td>Ambient temperature not fill for heat pumps, change the mode to E-heater.</td>
</tr>
</tbody>
</table>

* If the errors occur, please contact your installer.

---

### 9. RUNNING AND CAPABILITY

#### 9.1 Trial Run

- Before start, please check the following first:
  - Correct installation of the system;
  - Correct connection of pipeline, wiring and earthing;
  - Drainpipe connected;
  - Suitable pipe insulator;
  - Correct transportation of unit;
  - Correct power supply;
  - No obstacles outside the air inlet and outlet;
  - Complete bleeding air out of hot water cylinder and pipes;
  - Effective electric leakage protector;
  - Sufficient inlet water pressure (≥150kPa)
- 

#### 9.2 Operating Capability

- Water-heating Operating Capability
  
  - There are two types of heat sources that can be used by the heat pump water heater: electric element and heat pump. These two sources may work together at the same time.

This unit has two temperature sensors in the hot water cylinder, they are installed at the upper 1/4 and bottom 1/2. The upper one tests the upper temperature, shown in the figure below, and the bottom one is used to test the lower water temperature, which will control the operation of the heating automatically.

![Fig.9-1](image-url)
NOTE

Heat-up Time

Water Temperature Display
- The temperature on the display is the water temperature in the upper part of the water tank, this is approximately 75L of water.
- When using water, the temperature of the lower part may decrease while the upper part still keeps at a high one, and the system will start heating the lower part. This is normal.

Trouble Shooting
- When an error code appears on the display or the unit is not operating, please contact your installer.
- When an error occurs, the buzzer will buzz in every minute, the warning light flashes, the display will indicate the error code and water temperature alternatively. Press CANCEL button for 3 seconds to stop the alarm.

Restart after a period of disuse over one year
Please follow the draining and filling water instructions on page 12 to refill the water.

NOTE

Mode Selection
Different modes are designed to meet different demand and the following are recommended selections.
- Heat pump Mode: -7~43℃, continuous hot water demand below 300L (60℃);
- E-heater Mode: -30~43℃, continuous hot water demand around 150L (60℃).

Self-Protection
- When self-protection occurs, the system will stop and begin self-check, and restart when the problem is resolved; system will not restart automatically if problem persists, in such case, contact your installer.
- When the self-protection happens, the buzzer will buzz every minute, the ALARM indicator flashes and the display indicates the error code and water temperature alternatively. Press CANCEL key for 3 seconds to stop the alarm. Buzzing and flashing stops when the problem is resolved and error code disappears on the display.

Self-Protection
- Self-protection starts in the following circumstances:
  ① Air inlet or outlet is blocked; Error Code: P1
  ② The filter is covered with too much dust; Error Code: P2
  ③ Incorrect power supply (exceeding the range of 220-240V) Error Code: P4

- Ambient Temperature
The system’s operation temperature is within -30~43℃

- Defrost during Water-heating
  - If the evaporator is frozen in a cold environment, the system will defrost automatically. (3~10 min).

- NOTE
  - Heat pump should be used when the ambient temperature is between -7~43℃. When the ambient temperature is under -7℃, the energy efficiency would decrease, E-heater mode should be used in this circumstance.

- NOTE
  - Heat-up time (h) | Water outlet temperature (℃)

<table>
<thead>
<tr>
<th>Ambient Temp. (℃)</th>
<th>45</th>
<th>50</th>
<th>55</th>
<th>60</th>
</tr>
</thead>
<tbody>
<tr>
<td>-20</td>
<td>1.8</td>
<td>2.1</td>
<td>2.4</td>
<td>2.7</td>
</tr>
<tr>
<td>-10</td>
<td>1.8</td>
<td>2.1</td>
<td>2.4</td>
<td>2.7</td>
</tr>
<tr>
<td>-5</td>
<td>6.6</td>
<td>6.9</td>
<td>7.2</td>
<td>7.5</td>
</tr>
<tr>
<td>0</td>
<td>5.9</td>
<td>6.3</td>
<td>6.6</td>
<td>7.0</td>
</tr>
<tr>
<td>2</td>
<td>5.5</td>
<td>6.5</td>
<td>7.4</td>
<td>7.7</td>
</tr>
<tr>
<td>7</td>
<td>4.6</td>
<td>5.4</td>
<td>6.2</td>
<td>6.4</td>
</tr>
<tr>
<td>16</td>
<td>3.3</td>
<td>4.0</td>
<td>4.6</td>
<td>5.3</td>
</tr>
<tr>
<td>20</td>
<td>3.1</td>
<td>3.6</td>
<td>4.2</td>
<td>4.8</td>
</tr>
<tr>
<td>25</td>
<td>2.8</td>
<td>3.3</td>
<td>3.8</td>
<td>4.4</td>
</tr>
<tr>
<td>30</td>
<td>2.4</td>
<td>2.9</td>
<td>3.4</td>
<td>3.9</td>
</tr>
<tr>
<td>32</td>
<td>2.4</td>
<td>2.8</td>
<td>3.2</td>
<td>3.7</td>
</tr>
<tr>
<td>35</td>
<td>2.3</td>
<td>2.7</td>
<td>3.2</td>
<td>3.6</td>
</tr>
<tr>
<td>40</td>
<td>2.3</td>
<td>2.7</td>
<td>3.2</td>
<td>3.6</td>
</tr>
<tr>
<td>43</td>
<td>2.2</td>
<td>2.6</td>
<td>3.0</td>
<td>3.1</td>
</tr>
</tbody>
</table>
10. MAINTENANCE

10.1 General Maintenance

- Check the connection between power supply plug, socket and ground wiring regularly;
- In some cold areas (below 0°C), if the system is to be stopped for a long time, the tank should be drained of water to prevent damage to the unit;
- It is recommended to drain the inner tank regularly to maintain efficient performance.
- The anode rod should be checked and changed if necessary by qualified installed every year. For more details, please contact the supplier.
- Clean the air filter every year to maintain heating performance.
  - Air inlet filter, the method to dismantle the filter is: unscrew the air inlet ring anti-clockwise, take out the filter and clean it completely, finally, re-fit to the unit. For unit with ducting, remove duct first then follow above instruction.
- Before shutting the system down for a long period, ensure that:
  - Power supply has been shut off;
  - Water in water tank and pipeline has been drained and all valves has been closed;
- Instruction to change anode rod (for qualified installer)
  - Turn off the power, and turn off the water inlet valve.
  - Open hot water tap, and decrease the pressure of the inner container.
  - Open the temperature pressure valve, and drain out the water until no water flows out.
  - Unscrew anode rod.
  - Replace with a new one, and make sure it is sealed effectively.
  - Open cold water valve until hot water flows out, and turn off the hot water tap.
  - Restart.

10.2 Non-error Malfunction

- 3-minute Protection
  - If the power supplied is interrupted, a restart after the shutting down will commence in 3 minutes as to protect the compressor.
  - If self-protection occurs and the system stops, check:
    - When the power indicator lights up, whether the system has been forced to run while startup requirement has not been met;
    - If the air outlet or inlet is blocked or strong winds are blowing.
- Defrosting
  - When the environment is humid and cold, the evaporated water may freeze and the water-heating capacity thus decreases. When this happens, the system will stop heating water and go into defrostmode, then restart water-heating upon completion.
  - During defrosting, fan stops working, four-way valve reverses the flow direction, and compressor keeps working.
  - The defrosting time varies from 3 minutes to 10 minutes depending on the ambient temperature and the frost.
- Temperature Display
  - When the system stops, a decrease of water temperature is normal as heat loss. When it decreases to a certain point, the system will restart automatically.
  - During water-heating, the displayed water temperature might still decrease or not increase for a period of time because of the heat exchange of the water. When the whole tank of water has reached the set temperature, the system will stop automatically.

10.3 Malfunctions and Resolutions

<table>
<thead>
<tr>
<th>Malfunction</th>
<th>Cause</th>
<th>Resolutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outlet water</td>
<td>Outlet water is set on a low temperature</td>
<td>Set outlet water to a higher temperature</td>
</tr>
<tr>
<td>is cold.</td>
<td>Outlet water temperature controller is damaged</td>
<td>Contact the installer</td>
</tr>
<tr>
<td>No hot water from the outlet</td>
<td>Tap water has been cut off</td>
<td>Will return to normal after supplied water</td>
</tr>
<tr>
<td></td>
<td>Water pressure is too low</td>
<td>Contact installer</td>
</tr>
<tr>
<td></td>
<td>Inlet valve has been closed</td>
<td>Open the inlet water valve</td>
</tr>
<tr>
<td>Water leakage</td>
<td>The joints on the pipeline are not sealed well</td>
<td>Check and reseal all the connections</td>
</tr>
<tr>
<td>The display</td>
<td>Bad connection of power supply plug and socket</td>
<td>Reconnect the plug</td>
</tr>
<tr>
<td>is dark.</td>
<td>Circuit board indicator is damaged</td>
<td>Contact the installer</td>
</tr>
</tbody>
</table>

10.4 After-Sale Service

If the unit run into malfunction or error, it should be shut down and the power supply cut off. Please contact Parex Industries Ph 0800 200 510.
### 11. Specifications

#### Table. 11-1

<table>
<thead>
<tr>
<th>Model</th>
<th>EcoSpring ES300</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mode</strong></td>
<td>Heat Pump</td>
</tr>
<tr>
<td><strong>Water-heating cap.</strong></td>
<td>3000W</td>
</tr>
<tr>
<td><strong>Rated Current</strong></td>
<td>18.7A</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>220-240V ~50Hz</td>
</tr>
<tr>
<td><strong>Operation control</strong></td>
<td>Auto/Manual startup, real time control, error alarm, etc</td>
</tr>
<tr>
<td><strong>Protection</strong></td>
<td>High-pressure Protector, Over-load Protector, Temp Controller &amp; Protector, Electric Leakage Protector, etc</td>
</tr>
<tr>
<td><strong>Compressor power</strong></td>
<td>850W</td>
</tr>
<tr>
<td><strong>Heater</strong></td>
<td>3000W</td>
</tr>
<tr>
<td><strong>Refrigerant</strong></td>
<td>R134a (1200g)</td>
</tr>
<tr>
<td><strong>Outlet water temp.</strong></td>
<td>Default 55℃, (38-60℃ adjustable)</td>
</tr>
<tr>
<td><strong>Water side exchanger</strong></td>
<td>Surface heat exchanger</td>
</tr>
<tr>
<td><strong>Inlet pipe Dia.</strong></td>
<td>DN20</td>
</tr>
<tr>
<td><strong>Outlet pipe Dia.</strong></td>
<td>DN20</td>
</tr>
<tr>
<td><strong>Solar water outlet</strong></td>
<td>DN20</td>
</tr>
<tr>
<td><strong>Solar water inlet</strong></td>
<td>DN20</td>
</tr>
<tr>
<td><strong>Drain pipe Dia.</strong></td>
<td>DN20</td>
</tr>
<tr>
<td><strong>TPR valve Dia.</strong></td>
<td>DN20</td>
</tr>
<tr>
<td><strong>Max. pressure</strong></td>
<td>700kPa, minimum 150kPa</td>
</tr>
<tr>
<td><strong>Material</strong></td>
<td>Hydrophilic aluminum fin, inner groove copper tube</td>
</tr>
<tr>
<td><strong>Motor power</strong></td>
<td>80W</td>
</tr>
<tr>
<td><strong>Outlet air type</strong></td>
<td>Vertical upflow air supply</td>
</tr>
<tr>
<td><strong>Dimension</strong></td>
<td>Dia 650 mm x Height 1920 mm</td>
</tr>
<tr>
<td><strong>Water tank cap.</strong></td>
<td>300L</td>
</tr>
<tr>
<td><strong>Net weight</strong></td>
<td>145kg</td>
</tr>
<tr>
<td><strong>Fusible link type</strong></td>
<td>T5A 250VAC</td>
</tr>
</tbody>
</table>

The test conditions:
Test temperature 15/12℃ (DB/WB), Water temperature from 15℃ up to 45℃.

**Warranty**
3 Year Comprehensive