Installation/Operation and Maintenance Instructions

Ecolectric Water to Water Heat Pump
W2W 4.5 & 7.5/9.0 KW

Please read these instructions carefully before installing, Commissioning and using this appliance
Important Safety Instructions

Please read all the instructions before use and keep for future reference

WARNING

Misuse or modification of this appliance may result in breakdown or injury.

This appliance is not intended for use by persons (including Children) with reduced physical, sensory or mental capabilities, or lack or experience and knowledge, unless they have been given supervision or instruction concerning use of the appliances by a person responsible for their safety.

This product must only be installed and serviced by persons with suitable engineering qualifications.

IMPORTANT INFORMATION

Check that the voltage on the rating label of the appliance corresponds with your electricity supply which must be A.C (Alternating Current).

Only use this appliance for its intended purpose.

Frost Protection
To prevent the danger of water in the system freezing in very cold weather a suitable antifreeze such as Glycol should be added to the system.

FOR SAFETY

Do not attempt to modify, repair or service the appliance yourself.

Do not operate the unit or programmer with wet hands/fingers.

Do not place items on top of this product or use it to support other appliances.

Ensure the area around this appliance is clean, well ventilated and free from obstructions.

Ensure the appliance is protected from exposure to water.

Do not use if any parts damaged.

This product must only be installed and serviced by persons with suitable engineering qualifications.

Only use this appliance for its intended purpose.

If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

Do not install or operate the appliance where explosive gases are present.
1 Introduction

The Smiths Ecolectric water to water heat pump is designed to be used in conjunction with ground source/geothermal/PV-Thermal and provides a hot water & low temperature heating with minimal operation cost. The heat pump operation principles are similar to those used in a normal domestic refrigerator except in reverse. In a refrigerator heat energy is drawn from inside the refrigerator (making things cold), concentrated by the compressor then dissipated to the atmosphere via the condenser coil located on the back of the refrigerator cabinet. Please see the diagram below to know how the water to water heat pump works.

2 Technical information

Clearance:
Specifications:

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<td>Return</td>
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<tr>
<td>Water flow rate</td>
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<td>12.96</td>
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Dimensions:

W2W 4.5/6.0 kW

3 Controls
The heat pump hot water temperature can be controlled by the temperature controller on the electrical panel. Depending upon the application of the heat pump, the water temperature can be set by the temperature controller.

Before setting the new required temperature please check the current set value by pressing the button \( \hat{\circ} \). The temperature is factory set at 50°C.

**Water Temperature Setting:**

To adjust the set temperature keep button \( \hat{\circ} \) pressed, use button \( \Delta \) or \( \nabla \) to increase or decrease the temperature. Releasing button \( \hat{\circ} \) will store the new set temperature value.

The Ecolectric heat pump can be set between 35°C and 50°C, depending on your application. The water temperature can be adjusted at any time.

The heat pump will turn off once the cylinder water temperature has reached its required level. It will turn on when the cylinder temperature drops below 5°C of the required temperature.

**Note:** DO NOT set the temperature valve more than 60°C.

### 4 Installations

**Introduction:**

The Installation must be carried out by a fully qualified engineer and it must be installed in accordance with these instructions and all relevant standards.

The Heat Pump is charged with refrigerant to the required amount before it leaves the factory. All the heat pumps are fully tested and programmed; it only needs the water connections and electrical power supply to be connected by the installer.

This heat pump uses R134a refrigerant.

**Heath and safety:**

The appliance requires two persons, or special lifting equipment to lift into position. Ensure that the lifting equipment is fully approved and checked for safety before use.

It is the installer’s responsibilities under the Act to provide the appropriate protection for all persons carrying out the installation.

Please do not stand on the unit under any circumstance.

**Siting:**

The appliance should be installed on a solid surface which should be able to take the weight of the heat pump and firm enough to prevent vibration.

The appliance must be installed in the area where no obstruction and enough ventilation are available. Also enough clearance should be available on all the sides after the installation for regular checks and service. (Please refer diagram sec 2 page 4).

Do not install the appliance near doorways or windows or near to potential gas leak.

**Heating connection (Condensing side):**

The water connections to the Inlet and Outlet pipes are 22mm. It is recommended to make connections using a short 22mm flexible hose not more than 300mm long with a larger bore diameter into the heat pump. This will minimize the vibration transmitted through the pipe work into the building.
It is highly recommended to use an inline filter on the heat pump water inlet to avoid any residue or dirt getting into the plated heat exchanger as this will reduce the system thermal output and efficiency. This residue or dirt build up could block the heat exchanger (condenser) and this could lead to the failure of the appliance.

All the pipe work outside the building should be kept as low as possible and well insulated to avoid pipe freezing during severe cold weather and when heat pump is not operating. This will also reduce the heat loss.

Isolation valves must be sited on the water inlet and water outlet pipe work close to the heat pump, for servicing and disconnection.

Cooling connection (Evaporating side):

This side of the connection can be connected to ground loop/ground bore or Smith’s PV-Therm Panels. Water connections to inlet 7 outlet are 22mm. It is recommended to connect short 22mm flexible hoses of not more than 300mm long with a larger bore diameter into the heat pump. This will minimize the vibration transmitted through pipe work into the building.

It is highly recommended to use an inline filter on the heat pump water inlet to avoid any residue or dirt getting into the plated heat exchanger as this will reduce the system thermal output and efficiency. This residue or dirt build up could block the heat exchanger (Evaporator) and this could lead to the failure of the appliance.

All the pipe work outside the building should be kept low as possible and well insulated to avoid pipe freezing during severe cold weather and when heat pump is not operating. This will also reduce the heat loss.

Isolation valves must be sited on the water inlet and water outlet pipe work close to the heat pump, for servicing and disconnection.

System Flushing & Treatment:

When installing the heat pump into new or existing heating systems whole system must be flushed before connection to the heat pump, in order to avoid any dirt, impurities, and residues from existing system or solder, fluxes, greases & metal fillings from new system entering into the heat pump.

Where the heat pump is direct replacement of boilers, in addition to the system flushing the whole system must be free from scale deposit.

NOTE: The heat pump warranty will become invalid in the event of the installer failing to flush, add inhibitors and antifreeze to the system. The heat pump must not be run without water or with a lower than recommended flow rate in the system.

Air removal:

Any air must be completely removed from the system before running the heat pump; failure to do so will cause the heat pump to cease operation. It is highly recommended to fit an auto air vent within the system.

Filling the system: note - To provide frost protection a suitable anti freeze should be added to the system.

Open vent system:

The system should be filled with mains supply water and using the mains pressure to remove the air out of the system. Make sure there is not any permanent connection between the heat pump and the mains water supply. We recommend using a non-return valve on the mains cold water fill.

Sealed system:

Before filling the system check the expansion vessel charge pressure. It should be slightly higher than the mains pressure. Also make sure all the fittings and joints are properly fitted and tightened.

Open the mains cold water supply valve, and then open the filling valve on the cold water supply. Gently open the filling valve on the heating circuit until water can be heard flowing into the system.

Fill the system to the required pressure (recommended 1 Bar). Remove any trapped air then check the system pressure, top up if required.

Legionella:

Where the heat pump is used to generate the domestic hot water, it is vital to kill the Legionella. The can be done by having a secondary (e.g. electric element) heat source to the domestic hot water cylinder, which can be programmed to take the cylinder temperature to 65°C or above at least once per week.
**5 Electrical Connections**

A separate single phase fused (20 Amp) power supply is required. Ensure the power supply is isolated. Access and connect the heat pump mains cable into the power supply.

1. MCB’s type C or D rated fuses must be used.
2. An isolator should be fitted within 2 meters of the unit to comply with I.E.E regulations.
3. This appliance must be earthed and the earth cable must be greater length than the Live and neutral.
4. The minimum supply cable size is 2.5 mm².

Electrical Work must be carried out in accordance with BS 7671:2001, current I.E.E regulations and any local regulations which may apply, by a qualified electrical engineer.

Important: Isolate the electrical supply before accessing the unit.

If any fault found after the installation, the electrical system should be thoroughly checked for short circuit, resistance to earth, fuse failure, earth continuity and incorrect polarity.

**6 Commissioning**

Once the heat pump is fully installed in accordance with these instructions, the following procedure should be used to turn the heat pump ON for first time.

1. Leave the mains power supply to the heat pump on “off” position.
2. Turn the heating demand “ON” by timer/programmer.
3. Confirm that the motorized valve is open (this can be achieved by adjusting the room thermostat) also ensure that the circulating pump turns “ON” and circulating the water.
4. Once the heating demand is “ON” and water is circulating in the system through heat pump, then turn the mains power “ON” to the heat pump.
5. Within a few seconds the temperature controller will show the display. It will display the temperature of the incoming water (Water In temperature)
6. Within 2 minutes the compressor will start.
7. Set the water temperature to the required level (recommended 45°C). To do this please refers the controls section.
8. Once the system is fully running and working in the heating mode, turn the Heating demand “OFF” and ensure that heat pump turns “OFF”.
9. Turn the hot water demand “ON” by using the timer/programmer.
10. Confirm the motorized valve is open (This can be achieved by adjusting the cylinder thermostat). Ensure that the circulating pump turn “ON” and circulating the water.
11. The heat pump will turn ON and steps 5 & 6 will follow.
12. Once the heat pump is supplying hot water to hot water cylinder and is working correctly, turn the hot water demand “OFF” by the using the timer/programmer and ensure that heat pump turns “OFF”.
13. Set both the heating and hot water demand to “ON”.
14. Confirm that the motorized valve is in the mid position and that water is circulating in both heating and hot water circuits.
15. The heat pump will turn ON and steps 5 & 6 will follow.

**7 Service & Maintenance:**

Even though it is not required to do an annual service it is highly recommended to carry out regular visual inspection.

Visually inspect the grilles on the unit. Clean the grille regularly to encourage the air circulation in the unit.

Please check the pipe connections into the heat pump and make sure they are not damaged or leaking.

**Warning:**

Before carrying any work on the heat pump, please disconnect from power supply. All the work should be carried out by qualified 7 certified personal. Any work on the refrigeration circuit must be carried out by F-gas certified refrigeration engineers.
8 Internal Wiring Diagrams

Control panel wiring:

Main Wiring:
9 Hydraulic Schematics

Ecolectric Side Connection:

Ecolectric Open Vent system

Ecolectric Sealed system

HEAT PUMP

TO HEATING SYSTEM

MAINS CONNECTION

EXPANSION TANK

COLD WATER FILLING LOOP (FROM MAINS)
Heating and Hot water:

Option 1:

Option 2:
Hot water only:

Heating only:

Note: This schematic is for reference only. We highly recommend the use of a buffer tank between the heat pump and heating circuit.
10 Heath and safety

When working with the unit, it is the user/engineer’s responsibility to use the necessary protection clothing or equipment.

Smith’s Environmental Products Ltd took the entire necessary step during the designing and constructing the heat pump to fulfil the general safety requirements, provided they are properly installed and used.

Under the consumer protection act 1987 and health and safety at work act 1974, it is a requirement to provide information on substances hazardous to health.

**ALL ELECTRICAL INSTALLATIONS CONNECTIONS MUST COMPLY WITH BS7671, 1992 AND THE IEE REGULATIONS. CHECK THE VOLTAGE ON THE HEATER IS CORRECT FOR YOUR SUPPLY. IF IN DOUBT, CONSULT A QUALIFIED ELECTRICIAN.**

If the pre-wired mains cable is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons.

**IMPORTANT**

- The appliance is not to be used by children or persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction
- Children should not be permitted to play with the appliance
- Ensure that the fan is switched off from the supply mains before removing the guard
- Any specifications with regards to dimensions of space required for the appliance to operate effectively

**Safety Information for the end user**

This product must only be installed and serviced by persons with suitable engineering qualifications. Do not attempt to modify, repair or service the appliance yourself.

Do not operate the unit or programmer with wet hands/fingers

Only use this appliance for its intended purpose.

Do not place items on top of this product or use it to support other appliances.

Ensure the area around this appliance is clean, well ventilated and free from obstructions.

Ensure the appliance is protected from exposure to water.

To provide protection against freezing a suitable anti freeze should be added to the system
Refrigerants

This unit contains R134a refrigerant.

When handling, avoid inhalation and contact with skin and eyes. Personal protective equipment must be worn (e.g. goggles, gloves overalls etc.) and first aid kit should be easily available.

Engineers who handle the liquid refrigerants should understand the hazards relates to the liquid refrigerant and should have a certificate of competence.

After the end of the heat pump life it must be disposed in accordance with local council regulations.

In the event of exposure to eyes and skin should be need an immediate cleansing of the affected areas.

12 Service Information

This appliance should only be serviced by qualified personnel only

During servicing this appliance should be isolated from the electrical supply

In the advent of a fuse failure the correct size and rated fuse should be used.

After sales service information:

In the event of a product failure a qualified service engineer is available to attend whilst the appliance is under guarantee. Please note a charge will be made on site where.

* The field service engineer finds no fault with the appliance.

* The appliance has not been maintained correctly.

* The appliance has not been correctly installed as recommended by these instructions or by unqualified persons.

* The breakdown occurs outside the guarantee period.

13 Warranty / Product Guarantee

This product is guaranteed against manufacturing defects for a period of 1 Year. Please note the guarantee may be invalidated if this product is not installed and used in accordance with this guide.

This product is guaranteed for twelve months from the date of original purchase. Any defect that arises due to faulty materials or workmanship will either be replaced or repaired by a qualified Smiths servicer engineer. The decision to repair or replace the component will be entirely at the discretion of Smiths Environmental Systems Ltd.

The warranty only applies to the Ecolectric HP or components in the Ecolectric HP and does not cover any plumbing or associated parts, including but not limited to, pressure limiting valves, stop cocks, non return valves, electrical switches, pumps or fuses, supplied by any person installing this product.

The guarantee is subject to the following provisions:

The guarantee does not cover accidental damage, incorrectly installed units or misuse.

The product must be installed correctly installed and operated in accordance with the instructions contained in this manual.

The guarantee will be rendered invalidated if the product is re-sold or has been damaged by inexpert repair.

Specifications are subject to change without notice.

The manufacturer disclaims any liability for the incidental or consequential damages.

The guarantee is in addition to, and does not diminish your statutory or legal rights.
NOTES:

Products with this symbol (crossed out wheelie bin) cannot be disposed as household waste. Old electrical and electronic equipment must be recycled at a facility capable of handling these products and their waste by-products. If you are purchasing replacement equipment your retailer may offer a 'take back' scheme, or will be able to give details of the nearest approved authorised treatment facility. Proper recycling and waste disposal will help conserve resources whilst preventing detrimental effects on our health and the environment.

WEEE Registered Code: WEE/ED0093VW

This Installation and User Guide is printed on 100% re-cycled paper.

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