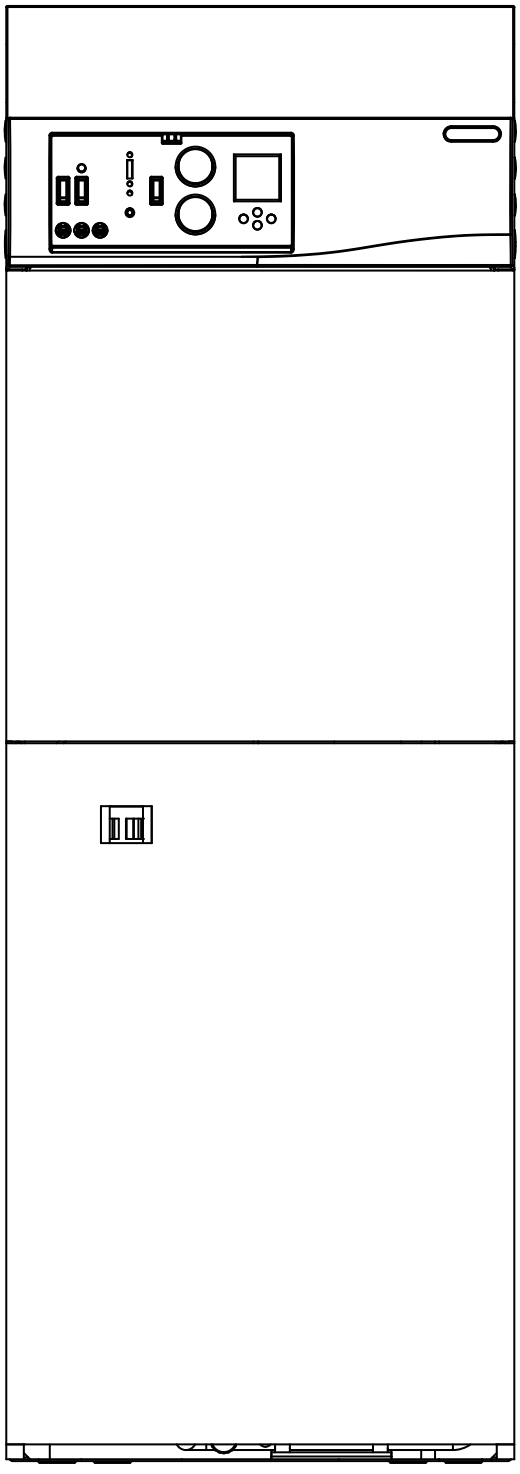
HEATRAE SADIA

The quality name in water heating



ELECTROMAX SOLAR

USER GUIDE

CONTENTS

1.0 INTRODUCTION

Thank you for purchasing a Heatrae Sadia Electromax Solar. The Electromax Solar is manufactured in the UK to the highest standards and has been designed to meet all the latest relevant safety specifications.

1.1 IMPORTANT POINTS

The Electromax Solar must be installed and commissioned by a competent person. Please read and understand these instructions before using the Electromax Solar and keep them in a safe place for future reference.

The Electromax Solar 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 the use of the appliance by a person responsible for their safety.

Children should be supervised to ensure they do not play with the Electromax Solar.

FIGURE 01: ELECTROMAX SOLAR INSTALLATION (SOUTH FACING, RADIATOR CENTRAL HEATING).

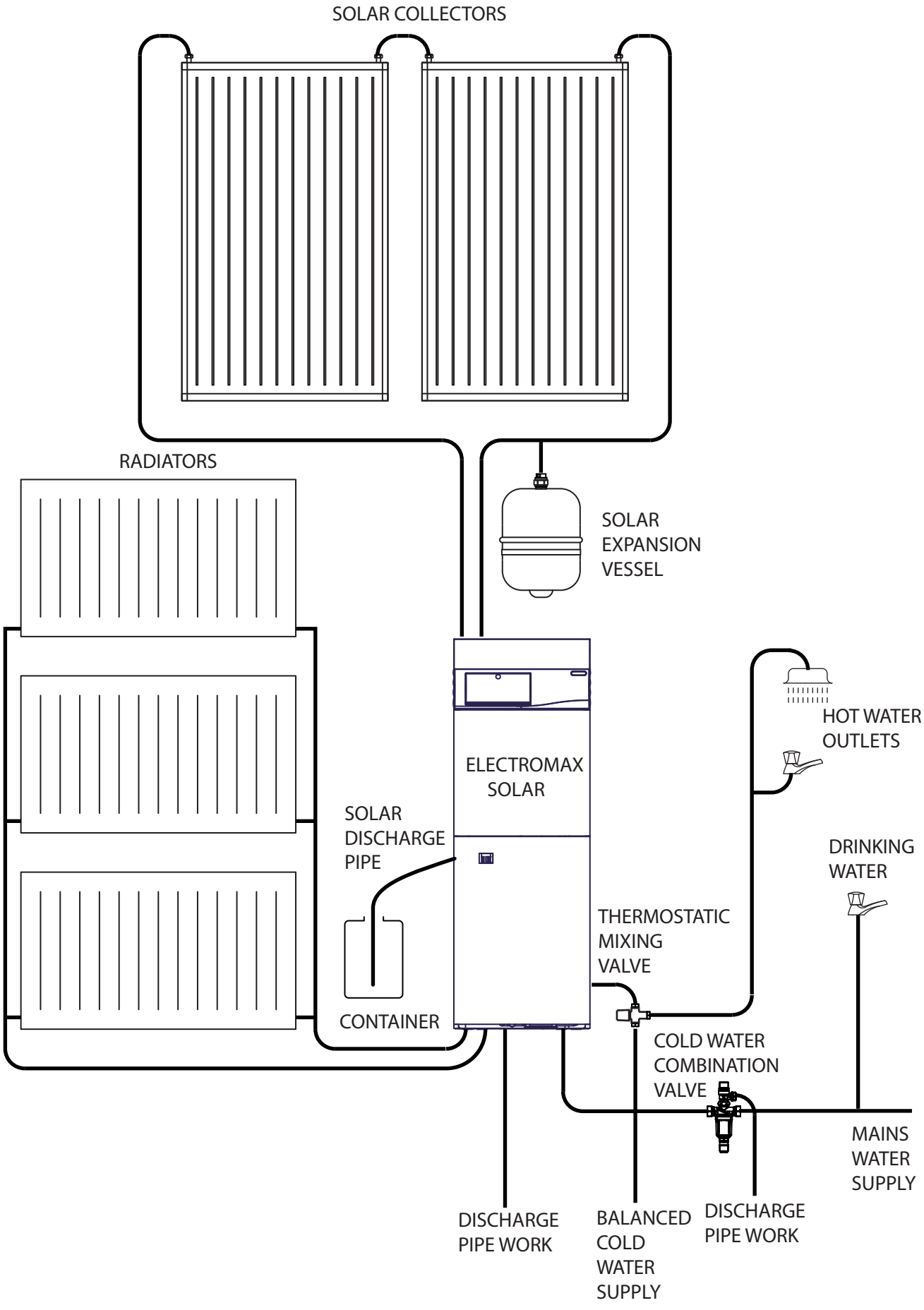
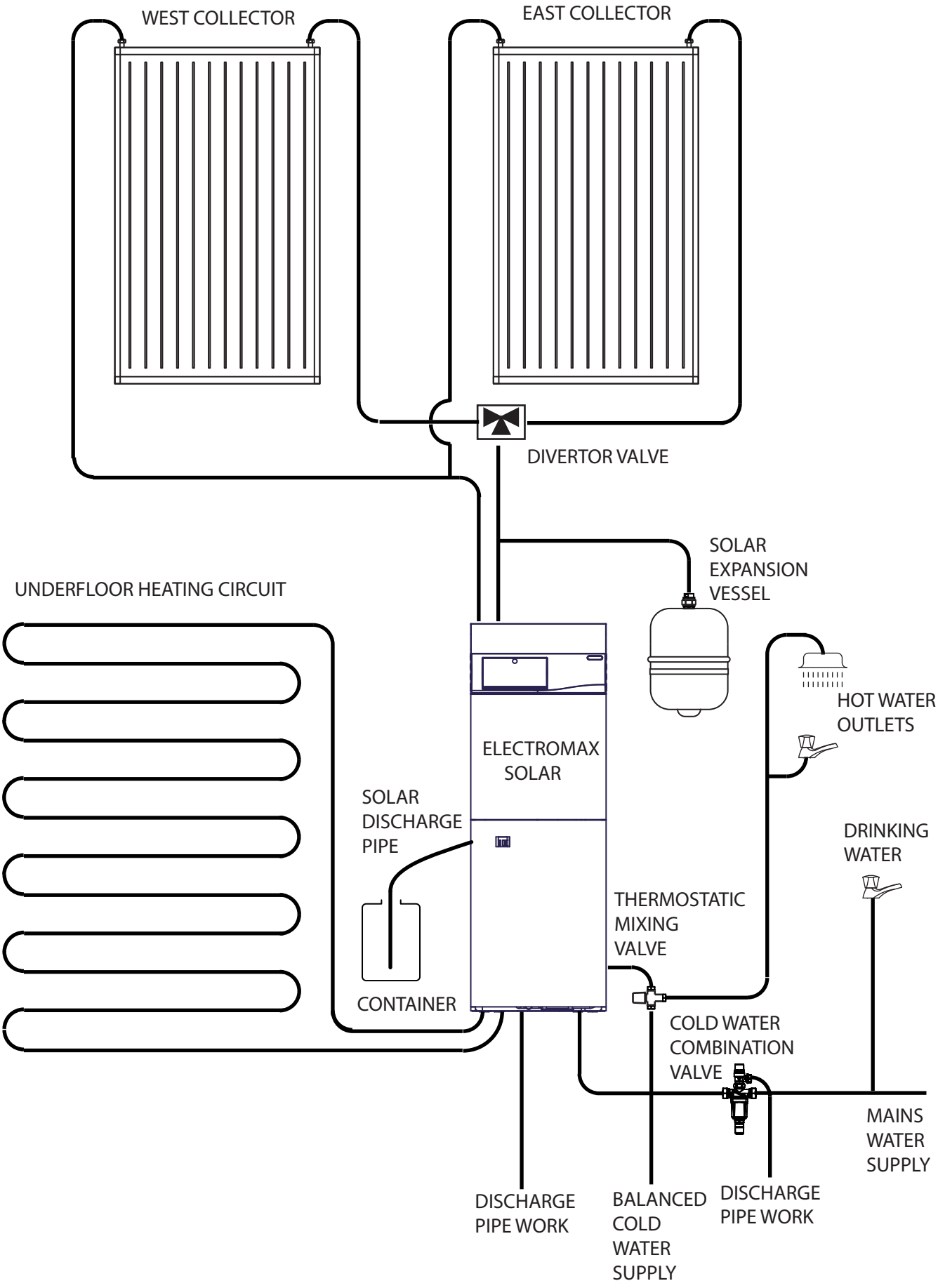


FIGURE 02: ELECTROMAX SOLAR INSTALLATION (EAST WEST ARRAY, UNDERFLOOR CENTRAL HEATING).



2.0 INSTALLATION & HAND OVER

When your Electromax Solar was installed the installer should have fully commissioned the system and left it in working order. Any panels or covers should have been replaced and secured. Following this the system, its function and control should have been explained inlcuding:

2.1 ELECTROMAX SOLAR CONTROL PANEL

1. How the control cover is opened and closed.
2. The function of the switches and indicators.

2.2 DOMESTIC HOT WATER

1. How the whole cylinder is heated when there is sufficient solar energy.
2. How part of the cylinder is heated by the lower immersion heater if sufficient solar energy is not available.
3. The one hour boost immersion heater is operation.

2.3 CENTRAL HEATING

1. How the central heating system works.
2. How the programmable room thermostat is operated, how it has been set, and how it can be over-ridden if required

2.4 SYSTEM MALFUNCTION

1. How to isolate electrical and water supplies in the case of a system fault.
2. A qualified plumber and or electrician should be contacted if there is a system fault.
3. How to identify / check for basic system faults:

- Hot water temperature
- Central heating temperature
- Pressure relief valve discharge
- Solar and central heating system pressures
- Electric boiler alarm indicator
- Solar controller alarm indicator

2.5 SYSTEM MAINTENANCE

1. Regular maintenance of the Electromax Solar will ensure its continued safe and efficient operation.

2.6 LITERATURE

Hand over of the following literature:

- Electromax Solar installation instructions
- Electromax Solar collector installation instructions
- Electromax Solar user instructions
- Programmable room thermostat instructions

This user guide further explains a number of the above points and should be retained as a reminder of how to operate and look after the Electromax Solar for trouble free operation. If you are in any doubt, please ask your installer for clarification or contact Heatrae Sadia Heating. Useful contact numbers are listed on the back of this leaflet.

3.0 HOW YOUR ELECTROMAX SOLAR WORKS

The Electromax Solar, when combined with an Electromax Solar Collector kit, comprises all the principle components to provide:

- An efficient solar water heating system
- An electric back up water heating system
- An electric heated wet central heating system

3.1 HOT WATER

The Electromax Solar has an unvented domestic hot water storage cylinder, manufactured from Duplex stainless steel and insulated with polyurethane foam, which gives the benefit of high pressure water to all hot water taps and outlets connected to the Electromax Solar. It requires no cold water cistern, flow from the hot outlets is governed by the mains water pressure.

The primary heat source for the domestic hot water is solar energy. The sun's energy is captured by a series of solar collector panels (supplied separately) through which a special heat transfer fluid is pumped. As the fluid passes through the collector panels its temperature is raised. The heated fluid is circulated through a heat exchanger coil in the base of the hot water storage cylinder transferring the heat gained to the stored water, gradually raising its temperature. The cooled fluid then returns to the collector panel to be heated again.

In the UK a well designed solar system has the potential to deliver up to 60% of a dwellings hot water requirement from solar energy, however this energy is not received uniformly throughout the year (70% of the UK annual radiation is received over the period April to September and 25% is received in the months of June and July).

The Electromax Solar also has two 3kW immersion heaters: a lower immersion heater to supplement the solar energy for periods of low solar gain, and an upper immersion heater to provide a one hour boost. The lower immersion heater is typically connected to an economy tariff. The upper 'boost, immersion heater is connected to a 24 hour electrical supply and can be used at any time.

Temperature control of the hot water is provided by factory fitted thermostats (immersion heaters) and electronic control (solar circuit), the temperature may be adjusted between 10 - 70°C by your installer. It is recommended that the temperature of the stored water is set to 60°C to avoid legionella risk, and blended down at the outlet to avoid risk of scalding.

A solar rated thermostatic mixing valve (supplied) should be plumbed to the Electromax Solar hot outlet to ensure excessive temperatures are not reached at hot outlets in case of fault conditions. The solar rated thermostatic mixing valve can be set between30 - 65 °C.

It is recommended that the solar rated thermostatic mixing valve is set at 60°C to allow water for dishwashing and that further TMV's are installed in the hot water system to blend water down to lower temperatures for handwash and showers (41°C), bathing (44-46°C), and bi-dets (38°C).

3.2 CENTRAL HEATING

The Electromax Solar has a wet, sealed, central heating primary circuit suitable for connection to radiators or underfloor manifolds depending on the model purchased. The central heating circuit is separate to the domestic hot water system.

The heat source is a 9kW electric flow type boiler which provides heat to the water pumped around the radiator, or underfloor circuit in your property. All necessary safety and functional controls are factory fitted.

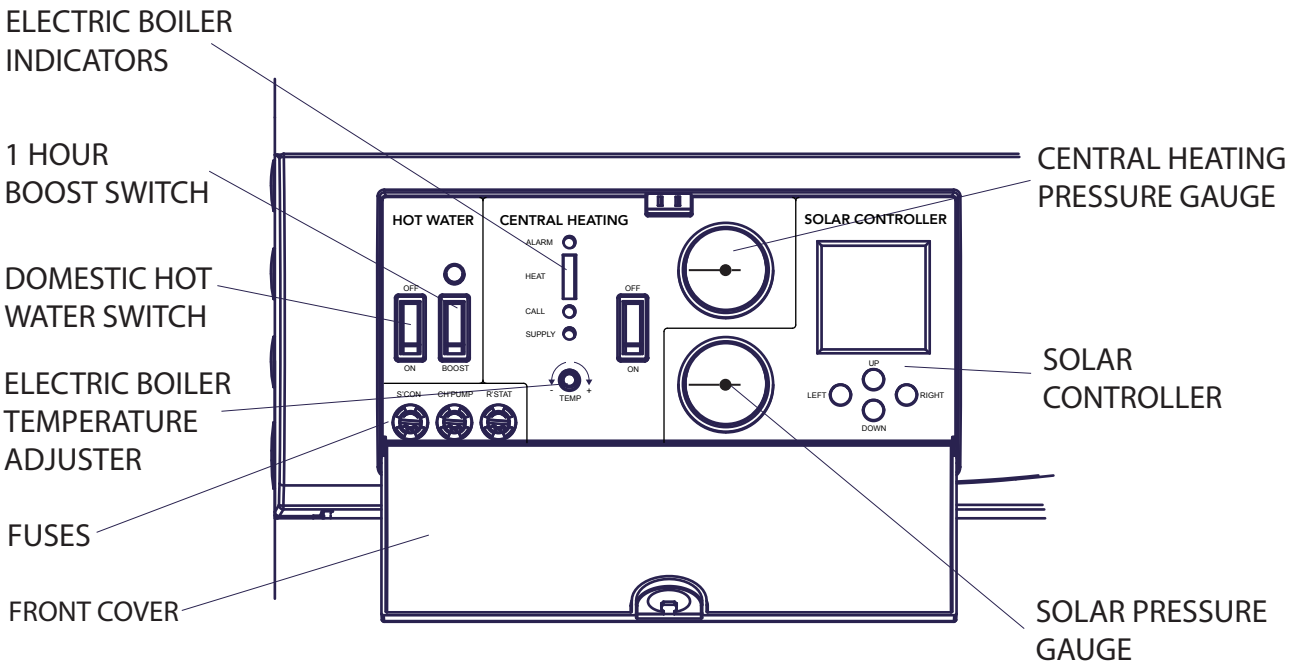
Temperature control of the central heating system is provided by a programmable room thermostat which will be sited remotely from the Electromax Solar. It may be used in conjunction with thermostatic radiator valves (TRV's) which control the temperature of individual rooms, however a TRV must not be placed on the radiator in the room where the programmable room thermostat is located.

When the programmable room thermostat is in a heating period and the room temperature is below that set, it will switch on the Electromax Solar electric boiler to heat the radiators, or underfloor heating circuit, and raise the room temperature.

The central heating circuit operates independently to the domestic hot water system which allows the electric boiler to be switched off during summer months without affecting the hot water performance.

4.0 ELECTROMAX SOLAR CONTROL FUNCTIONS

FIGURE 03: ELECTROMAX SOLAR CONTROL PANEL



4.1 COVER

The Electromax Solar Controls are housed behind a protective front cover. To open the cover, press the finger recess (top middle) lightly and allow the cover to drop forward.

4.2 DOMESTIC HOT WATER “ON” SWITCH

Switches on the electrical supply to the water heater. When in the “ON” position the switch is illuminated. With the switch in the “ON” position the water heater will heat up whenever an “Off-Peak” electrical supply period is available.

4.3 HOT WATER “BOOST” SWITCH AND INDICATOR

Switches on the electrical supply to the “Boost” element when pressed. NOTE: the switch does not latch in the “ON” position. When the supply to the “Boost” element is switched on the indicator will illuminate. The “boost” is timed to operate for a maximum of one hour, this is sufficient time to fully reheat a smaller “boost” volume of water. The “Boost” element cannot be switched on if the Hot Water “ON” switch is in the “OFF” position.

4.4 CENTRAL HEATING “ON” SWITCH

Switches on the electrical supply to the boiler to provide central heating. When in the “ON” position the switch is illuminated. With the switch in the “ON” position the operation of the boiler will be controlled by the times set on the programmable room thermostat.

4.5 ELECTRIC BOILER INDICATOR - SUPPLY

This will illuminate green to indicate there is mains supply to the electric boiler.

4.6 ELECTRIC BOILER INDICATOR - CALL

When illuminated GREEN this indicates that there is a heating demand for the central heating from the Programmable Room Thermostat. It will flash for approximately 2 to 3 minutes whilst the boiler undergoes a series of self diagnostic tests. When the indicator glows steady green it indicates that the boiler is heating.

When flashing RED at the same time as the ALARM indicator it indicates that there has been an over-heat fault on the system.

4.7 ELECTRIC BOILER INDICATOR - HEAT

This will illuminate GREEN as the boiler produces heat. It will show the degree of heat being applied and will only be fully illuminated when the boiler is on full power output. As the boiler adjusts its power output to the heating demand (modulating) the indicator will alter in intensity.

4.8 ELECTRIC BOILER INDICATOR - ALARM

This indicator will flash RED when there is a problem with the boiler. If flashing alone there is a water flow problem, if flashing at the same time as the CALL indicator flashes RED there is an over-heat problem.

The boiler will not operate until the problem has been rectified and reset. Contact your installer or our service team on 0844 8711535 if a fault ALARM occurs.

4.9 ELECTRIC BOILER - TEMPERATURE

This adjuster alters the electric boiler flow temperature. It will normally have been set to its optimum position during installation. At its minimum position (- fully anti clockwise) the boiler flow temperature is set at 65°C; at its maximum position (+ fully clockwise) the boiler flow temperature is set at 80°C.

4.10 CENTRAL HEATING PRESSURE GAUGE

This will show the pressure in the heating system. The minimum system pressure should be 1.0 bar. If lower than this figure the system may have a leak or have discharged water from the safety valve due to a fault. This will need to be investigated, rectified and the system re-pressurised. The maximum system pressure is 3 bar. If when heating the indicator needle on the gauge approaches the 3 bar mark this will indicate that the system is overpressurising. The reason for this should be investigated and rectified.

In normal operation the system pressure should be between 1 bar and 2.5 bar. Any under or over-pressurisation problem should be investigated by a competent installer or service engineer.

4.11 SOLAR PRESSURE GAUGE

This will show the pressure in the solar system. The minimum system pressure should be 1.5 bar. If lower than this figure the system may have a leak or have discharged fluid from the safety valve due to a fault. This will need to be investigated, rectified and the system re-pressurised. The maximum system pressure is 6 bar. If when heating the indicator needle on the gauge approaches the 6 bar mark this will indicate that the system is over-pressurising. The reason for this should be investigated and rectified.

Any under or over-pressurisation problem should be investigated by a competent installer or service engineer.

4.12 SOLAR CONTROLLER

The solar controller incorporates a micro processor based temperature controller which contains many functions to regulate and monitor the solar primary system, this includes:

- Functions for heating the solar cylinder
- Functions to monitor the solar system
- Functions to protect the solar system

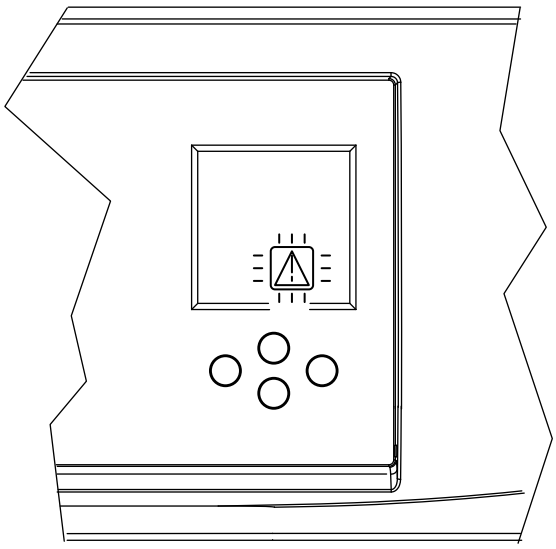
The solar controller is pre set at the factory and should require no adjustment.

Section 4.8 of the Electromax Solar installation instructions gives details of the solar controller menu functions.

Adjustment of the solar controller should only be carried out by a competent installer or service engineer.

A warning triangle (see figure 04) will flash if there is a problem with the solar primary system. Contact your installer or our service team if the warning triangle flashes.

FIGURE 04: SOLAR WARNING INDICATOR

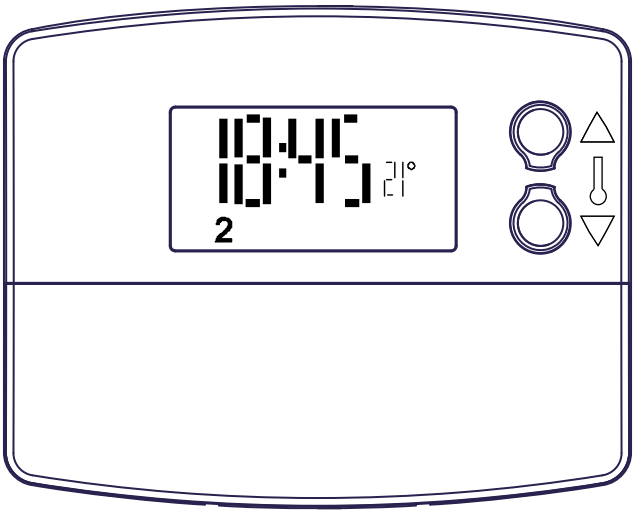


5.0 PROGRAMMABLE ROOM THERMOSTAT

Overall control of the Central Heating will be performed by the Programmable Room Thermostat.

The device supplied with the Electromax Solar is a Danfoss TP5000 Si and is supplied with its own Installation Instructions. Its basic functions are described below, refer to the Danfoss leaflet for further details.

FIGURE 05: PROGRAMMABLE ROOM THERMOSTAT



5.1 PROGRAMME SETTINGS

Your installer should have set the programmer to give suitable time and temperature control of your central heating. These settings should, wherever possible, take advantage of any day time “Off-Peak” electricity supply periods. It can be programmed to give 6 time and temperature events each day. One set of times can be set for weekdays and another for weekends.

The unit is a “temperature set back” programmer. This means that when you do not want the heating to be on, a lower “set back” temperature is programmed. Rather than completely turning the boiler off during these periods, if the lower “set back” temperature is reached the boiler will switch on to maintain the temperature at this lower point until the next heating time period is reached.

5.2 SETTING THE CLOCK AND DAY

1. Open the front flap on the front of the programmer. Press the + and - and the ▲ and ▼ buttons simultaneously to reset the programmer to the factory settings. The time will show 12:00 and day 1 will be indicated.
2. Press the PROG button.
3. Using the + and – buttons adjust the time to the correct time of day. (Holding the buttons down will change the time in 10 minute increments).
4. Press PROG again.
5. Using the + and – buttons until the correct day is shown (1 = Monday, 2 = Tuesday, etc.).

5.3 SETTING THE PROGRAMMES (DAYS 1 TO 5 – WEEKDAYS)

1. Press PROG until the first pre-set time and temperature (Event 1 Days 1, 2, 3, 4, 5) shows in the display
2. Using the + and – buttons adjust the time until the required start time is selected.
3. Using the ▲ and ▼ buttons adjust the temperature required for the first event.
4. Press PROG to move to the next pre-set time and temperature (Event 2).
5. Repeat the steps in 2, 3 & 4 to set the required times and temperatures for each Event (up to six are possible). Note: to retain the pre-set time and temperature just press PROG again to move to the next event.

5.4 SETTING THE PROGRAMMES (DAYS 6 & 7 - WEEKENDS)

1. Press PROG until the first pre-set time and temperature for the weekend (Event 1 Days 6 – 7) shows in the display.
2. Using the + and – buttons adjust the time until the required start time is selected.
3. Using the ▲ and ▼ buttons adjust the temperature required for the first event.
4. Press PROG to move to the next pre-set time and temperature (Event 2).
5. Repeat the steps in 2, 3 & 4 to set the required times and temperatures for each Event (up to six are possible). Note: to retain the pre-set time and temperature just press PROG again to move to the next event.

5.5 RUNNING THE PROGRAMMES

1. When all events have been programmed press PROG again.
2. The colon (:) in the display will begin to flash. The central heating will now be controlled by the on/off times and set temperatures.

5.6 OTHER FUNCTIONS

Other functions are available on the programmer such as time and temperature over-rides, different display modes, temporary use of weekend settings during weekdays and a frost protection mode. Details of how to select these can be found in the instruction booklet supplied with the Danfoss TP 5000Si programmable room thermostat.

5.7 BATTERY REPLACEMENT

When the batteries are low a battery symbol will flash on the display. You will then have 15 days to replace the battery before the unit will switch off. If the batteries are not replaced the display will go blank and any programmed settings will be lost. Your central heating will not work if the programmable room thermostat loses power.

When changing the batteries remove the old batteries and replace them with new ones within one minute to ensure your programmed settings are retained. If left for longer programmed settings will be lost and will need to be reset when battery power is restored.

Only use high quality alkaline batteries. The unit uses two AA/MN1500/LR type batteries. Ensure the batteries are installed correctly (+ to + and - to -).

6.0 THINGS TO BE AWARE OF

6.1 DOMESTIC HOT WATER

Water which is left standing in a stainless steel water cylinder for long periods without draw off will become de-oxygenated and potentially corrode the vessel material. If the Electromax Solar is to be left unused for long periods of time the water cylinder should be drained or regularly (once per week) flushed through with fresh mains water.

6.2 SOLAR CIRCUIT

The Electromax Solar Solar primary circuit incorporates a pressure relief valve.

Pipework to safely convey discharged fluid to a suitable container should have been installed and some fluid should have been left in the bottom of the container. DO NOT remove the discharge pipework, the container or the fluid.

The Solar system pressure gauge (see figure 03) will indicate the actual pressure within the solar primary circuit. When the system is cold this should read between 1.5 - 2.2 bar. As the solar fluid is heated by the sun during the day the system pressure will rise.

If fluid or vapour is discharged from the solar pressure relief valve, switch off the power supply to the Electromax Solar Controller and contact a competent installer or service engineer.

The pipework between the solar collector(s) and the Electromax Solar can be very hot. These pipes should have been insulated by the installer. This is high temperature insulation.

If the electrical supply for the Electromax Solar is interrupted the solar controller will not operate, however, programme settings are stored by the controller and will automatically re set when power is restored.

6.3 SAFETY VALVE DISCHARGE

The Electromax Solar incorporates a factory fitted temperature and pressure relief valve on the domestic hot water cylinder and a factory fitted pressure relief valve on the central heating primary circuit.

The Electromax Solar will also include a cold water combination valve in the mains water supply. The cold water combination valve incorporates a pressure relief valve. The cold water combination valve may be sited remotely from the Electromax Solar.

There is a viewing window located on the lower front panel of the Electromax Solar through which any discharge from the Temperature and pressure relief valve and central heating pressure relief valve can be safely observed.

The pressure relief valve incorporated into the cold water combination valve should be plumbed to a tundish which should be in an easily accessible and visible location.

If water is seen to discharge from any of the safety valves fitted to the Electromax Solar switch off all power supplies to the Electromax Solar. DO NOT turn off the water supply. Contact a competent installer or service engineer to check the system.

DO NOT tamper with any safety valves fitted to the Electromax system, if a fault is suspected contact a competent installer or service engineer.

Discharged water may be very hot. DO NOT touch discharge pipes when water is flowing through them or place hands or fingers under the discharge water.

If fluid or vapour is discharged from the Pressure Relief Valve on the solar circuit, switch off the power supply to the unit and contact a qualified solar water heating engineer.

The pipework between the solar collector(s) and the Electromax Solar can be very hot. These pipes should have been insulated by the installer. This is high temperature insulation. In the event of damage a competent installer or service engineer.

If the electrical supply for the solar domestic hot water heating system is interrupted it will not operate. However, program settings are stored by the controller and should not need resetting when power is restored.

6.4 CENTRAL HEATING SYSTEM PRESSURE

The Central Heating System Pressure Gauge (see figure 03) will indicate the actual water pressure within the central heating system. When the system is cold the pressure should be between 1.0 and 1.5 bar. On switching on the heating a small drop in system pressure may be noted, but the pressure will then rise as the system heats up. When fully hot the system pressure may be up to 2.5 bar.

If the system pressure drops below 1.0 bar it will require topping up. To do this first turn off the electrical supply to the Electromax Solar.

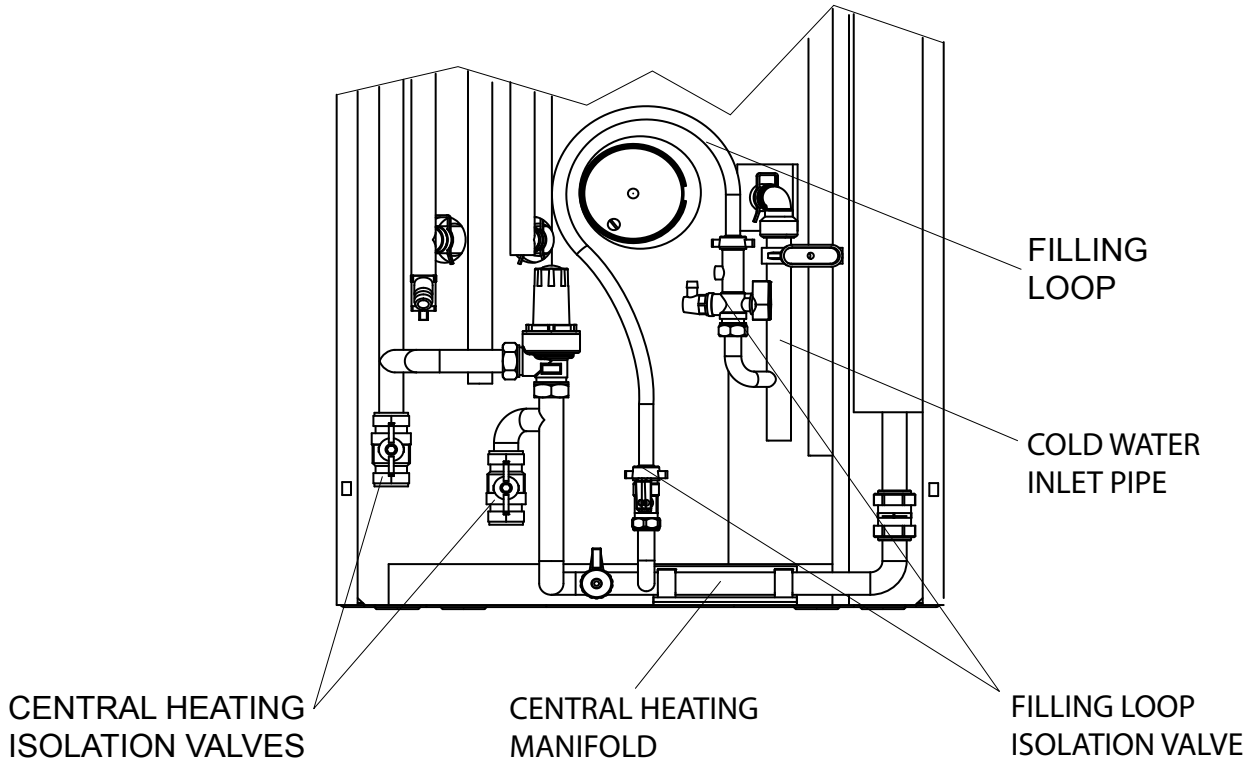
DO NOT REMOVE ANY COVERS UNLESS THE ELECTRICAL SUPPLY IS ISOLATED – AN ELECTRIC SHOCK HAZARD MAY OCCUR.

Pull the lower front panel forward using the finger holds in the sides of the panel. Connect the Filling Loop. Open the Filling Loop Isolating Valves and allow system to re-pressurize to between 1.0 and 1.5 bar. Close the Isolating Valves, disconnect the Filling Loop and refit lower front panel.

If regular topping up is required it may indicate a fault or a leak within the system – contact a competent installer or service engineer to check.

Severe loss of pressure may result in the boiler entering an ALARM mode. If this happens the boiler will need to be reset. This should only be done by a competent installer or service engineer, following the rectification of the fault.

FIGURE 06: CENTRAL HEATING CONNECTIONS



6.4 FROST PROTECTION

If you are leaving your home un-occupied during colder periods it is possible to stop the Electromax Solar heating the home unnecessarily, but protect it if the temperature falls to a very low level for any length of time. This is done by leaving the Central Heating “On” switch in the on position (illuminated green) and over-riding the normal programmes on the Programmable Room Thermostat.

To do this press the ▲ and ▼ buttons together twice. The time indication will disappear and the colon flash. Press the button until 5° and a snowflake symbol are shown to the right of the flashing colon. In this mode the central heating will be turned on if the room temperature drops below 5°C.

To return the Programmable Room Thermostat to your programmed times and temperatures press the ▲ and ▼ buttons together again.

6.5 CLEANING

The outer casing can be wiped down with a damp cloth to remove any marks. Do not use abrasive cleaning agents as they may damage the finish of the outer casing.

6.6 PROGRAMMABLE ROOM THERMOSTAT

The Programmable Room Thermostat supplied with the Electromax Solar is manufactured by Danfoss. The User Instructions provided with this control should be followed.

6.7 OTHER CONTROLS

Other controls may have been fitted to your system during installation, for example Thermostatic Radiator Valves. Instructions for use of these controls should have been provided by the installer.

7.0 IN AN EMERGENCY

Your Electromax Solar should give you trouble free operation, however should a fault occur the following steps will render it safe until the problem is resolved by a competent installer or service engineer.

7.1 ELECTRICITY

Should an electrical supply fault be suspected all electrical supplies to the Electromax Solar should be switched off.

Within the electrical supplies to the unit should be a number of isolating switches, the location of these should have been pointed out to you by your installer on hand-over.

The electrical supplies should also be switched off at the consumer unit Mains Circuit Breakers.

7.2 WATER SUPPLY

If a cold water pipe supplying the Electromax Solar or a hot water pipe connected to the unit starts to leak turn off the “Hot Water” switch (green switch not illuminated) and turn off the mains water supply to the Electromax Solar. Collect any water leakage in a suitable container.

7.3 CENTRAL HEATING SYSTEM

If a radiator, any part of the underfloor heating pipework, central heating pipe or the boiler starts leaking turn the Central Heating switch to the “Off” position (green switch not illuminated).

Open the lower front panel of the Electromax Solar and turn the central heating isolating valves to the off position. This will minimize the loss of water from the system.

8.0 TIPS FOR ECONOMICAL USE

8.1 HOT WATER

Avoid supplying hot water to appliances such as washing machines or dishwashers. It is more economical to install “cold fill” appliances and have them heat the water used to its optimum temperature within the appliance. Even lower running costs can be achieved if these can be programmed to run on “Off-Peak” times.

Avoid excessive use of the Boost element as this will generally not be using “Off-Peak” electricity. Be aware of when the day time “Off-Peak” periods are, as the water heater will automatically reheat during those times if the thermostat is calling for heat. Check with your electricity supplier for details of your tariff. A small adjustment to your useage patterns can have a big influence on your system running costs.

8.2 CENTRAL/ UNDERFLOOR HEATING

Check that the Programmable Room Thermostat is programmed to take advantage of any day time “Off-Peak” electricity periods.

Set the temperature required to a comfortable level, over–heating and consequent over compensation to cool the room temperature wastes power.

Review your central heating times – don’t programme a heating period when the property is unoccupied. The Programmable Room Thermostat has various over-ride functions that can be useful if the normal programmed periods are not required.

Lower the boiler flow temperature (see section 4.9, page 10) to give adequate heating to maintain comfort levels.

If not already provided, fit Thermostatic Radiator Valves (TRV’s) to radiators in rooms other than where the Programmable Room Thermostat is fitted. Set an appropriate temperature for each room, for example bedrooms should have a lower temperature than living areas.

HEATRAE SADIA

The quality name in water heating

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