



## Combined Electric Flow Boiler and Direct Unvented Water Heater

## USER'S INSTRUCTIONS

### 1.0 INSTALLATION AND HAND OVER

When your Electromax 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 he should have explained the system, its function and control including:

- a. DHW supply –  
Explained how the complete cylinder is only heated by Off-Peak electricity.  
Explained how a one hour DHW boost can be obtained if a day time top up is required.
- b. Central Heating –  
Explained how the central heating system works.  
Explained the operation of the Programmable Room Thermostat and the settings that have been programmed.  
Explained how the Programmable Room Thermostat can be overridden if required.
- c. System malfunction –  
Explained what to do if the system malfunctions or the "Alarm" indicators are illuminated.  
Explained how to isolate the electrical supplies or water supply in the event of a system fault.
- d. System maintenance –  
Explained the necessity for the system to receive regular maintenance to ensure its continued safe and efficient operation.
- e. Literature –  
Handed over the Electromax Installation Instructions and the Danfoss TP 5000 Installation and User Instructions.

The following leaflet further explains a number of the above points and should be retained as a reminder of how to operate the Electromax models and look after the system 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 page 7 of this leaflet.

### 2.0 HOW YOUR ELECTROMAX WORKS

#### 2.1 General description

The Electromax is a combined electric central heating boiler and unvented storage water heater. The electric boiler provides heat to the water that is pumped around the radiators / underfloor heating system in your property thus warming it up. The water heater operates independently to the boiler and provides a full tank of domestic hot water heated by Off-Peak electricity. Should this hot water store be fully used a "Boost" element is fitted to provide a smaller quantity of water in a shorter time. This can be used any time needed as it works off a 24 hour electrical supply.

#### 2.2 Control of the central heating

The central heating operating times and temperatures are controlled by the Programmable Room Thermostat which will be sited remotely from the Electromax. 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 boiler to heat the radiators and raise the room temperature.

### 2.3 Central & Underflooring Heating

The Electromax boiler works as part of a “sealed” pressurized central heating system. The unit is fitted with a pressure gauge which will indicate the operating pressure of the system. Within the unit all necessary safety and functional controls are factory fitted.

The boiler is fitted with a sophisticated electronic control which will adjust the heat input to the water circulated around the radiators to maintain them at an optimum temperature. Safety functions will shut the boiler down in the unlikely event of a fault.

### 2.4 Hot water

The water heater fitted in the Electromax is an unvented cylinder which gives the benefit of high pressure water to all hot taps and outlets connected to the unit. It requires no cold water feed cistern, flow from the hot outlets is governed by the mains water pressure.

The bulk of the hot water will be heated by cheaper “Off-Peak” electricity. This will generally happen over night to give a full tank of hot water for use during the day. If the hot water store is fully used a “Boost” element is provided to heat a smaller quantity of water in a quicker time, typically in less than an hour.

The water heating function operates independently of the central heating boiler so the boiler can be switched off during summer months without affecting the hot water performance.

## 3.0 ELECTROMAX CONTROL FUNCTIONS

Refer to Diagram 1 to help you identify the various features and functions of the Electromax controls panel.

### 3.1 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.

### 3.2 Hot Water “Boost” switch and indicator +1 hour

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.

### 3.3 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.

### 3.4 Boiler Status Display

#### **DEMAND / OVERHEAT**

When illuminated GREEN this indicator 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.

**HEAT** 

This indicator will illuminate GREEN as the boiler produces heat. It will show the degree of heat being applied, it 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.

**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 DEMAND/OVERHEAT 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 Heatrae Sadia Service Department if a fault ALARM occurs.

**FLOW TEMP** 

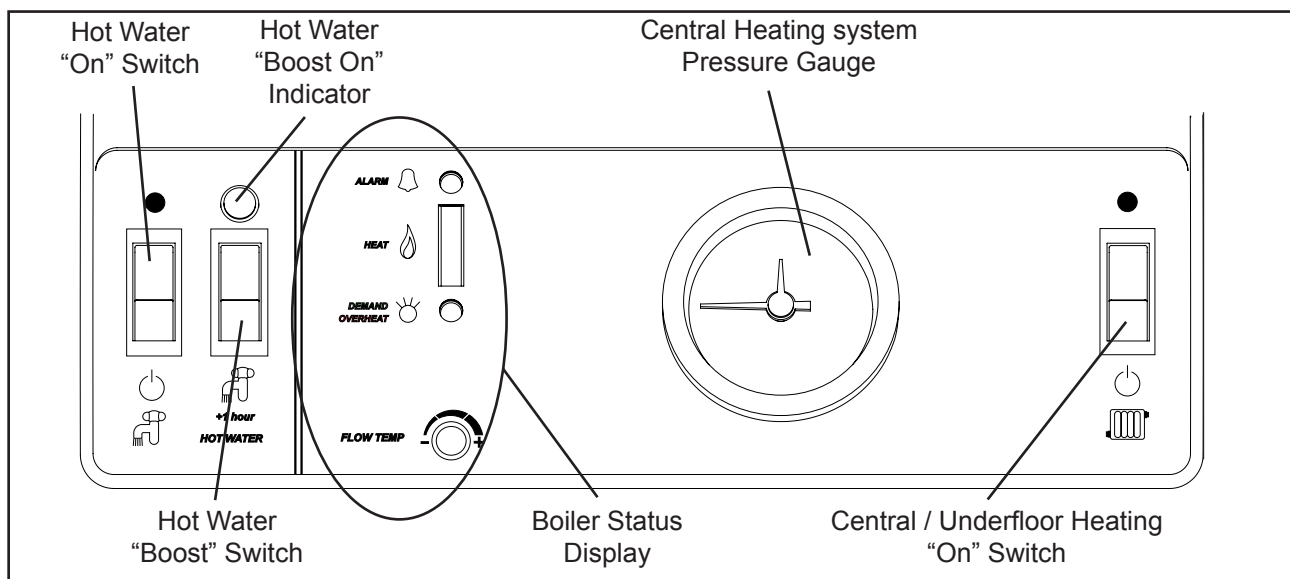
This adjuster alters the boiler flow temperature. It will normally have been set to its optimum position during installation. At its minimum position (- fully anticlockwise) the boiler flow temperature is set at 65°C; at its maximum position (+ fully clockwise) the boiler flow temperature is set at 80°C.

**3.5 Central Heating System 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 over-pressurising. 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.

**Diagram 1 - Radiator Heating model pictured**



## 4.0 PROGRAMMABLE ROOM THERMOSTAT

Overall control of the Central Heating will be performed by the Programmable Room Thermostat. The device supplied with the Electromax is manufactured by Danfoss and is supplied with its own Installation Instructions. Its basic functions are described below, refer to the Danfoss leaflet for further details.

### 4.1 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.

### 4.2 Altering programmes

#### 4.2.1 Setting the Clock and Day

- a) Open the front flap on the front of the programmer. Press the + & - and the ▲ & ▼ buttons simultaneously to reset the programmer to the factory settings. The time will show 12:00 and day 1 will be indicated.
- b) Press the **PROG** button.
- c) 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).
- d) Press **PROG** again.
- e) Using the + and – buttons until the correct day is shown (1 = Monday, 2 = Tuesday, etc.).

#### 4.2.2 Setting the programmes (Days 1 to 5 – weekdays)

- a) Press **PROG** until the first pre-set time and temperature (Event 1 Days 1,2,3,4,5) shows in the display
- b) Using the + and – buttons adjust the time until the required start time is selected.
- c) Using the ▲ and ▼ buttons adjust the temperature required for the first event.
- d) Press **PROG** to move to the next pre-set time and temperature (Event 2).
- e) Repeat the steps in b), c) and d) 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.

#### 4.2.3 Setting the programmes (Days 6 & 7 - weekends)

- a) Press **PROG** until the first pre-set time and temperature for the weekend (Event 1 Days 6 – 7) shows in the display.
- b) Using the + and – buttons adjust the time until the required start time is selected.
- c) Using the ▲ and ▼ buttons adjust the temperature required for the first event.
- d) Press **PROG** to move to the next pre-set time and temperature (Event 2).

- e) Repeat the steps in b), c) and d) 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.

#### 4.2.4 Running the programmes

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

#### 4.2.5 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 5000 programmable room thermostat.

#### 4.2.6 Battery Replacement

When the batteries get 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 +, - to - ).

## 5.0 THINGS TO BE AWARE OF

### 5.1 System Pressure

The Central Heating System Pressure Gauge (see Diagram 1) 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. **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.

## 5.2 Frost protection

If you are leaving your home un-occupied during colder periods it is possible to stop the Electromax 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.

## 5.3 Safety Valve discharge

There is a viewing window located on the upper front panel of the Electromax through which any discharge from the safety valves can be observed. **If water is seen to discharge from any of the safety valves fitted to the Electromax switch off the Water Heater and the Central Heating boiler. 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.**

## 5.4 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 casing parts.

## 5.5 Programmable Room Thermostat

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

## 5.6 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.

## 6.0 IN AN EMERGENCY

**The following steps will not rectify any faults that have caused the product to malfunction, but will render it safe until the problem is resolved by a competent installer or service engineer.**

### 6.1 Electricity

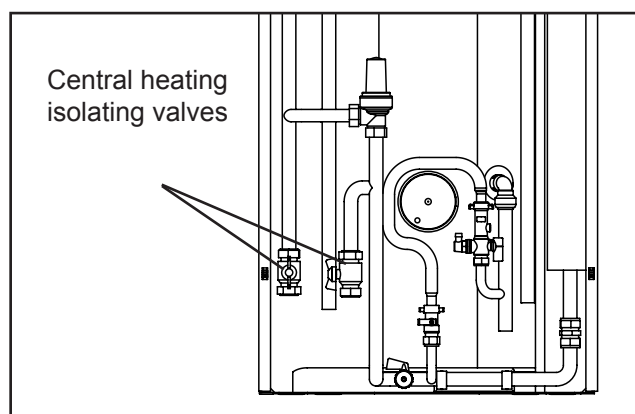
Should an electrical supply fault be suspected all electrical supplies to the Electromax should be switched off. Within the electrical supplies to the unit should be a number of isolating switches, the location of these should have been pointed out to you by your installer on hand-over.

The electrical supplies should also be switched off at the consumer unit Mains Circuit Breakers (MCB's).

**Never open the casing to the unit without first disconnecting ALL electrical supplies to the unit.**

## 6.2 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 and turn the central heating isolating valves (see Diagram below) to the off position. This will minimize the loss of water from the system.



## 6.3 Water Supply

If a cold water pipe supplying the Electromax 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. Collect any water leakage in a suitable container. **Note: this water may be very hot, take suitable precautions.**

## 7.0 CONTACTS

When contacting Heatrae Sadia Heating please have the Serial Number and Model Name to hand. This will aid us in dealing with your query. This information can be found on the data label located on the front face of the water heater insulation and can be seen when the front panels are removed. **DISCONNECT ALL ELECTRICAL SUPPLIES WHEN REMOVING ANY COVERS.**

### ADDRESS

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Norwich  
Norfolk  
UK  
NR6 6EA

### SWITCHBOARD

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### LITERATURE

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E-mail: [sales@heatraesadia.com](mailto:sales@heatraesadia.com)

### SERVICE

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### SPECIFIER

Tel: 01603 420220

Fax: 01603 420229

## 8.0 TIPS FOR ECONOMIC USE OF THE SYSTEM

### 8.1 Central/ Underfloor heating

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

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 Electromax Controls section) to give adequate heating to maintain comfort levels.

### 8.1.2. Central heating only

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 the room use, for example bedrooms should have a lower temperature than living areas.

### 8.2 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 your electricity supply bill for details of your tariff and then refer to the Table below. A small adjustment to your lifestyle patterns can have a big influence on your system running costs.

ECONOMY 10 PROVIDERS				
Electricity Supplier	Off-Peak Times			GMT or Clock
Midlands	midnight - 5.00am	1.00 - 4.00pm	8.00 - 10.00pm	GMT
Norweb	midnight - 5.00am	1.00 - 4.00pm	8.00 - 10.00pm	GMT
Southern	midnight - 5.00am	1.00 - 4.00pm	8.00 - 10.00pm	GMT
South Wales	midnight - 5.00am	1.00 - 4.00pm	8.00 - 10.00pm	GMT
South Western	midnight - 5.00am	1.00 - 4.00pm	8.00 - 10.00pm	GMT
Yorkshire	midnight - 5.00am	1.00 - 4.00pm	8.00 - 10.00pm	GMT
Scottish Hydro	4.30 - 7.30am	1.00 - 4.00pm	8.30 - 12.30pm	Clock
Manweb	4.30 - 7.30am	1.00 - 4.00pm	8.30 - 12.30pm	Clock

The pace of product development is such that we reserve the right to change product specifications without notice. We do, however, strive to ensure that all information in this leaflet is accurate at the time of publication. Electricity tariff information is compiled from a number of different energy suppliers and may be subject to change.