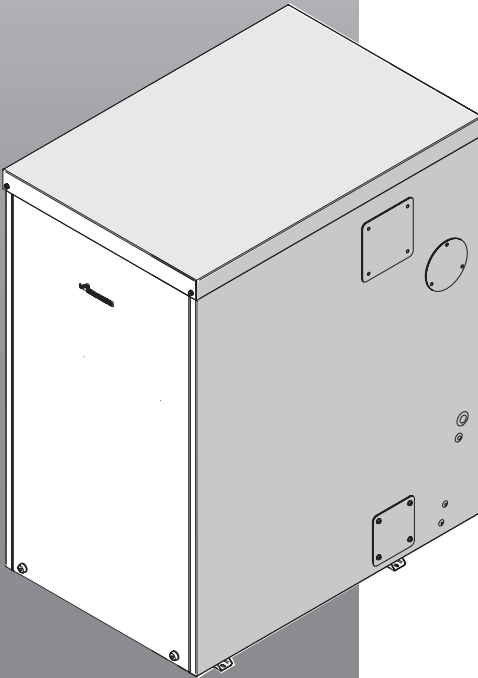


**USER INSTRUCTIONS & CUSTOMER CARE GUIDE**  
**EXTERNAL OIL FIRED CONDENSING BOILER**  
**USING BALANCED FLUE SYSTEM**

**GREENSTAR CAMRAY EXTERNAL &**  
**EXTERNAL SYSTEM12/18, 18/25, 25/32**

**FOR OPEN VENT AND SEALED CENTRAL HEATING SYSTEMS WITH**  
**DOMESTIC MAINS FED HOT WATER**



**THE BOILER IS FOR USE WITH**  
**KEROSENE (28 SECOND OIL) ONLY**

UK

**WORCESTER**  
Bosch Group

## CONTACT INFORMATION

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### Worcester, Bosch Group:

#### Service call centres:

UK TEL: 08457 256206  
FAX: 08457 757536

SCOTLAND ONLY FAX: 01506 441687

Other enquiries: TEL: FAX:  
MAIN RECEPTION: 01905 754624 754619  
TECHNICAL: 08705 266241  
LITERATURE: 01905 752556  
SALES: 01905 752640  
WEBSITE: [www.worcester-bosch.co.uk](http://www.worcester-bosch.co.uk)

#### WATER TREATMENT:

FERNOX 01799 550811

[www.fernox.com](http://www.fernox.com)

SENTINEL 0800 389 4670

[www.sentinel-solutions.net](http://www.sentinel-solutions.net)

#### FLUE TERMINAL GUARDS:

WORCESTER, BOSCH GROUP

#### OIL FIRING TECHNICAL ASSOCIATION:

OFTEC 0845 6585080

[www.oftec.org](http://www.oftec.org)

## USER INSTRUCTIONS & CUSTOMER CARE GUIDE

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### PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE OPERATING YOUR APPLIANCE.

THESE INSTRUCTIONS ARE APPLICABLE TO THE WORCESTER, BOSCH GROUP APPLIANCE MODEL(S) STATED ON THE FRONT COVER OF THIS MANUAL ONLY AND MUST NOT BE USED WITH ANY OTHER MAKE OR MODEL OF APPLIANCE.

IF YOU ARE IN ANY DOUBT CONTACT THE WORCESTER, BOSCH GROUP TECHNICAL HELPLINE.

PLEASE KEEP THESE INSTRUCTIONS WITH THE INSTALLATION AND SERVICING INSTRUCTIONS IN A SAFE PLACE OR WITH THE APPLIANCE AFTER INSTALLATION OR SERVICING.

### DO NOT INTERFERE WITH ANY SEALED COMPONENTS.

THIS APPLIANCE SHOULD ONLY BE OPERATED BY RESPONSIBLE ADULTS WHO HAVE BEEN INSTRUCTED IN AND UNDERSTAND ITS OPERATION AND ARE AWARE OF ITS OPERATING CONDITIONS AND EFFECTS.

THIS APPLIANCE SHOULD NOT BE OPERATED BY CHILDREN.

#### ABBREVIATIONS:

SEDBUK Seasonal Efficiency for Domestic Boilers in the United Kingdom.

OFTEC Oil Firing Technical Association for the Petroleum Industry.

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INTRODUCTION

USING YOUR  
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ENERGY  
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NOTES

**OIL SMELLS, LEAKS OR FUMES FROM THE APPLIANCE:**

- ▶ Extinguish any naked flames.
- ▶ Switch off the appliance electricity supply.
- ▶ Isolate the fuel supply to the boiler.
- ▶ Contact installer/service engineer.

**HEALTH & SAFETY:**

The appliance contains no asbestos and no substances have been used in the construction process that contravene the COSHH Regulations (Control of Substances Hazardous to Health Regulations 1988). Where applicable, the CE mark indicates compliance with relative EU Directives.

**COMBUSTIBLE AND CORROSIVE MATERIALS:**

**Do not** store or use any combustible materials (paper, thinners, paints etc.) inside or within the vicinity of the appliance.

The combustion air must be kept clear of chemically aggressive substances which can corrode the appliance and invalidate any warranty.

**FITTING & MODIFICATIONS:**

Fitting the appliance and any associated controls may only be carried out by a competent engineer in accordance with the relevant Installation Regulations.

Flue systems must not be modified in any way other than as described in the fitting instructions.

Any misuse or unauthorised modifications to the appliance, flue or associated components and systems will invalidate the warranty. The manufacturer accepts no liability arising from any such actions, excluding statutory rights.

**SAFETY PRECAUTIONS**

**This appliance is suitable for use with kerosene only, no other fuel must be used.**

**SERVICING:**

You must have the system regularly serviced by a competent, qualified OFTEC registered engineer using approved spares, to help maintain the economy, safety and reliability of the appliance.

The appliance should be serviced once each year after installation unless the installation conditions and usage demand more frequent services.

Although the appliance is serviced externally, the engineer will require access to the property to operate the controls.

**DO NOT OPERATE THE APPLIANCE WHEN:**

- ▶ The appliance, flue or system is incorrectly fitted, faulty or damaged.
- ▶ The flue terminal outlet or air inlet is obstructed or damaged.
- ▶ There are fumes, fuel leaks or fuel smells from the fuel supply, appliance or flue system.
- ▶ The system is empty, frozen or unpressurised (sealed systems).
- ▶ The condensate pipe is blocked or restricted.
- ▶ The appliance clearances are inadequate.
- ▶ The air supply is restricted.

## EXCELLENCE COMES AS STANDARD

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Thank you for purchasing a Greenstar Camray oil fired condensing boiler from Worcester, Bosch Group. The company prides itself on manufacturing boilers to the strictest quality control standards throughout every stage of production.

Worcester, Bosch Group has led the field in innovative appliance design and performance for more than 40 years. This heritage means all products are of exceptional quality and proven reliability.

The condensing range, in particular, is extremely energy efficient, converting more of the fuel consumed into heat offering you economical running costs and value for money. It sits in SEBUK band A, at the top of the energy rated appliances available.

There is also the assurance of our no-nonsense parts and labour guarantee - backed up by an optional servicing and maintenance contract to keep your boiler operating at peak condition and efficiency.

To find out more about Worcester, Bosch Group, use the 'Contact Information' shown on the inside front cover.

Read these instructions carefully to get the best from your appliance.

### CENTRAL HEATING SYSTEMS:

During the first few hours of operation of the central heating system, check that all radiators are being heated at an even rate.

If the top of a radiator is at a lower temperature than the bottom then it should be vented by releasing air through the venting screw at the top of the radiator. Ask your installer to show you how this is done. Repeated venting in sealed systems will reduce the quantity of water in the system and this must be replenished for safe and satisfactory operation of the appliance.

When excessive venting or water leaks are found in the system you must contact a service engineer to inspect the installation and rectify any fault.

Only use additives compatible with the appliance and system. Use of incompatible additives can cause damage and will invalidate the appliance guarantee.

### Sealed heating systems:

Where the appliance is fitted to a sealed heating system your installer will inform you of the minimum and maximum pressure which must be indicated on the pressure gauge.

Regularly check the pressure is maintained and contact your installer or maintenance engineer if there is a noticeable, permanent drop in pressure. If the system loses pressure it should be repressurised and the cause of the loss investigated.

### FILLING LOOP: Sealed systems only

Should the sealed system pressure within your system have dropped to below 0.5 bar (shown on the pressure gauge located on the fascia of the External System models) you will need to increase this to ensure your boiler continues to run without problems.

*Your installer should have informed you where to find the filling system and instructed you in its use.*

Should this have been overlooked you can increase the pressure by following these instructions:

1. The boilers integral pressure gauge should be visible.

## GENERAL INFORMATION

2. Connect the flexible hose across the two valves, one leading from the boiler and the other from the mains supply. The connecting nuts need only to be hand tight.

3. Slowly open both valves ensuring that water does not leak from either end of the flexible hose.

4. You will start to hear water passing across the hose and valves and the grey needle on the pressure gauge will rise.

5. When the needle rises between 1 and 1.5 bar close both valves, the needle should now remain fixed.

6. The hose should then be disconnected from at least one valve, a small amount of water will emit from the hose, this is normal. If water continues to issue from the hose the valve has not been fully closed or is passing. If it is passing you will need to contact your installer to resolve the problem.

A filling loop is a set of manually operated valves and a flexible pipe that allow water to be added to the system when the valves are opened. This device must be WRAS approved. To comply with local water authority by-laws the flexible pipe should only be connected when topping up the system and disconnected when not in use.

### CONDENSATE:

This is a high efficiency appliance using condensing technology which will under normal operation produce a regular discharge of condensate to drain and at times, give out a plume of water vapour from the flue terminal.

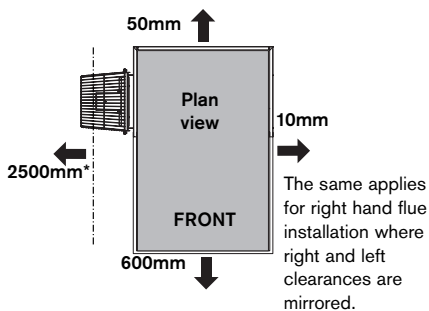
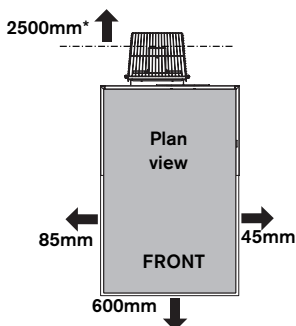
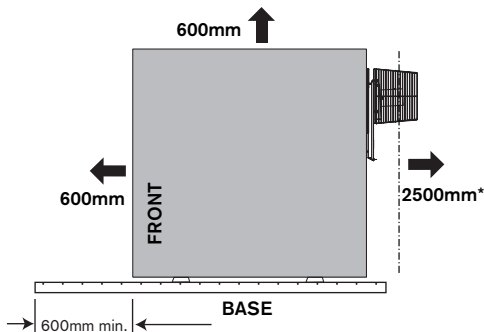
### ROOM THERMOSTAT:

A room thermostat must be fitted to control the central heating. Refer to instructions supplied with the room thermostat for information on siting and setting.

### THERMOSTATIC RADIATOR VALVES:

It is recommended that this type of valve is fitted to all but one of the radiators (or at least those in the sleeping accommodation). The remaining radiator, which must be where the room thermostat is located, should be un-controlled and must be left open.

## INSTALLATION & SERVICING CLEARANCES



## GENERAL INFORMATION

### WARNING:

External equipment operating at 230 Volts must not be serviced or repaired during adverse weather conditions.

Do not use pressure washers or steam cleaners on this appliance or cabinet.

### FUEL:

This appliance is designed to use kerosene, no other fuel must be used.

### BOILER LOCATION:

#### WARNING:

This boiler must not be installed where there is a potential for excessive ground water coverage.

To prevent "wetting" it is recommended that the flue terminal faces away from walls.

**Never allow the flue terminal or air inlet to become obstructed by plants or any other objects.**

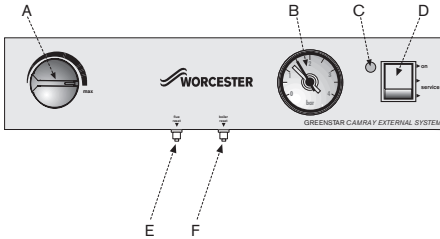
This boiler is only suitable for installing externally at a suitable location onto a fixed, permanent, rigid surface capable of supporting the boiler weight. Wood and tarmac hardstandings are not recommended.

The boiler must be installed on a flat level surface to ensure that condensate does not enter the primary heat exchanger.

The cabinet is not load bearing, and only provides weather protection for the boiler inside.

There must be sufficient hard standing and access around the boiler for servicing.

\*See installation manual for further details.



## CONTROLS

To remove the front panel, undo the screws using the tool provided on each side of the base of the front panel. The panel can then be removed (see illustration below).

- A Temperature control.
- B System pressure gauge (External System models only).
- C Boiler mode indicator.
- D Mode switch.
- E Reset button - flue thermostat.
- F Reset button - heating.
- G Lockout indicator/reset button (is located on the burner control box see 'reset button locations' below).

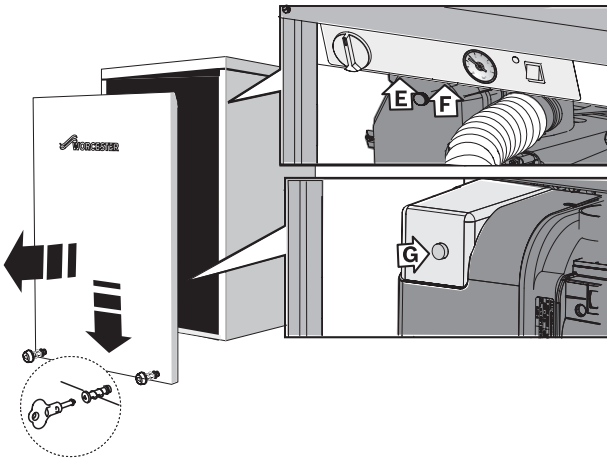
### Reset Button Locations

#### All Models

Remove front panel to access all reset buttons.

The Flue Thermostat Reset Button (E) and Heating Thermostat Reset Button (F) are located beneath the boiler control panel.

The Lockout Reset Indicator/ Button (G) is located on the burner control box which is situated on the burner at the base of the appliance.





## OPERATING THE APPLIANCE

### SWITCHING THE BOILER ON/OFF:

- ▶ To switch on the boiler; turn on the water, oil and electricity supply to the boiler.
- ▶ Check the mode switch is in the ON position with the indicator illuminated.
- ▶ Check the programmer/timer is correct and it is set to ON.
- ▶ Set the room thermostat to the desired setting.
- ▶ Open and set thermostatic radiator valves as required.
- ▶ Turn the boiler water temperature control to the required setting.
- ▶ To switch off the boiler; turn the programmer/timer to OFF for heating and hot water. *If the appliance is left unused and exposed to freezing conditions; shut off all the mains supplies, isolate the boiler and drain the system and boiler.*

### CENTRAL HEATING TEMPERATURE CONTROL:



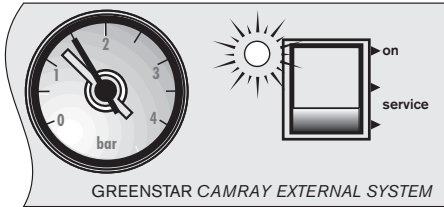
### SETTING RADIATOR TEMPERATURE:

- ▶ Turn the control clockwise to increase the radiator water temperature.
- ▶ Turn the control anti-clockwise to reduce the radiator water temperature.

The minimum and maximum ranges of the heating control positions are approx. 55°C to 81°C.

### CONTROLLING CENTRAL HEATING:

- ▶ Set the programmer/timer to the correct time with the required ON/OFF periods. (Refer to the user guide supplied with the programmer).
- ▶ Turn the room thermostat to the temperature required.
- ▶ Set thermostatic radiator valves to the required temperature for each room.



## OPERATING THE APPLIANCE

### PRESSURE GAUGE (EXTERNAL SYSTEM):

The pressure gauge indicates the boiler/heating system water pressure and has two pointers:

Red (external) pointer is set manually to indicate the normal system pressure (1 to 1.5 bar for sealed systems, 0 to 0.5 bar for open vent systems).

Grey (internal) pointer shows the actual system pressure (on sealed systems the pressure will rise when the boiler/system heats up from cold). *Please check with your installer what type of system you have.*

On sealed systems the red pointer should be set to the normal operating pressure (1 to 1.5 bar) and the grey pointer will fluctuate around this pressure depending on whether the system is hot or cold. If a sealed system pressure drops below 1 bar the system should be repressurised to 1.5 bar and the cause of the drop investigated. If the pressure rises to more than 2.5 bar please contact your installer for advice.

Regularly check that the pressure is maintained and contact your maintenance engineer if a permanent significant drop in pressure regularly occurs.

On open vent systems the pressure gauge is not used and the grey pointer will remain at the bottom of its scale. If the pressure rises to more than 1 bar please turn off the appliance and contact your installer for advice.

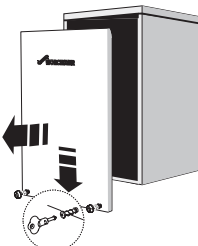
### FROST PROTECTION:

- ▶ A frost thermostat is fitted to the appliance to protect the appliance and system from the risk of freezing.
- ▶ The boiler mode indicator light **MUST** be illuminated for the frost protection to operate.

**In the unlikely event that there is no hot water or heating, remove the front panel and check for lockout or other fault conditions.**

**Check page 9 for fault conditions.**

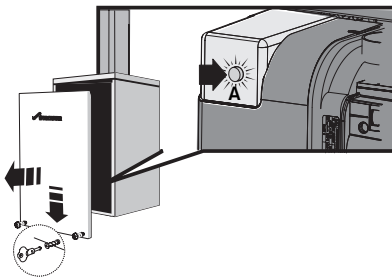
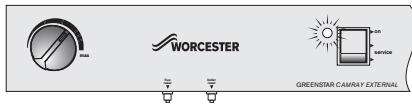
## 1 ACCESSING CONTROLS:



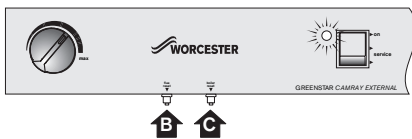
## 2 NORMAL OPERATION:



## 3 BOTH LIGHTS ON:



## 4 BOILER MODE LIGHT ON LOCKOUT LIGHT OFF:



## 5 BOTH LIGHTS OFF



## OPERATING THE APPLIANCE

### FAULT CONDITIONS:

The Boiler mode and Lockout lights can indicate some basic fault conditions.

#### 1 Accessing Controls:

- ▶ Undo the screws on the bottom of the front panel using the tool provided. The panel can now be removed.

#### 2 Normal operation:

##### Boiler mode light ON

The appliance is in boiler mode, with a demand for heat from the controls.

#### 3 Both lights on:

##### Boiler not firing

- ▶ Check the level in the oil tank.
- ▶ Press the Reset button (A). The boiler should fire.
- ▶ If there is no response, wait 2 minutes and press the Reset Button (A) again.
- ▶ If Lockout light stays on, **do not** attempt further resets. Contact your Service Engineer for advice.

#### 4 Boiler mode light on, lockout light off:

##### Boiler not on -

##### No heating/hot water

- ▶ Press Reset Button (B), press Reset Button (C) both are below the fascia.
- ▶ If the boiler remains off, contact your Service Engineer for advice.
- ▶ If this fault re-occurs contact your Installer or Service Engineer.

#### 5 Both lights off:

##### Boiler not on -

##### No heating/hot water

- ▶ Ensure there is power supply to the boiler.
- ▶ Check the programmer is set to ON and thermostat is calling for heat.
- ▶ Ensure that the Service switch is in Boiler mode.
- ▶ If there is power supply to the boiler contact your service engineer for advice.

## TIPS ON ENERGY SAVING

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### Heating economically:

The boiler is designed to provide a high level of comfort while keeping oil consumption and the resulting environmental effect as low as possible.

The temperature control on the boiler should be set as low as possible while still maintaining a comfortable room temperature.

The temperature of each room can be set individually using the thermostatic radiator valves (except the primary room with the room thermostat).

### Roof insulation:

Around 30% of the heat loss from a property is through the roof. Replace any old insulation with new insulation, preferably to a minimum thickness of 200mm.

### Window frames:

Single glazed windows, particularly those with steel frames, can lose a great deal of heat.

Consideration should be given to replacement with PVCu or wooden framed double glazed units.

### Curtains:

Lined curtains, or heavier full length curtains can provide excellent insulation. However, always ensure that the curtains do not drape over radiators.

### Draughts:

Try to ensure that draughts around doors, windows, letterboxes and keyholes etc., are reduced by using a suitable draught excluder.

**Warning: do not block or seal any air vents that are installed to ensure the central heating boiler (or other appliance) operates safely.**

## TIPS ON ENERGY SAVING

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### Room thermostats:

Reducing the setting of the room thermostat by 1°C can reduce fuel consumption by up to 10%.

### New control systems:

Upgrade your heating control system with the latest equipment available. The minimum level of control for a heating system is a programmer/timer, interlocking room thermostat and thermostatic radiator valves.

### Radiators:

More often than not radiators will be sited underneath a window, so the warm air from the radiator heats the colder incoming air from the window.

The performance of the radiator will be affected if the curtains are allowed to drape over the radiator or shelves are fitted above it.

The positioning of furniture and tables in front of the radiator should also be avoided.

It is advisable to manually adjust all radiator valves every 2-3 months to prevent them from sticking. It is also important that the plastic tops of all valves are always in position and not cracked or damaged to help prevent accidents. Care should be taken when vacuum cleaning carpets to avoid damage to valves and pipework.

The heating system and the outputs of the radiators have been carefully selected by your installer. The temperature obtainable in any given room is dependent on all radiators being operated at the same time. If you decide to turn off radiators in unused rooms, spare bedrooms etc., you may experience slightly lower room temperatures in rooms adjacent to unheated rooms.

## MAINTAINING YOUR APPLIANCE

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Your new appliance represents a long term investment in a reliable, high quality product.

In order to realise its maximum working life and to ensure it continues to operate at peak efficiency and performance, it is essential that servicing and maintenance checks are performed at least once a year by a competent person.

If you would like to know more about servicing options from Worcester, Bosch Group please visit [www.worcester-bosch.co.uk](http://www.worcester-bosch.co.uk).

Please tick the appropriate box on your warranty registration card for further details on the Worcester, Bosch Group service contract.

In addition to the service contract we are pleased to offer a one-off annual service or breakdown call out for your appliance.

When your appliance requires servicing please contact the Worcester, Bosch Group contact centre (see inside front cover for details).

### Maintenance tips:

Regularly check the oil level in the tank.

Regularly check the system pressure, ask your installer for guidance.

Do not obstruct the flue outlet or the air inlet.

Do not pressure wash or steam clean the appliance or its cabinet.

To clean the cabinet wipe down with soapy water.

## FAULT FINDING

---

Problem	Cause	Remedy
Desired room temperature is not reached	Thermostatic radiator valve(s) set too low	Increase thermostatic radiator valve setting(s)
	Room thermostat set too low	Increase room thermostat setting
	Boiler temperature control set too low	Increase temperature control setting
	Air trapped in heating system	Bleed radiators; if fitted to a sealed system recharge heating system
Desired room temperature exceeded by large amount	Radiators are too hot	Turn down thermostatic radiator valves / room stat
Temperature rises instead of falling	Clock is incorrectly set	Check setting
No display or control unit does not respond	Momentary power failure	Switch off appliance at master switch, wait a few seconds then switch on again
Hot water temperature too low	Hot water cylinder temperature set too low	Check setting
	Hot water not in timed period on the programmer	Check programmer settings
	Boiler temperature control set too low	Check setting

MAINTENANCE

## FAULT OR BREAKDOWN

This appliance is supported in the UK by Worcester, Bosch Group, part of Bosch Thermotechnology Ltd.

Specialist factory trained Service Engineers are available to attend in the unlikely event that a breakdown occurs on this appliance.

### No charge will be made for parts and/or labour providing:

- ▶ An appliance fault is found and the appliance has been installed within the past 24 months. Reasonable evidence of this must be supplied on request.

### A call-out charge will be made where:

- ▶ The appliance has been installed for over 24 months OR
- ▶ Our Field Service Engineer finds no fault with the appliance (see Note) OR
- ▶ Evidence cannot be provided that the first year service inspection has been carried out. (i.e. an entry in the service interval record found at the rear of the appliance installation and servicing manual) OR
- ▶ The cause of breakdown is misuse or fault found with other parts of your plumbing/heating system, or with equipment not supplied by Bosch Thermotechnology Ltd.

### Note: NO APPLIANCE FAULT IS FOUND ON OVER 30% OF ALL SERVICE CALL OUTS.

Please read this guide carefully to gain a good understanding of the operation of your appliance. In the case of a suspected fault, refer to the fault finding section of this guide.

If in doubt contact Worcester, Bosch Group quoting the boiler serial and model number. These numbers are printed on a Data Label which is located as shown opposite. (You can record this information on the inside back cover of this manual.)

In the unlikely event of an appliance fault or breakdown please call the contact centre (see inside front cover for details). Your service administrator will arrange for an Engineer to call with the minimum of delay. Under normal

circumstances this will be from 1 to 3 working days (excluding weekends) for priority breakdown situations (no hot water and/or heating).

Invoices for attendance and repair work carried out on this appliance by any third party will not be accepted.

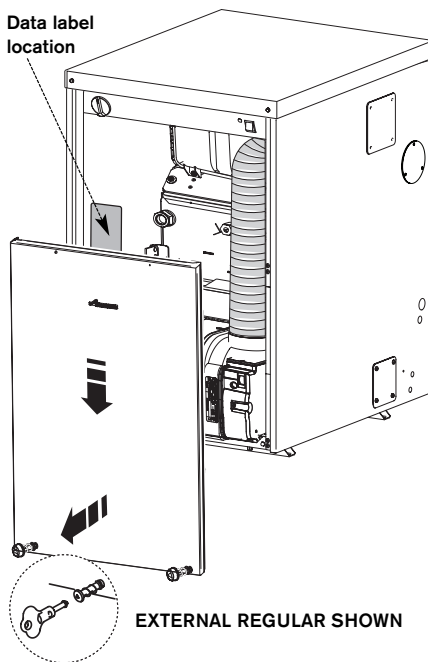
### APPLIANCE DATA LABEL

The data label can be found on the inside of the left hand panel. To access:

- ▶ Unscrew the two screws on the bottom of the front panel using the tool provided. The panel can now be removed.

To replace:

- ▶ Push the front panel up behind the top panel, push in and secure the screws with the tool provided.





## YOUR GUARANTEE

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This appliance is guaranteed against faulty materials or workmanship for a period of 24 calendar months (60 months for the primary heat exchanger) from the date of installation subject to the following conditions:

- ▶ That during the period of this guarantee any components of the unit which are proved to be faulty or defective in manufacture will be exchanged or repaired free of material charges and free of labour charges if repaired directly by Bosch Thermotechnology Ltd.  
**Please be aware that invoices for attendance and repair of this appliance by third parties will not be accepted for payment by Bosch Thermotechnology Ltd.**
- ▶ That the householder may be asked to prove, when requested, the date of installation, that the appliance was correctly commissioned and, where appropriate, that the 12 month service inspection has been carried out to the satisfaction of Bosch Thermotechnology Ltd, when requested. The guarantee card must then be returned within 30 days of installation.
- ▶ That any product or part thereof returned for servicing under the guarantee must be accompanied by a claim stating the Model, Serial Number and Date of Installation.
- ▶ That Bosch Thermotechnology Ltd will not accept responsibility for damage caused by faulty installation, neglect, misuse or accidental damage and non-observance of the instructions contained in the Installation and Users Instructions leaflets.
- ▶ That the appliance has been used only for normal domestic purposes, for which it was designed.
- ▶ That this guarantee applies only to equipment purchased and used in mainland Great Britain.

This guarantee is given in addition to all your normal statutory rights.

*Worcester, Bosch Group is a trading name of Bosch Thermotechnology Ltd.*

## GUARANTEE REGISTRATION

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You should complete and return the postpaid Guarantee Registration Card within 30 days of installation.

Returning your card will register you as the owner of your new appliance and will assist us in maintaining an effective and efficient customer service by establishing a reference and permanent record for your boiler.

This does not affect your statutory rights.

*For your own record:*

Model \_\_\_\_\_

Serial No. \_\_\_\_\_

(See identity label inside appliance casing)

Type / size \_\_\_\_\_

Date of installation \_\_\_\_\_

Installer details \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

GUARANTEE

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GUARANTEE  
REGISTRATION

GREENSTAR CAMRAY EXTERNAL & EXTERNAL SYSTEM 12/18 - 18/25 - 25/32  
8 716 115 668a (05.09)

 **WORCESTER**  
Bosch Group

## NOTES

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NOTES

**Dedicated to heating comfort**

Worcester, Bosch Group

Cotswold Way, Warndon, Worcester WR4 9SW.

Tel. 01905 754624 Fax. 01905 754619

**worcester-bosch.co.uk**

*Worcester, Bosch Group is a brand name of Bosch Thermotechnology Ltd.*

**8 716 115 668a (05.2009)**

