



Installation and Operating Manual
Woodpecker 15, 25 and 45 Models
Wood Pellet Boiler System
Including Cosyman

Version 5 October 2011



Woodpecker Energy operates a policy of continuous development and improvement of our products and welcomes any feedback from our Customers. Please forward your comments to:

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This symbol is used to highlight important information



SAFETY NOTICE

PLEASE READ THIS ENTIRE MANUAL BEFORE YOU INSTALL AND USE YOUR NEW BOILER.

THIS APPLIANCE MUST BE INSTALLED BY APPROVED AND COMPETANT PERSONNEL ONLY. FAILURE TO INSTALL THE APPLIANCE IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS AND LOCAL BUILDING REGULATIONS AND BY-LAWS WILL INVALIDATE THE WARRANTY.

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2 General Information

Dear Customer,

We would like to congratulate you on purchasing this high-quality product from Woodpecker Energy. With this purchase you are now the owner of an extremely easy-to-use and powerful biomass heating system. Due to the low-emissions and CO₂-neutral heat produced by renewable fuels, you are making a considerable contribution to the protection of the environment and its resources.

You have also chosen a product with an elegant line, a refreshing design and perfect workmanship. The outer surfaces require minimum care in day-to-day life and are easy to clean. On the inside, however, is a carefully designed and ultra-efficient heat exchanger which has been developed from Woodpecker Energy's 40 years of boiler manufacturing experience. At the centrepiece of the system is a self-cleaning pellet burner which is at the cutting edge of combustion technology and innovation which guarantees low emissions and high efficiency by maintaining the combustion area in a clean condition. The mastermind of the system is the Woodpecker Boiler Management System (BMS) control which sets the standard in control engineering. The LCD display with generous graphics and clear-text user management provides brilliantly simple and easy-to-use operation.

This new-generation control system together with the self-cleaning mechanism and the automatic de-ash system (in de-ash models) makes sure that under normal operating conditions the only user maintenance that is required is occasional emptying of the ash box. A Service is required every 1200 hours of operation or annually (whichever is sooner). This instruction and maintenance manual contains all the information required for trouble-free operation and handling of the system. Please read it carefully. And if you still have any questions, please contact your sales partner. No claims for damages incurred as a result of misuse of the safety, operating or maintenance notes can be accepted.

We wish you many years of heating pleasure with your new Woodpecker biomass heating system.

Best regards from your Woodpecker Energy team,

We provide heating with a clear conscience!



Important note for efficient and low-emission operation of your Woodpecker biomass heating system

For efficient and low-emission operation of your Woodpecker heating system, please follow these instructions:

- Only use the fuels specified in this Woodpecker instruction manual. Only then can efficient, low-emission, and trouble-free operation of your heating system be guaranteed. (Section 12)
- Carry out maintenance and cleaning work recommended by Woodpecker Energy on your heating system at regular intervals. Details can be found in the instruction manual in section 9. By doing this, you will not only be ensuring the operational reliability of the heating system but also its efficient and low-emission operation. The best way of caring for your heating system is by taking out a Woodpecker maintenance contract. Your Woodpecker Approved Installer will be happy to give you information about this.
- Your Woodpecker heating boiler will automatically adjust its output between 30 to 100% of the boiler's rated power. Your heating system may have a lower or higher heat demand than the boiler can deliver, for this reason Woodpecker recommend a buffer tank is installed. The buffer tank ensures operational reliability of the appliance and improves heating response and energy saving. This ensures efficient and low-emission operation of your Woodpecker boiler.

3 SAFETY INFORMATION

In the design of the Woodpecker biomass boiler, special attention has been placed on safety. However, since the system contains elements which can reach high temperatures, it is essential that several simple, but important rules are adhered to by the user.

3.1 Woodpecker Safety Guidelines



Please read the instruction manual carefully before starting the system for the first time, and pay special attention to the safety instructions. If something is not clear, please look it up in this operating manual.

- Ensure all maintenance doors are closed tightly.
 - The boiler room should always be locked.
 - When opening the boiler door make sure that no flue gases or sparks come out. Never leave the boiler door open without supervision.
 - Make sure that there is sufficient supply of fresh air to the boiler room and avoid frost.
 - Carry out maintenance work regularly or call your Agent to arrange to have this done.
 - Always make sure the power is isolated when carrying out maintenance work or opening the control system.
 - Combustible materials (including fuel) should not be stored in the boiler room, other than the fuel that is required for the operation of the boiler.
 - Fire extinguishing apparatus should be located near the door of the boiler room.
 - The boiler may only be run on wood pellet fuel as prescribed in the fuel section of this manual.
- Do not carry out any unplanned changes to the settings; do not modify the system in any way without first consulting your installer.
 - Where a bulk silo is fitted, the boiler should be switched off before refilling the silo (if blown delivery system is used).
 - In the case of any problems contact your Installer or for troubleshooting visit www.woodpeckerenergy.co.uk.

Legislation stipulates certain devices should be used with automatic pellet boilers which prevent back-burn along the conveying troughs into the fuel store. The following safety precautions are implemented in Woodpecker systems:

- An air gap is formed between the head of the conveying auger and the combustion area thus helping to prevent back burn.
 - If the temperature in the pellet feed pipe exceeds a pre-determined safety temperature the burn-back prevention plate will close across the pellet feed pipe and prevent back-burn. In the event of a power outage the burn-back prevention plate is spring loaded and will close automatically and render the system safe.

HEALTH AND SAFETY PRECAUTIONS

Special care must be taken when installing the boiler such that the requirements of the Health and Safety at Work Act are met.

Handling

Adequate facilities must be available for loading, unloading and site handling.

Fire Cement

Some types of fire cement are caustic and should not be allowed to come into contact with the skin. In case of contact, wash immediately with plenty of water.

Asbestos

This boiler contains no asbestos. If there is a possibility of disturbing any asbestos in the course of installation then please seek specialist guidance and use appropriate protective equipment.

Metal Parts

When installing or servicing this boiler care should be taken to avoid the possibility of personal injury.

In all cases the installation must comply with current Building Regulations, Local Authority Bye-laws and other specifications or regulations as they affect the installation of the boiler. It should be noted that the Building Regulations requirements may be met by adopting the relevant recommendations given in British Standards BS 8303, BS EN 15287-1:2007. An alternative means to achieve an equivalent level of performance is to follow the guidance given in Approved Document J.

A Woodpecker trained and approved installer must be used to install the boiler. A HETAS registered installer will be able to self-certificate the installation to ensure compliance with all the relevant regulations.

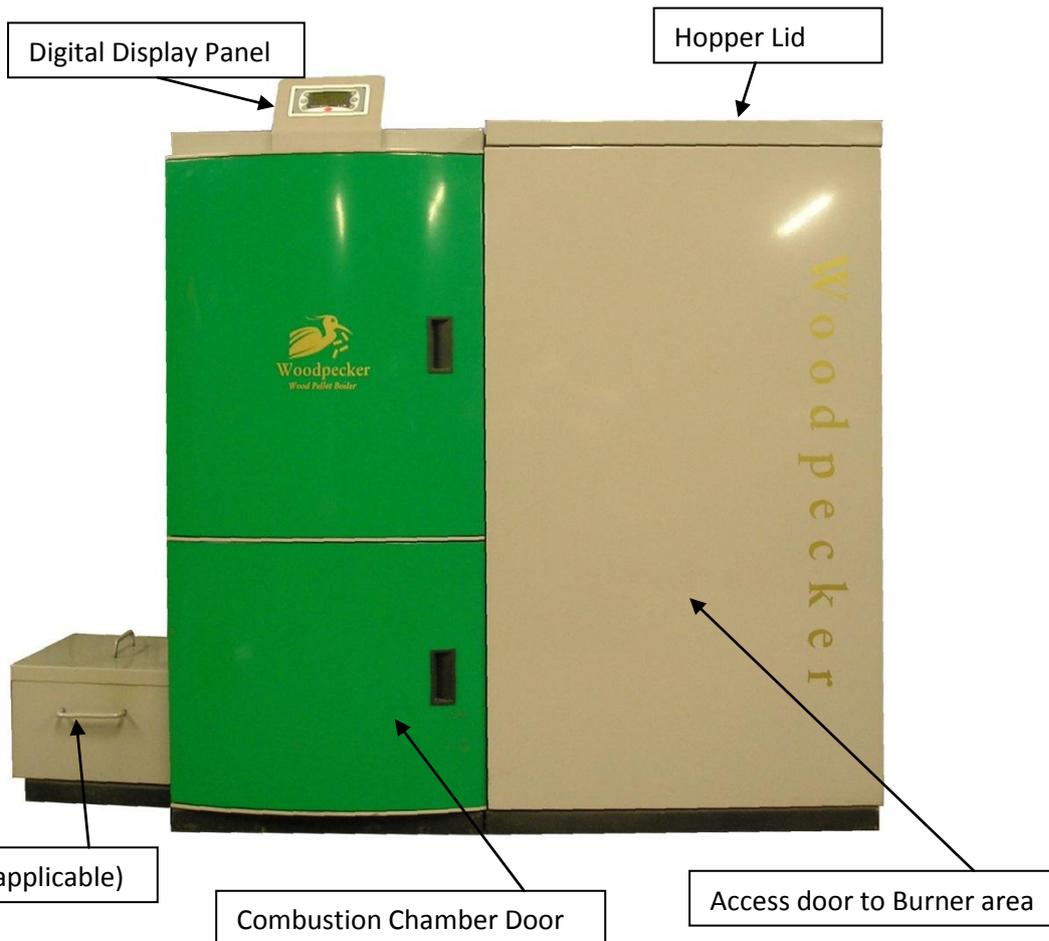


Please note that it is a legal requirement under England and Wales Building Regulations that the installation of the boiler is either carried out under Local Authority Building Control approval or is installed by a Competent Person registered with a Government approved Competent Persons Scheme. HETAS Ltd operate such a Scheme and a listing of their Registered Competent Persons can be found on their website at www.hetas.co.uk.

4 WOODPECKER SYSTEM FEATURES

The boiler data plate contains important information on the type designation of the appliance. You will find this on your system mounted on the control panel cover. The boiler is located on the left hand side of the unit with the burner located underneath the integral storage hopper.

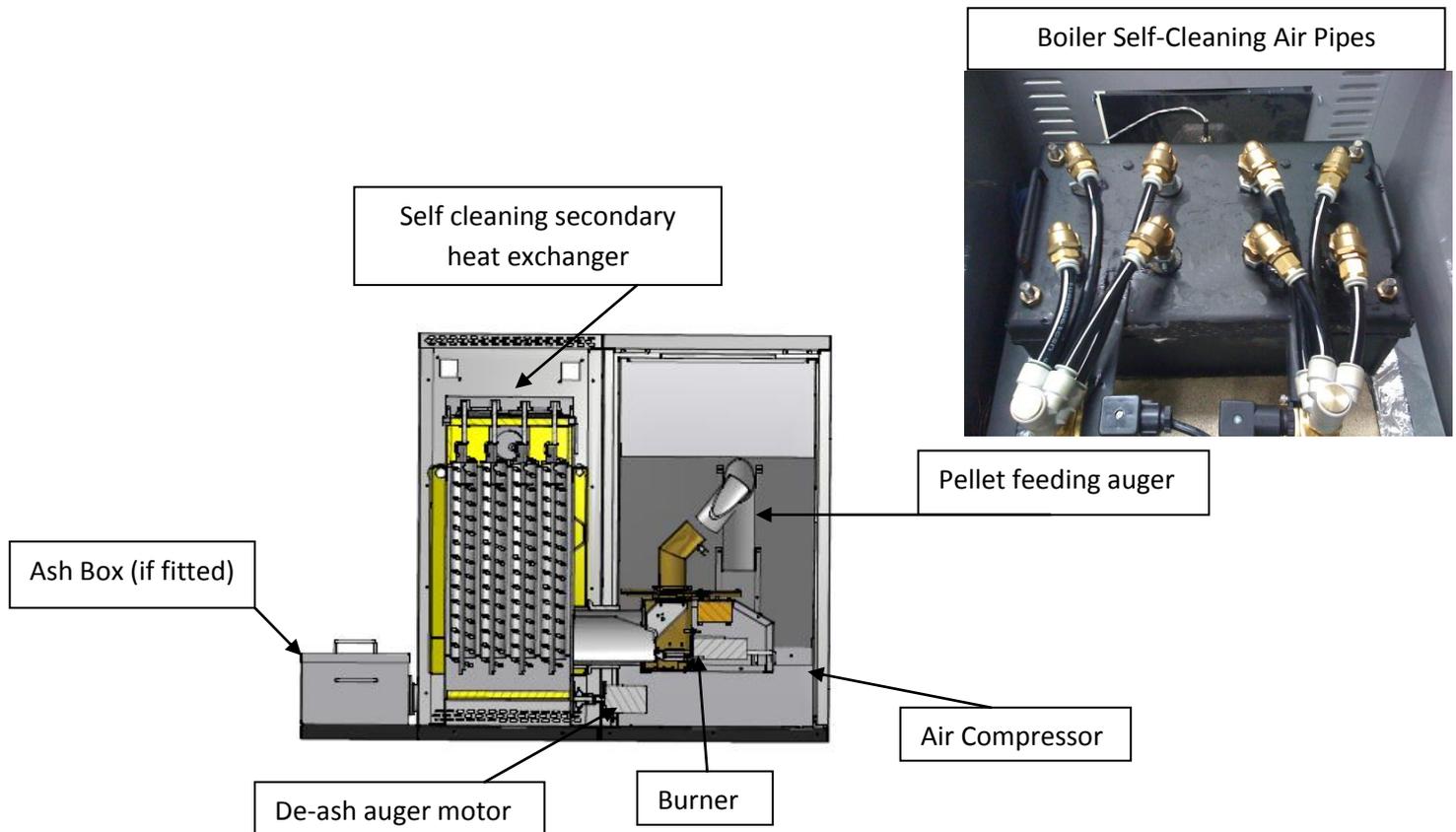
The fuel can be manually loaded in the integral hopper which has a capacity of approximately 110 kgs. Additional features such as an auger or vacuum delivery system are available which can fill the integral hopper from a remote bulk storage silo.



4.1 Woodpecker Boiler Features

The heat exchanger has been designed and developed to provide maximum efficiency and combustion quality in a compact unit. The compact nature of its design has allowed the integral hopper to be incorporated as part of the overall unit. The secondary heat exchanger is cleaned by using high pressure jets of compressed air at pre-determined intervals to clean the tubes.

The drop feed burner is fitted to the right hand side of the boiler where the flame fires in a horizontal direction across the combustion chamber. The flue gases are then drawn to the top of the chamber and down behind the refractory board which aids in the complete combustion of the flue gases. The flue gases then pass through 8 vertical heat exchanger pipes before exiting through the flue box at the rear of the boiler and are eliminated through the flue. The flue exhaust fan ensures the ideal draft conditions for the appliance to work efficiently and safely.



4.2 Integral Hopper Features

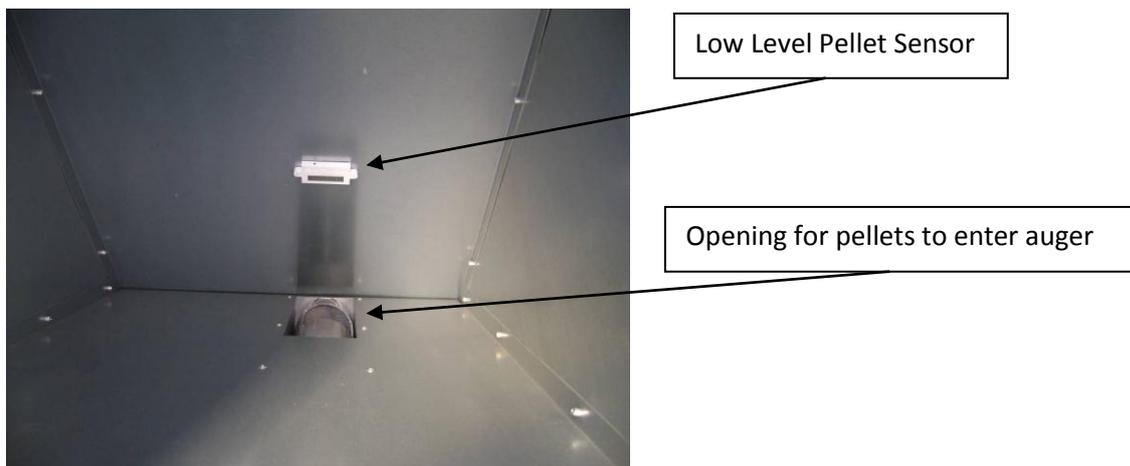
The integral hopper has a capacity of up to 215 litres or about 110 kgs of pellets. The pellets are auger fed from the base of the hopper to the top of the drop feed pipe where the pellets free fall down into the pellet burner. The auger has been designed to be able to handle wood pellets that meet the CENTS Din Plus/A1 grade.

Pellets with a high dust content may lead to clogging of the auger and reduce the performance of the burner. If dusty pellets are used the hopper will need to be cleared regularly.

Your Installer will provide training on how to carry out this task during commissioning.

Located in the hopper is a pellet level sensor which lets the system know when the level of pellets has reached a low level. After a pre-determined time delay the system will go through an orderly shutdown procedure and the controller display will signal that you are “Out of Fuel”.

When the hopper is refilled the boiler will re-start automatically if there is a heat demand.



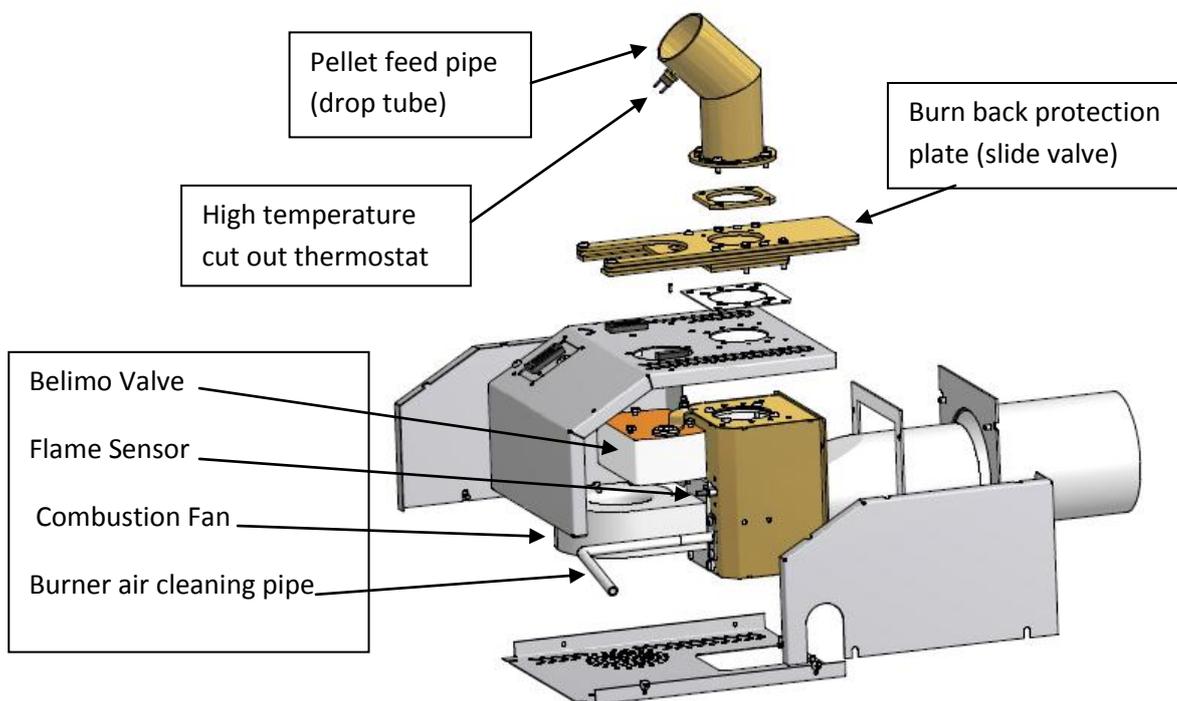
**Make sure that no foreign matter enters the hopper.
Never leave the hopper unattended while the lid is off.**

4.3 Burner Features

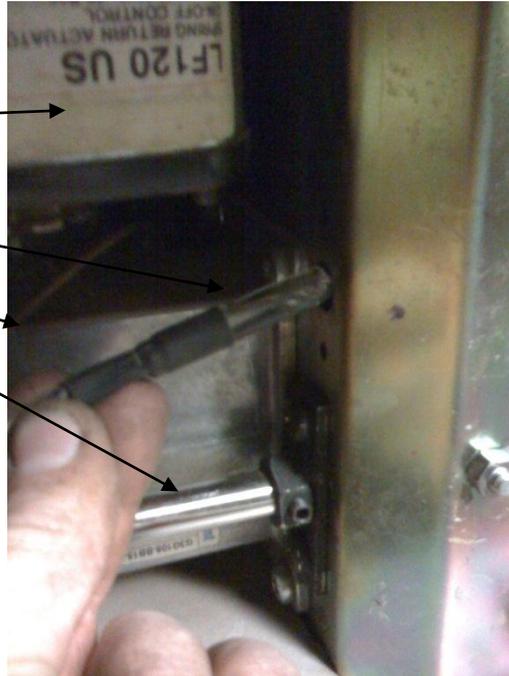
- ❑ Automatic ignition: a miniature heating element heats the incoming air to light the pellets during the start-up phase.
- ❑ Combustion fan: forces air through the fire bed to ensure clean and efficient combustion
- ❑ Flame sensor: Detects when a flame is present – used to detect ignition and extinguishing.
- ❑ Compressed air cleaning: A jet of compressed air is used to clean the burner at the end of a burn cycle.

4.3.1.1 Safety Features:

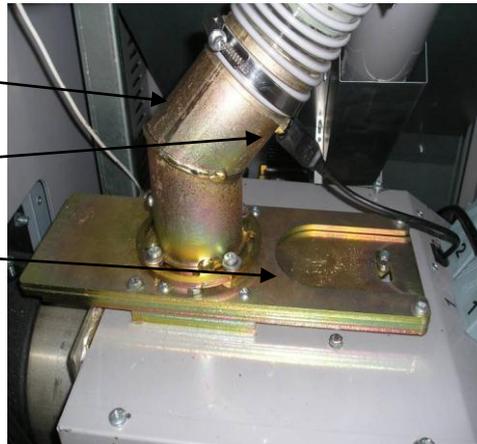
- ❑ Anti burn back slide valve and belimo actuator: the metal slide valve is held closed by a spring return actuator (belimo). The belimo only opens when the boiler is firing and will shut in the event of a power cut or if any fault is detected.
- ❑ Pellet pipe sensor: A thermostat that cuts out the boiler and closes the belimo if the temperature in the pellet pipe exceeds 70°C



- Belimo Valve
- Flame Sensor
- Combustion Fan
- Burner air cleaning pipe



- Pellet feed pipe (drop tube)
- High temperature cut out thermostat
- Slide Valve



5 Installation

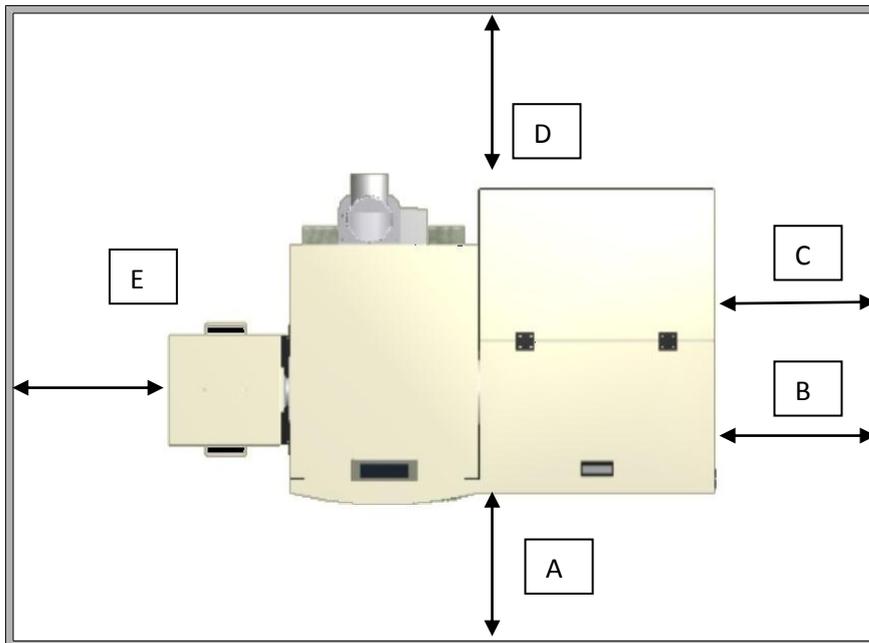
Some time spent planning the boiler room and fuel store will prevent delays when it comes to installing the system. Some of the following considerations will need to be borne in mind when planning the installation.

- How much space do I require for my boiler and fuel store?
- Is my boiler sized correctly and what size of buffer do I require?
- Can I move the boiler to its location easily? Is it in a basement?
- If purchasing pellets in bulk does the tanker have access to the filling pipe?
- If using a vacuum or auger system what route will the transport hoses take?
- What route will the flue take and will it comply with the Building Regulations?

5.1 Setting out the boiler location

The Woodpecker system requires minimum clearances around the appliance for servicing and maintenance. These are detailed in the figure below. A minimum of 650mm is required in front of the boiler in order to safely remove the ash pan from the boiler or to clean the combustion chamber. A space that is 2.5m x 2.5m will fit the boiler, buffer tank and essential pipework with good service access.

5.1.1 Minimum and Recommended Clearances



		Minimum clearances for access, or to combustible surfaces	Recommended clearances for servicing
A	Front access	650 mm	1050 mm
B	Right hand access	225 mm	400 mm
C	R/H access with fillomatic	225 mm	500 mm
D	Rear access	225 mm	400 mm
E	Left hand access	555 mm	555 mm

5.1.2 Hearth:

The boiler must be located on a non-combustible base that is capable of holding the weight of the boiler when full of water and pellets.

A hearth must be provided (or marked out if the boiler is located on a concrete plant room floor). The hearth must extend for a minimum of 150mm either side of the fire door and 225mm in front of the fire door, the hearth should be denoted by a change of level or permanent heat proof marking.

5.2 Unpacking

The Woodpecker Pellet Boiler System is delivered on a pallet in a single crate. Remove the wooden crate, cardboard packaging, polystyrene packing, and bubble wrap packaging and recycle in the appropriate manner.

There are various packed items within the Woodpecker boiler and hopper. These should be located and checked against the lists below.

Inside the Hopper

- De-ash box complete with lid, base and fixing plates.
- 5" Chimney starter pipe complete with draught stabiliser.
- Exhaust fan.

Inside the Boiler Combustion Chamber

- Boiler scraper tool
- Burner scraper tool
- Foil backed insulation complete with foil tape (to fix around burner tube)
- Foil tape to seal de-ash auger (25 and 45kW models)
- Flexi-pipe complete with 2 x hose clamps
- A4 Manual pack
 - Installation and User Manual
 - Product Registration Card
 - Foil tape to blank de-ash outlet
 - Chimney pipe gasket
 - Hopper/Boiler fixing bolts x 2

Cable ties to tidy cable runs after installation.

In the unlikely event that an item is missing then your Installer must notify Woodpecker Energy Ltd. within 5 working days in order to issue replacement parts. Missing or mislaid parts notified after 5 working days may incur a charge plus postal costs.

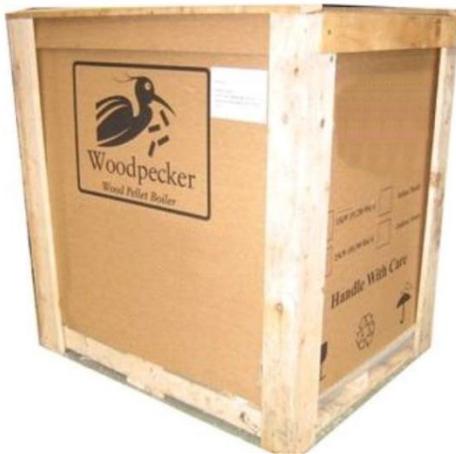
The following guidelines should be followed to ensure that the installation of the boiler is carried out in a trouble free manner.



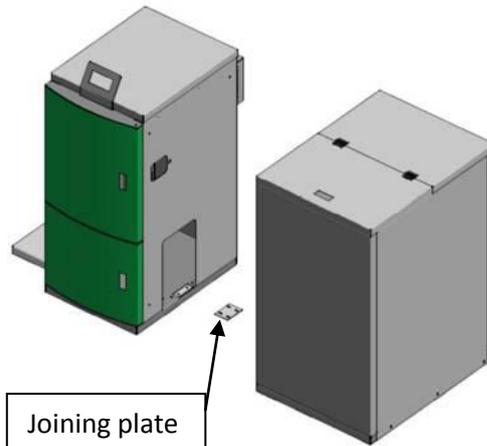
Be careful when moving or lifting the boiler and hopper section as these sections are heavy and could cause an injury. Use appropriate lifting techniques and equipment for the individual weights of these sections. Take all necessary precautions to prevent damage to external casing.

5.3 Assembly

Follow the instructions below carefully to unpack and disassemble the unit and re-assemble in its proposed location:



Remove all wood and cardboard packaging and recycle where possible.



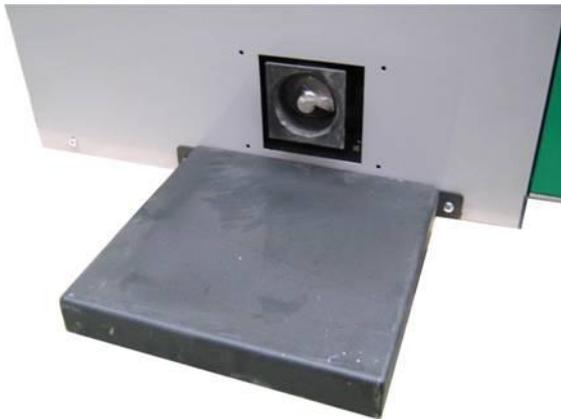
Joining plate

Disconnect and remove the burner assembly and disconnect the pellet level sensor and unscrew the fixing plate holding the two bases together. Both halves can then be separated for easy handling. Reverse the procedure to reassemble.

Unscrew the control panel plate from its transport position and turn upwards



Re fit the control panel by screwing the screws from underneath the top support bar.



Fit the Ash Box base to the side of the boiler



Fit the fixing plates for the de-ash box in the order shown above.



Fix the plates onto the outside of the de-ash box with the bolts provided



Slide the box onto the flange of the auger until it rests on the base. Cover the opening with the foil tape provided.



Fit flexi-pipe and hose clamps securely



Fit the chimney starter flue to the smoke box using the screws and gasket

5.4 Woodpecker Cosyman

The Cosyman is based on the same burner, heat exchanger, firebox, fuel hopper and controller as the other woodpecker boilers. It operates in exactly the same fashion and all major components are interchangeable. The Cosyman has a weatherproof outdoor casing so that it may be positioned outside when there is not space for the boiler inside the property. The Cosyman does not have the automatic de-ashing function and is not available with an external silo.

5.4.1 Cosyman Assembly:

The Cosyman is delivered fully assembled on a Skid frame which has forklift slots. It may be easily positioned using a pallet truck or rollers. If required the Cosyman can be dismantled to pass through a standard doorway.

5.4.2 Cosyman Flue

If the Cosyman is installed adjacent to a building the flue must be supported from the building wall and rise according to the building regulations. If the Cosyman is installed at a distance away from any property the then flue has only to rise sufficiently to ensure that the flue gases will be dispersed into atmosphere without causing nuisance. Woodpecker recommends a minimum of 2m of flue above the boiler. In this case the flue must be supported on a mast to support the weight of the flue and ensure that it remains upright.

5.5 Flues

Woodpecker recommends the use of stainless steel twin walled insulated flue pipe. An exhaust fan is used to extract the combustion gases from the firebox this creates a negative pressure in the firebox and a positive pressure in the flue system. Because of this positive pressure the flue must be pressure rated if it passes through any inhabited areas. The flue fan means that a tall flue is not required to provide natural draft however the flue must be constructed to comply with building regulations with regard to height and termination point. Be sure to use wall and ceiling pass through fittings when going through combustible materials. Be sure to use a starting collar to attach the flue system to the boiler. The starting collar must be sealed to the boiler flue collar with high temp silicone caulking or aluminium tape

The flue must be fitted with a cleaning access. The flue must be fitted with a structural support so that its weight is not resting on the boiler.



It is not permitted for the flue to have 90° elbows or horizontal sections. If the flue must pass through a wall only 45° elbows may be used

Woodpecker Energy recommends the use of Poujoulat Therminox flue products

5.6 Flue Pipe

A flue pipe suitable for use with solid fuel manufactured to EN15287 Parts 1 and 2. Constructed of two layers of stainless steel with insulation between the layers. This insulation reduces the outside surface temperature to allow a minimum clearance to combustibles of 50mm.

The sections of pipe lock together to form an air tight seal in most cases; however, in some cases a perfect seal is not achieved. For this reason and the fact that the Woodpecker operates with a

positive vent pressure, we specify that pressure rated joint seals are fitted if the flue is installed through an inhabited area.

NOTE: The flue and exhaust system must be cleaned and inspected annually.

NOTE: Read and follow all of the flue pipe manufacturers' instructions on the proper installation and support of the flue pipe. Adhere to all Clearances and recommendations.

Woodpecker Boilers are fitted with a draft stabiliser. This is to ensure that the boiler flue fan can control the draft in the boiler without influence from wind or downdraft.

The Woodpecker Boiler may be used and installed into an existing masonry or a flue pipe suitable for use with a class 1 appliance (i.e. an appliance burning solid fuel). As long as the flue is sound and satisfies a positive pressure test. Woodpecker recommends that a high quality flue liner is installed with insulated backfill where an existing masonry flue is to be utilised

It is not permitted to connect your woodpecker boiler flue to a chimney serving another appliance.

A Masonry Chimney must be cleaned and inspected before installation of a liner.



Keep combustible materials such as grass, leaves, etc. at least 3 feet away from the point directly under the flue termination. (Between the flue and the ground)



FLUE INSTALLATION IS TO BE PERFORMED BY A QUALIFIED INSTALLER.

DO NOT INSTALL A FLUE DAMPER IN THE EXHAUST FLUE SYSTEM OF THIS UNIT.

DO NOT CONNECT THIS UNIT TO A CHIMNEY FLUE SERVING ANOTHER APPLIANCE.

CAUTION KEEP COMBUSTIBLES AWAY FROM FLUE OUTLET.

5.7 Flue Requirements

A natural draught must exist in the boiler when connected to the flue and this will be checked by the Commissioning Engineer before the burner is run.

Down draughts may affect the performance of the boiler and may cause some of the safety features to come into operation.

Down Draught:

If the proper draught cannot be achieved the commissioning engineer may refuse to commission the boiler. In cases where the boiler is commissioned with a lower height flue the Customer must sign the Commissioning Report stating that any issues arising from the flue not to the required height will not be covered under warranty.

Reference: BS EN15287-1:2007; Chimneys – Design, installation and commissioning of chimneys; Part 1: Chimneys for non-room sealed heating appliances

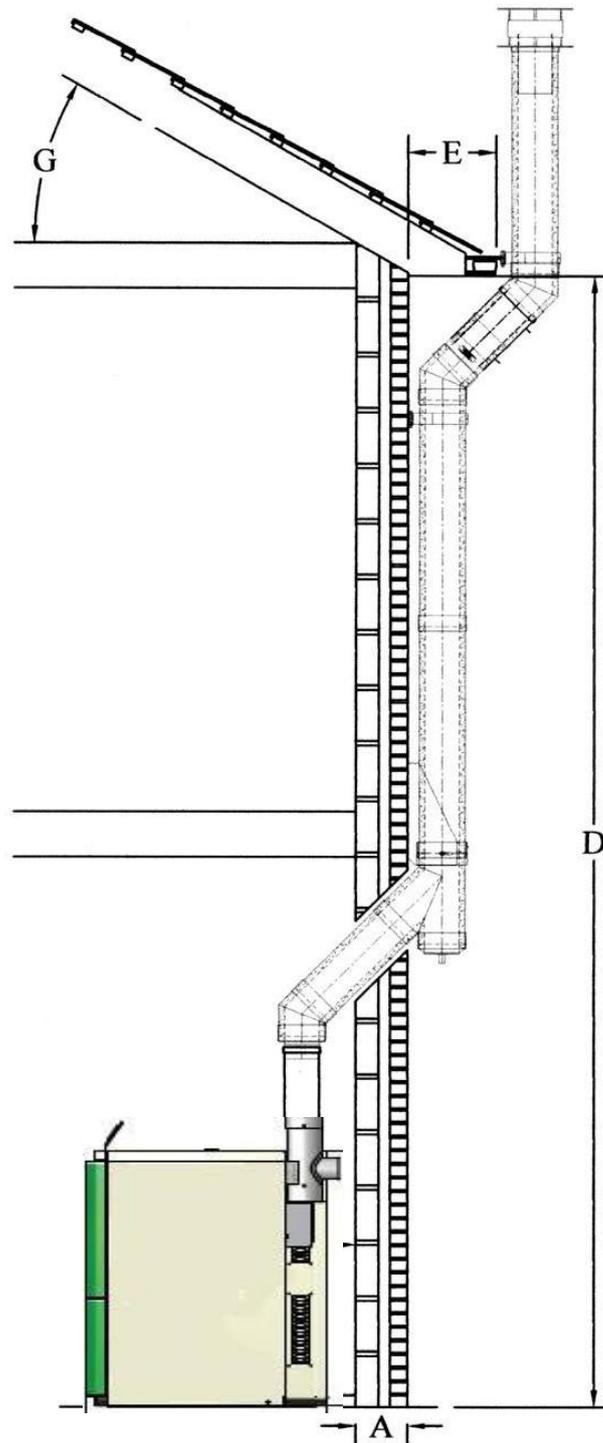
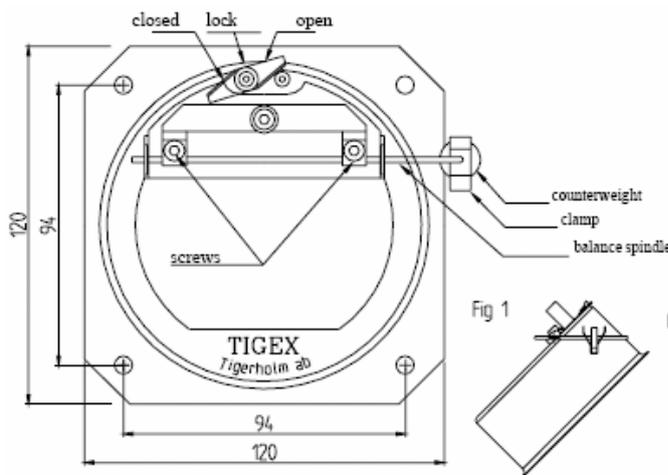


Diagram courtesy of Docherty Flues

The chimney or flue must have a cross-sectional area throughout its whole length that is at least the area of flue outlet of the boiler and must be sealed to the boiler with fire clay or other suitable compound.

Adjusting the draught stabiliser

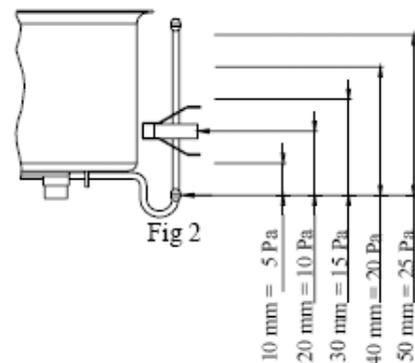
After installation the two screws should be loosened and the balance spindle should be turned to a 30° below the horizontal position when the flap is closed. Tighten screws. The counter balance weight should be adjusted so that the flap starts to open when the depression in the flue exceeds 10pa Flue depression can be measured via the test port on the flue outlet



Adjustment of Under-pressure

Adjustment of the under-pressure opening the flap is made by pressing the clamp on which the weight is fitted and moving it along the spindle. The under-pressure is changed approx. 1 Pa every 2mm the weight is moved, see fig. 2. The values are approximate and must be controlled with a draught indicator if exact under-pressure is required.

The draught varies considerably depending on the chimney, the weather and if the burner runs or not. This means that the function can vary between different installations, e.g. the flap may open more or less when the burner is running, flutters when the burner starts or a door is being closed, etc.



All flues must be installed in accordance with part J of the building regulations and certified by a competent person. A chimney data plate must be fixed and completed at the base of the flue system before commissioning. In particular it is important to note that the flue gas temp of the Woodpecker is lower than other solid fuel. In order to ensure the combustion gasses are properly vented the installer must ensure the flue is designed for safe operation.

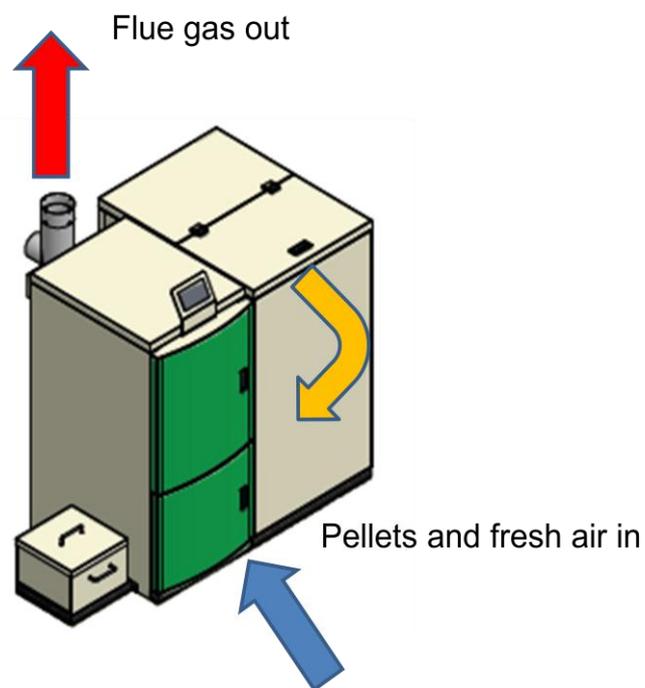
5.8 Air Supply

Free Air Requirements - Provision for air for combustion and ventilation:

General:

A sufficient permanent air supply to the appliance will be required for:

- (a) Correct combustion of fuel and an effective discharge of combustion products to the open air.
- (b) The ventilation of the space in which an appliance is installed to prevent overheating of the appliance and any equipment in and near the appliance.
- (c) The satisfactory operation of any draught break or stabiliser which may be fitted. It should be both the Architect's and the installer's concern that the air required for these functions be introduced so as to cause as little discomfort as possible to building occupants and thus to offer them the least temptation to obstruct ventilation.



Air for Combustion:

Example

- Boiler rating 15 kW
- Air for Combustion 550 mm²/kW
= 550 * 15 = 8,250 mm²
= 91 mm * 91 mm (~4 inch square)

Including allowance for draft stabiliser (standard fitting on woodpecker boilers)

- Air for Combustion 850 mm²/kW (with stabiliser) = 850 * 15 = 12,750 mm²
= 115 mm * 115 mm (~5 inch square)

For boilers fitted with a flue draught stabiliser – first 5kW=300mm² + 850mm² per kW above 5kW

This requirement will be satisfied if the room or space in which the appliance is installed has an opening or duct which is designed to allow the passage of air at all times equivalent, in total free area, to 550 square mm/kW (2.5 sq. inches per 10,000 Btu's) minimum of the appliance rating.



Note; It is not permitted to fit an extractor fan in the room which contains the Boiler

Air for Ventilation:

For an appliance in a confined space, care should be taken to provide air for ventilation. A working guide to the minimum free area of openings to be provided in addition to that for combustion air is as follows:

Where the air is taken from outside, 550 sq. mm/kW at both high level and low level in addition to the combustion air requirement. This means two more vents of the same area as the combustion air vent, one fitted at low level and one at high level.

The warranty for such boilers could be affected if proper free air requirements are not provided.

Woodpecker Energy recommends that two air vents should be provided into the room containing the appliance. One should be located at least 100mm above finished floor level and the other at high level. A single vent at high level may prevent fresh air from reaching the burner if the ambient temperature surrounding the appliance is high.

Boiler rating:	minimum combustion air vent area
15kW - 45,000Btu	8,250mm ² ~ 90mm x 90mm (3.5" x3.5")
25kW - 75,000Btu	13,750mm ² ~ 120mm x 120mm (5"x5")
45kW - 135,000Btu	24,750mm ² ~ 155mm x 155mm (6"x6")

Woodpecker Recommended ventilation sizes for boilers with flue draught stabilisers:

15kW - 10,000mm² = 4.3"Ø vent

25kW - 18,500mm² = 6"Ø vent

45kW - 25,500mm² = 8.5"Ø vent

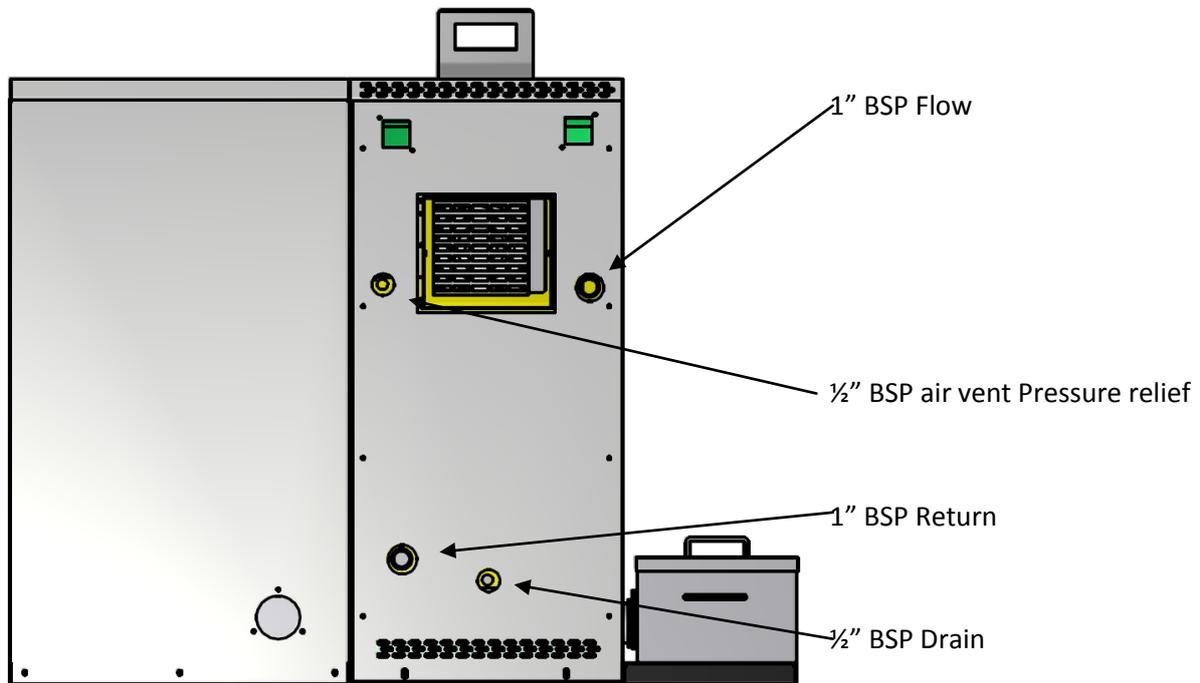
For enclosed rooms additional vents must be fitted at high and low level.



Warning: Never obstruct or cover permanent ventilation openings in the boiler room as these are required for the Safe and efficient operation of the boiler.

5.9 Water Connections

The diagram below indicates the plumbing connections at the rear of the boiler.



It is recommended that the boiler is plumbed into a sealed system. If an open vented system is fitted the maximum static head of water permissible is 90 ft. (27.44 meters), Be sure that the minimum head is sufficient to avoid pump cavitation, and that cold feed and expansion connections are fitted to avoid pump over. In all systems there must be sufficient allowance for expansion of the water in the system. The expansion vessel should be sized based on the water capacity in the boiler, buffer and the water in the entire heating system. Woodpecker recommends a minimum expansion volume of 10% of the total heating system volume.



Incorrectly sized expansion vessel will invalidate the warranty

The pump must always be placed on the return pipework just before the boiler. An automatic air vent and pressure relief valve must be fitted to the ½" BSP vent connection on the boiler. The pressure relief valve should be piped to a drain to prevent injury to the User or Service Technicians if it is activated.

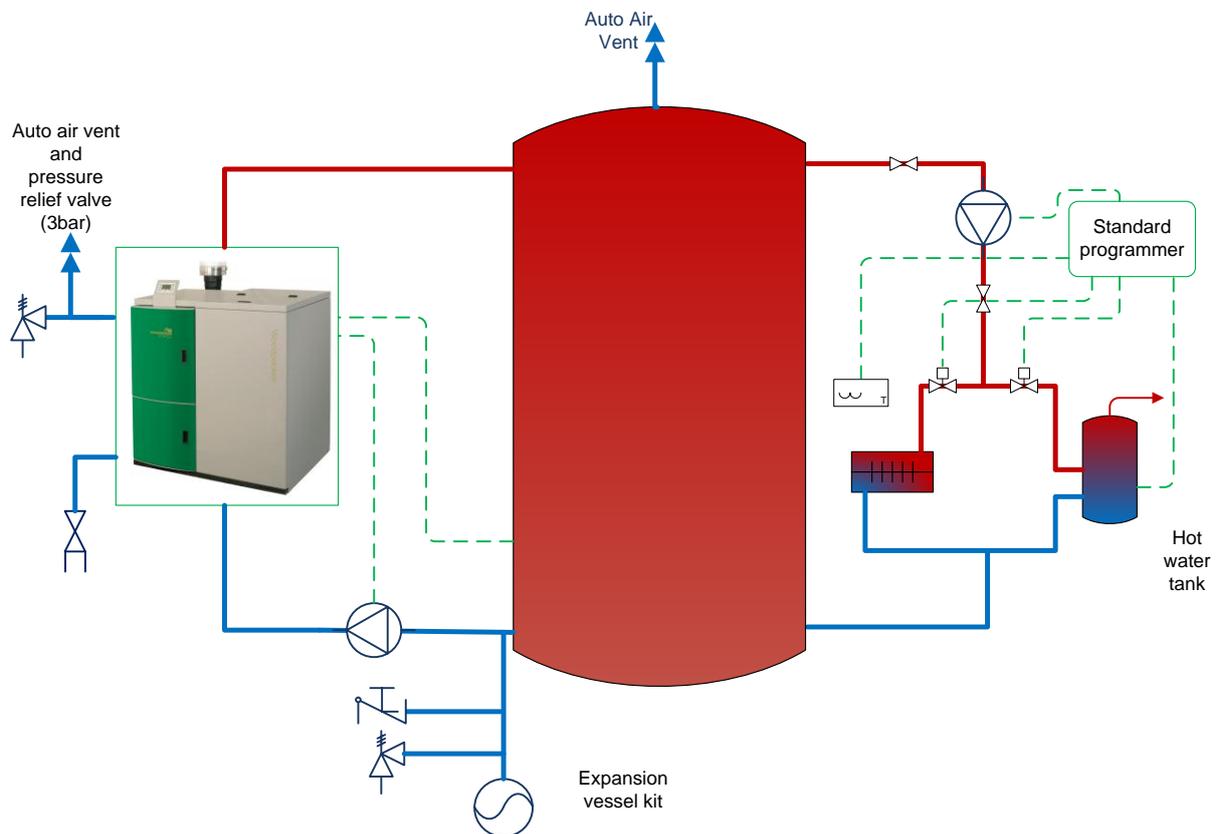
Woodpecker Energy recommends the use of a buffer tank. Buffer tanks act as a "shock absorber" in the heating system, they allow the boiler system to respond to instant changes in heat demand and ensure that the boiler does not overheat when the heating shuts off. The Woodpecker biomass system can only be connected directly to a conventional radiator heating system under exceptional circumstances. You must supply a schematic for prior approval. Woodpecker reserve the right to

refuse to commission a boiler where they feel the heating system is unsafe or will not operate correctly.

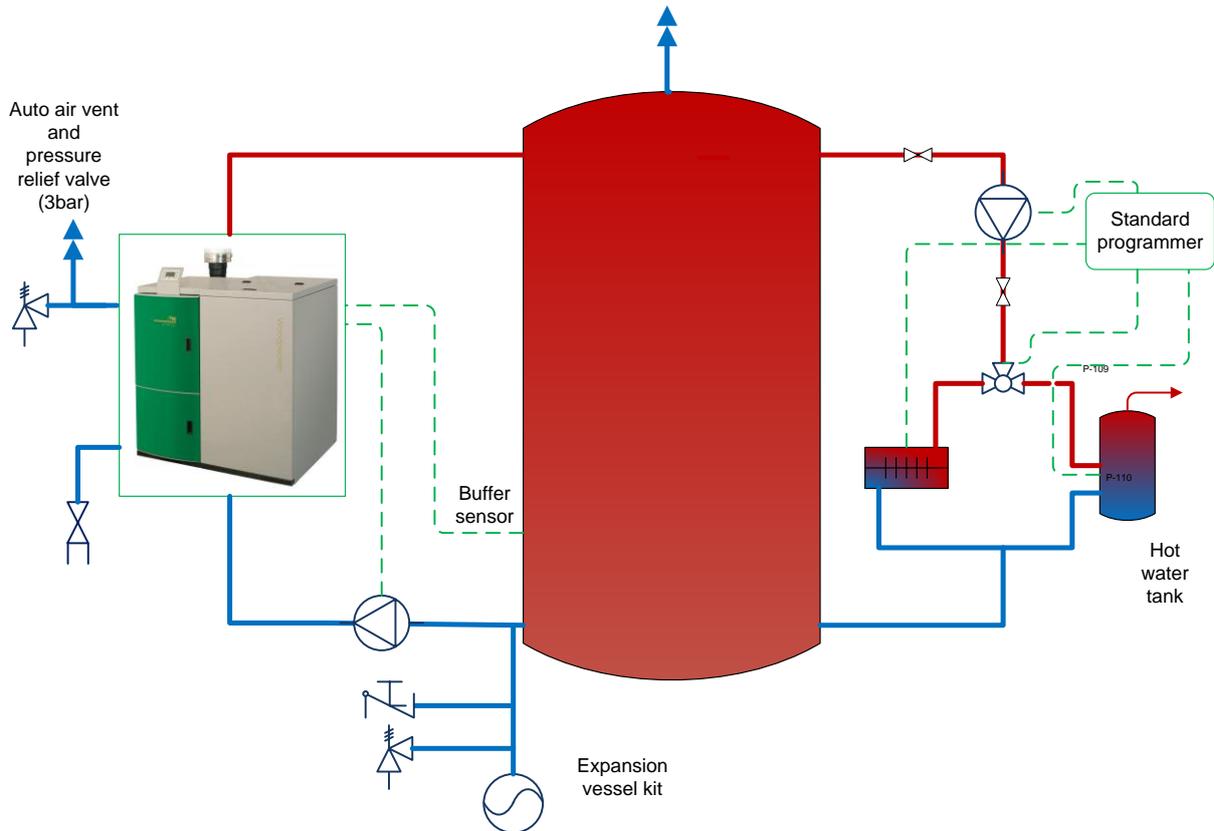
Once the plumbing has been completed the system should be fully flushed to clear any debris which may have become lodged in the pipework. The system must then be filled and the pump can be run continuously for a few hours to completely de-aerate the system. Only when the system has been fully vented can the boiler be commissioned

The installation and the design of the central heating system must be in accordance with BS EN 14336:2004: Heating Systems in Buildings. Installation and commissioning of water based heating systems. BS EN 12828: 2003; Heating Systems in Buildings. Design of water based heating systems. BS EN 12831: 2003; Heating Systems in Buildings: Method for calculation of the design heat load.

5.9.1 Y Plan Schematic

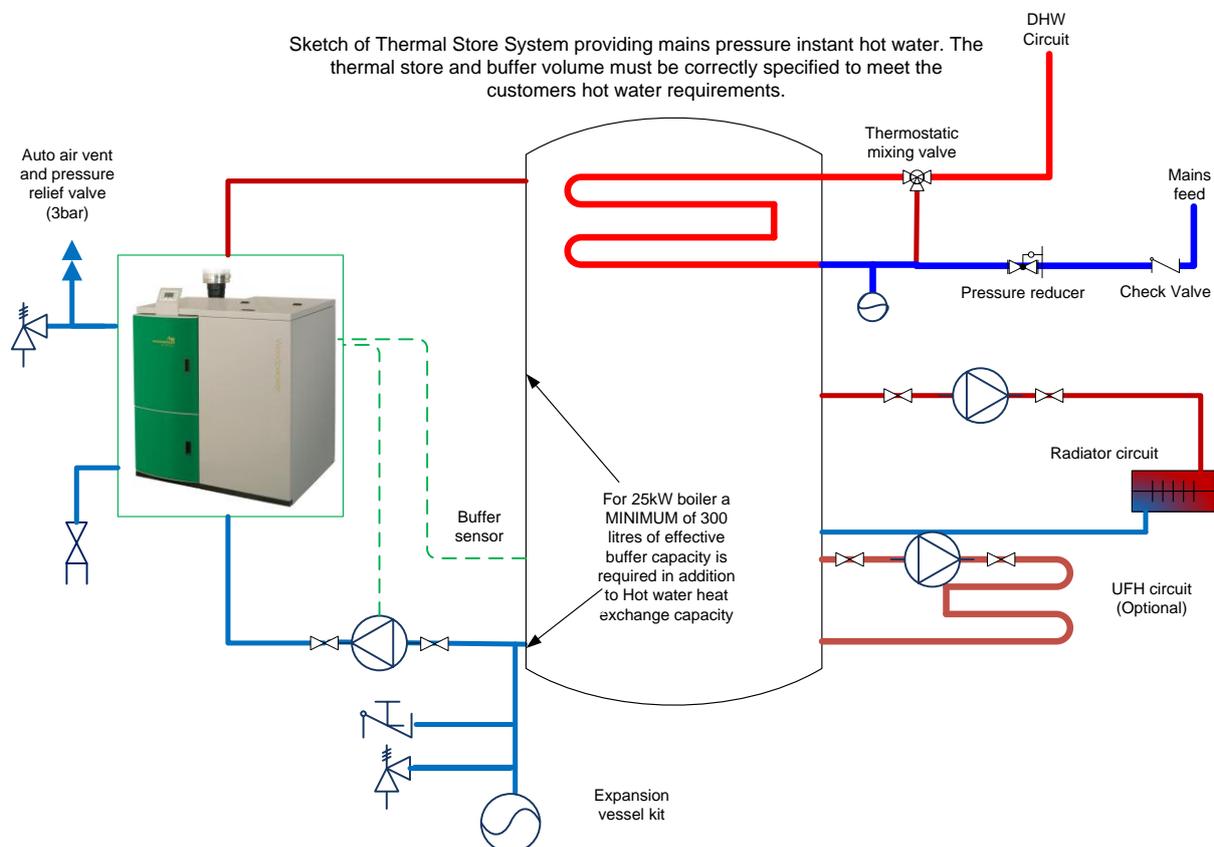


5.9.2 S Plan Schematic



5.9.3 Thermal Store schematic

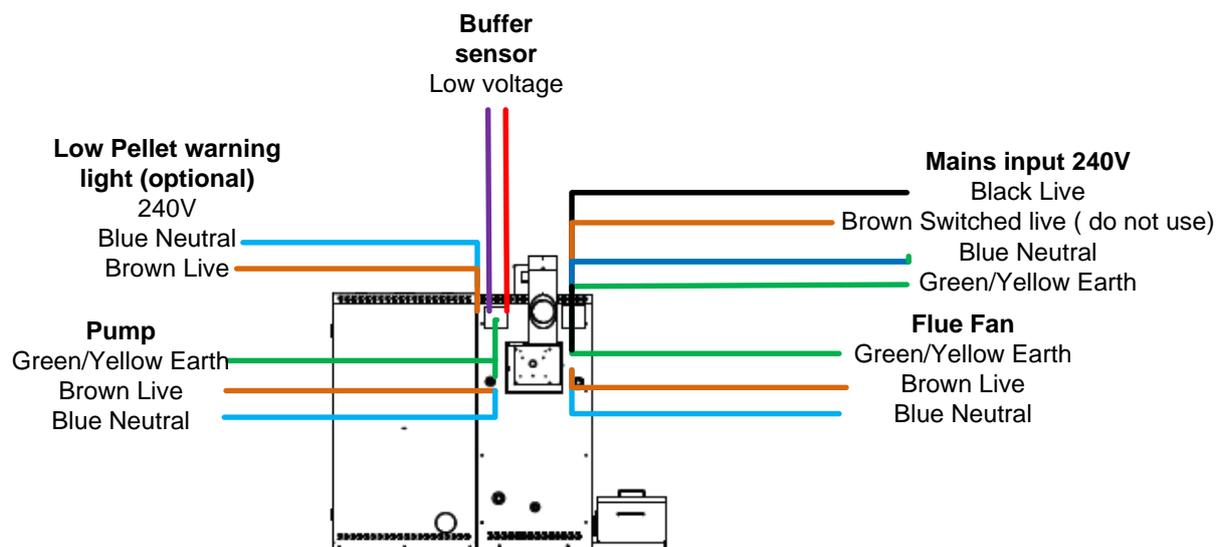
Sketch of Thermal Store System providing mains pressure instant hot water. The thermal store and buffer volume must be correctly specified to meet the customers hot water requirements.



5.10 Electrical Connections

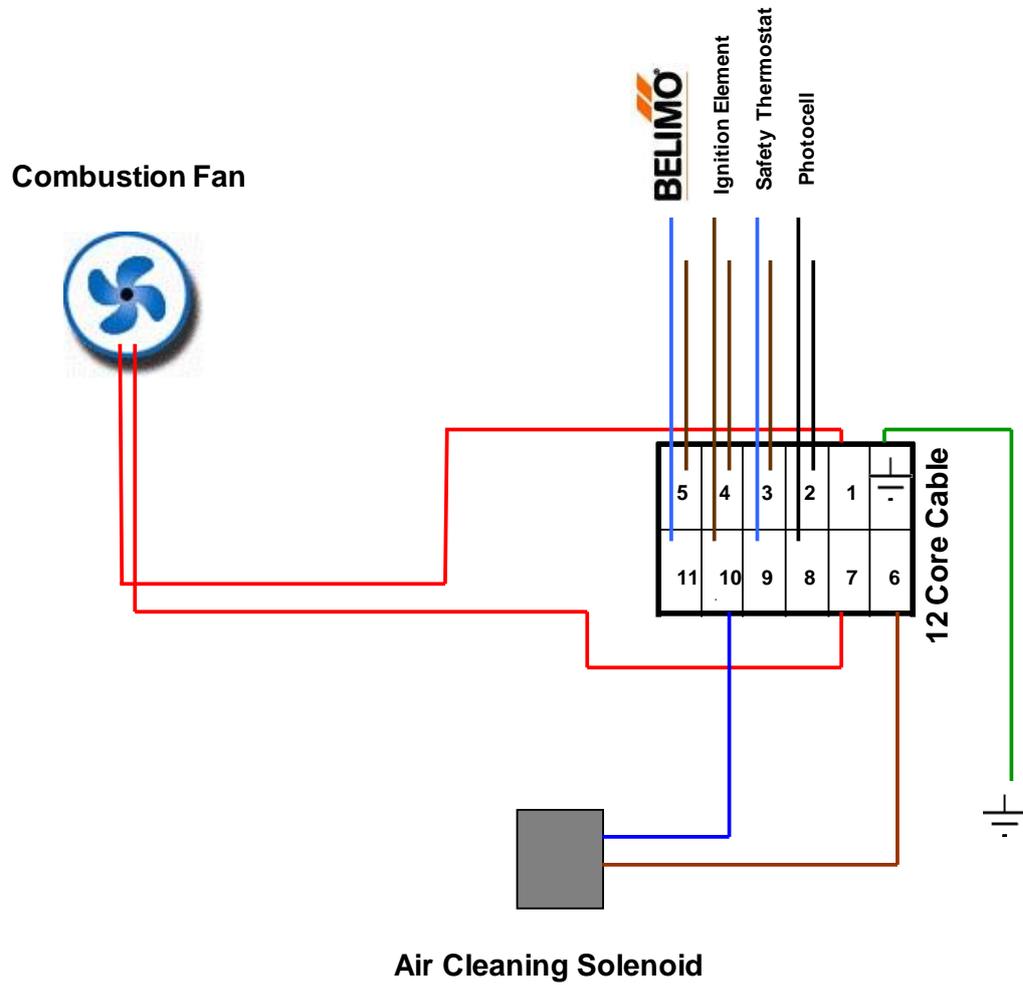
Electrical installations should only be carried out by suitably qualified and certified electricians. If in doubt on any issue relating to the electrical connections on the appliance contact Woodpecker Energy Technical Support or your Installer for guidance before carrying out any connections.

The Woodpecker boiler is powered by a 230V 50 Hz electrical supply which should be protected with a 5A fuse. It is recommended that a power isolation switch is located adjacent to the boiler to isolate the power during servicing and maintenance but also out of the reach of children and to prevent accidental turning off of the mains power.

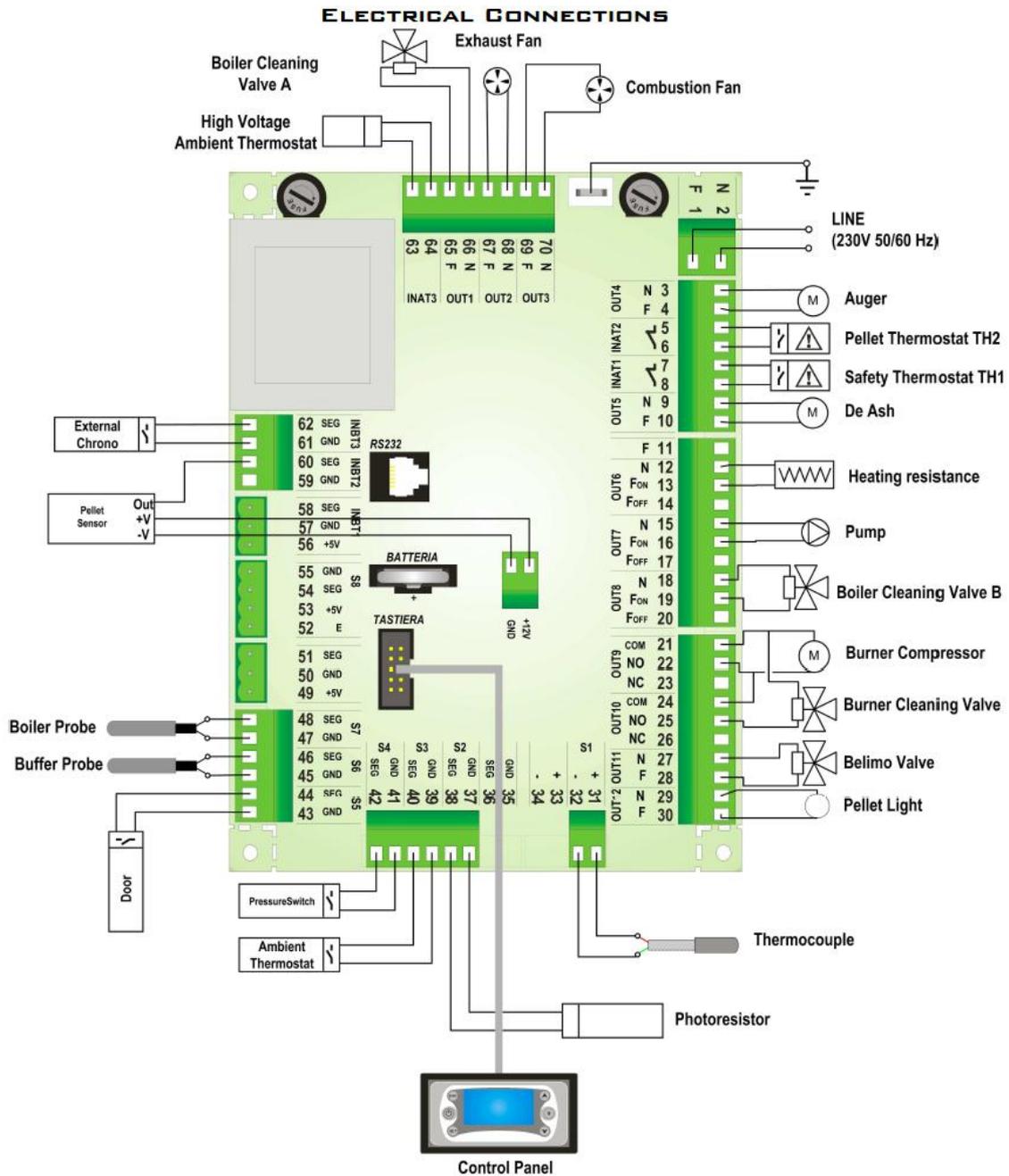


Only authorized Woodpecker Energy personnel may open the control panel on the boiler. Any interference with the wiring in the control panel will invalidate the warranty. The boiler and complete plumbing system must be adequately earthed and bonded in accordance with local Building Regulations and Bye-Laws.

5.11 Self-Cleaning Burner Electrical Schematic



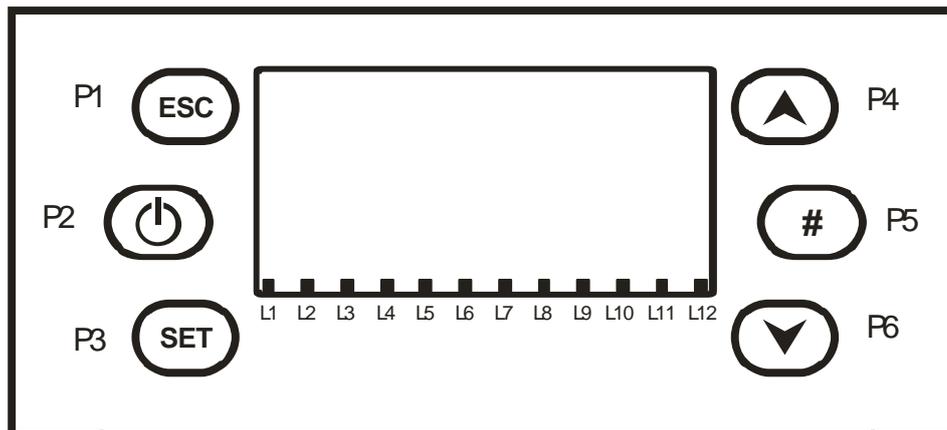
5.12 Boiler Control Panel Electrical Schematic



6 DIGITAL CONTROL SYSTEM

The BCS (Boiler Control System) controls all functions of the boiler and associated hardware (i.e. circulation pump, mini hopper auger motor, exhaust fan, etc.). The control panel display indicates the system state at which the boiler is running in real time as well as providing the Customer with a user friendly way of adjusting temperature and identifying clearly any issues which may occur.

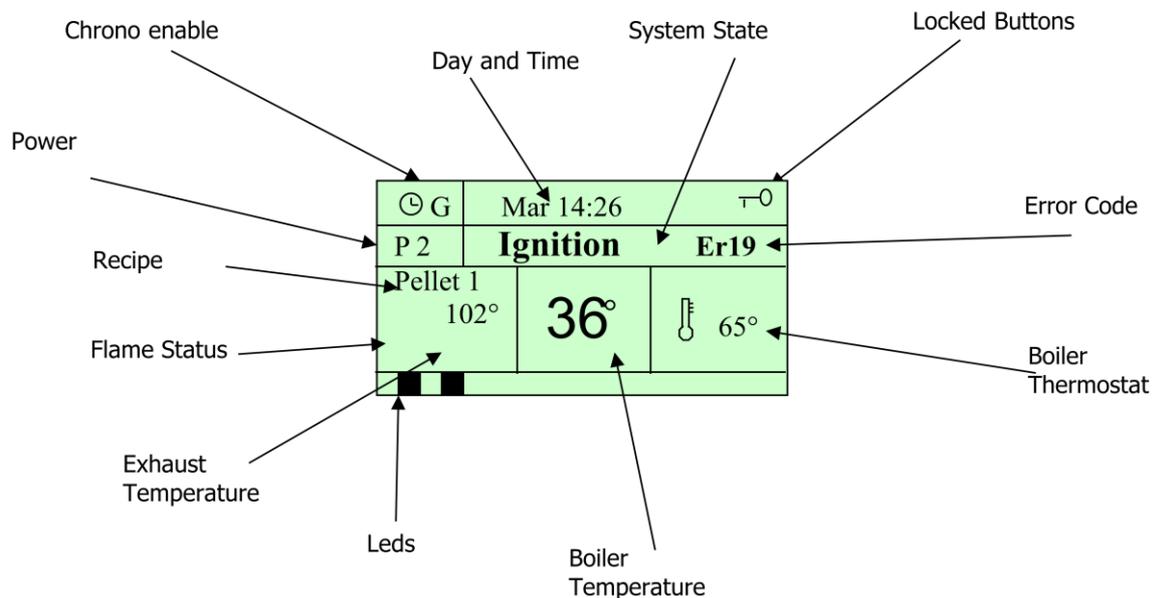
The control panel display is laid out as follows:



6.1 Buttons

Button	Function	Description
P2	ON/OFF	Ignition: Press and hold for 3 seconds until beep.
P2	Unblock	When system is in Block or Error, Press and hold for 3 seconds until beep
P1	Esc/Back up	Exit from menu/sub menu
P3	SET	
P3	Menu	Select menu/submenu or item
P3	Select/Adjust/confirm	Press to select item, press to adjust item (display blinks) adjust with P4&P6 Press to confirm
P4 P6	Adjust value	P4 to increase and P6 to reduce value when blinking.

6.2 LCD Display



Information that can be seen on the Main Screen is:

- Key lock status
- Date and Time
- Chrono activation Modality (D daily, W weekly, We week-end) (NOT USED)
- Power Level in automatic operation shows current power level, in manual mode shows power selected.
- Selected recipe
- Functioning State *
- Error code
- Boiler Thermostat set value
- Water temperature
- Exhaust temperature
- Flame On 

*The Functioning States that can be seen on the Main Screen are:

- Check Up
- Preheating
- Preload
- Ignition
- Stabilization
- Run Mode
- Modulation
- Standby
- Extinguish
- Recover Ignition
- Block

Other information that is presented by the display:

- **Out of Fuel:** The message is displayed if the Pellet Sensor reads a lack of Fuel
- **Cleaning:** The message is displayed during the extinguishing phase of the Start-Stop program (if this function is activated).
- **Prob:** The message is displayed during **Check Up** (starting cleaning) if one or more of the sensors is 0 °C or 0% (photo resistance) or if one or more probes are unconnected or short-circuited. *This is not an error and can only be reset by repairing or replacing the relevant probe.*
- **Door:** The message is displayed if the door contact is open.
- **Pump on**
- **Auger on**

6.3 Power Display

DISPLAYED POWER IN AUTOMATIC MODE	
DISPLAY	DESCRIPTION
P 0	No power (OFF state or BLOCK state) or fans at max speed in CHECK UP state
P a	Variable Ignition or Stabilization Power
P 1	Power 1
P 2	Power 2
P 3	Power 3
P 4	Power 4
P 5	Power 5
P e	Extinguishing, Modulation or Standby Power

6.4 Error Messages

ERRORS	
DISPLAY	DESCRIPTION
Er01	Safety thermostat High voltage 1 Will also displayed when the system is OFF Boiler is over temperature
Er02	Pressure switch (not in use)
Er03	Pellet thermostat High voltage 2 Pellet tube over temperature
Er04	Water over-temperature
Er05	Exhaust over-temperature
Er09	Real time clock error
Er12	Ignition failed
Er13	Accidental Extinguishing for low brightness of the flame (The photo probe reads a light under value L00 - Light OFF)
Er16	Lack of voltage- power outage
Er19	Shut down due to Lack of Pellets in hopper

6.5 Menus

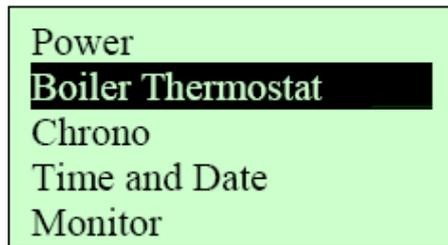
In the BCS there are two levels of Menu, a USER MENU and a SYSTEM (INSTALLER) MENU. The USER MENU allows the User to perform some basic functions such as:

- POWER adjust power level (commissioning engineers only)
- BOILER THERMOSTAT Adjust the boiler set temperature
- BUFFER THERMOSTAT Adjust the buffer set temperature
- CHRONO adjust internal timer DO NOT USE
- DATE/TIME Set the time and date
- MONITOR Monitor the functions of the boiler
- LANGUAGE Change the keyboard language
- LOAD Re-prime the auger
- KEYBOARD MENU To change display settings
- SYSTEM Go to the system menu (commissioning engineers only)

6.6 User Menu

USER MENU		DESCRIPTION
Power		Allows to User modify the combustion power if the controller is set to Manual Mode
Boiler Thermostat		Menu which allows the User to modify the Boiler target temperature
Buffer Thermostat		Menu which allows the User to modify the Buffer target temperature
Chrono (do not use)	<ul style="list-style-type: none"> • Modality <ul style="list-style-type: none"> ○ Disabled ○ Daily ○ Weekly ○ Week-end 	Menu used to select the functioning mode of the internal time clock in the BMS system.
	<ul style="list-style-type: none"> • Chrono Program <ul style="list-style-type: none"> ○ Daily ○ Weekly ○ Week-end 	Menu which allows the User to program 3 periods of time to switch on and switch off the boiler for each programming mode.
Time and Date		Menu to set time and date
Monitor <ul style="list-style-type: none"> • Smoke Temperature • Water Temperature • Buffer temperature • Flame Light • Ignitions' N° • Product Code 		Menu to display the temperatures and other values
Load		Menu which allows the auger to run continuously. (Used only on commissioning and during auger cleaning).
Language		Menu which allows to select the language
Keyboard Menu		Menu to test the connection and to update the panel (see section Learn Menu) (NOT USED)
System Menu		Menu to enter into Commissioning Menu

6.6.1 To Enter the User Menu:



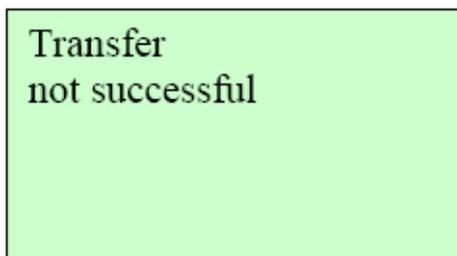
Push **P3** button to enter the user menu

Using **P4** and **P6** buttons it is possible to select the desired menu or submenu.



Function	Button
Enter in modify mode	P3
Decrease or increase value	P4 or P6
Save the new value	P3
Cancel the modifies and restore the old parameter's value	P1

If a parameter value is changed, the new value is sent to the boiler controller. But if the transmission failures a message appears:

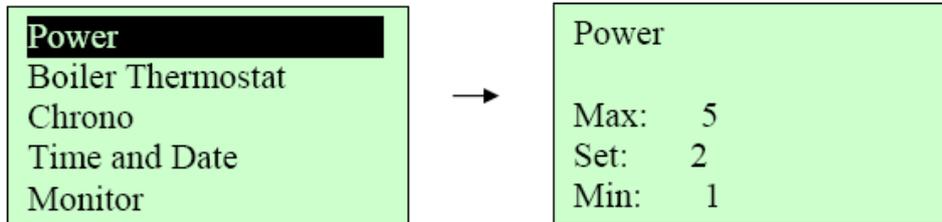


In this case you will need to repeat the procedure to adjust the parameter's value.

Push **P1** button to exit the menu. :

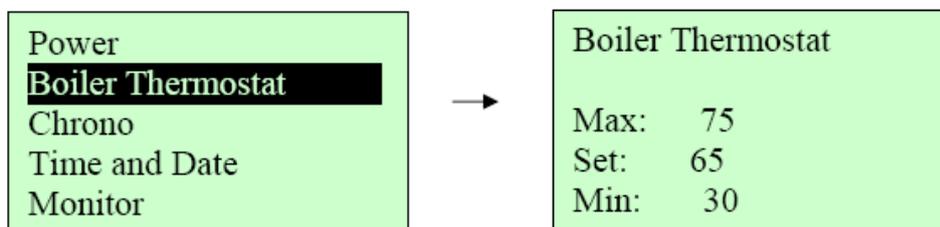
6.6.2 Power Menu

Menu which allows the User to modify the system combustion power **only** if the system is set to Manual by the Commissioning Engineer



6.6.3 Boiler Thermostat Menu

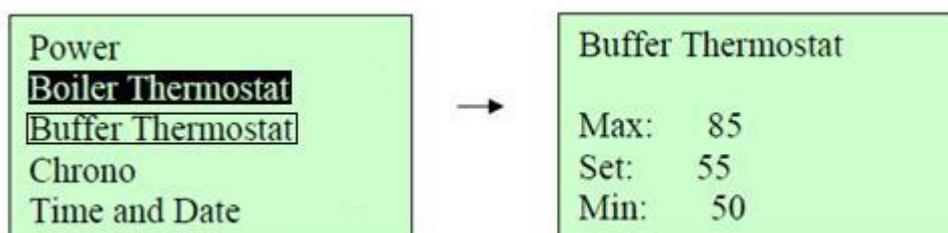
Menu which allows the User to modify the Boiler Thermostat's value for Standby i.e. boiler SET temperature.



The minimum and maximum values are factory set but are modifiable by the Service Technician. The boiler set temperature is set to an optimum value for your heating system during commissioning, woodpecker recommend that this is NOT adjusted

6.6.4 Buffer Thermostat Menu

Menu which allows the User to modify the Buffer Thermostat's value for Standby i.e. boiler Standby temperature. The boiler will re-light when the buffer cools by a set amount (10°)



The minimum and maximum values are factory set but are modifiable by the Service Technician. The Buffer set temperature is set to an optimum value for your heating system during commissioning woodpecker recommend that this is NOT adjusted

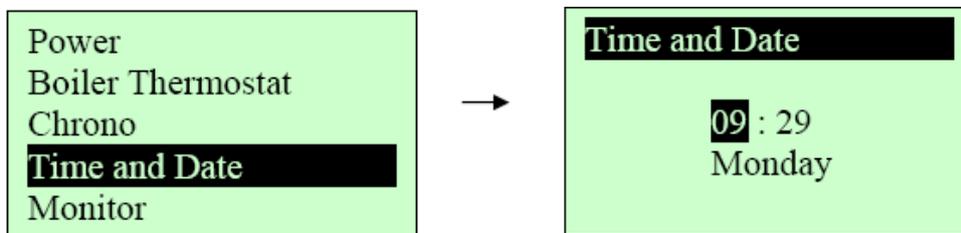
6.6.5 Chrono Menu

Menu which allows you to set the times the boiler will switch on and switch off. It is recommended that the CHRONO menu is **NOT** used and the boiler is controlled by the buffer control sensor. The central heating is controlled by a time clock and thermostat in the usual way. Therefore the boiler is left “on” at all times but only operates when there is a heat demand. This ensures that you get the heat you want when you want it.

Function	Button
Select hours, minutes or day	P4 and P6
Enter in modify mode	P3
Decrease or increase value	P4 or P6
Save the new value	P3
Exit without saving	P1

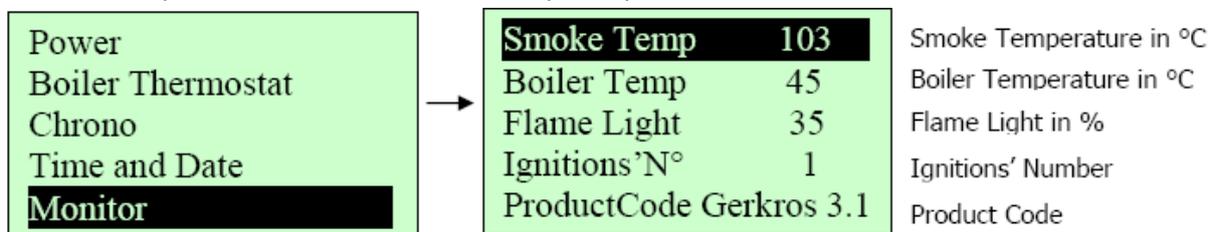
6.6.6 Time & Date

Menu for the manual setting of date and time.



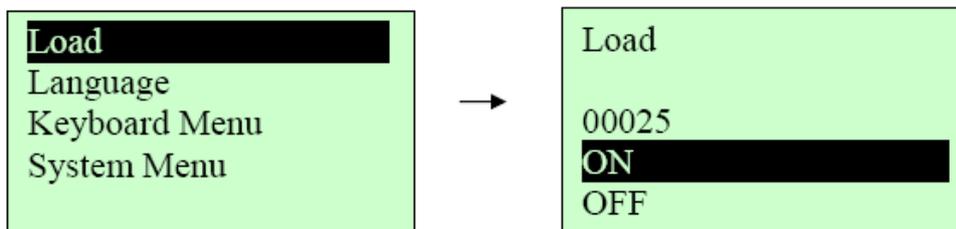
Monitor

Menu allows you to view the values as read by the system sensors.



6.6.7 Load Menu

Menu allows you to load the auger manually

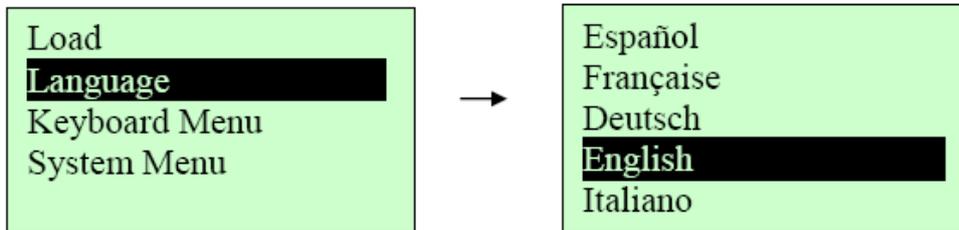


To enable the auger select ON, to stop the auger select OFF or wait 600 seconds. (The seconds of activation are showed on the display). **IT IS POSSIBLE TO LOAD THE AUGER MANUALLY ONLY IF THE SYSTEM IS OFF.**

NOTE: ONLY RUN THE AUGER WHILE THE PLASTIC FLEXI-PIPE IS DISCONNECTED FROM THE PELLETT FEED PIPE.

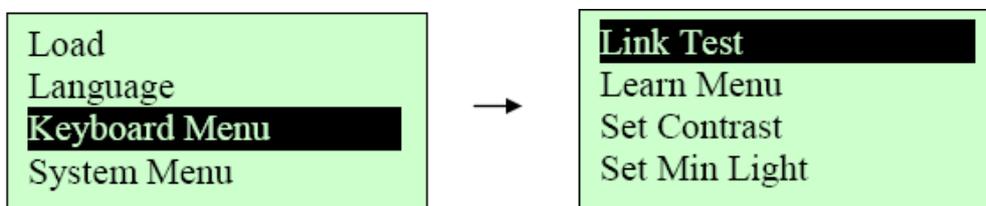
6.6.8 Language Menu

This menu allows you to change the language version on the display.



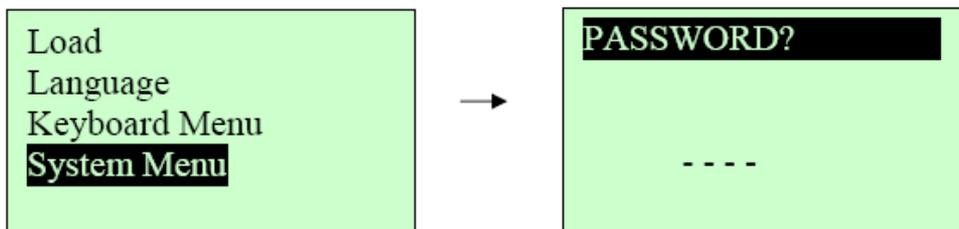
6.6.9 Keyboard Menu

This menu allows Technicians to test the panel connection and to update the product. Only Authorised Personnel should access this Menu.



6.6.10 Secret Menu

This menu is for Service Technicians and Commissioning Engineers and contains all the parameters and settings for the system. This menu is password protected.



6.7 Errors and Error rectification

Error Code	Cause	Remedial measures
ER 01	Safety Thermostat Tripped	
	The boiler safety thermostats have tripped due to high water temperature in the boiler	<p>Check the boiler and heating system is full of water. Check the boiler pump is working Check that there are no valves in the boiler primary circuit that may have been closed inadvertently. Reset both high limit thermostats. One located on the front of the boiler inside the upper door, the other located to the left side of the electrical panel inside the upper door. (remove black caps and press red button with the tip of a ballpoint pen or similar until it clicks) Reset the boiler by pressing on-off button (P2) for 3 seconds for the error to clear. If error does not clear call your installer</p>
ER 02	Pressure switch fault	Not fitted to boilers post 2009
	In models fitted with a pressure switch in the combustion chamber, a lack of pressure will result in an error	<p>Check combustion chamber door seals fully. Check exhaust fan is running Check ash bin is sealed Check ash auger is covered with ash, or that ash auger outlet is covered with foil tape. Reset the boiler by pressing on-off button (P2) for 3 seconds for the error to clear. If error does not clear call your installer</p>
ER 03	Pellet thermostat tripped	
	The pellet thermostat has detected heat travelling back up the drop tube into the burner	<p>Check that the exhaust fan is running Check for blockages in the flue, clear if found.</p> <p>Turn off power to the boiler Pull off the black rubber cap from the pellet thermostat on the pellet drop tube. Ensure the pellet drop tube is cool to the touch. Press the red button on the pellet thermostat to reset the thermostat. Refit black rubber cap. Ensure that the connectors have connected with the pins on the thermostat. Turn power back on. Reset the boiler by pressing on-off button (P2) for 3 seconds for the error to clear. If error does not clear turn power off and re-check pin connectors If error does not clear call your installer</p>

Error Code	Cause	Remedial measures
ER 04	Water Over Temperature	
	The water in the boiler has reached a temperature of 95°C	<p>Check that the boiler is full of water by:</p> <p>Checking the Automatic air vent on the boiler is clear and working.</p> <p>Checking that the system is at the correct operating pressure (sealed systems only)</p> <p>Checking that the header tank is full (open vented systems only)</p> <p>Check the pump is working.</p> <p>Reset the boiler by pressing in the manual high limit stats (on the front and left side of the front panel inside the upper door)</p> <p>Reset the boiler by pressing on-off button (P2) for 3 seconds for the error to clear.</p> <p>If error does not clear call your installer</p>
ER 05	Exhaust Over Temperature	
	Flue gas temperature has exceeded 250°C	<p>IF the flue temperature has reached this high level it is likely that the heat exchanger is damaged or not working.</p> <p>Check when the boiler was last serviced.</p> <p>If the boiler was serviced less than 1200 hours ago check the target board for damage.</p> <p>In either case call your installer</p>
ER 09	Real time clock error	
	The back-up battery in the control board has expired	Call your installer
ER 12	Ignition Failed	
	<p>During the ignition cycle the boiler has not detected a flame</p> <p>The ignitor has failed</p> <p>The flame sensor is dirty</p> <p>OR the pellets have not lit for another reason</p>	<p>Ensure the boiler is cool.</p> <p>Open the fire door; use the half-moon scraper to clear the blast tube. Note what you find: (typically unburned pellets but may be char or clinkers as well.</p> <p>Check there are enough pellets in the hopper</p> <p>Check that the pellets are not dusty.</p> <p>IF the pellets are dusty the hopper and auger will need to be cleared. call your installer</p> <p>Check that the ignitor is functioning.</p> <p>Check that the photocell is clean.</p> <p>call your installer for advice or assistance</p>

Error Code	Cause	Remedial measures
ER 13	Accidental extinguishing due to low flame	
	<p>The boiler has gone out unexpectedly!!</p> <p>It may have run out of fuel</p> <p>The flame sensor may be dirty</p> <p>The pellets may be poor quality.</p> <p>The blast tube may be blocked or damaged</p>	<p>Ensure the boiler is cool</p> <p>Open the fire door; use the half-moon scraper to clear the blast tube. Note what you find: (typically unburned pellets but may be char or clinkers as well).</p> <p>If there are clinkers in the blast tube. Scrape the blast tube thoroughly</p> <p>Reset the boiler by pressing on-off button (P2) for 3 seconds for the error to clear.</p> <p>Restart the boiler.</p> <p>If the boiler does not relight:</p> <p>Refer to ER 12 and:</p> <p>Check there are enough pellets in the hopper</p> <p>Check that the pellets are not dusty.</p> <p>IF the pellets are dusty the hopper and auger will need to be cleared. call your installer</p> <p>Check that the photocell is clean.</p> <p>call your installer for advice or assistance</p>
ER 16	Lack of Voltage	
	There has been a power cut or other power interruption.	<p>Ensure the boiler is cool</p> <p>Open the fire door; use the half-moon scraper to clear the blast tube. Note what you find: (typically unburned pellets but may be char or clinkers as well).</p> <p>Reset the boiler by pressing on-off button (P2) for 3 seconds for the error to clear</p>
ER 19	Lack of Pellet	
	<p>The level of pellets in the hopper has fallen below the level sensor</p> <p>The level sensor is faulty</p>	<p>Check the hopper fuel level. If the level sensor is exposed then refill the hopper. The boiler should relight immediately.</p> <p>If the sensor is covered then there is a fault with the level sensor and you should call your installer for advice or assistance</p>

7 How Does My Wood Pellet System Work?

The Woodpecker Biomass Heating System introduces state of the art technology to a very simple process. The basic steps of how the system works are illustrated later in this chapter.

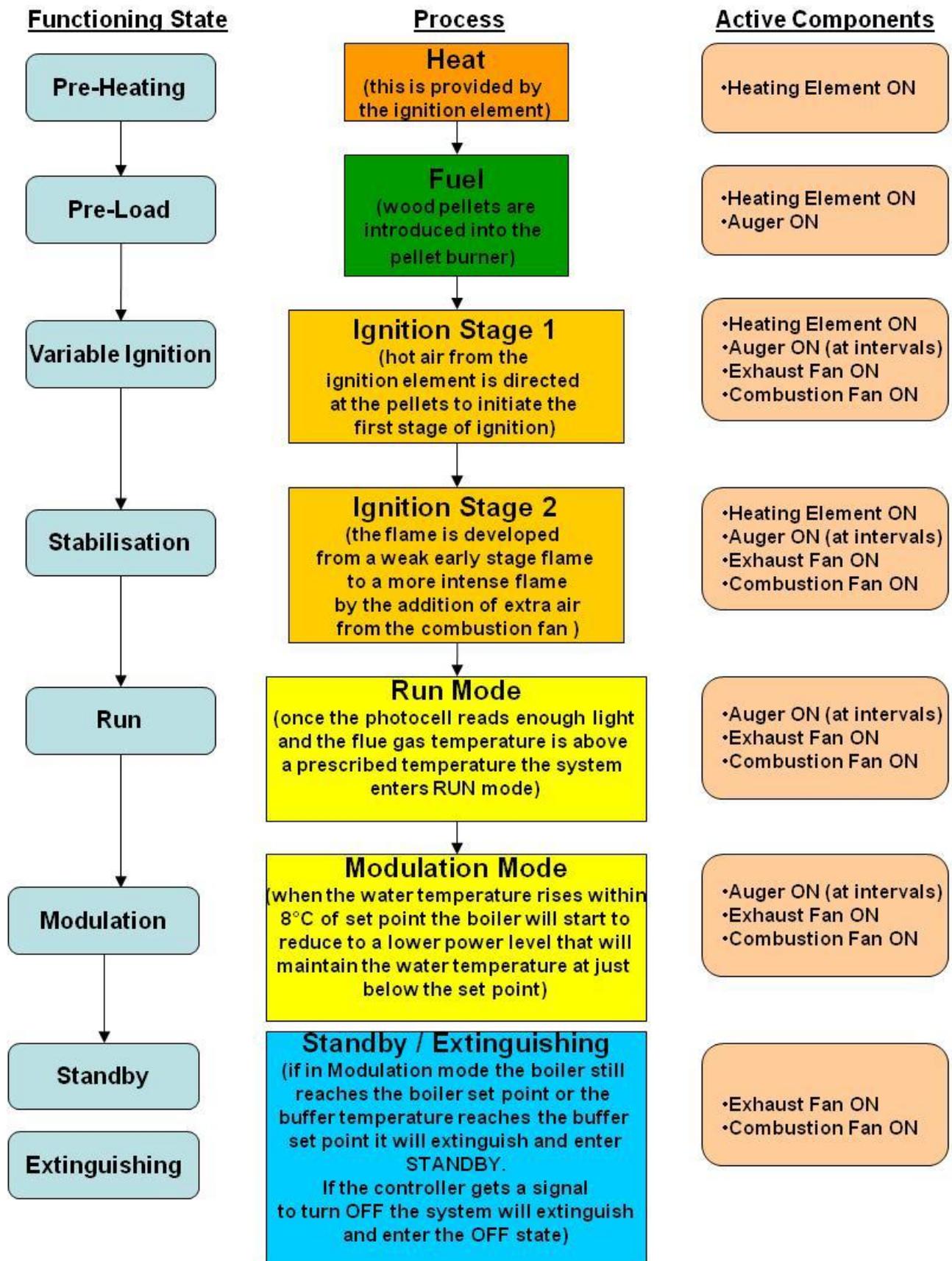
7.1 Sensors

On the Woodpecker system there are 8 sensors which provide the Boiler Control System with the information it requires to control the processes. These are:

- **Flue Gas Temperature Probe** - measures the temperature of the exhaust gases in the flue.
- **Water Temperature Probe** - measures the temperature of the water in the boiler.
- **Buffer Temperature Probe** - measures the temperature of the water in the buffer tank
- **Photocell**- measure the light value (flame) in the burner.
- **Pellet Level Sensor**- gives a signal to the controller when the hopper has reached a low level of pellet.
- **Door Switch**- gives a signal to the controller that the fire door is open.
- **Pellet Feed Safety Thermostat**- signals the controller if the temperature in the pellet feed pipe reaches an unsafe temperature.
- **High Limit Safety Thermostat**- signals the controller if the water temperature has reached an un-safe temperature.

7.2 Combustion Process

The combustion process to ignite and burn wood pellets cleanly and efficiently is summarised on the following flow chart:



7.3 What happens when I turn on my boiler?

When the Woodpecker boiler is given a signal to turn on (switched on at the digital controller at the boiler or by a remote time clock) the system goes through a series of steps:

7.3.1 Check Up

Time: Approx 15 seconds (TIMER t08)

This stage allows for the cleaning of the boiler and burner before the ignition phase.

- ✓ The combustion fan on the burner and the exhaust run at full power to eliminate any dust or smoke (in the event of a hot restart) from the boiler.
- ✓ The Belimo valve opens the burn back protection plate.
- ✓ All the system sensors are checked for correct connections.

7.3.2 Pre-Heating

Time: 40 seconds (TIMER t00)

This stage brings the ignition element to the correct temperature before loading the burner with pellets.

7.3.3 Pre-Load

Time: Approx 40 seconds (TIMER t38)

A pre-defined starting dose of pellets is given into the burner by the auger.

7.3.4 Variable Ignition

Time: 4 minutes (TIMER t02)

This stage starts the ignition process.

- ✓ The heat from the ignition element is directed at the pellets by the combustion fan which runs at a relatively slow speed.
- ✓ At intervals the auger introduces more pellets once the flame has begun to establish.
- ✓ The photocell monitors the light level as the flame develops.
- ✓ The flue gas temperature probe measures the temperature in the flue.
- ✓ At the end of this stage the photocell checks to make sure the flame intensity is over a pre-defined level and the flue gas temperature is over a pre-defined temperature. If both of these variables are satisfied then the process continues to the next stage (Stabilisation)

If these variables are not satisfied then this stage continues for another 4 minutes (second ignition attempt) and if the variables have not reached their values by the end of the second attempt, EXTINGUISHING will occur and an Er12 (Failed Ignition) will be displayed on the screen.

7.3.5 Stabilisation

Time: 90 seconds (TIMER t03)

This stage develops the flame even further before allowing the system to enter RUN mode.

- ✓ The auger introduces pellets more frequently into the burner.
- ✓ The combustion fan and exhaust fan increase in speed to speed up the combustion process.
- ✓ The ignition element remains on in this stage.
- ✓ At the end of this stage the photocell checks to make sure the flame intensity is over a pre-defined level and the flue gas temperature is over a pre-defined temperature. If both of these variables are satisfied then the process continues to the next stage. (Run mode)
- ✓ If these variables are not satisfied then this stage continues for another 3 minutes (second ignition attempt) and if the variables have not reached their values by the end of the second attempt, EXTINGUISHING will occur and an Er12 (Failed Ignition) will be displayed on the screen.

7.3.6 Run Mode

During run mode the combustion rates are pre-set for the 5 different power levels.

- ✓ On entering this phase the system starts at Power Level 1 and after 20 second intervals increases a Power Level each time until Power 5 is reached.
- ✓ The boiler will continue to run at Power 5 until the water temperature reaches within 8°C of the set point.
- ✓ The ignition element is off during this phase.
- ✓ The auger ON/OFF values are pre-set for each of the power levels.
- ✓ During commissioning the combustion fan and exhaust fan speeds are set to maintain the correct CO₂ (Carbon Dioxide) and CO (Carbon Monoxide) levels for clean efficient combustion.
- ✓ The circulation pump is activated by the controller once the water in the boiler reaches 65°C. The pump will turn off once the temperature drops to 62°C.
- ✓ If the unlikely event that light diminishes below a pre-set low value for a period of time then Er13 will appear to indicate that the light has gone out. This may be due to a lack of pellets entering the combustion tube due to dust or poor quality pellets.

7.3.7 Modulation Mode

The modulation range has been pre-set so that the system starts reducing to a lower power level when the water temperature comes within 8°C of the set point.

Example: Water temperature on the controller has been set to 85°C. When the water temperature in the boiler reaches 77°C the system enters Modulation Mode. When the water temperature reaches 77°C the power level drops to Power 4, 79°C – Power 3, 81°C – Power 2, 83°C – Power 1 and 85°C – Standby / Extinguishing.

- ✓ During Modulation each power level has its own pre-set parameters for fan speeds and auger ON/OFF values.
- ✓ Power Level 5 is the full rated output of the boiler.
- ✓ Power Level 1 is 50% of the rated output of the boiler.
- ✓ Depending on the heat loss from the heating system the boiler may settle at a power level to match the heat loss from the system and may increase power levels again to match a drop in water temperature.

The Modulation band may be set wider (up to a max of 15°C) by the Commissioning Engineer if it is deemed necessary

7.3.8 Standby / Extinguishing / OFF

The system goes into STANDBY when the water in the buffer reaches its set temperature or the water in the boiler reaches its set temperature (whichever is sooner) and the system goes into an extinguishing mode.

- ✓ The auger stops feeding pellets to the burner.
- ✓ The Belimo valve closes the burn back protection plate.
- ✓ The combustion fan and exhaust fan will run at full power until all light in the burner has extinguished and the temperature in the flue has decreased to a safe temperature.
- ✓ Once the flame has been extinguished the system enters its Final Cleaning stage where the burner cleaning and boiler cleaning takes place (if applicable).

The system will sit in standby until the buffer temperature decreases to a pre-determined amount (typically 10 degrees) when it will restart again with the CHECK UP phase.

The system will go into the OFF state when the system gets a signal from an external time clock or if the system is turned off manually on the controller. The shutdown procedure is the same as STANDBY. Once the extinguishing phase has been completed the boiler will remain in the OFF state until a signal is given to the boiler to start.

7.3.9 Pump Management

The circulation pump on the plumbing system (not supplied) is controlled by the central heating timer controller. It is programmed to activate when the heating or hot water system requires heat. The boiler primary pump is controlled by the boiler. This pump is sized to give a 10 degree temperature difference across the boiler when the boiler operates at full power. The pump starts when the water temperature in the boiler reaches 65°C and shuts off when the temperature decreases to 62°C.

In cold conditions when the boiler is OFF the pump will activate when the water temperature in the boiler drops to 5°C to prevent the water from freezing. "ICE" will appear on the display.

7.3.10 Extinguishing when boiler is in the OFF state

If the boiler goes into an extinguishing mode when the boiler is off it is because the photocell is receiving light (the ash pan door may be opened or in a very bright boiler room some light may be reflected on to the photocell.) Once the light has been eliminated the boiler will remain in the OFF state.



CAUTION: Hot while in operation. Do not touch. Keep children, clothing, furniture, and other combustible material out of the installation clearance area.

WARNING: Do not operate with chamber or ash removal doors open. Always ensure that the combustion chamber door on the boiler is fully shut after attending to the boiler.

WARNING: Do not store fuel or other combustible material within installation clearance area.

WARNING: Do not operate the boiler if there is the possibility that any part of the plumbing system may be frozen.

WARNING: Do not use an aerosol spray near the boiler when it is in operation.

8 Operation

The Woodpecker Wood Pellet Heating system is designed with the User in mind. The system is fully automatic and only requires occasional intervention by the User.

The boiler is manually started and will then automatically start, run, modulate and shut down as the water within the buffer reaches its set temperature. Once the controller detects a drop in temperature in the buffer, the boiler will restart.

The heating system can be operated by a remote time clock or timer thermostat in the house or elsewhere. The time clock/room thermostat controls the export pump which draws hot water from the buffer tank. The boiler will fire when the buffer tank cools.

Turn ON /OFF (Manually)

Hold the ON/OFF button (P2) for 3 seconds to start the boiler manually. To turn off the boiler repeat the process. If the boiler is turned OFF during the ignition phase then the system will finish out the ignition stage run for a few seconds and then shut down. If the boiler is turned ON during the shutdown / extinguishing stage the system will go into RECOVERY IGNITION, i.e. the system will restart once the extinguishing process has finished.

Set the boiler temperature.

The boiler temperature is set on commissioning. It can be adjusted by the User to a minimum of 55°C up to a maximum of 85°C.

To set the water temperature:

- Press SET button (P3) on the display.
- Use ▲ or ▼ to scroll up or down through the menu until you reach Boiler Thermostat.
- Press SET to select Boiler Thermostat
- Press SET to adjust the temperature by using the ▲ or ▼ buttons and press SET to save the selected temperature.
- Press ESC (P1) twice to return to the main screen.
- The buffer temperature is also set on commissioning. The temperature difference between buffer and boiler is critical for optimum performance of your heating system. If the boiler temperature is adjusted the buffer must be adjusted by the same amount.

Woodpecker strongly recommend that the boiler and buffer temperatures are only adjusted by Woodpecker trained competent persons



Warning Note

Properly installed, operated and maintained this appliance will not emit fumes into the dwelling. Occasional fumes may occur if the appliance doors are opened while the boiler is under fire. However, persistent fume emission is potentially dangerous and must not be tolerated. If fume emission does persist, the following immediate actions should be taken:-

- Switch off boiler, which will then enter extinguishing mode.
- Open doors and windows to ventilate room.
- When the boiler has shut down, check for flue or chimney blockage, and clean if required.

Do not attempt to relight the fire until the cause of the fume emission has been identified and corrected. If necessary seek expert advice.

9 Maintenance

As with all wood pellet heating appliances, periodic maintenance is required to be carried out by the user and an annual service by your installer.



WARNING: When carrying out periodic maintenance always allow the boiler to cool down sufficiently after being shut down before opening the ash pan door. Always wear heat resistant gloves and protective clothing when handling ash.

9.1 Householder Maintenance

Ash Box / Ash Pan

The ash box (in automatic de-ash models) only needs to be emptied every 3-4 months (depending on boiler usage). The ash box should fill to within 2" of the lid. When emptying the ash box enough ash must be left in the ash box to cover the auger outlet so air cannot get into the combustion chamber via the ash box. Make sure the ash box lid is fitted correctly to make a good seal.

In non-automatic de-ash models the ash pan is used to collect ash that is swept out of the combustion chamber. You should use a real bristle (NOT nylon) bush for this purpose. The ash pan is designed to fit under the firebox and catch all the ash you sweep out of the combustion chamber. If you leave the ash pan in the combustion chamber it will be damaged by heat. The ash pan is not covered under warranty if it is left in the combustion chamber. The combustion chamber will need to be cleared every 1-2 weeks (depending on boiler usage). After the installation of the Woodpecker pellet heating system it is recommended to observe the level of ash over a number of weeks to establish how frequent the ash containers need to be emptied.

Burner

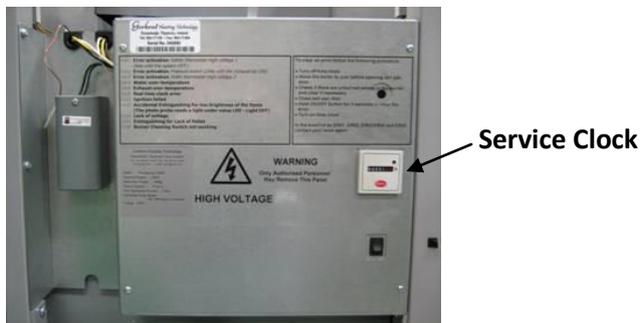
It is recommended that whenever the ash pan area door is open that the burner tube is scraped clean with the scraper tool provided. The Commissioning Engineer will demonstrate this to you.

Boiler

It is recommended that whenever the ash pan area door is open that the side walls of the boiler are brushed clean with the scraper tool provided. The Commissioning Engineer will demonstrate this to you.

9.2 Annual Service

It is recommended that the Woodpecker pellet boiler system is serviced annually or every 1200 hours, whichever comes first. Your Installer will advise you on the cost of the service and will advise you what Maintenance Contracts are available in your area



10 Commissioning

Commissioning may only be carried out by Woodpecker Energy authorised personnel. The digital control panel shall remain locked until all pre-commissioning checks have been carried out by the Commissioning Engineer. A pre-commissioning checklist must be submitted by the installer to the Local Agent prior to a visit by the Commissioning Engineer.

The Commissioning Engineer will carry out a series of checks on the installation and the appliance prior to commissioning. Should the Engineer find that some installation items remain outstanding or if there are items that may present a health and safety risk he may decide to not commission the appliance until recommendations have been carried out. The return visit by the Commissioning Engineer will incur a call back charge. Your local Agent will advise you of these charges.



Automatic De-Ash Models: Make sure that the foil tape provided is attached to the inside of the de-ash box so that the auger opening is covered. Failure to do so will lead to inaccurate adjustment of draft and flue gas analysis.



Fit Foil tape here

Commissioning can be divided into 3 separate tasks:

1. Pre-commissioning checks
2. Start-up check
3. Run mode check and flue gas analysis

1. Pre-commissioning checks

These checks include:

- ✓ Electrical installation o.k.
- ✓ Flue installation o.k.
- ✓ Plumbing at the boiler is o.k.
- ✓ Unlock the controller.
- ✓ Boiler system test.
- ✓ Load boiler hopper with pellets, preload auger.
- ✓ Check de-ash auger is covered if applicable.

2. Start Up Check

- ✓ Turn on boiler
- ✓ Monitor draught and adjust at each stage of ignition (20 -30 Pa draught)
- ✓ Ensure all functions are operating correctly
- ✓ Monitor photocell and flue gas temperature reading during start up
- ✓ Monitor the transition from start up to running mode

3. Run mode check and flue gas analysis.

- ✓ Ensure boiler reaches power 5.
- ✓ Set boiler to manually adjusted power levels
- ✓ **At each power level:**
- ✓ Check draught.
- ✓ Run for approx 15 minutes until flue gas temperature reaches working temperature.
- ✓ Carry out flue gas analysis. Adjust combustion fan to achieve CO₂ reading of approx 12% and CO of less than 300 ppm
- ✓ Repeat the process for power levels 4, 3, 2 and 1.
- ✓ Return the boiler to automatically adjusted power levels.
- ✓ Wait until boiler reaches the water temperature to enter modulation range and boiler modulates successfully, reaches water set temperature and shuts down.
- ✓ Monitor buffer temperature and set buffer target temperature so boiler shuts down just as power level 1 is reached in modulation



During the operation of the boiler it is recommended that you check for any leakage of products of combustion from the flue system or from service openings on the boiler.

- **Customer User Instructions**
 - Turning ON/OFF the boiler
 - Adjusting water temperature and buffer temperature
 - Control Panel
 - Loading the auger if it has run out of pellets
 - Managing error messages
 - Emptying the ash pan
 - Cleaning the boiler
 - Cleaning the burner
 - Cleaning the auger
- **Health & Safety Information**
 - Handling hot ash
 - Protective equipment
 - Electrical
- **Customer Acceptance**
 - Customer signs commissioning certificate to confirm that they have received instruction on how to use the appliance and are aware of the Health & Safety implications and procedures for handling hot ash. Customer also confirms that they understand the warranty and call back policy of Woodpecker Energy Ltd.

11 Warranty Information

Woodpecker Energy offers the following guarantees / warranties on this appliance:

5 year replacement warranty on the boiler heat exchanger against leaks.

12 months replacement warranty on all electrical components i.e., photocell, fans, thermostats, controller, display panel. Replacement of other faulty mechanical components and boiler casing

The above items are covered under a parts and labour guarantee.

Warranties are valid only when the product has been properly installed and commissioned by an approved Woodpecker Installer and has been serviced according to the manufacturers' instructions.

11.1 Exclusions

The warranty excludes all ancillary products associated with the system (e.g. flue pipes, circulation pumps, bulk hoppers and augers, plumbing and electrical system.). The ash pan and fibre board are regarded as a consumable item and are not covered under warranty.

The warranty does not cover Third Party damage to the product or damage caused by the plumbing (an example would be an inappropriately sized expansion vessel) or electrical system. Warranty does not cover issues arising from pellets that do not conform to CEN TS 14961, O Norm standard ON 7135 or DIN Plus 51731.

Recommendations advised during commissioning must be completed by your installer and confirmed completed to Woodpecker Energy Ltd. in order to validate the warranty.

The requirements for the flue installation, particularly in relation to draught, is the responsibility of the system installer. Compliance with Local Building Regulations must be adhered to.

The warranty does not cover misuse of the product or sabotage.

Any consequential loss or damage caused by the failure of a component on this product is not covered.

11.2 Call Out Policy.

All call out requests should be communicated by fax or e-mail to our Technical Support Dept. or your Installer stating clearly the following information:

The exact nature of the problem / defect and any error messages on the display.

The boiler serial number and model.

In the event that telephone instructions can correct the problem the system user will be provided with the appropriate instructions.

If deemed necessary temporary instruction may be given to minimise the problem.

Should a service call be deemed necessary the Technical Support Dept. or your Installer will advise the procedure involved in scheduling a visit by a Service Technician.

If the issues / defects are deemed to be covered under warranty then no charge will apply.

Maintenance contracts for our wood pellet boiler products are available from your Installer or direct from Woodpecker Energy Ltd.

12 Fuel

For the correct operation and efficient working of your wood pellet boiler system Woodpecker Energy recommend that only pellets that conform to European-wide CEN TS 14961 standard are used with their products. The system settings are for the use of 6mm pellets only. It is the responsibility of the Customer to ensure that only a quality grade pellet is used for the appliance. Issues arising from poor quality pellet and which necessitate a visit by a Technician are not covered under warranty and a call out charge will apply.

If you change your fuel brand or supplier contact your installer (or Woodpecker Energy) for guidance on whether the burner needs to be adjusted. Pellets must be stored in a dry and well ventilated storage area free from moisture. Incorrect storage of pellets may degrade the pellet quality and may affect the performance of the burner.

In cases where the pellets appear to have a high fines/dust content the auger system may need to be cleaned periodically to maintain the correct feed rate of pellets to the system. Some pellet brands may require the burner to be cleaned at more frequent intervals to remove any residues which may be left behind.

Wood fuels that conform to the European-wide CEN standard means that the product is of the highest quality and that the consumer can have every confidence in choosing wood heating. CEN, the European Committee for Standardisation, established a Technical Committee to define standards for solid biofuels.

Recommended Specification for Wood Pellets for Domestic Heating:

Origin: Chemically untreated wood without bark

Moisture content: $\leq 10\%$

Dimensions: Diameter 6 mm \pm 0.5 mm and Length \leq 8mm-25mm,

Ash content: $\leq 0.7\%$

Sulphur content: $\leq 0.05\%$

Mechanical durability: 97.5% after testing

Amount of fines: $\leq 1.0\%$

Additives: < 1 w-% of dry basis

Energy density: Min. 4.7 kWh/kg.

EU Standards: CEN TS 14961

Austria: ÖNORM M1735

Sweden: SS 187120 and SS 187121

Germany: DIN 51731

13 Technical Data

13.1 Woodpecker Wood Pellet Boiler Specification

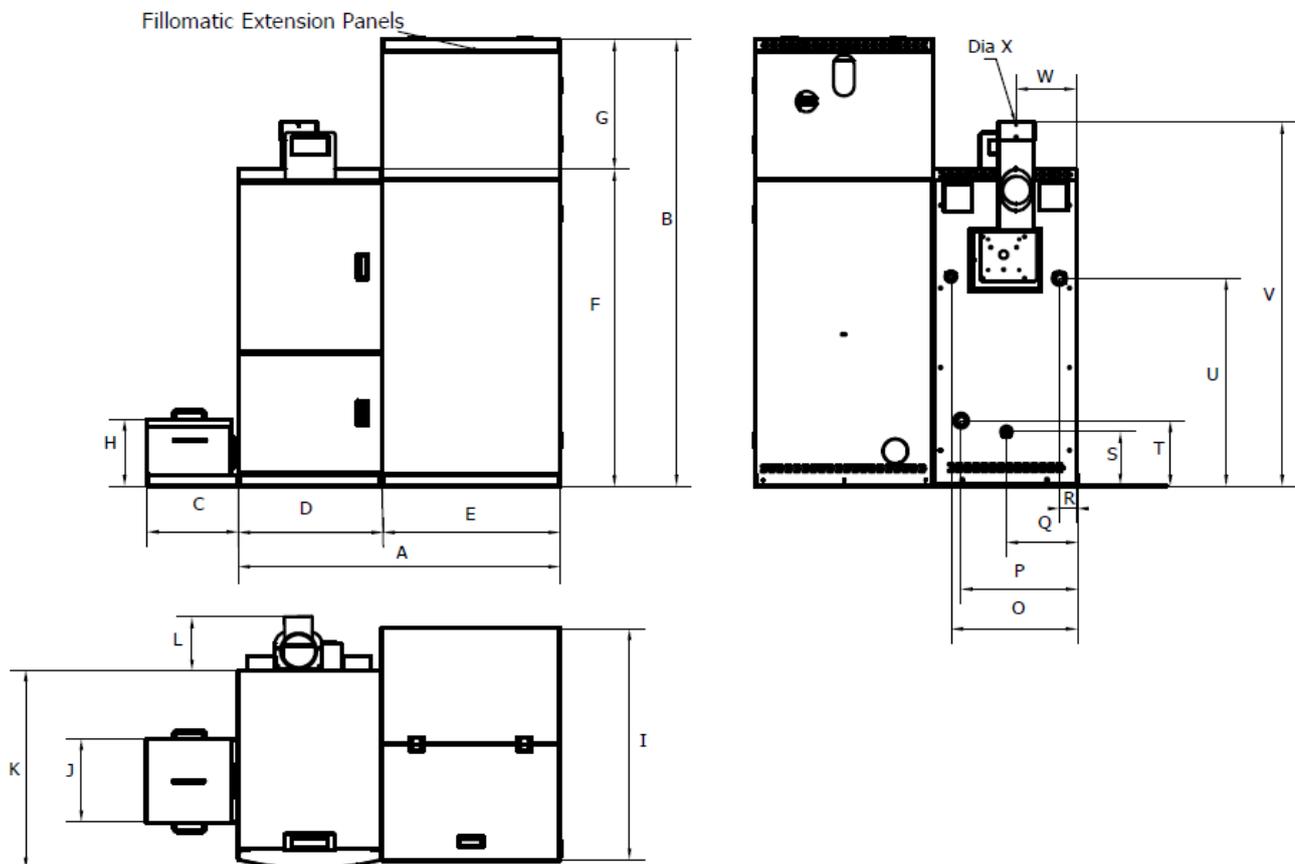
Description	units	Woodpecker 15	Woodpecker 25	Woodpecker 45
Dimensions				
Width excluding ash box A	mm	1170	1170	1260
Height F	mm	1160	1160	1160
Depth I	mm	880	880	880
Fuel hopper capacity Gross	Kgs	110	110	110
Fuel hopper capacity (between refills)	Kgs	70	70	70
Dry Weight Empty	Kg	280	350	510
Water Content	Litres	35	40	60
Boiler connections				
Flow and return	"	1	1	1
Drain and air vent	"	½	½	½
Flue stub diameter	Mm	125	125	125
Performance				
Operating temperature	°C	55-85	55-85	55-85
Nominal Output Min - Max	kW	7-15	12-25	17-45
Nominal fuel input Min Max	Kg/hr	1.5-3.2	1.7-6	3.2-10.8
Efficiency Nom. Input EN14875**	%	94***	94.2***	94***
Efficiency Nom input EN303-5*	%	89.8	91.7	91.6
Flue temp Max power	°C	135	133	158
Flue temp Min power	°C	90	95	102
Minimum draft at flue outlet	Pa	0-25	0-25	0-25
Exhaust mass flow	g/s	6-11	7-13	10-24
Max pressure	Bar	3	3	3
Operating pressure range	Bar	1.5-2	1.5-2	1.5-2
Safety thermostat setting	°C	105	105	105
Electrical				
Boiler power requirement		220-240V 50Hz 6.3A		
Max electrical power consumption	kW	0.5	0.5	0.5
Power input fuse	Amp	5	5	5
Circuit board fuse	Amp	1	1	1

*EN14875 Residential heating appliances fired by wood pellets

**EN303-5 Heating boilers for solid fuels, hand and automatically fired nominal heat output up to 300 kW

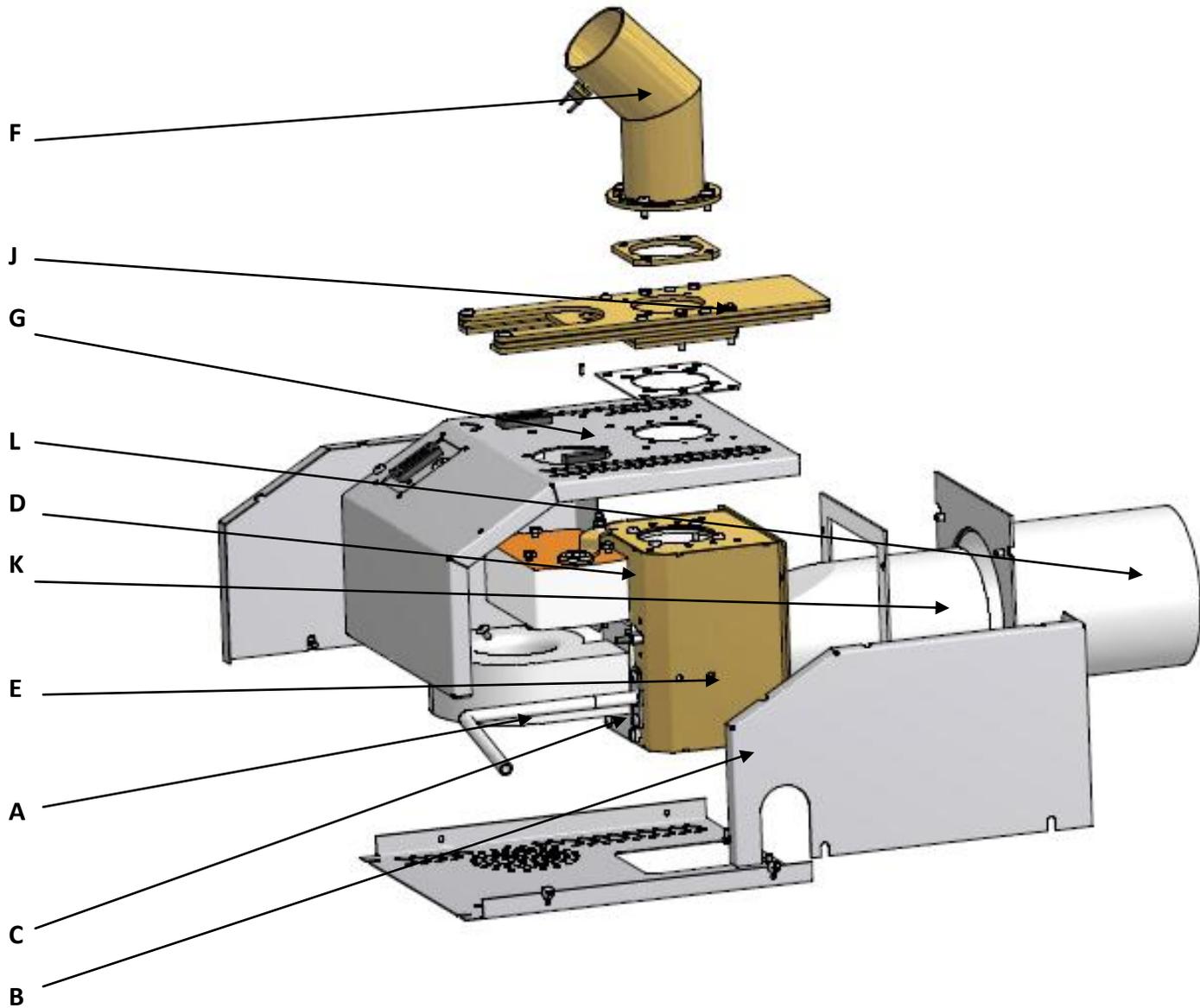
*** Manufacturers declared Efficiency

13.2 Boiler Dimensions



	Description	Woodpecker 15Kw	Woodpecker 25Kw	Woodpecker 45Kw
A	Width excluding ash box C	1160mm	1160 mm	1260 mm
B	Height of hopper and fillomatic	N/A	1650 mm	1650 mm
C	Width of ash can	N/A	340 mm	340 mm
D	Width of heat exchanger	517 mm	517 mm	618 mm
E	Width of hopper	642 mm	642 mm	642 mm
F	Height of hopper	1150 mm	1150 mm	1150 mm
G	Height of fillomatic	N/A	500 mm	500 mm
H	Height of ash can	N/A	240 mm	240 mm
I	Depth of Hopper	844mm	844mm	844mm
J	Depth of ash can	N/A	290 mm	290 mm
K	Depth of heat exchanger	651mm	718 mm	888 mm
L	Depth of extract fan	191 mm	191 mm	191 mm
O	Centre of blow-off to outer edge	400 mm	450 mm	545 mm
P	Centre of return to outer edge	400 mm	422 mm	510 mm
Q	Centre of drain-off to outer edge	245 mm	250 mm	299 mm
R	Centre of flow to outer edge	90 mm	60 mm	53 mm
S	Centre of drain-off to floor level	132 mm	197 mm	202 mm
T	Centre of return to floor level	170 mm	237 mm	242 mm
U	Centre of flow to floor level	625 mm	753 mm	878 mm
V	Height of flue connection to floor	1167 mm	1318 mm	1440 mm
W	Centre of flue to outer edge	211 mm	218 mm	263 mm
X	∅ of flue	125 mm	125 mm	125 mm

13.3 Burner Components



- A Combustion Fan
- B Ignition Element
- C Self Cleaning Air Pipe
- D Belimo Valve
- E Photocell
- F Pellet Safety Thermostat
- G Power Sockets
- J Slider Plate
- K Inner Combustion Tube
- L Outer Combustion Tube

13.4 Boiler Components

