

Owner's Manual



P4 Pellet Boiler



Read and follow the operating instructions and safety information! Subject to technical change!

Dear customer,

Congratulations on choosing a quality product from FRÖLING.

The FRÖLING P4 Pellet features a state-of-the-art design that conforms to all currently applicable standards and testing guidelines.

Please read and observe the operating instructions and always keep them close to the boiler for reference. They contain safety information and all the operation and maintenance specifications needed to operate the boiler safely, properly and economically.

The constant further development of our products means that there may be minor differences from the pictures and content. If you discover any errors, please let us know.

Subject to technical change.

The P4 Pellet boiler is produced using the highest quality materials and modern production system. The use of high technology laser cutting and robotic welding system, accompanied by time honoured European design, craftsmanship and attention to detail, results in a long lasting boiler with unmatched fit and finish.

With proper installation, operation and maintenance your P4 pellet boiler will provide years of safe, dependable, economic and earth friendly heating.

This manual contains paragraphs that require your special attention. These paragraphs are marked with the safety information according to ANSI Z535 described in chapter 2.

Units of Measurement

Most hardware and fittings on the boiler are metric (some plumbing fittings are British Straight Thread). In this manual the convention used for dimensions is that values are presented in English units, followed by metric units in parenthesis, for example: 6" (152 mm).

In this manual temperatures are presented as degrees Centigrade.

Note: A conversion table between Centigrade and Fahrenheit is provided in [Section 7.2](#).

Installation and Warranty Requirements

This product is provided with a limited warranty which is described in [Section 7.1](#) within this manual. The warranty is contingent upon the successful and legal installation of the boiler. At a minimum, the installation, adjustment, start up, service, and maintenance of this product must be performed by a licensed professional heating system installer. Where applicable, the installation must be inspected and accepted by the legally responsible entity. Conditions described in the text of the warranty for keeping it in force must be followed by the owner/ system operator.

If the boiler has been purchased through a dealer, the warranty claim must be made to the dealer. Otherwise, claims may be made directly to BioHeatUSA.

Please read the literature enclosed by the manufacturer regarding the various accessory devices. These devices are warranted by the manufacturer, NOT BY BioHeatUSA. These accessory devices must be



installed and used according to the recommendations of the manufacturer.

Failure to follow these instructions could result in property damage, bodily injury, or death. All boilers must be installed in accordance with national, state, and local plumbing, heating, and electrical codes and the regulations of the serving electric, water, and gas utilities. Contact local building or fire officials before installation about restrictions and installation inspection requirements in your area. This boiler is safety tested and listed. The P4 pellet boiler does not carry an ASME stamp.

The instructions in this manual and in supporting documentation (additional instructions, diagrams, and component information provided by BioHeatUSA) must be followed. If the instructions are in conflict with local code requirements, the local code requirements will prevail. When in doubt, contact your dealer or BioHeatUSA. The manual and supporting documentation must be retained by the owner/ system operator for reference and future use.

The installer is responsible for familiarizing the owner/ system operator with all aspects of boiler operations, safety procedures, monitoring and cleaning requirements, shut down procedures, and annual maintenance requirements.

NOTE

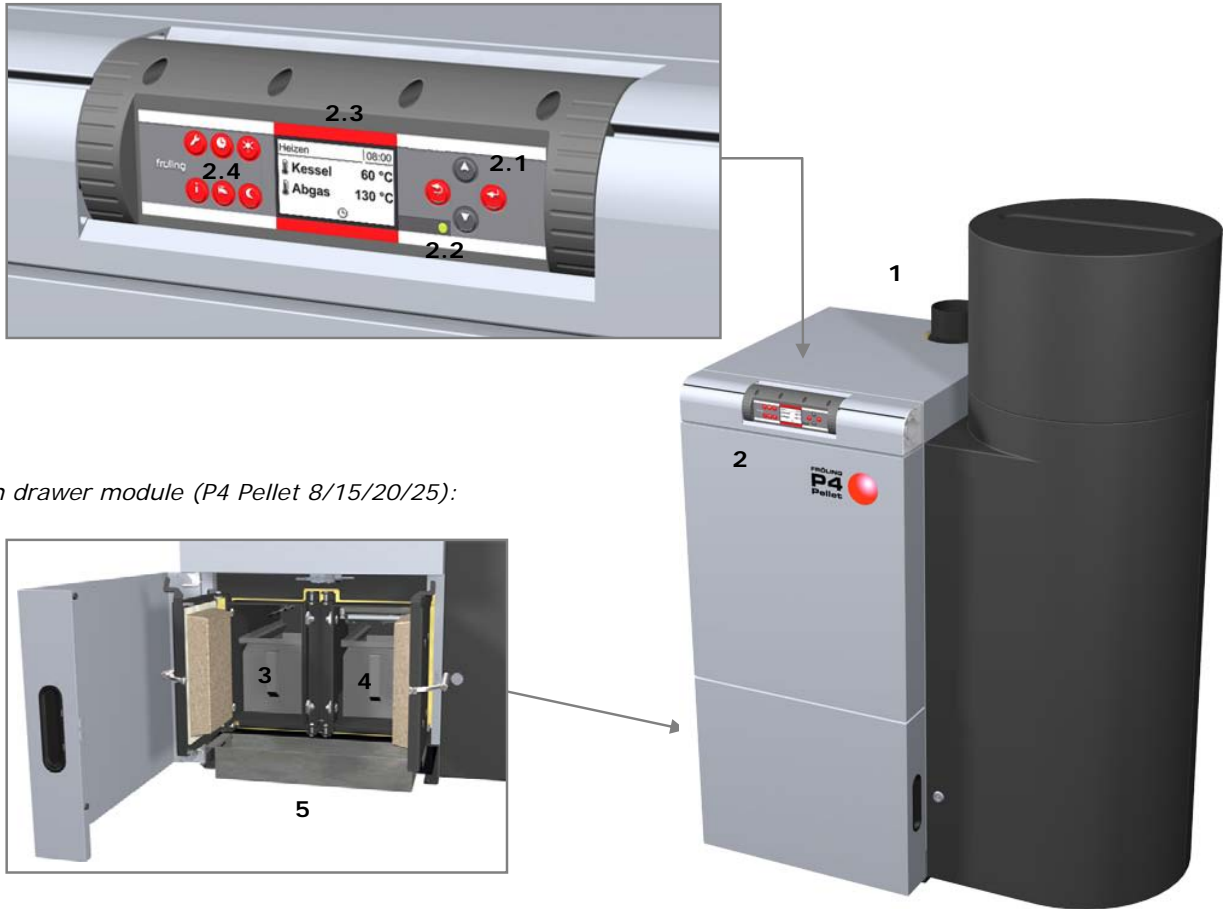
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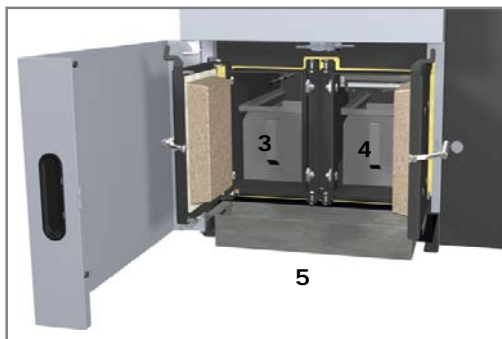
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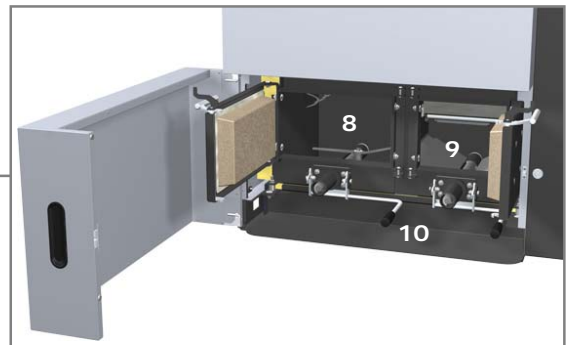
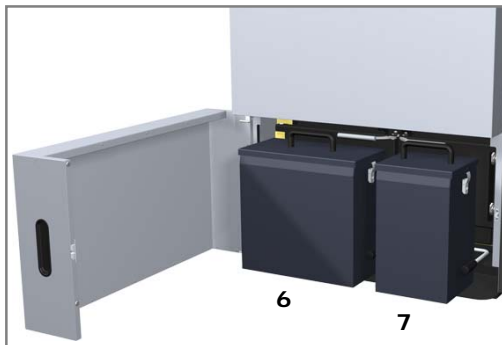
1 Product Overview



Ash drawer module (P4 Pellet 8/15/20/25):



Ash drawer module (P4 Pellet 32/38):



Below the insulating cover:



Pos	Component
1	P4 Pellet with integrated Pellets cyclone container
2	Lambdatronic P 3100 control system
2.1	Navigation keys to move around in the menus and to change the parameter values
2.2	Status LED (operating status): - slow green flashing light: boiler activated - fast green flashing light: boiler deactivated - flashing red light: malfunction
2.3	Large graphical display to show operating statuses and parameters
2.4	Function keys for calling up individual boiler functions or modes directly
3	Ash drawer - heat exchanger
4	Ash drawer - Combustion chamber
5	Ash drawer
6	Ash container - heat exchanger
7	Ash container - combustion chamber
8	Ash screw and stirrer of the automatic heat exchanger cleaning
9	Ash screw and guide plates of the combustion chamber cleaning
10	Lever of the ash box lock
11	Service interface of the control
12	Safety temperature limiter - STL

1.1 Boiler Fabrication and Testing

Your boiler was manufactured by Fröling, a world leader in hot water (hydronic) heating for over 40 years. The P4 Pellet boiler conforms to traditional high standards for quality and reliability. It offers modern pellet boiler technology with high operating efficiencies at over 90%. If treated properly and operated according to the guidelines in this manual it will provide years of safe, dependable, and economical heating.

P4 Pellet boilers are designed and built in accordance with European Standard EN 303-5. Safety and performance testing and listing for North American markets have been performed by OMNI Test Laboratories, Inc., Portland, Oregon. The boiler is tested and listed to applicable UL, CAN and other standards. The boiler is not ASME stamped. The installer should follow local or state installation requirements.

The P4 Pellet boiler is a pellet boiler designed and constructed for highly efficient combustion of wood pellets.

Do not burn other fuels in the P4 Pellet boiler. The P4 Pellet boiler is not a self contained weather-tight boiler. It should be installed within the heated building. P4 Pellet boilers should be installed with a thermal storage system to prevent short-cycling of the boiler during periods when the building is not calling for heat.

1.2 Models and Applications

Four P4 Pellet boiler models are available (8/15, 20/25, 30/38, and 48/60) covering an output range between 35,800Btu/hr and 200,000Btu/hr. Models 8/15, and 20/25 is available with a pneumatic hopper or 280 lb (240 liter) day bin. Specification data for each P4 Pellet boiler is provided in the Installation Manual. The boilers can be utilized as a single heat source, or in parallel with another boiler.

2 Safety

This manual contains paragraphs that require your special attention. These paragraphs are marked with the symbols described below:



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to personal injury.

2.1 Safety Information



RISK

Non-permitted use!

Incorrect use of the boiler can cause severe injuries and damage!

The instructions and information provided in the instructions should be observed!

Installation is to be performed by a qualified installer.

Details on procedure for operation, maintenance and cleaning, as well as troubleshooting for the boilers are included in the individual instructions. Any further work should be carried out by authorised heating engineers or by Fröling customer services.



WARNING

External influences!

Negative external influences, such as insufficient combustion air or non-standard fuel can cause serious faults in combustion (e.g. spontaneous combustion of carbonisation gases or flash fires) which can in turn cause serious accidents!

Instructions and information for versions and minimum values, as well as norms and guidelines for heating components in the instructions must be observed!



WARNING



Severe injuries and damage can be caused by an inadequate flue gas system!

Inspect and clean flues and chimney regularly. Problems with the flue system, such as poor cleaning of the flue pipe or insufficient chimney draught can cause serious faults in combustion (such as spontaneous combustion of carbonisation gases or flash fires)!


You can only be guaranteed of optimum performance from the boiler if the flue gas system is running smoothly!

2.1.1 Installation Hazards





Install, modify and use only in accordance with manufacturer's manuals. Refer to authorities having jurisdiction for proper installation. Contact local building and fire officials about restrictions and installation inspection in your area. If there are no applicable local codes, follow ANSI/NFPA 211 and CAN/CSA B365. Special precautions are required for passing the Chimney through a combustible wall or ceiling.

Inspect and clean exhaust system, Fuel Loading Chamber, Combustion Chamber, Ash-Pits, and Heat Exchanger frequently in accordance with owner's manual.

DANGER!

-  Working on electrical components may cause severe injuries from electric shocks!

WARNING!

-  The electrical system of the boiler shall be supplied from a double 115 V 60 Hz (nominal 230 V AC) 15 amp branch circuit including neutral and ground connection. For wiring instructions please refer to Installation Manual!
-  Chimney must be 5" (127 mm) diameter listed UL-103 HT or ULC-S629 residential all-fuel type or tile-lined masonry for models 8/15 and 20/25 and 6" (150 mm) for models 32/38 and 48/58. Flue connector pipe must be 5" (127mm) or 6" (150 mm) diameter (dependent upon boiler model) made of a minimum 24 MSG black steel.
-  Inadequate design, installation and maintenance of the flue gas system will lead to insufficient chimney draft and could result in Danger of Life or Severe Injury caused by serious faults in combustion, e.g. explosively combustion of wood gases and flash fires!
-  This boiler requires fresh air for safe operation and must be installed so there are provision for adequate combustion and ventilation air!

CAUTION!

- ▲ Do not connect this unit to a Chimney flue serving another appliance!
- ▲ Flooring must be a minimum 3/8" (10 mm) non-combustible material covering the installation clearance area! The floor must be level and reinforced if required. For construction of the floor beneath the boiler please pay attention to weight of boiler, water content and wood fuel according to the Installation Manual!
- ▲ Use original spare parts only. Installation of non-licensed replacement parts will void the warranty!

DANGER!**Risk of Fire or Explosion!**

- ▲ Do not burn coal, fuel coke, garbage and other residual material, painted or treated wood, garbage, gasoline, diesel, fuel oil, naphtha, engine oil, drain oil or other flammable liquids or any other organic materials or other inappropriate materials!
- ▲ Do not use chemicals, gasoline, oil or any other combustible fluids to start the fire!
- ▲ Use of inappropriate fuels can result in Danger of Life or Severe Injury caused by explosive combustion and flash fires!
- ▲ Burn fuels other than those designated in the manual will void warranty

DANGER!**Explosive Gases!**

- ▲ Never open Ash-Drawer Doors or Heat Exchanger Cover during operation or refueling!
- ▲ Faulty operation of boiler system will cause Danger of Life or Severe Injury and Property damage!
- ▲ Flue gases can cause fatal poisoning! In case of strong smell of flue gas:
 1. For safety keep all Boiler Doors and Ash-Drawer Doors tightly closed!
 2. Ventilate the room where boiler is installed!
 3. Close the door of the boiler room and doors to living areas!

WARNING!**Risk of Fire!**

- ▲ For safety keep all Boiler Doors and Ash-Drawer Doors and all Covers tightly closed during operation! Door seals must be maintained in good condition.
- ▲ Do not operate with flue draft exceeding 0.10 inches in water column (25 Pa), if no Draft Regulator is installed! Excessive draft could cause a solid fuel fire to burn out of control.
- ▲ Do not store fuel, clothing, furniture or other combustible material within marked installation clearances within boiler is installed!
- ▲ Faulty operating conditions not complying with Owner's Manual, such as insufficient combustion air, incorrect or insufficient cleaning and maintenance or non-permitted fuel could result in Danger of Life or Severe Injury caused by serious faults in combustion (e.g. spontaneous combustion of wood gases or flash fires)!
- ▲ Inspect and clean Boiler, Flue Gas Pipe and Chimney regularly!
- ▲ The Heat Exchanger, Induced Draft Fan, Flue Gas Pipe, and Chimney must

be cleaned regularly to remove accumulated creosote and ash. Ensure that the Heat Exchanger, Flue Gas Pipe, and Chimney are cleaned at the end of heating season to minimize corrosion during the summer months.

- ⚠ First firing during start-up of boiler system shall be carried out in accordance to Instruction Label at Fuel Loading Chamber Door and in attendance of an authorized installer or manufacturer's representative only! Disregarding of warning may cause damage or explosion of Combustion Chamber and severe injuries unfavorably!
- ⚠ Gas created during solid-fuel combustion may cause a small flash when the boiler is refueled if not properly vented!
- ⚠ Do not connect to any air distribution duct or system.
- ⚠ DO NOT INSTALL IN A MOBILE HOME
- ⚠ It is necessary to adhere to installation clearances and restrictions.

⚠ CAUTION!

Hot Surfaces!

- ⚠ Hot parts and the Flue Gas Pipe can cause serious burns!
- ⚠ Unauthorized access to the boiler room could result in personal injury and damage to property!
- ⚠ Keep children, clothing, and furniture away!
- ⚠ Always use protective gloves while loading boiler or carry out other work on boiler!
- ⚠ Always use Control Handles when opening Boiler Doors!
- ⚠ Do not touch Flue Gas Pipe during operation!
- ⚠ Do not carry out maintenance when the boiler is hot!
- ⚠ Do not touch hot surfaces behind Insulation Door!
- ⚠ Maximum draft marked on nameplate.

2.2 Permitted Uses

The boiler should only be operated when it is in full working order. It should be operated in accordance with the instructions, observing safety precautions, and you should ensure you are aware of the potential hazards. Ensure that any faults, which might impair safety, are rectified immediately.

The Fröling P4 Pellet is intended exclusively for heating up heating water. Use only the fuels specified under 2.2.1.

The manufacturer or supplier is not liable for any damages resulting from non-permitted uses.

2.2.1 Permitted fuel



Wood pellets made from natural wood with a diameter of 6mm and they meet the grade specifications of **Premium** or **Super Premium**.

Applies generally:

Before refilling the store, check for pellet dust and clean if necessary.

2.2.2 Non-permitted fuels

CAUTION

Non-permitted fuels!

Burning non-permitted fuels increases the cleaning requirements and leads to a build-up of aggressive sedimentation and condensation, which can lead to damage to the boiler and also voids the warranty! Using non-standard fuels can lead to severe faults with combustion.

- **Do not burn coal, fuel coke, garbage, gasoline, diesel, drain oil, naphtha, other flammable liquids, or other organic materials and any other inappropriate materials.**
- **Do not store fuel or other combustible material within marked installation clearances. Keep away from heater while it is in use.**
- **Do not use chemicals, gasoline, gasoline-type lantern fuel, kerosene, charcoal lighter fluid, or similar liquids to start or freshen up a fire in this heater.**

2.2.3 Who may operate the boiler

Non-permitted use of the boiler by unauthorized persons can cause faults in combustion. The operator is responsible to explain all cautions before allowing any person's access to boiler room.

Unauthorized persons, especially children, are to be kept away from the boiler.

Only trained operators are permitted to operate the boiler.

- The owner/system operator is responsible for correct operation of the boiler per guidelines in this manual.
- Incorrect operation can reduce the boiler life.

Throughout this manual, safety considerations are noted and discussed. A few general safety considerations to be considered are:

- Safety faults or deficiencies with the boiler or installation must be rectified as quickly as possible; either by the owner/system operator or the installer. Using makeshift compromises during the installation can create an unsafe situation.
- Outlet pipes, ventilation channels, fresh air openings, etc. must not be closed or blocked.
- A chimney connector shall not pass through an attic or roof space, closet or similar concealed space, or a floor, or ceiling.

2.3 Design Information

It is unlawful to carry out modifications to the boiler or to change or deactivate safety equipment.

In addition to the operating instructions and the applicable regulations for the country in which the boiler will be operated for installation and operation of the boiler system, all fire, police, and electrical regulations must be observed.

2.3.1 Approvals and reporting obligations

- ☞ **IMPORTANT:** Install, modify and use only in accordance with manufacturer's installation & operation manuals. Refer to authorities having jurisdiction for proper installation. Contact local building and fire officials about restrictions and installation inspection in your area. If there are no applicable local codes, follow ANSI/NFPA 211 and CAN/CSA B365. Special precautions are required for passing the Chimney through a combustible wall or ceiling. Inspect and clean exhaust system frequently in accordance with Owner's Manual.

2.3.2 Requirements for initial filling and re-filling of heating system

Water quality conditions for initial filling the heating system:

For first filling of heating system water must be clean, pure or purified, odorless and without suspended matter.

For re-filling of small amounts water shall be clean at least.

CAUTION

For swimming pools or spas do not use heating water directly. Proper sized heat exchangers are required! Boiler water is not potable!

Use of a suitable antifreeze mix is allowed, but will cause a loss in heat transfer efficiency.

- ☞ Note for filling with make-up water:
Bleed the filling hose before connecting to prevent air from getting into the system.

2.3.3 Outside Combustion Air

Provision for outside combustion air may be necessary to ensure that fuel-burning appliances do not discharge products of combustion into the house. Guidelines to determine the need for additional combustion air may not be adequate for every situation. If in doubt, it is advisable to provide additional air.

Outside air may be required if:

1. The solid fuel fired appliance does not draw steadily; experiences smoke roll out from boiler, burns poorly, or back drafts whether or not there is combustion present.
2. Existing solid fuel fired equipment in the house, such as fireplaces or other heating appliances smell, do not operate properly, suffer smoke roll out when opened, or back-draft whether or not there is any combustion present.
3. Any of the above symptoms are alleviated by opening a window slightly on a calm (windless day).
4. The house is built very tightly with a well sealed vapor barrier or foam type insulation and tight fitting windows and/ or has any powered devices which exhaust in the house.
5. There is excessive condensation on windows in the winter.
6. A non-balancing ventilation system is installed in the house.
7. Where fans are used in the fuel storage area, they should be installed so as not to create negative pressures in the room where the boiler is located.

If these, or other indications, suggest that infiltration air is inadequate, additional combustion air should be provided from the outdoors.

If a mechanical ventilation system (air exchange or heat recovery) is already present in the home it may be able to provide sufficient combustion make-up air for the solid fuel fired appliance. The ventilation system may need to be re-balanced after installation of the Froling P4.

NOTE

Canadian installations must conform to ANSI/NFPA outside air requirements of 1 sq. Inch per) 2.5cm) 1,000Btu/hr (.30kW/hr).

2.3.4 Installing the heating system

The entire heating system has to be designed according relevant national and local codes. The nominal power of the Central Heating Boiler shall be corresponding to the calculated heat demand for all heating appliances connected to the heating system both in summer and winter time.

The heating system must be able to carry all heat produced by the Central Heating Boiler and additional heat source, if applicable. The whole heating system as well as all heating zones has to be hydraulically balanced.

Special arrangements have to be provided for initial filling or re-filling and bleeding of all heating zones. Flow-check valves and zone-valves have to be installed for proper adjustment of water flow rates. All piping must be water and air tight and insulated safely.

If there is a risk of freezing for parts of the heating system all water within these heating zones has to be frost-proof!

2.3.5 Combination with storage tank

NOTE

We recommend that you use the pellet boiler with a storage tank, as this allows you to achieve a reduction in start-up and shut downs within the ideal performance range of the boiler.

Please contact your installer or a Fröling technician directly for the right measurements of the storage tank.

If your P4 Pellet boiler has been installed with a Thermal Storage System, this system may require periodic maintenance. Please review the periodic maintenance requirements of your thermal storage system with your installer.

2.3.6 Chimney connection / chimney system



The chimney is one of the most critical factors in the successful operation of any solid fuel heater, including the Fröling P4 boiler. A good chimney will provide a continuous and dependable draft to pull the exhaust gasses out of the building. The entire flue gas system must be designed to prevent, wherever possible, damage caused by seepage, insufficient feed pressure and condensation. Follow manufacturer's installation instructions for installing and supporting any specific chimney product.

NOTE

The boiler must be connected to a tile-lined masonry chimney or to a factory-built Type UL 103 HT (ULC S629 in Canada) approved chimney. The chimney must be in good condition. If the boiler is connected to a dirty or inadequate chimney, it can present a serious fire hazard. All chimneys and connections must conform to NFPA standard #211. No other appliance should be connected to this flue unless allowed by the local code authority. Consult your local inspector for chimney requirements and install the boiler in accordance with all applicable codes.

Flue gas exhaust temperatures can be low enough to cause condensation in chimneys. Condensation will, over time, damage a masonry chimney. Accordingly, installation of a stainless chimney liner (made with 316 or AL-294C alloys) inside the chimney flue is strongly recommended.

The flue gas temperatures (when cleaned) and the additional flue gas values can be found in the technical specification sheets (See chart below "see chart below "Boiler data for constructing the flue gas system").

The smoke pipe connecting the boiler to the chimney flue must be black or stainless, have a minimum thickness of 24 gauge, and rise a

minimum of ¼" per foot of run toward the chimney. Smoke pipe sections must be attached to one another with a minimum of three sheet metal screws and sealed with hi-temperature silicone. The smoke pipe should not contain more than two 90° elbows (45° elbows are preferred over 90° elbows).

The chimney draft must be stable (see chart below "Basic Boiler Data for Layout of Chimney system").

The top of the chimney must be 3 feet (0.9 m) above the roof and 2 feet (0.6 m) above any structure within 10 feet (3.0 m) measured horizontally.

Barometric Damper

- ☞ We recommend that you install a barometric damper. **1**
- ☞ Install the barometric damper directly under the mouth of the flue line, as there is always low pressure there. **1**


Basic Boiler Data for Layout of Chimney system

			P4 Pellet					
Component		Unit	8	15	20	25	32	38
Flue gas temperature	NL	°C	140	150	150	150	160	160
		°F	284	300	300	300	320	320
Flue gas mass flow	NL	kg/hr	25	36	52	65	78	92
	PL	Kg/hr	11	15	20	25	32	41
	NL	lb/hr	55	79	115	143	172	203
	PL	lb/hr	24	33	44	55	70	90
Minimum Draft	NL	Pa	8	8	8	8	8	8
	PL	Pa	6	6	6	6	6	6
	NL	inch WC	0.03	0.03	0.03	0.03	0.03	0.03
	PL	inch WC	0.02	0.02	0.02	0.02	0.02	0.02
Flue pipe diameter		mm	130	130	130	130	150	150
		inches	5	5	5	5	6	6

NL = Nominal Load, PL = Partial Load

2.4 Safety Devices



1	Key for automatic mode	<p>In case of overheating of the boiler:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Press and hold the  key for 5 seconds <ul style="list-style-type: none"> ↳ Automatic mode is switched off ↳ Control follows the boiler shutdown procedure ↳ The pumps continue to run!
2	Safety temperature limiter (STL)	<p>Switches off the blower fan at the maximum boiler temperature of 220 °F (105 °C). The pumps continue to run!</p> <p>☞ Once the temperature falls to below approx. 203 °F (95 °C), the STL can be reset mechanically.</p>

2.4.1 Devices for Preventing the Boiler from overheating

The P4 Pellet boiler comes with safety systems to prevent the following:

- Pressure in the boiler exceeding 30 psi (2 bar) (over pressure)
- Boiler water temperature exceeding 220°F (105° C)

Pressure Relief Valve



Protection against over-heating/ excessive pressure:

When the system pressure reaches a maximum of 30 psi (2 bar), the Pressure Relief Valve opens and the heating water is released in the form of steam.

Overheat Thermostat (Safety Temperature Limit Switch-STL)



The Overheat Thermostat stops combustion at a boiler temperature of 220 °F (105 °C). The circulators continue to run!

In case Overheat Thermostat automatically has been activated:

- Wait for boiler temperature to drop below 203 °F (95 °C)
- Remove cap of Overheat Thermostat (STL) by screwing-off counter-clockwise. STL located at right hand side of Boiler Control System viewed from front side of the boiler.
- Release STL by pushing button behind cap using a small screw driver or ball point pen. Release is successful, when fault is gone on display.
- Screw-on cap of STL again (clockwise).

On the Boiler Control System there is an Overheat Thermostat. If the boiler exceeds 220 °F (105 °C) it will shut off the Induced Draft Fan.

Gravity Over-heat Dump Loop

The piping and controls must be connected to the boiler in such a way that in the event of a power failure there is one loop of radiation available for gravity circulation. This loop must not be obstructed by any valves or other accessories which would prevent gravity circulation during a power failure. The piping is plumbed in such a way that excessive pressure will not be developed in any portion of the boiler or system. The loop must be large enough to dissipate at least 10% of the boiler's maximum rated heat output, assuming an ambient temperature of 65 °F (18 °C) and a mean water temperature of 180 °F (82 °C).

The minimum pipe size for this loop is 3/4" and if possible, the loop should be located and pitched to maximize natural thermal convection of the water. The loop must be positioned above the boiler. The design of the loop must be such that it can be made inoperative only in a deliberate manual action. If large enough, an existing heating radiation zone may be used for the over-heat loop. The loop must be equipped with zone valves which will open automatically during a power failure. We recommend AUTOMAG zone valves for this application (offered as an accessory).

Overheat loop: with electricity

The Honeywell L4008B aquastat provided with the boiler is wired in parallel with the thermostat on the zone with the most heating capacity in the main living area. Upon reaching the aquastat set point 200 °F (93 °C) the heating zone will be activated, pulling heat away from the boiler. The home owner is alerted to a potential problem with the boiler by an overly warm living space.

2.5 Emergency procedure**⚠ WARNING**


Do not touch the hot surface!

Hot parts and the flue pipe can cause serious burns!

- Protective gloves should generally be worn when working on the boiler.
- Only operate the boiler using the handles provided for this purpose.
- Insulate the flue pipes or simply avoid touching them during operation.



Before carrying out maintenance work on/in the boiler:

- Press and hold the  key for 5 seconds
 - Boiler follows shutdown procedure and changes to the operating status "Burner off"

⚠ WARNING

Do not open the ash doors during operation!

This may cause injury, damage and smoke!

It is forbidden to open the doors behind the insulating door during operation!

⚠ WARNING

Do not use unauthorised fuel!

Non-standard fuels can cause serious faults in combustion (e.g. spontaneous combustion of carbonisation gases / flash fires) which can lead to serious accidents!

Only use fuels specified in the chapter on "Permitted Uses" in these instructions.




2.5.1 In the event of loss of electrical power

- ❑ Do not open any Boiler Doors.
- ❑ Do not load fuel into the boiler.
- ☞ Boiler Control System automatically restarts after power fail restart.
- ☞ One hour after power has returned, check system for normal operation and compare the pressure gauge reading to initial settings. If system pressure is low, replenish water to the heating system according plumber's instructions.

2.5.2 Overheating of the system

If the system overheats in spite of the safety devices, proceed as follows:

- ❑ Keep all the doors on the boiler closed.
- ❑ Turn off the boiler by pressing the  key for 5 seconds
- ❑ Open all mixer taps, switch on all pumps.
 - ☞ Fröling heating circuit control takes over this function in automatic operation.
- ❑ Leave the boiler room and close the door.
- ❑ Open any available radiator thermostat valves


2.5.3 In the event of chimney fire

- ❑ Call the fire department.
- ❑ Keep all the doors on the boiler closed.
- ❑ Evacuate your house.
- ❑ If possible, wet your entire roof with a garden hose.

2.5.4 Strong Smell of flue gas



Flue gases can cause fatal poisoning!
When there is strong smell of flue gas:

- ❑ Keep all the doors on the boiler closed.
- ❑ Turn off the boiler by pressing the  key for 5 seconds.
- ❑ Air the room where the boiler is installed.
- ❑ Close the fire protection door and doors to living areas.

3 Operating the system

3.1 Initial start-up

NOTE

- ☞ **Optimum efficiency and efficient, low-emission operation can only be guaranteed if the system is set up by trained professionals and observing the standard factory settings.**

Take the following precautions:

- Initial start-up should be carried out with an authorised installer or with Fröling customer services.

The individual steps for initial start-up are explained in the operating instructions for the controller.

[See Section 4 for instructions on the Lambdatronic P 3200](#)

NOTE


If condensation escapes during the initial heat-up phase, this does not indicate a fault.

- ☞ If this occurs, clean up using a cleaning rag.

3.2 Filling/ refilling the store with fuel

CAUTION

Damage and injuries can occur if the store is filled when the boiler is on!

- Turn off the boiler by pressing the  key for 5 seconds
- Allow the boiler to cool down for at least half an hour.

When the boiler has cooled down:

- Close all opening to the store to seal out dust
- Fill the store with pellets
- ☞ Only use permitted pellets
[Page 12, 2.2.1 Permitted fuel](#)


3.3 Heating up the boiler

NOTE

- ☞ Changing the factory settings for primary and secondary air can have a negative effect on efficiency and emissions of the system.

3.3.1 Switching on the boiler

- Turn on service switch, if installed.


- Press the  key
 - ➔ Automatic mode
 - ➔ The heating system is controlled via the control system according to the selected mode.

3.3.2 Controlling the boiler

Necessary control steps. Displaying or modifying parameters:

➔ [See Chapter 4](#)

3.3.3 Switching off the boiler

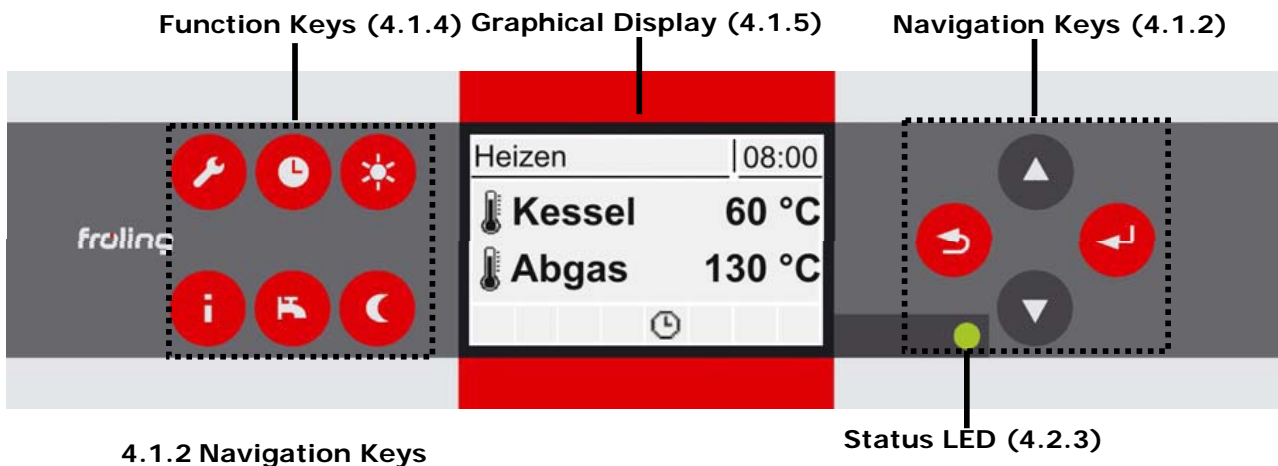
- Press and hold the  key for 5 seconds
 - ➔ The boiler follows the shut-down program and switches to "Burner OFF" status.
 - ➔ The combustion unit is switched off, the chamber delivery unit and the active hydraulic system are active

4 Boiler Control System Lambdatronic S 3200





This chapter contains information about use, control parameters, troubleshooting and the electrical connections of the Boiler Control System Lambdatronic S 3200. All parameters, which are visible at the service technician operator level, are shown. The parameters at Owner's level are shown with a grey background!

4.1 Overview of the Basic Functions

4.1.1 Control Keys and Display



The Navigation keys are for scrolling in the menu and changing parameter values.

Key	Function for .
 UP arrow	Navigation: Move up in the menu Parameter change: Short keystroke: Increase value Long keystroke: Increase value in steps of 10 Long keystroke (> 10 sec): Increase value in steps of 100
 DOWN arrow	Navigation: Move down in the menu Parameter change: Short keystroke: Decrease value Long keystroke: Decrease value in steps of 10 Long keystroke (> 10 sec): Decrease value in steps of 100
 Enter key	Navigation: Go to selected menu Parameter change: Short keystroke: Unlock parameter for editing or save parameter value
 Back key	Navigation: Go back to higher menu Parameter change: Short keystroke: Do not save parameter value Long keystroke: Back to Basic Display without saving

4.1.3 Status LED


















The status LED shows the operating status of the system:

- Green flashing light: **BOILER ACTIVE**
- Flashing red light: **WARNING** or **FAULT**

4.1.4 Function keys

The function keys of the Lambdatronic P 3200 have dual functions. Different functions can be called with long or short keystrokes, using the following definitions of keystroke duration:

Short keystroke < 1 sec
 Long keystroke > 4 sec

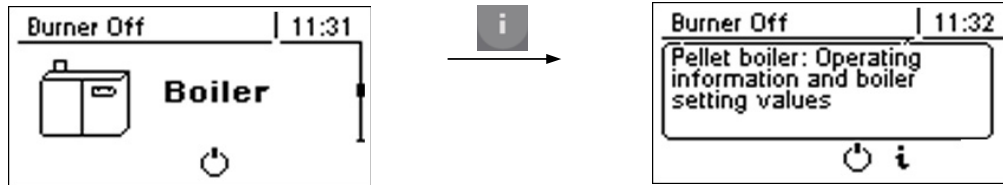
Keystroke		Function / Symbol in status line		
 Service Program	Short	Chimney sweep	System is operated for 30 minutes with rated load To exit this function: Use "Automatic Program" below	
	Long	Service mode	Control follows the boiler shutdown procedure and after the cleaning cycle the grate stays in open position. The ID fan runs at controlled speed and the door contact switch is activated. ☞ Recommended for ash discharge	
 Automatic Program	Short	Automatic mode (On)	Function not used (exit other functions only)	
	Long	Off	The control follows the boiler shutdown procedure and starts with the cleaning cycle. After the cleaning cycle the boiler goes to "Burner OO" status. The Lambdatronic controls the connected heating components. All parts of the boiler are deactivated.	
 Party Program	Short	Party mode	Function not used	
	Long	Extra heating	Function not used	
 Info	Short	Display info text	Query / Clear text information on menu points or errors. ☞ See section 4.1.5 Info Key	
	Long	No function		
 DHW tank-Program	Short	Extra loading	Function not used	
	Long	Summer operation	Function not used	
 Setback Program	Short	Setback mode	Function not used	
	Long	Continuous setback	Function not used	

4.1.5 Info Key



The info key can be pressed at any time and always shows a text window, with information about the current menu point or the currently pending error. Error messages always have the highest priority.

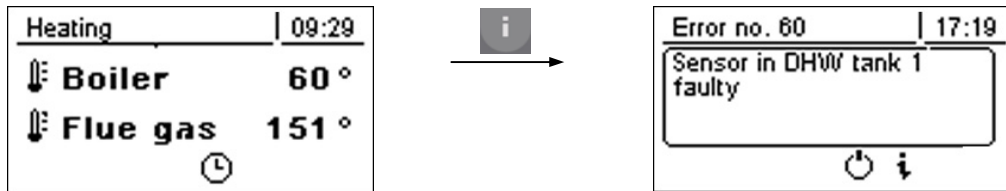
Info key in normal operation:



In Normal mode (without faults) the info key can be pressed to display information or an explanation for every menu point or parameter

The info text is also identified by the frame and the info symbol in the symbol tab.

Info key for pending warning or fault:



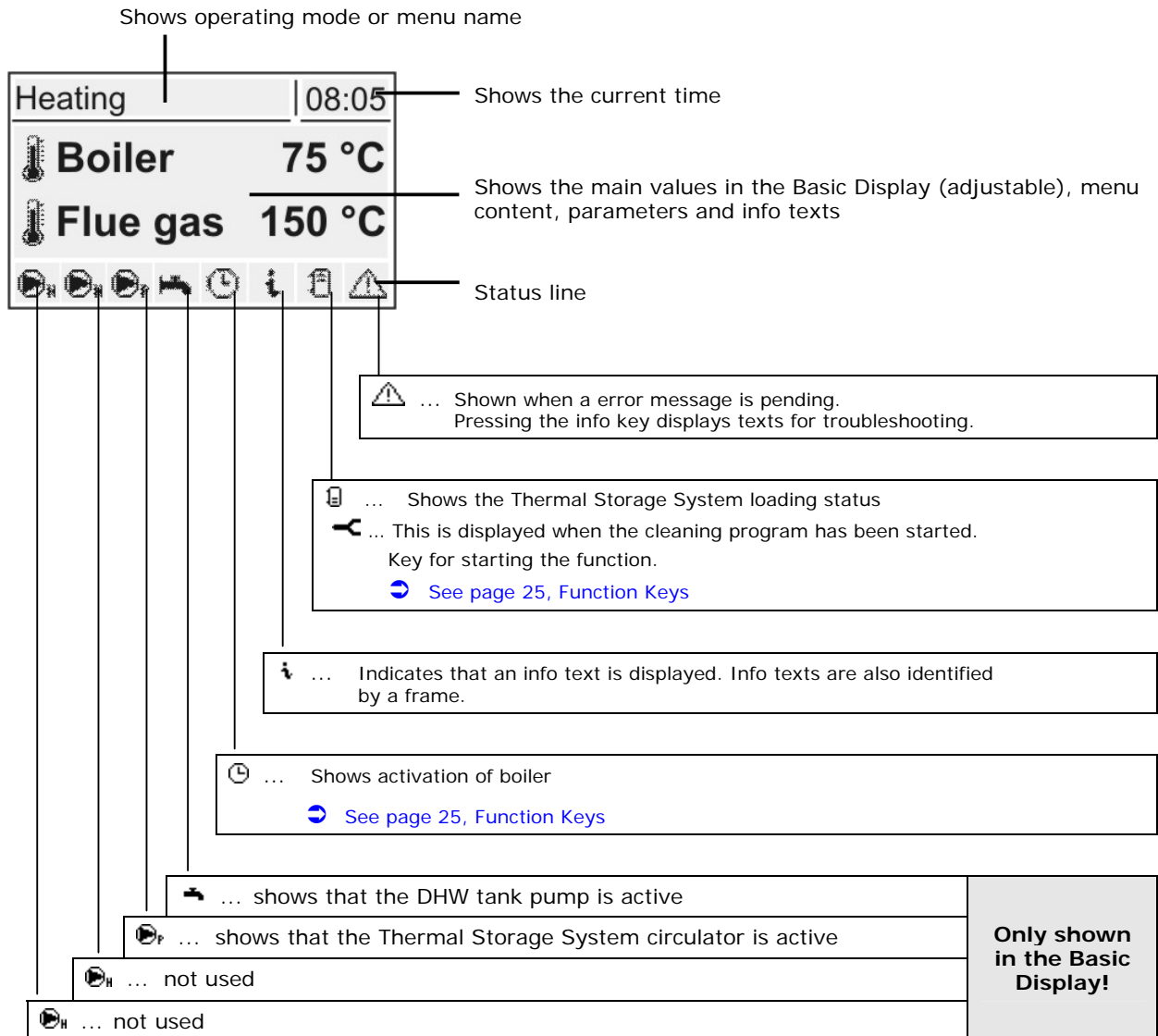
If a fault was acknowledged after arising, but not resolved, this is displayed by a warning symbol at the bottom right on the symbol tab.

Pressing the info key calls up the information on the currently pending fault message again.

How to proceed when troubleshooting an error message:

➔ [See 6.3 Error messages](#)

4.1.6 Graphical Display



4.1.7 Operating Modes

Heating	09:29
↓: Boiler	60 °
↓: Flue gas	151 °
	⌚

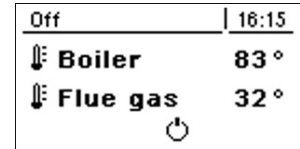
Preparation	The boiler is ventilated, the sealing slider is opened and the Lambda probe is heated.
Heating up	The combustion chamber is filled with pellets.
Pre-heating	The fan-assisted ignition switches on and the pellets are preheated until a bed of embers is formed. For this period loading is deactivated.
Ignition	The pellets are ignited with the fan-assisted ignition. The flame is distributed around the whole combustion chamber. The control of the loading unit is defined as "Ignition" in the parameter menu.
Heating	The Lambdatronic controls combustion according to the boiler set-points.
Constant burn	The boiler has no power consumption. The ID fan and the loading unit are deactivated.
Cleaning	The Lambdatronic carries out the cleaning program (duration approx. 3 min).
Shutdown wait	When the boiler is interrupted during the heating up procedures (heating up, pre-heating, ignition), it waits for a specified period of time until the next start attempt.
Shutdown wait 1	The ID fan runs to burn the remaining pellets. The loading unit is deactivated.
Shutdown wait 2	The system is still ventilated by chimney draught. The loading unit is deactivated.
Fault	CAUTION-Fault persists! ➡ Procedure see Chapter 6-Troubleshooting
Burner Off	The Lambdatronic controls the connected heating components. All parts of the boiler are deactivated.

4.2 Initial start-up

After power up the start logo is displayed. The Boiler Control System performs a system check.

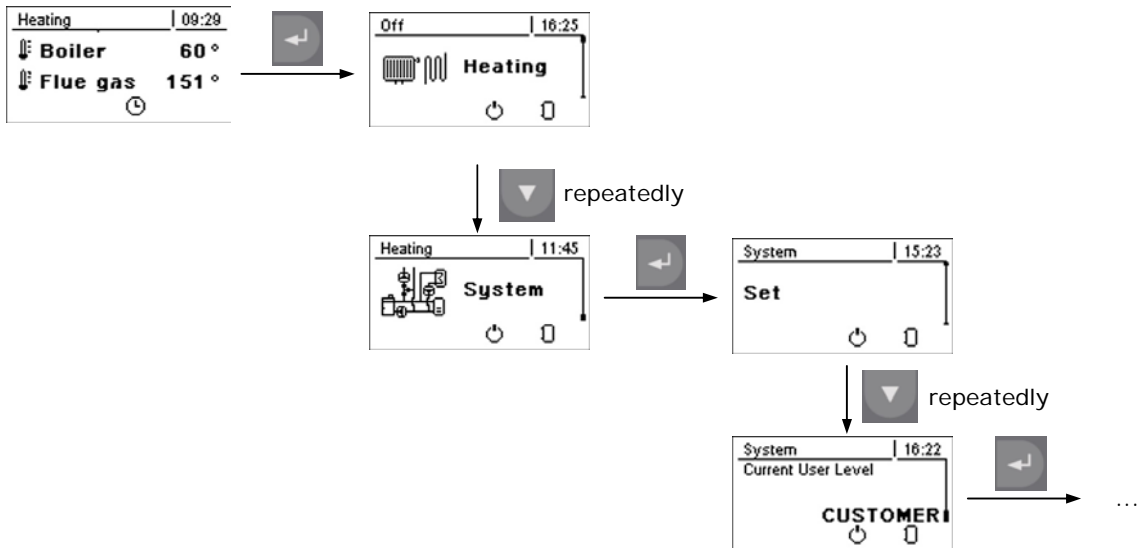


After the system check the Basic Display is shown. The Basic Display is shown as default during normal operation, giving information about the two most important parameters; the display can be configured individually.



4.2.1 Changing the User Level

For safety reasons certain parameters are only visible at specific User Levels. To change to another level it is necessary to enter the relevant user code:

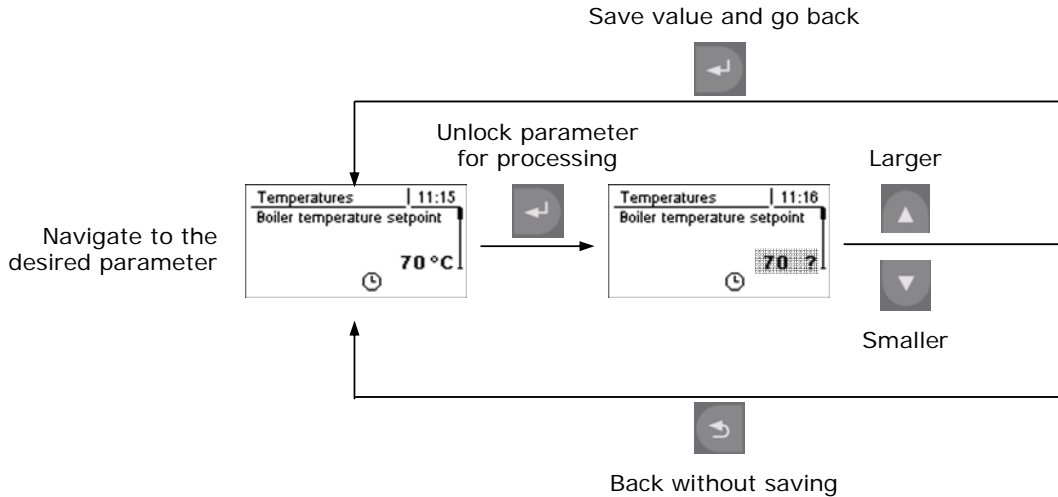


Child lock (User Code 0)	At "Child lock" level, only the Basic Display is shown. It is not possible to change any parameter at this level.
Owner (User Code 1)	Standard level for normal operation of controls. All parameters for Owner's use are displayed and released for adjustment.
Installer / Service	Detailed level for Installation and Service purposes. All parameters and system controls available are displayed and released for adjustment. All parameters shown in these operating instructions are available.

4

4.3 Setting parameters

Changing values is very simple and is identical for all parameters:



- ☞ All parameter values are pre-set to allow optimal operation in a wide range of application without any need of further changes to the parameter.

The following parameters, however, can/should be set as desired by the Owner:

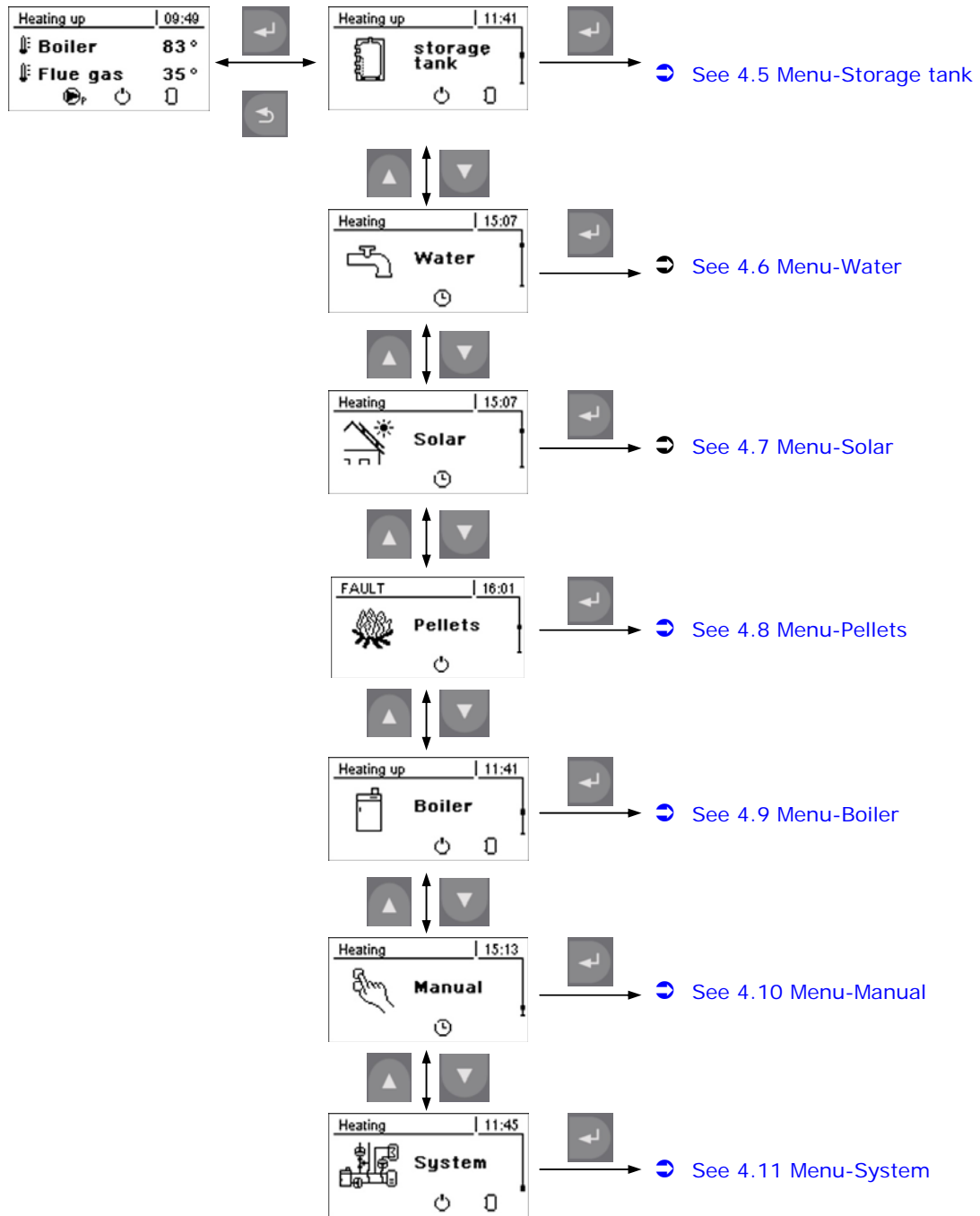
- Desired target boiler temperature

- ☞ All temperature values at Boiler Control System are displayed in Centigrade or °C only!
- ☞ Temperature values in Fahrenheit or °F can be estimated using the following conversion table, based on:
 $^{\circ}\text{F} = 1.8 \times ^{\circ}\text{C} + 32$ $^{\circ}\text{C} = (^{\circ}\text{F} - 32) / 1.8$

°C	°F	°C	°F
0	32	65	149
5	41	70	158
10	50	75	167
15	59	80	176
20	68	85	185
25	77	90	194
30	86	95	203
35	95	100	212
40	104	105	221
45	113	110	230
50	122	115	239
55	131	120	248
60	140	125	257

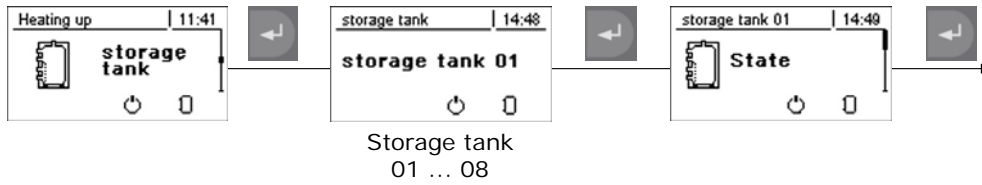
°F	°C	°F	°C
32	0	160	71
40	4	170	77
50	10	175	79
60	16	180	82
70	21	185	85
80	27	190	88
90	32	200	93
100	38	210	99
110	43	220	104
120	49	230	110
130	54	240	116
140	60	250	121
150	66	255	124

4.4 Menu Overview



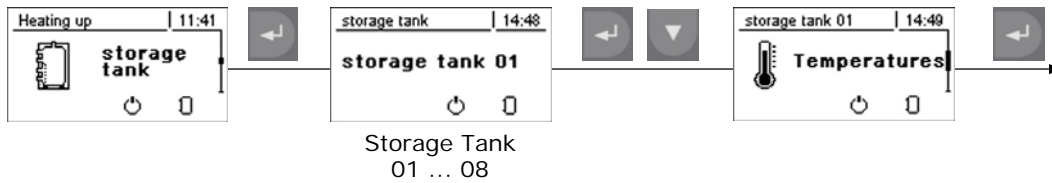
4.5 Menu-Storage tank

4.5.1 Status display of the Thermal Storage Tank



Display		Description
Storage tank top temperature	55°C	Current temperature at Thermal Storage System top sensor.
Storage tank bottom temperature	50°C	Current temperature at Thermal Storage System bottom sensor.
Storage tank pump control	0%	Function not used! Pump control either 0% or 100% speed! Specifies the speed of the Thermal Storage System circulator as a percentage of maximum speed.

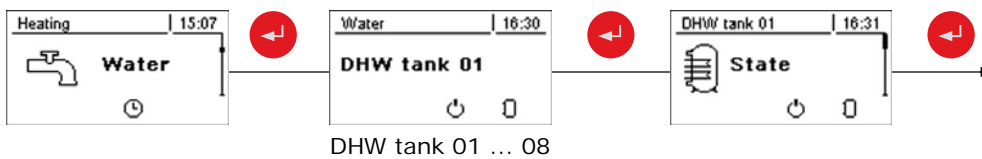
4.5.2 Temperature settings for Thermal Storage System



Setting value		Description
Heating circuit release from following storage tank temperature	35°C	Function not used! Minimum value for heating circuit release for combination with a Thermal Storage System.

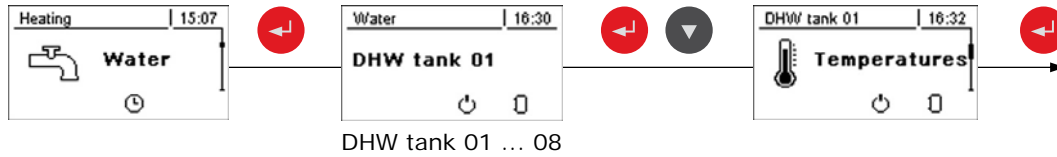
4.6 Menu-Water

4.6.1 Status Displays for the DHW Tank



Display		Description
DHW tank top temperature	60°C	Current temperature in the top part of the DHW tank. The DHW tank is heated during the loading times until the specified parameter, "Desired DHW temperature", is reached.
DHW tank pump control	0%	Specifies the speed of the DHW tank pump as a percentage of maximum speed.

4.6.2 Temperature Settings of the DHW Tank



Setting value	Description
Desired DHW tank temperature 60°C	When the specified temperature is reached in the DHW tank, the DHW tank loading pump switches off.
Reload if DHW tank temperature is below 45°C	Reloading of the DHW tank is authorised when the DHW tank temperature is below this level.

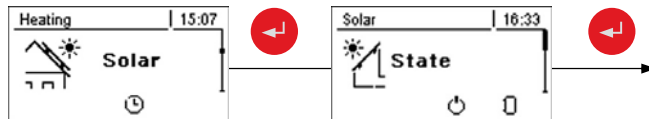
4.6.3 Heating Times of the DHW Tank



↻ Times must be set in the service mode.

4.7 Menu-Solar

4.7.1 Status Displays for the Solar System



Display	Description
Collector Temperature 80°C	Current temperature at collector.
Solar temperature storage tank bottom 38°C	Current temperature at solar sensor in bottom storage tank.
DHW tank bottom temperature 39°C	Current temperature in the lower part of the DHW tank.
Collector pump runtime 1 h	Specifies the runtime of the collector pump.
Collector pump control 78%	Specifies the speed of the collector pump as a percentage of maximum speed.

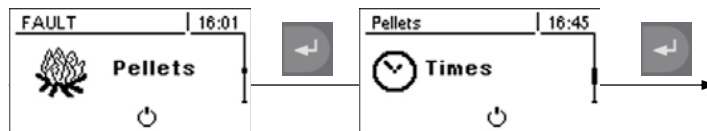
4.7.2 Temperature Settings for the Solar System



Setting value	Description
DHW tank temperature setpoint during solar charging 75°C	Up to this temperature the DHW tank is heated by the solar system.
Temp differential to start collector pump 10°C	The collector loading pump activates when the collector temperature exceeds the storage or DHW tank temperature by this value.
Temp difference to stop collector pump 5°C	The collector loading pump activates when the collector temperature exceeds the storage or DHW tank temperature by this value.
Maximum storage tank bottom temperature during solar charging 85°C	Maximum bottom storage tank temperature at which the collector pump is switched off (only with storage tank).

4.8 Menu-Pellets

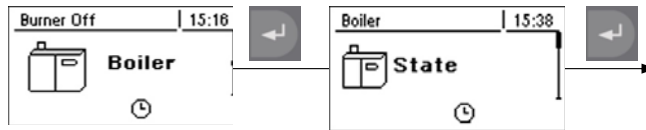
4.8.1 Fuel Filling Times



Setting value	Description
Start of 1st pellet filling 9:00	1 st Start time for filling. This is only carried out if the fill level in the container is under 85%.
Start of 2nd pellet filling 15:00	2 nd Start time for filling. This is also only carried out if the fill level in the container is under 85%.

4.9 Menu-Boiler

4.9.1 Status Displays for the Boiler



Display	Description
Boiler temperature 70°C	Actual state values of boiler control system : :
Flue gas temperature 176°C	
Flue gas set-point 178°C	
Boiler control variable 95%	
ID fan control 75%	
ID fan speed 2350U	
Air Speed at suction opening 0.00 m	
Ignition pipe temperature 0°C	
Calculated boiler set-point 70°C	
Sensor 1 85°C	

4.9.2 Temperature Settings for the Boiler



Setting value	Description
Boiler temperature set-point 80°C	The boiler temperature is regulated to this value. (Range: 40-70°C) Recommendation: System without storage tank 50°C, System with storage tank 70°C.
Shutdown if current boiler temperature is higher than boiler temperature set-point + 15°C	If the boiler temperature exceeds the set-point by this parameter value, the boiler switches to constant burn status. The boiler starts up again below the temperature set-point.
Always switch off above highest possible boiler temperature set-point + 3°C	If the boiler temperature exceeds the maximum set-point by this parameter, the boiler switches to constant burn status. The heating circuit and store loading pumps will also begin to run to cool the boiler. The boiler starts up again below the temperature set-point.
Minimum boiler temperature to release all pumps 35°C	The pumps are released at this boiler temperature. (Hysteresis 2°C).

4

4.10 Menu-Manual

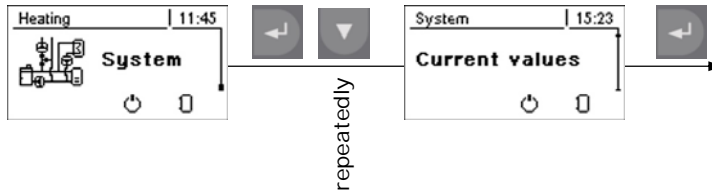
4.10.1 Manual operation



Digital Outputs		Description
Ash Screw-Drive	OFF	Switching Relevant Unit On and Off
WOS-drive	OFF	
Burn back flap-drive	OFF	
Manual filling of pellet container	OFF	After activating the parameter, the container is filled with fuel, regardless of fill level, until the function is turned off or the switch point of the level sensors is reached. If a vacuum screw delivery system is installed, the screw is activated at defined intervals (15s on 15s off). The jam sensor is not analyzed. When the level sensor reaches its limit value, the fill level is set to 100%.
Grate-Drive	OFF	Open and close grate manually.

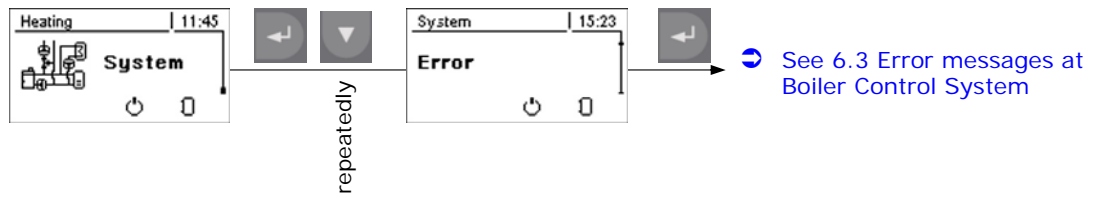
4.11 Menu-System

4.11.1 Current values

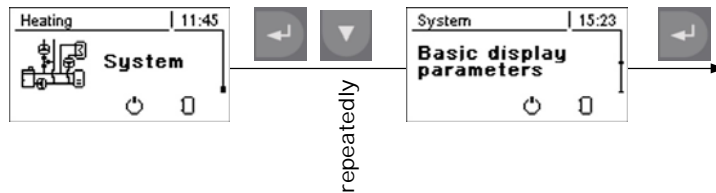


Parameter	Description
Boiler temperature	70°C
Flue gas temperature	90°C
ID fan control	75%
Residual oxygen content	12.3%
External temperature	23°C
Service Hours	26h
Software version	Version: 50.04 Build: 04.12

4.11.2 Error

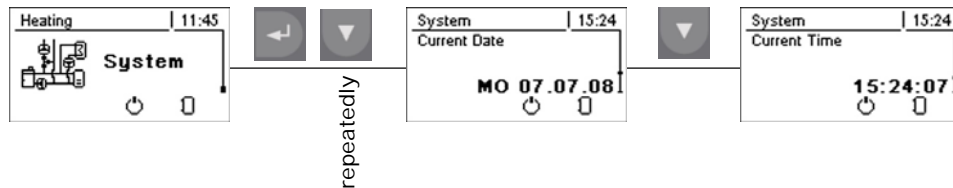


4.11.3 Basic Display parameters



Basic Display		Description
	Position 1 Position 2	The display of the two positions in the basic display can be adjusted individually, and for each position you can choose from the following parameters: <i>Boiler, flue gas, external, room, DHW tank, storage tank top, storage tank bottom, storage tank graphic, residual O2, ID fan.</i>

4.11.4 Time settings



In American configuration Date and Time are used for display purposes only!

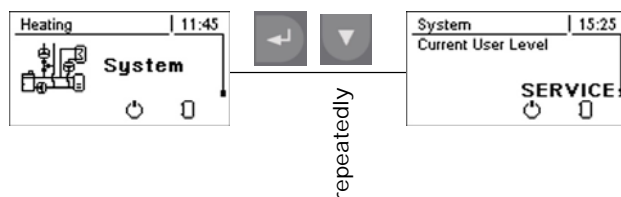
Format of Calendar Date:

Weekday (2 letters) – Day (2 digits) . Month (2 digits) . Year (2 digits)
 e.g.: MO 07.07.08 = Monday 07th of July, 2008

Format of Time:

Hour (2 digits, 24-hour-clock) : Minute (2 digits) : Second (2 digits)
 e.g.: 15:24:07 = 3:24 pm and 7 seconds

4.11.5 Current User Level



5 Boiler Servicing

5.1 General



RISK

Work on electrical components is very dangerous. Avoid severe personal injuries and death.

- Only licensed electricians to perform electrical work!




WARNING

The boiler is hot. Flue gas pipe and hot parts can cause serious burns! Wait for the boiler to cool down before starting any maintenance work.

- Protective gloves should generally be worn when working on the boiler.
- Only operate the boiler using the handles provided for this purpose.



Before starting any maintenance work:

- Press and hold the  key for 5 seconds
 - ↳ Boiler follows shutdown procedure and changes to the operating status "Burner off"
- Allow the boiler to calm down for at least 1 hour
- After maintenance has been carried out switch the boiler on in the desired mode.
 - ☞ In service mode the boiler does not start automatically.



WARNING

Incorrect or insufficient cleaning and maintenance of the boiler can cause serious faults in combustion (e.g. spontaneous combustion of carbonisation gases / flash fires). The instructions and information provided in this manual shall be observed.

Follow instructions for cleaning and maintenance within this chapter. Any further work shall be carried out by authorized heating engineers.




5.2 Inspection, cleaning and maintenance


- ☞ Regular cleaning of the boiler extends its life and is a basic requirement for smooth running. So clean the boiler regularly!
- ☞ Recommended: When cleaning, use an ash vacuum.

5.2.1 Cleaning

The ash drawers (P4 Pellet 8-25) or ash container (P4 Pellet 32-38) must be emptied at intervals according to energy requirements and pellet quality. The grate and combustion chamber should also be checked at these intervals for dirt.

⚠ WARNING	
	Ashes removed from the boiler should be placed in a metal container with a tight-fitting lid. The closed container of ashes should be placed on a non-combustible floor or on the ground, well away from all combustible materials, pending final disposal or moved outdoors. Other waste shall not be placed in this container.



⚠ WARNING	
	<p>Solid-fuel burning appliances need to be cleaned frequently because soot, creosote, and ash may accumulate. If there is a soot or creosote fire, please do the following:</p> <ul style="list-style-type: none"> • Establish a routine for the storage of fuel, care of the appliance, and firing techniques. • Check daily for creosote build-up until experience shows how often cleaning is necessary. • Be aware that the hotter the fire, the less creosote is deposited, and that weekly cleanings may be necessary in mild weather, even though monthly cleanings may be enough in the coldest months. • Have a clearly understood plan to handle a chimney fire. • The chimney should be inspected periodically to determine if creosote build-up has occurred. If a significant layer of creosote has accumulated (3mm or more) it should be removed to reduce the risk of a chimney fire.

Emptying the ash drawers (for P4 Pellet 8/15/20/25)

- Open insulation door
- Open ash doors



- ❑ Take the ash drawers out a bit
 - ↳ This pushes the ash lying in front of the drawer into the ash bowl
- ❑ Thread in the transport cover as illustrated and pull out the ash drawer, until the cover settles into position
- ❑ Take the ash drawer to the emptying point and empty it
- ☞ To remove the transport cover the locking lever must be pushed up



Emptying the ash container (for P4 Pellet 32/38 and 48/60)

- ❑ Open insulation door
- ❑ Push the locking lever upwards



- ❑ Pull out the ash container
- ❑ Put the cover cap supplied on the flange of the ash container




- ❑ Take the ash container to the emptying point and empty it
- ☞ To remove the cover the clamp must be unlocked and opened



Check the grate and combustion chamber



- ☞ Only clean the grate and combustion chamber when the boiler has cooled down
- ❑ Press and hold the  key for 5 seconds
 - ↳ Boiler follows shutdown procedure and changes to the status "Burner off"
 - ↳ The ID fan turns at a controlled speed and the combustion grate stays in open position.

for P4 Pellet 8/15/20/25:

- ❑ Open the insulating door, open the right ash door and pull out the ash drawer

For P4 Pellet 32/38 and 48/60:

- ❑ Open the insulating door, take out the right ash container and open the ash door
- ❑ Check the combustion grate and combustion chamber for dirt
- ❑ If there is a lot of dirt, clean the combustion chamber

[Page 42, Clean the flue gas collection chamber and the heat exchanger](#)

⚠ WARNING



Creosote-Formation and Need for Removal-When wood is burned slowly, it produces tar and other organic vapors, which combine with expelled moisture to form creosote. The creosote vapors condense in the relatively cool chimney flue of a slow-burning fire. As a result, creosote residue accumulates on the flue lining. When ignited, this creosote makes an extremely hot fire. The chimney and chimney connector should be inspected at least twice monthly during the heating season to determine if a creosote build-up has occurred. If creosote has accumulated it should be removed to reduce the risk of a chimney fire.

5.2.2 Yearly check

Clean the flue gas collection chamber and the heat exchanger

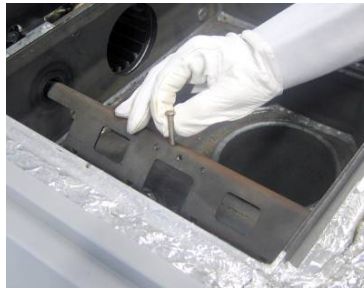
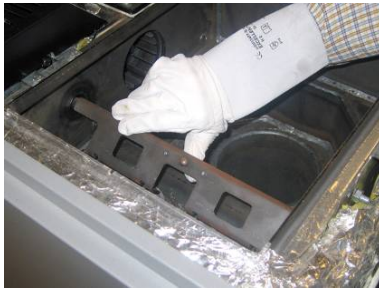


- ❑ Remove the insulating cover
- ❑ Turn the screw-handles on the cleaning cover anti-clockwise to loosen them
- ❑ Remove the cleaning cover
- ❑ Clean the flue gas collection chamber and the opening to the induced draught fan with a brush
- ❑ Remove any soot which has fallen in
 - ☞ We recommend that you use an ash vacuum



- ❑ Remove the internal heat exchanger cover
- ❑ Clean the flues and the combustion chambers beneath them with a cleaning brush

Clean WOS



- ❑ Remove the insulating cover and cleaning cover
[Page 42, Clean the flue gas collection chamber and the heat exchanger](#)
- ❑ Push the lock bolt upwards and remove
- ❑ Remove the WOS mount along with the springs
- ❑ Clean the heat exchanger pipes with cleaning brush

Cleaning the induced draught ventilator

- ❑ Detach the induced draught ventilator on the back of the boiler
- ❑ Check for dirt and damage
- ❑ Clean the blower wheel with a soft brush or paint brush
 - ☞ Do not move the balancing weights on the blower wheel!



Clean the smoke flue pipe

- ❑ Clean the connecting pipe between the boiler and the chimney regularly with a chimney sweeping brush
 - ☞ Depending on the layout of the flue pipes and the chimney draught cleaning yearly may not be enough!



⚠ WARNING

Soot and Flyash: Formation and Need for Removal-The products of combustion will contain small particles of flyash. The flyash will collect in the exhaust venting system and restrict the flow of the flue gases. Incomplete combustion, such as occurs during start-up, shutdown, or incorrect operation of the heater will lead to some soot formation which will collect in the exhaust venting system. The exhaust venting system should be inspected at least once every year to determine if cleaning is necessary.

5

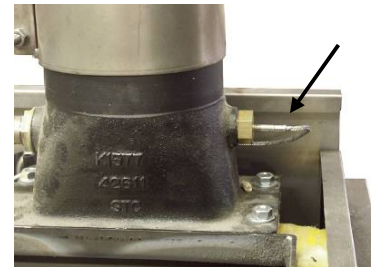
Checking the draught controller flap and explosion flap

- ❑ Check the draught controller flap and explosion flap for ease of operation
 - ☞ Maximum permissible setting: 25 Pa
 - ☞ Ideal setting: 20 Pa

Clean the flue gas sensors

- ❑ Remove the insulating cover
- ❑ Loosen the wing screw and remove the flue gas sensor

- ❑ Carefully wipe off the flue gas sensor with a clean cloth
- ❑ Slide in the flue gas sensor and secure it hand-tight



5.3 Spare parts

NOTE

Installing non-original parts voids the guarantee!

Only replace components or parts with original replacement parts

- ☞ [Please refer to Froling Spare Parts List Pellet P4 - USA](#)

6 Troubleshooting

6.1 General faults in the power supply

Error	Cause of error	Error correction
Nothing is shown on the display No power to the controls	General power failure FI circuit breaker or line protection is switched off	Switch on the FI circuit breaker or line protection

6.1.1 Behaviour of system after a power failure

When the power supply has been restored the boiler returns to the previously specified mode and is controlled according to the specified program.

EXCEPTION:

If the boiler was at operating status "Heating up", "Pre-heating" or "Ignition" it follows shutdown procedure and cleaning is started. Only then does the boiler switch to "Preparation" operating status and the system starts again.

6.2 Excessive temperature



The Overheat Thermostat stops combustion at a boiler temperature of 222°F (105°C). The circulators continue to run!

In case Overheat Thermostat automatically has been activated:

- Wait for boiler temperature to drop below 203°F (95°C)
- Remove cap of Overheat Thermostat (STL) by screwing-off counter-clockwise. STL located at right hand side of Boiler Control System viewed from front side of the boiler.
- Release STL by pushing button behind cap using a small screw driver or ball point pen. Release was successfully, when fault is gone on display.
- Screw-on cap of STL again (clockwise).

6.3 Error messages at Boiler Control System



If a fault has occurred and has not yet been cleared:

- Status LED (1) flashes red
- A fault message is shown on the display (2)

An internal distinction is made between 2 types of message:

Warning	Boiler follows shutdown procedure
Error	Boiler shuts down immediately, heating circuit controls and pumps remain active

6.3.1 Procedure for fault messages

The procedure for a fault message as well as causes for faults and procedure for troubleshooting are described in the operating instructions of the boiler controls:

- [See the operating instructions for the Lambdatronic P 3200](#)

6.3.2 Acknowledging a fault message

Trace and remove the fault and then:

Press the  key

- Status LED flashes green

7 Appendix

7.1 Warranty

LIMITED WARRANTY - FOR USE ONLY IN UNITED STATES

BioHeatUSA ("Importer") warrants the steel boiler identified below and its steel doord, high temperature insulation boards, burn chamber, day hopper, auger mechanism, ash bins, and turbulators against defects in material and workmanship under normal use and service ***TO THE ORIGINAL PURCHASER AT THE ORIGINAL INSTALLATION SITE*** in the United States under the following terms.

BOILER BODY -- LIMITED 20 YEAR WARRANTY: Subject to the below limitations, BioHeatUSA warrants the steel boiler body (not including cast iron doors, coil, or other components) against defects in materials or workmanship causing breaks or leaks that significantly impair the boiler's performance. During the first five years of the warranty period BioHeatUSA will pay for all required labor at the usual and customary rate paid by BioHeatUSA for similar labor performed in Lyme, NH, and provide or pay the cost of all materials for the repair of the warranted unit. In years six through twenty BioHeatUSA will pay the below stated percentage multiplied times the retail price of the warranted unit on the date of purchase to the original purchaser toward of the cost of repair of the warranted item or, if BioHeatUSA and the original purchaser agree, use the resultant sum as a partial allowance toward BioHeatUSA's replacement of the warranted item. The original purchaser shall be responsible for all shipping and installation charges in connection with any replacement or repair.

<u>Warranty Year (beginning from date of purchase)</u>	<u>Percentage BioHeatUSA will pay</u>
1-5	100%
6	60%
7	50%
8	40%
9	30%
10-20	20%

Example 1: Repair costing \$250.00 in year 7, BioHeatUSA will pay \$125.00 (50% of this repair).

Example 2: Boiler (original retail \$4,000.00) needs major repair in year 9. BioHeatUSA will pay \$1,200 (30% of \$4,000) toward replacement with similar warranted unit or up to 30% of the repair cost (\$1,200 maximum).

OTHER COMPONENTS -- LIMITED THREE YEAR WARRANTY

Subject to the application of the following percentages to parts and/or labor, BioHeatUSA provides the following limited warranty of each of its steel doors, high temperature insulation boards, burn chamber, day hopper, auger mechanism, ash bins, and turbulators against defects in materials or workmanship causing breaks or leaks that significantly impair the boiler's performance.

<u>Warranty Year (beginning from date of purchase)</u>	<u>Percentage BioHeatUSA will pay</u>
1	100% of parts and labor
2	100% of parts ONLY
3	50% of parts ONLY

OTHER COMPONENTS – ONE YEAR WARRANTY

Motors, electronics controls, and other electronic components have one year warranty.

BioHeatUSA'S LIMITED EXPRESS WARRANTY IS ONLY EXTENDED TO AND COVERS THE TARM USA PRODUCT'S END USER WHO OWNS THE BUILDING IN WHICH THE TARM USA PRODUCT IS INSTALLED, AND COVERS ONLY REPAIRS OR REPLACEMENTS RESULTING FROM DEFECTS IN MATERIALS AND WORKMANSHIP.

THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION IN THIS LIMITED WARRANTY, AND BioHeatUSA'S LIMITED WARRANTY IS IN LIEU OF AND TO THE EXCEPTION OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY OR WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE. EXCEPT AS OTHERWISE PROVIDED BY THIS LIMITED WARRANTY, BioHeatUSA TAKES NO RESPONSIBILITY FOR THE QUALITY OF BioHeatUSA PRODUCTS OR THAT THE GOODS WILL BE FIT FOR ANY PARTICULAR PURPOSE FOR WHICH YOU MAY BE BUYING THESE GOODS. UNDER NO CIRCUMSTANCES SHALL TARM USA BE SUBJECT TO INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, PUNITIVE, ENHANCED COMPENSATORY, OR CONTINGENT DAMAGES, WHETHER A CLAIM IS BASED ON CONTRACT, TORT, STRICT LIABILITY, OR ANY OTHER THEORY OF LAW, ALL SUCH DAMAGES AND CLAIMS BEING SPECIFICALLY DISCLAIMED.

BioHeatUSA's limited warranty is void if a BioHeatUSA product is installed by someone other than a qualified contractor whose principal occupation is the sale or installation of plumbing and heating equipment, or if the original purchaser fails to have the boiler serviced or inspected at least once every two years by an experienced and qualified service person. Repairs or replacements under this limited warranty must be performed by your dealer or someone authorized by him. You may be required to present this limited warranty to the dealer before any work is performed. You must pay for any work performed that is not covered by this limited warranty or that is not authorized by the dealer. BioHeatUSA'S limited warranty shall be construed under the laws of New Hampshire. Any dispute arising out of this warranty shall be tried only in a court in the State of New Hampshire, including the United States District Court for the State of New Hampshire. If any legal action is brought in connection with this limited warranty, the prevailing party shall be entitled to recover all reasonable expenses it incurs in the action, including its reasonable attorneys' fees, from the nonprevailing party.

TARM USA'S LIMITED WARRANTY EXPRESSLY EXCLUDES COVERAGE FOR THE FOLLOWING:

1. Ordinary wear and tear and repairs or replacements necessitated by normal use.
2. Repairs or replacements arising from corrosion including, but not limited to, the effects of a corrosive water supply or corrosive by-products of combustion formed when a boiler is run during warm weather temperatures or under other conditions that do not permit the boiler to reach necessary operating temperatures on a frequent basis as described in the Owner's Manual provided by BioHeatUSA.
3. Repairs or replacements of fittings, motors, fuel units, oil and gas burners, any and all controls, relief or regulating valves, transformers, and accessories.
4. Repairs or replacements to repair damage caused by (i) operation with inadequate draft, (ii) having installed a boiler model that is incorrectly sized for the application (too few or too many BTU's under normal operating conditions) or that is otherwise inappropriate for the application, (iii) burning other than super premium or premium wood pellets Certified by the Pellet Fuels Institute, or excessive boiler internal temperature from burning improper materials as fuel or operating the boiler without appropriate draft control (for example, burning the boiler too hot when the boiler is coming up to temperature from a cold start), or (iv) any similar use that violates or is not recommended in the Owner's Manual provided by BioHeatUSA.
5. The repair or replacement of any component furnished by any other manufacturer or damage caused by the functioning or malfunctioning of any such component.

This warranty gives you specific legal rights. You may also have other rights that vary from state to state. This warranty shall not be construed as inconsistent with any federal, state, or municipal law, regulation, or code that was applicable to the original installation site on the date the BioHeatUSA product was installed.

Questions regarding this warranty may be referred to:
BioHeatUSA, 4 Britton Lane, Box 285, Lyme, NH 03768 U.S.A. (603) 795-2214

KEEP THIS INFORMATION FOR YOUR RECORDS:

Model: _____ **Place of Purchase:** _____

Serial No.: _____ **Installation Date:** _____

Installer: _____

7.2 Temperature conversion table

°C	°F	°C	°F	°C	°F	°C	°F
40	104	80	176	135	275	220	428
45	113	82	179.6	140	284	225	437
50	122	84	183.2	145	293	230	446
52	125.6	86	186.8	150	302	235	455
54	129.2	88	190.4	155	311	240	464
56	132.8	90	194	160	320	245	473
58	136.4	92	197.6	165	329	250	482
60	140	94	201.2	170	338	255	491
62	143.6	96	204.8	175	347	260	500
64	147.2	98	208.4	180	356	265	509
66	150.8	100	212	185	365	270	518
68	154.4	105	221	190	274	275	527
70	158	110	230	195	383	280	537
72	161.6	115	239	200	392	285	545
74	165.2	120	248	205	401	290	554
76	168.8	125	257	210	410	295	563
78	172.4	130	266	215	419	300	572

7.3 Manufacturer

FRÖLING GmbH

**Industriestraße 12
A-4710 Grieskirchen
AUSTRIA**

TEL +0043 (0)7248 606 0
E-MAIL info@froling.com
INTERNET www.froling.com

7.4 Importer

BioHeatUSA

**4 Britton Lane
P.O. Box 285
Lyme, NH 03768**

PHONE 800.782.9927
E-MAIL info@bioheatusa.com
INTERNET www.bioheatusa.com

7.5 Local Dealer