

Operating Instructions
Pellet boiler P4 Pellet



Translation of the original German operating instructions for the operator

Read and follow the instructions and safety information!

Technical changes, typographical errors and omissions reserved!

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1 General

Thank you for choosing a quality product from Froling. The product features a state-of-the-art design and conforms to all currently applicable standards and testing guidelines.

Please read and observe the documentation provided and always keep it close to the system for reference. Observing the requirements and safety information in the documentation makes a significant contribution to safe, appropriate, environmentally friendly and economical operation of the system.

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: doku@froeling.com.

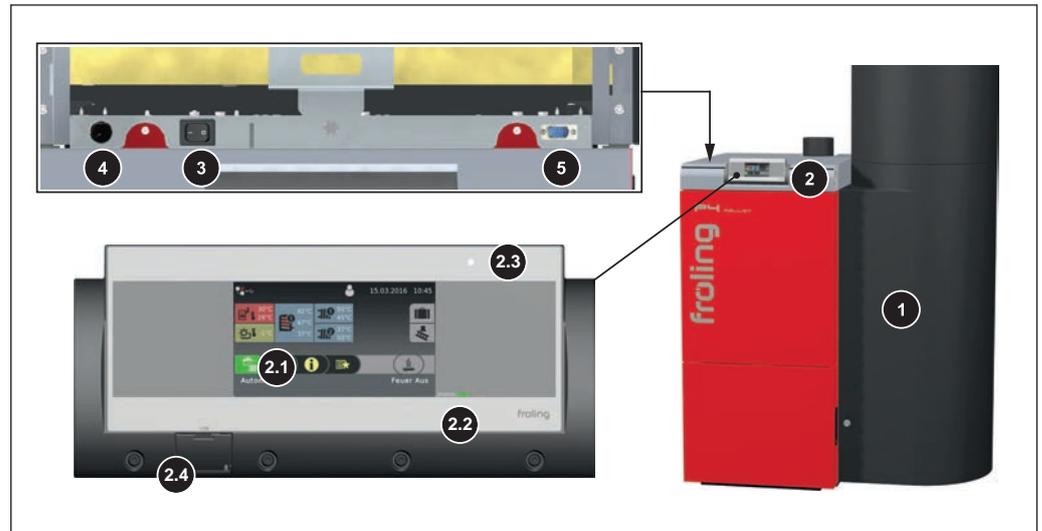
Subject to technical change.

Warranty and Guarantee Conditions

Our sale and delivery conditions will be applicable. These conditions have been made available to customers, and customers have been made aware of them at the time of order completion.

You can also find the guarantee conditions on the enclosed guarantee certificate.

1.1 P4 Pellet product overview



1 P4 Pellet with integrated pellet cyclone container

2 Control panel of the Lambdatronic P 3200 Touch control

2.1 Status LED (operating status):

- GREEN constant: BOILER SWITCHED ON
- GREEN flashing (interval: 5 sec OFF, 1 sec ON): BOILER SWITCHED OFF
- ORANGE flashing: WARNING
- RED flashing: FAULT

2.2 Large touch display for showing and changing operating statuses and parameters

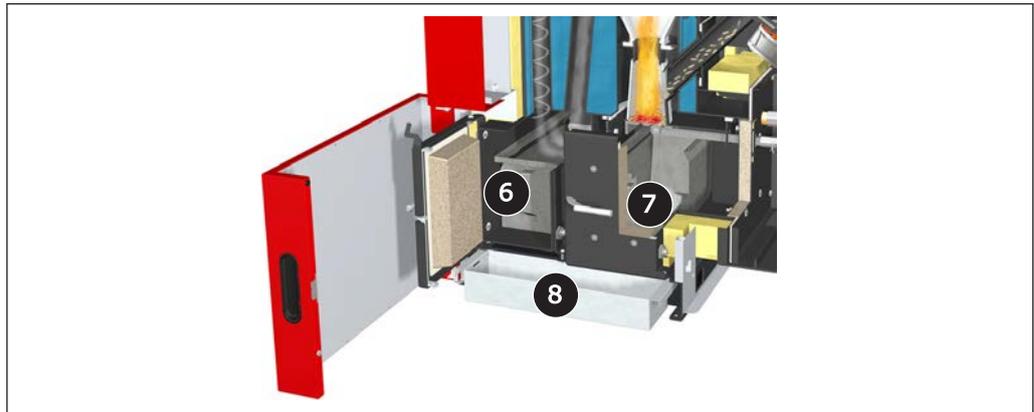
2.3 Brightness sensor for automatically adjusting the brightness of the display

2.4 USB port for connecting a USB stick for software updates

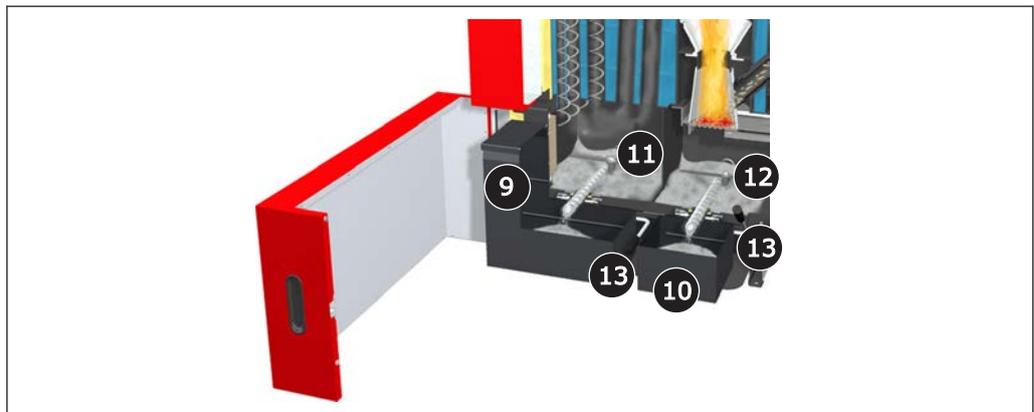
3 Main switch

4 High-limit thermostat (STL)

5 Service interface

Ash removal unit P4 Pellet 8-25

- | | |
|---|---------------------------------|
| 6 | Ash drawer - heat exchanger |
| 7 | Ash drawer - combustion chamber |
| 8 | Ash drawer |

Ash removal unit P4 Pellet 32-105:

- | | |
|----|--|
| 9 | Ash container - heat exchanger |
| 10 | Ash container - combustion chamber |
| 11 | Ash screw and rotary agitator of the automatic heat exchanger cleaner |
| 12 | Ash screw and rotary agitator of the combustion chamber ash removal unit |
| 13 | Lever of the ash box lock |

2 Safety

2.1 Hazard levels of warnings

This documentation uses warnings with the following hazard levels to indicate direct hazards and important safety instructions:

DANGER

The dangerous situation is imminent and if measures are not observed it will lead to serious injury or death. You must follow the instructions!

WARNING

The dangerous situation may occur and if measures are not observed it will lead to serious injury or death. Work with extreme care.

CAUTION

The dangerous situation may occur and if measures are not observed it will lead to minor injuries.

NOTICE

The dangerous situation may occur and if measures are not observed it will lead to damage to property or pollution.

2.2 Pictograms used

The following symbols are used in the documentation and/or on the boiler to show what is required and forbidden and to give warnings.

In accordance with the Machinery Directive, signs fitted directly within the danger area of the boiler indicate immediate hazards or safety procedures. These stickers must not be removed or covered.

	Refer to the operating instructions		Wear safety shoes
	Wear protective gloves		Turn off the main switch
	Keep the doors closed		Wear a dust mask
	Work under the supervision of a second person		Lock
	Unauthorised access prohibited		No fire, open flames or smoking
	Warning - hot surface		Warning - hazardous electrical voltage
	Warning - hazardous or irritant materials		Warning - automatic boiler startup
	Warning of injury to fingers or hands, automatic fan		Warning of injury to fingers or hands, automatic screw
	Warning of injury to fingers or hands, gear/chain drive		Warning of injury to fingers or hands, cutting edge
	Hand injury warning		Warning of injury from being pulled into rotating shafts
	Increased CO concentration warning		Slipping hazard warning

2.3 General safety information



DANGER

If the device is used incorrectly:

Incorrect use of the system can cause severe injury and damage.

When operating the system:

- Observe the instructions and information in the manuals.
- Observe the details on procedures for operation, maintenance and cleaning, as well as troubleshooting in the individual manuals.
- Any work above and beyond this should be carried out by authorised heating engineers or by Froling 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!

When operating the boiler, please note the following:

- Instructions and information regarding versions and minimum values, as well as standards 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.

Problems with the flue gas 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).

Take the following precautions:

- Optimum boiler performance can only be guaranteed if the flue gas system is functioning correctly.

2.4 Permitted uses

The Froling Pellet boiler P4 Pellet is designed solely for heating domestic water. Only the fuels specified in the "Permitted fuels" section must be used.

⇒ See "Permitted fuels" [page 11]

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

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

Only original spare parts or specific alternative spare parts authorised by the manufacturer may be used. Any kind of change or modification made to the product will invalidate the manufacturer's conformity with the applicable guideline(s). In such cases, the product will need to undergo new hazard evaluation procedures by the operator. The operator will then be fully responsible for the declaration of conformity according to the valid guideline(s) for the product and will need to issue a corresponding declaration for the device. This person will then assume all of the rights and responsibilities of a manufacturer.

2.4.1 The Clean Air Act 1993 and Smoke Control Areas

Under the Clean Air Act local authorities may declare the whole or part of the district of the authority to be a smoke control area. It is an offence to emit smoke from a chimney of a building, from a furnace or from any fixed boiler if located in a designated smoke control area. It is also an offence to acquire an „unauthorised fuel“ for use within a smoke control area unless it is used in an „exempt“ appliance („exempted“ from the controls which generally apply in the smoke control area). The Secretary of State for Environment, Food and Rural Affairs has powers under the Act to authorise smokeless fuels or exempt appliances for use in smoke control areas in England. In Scotland and Wales this power rests with Ministers in the devolved administrations for those countries. Separate legislation, the Clean Air (Northern Ireland) Order 1981, applies in Northern Ireland. Therefore it is a requirement that fuels burnt or obtained for use in smoke control areas have been „authorised“ in Regulations and that appliances used to burn solid fuel in those areas (other than „authorised“ fuels) have been exempted by an Order made and signed by the Secretary of State or Minister in the devolved administrations.

Further information on the requirements of the Clean Air Act can be found here: <http://smokecontrol.defra.gov.uk>

Your local authority is responsible for implementing the Clean Air Act 1993 including designation and supervision of smoke control areas and you can contact them for details of Clean Air Act requirements.

The Froling S1 Turbo 15 and S1 Turbo 20 have been recommended as suitable for use in smoke control areas when burning fuels as listed under "Permitted fuels".

The Froling P4 Pellet 8, P4 Pellet 15, P4 Pellet 20, P4 Pellet 25, P4 Pellet 32, P4 Pellet 38, P4 Pellet 45, P4 Pellet 48, P4 Pellet 60, P4 Pellet 70, P4 Pellet 80 and P4 Pellet 100 have been recommended as suitable for use in smoke control areas when burning fuels as listed under "Permitted fuels".

2.4.2 Permitted fuels

Wood pellets

Wood pellets made from natural wood with a diameter of 6 mm

Note on standards

EU:	Fuel acc. to EN ISO 17225 - Part 2: Wood pellets class A1 / D06
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and/or:	EN <i>plus</i> / DIN <i>plus</i> certification scheme
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General note:

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

TIP: Fit the PST pellet deduster for separating the dust particles contained in the return air

2.4.3 Non-permitted fuels

The use of fuels not defined in the "Permitted fuels" section, and particularly the burning of refuse, is not permitted.

CAUTION

In case of use of non-permitted fuels:

Burning non-permitted fuels increases the cleaning requirements and leads to a build-up of aggressive sedimentation and condensation, which can damage the boiler and also invalidates the guarantee. Using non-standard fuels can also lead to serious problems with combustion.

For this reason, when operating the boiler:

- Only use permitted fuels

2.5 Qualification of operating staff

CAUTION



If unauthorised persons enter the installation room / boiler room:

Risk of personal injury and damage to property

- The operator is responsible for keeping unauthorised persons, in particular children, away from the system.

Only trained operators are permitted to operate the unit. The operator must also have read and understood the instructions in the documentation.

2.6 Protective equipment for operating staff

You must ensure that staff have the protective equipment specified by accident prevention regulations.



- For operation, inspection and cleaning:
 - suitable work wear
 - protective gloves
 - sturdy shoes

2.7 Design information

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

Always comply with all fire, building, and electrical regulations when installing or operating the boiler system, and follow the operating instructions and mandatory regulations that apply in the country in which the boiler is operated.

2.7.1 Installation and approval of the heating system

The boiler should be operated in a closed heating system. The following standards govern the installation:

Note on standards

EN 12828 - Heating Systems in Buildings

NOTICE! Each heating system must be officially approved.

The appropriate supervisory authority (inspection agency) must always be informed when installing or modifying a heating system, and authorisation must be obtained from the building authorities:

Austria: report to the construction authorities of the community or magistrate

Germany: report new installations to an approved chimney sweep / the building authorities.

2.7.2 General information for installation room (boiler room)

Boiler room characteristics

- The floor must be even, clean and dry and have an adequate load-bearing capacity.
- There must not be a potentially explosive atmosphere in the boiler room as the boiler is not suitable for use in potentially explosive environments.
- The boiler room must be frost-free.
- The boiler does not provide any light, so the customer must ensure sufficient lighting in the boiler room in accordance with national workplace design regulations.
- When using the boiler above 2000 metres above sea level you should consult the manufacturer.
- Danger of fire due to flammable materials.
The floor of the boiler room must not be flammable. No flammable materials should be stored near the boiler. Flammable objects (e.g. clothing) must not be put on the boiler to dry.
- Damage due to impurities in combustion air.
Do not use any solvents or cleaning agents containing chlorine and hydrogen halides in the room where the boiler is installed (e.g. chlorination units for swimming pools).
- Keep the air suction opening of the boiler free of dust.

- The system must be protected against the chewing or nesting of animals (e.g. rodents etc.).

Ventilation of the boiler room

Ventilation air for the boiler room should be taken from and expelled directly outside, and the openings and air ducts should be designed to prevent weather conditions (foliage, snowdrifts, etc.) from obstructing the air flow.

Unless otherwise specified in the applicable building regulations for the boiler room, the following standards apply to the design and dimensions of the air ducts:

Note on standards

ÖNORM H 5170 - Construction and fire protection requirements
TRVB H118 - Technical directives on fire protection/prevention

2.7.3 Requirements for central heating water

Unless contrary to other national regulations, the latest versions of the following standards and guidelines apply:

Austria:	ÖNORM H 5195	Switzerland:	SWKI BT 102-01
Germany:	VDI 2035	Italy:	UNI 8065

Observe the standards and also follow the recommendations below:

- Aim for a pH value of between 8.2 and 10.0. If the central heating water comes into contact with aluminium, the pH value must be between 8.0 and 8.5
- Use prepared water which complies with the standards cited above for filling and makeup water
- Avoid leaks and use a closed heating system to maintain water quality during operation
- When filling with make-up water, always bleed the filling hose before connecting, in order to prevent air from entering the system

Advantages of prepared water:

- Complies with the applicable standards
- Less of a drop in output due to reduced limescale build-up
- Less corrosion due to fewer aggressive substances
- Long-term cost savings thanks to improved energy efficiency

Limit values for filling and make-up water:

	Austria	Germany	Switzerland
Total hardness	≤ 1.0 mmol/L	≤ 2.0 mmol/L	< 0.1 mmol/L
Conductivity	-	< 100µS/cm	< 100 µS/cm
pH value	6.0 – 8.5	6.5 – 8.5	6.0 – 8.5
Chloride	< 30 mg/L	< 30 mg/L	< 30 mg/L

Additional requirements for Switzerland:

The filling and make-up water must be demineralised (fully purified)

- The water must not contain any ingredients that could settle and accumulate in the system
- This makes the water non-electroconductive, which prevents corrosion
- It also removes all the neutral salts such as chloride, sulphate and nitrate which can weaken corrosive materials in certain conditions

If some of the system water is lost, e.g. during repairs, the make-up water must also be demineralised. It is not enough to soften the water. The heating system must be professionally cleaned and rinsed before filling the units.

Inspection:

- After eight weeks, the pH value of the water must be between 8.2 and 10.0. If the central heating water comes into contact with aluminium, the pH value must be between 8.0 and 8.5
- Yearly. Values must be recorded by the owner

2.7.4 Notes for using pressure maintenance systems

Pressure maintenance systems in hot-water heating systems keep the required pressure within predefined limits and balance out volume variations caused by changes in the hot-water temperature. Two main systems are used:

Compressor-controlled pressure maintenance

In compressor-controlled pressure maintenance units, a variable air cushion in the expansion tank is responsible for volume compensation and pressure maintenance. If the pressure is too low, the compressor pumps air into the tank. If the pressure is too high, air is released by means of a solenoid valve. The systems are built solely with closed-diaphragm expansion tanks to prevent the damaging introduction of oxygen into the heating water.

Pump-controlled pressure maintenance

A pump-controlled pressure maintenance unit essentially consists of a pressure-maintenance pump, relief valve and an unpressurised receiving tank. The valve releases hot water into the receiving tank if the pressure is too high. If the pressure drops below a preset value, the pump draws water from the receiving tank and feeds it back into the heating system. Pump-controlled pressure maintenance systems with

open expansion tanks (e.g. without a diaphragm) introduce ambient oxygen via the surface of the water, exposing the connected system components to the risk of corrosion. These systems offer no oxygen removal for the purposes of corrosion control as required by VDI 2035 and **in the interests of corrosion protection should not be used.**

2.7.5 Use with storage tank

NOTICE

In principle it is not necessary to use a storage tank for the system to run smoothly. However, we recommend that you use the system with a storage tank, as this ensures a continuous supply of fuel in the ideal output range of the boiler.

For the correct dimensions of the storage tank and the line insulation (in accordance with ÖNORM M 7510 or guideline UZ37) please consult your installer or Froling.

⇒ See "Addresses" [page 39]

2.7.6 Chimney connection/chimney system

EN 303-5 specifies that the entire flue gas system must be designed to prevent, wherever possible, damage caused by seepage, insufficient feed pressure and condensation. Please note in this respect that flue gas temperatures lower than 160K above room temperature can occur in the permitted operating range of the boiler.

NOTICE! Please see the technical data contained in the assembly instructions for further information about standards and regulations as well as the flue gas temperatures when clean and the other flue gas values!

2.8 Safety devices



2.2 BOILER OFF *(switches off the boiler to prevent overheating)*

- Tap "Boiler off"
 - Automatic mode is switched off
 - Control system follows the boiler shutdown procedure
 - Pumps continue to run

3 MAIN SWITCH *(switches off the power supply)*

Before carrying out work on/in the boiler:

- Tap "Boiler OFF"
 - Automatic mode is switched off
 - Control system follows the boiler shutdown procedure
- Switch off the main switch and let the boiler cool down

4 HIGH-LIMIT THERMOSTAT (STL) *(protection against overheating)*

The STL switches off the combustion system when the boiler reaches 105°C. The pumps continue to run. Once the temperature falls below approx. 75°C, the STL can be reset mechanically.

SV SAFETY VALVE *(protection against overheating/excess pressure)*

When the boiler pressure reaches a maximum of 3 bar, the safety valve opens and the heated water is blown off in the form of steam.

2.9 Residual risks

 **WARNING**

When touching hot surfaces:

Severe burns are possible on hot surfaces and the flue gas pipe!

When work is carried out on the boiler:

- Shut down the boiler in a controlled way (operating status "Boiler off") and allow it to cool down
- Protective gloves must generally be worn for work on the boiler, and it should only be operated using the handles provided
- Insulate the flue pipes or simply avoid touching them during operation.

 **WARNING**

If the ash doors are opened during operation:

Opening a door may result in injury or damage or flue gas generation!

Therefore:

- Do not open the doors while the boiler is operating!

 **WARNING**

When inspecting and cleaning the boiler with the main switch on:

Serious injuries possible due to automatic boiler startup!

Before inspection and cleaning work in/on the boiler:

- Switch the boiler off by tapping "Boiler off"
The boiler follows the shutdown procedure and switches to "Boiler off" mode
- Allow boiler to cool for at least 1 hour
- Switch off the main switch and take precautions to prevent accidental switching on.

 **WARNING**

If non-permitted fuel types are used:

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

Take the following precautions:

- Only use fuels specified in the "Permitted fuels" section of these operating instructions.

2.10 Emergency procedure

2.10.1 Overheating of the system

If the system overheats and the safety devices fail, proceed as follows:

NOTICE! Do not under any circumstances switch off the main switch or disconnect the power supply.

- Keep all the doors on the boiler closed
- Switch boiler off by tapping "Boiler OFF"
- Open all mixing valve taps, switch on all pumps.
 - The Froling heating circuit control performs this function in automatic operation.
- Leave the boiler room and close the door
- Open any available radiator thermostat valves

If the temperature does not drop:

- Contact the installer or Froling customer services
 - ⇒ See "Addresses" [page 39]

2.10.2 Smell of flue gas



DANGER

If you smell flue gas in the boiler room:

Inhaling toxic flue gas can be fatal!

If you smell flue gas in the room where the boiler is installed:

- Keep all the doors on the boiler closed
- Shut down the boiler according to procedure
- Ventilate the room where the boiler is installed
- Close the fire door and doors to living areas

Recommendation: Do not install smoke alarms and carbon monoxide detectors near the system.

2.10.3 Fire in the system



DANGER

In case of fire in the system:

Risk of death by fire and poisonous gases

Emergency procedure in case of fire:

- Leave the boiler room
- Close the doors
- Inform the fire department

3 Operating the System

3.1 Assembly and initial startup

Assembly, installation and initial startup of the boiler must only be carried out by qualified staff, and these procedures are described in the accompanying assembly instructions.

NOTICE! See assembly instructions for the P4 Pellet

NOTICE

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

Take the following precautions:

- Initial startup should be carried out with an authorised installer or with Froling customer services

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

NOTICE! See operating instructions for boiler controller!

The customer is responsible for ensuring the following prior to initial start-up of the system by Froling customer services:

- Electrical installation
- Installation of water pipes
- Flue gas connection including all insulation work
- Work must comply with local fire protection regulations

- It is essential that the electrician who has carried out the installation work is available when starting up the system for the first time to make any changes to the wiring which may become necessary.
- During initial start-up, operating staff are shown how to use the boiler. It is imperative for proper handover of the product that those involved are present as this is a one-off opportunity.

NOTICE

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

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

3.2 Filling the pellet store

CAUTION

Filling the store when the boiler is switched on
could result in damage and consequential injury!

When filling the fuel store:

- Switch off the boiler by tapping "Boiler OFF"
 - The boiler follows the shutdown procedure and switches to "Boiler off" status
- Allow the boiler to cool for at least half an hour

When the boiler has cooled down:

- Before filling check the store for fines and clean if necessary
 - Observe the general advice for working in the store.
 - ⇒ See "General advice for working in the store" [page 22]
- Close all openings to the store to seal out dust
- Fill the store with pellets
 - Only use permitted pellets
 - ⇒ See "Permitted fuels" [page 11]

3.2.1 General advice for working in the store



Risk of injury due to moveable parts!
Shut off the feeder unit before entering the store!



When cleaning the store an increased amount of dust may be generated. Wear a dust mask when working in the store.



Adequately ventilate the store before entering. Keep the door open and always have a second person present. Observe the CO concentration limit (< 30ppm).



Slick surfaces in the fuel store present a slipping hazard!



Unauthorised access prohibited! Keep children away!
Keep the fuel store locked and store the key in a safe place!



No fire, open flames or smoking in the store!

3.3 Heating up the boiler

NOTICE

Do not modify the factory settings!

Changing the system's factory settings can be detrimental to efficiency and emissions of the system.

3.3.1 Switching on the power supply



- Turn on the main switch
 - There is voltage at all of the boiler's components
 - When the control has completed the system start, the boiler is ready for operation

3.3.2 Switching on the boiler



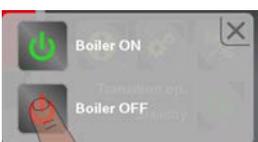
- Switch the boiler on by tapping "Boiler ON"
 - Automatic mode is active
 - The heating system is controlled via the controller according to the selected mode in automatic mode
- For other modes press the relevant function key
 - Information on function keys in the relevant operating instructions for the "Lambdatronic P 3200" boiler controller

3.3.3 Regulating the boiler

For the necessary steps, and how to display and alter parameters:

NOTICE! See operating instructions for boiler controller!

3.3.4 Switching off the boiler



- Switch boiler off by tapping "Boiler OFF"
 - The boiler follows the shutdown program and switches to "Boiler off" status
 - The combustion unit is switched off, the chamber discharge unit and the entire hydraulic system remain active

3.3.5 Switching off the power supply

WARNING

When turning off the main switch in automatic mode:

Serious combustion faults leading to serious accidents are possible.

Before turning off the main switch:

- Switch boiler off by tapping "Boiler OFF"
 - The boiler follows the shutdown procedure and switches to "Boiler off" status after the cleaning cycle



- Turn off the main switch
 - Boiler controller is switched off
 - There is no power supply to any of the boiler components

NOTICE! Frost protection function is no longer active!

4 Boiler Servicing

4.1 General information on servicing

DANGER



When working on electrical components:

Risk of electrocution!

When work is carried out on electrical components:

- Only have work carried out by a qualified electrician
- Observe the applicable standards and regulations
 - Work must not be carried out on electrical components by unauthorised persons

WARNING



When inspecting and cleaning the boiler with the main switch on:

Serious injuries possible due to automatic boiler startup!

Before inspection and cleaning work in/on the boiler:

- Switch the boiler off by tapping "Boiler off"
The boiler follows the shutdown procedure and switches to "Boiler off" mode
- Allow boiler to cool for at least 1 hour
- Switch off the main switch and take precautions to prevent accidental switching on.

WARNING



During inspection and cleaning work to the hot boiler:

Hot parts and the flue gas pipe can cause serious burns!

Take the following precautions:

- It should be standard practice to wear protective gloves when working on the boiler.
- Only operate the boiler using the handles provided
- Before starting any maintenance work activate "Service mode" in the quick menu
 - The boiler follows the shutdown procedure and switches to "Boiler off" status
- Allow boiler to cool 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 inspection and cleaning:

Incorrect or insufficient inspection and cleaning of the boiler can cause serious faults in combustion (e.g. spontaneous combustion of carbonisation gases / flash fires) and this can lead to serious accidents and damage!

Take the following precautions:

- Clean the boiler following the instructions in the instruction manual. Follow the boiler operating instructions.

NOTICE

We recommend that you keep a maintenance book in accordance with ÖNORM M7510 of the Technical Directive for Fire Prevention (TRVB)

4.2 Inspection and cleaning

- Regular cleaning of the boiler extends its life and is a basic requirement for smooth running.
- Recommendation: use an ash vacuum for cleaning.

4.2.1 Inspection

Checking the system pressure



- Check the system pressure on the pressure gauge
 - ➔ The value must be 20% above the pre-stressed pressure of the expansion tank
- NOTICE! Check that the position of the pressure gauge and rated pressure of the expansion tank match your installer's specifications!**

If the system pressure decreases:

- Top up with water
 - NOTICE! If this happens frequently, the seal of the heating system is faulty! Inform your installer**

If large pressure fluctuations are observed:

- Ask an expert to inspect the expansion tank

Checking the safety valve

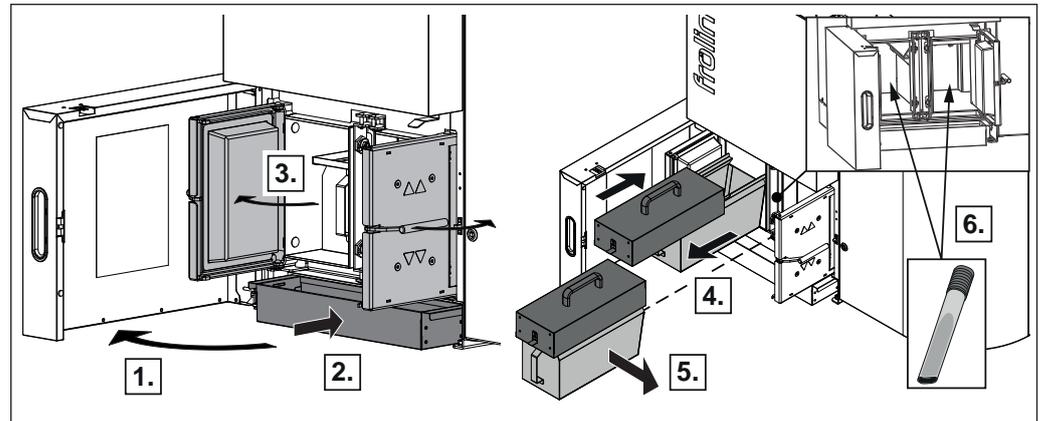


- Check the seal of the safety valve regularly and ensure that the valve is not dirty
 - NOTICE! Inspection work must be carried out in accordance with the manufacturer's instructions.**

4.2.2 Cleaning

The ash drawers (P4 Pellet 15-25) or ash container (P4 Pellet 32-105) 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.

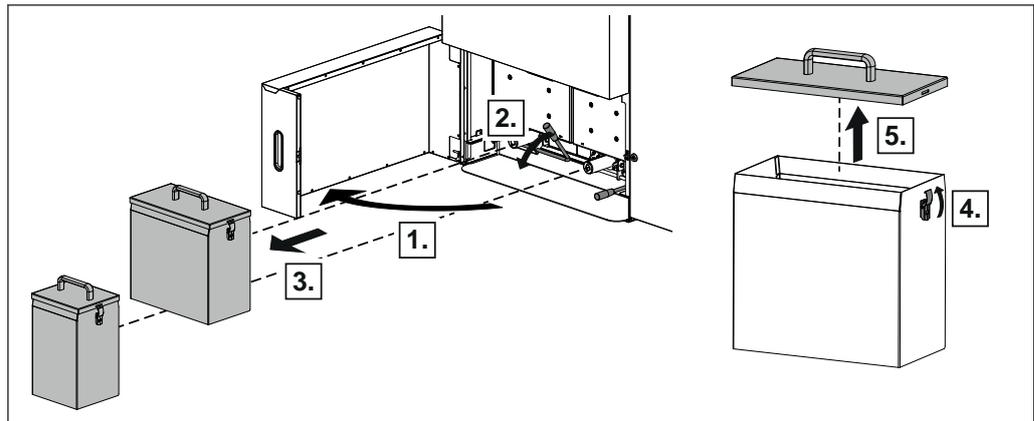
Emptying the ash drawers (for P4 Pellet 15/20/25)



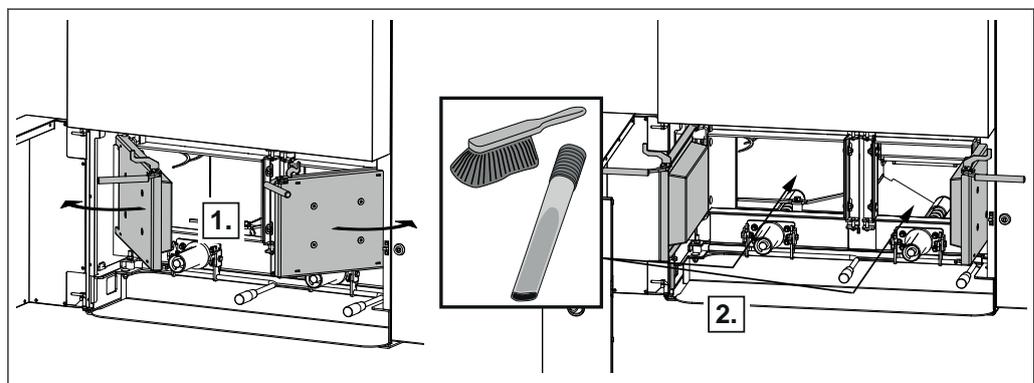
- Open the insulated door and position the ash drawer below the ash doors to catch any ash that might overflow
- Open ash doors

- Pull the ash drawer out slightly
 - This pushes the ash lying in front of the drawer into the ash bowl
- Put the transport cover on as illustrated and pull out the ash drawer until the transport cover engages

- Take the ashcan to the emptying point and empty it
 - Push up the locking lever to remove the transport cover.

Emptying the ash container (for P4 Pellet 32-105)

- Open the insulated door and push the locking lever up
- Pull out the ash container and put the cover plate provided onto 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

NOTICE! Only clean the grate and combustion chamber when the boiler has cooled down!

For P4 Pellet 15/20/25:

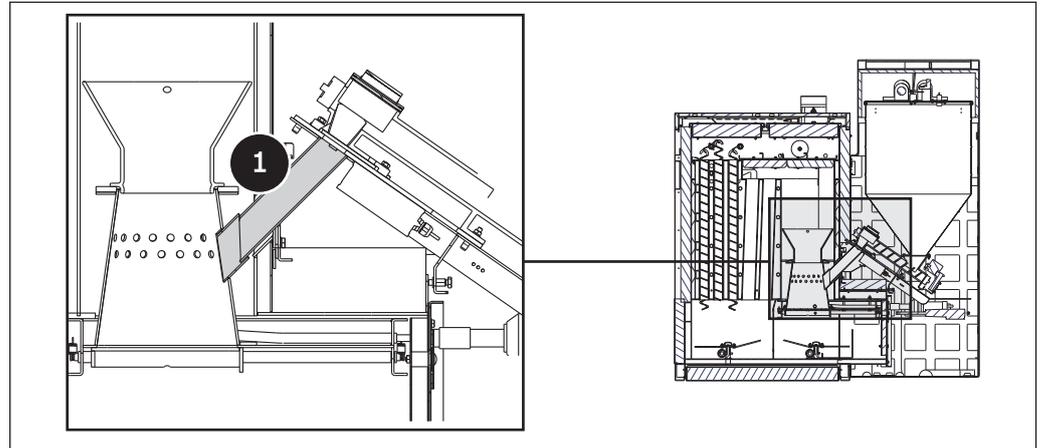
- Open the insulating door, open the ash door on the right and pull out the ash drawer

For P4 Pellet 32/38/48/60/80/100/105:

- Open the insulating door, take out the ash container on the right 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
 - ⇒ See "Cleaning the flue gas collection chamber and the heat exchanger" [page 30]

Check the downpipe for dirt (P4 Pellet 45 and up)



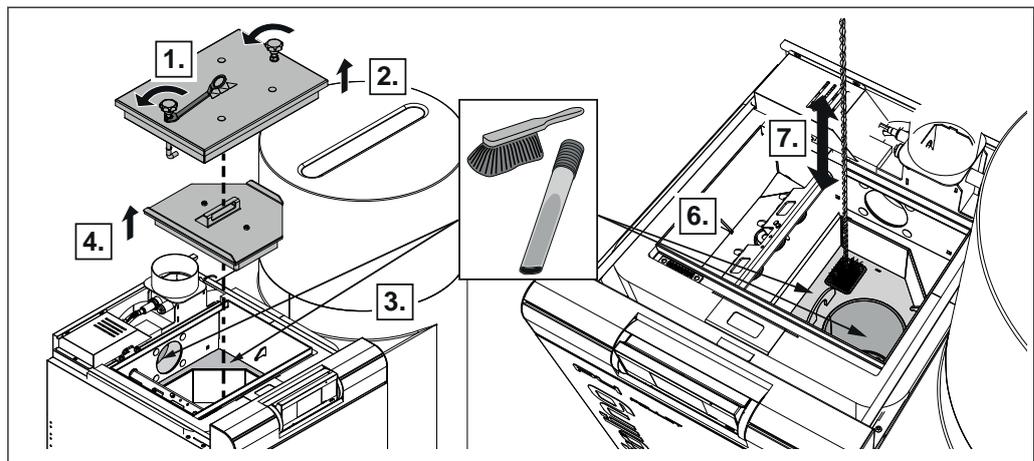
- Check the downpipe (1) between the burner gate valve and combustion grate for dirt
- If there is a lot of dirt or caking, clean the downpipe
 - For cleaning use a large crosshead screwdriver and a wire brush, for example.

4.2.3 Annual check

The boiler must be cleaned and inspected at appropriate intervals depending on the service hours and fuel quality.

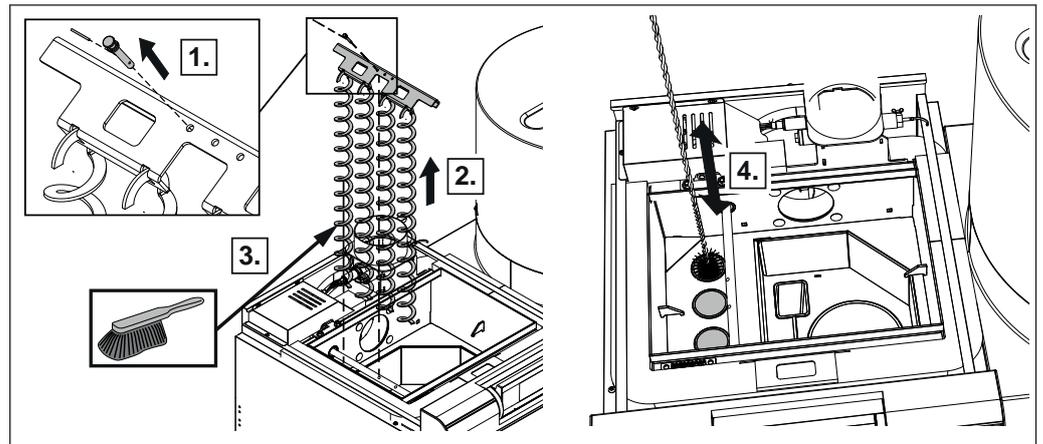
For fuels with a low ash content, annual cleaning and inspection (2000 to 2500 service hours) is usually sufficient. For less efficient fuels and fuels with a high ash content (indicated by short emptying intervals for the ash container), the work should be carried out more frequently accordingly.

Cleaning the flue gas collection chamber and the heat exchanger



- Remove the insulating cover and turn the seal screws on the cleaning cover anticlockwise using the tool supplied to loosen
- 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 accumulated
 - Recommendation: use an ash vacuum
- Remove the internal heat exchanger cover
- Clean the flue pipes and the combustion chamber underneath with a cleaning brush

Clean WOS



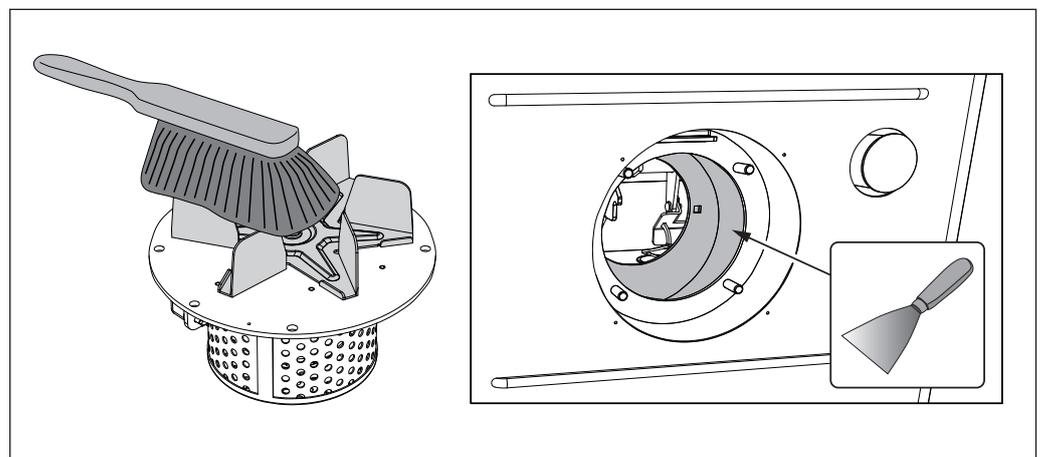
- Remove the insulating cover and cleaning cover
⇒ See "Cleaning the flue gas collection chamber and the heat exchanger" [page 30]
- Remove the retainer at the bottom at the lock bolt, push the lock bolt up and remove
- Remove the WOS mount along with the springs
- Clean the heat exchanger pipes with cleaning brush provided

Cleaning the induced draught fan

Check the induced draught fan for dirt and deposits and clean if necessary

NOTICE! Deposits on the running wheel can cause an imbalance in the ID fan, which can result in noise or, in the worst case, bearing damage.

Cleaning (if required)



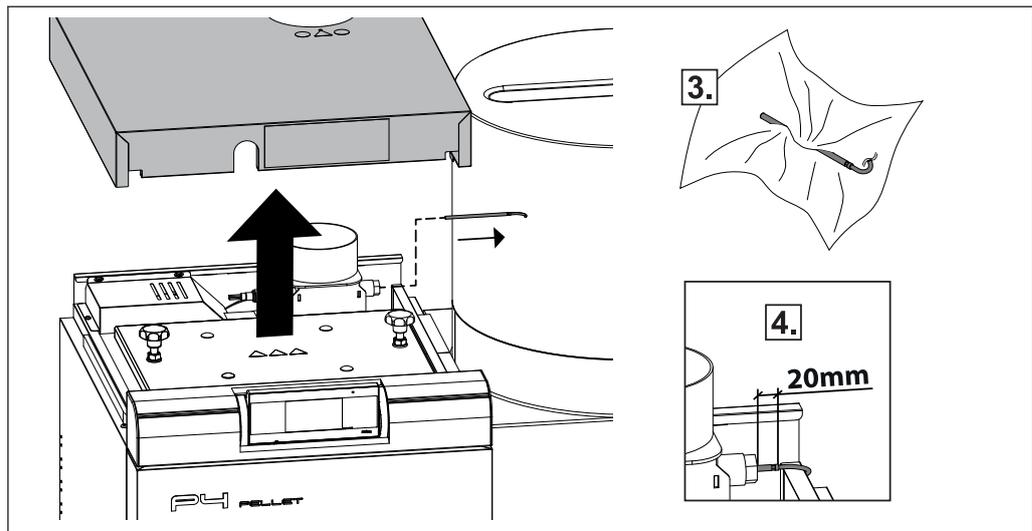
- Unplug the connection cable of the induced draught fan
- Remove the induced draught fan from the back of the boiler
 - Take care not to damage the seal
- Check running wheel for damage

- Clean the fan wheel from the inside out using a soft brush or paint brush
- Remove dirt and deposits from the induced draught housing using a scraper
- Remove any ash which has gathered using an ash vacuum
- Fit the induced draught fan
- Plug in the connection cable and secure with cable ties

Cleaning the flue gas pipe

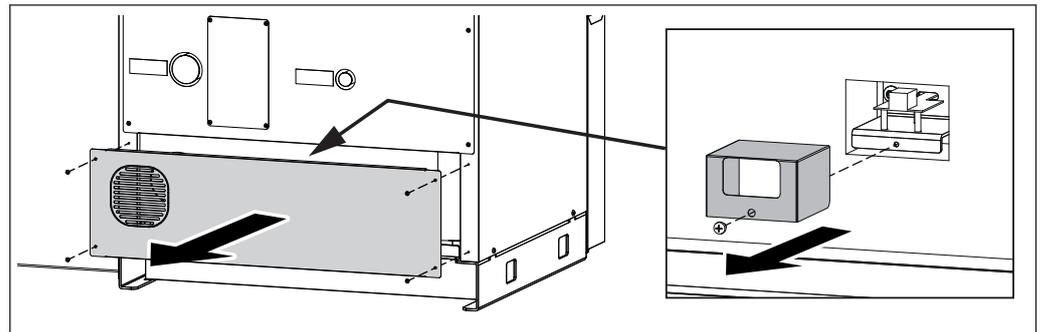
- Unplug the connection cable of the induced draught fan
 - This prevents damage to the fan from the cleaning brush
- Remove the inspection cover on the connecting pipe
- Clean the connecting pipe between the boiler and chimney with a chimney sweeping brush
 - Depending on the layout of the flue gas pipes and the chimney draught, cleaning once a year may not be enough!
- Plug in the connection cable of the induced draught fan

Cleaning the flue gas temperature sensor

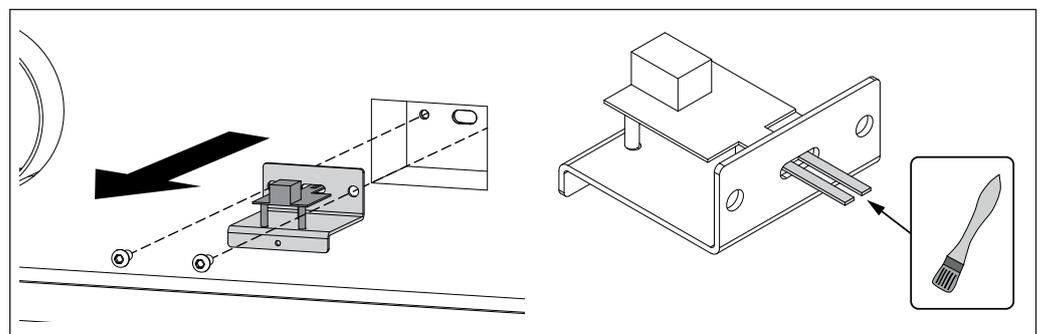


1. Remove the insulating cover and thermal insulation
2. Release the retaining screw and remove the flue gas temperature sensor from the flue gas pipe
3. Wipe the flue gas temperature sensor with a clean cloth
4. Push in the flue gas temperature sensor until about 20 mm of the sensor remains protruding from the bushing and secure with fixing screw

Cleaning the flow sensor



- Remove lower back panel
 - Number of screws varies depending on boiler size
- Remove protective plate



- Remove the flow sensor
- Carefully clean both sensors of the flow sensor with a fine brush

4.3 Emissions measurement by chimney sweep or regulatory body

Various legal regulations stipulate that heating systems must be inspected periodically. In Germany this is regulated by the First Federal Emissions Protection Ordinance (BimSchV) in the last amended version, and in Austria by various state laws.

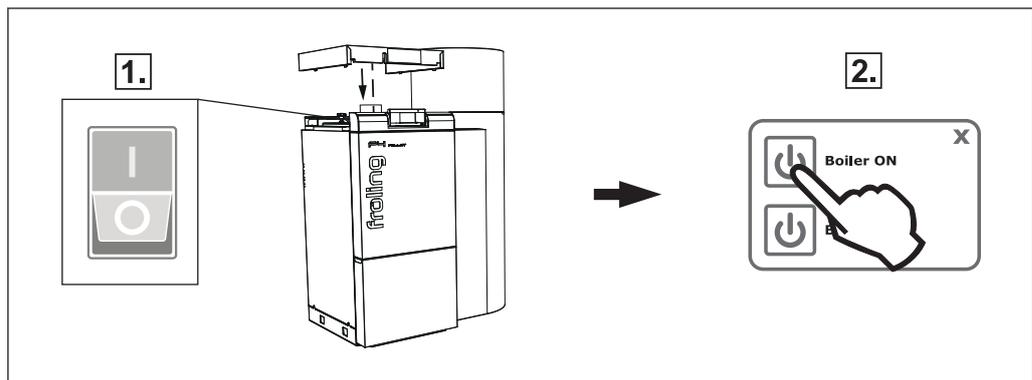
The following minimum requirements must be met by the operator of the system for a successful measurement:

- Thoroughly clean the boiler immediately before the measurement
- Only use fuels of high quality which meet the requirements as stipulated in the boiler operating instructions ("Permitted fuels" chapter)
- Ensure that there is adequate heat consumption on the day of the measurement. (e.g. storage tank must be able to take heat for the duration of the measurement)

4.3.1 Switch on the system

When the cleaning is complete:

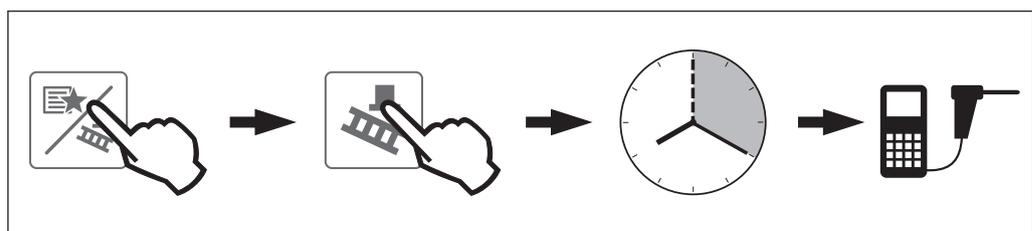
- Reassemble all dismantled components in reverse order and check for tightness and correct installation



1. Turn on the main switch
2. Switch the boiler on by tapping "Boiler ON"

4.3.2 Emissions measurement by chimney sweep or regulatory body

Immediately before the start of the measurement:



- Activate "Chimney-sweep mode" in the quick menu
 - The flue gas temperature and residual oxygen content should have stabilised approximately 20 minutes after activation
 - The display will indicate that the boiler is ready for measurement

4.4 Maintenance agreement / Customer service

NOTICE! We recommend a yearly inspection by Froling customer services or an authorised partner (third party maintenance).

Regular maintenance and servicing by a heating specialist will ensure a long, trouble-free service life for your heating system. It will ensure that your system stays environmentally-friendly and operates efficiently and cost-effectively.

In the course of this maintenance the entire system is inspected and optimised, particularly regulation and control of the boiler. The emission measurement carried out can also be used to draw conclusions about the combustion performance of the boiler. For this reason, FROLING offers a service agreement, which optimises operating safety. Please see the details in the accompanying guarantee certificate.

Your Froling customer service office will also be happy to advise you.

NOTICE

All national and regional regulations relating to regular testing of the system must be observed. Please be advised that, in Austria, commercial systems with a rated heat output of 50 kW or more must be regularly tested at yearly intervals in accordance with the Heating Plant Regulations (Feuerungsanlagen-Verordnung).

4.5 Replacement parts

With Froling original replacement parts in your boiler, you are using parts that match perfectly. As the parts fit together so well, installation times are shortened and a long service life is maintained.

NOTICE

Installing non-original parts will invalidate the guarantee.

- Only replace components or parts with original replacement parts

4.6 Disposal information

4.6.1 Disposal of the ash

- Austria:* dispose of ash in accordance with the Waste Management Act (AWG)
- Other countries:* dispose of ash in accordance with local regulations

4.6.2 Disposal of system components

- Ensure that they are disposed of in an environmentally friendly way in accordance with waste management regulations in the country (e.g. AWG in Austria)
- You can separate and clean recyclable materials and send them to a recycling centre.

5 Troubleshooting

5.1 General fault with power supply

Error characteristics	Cause of error	Elimination of error
Nothing is shown on the display No power to the controller	General power failure Main switch is turned off FI circuit breaker or line protection is switched off Faulty fuse in the controller	Turn on the main switch Switch on the FI circuit breaker or line protection Replace the fuse – note the amperage (6.3AT)

5.1.1 Behaviour of system after a power failure

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

- After a power failure, check whether the STL (high-limit thermostat) has tripped.
- Keep the doors of the boiler closed during and after the power failure, at least until the induced draught fan automatically starts up again.

EXCEPTION:

If the boiler operating status was "Heating up", "Pre-heating" or "Ignition" before the power failure, the boiler follows the shutdown procedure and cleaning commences. Only then does the boiler switch to "Preparation" operating status and the system starts up again.

5.2 Excessive temperature

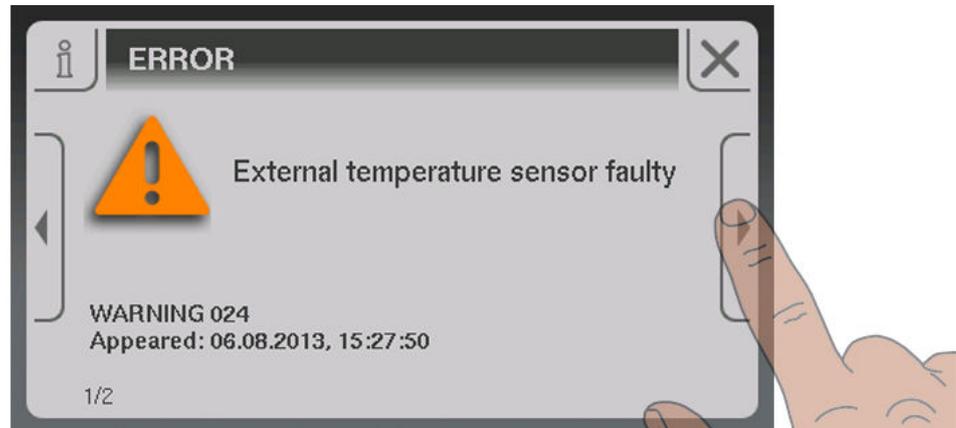
The high-limit thermostat (STL) shuts down the boiler when it reaches a temperature of 95 - 100°C. The pumps continue to run.

Once the temperature falls below approx. 75°C, the STL can be reset mechanically:

- Unscrew the cap on the STB (high-limit thermostat)
- Unlock the STL by pressing with a screwdriver



5.3 Faults with fault message



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

- Status LED indicates the nature of the fault
 - Orange flashing: Warning
 - Red flashing: Error or alarm
- A fault message is shown on the display

The term "fault" is a collective term for warnings, errors and alarms. The boiler reacts differently to the three types of message:

WARNING	In case of warnings the boiler initially continues controlled operation, giving the option of resolving the error quickly to prevent a shutdown.
ERROR	The boiler follows the shutdown procedure and remains in "Boiler off" status until the problem is resolved.
ALARM	An alarm triggers a system emergency stop. The boiler shuts down immediately, the heating circuit controller and pumps remain active.

5.3.1 Procedure for fault messages

The procedure in the case of a fault message, the causes of faults and procedure for troubleshooting are described in the operating instructions for the boiler controller:

IMPORTANT! See operating instructions for boiler controller

5.3.2 Acknowledging a fault message

Trace and remove the fault and then:

- Tap the "Cancel" symbol
 - Status LED constant or flashing green light (depending on operating status)
 - Green constant: Boiler switched on
 - Green flashing: Boiler switched off

6 Appendix

6.1 Addresses

6.1.1 Address of manufacturer

FRÖLING
Heizkessel- und Behälterbau GesmbH

Industriestraße 12
A-4710 Grieskirchen
AUSTRIA

TEL 0043 (0)7248 606 0
FAX 0043 (0)7248 606 600
EMAIL info@froeling.com
INTERNET www.froeling.com

Customer service

Austria	0043 (0)7248 606 7000
Germany	0049 (0)89 927 926 400
Worldwide	0043 (0)7248 606 0

6.1.2 Address of the installer

Stamp
