fröling

Operating Instructions

Pellet boiler P4 Pellet

CE

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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
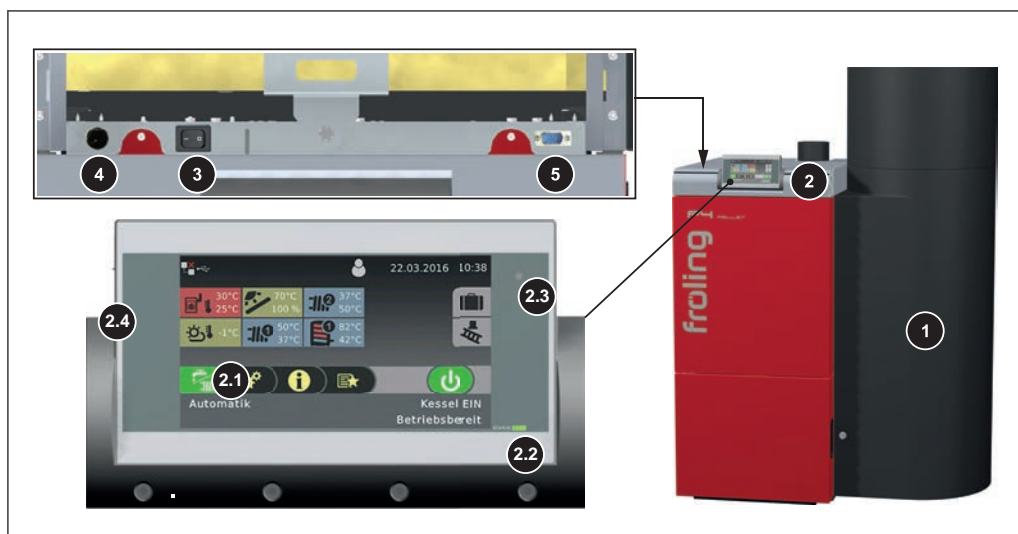
1	P4 Pellet with integrated pellet cyclone container

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 8/15/20/25
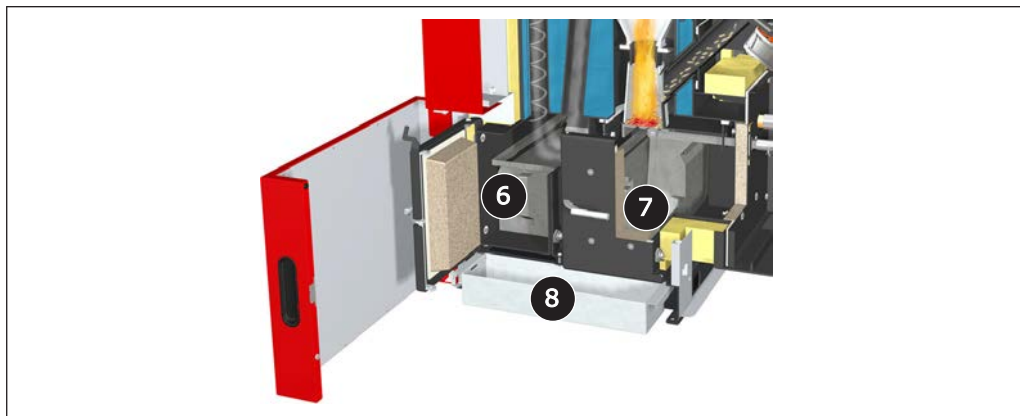
6	Ash drawer - heat exchanger
7	Ash drawer - combustion chamber
8	Ash drawer

Ash removal unit P4 Pellet 32/38/48/60/80/100/105:
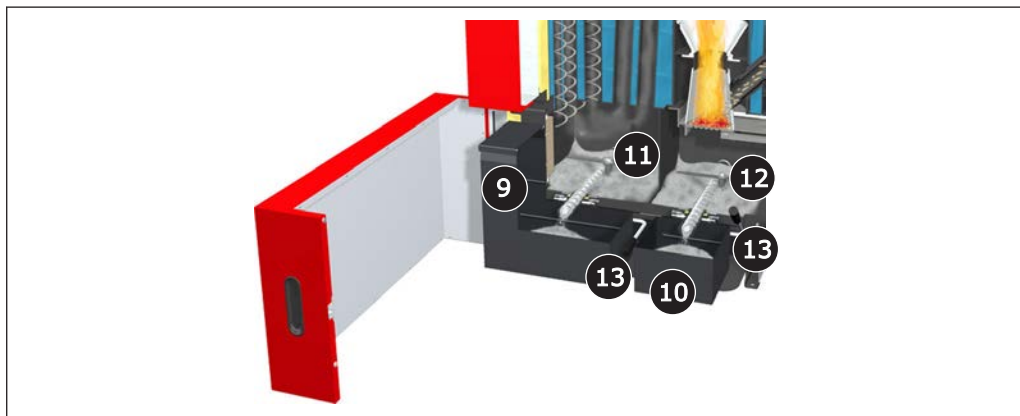
9	Ash container - heat exchanger
10	Ash container - combustion chamber
11	Ash screw and rotary agitator of the automatic heat exchanger cleaner
12	Ash screw and rotary agitator of the combustion chamber ash removal unit
13	Lever of the ash box lock

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 respective manuals.
- ❒ Any work above and beyond this (e.g. servicing) must be carried out by a heating engineer approved by Fröling Heizkessel- und Behälterbau GesmbH or by Froling customer services

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⚠ 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 may be used.

⇨ See "Permitted fuels" [page 12]

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 furnance 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 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
and/or:	EN*plus* / DIN*plus* certification scheme

General note:

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

TIP: Fit the Froling 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
  - Dust mask

2.7 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	**SAFETY TEMPERATURE LIMITER (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.

2.8 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 according to procedure ("Boiler off" operating status) and allow it to cool down
❒ Protective gloves must usually be worn for work on the boiler, and it should only be operated using the handles provided
❒ Insulate the flue gas pipes and do not touch 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 the 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.

2.9 Emergency procedure

2.9.1 Overheating of the system

If the system overheats and the safety devices fail to operate, 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 takes on this function in automatic operation.

❒ Leave the boiler room and close the door

❒ Open any thermostatic valves on the radiator and ensure sufficient heat dissipation from the rooms

If the temperature does not drop:

❒ Contact the installer or Froling customer services

2.9.2 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.

2.9.3 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 Notes for operating a heating system

Carrying out modifications to the system and changing or disabling safety equipment is prohibited.

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

3.1 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.

3.2 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

3.3 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 make-up 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

Permitted water hardness for the fill and make-up water in accordance with VDI 2035:

Overall heat output	Total hardness at <20 l/kW minimum individual heat output [1]		Total hardness at >20 ≤50 l/kW minimum individual heat output [1]		Total hardness at >50 l/kW minimum individual heat output [1]	
kW	°dH	mol/m³	°dH	mol/m³	°dH	mol/m³
≤50	no demand or		11.2	2	0.11	0.02
	<16.8 [2]	<3 [2]				
>50 ≤200	11.2	2	8.4	1.5		
>200 ≤600	8.4	1.5	0.11	0.02		
>600	0.11	0.02				

1. From specific system volume (litres nominal capacity/heat output; for multi-boiler systems use the smallest individual heat output)
2. In the case of systems with central heating boilers and for systems with electric heating elements

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

3.4 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**.

3.5 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.

3.6 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!

4 Operating the System

4.1 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
- Connect flue gas 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.

4.2 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

4.3 Operate the boiler using the touch display

4.3.1 Overview of the touch display

A	Display of freely selectable information ⇨ See "Select information displays" [page 27]
B	Display and change the current user level ⇨ See "Lock display/switch user level" [page 36]
C	Display and change the current date/time ⇨ See "Change date and time" [page 31]
D	Holiday program ⇨ See "Configure the holiday program" [page 37]
E	Chimney sweeper function ⇨ See "Emissions measurement by chimney sweep or regulatory body" [page 61]
F	Display of current operating status, boiler ON/OFF ⇨ See "Switch boiler ON/OFF" [page 29]
G	View available functions in the quick menu ⇨ See "Quick menu" [page 26]
H	Access all system information. No parameters may be changed in the info menu.

I	System menu for opening the system settings. All parameters can be displayed and/or edited depending on the user level. ⇨ See "Navigation within the system menu" [page 24]
J	Display and change the current boiler mode ⇨ See "Change boiler mode" [page 30]
K	Display icons for using froeling-connect ⇨ See "Display icons for froeling-connect/remote control" [page 23]
L	Brightness sensor for automatically adjusting the brightness of the display
M	LED frame to display the current system status ⇨ See "Status display" [page 22]
N	USB interface for software update (⇨ see operating instructions for the boiler controller) **NOTICE! USB interface is for service purposes only and must not be used to load devices or for PC connections!**

Status display

The status display indicates the system's operating status:

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

Control icons

✓	Confirms values entered; activates parameters
✗	Discards any values entered without saving; and closes messages
🏠	Back to basic display
ⓘ	Accesses all system information
📝★	Opens quick menu. Selection of functions depending on user level, configuration and current status.
✎	Tap to change parameters (dropdown menu or numeric keypad)

|	
⚙	Opens system menu. Menu display depends on user level and configuration
↩	Back to higher menu level.

Display icons for froeling-connect/remote control

The icons for connection status and remote control are displayed at the top left of the touch display. Tap on these icons to open the "Connection Centre". In the menu, the connection to froeling-connect as well as the remote control (switching on and off by external users) is activated/deactivated

Status to froeling-connect		Remote control of the boiler	
🖳✕	froeling-connect is deactivated or not in use	🔌	Remote control of the boiler is permitted
🖳	Establishes connection to froeling-connect	🔌✕	Remote control of the boiler is not permitted
🌐	Connection to the froeling-connect server		
🖧✕	No network connection to froeling-connect		
🖳⚠	No connection to froeling-connect server, ⇨ See "Connection status to "froeling-connect"" [page 23]		

Connection status to "froeling-connect"

The connection status to "froeling-connect" is displayed in the info menu.
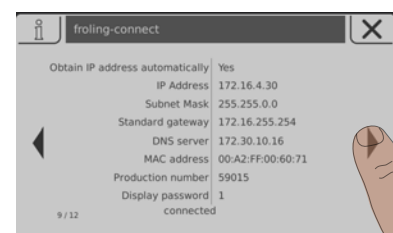
❒ Tap the info menu in the basic display and navigate to the "froeling-connect" menu
↳ The connection status is displayed in the lower range (connected, deactivated, …)

NOTICE! Consult the "froeling-connect" operating instructions for a detailed description of the connection status as well as troubleshooting

Navigation within the system menu

The system menu shows the menus available depending on the user level and the system configuration. Use the right and left arrows to navigate to the individual menus. Tap the corresponding icon to open the menu. Within the individual menus, the status display is shown with current values. If, for example, several heating circuits are installed, you can use the right and left arrows to navigate to the desired heating circuit.
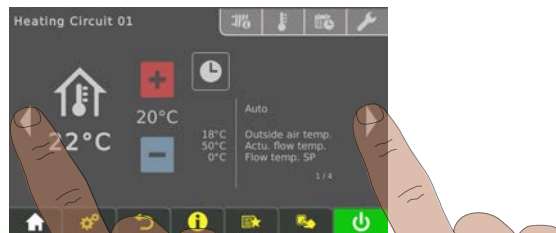
Tap the respective tab to carry out settings in the menus.

Icon	Tab	
	Status	
	Temperatures	
	Times	
	Service	
	General settings	
	Solar heat meter	

Changing parameters

If there is a "pencil" symbol next to a parameter text, the parameter can be edited. Depending on the type of parameter, it can be edited using the numeric keypad or by selecting from a list and then tapping on the "Confirm" symbol.
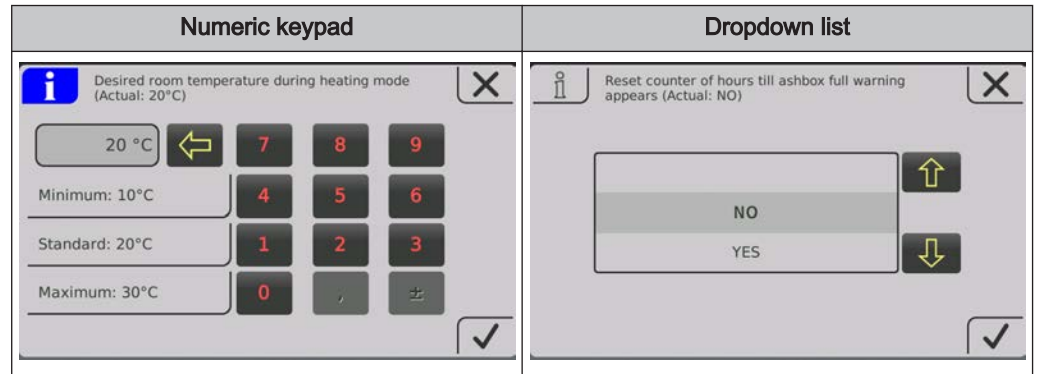

Change time window

The desired time window can be set in the "Times" tab in the menus of the heating components (heating, water, etc.). Up to four time windows are possible per day.

❐ Use the left or right arrow to navigate to the desired day of the week

❐ Tap the time window or icon underneath the day of the week
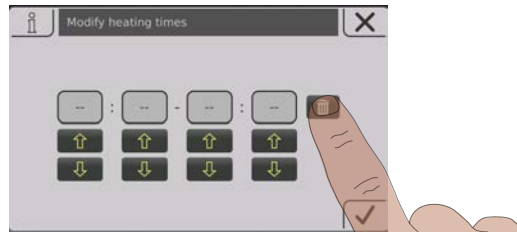
❐ Tap on the time window to be changed

❐ Use the up and down arrows to set the start and end time and save by tapping the "Confirm" icon

The time window set is saved for all selected days of the week.
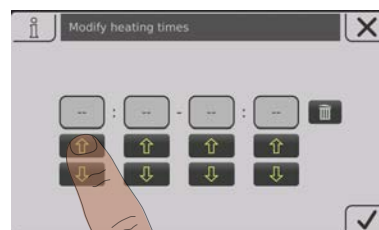
To delete a saved time window, tap on the "Recycle bin" icon next to it.


Quick menu

The quick menu provides different functions depending on the system configuration and system status.

Icon	Description
	Language selection Sets the desired system language: Deutsch – English – Francais – Italiano – Slovenski – Cesky – Polski – Svenska – Espanol – Magyar – Suomi – Dansk – Nederlands – Русский – Srpski – Hrvatski
	Clean the touch display The touch display is locked for 10 seconds, during which time it is possible to clean it without inadvertently changing the settings.
	User level Changes the current user level **Code "0"** … Child lock/Control lock **Code "1"** … Customer
	Extra heating Boiler starts, heating and domestic hot water tank are activated for 6 hours. The mode setting is ignored. CAUTION: The external temperature heating limit set in the "Heating" menu is active and can prevent release of the heating circuits.
	Extra loading One-time extra loading of all available DHW tanks. Subsequently, the mode that was previously set becomes active again.
	Error display List of all pending boiler faults and how to eliminate them.

| Icon	Description
	Setting wizard **Switching on for the first time:** Setting the language, manufacturer's number, date and time **Connect:** Setting parameters required for the boiler to use the "froeling-connect.com" (IP address, display password, …)

4.3.2 Select information displays

Tapping on the freely selectable information displays in the basic display opens the respective menu. The following options are available depending on the system configuration:

Menu	Selection	Icon	Description
Boiler	Empty ash in		Display of the remaining heating hours until the message "Ash box full, please empty" appears.
	Temperatures		Display of boiler und flue gas temperature
	Calorific value heat exchanger[1]		Display of boiler and flue gas temperature before or after the calorific value heat exchanger.
	Operation hours		Display of the operating hours and the operating hours since last maintenance.
Outside air temperature	Temperatures		Display of the current outside air temperature.
Boiler 2	Temperatures		Display of the temperature of the secondary boiler and the status of the burner relay
Solar	Temperatures		Display of the collector temperature and control of the collector pump.
Pellets	Remaining pellet amount in store room		Display of the remaining amount of pellets in storeroom.
Heating circuit 01 – 18	Temperatures		Display of the actual flow temperature and flow temperature setpoint of the respective heating circuit.
DHW tank 01 – 08	Temperatures		Display of the current DHW tank temperature and control of DHW tank pump of the respective DHW tank.
Storage tank 01 – 04	Temperatures		Display of storage tank temperature, top and bottom
	3 temperature sensors[1]		Display of storage tank temperature, top, middle and bottom.
	4 temperature sensors[1]		Display of storage tank temperature top, store sensor 2, store sensor 3 and bottom.
Circulation pump	Temperatures		Display of the status at the flow sensor (if present) and the current circulation return temperature.

Menu	Selection	Icon	Description
Differencial controller	Temperatures		Display of the current temperature from source and recess of the differential regulator
System	CPU/RAM capacity		Display of the CPU and RAM capacity in percent

1. This selection merges two tiles together, reducing the maximum number of information displays!
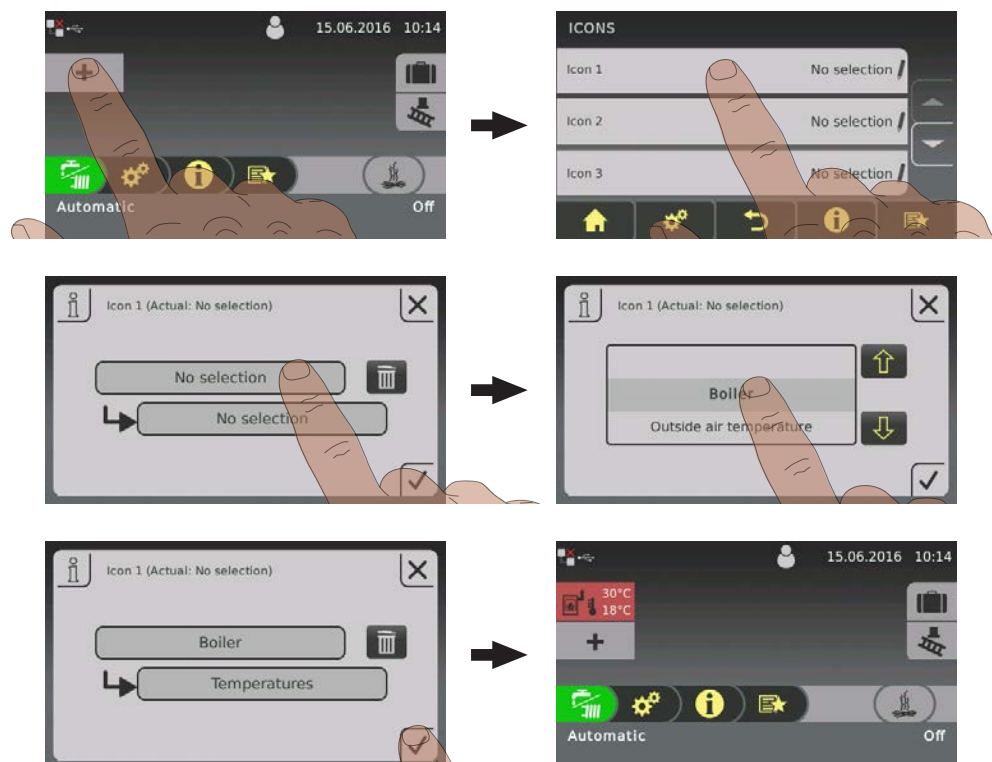
When using more than two store sensors, it is possible to have an information display with storage tank temperatures in accordance with the number of sensors. An information display that spans two areas is used.
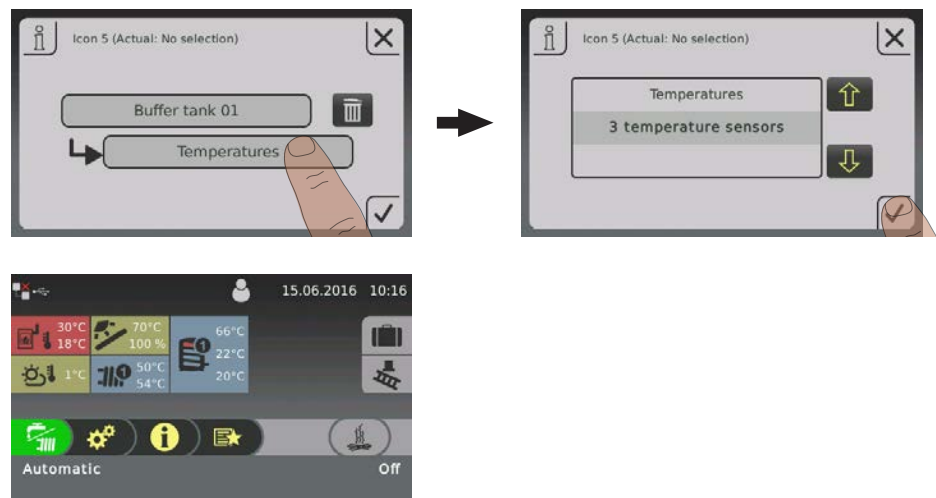

4.3.3 Switch boiler ON/OFF

The hydraulic system is controlled in accordance with the mode that is set, regardless of boiler status, ⇨ See "Change boiler mode" [page 30]

|	
	Boiler ON The boiler is activated and starts following a command from the hydraulic system. (Storage tank, heating circuit, domestic hot water…). Heating circuits and domestic hot water tanks are controlled according to the programs and times set.
	Boiler OFF The control follows the boiler shutdown procedure and starts the cleaning cycle. The boiler switches to "Boiler OFF" status. All boiler units are deactivated, heating circuits and domestic hot water tanks are controlled according to the programs and times set, the chamber discharge system remains active.

4.3.4 Change boiler mode
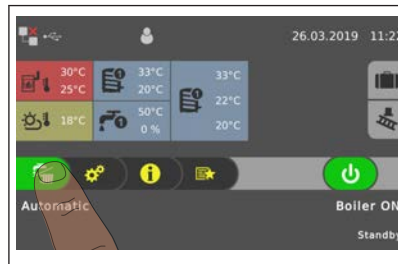
	Depending on the type of boiler, there are several modes available which can be changed directly in the basic display of the touch display.

Mode	Icon	Description
Automatic		Supply heating circuits and domestic hot water tanks with heat according to the selected heating times.
Domestic hot water		The domestic hot water tank is supplied with heat within the selected loading times. Heating circuits are switched off, frost protection remains active.
Continuous load		The boiler continuously maintains the selected boiler temperature setpoint and only shuts down for cleaning purposes. Supply heating circuits and domestic hot water tanks with heat according to the selected heating times.

NOTICE! Consult the enclosed operating instructions for the boiler controller for a detailed description of the boiler modes.

4.3.5 Change date and time

Tap on the displayed date and time to change the date and time in the basic display. Use the up and down arrows to adjust the settings and tap on the "Confirm" icon to save.
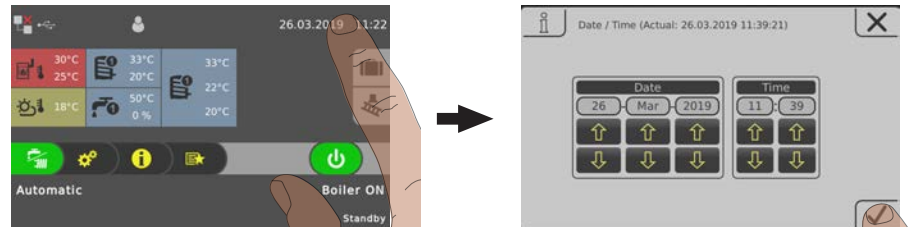
4.3.6 Change desired DHW tank temperature

❐ Tap the information display for the desired DHW tank
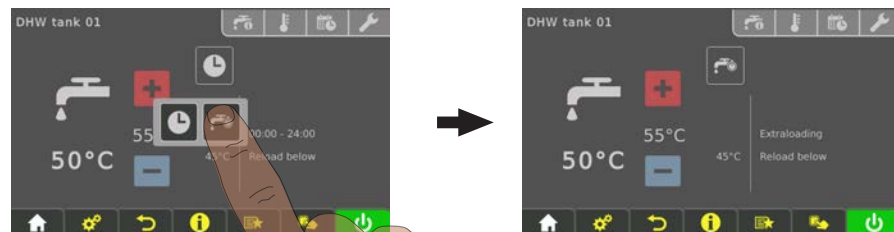❐ Adjust the temperature setpoint by tapping on "+" or "-"

NOTICE! If this selection is not configured in the information display in the basic display, open the components in the system menu.

4.3.7 One-time extra loading of an individual DHW tank

❒ Tap the information display for the desired DHW tank

❒ Tap the mode icon for the DHW tank

❒ Tap the "extra loading" icon

⤷ One-time loading of DHW tank starts. Once the selected DHW tank temperature setpoint has been reached, loading stops and the icon switches to "automatic".

NOTICE! If this selection is not configured in the information display in the basic display, open the components in the system menu.

4.3.8 One-time extra loading of all existing DHW tanks.

In the case of several DHW tanks, the "extra loading" function in the quick menu is used to start a one-time extra loading of all existing DHW tanks.

4.3.9 Set the heating curve of a heating circuit
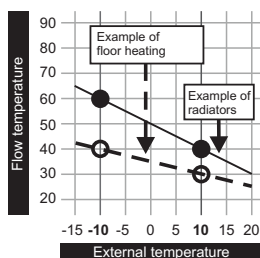
A flow temperature is calculated using the heating curve of the heating circuit depending on the outside air temperature and the two adjustable parameters "`flow temperature at -10°C outside air temperature`" and "`flow temperature at +10 °C outside air temperature`".

> **Example:**
>
> The heating curve is defined with 60°C (at -10°C outside air temperature) and 40°C (at +10°C outside air temperature). If the current outside air temperature is -2°C, the flow temperature is calculated as 52 °C.

Heating circuits without measuring the room temperature are operated using the calculated values. The heating curve must be adapted to influence the room temperature, ⇨ See "Change room temperature (heating circuit without room temperature sensor)" [page 34]

When using a room temperature sensor (analogue remote control FRA, room console RBG 3200, room console RBG 3200 Touch, room temperature sensor) it is not necessary to interfere with the heating curve. Any deviation of the actual room temperature to the room temperature setpoint is automatically compensated by increasing/reducing the flow temperature.

When starting up the system it is defined whether the heating circuit is operating as a "high temperature circuit" or a "low temperature circuit". The following values are set:

High temperature circuit
▪ Desired flow temperature at -10°C outside air temperature: **60 °C**
▪ Desired flow temperature at +10 °C outside air temperature: **40 °C**

Low temperature circuit
▪ Desired flow temperature at -10°C outside air temperature: **40 °C**
▪ Desired flow temperature at +10 °C outside air temperature: **30 °C**

Reduction of flow temperature

Outside of the set heating times (⇨ See "Change time window" [page 25]), the setback mode is active and the calculated flow temperature is reduced by the adjustable value "`Reduction of flow temperature in setback mode`".

Heating limits

The outside air temperature heat limits are set in the "Temperatures" tab and they activate/deactivate the heating circuit depending on the outside air temperature or time period.

Parameter	Effect
Outside air temperature, at which heating circuit pump switches off in heating mode (default: 18°C)	If the outside air temperature difference rises above the set value, the heating circuit is deactivated. (Pump off, mixing valve closes)
Outside air temperature, at which heating circuit pump switches off in setback mode (default: 7°C)	If the outside air temperature in setback mode (default: 22:00 – 06:00) falls below the set value, the heating circuit is activated (pump on, mixing valve regulated as per heating curve)

4.3.10 Change room temperature (heating circuit without room temperature sensor)

Situation	Effect
Room temperature generally too low	Move heating curve up in parallel. Increase both points on the heating curve by the same temperature level. (see figure 1)
Room temperature on cold days too low, OK on warm days	Change the slope of the heating curve. Increase the temperature level of the heating curve at -10°C outside temperature (see figure 2)
Room temperature on warm days too high, OK on cold days	Change the slope of the heating curve. Reduce the temperature level of the heating curve at +10 °C outside temperature (see figure 3)

Figure 1	Figure 2	Figure 3
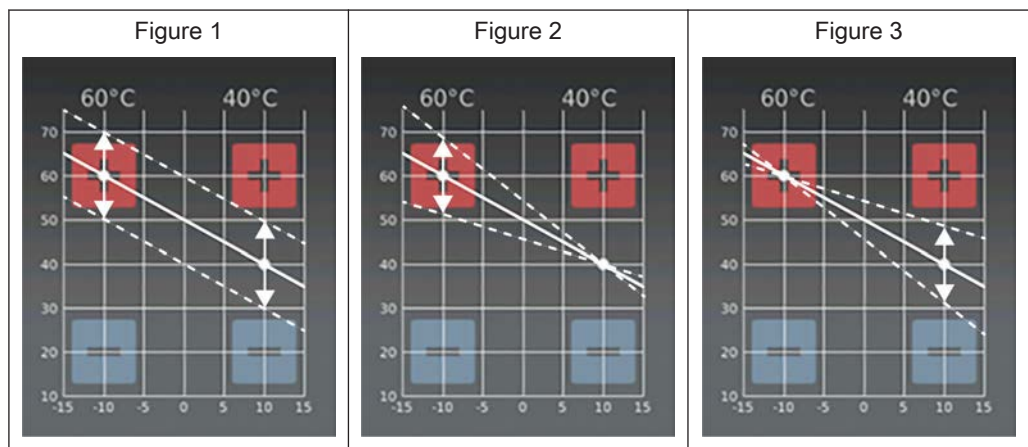
Depending on the situation, the heating curve an be adapted by tapping "+" or "-" at +/-10°C outside air temperature.

If the heating curve is to be changed, never change the desired point for a high temperature circuit more than 5°C, and never more than 3°C for a low temperature circuit. Once the changes have been made, wait a few days and assess comfort levels before carrying out additional changes.

4.3.11 Change room temperature (heating circuit mit room temperature sensor)
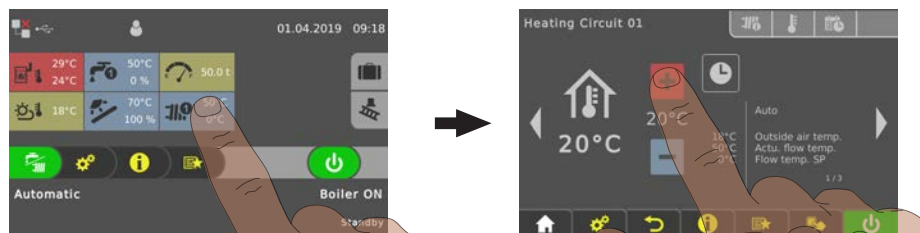
❒ Tap information display of the desired heating circuit
❒ Tap "+" or "-" to adjust the desired room temperature

NOTICE! If this selection is not configured in the information display in the basic display, open the components in the system menu.

Otherwise, the room temperature can be adjusted directly on the remote control/room console.

4.3.12 Switch heating circuit mode

Tap on the mode icon in the menu of the respective heating circuit to change the mode.

Procedure	Icon		Description
		OFF	The heating circuit is switched off. Frost protection remains active!
		Auto	The heating circuit is controlled according to the set time program.
		Party	The heating circuit is regulated before the start of the next heating time. To cancel this function prematurely, activate another mode/function.
		Setback mode	The heating circuit is regulated to the set setback temperature until the start of the next heating time. To cancel this function prematurely, activate another mode/function.
		Extra heating	The heating circuit is regulated to the set room temperature with no time limitation. To cancel this function prematurely, activate another mode/function.
		Continuous setback mode	The heating circuit is regulated to the set setback temperature until activation of another mode/function.

4.3.13 Lock display/switch user level

For safety reasons individual parameters are only visible at specific operating levels. To change to another level it is necessary to enter the relevant user code.
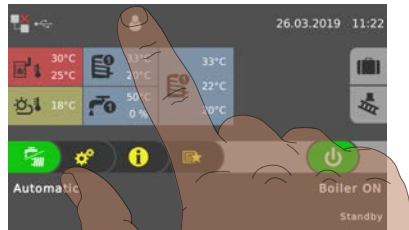

❒ Tap on the icon for the user level in the upper area of the basic display and enter the code.

User level	Icon	Description
Lock (Code "0")		At "Lock" level, only the basic display appears. It is not possible to change parameters.
Customer (Code "1")		Standard user level for normal operation of the controller. All customer-specific parameters are displayed and can be changed.
Installer		Releases parameters to adjust the controller to the system components (if configured). All parameters are available.
Service		

4.3.14 Change the name of the components

The names of the DHW tank, storage tank and heating circuits can be freely selected. A maximum of 20 characters are available for the name.
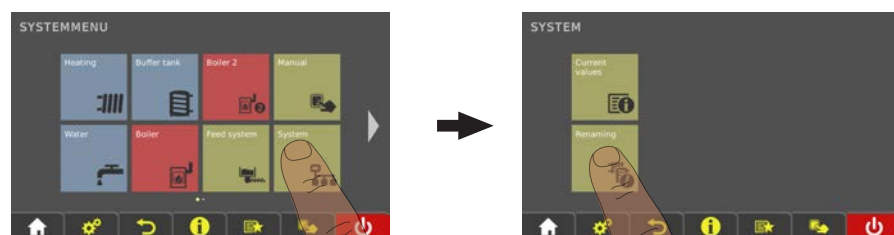

❒ Navigate to the "System" menu and open the "Renaming" sub-menu
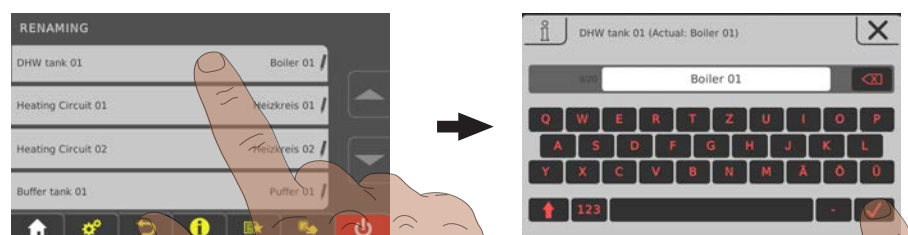
❒ Tap the desired component and use the keyboard to rename it

4.3.15 Configure the holiday program

Setting a start and end date in the holiday program determines a time period in which an active heating circuit is regulated for the set setback temperature and in which an activated boiler is not loaded. If Legionella heating is set, it remains active.
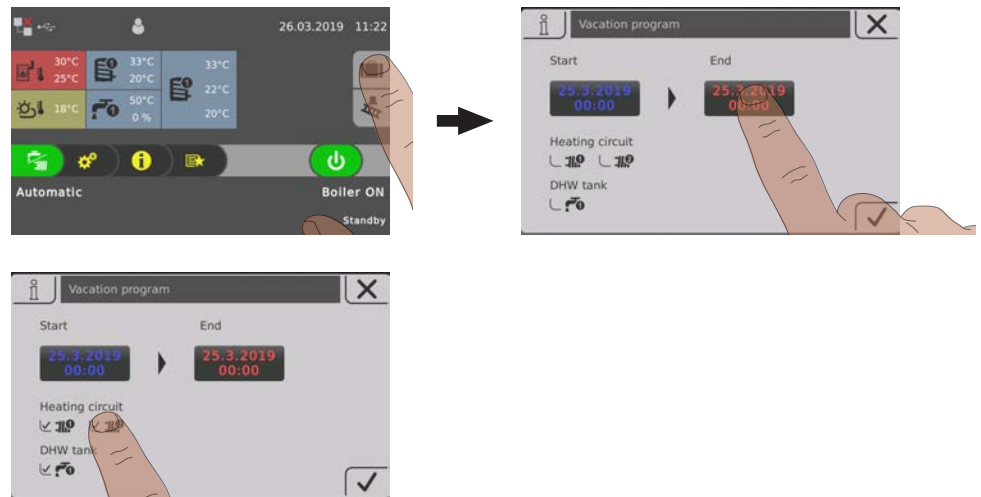

	If the start date is set in the future, the "suitcase" icon will be highlighted in green.

	Once the set start time of the holiday program has been reached, the boiler switches to "holiday" mode

Tap the "suitcase" icon to prematurely end the holiday program. The boiler then switches to the previously activated mode ("water tap" symbol = domestic hot water, "water tap/radiator" symbol = automatic).
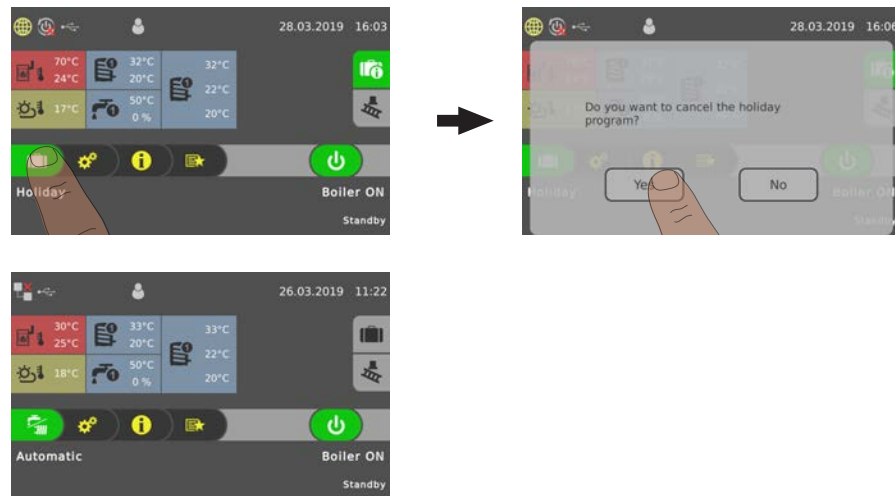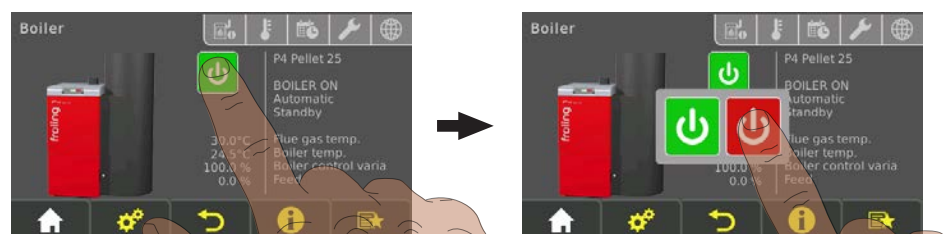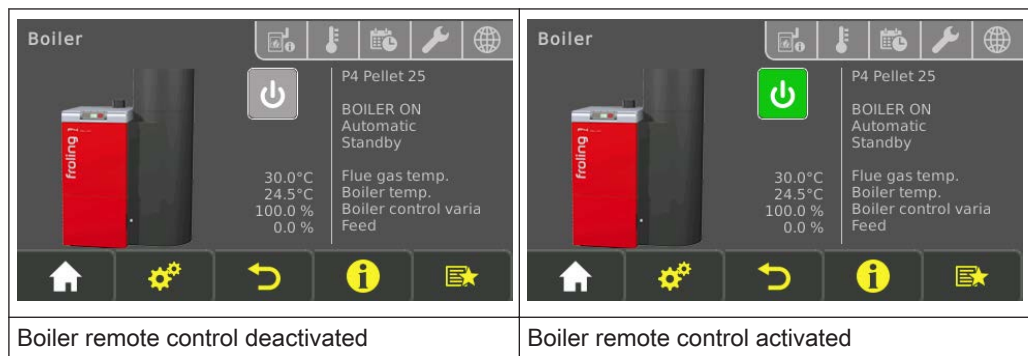

4.4 Switch the boiler ON/OFF on the room console

Prerequisite:

▪ Boiler access rights configured for the room console

If the boiler remote control is also activated (⇨ See "Display icons for froeling-connect/remote control" [page 23]), the boiler can be switched on and off on the room console.

| Boiler remote control deactivated | Boiler remote control activated |

❒ Switch the boiler ON/OFF by tapping on the current operating status

4.5 Filling the pellet store

4.5.1 Notes on filling the fuel stores

When working in the fuel store:

	Risk of injury due to moveable parts! Shut off the feeder unit before entering the fuel store!
	When cleaning the fuel store, an increased amount of dust may be generated. Wear a dust mask when working in the fuel store.
	Adequately ventilate the fuel 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!
	Unauthorized 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 fuel 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

❒ Close all openings to the store to seal out dust

❒ Fill the store with pellets

↳ Only use permitted pellets!

⇨

4.5.2 Correct the remaining pellet amount in store room

Add the following values for the available fuel quantity in the fuel store:

- Remaining pellet amount in fuel store before refilling
- Refilled quantity by the pellet supplier
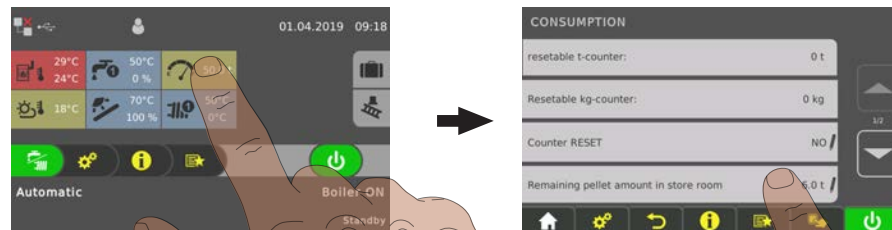
❒ In the "`Consumption`" menu, select the "`Remaining pellet amount in store room`" parameter and enter the calculated value

4.5.3 Adjust the pellet consumption counter to the fuel

NOTICE! The boiler must be in the "Boiler off/standby" operating status!

To accurately calculate pellet consumption, it is recommended to regularly weigh the amount of pellets fed in at 100% feed rate.
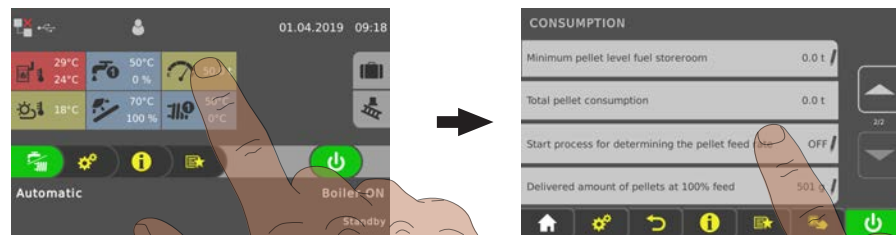
❒ Open the lower insulated door(s) and ash door(s)

❒ Removing the ashcans / ash container (depending on model)

❒ Removing ash in the combustion chamber ⇨ See "Check the grate and combustion chamber" [page 46]
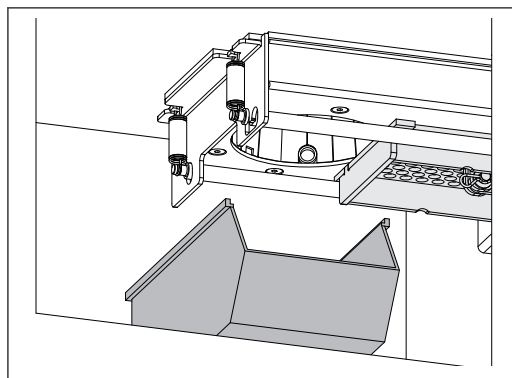
❒ Position a receiving tank with suitable dimensions below the grate

❒ Close the ash doors and insulated door(s)

Start the process:

❐ In the "Consumption" menu, set the "Start the process for determining the pellet feed rate" parameter to "YES"

↳ Stoker screw feeds pellets to the receiving tank with a fuel feed-in of 100% for a few minutes
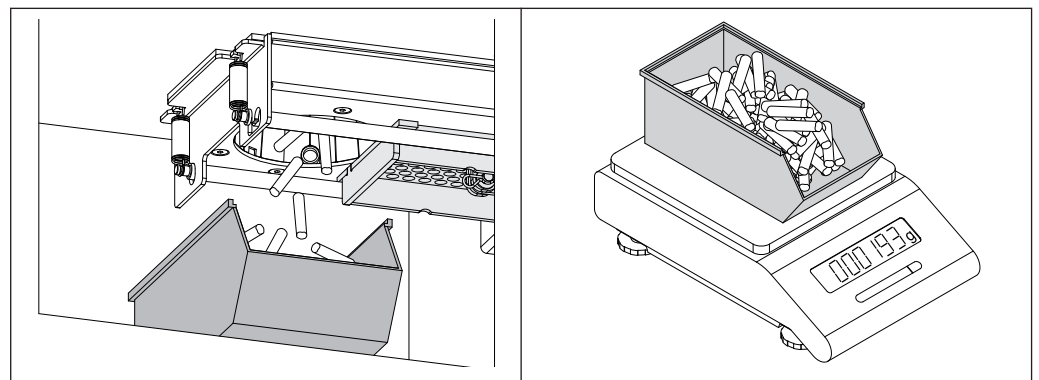
Once the process is finished:

❐ Move the pellets that are left on the grate by hand into the receiving tank

❐ Weigh the receiving tank including the pellets on the kitchen scale

❐ Subtract the weight of the receiving tank and note the value

❐ Empty the pellets into the pellet fuel store

❐ Carry out the entire procedure again and note the displayed value once again
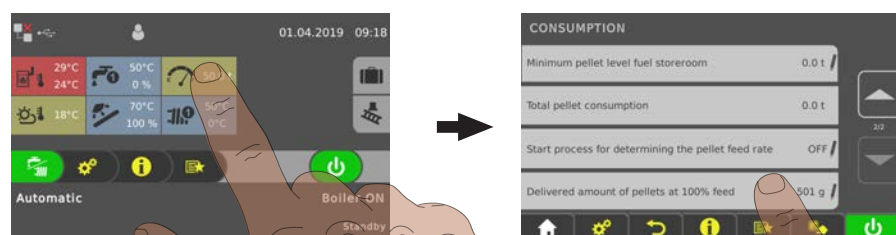
❐ Tap the information display of the pellet consumption

❐ Enter the larger of value of the two measurements in the "Consumption" menu in the "Delivered amount of pellets at 100% feed" parameter
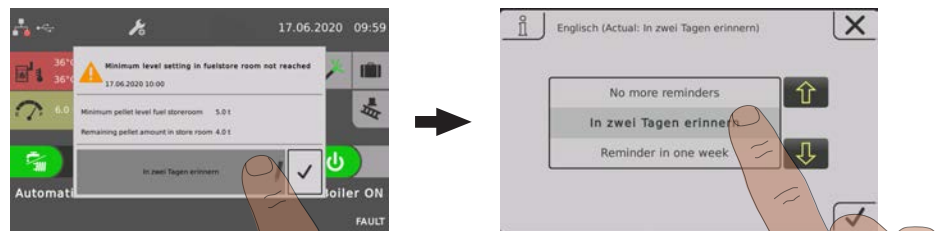
4.5.4 Setting the automatic notification for minimum level
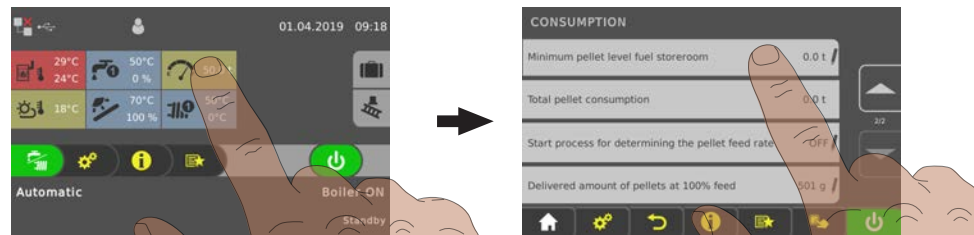
❑ In the "`Consumption`" menu, select the "`Minimum pellet level fuel storeroom`" parameter and enter the desired value

TIP: Select approximately 10% of the fuel store capacity as the value for the minimum level.

When the set minimum level in the pellet store is reached, a message is shown on the boiler display:


❑ Select and confirm by tapping the "pen" icon
  ↳ No more reminders
  ↳ Reminder in two days
  ↳ Reminder in one week

4.5.5 Resetting the pellet consumption counter

The pellet consumption counter indicates the consumption of pellets in the parameters "`Resettable t-counter`" and "`Resettable kg-counter`" in steps of tons or kilograms. Both values are set to "0" by resetting.

Examples of use for the counter:

▪ Monthly accounting to illustrate seasonal changes in pellet consumption

▪ Seasonal accounting (e.g. during the winter months) to illustrate annual changes in pellet consumption
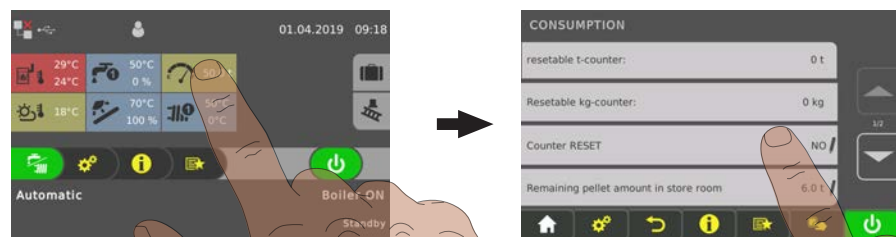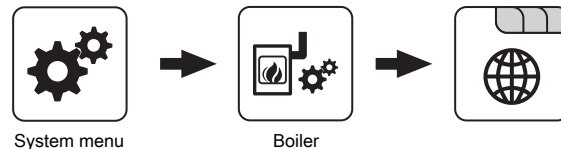

❒ In the "`Consumption`" menu, set the "`RESET counter`" to "`YES`"

↪ Values of the parameters "`Resettable t-counter`" and "`Resettable kg-counter`" are reset to "0"

↪ Parameter "`RESET counter`" is reset to "`NO`"

## 4.6 Checking the fill level of the ash container and emptying if required

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.

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

Note: If the ash container is emptied before the "Ash box full, please empty" warning appears on the touchscreen, reset the counter to the preset value:

System menu   Boiler

❏ In the boiler's "General settings" menu, set the "Reset counter of hours till ashbox full warning appears" parameter to "YES"
  ↳ Parameter is automatically reset to "NO" afterwards
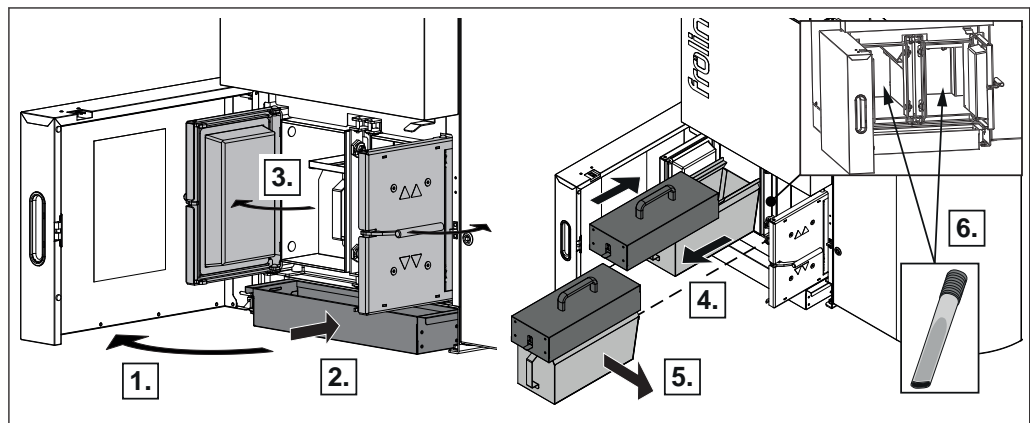
❏ Open the insulated door and position the ash drawer below the ash doors to catch any ash that might overflow
❏ Open ash doors

❏ 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!

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

Note: If the ash container is emptied before the "`Ash box full, please empty`" warning appears on the touchscreen, reset the counter to the preset value:
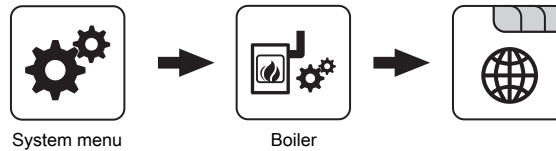

System menu   Boiler

❐ In the boiler's "General settings" menu, set the "`Reset counter of hours till ashbox full warning appears`" parameter to "`YES`"
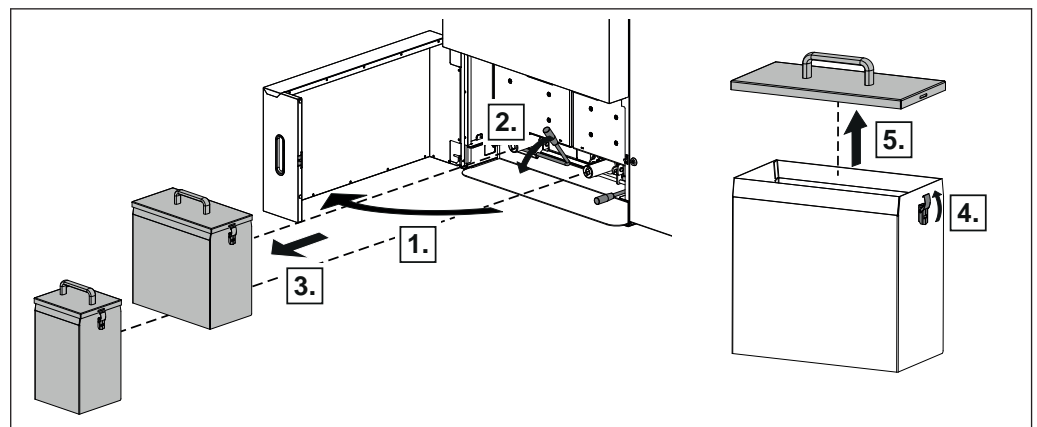   ↪ Parameter is automatically reset to "`NO`" afterwards

❐ 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

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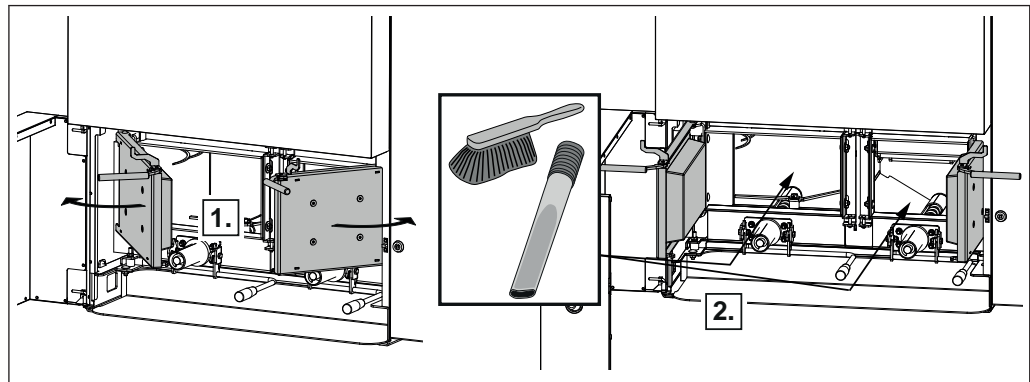
NOTICE! Only clean the grate and combustion chamber when the boiler has cooled down!

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 51]

4.6.4 Check the downpipe for dirt (P4 Pellet 45 and up)
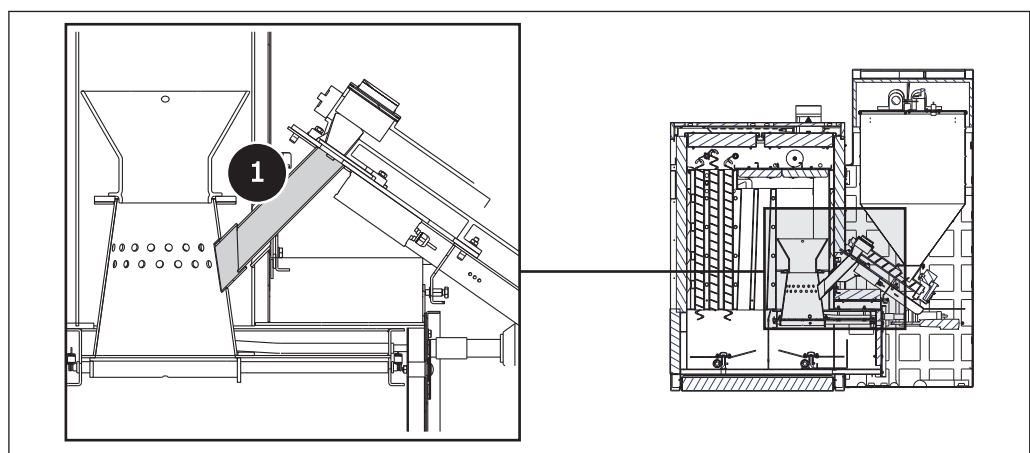
❐ Check the downpipe (1) between the burner gate valve and combustion grate for dirt
❐ If there is a lot of dirt or caking, clean the downpipe
 ↳ For cleaning use a large crosshead screwdriver and a wire brush, for example.

4.7 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!

5 Servicing the system

5.1 General information on servicing

⚠ DANGER

When working on electrical components:

Risk of electrocution!

When work is carried out on electrical components:
- ❒ Always 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 the 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 on 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 work, switch off the boiler and allow it to cool down for at least 1 hour

---

NOTICE

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

> ⚠ **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.

5.2 Required tools

The following tools are required for carrying out cleaning and maintenance work:
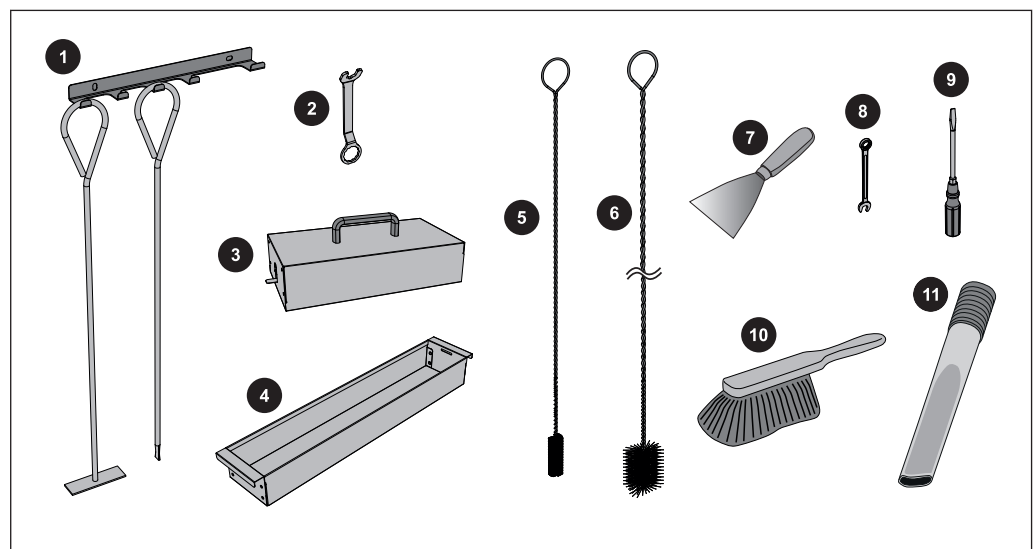
Included in delivery:	
1	Furnace tool with bracket
2	Spanner for door mountings
3	Transport cover for ash drawer
4	Ash drawer
5	Cleaning brush (Ø54) for cleaning the heat exchanger
6	Cleaning brush (73x53) for cleaning the down-swept flue (first flue)

Not included:	
7	Scraper for cleaning flat surfaces
8	Spanner or box wrench AF 13
9	Screwdriver set (Philips, flat head, Torx T20, T25, T30)
10	Small brush or cleaning brush
11	Ash vacuum

5.3 Maintenance work by the operator

❐ Regular cleaning of the boiler extends its life and is a basic requirement for smooth running.

❐ Recommendation: use an ash vacuum for cleaning.

5.3.1 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!
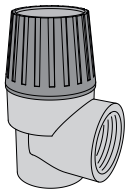
If the system pressure decreases:

❐ 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:
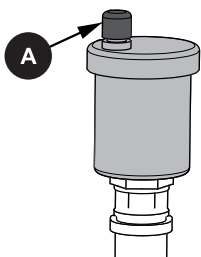
❐ Ask an expert to inspect the expansion tank

Checking the safety valve

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

Checking the quick vent valve

❐ Regularly check all the quick vent valves on the entire heating system for leaks

↪ If any liquid is leaking, replace the quick vent valves

NOTICE! The vent cap (A) must be loose (screw on approx. two revolutions) to ensure correct functioning.

5.3.2 Periodic inspection and cleaning

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

Inspection and cleaning must be repeated after not more than 2500 operating hours or at least once a year. For less efficient fuels (e.g. high ash content) this work needs to be carried out more frequently.

*Cleaning the flue gas collection chamber and the heat exchanger*
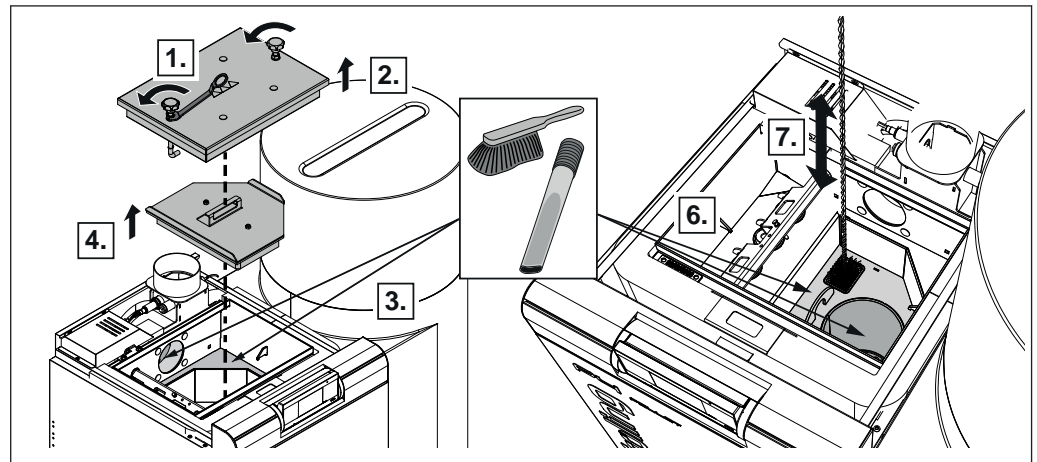
❐ Remove the insulating cover and turn the seal screws on the cleaning cover anticlockwise using the tool supplied to loosen

❐ 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
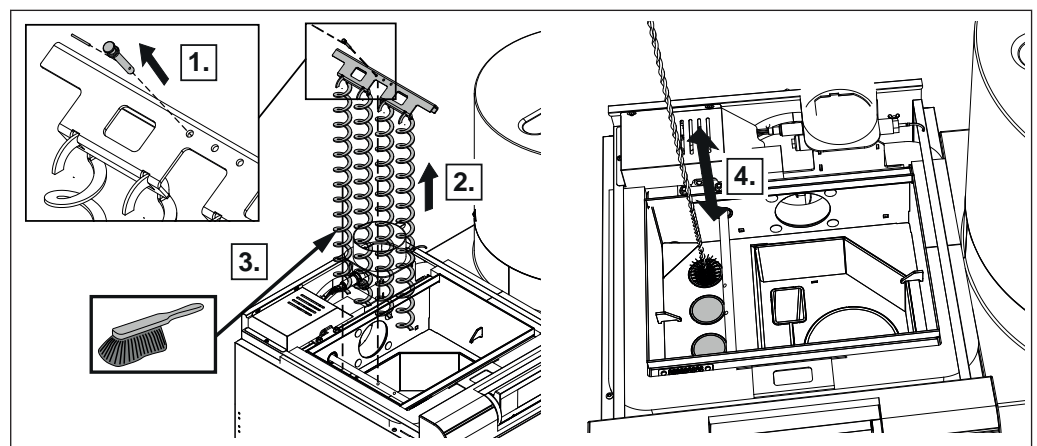
❐ Remove the insulating cover and cleaning cover
  ⇨ See "Cleaning the flue gas collection chamber and the heat exchanger" [page 51]

❐ Remove the spring cotter at the bottom of the lock bolt, and pull out the lock bolt

❐ Remove the WOS mount along with the turbulators

❐ Clean the heat exchanger pipes with the cleaning brush provided

| P4 Pellet 15 | P4 Pellet 20-38 | P4 Pellet 48-60 | P4 Pellet 80-105 |
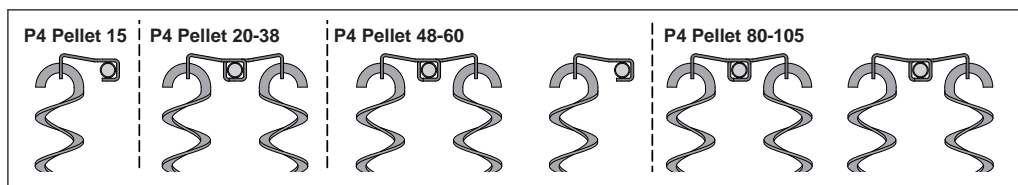
❐ Before fitting in the heat exchanger pipes, check that the turbulators are correctly hooked into the linking plate

↳ Attach the turbulators as shown

❐ Thread the turbulators into the heat exchanger pipes

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)
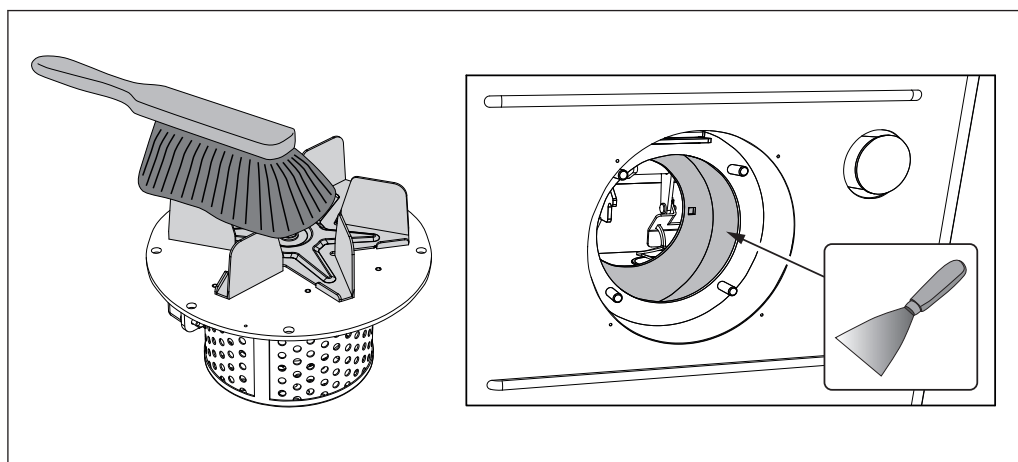
❐ Unplug the connection cable of the induced draught fan

❐ 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
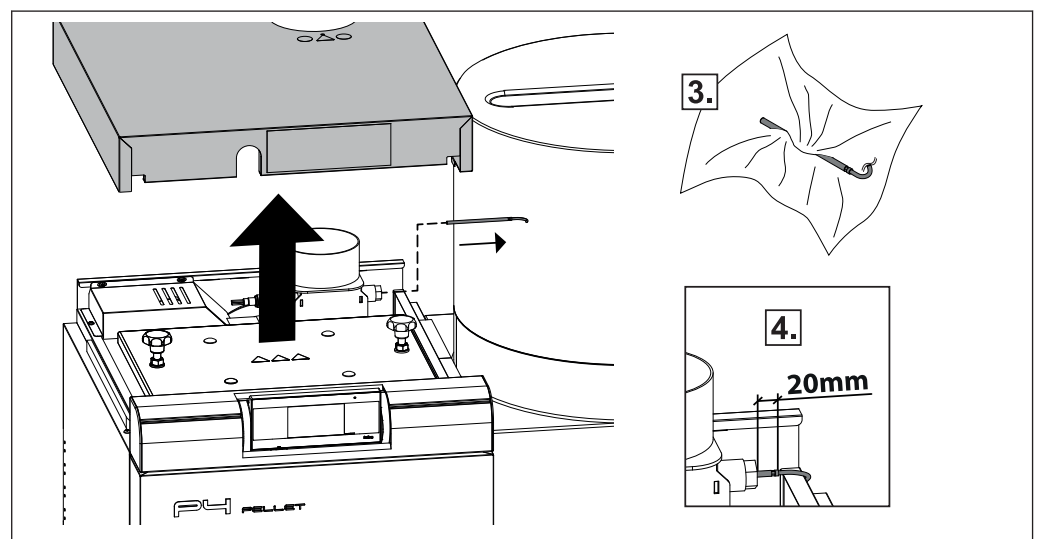
❐ Remove the insulating cover and thermal insulation

❐ Release the retaining screw and remove the flue gas temperature sensor from the flue gas pipe

❐ Wipe the flue gas temperature sensor with a clean cloth

❐ Push in the flue gas temperature sensor until about 20 mm of the sensor remains protruding from the bushing and secure with fixing screw

5.4 Servicing the condensing boiler heat exchanger (optional)

The condensing boiler heat exchanger must be inspected and cleaned at appropriate intervals depending on the operating hours and fuel quality.

Inspection and cleaning must be repeated after not more than 250 operating hours or at least once a month. For less efficient fuels (e.g. high ash content) this work needs to be carried out more frequently.

5.4.1 Inspecting the heat exchanger
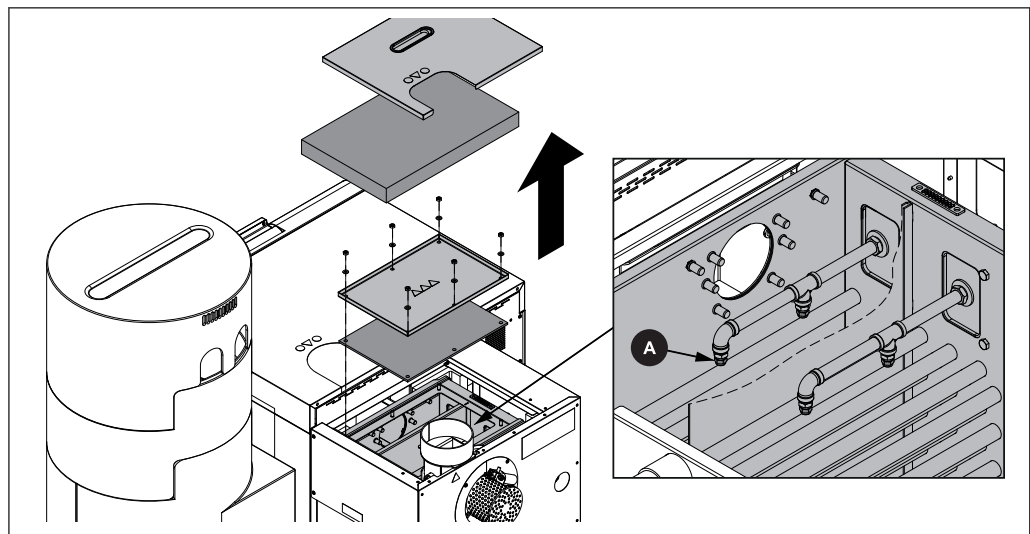
When the boiler has cooled off:

❒ Remove the top cover on the condensing boiler heat exchanger

❒ Remove the inspection cover below and check the heat exchanger for dirt

❒ Operate the flushing device by hand ("manual operation") and check its nozzles (A) for blockage (lime scale, dirt etc.)

Manual operation of the flushing device

❒ On the boiler controller navigate to the "Manual" menu

❒ In the "Manual operation" submenu, set the "Calorific value heat exchanger manual flushing – only in boiler off/standby" parameter to "YES"

↳ The flushing device is activated once for the period of time specified in the "Condenser cleaning duration" parameter (default: 60s - Condenser)

5.4.2 Checking the condensation drain

NOTICE! If the condensation drain is blocked, the condensing boiler heat exchanger will fill with condensation, thus preventing the flue gas from escaping through the chimney, which could in turn lead to problems with combustion. For this reason it is important to check the condensation drain regularly!
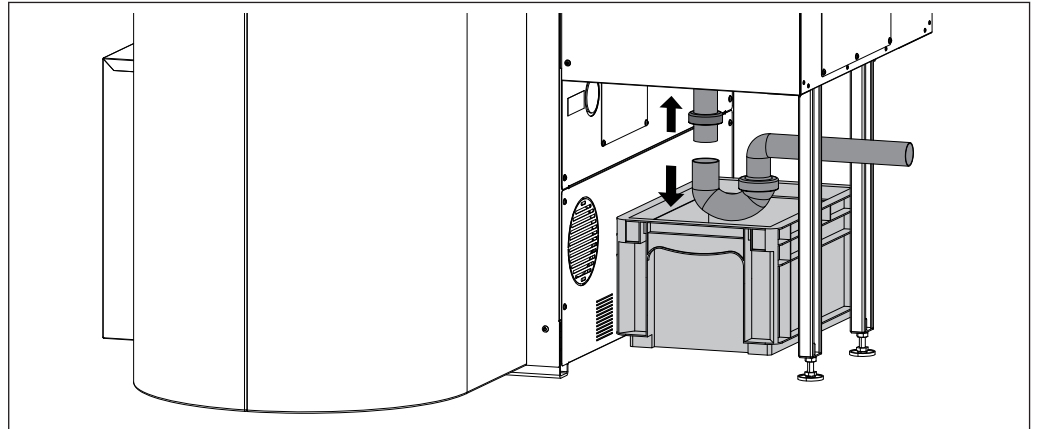
At the back of the boiler below the condensing boiler heat exchanger:

❒ Position a suitable container below the siphon to catch the condensation that runs out

❒ Remove and check the siphon for dirt and deposits

❒ Check the condensation drain up to where it enters the waste water system and clean if necessary

❒ Ensure that the condensation is continually drained into the waste water system!

5.5 Maintenance work by technicians

> ⚠️ **CAUTION**
>
> **If maintenance work is carried out by untrained personnel:**
>
> *Risk of personal injury and damage to property!*
>
> The following applies for maintenance:
> ❑ Observe the instructions and information in the manuals
> ❑ Only allow appropriately qualified personnel to work on the system

Only qualified staff are permitted to carry out maintenance work in this chapter:

- Heating technicians / building technicians
- Electrical installation technicians
- Froling customer services

The maintenance staff must have read and understood the instructions in the documentation.

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).
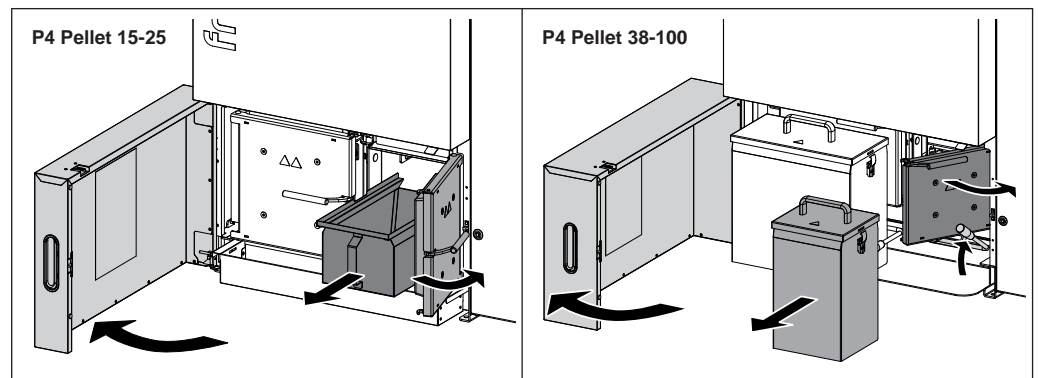
5.5.1 Checking and cleaning the combustion grate

The grate must be closed to remove the combustion grate.

System menu → Manual → Manual operation
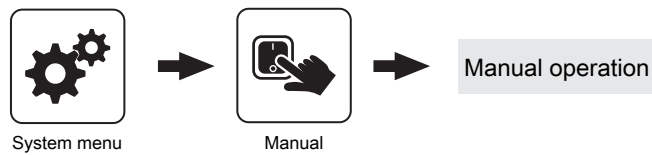
❒ On the controller, go to the "Manual operation" menu
❒ In the "Manual operation" menu, change the "Grate drive" parameter to "BACK"

❒ Switch off the boiler and allow it to cool down
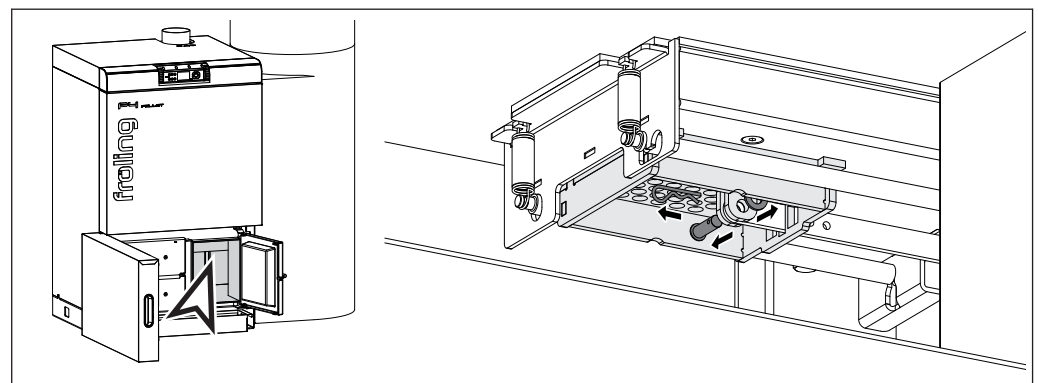❒ Switch off the power supply to the boiler

P4 Pellet 15-25:

❒ Open the insulating door and ash door
❒ Pull out the ashcan

P4 Pellet 38-100:

❒ Open the insulated door and push the locking lever up
❒ Pull out the right ash container and open the ash door behind it

❒ Pull out the spring cotter beneath the grate
❒ Remove the eyebolt and washer

CAUTION! Crushing hazard in following step! – Pay attention to the weights!

| P4 Pellet 15	**1.2 kg**	P4 Pellet 48/60	**5.3 kg**
P4 Pellet 20/25	**2.1 kg**	P4 Pellet 80/100	**8.3 kg**
P4 Pellet 32/38	**2.9 kg**	P4 Pellet 80/100 – 3-part grate	**9.6 kg**
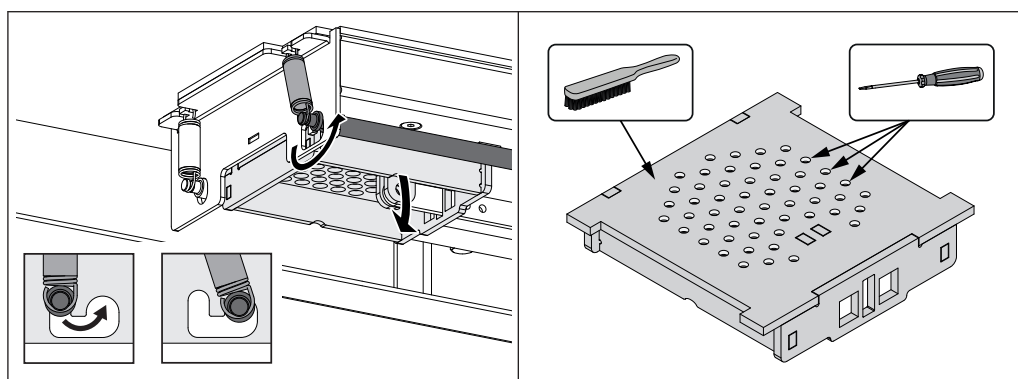
❒ Pull the shaft down and forwards to lock in place

↳ At the same time, push the grate up

❒ Lift out the combustion grate at the bottom

❒ Thoroughly clean the combustion grate, remove any dirt from the air openings using a screwdriver
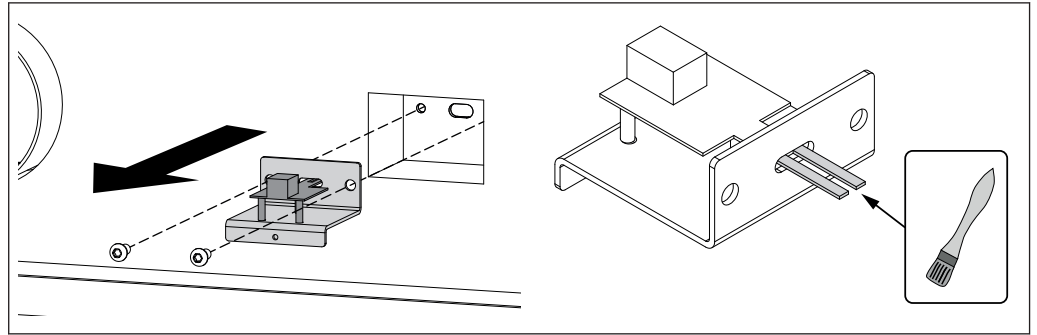
NOTICE! Small cracks and slight deformations on the combustion grate are not indicative of a fault. The grate can be re-fitted after thorough cleaning.

❒ Replace the combustion grate in the reverse order
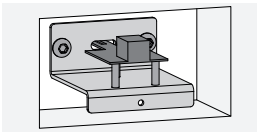
5.5.2 Cleaning the flow sensor
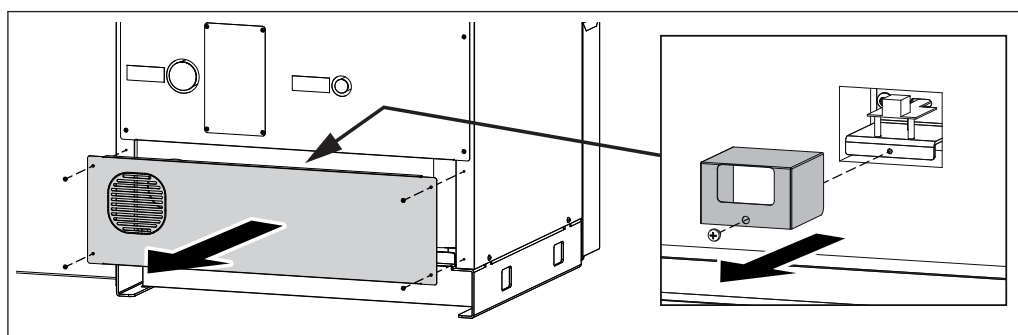
❒ Remove lower back panel

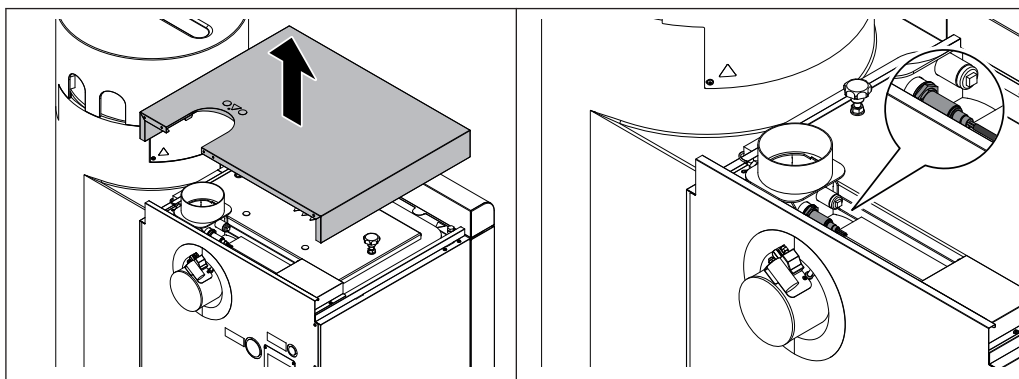↳ Number of screws varies depending on boiler size

❒ Remove protective plate

❒ Remove the flow sensor

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

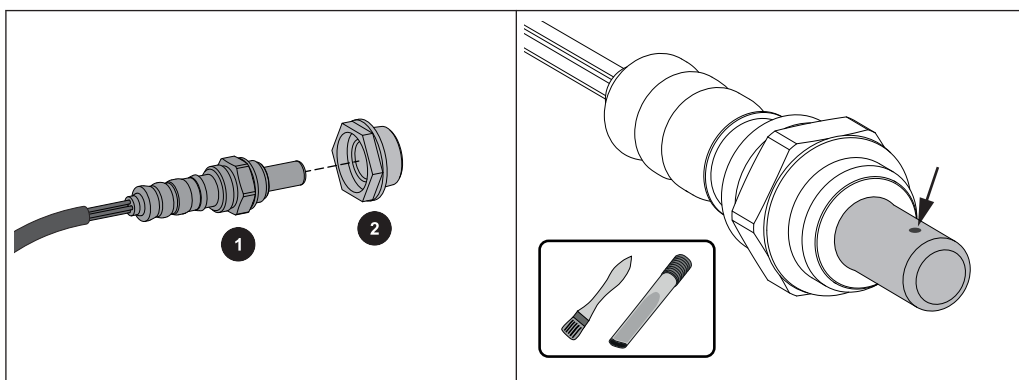

NOTICE! Fit the flow sensor as shown to prevent malfunctions!

5.5.3 Cleaning the Lambda probe

❑ Remove the cover at the top of the boiler

❑ Carefully remove the Lambda probe (1) and plastic bushing (2 – if installed)
   ↳ Pay attention to the cables of the Lambda probe!
❑ Carefully remove impurities from the measuring ports with a fine brush and ash vacuum
   ↳ Hold the Lambda probe with the tip downwards so that deposits can fall out of the measuring ports
❑ Check the plastic bushing (2) for dirt and cracks, replace if necessary
   ↳ IMPORTANT: The seal surface of the plastic bushing must lie flat after assembly

CAUTION:

▪ Do not clean the Lambda probe with compressed air
▪ Do not use chemical cleaning agents (brake cleaner, etc.)
▪ Careful handling of the Lambda probe, no "tapping" or cleaning with a wire brush

5.6 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

❒ Ensure there is adequate fuel

    ↳ 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)

❒ There must be a suitable measuring port in the straight flue gas pipe for the measurement. The measuring port must be twice the flue gas pipe diameter away from the last upstream bend.

    ↳ If the measuring port is not correctly positioned, the measuring result will be distorted

5.6.1 Switch on the system

When the cleaning is complete:

❒ Reassemble all dismantled components in reverse order and check for tightness and correct installation
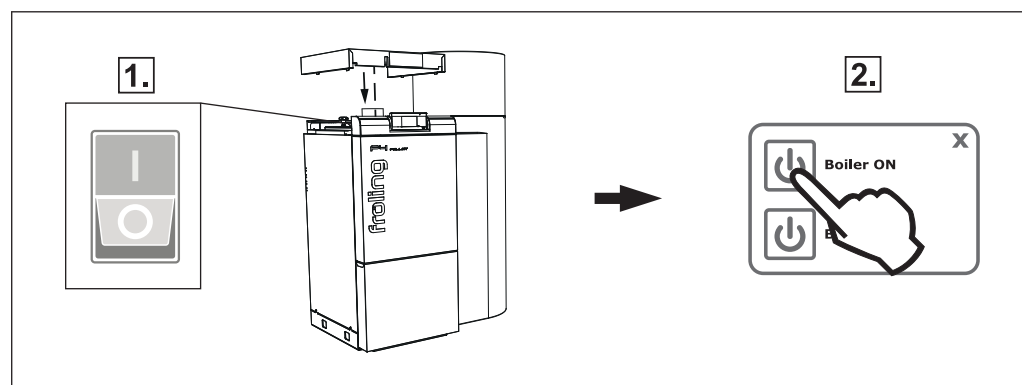
❒ Turn on the main switch

    ↳ When the control has completed the system start, the boiler is ready for operation

❒ 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

5.6.2 Start emissions measurement
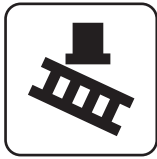
❒ Activate the "Chimney-sweep mode" icon

❒ Select the desired time from the menu:

immediately	❒ Specify the type of measurement (`nominal load` / `partial load`)
	↪ 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 as soon as all the conditions for the measurement are fulfilled
Enter target date	❒ Enter the time of measurement (date and time)
	↪ The boiler will follow the shutdown procedure before the start of the measurement according to the time lock and will not start up again until the set time
	↪ **NOTICE! The boiler starts 30 minutes before the start of the measurement and is already ready for measurement at the set time!**

5.7 Replacement parts

With Froling original replacement parts in your system, 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.

<table>
<tr><td align="center">NOTICE</td></tr>
<tr><td>Installing non-original parts will invalidate the guarantee.

❒ Only replace components or parts with original replacement parts.</td></tr>
</table>

5.8 Disposal information

5.8.1 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

5.8.2 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.

6 Troubleshooting

6.1 General fault with power supply

Error characteristics	Cause of error	Elimination of error
Nothing is shown on the display	General power failure	
No power to the controller	Main switch is turned off	Turn on the main switch
	FI-protective circuit breaker, power line protection or SPS power line protection tripped	Switch on the protective circuit breaker

6.1.1 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.

6.2 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 unlocked mechanically:

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

6.3 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.

6.3.1 Procedure for fault messages

If a fault occurs on the boiler, it will be shown on the display.

If the fault is acknowledged, although it has not been rectified, the window with the associated fault can be reopened as follows:
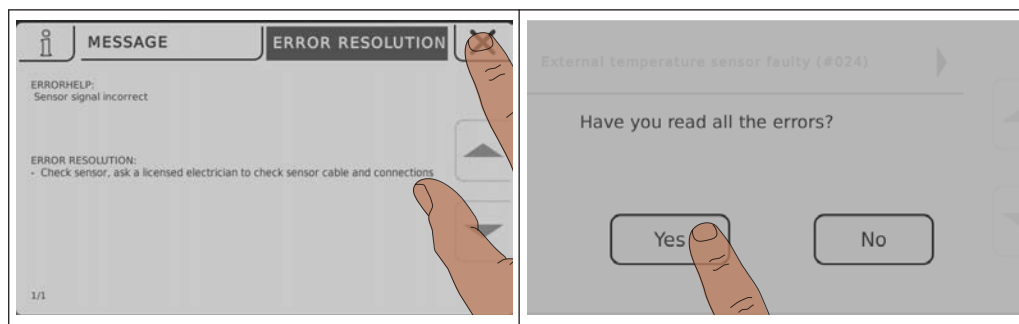
Open error display

System menu → Diagnostics → Current fault list
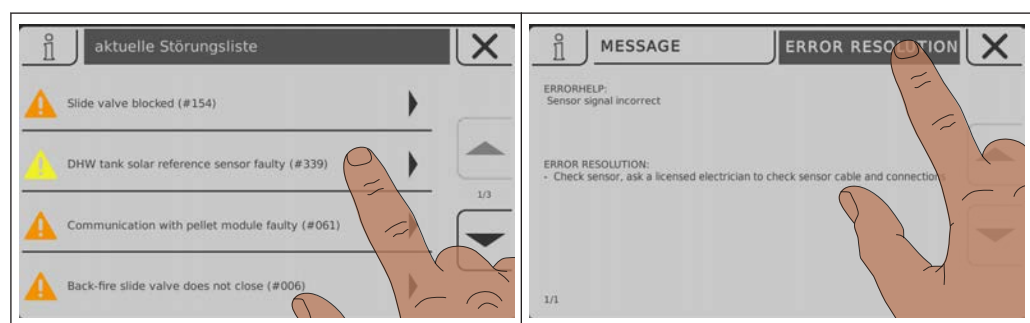
The error display lists all current faults

❒ Open by tapping the listed fault

❒ The "Message" tab displays the current fault.

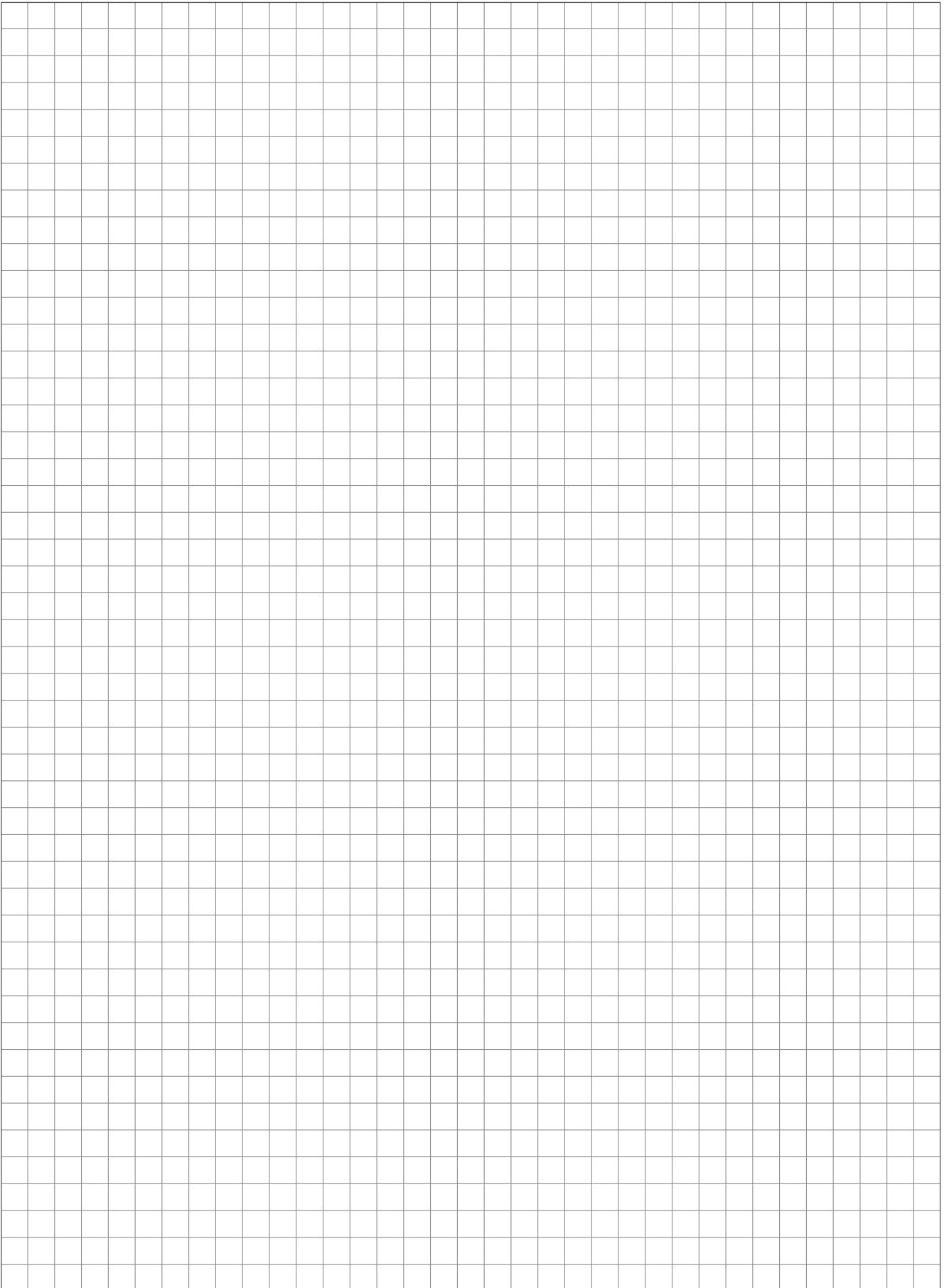❒ Press the "Error resolution" tab to view possible causes and troubleshooting procedures

❏ Tap the Cancel icon to close the current fault and display the fault list

❏ Tap the Cancel icon again and confirm that you have read all of the errors to return to the basic display

↳ The boiler is in the previously set mode

7 Notes

8 Appendix

8.1 Addresses

8.1.1 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

8.1.2 Address of the installer

Stamp