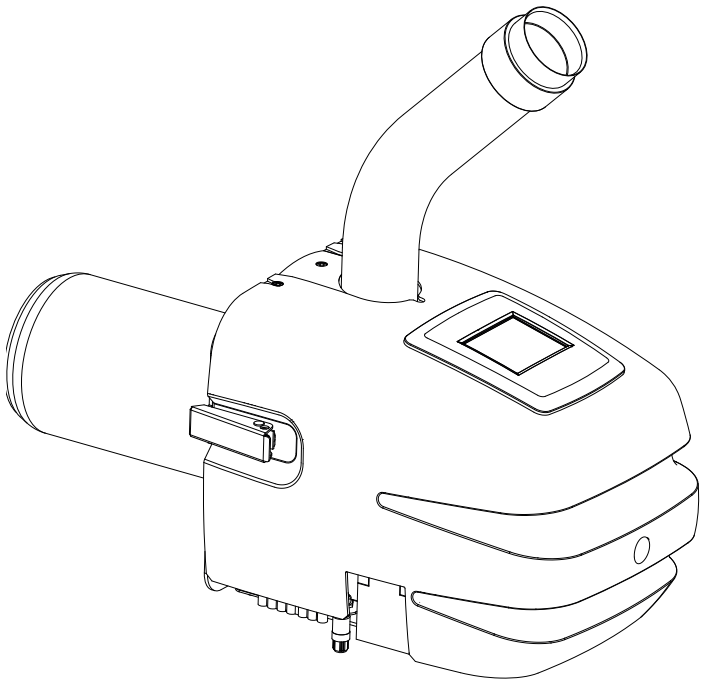
v1-smokelessheat-12-14

Installation and maintenance

Pellet burner

VIKING BIO 200

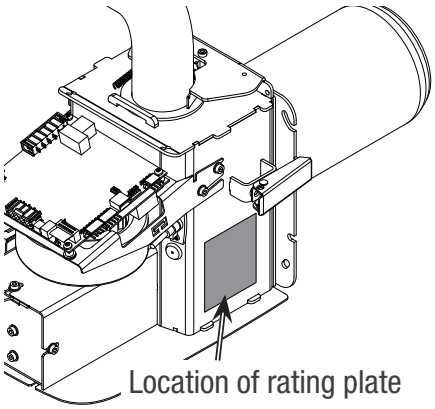


VÄRMEBARONEN

Notes

To be completed by the installation engineer when the Viking Bio 200 is installed.

Add a printout from the flue gas analysis instrument.


Location of rating plate

Serial number: .....

Installation date: .....

Installed in boiler, make/type: .....

Installation engineer: .....

Tel.: .....

Other: .....

.....

.....

.....

.....

.....

Result from adjustment

CO_2 average: .....

CO average: .....

Flue gas temperature: .....

Draught: .....

Fuel: .....

Air setting: .....

Contents

Safety and handling

Read these instructions carefully before installation, adjustment or service is carried out. Keep the instructions close to the burner.

Check that the burner has not been damaged during transport. Report any transport damage to the carrier.

Check that the delivery is complete.

A chimney-sweep must be contacted before a different type of fuel is used.
No building permit or notification is normally required if the existing boiler can be fired with pellets. Contact your municipality regarding restrictions on burning solid fuel in a densely built-up area.

All installation must be performed by an authorised person in accordance with the existing regulations.

Only authorised persons may work on the system.

Correct installation in combination with correct adjustment and continuous service will produce high operational reliability and good heating economy.

Correct settings are important for good heating economy and the service life of the parts in contact with flames. Optimum adjustment is possible only using flue gas analysis instruments.

The burner's parts in contact with flames are wearing parts that need replacement as required.

Use only original spare parts. Spare parts that do not meet Värmebaronen's specifications may have an impact on safety.

Always contact your installation engineer for service.
The type and serial number of the burner must always be specified when ordering spare parts. See the rating plate.

The burner must not be modified, changed or converted in any way.

Risk of crushing! Never touch the feed auger or sweeping rods when the burner is switched on.

When the burner is in operation, the feed auger's plug, the power supply, must never be removed from the burner!

Never disable the safety equipment!

Before service and maintenance work are started, the system must be disconnected from the main power supply.

The Viking Bio 200 is designed to fire wood pellets after it has been installed on a boiler in a boiler room that meets the standards of the Swedish National Board of Housing, Building and Planning. The burner may not be fired with any other combustible material.

This product is not designed to be used by persons with reduced physical or mental capacity or a lack of experience and knowledge unless they are supervised or instructed by a person with responsibility for their safety.
Children must be instructed/supervised to ensure that they never play with the product.

Värmebaronen AB reserves the right to change the specification, in accordance with its policy of continuous improvement and development, without prior notice.

Subject to amendments and printing and proofreading errors.

The following icons are used in these instructions to indicate important information:

Information that is important for optimum operation.

Tells you what you should or should not do to avoid personal injury.

Tells you what you should or should not do to avoid the product, a component, a process or the environment from being damaged.

Electrical hazard!

Operation

The Viking Bio 200 is a forward-burning pellet burner designed to heat detached houses and small properties with 6-8 mm wood pellets.

Fuel and air are mixed in a controlled fashion in the burner. This is the basis for environmentally-friendly combustion and high efficiency.
When the thermostat has reached the break temperature, the pellet supply ceases, all pellets are combusted and the burner stops.

When the thermostat is activated, ash removal takes place, if the set time interval for ash removal has been reached, before pellets are supplied. This results in longer operating times without the burner needing to be cleaned.

The Viking Bio 200 can be installed on a conventional oil or wood-fired boiler.

The Viking Bio 200 is fully automatic and controlled by the boiler thermostat.
A temperature sensor is available as an accessory to allow the burner to control the temperature. The temperature control start and stop temperatures are adjustable.
A large difference reduces the number of starts and extends the operating time.
It is advantageous to have the burner control the boiler temperature if hot water is produced in a heat exchanger.

Different operating modes can be selected: full power, 3/4 power or automatic power selection.

The burner's touch screen is used to make all settings and to display information on operating phases, warnings and alarms.

A feed auger, controlled by the burner, feeds pellets to the burner from the pellet store.

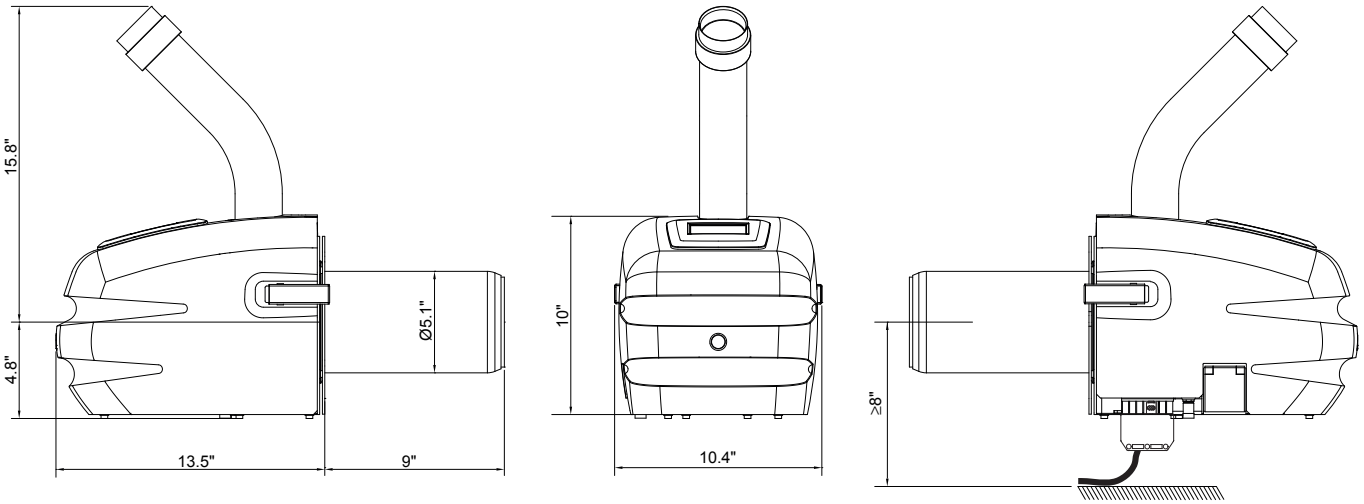
The safety system in the pellet system with the Viking Bio consists of overheating protection, a thermal relay on the downpipe, a non-combustible hose between the feed auger and the downpipe, a fan with a fan guard, flame monitoring and blocking if the ambient temperature is high.

To simplify installation and maintenance, the burner has quick attachments that make it easy to attach the burner to the boiler and remove it. Electrical connections have quick couplers.

The burner is supplied with a connection cable and a flue gas thermometer.

Technical data

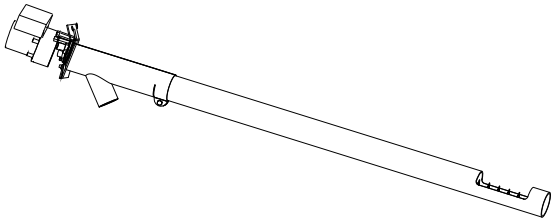
Type		Viking Bio 200	
Art. no.		6274	
Weight		34	lb
Ambient temperature		50-86	F
Heat output, supplied	low	58	kBTU/h
	high	75	kBTU/h
Voltage		120 V~, ±10%, 60 Hz	
Current		5.6	A
Fuse protection		10	A
Power consumption	high power	68	W
	low power	47	W
	standby	17	W
	start/ignition	648	W
Enclosure protection class		IPx1	
Draught requirements		0-5	Pa
Pressure in combustion chamber		-15-0	Pa
Sound pressure		65	dBA
Fuel, quality		wood pellet in accordance with EN 14961:2 cl. A1	
Pellet size		∅0.24-.31	in
Combustion chamber, min		h x w x d 9 x 9 x 14.4	in
Minimum distance to floor from centre of burner pipe		8	in
Emission class according to EN 15270		class 5	
Output for feed auger, load		> 25 W @ 120 V~,60hz	
Tested-Guardian Fire Testing Labs		UL 391, ETLM 78-1, ASTM E-1509, CAN/CSA-B 366.1	



Accessories

Designation	art. no.
Screw 1500 mm	3301
Screw 2500 mm	3302
Pellet store 200	3306
Temperature sensor	3310
Spacer	3323

To guarantee correct pellet supply, use only Värmebaronen's feed auger!



Installation

Installation must take place according to existing regulations. The installation engineer must familiarise himself with the existing rules.

Boiler

The boiler's power range must match the burner's power so that the flue gases are cooled sufficiently.

The boiler's flues may not be so narrow that they can easily be clogged by ash.

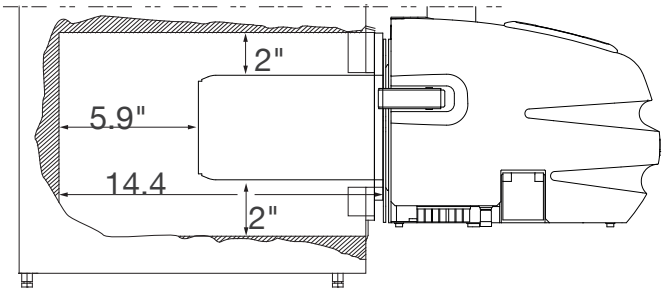
Pellet firing produces a fair amount of ash which needs space. It should also be easy to remove it from the boiler. The distance to the base of the combustion chamber should be high enough for there to be space for the quantity of ash formed during a weeks' firing in winter.

For simple maintenance, it should be possible to open the combustion chamber hatch without the burner needing to be removed.

The burner is installed so that there is space for service and maintenance, at least 24 in. free space to the rear and 12 in. on the sides from the burner.

The flame must not touch the walls of the combustion chamber.

The boiler's hatches and dampers must be tightly sealed.



Supply air to boiler room

There must be a supply air valve to the boiler room. The valve's free surface must correspond to the cross-sectional area of the chimney.

There must not be any mechanical ventilation if it affects the operation of the burner.

Draught damper

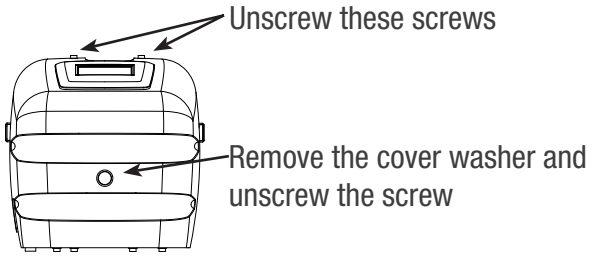
The chimney must be fitted with a draught damper that is appropriate for the chimney.

The combustion is affected by the draught. Therefore, stable draught conditions are the objective.

Installing the burner

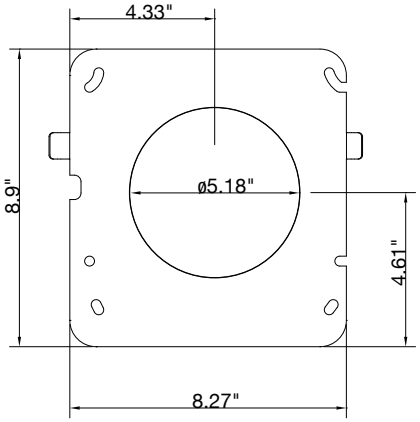
The combustion chamber hatch must be well insulated from the burner.

Remove the burner's cover, open the quick attachments and release the burner from the outer burner pipe.

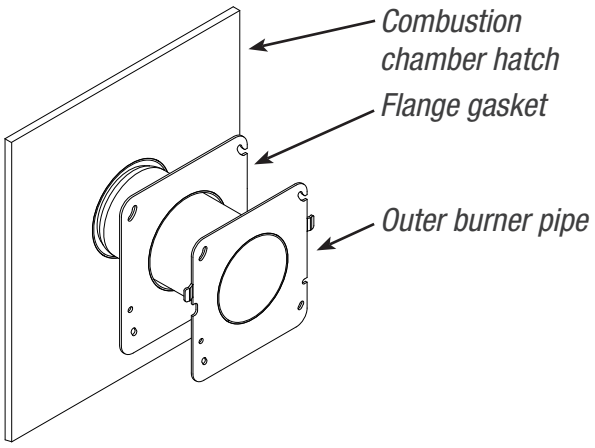


Be careful when removing the cover so that the cable that links the circuit boards is not damaged.

Mark out where the burner will be located and make holes as shown in the drawing.



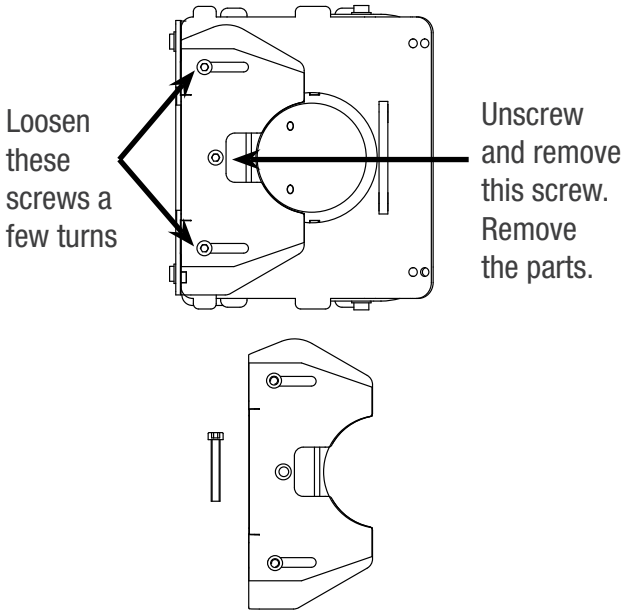
Screw the outer burner pipe to the combustion chamber hatch with four M6 screws. The burner must be installed horizontally.



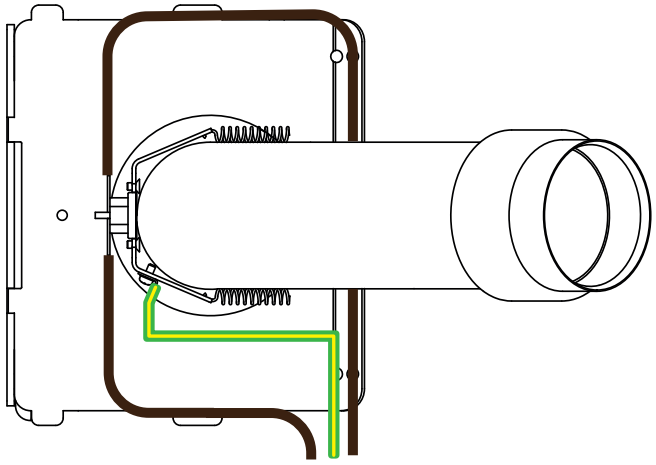
Install the burner and lock the quick attachments. Check that the burner is tight against the gasket on the flange.

Downpipe and thermal relay

Take note of how the parts are assembled.



Check that the position of the thermal relay and the cable matches the figure.

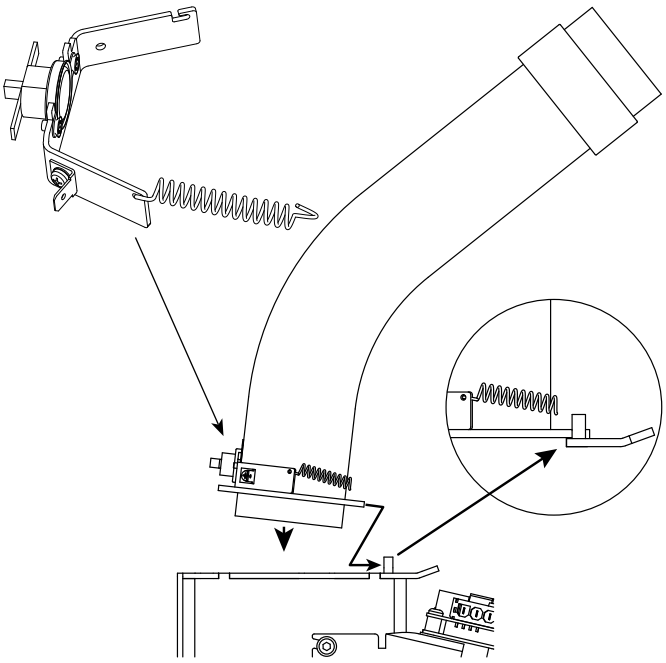


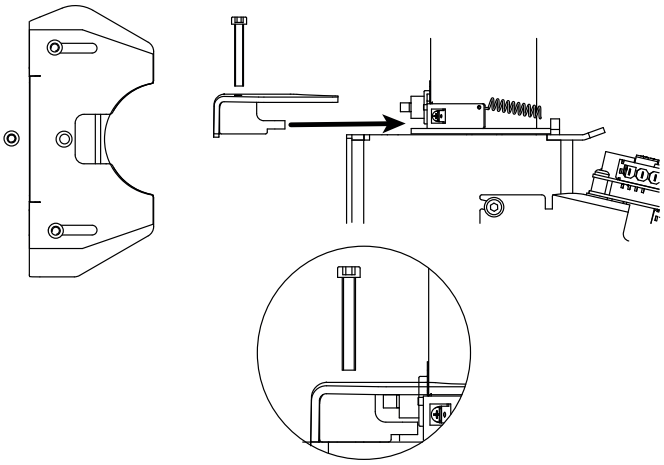
Reinstall. The hoop must be under the thermal relay.

Turn the downpipe before the screw is tightened so that it is correctly positioned in relation to the feed auger.

Install:

- The downpipe on the burner housing. Insert the downpipe's flange under the hoop on the burner housing.
- The thermal relay on the downpipe. The spring must be tightened around the downpipe.





Push the cover plate against the downpipe.

Fit the burner's cover and tighten the screws.

Check that no cable has been caught and that the electrical connections cannot be touched.

Installation

Pellet store

Wood pellets must be stored in a dry, airy place protected from the weather. Ready-made pellet stores are available on the market. These are preferable to homemade stores.

It should be possible to remove the feed auger for cleaning without having to empty the store.

The size of a weekly store depends on the building's heating requirements.

Feed auger

Fuel is supplied to the VIKING BIO 200 from a pellet store by an external feed auger.
Fit the feed auger motor on the feed auger. Tighten the locking screw well so that the motor does not slip on the feed auger shaft.
The feed auger must be well anchored with the chain as it will work its way into the store.

Check the position of the feed auger before the store is filled with pellets. Use tape or similar to mark on the feed auger's pipe how far it extends into the store. This makes it easy to see whether the feed auger has worked its way into the store and it becomes easier to refit the feed auger when it has been taken out of a full store.

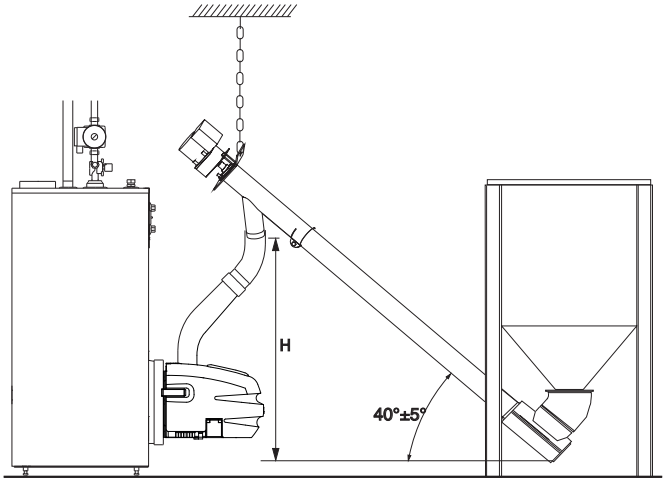
Use the enclosed hose to connect the feed auger to the burner's quick coupler on the downpipe. The hose must have a straight fall without sudden bends and the hose connections must be slightly displaced from each other. Secure the hose at both ends with hose clips.

Connect the feed auger's power cable to the power socket on the burner.

Before starting the feed auger and the burner, the feed auger must be filled with pellets. See 'Startup'.

Risk of crushing!
Do not insert hands or objects into the feed auger.

The inclination of the feed auger from the horizontal plane must be 40°±5°.



H dimension at 40° inclination:

4.9 ft. feed auger: 2.46 ft.
8.2 ft. feed auger: 4.59 ft.

Flue gas thermometer

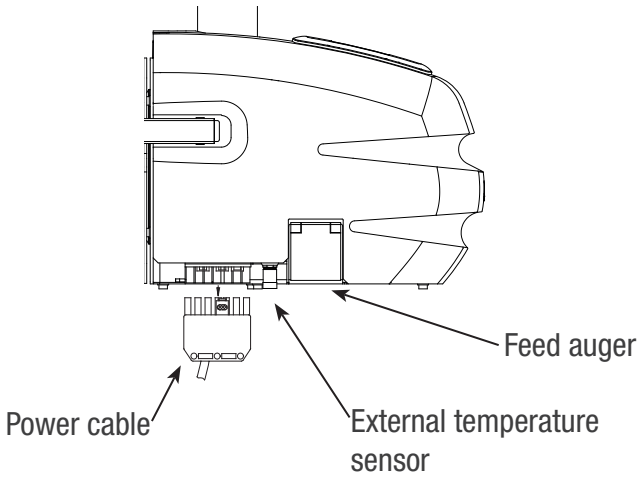
The enclosed flue gas thermometer is fitted to the usual connection on the boiler's flue pipe.

Electrical connection

The electrical installation must be carried out according to existing rules under the supervision of a qualified electrician.

The burner must be preceded by an all-pole main breaker and overheating protection.

Connections to burner



Insert the supply cable's plug into the socket on the burner until the catch engages and the contact is locked.
Before disconnection, the power must be switched off. Then press the catch in while pulling the plug out of the socket.

Alarms and warnings

In the event of an alarm burner produces 120V~ signal on S3, grey cable. The signal can be used for visual/acoustic presentation.

If the function is not used, the cable end must be insulated.

Hatch safety switch

A hatch switch must be installed if the combustion chamber hatch can be opened without tools.
Safety can also be guaranteed if the supply hose is made so short that it has to be detached before the hatch can be opened and the burner's connection cable is attached in such a way that it has to be disconnected from the burner to allow the hatch to be opened.

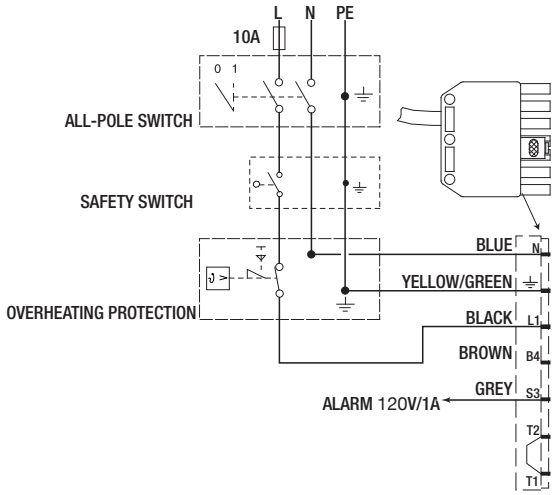
Temperature control via the burner

When the burner is to control the temperature, the phase supply must be preceded by overheating protection.

An external temperature sensor (accessory) is connected to a contact on the burner. *The sensor must be connected to the burner before it is selected in the menu system.*

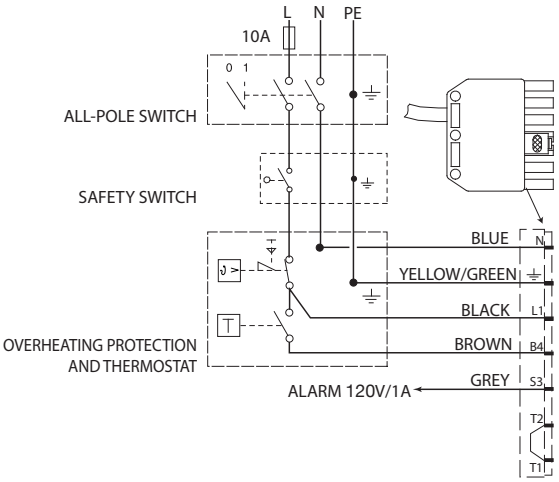
The sensor should preferably be placed in an immersion pocket high up on the boiler. If there is no immersion pocket, the sensor is glued to the body of the boiler with epoxy glue. The sensor must have good thermal contact.

In an exchanger boiler, the sensor is placed so that it senses the exchanger's return flow, but not on the return pipe.



Boiler thermostat controls boiler temperature

The phase supply must be preceded by overheating protection and the control phase by a thermostat.



Installation

Connection to Värmebaronen pellet boilers

The diagrams below show how the burner is connected to some of Värmebaronen's boilers. See also the instructions for the boiler.

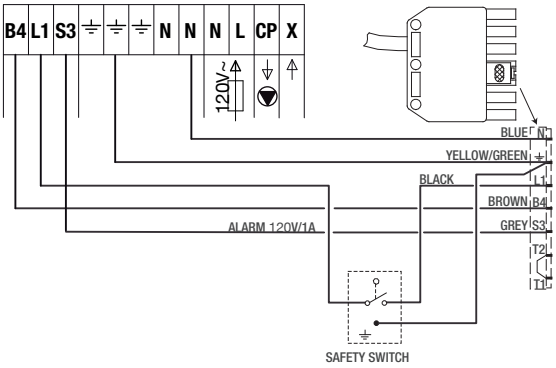
The electrical installation must be carried out according to existing rules under the supervision of a qualified electrician.

The temperature difference between the burner's on and off temperatures can be set in the range 46-60 °F in the boiler's controller.
A low temperature difference gives the burner a shorter operating time and results in more starts/stops.
A high temperature difference results in a longer operating time and fewer starts/stops but higher fluctuation in boiler temperature.

The burner cannot be switched off in the boiler's menu if an external temperature sensor is selected in the burner.

Pellmax UB

Boiler thermostat controls boiler temperature



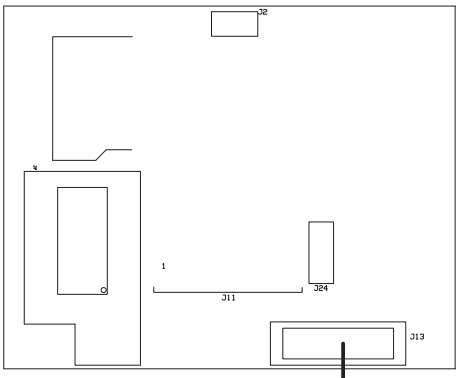
Temperature control via the burner

An external temperature sensor must be connected to the burner before it is selected in the menu system.

The on/off temperatures are set in the 'On/off temperature range' menu on the burner.

The boiler's thermostat has no function/impact on the burner if control is via the burner.

The burner must disconnected from the power supply before work is carried out on it or it is removed from the boiler.



Display circuit board, installed in the burner's cover

Be careful when removing the cover so that the cable between the circuit boards is not damaged!

Ash removal motor

Cable, connects display circuit board to power circuit board.

External temperature sensor

Power circuit board with power supply unit

Fan

Flame guard

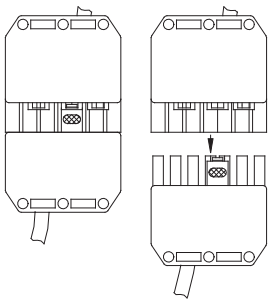
Thermostat input

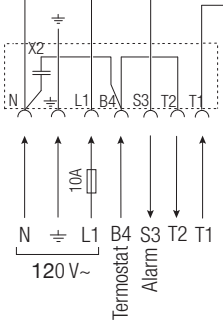
Alarm

Ignition element

Auger motor

Thermal relay, downpipe





N: neutral conductor, blue.

⏚: earth conductor, PE, yellow/green.

L1: supply via overheating protection, black.

B4: boiler thermostat, brown.

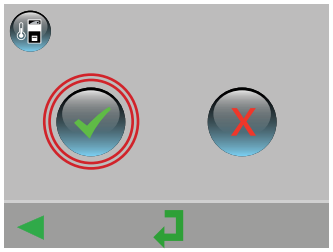
S3: alarm signal, 120 V~, grey.

Startup

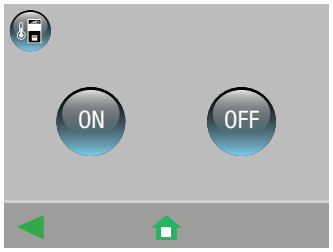
Before starting the burner for the first time, check that:
- it has been installed according to the instructions.
- the feed auger's inclination is 40 ±5°.
- there is a draught damper and it is adjusted to -5 Pa.
- the main power switch is in position 'I'
- all control units are correctly set, for example thermostat.
- the burner has sufficient combustion air.
- there are pellets up to the burner.
- the pellet brake and pellet stop are in place.

Temperature control via the burner

Install the temperature sensor before it is selected in the menu system:



Set the desired on and off temperatures:



Feed auger

The feed auger must be filled with pellets before startup. Place a collection receptacle below the feed auger and connect the feed auger to an earthed power point. Operate the feed auger so that approximately 2 gallons of pellets pass through.

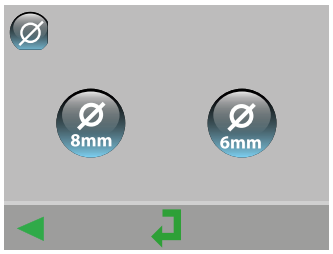
Flue gas temperature

Condensation damage can be avoided if the flue gas temperature is minimum 158 °F three feet below the top of the chimney. The temperature is measured with the boiler at its normal operating temperature no earlier than five minutes after the burner was started and with the draught damper closed.

Measures to increase the flue gas temperature:
- remove or shorten any turbulators.
- insulate the boiler's flue pipe and the chimney in cold rooms.
- increase the burner's capacity.
- install flue lining tubes.

To avoid damage to the chimney, the flue gas temperature must be checked.

Select pellet size



Target values

The correct adjustment is important for good heating economy, high efficiency and low emissions of environmentally harmful substances.

Flue gas temperature:	dependent on boiler and chimney type
Soot number:	1-3
CO content:	< 300 ppm
CO_2 content, average:	10-15%
Efficiency:	dependent on boiler type

Fuel volume

Correct fuel volume:

CO_2: 10-15% CO: < 300 ppm	little soot low soot number	

Too little fuel:

CO_2: 5-10%	no soot low/no soot number	stops sometimes

Too much fuel:

CO_2: > 15% CO: > 500 ppm	a lot of soot high soot number	pellets in downpipe

Efficiency

The aim is to extract as much heat as possible from the pellets. The efficiency should be > 90%. If the efficiency is lower, although the other combustion values are good, the low efficiency is based on high flue gas temperature. The boiler is unable to make use of the heat in the flue gases.
In such case, a change of boiler should be considered. A modern pellet boiler produces high efficiency and is more straightforward to use.

Adjustment

Adjustment

The burner's delivery settings are not operating settings. They must be adapted in each case. Optimum adjustment is possible only using flue gas analysis instruments.

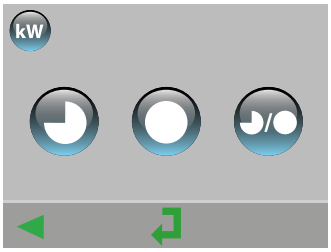
The feed auger provides an irregular supply at the start. Therefore, fine adjustment should take place after approximately 20 hours of operation.

The burner is adjusted first in high power mode and then in low power mode. This is important as the high power adjustment affects combustion in low power mode.

The boiler room door must be closed during measurement.

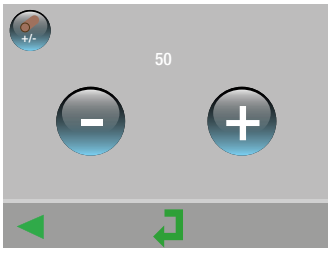
High power adjustment

Start the burner in high power mode and wait 7-10 minutes before starting the flue gas analysis to allow combustion to stabilise.



Read off the CO_2 content every minute for 5 minutes. Calculate the average value for CO_2. It should be 10-15%. If it is:

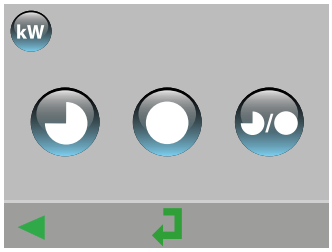
- lower, increase the fuel volume in the 'fuel' menu using +.
- higher, reduce the fuel volume in the 'fuel' menu using -.



Wait 5 minutes after a fuel volume adjustment before measuring the CO_2 again.
Repeat until the average value for CO_2 is 10-15%. Then measure the CO content, which should be < 300 ppm.

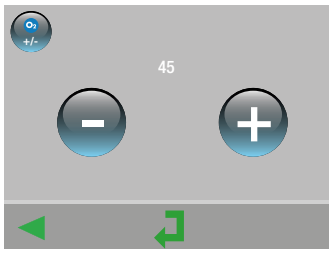
Low power adjustment

Change to low power and wait 5 minutes before starting the flue gas measurement.



Read off the CO_2 content every minute for 5 minutes. Calculate the average value for CO_2. It should be 10-15%. If it is:

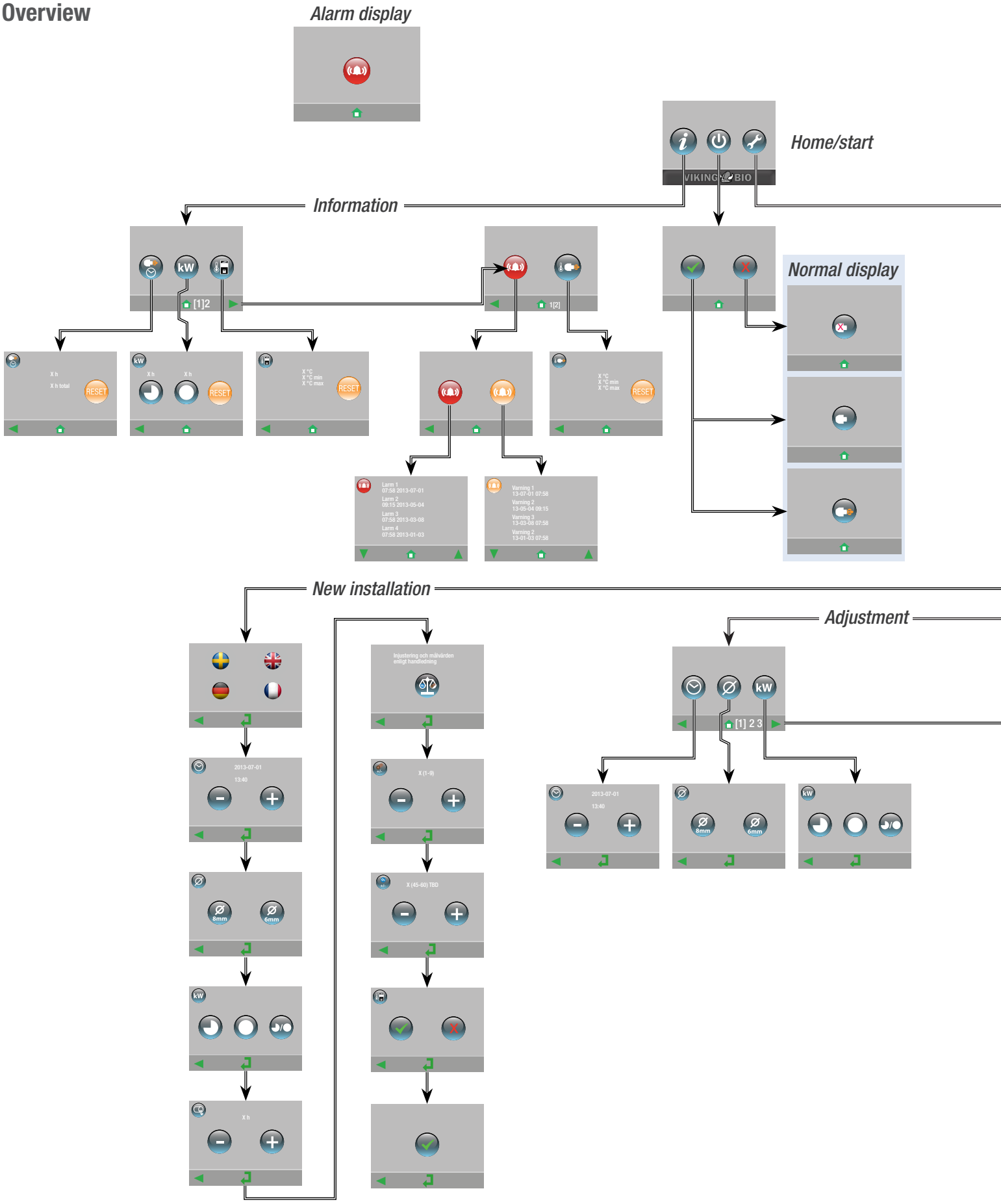
- lower, reduce the air setting with the - button in the air menu
- higher, increase the air setting with the + button.



Wait 5 minutes after a fuel volume adjustment before measuring the CO_2 again.
Repeat until the average value for CO_2 is 10-15%. Then measure the CO content, which should be < 300 ppm.

If the CO is over 300 ppm despite CO_2 of 10-15%, this may be due to an air leak or to the boiler or burner having been poorly cleaned.

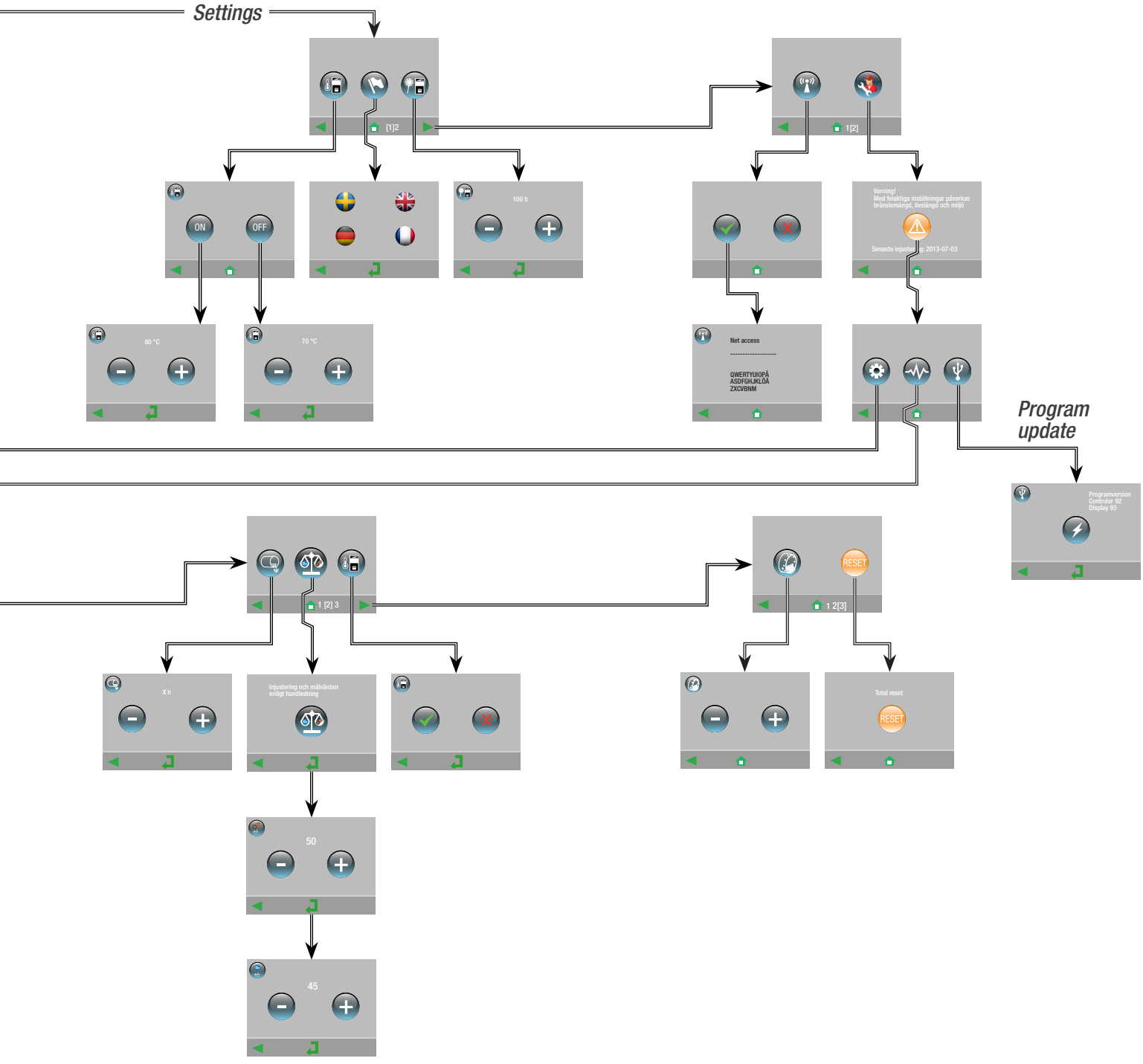
Overview



Home	Back	Next	Burner in operation	Burner not in operation	Burner standby
Confirm OK	Down	Up	Information	On / standby	Settings
Power selection	Power: 100%	Power: 75%	Automatic power switching	Sweeping interval	Manual ash removal
Operating time	Internal temperature	Adjustment of air	USB	Program update	Adjustment

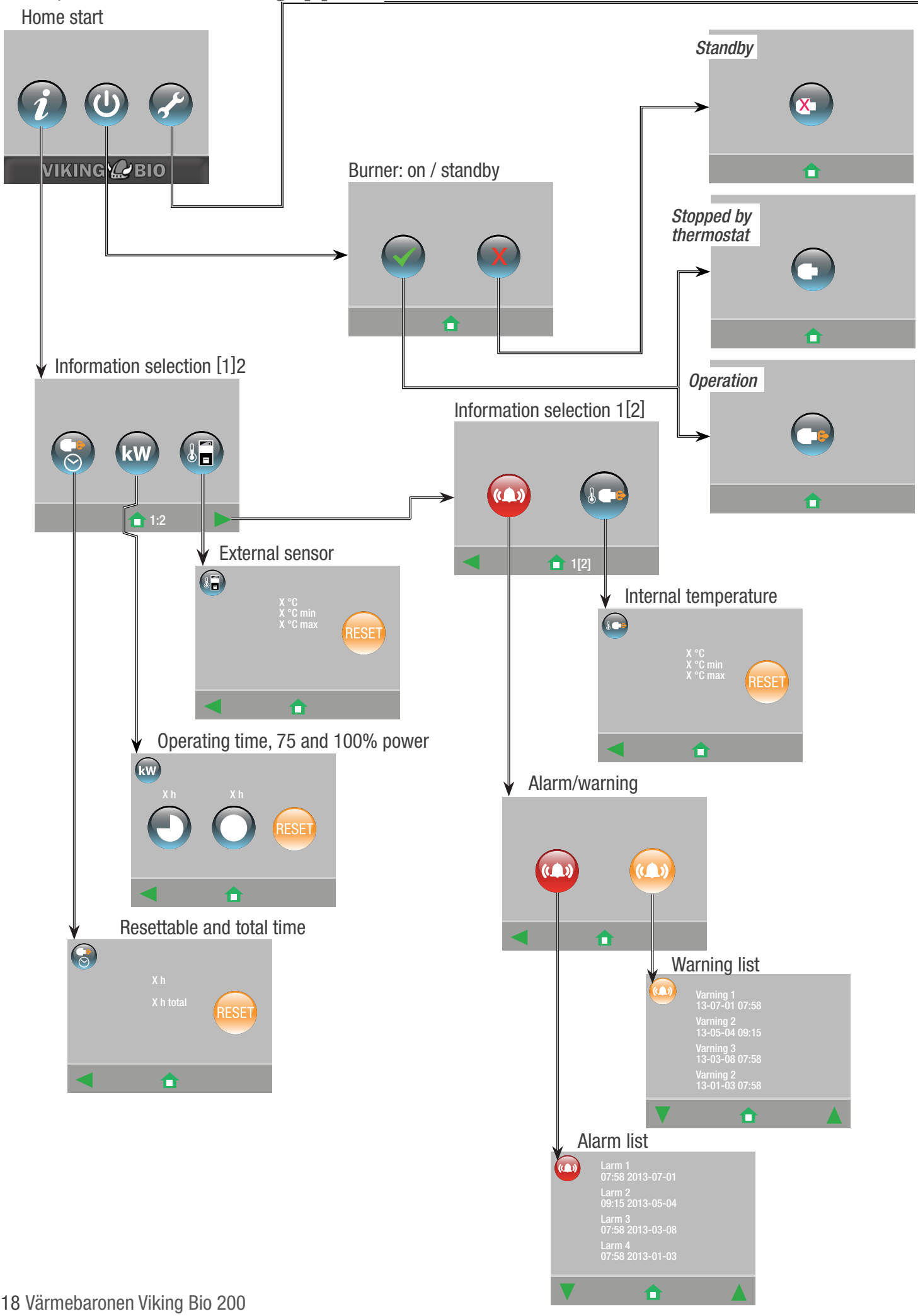
Screensaver after 5 minutes

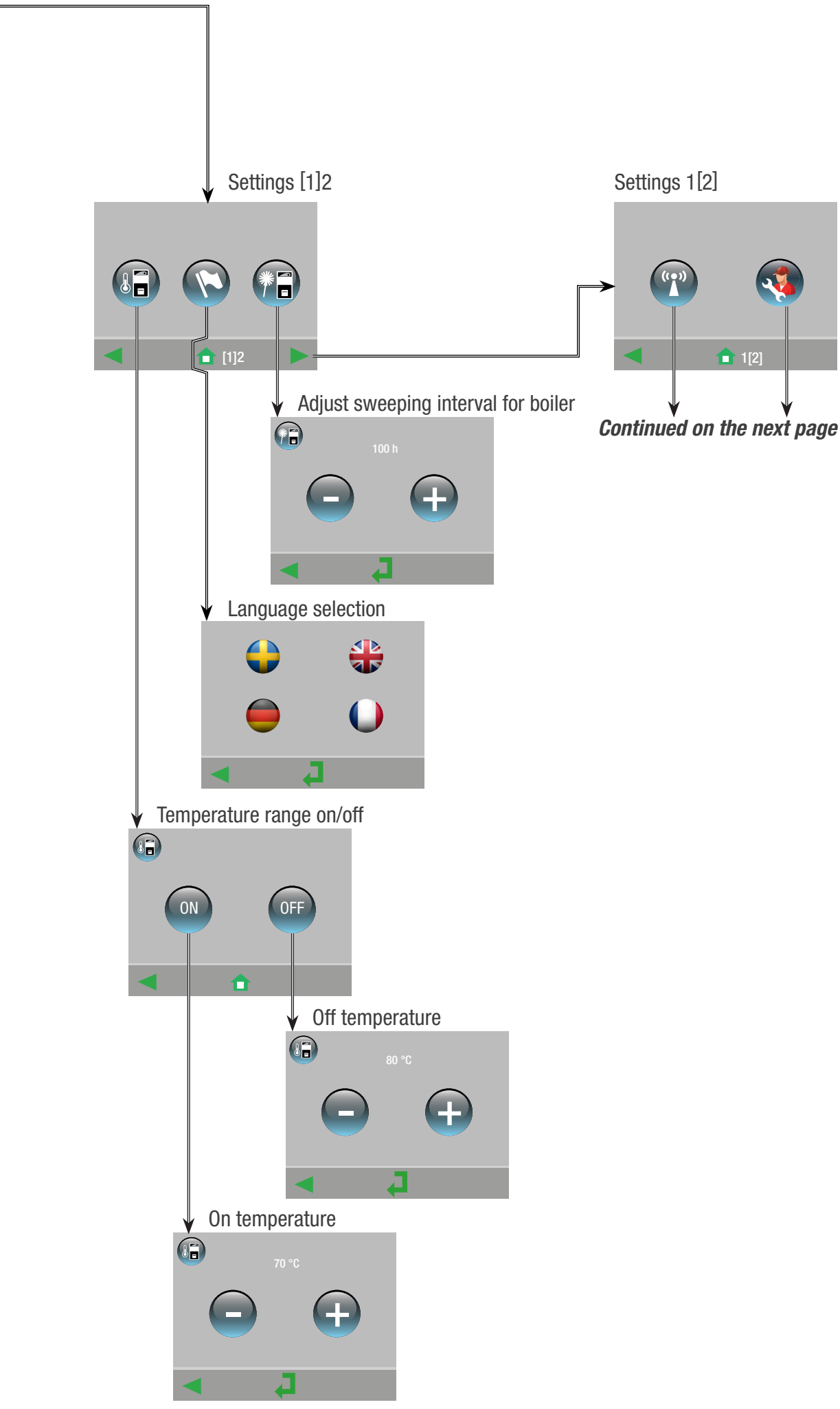
Alternately: Wants to report something when the screensaver is active.



Alarm/warning	Alarm	Warning	Reset	Activate	Deactivate
Boiler temperature, on	Boiler temperature, off	Increase	Reduce	Boiler temperature	Language selection
Ash removal	WiFi	Expert's settings	Selection of pellet diameter	8 mm pellet	6 mm pellet
Adjustment of air/fuel	New installation	Date/time	Adjustment of fuel		

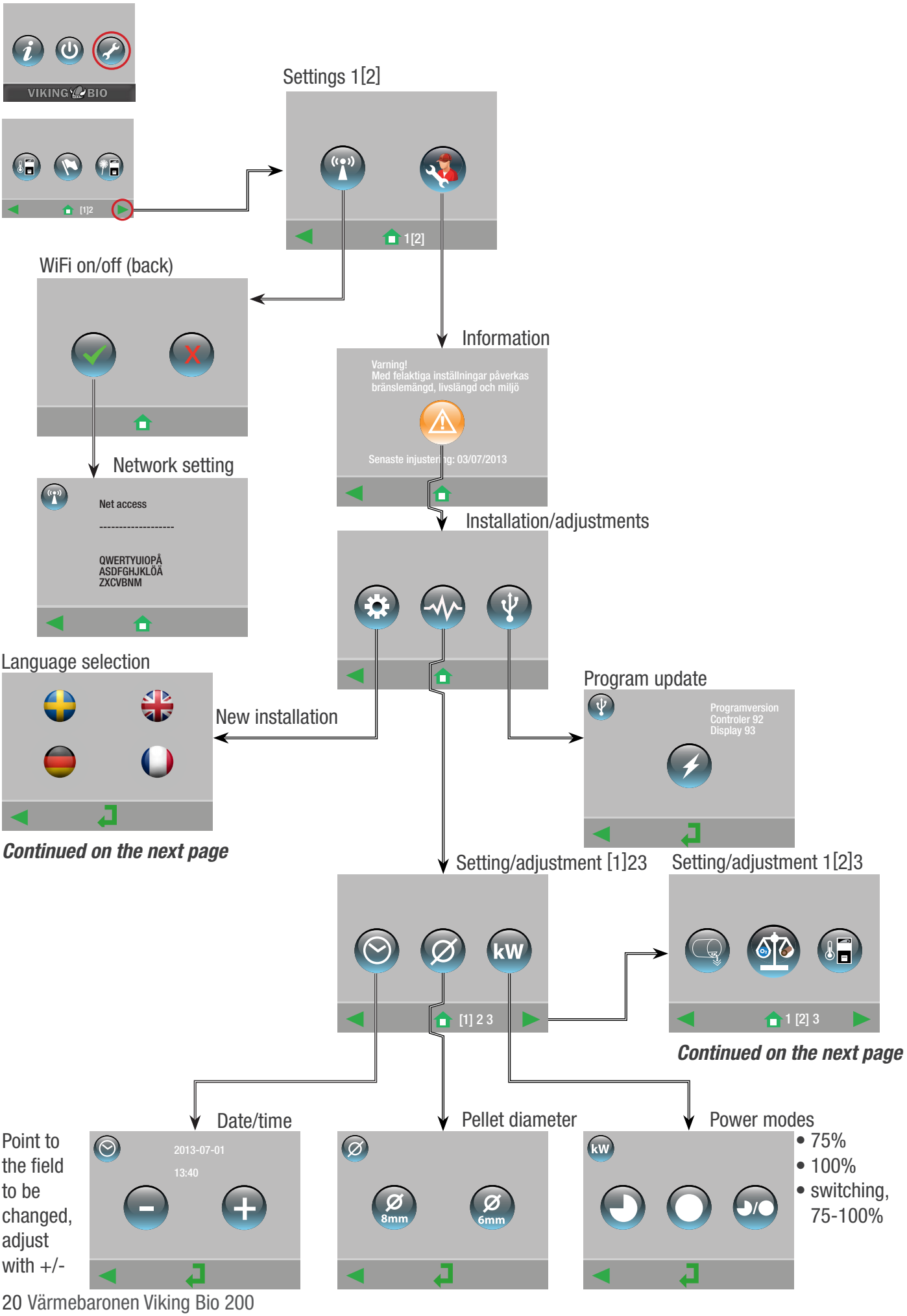
Menu, information and settings [1]2




Settings [1]2
[1]2
Settings 1[2]
1[2]
Adjust sweeping interval for boiler
100 h
Continued on the next page
Language selection
Temperature range on/off
ON
OFF
Off temperature
80 °C
On temperature
70 °C

Search path, follow the highlighted icons

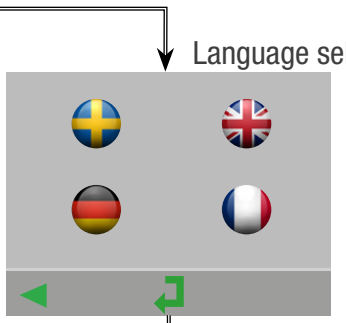
Menu, settings 1[2]



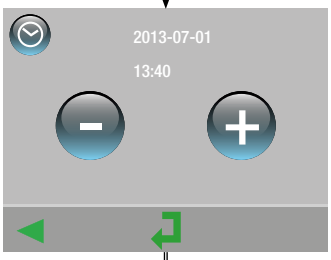
Search path, follow the highlighted icons

Menu, New installation



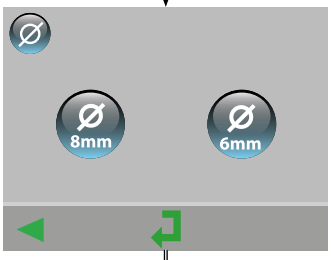


Language selection

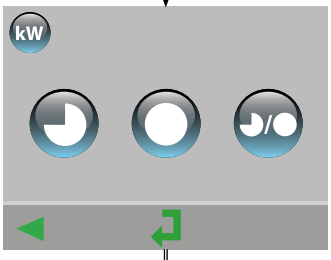


Date/time

Point to the field to be changed, adjust with +/-

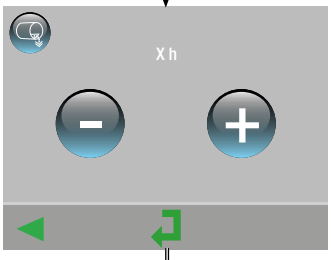


Pellet diameter



Power modes

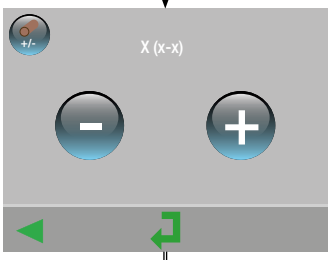
- 75%
- 100%
- switching, 75-100%



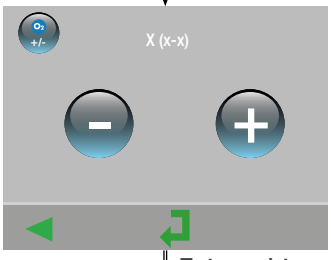
Ash removal interval



Fuel/air

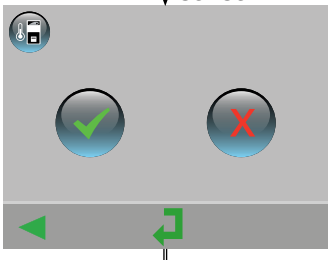


Fuel

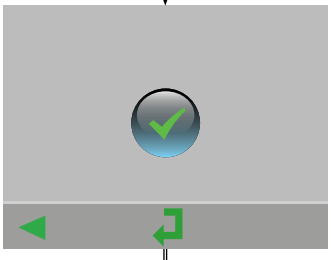


Air

External temperature sensor

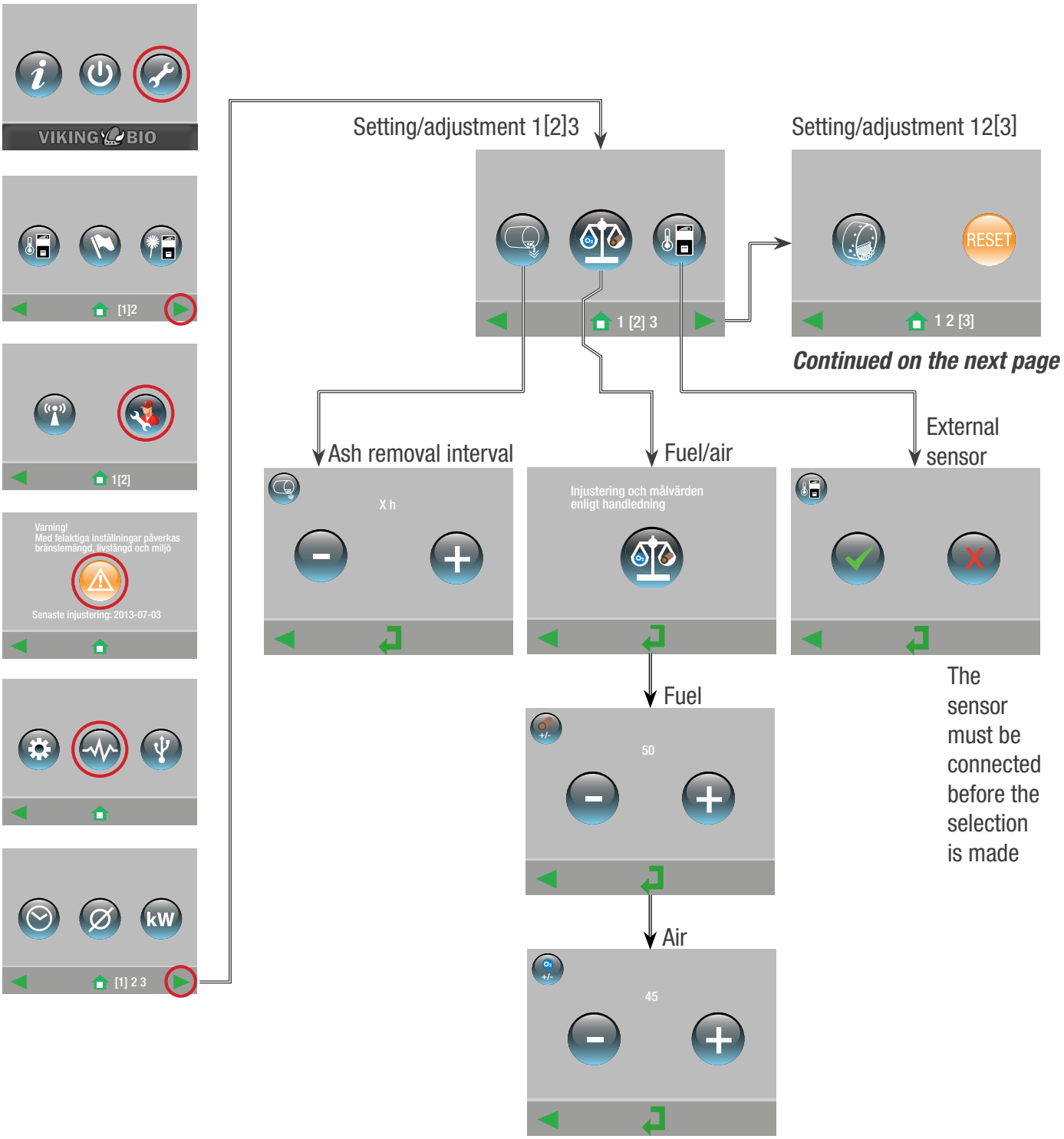


The sensor must be connected before the selection is made

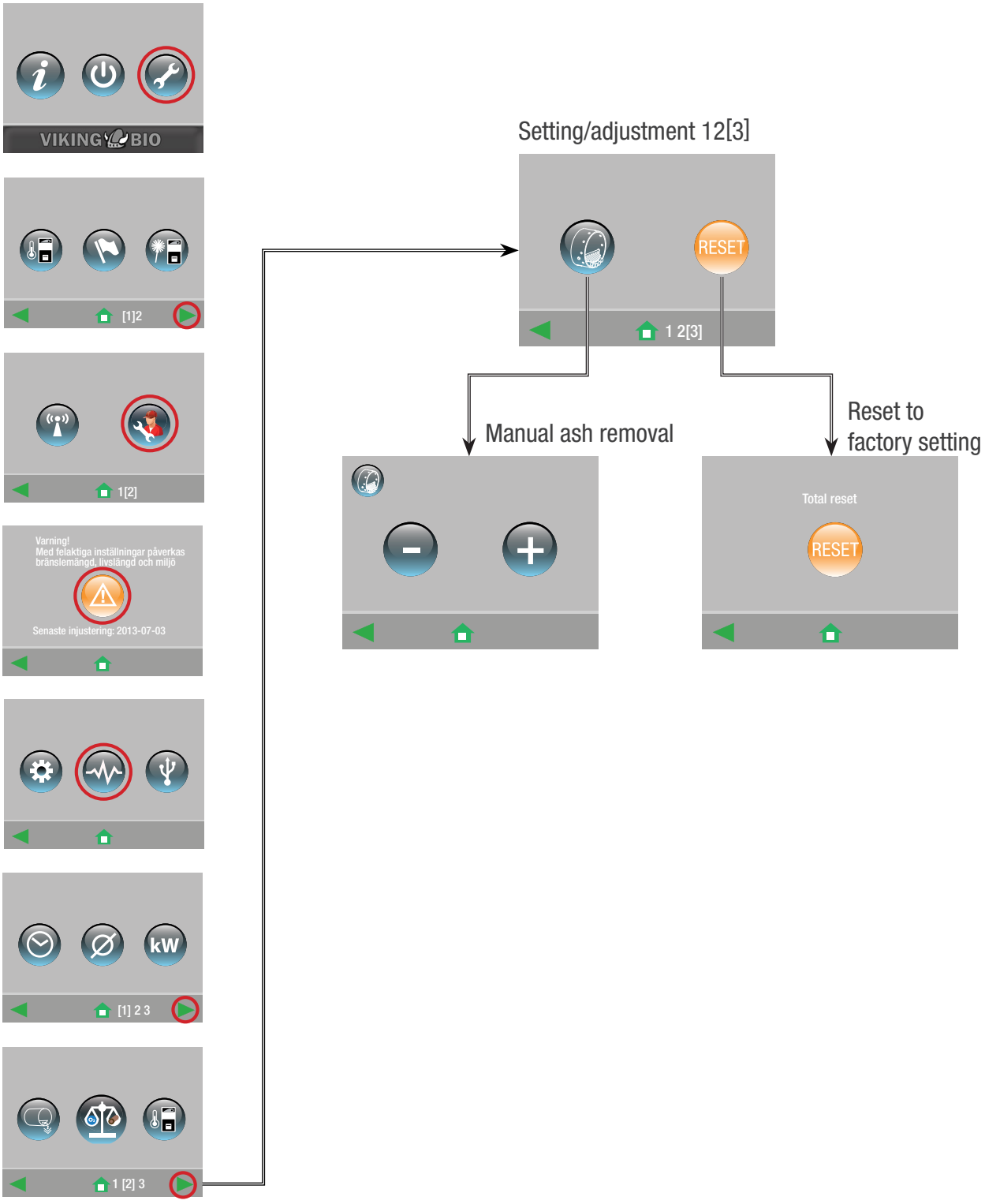


New installation done

Search path, follow the highlighted icons



Search path, follow the highlighted icons



Pellet firing

The burner's parts in contact with flames are wearing parts that need replacement as required.
To extend the burner's service life and maintain good combustion with high efficiency and low emissions of environmentally hazardous substances, the following points should be observed:

- The burner must be adjusted with a flue gas analysis instrument for the pellet quality used.
- If the quality and/or supplier of pellets is changed, adjustment must be repeated. Pellets may have different contents that may affect combustion.
- A draught damper must be fitted between the boiler and the chimney.
- Replace damaged parts as soon as possible.
- Follow these instructions.

The system must always have an alternative energy source to reduce vulnerability.

Pellet quality

Minimum pellet requirements under EN 14961-2

Length: ≤ 40 mm class A1

Fines content < 1/8": ≤ 1.0% (by weight)

Calorific value: ≥ 7119 BTU/lb

Ash content: ≤ 0.7%

Total moisture content: ≤ 10% (by weight)

The melting point of the ash should be high, >2460 °F, as molten (sintered) ash is a problem.

Use only wood pellets that meet the requirements of standard EN 14961-2, class A1.

Combustion

The ash sinters if the pellets are of poor quality with a high ash content with a low melting point. The melting point of the ash should be >2460 °F. Molten ash is very difficult to remove and increases the cleaning required. Do not confuse sintered ash with the easily removable ash cakes or ash balls that may be found in the combustion chamber.

If the boiler was previously fired with wood, the smoke may be dark and malodorous because tar on the boiler and chimney walls is being burned off.

The colour of the soot/dust coating on the walls of the combustion chamber shows how good combustion has been.

Light greyish brown:	good combustion.
Black:	too little air or too much fuel.
White:	too much air or too little fuel.

Flue gas temperature

A high flue gas temperature may be because the boiler has not had soot removed or there is too much combustion air. This produces low efficiency and unnecessarily high pellet consumption.

The burner has a sweeping warning that should be set to avoid high flue gas temperature.

A low flue gas temperature may be because of poor combustion on account of too little air or because the boiler is overdimensioned. There is then a risk of condensation in the chimney, which will cause damage. During combustion, water vapour is formed and accompanies the flue gases out into the chimney. Depending on the cooling in the chimney, the steam may condense as water. A low flue gas temperature results in higher efficiency but this must be weighed up against the risk of condensation.

Measures to increase the flue gas temperature:

- remove any turbulators or baffle plates in the boiler
- insulate the boiler's flue pipe and the chimney in cold rooms
- increase the burner's capacity
- install flue lining tubes.

Turbulators

Certain boiler types have or can be fitted with flue gas turbulators. Their task is to make the flue gases turbulate to extract more heat and thus increase efficiency.
At low power, the flue gas temperature is low and there is a risk of condensation forming in the chimney. Try to shorten the turbulators until the flue gas temperature is suitable.

Draught damper

The draught is affected by temperature, weather and wind. As the combustion is affected by the draught, stable draught conditions should be the objective. The hatch lets boiler room air into the flue. The advantages of this are:

- more stable draught and flue gas temperature
- reduced stoppage losses
- ventilation of the flue
- drier flue gases, which reduces the risk of condensation

Efficiency

The aim is to achieve high efficiency, which means extracting as much heat as possible from the pellets. In fact, this involves reducing losses. The losses that should be minimised are:

Flue gas loss:	The heat in the flue gases that escape via the chimney.
Stoppage losses:	While the burner is not operating, the chimney draught sucks cold air through the boiler, thus cooling it. This loss can be reduced by means of a draught damper.
Insulation losses:	Heat leakage via the boiler's insulation. A small part of this is recovered by the combustion air being heated. In some cases, some of it benefits the building.

Power mode

The burner can be set to two power levels. It is a good idea not to use higher power than necessary but not so low that the indoor temperature or temperature of hot water is too low. A lower power for the burner results in a longer operating time and lower stoppage losses, which produces higher boiler efficiency.

Seasonal changes mean that it can often be a good idea to change the power mode several times a year.

Temperature control via the burner

The temperature sensor (accessory) must be connected to the burner and activated in the menu.
The burner's temperature control controls the temperature with adjustable start and stop temperatures.

When it is idle, the burner senses a rapid decrease in temperature, which may occur in an 'exchanger boiler', for example, when hot water is drawn off. The burner then starts before the temperature has fallen to the set start temperature.

The temperature control is also suitable when the burner has been installed in a boiler which works with an accumulator tank.

Smoke in boiler room

Smoke can escape into the boiler room following a downblast in the chimney or negative pressure in the boiler room. The cause may also be leaky hatches and dampers and defects in the chimney or the join between the chimney and the boiler.

A smoke detector is a good way of discovering whether flue gases are leaking out into the boiler room.

The boiler hatches must be closed when the burner is in operation.

Safety

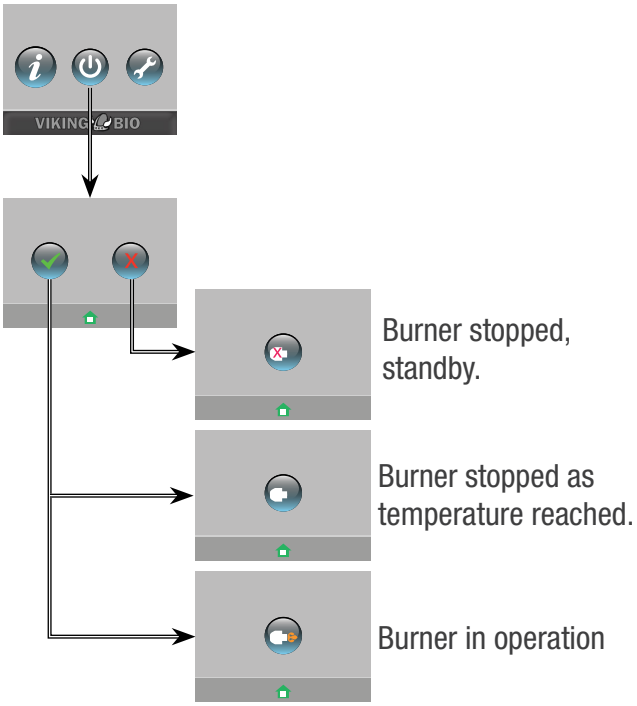
From the point of view of fire safety, it is important for the boiler room to be clean and free of dust.

Flammable substances must not be stored in the boiler room.

The door to the boiler room must be closed.

In the event of fire or any other hazard, cut the power to the burner and take the necessary action.

Operation, start to stop



Start



Start conditions

- Overheating protection and any hatch switch closed.
- Alarm reset.
- The thermostat or the burner's temperature control are requesting heat.
- The burner receives pellets.

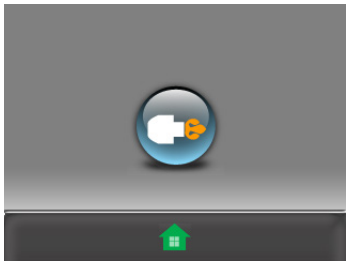
Ignition

- If the conditions for ash removal are met
- During ignition, these icons will be displayed in the display.



- Ventilation; the fan operates at maximum speed for 25 seconds to ventilate the boiler and flue gas duct.
- A start dose of pellets is supplied and the ignition element begins to heat.
- The fan alternates between operating with low RPM and not operating until the flame guard senses that there is a flame.
- When there is a flame, more pellets are supplied. The fan gradually increases the RPM. Ignition ends when the pellet supply and the fan comply with the set values.
- There is normally a flame after two to three minutes. If the attempt fails, the ash removal motor operates briefly and a few pellets may be supplied.

Operation



- Pellets are supplied according to the set values. The fan operates constantly with the values according to the power mode and setting.
- Ash removal takes place after the set operating time.
- The sweeping warning lights up after the set operating time.

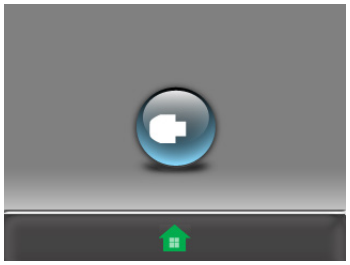
Extinguishing



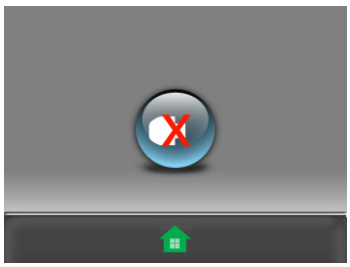
- During the extinguishing sequence, these icons will be displayed in the display.



- When the pellet burner is switched off or the thermostat cuts the power, the fan increases RPM and burns out the remaining pellets.
- The fan alternates between operating and not operating to cool the burner.
- When the cooling phase has been completed, the burner is switched to 'not in operation':



or 'burner stopped':



depending on whether the burner was switched off or the thermostat cut the power.

Operation and maintenance

Cleaning and sweeping

Risk of burn injuries!
Switch off of the burner and let it burn out and cool before starting to clean it.

The interval of time between cleaning and ash removal depends on the boiler's ash space, consumption and pellet quality. You will quickly learn how often the burner needs to be cleaned.
The flue gas thermometer can show you when it is time to sweep. To retain good efficiency, the boiler should be swept when the flue gas temperature has risen by approximately 120 °F in relation to when the boiler was last swept.

Burner stop

Turn down the boiler thermostat or switch off the burner via the display so that it carries out cooling before stopping.

Automatic ash removal

Ash removal takes place:
- when the burner starts after having been switched off
- after 8 hours of operation, factory setting. This time can be adjusted depending on the boiler.

If the 8 hour limit is reached while the burner is in operation, the burner waits for an hour for the thermostat to switch off the burner. If this does not happen, the burner stops, ash removal takes place and it restarts.

Sweeping warning

The warning is displayed after a set operating time. The factory setting is 100 hours. Sweep the boiler and acknowledge the warning.
Adjust the time so that the sweeping warning is displayed after the number of operating hours it takes for the flue gas temperature to increase by 120 °F.

Burner cleaning

The burner requires regular cleaning.
When sweeping the boiler, it is a good idea to clean between the inner and outer burner pipes.
Detach the quick coupler on the hose from the feed auger and the power supply to the burner. Open the quick attachments and separate the burner, with the inner burner pipe, from the outer burner pipe.

Brush the inner burner pipe clean. Avoid damaging the oxide layer that has been formed. Clean the 1/8" holes in the inner burner pipe if they are clogged.

Each time you clean, check the condition of the parts in contact with flames. These are the inner burner pipe, the end wall, the pellet stop and the hose between the feed auger and downpipe.
Replace damaged parts as soon as possible.

When you refit the burner, check that the silicone gasket is in place and is airtight. Otherwise, the inner burner pipe may be damaged.

Blow any dust that has collected in and on the burner away carefully with compressed air or brush it away with a soft brush.

Clean the photoresistor if necessary.

Ash and soot can glow for several days.
Keep the ash in a metal container with a tightly-sealed lid away from combustible material.

Cleaning the pellet storage bin

Over time, there will be fine fractions of pellets in the base of the pellet store. If their volume is so high that the pellet supply to the burner is impeded, the store must be cleaned.

Handling pellets may entail health hazards. Contact your pellet supplier for more information on how pellets should be handled and stored.

Ventilate the store well before entering it and switch off the feed auger.

Being in an unventilated store may entail a risk of death.

Ensure that children are unable to enter the store.

Naked flames are prohibited near the store.

Risk of crushing.
Do not insert hands or objects into the feed auger.
Before any work is done on the feed auger, the power cable must be disconnected from the burner.

Safety system

Most of the safety functions of the pellet system cannot be influenced by the user and require no special control. The safety system consists of:
- overheating protection against excessive boiler temperature.
- thermal relay in downpipe.
- non-combustible hose between feed auger and downpipe.
- fan with fan guard.
- flame monitoring.
- blockage if the ambient temperature is too high.

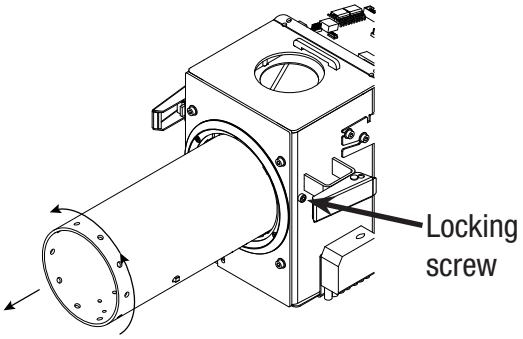
Disconnect the burner from the power before working on it.

Changing the inner burner pipe

Detach the burner from the outer burner pipe. Unscrew the locking screw approximately 10 mm, turn the inner burner pipe anticlockwise and pull out the pipe.

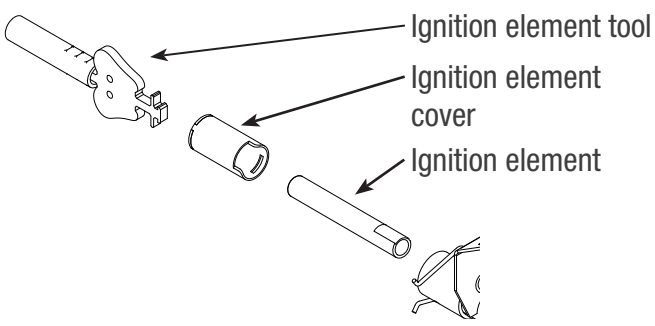
Refit in reverse order.

Check the condition of the outer burner pipe as well.



Changing the ignition element

1. Detach the burner from the outer burner pipe. Unscrew the locking screw approximately 10 mm, turn the inner burner pipe anticlockwise and pull out the pipe.
2. Detach the ignition element cover by inserting the ignition element tool into the arrow-shaped opening and turning half a turn.
3. Press the hose on the ignition element tool over the element until it touches bottom. Carefully withdraw the ignition element. Recycle appropriately.
4. Press the new ignition element carefully into the holder, using a finger, until it touches bottom. Ensure that the slot is correctly located in the holder.
5. Place the ignition element cover with the arrow upwards in its position using the ignition element tool. Turn half a turn until the arrow points downwards.
7. Refit the inner burner pipe and tighten the locking screw.
   The pellet stop must be in a horizontal position.



Resetting the thermal relay

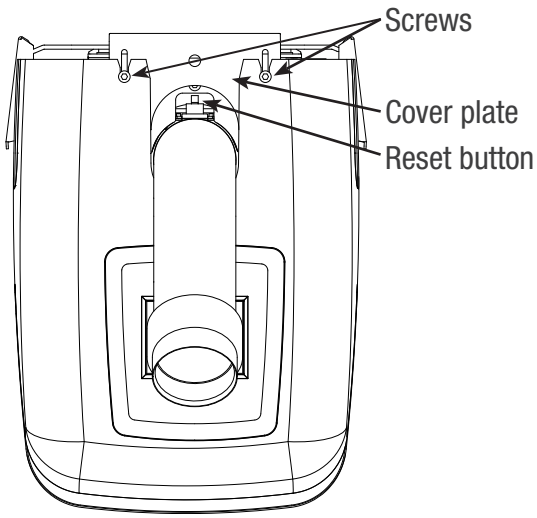
Switch off the power to the burner before the thermal relay's enclosure is removed.

Unscrew the screws by the downpipe approximately 2 turns so that the cover plate can be pushed away from the downpipe so that the thermal relay is accessible.

Reset it by pressing in the button using a chisel.

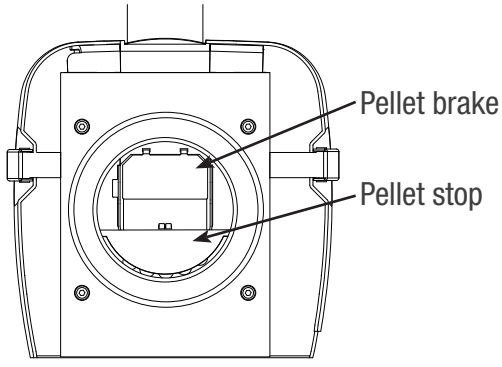
Push back the cover plate and tighten the screws.

Restart the burner.



Installation/removal of the pellet stop

The pellet stop is removed with the outer burner pipe removed. Remove the pellet stop by angling it up towards the centre of the pipe. Then it can be detached from its position. Fit in the reverse order.



Troubleshooting

Troubleshooting

In the event of a problem, first check all the conditions required for the burner to work:

- Is the burner receiving power?
- Are all control units, thermostats, etc. set correctly?
- Are all safety devices, overheating protection, hatch switches, etc. in normal operating mode?
- Is the burner receiving pellets?

Look into the burner pipe if no flame has been established. If there are unburned or slightly singed pellets there, the most probable cause is an ignition error.
If all the pellets have burned up, the most probable cause is that there is a problem with the pellet supply.

If the cause of the problem is none of the above, all the burner's functions must be checked.

If the burner is in alarm mode, i.e. the alarm indicator is displayed in the display, it must be reset.

Follow the operation of the burner.

External fault sources

Common circumstances that give rise to operating problems:

- the inclination of the feed auger from the horizontal plane is not 40°±5°.
- the pellets do not meet the requirements under the standard.
- draught >15 Pa.
- lack of draught damper.
- large area in flue.
- irregular fuel supply because the feed auger has not travelled far enough, the pellet store is of poor quality or there are a lot of crushed pellets in the store.

Checking the feed auger's capacity

A. Detach the quick coupler at the downpipe and hold your hand over the quick coupler part that is attached to the hose.

B. Connect the feed auger to a power point and let it rotate through 3.5-4 revolutions.

C. The quick coupler part on the hose must be filled with pellets. If this is not the case, check the inclination of the feed auger and its insertion into the pellet store.

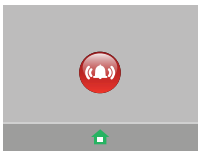
Fault indication/alarm

The burner has two types of fault indication: alarm and warning.

In the event of an alarm, the burner stops. A red icon is displayed in the display. If the screensaver is active, the display will flash. The icon is displayed only after the display has been touched. After the icon has been touched, a new window is displayed with the cause and additional information.
An alarm must be acknowledged before the burner can be restarted.

A warning is displayed with a yellow icon in the display. The burner does not stop and no acknowledgement is required. Otherwise as above.

Alarm acknowledgement



When this window is displayed, the burner is locked on account of an alarm. The alarm must be reset to allow the burner to restart. This is done by touching the alarm icon. A new window is then displayed with the cause of the stoppage.

Temperature sensor's resistance (accessory)

Temp °C	Resistance kΩ	Temp °C	Resistance kΩ
20	12.5	55	3
25	10	60	2.5
30	8.1	65	2.1
35	6.5	70	1.8
40	5.3	75	1.5
45	4.4	80	1.3
50	3.6	85	1.1

During measurement, the sensor must *not* be connected to the burner.

Switch off the power to the burner and detach the plug before cleaning or service or before the burner is detached from the boiler.

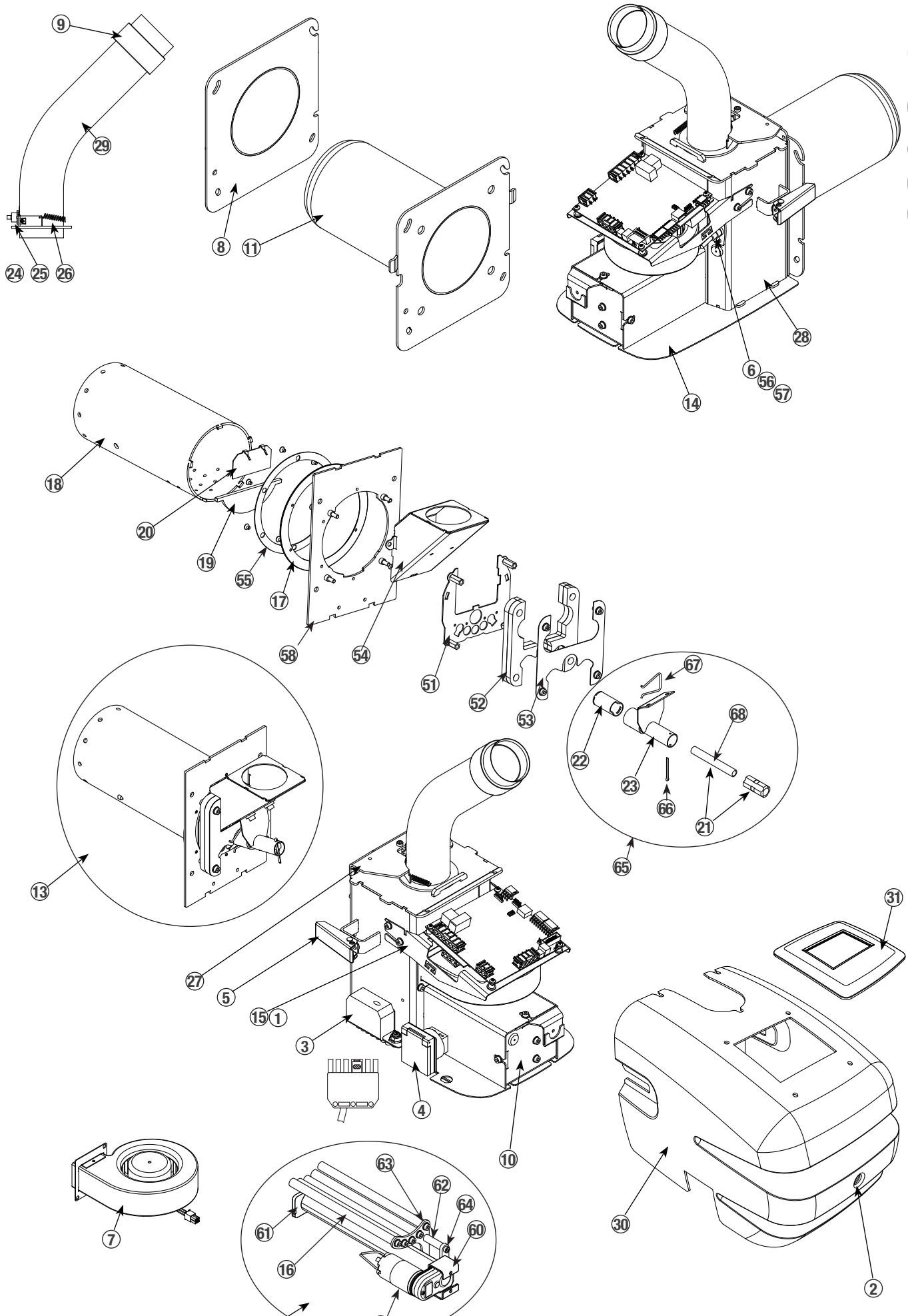
Alarm text	Information
Ignition error 1	Receiving no pellets or too few pellets. Defective ignition element. Defective or dirty flame guard. Maintenance interval exceeded.
Ignition error 2	Receiving no pellets or too few pellets. Defective ignition element. Defective or dirty flame guard. Too much ash in the boiler. Poor pellet quality.
Over temperature in downpipe	Back-pressure in the boiler. Ventilation creating negative pressure in boiler room. Pellet brake defective. Defective over temperature protection.
Over current, ash removal motor	Defective ash removal motor.
Flame guard	Defective flame guard. Flame guard not in its position. The burner detects a flame although there is no flame.
Auger motor	The auger motor is not adapted to the burner. Defective auger motor. Auger motor not connected.
Ignition error 3	Receiving no pellets or too few pellets. Defective ignition element Defective or dirty flame guard. Draught too high. Back-pressure in boiler too high.
Fan RPM too low	Defective fan. Contaminants braking the fan mechanically.

Warning text	Information
Incorrect current value, ignition element	Defective ignition element
Long operating time, ash removal motor	Defective ash removal motor. Maintenance interval exceeded.
Short operating time, ash removal motor	Ash removal motor working slowly. Ash removal motor blocked.
Restart after power cut	Power cut during operation.
External sensor over 100 °C	Boiler temperature over 100 °C. Short-circuit, external sensor. External sensor incorrectly placed. Poor water circulation.
Frequency error, supply voltage	The voltage of the burner must be measured with frequency-stable, sinusoidal alternating current.
Time to sweep the boiler!	Sweeping interval selected has been reached.
Unexpected error 9 Unexpected error 10 Unexpected error 11 Unexpected error 12	An unexpected error has occurred.
High temperature in controller	Defective insulation, hatch. High ambient temperature.

Components

item	art. no.	designation	qty.
1	210030	Circuit board, power	1
15	711533	Circuit board holder	
2	370047	Cap	1
3	440163	Electrical intake	1
4	440165	Power point	1
5	440212	Eccentric lock	2
6	500003	Photoresistor	1
56	500004	Flange for photoresistor	1
57	500005	Clamping ring for photoresistor	1
7	500020	Fan	1
8	700060	Gasket against combustion chamber hatch	1
9	710044	Reducer	1
10	711471	End wall	1
11	711477	Outer burner pipe	1
12	**711483**	**Ash removal unit, complete**	**1**
59	500050	Linear tool, ash removal unit	1
60	711481	Bracket, ash removal motor	2
61	711482	End wall	1
16	711485	Sweeping rod	5
62	711486	Spacer tube	1
63	711487	Arm	1
64	711488	Pusher	1
13	**711511**	**Inner burner pipe, complete**	**1**
17	700204	Silicone gasket	1
55	710701	Mounting ring, silicone gasket	1
58	711475	Inner bracket with spacers	1
54	711505	Drop box	1
53	711506	Insulation protection	1
52	711508	Insulating disc	4
18	711510	Inner burner pipe	1
19	711552	Pellet stop	1
20	711628	Pellet sheet	1
	711633	**Ignition element, divisible**	**1**
66	100740	Split pin	1
21	440121	Ignition element with cable	1
67	700503	Hairpin	1
22	711616	Ignition element cover	1
23	711631	Ignition element holder	1
51	711637	End wall, complete	1
68		Ignition element	1

item	art. no.	designation	qty.
14	711515	Base plate	
69	711624	Design plate	
24	**711626**	**Thermal relay unit, complete**	**1**
25	120090	Thermal relay	1
26	440322	Spring	
27	711634	Cover plate	1
28	711635	Housing	1
29	711636	Downpipe	1
30	720461	Cover	1
31	**720464**	**Display, complete**	**1**
	210031	Circuit board, panel	


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This product uses the FreeRTOS
- www.freertos.org
- http://sourceforge.net/projects/freertos/files/FreeRTOS/V7.0.0/FreeRTOSV7.0.0.zip/download

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