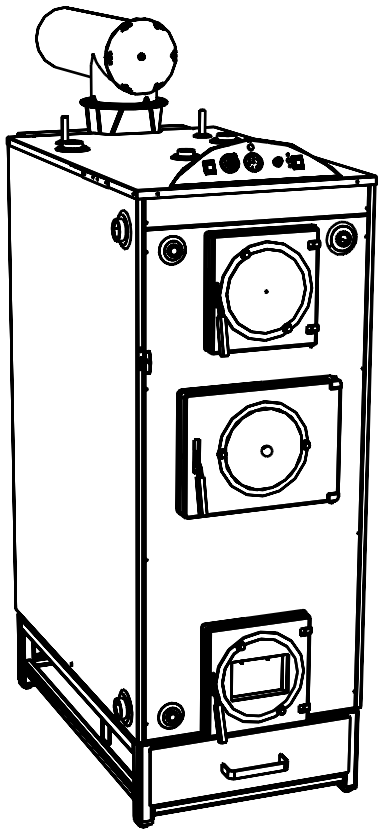
THL no.: 170823

Installation and maintenance

Vedolux 55



VÄRMEBARONEN

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Component specification 20

To be completed when the Vedolux 55 is installed

Serial number: .....

Installation date: .....

Plumber: .....

Phone: .....

Electrician: .....

Phone: .....

Other: .....

.....

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Checklist

To be completed by installation engineer:

- ☐ **Boiler installed according to these instructions.**
- ☐ **Chimney tested for leaks and approved for wood firing, and meets the requirements of the boiler.**
- ☐ **Installed so that the fan and boiler can be easily cleaned.**
- ☐ **Flue pipe is connected to the chimney so that there are no gas and dust leaks.**
- ☐ **Thermal valve (STW) has been fitted.**
- ☐ **Expansion tank volume correctly dimensioned. Pay attention to prepressurisation in a closed tank.**
- ☐ **System has been filled with water, vented and checked for leaks. Pay attention to system pressure.**
- ☐ **Safety valve has been tested and its drainage pipe has been laid to a drain.**
- ☐ **Boiler connected to mains power.**
- ☐ **User has been informed about how the system is operated and how it works.**

Congratulations on making a good choice!

Wood boiler with inverted combustion and suction fan for large properties

This manual describes the installation and operation of the Vedolux 55. This heater meets the 2020 U.S. Environmental Protection Agency's cord wood emission limits for wood heaters sold after May 15, 2020. Under specific test conditions, the heater has been shown to deliver heat rates as specified in the technical data in this manual.

Vedolux 55

- is a wood-fired boiler with a suction fan, designed for heating properties.
- must be fired in combination with an accumulator.
- has environmental approval.
- is designed for half-metre wood.
- is designed for connection to an external water heater suitably located in the accumulator.
- has an output of 180 - 195 kBTU/h.
- has an output with pellets of up to 171 kBTU/h.

Ceramic combustion chamber

The combustion chamber is designed for inverted combustion.
The depth of the combustion chamber is 22.6 in.

How it works

Vedolux 55 uses so-called inverted combustion.
The suction flue gas fan causes the flames to move downwards through the grate. The gases remaining are combusted in the ceramics.

The hot flue gases then continue through the boiler's flues, where the heat is absorbed, and then up through the chimney.

Sweeping

All flues in the boiler are swept from the same hatch on the front of the boiler. As the flues are round, it is not possible to miss any inaccessible corners when sweeping.

Chimney

Vedolux 55 has a suction fan which means that the boiler has minimal requirements for the chimney conditions.

Accumulator tank

To achieve the best combustion and efficiency, and to meet the environmental requirements for wood firing, the boiler must be fired in combination with an accumulator tank.

Included in the delivery

- Sweeping tool
- Mains power cable
- Turbulators
- LPG ignition
- Flue pipe to rear/ upwards

Accessories

- Accumulator control 3 art. no.: 2912
- Draught hatch art. no.: 2961

Safety and handling

Read these instructions carefully before installation and ignition.
Keep the instructions close to the boiler.

- **Correct installation in combination with correct adjustment and continuous service will produce high operational reliability and good heating economy.**
- **Contact a chimney sweep before changing fuel type.**
- **Contact the public authorities regarding restrictions on burning solid fuel in a densely built-up area.**
- **Only authorised persons may work on the boiler.**
- **Switch off the operating switch before any service/repair**
- **Never carry out maintenance work/service on pressure-bearing parts when they are pressurised.**
- **The boiler must not be modified, changed or converted in any way.**
- **The boiler may not be used by children or people with disabilities. Nor by children/ people who lack knowledge about the boiler. Children may not play with the boiler and connect accessories.**
- **Never place any combustible material on the boiler or flue pipe.**
- **Be careful if you need to open the boiler's hatches during operation. If the hatch is opened too fast, flames may shoot out.**
- **Always contact your installation engineer for service.**
- **The type and serial number of the boiler must always be specified when contacting Värmebaronen. See the boiler's rating plate.**
- **Värmebaronen AB reserves the right to change the specification, in accordance with its policy of continuous improvement and development, without prior notice.**

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

Information that is important for optimum operation.

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

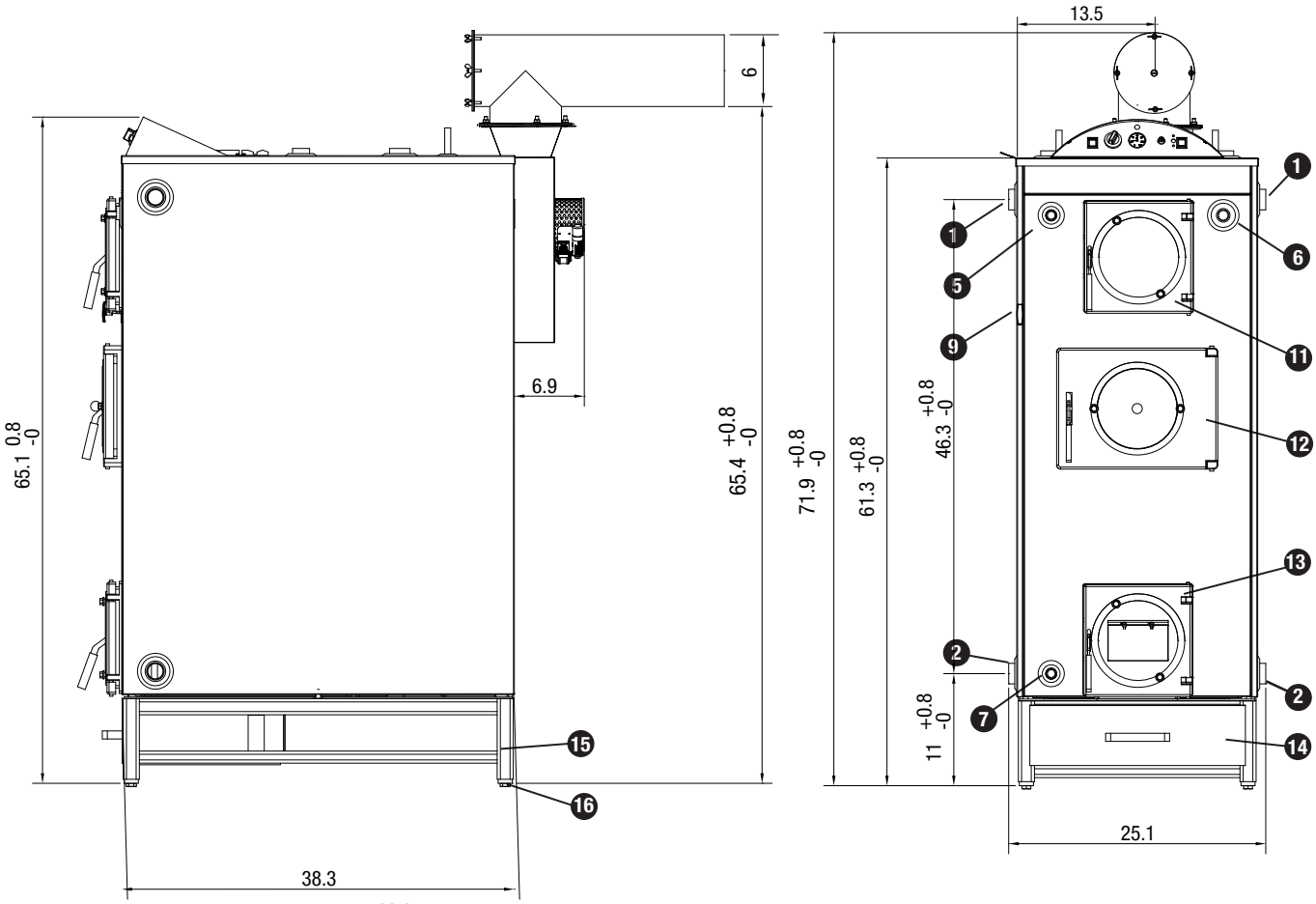
Tells you what you should or should not do to avoid a component, the boiler, a process or the environment from being damaged or destroyed.

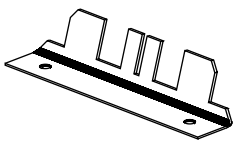
- **Subject to amendments and printing and proofreading errors**

This wood heater has a manufacturer-set minimum low burn rate that must not be altered. It is against federal regulations to alter this setting or otherwise operate this wood heater in a manner inconsistent with operating instructions in this manual.

Warranty; please contact your local dealer, you find the contact information and warranty details in the warranty manual.

Dimensions





Bracket for sweeping tool

Use the delivered NPT adapters for these connections.
The adapters builds 2.2”.

1. Hot water outlet, riser, left/right 1¼” int.
2. Hot water, return, left/right 1¼” int.
3. Expansion/safety pipe 1¼” int.
4. Lifting sleeve 1” int.
5. Sleeve 0.6” int.
6. Sleeve 0.6 int.
7. Sleeve 0.6” int./ drain valve
8. Cooling coil Cu Ø 0.6 in.
9. Bypass damper control
11. Sweeping hatch
12. Wood filling hatch with cap for pellet burner outlet
13. Ash hatch with draught hatch
14. Ash drawer
15. Leg frame
16. Adjustable foot bolts

The hatches are supplied right-hung but can be reversed so they are left-hung. A plate needs to be changed on the hatch to reverse the hanging.

Minimum 11 in. between rear of boiler and wall!

Technical data

Weight	empty	1049	lb
	full of water	1592	lb
Water volume		65	gal
Fuel		wood	
	length	19.7	in
	moisture content	16 ±8	%
Wood store	volume	39.6	gal
	depth:	22.6	in
Filling hatch	w x h	11 x 9	in
Burning time	full wood store	2-3	h
Power	nominal	170	kBTU/h
Pressure	design	21.8	Psi
	test	31.2	Psi
Temperature	max.	230	°F
Chimney requirements:	Straight steel chimney with ∅3.9 in., recommended height 0 - 98.4 in.		
	Straight steel chimney with ∅4.9 in., recommended height 0 - 275.6 in.		
	Straight steel chimney with ∅6.3 in., recommended height 0 - ∞.		
Flue gas temperature	nominal output	310	°F
Flue gas flow rate		0.11	lb/s
Operation, natural ventilation/fan		with flue gas fan	
Condensing/non-condensing		non-condensing	
Positive/negative pressure at flue gas outlet		negative pressure	
Pressure drop, water side	q = 820 gal/h, Δt = 50°F	0.15	Psi
		4.22	inH_2O
	q = 423 gal/h, Δt = 68°F	0.03	Psi
		0.76	inH_2O
Return temperature	min.	≥120	°F
Temperature setting		200	°F
Accumulator volume	min.	581	gal
Cooling coil, incoming cold water	connection pressure	≥29	Psi
	temperature	<59	°F
Boiler class in accordance with EN 303-5		Class 3	
Voltage		115 V~ +10/-15%, 60 Hz	
Current consumption	max.	0.46	A
Power consumption	operation, max.	50	W
(without any additional appliances connected)	standby	0	W
IP class		IPx1	

Ambient temperature	during operation	0 - 86	°F
Noise level during operation		50	dB
Manufactured to		PED 97/23/EC article 3.3	

Tested according to method 28 WHH PTS

Effenciency

The efficiency test is performed with the boiler connected to a partial storage, due to that the boiler can be operated at nominal output even when the heat demand is low. The efficiency for the combustion will be the same even if the heat demand is high or low.

The heat demand may affect the efficiency for the complete installation by the heat losses, the heat losses will be the same regardless the heat demand; but will be a greater part compared with the used heat if the heat demand is low.

The location of the boiler and storage tank will affect the heat losses and thereby the efficiency, if the installation is located in a heated area the heat losses will be smaller and if the heat losses can be used to heat a living area the efficiency will increase. If the installation are located in a cold building the heat losses will be both greater and there will not be any use for the heat losses.

The efficiency can be calculated from higher (HHV) or lower heat value (LHV). An efficiency calculated from LHV will give a higher result in percent compared with a calculation from the HHV. The efficiency for Vedolux is calculated from the HHV.

The highest efficiency for the boiler will be found when it is operated at nominal output, all attempts to increase or reduce the output from the boiler risk to affect the efficiency in a negative way. The output from the system shall be controlled by the output from the accumulator.

During start up and end phase the content of CO in the flue gas can be significant, but when the combustion temperature is high and the combustion is normal there will only be a small content of CO in the smoke, less CO if the fuel are well seasoned but it can be a quite high content if the fuel are damp. CO is invisible, odorless gas. CO are toxic and can be deadly. Pay attention to leakage from the boiler or flu gas duct. Smoke monitors are recommended to detect leakage.

CO, average in dilution tunnel:

Boiler	Cat I >15% load	Cat IV 100% load	Unit
Vedolux 55	0.19	0.042	g/min

Natural wood only.

This heater is designed to burn natural wood only. Higher efficiencies and lower emissions generally result when burning air dried seasoned hardwoods, as compared to softwoods or to green or freshly cut hardwoods.

DO NOT BURN:

(1) Garbage;

(2) Lawn clippings or yard waste;

(3) Materials containing rubber, including tires;

(4) Materials containing plastic;

(5) Waste petroleum products, paints or paint thinners, or asphalt products;

(6) Materials containing asbestos;

(7) Construction or demolition debris;

(8) Railroad ties or pressure-treated wood;

(9) Manure or animal remains;

(10) Salt water driftwood or other previously salt water saturated materials;

(11) Unseasoned wood; or

(12) Paper products, cardboard, plywood, or particleboard. The prohibition against burning these materials does not prohibit the use of fire starters made from paper, cardboard, saw dust, wax and similar substances for the purpose of starting a fire in an affected wood heater. Burning these materials may result in release of toxic fumes or render the heater ineffective and cause smoke.

Installation

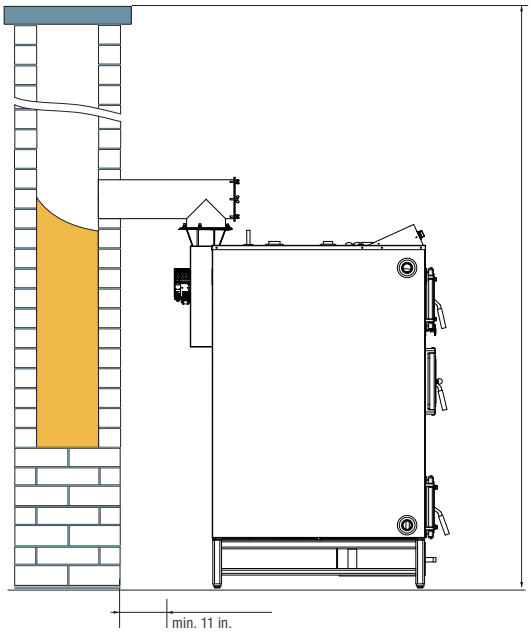
Installation must take place according to existing regulations and standards.

- The boiler must be placed indoors in a boiler room designed to meet the existing standard.
- The installation site must withstand the weight of the boiler, the accumulator tank and any chimney.
  The boiler may be loaded with maximum 220 lb of the chimney's weight vertically downwards.
- There must be a fresh air intake. Any mechanical ventilation in the room must not create any negative pressure that disturbs the operation of the boiler. The boiler room's fresh air intake must have an area at least as large as that of the chimney and it must be designed so that it cannot be closed by mistake.
- The existing standards for minimum distance to combustible material must be met.
  The minimum distance for removing the flue gas fan = minimum 11 in free space behind the flue gas fan.
  Ensure that the provisions for sweeping meet the existing regulations.
- Adjust the foot bolts so that the boiler is horizontal.
- The flue pipe must be connected according to existing standards.
  It is important for all connection points and flues not to leak dust and gas.
  If the boiler is connected higher up the chimney than a previous boiler was connected, the lower, inactive part must be filled.
- The boiler must be connected to an open or closed expansion system.
- The boiler must be connected to an accumulator system. The boiler shall be operated at nominal output and charge the accumulator. Output from the accumulator can be adjusted to correspond the heat demand. The installation must have accumulator control.
- A temperature limiter, thermal valve (STW), must be fitted.
- No work must take place on the boiler's cover plates as it can damage the boiler's electrical equipment.
- The boiler is not designed for oxygenated water. Hard, calcareous water is not suitable in a plumbing and heating context.
  If you have your own well, the water quality must be checked so that it does not cause damage. Copper in the pipes must not be subjected to abnormally aggressive water.
  A water analysis will give you the necessary information. If the water quality is poor, a water filter must be installed.
- The turbulators and the draught damper can be used to adjust the flue gas temperature if there is a risk of condensation in the chimney.
- A chimney-sweep must be contacted before a different type of fuel is used.
- Contact the local authority regarding restrictions on burning solid fuel in a densely built-up area.

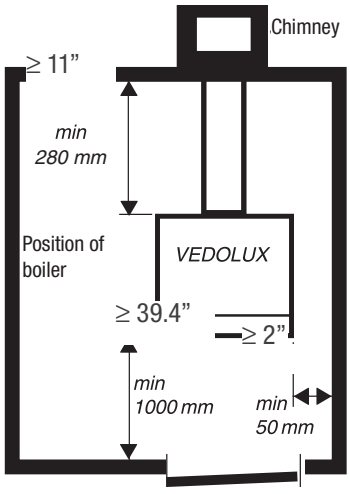
Installation must take place according to existing regulations and standards.

Chimney

Vedolux 55 has a suction fan and the chimney requirements are therefore low. If the boiler is connected higher up the chimney than a previous boiler was connected, the lower, inactive part must be filled. The smoke from the chimney shall (except for the start-up phase) be white or invisible during the combustion, if the smoke is dark or yellow it is an indication that the combustion is poor or that the fuel is improper for the boiler.



Minimum 11 in. between rear of boiler and wall!



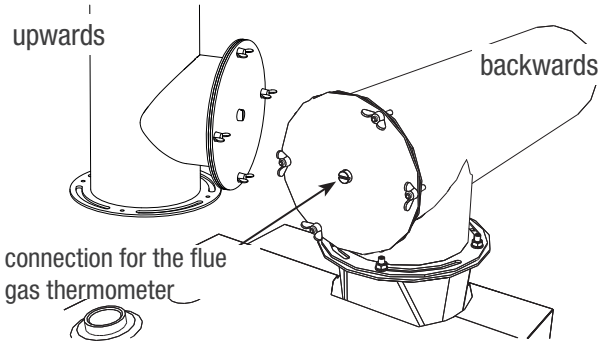
The boiler is tested with a 7.1 in. diameter chimney with a vertical connection. All deviations from this installation entail a risk of the resistance in the chimney being higher. A higher resistance in the chimney means that the fan is unable to convey flue gases out in the same way and the boiler may have lower output.

A chimney with a large diameter produces better flue gas evacuation the taller it is as the natural draught helps. A chimney with a small diameter will have poorer flue gas evacuation if it is tall as the flue gas will have a long way to travel through a narrow pipe and the natural draught will not be enough to compensate for the long distance.

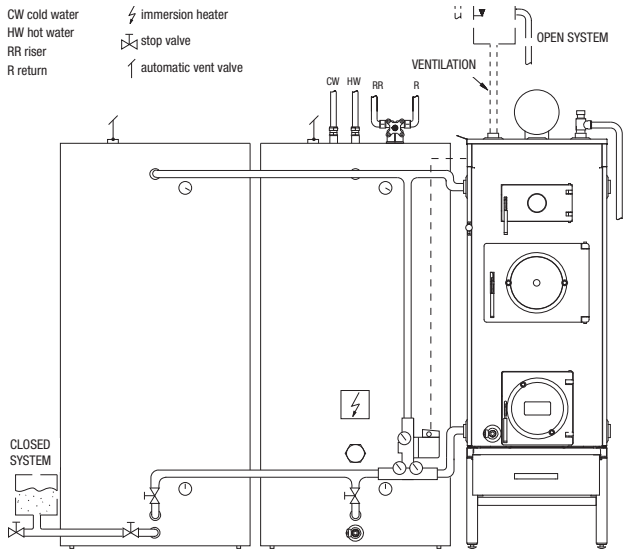
For the boiler to deliver the promised output, the chimney should not have an area that is too small or be too long. You should also bear in mind that other factors such as chimney hoods, angles, insulation, whether the inside is smooth or rough, etc. also affect the resistance in the chimney.

Flue pipe

The rotatable smoke pipe is attached with four bolts to the boiler smoke pipe. The flue pipe can be mounted for connection upwards or backwards to the chimney. The adjustment makes with the placement of the front plate. Do not forget the gasket between the boiler and the smoke pipe as well as the smoke pipe and the front plate.



System in principle



This is a system in principle. The actual system must be installed according to existing standards and the instructions that accompany each component.

The principle diagram shows the Vedolux with Aqualux and Aqualux UB accumulator tanks and Ackstyrning 3 accumulator control. The documentation supplied with each product contains more information. Follow the installation instructions provided.

How the accumulator control works

The accumulator control ensures that the boiler has a high working temperature before it is loaded by the accumulator tank. It also prevents the return temperature to the boiler being too low, which minimises the risk of condensation in the combustion chamber. The charging pump is controlled by the boiler's flue gas thermostat.

Expansion system

The boiler is connected to an open or closed expansion system. The volume of the expansion tank is dimensioned according to the prevailing conditions. The recommended values for this are that the volume, for an open system, must be approximately 5% of the system's total volume or 13-15% for a closed system.

In an open system, the distance between the top of the highest radiator and the expansion tank may not be less than 98.4 in to avoid the water in the heating system being oxygenated.
The expansion tank is connected in an unisolatable, uninterruptible rise from the boiler's expansion connection.

To avoid damage in the event of any blockage in the expansion system, the boiler should be fitted with a safety valve, 21.7 psi.

In a closed system, the boiler must be fitted with a safety valve, 21.7 psi, in an uninterruptible connection from the connection on the top of the boiler, and a vent valve. The expansion tank is best connected with 0.6 in. Cu pipe, as shown in the system in principle.

Cooling coil - thermal relay

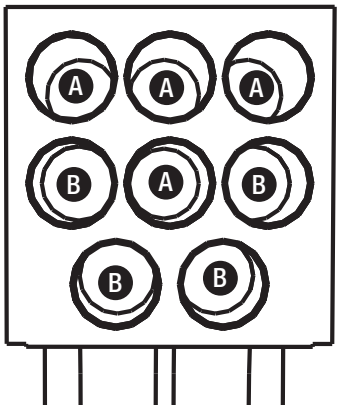
The boiler's cooling coil must be fitted with a suitable thermal valve to reduce the boiler temperature in the event of boiling. Follow the valve manufacturer's installation instructions.

Filling, heating system

The boiler is fitted with valves for filling and draining.

Turbulators

If the turbulators are incorrectly positioned, efficiency is reduced. The service life of the turbulators is also reduced.



A = Short turbulators
B = Long turbulators

The eight turbulators are positioned in the boiler's flue gas tubes as shown above. The turbulators make the flue gases turbulate, which causes more heat to be transferred to the boiler water.

If the flue gas temperature from the boiler is too low, there is a risk of condensation in the flue. To increase the temperature, the three upper turbulators can be removed or cut to a length that produces a suitable flue gas temperature.

Bracket for sweeping tool

The bracket is installed on any side of the boiler or in another suitable location near the boiler.

Draught hatch

An extremely high chimney and/or a strong wind may, in certain cases, cause such a high draught in the chimney that combustion takes place with the fan switched off. The solution is to install a draught hatch with which the draught can be reduced to 10-15 Pa.

Pellet burner

Vedolux 55 is primarily designed for wood firing, but can be adapted for use with a pellet burner. The burner is installed in the wood filling hatch.

If operated with a burner, the accessory for pellet firing, a cover plate with a draught hatch, must be used instead of the fan.

Pay attention to the flue gas temperature. There is a risk of condensation. Check that the flue gas temperature is suitable for the chimney type.

The boiler temperature must not be lower than 158°F.

You should also follow the burner manufacturer's instructions.

Electrical connection

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

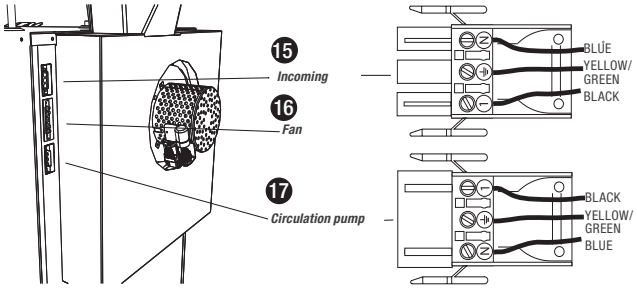
If the boiler is connected to an emergency power unit, this must produce a pure sine wave. Otherwise, the boiler's electrical components may be damaged.

The boiler is connected to the fixed installation with rubber cable via an all-pole main breaker with at least 0.12 in breaking distance.
The electrical connections are on the rear of the boiler in the form of three quick connectors:

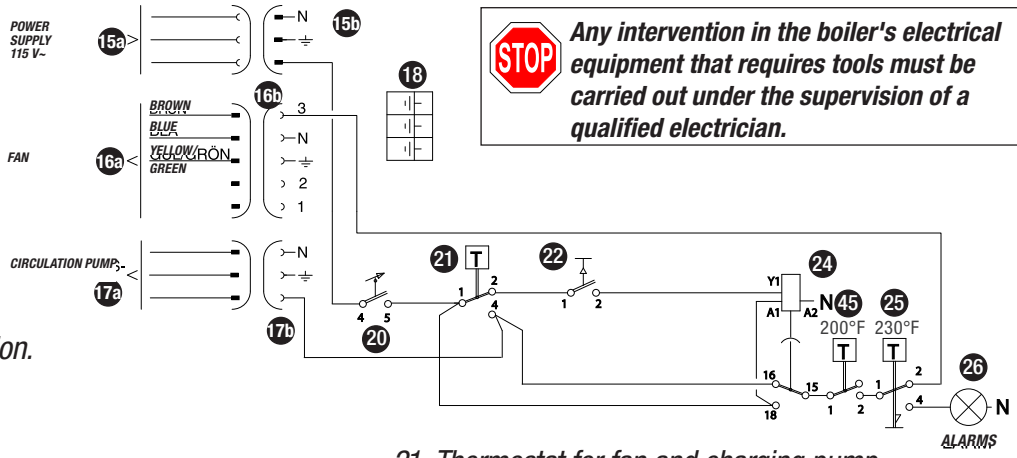
15. Mains connection, 115 V~, cable is supplied.

16. Fan.

17. Charging pump for the accumulator system.



Any intervention in the boiler's electrical equipment that requires tools must be carried out under the supervision of a qualified electrician.



15. Power supply connection.
a. cable part, sleeve.
b. chassis part, pin.

16. Fan connection.
a. cable part, pin.
b. chassis, sleeve.

17. Connection for charging pump for accumulator system.
a. cable part, pin.
b. chassis, sleeve.

18. Terminal block, internal earth connections.

20. Main power switch.

21. Thermostat for fan and charging pump.

22. Fan start when the boiler is cold.

24. Time relay, power off delay.

25. Overheating protection.

26. Indication, overheating protection triggered.

45. Operating thermostat 200°F.

Operation

Starting the boiler from cold:

- Switch the main switch on. The green field must be visible.
- 'FAN STOP' thermostat set to 248°F. The thermostat detects the flue gas temperature.
- Press in 'FAN START'. The time relay operates and the fan starts.

When the set time of the time relay, 30 minutes, has elapsed, its contact switches and the charging pump for the accumulator system will be controlled by the thermostat.

When the wood has been burned up and the flue gas temperature has fallen below the set temperature, the fan and the charging pump will stop.

If the boiler temperature exceeds 212-220°F, the overheating protection will be triggered. The fan stops and the charging pump remains in operation.

'ALARM' lights up to indicate that the overheating protection has been triggered. The overheating protection is reset by pressing 'RESET' on the control panel. It is not possible to reset the system until the boiler temperature has fallen below 200°F. An operating thermostat limits the boiler's maximum working temperature.

Check

The installation engineer checks that:

- the system is full of water.
- all pipe connections are leakproof.
- the flue pipe connection to the boiler and chimney is leakproof.
- the filling/drain valve is properly closed.
- the safety valves work correctly.
- necessary valves are open.
- the circulation pump is working with the correct flow direction.
- the correct temperature is set on the charging thermostat.

After installation, check with the installation engineer that the system is in perfect condition.

Ask the installation engineer to demonstrate the control and functions so that you know how the system works and must be maintained.

Wood firing

Vedolux 55 has a ceramic grate and secondary combustion chamber. The boiler works according to the principle of inverted combustion. Used correctly, the boiler produces very good combustion of wood and gases and therefore has high efficiency and a low environmental impact.

Wood firing involves more than just lighting the wood. The firing technique is essential to the result.

Wood

Hardwood generally has a higher energy content than softwood. However, it is important for the wood to be dry with a moisture content of 16±8%.

If the wood is damp, a large part of its energy is used to dry it, combustion is impaired and the risk of tar coating increases.

On account of its high acid content, firing with oak for extended periods of time should be avoided. Oak should be stored for at least three years before firing.

The pieces of wood must be adapted to the combustion chamber. The length should be approximately 20 in. and the thickness approximately 6 in. so that three pieces have room on the width of the grate.

To allow the wood time to dry, it should be felled at least one firing season in advance. An alternative is sour felling, which involves the tree being felled in the spring when the leaves have just come out. Wait a few weeks to trim and split the wood. The leaves will have withered and withdrawn moisture. After drying for another few weeks, the wood has 25-30% moisture content.

After cutting, the wood must be split. The more it is split, the faster and more easily it dries. For pieces of wood that are hard to split, the bark can be peeled off to allow them to dry faster. Fresh wood is easiest to split.

The wood must not lie directly on the ground as it will then absorb moisture instead of drying. It should preferably be stored under a roof but so that the sun and wind are able to dry it. Finally, it should be dried in the boiler room two to three weeks before it is used. After this, the moisture content is down to approximately 20%.

This heater is designed to burn natural wood only. Higher efficiencies and lower emissions generally result when burning air dried seasoned hardwoods, as compared to softwoods or to green or freshly cut hardwoods.

DO NOT BURN:

(1) Garbage;

(2) Lawn clippings or yard waste;

(3) Materials containing rubber, including tires;

(4) Materials containing plastic;

(5) Waste petroleum products, paints or paint thinners, or asphalt products;

(6) Materials containing asbestos;

(7) Construction or demolition debris;

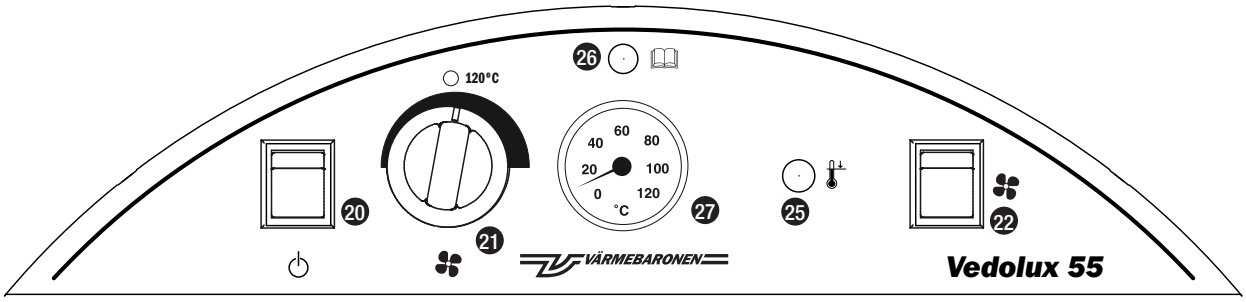
(8) Railroad ties or pressure-treated wood;

(9) Manure or animal remains;

(10) Salt water driftwood or other previously salt water saturated materials;

(11) Unseasoned wood; or

(12) Paper products, cardboard, plywood, or particleboard. The prohibition against burning these materials does not prohibit the use of fire starters made from paper, cardboard, saw dust, wax and similar substances for the purpose of starting a fire in an affected wood heater. Burning these materials may result in release of toxic fumes or render the heater ineffective and cause smoke.



20. Main power switch.

21. Thermostat for fan and charging pump.

22. Starting the fan when the boiler is cold.

25. Overheating protection.

26. Indication, overheating protection triggered.

27. Thermometer, shows boiler temperature.

28. Pressure gauge, displays the pressure in the heating system.

Start

1. The bypass damper must be closed.
2. Insert finely chopped wood and possibly paper in the boiler.
3. Switch the main switch on (green field must be visible).
4. Set the 'FAN STOP' thermostat to 248°F (120°C).
5. Press in 'FAN START'; the fan starts.
6. Light the boiler, preferably with an LPG burner.

First firing

When the boiler is fired for the first time, the firing should be started carefully so that the remaining moisture in the ceramics can evaporate slowly. Excessive firing may cause cracks in the ceramics. Fire with just a small fire the first time. When the ceramics have dried, the boiler can be fired with proper fires. The ceramics do not absorb moisture while the boiler is in use.

Firing - starting

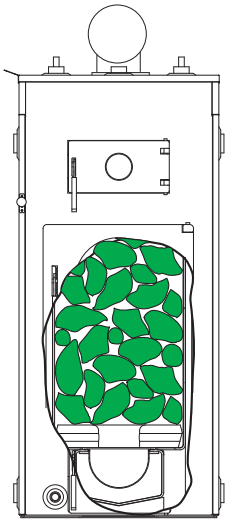
- Insert finely chopped wood and then crumpled newspaper.
- Press 'FAN START'. The fan will start. Light the paper. Leave the wood filling hatch ajar.
- Wait a while before you shut the wood filling hatch. The wood must have been properly ignited (flue gas temperature approximately 248°F (120°C)). Let it burn until a strong bed of embers has been formed.

Firing - starting with an LPG burner

- Insert finely chopped wood. On top of this place a layer of medium-sized pieces of wood. Fill the rest of the combustion chamber with large pieces.
- Close the wood filling hatch.
- Light the LPG burner and insert the nozzle in the upper hole in the inner ash hatch. Move the flame from side to side. After approximately one minute, the wood should have been ignited.

Adding wood

To avoid smoke entering the boiler room and the risk of flames emerging, the bypass damper must be opened before the wood filling hatch.



Level out the bed of embers. Add wood, stacking well. The quantity must be adapted to the temperature in the accumulator so that the temperature does not become too high. Filling the chamber with wood increases the temperature in the boiler and a 660 gal. accumulator by approximately 104°F.

Close the wood filling hatch and then the bypass damper.

When the wood has burned up and the flue gas temperature has fallen to approximately 212°F, the fan and the charging pump for the accumulator stop.



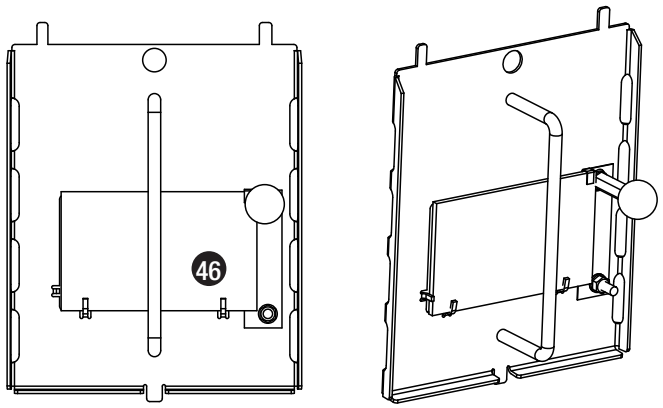
RISK OF BURN INJURIES!
Do not open the boiler's hatches if the fan is idle and you suspect there may be fire in the boiler.

Bypass damper

The boiler's bypass damper is used to prevent smoke entering the boiler room when wood is added during a firing phase.

When the bypass damper is open, the boiler functions as a supercombustion boiler and has shorter flue gas paths. This increases the flue gas temperature and reduces the efficiency.

Don't forget to close the damper after adding wood.



46. Secondary air damper.

Combustion control

All air is supplied to the boiler via the draught hatch in the ash hatch. The combustion is controlled by the draught that the fan creates and by the oxygen supply via the primary and secondary air that is supplied via the inner ash hatch.

To optimise combustion and efficiency, the flue gas temperature should be approximately 300°F.

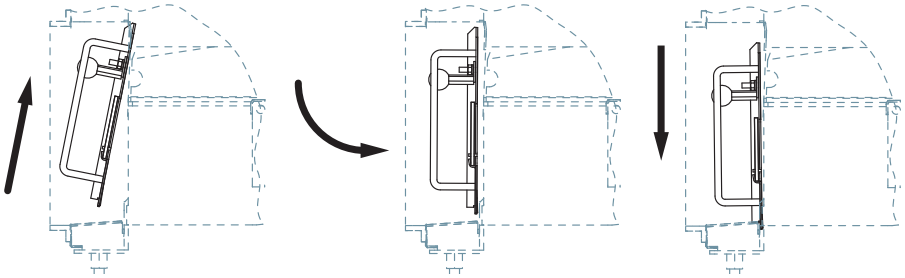
The secondary air, 46, is adjusted so that the flame is light yellow.

The soot reflects the quality of the combustion. If it is very dark, black, the combustion has too little air. The damper should then be opened more. If the combustion is good, the soot is greyish brown. When firing with wood with 18% moisture content, the opening must be approximately 0.16 in. The smoke from the chimney shall (except for the start-up phase) be white or invisible during the combustion, if the smoke is dark or yellow it is an indication that the combustion is poor or that the fuel is improper for the boiler.

Inner ash hatch

The figures below show the insertion of the inner ash hatch. It is removed in reverse order. It is very important for the inner ash hatch to be correctly positioned after sweeping.

Ensure that the inner ash hatch is correctly positioned.

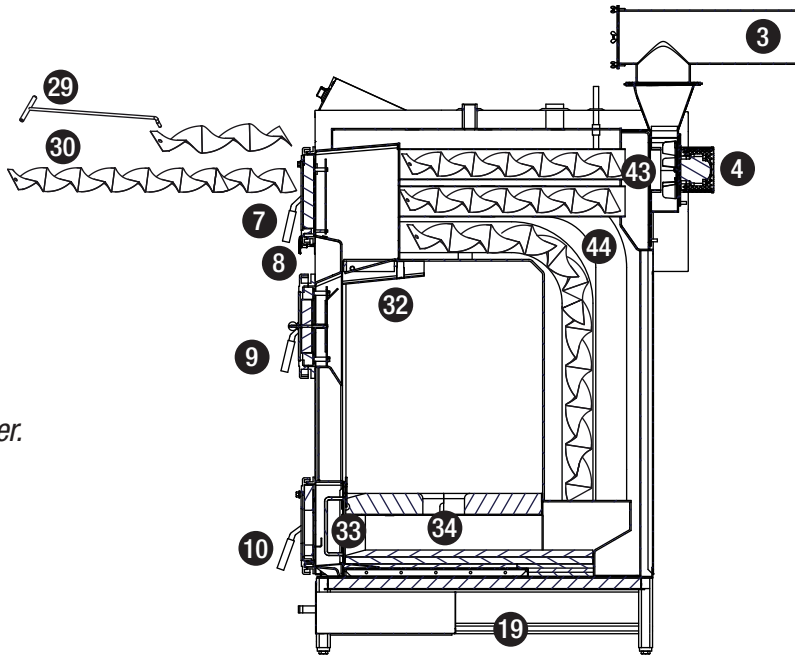


Push up *Angle in* *Push down. The pin on the bottom of the hatch must enter the hole in the scraper plate.*

When sweeping, no fire or residual embers may be left on the grate.
Switch off the power to the boiler sweeping begins.

The ash may contain residual embers for a long time after firing. Therefore, keep it in a non-combustible container with a lid.

3. Flue pipe.
4. Fan motor.
7. Soot hatch.
8. Bypass damper control.
9. Wood filling hatch.
10. Ash hatch.
19. Leg frame with ash drawer.
29. Tool for turbulators.
30. Turbulators, please note the position.
32. Plate at the front top of the combustion chamber.
33. Inner ash hatch with secondary air damper.
34. Ceramic grate, two parts, front and rear.
43. Protective grille for fan.
44. Collection chamber.



Sweeping

In a well-swept boiler, less heat accompanies the flue gases out. A flue gas thermometer gives an indication of when it is time to sweep. Sweeping is a good idea when the temperature has risen by approximately 77°F compared to a well-swept boiler.

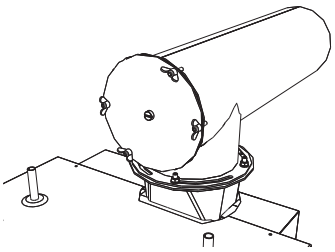
All boiler sweeping takes place from its front.

The ash should be raked out of the ceramic tunnel before each firing. Tar coating in the combustion chamber is not normally a problem with correct firing with an accumulator tank.

- Open the soot hatch.
- Pull out the turbulators with the turbulator tool.
  Sweep the flues with the flue brush.
  Be careful when sweeping the upper flues so that the flue brush does not pass through the protective grille and damage the fan. The flue brush must not be inserted further than to the end of the flue. You can tell when it has reached the end because less force is required to move it.
  Refit the turbulators.
- Open the wood filling hatch and bypass damper.
  Rake out the ash on the plate in the top front of the combustion chamber.
  There should always be a small quantity of ash on the ceramic grate to increase the service life of the grate.
- Open the ash hatch and remove the inner ash hatch.
  Rake the ash out of the ceramic tunnel. Leave a layer of a few centimetres. Clean the chamber around the flame bowl. Close all hatches and dampers.

Sweeping the chimney

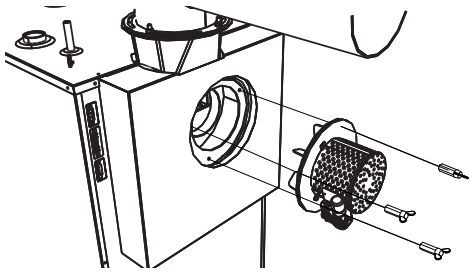
After sweeping the chimney, remove the wing nuts on the front of the flue pipe and remove the cover. Remove soot and ash. Remove any ash that has fallen down on the fan and in the collection chamber before the boiler is started again.



Cleaning the fan

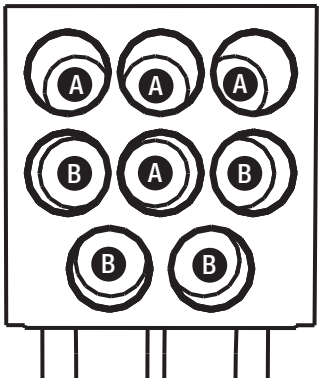
When required, remove the fan and clean it. Handle the fan with care.

- Disconnect the fan's connector from the outlet on the boiler.
- Remove the long nuts that hold the fan in place.
- Clean the fan blades carefully, preferably with a brush.
- Refit the fan and connect the power cable.

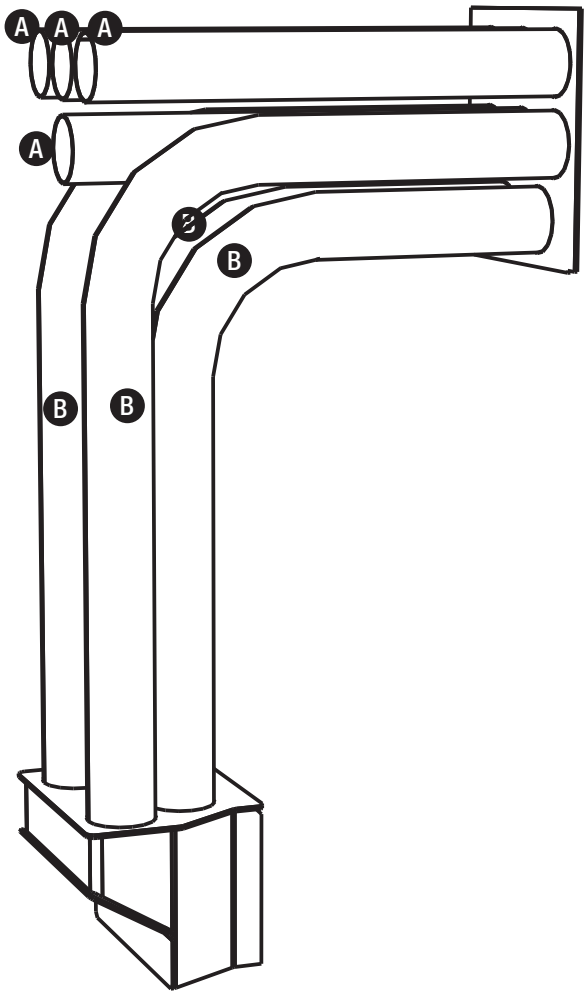


Tubular pipes and position of turbulators

It is very important for the turbulators to be positioned in the correct manner in the flues. If they are positioned incorrectly, their service life is shortened and the boiler's efficiency is lower.



A = Short turbulators
B = Long turbulators



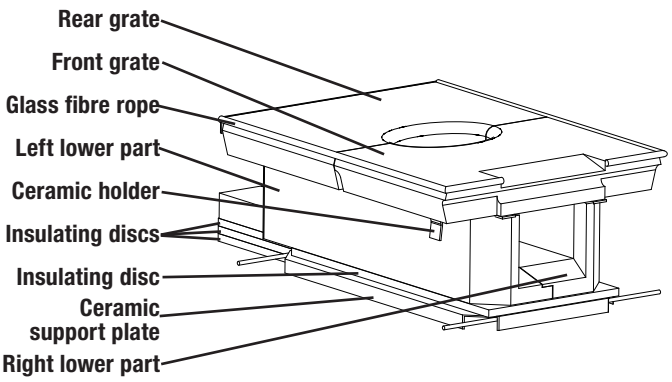
If the turbulators are incorrectly positioned, efficiency is reduced.
The service life of the turbulators is also reduced.

The boiler's ceramics

The boiler's ceramic parts are wearing parts that need replacement as required. Wearing parts are not covered by any warranty. Small cracks in the ceramics are not unusual and require no action.

To increase the service life of the ceramics:

- Do not remove the ceramics when cleaning the boiler's combustion chamber.
- Scrape the ceramics softly and carefully when removing ash from the boiler.
- Let a layer of ash of a few centimetres form a protective layer on the grate.
- Fire only with real wood, not plastic, processed timber, refuse or similar.
- **The wood must be inserted in the boiler, not thrown.**



Firing problems

The most common problems associated with wood firing usually result in the boiler not achieving a sufficiently high temperatures. The boiler doesn't really get going. It is also common for the heat not to be transferred to the accumulator tanks although the boiler is burning well.

Boiler burns poorly	Damp wood.	A ceramic boiler requires a high combustion temperature. To achieve this, the wood must be dry with a moisture content of 8-24%.
	Incorrect handling.	Read the manual.
	The wood is not adapted to the boiler.	Its length should be 20 in. Its thickness should be such that three pieces of wood have room on the width of the grate.
	Shaped wood, studs.	If evenly shaped pieces of wood are stacked on top of each other, they form a solid lump of wood with little surface for the fire to gain a hold on. Insert the wood so that there is air between the pieces.
	The wood gets stuck.	This occurs when the wood is bent and not adapted to the combustion chamber. Adapt the wood to the boiler.
	Insufficient supply air.	The supply air duct for the boiler room must have at least the same area as the flue. Check that the supply air valve is open.
	Secondary air damper open too far.	If the damper is open too far, the distribution between primary and secondary air is incorrect. Start by having the secondary air damper completely closed. It normally never needs to be open more than a few millimetres (the glass).
	The chimney duct continues downwards from the connection to the boiler.	The turbulence formed takes away part of the draught. Fill the underlying part with sand or similar.
	No accumulator control.	A ceramic boiler burns best when the ceramics have become warm. Therefore, it is necessary to increase the temperature in the boiler fast before it is loaded. Add a controller.
	Ceramics incorrectly inserted.	On a new boiler, check that the ceramics have not been displaced during transportation. There is no reason to remove the ceramics, not even for cleaning. However, if they are removed, they must be replaced correctly. Pay attention to the seal with the combustion chamber wall.

High flue gas temperature.	Tar and soot in the tubes.	Caused by incorrect combustion. Check the wood, the draught, the supply air and the operation. Sweep the boiler.
	Bypass damper open.	Close the damper. The bypass damper must only be open when wood is being added.
	Flue gas thermometer broken.	The thermometer may have been damaged during sweeping or by long-term supercombustion.

Tar and and a lot of soot in the tubes.	Incorrect combustion.	See the item about high flue gas temperature.
	Incorrect connection.	Check.
Heat is not transferred from the boiler to the accumulator.	Circulation pump too small.	The pump must have sufficient capacity so that it can transfer the heat. Replace with a bigger pump.
	Air.	Our suggested connection is not air-sensitive. Vent.
	Incorrect accumulator connection.	See points above.

Boiling sound in the boiler.	Low pressure head.	Check the pressure, should be > 14.5 psi. The expansion tank must be adapted to the volume and the temperature variations that occur.

Fan does not start	Switches in position 0.	Switch the switches to position I.
	Forgot to connect the quick connector.	Connect the quick connector.
	Overheating protection triggered.	Reset the overheating protection.

Safety valve opens when the temperature of the system increases.	Expansion tank too small.	See the 'Expansion system' section.
	Prepressurisation in the expansion tank too high/low.	Check the pressure in the tank. See 'Expansion system'.

Component list

Component	*Description*	*pcs.*
80828	Ceramic holder	1
83537	Shaft, bypass damper	1
90457	Base plate for ash hatch	1
90458	Ceramic support plate	1
90494	Inner ash hatch, complete	1
120006	Thermostat	1
120009	Thermostat knob	1
120022	Overheating protection	1
120053	Flue gas thermostat	1
130031	Power switch, springback	1
130032	Power switch	1
170022	Time relay	1
190006	Lamp, red	1
230075	Damper alarm, bypass damper	1
230076	Damper alarm lock	1
232254	Turbulator, 608 mm / 23.9 in.	4
232256	Turbulator, 1230 mm / 48.4 in.	4
240010	NPT adapter 15 L = 55mm	1
240012	NPT adapter 32 L = 55mm	4
240186	Stopper DN 32	2
240350	Drain valve	1
244025	Bushing G25/20 brass	1
245505	Safety valve, 1,5 bar R20utv/22	1
300007	Glass fibre rope, 15 mm / 0.6 in (m)	1.4
300031	Fibre paper, 3 x 25 mm / 0.12 x 1 in (m)	1
310015	Insulating disc, 250 x 500 x 12 mm / 9.8 x 19.7 x 0.5 in	1
310018	Insulating disc, 204 x 175 x 12 mm / 8 x 6.9 x 0.5 in.	3
310210	Front ceramic grate	1
310211	Rear ceramic grate	1
310212	Left ceramic duct	1
310213	Right ceramic duct	1
320007	Wood filling hatch	1
320017	Soot hatch	1
320020	Draught hatch	1
370060	Handle knob, bakelite	2
370064	T-handle, bypass damper	1
380010	Thermometer 240°F / 120°C	1
380011	Pressure gauge 60 psi / 4 bar	1
380030	Flue gas thermometer	1
440002	Flue brush, 89 mm / 3.5 in.	1
440005	Flue brush, 595 x 80 x 60/30 mm / 23.4 x 3.2 x 2.4/1.2 in	1
440013	Spring steel shaft	1
440153	Electrical intake, triple-pole	1
440154	Panel bracket for triple-pole	2
440159	Plug, triple-pole	1
440166	Power point, 5-pole, for panel	1
440168	Electrical intake, triple-pole	1
440169	Plug, triple-pole	1
40191	Sight glass	1
440225	Power JET, E400, LPG handle	1
500011	Fan, 115V	1
700256	Soot tool bracket	1
700379	Gasket, fan	1
700523	RG PACKNING V50F	1
700531	Gasket, flue pipe flange	2
710014	Spring plate	1
710260	Turbulator tool	1
710669	By-pass damper	1
711396	Ash rake	1
711663	Ignition plate	1
710669	Bypass damper, complete	1
711672	Air duct, combustion chamber roof	1

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