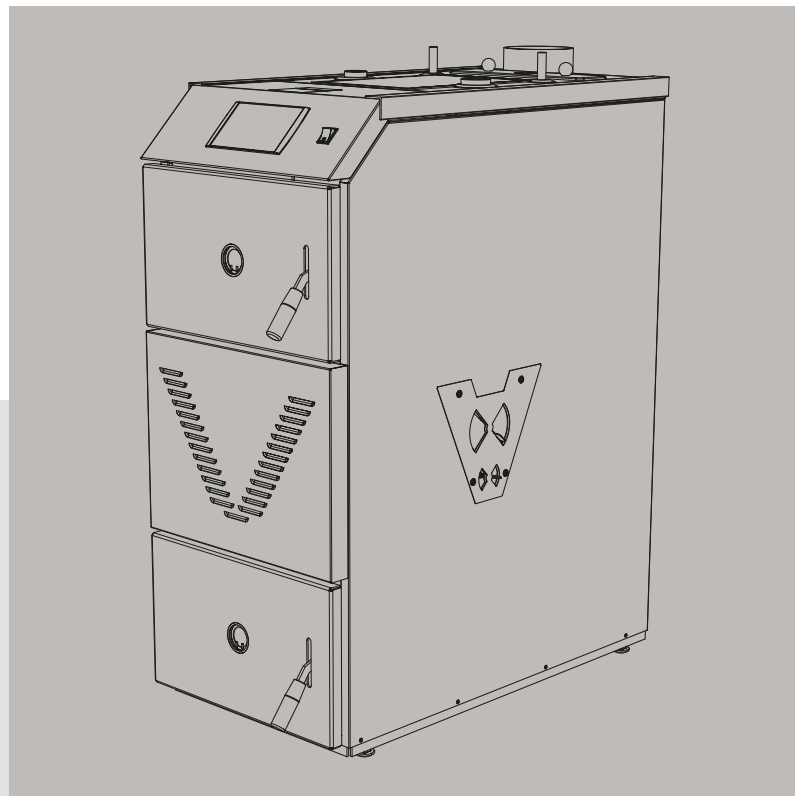


Wood gasifying boiler VEDEX 4000



This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities or lack of experience and knowledge about the appliance, unless they have been given supervision or instruction concerning the use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance. We reserve the right to make design modifications without prior notice.

Content

1 General	4	7 Pipe installation	21
		Connection	21
2 Installation	5	Flue gas thermometer	21
System diagram	5	Filling	21
Area of use	5	Draining	21
Product description	5	Cooling coil	21
Hot water heating	5	Environmentally friendly	21
Abbreviations	5	approved	21
Heating	5		
3 Boiler controller - IGNEO TOUCH	6	8 Connection to buffer tanks	22
Description	6	Abbreviations	22
Menu	7	Docking to two tanks with thermal charge	22
Main Menu	9	control and open expansion tank	22
Maintenance levels	10	Docking to several tanks with thermal charge	22
Boiler	11	control and open expansion tank	22
Burner	12	Docking to two tanks with thermal charge	23
Alarms	13	control and closed expansion vessel	23
Alarm codes	14		
Start-up and firing	15	9 Electrical connection	24
		Connecting (for IGNEO Compact)	24
4 Settings and maintenance	16	10 Service	25
Charge and circulation pump	16	Fan	25
Sweeping	16	Cover plate	25
Sweeping description	16	Troubleshooting	26
General instructions	17		
Primary air control	17	11 Component locations	27
		Component location, boiler section	27
5 Wood firing	18	12 Dimensions	28
Lighting instructions	18	Dimensions	28
Adding wood	18	Enclosed kit	29
Regulation	18	Accessories	29
6 General information for the installer	19	13 Technical Data	30
Boiler room	19	Technical data/Technica specifications	30
Chimney	19	Other information	30
Carbon Monoxide Detectors	19	Water-side resistance	30
Assembly	19		
Distance to walls	19		
Turbulators	20		
Installing ceramics	20		
Pre-installed ceramic kit	20		
Ceramic grate	20		
Flame trough	20		

1 General

Congratulations on choosing VEDEX 4000, a high quality wood boiler with a long service life, developed and manufactured in Sweden.

In order to get the ultimate benefit from VEDEX 4000 you should read through these Installation and Maintenance Instructions. The numbers in brackets refer to the section “Component locations”.

The boiler is designed for houses with water borne heating and is environmentally approved for accumulator tank firing.

IMPORTANT

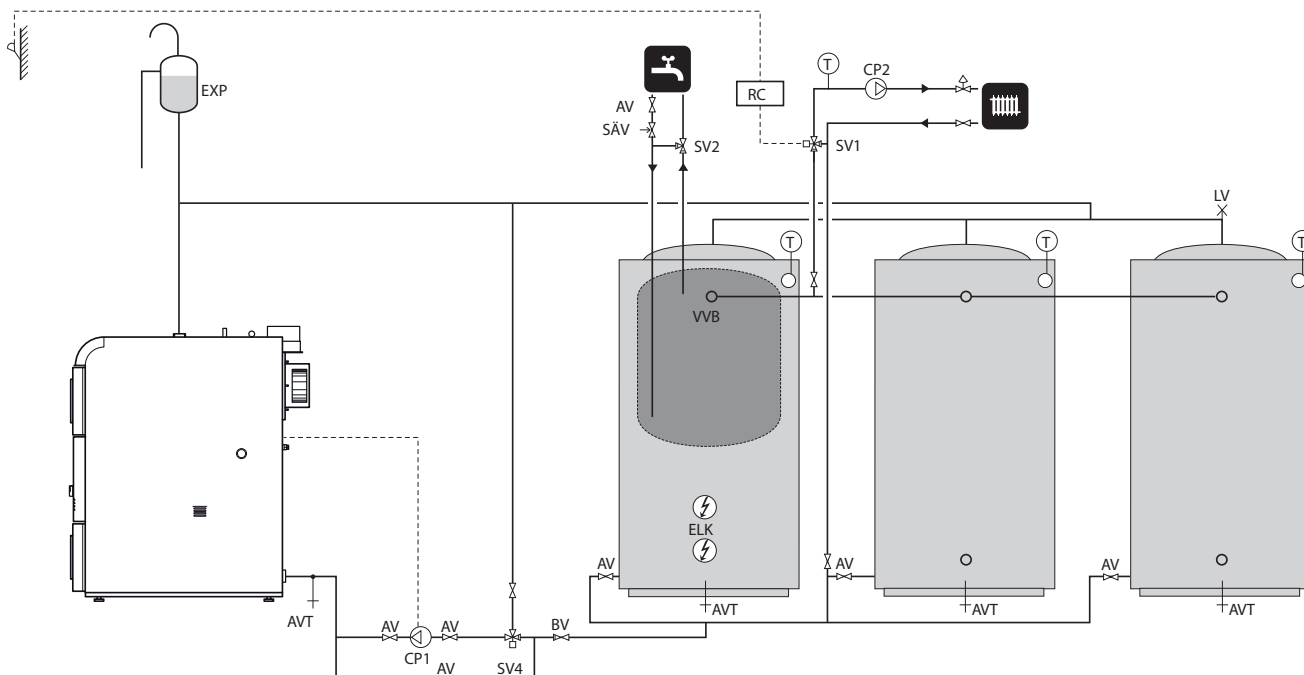
In summer, the boiler must remain connected to the power supply - to reduce the risk of condensation in the panel. To stop the boiler operation, turn off the heating circuits on the regulator.

IMPORTANT

The VEDEX 4000 must be installed by approved and competent personnel in accordance with the manufacturers instructions and relevant regulations, standards and by-laws. Failure to follow these instructions may result in loss of warranty.

2 Installation

System diagram



Area of use

VEDEX 4000 is a boiler intended for heating houses and other small buildings. The boiler is environmentally approved for wood firing to the accumulator tank.

Product description

VEDEX 4000 is a wood-fired boiler with an induction flue gas fan. Max. wood length is 0.5 m. The boiler is designed to be connected to an external water heater for heating domestic hot water.

When firing, the boiler water is partly heated by the hearth and partly by the flue gas ducts.

Average output during wood burning operation is approx. 35kW (max. output is approx. 40kW).

Hot water heating

An accumulator tank with integrated water heater or coil is needed for hot water heating or alternatively an external water heater.

The hot water capacity is determined by the choice of water heater size or the length of coil.

Abbreviations

AV	Shut-off valve
AVT	Draining valve
BV	Non-return valve
CP1	Charge pump
CP2	Circulation pump
ELK	Immersion heater
EXP	Level vessel/expansion vessel
LV	Venting valve
MV	Motor valve
RC	Control box
SV1	Shunt valve
SV2	Mixer valve
SV4	Thermal valve
SÄV	Safety valve
TG	Temperature sensor
VVB	Hot water heater

The outline diagram shows components that are not included in standard deliveries.

Heating

Hot water is taken from the top of the boiler and routed to the accumulators. Return water from the accumulator tanks is led via a charger pack to the bottom of the boiler. The hot water is led from the accumulators to the radiator circuit via a shunt valve (SV1), where the desired temperature to the radiators is maintained by mixing the hot accumulator water with the cooled return water from the radiator circuit with recommended 65°C temperature.

3 Boiler controller - IGNEO TOUCH



Description:

1. **Time / time setting** – shows time according to previous settings. Touching the time will cause opening of the time setting menu.
2. **Day of the week / date setting** – shows current day of the week according to previous date settings. Touching will cause opening of the date setting menu.
3. **Current boiler operating mode and temperature set at the boiler** – shows currently selected operating mode. Touching will cause opening of the mode setting menu:
 -  - Manual temperature regulation
4. **Currently performed boiler activity and current boiler temperature**
5. **Turning the boiler on / off.** Touching will open the menu for turning the boiler on/off, and operating mode for heating and domestic hot water.
6. **Burner** - shows current status for burner operation. Touching will cause opening of the boiler menu, which displays burner operation status and provides for editing the settings.
7. **MENU** - touching will cause opening of the main controller MENU.

DIODES:

- A. Boiler diode. On then the boiler is on.
- B. Burner diode. On then the burner is working.
- C. Alarm diode Flashing when alarms are active On when the alarms have not been acknowledged.

Status	Description
TURNED OFF	Burner does not operate. Operation is not allowed.
MODULATION	Burner operates with power modulation (power range).
STOP	Burner does not operate but its operation is allowed. The required boiler temp has been achieved.

Menu

The following description shows the available functions from the MENU. Service functions are available when Authorization Code is typed.

MENU	Boiler	SETTINGS	Set temperature [°C]
			Histeresis on [°C]
			Histeresis off [°C]
			* Min pump temperature
			* Pump overrun time [min]
			* Min return temperature [°C]
			* Mixing valve time [s]
	Burner	SETTINGS	Air corretion [%]
			Blower power modulation [%]
			Blower firing up power [%]
			Blower in incandescing
			Blower in hold/ pause
			* Blower in burning off
			* Incandescing time [min]
			* Burning off time [min]
			* Lambda control
			* Oxygen power 100%
			* Exhaust fan
			* Min. exhaust gas temperature [°C]
			* Nominal exhaust gas temperature [°C]
			* Max exhaust gas temperature [°C]
			* Burner inertia [min]
	Alarm history		
	Software info		
	Menu level (PIN)	Enter PIN	
	* Language	Language select	
	*Sound alarm	ON/OFF	

*- service function (PIN code required)

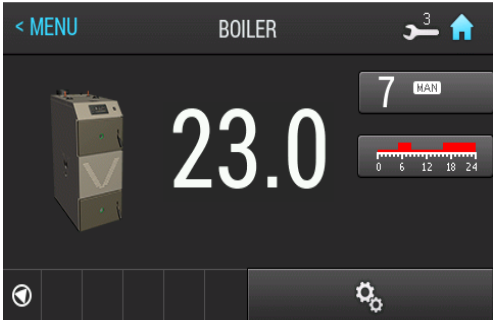
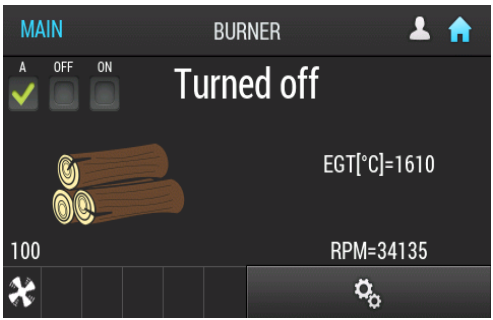
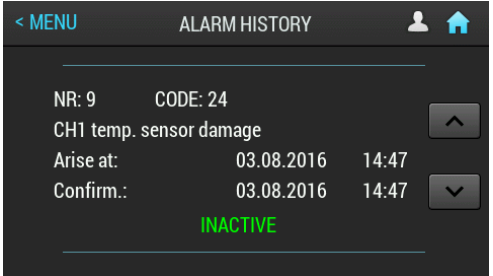
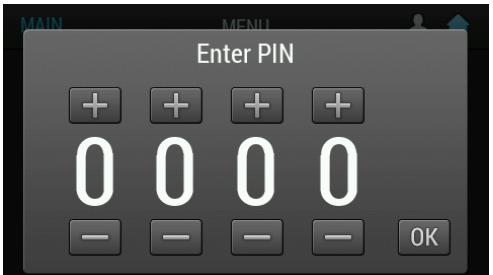
* Configuration	* Autoconfiguration
	* Main module IO
	* Heating curcuits number
	* Outside temperature sensor
	* Hot water
	* Solar heating
	* Buffer
	* Lambda module
	* Return to boiler sensor
	* Profile number
	* Boiler pump
	* Cascade Master
	* EGT sensor type
	* Energy measure
	* Blower with HALL
* Out test	* Hot water pump
	* Boiler pump
	* Solar pump
	* Exchanger cleaner
	* Blower
	* ExhaustF
	* CH1 pump
	* CH2 pump
	* CH3 pump
	* CH4 pump
	* CH1 mixing valve
	* CH2 mixing valve
	* CH3 mixing valve
	* CH4 mixing valve
	* Boiler ret. mixing valve
* Statistic	* Fire up counter
	* Average fire up time [s]
	* Average oxygen 30% power [%]
	* Average oxygen 50% power [%]
	* Average oxygen 70% power [%]
	* Average oxygen 90% power [%]

*- service function (PIN code required)

Main Menu

Main Menu	Boiler
	Burner
	Alarm history
	Software info
	Menu level (PIN)

Moving about the main menu occurs by moving the finger on the touchscreen. After selecting an item in the menu and touching it, the submenu will open. Depending on the selection, the user can change the settings, define a programme, or read the history of alarms and information about controller software.

Menu	Description
	Boiler Presents current boiler temperature. After pressing the SETTINGS button, we move to boiler settings. In order to change boiler operation programme, return to the main menu and press the button for changing the programme.
	Burner The Burner submenu presents current exhaust temperature in Celsius [°C]. After pressing the SETTINGS button, we move to burner settings.
	Alarm history The Alarm History submenu presents the last 20 alarms detected by the regulator. In order to turn off the sound of the alarm, Confirm the present alarm in the alarm history.
	Menu level This function is intended only for service technicians. In order to increase the level of the menu, enter the correct PIN code and then confirm with „OK“.

Maintenance levels

ATTENTION

Only authorized personnel may use the service menu!

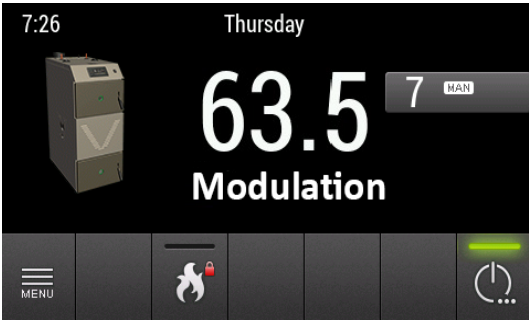
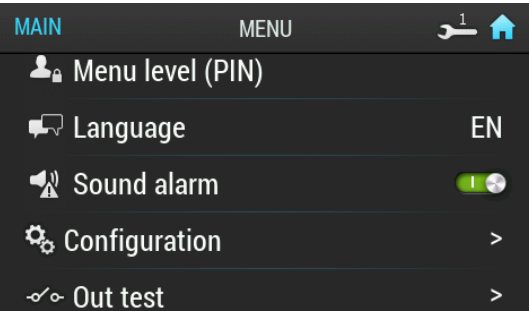
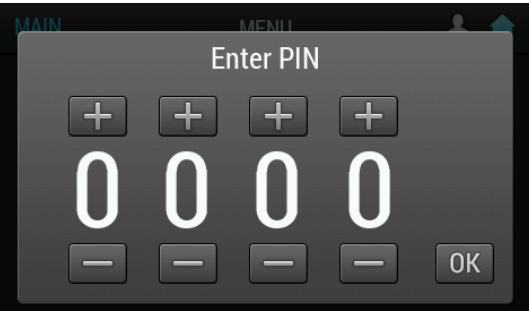
Particular maintenance levels are password-protected. There are two maintenance levels, level 2 being the highest one. In order to enter the PIN code to unlock hidden functions, in the main menu select function MENU LEVEL (PIN), and enter the PIN code:

- Maintenance level 1 0 9 0 0

Maintenance level is required for detailed configuration of the equipment, testing outputs, or changing detailed settings for preheating function

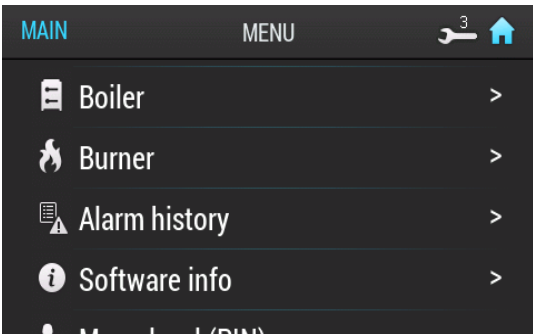
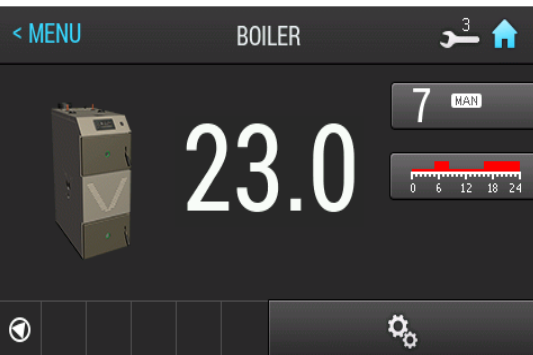
Maintenance level remains active until reentering the user code. After entering user code, menu returns to the initial level. User level also returns automatically after turning the boiler off and on again.

Example of password entry in the maintenance service menu:

Step	Menu
1. At the home screen, press MENU to show main menu.	
2. In the main menu go down and select MENU level (PIN) function.	
3. Enter the PIN code corresponding to the required MENU level and approve by pressing "OK".	

Boiler

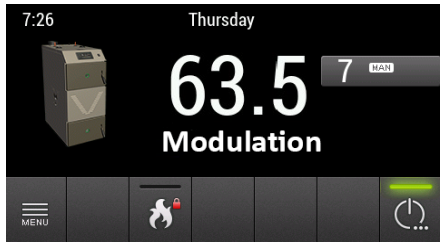
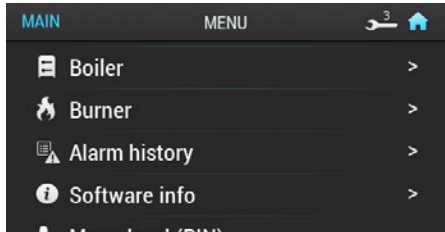
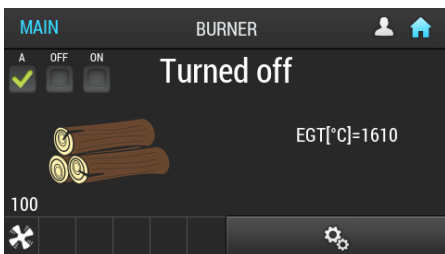
In order to check or change boiler operating parameters, open the BOILER menu..

Step	Menu
1. On the main screen, choose MENU to show the main menu.	
2. Next, select the BOILER function.	
3. In order to enter the SETTINGS menu, touch the settings menu button in the bottom right corner of the BOILER screen.	
4. While moving about in the SETTINGS menu, set the following parameters:	
• Set temperature [°C] - Boiler set temperature. • Histeresis on [°C] - Temp. of the fan speed increase when entering the boiler histeresis. • Histeresis off [°C] - Temp. of the fan speed decrease when exiting the boiler histeresis. • * Min pump temperature [°C] - Boiler circulating pump activating temperature. • * Pump overrun time [min] - Time for which the pump is running at the set temperature. • * Min return temperature [°C] - Set minimal return temperature. • * Mixing valve time [s] - Mixer full opening time.	

*- service function (PIN code required)

Burner

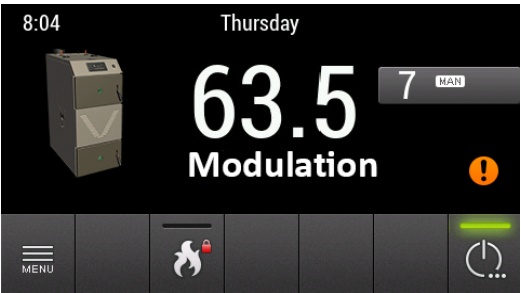
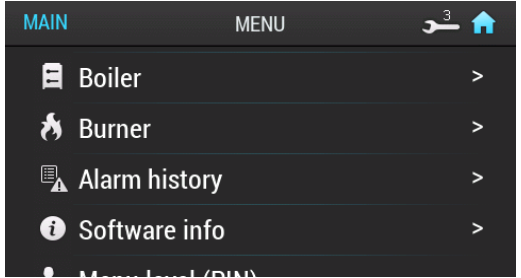
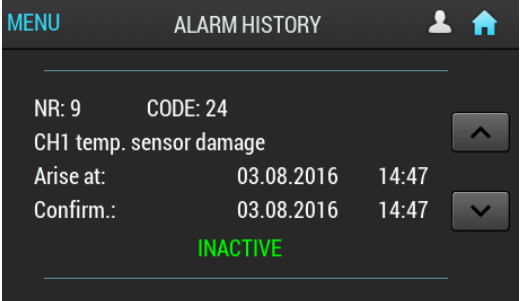
In order to check or change burner operating parameters, open the BURNER menu..

Step	Menu
1. At the home screen, press MENU to show main menu.	
2. Next, select the BURNER function.	
3. In order to enter the SETTINGS menu, press the settings button in the bottom right corner of the BURNER screen.	
4. While moving about in the SETTINGS menu, set the following parameters: • Air correction [%] - Allows the adjustment of the air volume supplied to the combustion process, as programmed by the installer. • Blower power modulation [%] - Blower power expressed in % after entering the modulation mode • Blower fifying up power [%] - Blower power expressed in % after entering the ignition mode. • Blower in incandescing [%] - Blower power expressed in % after entering Incandescing mode. • Blower in hold/pause [%] - Blower power expressed in % after exceeding the preset temperature or the maximum exhaust gas temperature. • * Blower in burning off [%] - Blower power expressed in % after entering burning off mode • * Incandescing time [min] - time of incandescing process. • * Burning off time [min] - Burning off time after reaching the minimum exhaust temperature. • * Lambda control - Turning on/off Lambda sensor. • * Oxygen power 100% - Oxygen content at maximum power. • * Min exhaust gas temperature [°C] - Determines the minimum flue gas temperature for the boiler.. • * Nominal exhaust gas temperature [°C] - Exhaust gas temperature during modulation mode. • * Max exhaust gas temperature [°C] - Determines the maximum flue gas temperature for the boiler. • * Burner inertia [min] *- service function (PIN code required)	

Alarms

The controller features the alarm history saved in the memory. If there are any active or not acknowledged alarms, the alarm icon will be displayed at the home screen, pressing of which will display alarm history. History presents 20 last alarms.

In order to enter alarm history, proceed as follows:

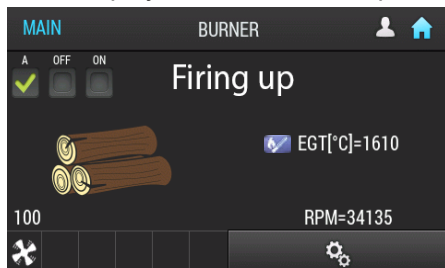
Step	Menu
1. At the home screen, press MENU to show main menu, or directly touch the orange alarm icon at the home screen of the control panel.	
2. After opening the MENU, scroll functions downwards to show ALARM HISTORY. Acknowledge by pressing the function.	
3. After opening the ALARM HISTORY menu, the list of recent alarms will be displayed. If an alarm is active, confirm it by pressing "CONFIRM" button. After acknowledging, the alarm will remain active if still present. Acknowledging the alarm silences the alarm sound at the controller.	

Alarm codes

Main alarms		
Code	Brief description	Possible cause
1	Short of the boiler sensor	Sensor failure. Sensor cable broken.
2	Boiler overheating	Boiler temp has exceeded the max value.
3	Return to boiler sensor damage	Sensor failure. Sensor cable broken.
4	Burner/feeder sensor damage	Sensor failure. Sensor cable broken.
5	STB	-
20	Room sensor 1 damage	Sensor failure. Sensor cable broken.
21	Room sensor 2 damage	Sensor failure. Sensor cable broken.
22	Room sensor 3 damage	Sensor failure. Sensor cable broken.
23	Room sensor 4 damage	Sensor failure. Sensor cable broken.
24	CH1 temp. sensor damage	Sensor failure. Sensor cable broken.
25	CH2 temp. sensor damage	Sensor failure. Sensor cable broken.
26	CH3 temp. sensor damage	Sensor failure. Sensor cable broken.
27	CH4 temp. sensor damage	Sensor failure. Sensor cable broken.
30	Hot water sensor damage	Sensor failure. Sensor cable broken.
31	Buffer top sensor damage	Sensor failure. Sensor cable broken.
32	Buffer bottom sensor damage	Sensor failure. Sensor cable broken.
40	Solar sensor damage	Sensor failure. Sensor cable broken.
41	Solar tank sensor damage	Sensor failure. Sensor cable broken.
42	Return to solar sensor damage	Sensor failure. Sensor cable broken.
43	Solar T4 sensor damage	Sensor failure. Sensor cable broken.
44	Solar T3 sensor damage	Sensor failure. Sensor cable broken.
45	Solar T2 sensor damage	Sensor failure. Sensor cable broken.
46	Solar T1 sensor damage	Sensor failure. Sensor cable broken.
50	Fuel reserve	Fuel level reached reserve.
51	Fuel tank empty	Fuel have runned out.
100	Communication with the module 0	Problem with CAN bus or power supply.
101	Communication with the module 1	Problem with CAN bus or power supply.
102	Communication with the module 2	Problem with CAN bus or power supply.
103	Communication with the module 3	Problem with CAN bus or power supply.
104	Communication with the module 4	Problem with CAN bus or power supply.
105	Communication with the module 5	Problem with CAN bus or power supply.
106	Communication with the module 6	Problem with CAN bus or power supply.
107	Communication with the module 7	Problem with CAN bus or power supply.
110	Communication with the module BIG	Problem with BIG bus or power supply. Cable CAN not connected

Start-up and firing

1. To start the boiler, press the power button.
2. The boiler controller turns ON automatically when the power is turned ON.
3. In order to start the boiler, touch the  symbol on the touchscreen and then move the slider responsible for turning the boiler ON/OFF.
4. Place the fuel in the loading chamber, in accordance with the recommendations in section 1 of the **Firing Instructions** (see **Chapter 6 Burning Wood**)
5. To start the firing process, enter the BURNER sub-menu. After selecting the  symbol, FIRING UP status is displayed on the control panel display.



6. Set fire to the newspapers stacked on the wood according to section 2 of the **Lighting Instructions** (see **Chapter 6 Wood firing**)
7. After completion of the FIRING UP procedure, the boiler switches to the GLOWING and then MODULATION statuses

4 Settings and maintenance

Maintenance

The Swedish Rescue Services Act specifies how often a boiler is to be swept and at what intervals with regard to the risk of soot fires. Sweeping carried out by a chimney sweep includes all flue gas routes from the hearth to the top of the chimney.

You can check the boiler's fire-affected surfaces and flue gas ducts yourself to determine how often the boiler should be swept.

Gas, which contains tar substances, builds up in the wood magazine. These substances condense on the walls of the wood magazine and are later burned off. This means that the walls of the wood magazine do not usually have to be cleaned.

For optimum combustion and efficiency the boiler's secondary combustion chamber should be cleaned after about 15 smoking (burning) cycles.

Tips and remarks

In order to ensure the safety of boiler maintenance and cleaning activities, please observe the rules and notes below:

- Maintenance and cleaning activities have to be completed prior to commencement of boiler operation, or when the combustion chamber is completely cool.
- During maintenance and cleaning always use protective gloves, in order to avoid burning of skin.
- When cleaning the boiler never use abrasive or caustic cleaning agents.
- Clean the boiler regularly in order to maintain its efficiency, safe operation and environmentally-friendly combustion process.
- Clean ceramic inserts using brush only in order to avoid damage to ceramics.

ATTENTION

Boiler cleaning interval depends to a large extent on quality of fuel. Maximum permitted moisture content in fuel is 20%. Exceeding the permitted moisture content shall have an adverse impact on combustion parameters and boiler lifecycle.

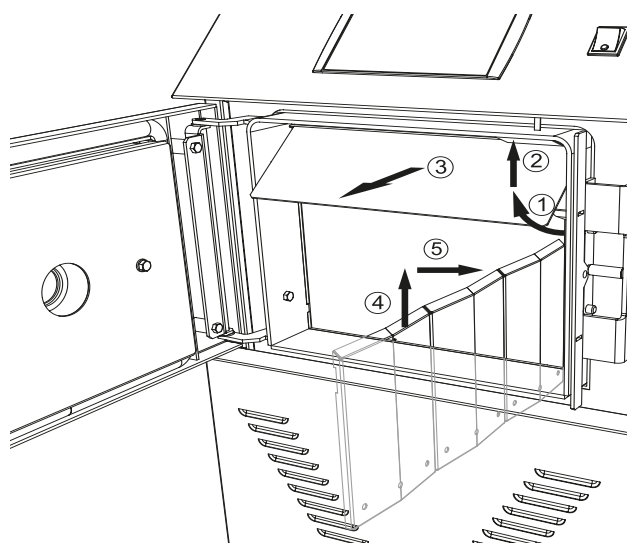
Cleaning the loading chamber

ATTENTION

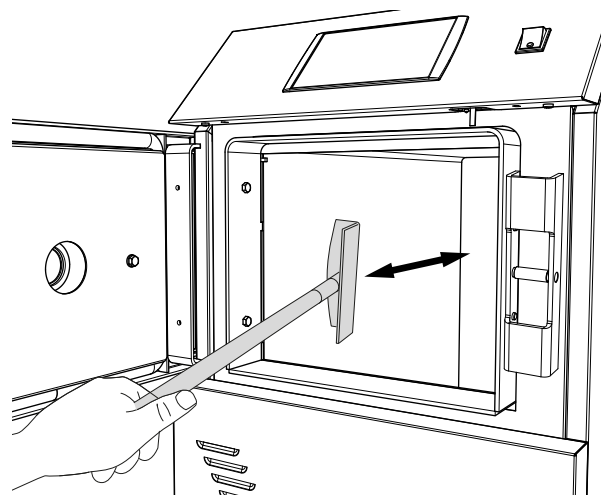
Maintenance and cleaning activities have to be completed prior to commencement of boiler operation, or when the combustion chamber is completely cool!

Cleaning the loading chamber::

1. Wait until the boiler cools down.
2. Open the loading chamber door.
3. Remove the smoke blocking plate as per the sequence in figure below (numbers 1, 2, 3).
4. Dismantle 6 lateral walls in the loading chamber, as per the sequence in figure below (numbers 4,5).



5. Check the cleanness of the loading chamber and clean, if necessary, using a scraper and a brush.



6. Swipe the removed residue out through the opening in the ceramic plate.
7. Install lateral walls in the loading chamber.
8. The loading chamber was cleaned properly and is ready for operation.

Cleaning the combustion chamber.

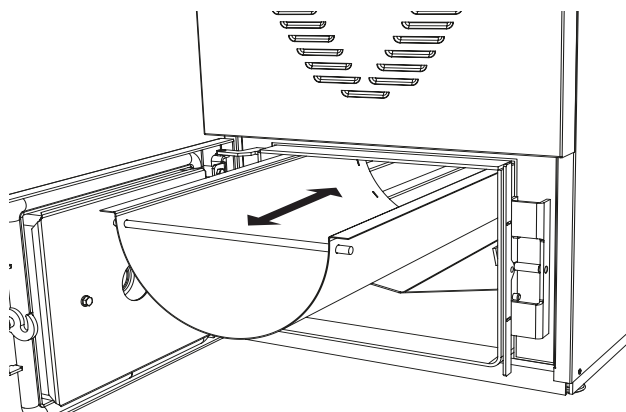
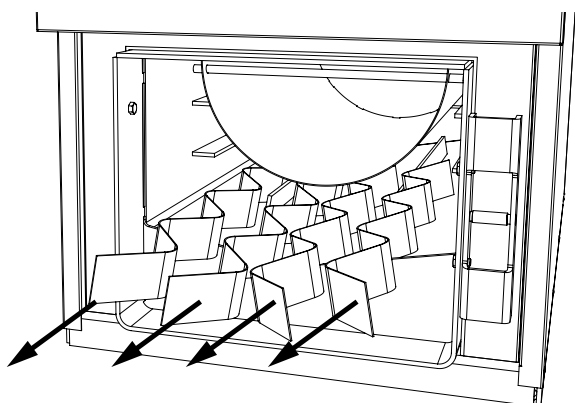
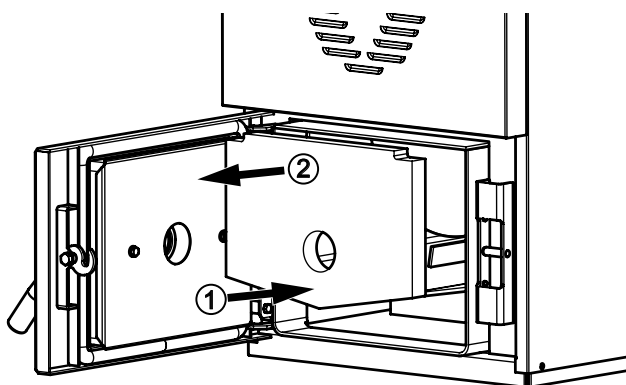
The bottom section of the cleaning chamber is cleaned via the door in the boiler's bottom section. In order to clean the combustion chamber properly:

1. Open the combustion chamber door.
2. Remove the vermiculite plate (see picture below).
3. Remove turbulators below ash tray.
4. Remove the tray.

NOTE

Ash can still contain glowing embers after a long period of time. Therefore, always use a non-inflammable container when emptying ash and soot.

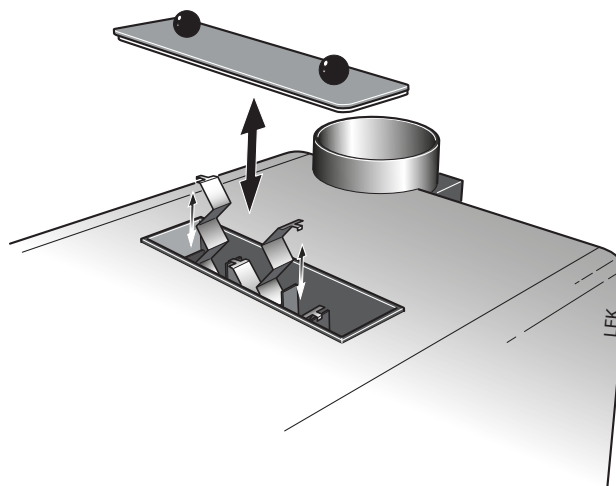
5. Empty the tray, remove ash and ash residue. Clean thoroughly.
6. Clean the chamber.
7. Replace the ash drawer and close the door.
8. The combustion chamber was cleaned properly and is ready for operation.



Cleaning the convection section

The convection section needs to be cleaned a few times in between chimney-sweep visits. In order to clean convection channels properly:

- Remove convection channel cover from the boiler top section.
- Remove turbulators from the convection section.
- Clean the convection section using round brush, attached with the kit.
- Mount turbulators, as per the sequence shown on page 20.
- Mount the cover of boiler's convection channels



Charge and circulation pump

If a charge or circulation pump is not in operation for an extended period of time, it should be started from time to time so that it does not jam.

General instructions

The way the wood is chopped, its type and the moisture content are all determining factors that affect the function and efficiency of the boiler.

Adjust the size of the wood to fit the hearth. Suitable length of chopped wood for VEDEX 4000 is 0.5m.

The wood is placed on the ceramic grate.

The combustion process works by reverse combustion where the combustion gases are forced down through the grate by an exhaust fan. The fan is controlled by the flue gas temperature. A damper ensures that a self induced draught does not occur when the fan is off .

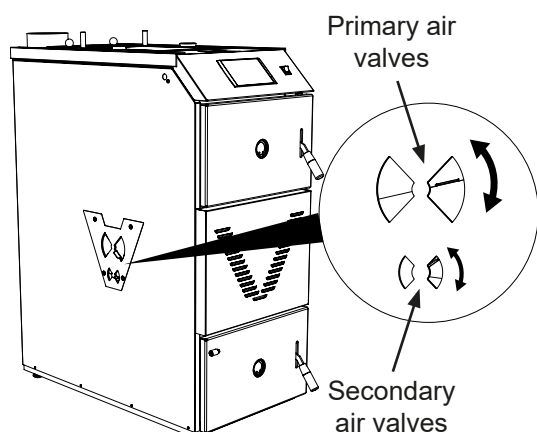
The fan is modulated according to the entered exhaust gas temperature and boiler water temperature parameters. When the door are opened, the fan enters 100% of the power.

Always use dry wood. Wood with a high moisture content reduces the combustion temperature and causes increased amounts of environmentally harmful emissions as well as reducing efficiency. Extremely dry wood can cause too large a fire which can create large amounts of gas. In addition, there is a risk of flashover, which in turn causes irregular combustion. Carpentry off cuts can be used but should be mixed with other wood. All wood over 10 cm must be split. Only use untreated and clean wood. Combustible gases are created as the wood heats up. These burn at temperatures between 300 - 900°C. The gases make up 75% of the wood's energy content, the rest is in the charcoal created, which also then burns.

Final combustion occurs in the compartment under the grate after the supply of secondary air.

Primary air control

Secondary and primary air valves located on both sides of the boiler are used for the distribution of air within the combustion chamber.

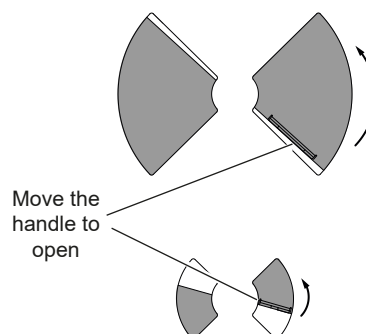


- Primary air valves provide air to the upper section of the combustion chamber.
- Secondary air valves provide air to the bottom section of the combustion chamber, which is fed to the grate.

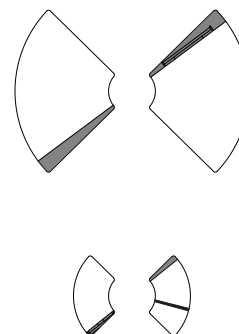
During the firing up process, open the primary air valves to properly supply the required amount of oxygen/air needed for the combustion process. The secondary air valves should be closed during the firing up.

During the combustion process we recommend, to open the secondary air valves about 90% to properly supply the right amount of oxygen/air needed for the combustion process. The primary air valves should be opened only for 2-3 mm .

Valves completely closed:

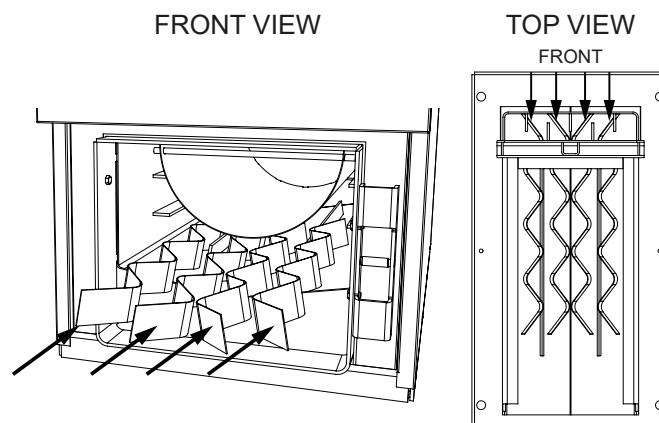


Valves completely open:



Lower turbulators air control

In the set with the boiler there are additional 4 turbulators. These turbulators should be installed in the furnace chamber under the ash tray (see figure below).



5 Wood firing

Lighting instructions

It is important that initial firing is carried out carefully in a new boiler so that any remaining crystallisation water in the ceramics is condensed slowly to prevent cracking.

1. Put approx. 4kg of finely chopped wood, and lay it in layers set crosswise, in order to create gaps between the various layers of wood. Open the primary air valves, and close the secondary air valves.
2. Put a larger piece of newspaper on top and then set it on fire with the top door ajar.
3. Wait until the wood begins to burn properly (flue gas temperature should be around 170-200 °C.)
4. Leave the top door of the furnace open until the initial portion of wood ignites.
5. You can add more wood after igniting the starting portion. After adding more wood, leave the primary air valves slightly ajar and open the secondary air valves and then close the top door of the upper combustion chamber. The flue gas temperature should decrease.
6. Check whether the flue gas temperature is rising a few minutes after adding wood. If the temperature starts to increase, the boiler is in normal operating mode (i.e. flue gas temperature is approx. 150-180 °C).
7. You can add another portion of wood when the glow remains in the furnace.

NOTE

During the wood catching fire you should stay near the boiler, after closing the door and making sure that the boiler is working properly, you can leave the boiler room.

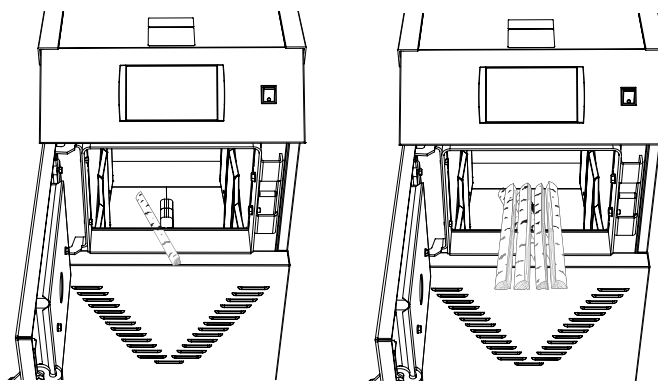
Adding wood

Add wood via the filler door. When this door is opened, a microswitch is affected, which, in turn increases the speed of the fan. To prevent self-ignition of gases and flame retraction when opening the door, you should slowly open the door at 1-2 cm, wait a moment for the air to flow into the boiler through the door and then open it wider.

It is important that the amount of fuel is adjusted according to the temperature levels in the accumulator system so that it does not become overcharged.

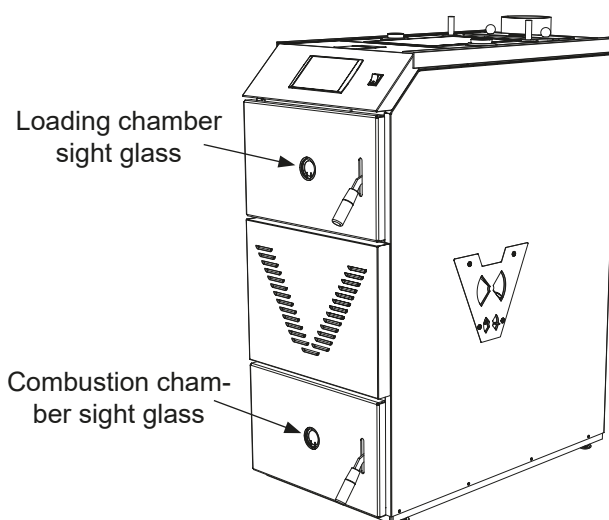
Even out the embers before adding more wood. Then close the filler door. The speed of the fan now slows and normal operation is resumed.

VEDEX 4000 is designed for 0.5 m long pieces of wood. Stack the wood well when adding. Place the logs so that they do not block the grate hole, see an example of positioning in the images below. If shorter pieces of wood are used, stack these over the grate hole towards the rear wall.



Regulation

The flame can be checked through the sight glass after about 30 minutes operation. The colour of the flame should then be yellow with a light blue tint in lower doors.



NOTE

It is forbidden to directly touch the sight glasses and the boiler door during operation, as the high temperature of these components can cause burns.

The following points should be observed for VEDEX 4000 to perform optimally:

- Follow the lighting procedure by checking the flue gas temperature.
- The fan should never stop during the firing cycle.
- When the accumulator is fully charged, there should no longer be any wood in the wood magazine.
- Never open the combustion chamber door during operation.
- The combustion of wood can vary depending on its moisture content and type as well as on the position of the primary air damper.

6 General information for the installer

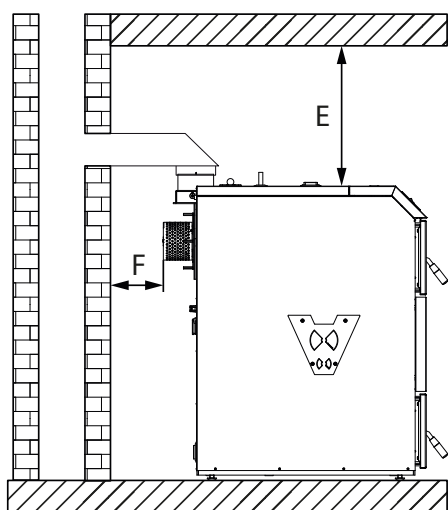
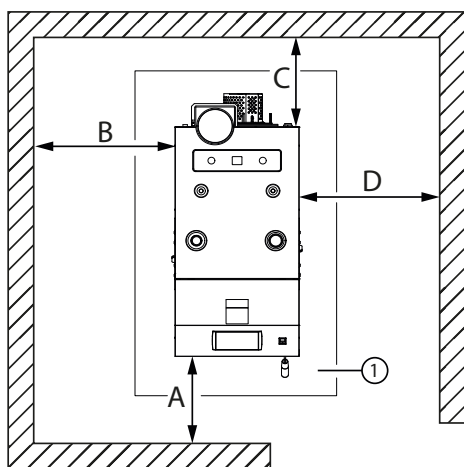
Boiler room

The boiler room must be built in accordance with applicable building regulations.

Provision for good air supply. The boiler room's air intake must be as large as the flue.

Distance to walls

Set the boiler while maintaining the minimum distances to the walls. When installing the unit, pay special attention to a convenient access to the boiler and chimney during maintenance, cleaning and servicing.



1 - foundations

Dimension	Distance [mm]
A	1000
B	600
C	600
D	600
E	1000
F	150

Chimney

VEDEX 4000 has a vertical flue pipe connection with an external diameter of 133mm. A vertical flue pipe is supplied as standard.

The flue diameter should be 160mm in accordance with the Building Regulations.

The flue should be dimensioned in accordance with the Building Regulations and EN 13384-1 to facilitate correct functioning of the combustion system.

The minimum chimney draught for satisfactory wood firing is 15 Pa. The flue needs to be inspected and approved before installation.

Material	Area	Min. height
Steel pipe	Ø160 mm	5.0 m
Brick	160 x 160 mm	5.0 m

Many older boilers have the flue duct located at the bottom and have been connected to the chimney near to the floor. If the new boiler is to be connected higher up on the chimney the lower, non-active, part of the chimney pipe should be filled with sand or similar material.

Carbon Monoxide Detectors

It is mandatory to fit a Carbon Monoxide alarm within the room whenever a new or replacement solid fuel appliance is installed in a dwelling. This alarm must be a permanently installed type, rather than a portable type, and should incorporate self-test and audible alert if the battery or detector cell develop a fault.

Setting of the alarm must meet the following criteria:

- on the ceiling at least 300mm from any wall or, if it is located on a wall, as high up as possible (above any doors and windows) but not within 160mm of the ceiling;
- between 1m and 3m horizontally from the appliance.

NOTE

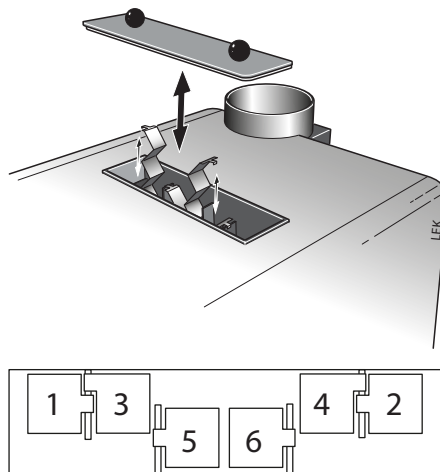
Ensure that sweeping can be carried out in accordance with the applicable regulations. If in doubt, contact a chimney sweep.

Assembly

VEDEX 4000 has inlets for primary and secondary air on the sides of the boiler. Therefore, always leave a space of at least a metre from combustible material. In unfavourable cases "puffs" from combustion can discharge sparks.

Turbulators

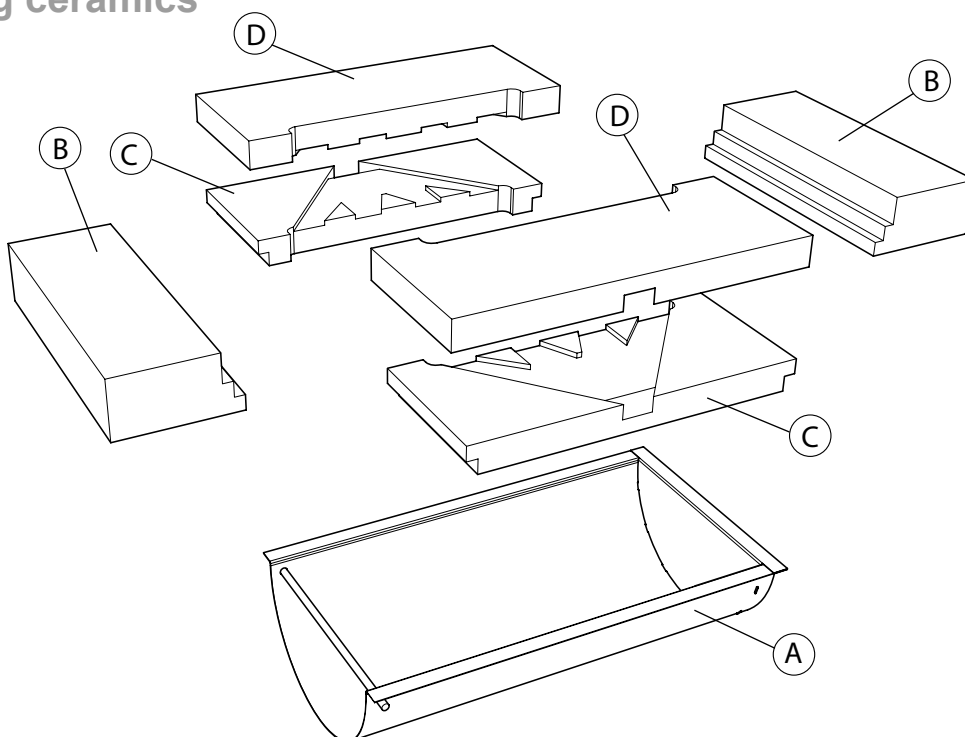
Ten turbulators are supplied with the boiler. These are located in the ducts in the boiler's convection part as illustrated. The turbulators affect the turbulence of the flue gases, which means that a greater amount of energy is transferred to the boiler water. The temperature in certain chimneys may become so low that there may be a risk of condensation build-up in the smoke duct. To increase the temperature in the chimney the turbulators can be removed, one at a time as illustrated. For each turbulator that is removed, the flue gas temperature rises from the boiler by 15 – 25 °C. Remove the turbulators in number order until the flue gas temperature in the chimney is correct.



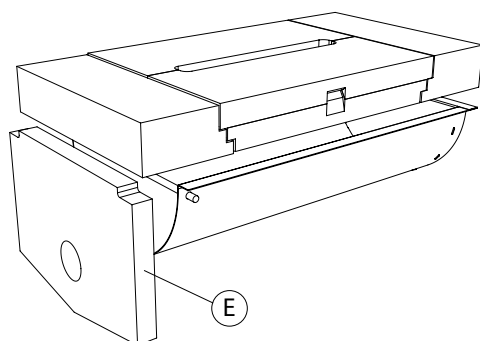
NOTE

The flue gas temperature must not drop below 65 °C 0.5 m below chimney opening.

Installing ceramics



Pre-installed ceramic kit



NOTE

Scratches on ceramics do not affect the boiler operation or the combustion process.

Ceramic grate

Place the ceramic inserts in through the filler door. First position the front stone and back stone (B). Then position the rear stones (C) followed by stones (D).

Flame trough

Open the lower door of the combustion chamber. Slide the ash drawer (A) onto the guides under the ceramic grate and then insert the ceramic insert (E).

NOTE

The trough must be slid all the way into the chamber.

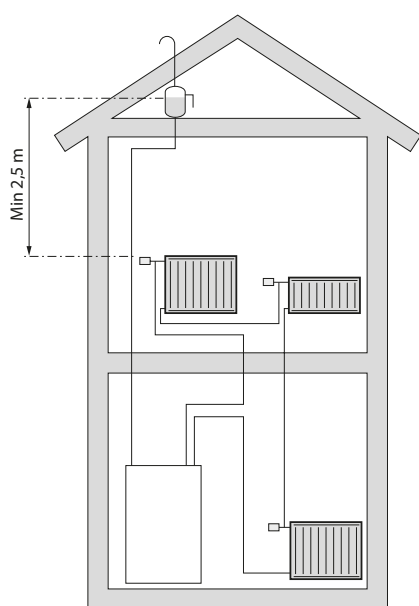
7 Pipe installation

Connection

The pipe installation must be carried out in accordance with current norms. Internal support bushes should be fitted when a steel pipe or annealed copper pipe is used.

The overflow pipe from any of the safety valves must be routed to a floor drain to prevent hot water splashes when checking the valves or when bleeding the boiler. The outlet of the overflow pipe must be visible.

If the heating installation has an open expansion tank, the distance between the highest radiator and the expansion tank must not be less than 2.5 m.



NOTE

The pipe work must be flushed before the boiler is connected, so that any contaminants do not damage the component parts.

Flue gas thermometer

VEDEX 4000 is supplied with an enclosed flue gas thermometer which must be installed in the flue gas door outlet. The sensor is connected to the control module, while the sensor is placed in the boilers chimney flue with the pressure screw in the sleeve.

Filling

Fill the boiler with water using a fixed filler line to one of the expansion connections or a hose in the draining valve.

NOTE

If filling via the radiator circuit, the shunt valve must be in a central position. Otherwise there is a risk of cracking one of the radiators.

Draining

The draining valve is installed next to connection. Drain by connecting a hose to the draining valve.

Cooling coil

VEDEX 4000 is supplied with cooling coil for connection to a temperature limiting valve. Refer to the manufacturer's instructions when installing.

NOTE

In the case of a closed circuit, you must add a boiler protection system (such as the safety coil) to prevent overheating. In an open circuit this is recommended.

Environmentally friendly approved

To meet the environmentally approved requirements during wood firing an accumulator tank of at least 1500 litres must be installed with the boiler.

8 Connection to buffer tanks

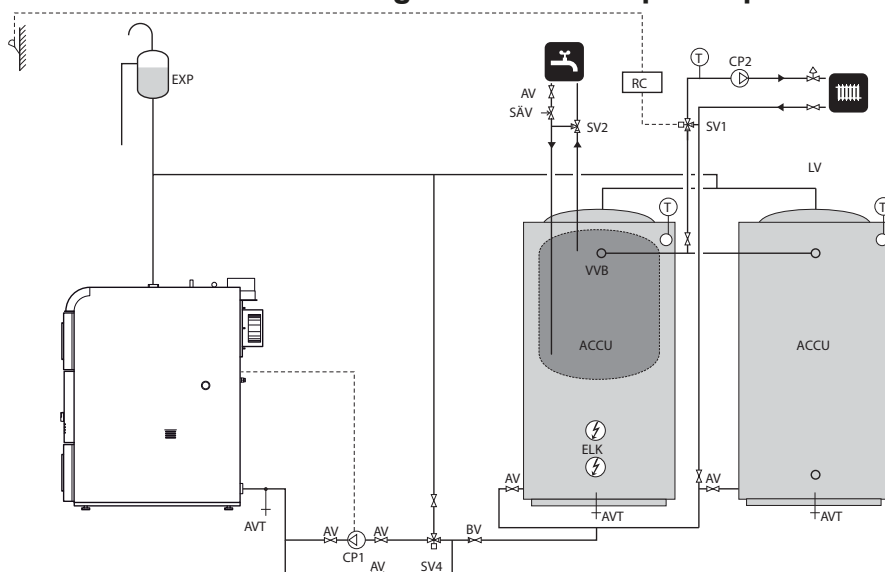
NOTE

These are outline diagrams. Actual installations must be planned according to applicable standards.

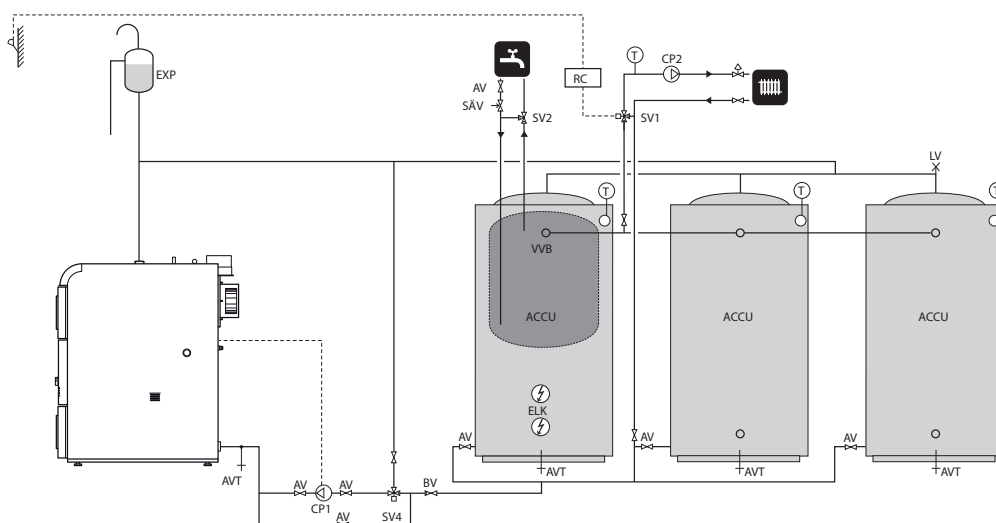
Abbreviations

AV	Shut-off valve	MV	Motor valve
AVT	Draining valve	RC	Control box
BV	Non-return valve	SV1	Shunt valve
CP1	Charge pump	SV2	Mixer valve
CP2	Circulation pump	SV4	Thermal valve
ELK	Immersion heater	SÄV	Safety valve
EXP	Level vessel/expansion vessel	TG	Temperature sensor
LV	Venting valve	VVB	Hot water heater

Docking to two tanks with thermal charge control and open expansion tank



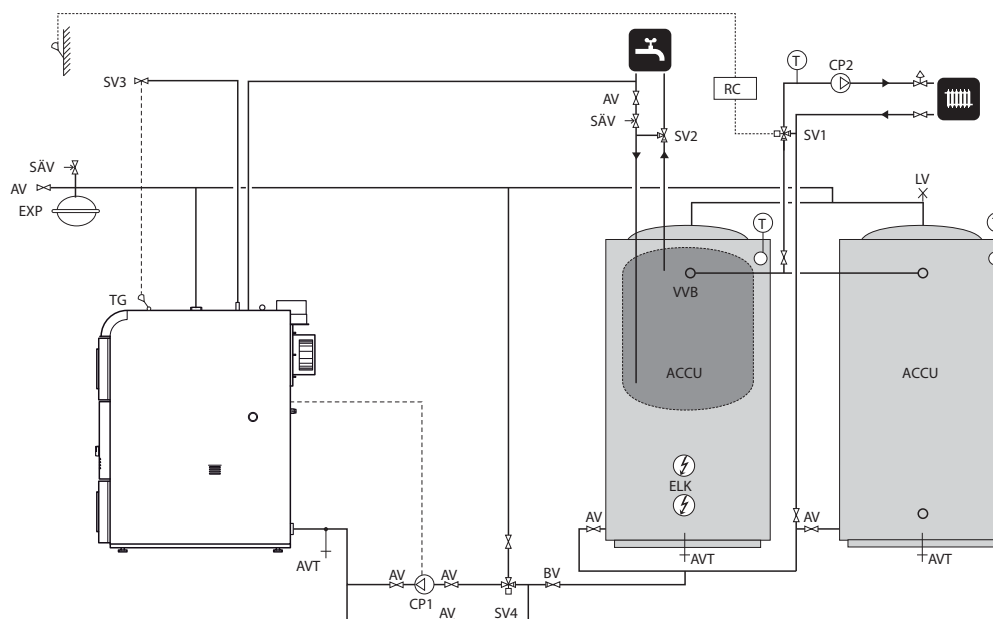
Docking to several tanks with thermal charge control and open expansion tank



When the boiler's temperature exceeds the set charge temperature (for example, 75°C) the charge pump starts, which then transfers heat from the boiler

to the accumulator. The thermal valve ensures that the water temperature to the bottom of the boiler does not drop so much that there is a risk of condensation.

Docking to two tanks with thermal charge control and closed expansion vessel



When the boiler's temperature exceeds the set charge temperature (for example, 75°C) the charge pump starts, which then transfers heat from the boiler to the accumulator. The thermal charge control ensures that the water temperature to the bottom of the boiler does not drop so much that there is a risk of condensation.

The expansion vessel volume must be dimensioned according to the applicable norms.

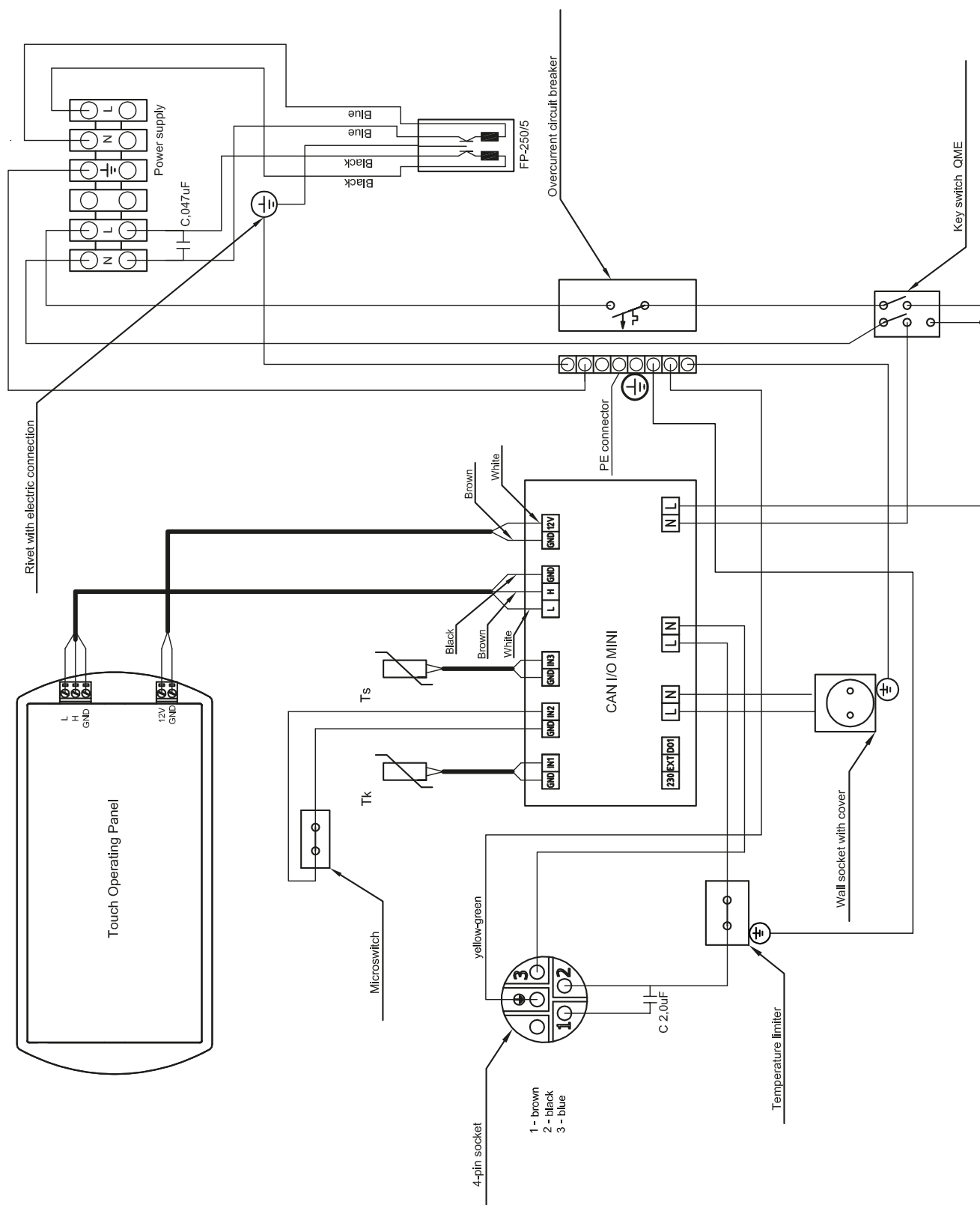
NOTE

Closed expansion vessel and emergency cooling presupposes there being sufficient cold water supply in event of, for example, a power cut.

In installations with closed expansion vessel a thermal valve to prevent overheating must be connected from the cold water to the boiler cooling coil, then to a suitable drain.

Overflow water from the safety valve is routed to a drain so that hot water splashes cannot cause injury. The entire length of the overflow water pipe must be inclined to prevent water pockets and must also be frost proof.

9 Electrical connection

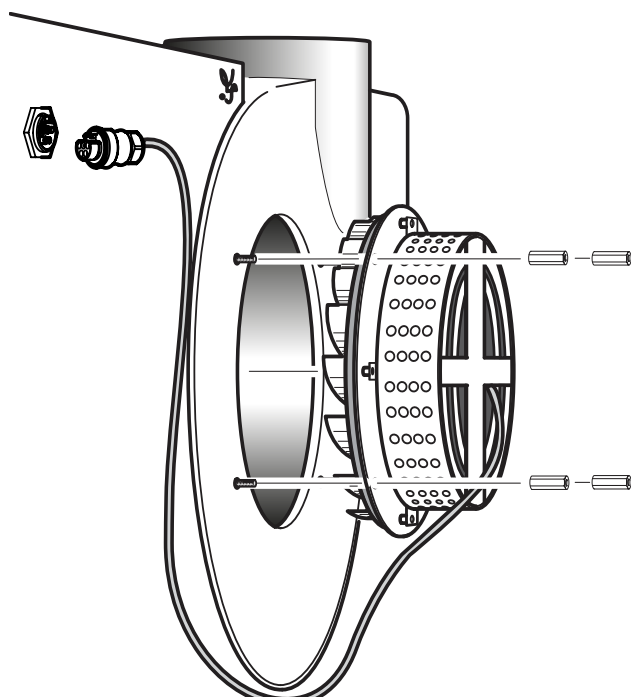


10 Service

Fan

The fan is a central part of VEDEX 4000 and should be treated with care. The fan should be removed and cleaned about twice a year for optimum function and a long service life.

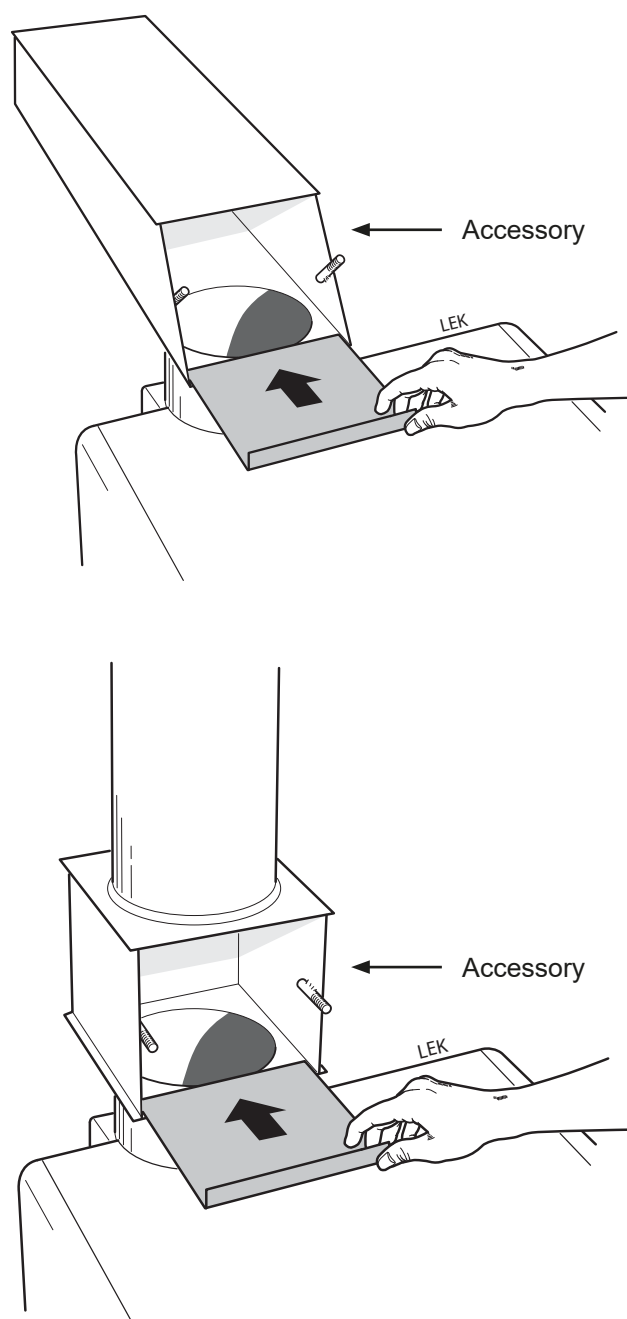
- Check that the boiler is off and that no embers are in the combustion chamber.
- Disconnect the fan from the electrical socket on the boiler.
- Remove the long nuts securing the fan to the boiler.
- Clean the fan blades carefully to prevent deforming them.
- Reinstall the fan and connect the electrical cable.



Cover plate

To prevent soot from getting into the flue gas fan when sweeping, use the supplied cover plate as follows:

- Remove the soot door.
- Insert the cover plate over the hole as illustrated.
- Reinstall the soot door to prevent soot exiting when sweeping.
- Do not forget to remove the cover plate when sweeping is complete.



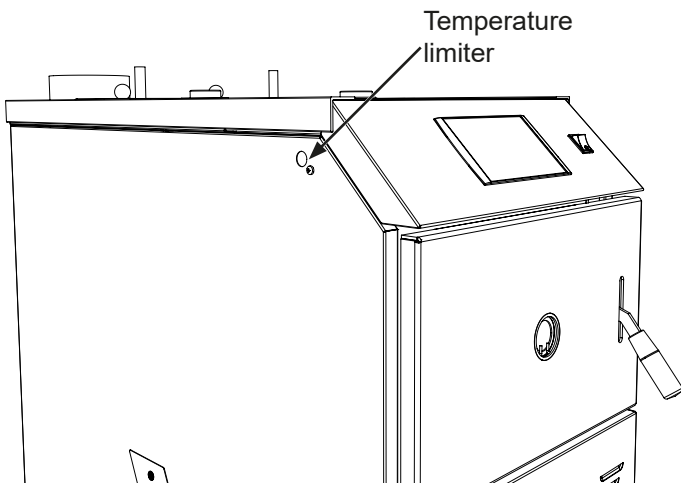
Boiler (STB) Temperature Limiter

Resetting of the boiler temperature limiter (STB)

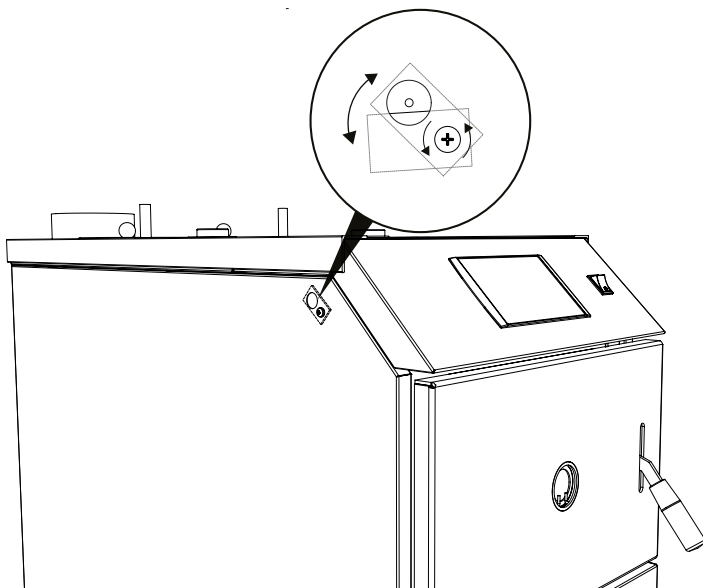
NOTE

Tripping of the boiler's temp limiter warns of incorrect operation of the System, which requires investigation.

1. The STB temperature limiter is available on the left cover side in the upper part.



2. Disconnect the boiler power supply cables.
3. Loosen the screw holding the plate which closes the access to STB switch. Now expose the STB temperature limiter by moving the plate down.
4. Press down STB temperature limiter, shift back the blank plate and tighten the screw holding it.

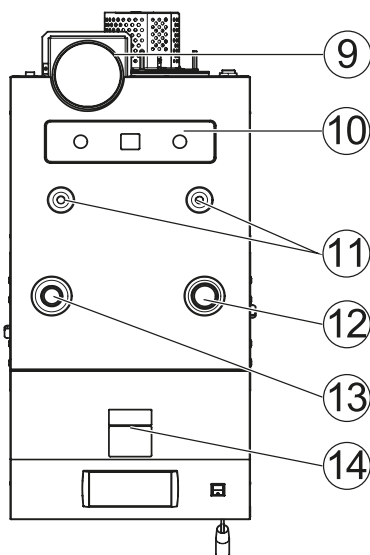
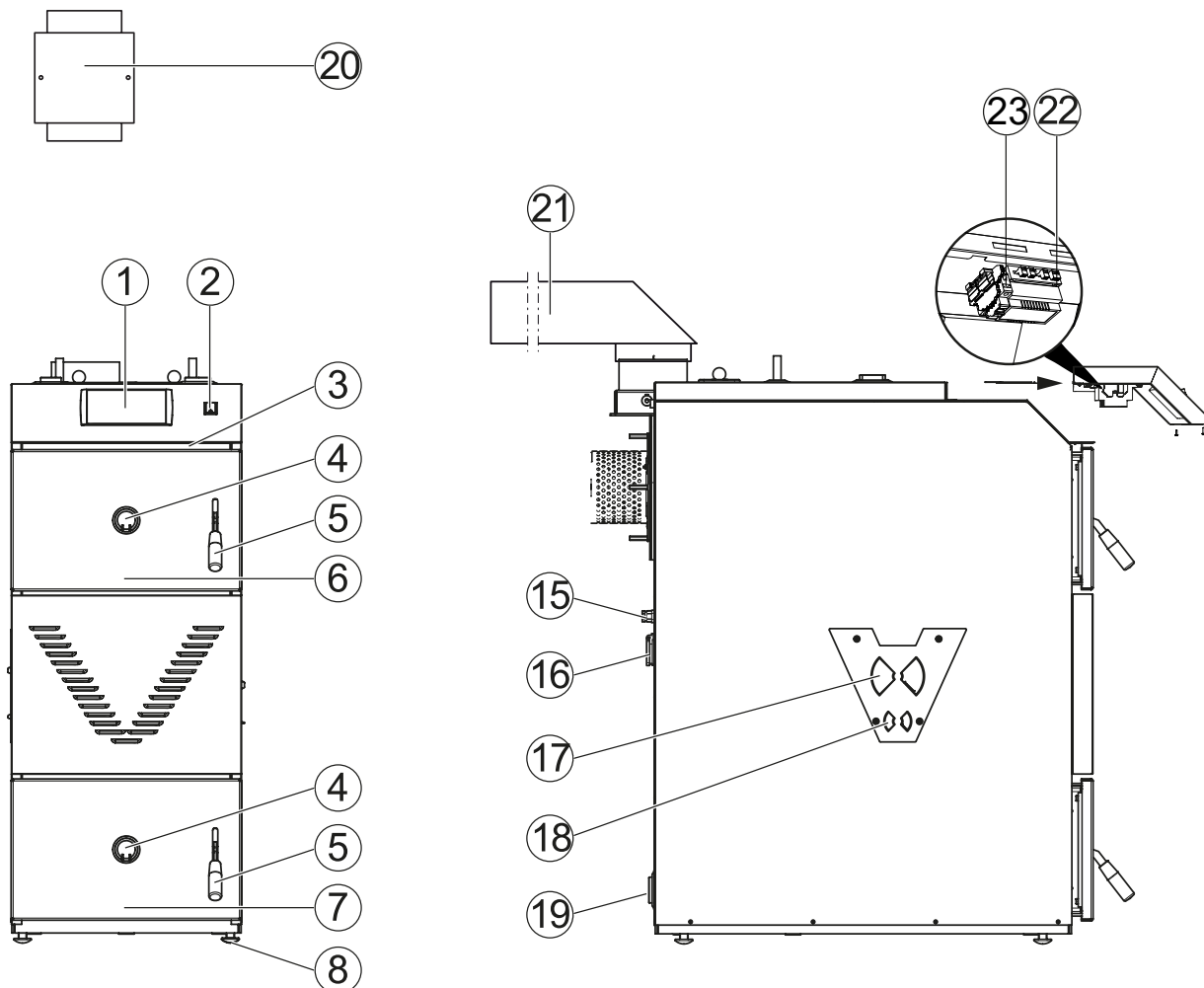


Troubleshooting

Fault	Cause	Correction
The fan impeller rotates in the wrong direction	wrong cable connection	check with electric scheme
Smoke pours through the door	faulty glass cord	replace the sealing cord
		adjust the door hinges
	the nozzle is clogged	do not burn small pieces of wood or sawdust
	small chimney draught	fault in the chimney
	the door is not completely closed	close the boiler door
Boilers do not achieve the required outputs and set water temperature	lack of water in the heating system	refill
	a high pump output	adjust the pump flow and switching
	the boiler output is not sufficiently sized for the water system	adjust/change the installation
	low-quality fuel	use only dry wood with moisture content below 20%
	leaking firing-up safety valve	repair
	small chimney draught	a new chimney, check and change connection, to low exhaust fan rotation
	strong chimney draught	position the throttle into the smoke-flue (draught limiter), to high exhaust fan rotation
	bent blades of draw-off ventilator	wrong exhaust fan assembly, straighten the blades (to 90° angle)
	long firing-up of the boiler	Incorrect firing, incorrect settings in the controller, faulty exhaust fan
	insufficiently cleaned boiler	clean
	clogged combustion air hole in the burning chamber	clean
The ventilator does not rotate	clogged impellor	remove the tar and deposits from the ventilator
	faulty capacitor	replace
	faulty engine	replace
Water inside burning chamber	the wood is too moist	use only dry wood with moisture content below 20%
	set temperature is too low	increase set temperature of the boiler
	temperature of return water is too low	use safety valve to protect return from too low temperature
Temperature of the boiler body is high	opened boiler door	close the boiler door
No power	No power	check the power in outlet
		check the plug and cord

11 Component locations

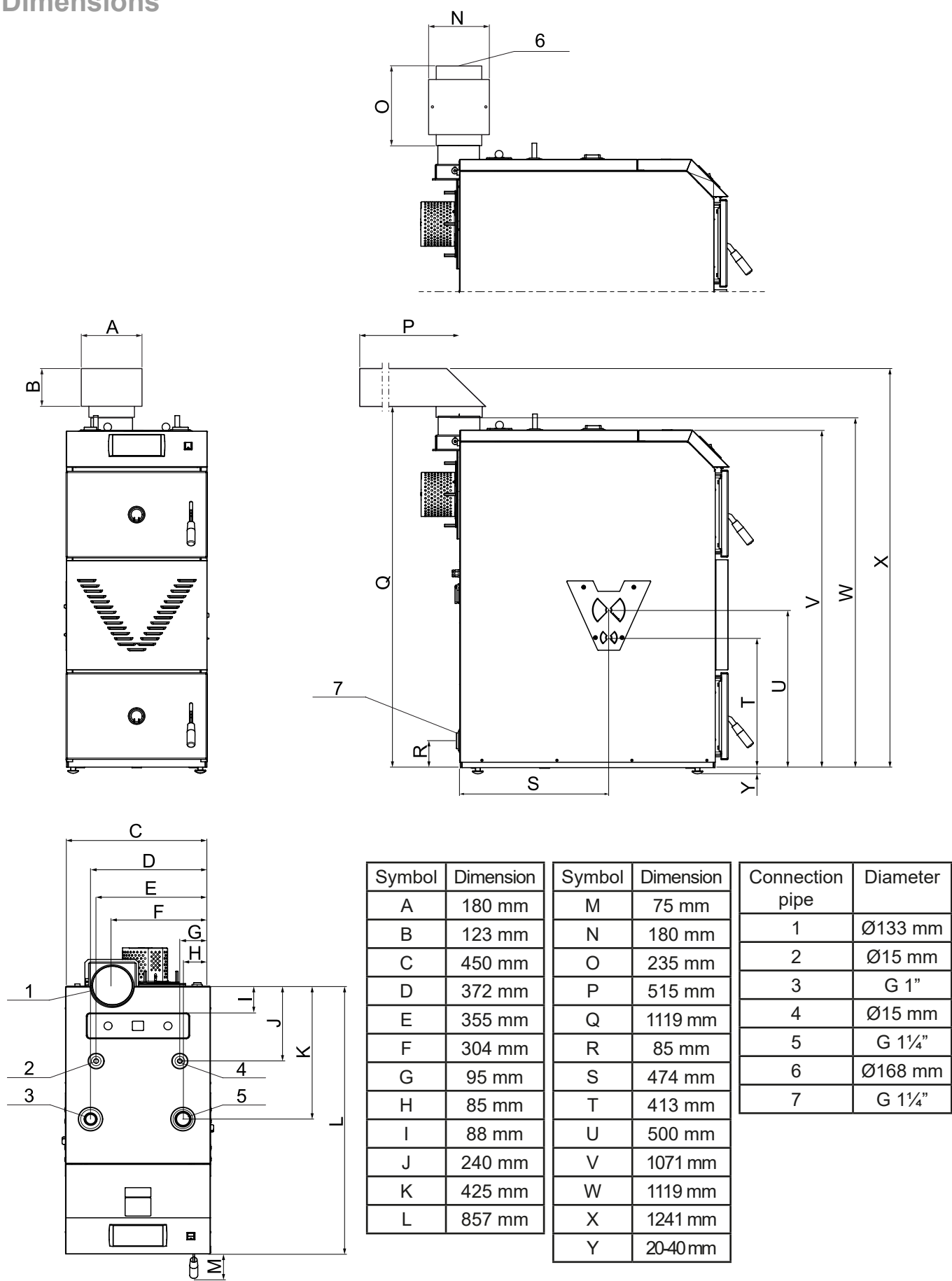
Component location, boiler section



- 1 Boiler regulator (operator panel).
- 2 Main ON/OFF switch.
- 3 Microswitch
- 4 Sight glass
- 5 Hatch handle
- 6 Filler door
- 7 Combustion door
- 8 Adjustable feet
- 9 Flue gas connection
- 10 Turbulators top cover
- 11 Cooling coil
- 12 Flow line
- 13 Expansion terminal
- 14 Dataplates
- 15 Connection cable electricity
- 16 Electrical socket for charge pump
- 17 Adjust primary air
- 18 Adjust secondary air
- 19 Return connecting, or drain connection
- 20 Vertical flue pipe (accessory)
- 21 Horizontal flue pipe (accessory)
- 22 Main module CAN I/O
- 23 Circuit breaker

12 Dimensions

Dimensions



Standard equipment

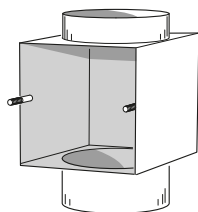
Soot scraper (1 pcs.)
Ramrod handle (1 pcs.)
Spring steel hand grip (1 pcs.)
Boiler shovel (1 pcs.)
Cleaning brush (1 pcs.)
Soot brush (1 pcs.)
Turbulator - fire chamber (4 pcs.)
Turbulator - central (4 pcs.)
Turbulator - right (1 pcs.)
Turbulator - left (1 pcs.)
Fan complete (1 pcs.)
Schuko plug 230V (1 pcs.)
Draining valve (1 pcs.)
Spring Washer (4 pcs.)
Stand offs (4 pcs.)
Users manual (1 pcs.)

Accessories

Vertical flue pipe

For vertical chimney connections this unit is used for the vertical flue pipe.

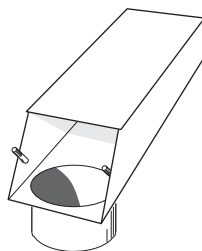
Collar, Ø int. 159 mm
Lower connector, Ø int. 139 mm
Ø ext. 144 mm
RSK no. 621 07 38



Horizontal flue pipe

For horizontal chimney connections this unit is used for the horizontal flue pipe.

Collar, Ø int. 140 mm
Lower connector, Ø int. 160 mm
Ext. 163 x 117 mm
RSK no.



13 Technical Data

Technical data/Technica specifications

Parameter	Unit	Value
Height	mm	1139-1159 (without flue pipe)
Width	mm	450
Depth	mm	850
Weight	kg	295
Boiler water volume	l	65
Voltage	V	230
Max. available output, wood firing	kW	40
Average output during wood firing	kW	35
Nominal heat output and heat output range	kW	39,4kW
Wood magazine volume	l	95
Wood magazine width x depth	mm	300 x 530
Filler door width	mm	300
Filler door height	mm	250
Electrical connections including appliance and main-switch-off	A	16
Max. permitted total current for connected units	A	5
Max. operating pressure/design pressure boiler	bar	2,5
Max. wood length	mm	500
Max. wood moisture	%	<20
Fan	W	70
Power consumption in standby mode	W	13
Auxiliary power requirement	W	32
Necessary draught	mBar	0,15
Necessary accumulator storage	l	1500
Combustion period in hours at QN	h	2
Noise level	dB	48
RSK no.	-	
Approved in accordance with EN 303-5 Class 5		

* Max. output: 40 kW. Nominal output: 35 kW = Average output over 4 hours with chimney draught of 15 Pa, wood moisture: 16 %.

The boiler is designed for heating systems with pump circulation. Manufactured according to applicable norms. All dimensions in mm. We reserve the right to make changes to designs.

Other information

Parameter	Unit	Value
Exhaust gas temperatures at nominal heat outputs (avarage temperature in tests)	°C	170
Minimum return temperature at boiler return tapping	°C	60
Setting range for the temperature controller	°C	60-90
Flue gas mass flow	kg/s	0,00283
Cold water pressure for safety heat exchanger	bar	1,5
Cold water temperature for safety heat exchanger	°C	12
Water pressure test conducted in production plant	bar	4
Commissioning, including the required boiler output range	kW	

Water-side resistance

Temperature difference	Water flow [m³/h]	Pressure drop [mbar]
10 K	3,7	24
20 K	2	5

DEKLARACJA ZGODNOŚCI UE

DECLARATION OF CONFORMITY
KONFORMITÄTSERKLÄRUNG

2018

**Producent:****NIBE-BIAWAR sp. z o.o.***Manufacturer:*

Al. Jana Pawła II 57

Hersteller:

15-703 BIAŁYSTOK

Tel. +48 85 6628490; Fax: +48 85 6628409

Przedmiot deklaracji:**Kocioł na paliwo stałe***Object of the declaration:**Boiler fired by solid fuel**Gegenstand der Deklaration:**Festbrennstoffkessel***Model Produktu:****VEDEX 4000***Product Model:**Produktmodell:*

Wymieniony powyżej przedmiot niniejszej deklaracji zgodności UE jest zgodny z odnośnymi wymaganiami unijnego prawodawstwa harmonizacyjnego:

*Mentioned above object of this EU declaration of the conformity is compatible with the relevant Union harmonization legislation:
Der oben genannte Gegenstand dieser EU- Konformitätserklärung ist mit den einschlägigen Harmonisierungsrechtsvorschriften der Union vereinbar:*

- Dyrektywa Kompatybilności Elektromagnetycznej (EMC): **2014/30/UE**
Electromagnetic Compatibility (EMC):
Elektromagnetische Verträglichkeit (EMV):
- Dyrektywa Niskonapięciowa (LVD): **2014/35/UE**
Low Voltage Directive (LVD):
Niederspannungsrichtlinie (LVD):
- Dyrektywa Ciśnieniowa (PED): **2014/68/UE**
Pressure Equipment Directive (PED):
Druckgeräterichtlinie (PED):
- Dyrektywa Maszynowa (MD): **2006/42/UE**
Machinery Directive (MD):
Maschinenrichtlinie
- Dyrektywa Ograniczenia Substancji Niebezpiecznych (RoHS): **2011/65/UE**
Restriction of the use of Hazardous Substances (RoHS):
Beschränkung der Verwendung gefährlicher Stoffe (RoHS):
- Rozporządzenie REACH: **1907/2006/WE**
REACH Regulation:
REACH-Verordnung
- Dyrektywa zużytego sprzętu elektrycznego i elektronicznego (WEE): **2012/19/UE**
Waste Electrical and Electronic Equipment Directive (WEEE):
Richtlinie über Elektro- und Elektronik-Altgeräte (WEEE):
- Dyrektywa etykietowania produktów związanych z energią: **2010/30/UE**
Energy Labelling Directive:
Energiekennzeichnungsrichtlinie:
 - Rozporządzenie Komisji (UE) nr 2015/1187
Commission Regulation (EU) No. 2015/1187
Verordnung (EU) Nr. 2015/1187 der Kommission

NIBE - BIAWAR sp. z o.o.

15-703 Białystok, Al. Jana Pawła II 57

tel. 085 622 84 90, fax 085 662 84 09

REGON: 050042407 NIP: PL 542-02-00-292

Sąd Rejonowy w Białymstoku XII Wydział Gospodarczy KRS 0000030931

Wysokość kapitału zakładowego: 4 200 000,00 zł

Informacje dodatkowe:

Te urządzenia ciśnieniowe są objęte art. 4 Dyrektywy 2014/68/UE. W sposób określony w pkt 3 niniejszego artykułu, urządzenie jest zaprojektowane i wyprodukowane zgodnie z dobrą praktyką inżynierską państwa członkowskiego tak, aby zapewnić bezpieczne użytkowanie. Sprzęt taki nie podlega oznakowaniu CE opisanym w Artykule 18 Dyrektywy 2014/68/UE.

Additional information

This pressure equipment is covered by Article 4 in EU Directive 2014/68/UE. As prescribed in item 3 of this article, the equipment is designed and manufactured in accordance with the sound engineering practice of a member state in order to ensure safe use. Such pressure equipment must not bear the CE marking referred to in Article 18 in EU Directive 2014/68/UE.

Zusätzliche Informationen

Diese Druckgeräte fallen unter Artikel 4 der EU-Richtlinie 2014/68 / EU. Wie in Punkt 3 dieses Artikels vorgeschrieben, wird das Gerät in Übereinstimmung mit der guten Ingenieurspraxis eines Mitgliedstaates entworfen und hergestellt, um eine sichere Verwendung zu gewährleisten. Diese Druckgeräte dürfen nicht die CE-Kennzeichnung gemäß Artikel 18 der EU-Richtlinie 2014/68 / EU tragen.

Zastosowane normy i specyfikacje techniczne:

Applied standards and technical specifications:

Angewandte Normen und technische Spezifikationen:

PN-EN 60335-1:2012	Elektryczny sprzęt do użytku domowego i podobnego -- Bezpieczeństwo użytkowania -- Część 1: Wymagania ogólne <i>Household and similar electrical appliances - Safety - Part 1: General requirements</i> <i>Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke - Teil 1: Allgemeine Anforderungen</i>
PN-EN 60335-2-102:2016-03	Elektryczny sprzęt do użytku domowego i podobnego -- Bezpieczeństwo użytkowania -- Część 2-102: Wymagania szczegółowe dotyczące urządzeń spalających gaz, olej i paliwa stałe, mających połączenia elektryczne. <i>Household and similar electrical appliances. Safety. Particular requirements for gas, oil and solid-fuel burning appliances having electrical connections</i> <i>Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke - Teil 2-102: Besondere Anforderungen für Gas-, Öl- und Festbrennstoffgeräte mit elektrischen Anschlüssen</i>
PN-EN ISO 12100:2012	Bezpieczeństwo maszyn -- Ogólne zasady projektowania -- Ocena ryzyka i zmniejszanie ryzyka <i>Safety of machinery. General principles for design. Risk assessment and risk reduction.</i> <i>Sicherheit von Maschinen - Allgemeine Gestaltungsgrundsätze - Risikobeurteilung und Risikominderung</i>
PN-EN 303-5:2012	Kotły grzewcze -- Część 5: Kotły grzewcze na paliwa stałe z ręcznym i automatycznym zasypem paliwa o mocy nominalnej do 500 kW -- Terminologia, wymagania, badania i oznakowanie <i>Heating boilers. Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 500 kW. Terminology, requirements, testing and marking</i> <i>Heizkessel - Teil 5: Heizkessel für feste Brennstoffe, manuell und automatisch beschickte Feuerungen, Nennwärmeleistung bis 500 kW - Begriffe, Anforderungen, Prüfungen und Kennzeichnung</i>
PN-EN ISO 9606-1:2017-10	Egzamin kwalifikacyjny spawaczy -- Spawanie -- Część 1: Stale <i>Qualification testing of welders. Fusion welding. Steels</i> <i>Prüfung von Schweißern - Schmelzschweißen - Teil 1: Stähle</i>
PN-EN ISO 3834-2:2007	Wymagania jakości dotyczące spawania materiałów metalowych -- Część 2: Pełne wymagania jakości <i>Quality requirements for fusion welding of metallic materials. Comprehensive quality requirements</i> <i>Qualitätsanforderungen für das Schmelzschweißen von metallischen Werkstoffen - Teil 2: Umfassende Qualitätsanforderungen</i>
PN-EN ISO 15614-1:2017-08	Specyfikacja i kwalifikowanie technologii spawania metali -- Badanie technologii spawania -- Część 1: Spawanie łukowe i gazowe stali oraz spawanie łukowe niklu i stopów niklu <i>Specification and qualification of welding procedures for metallic materials. Welding procedure test. Arc and gas welding of steels and arc welding of nickel and nickel alloys</i> <i>Anforderung und Qualifizierung von Schweißverfahren für metallische Werkstoffe - Schweißverfahrensprüfung - Teil 1: Lichtbogen- und Gasschweißen von Stählen und Lichtbogenschweißen von Nickel und Nickellegierungen</i>
PN-EN 10204:2006	Wyroby metalowe -- Rodzaje dokumentów kontroli <i>Metallic products. Types of inspection documents.</i> <i>Metallische Erzeugnisse - Arten von Prüfbescheinigungen</i>
PN-EN 55014-1:2017-06	Kompatybilność elektromagnetyczna -- Wymagania dotyczące przyrządów powszechnego użytku, narzędzi elektrycznych i podobnych urządzeń -- Część 1: Emisja <i>Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Emission</i> <i>Elektromagnetische Verträglichkeit - Anforderungen an Haushaltgeräte, Elektrowerkzeuge und ähnliche Elektrogeräte - Teil 1: Störaussendung</i>
PN-EN 55014-2:2015-06	Kompatybilność elektromagnetyczna -- Wymagania dotyczące przyrządów powszechnego użytku, narzędzi elektrycznych i podobnych urządzeń -- Część 2: Odporność -- Norma grupy wyrobów

NIBE - BIAWAR sp. z o.o.

15-703 Białystok, Al. Jana Pawła II 57

tel. 085 622 84 90, fax 085 662 84 09

REGON: 050042407 NIP: PL 542-02-00-292

Sąd Rejonowy w Białymstoku XII Wydział Gospodarczy KRS 0000030931

Wysokość kapitału zakładowego: 4 200 000,00 zł

PN-EN 61000-3-2:2014-10

*Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus.
Immunity. Product family standard
Elektromagnetische Verträglichkeit - Anforderungen an Haushaltgeräte, Elektrowerkzeuge und ähnliche Elektrogeräte
- Teil 2: Störfestigkeit - Produktfamiliennorm*

Kompatybilność elektromagnetyczna (EMC) -- Część 3-2: Poziomy dopuszczalne -- Poziomy dopuszczalne emisji harmonicznego prądu (fazowy prąd zasilający odbiornika < lub = 16 A)
Electromagnetic compatibility (EMC). Limits. Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)

PN-EN 61000-3-3:2013-10

Elektromagnetische Verträglichkeit (EMV) - Teil 3-2: Grenzwerte - Grenzwerte für Oberschwingungsströme (Geräte-Eingangsstrom ≤ 16 A je Leiter)

Kompatybilność elektromagnetyczna (EMC) -- Część 3-3: Poziomy dopuszczalne --
Ograniczanie zmian napięcia, wahań napięcia i migotania światła w publicznych sieciach zasilających niskiego napięcia, powodowanych przez odbiorniki o fazowym prądzie znamionowym < lub = 16 A przyłączone bezwarunkowo

Electromagnetic compatibility (EMC). Limits. Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection

Elektromagnetische Verträglichkeit (EMV) - Teil 3-3: Grenzwerte - Begrenzung von Spannungsänderungen, Spannungsschwankungen und Flicker in öffentlichen Niederspannungs-Versorgungsnetzen für Geräte mit einem Bemessungsstrom ≤ 16 A je Leiter, die keiner Sonderanschlussbedingung unterliegen

PN-EN 62233:2008

Metody pomiaru pól elektromagnetycznych elektrycznego sprzętu do użytku domowego i podobnego z uwzględnieniem narażania człowieka

Measurement methods for electromagnetic fields of household appliances and similar apparatus with regard to human exposure

Verfahren zur Messung der elektromagnetischen Felder von Haushaltsgeräten und ähnlichen Elektrogeräten im Hinblick auf die Sicherheit von Personen in elektromagnetischen Feldern

Niniejsza deklaracja zgodności wydana zostaje na wyłączną odpowiedzialność producenta

*The declaration of the conformity is issued under the exclusive responsibility of the manufacturer
Diese Konformitätserklärung wird unter ausschließlicher Verantwortung des Herstellers ausgestellt*

Główny Konstruktor

*Chief Designer
Hauptkonstrukteur*


Jerzy Spierzak

Dyrektor Techniczny

*Technical Director
Technischer Direktor*


Roman Chomczyk

NIBE Energy Systems
Hannabadsvägen 5
Box 14
SE-285 21 Markaryd
info@nibe.se
nibe.eu