

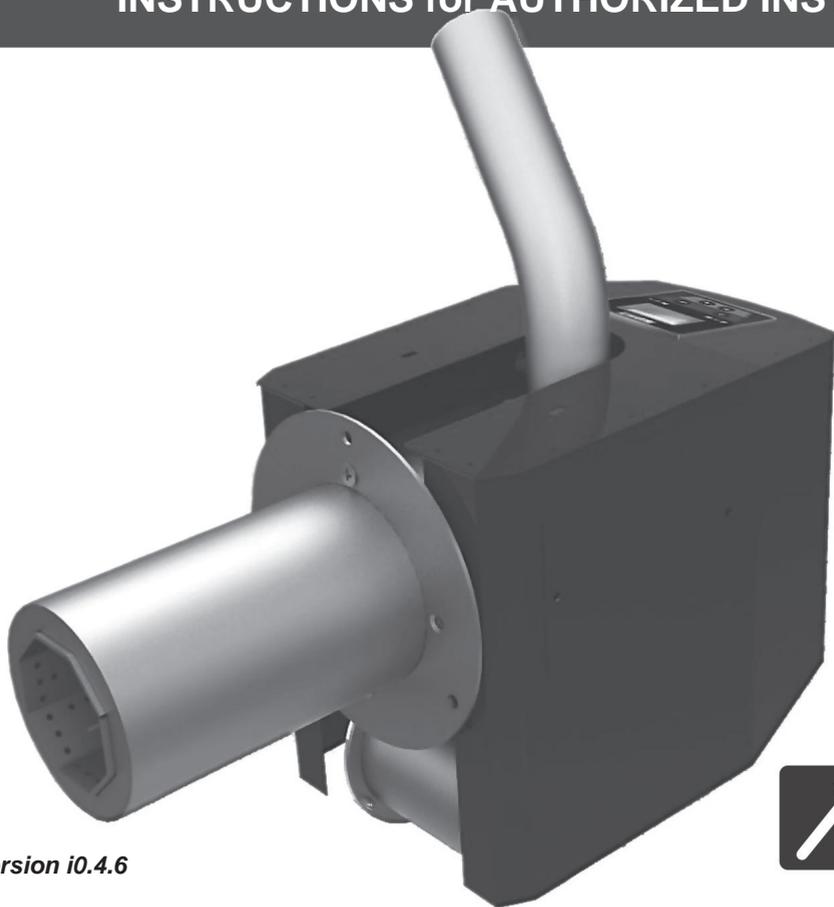
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BURNIT
by **SUNSYSTEM**

PELLET BURNER

PELL V.2 series

TECHNICAL PASSPORT
INSTALLATION and OPERATION
INSTRUCTIONS for AUTHORIZED INSTALLERS



Version i0.4.6



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to fire or injury. Contact your local building inspector if you need prior approval to install this product.

- It is mandatory to install a smoke detector in the room where the burner is installed. • The Pell burner is not designed for installation in

mobile caravans, trailers

and the so-called

1.2.2. Instructions for the user of the installation

\$	<p>HAZARD of poisoning or explosion <i>Do not use waste, plastics, naphthalene or liquids - gasoline, motor oil - to light the burner.</i></p> <p>- Use only those specified in this fuel instruction, otherwise the warranty may be voided.</p> <p>- If there is a danger of explosion, ignition, or release of exhaust gases in the room, stop the burner and the boiler from operation.</p>
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y	<p>backup power supply - generator, with the corresponding power! (see item 12.3)</p> <p>It is mandatory to provide</p>
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y	<p>the installer/service is obliged to train the user on the operation and</p> <p>of the boiler.</p>
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y	<p>ATTENTION! Risk of injury / equipment damage due to incompetent operation</p> <p>-The pellet burner can only be serviced by persons who are familiar with the instructions for use.</p> <p>-As a user, you are only allowed to put the burner into operation, to set the operating mode of the control to take the burner according to the instruction out of operation.</p> <p>- Access of unsupervised children in the room with working burner and boiler is prohibited.</p>
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General safety rules to be followed by the user:

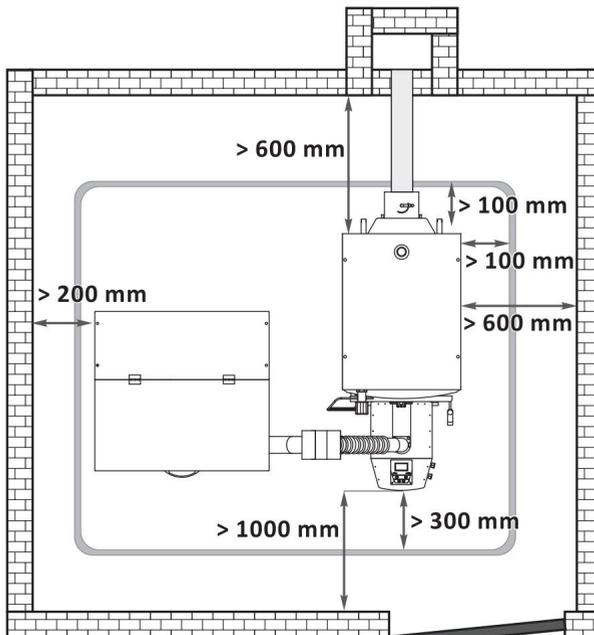
- Operate the pellet burner only with the recommended fuel, periodically checking the boiler room.
- Do not use liquids to ignite the fire and to increase the power.
- Clean the surface of the burner only with non-combustible means.
- Do not place flammable objects on or near the burner. (see scheme 1 for minimum distances)
- Do not store combustible materials in the boiler room.
- The boiler on which the burner is mounted, the chimney and the additional connections must comply with the fire and emergency safety regulations of the respective country.
- Strict compliance with the instructions for the electrical connection of the burner to the electrical network and to the peripheral devices is mandatory. - Modifications to the burner design by the user may result in damage to the appliance or injury.
- Do not allow contact of a current-carrying or sensor wire to parts of the boiler where the surface temperature may exceed 70°C.
- This instruction to be kept through the entire period of use of the burner.
- Dismantle the burner in cases when you heat the boiler with alternative (primary) fuel - wood, wood briquettes, coal or other fuel.

-	<p>ATTENTION! Hot surface! <i>There is a risk of burns when touching the operating system. The burner casing, body and flange are hot surfaces during burner operation.</i></p> <p>It is absolutely forbidden to open the inspection doors of the boiler when the burner is working.</p> <p>Also, be careful when touching the combustion eyepiece. He can be hot.</p>
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1.2.3. Minimum distance during installation and flammability of building materials

Other minimum distances than those below may apply in your country. Please consult your installer.

The minimum distance of the heating boiler or exhaust gas pipe from objects and walls must be no less than 200 mm.



Scheme 1

Table 1. Flammability of building materials

Class A - non-combustible	Stone, bricks, ceramic tiles, baked clay, solutions, plaster without organic additives.
Class B - hard to burn	Gypsum board, basalt felt, glass phaser, AKUMIN, Izomin, Rajolit, Lignos, Velox, Heraklit.
Class C1/C2 - medium combustible	Wood beech, oak Softwood, laminated wood

Class C3 - easily combustible	Asphalt, cardboard, cellulose, tar, wood fiber, cork, polyurethane, polyethylene.
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The recommended distance of the boiler with the burner installed on it from the walls is shown in diagram 1.

For general safety, we recommend that the boiler be placed on a foundation of grade material A, see Table 1.

2. PRODUCT DESCRIPTION

The pellet burner for water heating boilers BURNIT Pell is designed to burn only wood pellets, and its purpose is to heat heating boilers. The built-in microprocessor control, self-cleaning system and internal auger ensure the automated operation of the burner and optimal fuel burning.

2.1. Construction

The burner is made of high-quality stainless steel, resistant to temperatures up to 1150°C. The burner is installed

to a heating boiler.

The burner consists of two parts: a combustion chamber tube and an outer tube with a sheet metal lining. Longitudinally under the skin are located a blowing chamber, a heater for igniting the fuel, a fan, and an electrical power supply. At the top of the burner is the feed pipe to which the pellet auger connects. The casing of the burner is constructed according to all safety standards (without sharp and protruding elements), and the operating temperature does not exceed 50°C.

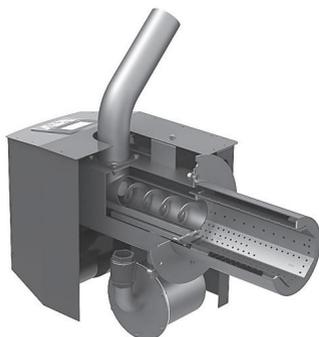
The combustion chamber consists of two pipes:

Heat-resistant steel tube in the inner part of the burner, with air inlet holes along the entire length, hot air hole from the fuel ignition heater, photo sensor hole.

Stainless steel outer tube. Space is provided between the two pipes for the free circulation of air, necessary for both cooling and bringing

oxygen in the combustion chamber.

The feed pipe can be rotated 360° so that it is in a convenient position for binding to the hopper auger.



scheme 2. Pellet burner device

• Built-in microprocessor control.

The main control unit located in the burner manages the entire heating process.

Functions:

- 1) automated ignition and pellet feeding;
- 2) self-cleaning function, activated one to six times every 24 hours;
- 3) control of the heating pump

installation;

- 4) control from an external room thermostat;
- 5) timer;
- 6) control of a DHW pump (domestic hot water).

• Photo sensor - monitors the strength of the flame the burner

• Internal auger

• Dry non-contact heater, providing fuel ignition.

• Innovative fuel cleaning system camera

• Variable pressure fan (from 0% to 100%).

2.2. Burner safety guards

• Bent feed tube. The geometry of the burner feed pipe prevents backfire from the burner from entering the pellet hopper.

• Thermostatic protection (80°C). The thermostatic protection is mounted on the supply pipe. When reaching 80°C on the surface of the supply pipe, the control stops the supply of pellets to the burner and signals an emergency.

• Fuse. In the event of an electrical fault in the burner system (short circuit, high current, etc.), the overload is taken over by an electrical fuse mounted on the main burner control unit (10 A).

• Power failure. In the event of a power failure, all set parameters are saved in the controller's memory. At the next restart of the burner, the controller continues the execution of the program where it left off

power cut.

3. FUEL

	<p>When buying pellets, ask for a declaration of conformity and a certificate from an accredited laboratory and make sure that the fuel meets the requirements mentioned in the instructions. When buying a large amount of pellets (for example, needed for one heating season), ask your supplier to inform you precisely and correctly about the storage method</p> <p>of the pellets.</p>
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We recommend pellets with a diameter of 6-8 mm, density 600-750 kg/m³, calorific value 4.7-5.5 kWh/kg. Dust content - no more than 1% and humidity up to 8%, EN ISO 17225-2:2014. The optimal density of the pellets, which guarantees their quality, is in the range of 605-

700 kg. per cubic meter

The moisture in the pellets should not exceed 10%. Make sure you store your fuel in a dry and ventilated place.

The optimal amount of ash in the pellets is \leq 1%. This causes less frequent cleaning of the burner.

The following table contains the parameters that we recommend you take into account when choosing fuel for your "Pell" burner.

4. TRANSPORTING THE BURNER

When loading, transporting and unloading the product, appropriate safety equipment must be used in accordance with Directive 2006/42/CE. The product must be in its original packaging, observing the instructions on the label - to protect it from adverse weather conditions (snow, rain and dust), from shocks, impacts and other actions that can cause damage. In case of malfunction of the fan or the motor unit (noise, friction) or in case of damage to a high-tech element such as a non-functioning LCD screen, contact the nearest authorized service for repairs and maintenance.

- Overall dimensions of the burner packaging: 470x350x760 mm

- Overall dimensions of the auger package:

260x120x1700 mm.

- Dimensions of the package (wooden case) of the **Pell 150 burner**:

865x435x630mm

5. DELIVERY OF THE BURNER

- Upon delivery, check the integrity of the packaging- and.
- Check that you have received all components.

The delivery of the burner includes (see diagram 3):



scheme 3. Items on delivery Pell burner

v.2

- 1) Burner
- 2) Supply pipe
- 3) Rye
- 4) Screw
- 5) Installation and operating instructions
- 6) Service book and Warranty card

If you find a missing component turn around to your supplier.

6. STORAGE OF THE BURNER

Pell torches should be stored in dry and well-ventilated areas. Burners and feeders must NOT be stored together with fertilizers, acids, chemicals, etc. which could damage them. Recommended storage temperature from +5°C to +40°C. Recommended relative air humidity - below 70%. During storage, the products must be placed on racks, on a maximum of two levels, and must be in their original packaging. The storage period should not exceed 2 years from the date of production. It is recommended that the burner be tested before installation. The quality and safety of the burner must be confirmed by a test,

mentioned in the Warranty card.

7. ASSEMBLY OF THE BURNER

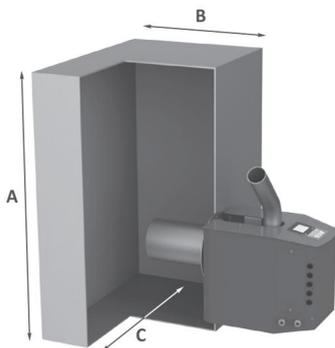
ÿ	<p>The assembly, installation and adjustment and of the burner must be carried out by a specialist authorized for the purpose. The installer is obliged to indicate to the user of the installation the minimum distances to flammable materials and liquids.</p>
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We recommend a Pell pellet burner to be mounted to boilers with the following fuel sizes

cameras:

Table 3

	Pell 25	Pell 40	Pell 70	Pell 90	Pell 150
A	250	350	350	500	500
B	390	450	550	750	800
C	250	450	450	500	500



Scheme 4. Installation of a Pell v.2 burner to a combustion chamber

7.1. Connecting the burner to the hopper and auger

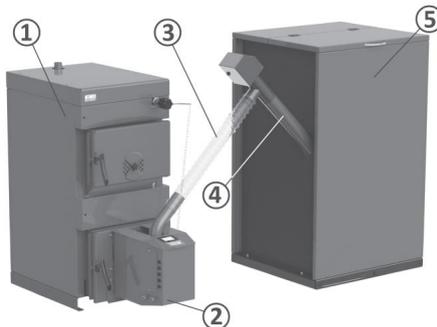
- Take the flexible feed tube (from the auger kit). Secure one end to the top of the auger using a clamp.

- Fasten the other end to the supply pipe using a clamp. - Don't forget - the auger is mounted at 45° to the ground horizontal.

- Fill the hopper with fuel (see table 2 for the parameters of the fuel used)

- Connect the auger power cable (plug) to the burner using the indicated socket (shuko) connected by

the left side of the burner.



Scheme 5. Mounted on a Pell v.2 burner to a WBS boiler

1. Boiler WBS; 2. Pell burner;
3. Flexible pipe; 4. Screw;
5. Hopper for pellets.

7.2. Connecting the burner to an electrical and network

ÿ	<p>Performed by specialist / service authorized for the purpose</p>
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+	<p>Attention! ELECTRICITY!</p> <p>- Before opening the appliance: switch off the voltage and secure the device against accidental re-connection.</p> <p>- Follow the instructions for installing.</p>
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<p>It is mandatory to use a backup electric power supply - generator, with mandatory reserve (see item 12.3)</p>
<p>Check that the power supply network is grounded.</p>
<p>During lightning storms, disconnect the device from the mains in order to protect against electric shock blow.</p>

In order to put the Pell burner into operation, it must be connected to the electrical network from a 220V/50Hz plug (length 3 meters, connected to the burner).

Build a solid connection to the power grid that meets local regulations.

Table 3. OUTPUT OF NPBC-V3C-1/NPBC-V4C-1/NPBC-V4E-1

GET OUT		ENTRANCES	
FM	Air blower	RT	Room thermostat. To this entrance can to include a normally open or normally closed contact, without additional voltage!
FSG	Flue gas fan The output is not output for binding	PS	Photo sensor
SF	Fuel auger	RB	Temperature sensor at the top of the buffer
SB	Internal auger	B	Boiler temperature sensor
PH	Circulation pump for heating	WH	Thermosensor in hot water boiler
PWH	DHW circulation pump	PT	Sensor for the temperature in the lower part of the buffer
IGN	Ignition heater	OD	Backburner sensor
FC	Cleaning fan	--	

7.3. Possible problems and their prevention Table 4.

Malfunction	Reason	Removal
<p>1.1. Immediately consult - in the boiler, on combination of No Yes Install at the outlet which you wrote with your installer, it was installed - 1.1. Improperly sized for the problem. the rail is low. installation and/or for heating equipment</p> <p>reach normal draining Y PIC-tap, which temperature mode is included in the set.</p> <p>65° - 85°C</p>		
<p>on unburnt pellets in analyzer. the combustion chamber of the 2.2.</p>	<p>necessary to make the correct adjustment of controller using the gas burner</p> <p>2.2. Using the boiler</p> <p>low-quality pellets (shorter than specified length)</p>	<p>2.1. Refer to your 2.1. Bad installer setup. It is the fuel ratio 2. Exhaust and air in the burner</p> <p>use fuel responsibly of the requirements specified in the instruction.</p>
<p>3. Education on pieces of slag and non-combustible inclusions in the burner body.</p>	<p>use fuel, low-quality pellets (with a high dust content that meets the requirements)</p> <p>of the self-cleaning system</p> <p>3.3. Poor fuel setting - 3.3. Settings with the air mixture 4. 1. Bad</p>	<p>Mandatory 3.1. 3.1. specified in the instruction. 3.2. Increase the number 3.2. Insufficient work on the inclusions on the self-cleaning system.</p>
<p>imperative to clean the chamber of the pellet burner</p>	<p>draft of the chimney of 4.1. Immediately consult your boiler or high internal problem that has arisen.</p> <p>boiler chamber</p> <p>4.2. Clogging of the fuel 4. Smoke in the hopper for 4.2. It is of the brush burner being deposited non-combustible materials</p> <p>4.3. Poor fuel setting - 4.3. Settings with the air mixture 5.1.</p>	<p>resistance of the fuel installer about the</p> <p>burning of the combustion chamber as a result</p>
<p>5. Unstable pla-non-combustible dark (photosensor reads >180 units at operating power) maximum dust sensor</p>	<p>Clogging of the fuel 5.1. It is imperative to clean the burner chamber net of the combustion chamber as a result of the burner being deposited with a brush</p> <p>5.2. Pollution of photo-sensor</p> <p>5.3. Bad fuel setting - 5.3. Settings with the air mixture It is</p>	<p>5.2. It is imperative to clean the photosensor. The instructions mention how to do this.</p>
<p>6. High boiler temperature. The controller is not working.</p>	<p>6.1. Fluctuations in the electrical network</p> <p>6.2. Power failure.</p>	<p>mandatory to provide a backup power supply - a generator with the appropriate power! (see item 12.3)</p>

8. OPERATION OF THE BURNER

8.1. Ignition.

After starting the burner from the control unit, the main feed auger transports a certain amount of fuel from the pellet hopper to the burner. This amount of pellets is set by the installer and depends on the characteristics of the fuel. The incoming amount of pellets is transported by the transport auger built into the burner to the combustion chamber, where it is ignited with the help of hot air.

8.2. Burning.

The combustion process takes place in the combustion chamber, and after entering the burner, the fuel is transported by the internal transport auger to the combustion chamber of the burner in parts. Thus, a rhythmic and optimal combustion of the fuel is achieved. The strength of the flame is monitored by a photo sensor that reads the combustion and provides information to the control unit for possible start or stop of the combustion process. The power with which the burner works is determined by the preset periods of the command block, taking into account the calorific value, size and density of

the pellets.

8.3. Self-cleaning system.

The pellet burner "Pell v.2" has innovative self-cleaning system

the combustion chamber. Thanks to a powerful cleaning motor built into the burner housing, air is blown in at a very high speed and flow rate, which cleans all residues - ash, non-combustible inclusions, etc. in the combustion chamber of the boiler. These self-cleaning periods last a few seconds each, and they can be further adjusted, as well as theirs

repeatability depending on burner load.

8.4. Requirements for the installer regarding servicing and maintenance of the burner.

Before the heating season, it is mandatory to check and clean the burner and its components.

It is mandatory to clean the combustion chamber of the burner with a brush. In the presence of clogging of openings in the combustion chamber due to the burning of non-combustible materials, the same openings should be unclogged with the help of an awl. Brush the internal combustion chamber thoroughly to remove any deposits on the metal. Clean the combustion chamber from sand and ash using a vacuum cleaner. Replace the gasket between the outer combustion chamber and the closing cover if its integrity is compromised.

It is mandatory to clean the main fan and the controller from dust.

8.5. Important recommendations for long-term and correct operation of the burner

- When assembling and installing the burner, observe the requirements in this instruction.
- Use only the fuel recommended in this manual.
- Clean the burner regularly by removing it from the boiler. Depending on the fuel and burner settings, cleaning is required once a month.
- The training for service, operation and maintenance of the burner is carried out by authorized installer or repairer.



In the event that the conditions for installation and operation included in the instruction and service manual of the product is void of warranty.

Type	Procedure	Obligation
prophylactic		ON
Weekly	The combustion chamber is cleaned with a broom and a brush.	User
Monthly	Dismantle the combustion chamber housing (A). Combustion chamber is cleaned with a brush and a vacuum cleaner. Replace the gasket if it is damaged (see diagram 8).	User / Installer
Annual	The burner is completely disassembled and cleaned. All gaskets are replaced (see diagram 10 of point 12.2)	Installer

9. MICROPROCESSOR CONTROL

9.1. Controller view. Explanation of buttons and indicators.

The NPBC-V4C-1 controller is controlled via its "Control Module", using 6 buttons. The functions of each button are shown below:

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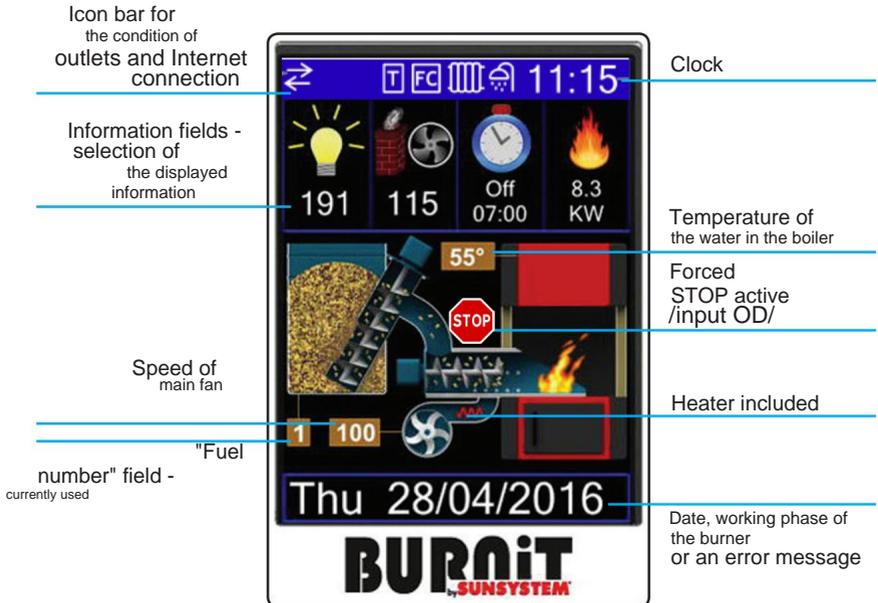
The NPBC-V4 controller must be powered for at least 3 minutes to operate normally

the system for maintaining the clock and monitoring the fuel process when the power is off!



9.2. LCD Screen. Explanation of display indication:

After turning on the power, the controller displays its main screen, which looks like this:



During the operation of the burner, the operation of the two screws and the fan are shown with animated pictures in their respective places. When a fire is detected, a flame will appear in the boiler. If there is a need to display several messages on the bottom line, they alternate every 4 seconds. The date is displayed in white, the working phase in green, and the registered errors in red.

If the clock has not been calibrated, its reading will be --:-- . For the normal operation of the burner, you will need to adjust the clock.

In most cases when there are error messages displayed in red on the bottom line, a warning three-tone beep will be heard.

Some of the error messages are cleared automatically after the reason for their registration disappears. There are others

messages such as "backfire", "boiler frozen" etc. which can only be cleared by

press and hold a button for 2 seconds.



for over

Explanation of display indication:



Light level measured by the photosensor.



Chimney fan speed.



Outputs information about the timers next action. If the timers are not activated or the burner is on, there will be no information below the icon. If at least

a timer is active and the burner is on, below the icon will be the next timer action and the time or day of the week when it will occur.



Temperature measured by the thermosensor for DHW.



Calculated power of the burner at the moment. For this power to be reliable you need to enter a calibration constant for the auger from "Service Settings" -> "Basic Settings" -> "Auger Fuel Capacity".



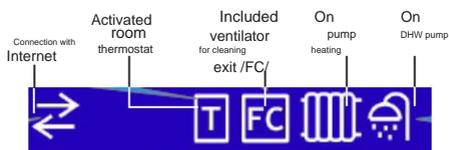
temperature, measured from the flue gas temperature sensor.

9.3. Controller Operation: The burner

controlled by the NPBC-V4C-1 can operate in both continuous mode and timer mode. When in timer mode, the burner operates only at user-set intervals of the day and days of the week. During operation, it goes through several phases: **cleaning, ignition, stabilization of the fire, combustion with power modulation** depending on the current and set temperature of the boiler, intermediate cleaning carried out during the **combustion process, extinguishing and cleaning after the end of combustion**. What phase the burner is currently in is displayed in green text on the bottom line of the main screen.

Each burner ignition starts with a **cleaning cycle**. The goal is to remove all remnants of previous combustion. First for a certain time, set in the menu "Service settings" -> "Sett. combustion" -> "Fuel X" -> "Cleaning" column "Vent" row "Start", only the main fan works, then the auxiliary cleaning fan also turns on, if there is one and is not turned off by the settings for the time set in column "FC". Then the burner goes to the phase of

ignition.



The **burner lighting** procedure begins with loading the first batch of pellets into the combustion chamber. Ignition takes place with the help of an electric heater and forced air from the burner fans.

The **ignition procedure**, performed after loading the first dose of pellets, consists of three stages. During the first stage, only the electric heater works without the fan, so that the required ignition temperature can be reached more quickly. During the next two stages, air is supplied to the combustion chamber simultaneously with the operation of the heater, thanks to which the heat of the heater is transferred to the pellets and the necessary oxygen is supplied to ignite the fuel. Typically, during Stage 2, the fan is adjusted with more

low speed, so as not to cool the emerging flame, and after the more stable kindling of the fire, the amount of air can be increased, which can be done during Stage 3.

From the menu "Service Settings" -> "Settings combustion" -> "Fuel X" -> "Ignition" the maximum duration of each stage of the ignition is set, as well as the speed of the main and chimney fan. When the photo sensor measuring the light of the fire reports that the pellets are lit, the heater is stopped and a kindling procedure is carried out, which aims to stabilize the fire while the combustion chamber is still not hot enough. If the pellets do not ignite within the set time, the burner is loaded with a new portion of pellets and a new ignition attempt is made. In order not to clog the burner with unlit pellets,

the amount of new pellets supplied is doubled with each subsequent ignition attempt.

In addition, new pellets are fed only for the first 3 ignition attempts at 100%, 50% and 25% of the set amount. When the set maximum number of ignition attempts is reached, the burner stops, displaying an ignition failure message.

The parameters needed to manage the loading with the first dose of pellets and their ignition are in the menu: "Service settings" -> "Setting combustion" -> "Fuel X" -> "Ignition".

The parameters for recognizing a lit or extinguished fire are in the menu "Service settings" -> "Det. fire".

The next phase of burner operation is **the procedures for calmly starting the fire**.

If with still unstable flame and cold

combustion chamber starts feeding pellets and air for maximum power, the flame can be choked or blown out. To prevent this from happening, it first waits for the burning of the first batch of pellets and then starts a smooth increase in power from the smallest power P1 to the largest required power, depending on the difference in temperatures (the set temperature and the temperature of the water in the boiler). The setting

of the warm-up process takes place in a menu

"Service Settings" -> "Settings combustion" -> 'Fuel X' -> 'Ignite'.

The next step is **combustion management**.

The controller supports settings for 4 different powers. Three of these capacities are used during normal burner operation to heat the boiler. The fourth power is for maintaining the fire when the water in the boiler is not needed to be heated and thus avoids the need to extinguish the burner, then clean it and light it again. Of course, if there is no need for new energy in the heating system for a longer time, the burner will go out. The dose of pellets that will be fed into the combustion chamber and which determines the current output is a function of: the performance of the fuel auger, the operating time of the auger, and the cycle between two activations of the auger. The parameters required to set each power are: the fuel auger operating time, the cycle between two consecutive auger activations, and the main and stack fan speeds. They are set in the menu **"Service settings" -> "Settings combustion" -> 'Fuel X' -> 'Power P1'/'Power P2'/'Power**

P3'/'Maintenance". The burner automatically selects which power to work with depending on the temperature difference between the set temperature and the current temperature in the boiler.

The selection is made at the beginning of each fueling cycle. All this is set from **"Service Settings" -> "Power Modulation."** In the last menu, the maximum time during which the burner will have power to maintain the fire is also set. If

after this time, the burner will go out. If during the "Maintenance" operating phase the temperature difference reaches that required for some of the operating powers and if there is still an ember in the burner, it will re-ignite using the ember in it and not the heater.

The burner is cleaned by increasing the main fan speed to 100% and if present

installed an additional powerful fan or other mechanical cleaning system to and from the FC outlet. The cleaning settings are different, depending on whether it is pre-ignition, post-extinction, or when a problem is logged. The procedure is as follows:

1. The burner goes out and waits for it to disappear the flame.
2. The main fan turns on and runs at maximum power for a time set from the menu **"Service Settings" -> "Setting combustion" -> 'Fuel X' -> 'Cleaning' column 'Vent' row 'Start', 'Stop' or 'Alarm'.**
3. After the time from the above step has elapsed, an additional more powerful fan or mechanical cleaning system can be turned on, which work together with the main fan for a time set from the menu **"Service Settings" -> "Sett. combustion" -> "Fuel X" -> "Cleaning" column "FC" row "Start", "Stop" or "Alarm"**. If time 0 is entered, the FC output will not work and this step is skipped!

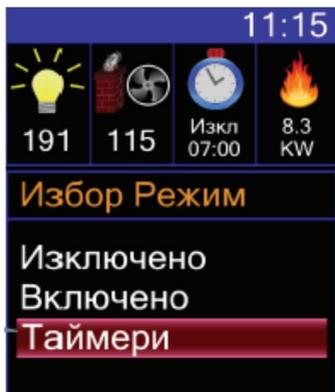
In addition to switching on, off or a registered alarm, the controller allows setting additional automatic cleaning cycles. The activation of automatic cleaning and the operating time of the burner, during which this cleaning should be included, are set in the menu **"Service settings" -> "Sett. combustion" -> 'Fuel X' -> 'Cleaning'.**

During automatic cleaning, the burner is first extinguished, then cleaned re-ignites automatically.

The controller also uses another method of intermediate cleaning, where the fire is not extinguished, but only the fan power is increased or output FC is activated for some mechanical cleaning mechanism. The necessary settings of this cleaning method are made from the menu **"Service Settings" -> "Setting combustion" -> "Fuel X" -> "Inter. clean."** The parameters to be set are: the time for which the intermediate cleaning procedure is repeated, the speed of the fans to be maintained during the cleaning, how long to clean and whether to use the FC output. The pellet supply is not interrupted during this cleaning method.

9.4. Operation of the burner: 9.4.1.

Switch on / off the burner.



With **On/Off** button goes to the mode selection menu.

With buttons  or  is highlighted upper or lower row. There are three operating modes to choose from: **Off**, **On** and **Timers**. The next time you press the On/Off button goes to the highlighted mode. If no button is pressed for more than 5 seconds or is pressed, it will exit without changing the mode or state. In order to be sure that the burner is turned off after selecting the Off mode, you must make sure that there is no indication in green on the bottom line, with some of the working phases of the burner, which are given in the following table.

Work phases	
1 Cleaning	6 Power P1
2 Charge	7 Power P2
3 Ignition	8 Power P3
4 Warming up	9 Intermediate cleaning
5 Maintenance	10 Extinction

When the burner is in the **"Off"** mode, it will not work. If the burner was lit when switching to this mode, it will switch to a fire extinguishing procedure.

The complete extinguishing of the fire and the cleaning require some time. It is normal for the burner and boiler units to continue to operate after switching to **"Off"** mode.

Circulation pumps can continue to operate despite the extinguished burner as long as the conditions for their operation are met. In this way, the remaining thermal energy of the water in the boiler will be used.

When the burner turns on, a "Fuel Number" field will appear first. If all conditions are met to ignite the burner, such as boiler temperature not reached, room thermostat not activated, forced stop OD input inactive, no serious problems logged and permission if any of the timers are on, the burner will switch to ignition automatically. After that, all the procedures set for this fuel will be performed automatically: ignition, fire stabilization, fire maintenance, power modulation, intermediate cleaning, extinguishing and full cleaning.

When selecting the **"Timers"** mode, the burner will operate in the intervals in which its operation is enabled. These intervals are set from the **"Timers"** menu in the user settings. IN

if there are no preset intervals, an error message will be displayed and the burner will remain in the off state. The controller will remember the selected mode and as soon as operation intervals are set from the corresponding menu in the user settings, the burner will switch to operation in Timers mode without the need to select it again:



9.4.2. Changing the set temperature for heating the water in the boiler.



By pressing buttons, the controller is in the **"Main screen"**, it goes to a screen for adjusting the set temperature. The temperature will begin to change when the button is released and then pressed again. If one of the buttons is held down, the temperature will begin to increase automatically at a rate of up to 5 degrees per second. To exit and save the temperature, press the **"Menu" button**. If you do not press any button for 5 seconds, you will exit to the main screen, and the change will not be made

remember.

9.4.3. Displaying additional information about the operation of the burner



Pressing a button when the controller is in the **"Main Screen"** switches to viewing the additional information screens.

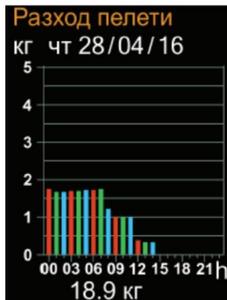
9.4.4. Pellet consumption statistics by hours.

The first information is a **Pellet Consumption screen** which contains graphs of pellet consumption for the last 4 days. First, information about the current day is displayed,



and with buttons, the rest of the days are also crawled. Display is with a histogram on the entire display. The coordinate system has a horizontal axis with the hours of the day and a vertical axis with the pellets consumed in kilograms for the corresponding hour. At the top is written the date to which the information refers, and at the bottom is the summary information about the consumption of

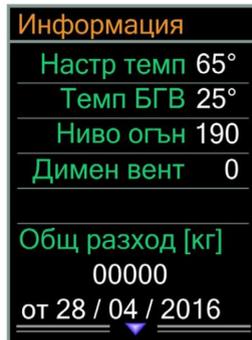
pellets during the day.



9.4.5. Information about the status of some current parameters.

By pressing a button when the controller is in the "Pellet consumption" screen, it goes to the **"Information" screen**. On this screen, the set temperature, the Domestic Hot Water (DHW) temperature, the light level of the photo sensor, the flue gas temperature, the current speed of the smoke fan, and the consumption of pellets since the last are displayed

its reset.



By pressing and holding the Menu button for more than 2 seconds, the readings for the total consumption of pellets are reset. In addition, the date and time of this reset is remembered, thanks to which you will have information for what period the next "Total consumption" of pellets has been accumulated.

ü *Note that the pellet consumption for the current day is not reset, because it starts counting from 00:00 of the day whose date is displayed on the screen!*

If you press from the **"Information"** screen, you go to the front screen - **"Pellet Consumption"**.

In addition to these measured parameters, there are other important information for the operation of the burner, which can be displayed for constant monitoring in the Information fields of the main screen.

9.4.6. Information about the operation of the WiFi modem and the connection to the Internet.

To get to the "WiFi connections" information screen, a button must be pressed



The fields are as follows:

ID – Unique identifier of each modem

IP – IP address of the modem

WiFi mode - State of the modem which can be:

- **Idle** – The modem has not yet connected to a WiFi router with the Internet
 - **Access point** – The modem is in Access point mode and provides the ability to accept the SSID and password of the local WiFi network to connect to it
 - **AP Associated** – The modem has associated with the router
 - **Internet Access** - Has a connection to the Internet
 - **Connected** – The modem has connected to the information system server
- Snd/Rcv** – Data packets sent / received over the Internet

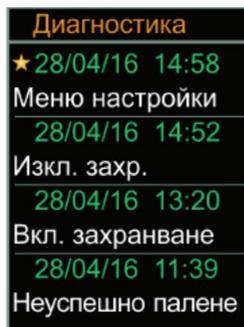
If there is no WiFi modem plugged into the controller, there will be a **"No WiFi Modem"** message.

9.4.7. Information about the operation of the WiFi modem and the connection to the Internet.

To get to the versions screen, a button must be pressed from the "WiFi connections".

9.4.8. Diagnosis

By pressing a button when the controller is in the "Information" screen, you go to the "Diagnostics" screen, which is a list of information about each registered problem and the exact time and date of its occurrence. If there are more than 4, buttons show the next or previous page, respectively. By holding the "Menu" button for more than 2 seconds, the accumulated diagnostic information is cleared. The star symbol marks the last and most recently registered information.



The messages you may see on this screen are given in **Table 5**. Messages 1 to 13 are also displayed as registered fault messages on the bottom line of the main screen.

	<p>When error messages are displayed in red at the bottom of the main screen, they can be cleared in the following ways:</p>
	<ul style="list-style-type: none"> • automatically after the disappearance of the reason that led to their appearance for all messages with auto clear enabled. • by pressing and holding a button for more than 2 seconds while the display is in the main screen and when the reason that led to their appearing

Table 5.

Message	Clearing	Description
1 Backfire	with a button 	A backburner thermostat has tripped
2 Interrupted TC boiler automatically	Interrupted thermal	sensor of the boiler
3 Short in TC boiler	automatic Short in	boiler temperature sensor
4 Frozen boiler	with a button 	Time and date of registration of the failure
5 Push button ignition failed		
6 Interrupted TC RB	automatically Interrupted	backburner thermosensor
7 Short in TC RB	automatic Short in	reburn thermosensor
8 Interrupted TC boiler automatically	Interrupted thermal	sensor of the DHW boiler
9 Short in TC boiler	automatic Short in	the thermal sensor of the hot water heater
10 Interrupted TC Pt100 automatically	Interrupted flue gas	temperature sensor-Pt100
11 Short in TC Pt100	automatic Short in	flue gas thermosensor-Pt100
12 High temp., smoke with button		Temp. of exhaust gases is very high
13 Dangerous temp., smoke with button	14 	Temp. of exhaust gases is unacceptably high
Settings menu	-	Entered into system settings menus
15 No module used	-	Missing connection to "Executor"
16 Incl. power supply	-	Power on time and date
17 Off power supply	-	Time and date of power outage
18 Beginning	-	Controller restart recording

10. WORKING SETTINGS

PARAMETERS

10.1. Ways to change operating parameters

When setting the necessary parameters for the operation of the controller, the display looks similar to one of the following views:

- Selection from a list - The red line indicates the marked row. With buttons the red line. Pressing a button   is moving selects the option of the highlighted row, entering the  corresponding setting screen. If there are more rows below the visible part of the screen, there will be an arrow pointing down. If there are more lines above the visible part of the screen, there will be an arrow pointing up. If there is an arrow to the right of the line, then it will not enter a setting screen, but an additional sub-menu for selection. If it is currently viewed further under a selection menu, pressing a button switches to the previous selection menu.

- Setup Screen – After entering such a screen, a pink marking frame is displayed on the first parameter, indicating that this parameter will be editable. With the help of buttons, the marking frame can be positioned on the parameter you want to edit, moving left/right or up/down respectively. With buttons, the highlighted parameter can be changed by increasing or decreasing its value or selecting or releasing accordingly. Parameter fields are any of the following types: numeric parameters, checkboxes with possible values enabled/disabled (selected/unselected), or a list of text values. Numerical parameters are checked for allowable outliers



values, and if they are reached, the corresponding parameter stops changing, despite a short beep when the change button is pressed.

After completing the necessary corrections to remember the changed parameters and exit to the previous screen, you must exit with the (Menu) button. There is a maximum waiting time without a button being pressed, after which the previous screen is returned without remembering the actions taken up to this point

changes.

	<p>When holding down one of the arrow buttons, in most cases, there is an automatic repetition of the function of the corresponding button. This repetition is at a rate of 5 times per second, which will increase or decrease the value of the selected parameter or move the marking frame between individual parameters!</p>
--	---

10.2. User menu. Settings.

With a short press of the Menu button from the main screen, a menu with user settings is entered that

Use buttons to move the red line. Pressing a button selects the highlighted sub-menu.



Time and Date - Check the controller clock. In this sub-menu, the hour, date, minutes and day of the week are corrected. There is also an option for automatic reconciliation

of the above parameters.

Language (Language) – Changing the language.

Timers – Setting and activating time intervals in which burner operation is allowed. If at least one of the three timers is active, the burner will only operate in the intervals indicated by the active timers! Outside the intervals, the burner will be turned off.

Fuel selection – From this menu, the pre-set fuel profile is selected

the fuel currently being used..

	<p>To see more clearly if the timers are activated and will control the burner and what their next action will be turn on/</p> <p>shutdown and at what time, you can display the information from them in the information fields at the top of the screen.</p> <p>If there are active timers and the burner is on, pressing and holding the On/Off button for more than 2 seconds will turn off the timers.</p>
---	--

InfoBox–Sets the information to be displayed in the four infoboxes at the top of the screen.

The possible captions and displayed information in each field are as follows:

- Light level – light level measured by the photosensor
- Chimney vent. - chimney fan speed
- Timers – next action controlled by timers
- Power – calculated instantaneous power obtained when burning the pellets
- Temp DHW – temperature of the hot water boiler
- Temp smoke – temperature of exhaust gases.

Pump management – sets the operation mode of the pumps of the external heating installations, as well as their switch-on and switch-off temperatures. Pumps are like

follows: a pump for the heating installation connected to outlet PH and a pump for the domestic hot water heater connected to outlet PWH.

Manual Prime – Manually turning on the fuel auger or circulation pumps. This menu is useful for: filling the auger when it is empty, turning on the auger to measure the amount of pellets fed per unit time in order to calibrate it, turning on the circulation pumps for a test or to fill their installation with liquid.

New WiFi Network - If the NRC-6 has a WiFi module to connect to the Internet and if it is being installed for the first time or the WiFi network it is connected to needs to be changed, it is necessary to go through

this menu.

10.3. Installer (service) menu. Service parameter settings.

These parameters are directly related to ignition management, combustion and safety when using the burner. Access to them can be restricted with a code that can be set from the "Service Settings" -> "Change Code" menu. To enter the service settings, press and hold the "Menu" button

for over 2 sec. If a passcode is enabled, a screen to enter it will appear first.

After correctly entering the access code, a screen for selecting the service settings menus will appear. Note that the controller

NPBC-V4C supports operation with up to 4 different profiles for different fuels. Some of the settings do not depend on the fuel used and are common to all fuels. However, there are many parameters that depend on the fuel for which

are intended and therefore one must first go through the choice of one of the fuels.

The fuels are named: **Fuel1**, **Fuel2**, **Fuel3** and **Fuel4**. When there is a right arrow after the selection line, it will jump to a new selection sub-menu:

10.3.1. Fuel-independent service settings.

Equipment - from this menu, the presence or absence of the optional elements of the burner, as well as the polarity of the operation of the contacts of the room thermostat are set

or

the forced stop circuit connected to input OD.

Basic Settings - here the control method of the internal auger (augment burner), the maximum permissible heating temperature of the boiler, the capacity of the auger for fuel and whether the output for the cleaning fan (output FC) should have an additional wait, if

used to control a linear actuator to have time to return to its initial state after it has moved forward.

Fire detection – It is set what the light of the photo sensor should be for detecting a lit or extinguished fire and how long it should be measured

illumination to ensure recognition.



The fire will be considered lit if the photosensor measures a level above 100 for more than 20 seconds.

The fire will be considered extinguished if the photosensor measures a level below 40 for more than 60 seconds.

Power modulation - The temperature differences between the set and measured temperature of the boiler are adjusted, when they are reached, one switches from one power to another.

The operating conditions are also set for power to "Maintain" the fire, waiting time and maximum temperature superheat, after which the burner should be extinguished.

Control by Thermostat - here the way of reducing the burner power is set when the room thermostat is activated and the pumps are controlled in the "Heating" mode. **priority**! In this mode, after the room thermostat has operated, if the burner has been operating at power P3 for example, it will stay at that power for the time set below and then switch to power P2, P1 and "Hold". Power Sustain will be held for as long as set in menu "Service Settings" -> "Power Modulation" line "Time". These settings are responsible for the smooth reduction of the supplied power to the heating installation when the expected room temperature is reached.

Output test – through this menu, all controller outputs can be controlled directly. For this control to be possible, the burner must be switched off.

A maximum activity time is provided

on this menu without pressing any buttons for 5 minutes. The outputs are then turned off and output to the front screen.

10.3.2. Fuel dependent service settings.

To enter these settings, you must enter the main screen for service settings on the line "**Sett. Combustion**", to press button , then select fuel and press button again



Cleaning - This menu sets the duration of the cleaning cycles, with the main and auxiliary cleaning fan running time. Here it is set whether there should be automatic cleaning cycles and in what period they should be. The automatic cleaning cycles are in the following sequence: extinguishing, cleaning after extinguishing and re-ignition. Cleaning procedures are performed before ignition (Start row), after extinguishing or during automatic cleaning (Stop row) and when a "Backburn" alarm is registered (Alarm row).

Ignition - through this menu, the number of ignition attempts (ignition attempts), the fuel auger operation time for loading the first dose of pellets (Loading), the speed of the chimney fan during the entire ignition period (Chimney fan) and the maximum duration can be set of each of the three stages of ignition, as well as the speed of the main

fan through each stage.

	<p>If the photo sensor detects a lit fire, the ignition procedure se breaks right away and goes to warm up!</p>
--	---

Warm-up – adjusts the smooth warm-up process to stabilize the fire after it is ignited. The top field sets the speed of the fans, main and chimney, as well as the duration (Duration [sec]) of the first dose burn period. No new pellets are fed during the burning of the first dose. In the lower field, the holding time of each power is set in the process of the smooth increase of the power from the smallest P1 to reaching the nominal,

according to the water temperature in the boiler.



Field Prod. (sec) -wait time to burn the first dose and speed of the ventilators

Field Smooth burn - After burning the first dose, 60 seconds will run on power P1 and another 60 with P2 power.

Power P1, Power P2, Power P3, Maintenance - same type menus for setting the working parameters for each power from the smallest P1 to the one for maintaining the fire. To accurately dose the amount of pellets, set the **Portion row**, which is the operating time of the fuel auger, and the **Cycle row**, which is the time between two periods of fuel supply. In order for the fire to burn properly, it must be supplied with an appropriate amount of air . Therefore, the speeds of the main fan (**row Fan**) and the chimney (**row Chimney vent**) must also be set .



Power field - Calculated power based on calorific value 5kWh/kg.

This parameter is not Correctable!

We recommend you to set power P3

of the maximum power you will want to get from the burner. Power P2 should be 50% of P3 and P1 should be 20% of P3. With such a setting, the controller will have the ability to smoothly modulate the power of the burner in the range of 20 to 100%, changing the power if necessary with each new cycle. For example, if you need a power of 75%, the controller will go from power P3 to P2 and then back to P3 at equal time intervals. Thus, the average power can be reduced to the following $(100+50)/2 = 75$. The switching time will depend on the inertia of the whole system and the set temperature differences in the menu "Service Settings" -> "Power Modulation."

The smallest switching interval between two powers can be one cycle, which is about 20-30 seconds. For such a small switching period, the temperature of the heating installation will not change appreciably for you to feel the power ripple. By adding "Sustain" power, which will be less than P1, the burner gets more

wider modulation range.

ÿ	<p>The important thing when setting the parameters of power maintenance is not to allow such an increase in the cycle between two pellet feeds that the available pellets in the upper chamber burn and do not leave</p> <p>enough heat to ignite the next pellets!</p>
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Intermediate Cleaning - This menu sets up an additional option that the NPBC-V3C controller allows called "Intermediate Cleaning". The idea is that while the burner is running normally, just increase the fans speed, which will raise it temporarily

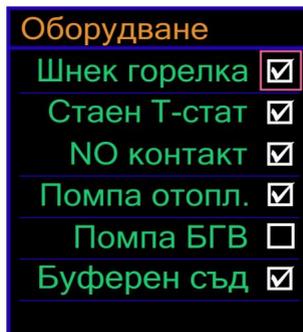
the temperature of the fire and this will result in more complete combustion of the slag and ash. A mechanical cleaning mechanism connected to the FC output can also be used to be activated periodically while the fire is burning to scrape off the adhering slag or ash. To do this, you need to mark the line "Output FC" and perhaps uncheck the line "Change vent"



10.4. Enable control by buffer vessel.

The operation of the pellet burner can be controlled depending on the temperature in the buffer vessel, and for this purpose, the sensors provided for the buffer vessel in the burner set must be installed in the buffer. The mode is activated by the service

"Hardware" menu .



When adjusting the maximum temperature of the burner, information on adjusting the temperature of the buffer is displayed.



In the service menu, in the "Basic settings" submenu, you can adjust the hysteresis of the buffer vessel.

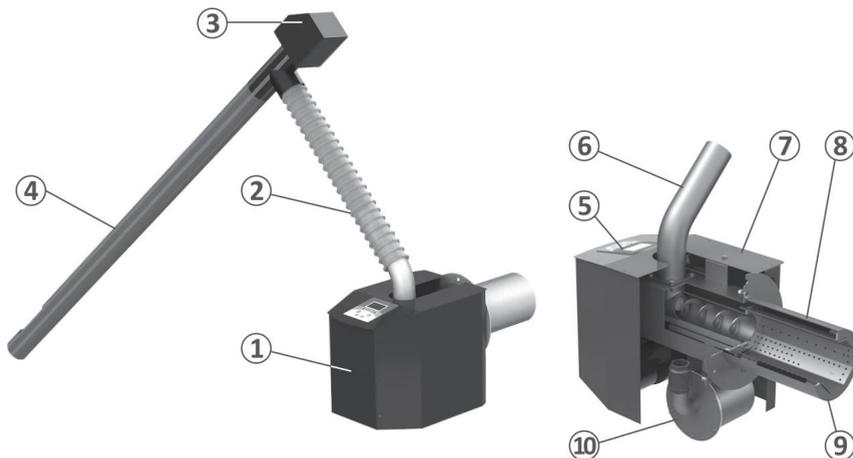


Range of adjustable parameters				Default							
Menu	Parameter		The only one	Min	Max	Pell					
						25	30	40	70	90	150
Display Brightness			level	2	10	7	7	7	7	7	7
Control pumps	Pump heating	Turn on	° S	10	80	50	50	50	50	50	50
		Hysteresis	° S	1	20	5	5	5	5	5	5
	Pump BGV	Temp. BGV	° S	10	70	45	45	45	45	45	45
		Hysteresis	° S	1	20	5	5	5	5	5	5
Basic on	Auger burner	Work	%	100	500	300	300	300	300	300	300
		Additional seconds 00			30	00	00	00	00	00	00
	Max. temp.		° S	35	90	85	85	85	85	85	85
	Auger fuel capacity		kg/h	0.5	2000	24	24	24	24	24	24
recognize flame	Burning		level	0	150	100	100	100	100	100	100
			seconds 10	240	20		20	20	20	20	20
	Extinguishing		level	0	150	40	40	40	40	40	40
			seconds 10	500	60		60	60	60	60	60
Modulation power	P3y		° S	2	30	8	8	8	8	8	8
	P2D		° S	1	29	4	4	4	4	4	4
	P1D		° S	0	28	0	0	0	0	0	0
	Time		minutes	0	120	30	30	30	30	30	30
	Overheating		° S	00	20	5	5	5	5	5	5
Cleaner-out	Start	Vent.	seconds 0		600	180	180	180	180	180	180
		FC	seconds 0		250	0	0	0	0	0	0
	Stop	Vent.	seconds 0		600	180	180	180	180	180	180
		FC	seconds 0		250	20	20	20	20	20	20
	Alarm Vent.		seconds 0		600	180	180	180	180	180	180
		FC	seconds 0		250	20	20	20	20	20	20
Cycle Auto cleaning		minutes 10	90	180	180	180	180	180	180	180	
Burning	Burning attempts		number	0	5	1	1	1	1	1	1
	Charging		seconds 1		240	30	35	35	35	40	40
	Kominen vent.		speed	0	100	0	0	0	0	0	0
	Stage 1	seconds 0		600	120	120	120	120	120	120	120
		speed	-	-	-	-	-	-	-	-	-
	Stage 2	seconds 10	40	120	120	120	120	120	120	120	120
		speed	0	100	15	15	15	15	15	15	15
	Stage 3	seconds 10	40	60		60	60	60	60	60	60
speed		0	100	20	20	20	20	20	20	20	

Range of adjustable parameters					Default						
Menu Parameter	One-	ca	Min	Max	Pell	25	Pell 30	Pell 40	Pell 70	Pell 90	Pell 150
Unravel-hurt	Continue-physicality	seconds	0	300		0	0	0	0	0	0
	Fan	speed	0	100		20	20	20	20	20	20
	Chimney vent. speed		0	100		20	20	20	20	20	20
	R1	seconds 10		600		60	60	60	60	60	60
	R2	seconds 10		600		60	60	60	60	60	60
Power P1	Portion	seconds 0.1		25.0		1.8	1.8	3.0	3.0	1.8	3.0
	Cycle	seconds	4	120		20	20	20	20	20	20
	Fan	speed	0	100		18	18	18	17	15	17
	Chimney vent. speed		0	100		25	25	25	25	25	25
Power P2	Portion	seconds 0.1		25.0		3.0	3.0	5.0	5.0	3.1	5.1
	Cycle	seconds	4	120		20	20	20	20	20	20
	Fan	speed	0	100		20	20	20	20	22	32
	Chimney vent. speed		0	100		50	50	50	50	50	50
Power P3	Portion	seconds 0.1		25.0		6.0	6.5	10.0	10.0	6.2	10.2
	Cycle	seconds	4	120		20	20	20	20	20	20
	Fan	speed	0	100		32	32	29	26	35	50
	Chimney vent. speed		0	100	100	100		100	100	100	100
support-or	Portion	seconds 0.1		25.0		2.0	2.0	2.0	2.0	2.0	2.0
	Cycle	seconds	4	120	120	120		120	120	120	120
	Fan	speed	0	100		8	8	8	8	8	8
	Chimney vent. speed		0	100		5	5	5	5	5	5
Cleaned in between.	Cycle	minutes	1	15		30	30	30	30	30	30
	Prolonged.	seconds	4	120		10	10	10	10	10	10
	Main vent. speed		0	100		50	50	50	50	50	80
	Chimney vent. speed		0	100		0	0	0	0	0	0
Control from thermostat	P3	seconds 10		240		60	60	60	60	60	60
	R2	seconds 10		240		60	60	60	60	60	60
	R1	seconds 10		240		60	60	60	60	60	60
safe-ness	Warning->	° S	150	300	200	200	200	200		200	200
	Extinguishment->	° S	151	350	220	220	220	220		220	220

11. TECHNICAL CHARACTERISTICS OF THE PELLLET BURNER PELL v.2

11.1. Elements of a PELL pellet burner



Scheme 8. Elements of a Pell v.2 burner

1. Pellet burner Pell; 6. Supply pipe;

2. Flexible pipe;

3. El. fuel auger motor; 4. Auger for automatic feeding of pellets; 9. Combustion chamber;

5. Microprocessor control;

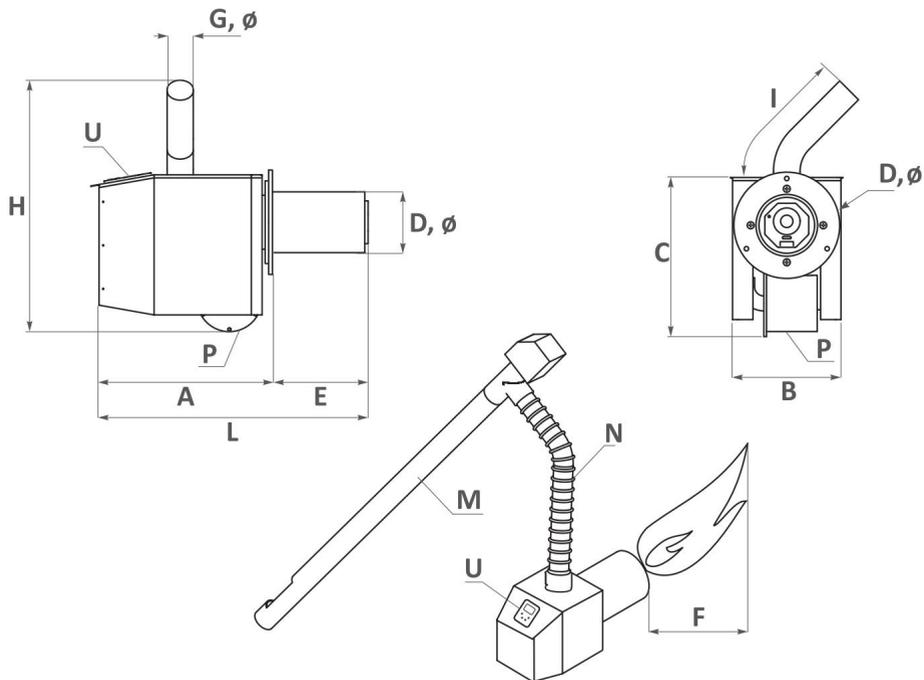
7. Burner body;

8. Housing of the combustion chamber;

10. Self-cleaning system;

11.2. Technical parameters

			Pell 25	Pell 30	Pell 40	Pell 70	Pell 90	Pell 150
Nominal power kW			25	30	40	70	90	150
Min. / max. power kW 5÷25 10÷30 10÷40 15÷70 30÷90 50÷150								
Power consumption:	In the process of ignition	IN	~ 400	~ 400	~ 400	~ 400	~ 400	~ 400
	In working mode	IN	~ 60÷70	~ 60÷70	~ 60÷70	~ 70÷110	~ 70÷110	~ 70÷110
	In self-cleaning mode	IN	~ 1300	~ 1300	~ 1300	~ 1300	~ 1300	~ 1300
Power supply V/Hz ~230/50 ~230/50 ~230/50 ~230/50 ~230/50 ~230/50								
Dimensions	Height H	mm	575	575	575	575	575	650
	Length L/ Width B	mm	615/245	615/245	700/300	750/350	750/350	750/350
Minimum recommended combustion chamber size	Height	mm	250	350	350	350	500	500
	Width	mm	250	390	450	450	500	500
	Depth on the boiler	mm	390	550	550	600	450	800
Required Chimney Draft Pa			25	25	27	30	32	40
Boiler connection kit			P	P	P	P	P	P
Power setting Efficiency fuel process			P	P	P	P	P	P
		%	96	96	96	96	96	96
Dedicated warmth		%	92	92	92	92	92	92
Burner weight kg			26	27	30	37	51	55
Burner housing	Length	A, mm	390	390	390	390	390	390
	Width	B, mm	245	245	245	245	245	330
	Height	C, mm	360	360	360	360	360	410
Housing combustion chamber	Diameter	D, mm	140	140	170	170	170	210
	Length	E, mm	220	220	300	340	340	340
Feed pipe Length	Diameter	G, mm	60	60	60	60	60	60
		I, mm	250	250	250	250	250	250
Self-cleaning system P			P	P	P	P	P	P
Built-in microprocessor control U			P	P	P	P	P	P
Burner flame, length* F, mm 750				800	1000 1500		1600 2000	
Fuel Auger Length Diameter	Diameter	M, mm	75	75	75	75	75	75
		mm	1500	1500	1500	1500	1500	1500
Flexible pipe Length		N, mm	60	60	60	60	60	60
		mm	700	700	700	700	700	700
Auger weight kg			6	6	6	6	6	6



12. RECYCLING AND DISPOSAL

Submit the packaging material for recycling according to local regulations and requirements.

At the end of each product's life cycle, it must be of in the components disposed accordance with regulatory requirements.

According to Directive 2002/96/EC on waste electrical and electronic equipment, disposal outside the normal household solid waste stream is required. They must be sent for processing to an authorized enterprise meeting the requirements for the protection of

environment. Old appliances must be collected separately from other waste for recycling materials that

contain harmful substances on health and the environment. The metallic parts as well as the non-metallic ones are sold to licensed collection organizations

metallic or non-metallic waste intended for recycling. They should not be treated as domestic

waste.





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