



# **BURNIT** by **SUNSYSTEM**

## **PELLET BURNING BOILER** **PelleBurn series**

**TECHNICAL PASSPORT INSTALLATION and  
OPERATION MANUAL FOR AUTHORIZED  
INSTALLER / SERVICE SHOP**



*Version i0.8.3*







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### 1. EXPLANATION OF SYMBOLS AND SAFETY INSTRUCTIONS

#### 1.1. Explanation of symbols

 **CAUTION!** - Important recommendation or warning concerning safety conditions during installation and operation of boiler.

 **DANGER!** - fault or improper use may cause injury or be hazardous to life of humans or animals.

 **FIRE HAZARD!** - fault or improper installation and operation may cause fire.

 **INFORMATION** - Important information on the proper operation of the product.

#### 1.2. Requirements to boiler installation room

This manual contains important information for the safe and correct installation, start-up and trouble-free operation and maintenance of the boiler. The Pellet boiler can be used for heating rooms only in the manner described in this manual.

The application and any other was the area of operation is not recommended by the manufacturer and is not responsible for the occurrence of defects or failures. Note the boiler type data on the factory rating label and the technical data provided in chapter 14 in order to ensure proper operation of the product.

##### 1.2.1. Instructions to boiler installer

During installation and operation, the country-specific requirements and regulations must be observed:


- Local construction regulations on installation, air supply and exhaust gas extraction as well as chimney

connection.


- Regulations and norms concerning the fitting of the heating installation with safety devices.
- Required installation of a smoke detector in the boiler room.

 Use only original BURNiT parts


 **WARNING!** Installation and setup of the boiler should be done by an authorized specialist / service shop and must follow the safety instructions and rules of operation.

 **DANGER** of intoxication, suffocation. Inadequate inflow of fresh air to the boiler room may result in dangerous leak of exhaust gases during boiler operation.

- Make sure the air inlets and exhaust gas outlets are not clogged or closed.
- If faults are not remedied immediately, the boiler must not be operated.
- The user must be provided with written instructions on the fault and the hazard it entails.

 **DANGER** of fire when burning flammable materials or liquids.

- Flammable materials/liquids must not be left in close proximity of the burner and heating boiler.
- Instruct system user of the allowed minimum clearances from surrounding objects.


 It is mandatory to assure a backup power generator of corresponding rated power! (see table 1)


**Customer must undergo boiler operation/maintenance training by authorized installer/service shop.**


**Table 1.**  
**Electricity consumption of the boiler**


Maximum electrical input	<b>780 W</b>
Electrical input at nominal heat output	<b>80 W</b>
Electrical input at minimum heat output	<b>60 W</b>

**1.2.2. Instructions to installation user**

	<p><b>DANGER of intoxication or explosion</b>  <i>Toxic gases may be discharged when burning waste, plastics, liquids.</i></p> <ul style="list-style-type: none"> <li>- Use only the fuels indicated in this manual.</li> <li>- In case of danger of explosion, ignition or discharge of exhaust gases in the room, stop the pellet burner from operation.</li> </ul>
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	<p><b>CAUTION! Danger of injury / damage of system due to incompetent operation.</b></p> <ul style="list-style-type: none"> <li>- The boiler must be serviced only by persons familiar with the operation manual.</li> <li>- As user, you are only allowed to start the boiler up, adjust the temperature of the boiler, shut the boiler down and clean it.</li> <li>- Unattended children must not be allowed access to premises with running boiler inside.</li> </ul>
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	<p><b>It is mandatory to assure a backup power generator of corresponding rated power! (see table 1)</b></p>
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	<p><b>Customer must undergo boiler operation/maintenance training by authorized installer/service shop.</b></p>
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**Safety rules for user operation:**

- Operate the boiler on recommended fuel only, and to that end you must regularly inspect the boiler room.
- Do not use flammable liquids for ignition or increase of burner output.
- Clean the boiler surface using non-flammable agents only.
- Do not place flammable objects onto the burner housing and heating boiler cabinet or in their proximity. (see diagram 1 for the minimum clearances)
- Do not store flammable materials in the boiler room.
- It is mandatory to strictly observe instructions for connecting the burner to power network as well as to all peripherals.
- Structural changes of the boiler by user can cause damage to equipment or injury.
- Do not allow contact transmission of electrical wire or touch any part of the boiler, where the surface temperature can exceed 70 °C.
- This manual should be kept throughout the lifetime of the boiler.

**CAUTION! Hot surface!**  
**Risk of burns if you touch the running system. Burner housing, body and flange are hot surfaces during burner operation.**

*It is strictly prohibited to open boiler inspection doors with the burner running.*

*The hopper hatch cover is not allowed to remain open for longer periods of time.*

*Also, exercise caution when touching the observation port for monitoring the burning process. It may be hot.*

### 1.2.3. Minimum clearances for installation and flammability of construction materials

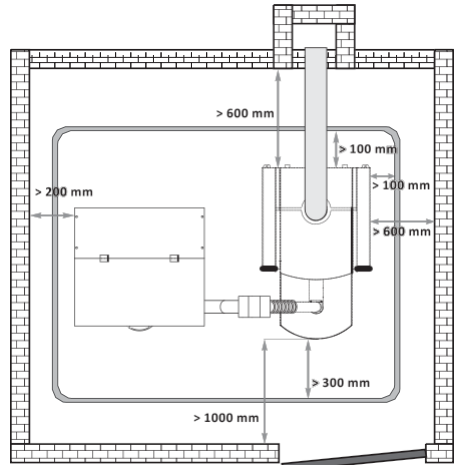
The applicable minimum clearances in your country may differ from the ones specified below. Please, consult your installer.

The minimum distance from the burner, heating boiler or exhaust gas pipe to objects or walls must be at least 200 mm.

**Table 2. Flammability of construction materials**

<b>Class A</b> – non-flammable	Stone, bricks, ceramic tiles, baked clay, solutions, plaster free of organic additives.
<b>Class B</b> – hardly flammable	Gypsum board panels, basalt fiber needled felt, fiberglass board, AKUMIN, Izomin, Rajolit, Lignos, Velox, Heraklit.
<b>Class C1/C2</b> Medium flammable	Wood, beech, oak, Wood softwood, layered wood
<b>Class C3</b> – easy flammable	Asphalt, cardboard, cellulose, tar, fiberboard, cork, polyurethane, polyethylene.

For general safety considerations, we recommend that the boiler be placed on a foundation made of class A material, see table 2.



**Diagram 1**

**Recommended clearances between boiler and walls.**

## 2. PRODUCT DESCRIPTION

Ecological and highly-efficient pellet boiler PelleBurn is designed for firing wood-pellets. The mantle fully covers the combustion chamber. Efficiency rate reaching 91%. Approved in accordance with EN 303-5, class 5.

Set includes pellet boiler, pellet burner, auger and pellet fuel hopper (option).

### 2.1. Design structure of boiler PelleBurn.

Cylindrical body design is made of high-quality boiler steel sheets with thickness of 4 mm for the combustion chamber and 3 mm for the water mantle.

- **Ecological.** A high-end pellet boiler. The wood-pellets used for fueling the boiler

are a renewable fuel with minimum carbon emissions and ultimate burning efficiency.

- **Automated.** All boiler functions are fully automated – no human intervention is needed for the normal operation of the boiler. Owing to an improved algorithm with optional adjustment of a wide variety of parameters, the system may be finely tuned to any particular heating system to achieve optimum efficiency and fuel consumption.

**Controller functions:**

- 1) **fully automated ignition and pellet feed;**
  - 2) **exhaust fan ensures stable operation of the boiler;**
  - 3) **boiler-and-burner self-cleaning function;**
  - 4) **controls the operation of central heating circulation pump;**
  - 5) **controls the operation of DHW (domestic hot water) pump;**
  - 6) **controls by room thermostat;**
  - 7) **flue gas sensor;**
- **Efficient.** To keep from losing heat into the ambience, the boiler is insulated on the outside by 100 mm high-temperature wool. With its state-of-the-art combustion control system and cylindrical body design construction the PelleBurn boiler achieves efficiency rate of as much as 91%

**2.2. Design of pellet burner Pell**

The burner is made of high-quality stainless steel able to withstand temperatures of up to 1150°C. The burner must be installed on a heating boiler.

The burner consists of two parts: combustion chamber tube and external tube with sheet metal mantle. Longitudinally, under the housing, there are blow chamber, fuel ignition heater, fan and power supply. On the upper part of the burner there is a feeder chute to which the pellet auger is attached. The combustion chamber consists of two tubes:

Ember resistant steel tube inside the burner with holes for air intake along its entire length, opening for the hot air from the fuel ignition heater.

Outer stainless steel tube. Between the two tubes there is a gap which provides for free circulation of the air necessary both for cooling and oxygen supply into the combustion chamber.

The feeder chute allows 360° rotation for its best convenient positioning when connecting the pellet auger to the hopper.



*Diagram 2. Design of Pellet Burner Pell*

**Other elements of the burner are**

- **Internal auger.**
- **Dry contactless resistance heater** assuring ignition of fuel.
- **Pneumatic cleaning system** of the combustion chamber.

- **Feed fan**, smooth regulation (0% to 100 %).
- **Telescopic pull-out system of burner** Pell for easy maintenance

### 2.3. Safety devices of pellet boiler-and-burner

A complex of safety devices provide for the safety of the appliance. Air-feed fan, step –regulated, controls the combustion according to energy needs and is maintained in optimal working order. Independent STB thermostat shut-off the burner and shut off the fuel feeding in the combustion chamber in case of rising boiler temperature.

- **Elbow-shape feeder chute.** The geometrical shape of burner feeder chute prevents backfire entry from burner into pellet hopper. The flexible tube is melted at a temperature above 80°C. Thus prevent access to the hopper of the fire.
- **Thermostatic protection (80°C).** The thermostatic protection is fitted on the feeder chute. When the surface of the feeder chute reaches 80°C, the control stops the feeding of pellets into the burner and signals for fault (BB Alarm).
- **Fuse.** In case of electrical fault in the system of the burner (short circuit, current overload, etc.), the overload is borne by the electrical fuse fitted on the main control panel of the burner (10 A).
- **Power interruption. Innovative controller.** In case of power interruption, all parameter settings are stored in the memory of the controller. Upon the subsequent restart of the burner, the controller resumes the execution of the program from the point when the power interruption occurred.

### 2.4. Design of pellet auger

The auger transports pellets from fuel hopper to burner. Auger elements are: auger pipe, auger hose, motor, conveyor belt for moving the pellets.



*Diagram 3. Design of pellet auger*

### 2.5. Design of fuel hopper FH 500-V2

Pellet hopper, designated to serve biomass pellet-fired boilers. Pellet hopper design allowing installation by choice on either side of boiler. Made of cold-rolled steel sheets with PVC coating. Comfortable pellet charging hatch. Pellets inside hopper are fed into auger in order of reception. Precision leveling of hopper possible via screw-in legs. Inspection side openings for easy emptying and cleaning of fuel hopper.

The hopper capacity is determined using as calculation base the daily or weekly fuel consumption rate of burner. The pellet hopper usable volume of 500 liters allows charging of 280-300 kg of pellets with diameter 6-8 mm, and top-up/refill once a week (for burner of rated power up to 40 kW).



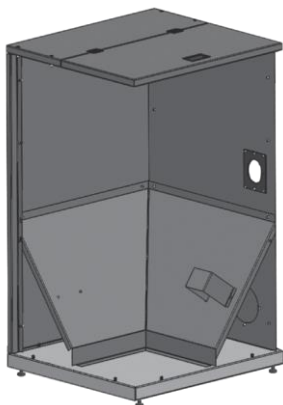


Diagram 4. Design of fuel hopper FH 500-V2

### 3. FUEL



All pellets are biomass manufactured from common low-growing plants and trees. The most common household type pellets are made of sawdust and milled wood chippings which are waste material from wood used in the production of logs, furniture and other products. Wood is the richest raw material which does not have any impact on the production costs of food products or ethyl alcohol (ethanol). The raw material is processed under high-pressure and temperature and is pressed to produce small-size cylindrical pellets. The production process may utilize soft

wood material (such as softwood, pine), hardwood (oak) as well as recycled waste wood. Wood pellets are produced in hammer mills or wood pellet plants.

#### Advantages of wood pellets:

##### Convenient storage.

Pellet bags can be stored on a small area in a dry garage, basement, service room or shed.

##### Easy loading.

In most cases the boiler hopper needs loading only once a week – this depends on the hopper capacity.

##### Better control of fuel quantity.

The small size of the pellets allows for precise fuel feeding. On the other hand, the supply of air for reaching optimal combustion efficiency is easier to adjust since the fuel quantity in the combustion chamber remains constant and predictable.

##### Fuel efficiency.

High combustion efficiency is also determined by consistently low moisture content of pellets (consistently under 10% as opposed to 20% to 60% moisture content of the logs). Low moisture content, controlled fuel portions and precise air setting means high combustion efficiency and very low carbon oxides in the flue gases.



**When purchasing pellets, ask for conformity declaration and certificate issued by an accredited laboratory and make sure the fuel meets the requirements indicated in the manual. If you purchase large amount of pellets (bulk supply for the entire heating season for example), ask your supplier to provide accurate and true information about the storage conditions.**

We recommend to use pellets with size of 6 - 8 mm. Density 600 - 750 kg/m<sup>3</sup> heating value 4.7-5.5 kWh/kg. Ash content – less than 1% and moisture content up to 8%, EN ISO 17225-2:2014.

The optimal density of the pellets which guarantees their quality is 605-700 kg per cubic meter.

Pellet moisture content must not exceed 10%. Make sure you store your fuel in a dry and well-ventilated place.

The optimal pellet ash content is  $\leq 1\%$ . This also provides for less frequent cleaning intervals for the burner.

The table below contains the parameters which we recommend that you take into consideration when choosing fuel for your Pell burner.

**Table 3. European Certification of Wood Pellets for Heating Purposes**

Parameters	Units	ENplus-A1	ENplus-A2	EN-B
Diameter	mm	6 (± 1) 8 (± 1)	6 (± 1) 8 (± 1)	6 (± 1) 8 (± 1)
Length	mm	15 ≤ L ≤ 40 <sup>1)</sup>	15 ≤ L ≤ 40 <sup>1)</sup>	15 ≤ L ≤ 40 <sup>1)</sup>
Bulk density	kg / m <sup>2</sup>	≥ 600	≥ 600	≥ 600
Calorific/heating value	MJ / kg	≥ 16,5-19	≥ 16,3-19	≥ 16,0-19
Humidity /moisture	Ma .-%	≤ 10	≤ 10	≤ 10
Dust	Ma .-%	≤ 1 <sup>3)</sup>	≤ 1 <sup>3)</sup>	≤ 1 <sup>3)</sup>
Mechanical durability	Ma .-%	≥ 97,5 <sup>4)</sup>	≥ 97,5 <sup>4)</sup>	≥ 96,5 <sup>4)</sup>
Ash	Ma .-% <sup>2)</sup>	≤ 0,7	≤ 1,5	≤ 3,5
Melting point of ash	°C	≥ 1200	≥ 1100	-
Chlorine content	Ma .-% <sup>2)</sup>	≤ 0,02	≤ 0,02	≤ 0,03
Sulfur content	Ma .-% <sup>2)</sup>	≤ 0,03	≤ 0,03	≤ 0,04
Nitrogen content	Ma .-% <sup>2)</sup>	≤ 0,3	≤ 0,3	≤ 1,0
Copper content	mg / kg <sup>2)</sup>	≤ 10	≤ 10	≤ 10
Chromium content	mg / kg <sup>2)</sup>	≤ 10	≤ 10	≤ 10
Arsenic content	mg / kg <sup>2)</sup>	≤ 1,0	≤ 1,0	≤ 1,0
Cadmium content	mg / kg <sup>2)</sup>	≤ 0,5	≤ 0,5	≤ 0,5
Mercury content	mg / kg <sup>2)</sup>	≤ 0,1	≤ 0,1	≤ 0,1
Lead content	mg / kg <sup>2)</sup>	≤ 10	≤ 10	≤ 10
Nickel content	mg / kg <sup>2)</sup>	≤ 10	≤ 10	≤ 10
Zinc content	mg / kg <sup>2)</sup>	≤ 100	≤ 100	≤ 100

<sup>1)</sup> not more than 1% of the pellets may be longer than 40 mm, max. length 45 mm;

<sup>2)</sup> dry weight;

<sup>3)</sup> particles <3.15 mm, particulate matter, before handing over the goods;

<sup>4)</sup> measurements with Ligno-Tester limit value ≥ 97,7% by weight.

#### 4. TRANSPORTATION OF THE BOILER

We recommend to transport the heating boiler to the installation site in its packaging placed on the pallet. During transport and installation, depending on the weight, suitable safety devices should be used in accordance with Directive 2006/42/EC.

When transporting items weighing more than 30 kg, the use of pallet jack, fork truck or other hoisting devices is a must.

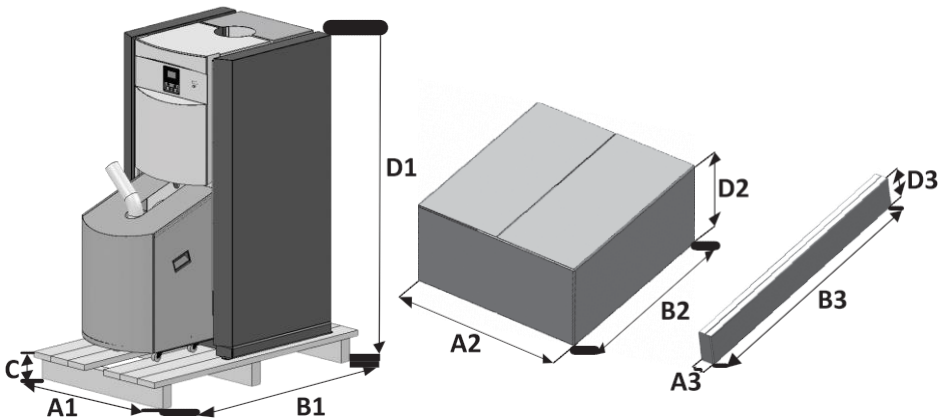
Product must be in original packaging following the instructions on the label - to be protected from adverse weather conditions (snow, rain and dust) from the shocks, and other activities likely to cause damage. In case of malfunction of

the fan or the motor drive (noise, friction) or failure of high-tech elements such as broken controller-screen, contact your nearest authorized service center for repairs and maintenance.

The boiler is securely fastened with fasteners to a wooden pallet.

**Important:** When installing the boiler, the wooden pallet onto which the boiler is placed must be removed by unscrewing the bolted connections using flat ring wrench S13.

PelleBurn		15	25	40
A1, mm	Pellet boiler, burner and pallet	710	710	810
A2, mm	Auger, box	120	120	120
A3, mm	Fuel Hopper, box	840	840	840
B1, mm	Pellet boiler, burner and pallet	1100	1100	1320
B2, mm	Auger, box	260	260	260
B3, mm	Fuel Hopper, box	810	810	810
C, mm	Pellet boiler, burner and pallet	125	125	125
D1, mm	Pellet boiler, burner and pallet	1430	1630	1775
D2, mm	Auger, box	1700	1700	1700
D3, mm	Fuel Hopper, box	1220	1220	1220
Weight, kg	Pellet boiler, burner and pallet	232	275	387
	Auger, box	10	10	10
	Fuel Hopper, box	73	73	73



**Diagram 5**  
Indications dimensions

## 5. DELIVERY OF THE BOILER

- Inspect the integrity of the packaging upon delivery.
- Check whether all components have been delivered to you. Boiler consignment package includes:

- 1) Pellet boiler PelleBurn with pellet burner Pell
- 2) Auger
- 3) Fuel hopper FH 500-V2 (option)
- 4) Safety valve 3 bar.
- 5) Fire irons
- 6) Technical passport. Installation and operation manual
- 7) Service booklet and Warranty card

If any of the above items are missing, contact your supplier.

## 6. INSTALLATION OF THE HEATING BOILER



**The assembly, installation and set-up of the boiler must be performed by a technician authorized for such operations. Installer must indicate to the user of the installation the minimum clearances from flammable materials and liquids.**

### Requirements:

- Boiler room must be frost-proof;
- Boiler room must allow for continuous access of air necessary to maintain combustion;
- Boilers must not be placed in inhabitable rooms;

- All boiler rooms must have correctly calculated vent depending on the boiler output. The vent must be protected by means of a net or grate.

The size of the vent is calculated according to the formula:

**A=6,02Q** - where:

**A** – area of the vent in cm<sup>2</sup>,

**Q** – boiler output in kW

- Remove the packaging without polluting the environment
- Observe building supervision instructions, in particular the existing Ordinance on combustion devices and storage of combustion materials, on building requirements applicable to installation sites and on ventilation;
- The boiler must be placed on a foundation whose surface area is larger than the base of the heating boiler according to diagram 1;
- The boiler must be placed in a position which allows for the easiest possible cleaning and servicing;
- Installation must be carried out according to installation diagram 1 which shows the boiler housing;
- No objects made of flammable materials or liquids may be placed on/near the boiler;

### 7. SETUP OF THE HEATING BOILER

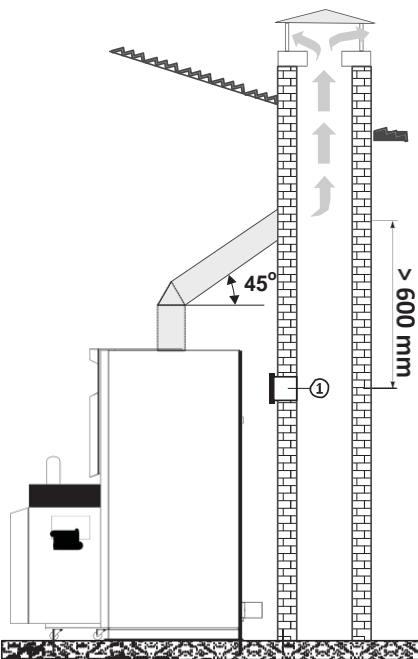
#### 7.1. Connecting the boiler to a chimney

Boiler-to-chimney connection must always comply with the existing standards and rules. The chimney must provide sufficient draught for evacuation of the smoke under any conditions.

The proper functioning of the chimney requires adequate sizing of the chimney itself since the draught it produces affects combustion, boiler's output and life span. The draught created by the chimney is in functional relation to its cross-section, height and the roughness of its interior walls. No other appliance may be connected to the chimney serving the boiler. Chimney diameter must not be smaller than the flue outlet of the boiler. Flue outlet must be connected to the chimney opening. In terms of mechanical properties, the flue outlet must be sturdy and properly sealed (to avoid gas leak) and allow for easy access for cleaning on the inside. The inner section of the flue outlet must not be greater than the effective section of the chimney and must not narrow. Avoid using elbow joints.

The chimney cleaning opening has to be in its lowest part. The chimney's wall has to be three plied where the medium layer is from mineral wool. The thickness of the insulation is not less than 30 mm when the chimney is setting up inside the house and the thickness is 50 mm, when the setting up is outside.

Please entrust choosing a chimney and its installation by a qualified professional. The required distance between the boiler and the chimney is 300-600 mm. Draught regulator (1) must be installed at least 600 mm from the joint (connection).



*Boiler size and chimney parameters*

*Table 4. Recommended minimum sizes and chimney draft*

Boiler output	Chimney diameter, mm	Chimney draft, Pa
15 kW	Ø 130	10-20
25 kW	Ø 130	10-20
40 kW	Ø 150	10-20

**Data in the tables are for indicative purposes.**  
**Draught depends on the diameter, height, uneven sections along the chimney surface and differences in temperature of combustion products and outside air. We recommend that you use chimney fitted with flue terminal. Heating specialist must calculate the precise sizing of the chimney.**

### 7.2. Pellet boiler connection to the pellet burner, auger and fuel hopper

- Take the auger hose (from the auger set). Using a bracket, clamp one end of the hose onto the motor-end outlet of the pellet auger.
- Using a bracket, clamp other end onto the feeding chute of burner
- Remember pellet auger must be installed at 45° angle to the ground horizontal surface.
- Fill the hopper with fuel (see table 2 for parameters of the fuel types used)
- Plug the power cord of the pellet auger into the indicated Schuko-type boiler socket on the left side of the boiler housing.



1. Pellet boiler PelleBurn;
2. Pellet burner Pell;
3. Auger hose;
4. Auger;
5. Fuel Hopper FH.

**Diagram 6. Pellet burner Pell and Fuel Hopper connected to pellet boiler PelleBurn**

### 7.3. Connecting the boiler to the mains power supply

	<b>Such connection must be performed by a technician / service shop authorized for such operations.</b>
	<b>Caution! ELECTRIC SHOCK HAZARD!</b> - Before opening the unit: switch off the voltage and secure the unit against accidental restart. - Observe installation instructions.
	<b>It is mandatory to assure a backup power generator of corresponding rated power! (see table 1)</b>
	<b>Improper cable connections may damage the regulator!</b>
	<b>The device may be damaged if struck by a lightning. Make sure it is unplugged during the storms.</b>

To bring into exploitation the boiler and auger must be connected to the electricity network 220V/50Hz with power cord. Create tight connection with the electrical mains which complies with the local regulations.

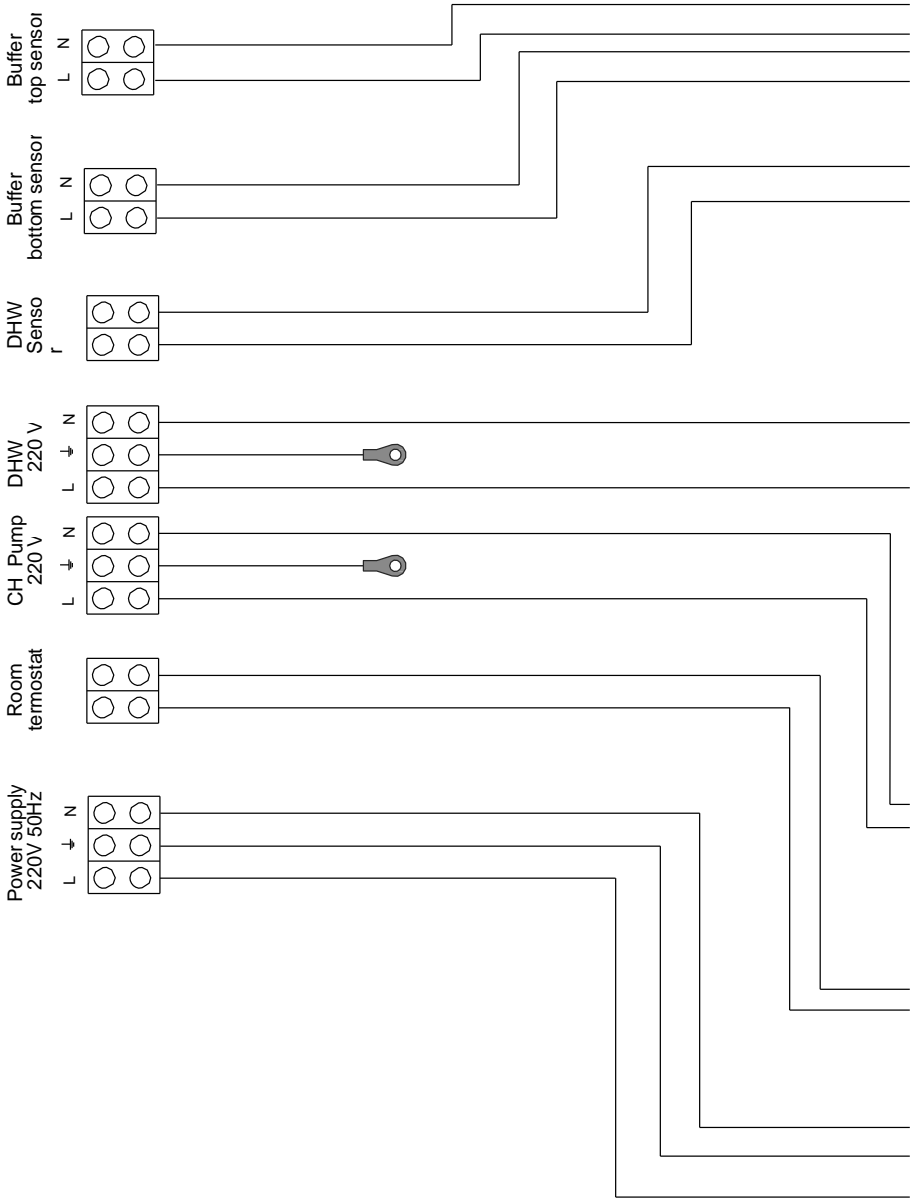
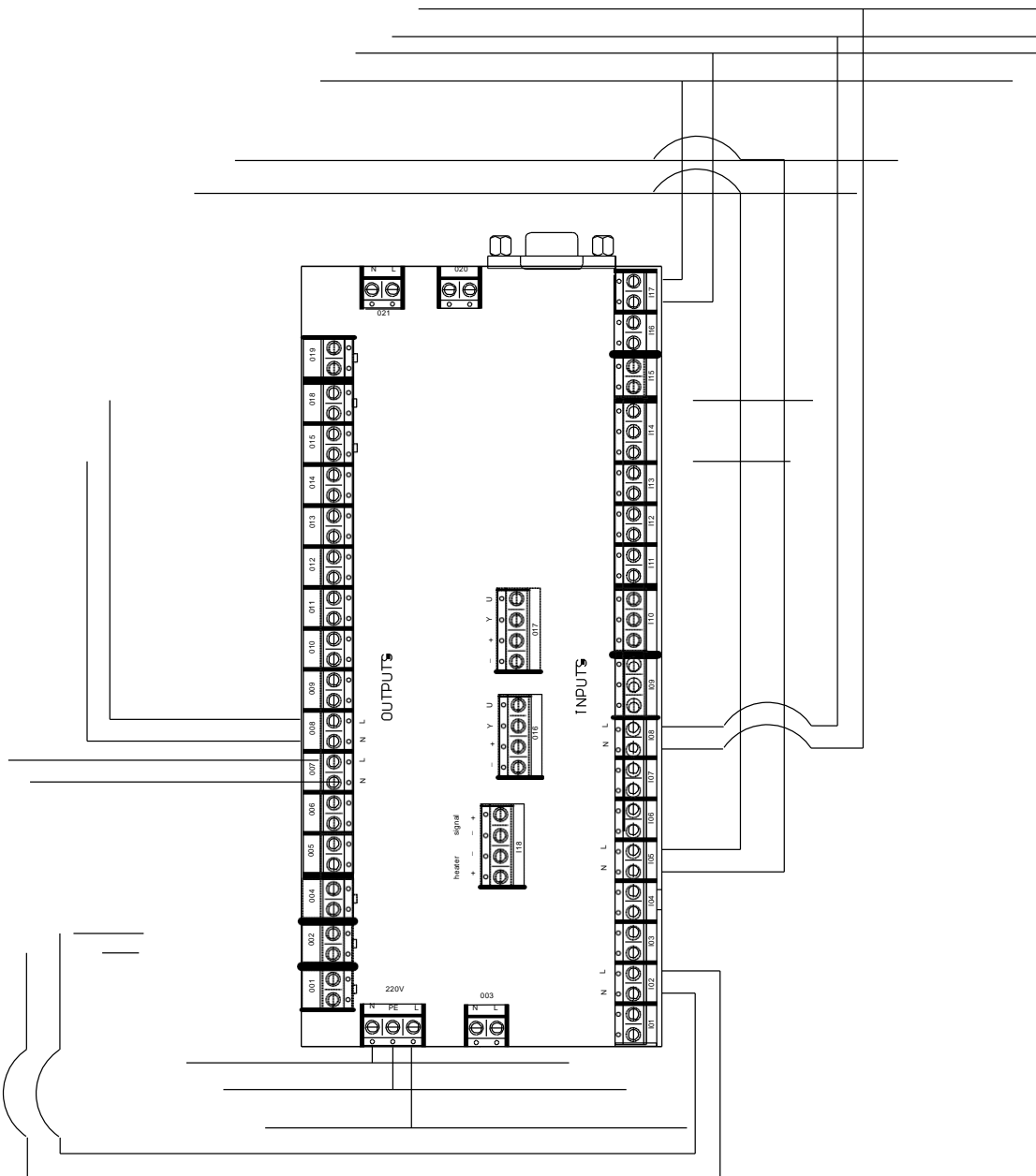


Diagram 7. Wiring diagram of connection





of boiler elements to the controller

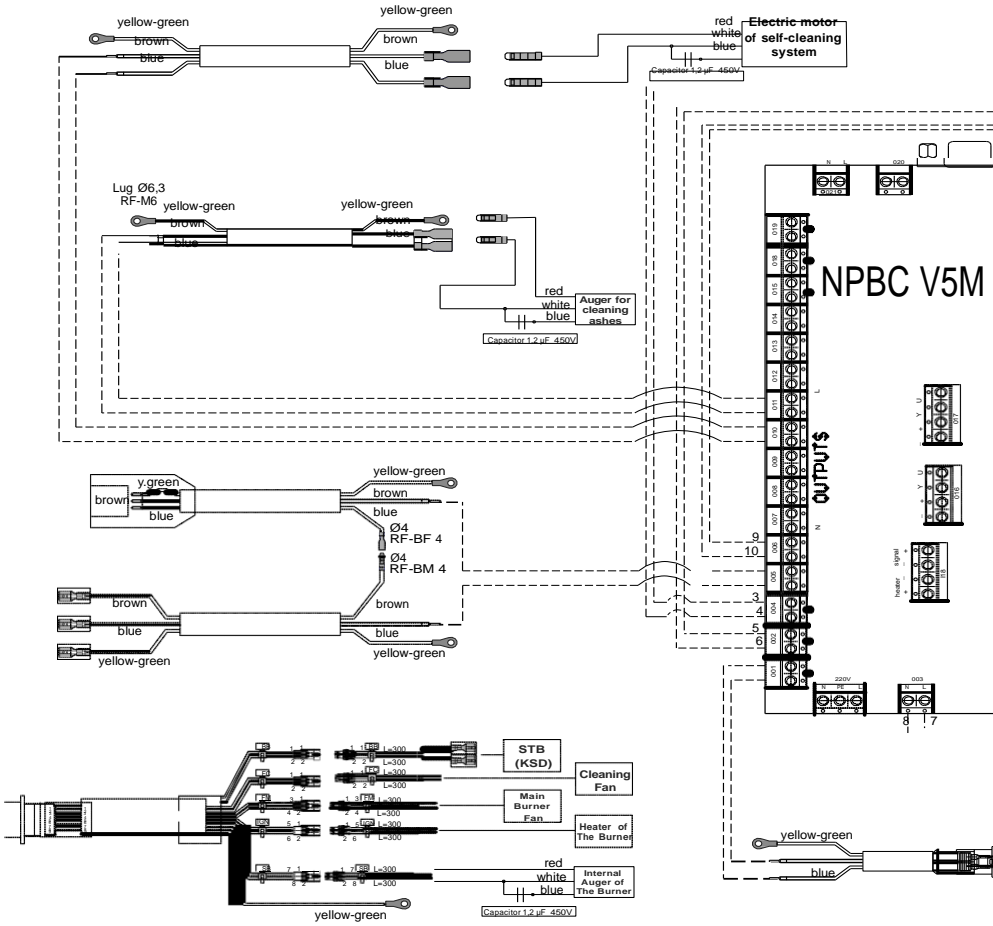
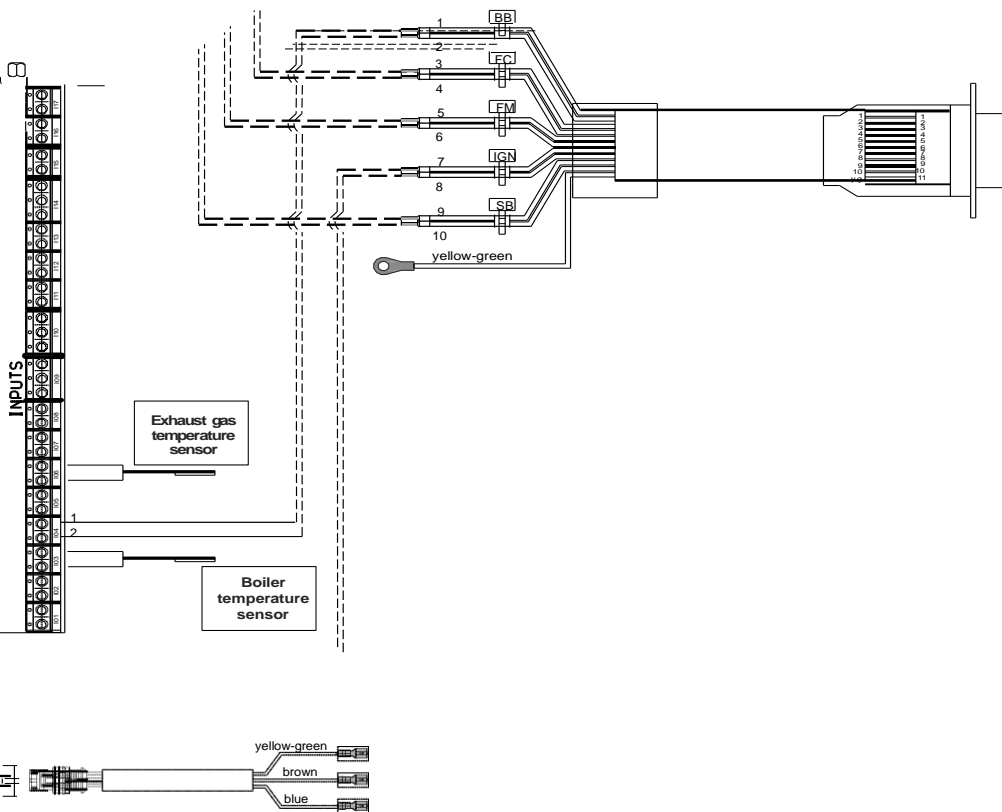


Diagram 8. Wiring diagram of connection of burner



*elements to the controller and connecting socket*

### Legend /Diagrams 7 and 8/

Elements	INPUTS	Symbol
Room thermostat	I02	RT
Boiler sensor	I03	B
STB thermostat of the burner	I04	RB
Sensor water heater	I05	WH
Sensor exhaust	I06	PT
Temperature sensor at the top of the buffer	I08	AT
Temperature sensor at the bottom of the buffer	I17	NA1

Elements	OUTPUTS	Symbol
Fan smoke gases	O 01	FSG
Ignitor	O 03	IGN
Fan cleaning of the burner	O 04	FC
Screw fuel	O 05	SF
Screw burner	O 06	SB
Pump heating	O 07	PH
Pump water heater	O 08	PHW
Electric motor of self-cleaning system	O 10	CS
Electric motor of clean ash	O 11	CA

#### 7.4. Connecting the boiler to the heating installation.



Such connection must be performed by a technician / service shop authorized for such operations.

When the boiler is connected to a heating system, it is mandatory to install a 3 bar relief valve and expansion vessel. No shut-

off fittings may be installed between the relief valve, expansion vessel and boiler.



It is mandatory to install a three-way valve (Laddomat or similar) or a four-way mixing valve which to ensure that the temperature of the heating medium fed into the boiler from the heating installation is at least 65°C.

**Table 5. TROUBLE-SHOOTING TABLE**

Cause	Solution
<b>Installation damage</b>	
<i>Due to unsealed connections</i>	<i>Install the connecting piping strain-free to the boiler connections.</i>
<i>Due to freezing</i>	<i>If the heating installation, including the piping network, has not been built frost-proof, we recommend that you fill the heating installation with a liquid which has low freezing point and corrosion protection and antifreeze agent.</i>
<b>Boiler water too hot, heating bodies too cold</b>	
<ol style="list-style-type: none"> <li>1. Hydraulic resistance is too high.</li> <li>2. Air in the system</li> <li>3. Inoperable circulation pump</li> </ol>	<i>Make sure the circulation pump has been properly selected and the heating installation is of the proper dimensions. (You must contact your installer.)</i>

<i>The STB safety thermostat has been triggered.</i>	<i>Upon reaching a temperature of 95°C, the thermostatic safety protection device is triggered and the fan is turned off. To resume protection, remove the black cap on the front panel of the boiler and press the button on the STB-thermostat. Contact your installer to determine the cause of protection triggering.</i>
<b>Low boiler temperature. Unable to reach normal temperature mode of 65°-85° C</b>	
<i>Inadequate sizing and/or combination of heating appliances</i>	<i>Immediately consult your installer about the problem.</i>
<b>Ejection of unburned pellets into the combustion chamber of the boiler</b>	
<i>Poor adjustment of the fuel-to-air ratio from the burner controller</i>	<i>Contact your installer. It is necessary to set the burner properly using gas analyzer</i>
<i>Utilization of low-quality pellets</i>	<i>Use only fuel which meets the requirements specified in the manual. (see section 3. Fuel)</i>
<b>Formation of clinkers and noncombustible inclusions inside burner body</b>	
<i>Utilization of low-quality pellets (see section 3. Fuel)</i>	<i>Use only fuel which meets the requirements specified in the manual.</i>
<i>Low performance of the automatic cleaning system</i>	<i>Increase turn-on frequency of the automatic cleaning system.</i>
<i>Improper setting of fuel-air mixture</i>	<i>Adjust using gas analyzer</i>
<b>Smoke in the pellet hopper</b>	
<i>Poor chimney draught or high internal resistance of the boiler combustion chamber</i>	<i>Immediately consult your installer about the problem.</i>
<i>Blockage of burner combustion chamber due to build-up of noncombustible materials</i>	<i>It is necessary to clean the burner combustion chamber using brush</i>
<i>Improper setting of fuel-air mixture</i>	<i>Adjust using gas analyzer</i>
<b>Boiler temperature too high. Controller failure.</b>	
<i>Grid power fluctuations</i>	<i>It is mandatory to assure a backup power generator of corresponding rated power! (see table 1)</i>
<i>Power failure</i>	
<i>High temperature of exhaust gases. High temperature alarm is turning on</i>	<i>Fume exhaust tubes of boiler water jacket are clogged with soot. Reduced heat transfer. The boiler should be cleaned. Please contact an authorized specialist / service shop to clean the boiler.</i>
<i>High temperature in boiler water jacket and low temperature in the buffer tank.</i>	<ol style="list-style-type: none"><li>1. Incorrect ON/OFF temperature settings of pumps.</li><li>2. Incorrect sizing of heating system.</li></ol>

7.5. Connection diagrams



Such connections must be performed by a technician / service shop authorized for such operations.

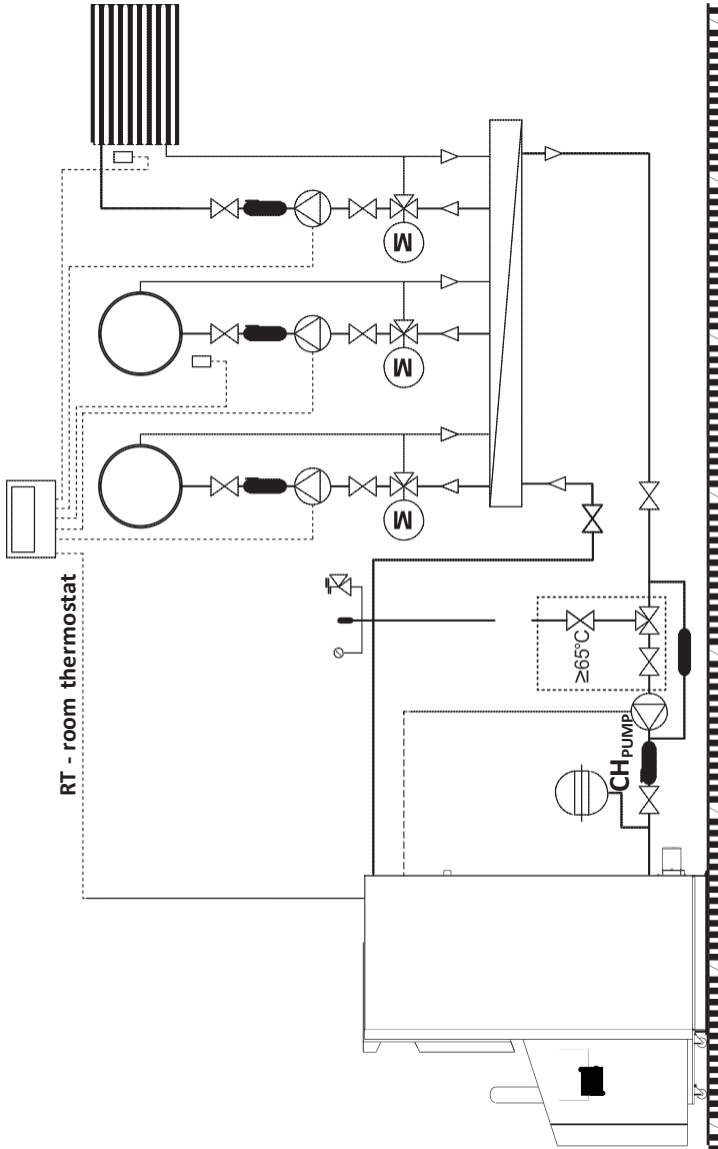


Diagram 9. Connection of boiler PelleBurn to three-way valve

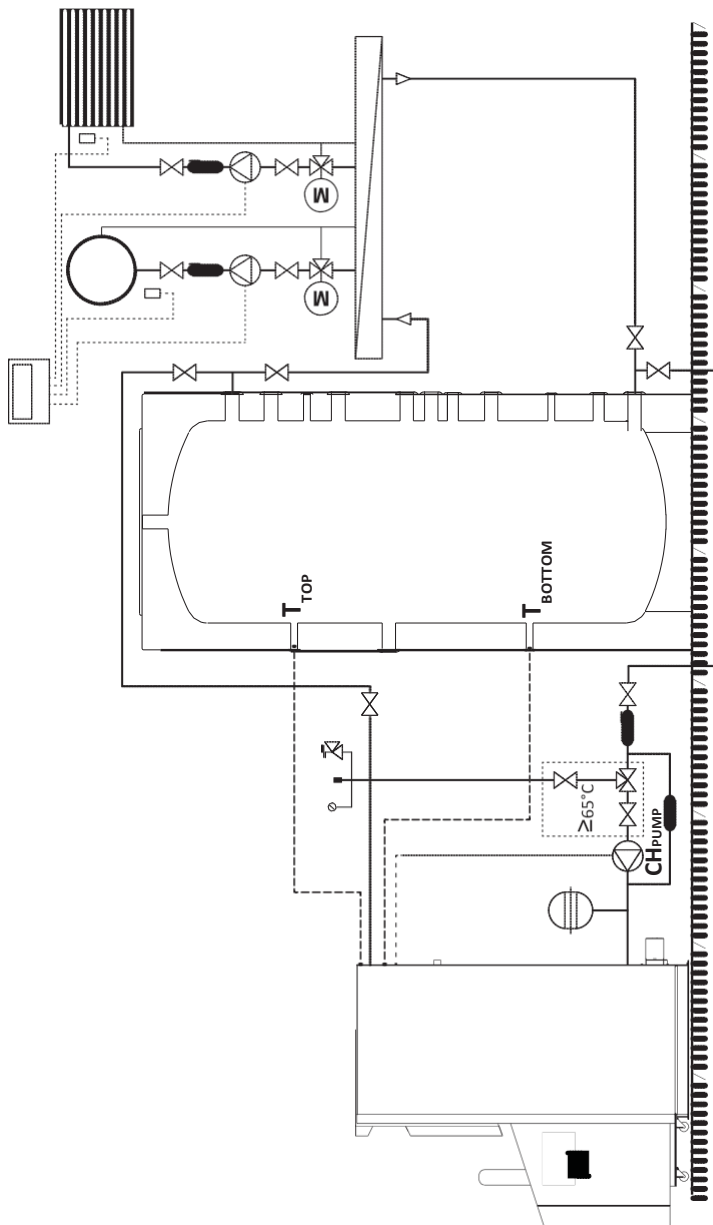


Diagram 10. Connection of boiler PelleBurn to P type buffer tank and three-way valve

д Б

МОБЕО Б

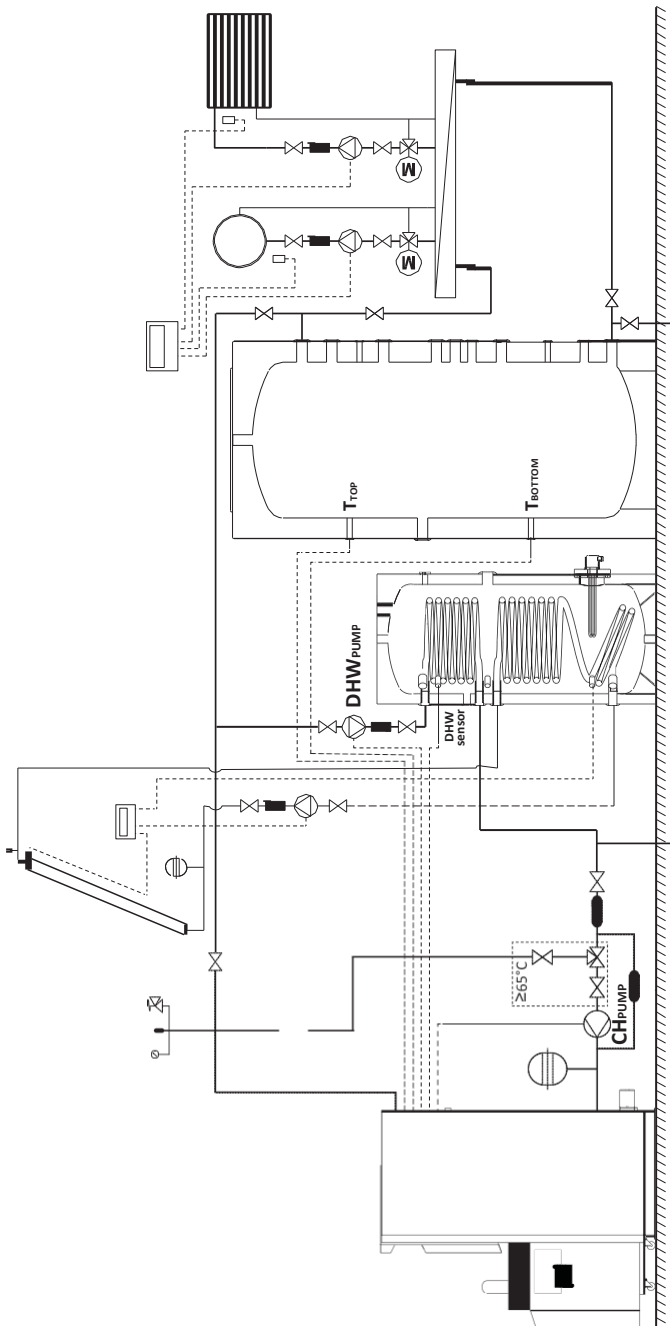
CHPUMP



*Diagram 11. Connection of boiler PelleBurn to combi tank KSC2, flat plate solar collector PK and three-way valve*

*Diagram 10. Connection of boiler PelleBurn to P type buffer tank and three-way valve*





**Diagram 12. Connection of boiler PelleBurn to solar tank SON, buffer tank P, flat plate solar collector PK and three-way valve**

### 8. FILLING THE HEATING INSTALLATION

Table 6

Problem	Prevention
Possible installation damage due to strains in the material caused by temperature differences	Fill the heating installation only in cold conditions (inlet temperature must not exceed 40°C).
Danger of installation damage due to accumulation of deposits Condensate formation and tar deposits may shorten boiler's operational life.	<ul style="list-style-type: none"> <li>- Do not operate the heating boiler for a long period of time in partial load mode</li> <li>- The temperature at the boiler inlet must not be less than 65°C, boiler water temperature must be between 80°C and 85°C.</li> <li>- Use the boiler for a short period to heat warm water in the summer.</li> </ul>

### 9. OPERATION OF BOILER



**Failure to observe the installation and operating requirements described in the manual and the service booklet voids the warranty.**

#### 9.1. Operation of pellet boiler PelleBurn with pellet burner Pell

**Ignition.** After starting the burner up from the control panel, the main pellet auger conveys certain amount of fuel from the pellet hopper to the burner. This specific amount of pellets is set by the installer and depends on the fuel characteristics. The fed-in quantity of pellets is conveyed from the auger conveyor built in the burner to the combustion chamber where it is being ignited using hot air.

**Burning.** The burning process takes place in the combustion chamber and, after it has been fed into the combustion chamber, the fuel is then transported from the internal auger conveyor to the combustion chamber in portions. This allows for constant and optimal burning rate of the fuel. The boiler is controlled and

operated by sensor exhaust. This sensor measures the temperature of exhaust gases and provides information to the control unit ignition or discontinuation of combustion. The output of the burner is determined by the intervals preset on the control panel taking into account the heating value, size and density of the pellets.

**Automatic cleaning system.** The pellet boiler is equipped with innovative automatic cleaning system for combustion chambers of both devices.

A powerful cleaning motor built in the burner body, air is being blown in at high speed and rate thus removing all residues – ash, noncombustible inclusions, etc. built up into the combustion chamber of the boiler.

At the same time the boiler turns on automatic ash removal which is transported to the ash container through screw located in the lower part. These automatic cleaning cycles last several seconds and can be additionally adjusted as well as their repeat rate depending on the load of the burner.

### 9.2. Important recommendations for long-lasting and correct operation of the boiler

- For assembly and installation of the burner follow the requirements in this manual.
- Use only recommended in this manual fuel.
- Disassemble the burner from the boiler body before clean it. Depending on fuel and burner settings, clean the pellet burner once a month.
- User's training for operation and maintenance of burner is performed by an authorized installer or service shop.

	<b>Failure to observe the installation and operating requirements described in the manual and the service booklet voids the warranty.</b>
--	---

### 9.3. Requirements for the cleaning and maintenance of PelleBurn pellet boiler with pellet burner.

	<b>Attention! Important instructions regarding cleaning of boiler</b>
--	---

	<b>Caution! Hot surfaces. Before cleaning the boiler, make sure the fire in it has died out and the boiler has cooled down.</b>
--	---

- It is mandatory to clean the ashes from the container once a week. Unhook the buckles on both sides of ash container. Pull ash container out of the boiler and clean it.
- Once you have emptied the container of ashes, please make sure you close the container cover tightly, buckle-lock it to the container buckles, then buckle-lock the container to the boiler buckles.

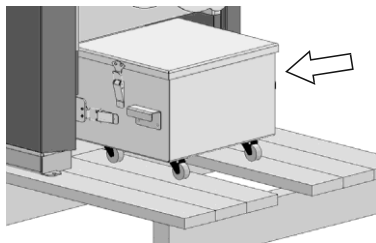


Diagram 13

- It is mandatory to clean once a month the combustion chamber of the burner.

	<b>Attention! Cleaning and maintenance of the boiler should be carried out only by an authorised installer/service shop.</b>
--	--

Before the start of the heating season it is mandatory to check and clean the following components of the boiler:

#### 9.3.1 Cleaning and maintenance of suction fan

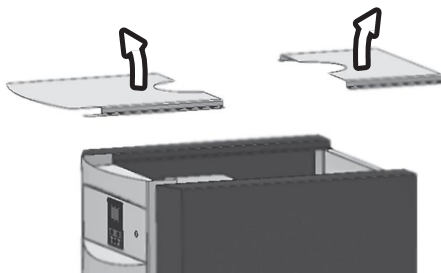


Diagram 14

- Remove the two parts of the boiler top cover by lifting them upwards

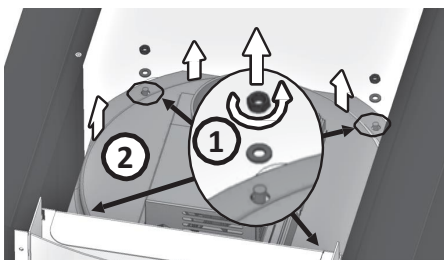
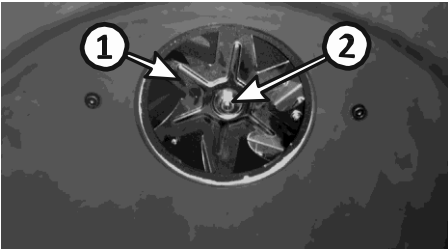


Diagram 15

- Remove the cover of the inner boiler body (2) using wrench S13.
- Clean the fan blade (1) and the dust and soot deposits. Use a brush. If the fan is not properly cleaned, this will affect the boiler performance.

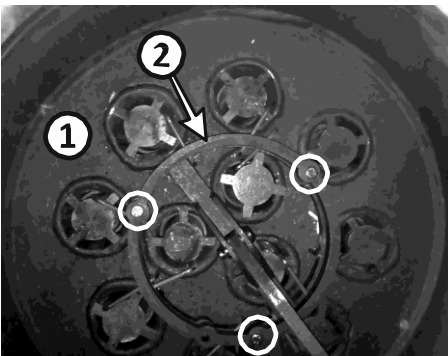


**Diagram 16**

- Check the nut holding the fan blade (2) to be well tightened. Attention: the nut is left threaded!
- Upon assembling the gasket of the fan must fit well in place. If necessary, change the fan gasket.
- Mount back the top cover

### 9.3.2. Cleaning and maintenance of the cleaning system:

- Remove the top cover (9.3.1).
- Cleaning system (1). Clean the ash deposits using a vacuum cleaner and/or a brush.



**Diagram 17**

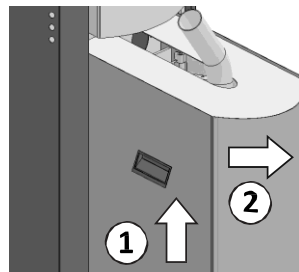
- Hold a visual inspection of the condition

of the entire cleaning system. Also check the drive mechanism, located outside the combustion chamber.

- Upon detection of worn piece/part, it is recommended to have it replaced with a new one.
- Dismantle flue pipes from the cleaning system of the boiler and clean them well. For this purpose: remove the upper ring of the automatic cleaning system (2). Use wrench S10. Use a brush to clean the flue pipes thoroughly one by one. Mount back the flue pipes and the upper ring of the cleaning system.
- Check silicone gasket mounted on the edge of the boiler. Replace if cracked or hardened.
- Mount back the top cover.
- The ashes from the cleaning system are collected in a drawer container for ash and soot. Upon completion of the cleaning procedure, empty the container.

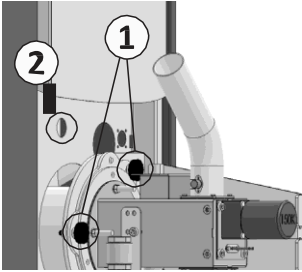
### 9.3.3. Servicing of the burner:

- Remove the burner casing from the boiler cabinet body – using the handles (1) lift it up then pull it towards yourself (Diagram18).



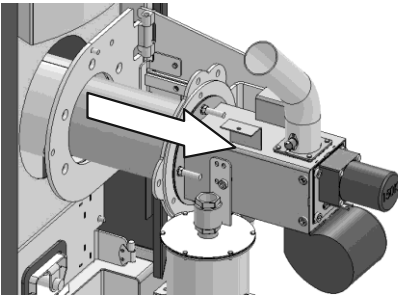
**Diagram 18**

- Remove connector (2) housing the wire connections between the burner and the controller. Unscrew the 2 marked plastic head bolts (1) to release the slide rail onto which the burner is mounted.



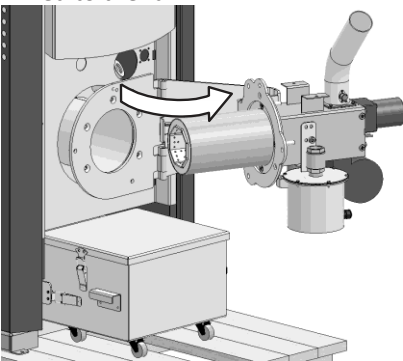
**Diagram 19**

- Carefully slide out the rail with the burner mounted on.



**Diagram 20**

- The rail itself is hinge-fixed to the boiler body, swing it to the right to withdraw the burner from the boiler body. Unscrew the marked bolts to dismount the burner from the flange holding it fixed to the rail.



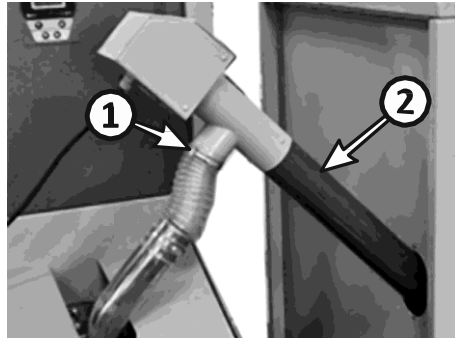
**Diagram 21**

- Disassemble the burner combustion chamber.

- Clean the inside of the burner chamber thoroughly from residues. Use a bodkin to release all clogged orifices along the combustion chamber.
- Remove the ashes from inside the burner. Use a vacuum cleaner and a brush.
- Inspect and clean the motors and sensors in the boiler.
- When mounting the burner back onto the boiler, replace the seal between the burner flange and the boiler.

**9.3.4. Feeding auger:**

- Completely empty the pellet hopper.
- Dismantle the auger from the pellet hopper: release the top of the flexible hose (1) from the auger tube; extract the auger (2) by pulling it out of the hopper.



**Diagram 22**

- Clean the Auger from the ashes of the transport of pellets: Dust off (3) and clean the ashes from the collected (4)



- Mount the feeding auger back to the pellet hopper.

	<p><b>Important! Fill Auger and calibrate it. If auger remain without fuel for transportation will deteriorate normal boiler operation.</b></p>
--	---

### 9.3.5. Pellet hopper:

- Completely empty the pellet hopper
- Clean the pellet ash residues from the bottom of the hopper. Use a scraper and a vacuum cleaner.

## 10. CONTROLLER UNIT




### 10.1. Controller view. Explanation of buttons and indicators.





#### LCD screen:


The controller screen displays the information for the operation of the facility.

#### Explanation of buttons:

When logging into a menu, use arrow keys **UP**  and **DOWN**  to move from one page to another. **Enter** button  permits adjustment of the page.

When adjustment is enabled, use arrow keys **UP**  and **DOWN**  to adjust the parameter.

Press **ENTER**  to change the parameters.

Press **F**  to exit the menu.

Confirm with **Enter** button .

#### Display symbols explanation:



Auto Clean symbol appears in right upper part of display. Active auto cleaning symbol means boiler automatic cleaning mode.



Crossed-out flame symbol appears in upper right part of display. Means that the boiler enters into Extinguish mode.




**CH priority** /Radiator /symbol appears in upper part of display.


Means than Central Heating priority is set





to heat up the central heating.

**Domestic** /shower/  
 priority symbol appears in upper part of display. Means that **DHW**

**priority** is set to heat up the domestic hot water. When set **DHW** temperature is reached, **DHW** pump stops and **CH** pump is activate d.

Parallel pumps /shower and  radiator/ symbol appears in upper part of display. Means that is set equal priority to both pumps. They work in parallel and are controlled by temperature sensors.

 **Summer mode** /shower and sun/ symbol means that is set **Summer** heating mode. Only **DHW** pump is active.

 **Burner** flame symbol appears in upper right part of display. Means that burner is activated. Burner goes into Ignition mode and upcoming boiler fire up.



Flame 2 symbol means **Maximum output mode** of boiler. In this mode the boiler operates at maximum output.



Flame 1 symbol means **Low output mode** of boiler. In this mode the boiler operates at minimum output.



The notice "Hi" appearance on the screen where the boiler temperature is displayed means that the measured boiler body temperature is above 120°C. Flashing and beeping alarm is activated. When the issue is corrected, notification can be deleted. Disconnect fuel auger from boiler plug-in socket. Upon any such occurrence please contact immediately your installer for system checkup.



Boiler increased temperature. Those two symbols appearance on the screen where the boiler

temperature is displayed means that boiler temperature has increased up to 99°C. In such a case, please contact immediately to your installer to check the system.

**E** Error symbol appears in right upper part of display. Flashing and beeping error symbol mean error or fault in boiler operation. Use "Enter" button to move to next screen with error notification in lower left part of display. When the issue is corrected, error notification can be deleted. When disconnect the boiler from electrical supply for few seconds and then switch on it again, boiler goes back to normal operation (error notification is deleted).

**S** Cleaning system of exhaust gas tubes is activated.


**A** Ash cleaning system is activated.

### Factory setting - Alarms

<b>BB ALARM</b>	Reverse fire Alarm (when the thermostat contact RE input is open)
<b>SENSOR E1</b>	Boiler Temperature Sensor is missing (input B)
<b>SENSOR E2</b>	Boiler Temperature Sensor Short circuit (input B)
<b>IGNITION FAIL</b>	Failure ignition
<b>BURNOUT</b>	Exhaust gas temperature is too low in Operation mode. If the exhaust gases temperature drops below 85 °C the boiler will shift into extinguishing mode.
<b>DHW E1</b>	Water Heater Temperature Sensor is missing (input WH)
<b>DHW E2</b>	Water Heater Temperature Sensor Short circuit (input WH)
<b>Cleanup</b>	This alarm appears when gas temperature rises above 180°C

<b>TE Alarm</b>	This alarm appears when gas temperature rises above 220°C
<b>TE E1</b>	Temperature sensor of exhaust gases is missing
<b>TE E2</b>	Short circuit of temperature sensor of exhaust gases
<b>CH btm E1</b>	Temperature sensor of lower part of buffer tank is missing (when in choser scheme with buffer tank)
<b>CH btm E2</b>	Short circuit of temperature sensor of lower part of buffer tank (when in choser scheme with buffer tank)
<b>CH top E1</b>	Temperature sensor of upper part of buffer tank is missing (when in choser scheme with buffer tank)
<b>CH top E2</b>	Short circuit of temperature sensor of upper part of buffer tank (when in choser scheme with buffer tank)

*When restarting the controller alarm is deactivated.*

 **Notify the authorized installer/service to be performed immediately inspection of the boiler and heating installation.**





"C" symbol means that the motor of automatic cleaning system is activated.



The symbol "T" indicates that a room thermostat is connected to the controller of the burner (the boiler). In "CH Priority" mode the room thermostat controls the burner by starting and stopping it. In "DHW Priority" mode the room thermostat controls the heating installation pump by starting it when the temperature of the domestic hot water has reached the maximum preset temperature. In "Parallel Pumps" mode the room thermostat controls the

heating installation pump regardless of the temperature of domestic hot water. In "Summer Mode" the room thermostat is disabled.

**Lights for operating:**

-  - Pump heating system
-  - Pump Domestic hot water.

**10.2. User menu**

**10.2.1. Initial (start-up screen) „Standby“**



The burner is in standby mode.

The display shows: Temperature in the boiler (23 degrees),

time, and by pressing the Enter button you can browse the quick menu (bottom left) where the following read-only data is displayed: **Maximum set temperature t=85°C, temperature of domestic hot water** where such heating circuit is connected); **Light intensity in the burner; Burner status** (detected errors, if any); **Date**.

**No Errors 11:10** Error message. If there is an emergency in the operation of the facility for any reason will be displayed as an error.

**t=85° 11:11** Maximum set boiler temperature.

**05-11-2013 11:11** Current date.

**t<sub>DHW</sub>=23° 11:12** Parameter  $t_{DHW}$  indicates temperature of domestic hot water inside the water heater.

**t<sub>CH</sub>=49°/36°** Parameter  $t_{CH}$  indicates the value<sup>CH</sup> of

instantaneous temperature at upper and bottom part of the buffer tank.

This screen is active only when has been selected the menu option for boiler control according to buffer temperature.

**t<sub>e</sub>=146° 11:11** Parameter  $t_e$  indicates exhaust gases

temperature.

**Set Temperature 85°** Set maximum temperature of the boiler through navigation arrows.

When desired temperature is selected press **Enter**. Press button **F** and hold for 3 seconds to set the follow parameters:

**Manual Ash Clean** Possibility for forced turn on of ash and soot transport screw. Time setting of screw operation. To set start and operating time use buttons "Navigation arrow Up" and "Navigation arrow Down". After entering the correct value press button "Enter".

**Start now 180 sec**

**CH Setup** Use this menu to adjust switch-on temperature of central heating pump.

**Set Temp 64°**

**CH Buffer Setup** From this menu you can preset buffer tank circulation pump switch-on and switch-off temperatures provided such heating installation scheme (with buffer tank included) is selected, whereas the two sensors reading these temperatures are mounted in the upper, respectively lower part of the buffer tank (cf. boiler connection schemes).

**On 55**  
**Off 65°**

**DHW Setup** From this menu you can adjust the maximum temperature in the domestic hot water storage tank, whereas by navigating from the arrow keys up and down and using the **Enter** button you can change the parameters. You can adjust the maximum domestic hot water temperature inside

**Set Temp 40°**  
**Hysteresis 02°**

the storage tank, as well as the switch-on hysteresis for the circulation pump after a drop of DHW temperature inside the storage tank.



Use UP and DOWN arrow keys in Set Time menu to set the unit's built-in timer/clock.



Use UP and DOWN arrow keys in Set Date menu to set the date.



Use UP and DOWN arrow keys in Contrast menu to adjust the LCD display backlight level.

Confirm settings by shifting to next submenu through a single pressing of the functional key F.



Use this menu to choose the language of the controller. Choose a language by pressing navigation arrows and button "Enter".

### 10.2.2. Burner start-up „Switch mode“



Burner start-up. After pressing the "F" button and using the navigation arrows, the "Auto" or „Standby“ menu is selected.



Set the priority mode of the burner through "navigation arrows."

- **CH + DHW** – Both pumps /CH-central heating pump and DHW – domestic hot water pump /are active.
- **CH only** – In this mode of operation the only active pump is the CH circulation pump for the heating installation (**CH pump**). In this mode, the boiler can be managed via a room thermostat

or be temperature-controlled by the temperature inside the connected buffer tank to it (depending on the connection scheme) (see item 10.3.4, menu CH Mode).

- **Summer Mode** – Boiler works for heating of domestic hot water only.



If you have selected the (CH + DHW) option, upon confirmation of command via the F button you may navigate to the next screen.



From this menu you can set up and adjust DHW pump activity periods. Use the arrow keys to set time (HH:MM). Use "Enter" button to checkmark desired time period option.

If no option is check-marked, the controller will maintain DHW temperature as a priority. Only when its preset value is reached, the CH circulation pump will start.


	<b>Important:</b> The use of "External room thermostat for the burner" option (Thermostat) is active only if option is selected (CH Priority – priority of central heating installation pump).
--	--

### 10.2.3. Burner shut-down „Standby“



Pressing the "F" button will take you to the main menu and by using the navigation arrows you can select the "Standby" menu and confirm the selection by pressing "F". The burner goes into extinguishing mode. Set the temperature to start heating pump.

**10.3. Installer menu (setting the combustion parameters in the burner controller)**


	<b>CAUTION!</b> We recommend that this menu be used only by an authorized installer/service shop in order to ensure efficient and safe operation of the equipment
---	---

NPBC-V5M ver 1.2 / 1.1	To access the settings adjustment mode, simultaneously press the "Enter" and „F" buttons and hold them
---------------------------	--

pressed for 4 /four/ seconds. This will display the controller hardware and software version on the screen. Press again button "F" and this will open the initial page for the burner settings.


Service Code 0*****	To access the service settings must be entered service code. Service menu includes only parameters that
------------------------	---

directly affect the boiler combustion process, and the management of the installation (depending on the capabilities of the management of peripheral devices from the controller to the boiler).

	<b>Fuel switching and / or change the configuration of the heating installation must be performed by an authorized installer / service. Some of these reasons may affect the safe operation of the facility.</b>
---	--

**10.3.1. Menu for automatic dose pellets for maximum power**


Calculate Feed Power 40kW FuelC 5.0kWh/kg Feed 10cycles	Calculation of feeding: <b>Power</b> - Enter the maximum power of the model of boiler.
--	---

	<b>Important:</b> Please enter the exact power. Setting of higher or lower power than is written on production label of the boiler can cause boiler damage or physical injury.
---	--

**Fuel C** - Set the calorific value of used fuel. The calorific value is marked on fuel package.

**Feed** - Determine the number of cycles for screw calibration. When entering a larger number of cycles will get more precise results.

Press "F" button to switch to next submenu.

Feeder Filling  Feed	Filling of auger: From this menu by selecting "up arrow" button activate
--	---

operation of main auger of the boiler (the auger in fuel hopper). Auger began working constantly. If the auger is empty will take about 20 min. to be filled- well.


Feeder Capacity 0/10 cycles * Please wait...	Capacity of Auger: When enter this menu, controller automatically
--	--

start to operate 10 cycles. During these operating cycles the auger Switch-On and Switch-Off simulating normal operating behavior for combustion process. Transported by auger pellets during these cycles should be collected (use a plastic bag) and weighed when the last cycle is completed. The number on right-side of the screen shows how many cycles you set for execution. The number on left-side of the screen shows which cycle is currently running.

	<b>Pending completion of all cycles do not press the buttons display as it will stop the process!</b>
---	---

When the last of these set cycles has been executed, auger will stop automatically and controller will activate automatically the option **Weight**. When option **Weight** is active enter the weight of pellets. To do this you must have electronic scale.

**Feeder Capacity** Entering the amount of weighted pellets:  
**10/10 cycles**  
**Weight 750g** Use this menu to enter the amount of weighted pellets when all set cycles have been executed.

 Use accurate scales with range of at least 10 grams. Of the total weight (pellets and plastic bag) subtract the weight of the bag to get the right amount of pellets during measurement!

Use "Up arrow" and "Down arrow" buttons to enter the amount of weighted pellets as round the amount to 10 grams. Press "F" button to switch to next submenu.

**Calculated Feed** Applying the calculated feed:  
**8.8sec/ 20sec**  
 **Apply**  
 **Cancel** In this sub-menu controller automatically calculates the interval for fuel feeding during combustion cycle.

**Example:** (see picture) for combustion cycle of **20 sec.** calculated fuel feeding is **8.8 sec.** Use "Up arrow" and "Down arrow" button to **Apply** or **Cancel** calculated value. By confirmation with button "Apply" You confirm this and this setting is saved for maximum power setup.

Press „F" button to confirm and exit the menu.

### 10.3.2. Cleaning setup and Clean Ashes

The burner performs automatic cleaning before each ignition and shut-down.

#### Cleaning Setup

**Fan 500 sec**  
**Cleaner 20 sec**

You can use this menu to adjust the running time of the main fan (FAN) and of the cleaning motor (Cleaner).

Select the desired option using the navigation arrows. Use the „Enter" button to open the next parameter. Time-setting for parameter (FAN) determines burner cleaning, damping and ignition of the boiler.



**Important:** With the arrow keys up and down arrow can switch from one to the next page or return to the previous page.

#### Use Cleaner

**On Start**  
 **On Stop**

In this submenu you can activate or deactivate the automatic cleaning of the burner in Ignition (Start) mode and extinguished (Stop) mode.

The checkmark in the box indicates that the automatic cleaning system is active.

#### Clean Soot

**090 sec**

Setting up the run-time of the main boiler flue pipe cleaning motor. Select the desired option using the navigation arrows. Use the „Enter" button to open the next parameter.

#### Clean Ashes

**300 sec**  
**0300 cycles**

Setting up the runtime of the ash carrier screw taking the ashes from the boiler to the ash and soot container. The ash carrier screw runtime is set in seconds. The runtime of main pellet auger is set in number of cycles. Once the set number of cycles is completed, the boiler will launch the self-cleaning procedure after which the main auger will start automatically.

Select the desired option using the

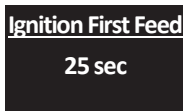
navigation arrows.



**Quiet Mode** menu. Setting the time interval when self-cleaning system of burner is OFF.

For example: from **22:00 to 06:00**. Check mark in the box activates Quiet Mode.

### 10.3.3. Ignition First Feed



In this submenu you can set the number of attempts (**Retries**) to ignite the burner and

the time of the initial feed portion of pellets (**Feed**).

Select the desired option using the navigation arrows. Use the „**Enter**” button to open the next parameter.

### 10.3.4. Cycle setup



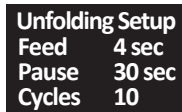
From this submenu you can set:  
- **Heater** – the runtime for the electric ignition heater

- **Fan B/E** – the runtimes and power levels of the main burner fan (**FanB**) and the exhaust gas fan of boiler (**FanE**) in the process of kindling the initial dose of pellets.

**Operation principle:** After the feed-in of the initial dose of pellets the heater will work for **3 min**, then for another **2 min** period parallel to the heater will start the burner fan (**FanB**) and the exhaust-gas fan (**FanE**), respectively at **15 %** and **40 %** of their rated power (exact parameters listed on p. 41).

If after this period of time the exhaust gas sensor has not reported a rise in the exhaust gas temperature, the controller will shift on to the Unfolding Setup menu. Through the navigation keys you set the desired value. Using the button "Enter"

you can navigate to the next parameter.



Unfolding Menu Setup. Use to set the values for:

- Feeding of pellets – Feed;
- Pause time – Pause;
- Number of cycles – Cycles.

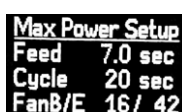
From this menu you can also set the number of cycles and time for feeding the pellets during ignition mode, while the temperature of exhaust gases has not risen. This step is executed in order to progressively secure a stable combustion.



From this menu you can make adjustment of the temperature difference at which the boiler would shift from maximum to minimum power.

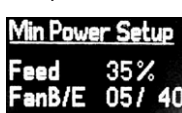
**Example:** When the maximum temperature is set at **85°C** the boiler will shift from maximum to minimum power once the temperature drops to **80°C**.

### 10.3.5. Burn Level



In this submenu you can adjust the performance of the main operation mode –

**Maximum Burner Output.** You can change the pellet feed quantity (**Feed**), the pellet feed time interval (**Cycle**) and the fan operation power level in percentages (**FAN B/E**).  
**Example:** At a set period of **20** seconds, the auger will feed pellets to the burner for **7** seconds, and stay idle for **17** seconds. Select the desired option using the navigation arrows. Use the „**Enter**” button to open the next parameter.



In this submenu you can adjust the criteria for minimum boiler power

pellet feed. We recommend the setting to be **35%** of the main mode. You can change the pellet feed quantity (**Feed**) in % of the set value at maximum power, and the power of both fans: the burner fan (**FanB**) and the exhaust gas fan (**FanE**).

Select the desired option using the navigation arrows. Use the „Enter” button to open the next parameter.

**Auto Clean Setup**  
 12:00  18:00  
 00:00  06:00  
 06:00  21:00

Use this menu to adjust the automatic cleaning of burner and boiler. Set the time and the number of automatic system cleaning (Clean Count). At least one cleaning per 24-hour period is required.

Maximum cleanings - not more than six times per 24-hour period.

Select the desired option using the navigation arrows. Use the „Enter” button to open the next parameter.

**Pellet Lul Sensors**  
 NO  
 NC

This menu is not active at the moment. Does not affect the boiler operation.

**Addons Activation**  
 CH Pump  
 DHW Pump  
 Thermostat

Use this submenu to activate (with check mark) or deactivate additional peripherals.

**CH PUMP** – central heating pump  
**DHW PUMP** – domestic hot water pump  
**Thermostat** .

Select the desired option using the navigation arrows. Use the „Enter” button to open the next parameter.

**CH Mode**  
 Thermostat  
 Buffer

From this screen menu you can choose the boiler operation management mode.

This menu is valid only in the event of "CH only" option selected. By selecting the checkmark "Buffer" the boiler will be controlled according to

temperature inside the buffer tank connected to the boiler. The setting of the temperature of the buffer tank circulation pump start and stop temperatures is done as described above. When selecting the boiler management via thermostat option the boiler will be controlled by the signal input from the thermostat, whereas the options are: thermostat normally open or thermostat normally closed. Its type is introduced at a later step on the controller menu.

**Room Thermostat**  
 NO  
 NC

In this menu you can select the type of the thermostat used (if that option is selected)

**NO** - normally open;  
**NC** - normally closed.

**Setup**  
dT > 05°  
> 095° / 30 min  
< 085°

From this menu, the following parameters are configured:

The **dT** parameter sets the temperature difference of exhaust gases upon which the controller should register ignition. The start point of watching this difference is the moment of start of the main burner fan in the process of ignition. From that point on whenever the temperature of the exhaust gases in the boiler rises with 5 degrees an ignition shall be registered and the boiler will go into normal operating mode.

The next parameter **> 095°C/30 min.** determines the time after the boiler shift to normal operating mode during which the boiler must exceed the specified temperature of exhaust gases. Upon fulfillment of this condition the boiler will register itself in normal working mode. If the exhaust gases temperature drops below **85 °C** the boiler will shift into extinguishing mode (**Error Burnout**).



**Burner Feeder**

Duty 300%

Use this submenu to adjust the internal auger of the burner as a percentage value of the operation of the external pellet auger. **Example:** If the external pellet auger runs for **10** seconds and feeds fuel in the burner, the internal auger will run for **30** seconds, if the setting is **Duty 300%** (see picture).

The check mark in the box indicates that the device is active.

Select the desired option using the navigation arrows. Use the „Enter” button to open the next parameter.

**Set Temperature**

Max 85°

This menu allows you to select maximum boiler temperature. In other words, the maximum temperature to heat the boiler on which the burner has been installed. The maximum value for this setting is **85°C**. Select the desired option using the navigation arrows. Use the „Enter” button to open the next parameter.

**Test Fan Speed**

00

Use this menu to conduct fan operation test. You can control the fan in real time, without confirming anything, using only the navigation arrows.

**Test EFan Speed**

Use this menu to test exhaust gases fan. You can control the fan in real time, without confirming anything, using only the navigation arrows.

**Important.** This menu is for installers only and it is active and visible only if the controller is in „Standby” mode.

**Test Outputs**

A1    VF  
 CS    CA

This menu allows you to check the operation of the various pellet boiler components / outputs.

**Test Outputs**

IFan    AuxF  
 CS    CA

Using the navigation arrows, you can turn on and off the various components and each time the respective component is being activated a check mark will appear in front of its name. Use the „Enter” button to select the individual components / outputs.

**Test Inputs**

TE 20°  
CHt 49°  
CHb 37°

Test controller inputs by using this menu. Menu includes:

**Description of Test components / outputs:**

- CS** – Clean soot motor;
- VF** – motor of the vacuum system for refueling;
- CA** – clean ash motor;
- FF** – Fuel Feeder;
- BF** – Burner Feeder;
- CH** – Central Heating pump;
- DHW** – Domestic Hot Water pump;
- Ign** – Ignition;
- CM** – Cleaning Motor;

**Important.** This menu is for installers only and it is active and visible only if the controller is in „Standby” mode.

**11. SETTING OUTPUT MODES OF OPERATION OF THE PELL PELLET BURNER CONNECTED TO PELLEBURN PELLETT BOILER**



This setting is valid for controller software version: NPBC-V5M 1.0/1.0



**CAUTION! You must use gas analyzer when setting the burner.**

The Pell pellet burner is equipped with two-step output adjustment and their setting depends on the boiler and heat requirements of the heating installation.

### 11.1. Calibration of auger fuel feed rate.

The auger fuel feed rate changes depending on the density and size of the fuel used. Therefore it is necessary to calibrate the main auger every time you change the type of the fuel used.



**CAUTION! It is recommended to use the same fuel throughout the heating season.**

Once you have installed the pellet auger according to the instructions in the manual, fill the hopper with fuel (pellets). Connect the power supply of the pellet auger directly to the power mains. The auger is now in operation. Wait about **15-20** minutes for the pellet auger to fill with pellets. The auger is filled with pellets when pellets begin to fall from the T-branch of the auger at the point where the auger hose is attached.

Filling of the pellet auger is necessary when the fuel in the hopper has been depleted or when fuel has been changed. Once you have ensured that the pellet auger has been filled, take an empty plastic bag and fixed it securely on the pellet auger, at the place of the auger hose. Reconnect the auger to the power socket and measure the amount of pellets collected in the bag over a period of 15 minutes using scales/weighing scale. (In our example, the amount of pellets collected in the bag over a 15-minute period is **7875** grams. (**900** sec). We

then divide **7875** by **900** and get **8.75** grams of pellets per 1 second. Repeat the measurement in order to obtain conclusive results.

### 11.2. Burner output adjustment.

In the burner output settings menu you can adjust the running time of the main auger (**Feed**); main running interval (**Cycle**) and fan output (**Fan**).

**Example for PLB 25 model:** we select mode **Cycle = 20 sec**. The heating value of your fuel is **4.8 kWh/kg**. (manufacturers indicate the heating value of the fuel on the packing – take it from there). We then employ the following formula to calculate the number of seconds for setting the operation of the main auger for these 20 seconds.

$t_{\text{FEED}} = 25\ 000 / (4.8 \times 180 \times 8.75)$  hence

$t_{\text{FEED}} = 3.3$  sec., where **25 000** is the desired output of the burner in Watts (W), **4.8** is the heating value of the fuel in kWh/kg, **180** is the number of burning cycles per 1 hour, **8.75** is the amount of pellets in grams fed by the auger per 1 second.

This way the output mode can be changed and instead the number **25 000 – 25kW**, we input the desired kilowatts (**40 kW=40000 W, 70 kW=70000 W etc.**).

Take also note of the fuel heating value which would change the value for the feed and the burner output.

Using the above procedure, you can set any of the two output modes of the burner.




**Mode** : **Max Power Setup** - It is indicated by two flames.

**Pellet auger running time (Feed) – 3.3 sec. (25kW)**

**Main combustion cycle (Cycle) – 20 sec. (recommended)**

**Fan output (Fan)** - adjust using gas analyzer

**Mode ** : **Min Power Setup** – It is indicated by one flame. We recommend setup value of **35% (0.35)** of the main mode.

**Pellet auger running time (Feed)** – **1.2 sec. (7.5 kW; 3.3 x 35% = 1.2)**

**Fan output (Fan)** - adjust using gas analyzer.



**CAUTION!** You use a burner whose carbon footprint values are approximately (CO=100 ppm), which is 2.5 times lower than the maximum allowed limits for harmful emissions in the EU Member States. Thus you can reduce the amount of harmful emission and contribute to environment protection.



**Important:** For each of the output modes the optimal fan setting is tweaked by using gas analyzer to control the oxygen amount registered by the device (for Max Power Setup within the range 8÷10%, and for Min Power Setup up to 13%). The specific setting depends also on the internal resistance of the boiler combustion chamber on which the burner has been installed as well as on the chimney draught. Therefore it is not possible to provide here the exact value for the fan output and it must be entered by a competent installer or service technician using gas analyzer.

Fuel hopper FH 500-V2 has a capacity of 500 liters pellets. Its design allowing installation by choice on either side of boiler. An important condition is to be leveled. Before loading the pellets, make sure that the hopper is clean. Empty the container for pellet powder and dust. Fuel hopper hatch-cover must be closed during operation. Detailed description for the assembly of a fuel hopper will find the User manual for assembling the fuel hopper FH 500-V2.

### 13. WARRANTY TERMS

The warranty terms are described in the Service booklet included in the supply.

### 12. MOUNTING OF FUEL HOPPER FH 500-V2

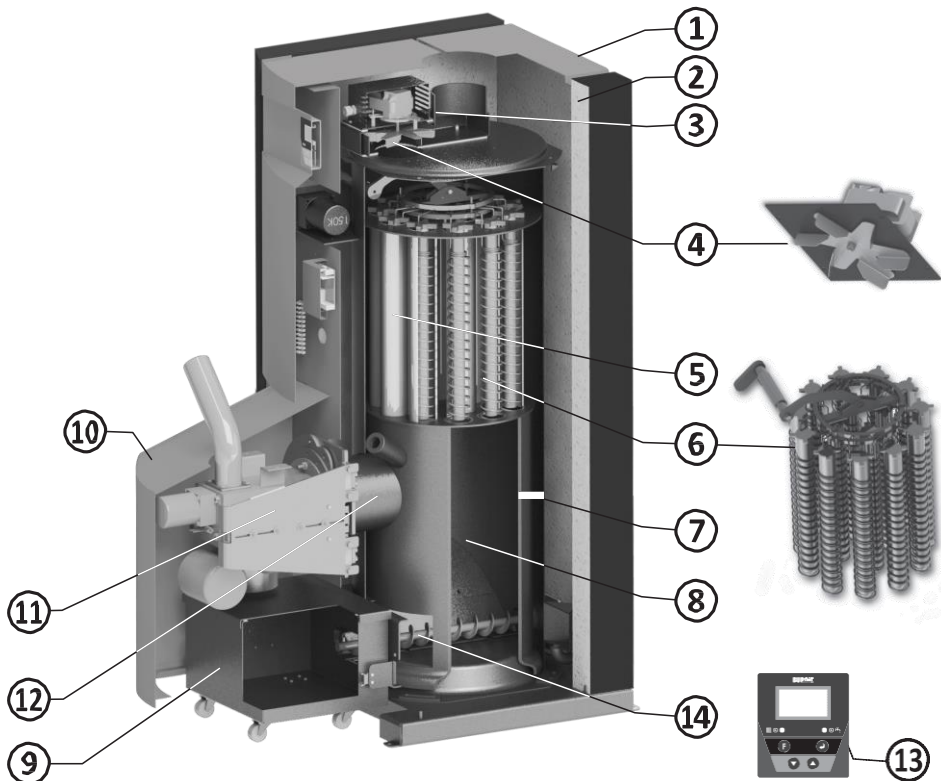
*Settings in table below are made with requirement for chimney draft of 10-12 Pa*

Parameter	Display	PLB 15	PLB 25	PLB 40
Service code		*****12	*****12	*****12
Cleaning Setup	Fan	700sec	700sec	700sec
	Cleaner	20sec	20sec	20sec
Use Cleaner	On Start	✓	✓	✓
	On Stop	✓	✓	✓
Clean Soot		60sec	60sec	60sec
Clean Ashes		300 sec	300 sec	300 sec
		0300 cycles	0200 cycles	0100 cycles
Quiet Mode		22:00/06:00	22:00/06:00	22:00/06:00
Ignition First Feed	Feed	25sec	25sec	40sec
Cycle Setup	Heater	3min	3min	3min
	Fan B/E	2min/20/40	2min/20/40	2min/20/50
Cycle Setup	Feed	4 sec	5 sec	6 sec
	Pause	30 sec	30 sec	30 sec
	Cycle	15	15	15
Max/Min Power	dT	5°C	5°C	5°C
Max Power Setup	Feed	3 sec	5 sec	8,3 sec
	Cycle	20	20	20
	Fan B/E	18/35	25/35	20/60
Min Power Setup __	Feed	35%	35%	35%
	Fan B/E	4/20	8/35	10/30
Auto Cleaning Setup		v 8:00 □ 00:00	v 14:00 □ 00:00	v 22:00 □ 00:00
Pellet Lvl Sensor		✓ NO	NC	
Addons Activation		✓ CH Pump		
		✓ DHW Pump		
		✓ Thermostat		
CH Mode	Thermostat	✓	✓	✓
	Buffer			
Room Thermostat	NO	✓	✓	✓
	NC			
Burn On / Burn Out Setup	dT	05°	05°	05°
	Burn On	>95°/25min	>95°/25min	>95°/25min
	Burn Out	85°<	85°<	85°<
Burner Feeder	Duty	300%	300%	300%
Set Temperature		80	80	80

**14. TECHNICAL FEATURES**

**14.1. Technical features of PelleBurn pellet boiler**

**14.1.1. Elements of PelleBurn pellet boiler**

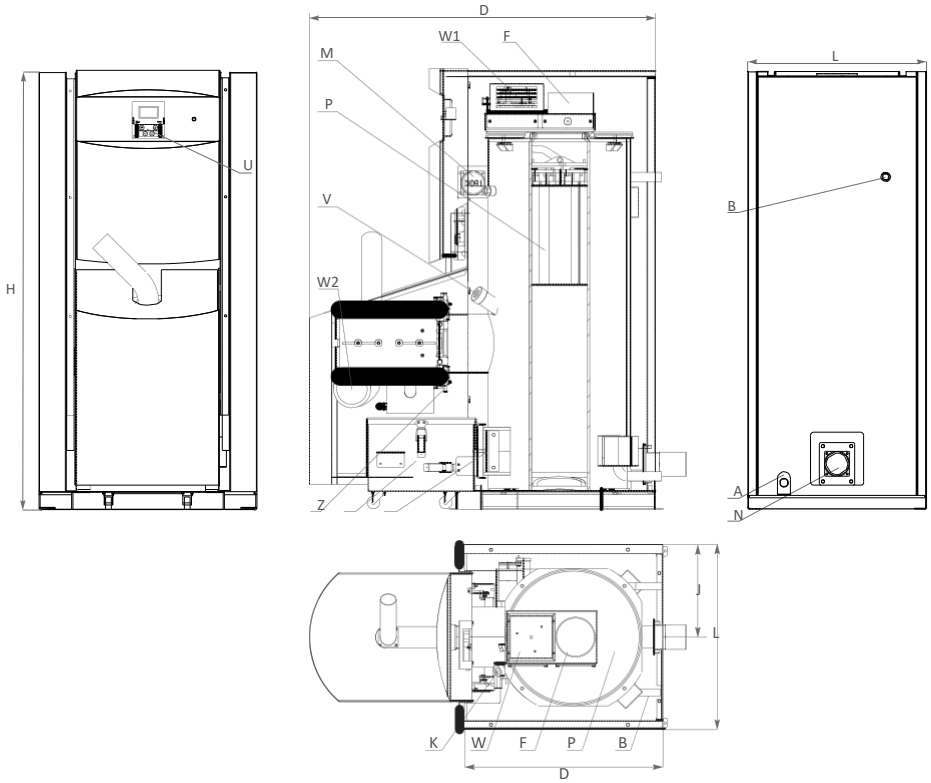


- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>1. Housing</li> <li>2. High efficiency thermal insulation</li> <li>3. Chimney</li> <li>4. Flue gas extraction fan</li> <li>5. Fume exhaust tube</li> <li>6. Automatic cleaning system</li> <li>7. Water mantle</li> </ul> | <ul style="list-style-type: none"> <li>8. Combustion chamber</li> <li>9. Ash-and-soot container</li> <li>10. Burner housing</li> <li>11. Pellet burner</li> <li>12. Burner flange</li> <li>13. Controller unit</li> <li>14. Ash and soot transport screw with stirring mechanism</li> </ul> |
|--|---|

*Diagram 23. Elements of PelleBurn pellet boiler*

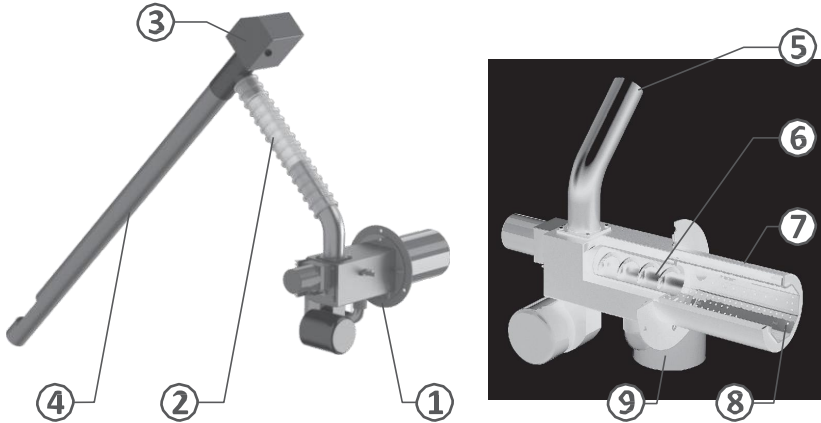
**14.1.2. Technical parameters of PelleBurn pellet boiler**

			PelleBurn 15	PelleBurn 25	PelleBurn 40
Nominal heat output		kW	15	25	40
Min.÷ Max. heat output		KW	5÷15	8÷25	10÷40
Mass flow exhaust gases, Min.÷ Max. heat output		kg/s	0,003÷0,009	0,005÷0,014	0,009÷0,025
Height H		mm	1290	1430	1700
Width L / Depth D		mm	640/1120	640/1120	700/1420
Water mantle volume		l	55	70	101
Combustion chamber volume		l	43	53	73
Combustion chamber resistance		Pa/mbar	10/0,10	11/0,11	12/0,12
Water side pressure drop ( $\Delta T=20^{\circ}C$ )		Pa/mH <sub>2</sub> O	480/0,048	850/0,085	1350/0,135
Required chimney draught		Pa	10÷20	10÷20	10÷20
Insulation	Boiler Doors	100 mm high-efficiency thermal wool lined with aluminum foil 20 mm high-efficiency black veil rockwool			
Electric power supply		V/Hz/A	230/50/10	230/50/10	230/50/10
Recommended fuel		wood-pellets, diameter $\varnothing$ 6÷8 mm			
Operating temperature range		°C	65-85	65-85	65-85
Operating pressure		bar	3	3	3
Weight		kg	215	258	370
BURNiT pellet burner Pell	Power	kW	5÷15	8÷25	10÷40
Pellet fuel hopper		L	500	500	500
Cold water inlet		A, mm	R 1" /100	R 1" /100	R 1" /100
Hot water outlet		B, mm	R 1" /930	R 1" /1070	R 1" /1370
Safety line sleeve		K	✓	✓	✓
Air vent		I	✓	✓	✓
Flue		F, $\varnothing$	133	133	150
		J, mm	1280	1480	1700
		mm	320	320	350
Cleaning opening		O, mm	140/300	140/300	140/300
Combustion viewer		V	✓	✓	✓
Boiler flue gas extraction fan		W1, mm	1220	1385	1665
Burner air-feed fan		W2, mm	510	510	565
Automatic cleaning device		P, mm	950	1090	1390
Cleaning device motor		M	✓	✓	✓
Burner flange		Z	✓	✓	✓
Ash and soot transport motor		N, mm	170	170	170
Ash-and-soot container		T	✓	✓	✓
Control unit		U	✓	✓	✓



## 14.2. Technical features of Pell pellet burner

### 14.2.1. Elements of Pell pellet burner



1. Pellet burner Pell 25;
2. Auger hose;
3. Auger motor;
4. Automatic pellet auger;
5. Feeder chute;

6. Burner (inner) auger;
7. Combustion chamber corps;
8. Combustion chamber;
9. Automatic cleaning system;

Diagram 24. Elements of Pell pellet burner

### 14.2.2. Spare parts for Pell pellet burner

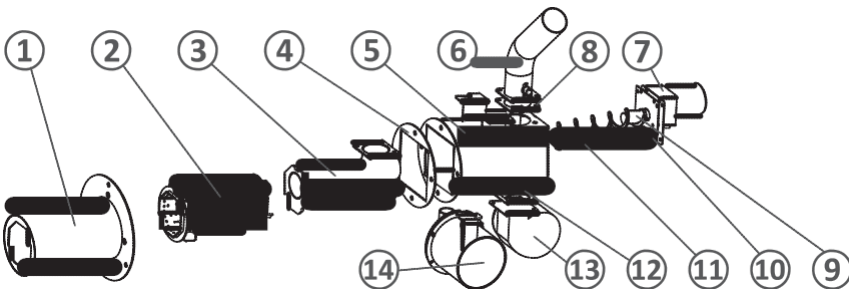


Diagram 25. Spare parts for BURNiT Pell pellet burner

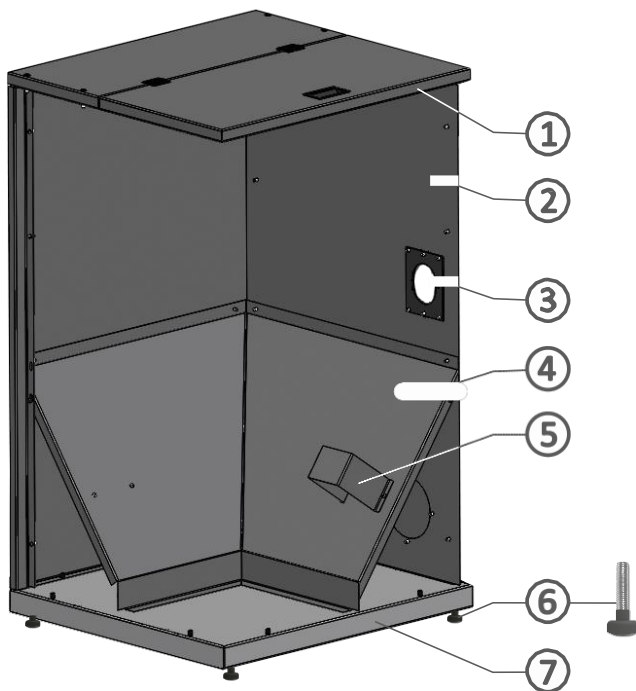


*Table 7*

No	Part Number	model Pell 25	model Pell 40
1	82801300000002	x	
1	82801300000003		x
2	82801300000010	X	
2	82801300000011		x
3	89801300000006	x	
3	89801300000024		X
4	89800000000005	X	X
5	89801381000001	X	
5	89801381000002		X
6	78801100000001	X	X
7	32800032000001	X	X
8	89080000000006	X	X
9	89801200000006	X	X
10	89800000000004	X	X
11	32590000000092	X	X
12	89080000000007	X	X
13	32640000000004	X	
13	32640000000003		X
14	32800000000006	x(C130)	x(C130)

### 14.3. Technical features of fuel hoper FH 500-V2

#### 14.3.1. Elements of fuel hopper



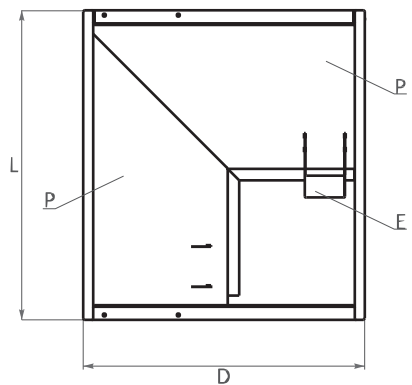
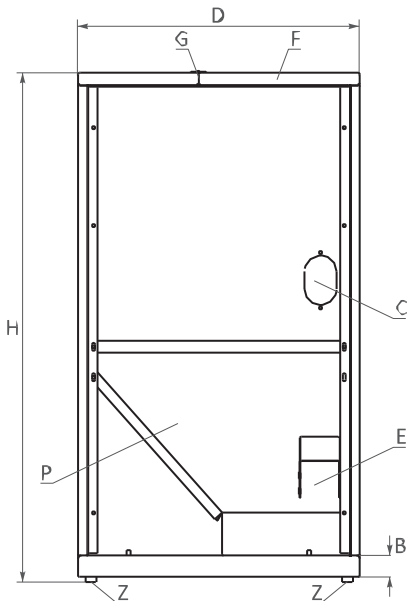
- 1. Pellets loading hatch-cover
- 2. Side panels
- 3. Auger mounting side-panel opening
- 4. Pellet-guide plates

- 5. Auger holder
- 6. Leveling feet
- 7. Foundation

*Diagram 26. Elements of fuel hopper FH 500-V2*

**14.3.2. Technical parameters of fuel hopper FH 500-V2**

		FH 500-V2
Capacity	l	500
Max / Min wood pellets load $\phi$ , 6÷8 mm	kg	280÷300 / 15
Height H	mm	1260
Width L / Depth D	mm	772 / 730
Foundation	B, mm	53
Auger mounting opening	C, $\phi$ mm	76
Auger holder	E	✓
Pellet-load hatch	F, mm	400 / 772
Hinges	G	✓
Inclination of guide plates	P	45°
Leveling feet	Z	✓
Weight	kg	71



## 15. RECYCLING

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

At the end of life cycle of each product its components are due to be disposed of in conformity with regulatory prescriptions. Obsolete equipment shall be collected separately from other recyclable waste containing materials with adverse effect on health and environment.

According to Directive 2002/96/EC regarding electrical and electronic equipment waste, disposal thereof is required separately from the normal flow of solid household waste.

Expired appliances must be collected separately from other recyclable waste containing substances hazardous to health and environment. Both metal and non-metal parts are sold out to licensed organizations for recyclable metal or non-metal waste collection. In any case they should not be treated as household waste.









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