

## PELLET BOILER COMMO COMPACT 32



***Installation, Operation and Maintenance Manual***



*This product meets the requirements of the Ecodesign Directive in terms of efficiency and air pollution level, in order to contribute to the reduction of energy consumption and negative environmental impact.*

## Dear Customers!

Thank you for purchasing Commo Compact 32 boiler. Please read the entire Operation Manual carefully before installing and using your Commo Compact 32 boiler. Heating devices (hereinafter referred to as "pellet boiler s" or "boiler s") produced by company "Alfa Plam JSC" are designed, manufactured and tested in accordance with the requirements of the applicable European Safety Standards Directives.

This Manual is intended for the boiler users, installers, and technicians authorized to use the Como Compact 32 Pellet Boiler . If you have any questions related to this Manual, or if you need any clarification, please contact the manufacturer or an authorized seller of "Alfa Plam".

Any even partial printing, translation and reproduction of this Manual is subject to the approval of "Alfa Plam". The boiler uses pellets as fuel. The boiler works automatically by loading pellets by the screw feeder from the pellet tank that is part of the device located behind the boiler unit. The pellet tank r is filled from above through the designated lid. Make sure that the boiler is properly dimensioned with regard to the heating system and the thermal needs of the facility. The device should be connected and started by a person authorized by "Alfa Plam".

The flame that develops in the boiler during normal combustion of wood biomass emits exactly the same quantity of carbon dioxide (CO<sub>2</sub>) that would be released as a result of the natural decomposition of wood. The quantity of CO<sub>2</sub> obtained by the combustion or decomposition of wood corresponds to the quantity of CO<sub>2</sub> the tree had absorbed during its life cycle and had turned into oxygen and carbon. By using non-renewable energy sources (coal, fuel oil, gas), contrary to what happens with wood, a much larger quantity of CO<sub>2</sub> is released into the air. Over the years, it has been accumulating and contributing to the enhancement of the greenhouse effect. The principle of clean combustion meets all environmental protection requirements, and "Alfa Plam" has directed all of its development and its activities towards meeting this goal.

FIRST OF ALL YOU NEED TO KNOW:

**-THE BOILER IS A COMPLETE PRODUCT WHICH INCLUDES ALL ELEMENTS NECESSARY FOR THE HEATING SYSTEM, THEREFORE YOU DO NOT HAVE ANY EXTRA COSTS, AND THESE ELEMENTS ARE:**

1. CIRCULATION PUMP RS 30/6, FITTED ON THE RETURN PIPE. THE SECOND PUMP IS NOT REQUIRED FOR SPECIAL HEATING (FLOOR, WITH ACCUMULATING BOILER, ETC),
2. 18-LITRE EXPANSION TANK ENOUGH FOR 37.5 KW HEATING POWER,
3. AUTOMATIC AIR VENT VALVE SET ON THE HOT WATER OUTLET FROM THE BOILER ,
4. SAFETY VALVE INSTALLED ON THE HOT WATER OUTLET FROM THE BOILER ,
5. FILL AND DRAIN COCK, INSTALLED ON THE LOWEST POINT OF THE BOILER ,
6. NON-RETURN VALVE R5 / 4 "INSTALLED ON THE HOT WATER OUTLET FROM THE BOILER WHICH PROTECTS THE BOILER FROM CONDENSATION.
7. WATER PRESSURE SENSOR IN THE BOILER , WHICH TURNS OF THE BOILER IN CASE OF TOO LOW OR TOO HIGH WATER PRESSURE IN THE HEATING SYSTEM.

**YOU SHOULD PARTICULARLY BE FAMILIAR WITH THE FACT THAT THE MAIN CHARACTERISTIC AND THE GREATEST ADVANTAGE OF THESE BOILER S IS THE INSTALLED MECHANISM FOR AUTOMATIC MECHANICAL CLEANING OF THE FIREBOX. THIS UNIQUE PATENTED SYSTEM, WHICH DOES NOT ALLOW INCOMBUSTIBLE PELLET PARTS TO PILE UP AT THE BOTTOM OF THE FIREBOX, IT PREVENTS THE SO CALLED "CEMENTING", AND IT DOES NOT ALLOW THE OPENING AT THE BOTTOM OF THE FIREBOX TO CLOSE. THIS SYSTEM ENABLES:**

**-COMBUSTION OF LOWER QUALITY PELLET (BUT NOT THE WORST QUALITY).**

**-GREATER AUTONOMY OF THE BOILER OPERATION, AND IT ENABLES THE BOILER TO OPERATE FOR A LONGER TIME WITHOUT BEING CLEANED.**

YOU SHOULD ALSO KNOW THAT THERE ARE TWO LARGE ASHTRAYS IN THE BOILER WHICH GIVE A HIGHER AUTONOMY AND PROVIDE LONGER OPERATION OF THE BOILER WHICH MEANS YOU CAN CLEAN IT EVERY FEW DAYS (DEPENDING ON THE PELET CONSUMPTION AND QUALITY).

THE BOILER ALSO CONTAINS A PELLET TANK WHICH COLLECTS 70 KG OF PELLETS. HOWEVER, THE BOILER MAY ALSO BE CONNECTED TO A SPECIAL, BIG PELLET RESERVOIR (TANK) INSTALLED NEAR THE BOILER FOR COLLECTING 300 - 500KG OF PELLETS, AND THIS ADDITIONAL TANK WOULD COMPLEMENT THE OPERATION OF THE INSTALLED PELLET TANK WHEN NECESSARY.

DUE TO THE EXTENDED HEIGHT OF THE BOILER AND DIFFICULTIES WITH FEEDING THE PELLETS INTO THE TANK, THE BUYER MAY PROVIDE LOW LADDERS, OR IN OTHER WAY FACILITATE FEEDING THE PELLETS INTO THE TANK.



**CAUTION**

- The minimum installed power of the heating system must not be less than 65% of the boiler's rated of the boiler, and the maximum power of the system must not exceed 100% of the boiler's rated power.

-The flue connected to the boiler must meet the requirements set in the user manual.

-To connect the appliance to the flue, do not use flexible hoses instead of flue pipes.

- Regular maintenance and care, such as cleaning the boiler, flue pipes and nozzles (pipes), are important for safe operation, and especially for effectiveness and maintenance value of the boiler.

- Do not perform any unauthorized modification to the appliance, as any unauthorized modification will void the warranty.

## Contents:

1.	PURPOSE OF THIS MANUAL .....	1
2.	RESPONSIBILITY OF THE MANUFACTURER .....	1
2.1.	REQUIRED GENERAL STANDARDS .....	1
2.2.	HARMONIZED STANDARDS .....	1
2.3.	TRANSPORTING AND MOVING THE PELLET BOILER .....	1
2.4.	RESPONSIBILITY OF THE INSTALLER .....	1
3.	INSTALLATION .....	2
3.1.	PLACING THE BOILER .....	2
3.2.	AIR SUPPLY .....	3
3.3.	SMOKE DISCHARGE SYSTEM .....	4
3.4.	CONNECTION TO ELECTRIC POWER SUPPLY .....	6
4.	MIXING VALVE .....	7
5.	FIRST FILLING AND IGNITING THE BOILER .....	7
5.1.	FILLING THE INSTALLATION .....	7
5.2.	IGNITING THE BOILER FOR THE FIRST TIME .....	7
6.	SAFETY WARNINGS .....	7
6.1.	SAFETY WARNINGS FOR THE MAINTENANCE STAFF .....	7
6.2.	SAFETY WARNINGS FOR USERS .....	7
7.	GUIDELINES FOR SAFE IGNITING AND CLEANING THE BOILER .....	8
7.1.	ROUTINE MAINTENANCE AND CLEANING THE BOILER .....	8
7.1.1.	CLEANING THE FIREBOX .....	8
7.1.2.	CLEANING THE CHAMBER PIPE .....	9
7.1.3.	CLEANING THE UPPER ASHTRAY AND SPACE AROUND THE UPPER ASHTRAY .....	9
7.1.4.	CLEANING THE FIREBOX SUPPORT BOTTOM .....	9
7.1.5.	CLEANING THE LOWER ASHTRAY .....	10
7.1.6.	CLEANING THE UPPER CHAMBER .....	10
7.1.7.	CLEANING THE HEAT EXCHANGER .....	10
7.2.	CHECK-UP AND PARTS TO BE MAINTAINED .....	10
7.3.	ADDITIONAL MAINTENANCE .....	10
7.4.	CHARACTERISTIC BUILT-IN ELEMENTS .....	11
7.4.1.	CIRCULATION PUMP .....	11
7.4.2.	EXPANSION TANK .....	11
7.4.3.	FILL AND DRAIN COCK .....	11
7.4.4.	ELECTRONIC SYSTEM .....	11
7.4.5.	NON-RETURN VALVE, AUTOMATIC AIR VENT VALVE, SAFETY VALVE AND WATER PRESSURE SENSOR .....	12
7.4.6.	MECHANICAL SAFETY DEVICES – THERMOSTATS .....	12
7.4.7.	FRESH AIR INTAKE, SMOKE DISCHARGE SYSTEM, RETURN AND PRESSURE LINE .....	13
8.	IMPORTANT SAFETY INFORMATION .....	13
9.	THE PELLET QUALITY IS VERY IMPORTANT .....	13
9.1.	PELLET STORAGE .....	13
10.	BOILER CONTROL SYSTEM .....	14
10.1.	Electrical Circuit Diagram .....	14
10.2.	Control Panel (Display) – Keys and Functions .....	14
10.3.	Menu .....	16
10.3.1.	Combustion Management Menu .....	17
10.3.2.	Heating Management Menu .....	18
10.3.3.	Chrono Menu .....	19
10.3.4.	Load Menu .....	20
10.3.5.	Time and Date Menu .....	20
10.3.6.	Remote Control Menu .....	20
10.3.7.	Language Selection Menu .....	20
10.3.8.	Display Menu (Keyboard Menu) .....	20
10.3.9.	System Menu .....	21
10.4.	Ignition of the Boiler and Functional Conditions .....	21
10.5.	Possible Problems and Solutions .....	22
11.	INFORMATION ON THE DISPOSAL AND DISASSEMBLY OF THE BOILER .....	24
12.	TECHNICAL CHARACTERISTICS OF COMMO COMPACT 32 PELLET BOILER .....	24
13.	DIMENSIONS OF COMMO CONTACT 32 BOILER .....	26
14.	HYDRAULIC INSTALLATIONS DIAGRAM OF COMMO CONTACT 32 PELLET BOILER .....	26
14.1.	Pellet boiler hydraulic installation diagram (radiator heating) .....	27

<b>14.2.</b>	<b>Pellet boiler hydraulic installation diagram (radiator and floor heating) .....</b>	<b>27</b>
<b>14.3.</b>	<b>Pellet boiler hydraulic installation diagram (accumulation tank) .....</b>	<b>28</b>

# 1. PURPOSE OF THIS MANUAL

The purpose of this Manual is to instruct the user how to take all necessary safety measures and ensure that all necessary actions that will guarantee the proper and safe use of this heating device will be undertaken.

## UPDATES

This Manual takes into account all the advanced technologies that existed at the time this pellet boiler was placed on the market.

This Manual does not take into account the boiler s already on the market with appropriate technical documents and which may not be considered faulty or inadequate after any modifications, adaptations or application of new technologies to newly launched products.

This booklet should be read and studied carefully. All information provided in this booklet should be considered necessary for the proper installation, use and maintenance of your boiler .

This Manual should be kept in a safe place. This Installation, Operation and Maintenance Manual is considered to be an integral part of the pellet boiler .

If the boiler is resold to another person, the new owner must also be given this Manual.

If you lose this booklet, you can ask the manufacturer or authorized seller for a new one.

# 2. RESPONSIBILITY OF THE MANUFACTURER

By delivering this manual, "Alfa Plam JSC" shall not accept any legal or criminal liability, either direct or indirect, for:

8. Accidents and/or damage occurred due to the non-observance of the standards and specifications stated in this Manual,
9. Accidents and/or damage occurred due to the improper operation or use of the boiler by the user,
10. Accidents and/or damage occurred due to any modifications and repairs not approved by "Alfa Plam JSC",
11. Poor maintenance,
12. Unpredictable events,
13. Accidents and/or damage occurred due to the use of spare parts that are not original spare parts or inappropriate.

The installer of the boiler shall take the full responsibility for the installation.

## 2.1. REQUIRED GENERAL STANDARDS

The boiler user must be an adult and responsible person.

Make sure that children do not approach the boiler while in operation, with the intention of playing.

Children must not approach the boiler while in operation with the intention of playing. This appliance can be used by children aged 8 and older and persons with reduced physical, sensory or mental abilities, if they are supervised by an adult who is familiar with the instructions for use. Boiler cleaning and maintenance cannot be performed by children without the supervision of an adult.

## 2.2. HARMONIZED STANDARDS

- EN 303-5;
- EN 50581;
- EN 61000-6-2;
- EN 61000-6-3;
- EN 60335-1;
- EN 60335-2-102;
- EN 62233;
- Commission Regulation (EU) 2015/1189.

## 2.3. TRANSPORTING AND MOVING THE PELLET BOILER

When moving the boiler , take care of your own safety.

Before transporting and moving the pellet boiler , which must be carried out absolutely safely, ensure that the forklift truck has a carrying capacity sufficient for lifting the boiler . Avoid sudden movements and /or improvised ways to move the boiler . Lifting, moving and repositioning your boiler can be carried out by means of rod-like boiler supports that have a thread at one end. These supports (4 pieces) are wound up to the designated places on both sides of the boiler (Figure 1). This activity should be carried out by 4 people. **Boiler supports are delivered with the boiler !**

Note:

When moving the device, it should be taken into account that it is much heavier in its front part because the boiler itself is located in that part of the device!

**ALL THE PACKAGING MATERIAL SHOULD BE REMOVED AWAY FROM THE REACH OF CHILDREN. THE MATERIALS CONTAINED IN THE PACKAGING (BAGS, FILMS, POLYSTYRENE, ETC.) MAY CAUSE SUFFOCATION.**

## 2.4. RESPONSIBILITY OF THE INSTALLER

The installer is responsible to check if the installation and the air supply function properly and if all the requirements required for the installation of the pellet boiler have been fulfilled.

The installer is to ensure that the boiler is in compliance with local regulations applicable in the place where the boiler is installed.

The boiler must be used in accordance with the instructions given in this Installation, Operation and Maintenance Manual, as well as with all the safety standards prescribed by local legal regulations applicable in the place where the boiler is installed.

The installer's obligations are defined by the SRPS 10683 Standard. The installer must verify:

- The type of the boiler that is being installed,

- Whether the room in which the boiler is being installed is appropriate, i.e. minimum size of the room in which the boiler is to be installed,
- Compliance with the flue gas regulations set forth in the instructions supplied by the manufacturer of the heating device
- The internal chimney diameter, the material the chimney is made of, whether it is flat and has a regular shape, whether there are any obstacles and barriers in the chimney,
- The height and vertical extension of the chimney,
- The existence and suitability of a wind resistant protective cap of the chimney,
- The possibility of providing the external air intake,
- The possibility of the simultaneous use of the heat source with other equipment already existing in that place.

If the above mentioned standards have been satisfied, then the installer may proceed with the installation of the boiler. The instructions provided by the boiler manufacturer, as well as the fire prevention standards and safety standards must be observed.

After the boiler has been turned on for the first time, the system must be put into a trial operation for at least 30 minutes in order to check that all the required conditions have been met.

Once the installation has been carried out, the installer is obliged to provide the client with the following:

- Installation, Operation and Maintenance Manual issued by the boiler manufacturer (if such a manual has not been delivered with the boiler),
- The documents required by applicable regulations,
- The installer must teach the client how to handle the device, how to perform regular maintenance and cleaning.

### 3. INSTALLATION

The buyer shall be fully responsible for the activities carried out at the installation site.

Prior to installing the boiler, the installer should check if all the safety requirements are met, particularly the following:

- The installer is to ensure that the boiler installation is in accordance with local, national and European standards.
- The installer is to adhere to all requirements stated in this document.
- The installer is to check whether the air supply pipes correspond to the type of the installed boiler.
- The electrical connections must not be executed with the use of temporary and/or unsuitable cables.
- The installer is to check the grounding of the electrical installation.
- The installer must always use personal protective equipment and observe all prescribed precautionary measures.
- The installer must always leave enough space for maintenance work.
- After completion of the installation, the installer is to measure the emission of flue gases.

#### 3.1. PLACING THE BOILER

We advise you to unpack the boiler only when it is put in the place where it is to be installed.

If the surrounding walls or floor are made of materials that are not heat resistant, appropriate protection made of incombustible insulation material should be used.

In order to protect the floor from inflammable materials, you should put a metal plate 3 to 4 mm thick on the floor under the boiler that would protrude for 30 cm ahead of the boiler front.

The pellet boiler should be installed in accordance with the diagram which determines the distance from the walls (**Figure 2**).

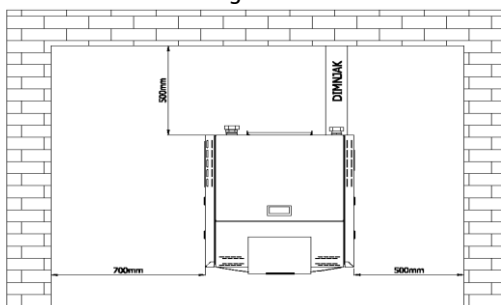


Figure 2

All minimum safety distances are indicated on the product data plate, DO NOT use lower values than specified (see INFORMATION ON CE MARKING).

If the pellet boiler is installed in a boiler room where there are other air suction devices (other boilers, various types of suction fans, etc.), make sure that the volume of air entering the room is satisfactory to guarantee the safe operation of the boiler.

If the chimney passes through the ceiling, it must be sufficiently insulated with a non-inflammable insulating material.

Once the boiler is placed, it should be levelled (brought to a horizontal position) with its adjustable legs. It is desirable that the back of the boiler is raised to be 5-6mm higher than the front part so that the air from the upper part of the boiler may be discharged completely.



Attention

The smoke discharge system **MUST NOT** be connected to:

- The flue pipe used by another heat generator (boilers, furnaces, fireplaces, etc.),
- The air exhaust system (hoods, suction fans, etc.).



Attention

It is forbidden to install flue gas flow control units!

The Ø100-mm flue pipe from the pellet boiler to the chimney should have the following characteristics:

- Total length maximum 5 m (in the case of a larger connection, increase the diameter of the connecting pipe to Ø150 mm),
- Each knee of 90° reduces the total length of the flue pipe by 1 m, which means that if you have one knee, the total length can be 4 m, two knees 3 m, etc.
- The cap needed for cleaning should be located on each knee;
- The connections between the pipes should be sealed.

**⚠ Attention**

If there is excessive resistance in the smoke discharge system (numerous knees, inadequate endings, bottlenecks, etc.), the discharge of flue gases is not guaranteed and the connection pipes and knees should have larger dimensions – Ø150 mm. Similarly, in case the chimney does not allow proper flue gas discharge, there may be an irregularity in operation and, consequently, the Como Compact 32 Boiler alarm may be activated. It is recommended that the chimney is checked by a qualified person before installing the Como Compact 32 Boiler.

The system for discharging smoke from the pellet boiler operates thanks to the underpressure that occurs in the combustion chamber and barely noticeable pressure in the flue pipe Ø100 mm. Therefore, make sure that the flue pipe is completely sealed.

It is necessary to carefully analyse the position and condition of the space through which the chimney passes. If the flue pipe passes through the wall and/or roof, it should be properly insulated in accordance with fire safety regulations.

Make sure that there is sufficient combustion air in the room where the boiler is located. The air supply pipe should have at least a 110-mm diameter and it should not be longer than 10 m. For each knee of 90°, the maximum length is reduced by 1 m. If the pipe is too long, it is necessary to increase the diameter of the air supply pipe.

If a grid is placed on the facade, the air inlet opening should be at least 100 cm<sup>2</sup> or bigger. The boiler operates at 220-230 V – 50 Hz. Ensure that the electrical cables do not go under the boiler, that they are away from hot surfaces and that they cannot come in contact with any sharp objects that could damage them. If the boiler is electrically overloaded, this may significantly shorten the service life of the electrical components of the boiler.

**⚠ Attention**

**Never turn off the power supply by pulling out the plug while there is still flame in the boiler. This may damage the boiler seriously and jeopardize the proper operation of the boiler.**

### 3.2. AIR SUPPLY

The combustion air must be supplied to the room with the boiler. The room must be continuously aired.

The fresh air opening must be at the bottom of the room and must let in the air.

A) Combustion air supply by pipeline through basements. This connection option preheats the combustion air, which is useful for good and clean combustion. Installation of pipelines in the basement is simple.

B) Combustion air supply through basements. The combustion air is preheated. The basement space must be separated from the ventilation system of the house and open to the outside. Avoid high levels of dust and moisture.

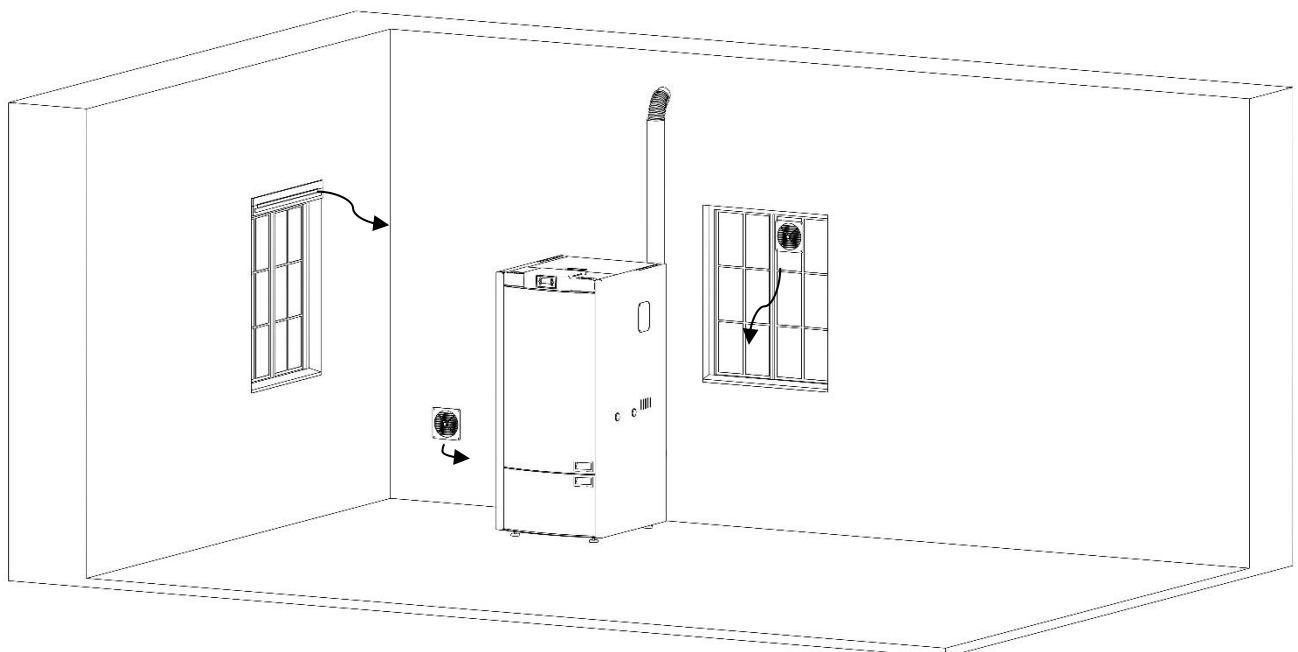
V) Combustion air supply from above. Air supply from above can only be performed with tested flue systems.

In this case, you must calculate the dimensioning of the flue!

D) Combustion air supply directly from outside. If the air is supplied directly through the outer wall, the combustion air is only slightly preheated, which is unfavorable for clean combustion. In this case, there is also a risk of condensation!

NOTE: We do not recommend these versions of the air supply! However, if you use these options, consult a qualified professional.

The room with the heating appliance must have a sufficient supply of fresh air. If the windows and doors are hermetically sealed or there are air extracting devices such as a hoods, hair dryers, fans, etc. located in the room with the boiler, combustion air (fresh air) must be supplied from outside. In any case, this should be discussed with the competent chimneysweeper before installing the boiler.



### 3.3. SMOKE DISCHARGE SYSTEM

The smoke discharge must be executed in accordance with the existing standards. Do not connect the flue gas pipe to the chimney to which the other furnaces have been connected (**Figure 3**). The flue gas pipe must not end in closed and/or semi-open spaces, for example, garages, narrow passages, corridors, driveways, etc. After connecting the boiler to the chimney, the authorized chimney sweep should check if there are any damages in the connection and if the connection has been properly sealed. If the chimney is not suitable, it must be made in accordance with the requirements stated above (point 3.1).

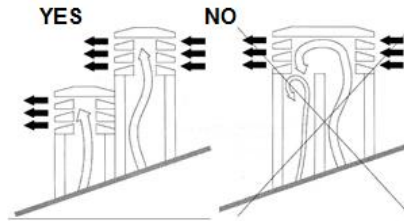


Figure 3



#### Attention

**The flue pipe must be made in compliance with applicable regulations. (Grounding is prescribed by the law.) This grounding must be independent of the heating device.**

When it comes to dimensions and materials, the flue pipe must meet the SRPS 9615-9731, SRPS 10683 - EN1856-1 standards.

Poorly maintained flue pipes or flue pipes made of unsuitable materials (asbestos, galvanized sheet metal, porous materials) do not comply with the applicable regulations and adversely affect the operation of the boiler .

Flue gases can be discharged via a conventional chimney (see figure below) if the following conditions are met:

- Make sure that the chimney is maintained. For proper maintenance and /or renovation of the chimney, contact the qualified chimney sweep.
- Flue gases can be discharged directly into the chimney only if it has a cap for the purposes of inspection and cleaning and if its cross section is up to 20 x 20 cm, i.e. if its diameter is up to 20 cm.
- If the chimney is larger, it is to be fitted with a properly insulated stainless steel pipe (of appropriate diameter).
- Make sure that the chimney connection is properly sealed.
- Avoid contact with combustible materials (embers) and in any case install fire resistant insulation.

When connecting the pellet boiler to the chimney using connecting elements, it is mandatory to install knees with an opening for cleaning (**Figure 4**). If you use knees with an opening for cleaning, this will allow regular cleaning, and you will not have to disassembly the pipe. The flue gases in the chimney connection are kept under mild pressure, so it is necessary to check that the cap used for cleaning ash is perfectly sealed and if it remains perfectly sealed after each cleaning. Make sure that everything is returned in its place and that the seals are in the right position.



Figure 4: Elements for cleaning

The installation of the flue pipes should be performed so that their narrow connecting part is always turned upwards (**Figure 5**).

We recommend avoiding using long horizontal extensions to the chimney. If this is necessary, ensure that the pipe is not counter leaned but that it has an inclination of at least 5% (**Figure 6**). The horizontal extensions must never be longer than 2 m.

It is not recommendable to connect the boiler directly to the chimney with a horizontal pipe longer than 1 m.



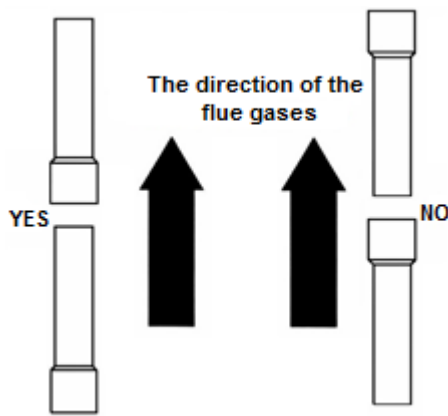


Figure 5

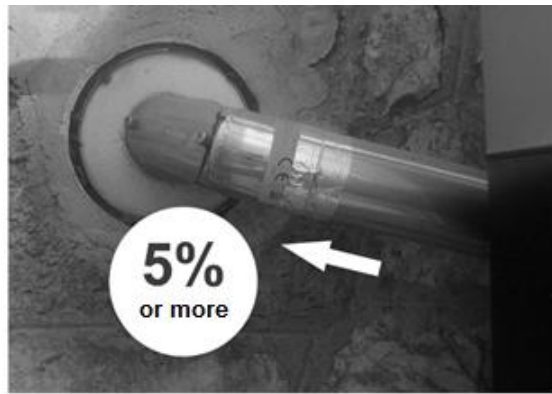


Figure 6

The flue pipe must be up to 6 m long with a diameter of 100mm up to the entrance to the chimney. After that, the diameter of the flue pipe must be increased to 130-150mm. Each knee means a 1 m shorter pipe. Thus, for example, if we have three curves of 100mm – diameter they change the length of 100-mm-diameter flue pipes for 3m. You can only put 3m of the straight pipe up to the chimney to reach a maximum of 6m of 100-mm-diameter flue pipes. After that, it must increase, switch to flue pipes or enter a chimney with a larger diameter, for example 130 – 150mm.

Make sure that the curve are not at a sharp angle of 90°. They must be under some radius or made from segments. Sharp curves increase resistance to passing of smoke through the curve.

- Every knee must have a door that can be opened for cleaning.
- The connections between the connecting pipes must be sealed.
- Use an Ø130mm connector for a longer distance. In this case, the length is up to 8m.

#### INSULATION AND DIAMETER OF THE OPENINGS ON THE ROOF

Once the position of the boiler has been determined, it is necessary to make a hole i.e. an opening the flue pipe should pass through. This varies depending on the type of installation, diameter of the flue pipe, and the type of the wall or roof the flue pipe should pass through. The insulation must be made of insulation material (mineral wool) with nominal density higher than 80 kg/m<sup>3</sup>.

The ideal underpressure is primarily dependent on the absence of obstacles such as narrowings and /or angular connections. Knees are recommended to be at 30 °, 45 ° and 90 °. Knees at 90 ° should be three-fold (**Figure 7**).

In any case, it is necessary to provide an initial vertical flue pipe extension which is at least 1.5 m long. Only in this way can the appropriate flue gas discharge be guaranteed.

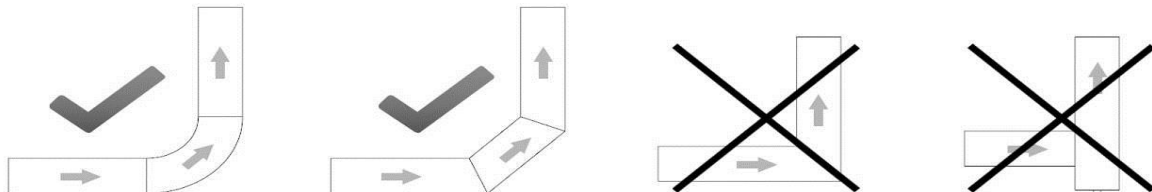
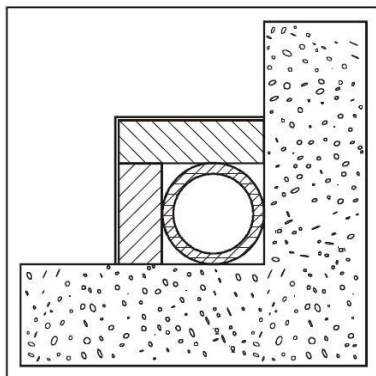
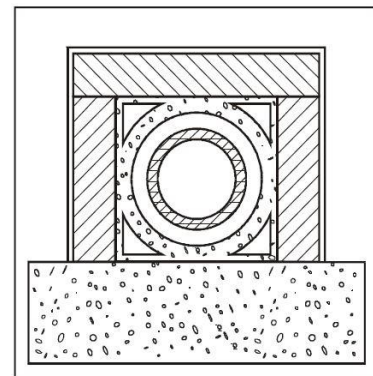


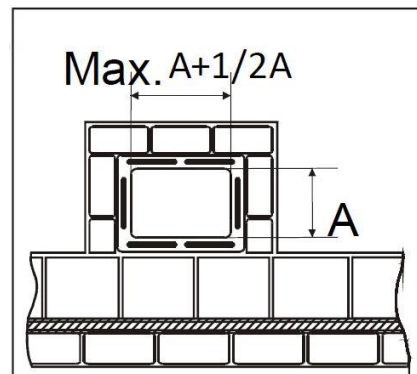
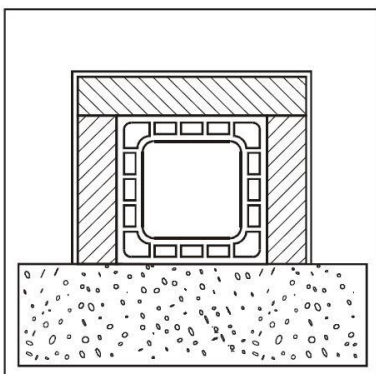
Figure 7



AISI 316 steel flue with double insulated chamber, material resistant to 400 ° C. Optimal efficiency 100%

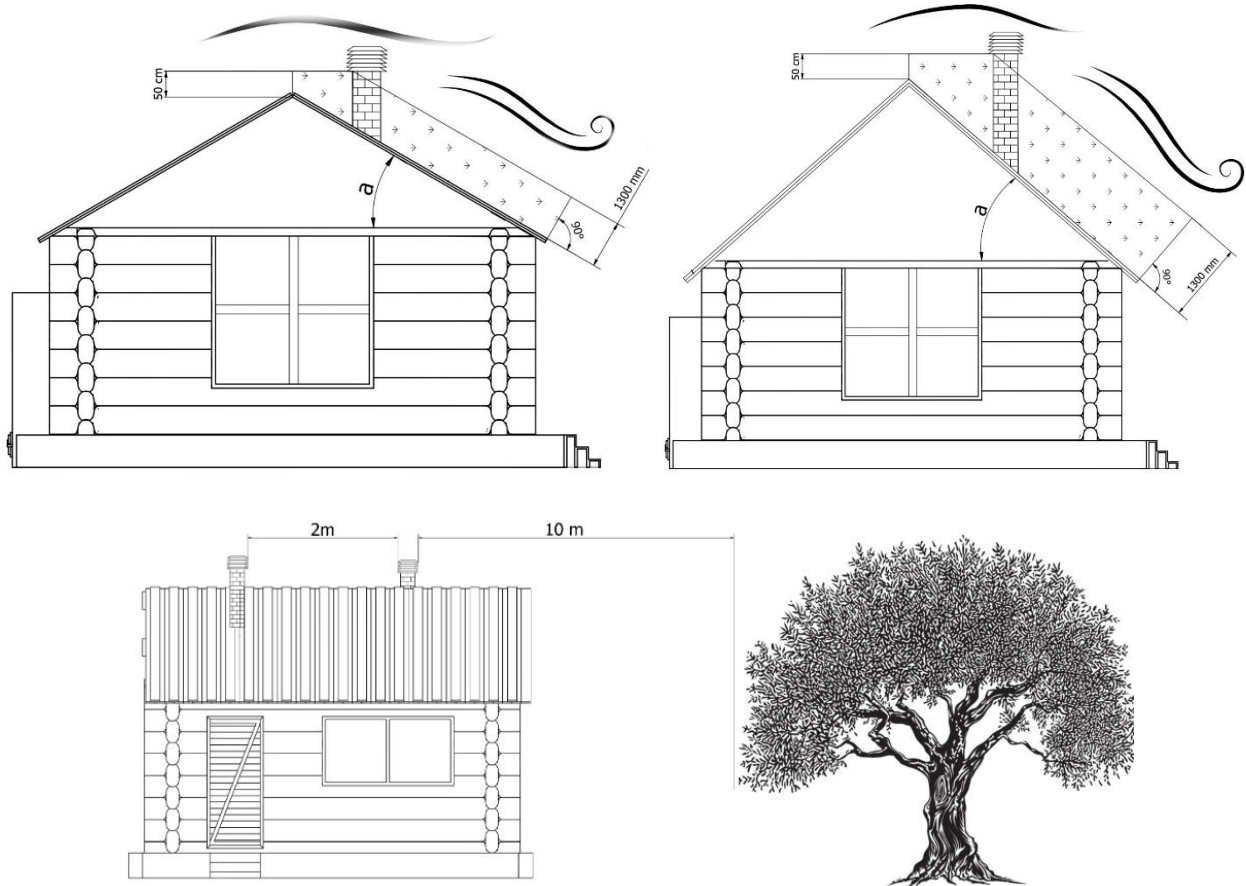


Waterproof flue with double insulated chamber and outer casing of light concrete. Optimal efficiency 100%



Traditional clay flue with indents. Optimal efficiency 80%

Do not use flue pipes with rectangular cross section with ratio different from the plan. Efficiency of modest 40%



Flue – position and distance

### 3.4. CONNECTION TO ELECTRIC POWER SUPPLY

These boiler s should be connected to the electric power supply. Our boiler s have electrical cables suitable for mild temperatures. Should the cable be damaged, please consult our authorized maintenance staff. Before you connect the boiler to the electric power supply, ensure that:

- The characteristics of the electrical installations correspond to the data i.e. specification stated on the nameplate of the boiler .
- The smoke discharge system must be grounded in accordance with applicable local regulations. (Grounding is prescribed by the law).
- Under no circumstances may the electrical cable be exposed to a temperature above 80°C
- The power cable is part of the equipment that is supplied with the boiler . It is 1.5m long.

#### Connection to the power supply

The pellet boiler should be connected to the mains.

Place the power cable in the bipolar switch connector located on the back of the boiler (Figure 9a).

Connect the boiler's power cable to the socket (Schuko) with grounding (Figure 9b).

Set the switch to position 1 (Figure 9c). The display of the boiler will light up and LED symbols will appear on it. If the boiler is not used for a longer period of time, disconnect it from the power supply or turn the switch into the switched off (0) position. In case of any breakdown or improper operation, switch the boiler off immediately or turn the switch into the switched off position (0) and contact the authorized maintenance centre.



Figure 9b

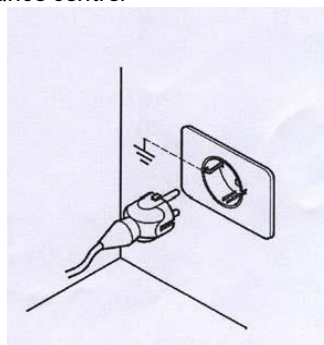


Figure 9c

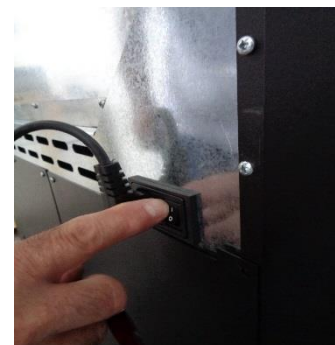


Figure 9a

After installation of the boiler , it is mandatory to measure the emission of flue gases.

## 4. MIXING VALVE

- First of all, because of the boiler 's large heat power, and in practice it will happen that the boiler 's reduced thermal power is used, it is necessary that the hydro installation has a built-in three-way mixing valve to avoid condensation of the boiler . This would prolong the life span of the boiler .

-For the underfloor heating installation, a mixing valve is required. We recommend special thermostatic floor heating valves that regulate the water temperature for entry into the floor up to 50°C. If there is no such a thermostatic mixing valve, the temperature of the water entering the floor system must be regulated in some other way. This is the duty of the designer and installer.

-Mixing valve should be 5/4 ".

## 5. FIRST FILLING AND IGNITING THE BOILER

### 5.1. FILLING THE INSTALLATION

- Before putting on the fire, the entire heating system should be filled with water, well ventilated, and the boiler should be properly connected to the chimney as explained in the previous sections.
- We recommend operating water pressure from 1 to 1.9 bar. It's best to be within the range of 1.2 to 1.6 bar.
- The test pressure can be up to 1.9 bar.

NOTE:

**The boiler cannot be used without water. It must be connected to the installation where the connected consumers (radiators) have power of 18kW.**

### 5.2. IGNITING THE BOILER FOR THE FIRST TIME

**An authorized person is to turn on the boiler for the first time, otherwise the guarantee will cease to be valid.**

INSTRUCTIONS FOR THE SAFETY OF PERSONS, ANIMALS AND PROPERTY

We want to draw the installer's attention to some procedures to be respected in order to install the boiler properly. It is necessary to comply with the required standards, but they are not sufficient. For more precise information, read the remaining part of this Installation, Operation and Maintenance Manual.

- Connect the pellet boiler to the electrical network.
- Do not allow children and pets to come near the boiler .
- Use only pellets of guaranteed quality and do not use any other types of fuel.
- Inform all users on possible risks and hazards, and show them how to handle the pellet boiler .
- If the boiler is placed on a wooden floor, it should be insulated in a suitable way.



Attention

**The boiler functions under underpressure in the combustion chamber and because of that, ensure that the flue pipe is thermally sealed.**

**When the boiler is ignited for the first time (at least for one hour), unpleasant paint fumes will be released, and therefore it is necessary to ventilate the room well.**

## 6. SAFETY WARNINGS

### 6.1. SAFETY WARNINGS FOR THE MAINTENANCE STAFF

In addition to being obliged to adhere to all safety measures, maintenance staff must:

- Always use protective equipment and personal protective equipment as defined in Directive 89/391/EC.
  - Turn off the electric power supply before they start working.
  - Always use appropriate tools.
  - Before starting any operations on the boiler , make sure that the boiler and ash in it are cool, especially before touching the boiler .
  - **PELLET BOILER IS UNUSABLE IF ONLY A SINGLE SAFETY DEVICE IS FAULTY, IMPROPERLY SET, OR DOES NOT FUNCTION!**
    - Do not make any modifications for any reason, except those allowed by the manufacturer or an authorized person.
    - Always use only original spare parts. Never allow the components to completely wear out before you replace them.
- Replace worn parts before they completely stop working to prevent damage caused by a sudden breakdown that could seriously jeopardize the safety of persons and/or your property.
- When cleaning the ash, clean both the firebox and the space below it.

### 6.2. SAFETY WARNINGS FOR USERS

The room in which the pellet boiler has been installed or will be installed should be designed in accordance with local, national and European regulations.

The pellet boiler is a combustion device. During its operation, some parts can be heated to very high temperatures. The C1 class pellet boiler is designed to combust wood pellets (pellets of diameter 6 mm, lengths up to 30 mm and humidity up to 10%), i.e. fuel C1 (wood pellet) in accordance with EN 14961-2.



Attention

**WHILE THE BOILER IS OPERATING, CHILDREN MUST NOT COME NEAR IT AND MUST NOT PLAY WITH IT!**

During the use of the boiler , it is very important to observe the following safety precautions:

- DO NOT approach and touch the door of the combustion chamber while the boiler is operating. There is a RISK OF BURN INJURIES.
- DO NOT approach or touch the flue pipe, while the boiler is operating. There is a RISK OF BURN INJURIES.
- During operation, DO NOT clean the heating installation.
- DO NOT open the firebox door while the boiler is operating, as it works properly only if the door is sealed.
- DO NOT remove ash when the boiler is operating.
- DO NOT allow children and animals to approach the pellet boiler .
- ADHERE TO THE INSTRUCTIONS STATED IN THIS DOCUMENT

Follow the below tips for correct use of the boiler :

- Only use fuel recommended by the boiler manufacturer.
- Observe the maintenance instructions.
- Clean the firebox after consuming 100 to 200 kg of pellets (every 3 to 4 days, only when the boiler and ash in it are cool).
- DO NOT use the pellet boiler if there are any breakdowns or other irregularities, unusual sounds, and /or if you suspect there is a breakdown. Contact your authorized maintenance centre IMMEDIATELY.
- DO NOT pour water on the boiler with or use water to extinguish fire in the combustion chamber.
- DO NOT lean on the boiler because it may not be stable enough and can overturn.
- DO NOT use the pellet boiler as a support or as a means of supporting other objects. Do not leave the pellet tank open.
- DO NOT touch the painted parts of the boiler during operation.
- DO NOT use wood or coal in the pellet boiler ; use only pellets of the following characteristics:  
     dimensions: diameter 6 mm  
     maximum length: 30 mm  
     moisture: up to 10%  
     heating value: min. 16.9 MJ / kg, or 4.7 kWh / kg  
     ash content: below 0.7%
- DO NOT use the boiler for burning garbage.
- Always take care of maximum safety.

## 7. GUIDELINES FOR SAFE IGNITING AND CLEANING THE BOILER

NEVER use fuel oil, petroleum or similar products, or other flammable liquids to start fire in the boiler . While the boiler is in operation keep such and other liquids away from it.

Make sure the pellet boiler is properly positioned and that it does not move.

Make sure the firebox is well closed and remain closed during operation of the pellet boiler .

Remove ash only while the pellet boiler is cold.

Do not use abrasive cleaning agents for cleaning the pellet boiler .

### 7.1. ROUTINE MAINTENANCE AND CLEANING THE BOILER

Using vacuum cleaner ash facilitates removing the ash from the boiler .

Before proceeding with any maintenance or cleaning procedures, observe the following safety rules:

- Turn off the pellet boiler before starting any procedure.
- Before starting any boiler maintenance activity, make sure the ash is cold.
- Use protective gloves for cleaning.
- You need to know what the better and cleaner the pellet, the less frequently you need to clean and maintain the boiler .

#### 7.1.1. CLEANING THE FIREBOX

- Clean the firebox every 3-4 days.
- Open the upper exterior door of the boiler (Figure 10a).
- Open the combustion chamber door (Figure 10b).
- Lift the firebox handle using the enclosed wrench (Fig. 10c), then lift the firebox and remove the firebox from its casing (Figure 10d).
- Turn the firebox and pour the ash and slag into the garbage bin. Then brush the sides and the bottom of the support with a brush and sharp object so that all openings on the firebox are clean.
- Finally, use a vacuum cleaner to clean the inside of the firebox (Fig. 10e).



Figure 10a



Figure 10b



Figure 10c





Figure 10d



Figure 10e

### 7.1.2. CLEANING THE CHAMBER PIPE

- Clean the chamber pipe every 10-15 days.
- When the firebox is taken out, clean the dirty sides of the chamber with a brush.
- Clean the inside of all boiler exchanger pipes located on the upper side of the exchanger (Figure 11a) by moving the brush up and down. It has 11 pipes. They are not visible from the front side. Find them with your hands.
- Vacuum clean the interior of the chamber (Figure 11b).
- Return the cleaned firebox on the firebox support and fix it with the handrail on the firebox support by lowering the firebox handrail (forward, down) to the lower position (so that you hear jumps when fixing the handrail) (Figure 11c).
- Take care that the non-asbestos tape on the underside of the firebox stays in its place and is not damaged. If damaged, replace it with a new one and seal it with high temperature resistant silicone (approximately 1000 ° C).



Figure 11a



Figure 11b



Figure 11c

### 7.1.3. CLEANING THE UPPER ASHTRAY AND SPACE AROUND THE UPPER ASHTRAY

- Clean the upper ashtray every 3-4 days.
- Open the lower exterior door of the boiler (Figure 12a).
- Unblock the fixed ashtray with both hands by moving the ashtray handrail forward and by lowering it (Figure 12b).
- Take the upper ashtray out and pour the ashes into the garbage bin.
- Then clean the ashtray and the space around the ashtray (in the boiler ) with the vacuum cleaner (Figure 12c).



Figure 12a



Figure 12b



Figure 12c

### 7.1.4. CLEANING THE FIREBOX SUPPORT BOTTOM

- When the upper ashtray is taken out, it is necessary to clean the bottom of the firebox support. It is located in the upper part of the space around the upper ashtray.
- Clean it every 3-4 days.
- Loosen the two butterfly nuts and remove the lid (Figure 13a).
- Use the vacuum cleaner through the rectangular opening to vacuum the bottom of the firebox support (Figure 13b).
- Return the lid in its place and tighten with the butterfly nuts (Figure 13c).
- Make sure that the non-asbestos tape on the underside of the lid stays in its place and that it does not get damaged. If damaged, replace it with a new one and seal it with high temperature resistant silicone (approximately 1000 ° C).
- In the end, return the upper ashtray and fix it with the ashtray handrail by moving the ashtray handrail upwards and then back (Figure 12b).
- Make sure that the non-asbestos tape on the underside of the ashtray stays in its place and that it does not get damaged. If damaged, replace it with a new one and seal it with high temperature resistant silicone (approximately 1000 ° C).



Figure 13a



Figure 13b



Figure 13c

### 7.1.5. CLEANING THE LOWER ASHTRAY

- Clean the lower ashtray every 10-15 days.
- Open the lower exterior door of the boiler (Figure 12a).
- Loosen the two butterfly nuts (Figure 14a).
- Take the lower ashtray out and pour the ash into the garbage bin (Figure 14b).
- Then, clean the ashtray with the vacuum cleaner and the space around the ashtray (in the boiler ) to the left, right and in the depth of the space (Figure 14c).
- Finally, put the ashtray back in its place and tighten the butterfly nuts.
- Take care that the non-asbestos tape on the underside of the ashtray stays in place and that it does not get damaged. If damaged, replace it with a new one and seal with high temperature resistant silicone (approximately 1000 ° C).



Figure 14a



Figure 14b



Figure 14c

### 7.1.6. CLEANING THE UPPER CHAMBER

- Clean every time the tank is filled with pellets.
- Raise the furnace lid, and then push the blade rod which ends in a Bakelite handle forward-back 3 - 4 times (Figure 15).
- After cleaning, leave the rod in the last position (to be as visible as possible).
- Make sure that the Bakelite handle does not unfasten and does not fall to the bottom of the tank.

### 7.1.7. CLEANING THE HEAT EXCHANGER

- Clean every time the tank is filled with pellets.
- Open the upper exterior door of the boiler (Figure 10a).
- Cleaning is done by moving the mechanism handrail left - right 3 - 4 times (Figure 16a).
- After cleaning, leave the mechanism in the zero position (in central and vertical position, turned down) (Figure 16b).



Figure 15



Figure 16



Figure 16a

#### ⚠ Attention

Contact the installer if you need any further clarifications. The manufacturer does not have direct supervision over the work of the installer and cannot guarantee for the performed works or maintenance works.

**In no case does the manufacturer assume responsibility for damages caused by third parties.**

#### ⚠ Attention

**Make sure that the pellet boiler and ash in it are cool.**

The incompletely burned pellet must never be returned to the pellet tank or thrown into the ash container.

## 7.2. CHECK-UP AND PARTS TO BE MAINTAINED

CHECK THE BELOW LISTED FACTS SO AS TO ENSURE THAT YOUR PELLET BOILER FUNCTIONS PROPERLY. THESE PRECAUTIONARY MEASURES GUARANTY BEST PELLET BOILER AND TEMPERATURE PERFORMANCE IN THE SYSTEM:



GENERAL CLEANING AT THE END OF THE HEATING SEASON



**Make sure that the pellet boiler and ash are cool. Unplug the power cable of the boiler .**

- At the end of the heating season, unplug the power cable of the boiler . It is very important to clean and check the boiler as it is explained in this Manual.

- The door seal can be detached after a while even though it is fastened with high temperature resistant adhesives. For re-fixing, apply a high temperature resistant adhesive (about 1000 ° C) to the back of the seal. This will ensure that the firebox door is sealed.

CONNECTION OF THE FLUE PIPE TO THE CHIMNEY (at the end of each heating season it should be cleaned).



**Make sure that the pellet boiler and ash are cool.**

- The flue pipe, chimney and chimney cap should be inspected and cleaned once a year. In order to take the procedure professionally, contact a chimney sweep.

## 7.3. ADDITIONAL MAINTENANCE

Your pellet boiler is a heat source which may use only pellets. Once a year, the maintenance of the boiler should be carried out by a person authorized by the company "Alfa Plam JSC".

Regular annual maintenance will maintain the proper functioning of the heating device, ensure its greater efficiency, maintain the warranty and extend the life span of the device itself.

The procedures described in the previous section are advisable at the end of the heating season. The purpose is to check and ensure the perfect operation of all components.

## 7.4. CHARACTERISTIC BUILT-IN ELEMENTS

THE BOILER IS A COMPLETE PRODUCT AND IT HAS ALL NECESSARY HEATING SYSTEM ELEMENTS BUILT IN, AND THESE INCLUDE:

### 7.4.1. CIRCULATION PUMP

- It is installed on the return pipe of the boiler , on the boiler itself.
- The circulation pump is RS30 / 6.
- Another pump is not required except for special heating (floor, with accumulating boiler, etc.).
- The pump is reached by removing the so-called the inspection cover which, when you are facing the boiler , is attached to the sheet metal on the left side of the boiler with screws (Figure 17). Therefore, there must be a greater distance between the left side of the boiler and the wall. The diagram proposes 700mm.
- The circulation pump (Figure 18) has the ability to operate at 2 or 3 speeds, depending on the resistance in the heating system. The second speed is factory set. If necessary, you can change the speed.
- If a high efficiency pump (for the needs of the EU) is installed, it adjusts the speed itself depending on the resistance in the system.
- The electronic parameters are set to activate the pump at water temperature of 50 ° C, and switches off at 47 ° C.
- The pump shaft must be in a horizontal position. Therefore, be careful when connecting to a heating installation so that it does not rotate.
- When the pump does not operate for a long period of time, there is a risk that the pump shaft jams and cannot start at the set water temperature (50 °C.). In this case, reach the pump and use the screwdriver to remove the short screw from the pump head (a little water will flow), and then use the screwdriver to get the pump shaft located under the removed screw working by turning the pump shaft with the screwdriver left-to-right.



Figure 17



Figure 18

### 7.4.2. EXPANSION TANK

- By removing the inspection cover (Figure 17), you can reach the expansion tank (Figure 19).
- The volume of the expansion tank is 18 litres.
- The factory set pressure is 1 bar.
- It has function to stabilize the pressure in the heating installation.
- It meets the boiler heat capacity of 37.5KW and another tank is not required up to this heat power. It can be used, but it does not have to.
- For larger systems, larger expansion tanks are needed for larger water volumes.
- The expansion tank has a pressure regulating valve in it.

### 7.4.3. FILL AND DRAIN COCK

- By removing the inspection cover (Figure 17), the fill and drain cock is reached (Figure 20).
- As the name says, it serves to fill and drain the installation.
- It is located at the lowest point of the system.
- The inlet connector is R1 / 2 "and the outlet connector has hose extension. It is ball shaped.

### 7.4.4. ELECTRONIC SYSTEM

- By simply removing the inspection cover (Figure 17), you can reach the electronic system (Figure 21).
- The electronic system is "TIEME" from Italy.
- The electrical connection diagram is given in this Manual.
- All cables, from all consumers, from safety mechanical thermostats, electronic probes, pressure switches, etc. are connected to the electronic system.





Figure 19



Figure 20

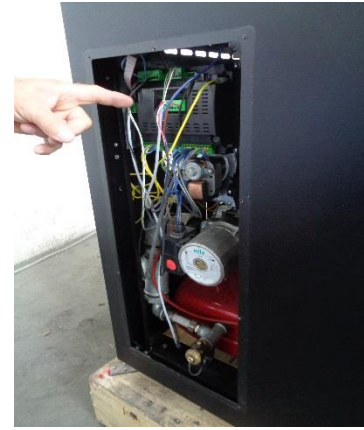


Figure 21

#### 7.4.5. NON-RETURN VALVE, AUTOMATIC AIR VENT VALVE, SAFETY VALVE AND WATER PRESSURE SENSOR

They can be reached by removing the right side, if you are facing the front side of the boiler . It is not shown in a figure, but the boiler is shown where the right side is shown in the foreground (Figure 22). All these elements are built in the boiler at the factory.

##### 7.4.5.1 NON-RETURN VALVE

- Non-return valve R5 /4" is installed on the boiler 's pressure line in the factory (Figure 23).
- It does not allow cold water to return from the system when the pump is stopped, which prevents condensation of the boiler .
- If there are more than one pump in the installation system, it is necessary to install more non-return valves. A non-return valve is placed behind each pump.
- Make sure that the non-return valve is easy to open (use your finger) so that the pump force can open it.
- The non-return valve prevents water in the boiler from cooling and thus prevents creating condensation in the boiler and smoke pipes. Condensation can occur until 2 - 3 fuel tanks have been used.
- Condensation in the boiler when the boiler is started for the first time is normal.

##### 7.4.5.2 AUTOMATIC AIR VENT VALVE

- Automatic air vent valve is positioned on the pressure line, under the lid at the highest point of the boiler .
- Its purpose is to exhaust air from the boiler .
- To get to the valve, you must take the right side off (when facing the boiler ).
- Valve safety cap should be loose, not too tight, so that the air could freely leave.

##### 7.4.5.3 SAFETY VALVE

- The safety valve is with R1 / 2 "connector, with an outlet on the back side, above the non-return valve.
- The safety valve is positioned under the furnace lid on the pressure line. Inlet connector is R1/2". Valve opens at water pressure of 2.5 bars.
- To get to the valve, you must take the right lateral side off (when facing the boiler ).
- The safety valve outlet whose white alpex pipe Ø16mm is above the pressure line must be discharged into the sewer.

##### 7.4.5.4 WATER PRESSURE SENSOR

- The water pressure sensor does not allow the boiler to operate at low and high pressures. It is factory set to a minimum operating pressure of 0.2 bar and a maximum of 2 bar.
- If the pressure drops below 0.2 bar or increases over 2 bar, the boiler is switched off.
- When facing the boiler , you can get to it by removing the right side.



Figure 22



Figure 23



Figure 24

#### 7.4.6. MECHANICAL SAFETY DEVICES – THERMOSTATS

- In addition to other safety devices, the boiler is protected against overheating with two mechanical thermostats. Their outlets with black protective caps are shown in Figure 24.
- The upper thermostat ensures that the boiler does not get overheated.
- The lower thermostat ensures that screw feeder does not get overheated.
- If the temperatures to which the thermostats are set up are reached, the boiler switches off.
- It is necessary to wait for the boiler to cool down and then reset the thermostat that got activated.



- First unscrew the black thermostat protective cap and then push the tube located in the middle of the thermostat until a low metal sound is heard.
- The boiler can be switched on again only after that.

#### 7.4.7. FRESH AIR INTAKE, SMOKE DISCHARGE SYSTEM, RETURN AND PRESSURE LINE

- The aforementioned parts may be seen at the rear side of the boiler .
- The supply of fresh air is through the pipe shown in Figure 25.
- A sufficient amount of fresh air is required for total combustion.
- A fresh air supply must be provided in the room where the boiler is located as shown in Figure 8.
- The flue gas discharge from the boiler is shown in Figure 26. The diameter of the flue pipes is Ø100mm.
- Observe the instructions for the flue gas discharge described in section 3.2. (in this Manual).
- The pressure line, Figure 23, and the return line, Figure 27, are 5/4 " and end in hollender parts that are protected by plastic protectors. Other parts of the hollender with rubber seals are packed, and delivered with the boiler .



Figure 25



Figure 26



Figure 27

## 8. IMPORTANT SAFETY INFORMATION

You have bought a top quality product.

The supplier will be always available to provide any further information you may need. The proper installation of the boiler in accordance with the instructions given in this Manual is very important for preventing breakdowns, fire hazards or fire risks

The boiler pellet operates with underpressure in the combustion chamber, therefore, you must ensure that connections to the chimney are sealed and leak-proof.



**Attention**

**In the event of fire in the chimney, evacuate all people and pets from the room. Turn the power supply off immediately using the main switch or by unplugging the power cable (only if you do not expose yourself to a risk), and immediately call firemen.**



**Attention**

**In order to preserve safety and proper functioning of the pellet boiler , do not use chopped wood.**



**Attention**

**Do not use the boiler for burning garbage.**

## 9. THE PELLET QUALITY IS VERY IMPORTANT

**The pellet quality is very important!**

The boiler is designed to use pellets. Since various types and dimensions of pellets appear on the market, it is important to choose pellets that do not contain impurities, and which are compact and do not produce dust. Uses pellet which meets the European standard, minimum EN plus A2.

Consult your supplier about the type of pellet, whose size must be 3,15-40 mm and cross section is 6 mm. **The proper functioning of the boiler depends on the type and quality of the pellet.**

Under no circumstances shall the manufacturer be responsible for the poor operation of the boiler due to the use of poor quality pellets.



**Attention**

If sawdust or small – decomposed pellets are put into the funnel-shaped part of the boiler i.e. the fuel tank, these may block the pellet feeding. Such pellets may obstruct the operation of the gear motor driving the pellet feeding mechanism, or they may damage the gear motor. If you see any such small, decomposed pellets at the bottom of the pellet tank or at the bottom of the screw conveyor when the tank is empty, vacuum them with the vacuum cleaner by inserting the vacuum cleaner hose through the openings of the pellet grate. Or even better, every one or one and a half months vacuum clean the tank bottom in the above described way when the tank has a little quantity of pellet.

### 9.1. PELLET STORAGE

Pellets must be stored in a dry place which is not too cold. Cold and wet pellets (with a temperature of around 5 °C) decrease the thermal power of the fuel and require additional boiler cleaning.



**Attention**

**People with damaged spine and pregnant women should avoid raising pellet bags.**

**The manufacturer denies any responsibility for any damages or poor operation of the boiler due to the use of poor quality pellets.**



#### Attention

The pellet must conform to DIN 51731, DIN plus, Ö-Norm M-7135 or other comparable European standards.



#### Attention

**THE PELLET MUST NOT BE KEPT NEAR THE BOILER . Keep them at least half a metre away from the boiler .**

When handling pellets, make sure that pellets do not spill.

If you pour the sawdust into the pellet tank, you may block the pellet loading system.

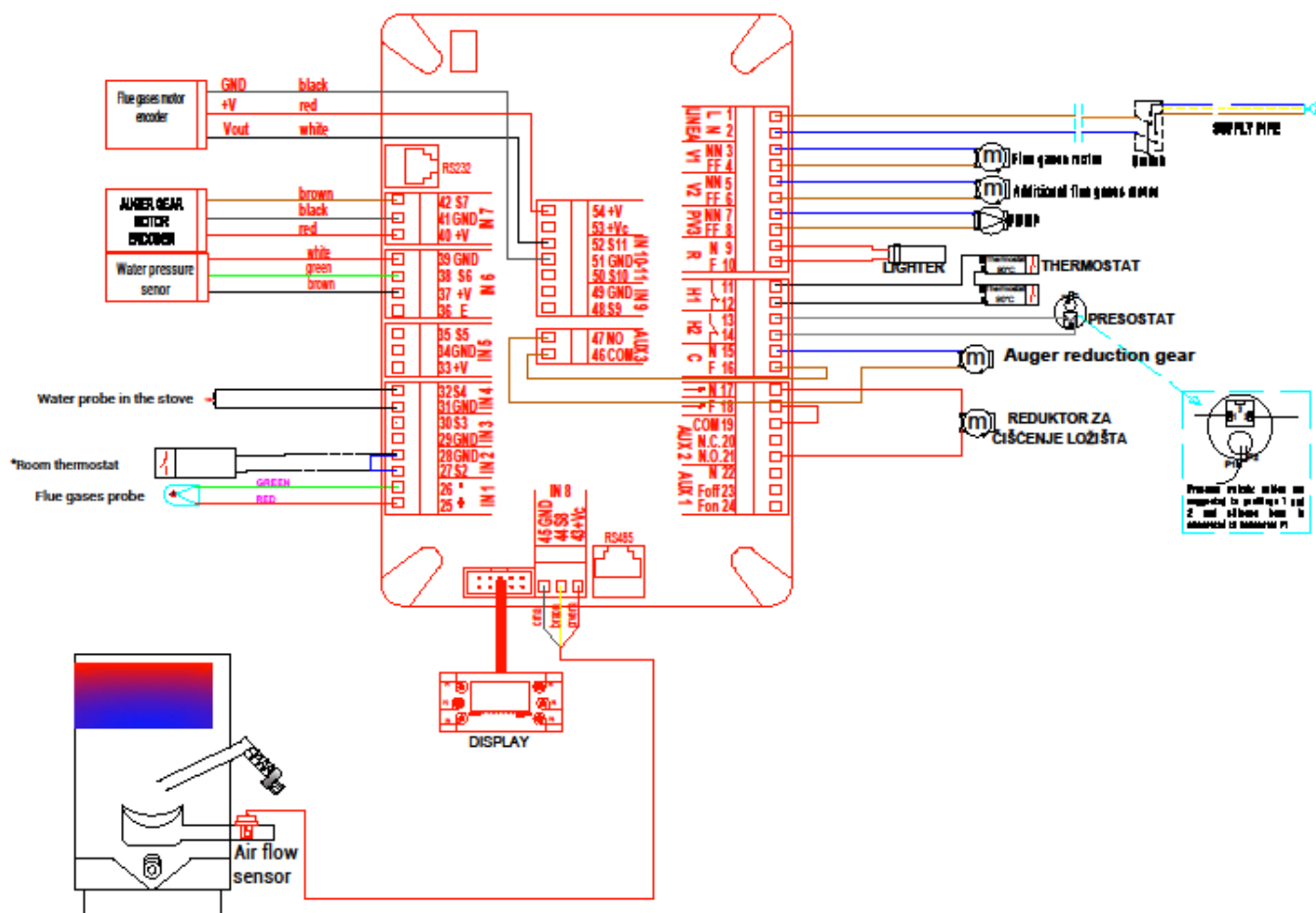
## 10. BOILER CONTROL SYSTEM

The boiler has an advanced control system that allows safe, efficient and reliable operation control and maximum functional utilization of the boiler .

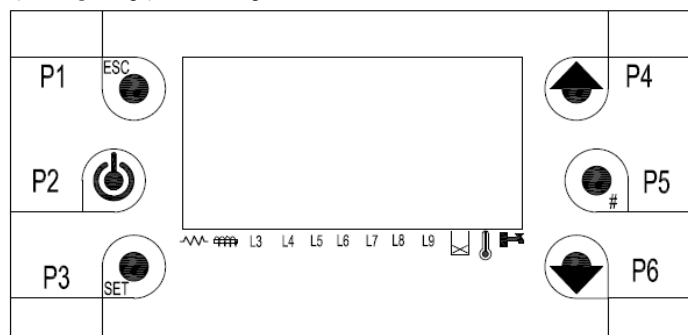
It is characterized by:

- Easy to set up and use,
- Simple and direct user functions,
- Reliable and flexible functional software specially developed for pellet boiler s,
- Advanced features available for installers to adapt different configurations and installations.

### 10.1. Electrical Circuit Diagram



### 10.2. Control Panel (Display) – Keys and Functions








#### Keys:

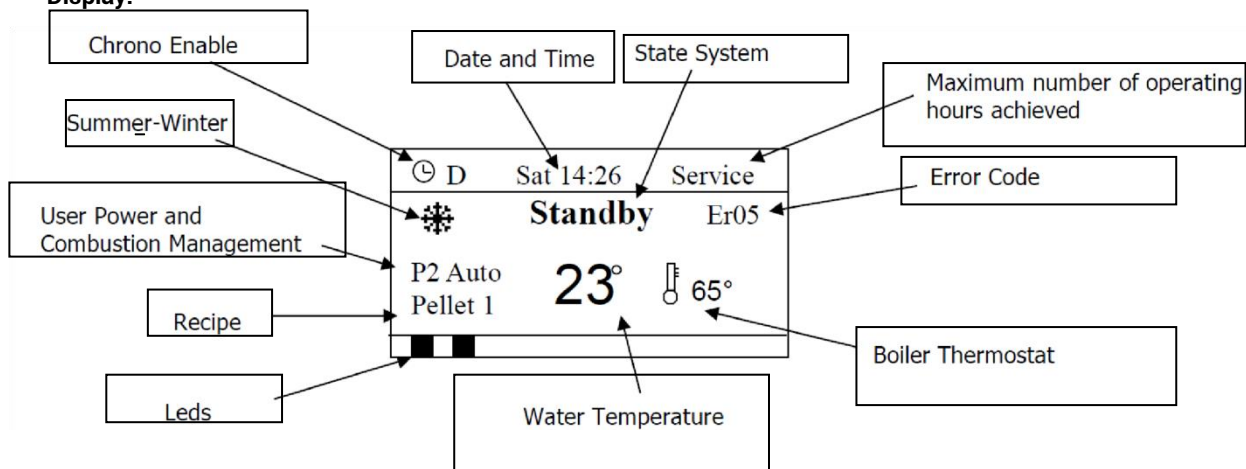
Key	Function	Description
-----	----------	-------------

P2	On/Off	Turning on the boiler , turning off the boiler by pressing the key for more than 3 seconds after the acoustic signal.
	Unblocking	If the system blocked, you can unblock it by pressing this key for more than 3 seconds after the acoustic signal.
P4	Changing values	Changing values and settings in menus and submenus
P6	Navigating menus and submenus	Navigating (changing) menus and submenus
	Visualisation	Access to the visualization menu
P1	Esc	Leaving the current menu or submenu
P3	Menu	Entering the menu or submenu
	Modify	Enables changes in the menu
	Set	Keeps (records) data in the menu
P5	Reset system maintenance 2 Function	The timer is reset (only if this option is activated)
	Manual Stan-by	By pressing the button for more than 3 seconds, the system goes into the Standby mode.

#### Led symbols:

Lighter	Led light is on: The lighter is on	
Auger	Led light is on: Auger is operating	
Pump	Led light is on: Pump is operating	L3
Aux 1 outlet	Led light is on: Aux 1 outlet has been activated	L4
Additional motor	Led light is on: Additional motor has been activated	L5
Aux 2 outlet	Led light is on: Aux 2 outlet has been activated	L6
Aux 3 outlet	Led light is on: Aux 3 outlet has been activated	L7
Not active		L8
Not active		L9
Pellet level sensor	Led light is on: Pellet is missing	
External thermostat	Led light is on: Contact is open	
Sanitary water switch	Led light is on: Sanitary water is needed	

#### Display:



#### - Meaning:

- Time and date
- Chrono modalities (D-Daily, W-Weekly, We-Week-End)
- Power system (P1, P2, P3, P4 and P5)
- Recipe (Pellet 1)
- System states (Check Up, Ignition, Stabilization, Run Mode, Modulation, Standby, Safety, Extinguishing, Recover Ignition, Block, Off)

#### -Errors (Alarms):

When an error occurs (alarm), the system enters the Block Phase (Block)

Error code (Alarm code)	Error(Alarm) description
Er01	Safety thermostat activated
Er02	Safety pressure switch activated
Er03	Turning off due to too low temperature of flue gases
Er04	Turning off due to too high temperature of water in the boiler
Er05	Turning off due to too high temperature of flue gases
Er06	Safety thermostat activated on the auger housing
Er07	An encoder error. A signal is missing

<b>Er08</b>	Encoder error. Inability to adjust the number of revolutions
<b>Er09</b>	Water pressure too low
<b>Er10</b>	Water pressure too high
<b>Er11</b>	Error due to internal clock problem
<b>Er12</b>	Turning off due to unsuccessful ignition
<b>Er15</b>	Power outage longer than 50 minutes
<b>Er16</b>	Communication error RS485
<b>Er17</b>	Air flow controller error
<b>Er18</b>	Pellet shortage
<b>Er25</b>	Cleaning motor error
<b>Er39</b>	Air flow controller broke down
<b>Er41</b>	Minimum airflow in the CHECK UP phase has not achieved
<b>Er42</b>	Maximum air flow has been achieved
<b>Er47</b>	Auger encoder signal error
<b>Er48</b>	Error due to inability to adjust the number of revolutions of the auger motor
<b>Er52</b>	Module error I/O I2C

**- Other messages:**

<b>Sound</b>	If this message is shown in the Check Up Phase, it indicates that the temperature at one or more probes is equal to the minimum value (0 ° C) or the maximum value (depends on the probe type). Ensure that the probe is not open (0 ° C) or in short circuit (the maximum value on the temperature scale).
--------------	---

<b>Service</b>	This message informs you that the planned number of hours has been reached and that it is necessary to call the maintenance staff.
<b>Clean</b>	This message informs you that the planned working hours have been reached and that it is necessary to clean the boiler .
<b>Block Ignition</b>	This message occurs if the system shuts down while it is still in the ignition stage. The system will stop only when it goes into the Run Mode.
<b>Link Error</b>	This message informs you that there is no communication between the LCD display and the controller in the boiler .
<b>Standby Man</b>	This message appears if the system is in Standby Mode after the P5 key has been pressed.

**- Visualisations:**

By pressing the P4 and P6 keys you enter the visualisation menu. In this menu you can see the values of some system parameters.

L3 On P1 Pump	Led number and state of the pump outlet
L4 Off Safety Valve	Led number and state of Aux 1 outlet
L5 Off Out not used	Led number and state of the outlet of the additional motor
L6 On Load Engine	Led number and state of Aux 2 outlet
L7 Off Out not used	Led number and state of Aux 3 outlet
Exhaust T.:103	Flue gases temperature (°C)
Water T.: 55	Water temperature (°C)
Buffer T.: 52	*Buffer temperature (°C)
Room T.: 21	*Room temperature (°C)
Pressure: 1548	*Water pressure in the boiler (mbar)
Air Flux: 680	Flow rate of primary air (cm/s)
Speed Fan: 1000	Speed /voltage of flue gas motor (rpm/V)
Auger ON: 800	Speed/voltage of auger motor (rpm/V)
Product Code 448-0000	System code
FSYD01000135.0.2	Controller firmware version
PSYSF01000209.0.2	Display firmware version

\* If the boiler configuration has no installed probes, these values are not visible.

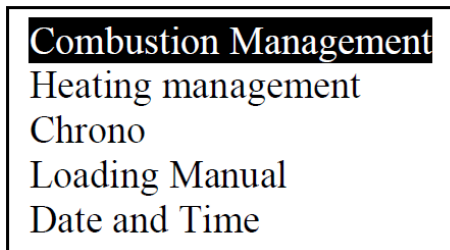
### 10.3. Menu

The menu contains the User Menu and the Technical Menu.

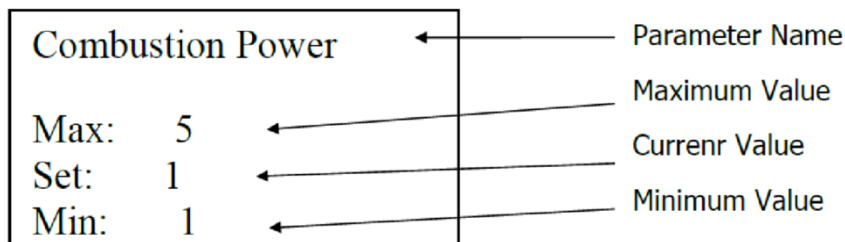
The Technical Menu contains the settings and features by which the manufacturer can modify the parameters and configuration of the system. The Technical Menu is not available to the user, but only to the authorized representative of the manufacturer.

**User Menu**

By pressing P3 key, you get into the User Menu



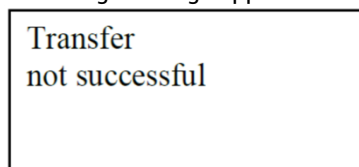
Press the **P4** and **P6** keys to select the desired menu or submenu. Then press the **P3** key to enter the desired menu or submenu.



To increase or decrease the parameter value press the **P4** or **P6** keys. Press the **P3** key to save the new parameter set value. To cancel all modifications and return to the old values, press the **P1** key.

After the parameter value has been changed, the new value is sent to the main controller.

If the transfer has not been successful, the following message appears on the display:



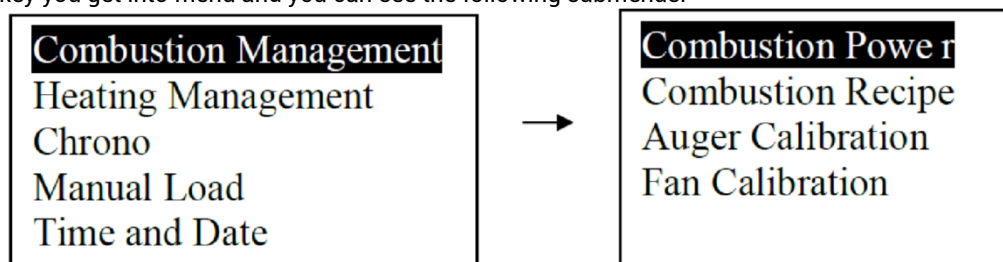
In this case, it is necessary to do settings once again.

The User Menu contains more menus and submenus. By pressing the **P3** key you enter the User Menu and the following list of submenus is shown:

Menu	Description
Combustion Management	Menu for modifying combustion power, calibration of the auger motor and the flue gas motor
Heating Management	Menu for modifying the set water temperature value in the boiler , buffer and other heating parameters.
Chrono	Menu for selecting modality of the Chrono Program and boiler turn on/off time
Manual Load	Menu for manual loading of the auger. It is only feasible when the system is in the OFF state
Time and Date	Time and date setup menu
Remote Control	Remote Control Activation Menu
Language	Change language menu on the control panel
Keyboard Menu	Menu for setting the contrast and brightness of the LCD panel
System Menu	Technical Settings Menu

### 10.3.1. Combustion Management Menu

This is a menu for setting the parameters that determine the combustion in the furnace. It contains several submenus. By pressing the **P3** key you get into menu and you can see the following submenus:

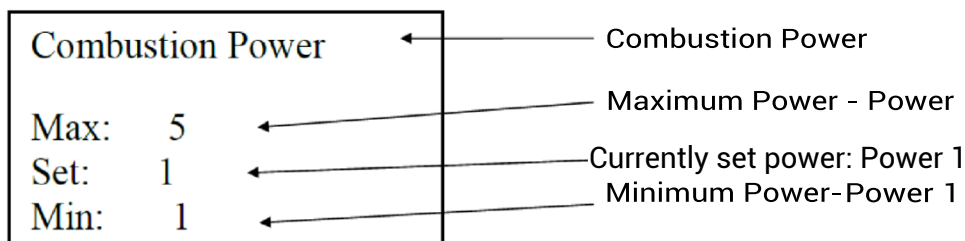


#### 10.3.1.1 Combustion Power

This menu is used for setting the system's combustion power in manual or automatic mode (if available). In manual mode, the user can adjust the desired combustion power by himself/herself.

Combustion	Description
1-5 (Combustion power 1, 2, 3, 4 and 5)	The power is adjusted manually by selecting Power 1, 2, 3, 4, or 5.
Auto (option not active)	The power is adjusted automatically by the system

By pressing the **P3** key you enter the Combustion Power Menu



The desired combustion power is selected by pressing the P4 and P6 keys. Press the **P3** key to save the new parameter set value. To cancel all modifications and return to the old values, press the **P1** key.

#### 10.3.1.2 Combustion Recipe

Combustion Recipe Menu. If only one recipe is set at the factory, this menu is not available.

#### 10.3.1.3 Auger Calibration

This menu is used for changing the auger feeding rate. The system has 10 calibration steps (from -5 to +5, the factory default is 0). The calibration effect is valid in the Run Mode and in the Modulation. For each step, the value is increased or decreased by 5%.

**Example:** Calibration value = -2;  $(-2 * 5\% = -10\%)$  This means that the calibrated velocity values of the auger will be reduced by 10% compared to the factory values.

Factory set values	C03=600	C04=900	C05=1200	C06=1600	C07=2000	C11=600
Calibrated values	C03=540	C04=810	C05=1080	C06=1440	C07=1800	C11=540

#### 10.3.1.4. Combustion Fan Calibration

This menu is used for changing the number of revolutions of the combustion fan. The system has 10 calibration steps (from -5 to +5, the factory default is 0). The calibration effect is valid in the Run Mode and in the Modulation. For each step, the value is increased or decreased by 5%.

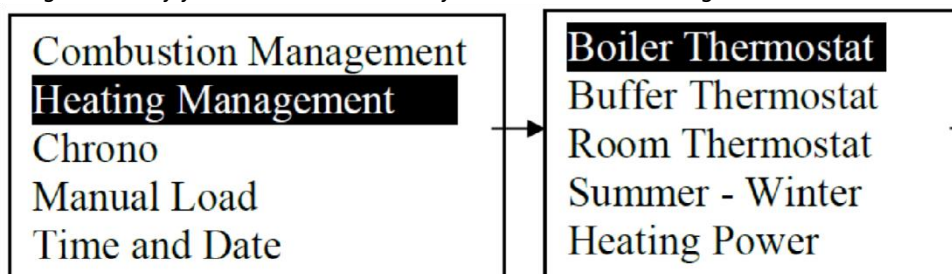
**Example:** Calibration value = +3;  $(+3 * 5\% = +15\%)$ . This means that the calibrated combustion fan speed values will be increased by 15% compared to the factory values.

Factory set values	U03=1000	U04=1200	U05=1400	U06=1600	U07=1800	U11=900
Calibrated values	U03=1150	U04=1380	U05=1610	U06=1840	U07=2070	U11=1030

**Note:** The calibration of the auger and flue gas motor should not be carried out without prior consultation with the authorized maintenance staff or representative of the manufacturer.

### 10.3.2. Heating Management Menu

This is a menu for setting the parameters that determine the heating performance of the boiler. It contains several submenus. By pressing the **P3** key you enter the menu and you can see the following submenus:



#### 10.3.2.1. Boiler Thermostat

This menu allows you to adjust the so-called set water temperature in the boiler. The temperature range of the water in the boiler can be adjusted from 30 °C to 80 °C. By adjusting the set value of the water temperature in the boiler, the user sets the operating condition of the boiler, i.e. the boiler will operate at the set power until it reaches the set water temperature in the boiler. When the set value of the water temperature in the boiler is reached, the boiler goes into the state of modulation i.e. it continues to operate at minimum power.

**We do not recommend setting the water temperature below 57°C due to possible condensation of the boiler, nor over 75°C.**

#### 10.3.2.2. Buffer Thermostat

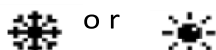
This menu allows the buffer temperature to be modified. This menu is only active if the buffer is installed.

#### 10.3.2.3. Room thermostat

In this menu, the ambient probe temperature is modified. This menu is only visible if the ambient probe option or room thermostat has been activated.

#### 10.3.2.4. Summer – Winter

In this menu, the functionality of the boiler is changed depending on the season. The display shows one of two symbols:



#### 10.3.2.5 Heating Power

This menu is not active.

### 10.3.2.6. Remote Control

This menu allows you to operate using the room radio thermostat. It must be activated by setting a certain parameter beforehand.

### 10.3.3. Chrono Menu

This menu adjusts the turning on/off time of the system, i.e. adjusts the programmed operation of the furnace for precisely determined time periods.

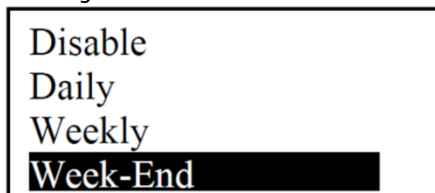
It contains two submenus:

- Modality
- Programming (Chrono program)

#### 10.3.3.1. Modality

When you enter the Chrono Menu, you can find two submenus – Modality and Programming.

By pressing the P4 and P6 keys you can select one of the submenus and then access it by pressing the P3 key. When you enter the Modality Menu, you can see the following:



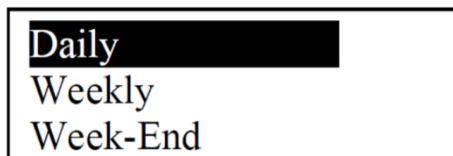
Description of settings in the Modality Menu:

Description	Keys	What is seen on the display
Current modality flashes		
Entering the change mode	P3	
Choosing desired modality	P4 and P6	
Cancelling the change and restoring the old modality	P1	
Save Changes	P3	
Menu exit	P1	

#### 10.3.3.2. Programming (Chrono Program)

By entering the Chrono Menu, you see two submenus – Modality and Programming.

Press the P4 and P6 keys to choose one of the submenus and then enter it by pressing the P3 key. When you enter the Programming menu, you can see the following:



Description of settings in the Programming menu:

Program selection	Keys	What is seen on the display
Current program flashes		
Entering the submenu	P3	
Choosing desired program	P4 and P6	
Menu exit	P1	

There are three types of programming that are separate. For example, if Daily program is activated, other programs remain unchanged. **After having set the program, it is necessary to select the desired modality in the Modality Menu to allow the system to turn on / off during the specified time periods.**

Description of the settings of the desired program in the Chrono Menu:

CHRONO PROGRAM	Keys
After selecting the desired program, select the time for switching on / off	P4 or P6
Entering the change mode (the selected time flashes)	P3
Time change	P4 or P6
Save changes to the program	P3
Turning on the program (  appears) or turning off the program (  disappears)	P5
Exit	P1

There are three types of programs that can be configured:



• Daily Program - the day of the week is selected and the programmed time of turning on and off of the system. There are three time ranges for each day.

<b>Daily</b>	<b>Monday</b>	<b>Monday</b>
Weekly	Tuesday	ON OFF
Week-End	Wednesday	09:30 11:15 $\nu$
	Thursday	00:00 00:00
	Friday	00:00 00:00

• Weekly Program - Weekly turn-on / off times are programmed. There are three time ranges to be set:

<b>Daily</b>	<b>Mon-Sun</b>
<b>Weekly</b>	ON OFF
Week-End	08:30 13:15 $\nu$
	20:00 22:00
	00:00 00:00

• Week-End program – you can choose one of the two time periods - "Monday-Friday" and "Saturday-Sunday". There are three time ranges for both periods.

<b>Daily</b>	<b>Mon-Fri</b>	<b>Mon-Fri</b>
Weekly	Sat-Sun	ON OFF
<b>Week-End</b>		10:00 12:15
		14:00 16:00 $\nu$
		00:00 00:00

#### 10.3.3.3. Load Menu

This menu enables you to load pellets manually. This can be done only when the boiler is in OFF mode.

#### 10.3.4. Load Menu

This menu allows you to load pellets manually when the boiler is started for the first time.

**To perform this operation, it is necessary that the system enters the OFF mode.**

#### 10.3.5. Time and Date Menu

This menu allows you to set the exact time and date.

By pressing the P4 and P6 keys, the hours, minutes, years, months and days are set.

By pressing the P3 key you enter the change mode, and by pressing the P4 and P6 keys you change the value.

If you press the P3 key, you will save the changes and you exit the menu by pressing the P1 key.

#### 10.3.6. Remote Control Menu

This menu allows you to activate or deactivate the remote control - Remote Control SYTX. Remote control is not factory set

#### 10.3.7. Language Selection Menu

This menu allows you to change the language on the LCD display.

#### 10.3.8. Display Menu (Keyboard Menu)

It contains two submenus:

Menu	Description
Set Contrast	Men for adjusting the contrast of LCD display
Set Minimum Light	Menu for adjusting the brightness of the LCD display

##### 10.3.8.1. Set Contrast

<b>Set Contrast</b>	<b>Set Contrast</b>
Set Minimum Light	15

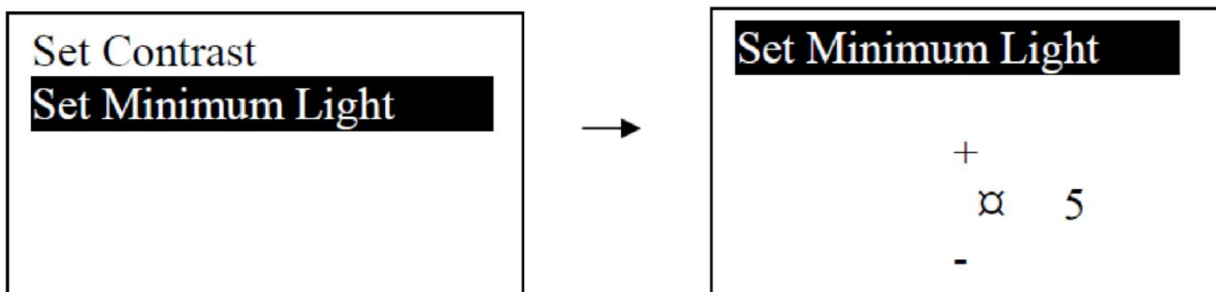
By pressing the P4 and P6 keys you increases or decreases contrast.

By pressing the P3 key the changes are saved and you exit the menu.

By pressing the P1 key you exit the menu without saving the changes.

##### 10.3.8.2. Set Minimum Light





By pressing the P4 and P6 keys you increase or decrease the brightness (min 0, max 20).

By pressing the P3 key, the changes are saved and you exit the menu.

By pressing the P1 key you exit the menu without saving the changes.

### 10.3.9. System Menu

This menu allows access to technical settings. Access is password protected and allowed only by authorized technical staff.


## 10.4. Ignition of the Boiler and Functional Conditions

The boiler is switched on by pressing the P2 key for more than 3 seconds. The following functional conditions of the furnace are then seen:

Check Up
In the Check Up Phase, you may examine boiler input signals and whether the probes and pressure switches function properly. At this stage, the flue gas motor runs at the maximum speed and the auger and lighter are switched off. The Check Up Phase takes a few seconds and after it has been completed successfully, the Ignition Phase follows.
Ignition
<p>The ignition Phase consists of four sub-phases which follow one another and they are the following:</p> <ul style="list-style-type: none"> <li>- Preheating Phase</li> <li>- Pellet Preload Phase</li> <li>- Fixed Phase</li> <li>- Variable Phase</li> </ul> <p>For the entire duration of the Ignition Phase, the message IGNITION is displayed. There are no special tags on the sub-phase display.</p>
Ignition Preheating
At this stage, the lighter is heated before the pellet is starting to be loaded. In order to make pellet ignition as efficient as possible, it is desirable that the lighter is already heated at the moment when the pellet loading starts. At this stage, the lighter is active and the auger is inactive. The flue gas motor runs at a lower speed to accelerate the heating of the lighter.
Ignition Preload
At this stage, pellets are preloaded, i.e. the auger loads a certain quantity of pellets that is necessary for ignition. At this stage, the lighter, auger and flue gas motor are active.
Ignition – Fixed Phase
This phase represents a fixed period of 180 seconds and in case the furnace ignition requirement is reached before the end of this phase, it will always last until the end, and the furnace goes into the Stabilization Phase only after the expiration of this fixed period of time. At this stage, the lighter, auger and flue gas motor are active.
Ignition – Variable Phase
This phase takes place after the Fixed Phase. The duration of this phase varies and it lasts up to the moment when the conditions for ignition are fulfilled, or until the flue gas temperature reaches 45 ° C. In the event that the conditions for the ignition of the boiler have been fulfilled before the end of this phase, it is interrupted and the next phase - the Stabilization Phase, takes place. At this stage, the lighter, auger and flue gas motor are active.
Stabilization
The Stabilization Phase is a transition state between the Ignition Phase and Run Mode. This phase occurs when the conditions for the ignition have been fulfilled, or when the flue gas temperature reaches 45 ° C. It lasts for three minutes and during this time the auger, flue gas motor and lighter are active.
Run Mode
After the Stabilization Phase, the furnace Run Mode Phase takes place. At this stage, there are five power levels that can be adjusted (see 10.3.1.1). At this stage, the lighter is switched off while the auger, flue gas motor and pump are active and operate at different intensities depending on the power level of the furnace. The boiler operates at a given power until the conditions for Modulation have been met.
Modulation

<p>The boiler goes into the Modulation Phase when one of the two conditions has been fulfilled:</p> <ol style="list-style-type: none"> <li>1. When the boiler achieves the set water temperature,</li> <li>2. If the flue gas temperature is above 200 ° C</li> </ol> <p>During the Modulation Phase, the boiler operates at a minimum power of - 1, until the temperature decreases below the limit value.</p>	
<b>Standby</b>	
<p>The boiler goes into the Standby Phase when one of the two requirements have been met:</p> <ol style="list-style-type: none"> <li>1. When the boiler reaches the set water temperature, it goes into the Modulation Phase and continues to increase the water temperature by inertia to 4 ° C higher than the set water temperature in the boiler .</li> <li>2. When an external (room) thermostat is activated.</li> </ol> <p>In Standby Mode, pellet loading stops and the boiler turns off. The boiler is switched on again when the water temperature in the boiler is reduced by 4 ° C below the set value, i.e. when the room thermostat is deactivated.</p>	
<b>Safety</b>	
<p>The Safety Phase occurs when the flue gas temperature exceeds 230 ° C or when the water temperature in the boiler reaches 85 ° C. At this stage, pellet loading stops until the flue gas temperature is below 230 ° C or the water temperature in the boiler is below 85 ° C. If the temperature is not reduced in the next 60 seconds, the boiler goes into the Alarms state and shows the <b>Er04</b> or <b>Er05</b> message.</p>	
<b>Extinguishing</b>	
<p>The boiler is switched off by pressing the P2 key for more than 3 seconds. Then the Extinguishing Phase takes place in which pellets stop being loaded and the flue gas motor and pump work with the maximum capacity in order to cool down the boiler as soon as possible. The minimum duration of this phase is 300 seconds, and the flue gas temperature needs to be less than 70 ° C in order to extinguish the furnace completely.</p>	
<b>OFF</b>	
<p>In this phase, the boiler is extinguished (flue gas motor, pump, lighter and auger are not active).</p>	
<b>Block</b>	
<p>The Block Phase occurs in the event of an error or an alarm. The exhaust fan, the auger and the lighter are off in this phase. Hold down the P2 key for 3 seconds to exit: if there are reasons for the Block Phase or there is no reason for activating alarm, the system will turn off.</p>	
<b>Recover Ignition</b>	
<p>The boiler goes into this phase in two cases:</p> <ol style="list-style-type: none"> <li>1. If the power supply outage occurs in the Run Mode and the flue gas temperature is greater than 45 ° C.</li> <li>2. By pressing the main switch at the moment the furnace is in the Extinguishing Phase.</li> </ol>	

## 10.5. Possible Problems and Solutions

Message on the display	Description	Possible causes	Resetting the error	Possible solutions
Er01	<p>Safety thermostat is activated</p>  <p>Boiler thermostat, Auger thermostat</p>	High temperature of the water in the boiler	Wait until the boiler completely cools down and then unscrew the plastic cap on the thermostat and press the reset button	Check if the pump is working properly
		Faulty or poorly connected pump		Contact the maintenance staff
		Faulty thermostat		
Er02	The safety pressure switch activated	Flue gas discharge obstructed	Press and hold the P2 key for more than 3 seconds	Check how dirty the flue pipes and chimney are
		Wrong installation of chimney		Contact the maintenance staff
		Faulty pressure switch		
Er03	Extinguishing due to too low flue gas temperature	Poor combustion (there are too few or too many pellets in the firebox)	Wait for the boiler to turn down and then press the P2 key for	Check the pellet size
				Check how dirty the furnace chamber is

		Pellet tank empty	more than 3 seconds	Check the state of the flue pipes
		Faulty flue gases probe		Contact the maintenance staff
Er05	Extinguishing due to too high flue gas temperature	The flue gas temperature exceeds the limit	Wait for the boiler to turn down and then press the P2 key for more than 3 seconds	Insufficient heat transfer - contact the maintenance staff
		Flue gas discharge obstructed		Check how dirty the flue pipes and chimney are
		Faulty flue gases probe		
Er07	Encoder error	Encoder signal missing	Wait for the boiler to turn down and then press the P2 key for more than 3 seconds	Contact the maintenance staff
Er08	Encoder error	The flue gas motor does not react	Wait for the boiler to turn down and then press the P2 key for more than 3 seconds	Contact the maintenance staff
		The flue gas motor runs at a speed different from the set speed		
Er11	Clock error	Internal clock problems	Press and hold the P2 key for more than 3 seconds	Check the accuracy of the set time
		Insufficient internal battery capacity		Check if the programming in the Chrono Mode has been done well
				Contact the maintenance staff
Er12	Failure to start the boiler	Ignition error	Wait for the furnace to extinguish and then press the P2 key for more than 3 seconds	Check the condition and quality of the used pellet
		The appropriate flue gas temperature has not been reached during the Ignition Phase		Check how dirty the flue pipes are and their draught
		Faulty flue gases probe		
Er15	Power outage	Power outage during the boiler Run Mode	Press and hold the P2 key for more than 3 seconds	Check if the system and installation work properly
				Contact the maintenance staff
Er16	Communication error between the electronic system and the display	Display cable disconnected	Press and hold the P2 key for more than 3 seconds	Check the cable and display cable connectors
		Display cable connector damaged		Contact the maintenance staff
Er17	Primary air flow meter error	The primary air flow meter does not adjust the operation of the boiler	The boiler continues to operate without adjusting the primary air. To reactivate the flow meter, turn off the furnace. Wait for the boiler to turn down and then press the P2 key for more than 3 seconds	Check how dirty the primary air inlet pipe is
				Check how dirty the flue pipe and chimney are and their draught
				Contact the maintenance staff
Er39	The primary air flow meter sensor has been damaged	Faulty sensor	The boiler continues to operate without adjusting the primary air	Contact the maintenance staff

Er41	The minimum primary air flow in the Check Up Phase has not been achieved	The presence of some obstacle or large impurities in the primary air inlet pipe	Wait for the boiler to turn down and then press the P2 key for more than 3 seconds	Check and clean the primary air inlet pipe
		Flue pipe obstructed		Check how dirty the flue pipe and chimney are and their draught
		The door not closed well in the Ignition Phase		Check that the door of the chamber closes well
				Contact the maintenance staff
Er42	The primary air flow is greater than the maximum allowed value	Too large inlet air	Wait for the boiler to turn down and then press the P2 key for more than 3 seconds	Check the primary air inlet pipe
				Check how dirty the flue pipe and chimney are and their draught
				Contact the maintenance staff

**NOTE: If the recommended solution to the problem does not remove the direct cause of the alarm, YOU MUST CONTACT "ALFA PLAM" CALL CENTRE or the nearest authorized maintenance service centre.**

## 11. INFORMATION ON THE DISPOSAL AND DISASSEMBLY OF THE BOILER

The owner of the boiler is responsible for its disposal and disassembly (as a waste material).

The owner must comply with the applicable regulations of the country in which the boiler is being disposed of for the sake of safety and environmental protection. The disposal of the boiler can also be entrusted to a third person who is licensed for such activities.

INDICATION: In any case, you must comply with the laws of the country in which the pellet boiler is installed.



**WARNING:** All disassembled parts intended for destruction must be properly removed:

- Remove all electrical parts,
- Separate the battery from the electronic system,
- Dispose of the battery separated from the electronic system in provided containers in accordance with the norms,
- Separate the base of the boiler and take care of it as scrap.



**WARNING:** If you dispose of the boiler in the environment, it may become a serious danger to people and animals.

The owner of the boiler is always responsible for the resulting damage.

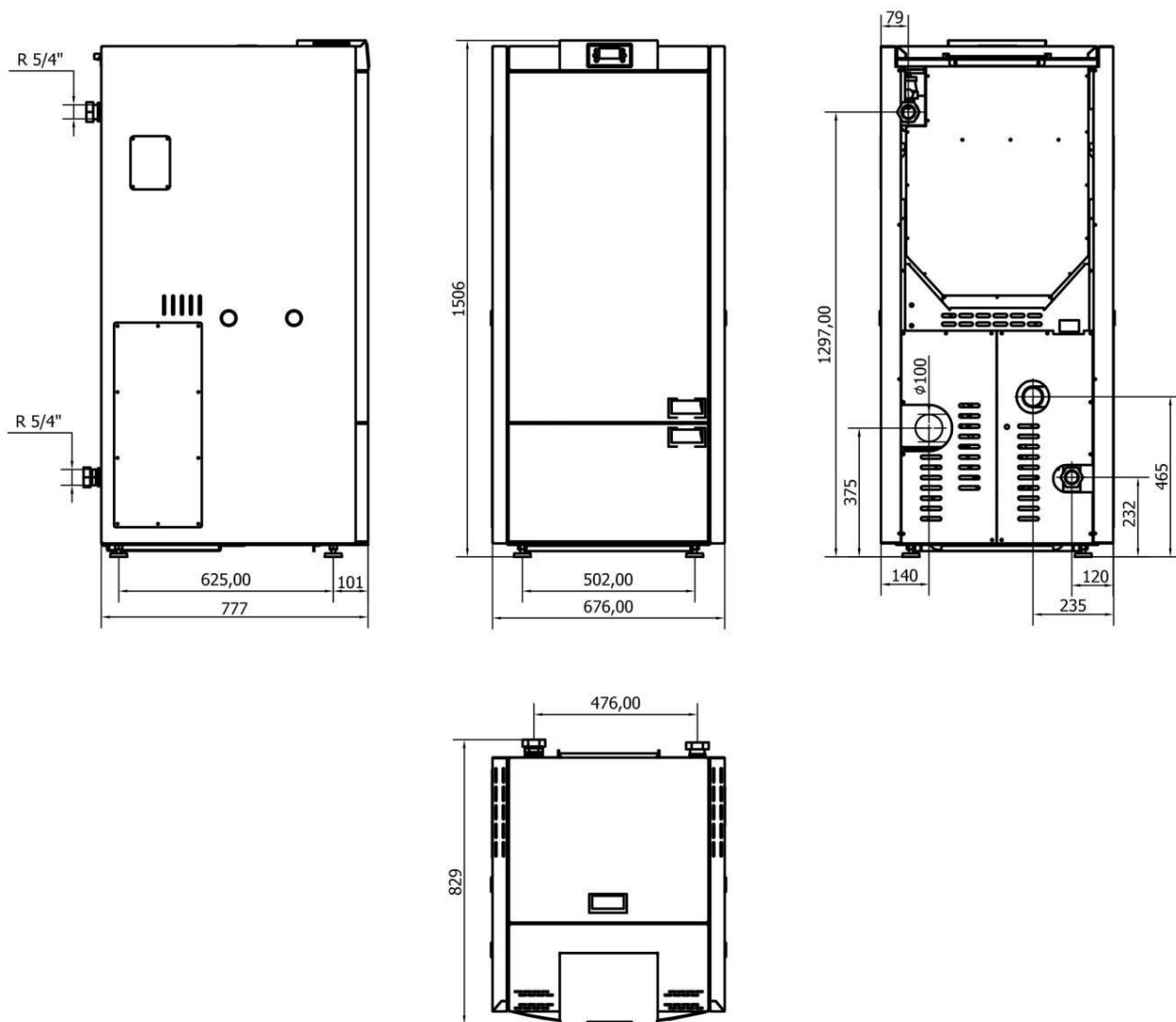
When the boiler is disposed of, it is necessary to take care of the CE mark, Operation Manual and all other installation related documents.

## 12. TECHNICAL CHARACTERISTICS OF COMMO COMPACT 32 PELLET BOILER

Characteristic name	Value	
	Reduced (minimum)	Nominal (maximum)
*Boiler power (kW)	9.8	31.7
*Utilization rate (%)	93.6	90.34
Consumption of pellets per hour kg / h	2.13	7.14
CO emissions (at 10% O <sub>2</sub> ) (%)	0.008	0.032
Flue pipe connection (mm)	Ø100	
Boiler Class	Class 5	
Weight (kg)	360 - 380	
Fuel	pellet	
Pellet tank (kg)	~ 70	
Voltage (V)	220-230	
Frequency (Hz)	50	
Electricity consumption while boiler operates at nominal power (W)	53	
Electricity consumption while boiler operates at reduced power (W)	37	
Electricity consumption during boiler Ignition Phase (W)	310	
Electricity consumption during boiler Standby Phase (W)	3	
Necessary draught at the nominal boiler power (mbar)	0.103	

Necessary draught at the reduced boiler power (mbar)	0.088
Flue gas temperature at nominal power (°C)	135.8
Flue gas temperature at reduced power (°C)	61.7
Mean NO <sub>x</sub> at 10% O <sub>2</sub> at nominal power (mg / m <sup>3</sup> )	134
Mean CO at 10% O <sub>2</sub> at nominal power (mg/m <sup>3</sup> )	404
Mean dust emission value at 10% O <sub>2</sub> at nominal power (mg / m <sup>3</sup> )	26.2
Flue gas mass at nominal power (kg/s)	0.0175
Flue gas mass at reduced power (kg/s)	0.0072
Maximum operating water pressure (bar)	2
Maximum operating water temperature (°C)	80
Boiler capacity (l)	68
Period of combustion at nominal power (h)	9.8
Resistance of water column at nominal power (mbar) at 10K	161
Resistance of water column at reduced power (mbar) at 10K	20
Minimum return water temperature at the boiler inlet (°C)	40
Boiler noise emission measured according to standard EN15036-1 (dB)	40

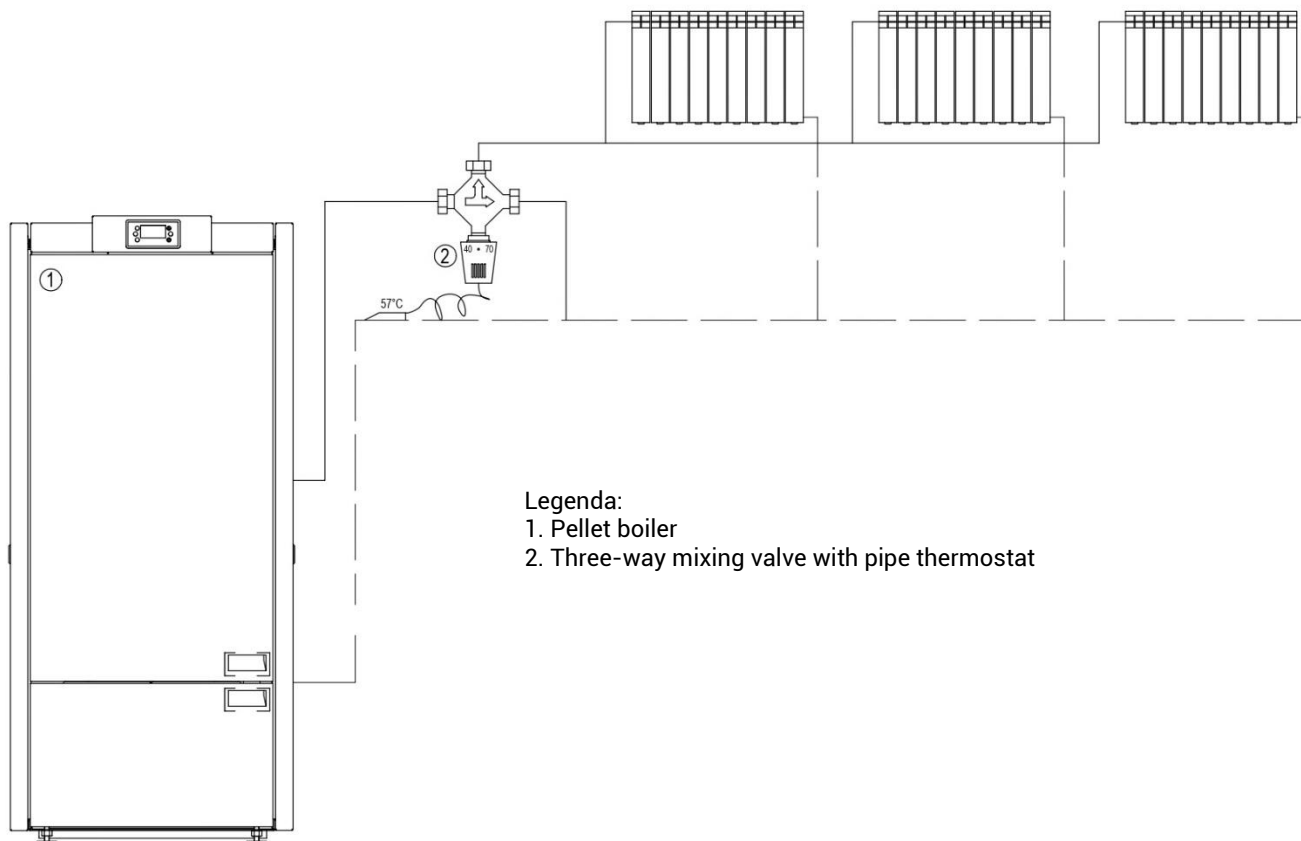
### 13. DIMENSIONS OF COMMO CONTACT 32 BOILER



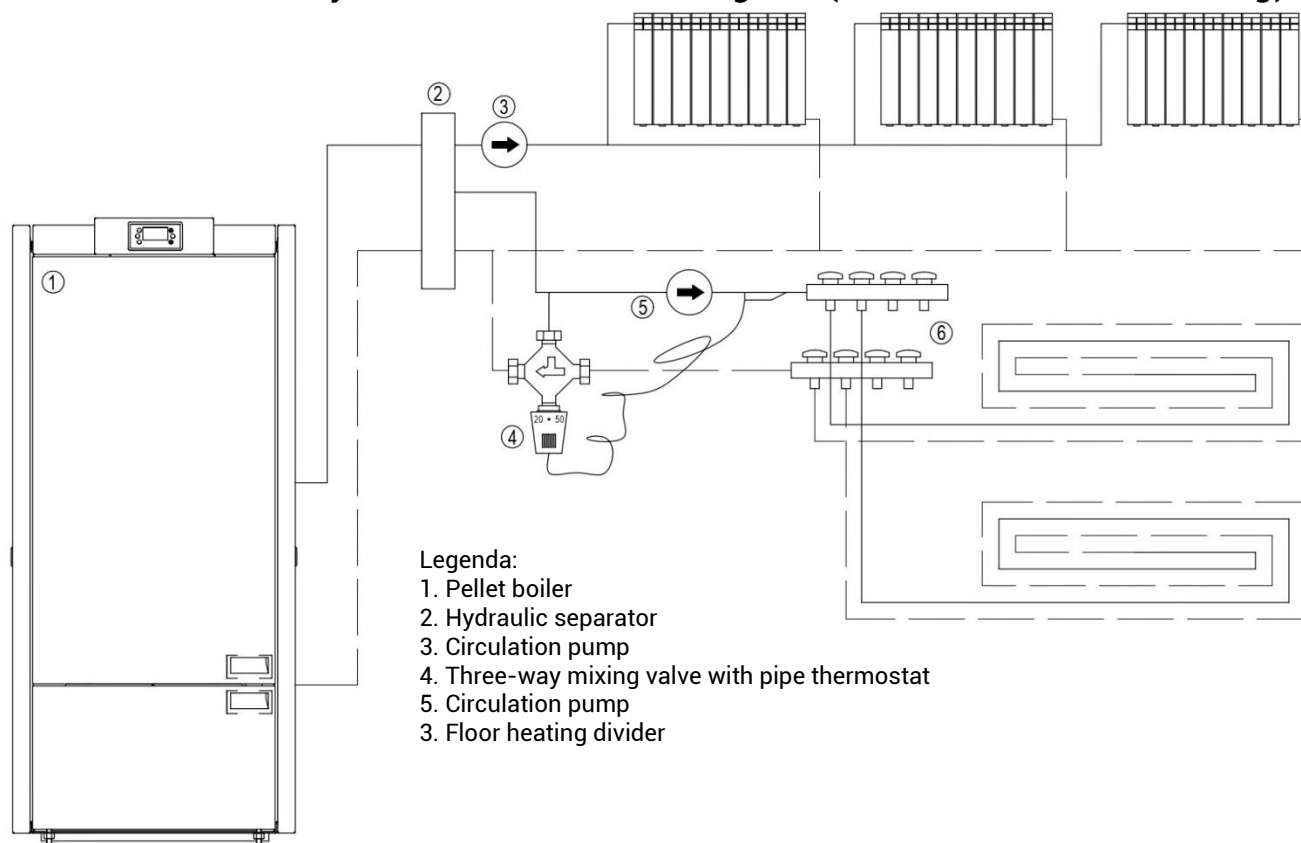
### 14. HYDRAULIC INSTALLATIONS DIAGRAM OF COMMO CONTACT 32 PELLET BOILER

In order to reduce the risk of condensation, install a three-way mixing valve with a pipe thermostat when installing the boiler.

## 14.1. Pellet boiler hydraulic installation diagram (radiator heating)



## 14.2. Pellet boiler hydraulic installation diagram (radiator and floor heating)



### 14.3. Pellet boiler hydraulic installation diagram (accumulation tank)

