# Pelling Pellet boiler


## user manual for maintenance

ThermoFLUX

# Content:

# 1 Notes on the manual

## 1.1 Introduction

### 1.1.1 Easy and safe operation

This manual contains important information for proper and safe operation of the Pelling boilers. Following these instructions you will avoid danger and repair costs, and also increase the operational life of the boiler.

### 1.1.2 Reading the manual

This manual must be read and applied by everyone who operates or works on the Pelling boiler.

### 1.1.3 Technical changes

ThermoFLUX continuously develops and improves its boilers. The information in this version is correct at the time of going to press.

All details in this manual on standards and regulations should be checked before use and should be compared with the installed boiler.

We reserve the right to make changes which may then deviate from the technical details and illustrations in this manual.

### 1.1.4 Copyright



**NOTE: Please save the received documents. In the event of a malfunction, service personnel need a serial number and the year of manufacture of the boiler, without these basic info we can not acknowledge a malfunction or service it.**

# 2 Safety notes

## 2.1 Proper use

Pelling boiler was designed and built in accordance with safety regulations:

- UNI EN 303-5 Heating boilers, Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 500kW
- 73/23/EEC Low Voltage Electrical Equipment
- 89/336/EEC Electromagnetic Compatibility (EMC), EU Council Directive

However, its use can result in the injury or death of the user and/or third part and in impairments to the boiler itself or to other material goods.

**The boiler was designed to burn wood pellet and wood. The manufacturer will accept no responsibility for any damage resulting from improper use. Proper use includes maintaining the installation, operation and maintenance specified by the manufacturer. The user may only enter or change the operating values specified in this manual. Any other entries will affect the boiler's control program and operation, which can lead to a malfunction.**

### 2.1.1 Using the boiler

Use the boiler only when it is in perfect condition. Use it properly, as described in this manual. Use the boiler as described in this manual. Get to know security measures and possible hazards. Remove any faults that could affect the safety. The operation of a faulty boiler can cause fier or explosion.
The boiler is intended for combustion of wood pellets and wood. Any other use is incorrect. It is forbidden to burn any other fuel other than pellets and wood. The manufacturer will not assume responsibility for any damage caused by improper handling. Correct use implies maintenance of the installed boiler, operation and maintenance conditions prescribed by the manufacturer.

**The user can enter or change only the values specified in this manual. Any other value of the parameters will affect the control program, and the operation od the boiler, wich can ultimately lead to the termination of the correct operation. In that case, the boiler is not subject to warranty anymore.**

### 2.1.2 Permissible fuel for the Pelling boilers

The boiler is designed for burning wood pellets with a diameter of 6mm and a length of 10-30mm. In exceptional cases, by inserting additional grid as an alternative can also be used dry wood. We do not recommend a continuously burning of wood for more than 30 days.

The pellets quality is derived from the EN 303-5: 2012 Standard (Table 7. Water content les than 12% according to DIN 51731-HP5, DINplus certification program and ÖNORM M7135-HP1 or ENPlus-UNI EN 14961-2, UNI EN ISO 17225-2 class A1 or A2. 6mm diameter, length 10-30mm)

**Particular attention should be paid to the quality of wood pellets. Low-grade pellets can cause malfunction of the boiler.**

### 2.1.3 Safety instructions for boiler room

The boiler room must be made according to current regulations, especially regarding fire protection. No flammable material should be stored in the boiler room.

The room where the boiler is installed must be frost-resistant.

The boiler should not be exposed to cold or freezing temperatures. Extreme cold temperatures can cause mailfunction and unexpected behavior of electronic components.

### 2.1.4 Fresh air supply

For combustion of pellets and normal work boiler needs fresh air. The room in wich the boiler is installed must have an opening for fresh air supply. The recommended minimum dimension is 30x15cm.

## 2.2 Warnings and safety symbols used

**DANGER OF ELECTRIC SHOCK.**

Work on areas marked with this symbol may only be done by a qualified electrician.

**WARNING!**

Warning about a dangerous location. Work on areas marked with this symbol can lead to serious injuries or to extensive material damage.

**CAUTION!**

Hand injuries. Work on locations marked with this symbol can lead to hand injuries.

**CAUTION**!

Hot surface. Work on locations marked with this symbol can lead to burns.


**CAUTION!**

Danger of fire. Work on locations marked with this symbol can lead to a fire.

**CAUTION!**

Frost danger. Work on locations marked with this symbol can lead to frost damage.

**Instructions for proper disposal of waste.**

## 2.3 Other risks of the side effects

Despite the precautions taken there are also certain risks of side effects:

**DANGER OF CARBON MONOXIDE.**

If the boiler is running during cleaning time may occur transmission of CO through the open door. Do not open the door longer than necessary.

## 2.4 Obligatory informing

Everyone who operates with the boiler must read the instructions before using it, in particular, the chapter ”Safety Instructions”.

This applies especially to persons who occasionally work on a boiler, for example, cleaning and maintaining boilers. This manual should always be kept near the installed boiler.

**Pay particular attention to the applicable local standards and guidelines. All local laws must be respected during installation, as well as standards and norms that are in force in the country where the boiler is installed even though it is not listed in this manual.**
**The Installation can be carried out only by persons (service technicians) who are trained/educated and have a license for this job.**
**The central heating system must be properly calculated and dimensioned.**
**The chimney should be calculated and made according to EN 13384-1. The chimney must be thermally insulated to prevent condensation.**
**Storage of pellets can be done only in places that are dry and free from moisture.**
**In certain countries, it is necessary to measure the emissions of gases by an authorized person during the first commissioning.**

## 2.5 Safety devices

**Boiler is equiped with safety devices that in case of unexpected situations stop the power supply and thereby stop the operation boiler.**

**Microprocessor control on the boiler:** Intervenes directly, turns off the boiler until it cools down and shows an error on the display screen in case of a fan failure, failure of the motor for auger, or the ignition.

**Fuse F4A 250V:** Fast fuse, protects the boiler from large voltage changes of electricity and short circuits inside the boiler.

**Safety limiting thermostat (STB):** intervenes by breaking the circuit in the boiler (automatically stops motor of the auger and exhaust gasses fan) if the boiler temperature reaches the limit of 95°C.

**Vacuum switch:** intervenes in case of low underpressure in burnerroom(open door, chimney jammed).

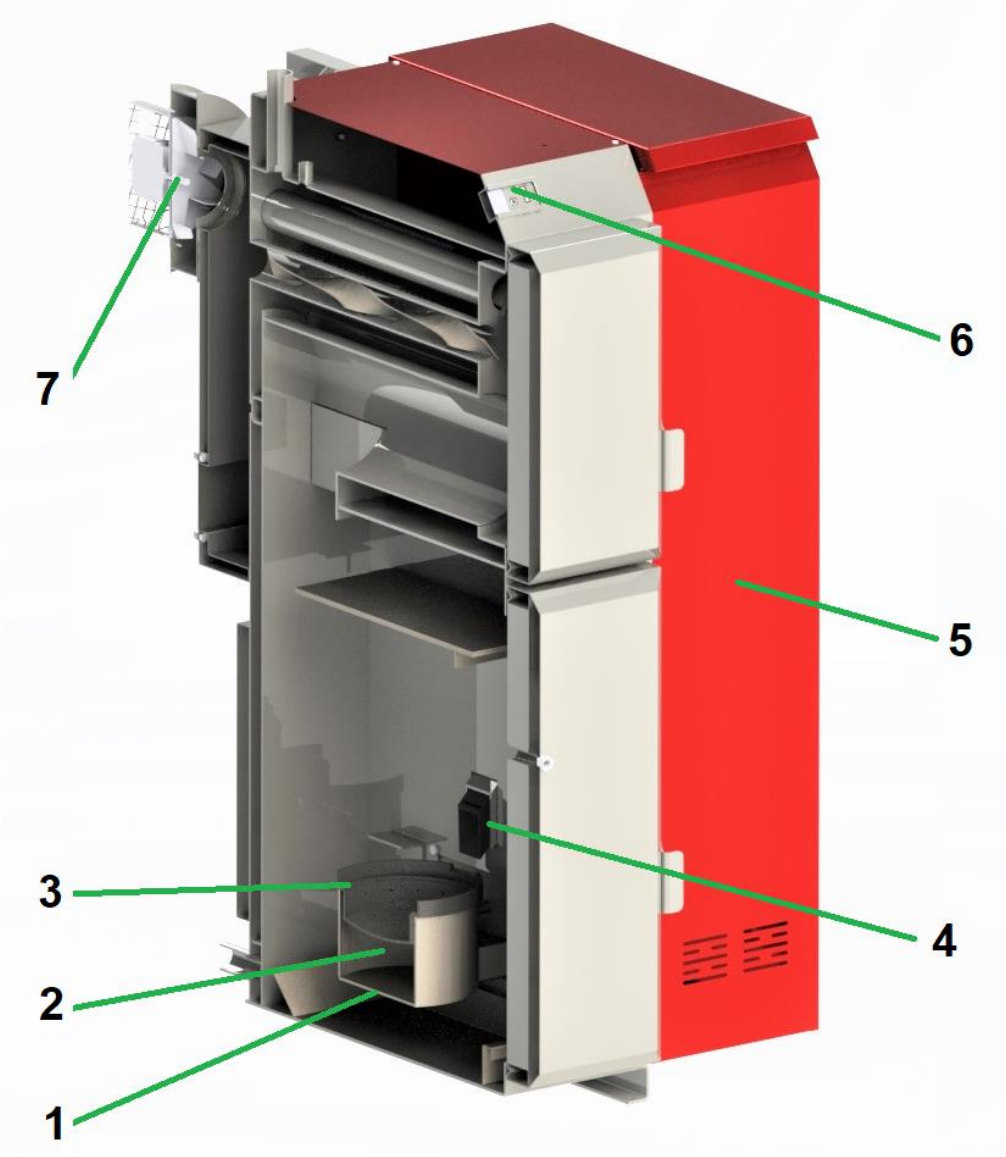
# 3 Functional description

## 3.1 General overview


**Accompanying material**

- Tools for the pipeline and firebox cleaning
- Instructions booklet
- Guarantee

## 3.2 Pellet boiler PELLING

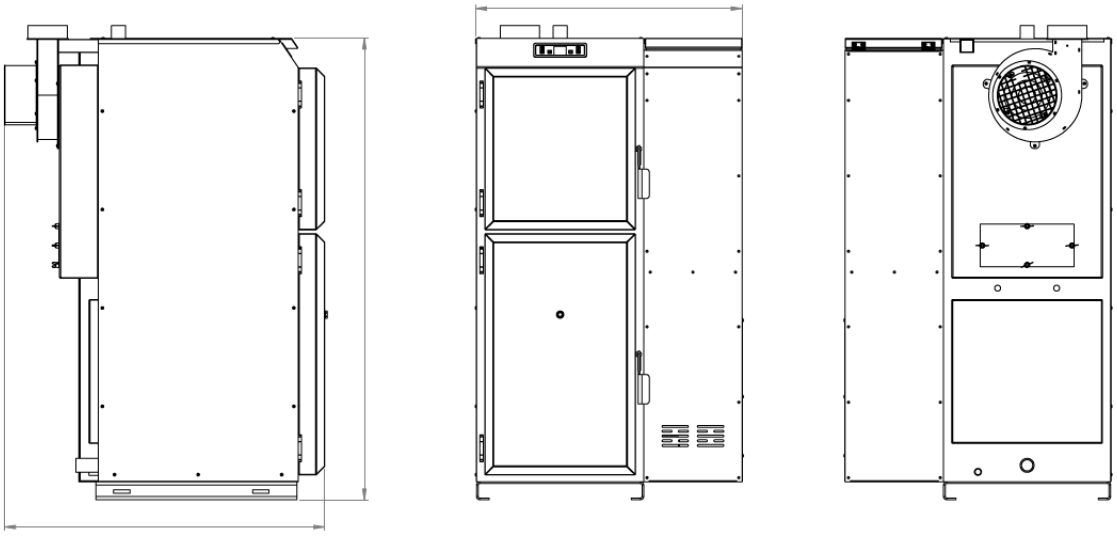



1. Combustion burner
2. Heater
3. Combustion chamber
4. Dispenser
5. Silo
6. Control unit
7. Exhaust fan

In the Pelling boiler the pellets introduced into the combustion burner 1. They are automatically ignited with an electric heater 4. Burnt pellet (ash) is collected in the ash pan 3. which is placed under the combustion burner. The air necessary for combustion is supplied to the combustion burner.

- The boiler power is aligned to the requirements of the cetral heating system.
- The usability and efficiency of the boiler is pre-optimized.

# 3.3 Technical data

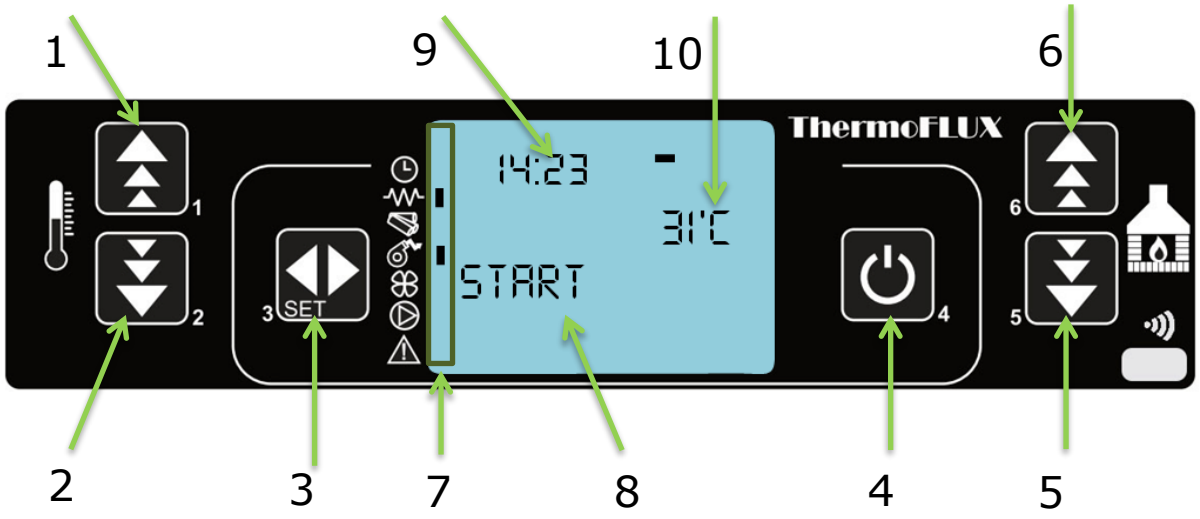


| | | Pelling 20 | Pelling 25 | Pelling 35 | Pelling 50 | Pelling 75 | Pelling 100 |
|---|---|---|---|---|---|---|---|
| ***Performance (measured according to EN 303-5: 2012)*** | | | | | | | |
| Maximum power | kW | 20 | 25 | 35 | 50 | 75 | 100 |
| Minimum power | kW | 6 | 8 | 11,7 | 16,5 | 25 | 33 |
| Power supply | V,Hz | 230V,50 Hz | 230V, 50 Hz | 230V, 50Hz | 230V, 50Hz | 230V, 50 Hz | 230V, 50 Hz |
| Electrical conection (current) | A | 6 | 6 | 6 | 6 | 6 | 6 |
| Boiler class | | 5 | 5 | 5 | 5 | 5 | 5 |
| ***General information*** | | | | | | | |
| Max. Permited presure | bar | 2,5 | 2,5 | 2,5 | 2,5 | 2,5 | 2,5 |
| Max. Permited temperature | °C | 80 | 80 | 80 | 80 | 80 | 80 |
| Min. permited return temperature | °C | 50 | 50 | 50 | 50 | 50 | 50 |
| Fuel | | EN PLUS - UNI EN 14961 - 2 (UNI EN ISO 17225-2) Class A1/A2 | | | | | |
| Pellet consumption (min/max) | kg/h | 1,3/3,9 | 1,6/5,2 | 2,3/6,7 | 3,5/11,1 | 5,2/16,6 | 6,5/22,2 |
| Pellet storage capacity | kg | 75 | 75/135 | 95/151 | 110/185 | 270 | 290 |
| Minimal fresh air opening | cm | 30x15 | 30x15 | 30x15 | 30x15 | 30x15 | 30x15 |
| ***Technical data*** | | | | | | | |
| Boiler width | mm | 410 | 410 | 510 | 510 | 560 | 650 |
| Boiler width with pellet storage | mm | 710 | 710/910 | 810/1010 | 810/1010 | 1060 | 1150 |
| Height | mm | 1245 | 1245 | 1385 | 1385 | 1670 | 1650 |
| Depth | mm | 798 | 948 | 948 | 1098 | 1240 | 1240 |
| Water content | l | 48 | 60 | 90 | 120 | 154 | 181 |
| Weight | kg | 197 | 267 | 348 | 392 | 494 | 580 |
| Height out/return | mm | 1280/88 | 1280/88 | 1415/85 | 1415/85 | 1568/70 | 1532/75 |
| Minimal chimney underpresure | Pa | 5 | 5 | 5 | 5 | 5 | 5 |
| Flue gas pipe height (direction UP) | mm | 1420 | 1420 | 1440 | 1440 | 1598 | 1630 |
| Flue gas pipe diameter | Ø | 120 | 120 | 120 | 120 | 150 | 150 |

**minimal power-30% maximum power*

# 4 Function of boiler

## 4.1 Overview of the controls and display and their basic functions




| Button | Description |
|---|---|
| **1 -** | Increasing temperature and program functions (adjusting days, time...) |
| **2 -** | Decreasing temperature and program functions (adjusting days, time...) |
| **3 -** | Changing – accepting program |
| **4 -** | ON / OFF, program exit |
| **5 -** | Decreasing power, navigate through the menu |
| **6 -** | Increasing power navigate through the menu |

| 7 | | When mark is visible |
|---|---|---|
| | Clock | • programmed ignit. active |
| | Heater | • heater active |
| | Pelet dosage | • auger active |
| | Smoke fan | • fan active |
| | Primary air fan | • fan active |
| | Circulating pump | • pump active |
| | Alarm | • alarm active |

| Display | |
|---|---|
| **8** | Info |
| **9** | Clock |
| **10** | Water temperature indicator |

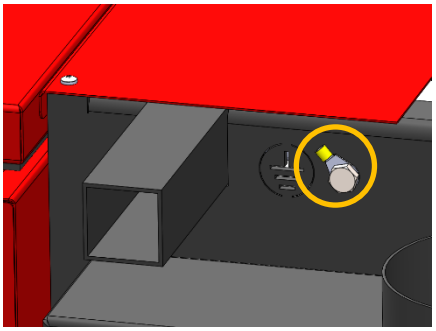
Regulation on the boilers ''Pelling'' is most important electronic component. It is consisted of key controling modul set under the cover of the boiler and controling unit with display set on the front side of the boiler. With controling unit it is possible to control functions of the boiler and also to check information about present state of the boiler.

Due to the possibilty to work in 5 (five) different powers, regulation can satisfy needs to increase or decrease heating by automatic adjustment of power.

If there is a need to increase power, this is registered by regulation and regulation gives a signal to increase power by adding more pellet as well as proportional increase of air flow in the burning basket.

When desired temperature is reached (need for heating energy is satisfied) regulation is decreasing power ( modulates ), or when room thermostat gives signal that set temperature is reached, boiler then goes into shut down (if mode **STAND-BY** is **ON**).

**NOTE: A ground connection to the boiler body for high voltage protection (lightning strike, etc.) is mandatory. Otherwise, the warranty on electrical components is not excluded.**

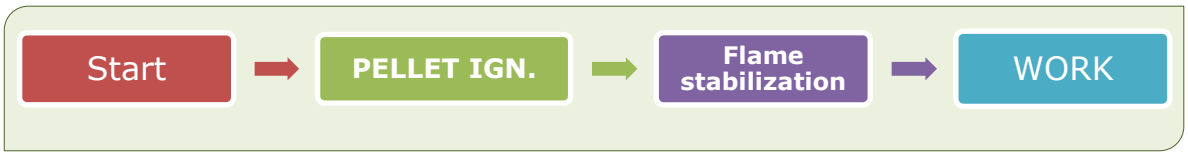


# 4.2 Principle of boiler operation

Principle of the boiler operation is very simple.

When button for start is pressed boiler goes into **IGNITION MODE. START** is displayed, and after that **PELLET IGNITION**. Usually this phase lasts for 5-15 minutes depending on type of the boiler and pellet quality. At that point dosing system is activated, igniter and suction fan. Dispenser is making initial dosing of pellet into burning basket. At the same point igniter starts to ignite pellet and suction fan is on and is making necessary underpressure needed for combustion. When temperature sensor for flue gasses detects that temperature in the chimney has reached necessary value, regulation then changes working mode of the boiler into **FLAME STABILIZATION**.

This phase (**FLAME STABILIZATION**) lasts for 2-3 minutes (depending on the type of the boiler) and in this phase igniter goes off. After flame stabilization, boiler goes into the normal working mode and changes power from power 1 to set power. On display is written WORK. On the right side set power is displayed and in the last




## 4.2.1 How to lock the Display

Press the **SET** button (key 3) and select from the menu:

**M-8 TECHNICAL SETTINGS**.

With the ↑ (up) arrow (key 1) go to A9 (A9 is found when it exceeds 99). Press SET, and then go with the ↓ (down) arrow (key 5) and select:

**M-8-4 GENERAL SETTINGS.**

Then, with the ↓ (down) arrow select:

**M-8-4-10 FROZEN KEYBOARD.**

Turn ON and confirm with **SET.**

Return to the main menu by pressing **ON/OFF** (key 4).

**We lock and unlock the display as follows:**

Press the **SET** button (key 3) and then the **ON/OFF** button (key 4).

## 4.3 Schematic representation of the menu control

By pressing button **SET** we enter general menu.

| MENU | | VALUE | | DESCRIPTION |
|---|---|---|---|---|
| MENU 01<br>SET<br>CLOCK | SET | TABLE 1 | | TIME AND DATE ADJUST |
| MENU 02<br>SET<br>CHRONO | SET | M-2-1<br>ENABLE<br>CHRONO | TABLE 2 | PROGRAMED SWITCHING<br>ON - OFF |
| | | ON / OFF<br>M-2-1-01<br>ENABLE<br>CHRONO | ON – OFF | |
| MENU 03<br>SELECT<br>LANGUAGE | SET | HR-IT-EN-DE-FR-ES-PT | | LANGUAGE SELECTION |
| MENU 04<br>MODE<br>STAND-BY | SET | ON - OFF | | ROOM THERMOSTAT MODE<br>- SWITCH OFF BOILER **(ON)** ,<br>- MODULATION **( OFF)** |
| MENU 05<br>MODE<br>BUZZER | SET | ON - OFF | | BUZZER |
| MENU 06<br>LOAD<br>INITIAL | SET | 90 SEC | | INITIAL LOAD OF THE PELLET |
| MENU 07<br>STATE<br>STOVE | SET | WATER TEMP.; EQHAUST GASES TEMP.;<br>EQHAUST FAN RPM. | | STATE OF THE BOILER |
| MENU 08<br>SETTINGS<br>TEHNIC | SET | ONLY FOR TECHNICAL PERSONAL | | |
| MENU 09<br>FUEL<br>TYPE | SET | PELLET - WOOD | | FUEL TYPE SELECTION |

BUTTONS 1 AND 2 - CHOOSE DESIRED VALUE

BUTTONS 5 AND 6 - CROSSING BETWEEN MENUS

BUTTON 3 (SET) - ACCEPT
BUTTON 4 (ON/OFF) - BACK

Table 1

| | | | |
|---|---|---|---|
| MENU 01 SET CLOCK | MENU 01 MONDAY DAY | PON - NED | DAY ADJUSTMENT |
| | 08: MENU 01 TIME CLOCK | 00-24 | HOUR ADJUSTMENT |
| | : 33 MENU 01 MINUTES CLOCK | 00-59 | MINUTE ADJUSTMENT |
| | 30 MENU 01 DAY CLOCK | 01-31 | DATE ADJUSTMENT |
| | 30 MENU 01 MONTH CLOCK | 1-12 | MONTH ADJUSTMENT |
| | 13 MENU 01 YEAR CLOCK | 00-99 | YEAR ADJUSTMENT |

Table 2

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| MENU 02 SET CHRONO | | | | | | | | | |
| M-2-1 ENABLE CHRONO | M-2-2 PROGRAM DAY | ON/OFF M-2-2-01 CHRONO DAY | 06:00 M-2-2-02 START 1 DAY | 10:00 M-2-2-03 STOP 1 DAY | 15:00 M-2-2-04 START 2 DAY | 19:00 M-2-2-05 STOP 2 DAY | | | |
| | M-2-3 PROGRAM WEEK | ON/OFF M-2-3-01 CHRONO WEEKLY | 06:00 M-2-3-02 START PROG-1 | 14:00 M-2-3-03 STOP PROG-1 | ON / OFF M-2-3-04 MONDAY PROG-1 | ON / OFF M-2-3-05 TUESDAY PROG-1 | ON / OFF M-2-3-06 WEDNESDA PROG-1 | .... | ON / OFF M-2-3-37 SUNDAY PROG-4 |
| | M-2-4 PROGRAM WEEK-END | ON/OFF M-2-4-01 CHRONO WEEK-END | 06:00 M-2-4-02 START 1 WEEK-END | 12:00 M-2-4-03 STOP 1 WEEK-END | 16:00 M-2-4-04 START 22 WEEK-END | 22:00 M-2-4-05 STOP 2 WEEK-END | | | |
| M-2-1-01 ENABLE CHRONO | | | | | | | | | |

**BUTTONS 1 AND 2 - CHOOSE DESIRED VALUE**

**BUTTONS 5 AND 6 - CROSSING BETWEEN MENUS**

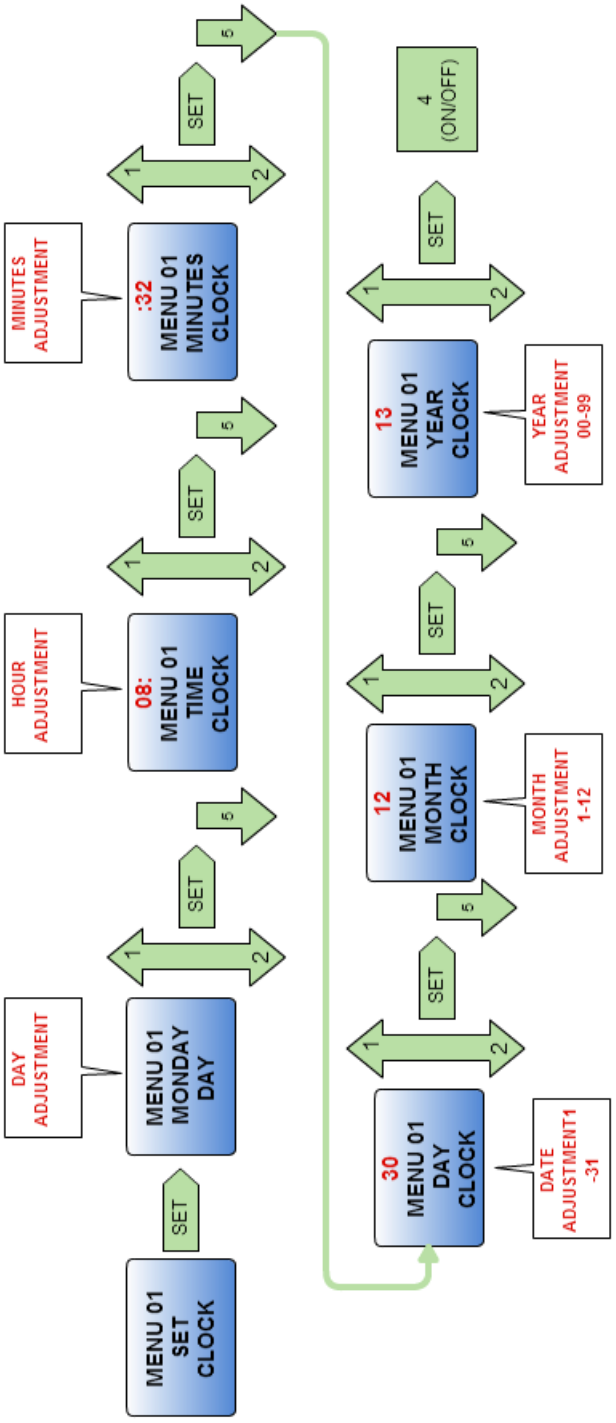
**PROGRAM WEEK**

**(П - 2 - 3)**

**POSSIBILITY OF 4 ( four) TIMES FOR SWITCHING ON OR OFF**

### 4.3.1 Clock adjustments

Clock adjustments can be done on following way:



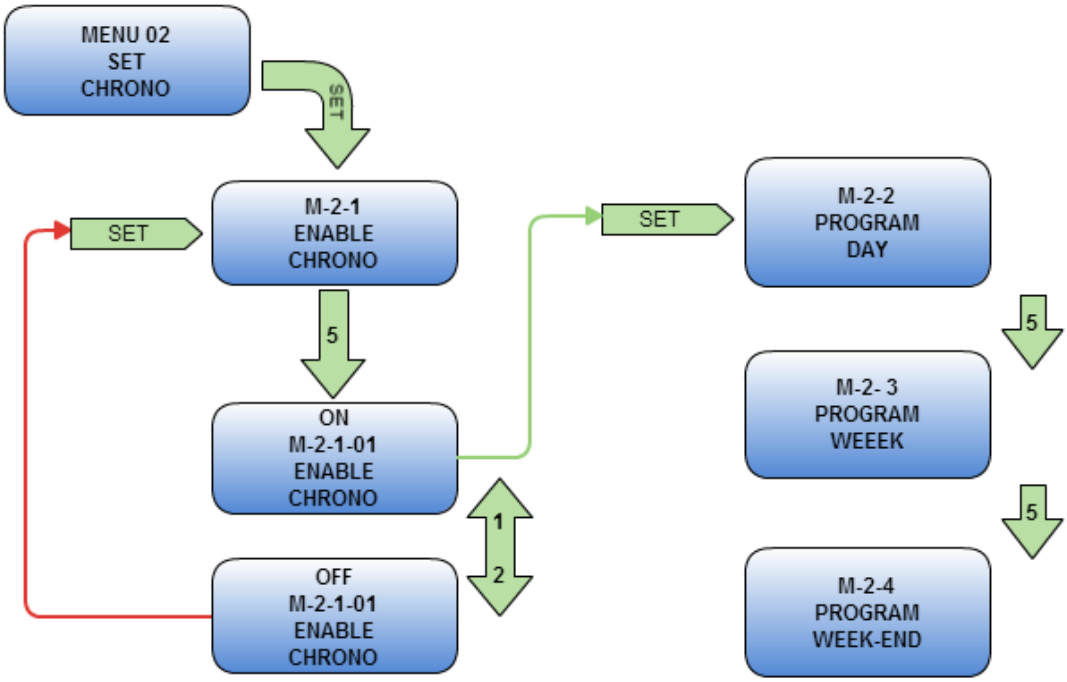
### 4.3.2 Adjustments of the programmed on and off mode

Boiler has possibility for programmed on and off mode during a day and this option is regulated on three ways:

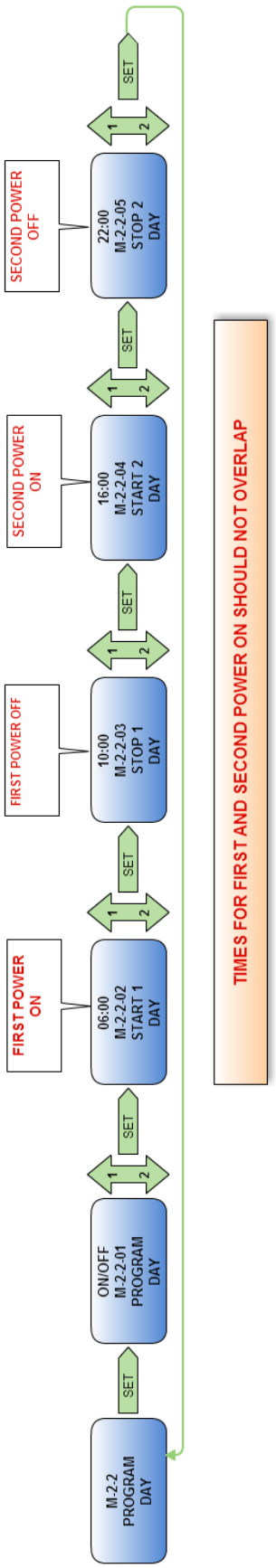
1. **DAY PROGRAM,** in this mode we can set 2 (two) different times for ignition and shutting down of the boiler.This applies to all days in the week.(Scheme 2)

2. **WEEK PROGRAM**, in this mode we can set 4 (four) different times for ignition and shutting down. In this mode, we can choose day in the week (MON-SUN) in which we want boiler to work for each program (Scheme 3)

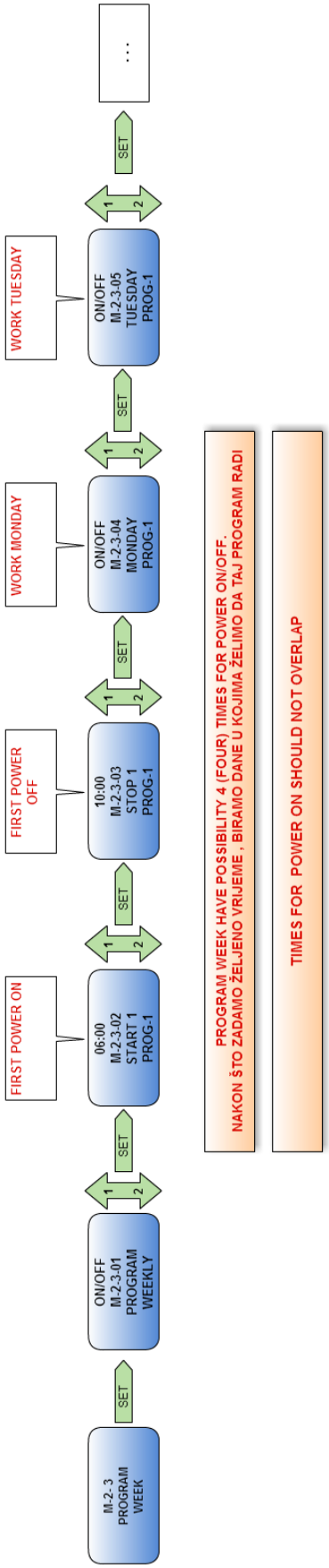
3. **SUN-SAT PROGRAM,** in this mode we can set 2 (two) different times forignition and shutting down, but onl for SATURDAY and SUNDAY. (Scheme 4)



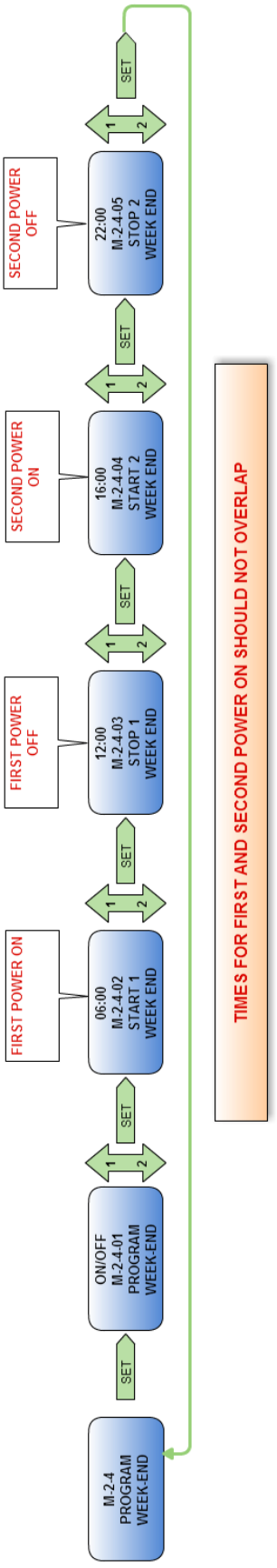

*Flowchart 1.*




Flowchart 2.




Flowchart 3.




Flowchart 4.

### 4.3.3 LANGUAGE OPTIONS

Language settings are adjusted by pressing the SET button,and after that by pressing of button 5 or 6 we choose option **MENU 03-LANGUAGE**.

By pressing of the **SET** button language menu is opened (italian, english, german, french, croatian...) in which we can choose desired language by pressing button 1 or 2.

When desired language is choosen, confirmation is to be done by pressing button **SET**. Returning back is done by pressing button 4 (**ON/OFF**)

### 4.3.4 STAND BY mode

**STAND BY** is used in two ways..

- In the case that boiler shuts down because desired temperature is reached (set **ON**) ,
- In the case that boiler modulates when desired temperature is reached (set **OFF**).

Function **STAND BY** can be set **ON** or **OFF** on following way:

**STAND BY** mode is activated by pressing button **SET**, and afterwards by pressing buttons **5** and **6** we choose desired item in the **MENU 04 – STAND BY MODE**.

By pressing **SET** we are opening options **ON** or **OFF** (choosed by pressing of buttons **1** or **2**, and confirmed by prissing of button **SET**).

#### *4.3.4.1 STAND BY mode with installed sensor for water temperature*

**Connection for room thermostat is delivered overbridged, which means that contact is closed.**

**A. FUNCTION STAND-BY SET ON**

In the case that function **STAND-BY** is activated (**ON**), boiler will shut down when desired temperature is reached and above by 2 degrees C, and after 2 minutes of time pause (set in factory) **TON-WAITING COOLING** is displayed. If temperature do not decrease below set temperature during 4 (four) minutes, on display is **written TON-REQUEST WAITING**.
When temperature of the water in boiler is below set temperature by 2 degrees C, boiler will start again with ignition mode and it will work on set power.

**B. FUNCTION STAND-BY SET OFF**

In the case that function **STAND BY** is not activated (**OFF**), and that connection for the room thermostat is not overbridged, boiler will always work in power 1 no matter which power is set.
In the case that function **STAND BY** is not activated (**OFF**), and connection for room thermostat is overbridged (set in the factory) boiler will work in the power chosen by the user, and when desired temperature is reached will go into modulation mode. Boiler will shut down only if the temperature in the boiler is 80 degrees C, and will start again when temperature drops down below desired temperature.

#### *4.3.4.2 STAND BY mode with room thermostat connected*

**A. FUNCTION STAND-BY SET ON– room thermostat shuts down boiler**

When room thermostat sends signal that desired temperature in the room is reached (contact is open/temperature is reached) boiler will shut down after 2 minute (factory settings- in the case that temperature in the room changes all to prevent constant turning on and off of the boiler) on display is written **tOFF-WAITING REQUEST.**
When room thermostat gives signal that room temperature is low (contact closed/ temperature needs to be reached) boiler will start ignition and on display is written **tON.**

**Remark:** Boiler functioning primarily depends on temperature of the water inside of boiler and factory settings inserted. If boiler is in state of **WAITING COOLING** (water temperature is reached), eventual request of the thermometer will be ignored.

**B. FUNCTION STAND-BY SET OFF – room thermostat gives signal to the boiler to work in POWER 1**

In the case that function **STAND BY** is not activated (**OFF**) boiler will work in power chosen by the user and when desired temperature is reached boiler will modulate (will not shut down but working power will change to lowest).
Boiler will shut down only if temperature of the water in the system is 80 degrees C, and on display is written **WAITING COOLING**. Boiler will start again when temperature in the system drops down below set temperature.

### 4.3.5 Option Buzzer

**BUZZER** is used in the case that user want to hear sound signal from the boiler in the case of activated alarm (set **ON**), or without sound signal (set **OFF**).

Option **BUZZER** is activated by pressing of button **SET**, and after that with buttons **5** or **6** we choose item **MENU 05- OPTION BUZZER.**

By pressing of the button **SET** choice **ON** or **OFF** is opened (with buttons **1 or 2** we are selecting option and confirmation is done by pressing **SET**).

### 4.3.6 Filling of spiral dispenser

**Filling of spiral dispenser** with pellet is done when pellet is loading for the first time or in the case of empty silo. Process of filling of spiral dispenser is set to 90 seconds .

Filling of spiral dispenser is done by pressing of button **SET**, and after by pressing buttons 5 or 6 we choose **MENU 06-FILLING OF SPIRAL.**

Filling os spiral is activated by pressing of button **SET**.

**Prior to start up of the boiler, check combustion chamber. There is a big possibilty that there are some leftovers from pellet in it while spiral dispenser was filled. Combustion chamber needs to be empty and then ignition process can be initiated.**

### 4.3.7 State of the boiler

**State of the boiler** is only of informational character and its purpose is to give us information about condition of the boiler. On display information is randomly changed about water temperature in the boiler, flue gasess temperature, fan RPM, etc.

To enter this option press **SET**, after that with buttons **5** or **6** we choose **MENU 07 – STATE STOVE.**

### 4.3.8 Technical settings

**TECHNICAL SETTINGS** are foreseen for authorised personnel only.

### 4.3.9 FUEL TYPE

**FUEL TYPE** is part of the menu where user is changing information about used fuel type. By default fuel is **SET** to **PELLET**, and in the case that we want to use wood, it is necessary to change this option to **WOOD**.
Selection of thy fuel type is done by pressing **SET**, and after that **5** or **6** we choose **MENU 09 – FUEL TYPE.**
By pressing **SET**, the option for desired type of fuel is opened (**PELLET or WOOD**).Selection is made by buttons **1** or **2**. After choosing of fuel type, confirmation of selection is done by pressing button **SET**.

# 5 Ignition and shutting down of boiler

**Ignition sequence and description of regulation**

Basic function of the regulation is to secure reliable ignition of used fuel, optimal conditions for combustion and controled sequence for shutting down. Depending on working power, and complexity of the heating system, parameters are read and controled differently. Some of the most important ways of working are described with relevant values.

**Before start up following things needs to be checked:**

- Silo needs to be filled with pellet
- Silo doors needs to be closed
- Combustion chamber/basket needs to be cleaned
- Ash pot needs to be clean
- All doors on boiler needs to be closed
- Boiler must be connected to electric source - 220 V, 50 Hz

## 5.1 Ignition

Press and hold button **4**  for **3** (three) seconds. Boiler will start with ignition.


**START** will be displayed, on the left side of display we see that igniter and suction fan are activated. Mark **tON** is showing that room thermostat is connected or overbridged on conncection for room thermostat (deafult). After that, on display we have text **LOAD PELLET** and on the left side we see that feeding of pellet is activ.

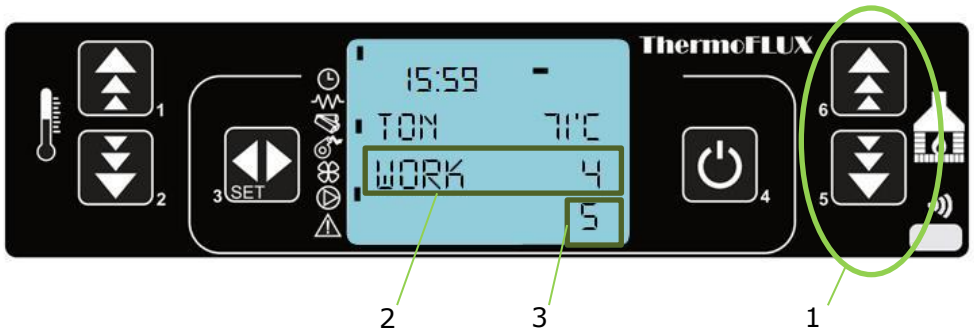

After ignition of pellet, and after tempereture of flue gasses raise on value of 50°C, regulation receives signal that fire is on and boiler continues to work with set values.

## 5.2 Shutting down of boiler

Press and hold button **4**  for 3 (three) seconds. On display it is written **CLEANING FINAL**. Suction fan is working on maximum, feeding of pellet is stopped.


## 5.3 Boiler power adjustments

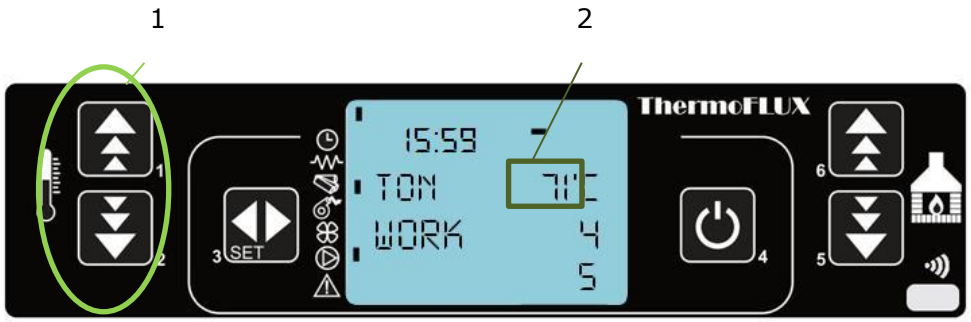
During working phase, it is neccesary to set working power in which we want boiler to work.
Adjustments of the working power is possible in the range from **1-5**, and selection of desired power is done by buttons **5** or **6** (*1). On upper line it is writen **WORK** and set power (*2), and present working power sign is blinking on lower line on the right side (*3). Power **1** is lowest and power **5** is highest power.




Regulation on the boiler is set in the way to modulate (power goes into lowest one) it's work when 4 C is reched below set temperature – **read 6.5 Modulation.**

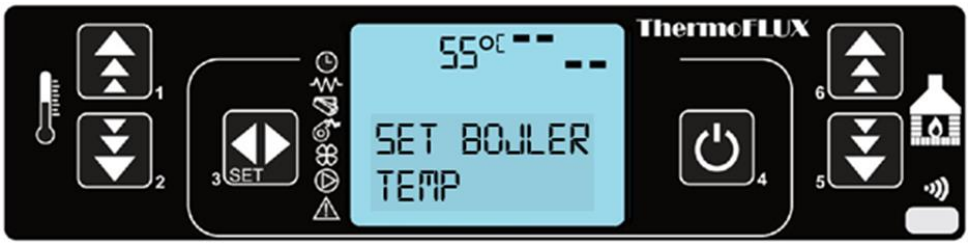
## 5.4 Adjustment of water temperature in boiler

Adjustment of water temperature in the boiler is done by pressing button 1 or 2 (*1). Temperature can be set in range from 50°C to 80°C (*2). These are factory settings and it is not possible to set lower or higher temperature then above mentioned.




## 5.5 Adjustment of sanitary water temperature

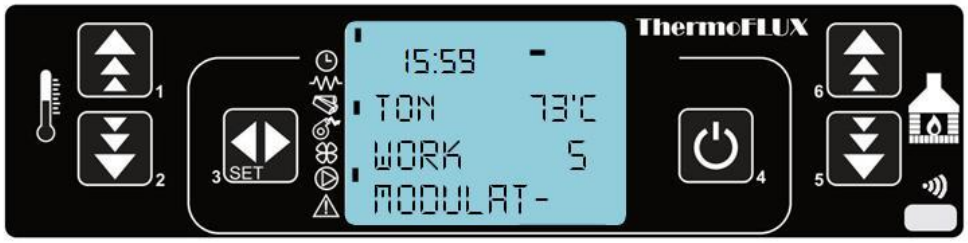
Adjustment of sanitary water temperature in the boiler is done by pressing button 2 first, then set the temperature between 55°C and 80°C with the buttons 1 and 2. After selecting the desired temperature it is necessery to confirm with SET button. These are the factory settings and it is not possible to set lower or higher temperature of the sanitary water.




## 5.6 Modulation

When water temperature in boiler is near to set value regulation begins to modulate its work and changes power to lowest. Modulation starts 4 °C below set temperature.

EXAMPLE: We have adjusted water temperature on 73°C and power 5, regulation will work in power 4 when temperature is 70°C, on 71°C boiler will work in power 3, on 72°C power is 2 and when 73°C is reached then boiler is working in power 1. **MODULATION** is displayed.




If temperature rises above set temperature by 2°C, boiler will be shut down automatically and on display will be written **WAIT COOLING**.


When temperature in the boiler decreases for 2 °C below set temp. regulation will start process of ignition again.

## 5.7 Cleaning of FIRE-POT

During its work boiler has set timer for cleaning of combustion basket (fire-pot) after certain time. This phase is shown on display and work of the boiler is set to lower power,and suction fan is working on maximun for certain period of time as set in the factory.


When cleaning phase is finished, boiler will continue to work and power will be set on power choosen before.

## 5.8 Burning of wood

Pelling boiler is constructed that beside pellet can burn wood also. Inserting of grate inside of boiler is very easy as well as changing of fuel type on the control unit.

**Wood combustion is an alternative option, and should not be longer than 30days. For flawless work and high efficiency during wood burning, it is recommended to install a Buffer tank. Only dry wood can be fired, not raw or coal. The boiler must be connected to the chimney.**

1. First it is necessary to remove the metal shelf above the burning chamber and the turbulators from heat pipe exchanger.

2. Then, remove the combustion pot and put the grate on the planned carrier.

3. After inserted grate, on regulation change mode to **WOOD**. This is done on following way:

Button **SET** press once , after that press button **5** until on display it is writen **MENU 09 – FUEL TYPE**.

Press **SET**, with buttons **1** or **2** choose **WOOD**.


4. Confirm with button **SET** , by pressing button return to main menu.
5. Start fire manualy and then turn on regulation on the boiler by pressing button **ON/OFF**

**Remark:** In case of burning wood, the safety thermal valve (Caleffi 544501 or Herman TDS 1) must be connected to the boiler, or the cetral heating system must be open.

The doors from the boiler must be closed and also the pellet tank (storage) must be closed.

Fire up smaller quantities of wood and do not overload the comustion burning chamber.

In event of a power failure (lost), and wood is burning it can easily overheat the boiler.

**ATTENTIONAL FIRE PROTECTION SHOULD BE SET UP ON THE AUGER PIPE.**

**While burning, wood can make certain amount of soot and tar which can amass on fan blades, and after certain period of time it can cause stoppage of fan and failure of fan function.**

# 6 Cleaning and maintenance

**To secure proper work of the boiler, cleaning and maintenance is neccesary. In the first place, the quality of the pellets and the heating intensity determine how often it is necessary to clean the boiler**.

**Cleaning can be divided in three stages:**

- Daily
- Weekly
- Monthly

During the heating season it is necessary to empty the entire ash pot at least twice and clean it from the dust.

## 6.1 Daily cleaning

Depending on pellet quality, braizer basket ( burning pot ) needs to be cleaned every 1 – 3 days.

1. Turn off boiler and wait for cooling
2. Open lower and middle doors
3. Clean stockhole.[1] Use protection gloves to remove braizer basket (burning pot). After removal of basket clear content from it. Content should be cleaned into fireproof container. [1]

4. Holes on the basket should be cleaned with proper tool to secure air flow for combustion.
5. Return back basket into position tio fit properly on igniter.

6. Close the door before ignition.

[1] We are suggesting waccum cleaner with metal container.

# 6.2 Weekly cleaning

Every 4 – 10 days ( depending on intensity of heating ) it necessary to :

- **Clean ash pot.**
- **Clean heat exchanger tubes**

## Cleaning of ash pot

1. Turn off boiler, wait for cool down.
2. Opet door of the boiler.
3. Clean inside from dust and ash with tool delivered with boiler
4. Use protection gloves to remove ash pot and after removal of ash pot clear content from it. Content should be cleaned into fireproof container.

5. Return ash pot back.
6. Close door before ignition.

## Cleaning of heat exchange tubes

**We recommend cleaning of heat exchange tubes before celaning of ash pot and braizer basket**

1. **Turn off boiler and wait for cooling**
2. **Open upper door.**
3. **With the metal cleaner (delivered with boiler) clean all tubes.**
4. **Close doors before ignition.**

Check if there is ash in ash in a pot or braizer basket and clean them according to instructions given for celaning of ash pot and braizer basket.

To activate the option of cleaning the boiler, press the **SET** button, then press the buttons **5** or **6** to select the menu item **MENU 11-BOILER CLEANING.**

By pressing the **SET** button, the fan is activated and operates at a maximum power of 250 seconds.
(*in older models, boiler cleaning is at **MENU 10**)

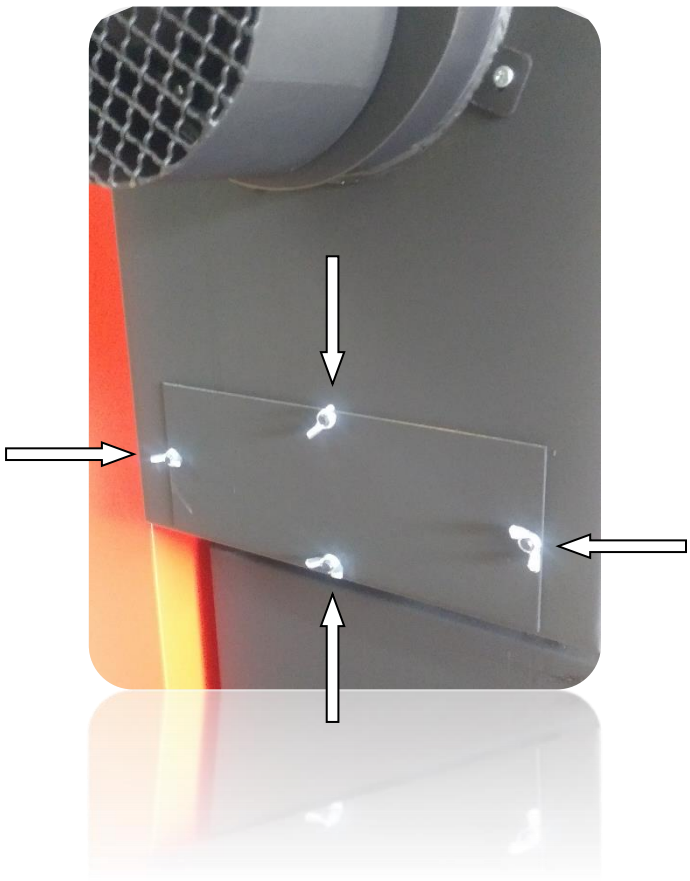
During the cleaning, it is necessary to opet the upper door of the boiler and clean all heat exchange tubes with the metal cleaner (delivered with boiler).

# 6.3 Monthly cleaning

## Cleaning of flue chamber

**Power off boiler, disconnect boiler from power supply.**

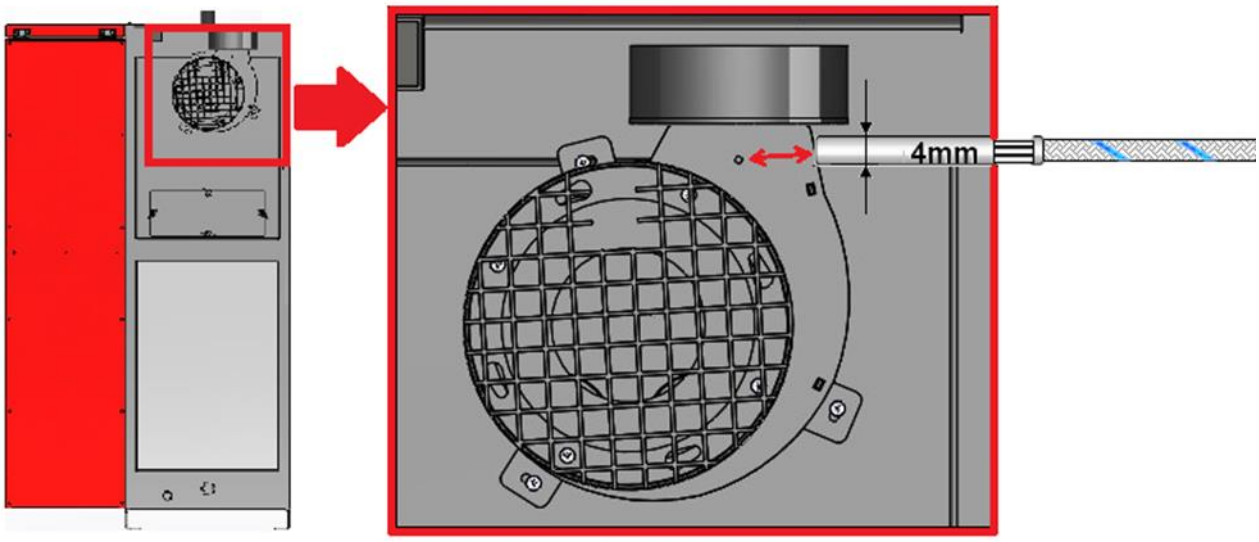
1. Turn off boiler and wait for cooling.
2. Unscrew the nuts on the back of flue chamber (picture below).



3. Remove metal plate.
4. Clean the content from the chamber into fireproof container.
5. Place removed plate back to position and all nuts should be tighten back.

# 6.4 Cleaning flue gas temperature sensor

During the worktime of the Pelling boiler, it is occasionally necessary to clean the smoke sensor at the flue gas outlet immediately next to the fan.



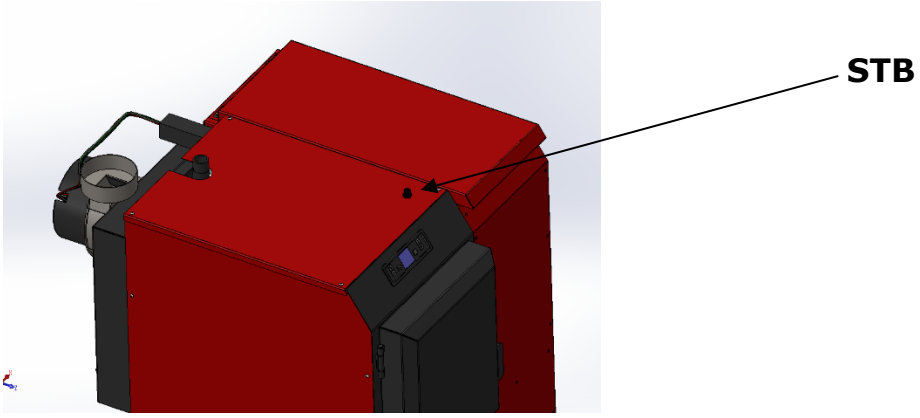

*Detail of the smoke sensor position*

Due to the size of the sensor (diameter Φ=4mm), lot of attention should be paid when removing the sensor from the hole of the flue fan outlet housing.

The procedure is:

1. Locate the metal bushing from the sensor in the output of the flue fan housing.
2. The sensor must be carefully pulled out, use needle nose pliers for this operation.
3. Clean the sensor with a cloth or sanding paper.
4. Replace (insert) sensor.

**Note: The smoke sensor needs to be cleaned once a season!**



# 7 Installation

**The commissioning of the system must be carried out by the personnel authorized by ThermoFLUX d.o.o. or the importer.**

**The warranty will not be valid if the boiler has not been commisioned by an authorized servicer.**

The first start-up includes the basic operation and maintenance of the boiler. The service technician authorized for the first commisioning must check the functioning of the boiler at least durin one complete work cycle.

**Risk of material and physical damage due to improper commissioning. If the first start-up is done by an unprofessional person, damage to the boiler and the heating system may occur.**

## 7.1 Conditions for installation

The following conditions must be completed before the system is released.
Switch off main power supply.

### Check mechanical connections

Check that all components are properly connected.
Check that all mechanical components are securely attached.
Make sure that the burning pot is positioned correctly.

### Check hydraulic connections

Check that the circulation pump and the mixing valve are properly connected.
Check that the safety equipment is properly connected.

(It is common that the ''cold'' water pressure in the heating system is minimal 1,5 to maximal 2bars)

## 7.2 Chimney and pipes for flue gas

**The boiler must be connected to the chimney.** The chimney should be calculated and made according to EN 1384-1. The chimney must be thermally insulated to prevent condensation.

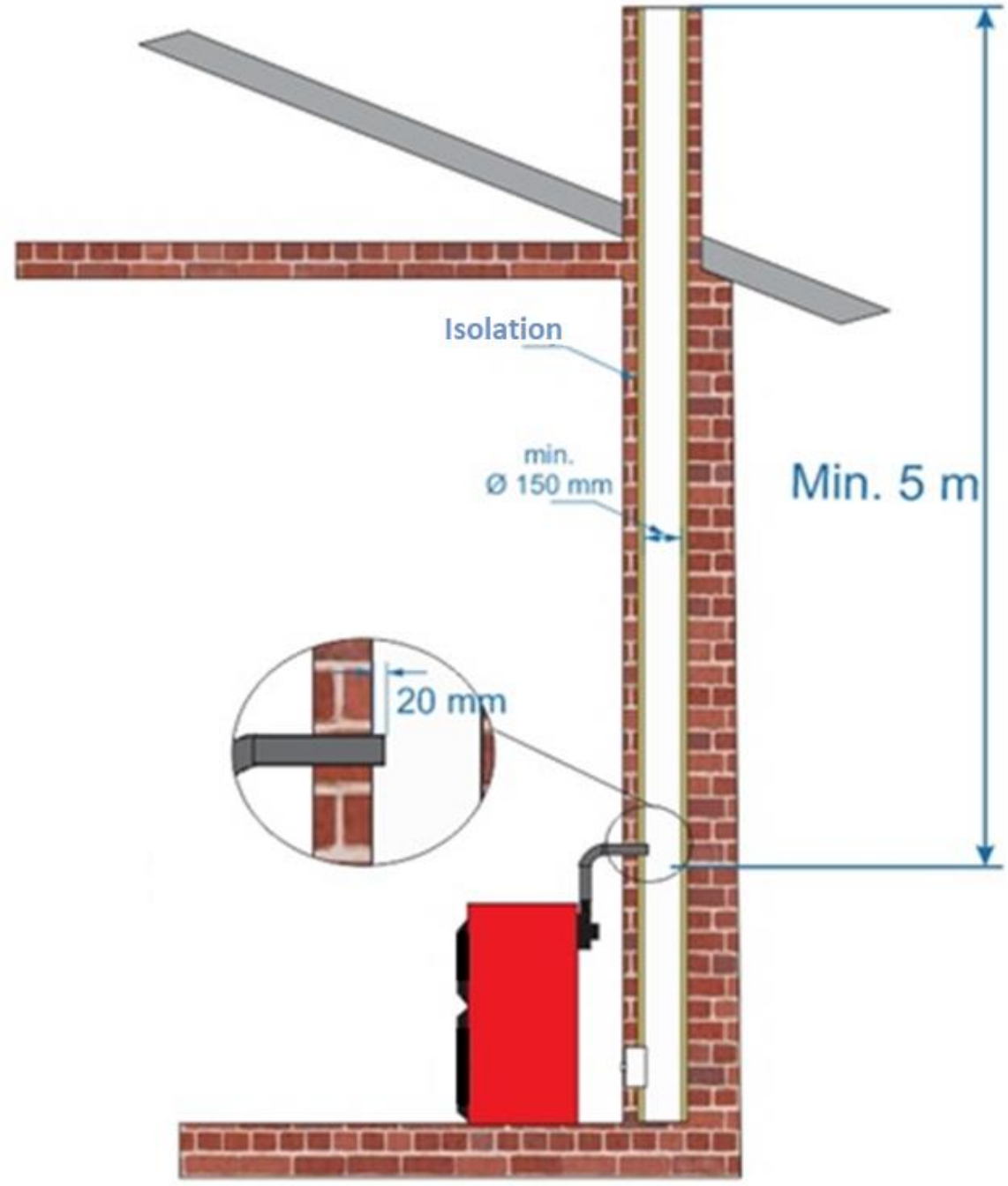
Flue gas discharge must comply with applicable regulations as regards chimney dimensions and use of materials for its manufacture. The chimney must have an opening for cleaning at the lower part.

The internal cross-section of the chimney should not be less than 150mm and the heights should be at least 5 meters.

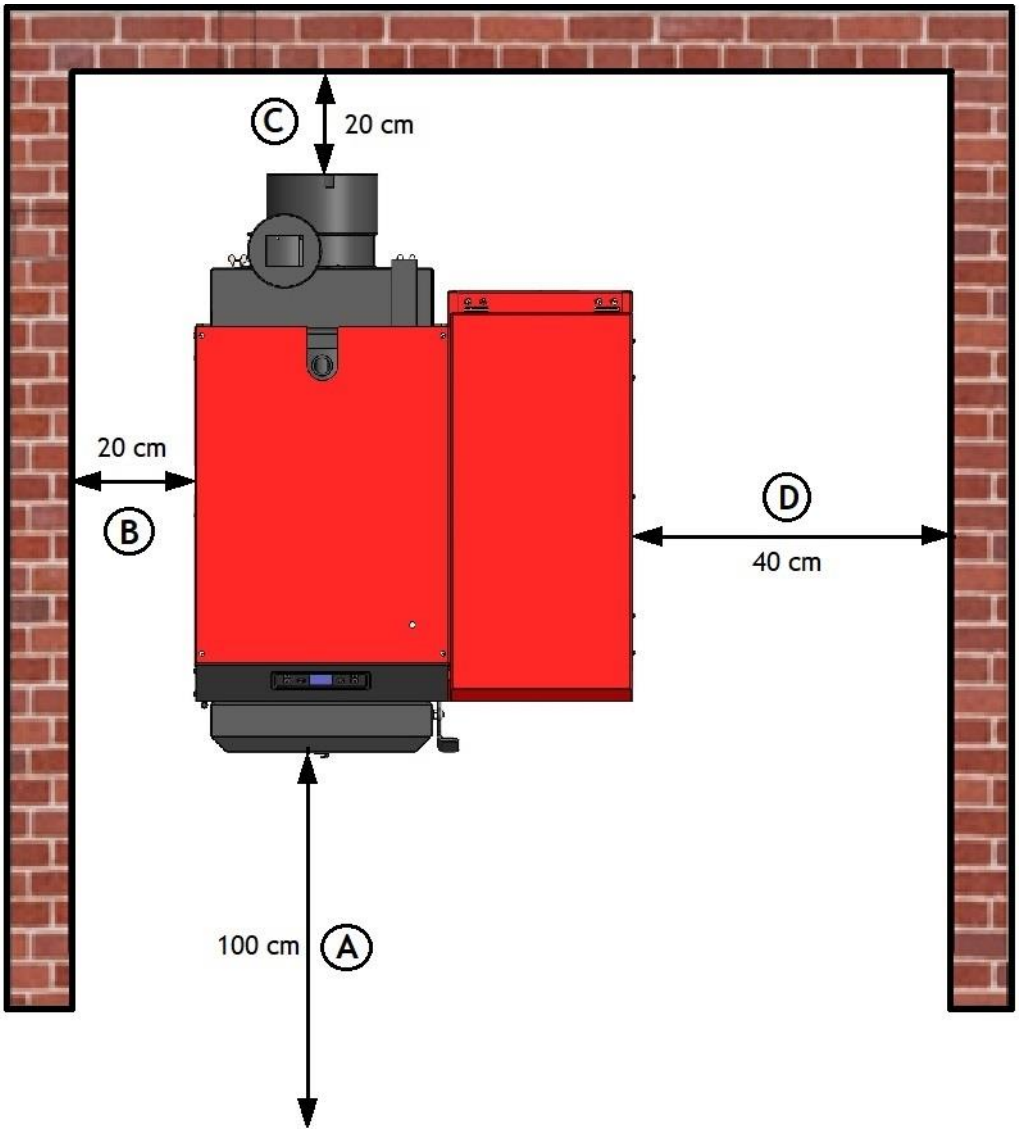
The flue gas pipes should be from non-inflammable materials that are suitable and resistant to combustion products and to their possible condensation.

The chimney connection must be put in the chimney 20mm inwards to prevent any condensation from the chimney to the boiler. Horizontal parts should have a slope of at least 3% upwards. The length of the horizontal part should be minimal and not longer than 2 meters with the ability to clean and remove the accumulated ash. The chimney connection should be carried out with a maximum of two angles of 90°C.

**As flue pipe do not use metal flexible hoses. All parts of the flue pipes should be safe and replaceable, allowing internal cleansing. Avoid horizontal deviation.**



**Minimal distances of the boiler from wall and objects**



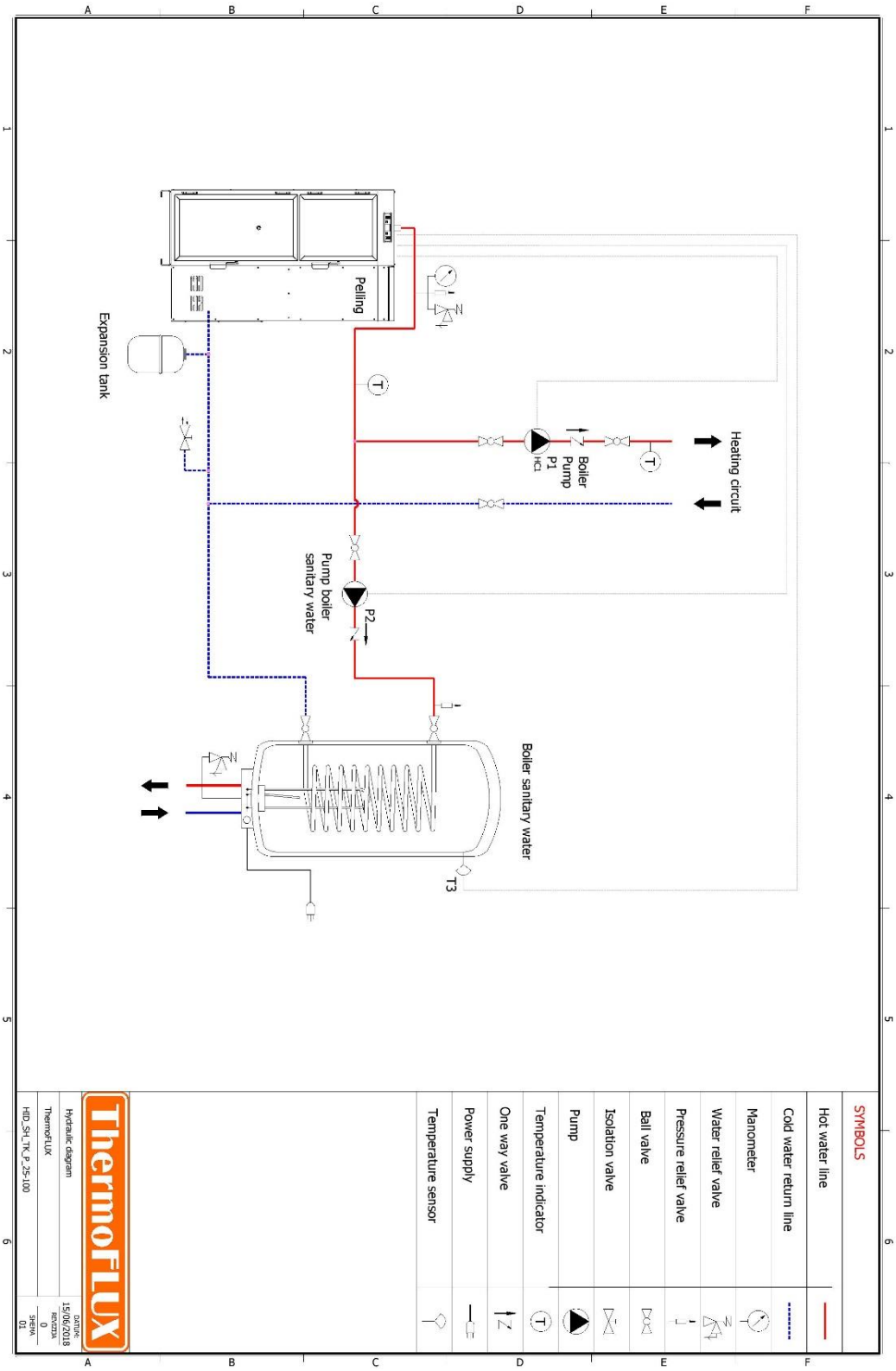

A – minimum distance front - **100 cm**
B – minimum distance from side (**BOILER BODY**) - **20 cm**
C – minimum distance back side- **20 cm**
D – minimum distance from side (**SILO**) - **40 cm**

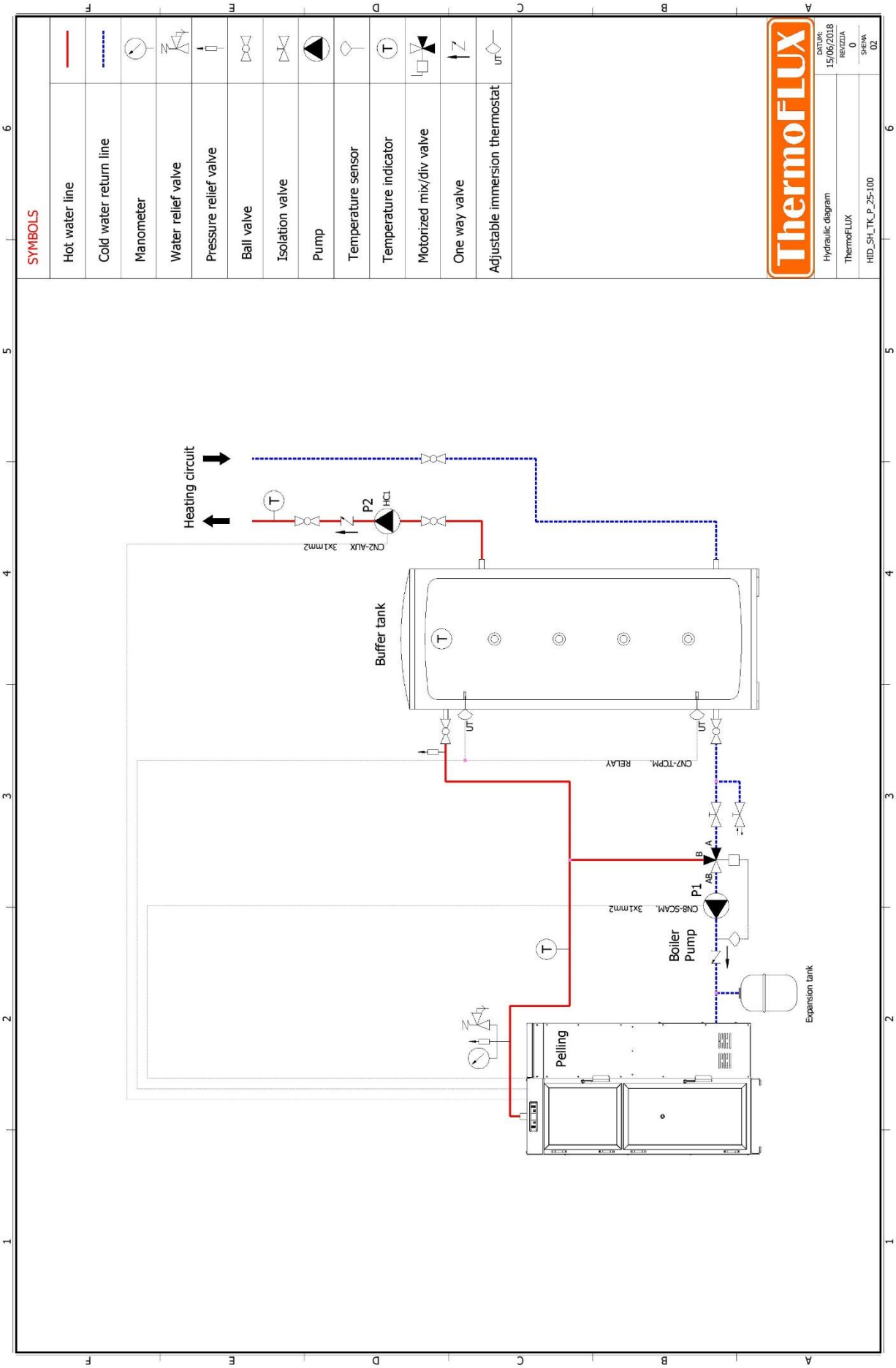
The required dimensions are necessary for the service technician to perform the annual service, or that the user can safely maintain the boiler and clean the smoke pipes.

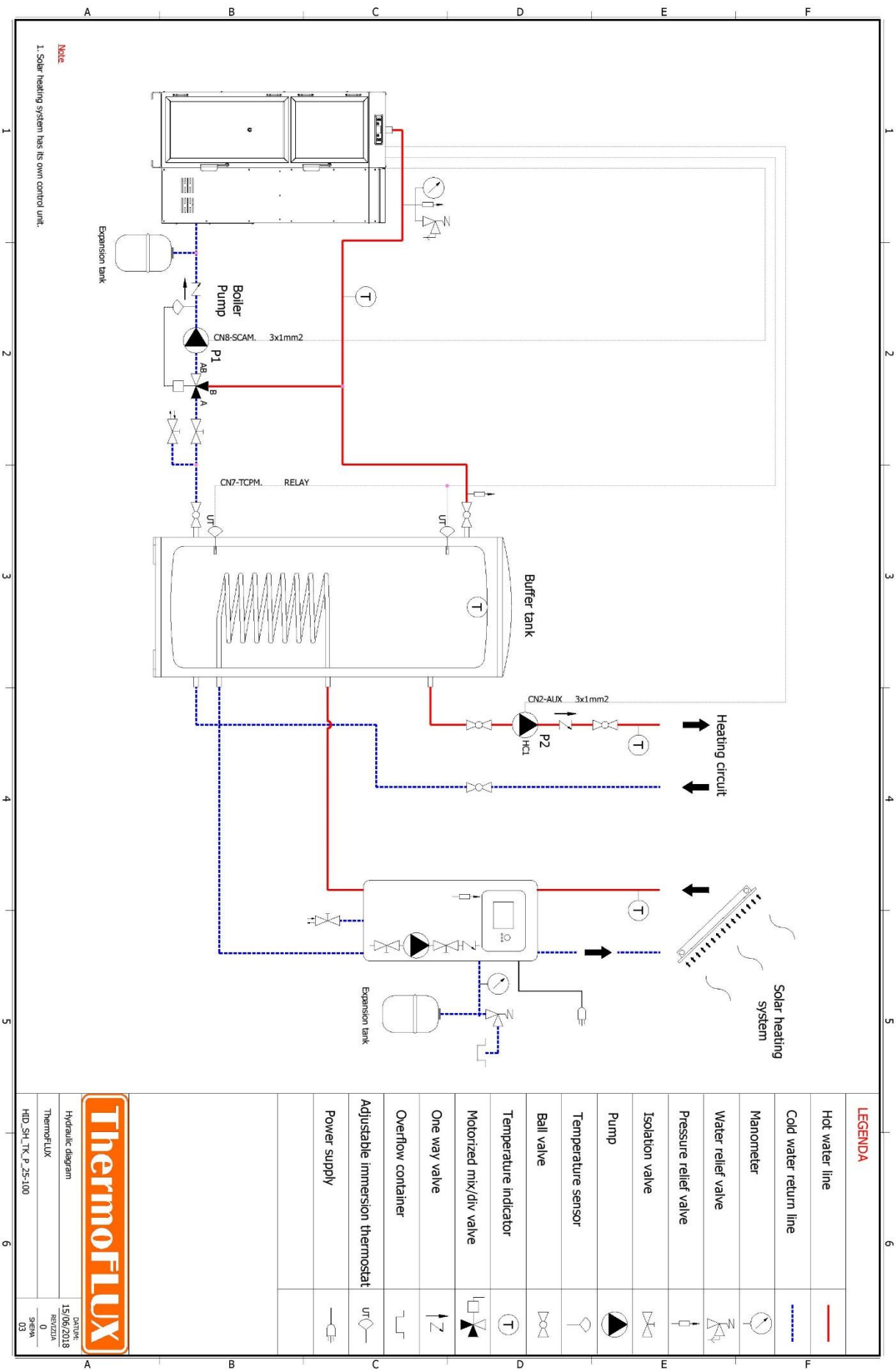
**ThermoFLUX leaves itself the right to later perform changes.**

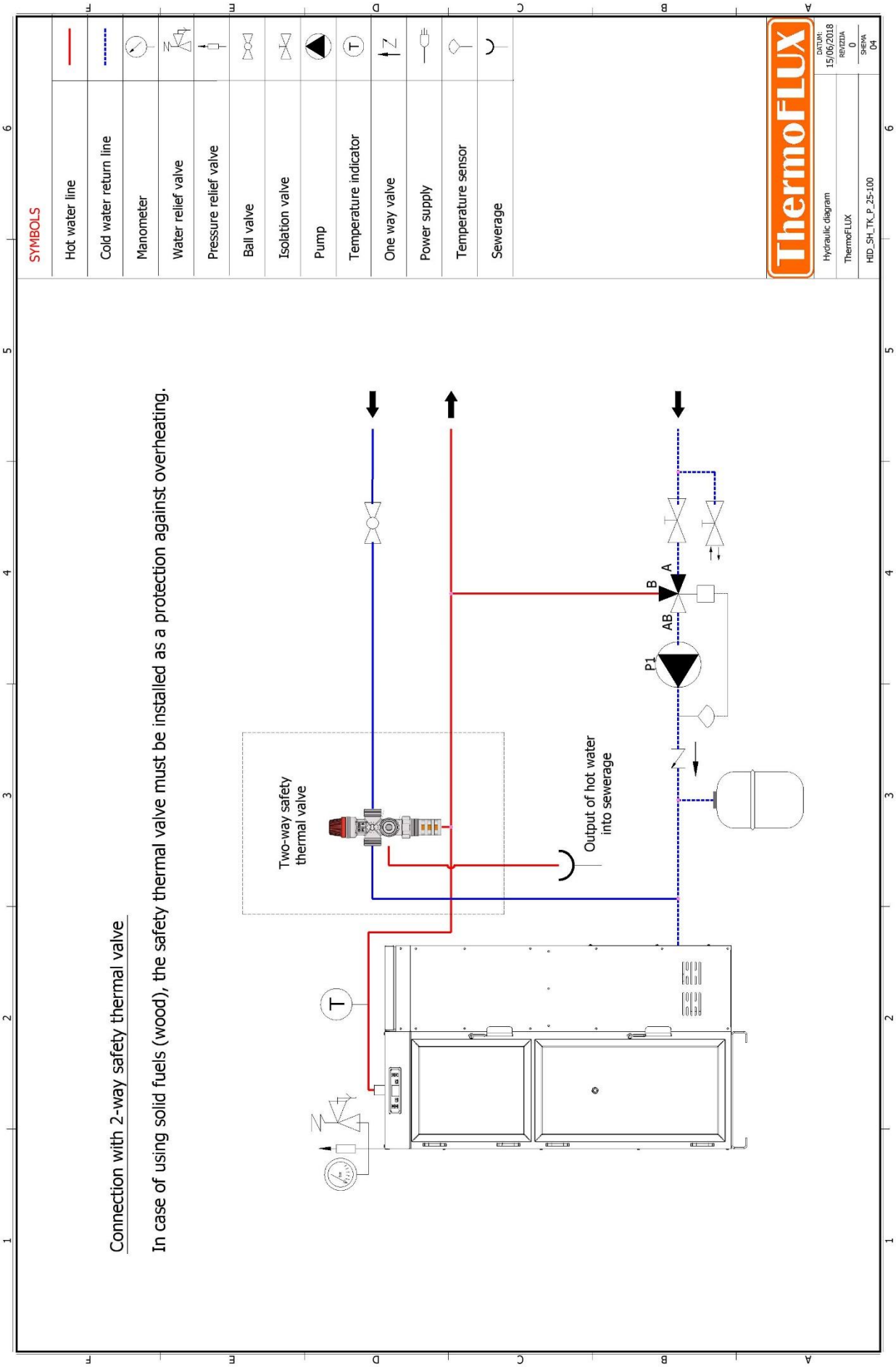
# 8 Connection options

## 8.1 Hydraulic schemes for connection




SYMBOLS
Hot water line
Cold water return line
Manometer
Water relief valve
Pressure relief valve
Ball valve
Isolation valve
Pump
Temperature sensor
Temperature indicator
Motorized mix/div valve
One way valve
Adjustable immersion thermostat
ThermoFLUX
Hydraulic diagram
ThermoFLUX
HID_SH_TK_P_25-100
DATUM: 15/06/2018
REVIZIA 0
SHEMA 02
Heating circuit
P2
HC1
CN2-AUX 3x1mm2
Buffer tank
CN7-TCPM. RELAY
P1
CN8-SCAM. 3x1mm2
Boiler Pump
Expansion tank
Pelling


Note
1. Solar heating system has its own control unit.
Expansion tank
Boiler Pump
CN8-SCAM. 3x1mm2
P1
CN7-TCPM. RELAY
Buffer tank
CN2-AUX 3x1mm2
P2
HCL
Heating circuit
Solar heating system
Expansion tank
LEGENDA
Hot water line
Cold water return line
Manometer
Water relief valve
Pressure relief valve
Isolation valve
Pump
Temperature sensor
Ball valve
Temperature indicator
Motorized mix/div valve
One way valve
Overflow container
Adjustable immersion thermostat
Power supply
ThermoFLUX
Hydraulic diagram
ThermoFLUX
HID_SH_TK_P_25-100
DATUM: 15/06/2018
REVIZIJA 0
SHEMA 03

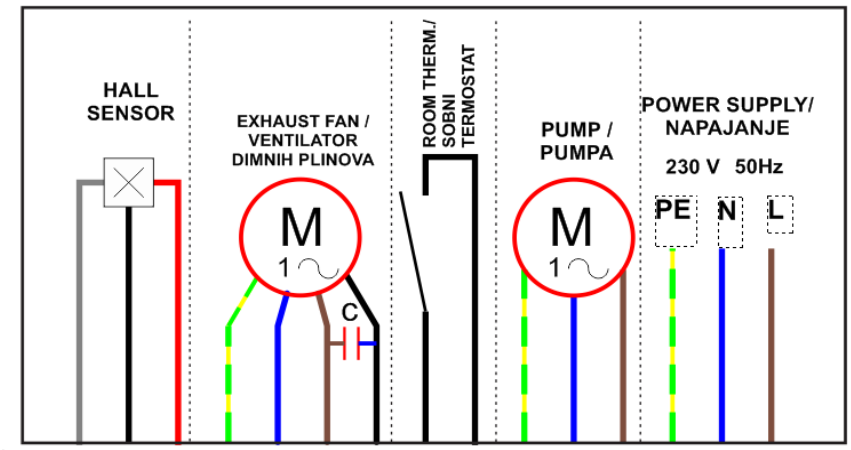

SYMBOLS
Hot water line
Cold water return line
Manometer
Water relief valve
Pressure relief valve
Ball valve
Isolation valve
Pump
Temperature indicator
One way valve
Power supply
Temperature sensor
Sewerage
ThermoFLUX
Hydraulic diagram
ThermoFLUX
HID_SH_TK_P_25-100
DATUM: 15/06/2018
REVIZIJA 0
SHEMA 04
Connection with 2-way safety thermal valve
In case of using solid fuels (wood), the safety thermal valve must be installed as a protection against overheating.
Two-way safety thermal valve
Output of hot water into sewerage
A
B
AB
P1
T

# 8.2 Scheme for electric connection

Below the top cover there are connection terminal blocks for:

- Power supply 230V, 50Hz
- Circulation pump
- Room thermostat

**Hall sensor and the flue gas fan are already connected.**




*Terminal blocks*

## Power supply

The boiler needs to be connected to 230V, 50Hz (via separate fuse 10A).

**Voltage changes greater than 10% can lead to malfunction of the product. Incorrect grounding on the power supply may lead to defective operation that can not be charged to the manufacturer.**

## Room thermostat

User has possibility to instal room thermostat in other room separate from the boiler. Work og the boiler with thermostat connected to conection for room thermostat can be different depending on activated function **STANDBY**. Connection for room thermostat is overbridged (default factory settings) so it means that his contact is closed.

**Instalation and connection of the room thermostat should be performed only by authorized personel.**

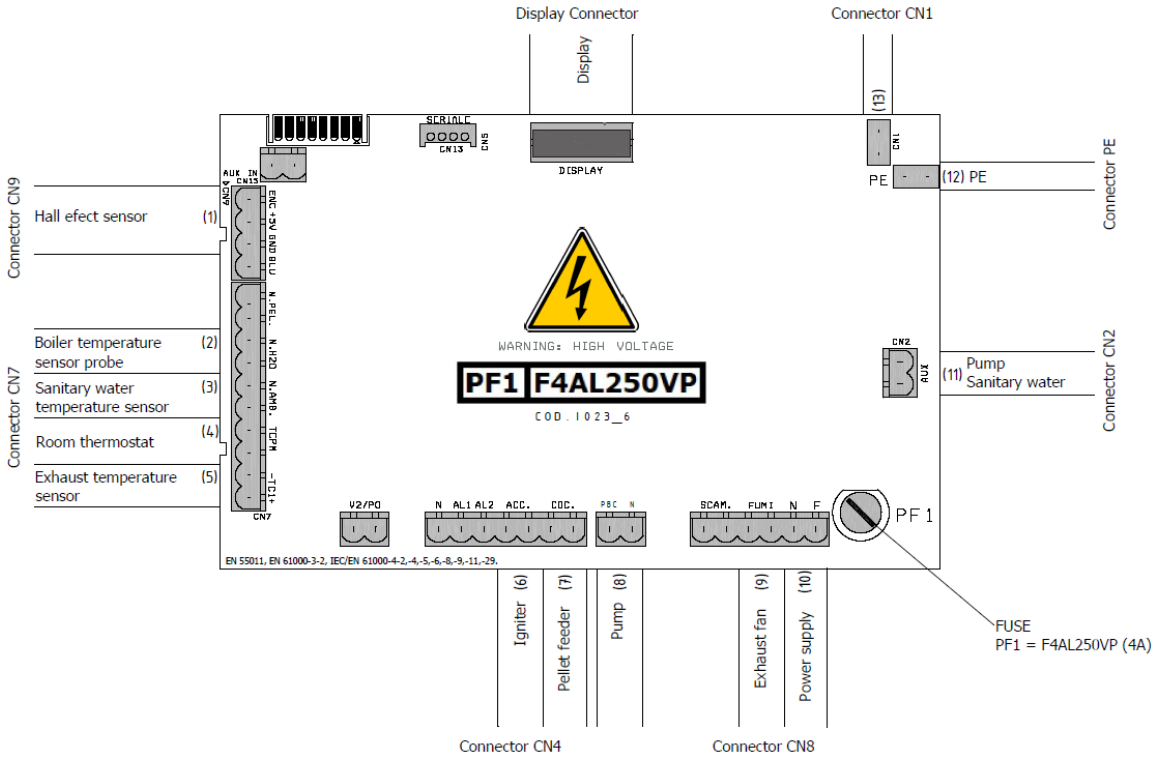
## Circulation pump

It is mandatory to connect the pump to the intended output. We recommend a high-efficient pump. The maximum power of the pump that can be connected to the output is 120W.

**The installation and connection must be carried out by an authorized service technician.**

## 8.2.1 Control unit

The motherboard is designed in accordance with EN 55011, EN 61000, IEC/EN 61000-4-2, -4, -5, -6, -8, -9, -11, -29.




Power supply: U=230Vac ± 15%, f = 50/60Hz, I = 55mA ± 15%

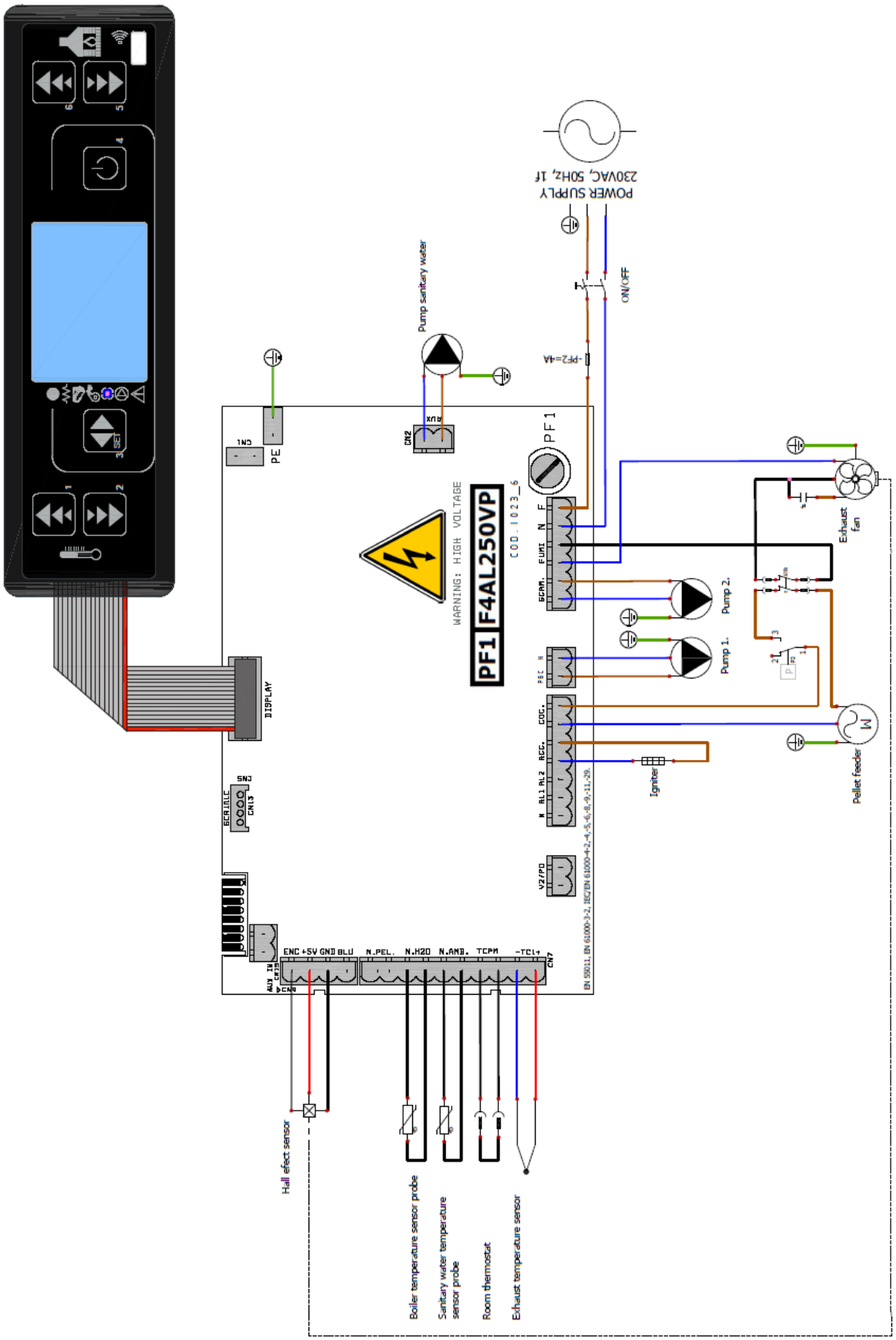
Temperature: -10°C do +60°C.

FUSE: PF1=F4AL250VP (4A).

**CAUTION!** Electronic circuits can be damaged by electrostatic discharge. Before working on the boiler it is necessary to be rid of static charge by touching grounding parts. All used mounted conductors are heat-resistant, and have impregnated glass fibre braid for thermal protection and against mechanical damage.

**NOTE:** In case of use/replacement of electrical components that deviate from the defined components in this manual, the warranty on the boiler does not apply. In case of cable damage, the cable needs to be replaced by an equivalent cable.

**BEFORE EVERY SERVICE, TURN OFF THE POWER SUPPLY** (for example, via a separate fuse) and be sure of the lack of electricity.


POWER SUPPLY
230VAC, 50Hz, 1F
ON/OFF
Pump sanitary water
PF1
F4AL250VP
WARNING: HIGH VOLTAGE
Exhaust fan
Pump 2.
Pump 1.
Igniter
Pellet feeder
DISPLAY
ENC +5V GND BLU N.PEL. N.H2O N.AMB. TCPM -TC1+
Hall efect sensor
Boiler temperature sensor probe
Sanitary water temperature sensor probe
Room thermostat
Exhaust temperature sensor

# 9 Alarms

| Ispis na displeju | Objašnjenje | Rješenje |
|---|---|---|
|  | Alarm aktivan- vidljiva oznaka pored znaka za alarm | Poništavanje alarma možemo izvršiti pritiskom na tipku 4  . Nakon toga se na displeju ispisuje ZAVRSNO CISCENJE koje traje 4 minute . Nakon toga možemo ponovo upaliti kotao ukoliko smo riješili problem. |
| **EXHAUST PROBE**<br>**AL2** | The flue gas temperature sensor is faulty or not connected.<br>ALARM ACTIVE is displayed, and then turns off. | The alarm can be canceled by pressing the key 4  FINAL CLEANING is displeyed for 4 minutes. After that we can restart the boiler If we have solved the problem. |
| **EXHAUST HOT**<br>**AL3** | Flue gas temperature is above the allowed (250 ° C). Boiler lists alarm is active and goes off. | The boiler has not been cleaned, smoke sensor is dirty.<br>Clean boiler and restart the ignition.<br>Excessive amounts of feed pellets.<br>Call service |
| **FAN FAILURE**<br>**AL4** | Flue gas fan error.<br>Flue gas fan stuck.<br>Invalid encoder (hall). | Call serviceReset STB (thermal switch)<br>(see picture page nr.33)<br>Call for service |
| **NO LIGHTIN**<br>**AL5** | Failed ignition. | No pellets in the storage - fill the pellets in the tank<br>Dosage spiral empty - initial filling<br>A foreign object stuck dosage spiral - clean<br>Poor quality pellets (wet pellet, long pellets, dust into pellets) - change the type of pellets<br>Pellet igniter is defective - replace it<br>Contact Service<br>Restart the boiler. |
| **NO PELET**<br>**AL6** | During operation of the boiler, flue gas temperature has decreased below the permitted values | No pellets in the storage - fill the pellets in the tank<br>Dosage spiral empty - initial filling<br>A foreign object stuck dosage spiral - clean<br>Poor quality pellets (wet pellet, long pellets, dust into pellets) - change the type of pellets<br>Call service |
| **WATER PROBE**<br>**AL9** | Water temperature sensor is faulty or not connected<br>Boiler lists alarm is active and goes off. | Call service |
| **SAFETY THERMAL** | Safety thermostat (STB) has been activated because the boiler water temperature exceeded 95 ° C. | Wait for the boiler to cool down and then unscrew the plastic cap and suitable tool to reset the switch.<br>It is possible that the pump is is out of service and there is no water circulation<br>Call service. |
| **POWER LOSS** | The boiler is out of power | Reset alarm and start again. |

# 10 Instruction about safety removal and proper disposal of boiler

## 10.1 Disposal

Following elements are made of metal and can be disposed on landfills for metal:

- **boiler**
- **cover metal sheets**
- **silo**
- **feeding system(except motor)**
- **braizer basket**

Electronic components can be recycled .

Glass, glass wool and plastic parts can be recycled on landfills.

Motor auger is made of few types of material which can be recycled.

Oil and capacitors can be disposed only in special waste disposal sites.

# 11 Guarantee

## 11.1 Guarantee period

Guarantee period of 5 years applies on boiler body, metal covers and silo for pellet, and 2 years on electric component ( regulation, motor, ignitier)

ThermoFLUX d.o.o. is responsible for service in BiH during guarantee period for failures as described in paragraph related to terms for guarantee,

Guarantee in other states is to be provided by authorised importer-distributor.

## 11.2 Guarantee terms

First start up of the boiler needs to be done by authorised service, or person authorised by ThermoFLUX or authorised importer – distributor.

Boiler must work in accordance with terms and conditions given in this manual.

Boiler needs to be instaled in accordance with all state regulations and law terms.

Quality of pellet must comply with all stnadards given in this manual.

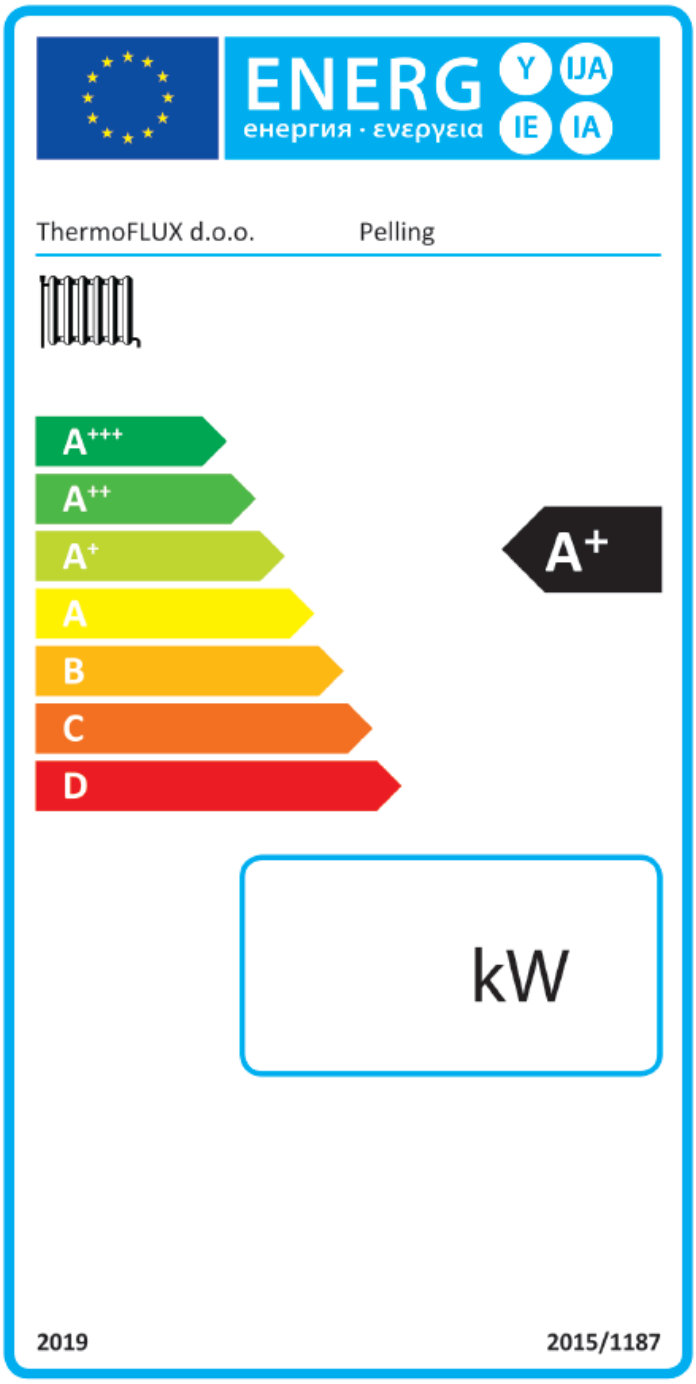
## 11.3 Exemption from the guarantee

Guarantee does not cover:

- **Unauthorised and negligent handling and maintenance**
- **Unauthorised opening and servicing of the boiler**
- **Improper installation, mechanical damage**
- **Damages caused by non-complying with instructions given in manual**

Damages caused by other conditions such are: fire and water, high voltage, thunderstroke.

# 12 EU Label


ENERG
енергия · ενεργεια
Y
IJA
IE
IA
ThermoFLUX d.o.o.
Pelling
A+++
A++
A+
A
B
C
D
A+
kW
2019
2015/1187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