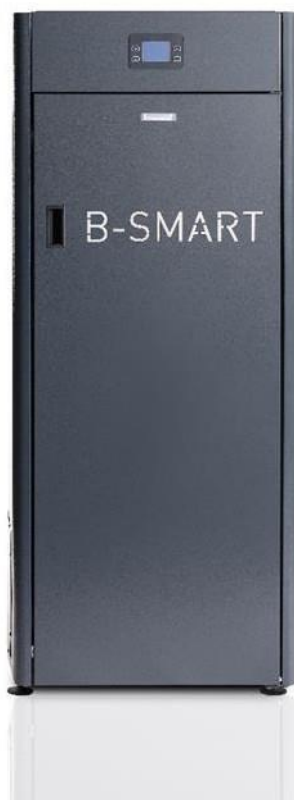


# Compact-size wood pellet boiler with smart regulation B-Smart

## Technical manual for use and maintenance



**termomont**



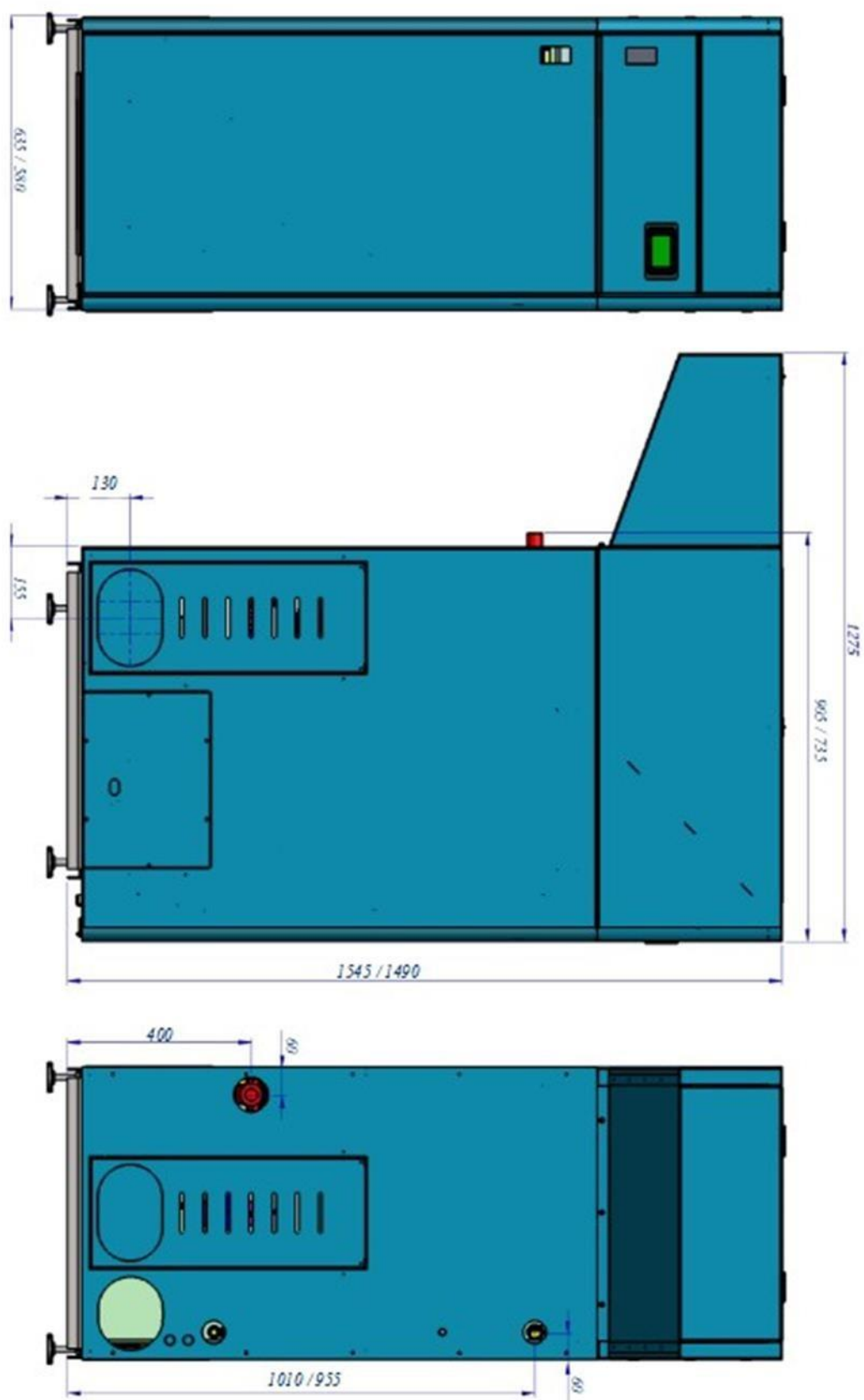
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# 1 General boiler data



## 1.1 Technical data according to EN 303-5

Type de chaudière	B SMART	B SMART
Nominal power	30 KW	15 KW
Power range	9-30 KW	5,5-15kw
Temperature range	60- 80 °C	60- 80 °C
Minimum temperature of the return line	50 °C	50 °C
Fuel consumption at minimum power	min 1,8 kg/h	min 0,86 kg/h
Fuel consumption at maximum power	max 6 kg/h	max 3,1 kg/h
Pellet quality	A1, A2 Ø6,	A1, A2 Ø6,
Total weight of the boiler	245 kg	225 kg
Maximum working pressure	2,5 bar	2,5 bar
Pellet capacity of the basic storage	150 l	80 lit
Pellet capacity of the extended storage	230 l	-
Flow / Return (inch)	1"	1"
Fill / Drain tap (inch)	1/2"	1/2"
Flue gas diameter	120 mm	80 mm
Air inlet opening	50 mm	50 mm
Flue gas temperature at nominal power	140 °C	140 °C
Necessary draught	10 Pa	10 Pa
Boiler water volume	58 l	33 l
Connection to electrical network	220 V 50 Hz	220 V 50 Hz
Energy consumption at start-up	400 W	400 W
Energy consumption at steady-state	100 W	100 W
Boiler class efficiency	5	5
Boiler class emissions	5	5

## 1.2 Emission values

**B-Smart** wood pellet boiler is evaluated according to European Directive 2015 :1189 (*notified body SZU Brno, Czech Republic*) and its emission values as well as boiler efficiency are officially tested and confirmed to be below prescribed limits.

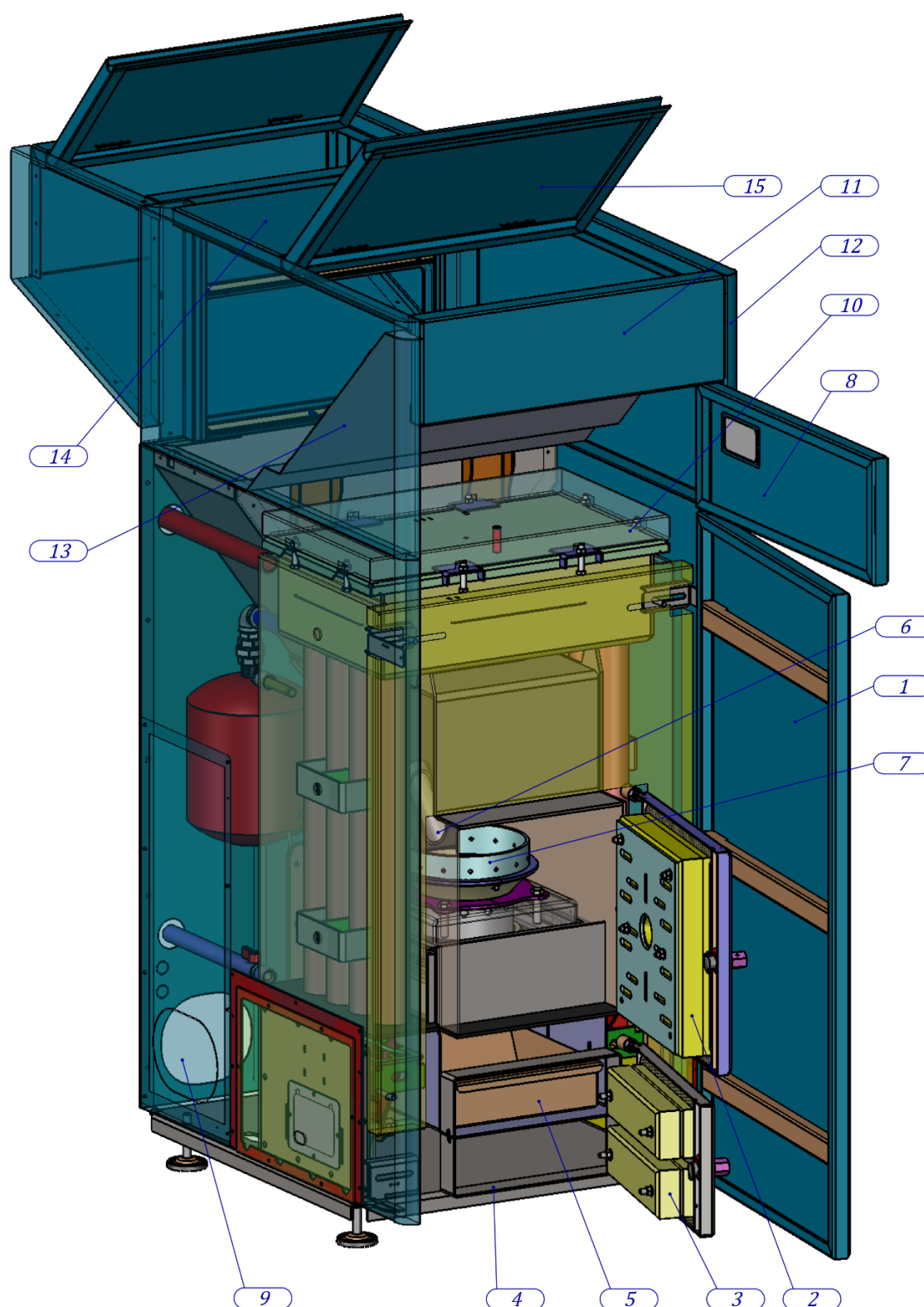
Seasonals emissions	mg/m <sup>3</sup> <sub>n</sub> (sur 10% O <sub>2</sub> )
CO	70
OGC	1
Dust	19.2
NOx	148
Seasonal efficiency	80 %
Energy efficiency index	118
Energy efficiency class	<b>A+</b>

## 1.3 Description of the product

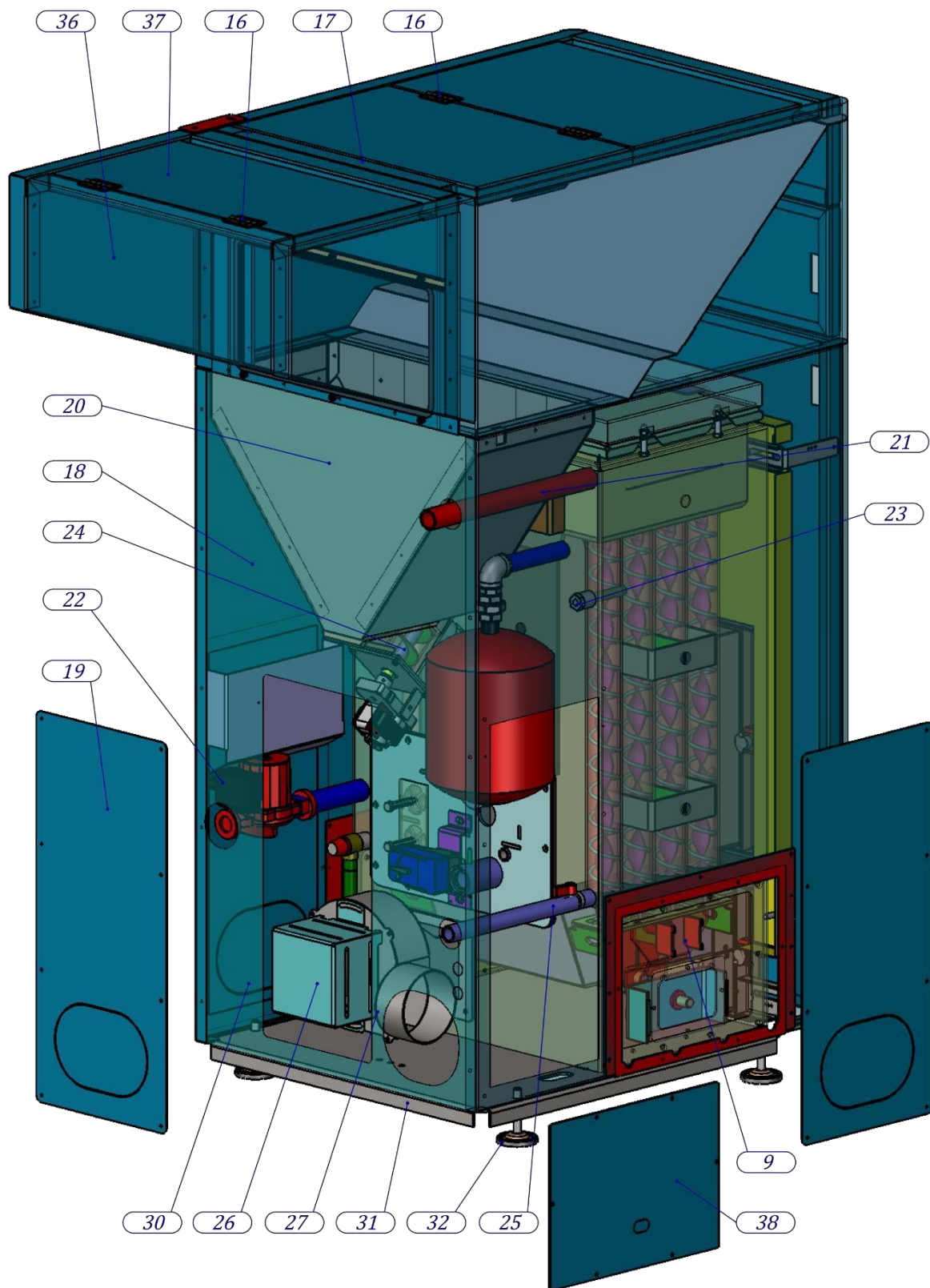
- This boiler is aimed for boiler rooms, not living areas. Boiler has a thermal insulation coat. Boiler dimensions and adaptable pellet storage make it suitable for placement in smaller areas.
- **B-Smart** wood pelet boiler is made according to EN 303-5 and fulfills Ecodesign criteria 2015:1189.
- Boiler can only be fed and fired with **wood pellets that fulfill EN 14961 norm**, pellet quality A1 or A2, pellet diameter 6mm or 8mm.

- The boiler has an expansion vessel of **8 litres**. It is recommended to add an additional expansion vessel of at least **18 litres**. Boiler comes with a circulation pump and safety valve inside (beneath the back cover). Air vent is not included.
- Original rotating burner design is enlisted at European design registry EUIPO.
- This boiler is achieving high efficiency at low exit temperature for flue gases. It is a „Class 5“ boiler according to EN 303-5 and a „7 Stars“ boiler according to French **Flamme Verte** classification.
- Ignition, start-up and turning-off are fully automatized. Combustion control is optimized using algorithms such as 'modulation' which automatically decreases pellet dose as the difference between desired and reached temperature is decreasing.
- Boiler regulation is equipped with three sensors (hot-water, flue gas, and heating chamber temperature). A smart PID boiler regulation can „recognize“ the caloric value of the pellets.
- It is also equipped with three gear motors (dosing, burner bottomrotation, tubulator automatic clean).
- Boiler chamber is made by welding 5mm thick steel plates (all surfaces in touch with fire). Other parts are made of 4mm steel.
- Working principle of this boiler is based on the “sub-pressure” of the heating chamber. The chamber is completely air-proof so that air flow in the boiler is fully controlled by the exhausting fan mounted on the back. Boiler regulation completely controls the quantity of the air inside the heating chamber: optimum combustion comes as a result. Le capteur de sécurité de pression du foyer arrête le fonctionnement du moteur et le dosage dès l'ouverture de porte basse de la chaudière.
- Pellets are fed to boiler via internal transporter screw inside the storage tank. From there pellets are fed over to heating chamber where they fall free to the designated melting area (the 'actual' embedded burner of the boiler). Storage and melting area are physically divided. There is a safety thermostat to prevent back-fire. There is also a pressure sensor inside the heating chamber - when the boiler door is open, this sensor will react and stop the feeding process.

## 2 Parts of the boiler

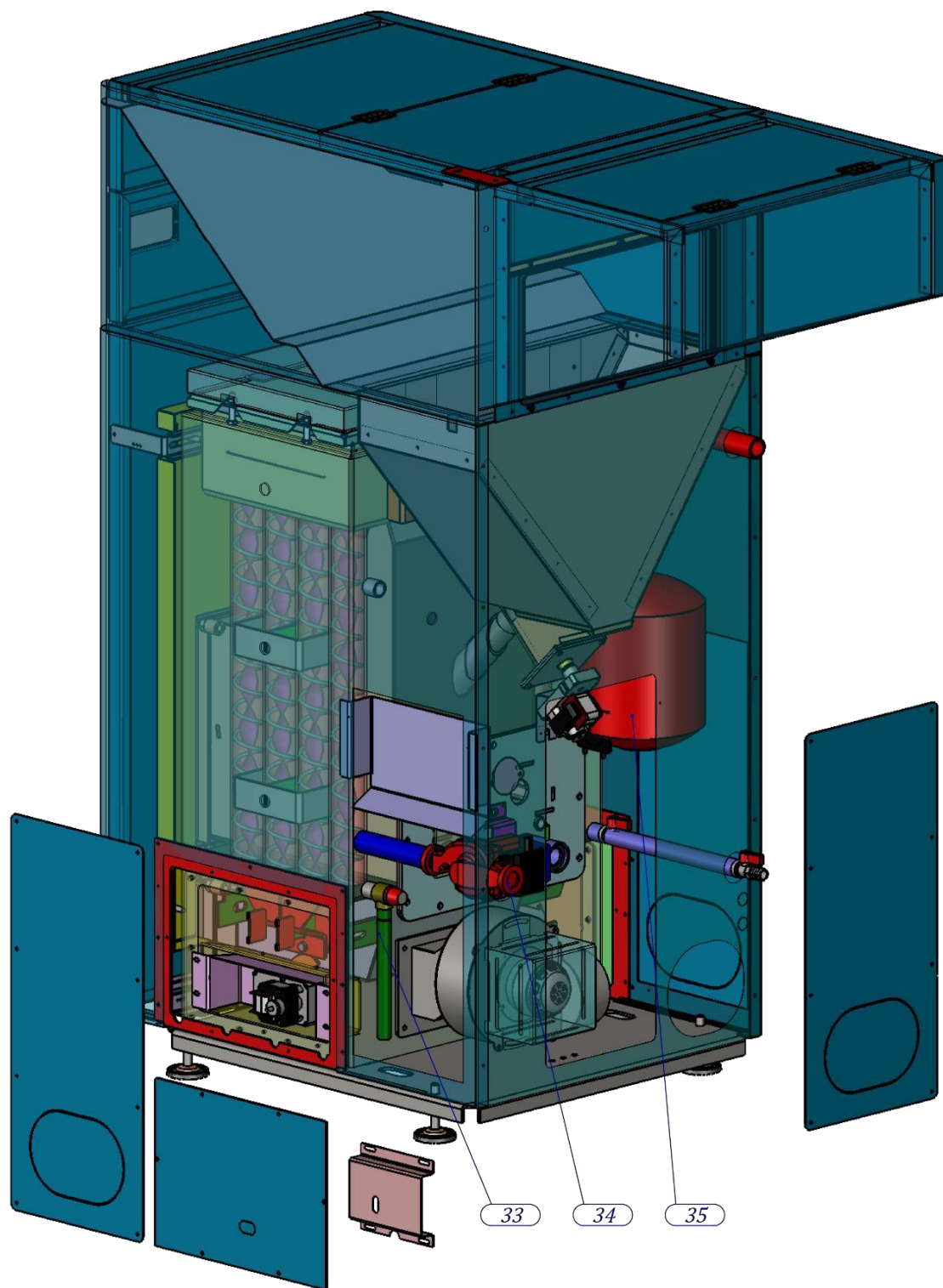


Boiler parts: 1. Outer front door 2. Inner front door (including vermiculite insulation) 3. Lower inner door 4. Ash concentration area (that falls from tubulators) 5. Burner ash-tray 6. Pellet doser 7. Burner 8. Small outer door with regulation interface (touch-screen) 9. Auxiliary opening for flue gas output 10. Heating chamber cover with insulation 11. Upper front cover with logo 12. Upper lateral cover 13. Slope of the pellet storage 14. Movable cover of the pellet storage 15. Fixed part of the pellet storage cover 16. Hinges of the pellet storage opening cover



Boiler parts from the back side: 17. Upper back cover 18. Back cover 19. Back cover for service access 20. Pellet storage – passage part 21. Flow line 22. Return line 23. Boiler sensor 24. Pellet-feeding electromotor 25. Fill / Drain tap 26. Flue gas fan 27. Flue gas sensor 30. Opening for electrical cables 31. Boiler basement 32. Adaptable legs





Additional built-in equipment : 33. Circulation pump 34. Safety valve 35. Expansion vessel

### 3 Recommendations for boiler shipment and storage

#### 3.1 Delivery form

This boiler is transported with its housing already mounted. Only the extension of the pellet storage is left to mounted on spot, it is wrapped and packed on top of the boiler.





Make sure product is during transport always placed in its vertical position.



Turning boiler upside-down can seriously damage the unit.



It is forbidden to stack boilers.



Boiler can be stored only in closed area without atmospheric influence. Wet cannot exceed 80%, room temperature should be between 0°C and 40°C.



While unpacking make sure if the paint is scratched somewhere, and that all boiler parts are stable and fixed in its place.

### 3.2 Additional parts and documents



Following parts and documents are delivered along the boiler:

- A cleaning kit
- Warranty and this manual
- Energy efficiency label
- Boiler regulation (part of the boiler)
- **Fill / Drain tap** valve inside a small bag along with the extension tube
- Special key to open the lower door of the boiler
- Expansion vessel, circulation pump and safety valve built-in



Following parts are not delivered with the boiler:

- Thermo-manometer and the safety group
- Mixing valve
- Additional boiler room valves and fittings

## 4 Introductory notes



The end user must strictly follow the guidelines prescribed in this manual. On the contrary, the warranty will not be recognized.



Only permitted fuel for this boiler is wood pellet, EN 14961, quality A1 or A2, diameter 6mm or 8mm.



The chamber of the boiler is factory tested at test pressure of 4,5 bar.



Pay strict attention that boiler valves are always open while boiler in use.



The boiler has an expansion vessel of **8 litres**. It is recommended to add an additional expansion vessel of at least **18 litres**. Boiler comes with a circulation pump and safety valve inside (beneath the back cover). Air vent is not included.



Don't forget to do a mechanical reset of the circulation pump at start of every heating season.



Clean the boiler on a regular base.



While the boiler is heating up, damp patches and drips may occur in the chimney area and in the hearth. If the pressure in the installation is constant, this phenomenon represents condensation and not a leak from the boiler. The reason for the condensation is a large temperature difference between the flow circuit and the return circuit, and occurs as a consequence of the following errors:

- If the power of the installed boiler exceeds the size of the installations,
- The mixing valve for the protection of the cold part of the boiler has not been installed.
- The boiler door or the ash pan are not correctly positioned (there is more air than necessary).



If the boiler leak is reported to the repair team and it is condensation, the team's visit will be invoiced.



An expert should be entrusted for the planning and construction of the heating system.



**In the case of an incorrectly planned system or the the incorrect installation of the system, which can again lead to an incorrect operation of the boiler, the complete liability for the material damage and new costs arising are to be covered by the person who was entrusted with the mounting of the central heating system, and not by the boiler manufacturer, sales representative or seller.**



Initial operation of the boiler is only to be performed by an authorized person (service) and additional fee applies (not in the price of the boiler).

## 5 Safety remarks



While in use, some parts of the boiler may be hot. Don't touch the boiler without appropriate hand protection against heat.



If some parts of the boiler occur to be damaged it is strictly forbidden to continue using the boiler.



Do not touch electrical cables with wet hands.



Electric connections must be made according to 73/23 CEE i 93/98 CEE and properly dimensioned.

## 6 Boiler installation

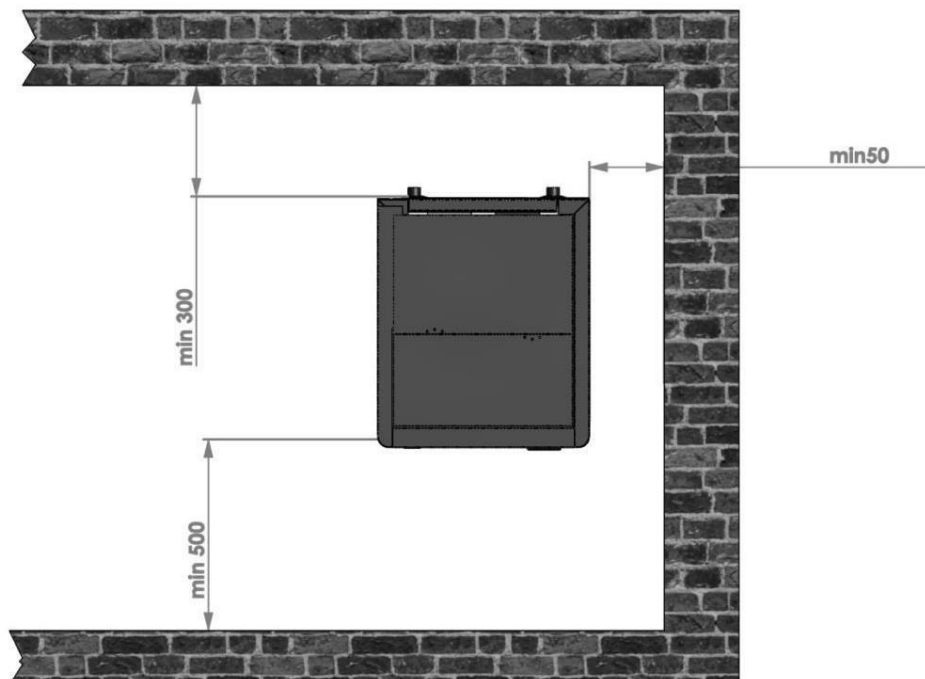
### 6.1 Boiler room



Room where boiler is placed, must possess ventilation windows, minimum surface area of window is given by equation:

$$A (cm^2) = 6,02 \cdot P (KW)$$

where **P** represents nominal power of the **KW**.





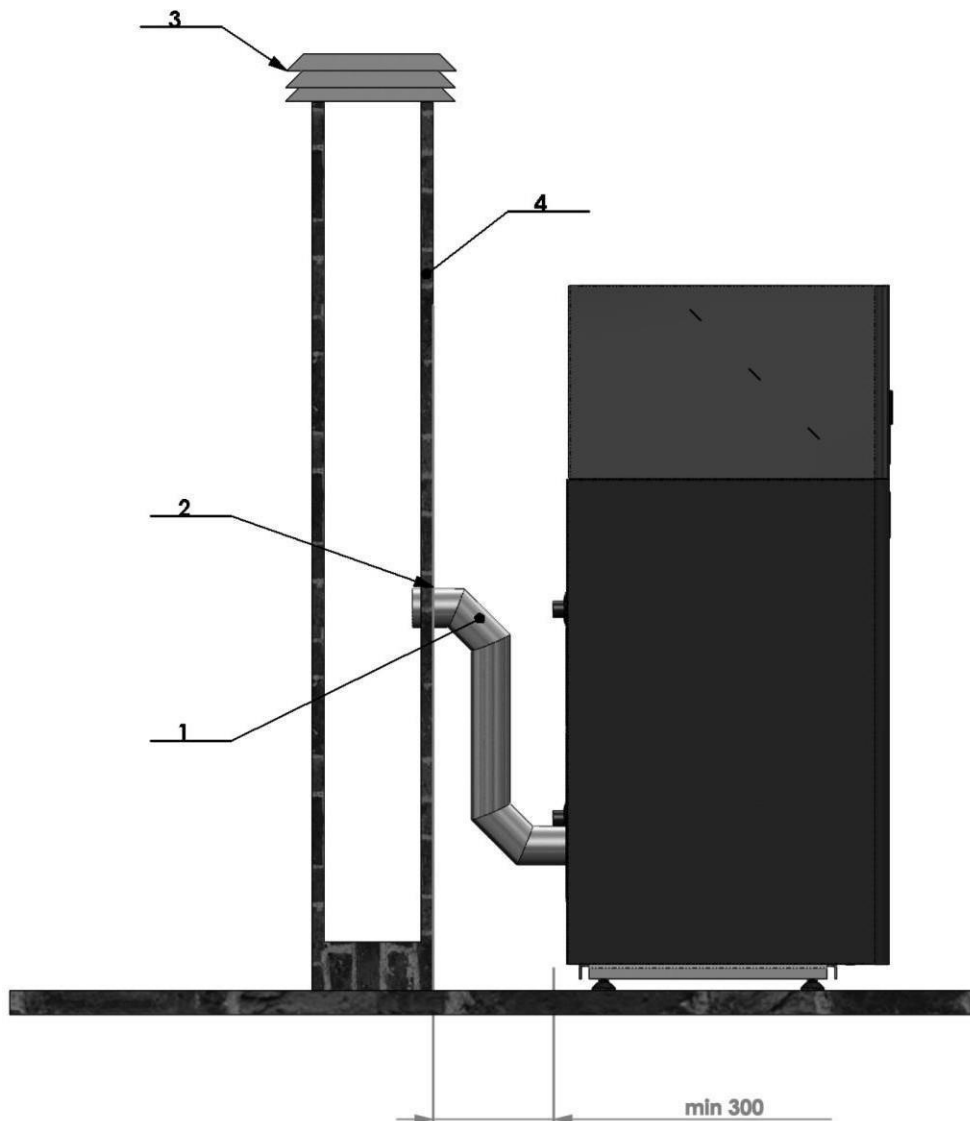
Boiler basement must be stable and made of fireproof material.

## 6.2 Connecting to the chimney

**B-Smart** is a boiler with natural draught so it requires a chimney not just to transport flue gases out of the boiler but also to create negative pressure necessary for boiler function. Boiler requires pressure drop of **10-14 Pa**.

Chimney is to be connected as depicted below and it is necessary to clean the chimney 1-2 per year.

To reduce heat loss and due to ecological and safety factors, it is essential to have a vertical chimney connected according to the picture and, if conditions allow, the chimney must be of quality (made with ceramic segments thick up to 5 cm). Clean the chimney regularly, at least once or twice a year. The maximum number of elbows between the boiler and the chimney is **2**.



1) Flue pipe 2) Gasket 3) Fireproof protection cap 4) Chimney diameter not greater than 200x200mm with max height 5-6 meters.

### 6.3 Filling the system with water

Filling the system with water is to be done using the tap valve connection of the boiler.



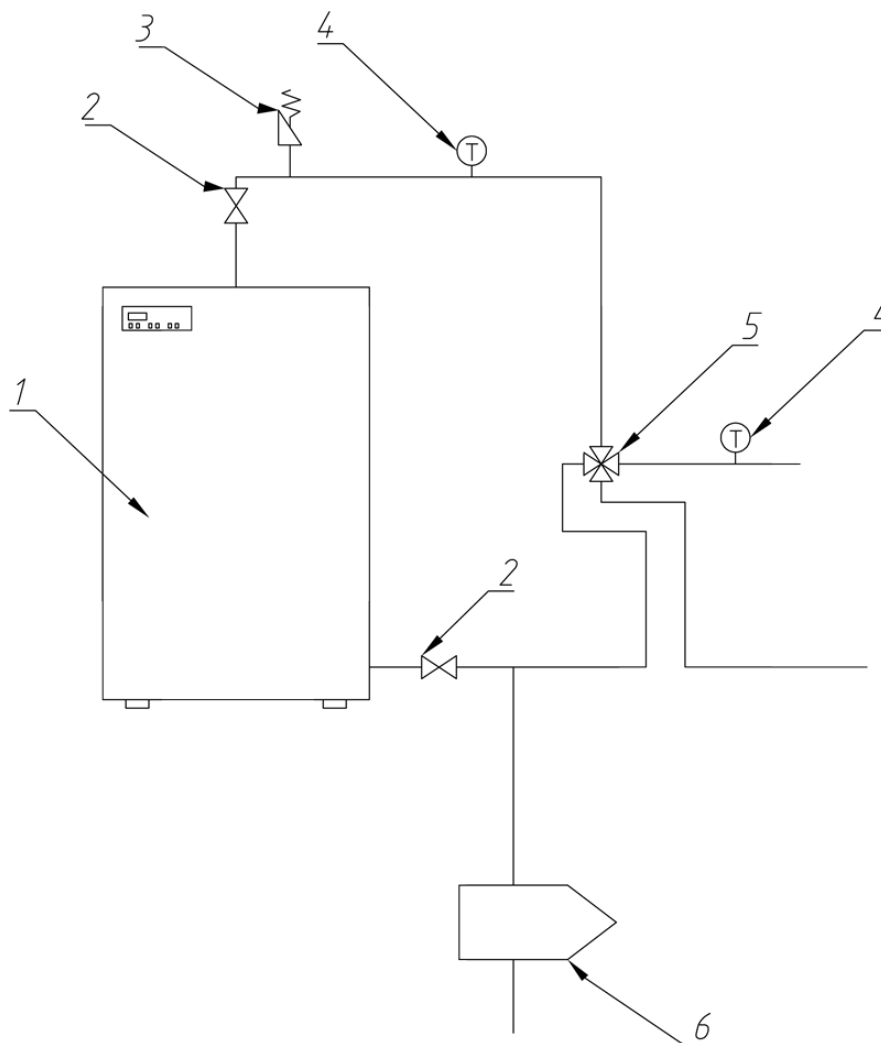
When filling the system with water take care that no air remains in the boiler.

The filling process is done when no air is coming out through automatic air vent and pressure gauge is showing the value between 1,5 and 2,5 bar (closed systems). Air vent is to be set at the highest point of the (closed) central heating system. If the pressure is below 1,5 bar the filling process must be repeated. For open systems, working pressure depends on the overall height of the system and the open expansion vessel (1 bar for each 10 m is an estimate).

After the filling process is done, it is obligatory to close the drain tap valve, close the water supply to the water-filling pipe and detach the water-filling pipe.

### 6.4 Connecting the boiler with a closed central heating system with circulation pump on the return line

Recommended connection scheme is depicted below:



1) Boiler 2) Boiler valve 3) Automatic air vent 4) Thermo-manometer 5) Mix valve 6) Dirt catcher



The safety valve (with preset 2,5 bar threshold) is already mounted on the backside of the boiler.



It is essential to have a thermometer and a manometer installed to the system (Position 4 on upper scheme)



It is recommended to install a dirt catcher and also an anticondensation valve on the return line. (3-way mixing valve).



Additional closed expansion vessel (position 7) should be mounted close to the boiler. Vessel must be positioned so that its membrane is in horizontal position. The volume of the expansion vessel should be around **18 lit**.



Please read the circulation pump manual before placing it into operation. Please note air vent is not pre-mounted within the boiler, it should be installed (Position 3) additionally.

## 6.5 Installation of temperature relief valve with obligatory filling



The temperature relief valve (as shown below or similar) must be present in the system. The valve must be installed by a qualified technician in accordance with the instructions given in the manual from the producer of the valve.



In the event of a rise in the temperature of the water in the boiler for any reason and if the critical value of **95-100 C** is reached, the role of this valve is to open the supply channel of the cold water from the network and directly cool the water in the boiler, thus preventing a potential breakdown.

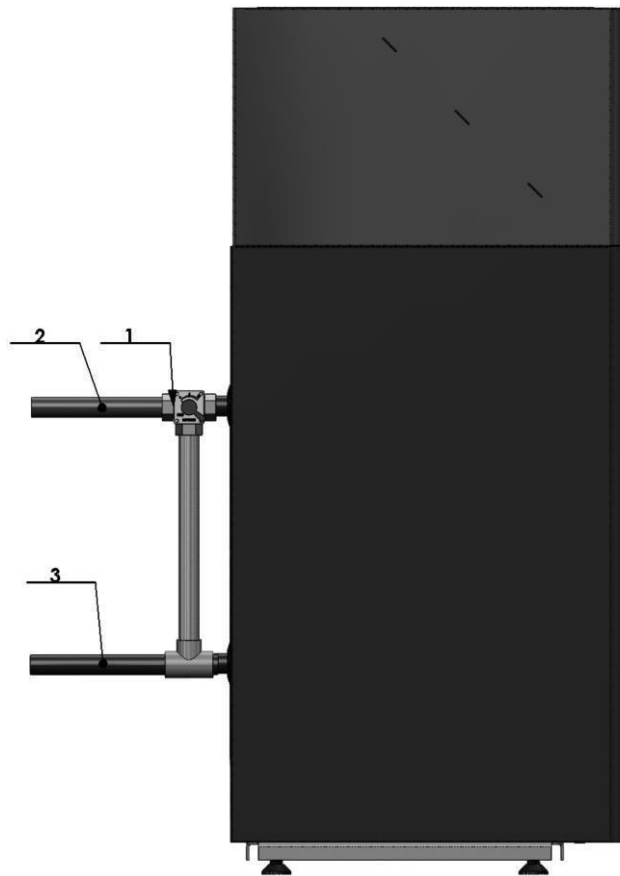
When the set temperature is reached, the cold water valve and the drain open simultaneously until the temperature drops to the marked value, after which the valves are closed simultaneously.

The method of installing the thermal exhaust valve is described in detail in the manufacturer's instructions that are accompanying the product.

## 7 Boiler return-line protection against condensation

It often happens that water runs under the boiler and creates a small puddle. This phenomenon does not always mean that the boiler is leaking. In most cases, it is a bad installation of the boiler, a bad selection of the power (size) of the boiler, or a bad chimney, which leads to the creation of condensation of the boiler. This is not pure water, but “condensate”, which may contain, depending on the fuel used, substances harmful to health. This water can cause boiler corrosion and greatly reduces the life of the boiler.

If the chosen boiler corresponds to the calculated heating surface, the problem of condensation can be avoided with protection of the cold part of the boiler by installing a designated device called the mixing valve:



1. 3-way mixing valve 2. Circulation pump 3. Thermostate

The function of the mixing valve is to immediately transfer a part of hot water to the cold part of the boiler in order to reduce the temperature difference between flow and return line. Indeed, low temperature corrosion occurs when the temperature of the water in the return circuit of the heating is below the point of creation of condensation by the flue gases. If this is the case, then the condensation of water vapor in the flue gases occurs, which creates condensates, i.e. the water flowing from the boiler.



**Installation of the mixing valve is obligatory.**

## 8 Boiler cleaning and maintenance



The boiler has an automatic burner ash removal system, i.e. the bottom of the burner is rotating, so that ashes are falling down into designated area. Regular cleaning cycle of this product is extended, yet still necessary!



Regular maintenance and cleaning of pellet boilers is necessary to ensure product functionality and long-life operation. Boiler cleaning consists of following operations:

1. Emptying ash-trail of the boiler
2. Removing ash from the bottom part of the boiler
3. Cleaning of burner pot
4. Cleaning of the holder of burner pot





Occasional (seasonal) cleaning consists of regular weekly cleaning plus detailed cleaning of the heating chamber from above on the end of season. It is recommended to provide a vacuum ash-cleaner for faster and detailed cleaning. If not, a cleaning kit delivered with the boiler can do the job too.



How often is the boiler cleaned? This depends exclusively on the quality of the pellets. A weekly cleaning of the boiler is essential and the detailed cleaning at the end of the heating season. The automatic ash removal system makes the boiler more resistant to poor quality pellets and guarantees reduced cleaning of the boiler.



If poor quality pellets are used which contain impurities of inorganic origin (earth, sand), these will accumulate over time in the form of “silicone” layers. In this case, the boiler will not work properly.



Lack of cleaning of the boiler leads to rapid degradation, i.e. corrosion of certain parts of the boiler, which leads to poor combustion and heat loss.



This boiler is intended for use with clean wood pellets without additives. The combustion will be of better quality and the life of the burner will be longer.



Before accessing cleaning, the boiler must be switched off and all parts of the boiler must be completely cold.



Use of gloves is obligatory for all operations described.

## 8.1 Weekly boiler cleaning



Open the big front door.



Using boiler key, open the chamber door.



Release the removable, ring part of the burner.



**CAUTION : Only when boiler is cold.**



Clean the burner from ashes.



Clean the ashes in the area around the burner.



The heating chamber must be free of ashes when finished.



Put back the burner ring.



Open the lowest part of the boiler (release the screws).



Clean the area from ashes



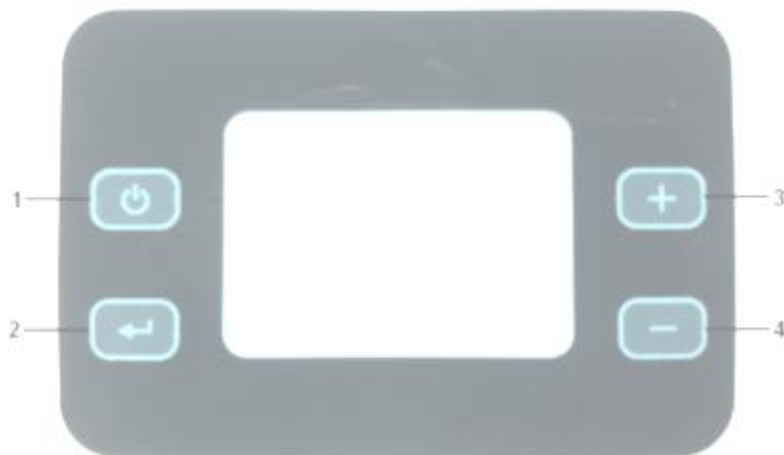
If you are not in possession of vacuum ash cleaner all operations can be done with manual kit submitted with the boiler.

## 8.2 Seasonal cleaning of the boiler

Seasonal cleaning consists of two parts. First part is weekly cleaning described in the chapters above, that has to be done also at the end of the heating season. On top of that, on the end of every season, the upper part of the boiler chamber must be open and cleaned. This operation can be made by service technician (additional fee applies).

# 9. OPERATING INSTRUCTIONS

## 9.1 CONTROL PANEL



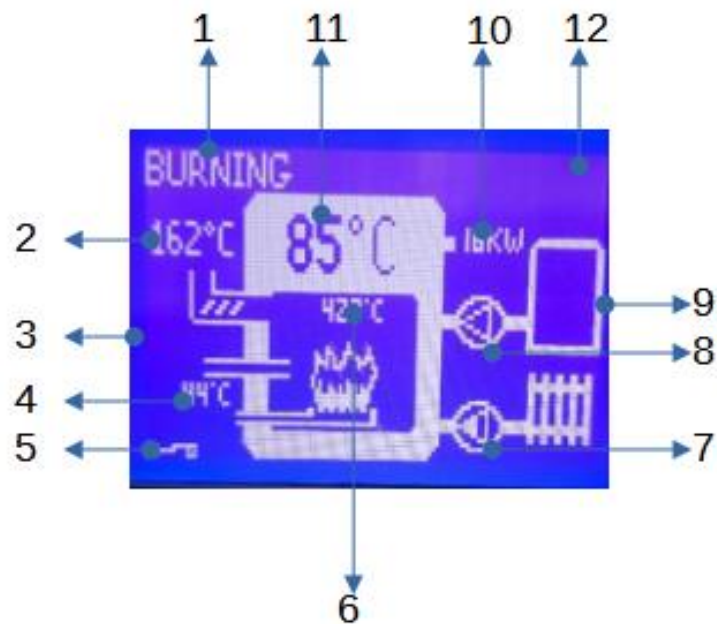
1 Switching on - Ignition: hold down for 3s,  
Power off - extinguish: hold down for 3 s,  
Exit the menu: short press 0.5s

2. Confirm key (enter)

3. Raise value button (+)

4. Value decrease button (-)

## 9.2 DESCRIPTION OF THE SYMBOL ON THE DISPLAY



1. Boiler condition
- 2 Flue gas temperature
3. Pellet dosage correction
4. Dispenser temperature
5. Room thermostat: off, on
6. Temperature in the firebox
7. Boiler pump
8. Water Heater Pump
9. Water temperature in the water heater
10. Current power of the boiler
11. The temperature of the water in the boiler
12. WIFI signal

## 9.3 ALARMS

Message : 1 Ignition error

- Wait for the shutdown to complete
- Remove the burner
- Shake out the contents of the burner
- Return the burner to the boiler
- Check the amount of fuel in the tank

Message : 2 Extinguished flame

- Wait for the shutdown to complete
- Remove the burner
- Shake out the contents of the burner
- Return the burner to the boiler
- Check the amount of fuel in the tank

Alarm: 3 Water probe

Alarm: 4 Flue gas probe

Alarm: 5 Dispenser temperature probe

Alarm: 6 Dispenser overheated

Alarm: 9 Overheated boiler

Alarm: 10 Safety thermostat

Alarm: 12 Communication error

Alarm: 16 Pressure switch – insufficient pressure in the boiler

**THANK YOU FOR READING THIS DOCUMENT CAREFULLY - IF YOU HAVE  
ADDITIONAL QUESTIONS FEEL FREE TO CONTACT US OR YOUR LOCAL  
RESELLER.**



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