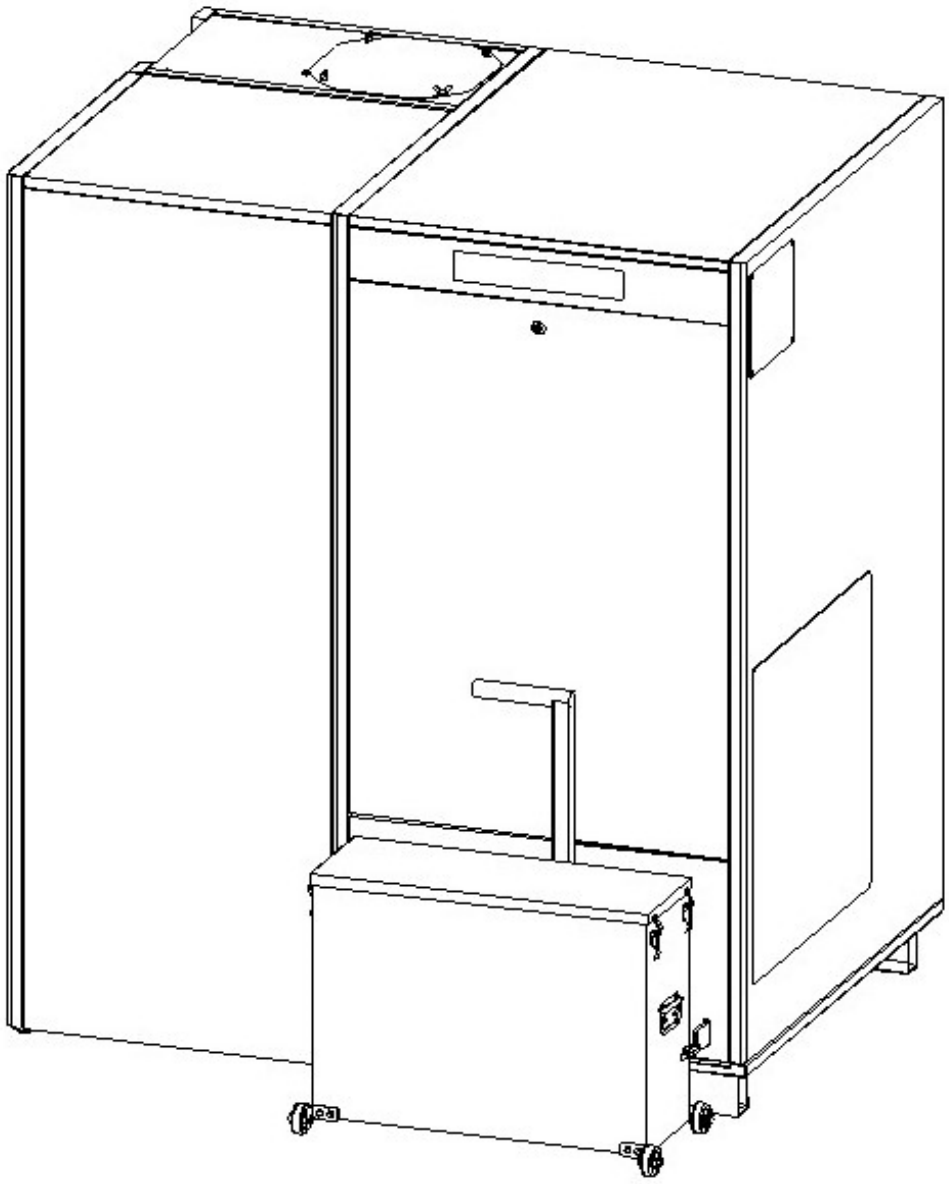
DOMUSA TEKNIK

BIOCLASS iC 150

Biomass boiler



EN | INSTALLATION AND OPERATING INSTRUCTIONS

Thank you for choosing a **DOMUSA TEKNIK** heating boiler. You have chosen the **BIOCLASS iC 150** model from the **DOMUSA TEKNIK** product line. With a suitable hydraulic installation and with wood pellets for fuel, this boiler will provide the ideal level of comfort for your facilities.

This document constitutes an essential part of the product and must be delivered to the end user. It is advisable to carefully read the warnings and advice contained in this manual, as they provide important information regarding the safety of the installation, as well as use and maintenance.

These boilers must be installed by qualified personnel only, in accordance with the legislation in force and following the manufacturer's instructions.

Start-up of these boilers and any maintenance operations must only be carried out by **DOMUSA TEKNIK**'s Authorised Technical Assistance Services..

Incorrect installation of these boilers could result in damage to people, animals or property, and the manufacturer will hold no liability in such cases.

DOMUSA TEKNIK, in compliance with item 1 of the first additional provision of Act 11/1997, hereby informs that the person in charge of delivering the container waste or used container, for its correct environmental management, will be the final holder of the product (Article 18.1 of Royal Decree 782/1998). At the end of its useful life, the product must be taken to a selected collection point for electrical and electronic equipment or must be returned to the distributor at the time of purchasing a new equivalent appliance. For more detailed information on the collection diagrams available, please contact either the collection facilities of the local authority or the distributor where the purchase was made.

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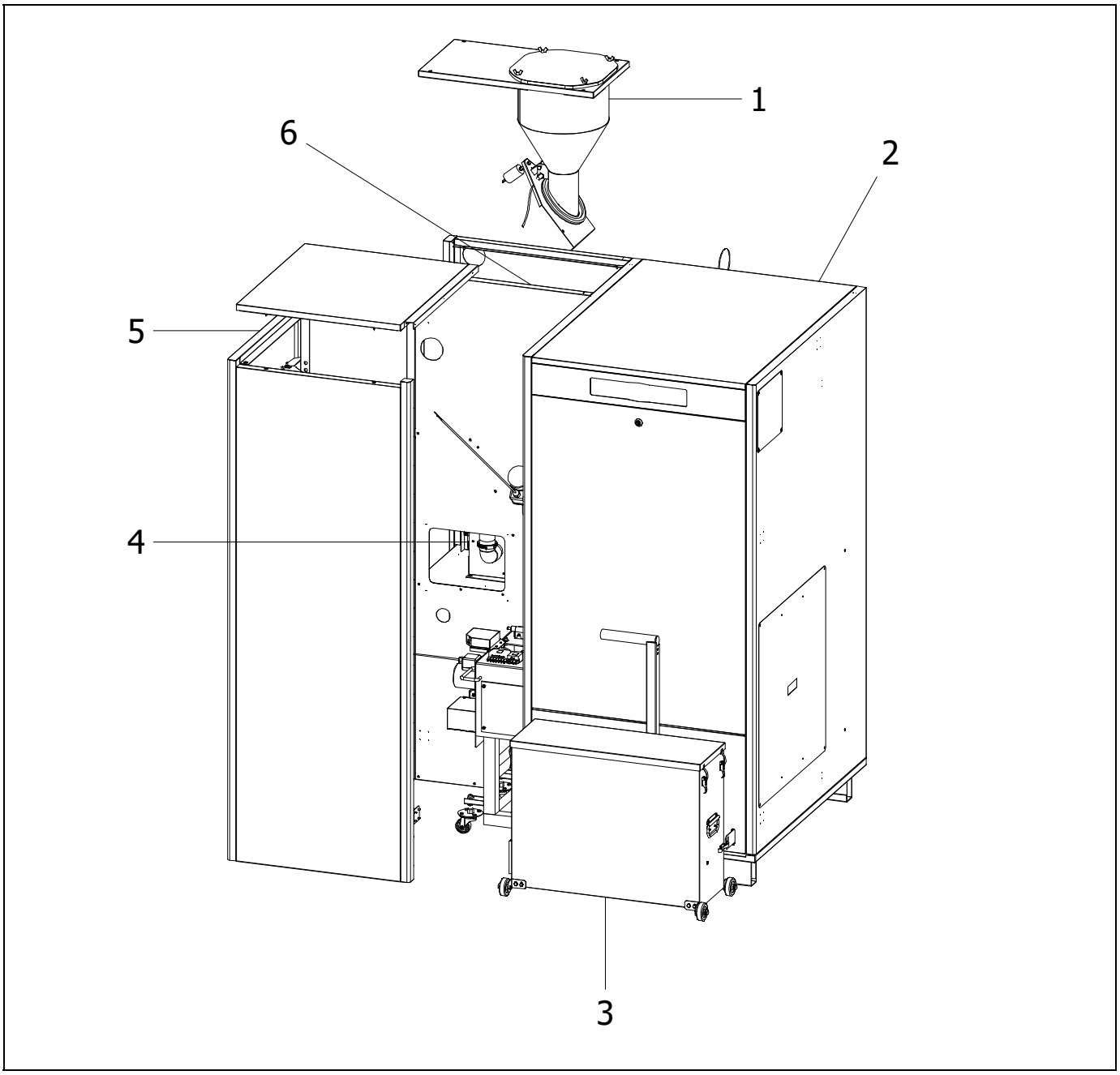


1. Pellets suction pot.

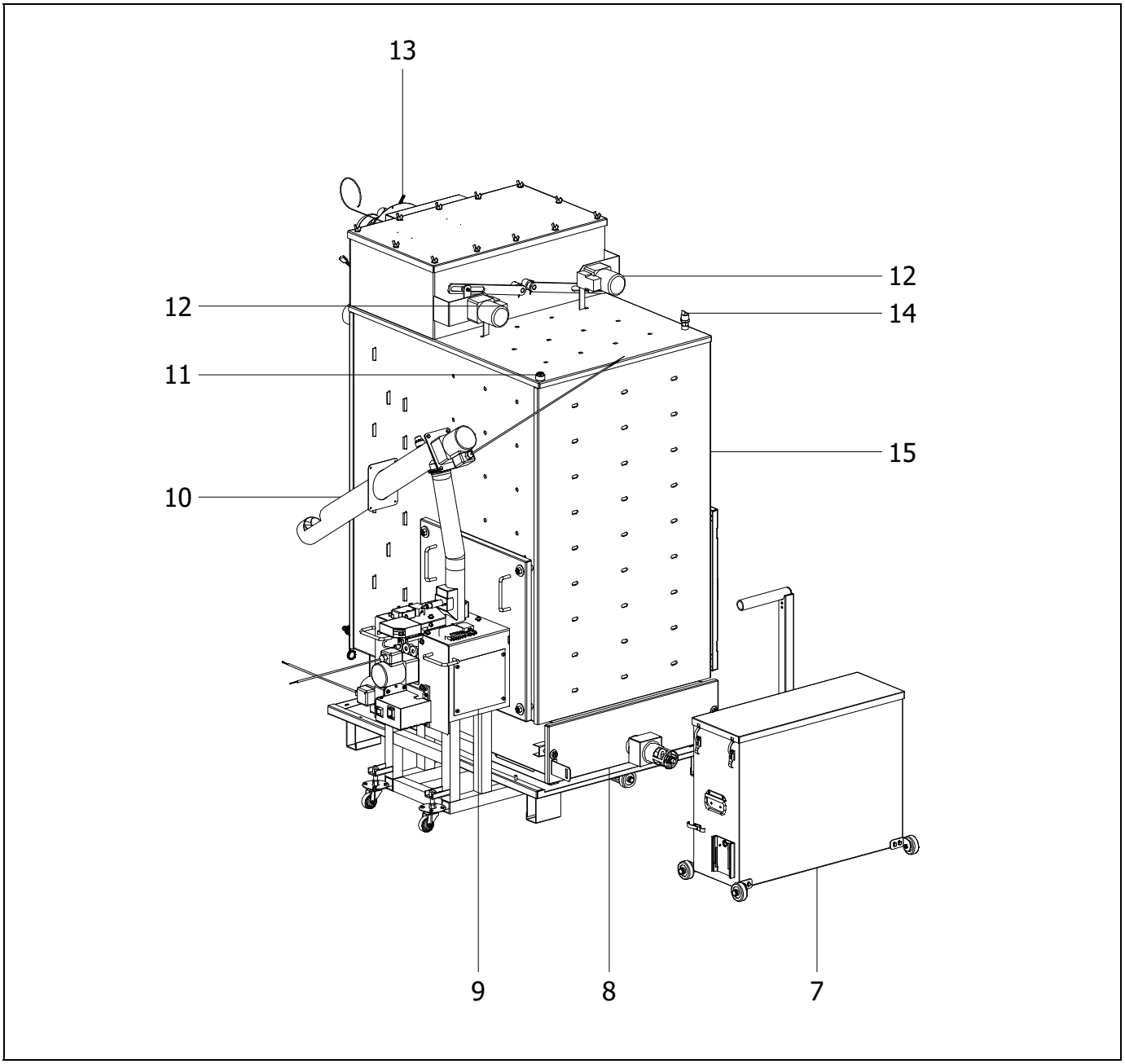
2. BioClass iC 150 Bioler.

3. Compressor ash deposit.

4. Pellet suction turbine.

5. Removable cover.

6. Pellet reserve tank.



7. Exterior ash drawer.

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9. Burner.

10. Fuel feeder.

11. Bulb sheath.

12. Vent cleaning device.

13. Fan.

14. Water pressure sensor.

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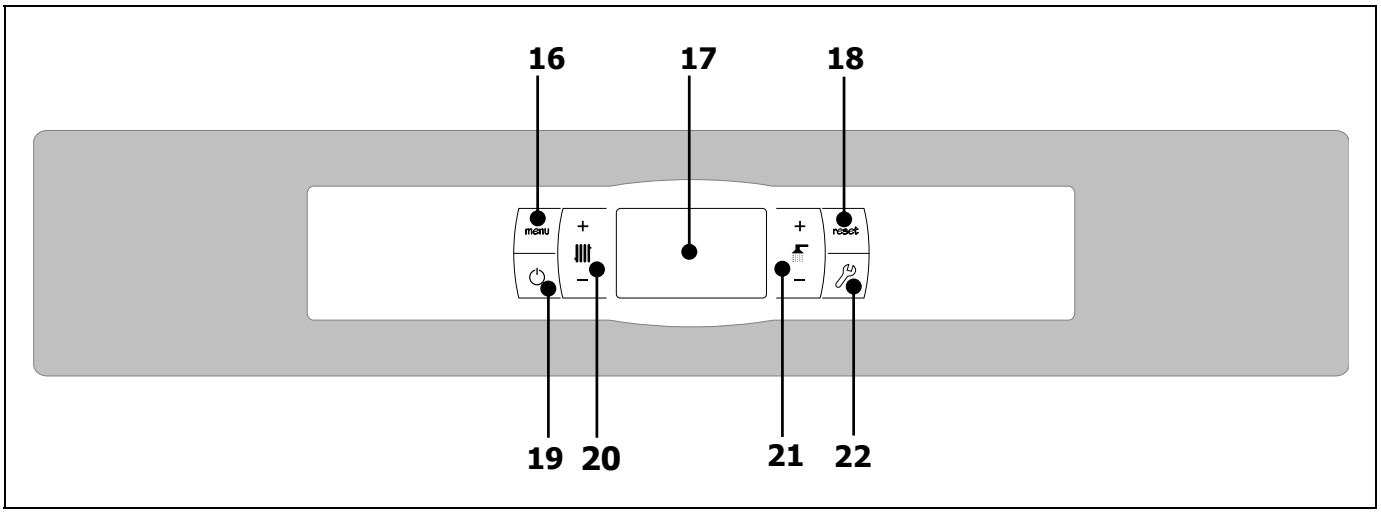
control components



16. MENU touch button:

This button is used to access and browse the "User Menu".

17. Digital display:

This is the main boiler functioning display, on which all the operating information, settings and values appear. This display is also used to access the appliance's user and service settings. In standard operating mode (default display), the actual boiler temperature is shown. If malfunction occurs, an alarm code will appear on the digital display instead of the temperature.

18. RESET touch button:

When the boiler is in lock-out mode, the RESET button is pressed to reset the lock-out and restore "Standard" functioning. If you are modifying any of the settings or browsing the menus, you may press the RESET button to exit the menu WITHOUT SAVING and return to the previous menu level.

19. ON touch button:

This button switches the boiler on and off.

20. Touch button for selecting buffer tank or hydraulic needle temperature:

With this button we can select the buffer tank or hydraulic needle temperature we require.

21. Touch button for selecting the boiler operating mode (winter/summer):

With this button we can select the boiler's operating mode.

22. SETTINGS touch button.

This button is used to access and browse the "Settings Menu". By pressing this button we can access the various modifiable parameters for adjustment.

2 INSTALLATION INSTRUCTIONS

The boiler must be installed by personnel authorised by the Ministry of Industry, in compliance with the applicable laws and regulations.

This boiler is suitable for heating water to a temperature below boiling point at atmospheric pressure. It must be connected to a heating installation and/or a domestic hot water distribution network, which must always be compatible with its performance and power.

This appliance should only be used for the purpose for which it has been expressly designed. Any other use should be considered improper and, therefore, hazardous. The manufacturer shall not be considered liable under any circumstances for damage caused by unsuitable, erroneous or improper use.

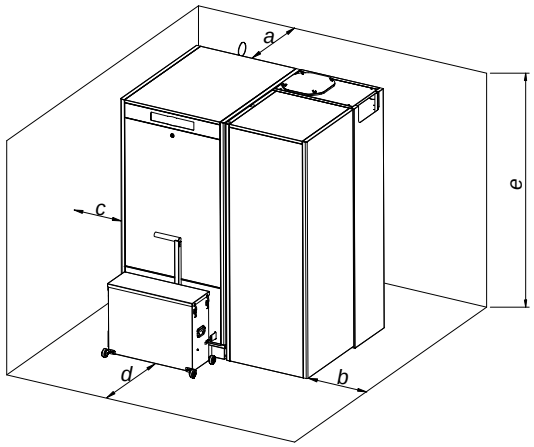
Remove all the packaging and check that the contents are complete. In case of doubt, do not use the boiler. Contact your supplier. The packaging components must be kept out of the reach of children, as they constitute potential sources of danger.

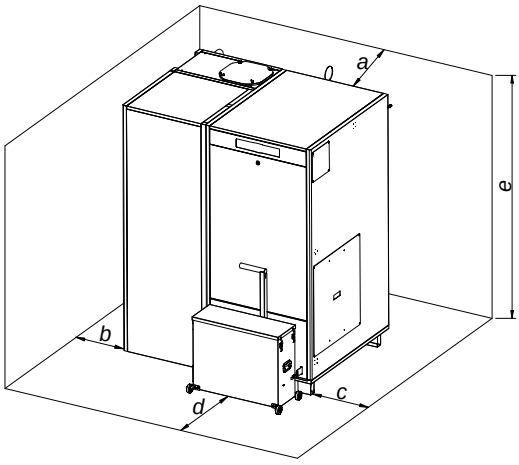
When you no longer wish to use the boiler, disable the parts that could be a potential source of hazard.

2.1 Location

The boiler must be installed in a sufficiently ventilated site, away from humidity. The boiler must be positioned in such a way that does not obstruct the grilles on the site. All the boiler parts should be easily accessible in such a way that they all maintenance operations can be carried out properly and safely.

It is necessary to respect the minimum distances to the surrounding components.





a= min. 1000 mm.
b= min. 700 mm.
c= min. 700 mm.
d= min. 1200 mm.
e= min. 2500 mm.

2.2 Hydraulic installation

The hydraulic installation should be carried out by qualified personnel, in compliance with the current installation regulation (RITE) and considering the following recommendations:

- **It is obligatory and essential** to install a device for raising the return temperature to prevent any water condensation in the heat exchanger. If this requirement is not complied with, **DOMUSA TEKNIK**'s guarantee of the appliance will automatically be null and void.
- The inside of the installation piping should be thoroughly cleaned before switching on the boiler.
- We recommend inserting cut-off valves between the installation piping and the boiler to simplify maintenance tasks.
- Leave a free space around the boiler for carrying out any maintenance and repair operations.
- Drain valves and suitable devices for correctly bleeding the air from the circuit during the boiler filling stage should be fitted. The boiler has an inlet on its highest part for fitting a drain valve.
- Install all the necessary safety elements in the installation (expansion vessel, safety valve, etc.) to comply with the required installation standards.

2.3 Fuel

The **BIOCLASS iC 150** boiler must be fuelled by **ENplus-A1**, **DIN PLUS** certified wood pellet or equivalent. The DIN PLUS certificate assures that the fuel's humidity levels and calorific value are ideal for optimum boiler functioning. If this requirement is not complied with, **DOMUSA TEKNIK**'s guarantee of the appliance will automatically be null and void.

The following aspects must be taken into account for correct fuel storage:

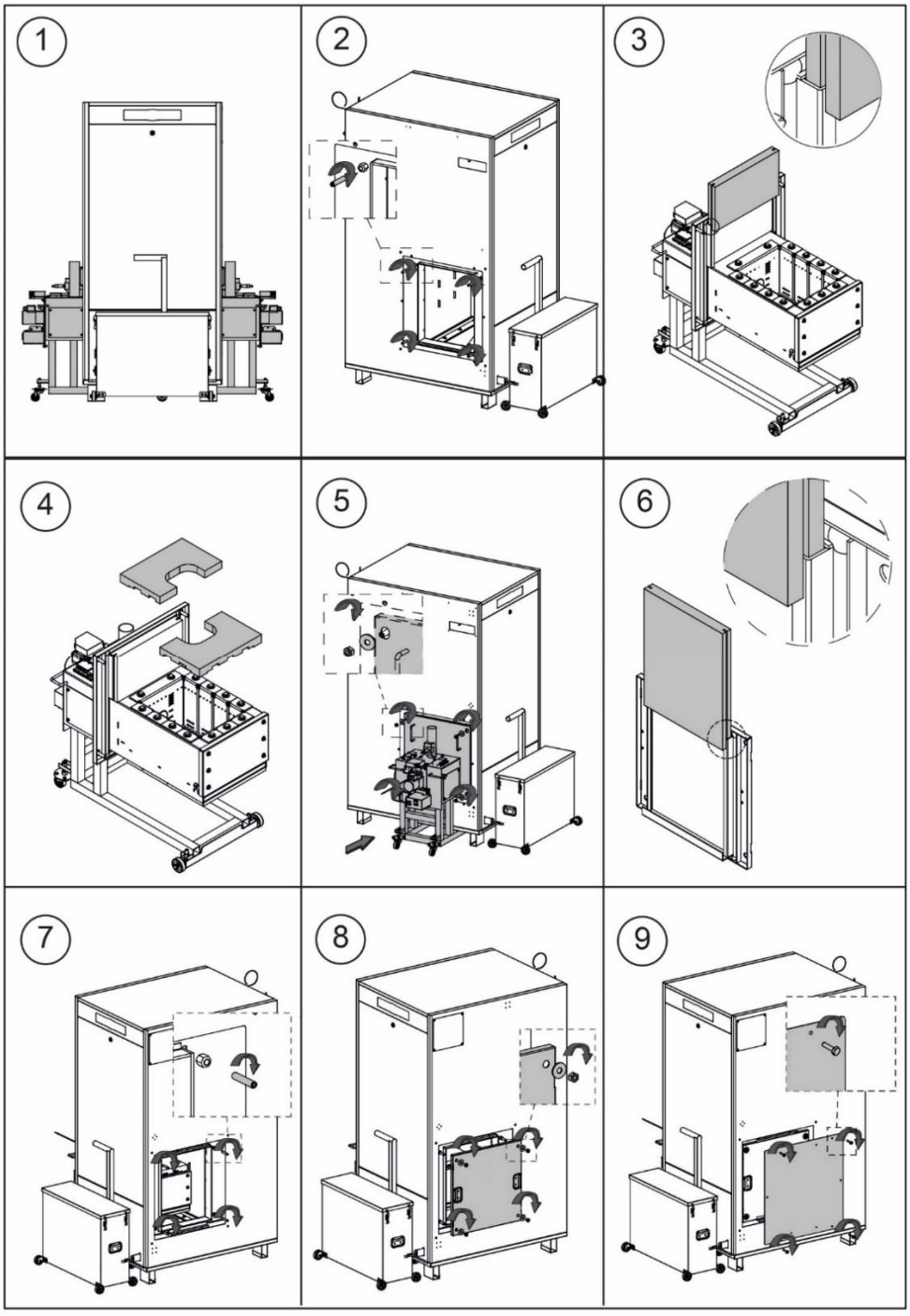
- The wooden pellets must be stored in a room protected from humidity and the weather. It is important to create an air gap around the bags or big-bags of wood pellets to ensure good ventilation. These bags or big-bag must never be stored in direct contact with the floor and/or a wall.
- The wooden pellets must be handled with care, as any handling may damage them.
- The wooden pellets must be visually inspected before use in the boiler to ensure there are no large amounts of dust or crushed pellets, which could cause the boiler to malfunction.

3 MOUNTING THE BOILER

DOMUSA TEKNIK shall supply, along with the boiler, the pellet burner, the reserve tank with the fuel suction system and the ash drawer.

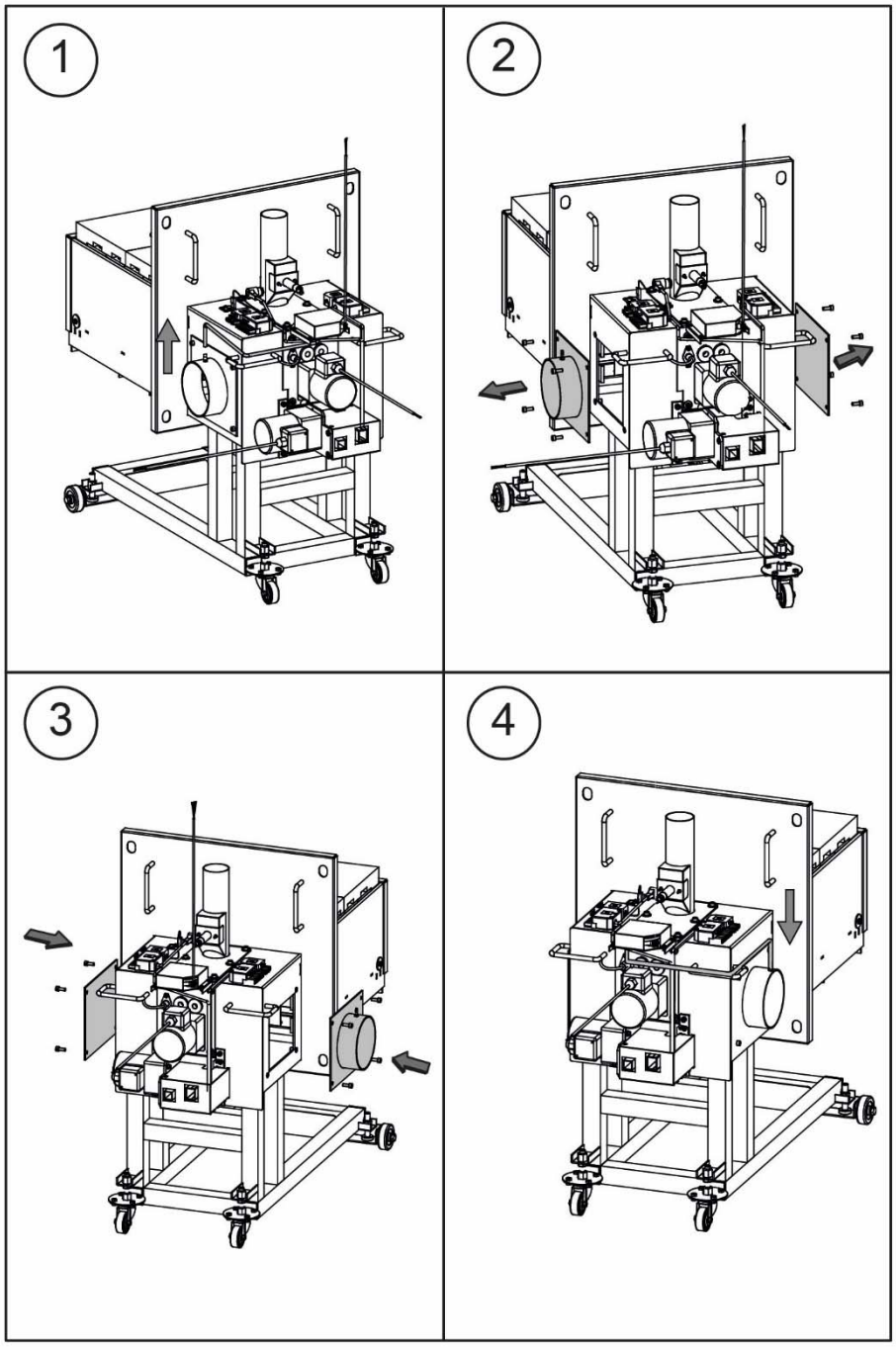
3.1 Mounting the burner

The burner and reserve tank can be mounted on either the left or right side of the boiler.



IMPORTANT: It is essential to obtain a good seal in the join between the burner and the boiler (drawing No. 5) and the maintenance door and the boiler (drawing No. 8).

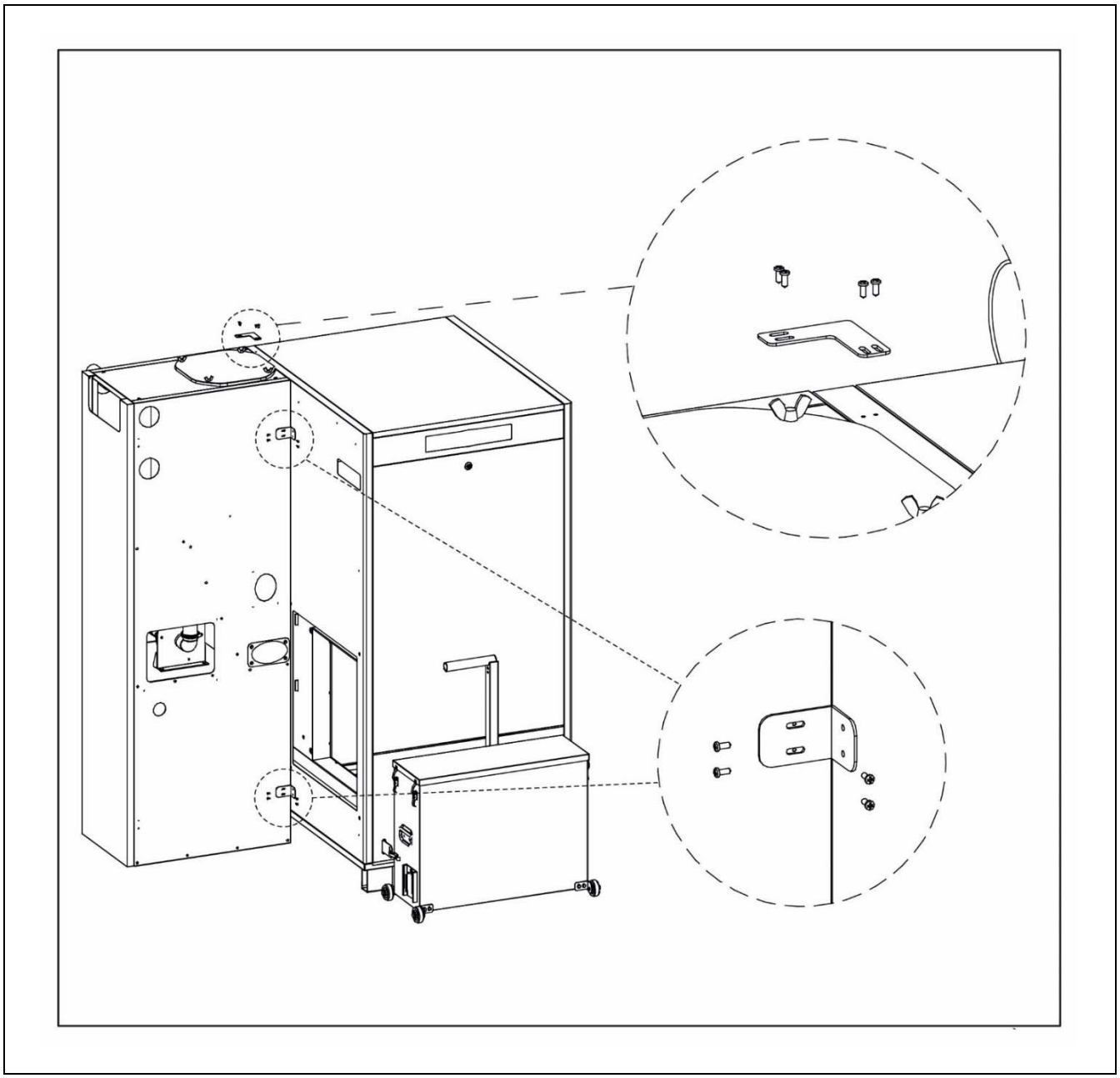
If the burner is installed on the right side of the boiler the air inlet part from the burner must be changed:



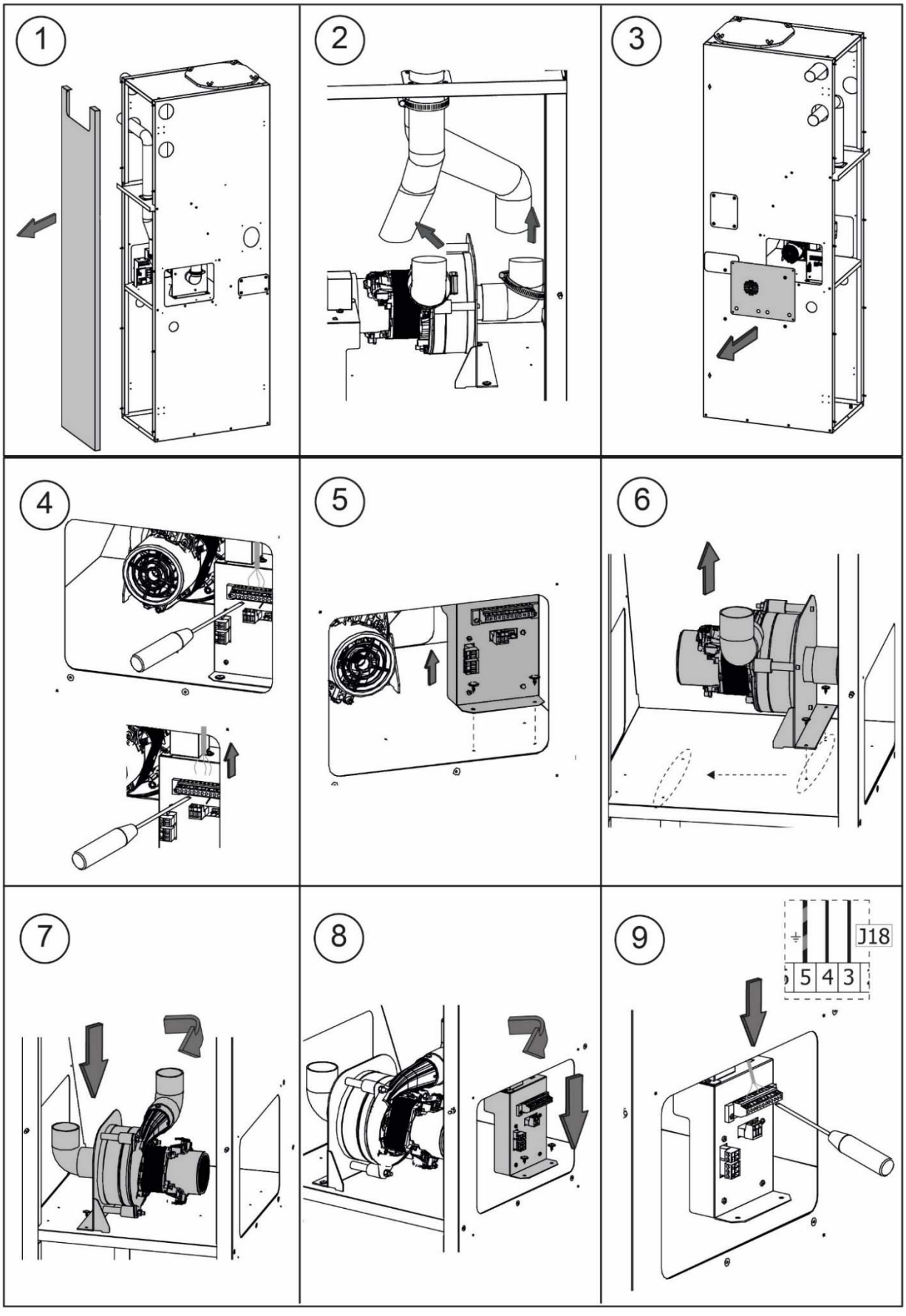
3.2 Mounting the reserve tank and suction system

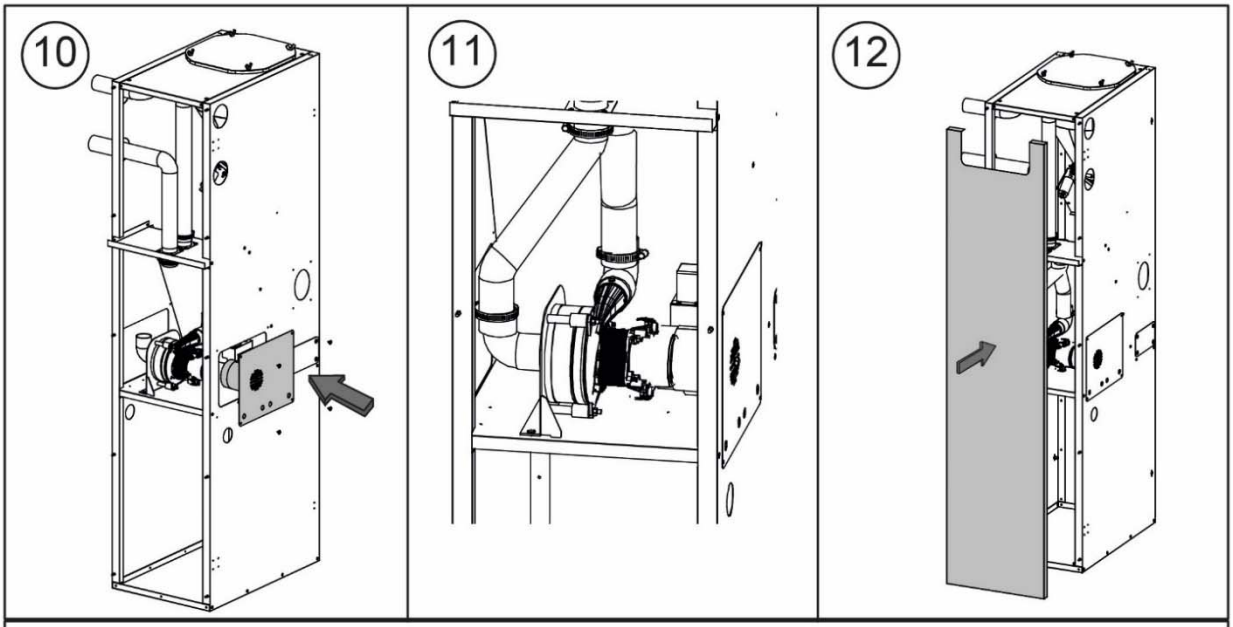
The reserve tank and the pellet suction system is delivered ready for mounting on the left side of the boiler. The mounting of the reserve tank and suction system must be carried out on the same side as the burner.

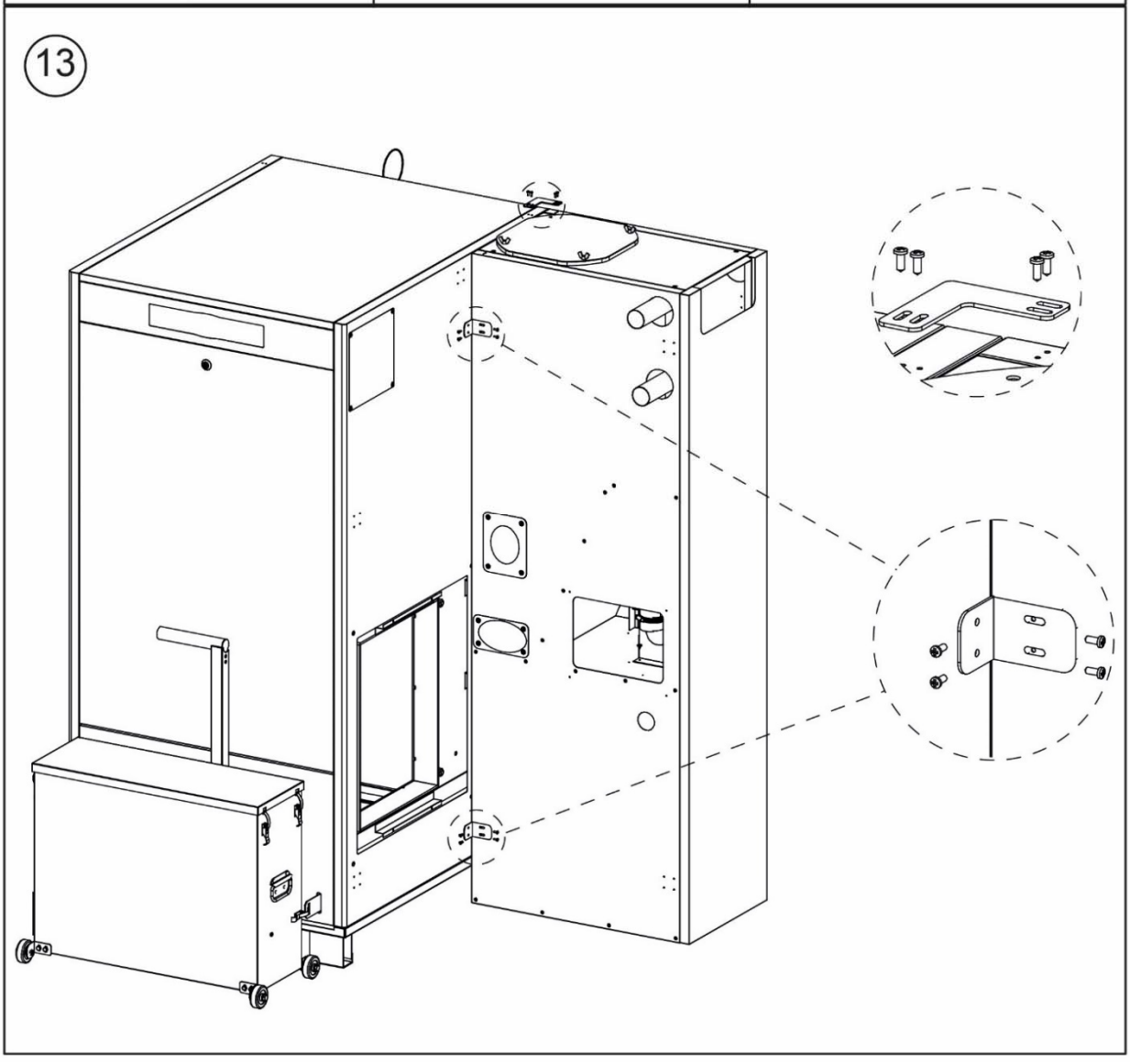
For the correct assembly of the reserve tank on the left side, carefully follow the assembly sequence described below:



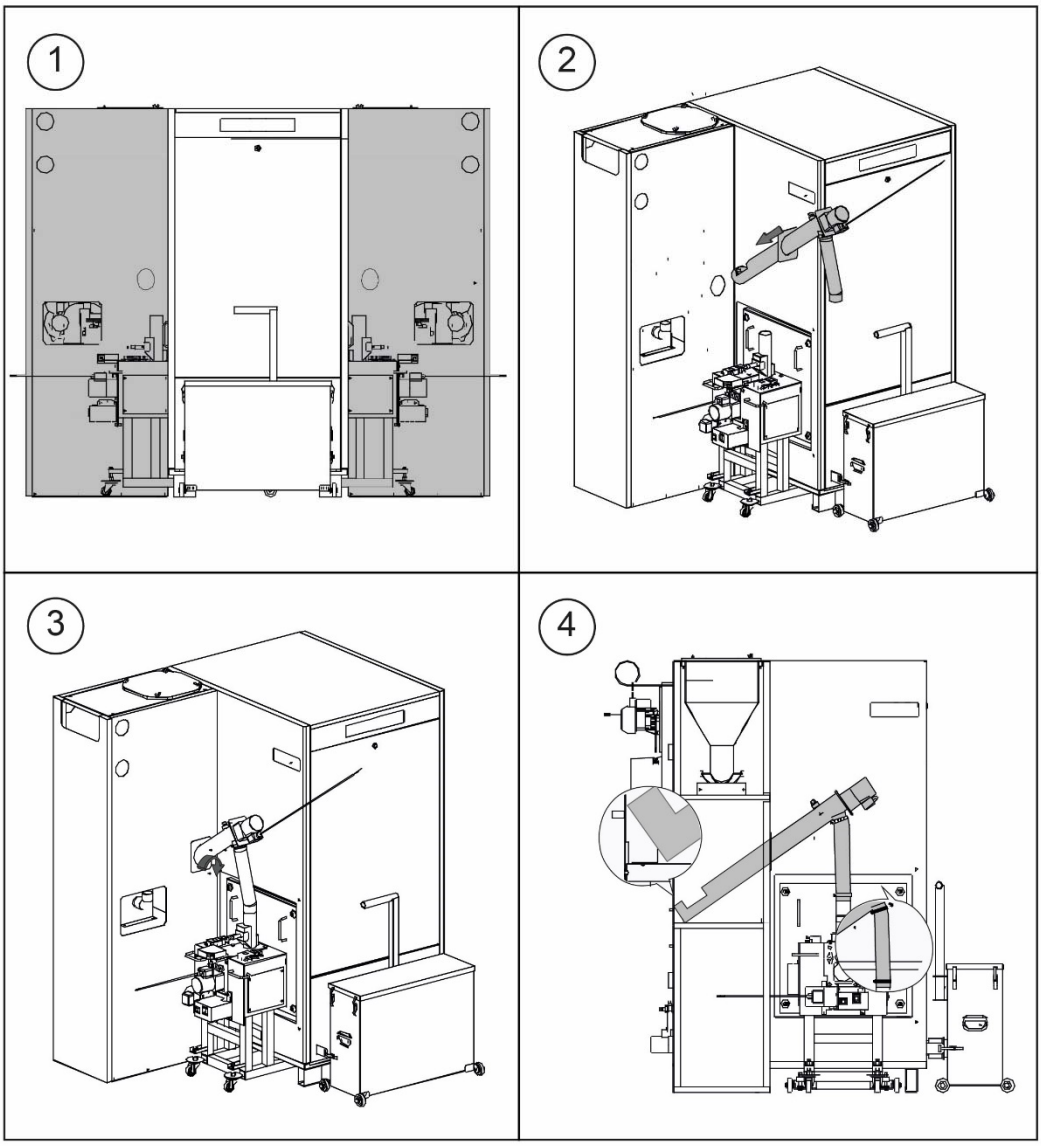
For the correct assembly of the reserve tank on the left side, carefully follow the assembly sequence described below:



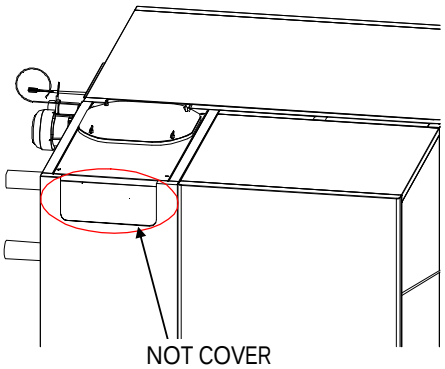

10
11
12


13

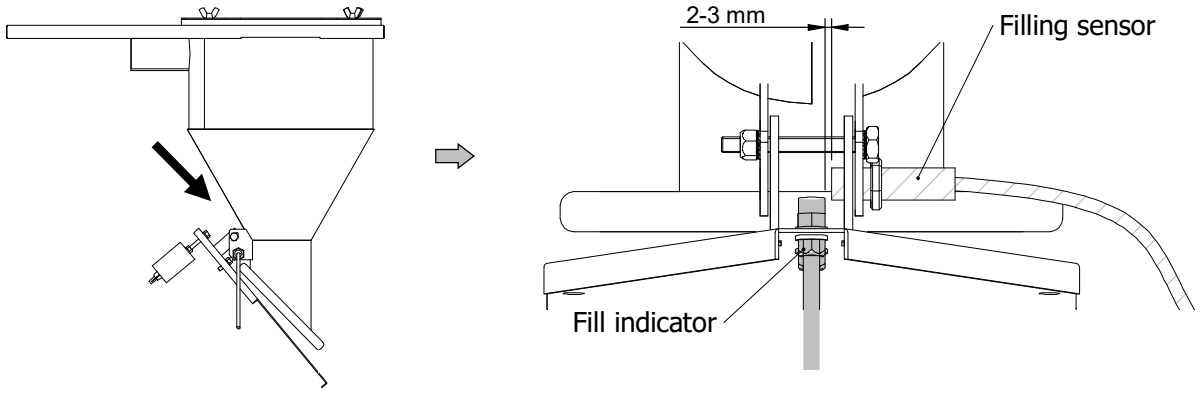
The pellet feeder must be assembled by following the instructions below:



There is a ventilation slot on the rear of the reserve tank to prevent a vacuum from being created inside it. Do not cover this slot, and keep it free from any obstacles that could block it.



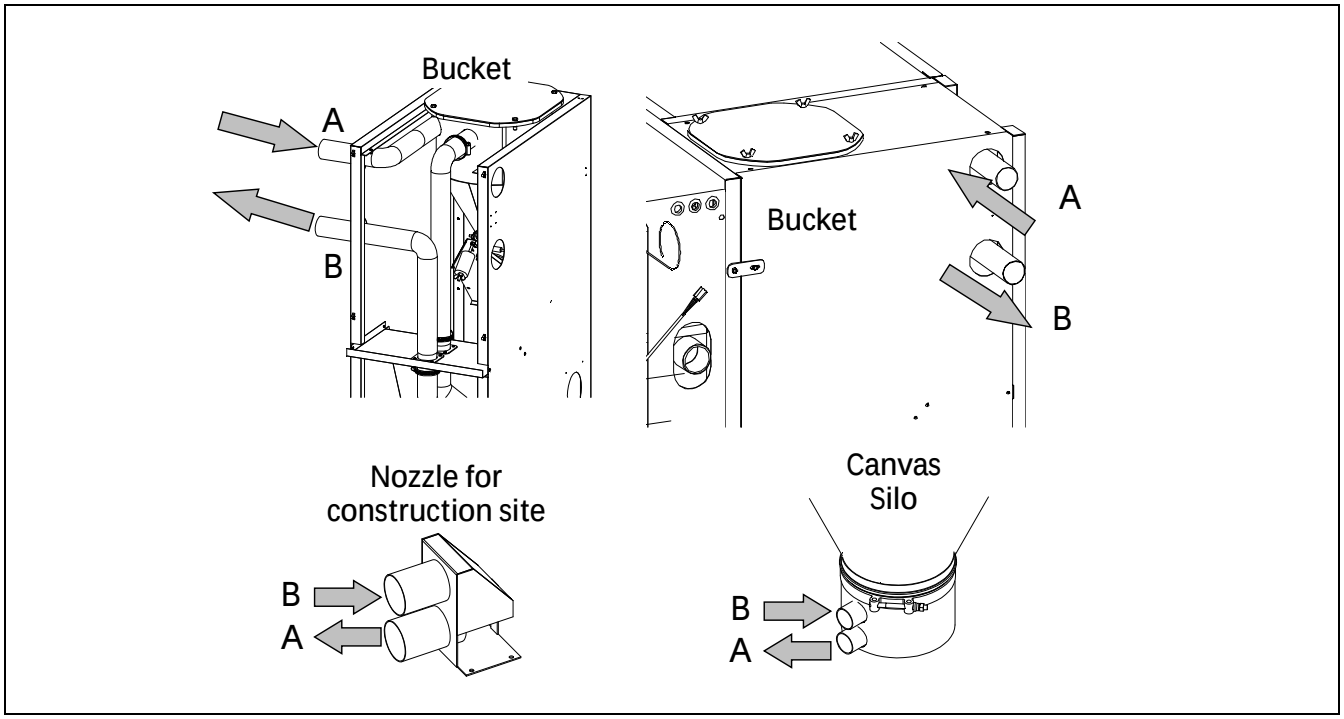
The fill level detection sensor for the pellets is supplied already set by the factory, therefore there is no need to adjust it unless it has become maladjusted during transport.



The various automatic fuel suction system components must be connected pneumatically using a hose with an interior diameter of 50 mm, preferably a flexible plastic hose with electrostatic charge accumulation protection.

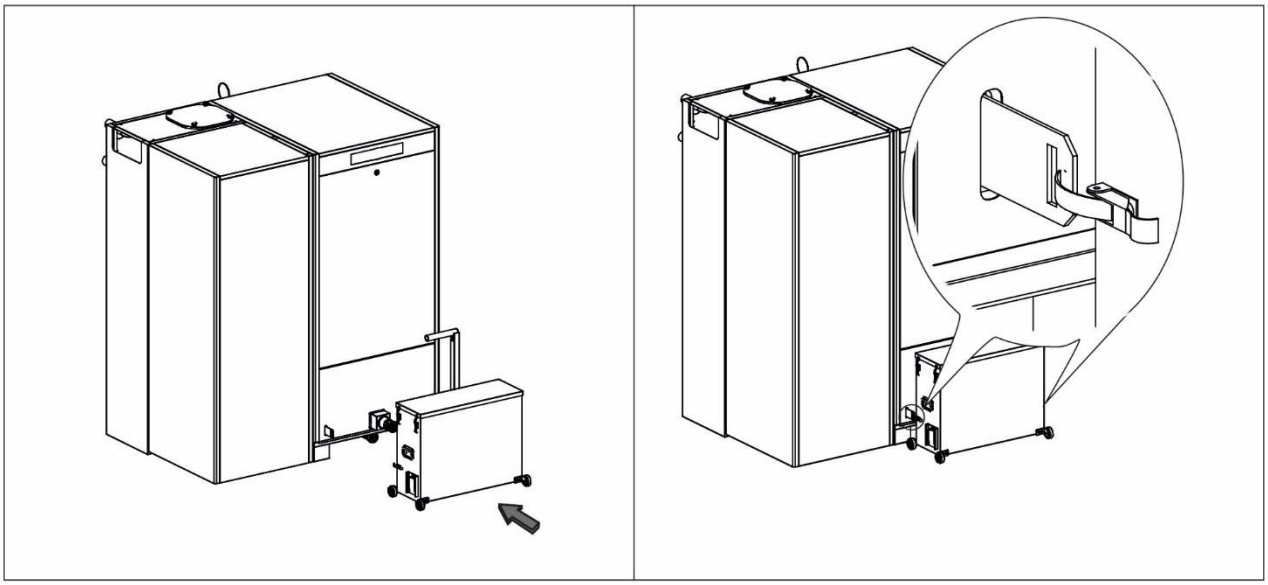
To ensure the system is correctly connected and sealed, the boiler includes 4 coupling flanges for fixing the hose ends to the respective pneumatic components.

The figure below shows the connection diagram of the fuel suction system:



Run a pipe from the main storage silo (intake **A**) to the boiler reserve tank and connect it to the cyclonic suction intake, (intake A) located on the rear part of the same. Run a pipe from the cyclonic air pipe (intake **B**) to intake B of the canvas silo or working nozzle.

3.3 Mounting the ash drawer



3.4 Electrical Connection

The boiler is prepared for connection to a 230 V~ 50 Hz (**J20 connector**). The socket should have an appropriate earth connection.

The burner is electrically connected to the boiler using connectors **C1**, **C2**, **C3** and **C4** (see **"Connection diagram"**).

The suction system is connected via the two hoses included with the boiler. The communication hose and the supply hose must be connected to the corresponding terminal strip **J18** located in the pellet reserve tank (see "**Connection diagram**"").

The terminal strip **J14** includes terminals for connecting the fuel feeder, while terminal strip **J12** includes terminals for connecting the feed pump for the buffer or needle tank (Bbt).

The boiler has a terminal strip **CR** (**J6**), prepared (see "**Connection Diagram**") for remote control of the boiler.

IMPORTANT: When working on the electrical installation of the boiler, make sure that it is disconnected from the electrical network.

3.5 Combustion product removal

The BioClass boiler is a **BIOCLASS iC 150** biomass boiler and it is essential for it to be connected to a flue, i.e. a smoke duct able to create a pressure drop (which in this case should be between 0.10 and 0.20 mbar), in compliance with the applicable laws in this regard.

The combustion product exhaustion ducts must be installed by qualified personnel and must comply with the regulations in force. For the flue to create a pressure drop, the following recommendations should be taken into account:

- It should be suitably insulated.
- It should be independently located, with a separate flue for each boiler.
- It should be vertical, avoiding any angles greater than 45º.
- It should always have the same diameter. It is recommendable for it to be circular, and never any narrower than the boiler outlet.
- **It is obligatory to install a fume inspection plate with condensation collection, to remove the condensation generated in the flue.** Otherwise, the condensation may reach the inside of the boiler and cause irreparable damage, **which would not be covered** by DOMUSA TEKNIK's guarantee. **The condensation pipe should lead to a drain outlet,** as a large amount of water may be generated. This connection must be made in compliance with the regulations for draining off condensation water to the drain system.
- **It is recommended that a draught stabiliser** be installed to prevent any pressure drop variations in the flue due to atmospheric conditions, which could affect correct boiler combustion.

4 STARTING UP THE BOILER

4.1 Prior warnings

Repair and maintenance of the boiler must be carried out by a qualified professional, authorised by **DOMUSA TEKNIK**. For optimum functioning and conservation of the boiler, it should be serviced annually.

Please carefully read this instruction manual and keep it in a safe, easily-accessible place. **DOMUSA TEKNIK** will not be liable for any damages caused by failure to follow these instructions.

Before any servicing, **disconnect the boiler from the mains.**

4.2 Electrical connection

The boiler is equipped for connection at 230 V~ 50 Hz to terminals No. 1 and 2 of the **J20** power strip. **The socket should have an appropriate earth connection.**.

4.3 Filling the installation

The hydraulic installation must include a fill valve, a safety valve, drain valves and the necessary hydraulic components for correctly filling the installation.

To fill the installation, open the fill valve until the *"water pressure"* on the *"User Menu"* shows a pressure of between 1 - 1.5 bars. The installation must be filled slowly, bleeding the air from the water circuit using the drain valves provided for this purpose. Close the fill valve after filling.

The **BIOCLASS iC 150** boilers have a pressure sensor for controlling the pressure of the installation. If the installation does not have minimum of the pressure selected in parameter P.19 of the *"Technical Menu"* (default setting 0.5 bar), the low-pressure alarm ("**E-19**) will appear on the display.").

IMPORTANT: Switching on the boiler with no water inside could result in serious damage.

4.4 Initial calibration of the fuel feeder

The **BioClass Ic 150** boiler is supplied from the factory with a fuel feeder, which should be assembled inside the reserve tank, as indicated in section *"Assembly of the reserve tank"*. Due to the diversity of fuel qualities on the market, it will be essential to carry out at least an initial calibration of the feeder for optimal operation of the boiler.

To carry out the calibration process correctly the instructions of section *"Calibration of the feeder* should be carefully followed. ".

4.5 Start-up

To ensure the **validity of the guarantee** is effective, the boiler must be started up by **personnel authorised by DOMUSA TEKNIK**. Before beginning the start-up process, the following must be complied with:

- The boiler must be plugged in to the mains.
- The installation must be filled with water (the pressure must be between 1 and 1.5 bar).
- The reserve tank must be filled with fuel.
- The start-up sequence is as follows:
- Check that the flue is correctly installed as it must include a condensation inspection plate and a draught stabiliser.
- Check the reserve tank and the fuel feeder auger are correctly installed. **The feed auger must be calibrated for correct boiler functioning** *(See "Calibrating the feed auger")*. Check that the type of fuel is suitable (for wooden pellets it must be **ENplus A1**, **DIN PLUS** or equivalent).
- If the installation has flow and return valves, check they are open.

4.6 Installation hand-over

After the initial start-up, the Technical Assistance Service will explain to the user how the boiler functions, making any observations they consider relevant.

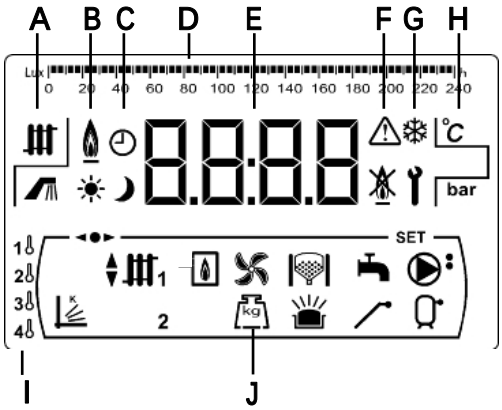
The installer is responsible for clearly explaining to the user the functioning of any control or regulation device forming part of the installation but not supplied with the boiler.

On delivery of the boiler, the user receives the following documents:

- The installation and operating manual of the boiler
- Analysis of the combustion performed during start-up.
- The boiler start-up sheet

5 DIGITAL DISPLAY:

The **BIOCLASS iC 150** boiler is equipped with a digital touch display for viewing and adjustment of the different boiler settings. The display has various display areas where different icons and numbers appear to indicate the different statuses of the boiler.



A Condition of the boiler: Summer Operation.

B Flame present icon: Indicates there is a flame in the burner.

C Timer programming icons:

- These are displayed when the real time is in the "ON" programme period.
- These are displayed when the real time is in the "OFF" programme period.
- Symbol indicating that the timer programming is active or that the meaning of the numerical display is related to the real time, programming display, etc.

D Numerical calibration:Depending on what is being displayed, the numerical calibration on the top part of the screen will have the following meanings:

Time calibration: This calibration is used to indicate values and parameters relating to time and/or time programming:

h
0 2 4 6 8 10 12 14 16 18 20 22 24

- Lux calibration: Is used to indicate the lux level read by the flame sensor:

Lux
0 20 40 60 80 100 120 140 160 180 200 220 240

- Calibration: This calibration is used to indicate the fill level of ash in the ash deposit of the boiler:

E Numerical display.

F Alarms indication: Alarm notification.

Boiler lock-out.

G Special operating icons:

Anti-frost function: This flashes when the boiler's anti-frost function is enabled.

Technical key: This symbol is used to indicate that the value or parameter shown in the numerical display is of a technical nature. It appears when any of the boiler's technical settings on the *"Technical Menu"* or *"Settings Menu" are being browsed or modified.*.

H Auxiliary icons:

°C Display of a temperature value (in international units) in the numerical display.

bar Display of any value or parameter relating to water and/or air pressure (in international units) of the boiler.

I Temperature icons from the buffer tank or hydraulic needle:

1 Upper temperature probe of the buffer tank or Scol. needle.

2 Intermediate temperature probe No. 1 of the buffer tank Sbt1.

3 Intermediate temperature probe No. 2 of the buffer tank Sbt2.

4 Lower temperature probe of the buffer tank Sdown.

J Operating mode icons:

Display of any value or parameter related to operation according to the pending load of the buffer tank.

Display of any value or parameter related to the boiler and/or burner.

Display of any value or parameter related to the functioning of the boiler fan.

Display of any value or parameter related to the weighing of fuel, fuel feeder calibration, mass consumption of the boiler, etc.

Display of any value or parameter related to the fuel suction system. When the fuel suction system is active the flashing symbol is displayed.

Display of any value or parameter related to the ash deposit.

Display of any value or parameter related to the ash deposit overflowing with ashes.

Display of the fuel feeder activation.

Display of any value or parameter related to the temperature or operation of the buffer tank.

Indication that you are browsing inside one of the electronic control menus.

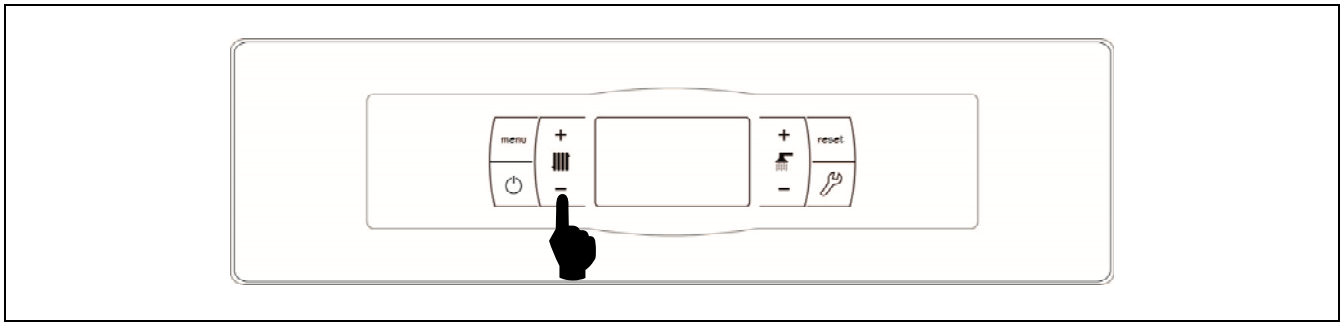
SET Indication that the parameter shown on the numerical display can be changed.

6 OPERATION

The **BIOCLASS iC 150** boiler is factory set to heat a buffer tank or a hydraulic needle.

The desired setpoint temperature of the tank or hydraulic needle should be selected *(see "Selecting the setpoint temperature of the tank or needle")*. The burner will start working to heat the water in the boiler. When the boiler temperature exceeds 60ºC the feed pump for the tank or needle (**Bbt**)will start up. The modulating burner of the **BIOCLASS iC 150** boiler will keep the tank or water at the selected temperature. When the temperature in the boiler exceeds the boiler set-point temperature by 2°C, the burner will shut off until the boiler temperature drops to 6°C below the desired temperature, starting again a new heating cycle.

6.1 Selecting the buffer tank or water setpoint temperature.



The desired buffer tank temperature is selected using the touch button, as shown in the figure. To select the desired temperature, touch the "**+**" or "**-**" symbols to increase or decrease the temperature value, respectively. When the temperature has been selected, the display will return to standby mode after a few seconds. The permitted range of setpoint temperature is OFF and 30-80ºC.

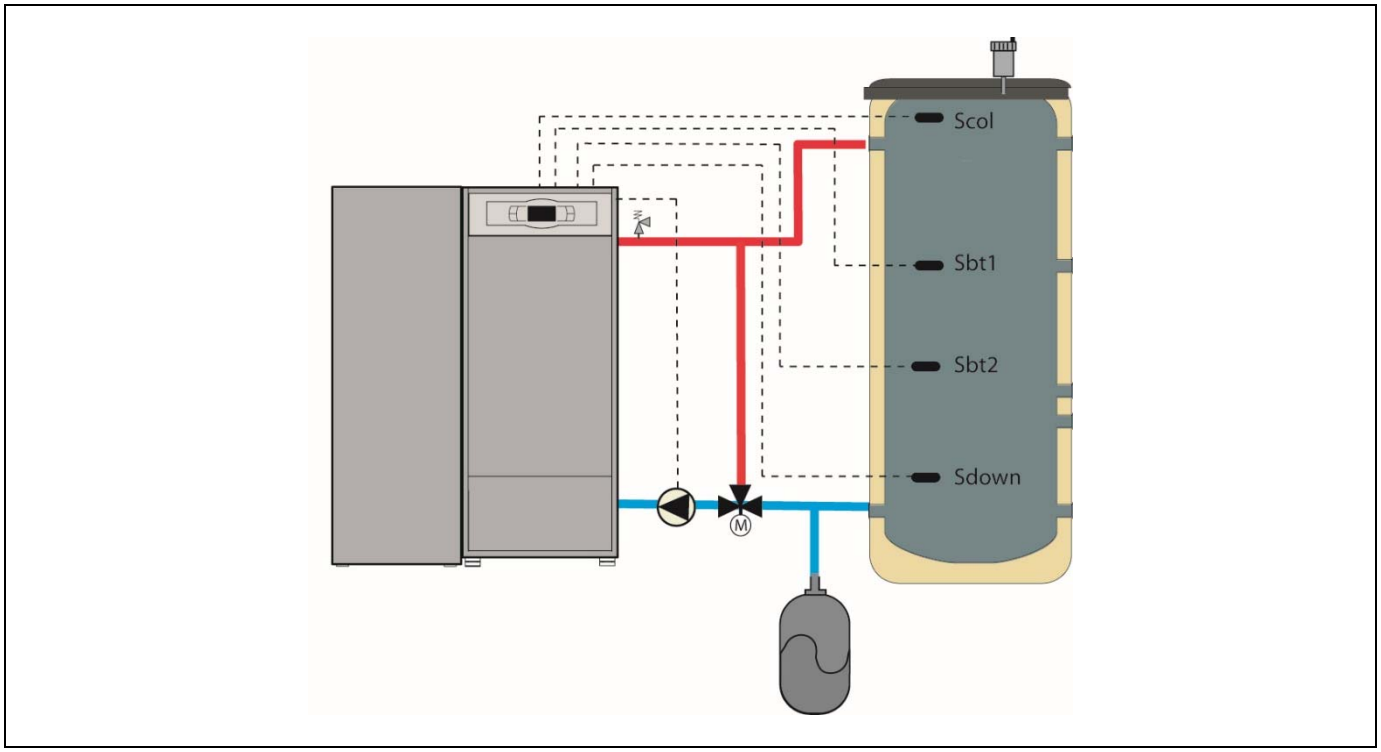
In addition, the setpoint temperature of the buffer tank can be selected by navigating, using the MENU touch button, to the display option *"Buffer tank setpoint temperature"*. Once the screen is placed in this option, touch the "**+**" or "**-**" symbol to select the desired temperature.

If you wish to completely deactivate the operation of the heating service for the buffer tank or hydraulic needle, select the set-point value equal to "**OFF**", by pressing the symbol "**-**" until said value appears on the screen.

7 OPERATION WITH BUFFER TANK

The **BioClass iC 150** boiler can be accompanied in your installation with a buffer tank. For this reason, the electronic control of the boiler is equipped with up to four temperature sensor inputs (**Scol**, **Sdown**, **Sbt1** and **Sbt2**; from the connection strips J8 and J11) and a feed pump output from tank or needle (Bbt; terminals N-42 on the connection strip J12).

The boiler is factory set with a temperature probe prepared for installation in the buffer tank (**Scol** probe) but as an option you can place up to 4 temperature probes for control of the buffer tank.



The following sections describe the operating characteristics with one, two, three or four temperature probes.

7.1 Operation with one temperature probe

In this operating mode, control and management of the buffer tank temperature is performed by a temperature probe (**Scol**) supplied with the boiler. The burner will start working to heat the water in the boiler. When the boiler temperature exceeds 60ºC the feed pump for the buffer tank (**Bbt**) will start up to heat the buffer tank. The modulating burner of the **BioClass iC 150** boiler will keep the water in the buffer tank at the selected temperature.

To heat the buffer tank to the selected temperature, the boiler should have a higher set temperature to compensate for the temperature loss in the installation between the boiler and the tank. This temperature difference can be selected through parameter **P.35**, and in this way the boiler setpoint temperature will be the sum of the setpoint temperature of the buffer tank and the adjusted temperature in parameter **P.35** (default setting 5ºC), always within a range of between 65ºC and 84ºC.

When the temperature of the tank reaches the selected setpoint temperature the burner will shut down until its temperature drops to the adjusted value in parameter **P.43** below the desired (default setting 5ºC).

7.2 Operation with two temperature probes

In this operating mode, control and management of the buffer tank temperature is performed by two temperature probes (**Scol** and **Sdown**). The **Scol** temperature probe must be installed in the upper area of the tank, and the **Sdown** probe in the lower area. The burner will start working to heat the water in the boiler. When the boiler temperature exceeds 60ºC the feed pump for the buffer tank (**Bbt**) will start up to heat the buffer tank.

To heat the buffer tank to the selected temperature, the boiler should have a higher set temperature to compensate for the temperature loss in the installation between the boiler and the tank. This temperature difference can be selected through parameter **P.35**, and in this way the boiler setpoint temperature will be the sum of the setpoint temperature of the buffer tank and the adjusted temperature in parameter **P.35** (default setting 5ºC), always within a range of between 65ºC and 84ºC.

When the temperature of the tank in the lower part (using the **Sdown** probe) reaches the setpoint temperature selected in parameter **P.39** the burner will shut down.

When the temperature in the upper area (using the **Scol** probe) drops below the setpoint temperature selected minus the adjusted value in parameter **P.43** (default setting 5ºC) the burner will start operating again.

7.3 Operation with three or four temperature probes

In this operating mode, control and management of the buffer tank temperature is performed by at least three temperature probes (**Scol**, **Sdown**, **Sbt1** and/or **Sbt2**). The **Scol** temperature probe should be installed in the upper area of the tank, and the remaining probes distributed at different heights in the tank. The burner will start working to heat the water in the boiler. When the boiler temperature exceeds 60ºC the feed pump for the buffer tank (**Bbt**) will start up to heat the buffer tank.

To heat the buffer tank to the selected temperature, the boiler should have a higher set temperature to compensate for the temperature loss in the installation between the boiler and the tank. This temperature difference can be selected through parameter **P.35**, and in this way the boiler setpoint temperature will be the sum of the setpoint temperature of the buffer tank and the adjusted temperature in parameter **P.35** (default setting 5ºC), always within a range of between 65ºC and 84ºC.

The heat demand calculation for the buffer tank is performed by calculating the percentage load. A 100% load means that the average temperature of the buffer tank is equal to the selected setpoint temperature. A 0% load means that the average temperature of the buffer tank is equal to the temperature selected in parameter **P.31** (default setting 20ºC). The intermediate values are calculated using the interpolation between the minimum and maximum load.

When the calculated load in the buffer tank reaches the value selected in parameter **P.41** (100% by default) the burner will shut down.

When the load drops below the value selected in parameter **P.40** (default setting 90%) the burner will start operating again.

In addition, regardless of the load in the tank, whenever the temperature of the upper area (through the **Scol** probe) drops below the setpoint temperature selected minus the adjusted value in parameter **P.43** (default setting 5ºC) the burner will start operating again to ensure the desired temperature in the upper part of the tank.

7.4 Winter/summer mode

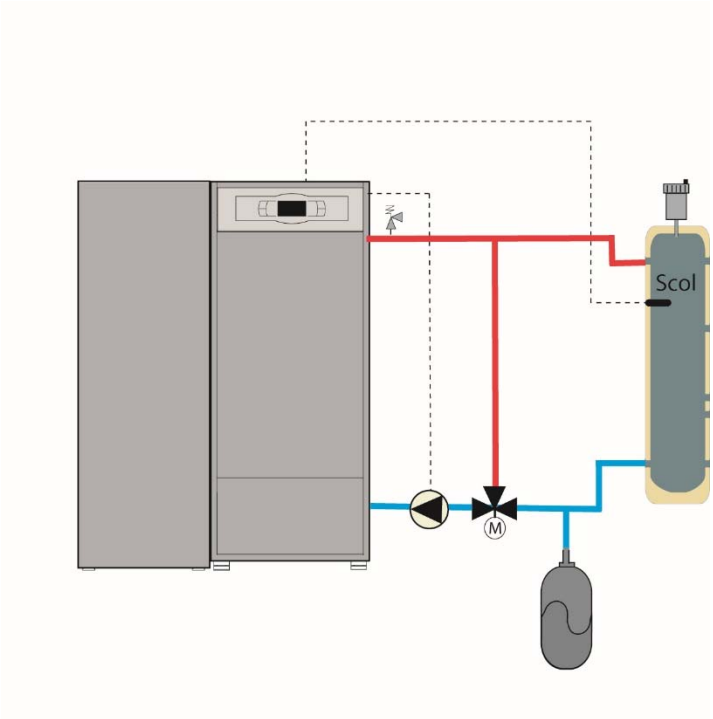
When only the upper area of the buffer tank is required to be kept hot you can enable the summer service mode by selecting the DHW setpoint value equal to "**ON**".

In the summer service mode control is performed by the temperature probe (**Scol**). The operation is the same as that described in the section "*Operation with one temperature*".

In the winter service mode the operation is performed according to the number of probes connected in the boiler.

8 OPERATION WITH HYDRAULIC NEEDLE

In this type of installation, the boiler is connected hydraulically to a hydraulic separator or "needle". For water circulation pump **Bbt** is used, connected to the boiler.



The boiler will be responsible for maintaining the hydraulic separator at the desired setpoint temperature (see *"Selecting the buffer tank setpoint temperature"*). The temperature of the hydraulic separator is read by the **Scol** probe supplied with the boiler.

In this operating mode the control and management of the hydraulic needle temperature is performed by one (**Scol**) temperature probe. The burner will start working to heat the water in the boiler. When the boiler temperature exceeds 60ºC the feed pump for the buffer tank (**Bbt**) will start up to heat the buffer tank. The modulating burner of the **BioClass iC 150** boiler will keep the hydraulic needle at the selected temperature.

To heat the hydraulic needle to the selected temperature, the boiler will have to have a higher setpoint temperature to compensate for the loss of temperature from the installation between the boiler and the needle. This temperature difference can be selected through parameter **P.35**, and in this way the boiler setpoint temperature will be the sum of the setpoint temperature of the buffer tank and the adjusted temperature in parameter **P.35** (default setting 5ºC), always within a range of between 65ºC and 84ºC.

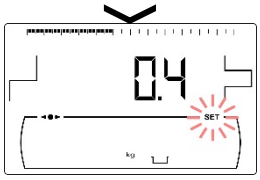
When the temperature of the tank reaches the selected setpoint temperature the burner will shut down until its temperature drops to the adjusted value in parameter **P.43** below the desired (default setting 5ºC).

9 USER MENU

The *"User Menu"* shows the settings connected with boiler functioning at each given time, on the digital display.

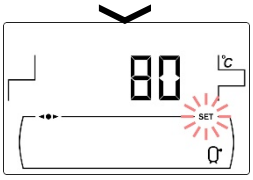
To access this display mode, press the MENU touch button. With each press, you can navigate through the different available parameters. When the desired option is selected, it will return to standby after 20 seconds have elapsed. The following table shows the different display options:

Standby. The actual boiler temperature is shown.

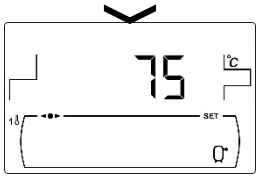


Ash deposit filling status.*(see "Ash deposit status")*

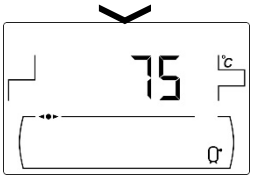
Current time (HH:MM).



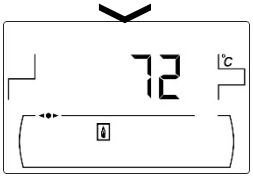
Boiler or buffer tank setpoint temperature(*), selected using the corresponding touch button ***(20)***..



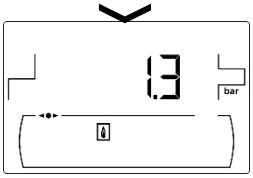
Actual temperature of the buffer tank or needle (Scol).



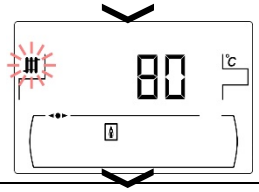
Actual average temperature of the buffer tank.



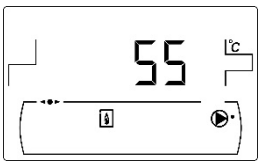
Actual boiler temperature.



Actual boiler water pressure, measured by the water pressure sensor.

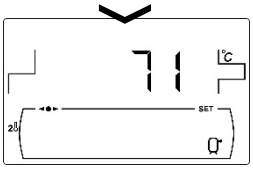


Boiler setpoint temperature active.



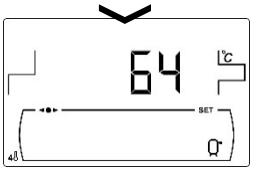
Boiler return setpoint temperature.

Actual boiler return temperature,



Intermediate temperature probe No. 1 of the buffer tank Sbt1.

Intermediate temperature probe No. 2 of the buffer tank Sbt2.



Actual temperature of lower probe in the buffer tank (Sdown).

9.1 Ash deposit status

With the operation of "Empty ash deposit warning" activated *(see "Settings Menu")* the boiler warns us when the ashtray drawer is full and needs to be emptied. In the *"Ash deposit status"* parameter you can see its condition and the upper part of the screen will display a bar indicating the fill level of the ash deposit. When it is full, a notice to empty the ashtray is activated. Every time the ashtray is emptied the screen value for *"Ash deposit status"* should be set to zero, to do this press the symbol "**-**" in DHW ***(21)***.

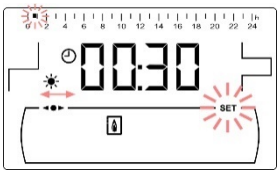
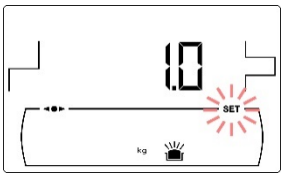
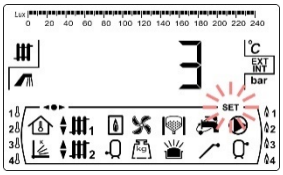
The display of notices is as shown below:

: Ash deposit between 0 and 75 % full
flashing: Ash deposit between 75 and 100% full.
and ⚠ flashing: Ash deposit more than 100% full.

10 SETTINGS MENU

The *"Settings Menu"* consists of a series of boiler operating settings that may be modified by the user (ash deposit notice function, time programming, time adjustment, etc.).

To access the *"Settings Menu"* press the symbol . Using the symbols "**+**" or "**-**" for Heating ***(20)***, you can browse through the menu settings. Once the desired parameter is selected, press again to access it and it can be adjusted or modified using symbols "**+**" or "**-**" of DHW ***(21)*** Once the desired parameter has been adjusted, press again to save and return to the *"Settings Menu"*. From the *"Settings menu"* or any of its settings, press Reset to return to the previous display level without saving. These settings are listed in the table below:

No.	Parameter	Display
1	Timer programming of the boiler.	
2	Adjusting the time,	
3	Ash deposit empty notice.	
4	Manual adjustment of the calibration	
5	Contrast of the display.	

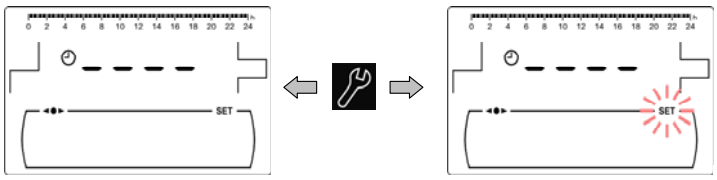
IMPORTANT: It is strongly recommended that the user enables the "Ash deposit empty notice" to prevent a malfunction of the boiler due to early contamination and a fire.

The following sections describe all parameters included in the *"Settings Menu"*.

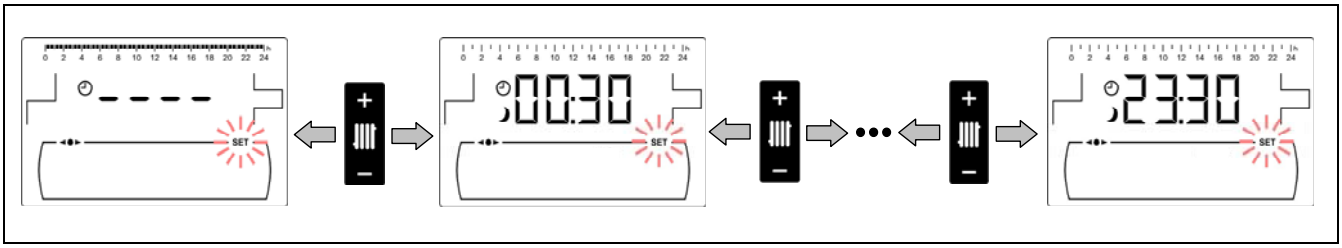
10.1 Programming process

The **BIOCLASS iC 150** boiler allows us to set the timer programming of the boiler. By default, if no programming adjustment has been made, the boiler will be supplied with the timer programming disabled, that is, the boiler will keep operating for 24 hours a day (showing on the relevant display the digits "**- - - -**"). The adjustment process described below will be the same for any of the above-mentioned timer programming mentioned above.

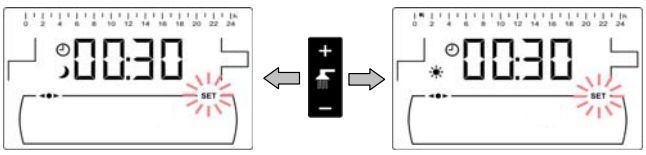
Once you have selected the timer programming you wish to set and by pressing , **SET** will light up and flash, starting the adjustment process.



Using the symbols "**+**" or "**-**" for Heating ***(20)*** you can browse through the timer programming in increments of 30 minutes.



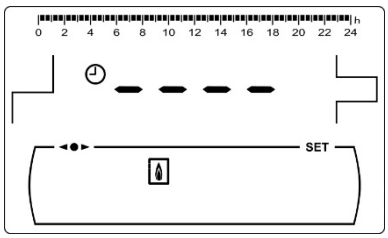
Once the desired scheduling period has been selected, using the symbols "**+**" or "**-**" of DHW ***(21)*** the programming status will change from "off", displaying the symbol ☽, to "on", displaying the symbol ☀ and vice versa.



Once all the desired time periods are adjusted, pressing the symbol for the last time will save the programming changes and will return you to the *"Settings Menu"*.

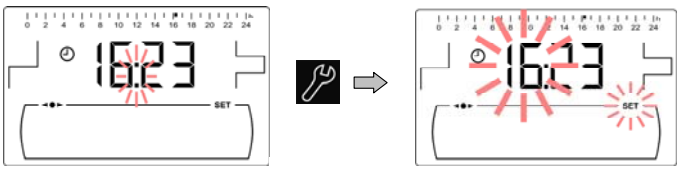
10.2 Timer programming of the boiler

This process is used to adjust the on and off times of the boiler as required. To disable the timer programming of the boiler, once the settings of the of the boiler programming are accessed ( ), hold down the symbol "**-**" for Heating ***(20)*** until "**----**" is displayed. In this way the boiler will stay on permanently.

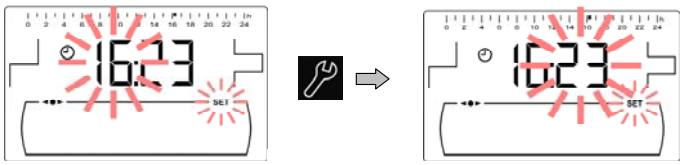


10.3 Adjusting the time

Once you have selected the time adjustment process from the *"Settings Menu"* by pressing you can access it, with **SET** and the two --'hour' digits will be flashing, beginning the adjustment process.



Using the symbols "**+**" or "**-**" of DHW ***(21)*** you can set the hour value and by pressing the hour is saved, before setting the minute digits.



Using the symbols "**+**" o "**-**" of DHW ***(21)*** you can adjust the minutes value and finally, pressing will save it and return you to the *Settings Menu*.

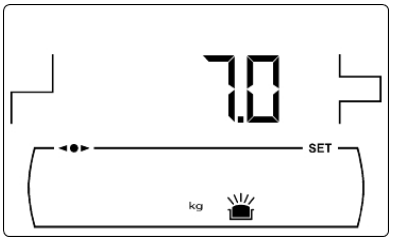
10.4 Empty ash box notice

With this function activated, the boiler lets us know when the boiler ash box is full, so that we proceed with its emptying. In the parameter *"Ash box status"* of the *"User Menu"* we can see its status. When it is full, an "empty the ash box" notice is activated.

By default, the ash box reminder function is supplied activated and is set to indicative fuel consumption values which, depending on the quality and type of fuel, will have to be adjusted for each system. Shown below are the default number of pellet tonnes at which the boiler notifies you to empty the ash drawer:

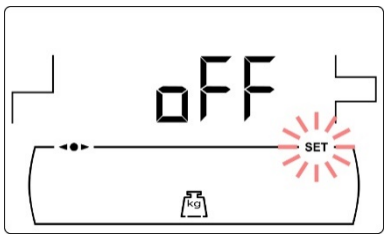
Model	Tn
BIOCLASS iC 150	**7.0 Tn**

To set the value of this function, once the display "Empty the ash box notice" is selected ( ) from the *"Settings Menu"*, by pressing the symbol we can access it; **SET** will begin flashing, and using the symbols "**+**" or "**-**" of DHW ***(21)*** we can set the desired value.



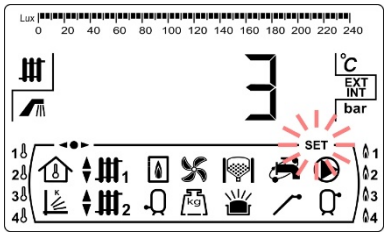
NOTE: Every time a new value in this parameter is adjusted, the ash box should be emptied.

10.5 Manual adjustment of the calibration



Once the display "Manual adjustment of the calibration" ( ) from the *"Settings Menu"* is selected by pressing the symbol we can access it; **SET** will begin flashing and using the symbols "**+**" or "**-**" of DHW ***(21)*** we can set the desired value. The range of setpoint calibration is OFF, 5,000 – 9,900 kg.

10.6 Adjusting the contrast of the display

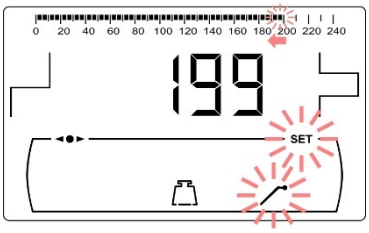
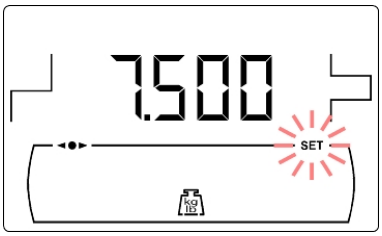
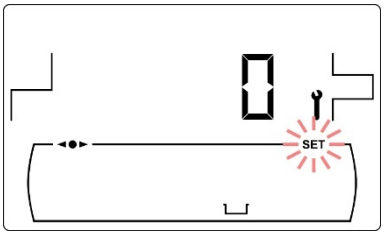
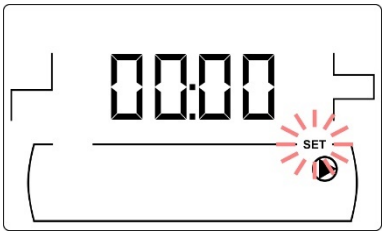


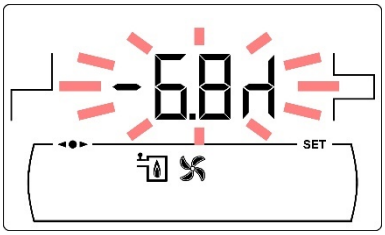
Once the display "Contrast adjustment" from the *"Settings Menu"* is selected by pressing the symbol we can access it, **SET** will begin flashing and using the symbols "**+**" or "**-**" of DHW ***(21)*** we can set the desired value. The range of selected values is 1 - 5.

11 CALIBRATION MENU

The *"Calibration Menu"* consists of a series of processes and parameters for start-up and maintenance of the boiler (draining of fuel, calibration of the fuel feeder, etc.).

To access the *"Calibration Menu"* we first of all must switch off the boiler by pressing the symbol . Once the boiler is switched off, press the symbol for 5 seconds. Using the symbols "**+**" or "**-**" for Heating ***(20)***, you can browse through the menu settings. Once the desired parameter is selected, press again to access it and it can be adjusted or modified using symbols "**+**" or "**-**" of DHW ***(21)*** Once the desired parameter has been adjusted, press again to save and return to the *"Calibration Menu"*. From the *"Calibration menu"* or any of its settings, press RESET to return to the previous display level without saving. These settings are listed in the table below:

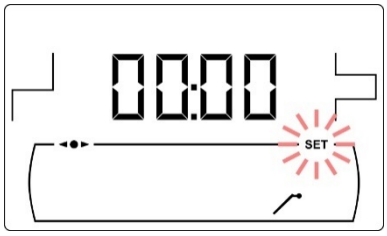
No.	Parameter	Display
1	Draining the feeder	
2	Calibration of the feeder	
3	Manual adjustment of the calibration	
4	Manual ash cleaning	
5	Manual activation of pump Bbt	

No.	Parameter	Display
6	Calibration of the lambda probe	

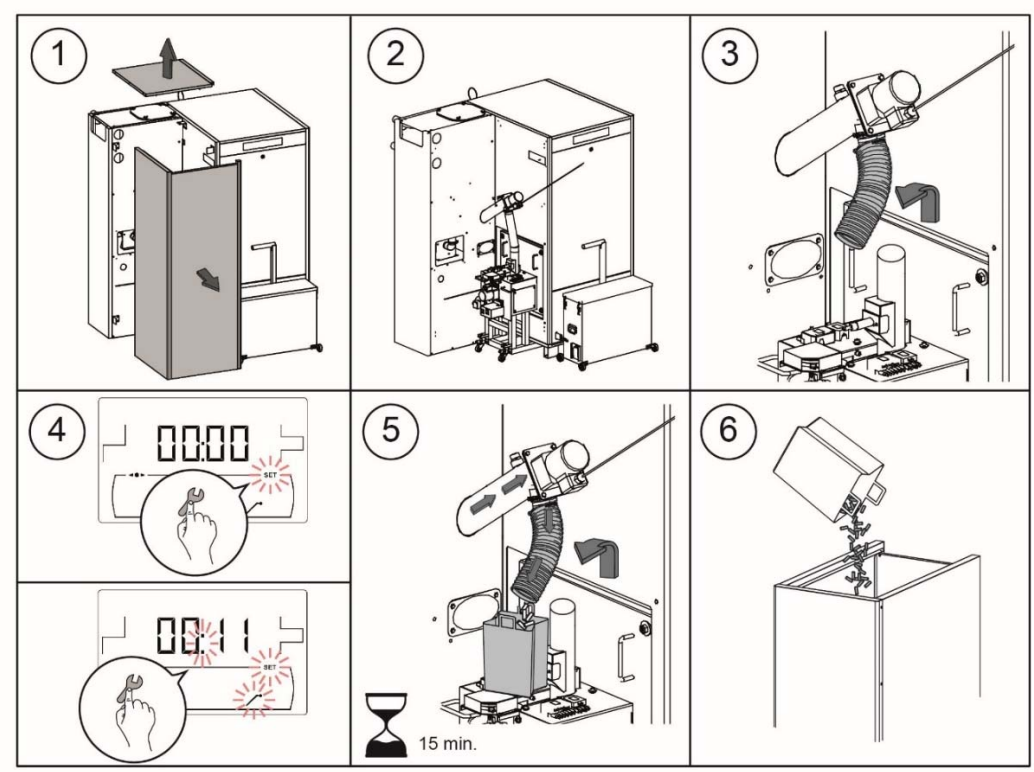
11.1 Draining the feeder

During the first start up, when the reserve fuel tank is emptied, and before performing the calibration process on the fuel feeder, **it is essential** to drain the it so that it can be refilled with fuel. This display is used to drain the fuel feed auger required for correct boiler functioning.

On selecting the "Drain fuel feeder" display ( ) from the *"Calibration Menu"* by pressing the symbol we can access it; **SET** will begin flashing. Pressing symbol again will start the drainage process, activating the fuel feeder for a maximum of 15 minutes. While the drainage operation is running, the display will show the time elapsed. Pressing will stop the feeder at any time, and by pressing RESET we can exit the drainage process at any time.



To ensure the fuel feeder is properly drained it is recommended to perform a minimum drainage cycle of 15 minutes. The steps for correctly draining the feed auger are as follows:

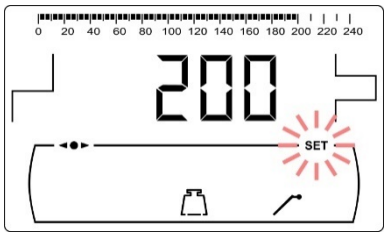


IMPORTANT: It is essential for the boiler feed auger to be drained on start-up and in the event that the reserve tank runs out of fuel.

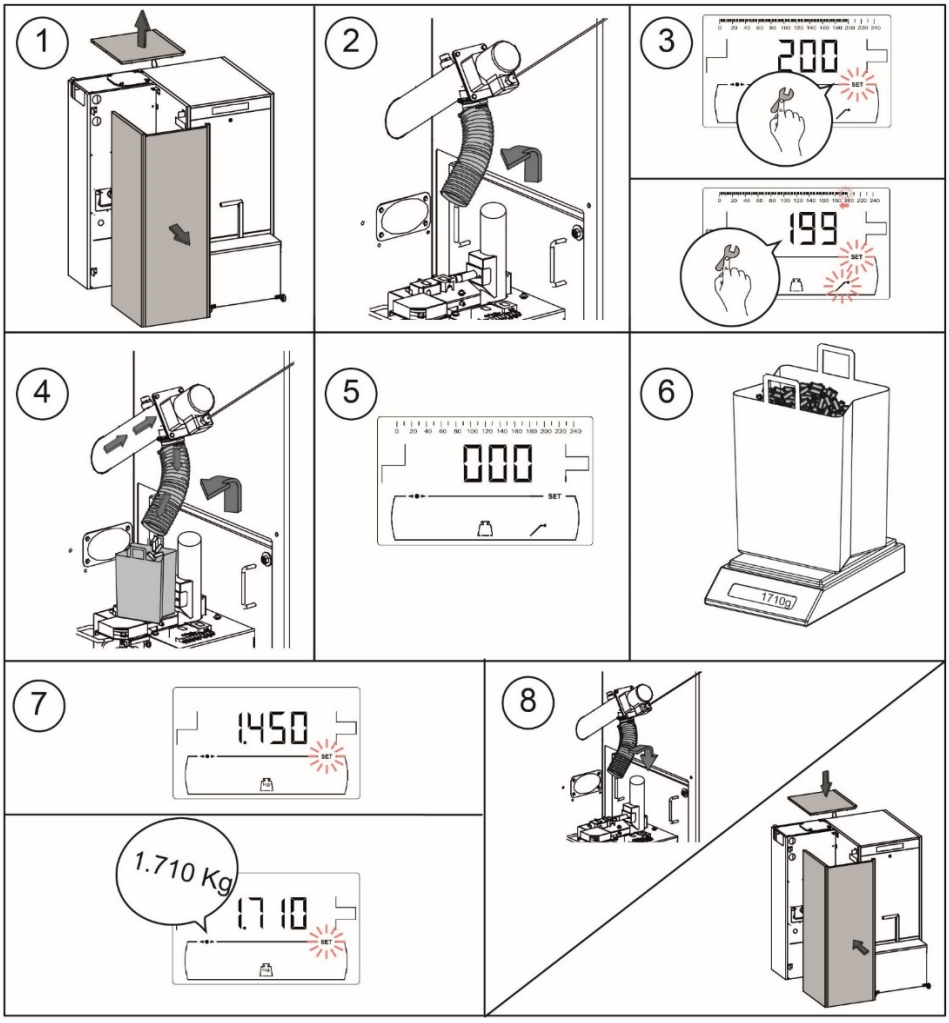
11.2 Calibration of the feeder

Calibrating the boiler feed auger, the electronic control adjusts the optimum amount of fuel required to supply the burner and produce the correct power and combustion. **If the reserve tank is empty or runs out of fuel, it is essential to drain the boiler feed auger before carrying out the calibration.** This display is used to calibrate the fuel feed auger required for correct boiler functioning. **It is essential that the boiler feeder is calibrated during start up**.

On selecting the "Calibration of the fuel feeder" display ( ) from the *"Calibration Menu"* by pressing the symbol we can access it and **SET** will begin flashing. Pressing symbol again will start the calibration process, activating the countdown from 200 doses in the fuel feeder. When the countdown finishes the current calibration value will be displayed and its value may be adjusted using the "**+**" or "**-**" of DHW ***(21)***. Pressing symbol again saves the new value.

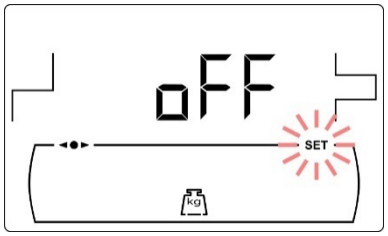


This process must be carried out at least twice to ensure that the correct amount of fuel has been added. The steps for correctly calibrating the feed auger are as follows:



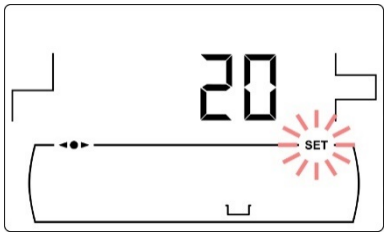
IMPORTANT: It is essential that the boiler feeder is calibrated during start up.

11.3 Manual adjustment of the feed auger calibration



In this display you can manually adjust the feed auger calibration value. Once the display "Manual adjustment of the calibration" ( ) from the *"Calibration Menu"* is selected by pressing the symbol we can access it; **SET** will begin flashing and using the symbols "**+**" o "**-**" of DHW ***(21)*** we can set the desired value. The range of setpoint calibration is OFF, 5,000 – 9,900 kg.

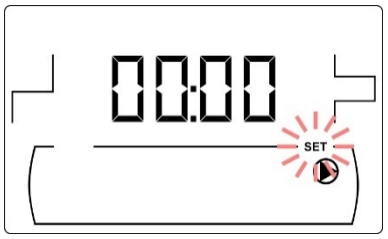
11.4 Manual ash cleaning



This display is used to manually enable a number of ash cleaning device functioning cycles up to a maximum of 20 cleans. On selecting the "Calibration of the fuel feeder" display ( ) from the *"Calibration Menu"* by pressing the symbol we can access it and **SET** will begin flashing. Pressing symbol again will start the manual ash cleaning process, activating the countdown from 20 cleans.

Pressing you can stop the cleaning process at any time, and by pressing RESET you can go back to the *"Calibration menu"* at any time.

11.5 Manual operation of the circulation pump

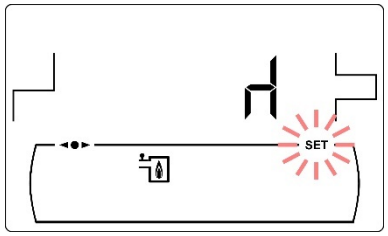


In this display we can manually operate the feed pump of the buffer tank or needle. On selecting the "Manual operation of pump Bbt" ( ) from the *"Calibration Menu"* by pressing the symbol we can access it and **SET** will begin flashing. Pressing the symbol again, the pumps will start up and run for a maximum of 20 minutes.

By pressing we can turn off the pumps at any time, and by pressing RESET we can return to the *"Calibration Menu"* at any time.

11.6 Calibration of the lambda probe

By calibrating the lambda probe we can adjust any deviations there may be in the lambda probe during the measurement of the oxygen concentration.

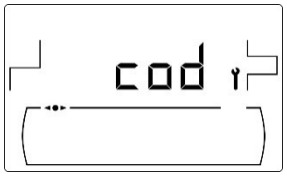
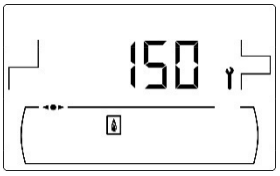
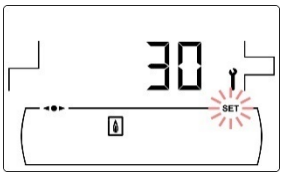
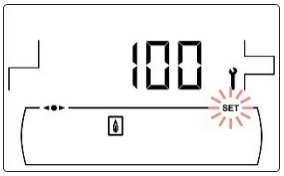
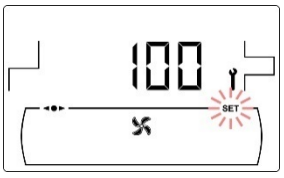
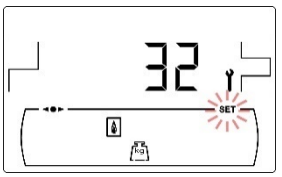


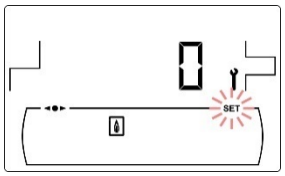
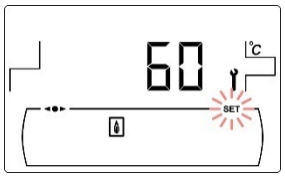
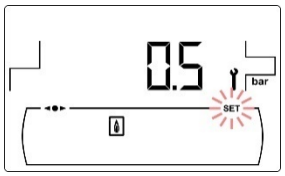
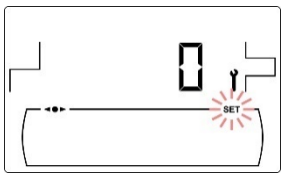
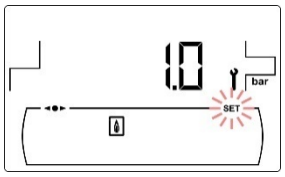
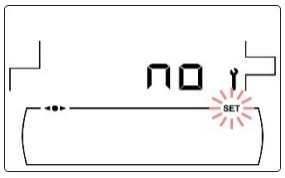
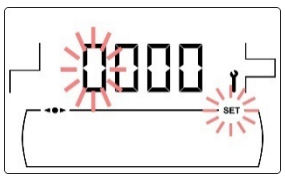
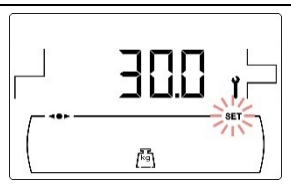
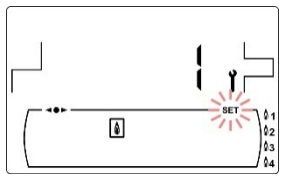
On selecting the "Calibration of the lambda probe" display ( ) from the *"Calibration Menu"* by pressing the symbol we can access it and **SET** will begin flashing. Pressing the symbol again will start the calibration process. During the calibration process the signal will be displayed in mV from the lambda probe. When the calibration process is complete the value -7 mV will appear on the display.

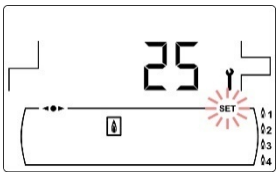
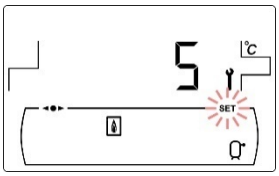
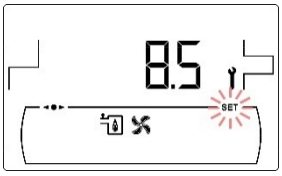
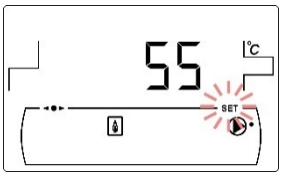
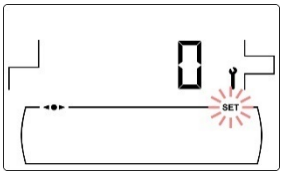
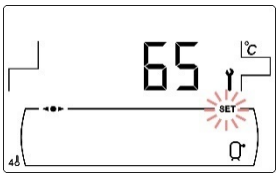
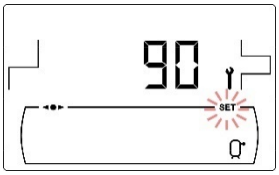
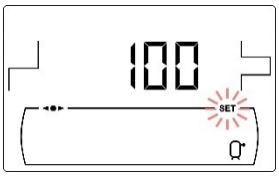
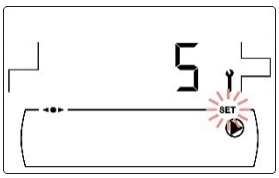
12 TECHNICAL MENU

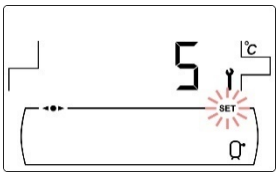
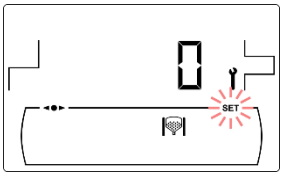
The *"Technical Menu"* consists of a series of boiler operating settings that may be modified, although this must be done by a person with sufficient technical knowledge of the meaning of each setting or by sufficiently qualified staff. Any inappropriate adjustment of any parameter of the *"Technical Menu"* may cause a serious malfunction of the boiler and may cause damage to people, animals and objects.

To access the *"Technical Menu"* press the MENU and RESET symbols simultaneously for 5 seconds. The request for an access code "cod" will appear on the screen *(see "Entering the code")*. Once the correct access code has been entered, using the symbols "**+**" or "**-**" for Heating ***(20)*** will browse through the menu parameters (**P.01**. **P.28**). Once the desired parameter is selected, by pressing the symbol we can access it and adjust or modify it. Once the desired parameter has been adjusted, press again to save and return to the *"Technical Menu"*. In the *"Technical Menu"* or within any parameter of it, press RESET to return to the previous display level without saving. These parameters are listed in the table below and are described in detail in the following sections of the manual:

No.	Parameter	Display
Code	Access code (default value 1234)	
P.01	Boiler model	
P.02	Minimum boiler power adjustment	
P.03	Maximum boiler power adjustment	
P.04	General fan factor (*This is only shown with the automatic fan adjustment switched off*)	
P.05	Fuel for ignition	
P.06	Fuel. (*This is only shown with the lambda combustion control switched off*).	

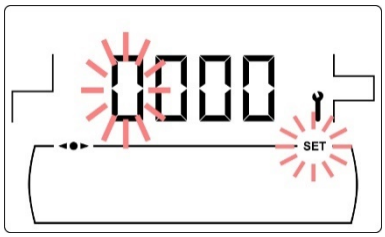
No.	Parameter	Display
P.13	Maintenance of the boiler temperature	
P.14	Minimum boiler temperature	
P.19	Minimum boiler water pressure adjustment	
P.20	Multifunction relay	
P.21	Automatic water filling pressure adjustment (*Only when P.20 = 3)*	
P.22	Cycle time of the **fuel suction system**	
P.24	Reset default values	
P.25	Set access code	
P.26	Auxiliary adjustment setting of the burner cleaning interval	
P.29	Cascade sequence type (*Only active with the cascade module connected*)	

No.	Parameter	Display
P.30	Time for change in dynamic cascade sequence (*only active with the cascade module connected*)	
P.31	Slope of BT load curves	
P.35	Difference in temperature between boiler setpoint and temperature setpoint of tank or needle	
P.36	Selection of the oxygen concentration at rated ower	
P.37	Return temperature selection	
P.38	External Alarm Input	
P.39	Lower temperature selection of the buffer tank	
P.40	Load status of the buffer tank for activating heat demand	
P.41	Load status of the buffer tank for disabling heat demand	
P.42	Post-circulation time of the buffer tank or needle feed pump.	

No.	Parameter	Display
P.43	Buffer tank hysteresis	
P.44	Cascade automatic loading system mode	

Entering and adjusting access code ("cod", P.25)

Once the "enter access code ("cod") display is selected or adjusted (**P.25**), pressing the symbol  will access it and **SET** will begin flashing, using the symbols "**+**" or "**-**" for heating ***(20)*** we can navigate through the code digits. Using the symbols "**+**" or "**-**" from HCW ***(21)*** we can adjust the value of each digit independently. The factory default access code is "1234". Parameter **P.25** can be used to set a new desired access code.



13 CONFIGURING THE BOILER

The following parameters in the *"Technical Menu"* allow us to set the operation of the boiler for each installation, provided that this is done by a person with sufficient knowledge of the meaning of each setting or by appropriately qualified staff.

13.1 Boiler Model (P.01)

Parameter **P.01** displays the model of boiler selected with the switches located on the electronic card on the control panel:

P.01 = 150 => **BIOCLASS iC 150**

13.2 Set the boiler power (P.02, P.03)

The **BIOCLASS iC 150** boiler is configured to modulate its power between a minimum and maximum power. Parameters **P.02** and **P.03** may be used to set the minimum and maximum burner power.

13.3 General fan factor (P.04)

Parameter **P.04** may be used to set a multiplication factor of the percentage of fan speed when automatic fan adjustment is switched off. This parameter can be used to increase or decrease the amount of combustion air to ensure the correct values for combustion. Changing its value adjusts the fan percentage for the entire modulation curve. The selectable range of parameter **P.04** is 0 - 200 (default value 100), if a value under 100 is set the air quantity will reduce and if a value higher than 100 is set it will increase.

13.4 Fuel for ignition (P.05)

Parameter **P.05** may be used to adjust the amount of fuel used in the burner ignition process. The selectable range of the parameter **P.05** is 10 - 2000 grammes.

13.5 Fuel (P.06)

Parameter **P.06** can be used to set the amount of fuel, in kilograms, that the boiler uses at 100% power in one hour, when the combustion setting by lambda probe is switched off. This parameter is related to the type of fuel selected, as well as the calorific value of the same. The selectable range of the parameter **P.06** is 15.0 - 34.0 kg.

13.6 Auxiliary parameter for cleaning interval setting of the burner (P.26)

Parameter **P.26** can be used to set the combustion to the particular characteristics of each fuel. The selectable range of parameter **P.26** is 00.0 - 99.9 kg and the default factory value will depend on the boiler model and the type of fuel.

13.7 Temperature maintenance of the boiler (P.13, P.14)

Parameters **P.13** and **P.14** can be used to adjust the operation of the boiler so that it constantly maintains a minimum temperature (default value **P.13 = 2**). When the value of parameter **P.13** is set to **0** or **4**, parameter **P.14** can be used to set this minimum temperature between 30 and 60ºC. Depending on the value selected in parameter **P.13** you can configure the following temperature maintenance modes for the boiler:

P.13 = 0 => Maintains the minimum boiler temperature set in **P.14** only with the Remote Control signal enabled (input **CR** closed).
P.13 = 1 => Maintains the boiler setpoint temperature selected on the control panel.
P.13 = 2 => Minimum boiler temperature is not maintained.
P.13 = 4 => Maintains the minimum boiler temperature set in **P.14** regardless of the Remote Control signal.

13.8 Selection of the oxygen concentration (P.36)

Parameter **P.36** can be used to set the target value of the oxygen concentration to maximum power at the boiler outlet. The selectable range of parameter **P.36** is 8.0 – 10.0. The default factory value is 8.5%.

14 HYDRAULIC CIRCUIT ADJUSTMENTS

The **BIOCLASS iC 150** boiler is equipped with an electronic control for efficiently regulating the automatic functioning of the boiler, it also has the following functions for the integrated hydraulic circuit control in the boiler:

14.1 Post-circulation of the buffer tank or needle feed pump (P.42)

This function keeps the feed pump operating from the buffer tank or needle (**Bbt**) for some time once the heat demand has been disabled, in order to prevent the boiler from overheating. Parameter **P.42** can be used to set the desired post-circulation time. The selectable range of parameter **P.42** is 0 - 40 minutes and the default factory setting is 10 minutes.

14.2 Minimum filling pressure of the installation (P.19)

The **BioClass iC 150** boiler has a water pressure sensor through which the electronic control is able to monitor the boiler pressure at all times, in such a way that, if the pressure drops to a specified value the control will lock-out the boiler and trigger the alarm **E-19** *(see "Safety Interlocks")*. Parameter **P.19** is used to set the minimum water pressure of the boiler at which the alarm will be enabled. The selectable range of parameter **P.19** is 0.1 - 0.5 bar and the default factory setting is 0.5 minutes.

14.3 Selection of the minimum return temperature (P.37)

The **BioClass iC 150** boiler can have a kit installed to raise the boiler return temperature and is supplied optionally by **DOMUSA TEKNIK** Parameter **P.37** can be used to set the minimum return temperature of the boiler.
The selectable range is 45 - 70ºC and the default value is 50ºC.

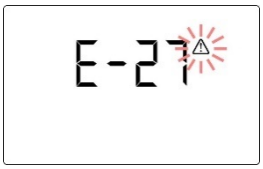
15 OPERATION OF THE PELLET ASPIRATION SYSTEM

The **fuel suction system** is an automatic pellet conveying and suction system equipped with an electronic control that governs the functioning of a suction device (suction turbine), by controlling the signal from a sensor that detects the fill level of the tank, located in the cyclonic pot of the reserve tank.

The operation is as follows: when the level sensor detects a low pellet level, the electronic control starts up the suction turbine, which begins to suck the pellets from the silo or main store and conveys them to the cyclonic tank in the boiler reserve tank. The suction turbine runs for a set duration (a cycle), while it fills the cyclonic tank. When the cycle is complete, the suction turbine stops and the hatch on the underside of the suction pot opens, emptying the pellets inside it into the reserve tank. If the level sensor continues to detect no pellets when the cyclonic tank has been emptied, the turbine starts up again and runs for another full cycle. When the sensor detects the filling of the reserve tank (cyclone door open), the control disables the operation of the fuel feeding system and waits until it starts up again.

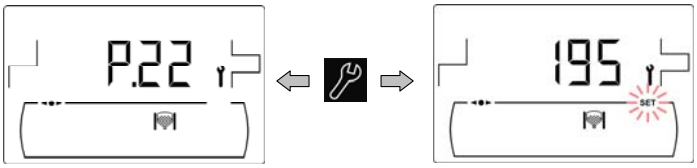
During the whole time in which the suction turbine is operating the silo symbol will appear flashing on the boiler display.

If, after 9 consecutive cycles, the sensor continues without detecting the filling of the reserve tank, the control will lock-out the suction system and trigger alarm **E-27** (fuel suction system lock-out), on the boiler display. To unlock the system we should press reset on the boiler control panel and 9 more consecutive cycles will rerun or until the sensor detects the tank filling, provided that the timer programming of the feed system allow it.



When the reserve tank empties alarm **E-49** will be enabled, which will cut off boiler operation.

The cycle time may be adjusted using parameter **P.22** from the boiler's "Technical" menu (see boiler manual). With this parameter we can optimise the filling time of the suction pot on the upper part of the reserve tank, adapting it to the different characteristics of each pneumatic installation (length of suction pipe, type of extraction system, etc.). The adjustable time range is from a minimum of 35 seconds per cycle to a maximum of 195. Provided in the following sections are some guide values for cycle times recommended for various types of installations.



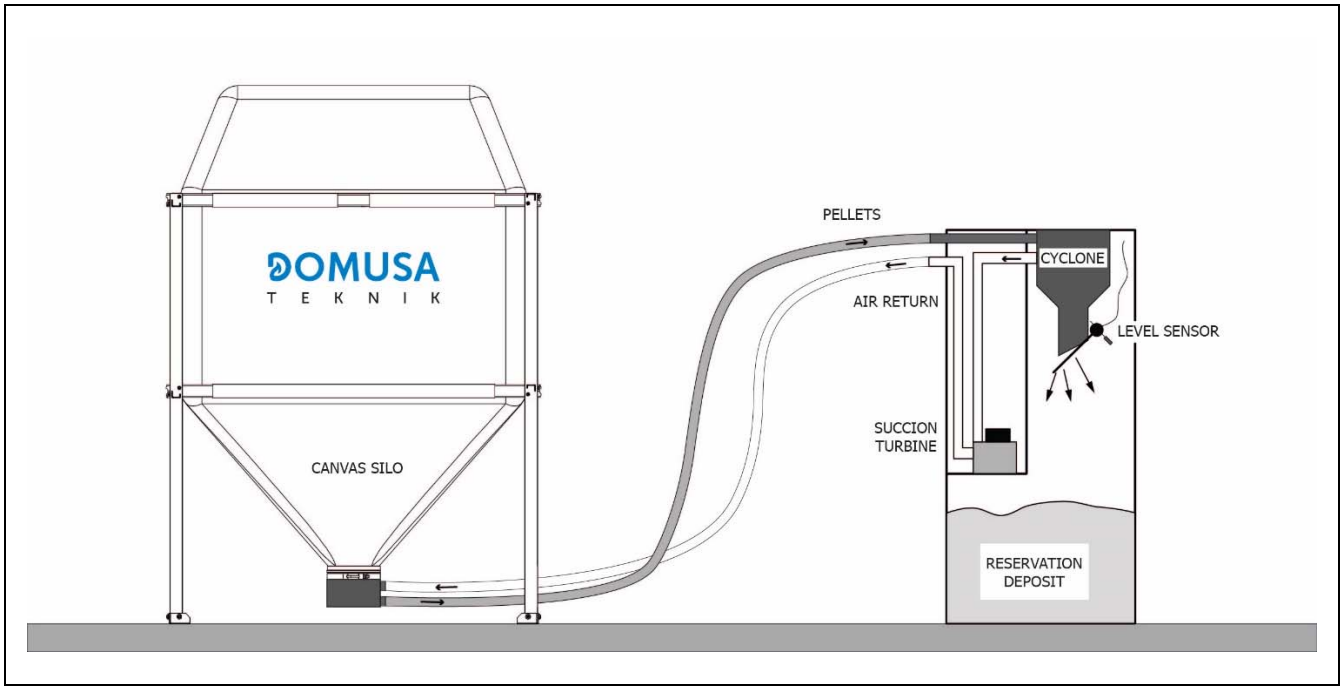
15.1 Operation with Canvas Silo or suction nozzle

If the installation is made up with a canvas silo or suction nozzle kit supplied by **DOMUS TEKNIK**, the suction turbine will switch on every time the cyclonic sensor detects a low pellets level and will continue operating for the cycle time set by the user in parameter **P.22** of the boiler's "Technical" menu. When the sensor detects he filling of the reserve tank, the control disables the operation of the suction turbine and will wait until it switches back on again. If, after 9 consecutive cycles, the sensor continues without detecting the filling of the tank, control will lock-out the functioning of the system and trigger alarm **E-27** (fuel suction system blocked), on the boiler display. To unlock the system we should press reset on the boiler control panel and 9 more consecutive cycles will rerun or until the sensor detects the tank filling.

The optimum cycle time is the time required for the cyclone on the reserve tank to be filled to its full capacity. The amount of pellets conveyed by cycle will depend on the length and route of the installation and the type of pellets. Bearing in mind such variable fuel characteristics, the table below shows some recommended cycle times, depending on the length of the installation:

Installation length	Cycle time
5 m	MIN (35 sec)
15 m	60 sec
25 m	120 sec

The figure below shows a functional diagram of the **fuel suction system** installed in combination with a **DOMUSA TEKNIK** canvas silo:



NOTE: If the suction system is locked-out, this could mean there are insufficient pellets in the main silo, or that the pneumatic hose installation has become blocked or is defective.

16 ADDITIONAL FUNCTIONS

The **BIOCLASS iC 150** boiler includes the following additional control functions:

16.1 Connection of the Remote Control input of the boiler

The boiler has connection strip **J6**, which allows the boiler to be enabled or disabled depending on an external control. The terminal strip **J6** is equipped with a bridge connecting its terminals so it will be necessary to remove the jumper before connecting the external control. This input has no voltage.

16.2 Cycle time of the fuel suction system (P.22)

The **BIOCLASS iC 150** boiler includes the installation of a fuel aspiration system. Using the **P.22** parameter, the activation cycle time of the system can be adjusted.

16.3 Reset default factory values (P.24)

If these settings are wrongly adjusted or if the boiler functions incorrectly, all the original settings of all the parameters can be restored by selecting "Yes" in parameter **P.24** of the *"Technical Menu"*..

16.4 Anti-block pump function

This function prevents the circulation feed pumps from the tank or needle from seizing up if they have been out of use for a long period. This system remains enabled while the boiler is plugged into the mains.

16.5 Anti-frost function

This function protects the boiler from freezing up during cold weather. If the boiler temperature drops to below 6ºC, the boiler circulation pump will start up until it reaches 8ºC. If the boiler temperature continues to drop and reaches 4ºC, the burner will start up, heating the installation until the boiler reaches 15ºC. This system remains on standby while the boiler is plugged into the mains.

16.6 Boiler pressure sensor function

This function prevents boiler failure caused by a low water level and excess pressure in the boiler. The pressure is detected by a pressure sensor, and its value appears on the control panel display (on the *"User Menu").* When the pressure drops below the set value in parameter **P.19** of the *"Technical Menu"* (default value 0.5 bar), the electronic control switches off the boiler and triggers an alarm on the display **("E-19**"). If the boiler pressure exceeds than 2.5 bar, an alarm is triggered on the display ("**E28**"), warning of excess pressure. If this should occur, we recommend calling the nearest **Technical Assistance Service** and drain the boiler until the pressure is between 1 and 1.5 bar *see "Draining the boiler")*.

16.7 External alarm input (P.38)

The **BioClass iC 150** boiler is equipped with voltage-free input for external alarms (connection terminals **J9**). Depending on the value selected in parameter **P.38** you can configure he following operating modes:

P.38 = 0 => External alarm inputs deactivated.
P.38 = 1 => External alarm input normally open. If contact closure is detected the boiler operation will lock-out and an alarm will be triggered on the display ("**E-68**").
P.38 = 2 => External alarm input normally closed. If contact opening is detected the boiler operation will lock-out and an alarm will be triggered on the display ("**E-68**").

16.8 Operation of Alarm Output

The **BioClass iC 150** boiler includes an alarm output. When the boiler triggers an operating alarm that shuts down the boiler the relay output supplied with voltage (230 V~) from terminal strip **J12**, where any external alarm signalling device can be connected to warn of boiler malfunctioning.

16.9 Communication MODBUS TCP/IP

The **BioClass iC 150** boiler includes an RJ45 plug for the Modbus communication. Using the LAN cable information is transferred via the Modbus TCP protocol and allows the user to read and write data from the boiler remotely.

17 FUNCTIONS OF THE "MULTIFUNCTION RELAY" (P.20)

The **BioClass iC 150** boiler is equipped with an auxiliary relay output which may be used to select a series of functions that increase the possibilities, features and comfort of the installation.

The different options of parameter **P.20** of the *"Technical Menu"* can be used to select the *"multifunction relay"* operating mode. The default value of this setting is 0 (disabled). The following sections include a description of the functions that can be selected.

17.1 Automatic filling Function (P.20 = 1)

The **BioClass iC 150** boiler may be connected to an automatic filling system which can be activated or deactivated via parameter **P.20**..

To do this, a motorised filling valve should be installed between the water supply network and the primary boiler circuit. This valve must be connected to the output of the auxiliary relay, between terminal Nos. **4** (**NO**) and **N** of the terminal strip **J3** *(see "Connections Diagram")*.

When the function (**P.20 = 1**) is enabled, the electronic control of the boiler will activate the multifunction relay output supplied with voltage (230 V~) between terminal Nos. **4** ("**NO**") and **N** from the terminal strip **J3**, and start up the fill valve connected to it, filling the primary circuit to the fill pressure set in parameter **P.21**. If the boiler water pressure drops below the minimum pressure set using parameter **P.19**, the boiler will automatically fill up again until the maximum filling pressure has been reached. The selectable range of fill pressure in **P.21** is 0.6 - 2.0 bar and the default factory setting is 1 bar.

17.2 Activation of auxiliary source with boiler lock-out (P.20 = 2)

The auxiliary source activation function with boiler lock-out (**P.20 = 2**) will activate the output of the multifunction relay supplying voltage (230 V~) between terminal Nos. **4** ("**NO**") and **N** of the terminal strip **J13**, activating the auxiliary source connected to it when there is a boiler lock-out.

The function consists of activating the multifunction relay when the boiler locks-out and there is a demand for heat from the buffer tank or needle and the Remote Control input is in closed circuit.

17.3 Activation of auxiliary source during peaks in demand (P.20 = 3)

The auxiliary source activation function with boiler lock-out (**P.20 = 3**) will activate the output of the multifunction relay supplying voltage (230 V~) between terminal Nos. **4** ("**NO**") and **N** of the terminal strip **J13**, activating the auxiliary source connected to it when there is a peak in heat demand.

17.4 Activation of auxiliary source with boiler lock-out and peaks in demand (P.20 = 4)

The auxiliary source activation function with boiler lock-out (**P.20 = 4**) will activate the output of the multifunction relay supplying voltage (230 V~) between terminal Nos. **4** ("**NO**") and **N** of the terminal strip **J13**, activating the auxiliary source connected to it when there is a boiler lock-out or a peak in heat demand.

18 SAFETY INTERLOCKS

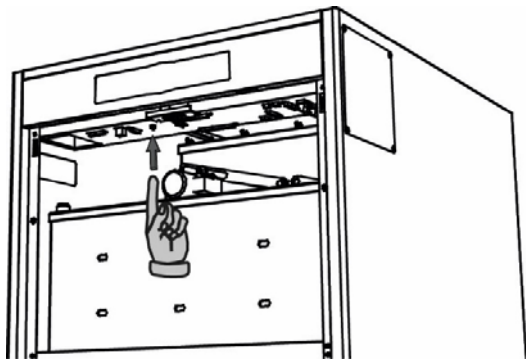
The electronic control system of the **BioClass iC 150** boiler may trigger the following safety interlocks to stop the boiler's operation. When any of these interlocks occurs, the boiler stops working and an alarm code appears on the display.

IMPORTANT: If any of the safety interlocks described below should occur repeatedly, switch off the boiler and call your nearest official Technical Assistance Service.

18.1 Temperature safety interlock

When this interlock occurs, the alarm code **"E-11"** will appear on the display. The burner will switch off and stop heating the installation.

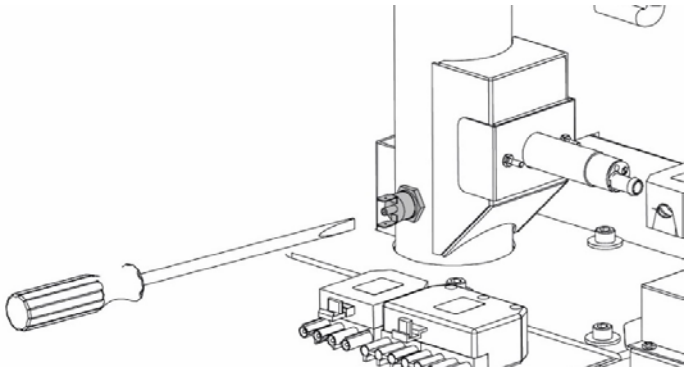
The interlock occurs whenever the water in the boiler exceeds a temperature of 100ºC. To unlock this alarm, wait until the temperature drops to below 90ºC and press the button on the safety thermostat, located on the underside of the boiler electrical box.



18.2 Safety interlock due to temperature in the fuel inlet pipe

When this interlock occurs, the alarm code **"E-05"** will appear on the display. The burner will switch off and stop heating the installation.

The interlock will occur when the temperature of the fuel inlet pipe to the burner exceeds 80ºC. To unlock the boiler operation, once the pipe temperature has dropped, press the reset button on the safety thermostat (see figure) and press the RESET symbol on the boiler control panel to resume start up.



18.3 Low pressure interlock

When this interlock occurs, the alarm code **"E-19"** will appear on the display. The burner and the boiler circulation pump will switch off, cutting off the heating and water flow to the installation.

This interlock occurs when the boiler pressure drops to below 0.5 bar, preventing the boiler from functioning when the water is drained from the installation, due to either leakage or maintenance operations. To unlock this alarm, fill the installation again *(see "Boiler Filling")*, until the *"water pressure"* parameter of the *"User Menu"* shows a pressure of between 1 and 1.5 bar.

19 SHUTTING DOWN THE BOILER

To switch off the boiler, place your finger on the power touch button  for 1 second *(see "Hand Components")*. In the **Off mode**, while the boiler is plugged into the mains and connected to the fuel installation, the boiler will stop operating, but the anti-frost protection and pump anti-block functions will remain activated.

To shut down the boiler functioning completely, unplug it from the mains and cut off the fuel supply.

20 DRAINING THE BOILER

The boiler has an outlet for drainage. The water is drained from the boiler by opening the drain valve located on the lower rear part of the boiler (the valve is not supplied with the boiler). Connect a flexible tube to this valve and run it to a drain. After draining the boiler, close the valve again and remove the flexible tube.

21 BOILER MAINTENANCE

Various maintenance operations should be carried out at different intervals to keep the boiler in perfect working order. The yearly operations must be carried out by personnel authorised by **DOMUSA TEKNIK**.

21.1 Boiler and flue maintenance frequencies

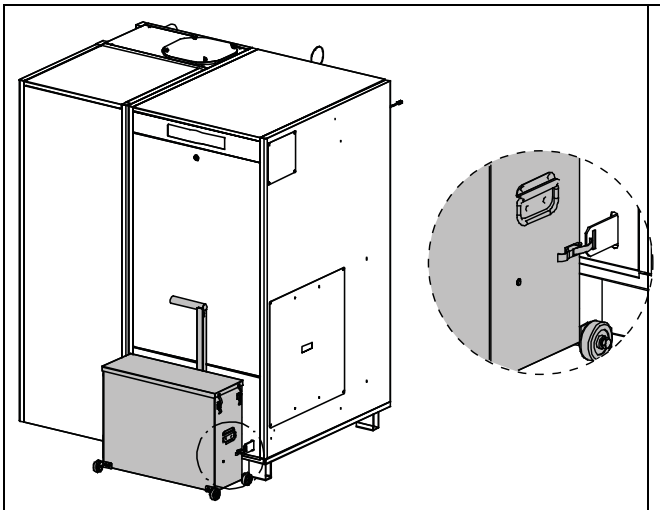
The most important aspects to be checked are as follows:

No.	Operation	Frequency
1.	Check the pellet storage.	as required
2.	Clean the ash in the ash drawer.	as required (approx. after using 7 Tn of pellets)
3.	Cleaning the burner combustion chamber.	approx. after using 7 Tn of pellets. The frequency could be higher according to current legislation in each country.
4.	Cleaning the boiler smoke box and the lambda probe.	Quarterly or approx. After using 14 Tn of pellets
5.	Check the boiler visually.	weekly
7.	Check the feed auger is correctly calibrated.	as required
8.	General cleaning of the bu	yearly
9.	General cleaning of the vent cleaning system.	yearly
10.	Check and clean the flue. The flue must be free of any obstacles and have no leaks.	yearly
11.	Calibration of the lambda probe	yearly
11.	Check the expansion vessel. It must be full, according to its reference plate.	yearly
12.	Check the seal between the burner and the boiler.	yearly
13.	Checking that the hydraulic circuits of the installation are completely sealed.	yearly
14.	Check the water pressure in the hydraulic installation. In cool mode, it should be between 1 - 1.5 bar.	yearly
15.	Checking the suction turbine motor brushes.	yearly

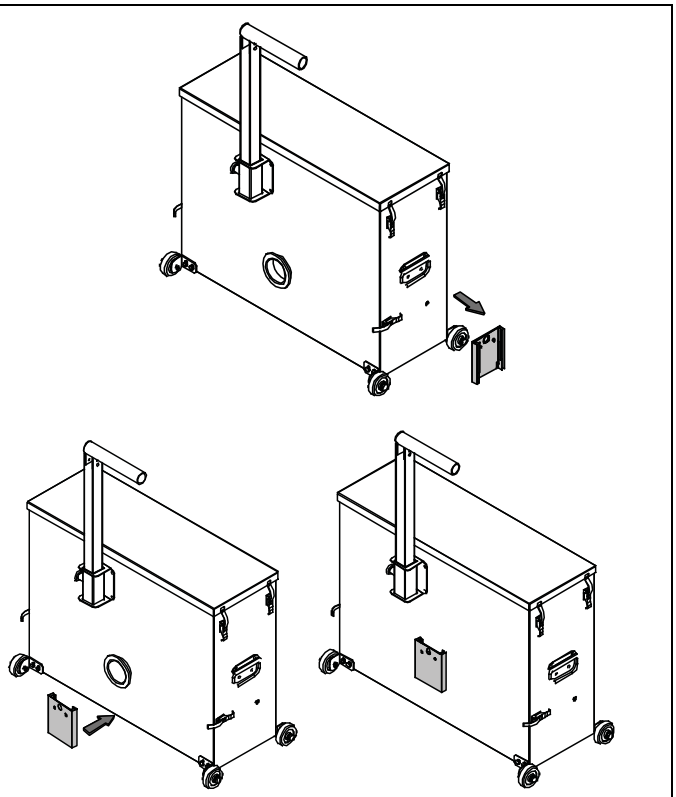
NOTE: Depending on the type of fuel and the weather conditions, the approximate consumption values may vary. The national and local periodic inspection provisions for the installation should also be taken into account.

21.2 Cleaning the ash drawer

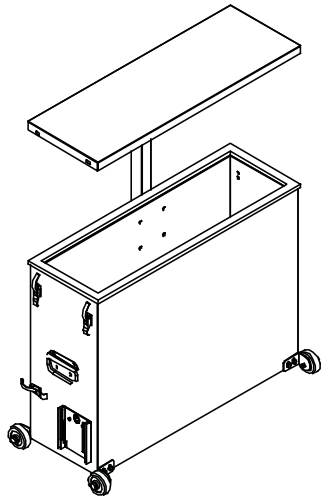
To empty the ash drawer, proceed as follows:



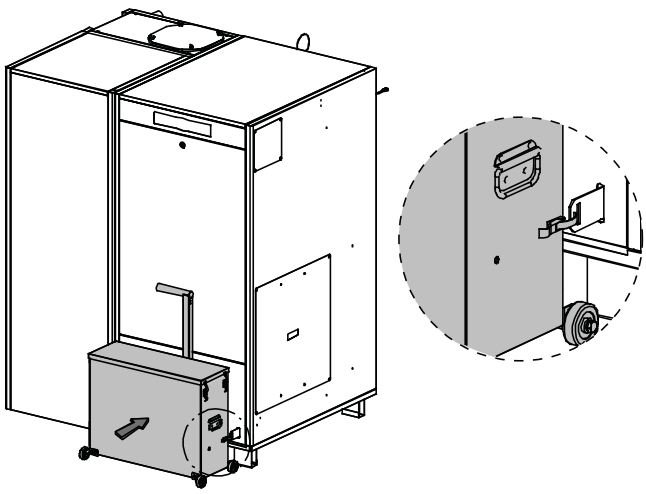
Release the latches of the ash drawer.



Place the cover over the ash filling hole as shown in the figure.



Open the cover of the drawer using the latches and empty out the ash.



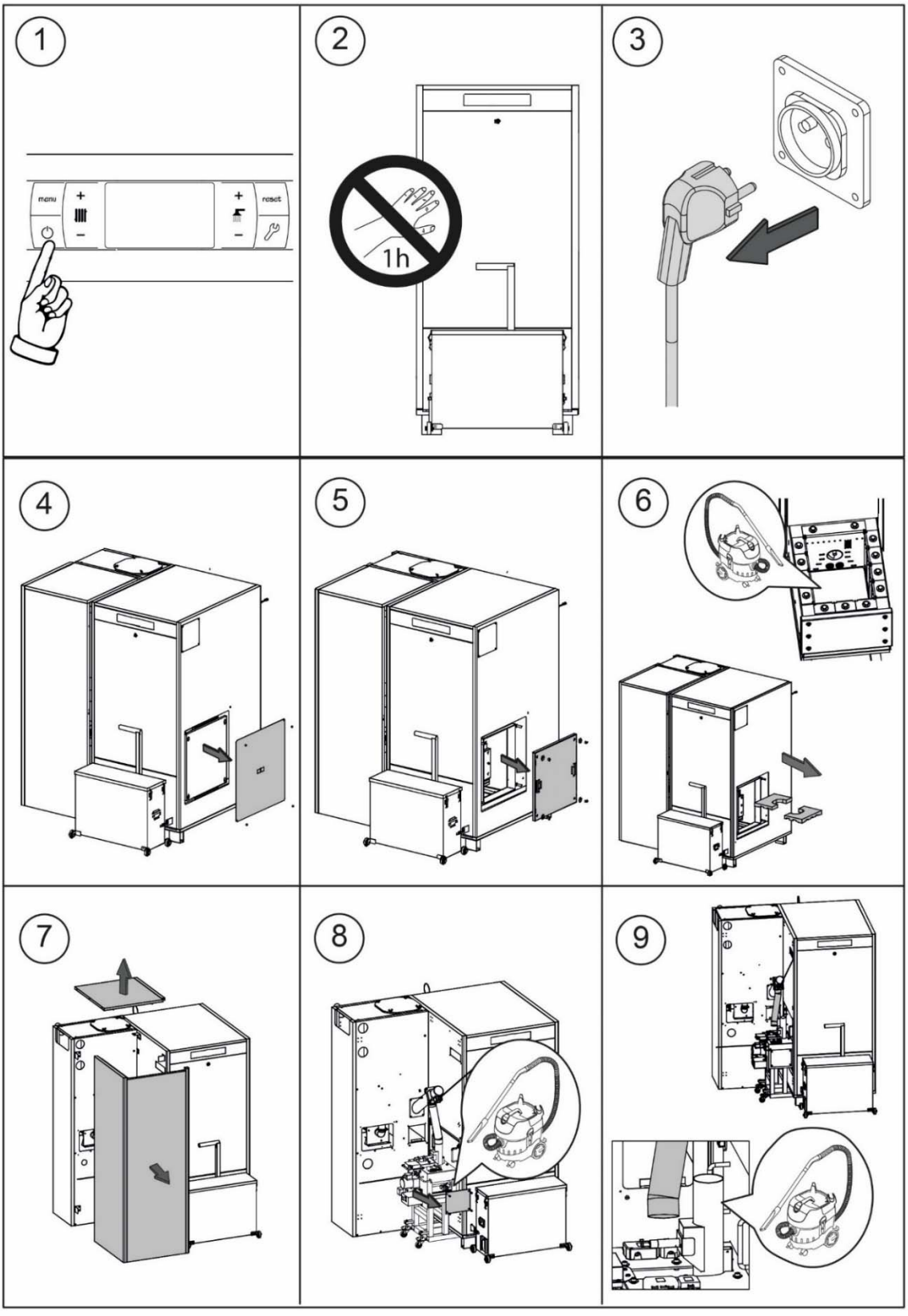
Replace the ash drawer, ensuring it is hermetically sealed.

IMPORTANT: Before any maintenance operation, switch off the boiler by pressing the power touch button. Leave the boiler switched off and allow it to cool down for at least one hour. Then turn off the main switch and ensure that it cannot be switched back on.

21.3 Cleaning the burner combustion chamber

The burner must be cleaned regularly to prevent the premature build-up of dirt due to the accumulation of slag (solid combustion waste) adhered to the burner walls.

The following procedure is recommended for correctly cleaning the burner:



Depending on the amount of wooden pellets burned or their quality, the cleaning frequency may vary. The user must clean the burner walls using a suitable brush or a vacuum cleaner, to prevent the build-up of large ash formations.

Handle the refractory parts with care to avoid breaking them.

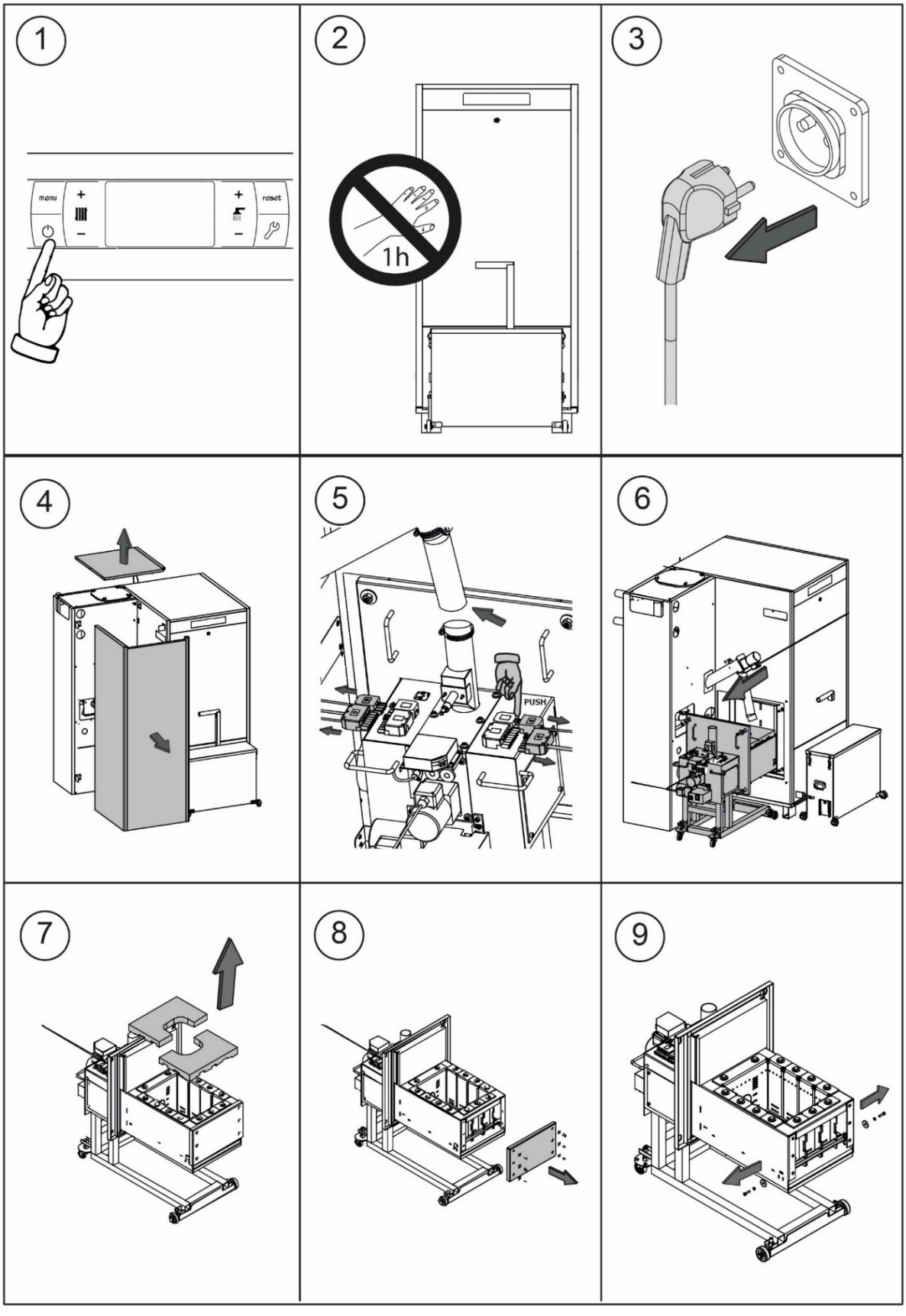
IMPORTANT: Before any maintenance operation, switch off the boiler by pressing the power touch button. Leave the boiler switched off and allow it to cool down for at least one hour. Then turn off the main switch and ensure that it cannot be switched back on.

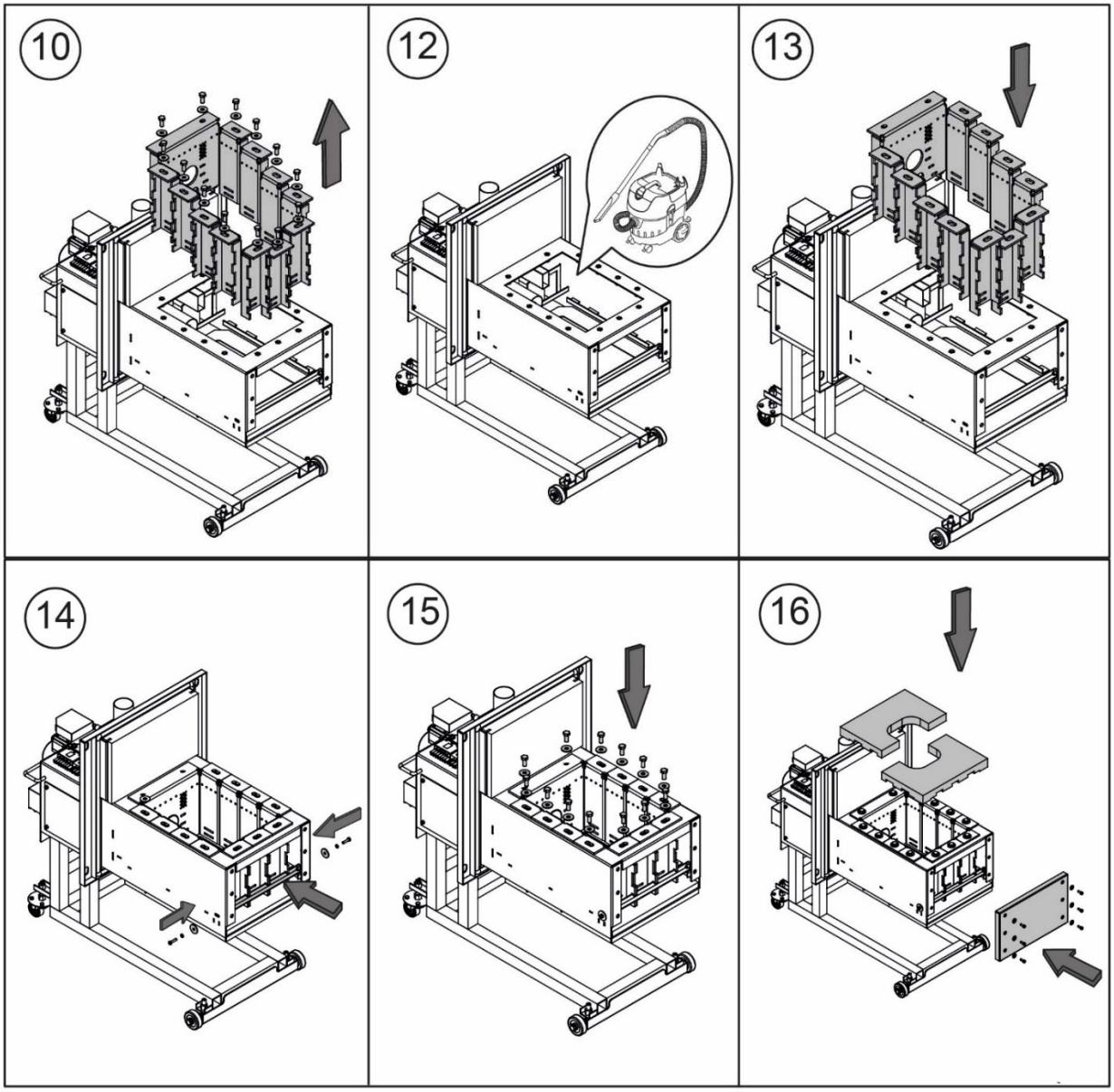
Warning:

- **To be carried out only when the boiler is switched off and cooled down**
- **thermal gloves** 
- **mask** 
- **fire hazard** 

21.4 General cleaning of the burner

The following procedure is recommended for correctly cleaning the burner:





Depending on the amount of wooden pellets burned or their quality, the cleaning frequency may vary. The user must clean the burner walls using a suitable brush or a vacuum cleaner, to prevent the build-up of large ash formations.

Handle the refractory parts with care to avoid breaking them.

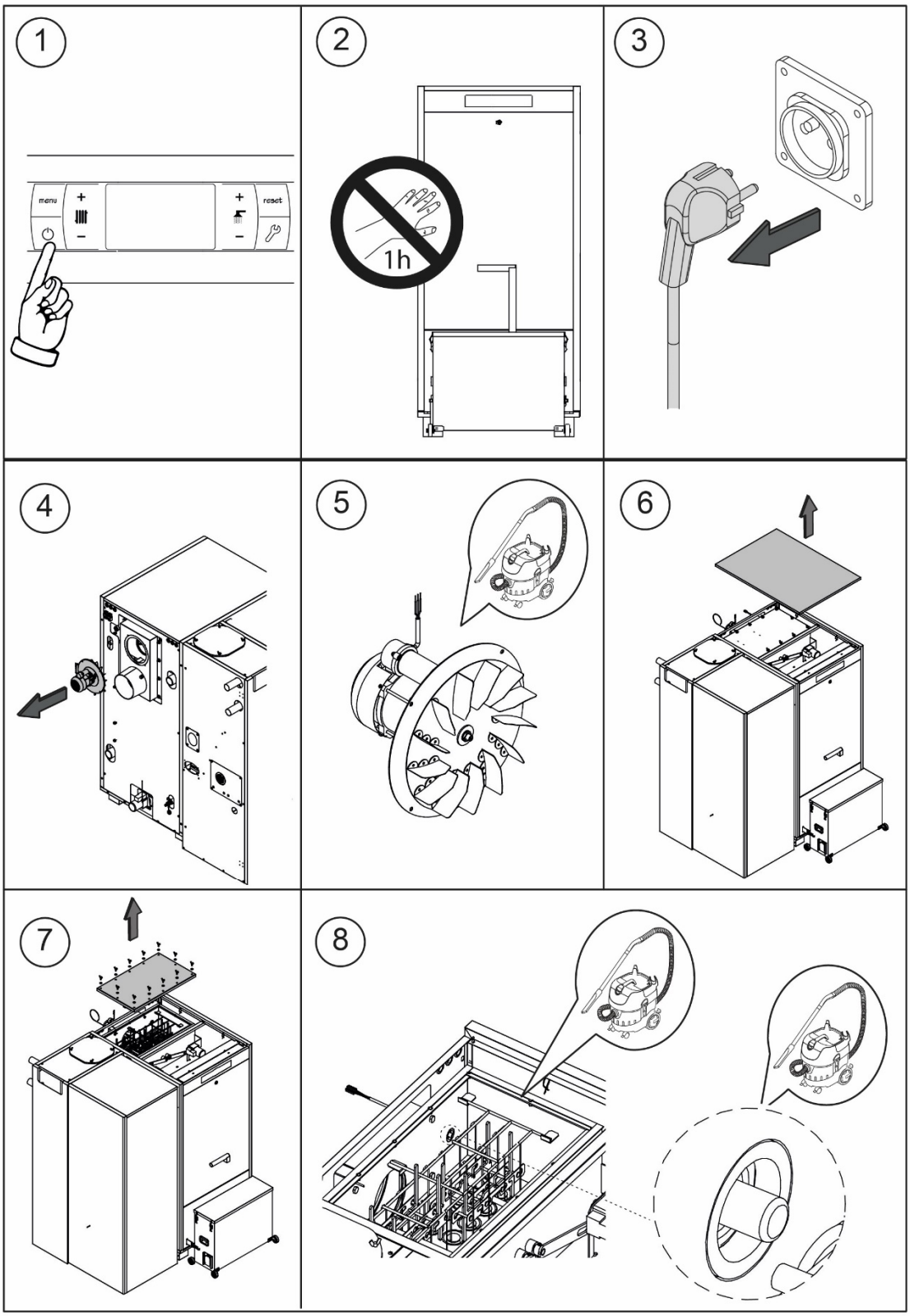
IMPORTANT: Before any maintenance operation, switch off the boiler by pressing the power touch button. Leave the boiler switched off and allow it to cool down for at least one hour. Then turn off the main switch and ensure that it cannot be switched back on.

Warning:

- **To be carried out only when the boiler is switched off and cooled down**
- **thermal gloves**
- **mask**
- **fire hazard**

21.5 Cleaning of the smoke box and lambda probe

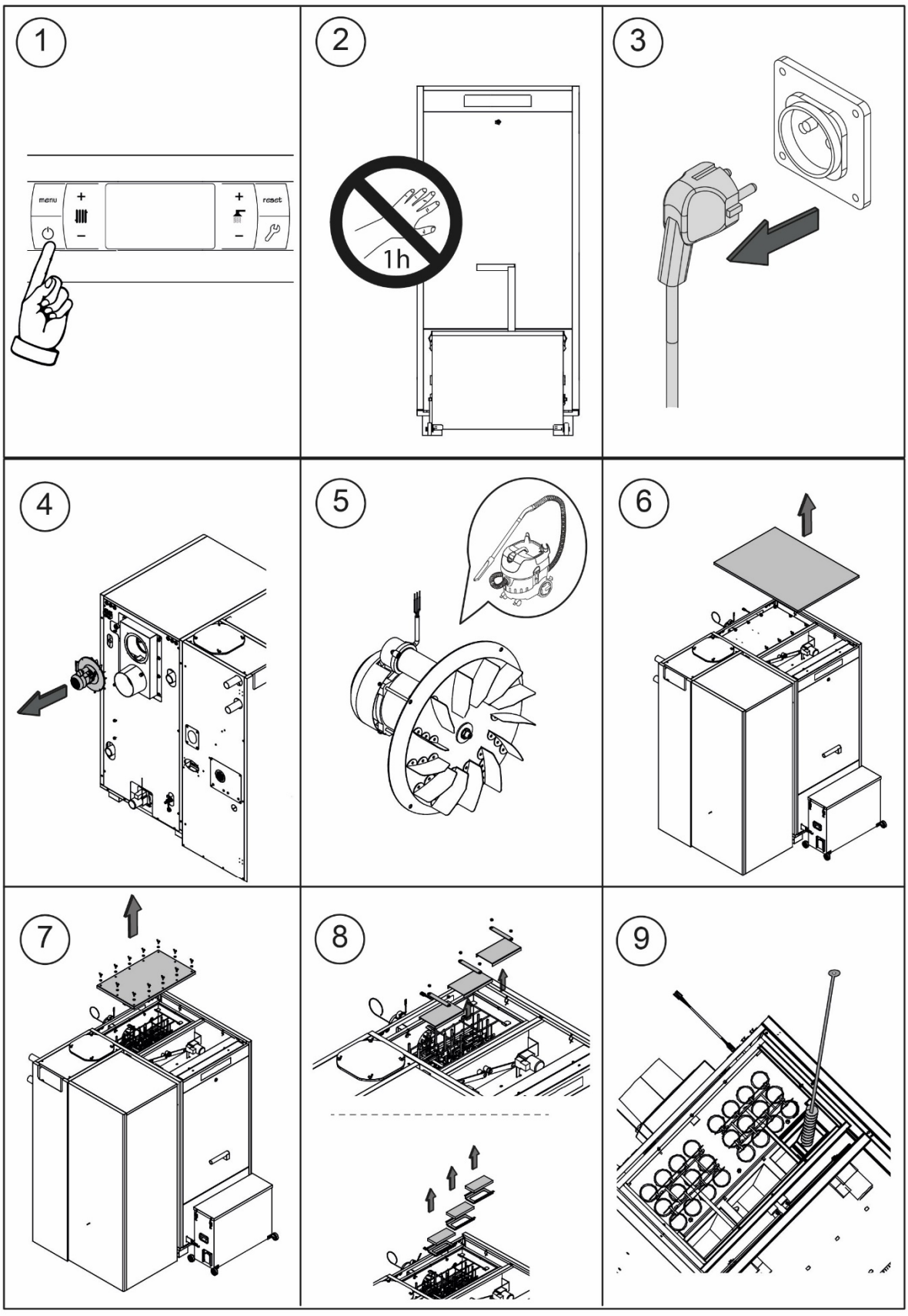
The following procedure is recommended for correctly cleaning the vents:

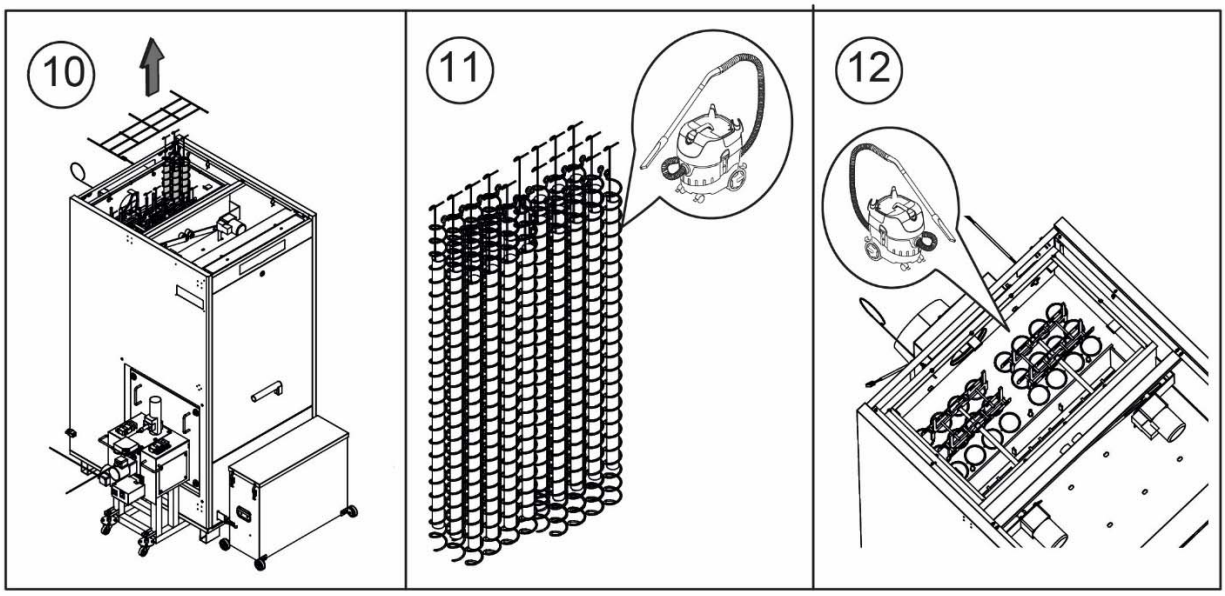


IMPORTANT: Before any maintenance operation, switch off the boiler by pressing the power touch button. Leave the boiler switched off and allow it to cool down for at least one hour. Then turn off the main switch and ensure that it cannot be switched back on.

21.6 General cleaning of the vent cleaning circuit

The following procedure is recommended for correctly cleaning the vents:





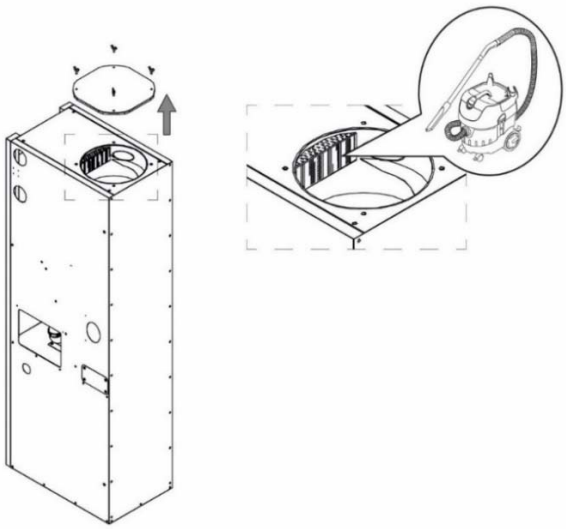
IMPORTANT: Before any maintenance operation, switch off the boiler by pressing the power touch button. Leave the boiler switched off and allow it to cool down for at least one hour. Then turn off the main switch and ensure that it cannot be switched back on.

21.7 Cleaning of the protection grille and inspection of the suction unit

Before cleaning the cyclone mesh ensure that the ´**suction system is disconnected from the mains.**

At least once a year (depending on the amount of dust in the pellets) unscrew the cyclone cover and hoover the dust in the protection grille underneath the suction turbine.

If the pellets suction turbine generates a lot of noise or throws out sparks, this may be due to dirt deposited in the fan blades. You must remove the suction turbine and clean it using a vacuum cleaner or compressed air. The suction turbine motor has carbon brushes. Replace the brushes after using approximately 55 tonnes of pellets.



To prevent any damage to people and property, the following safety indications must be taken into account during the maintenance operations described in the following sections:

- Before any servicing, disconnect the boiler from the mains.
- Wear a protective mask (standard mask) when cleaning the suction turbine and the protection grille to protect against the formation of airborne dust.

21.8 Draining the condensation water

Draining of condensation water from the flue should not be altered in any way and it must be kept free of obstructions.

21.9 Boiler water characteristics

In areas with water hardness exceeding 25-30ºfH, treated water must be used in the heating installation to avoid any scale deposits on the boiler. It should be noted that even a few millimetres of scale will greatly reduce the boiler's heat conductivity, causing a major drop in performance.

Treated water must be used in the heating circuit in the following cases:

- Very large circuits (containing a large amount of water).
- Frequent filling of the installation.

If repeated partial or total draining of the installation is necessary, we recommend filling it with treated water.

IMPORTANT NOTE:

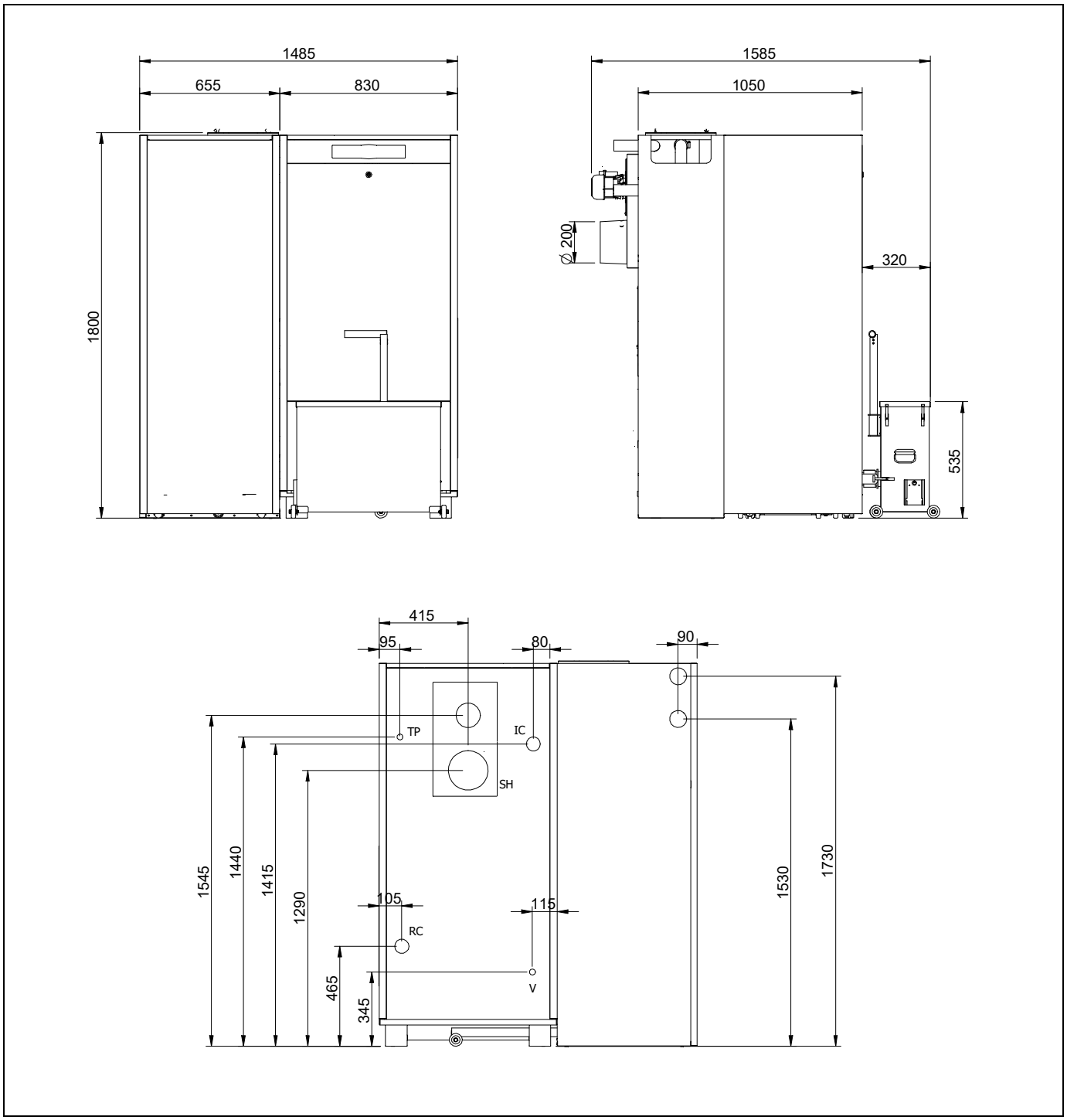
- Improper handling of the boiler may cause serious or even fatal damage to the apparatus.

- The user must ensure that the water pressure of the installation is correct, that is, at a pressure between 1 and 1.5 bar. If the pressure is below 0.5 bar, an error code **E-19** will appear on the display and code **E-28** if the pressure exceeds 2.5 bar.

- The standardised ventilations where the boiler is situated (boiler room) must not be obstructed or partially obstructed under any circumstances.

- Boiler maintenance shall be carried out in accordance with the specifications in this manual. The apparatus must be visually inspected regularly to detect any leak or malfunction.

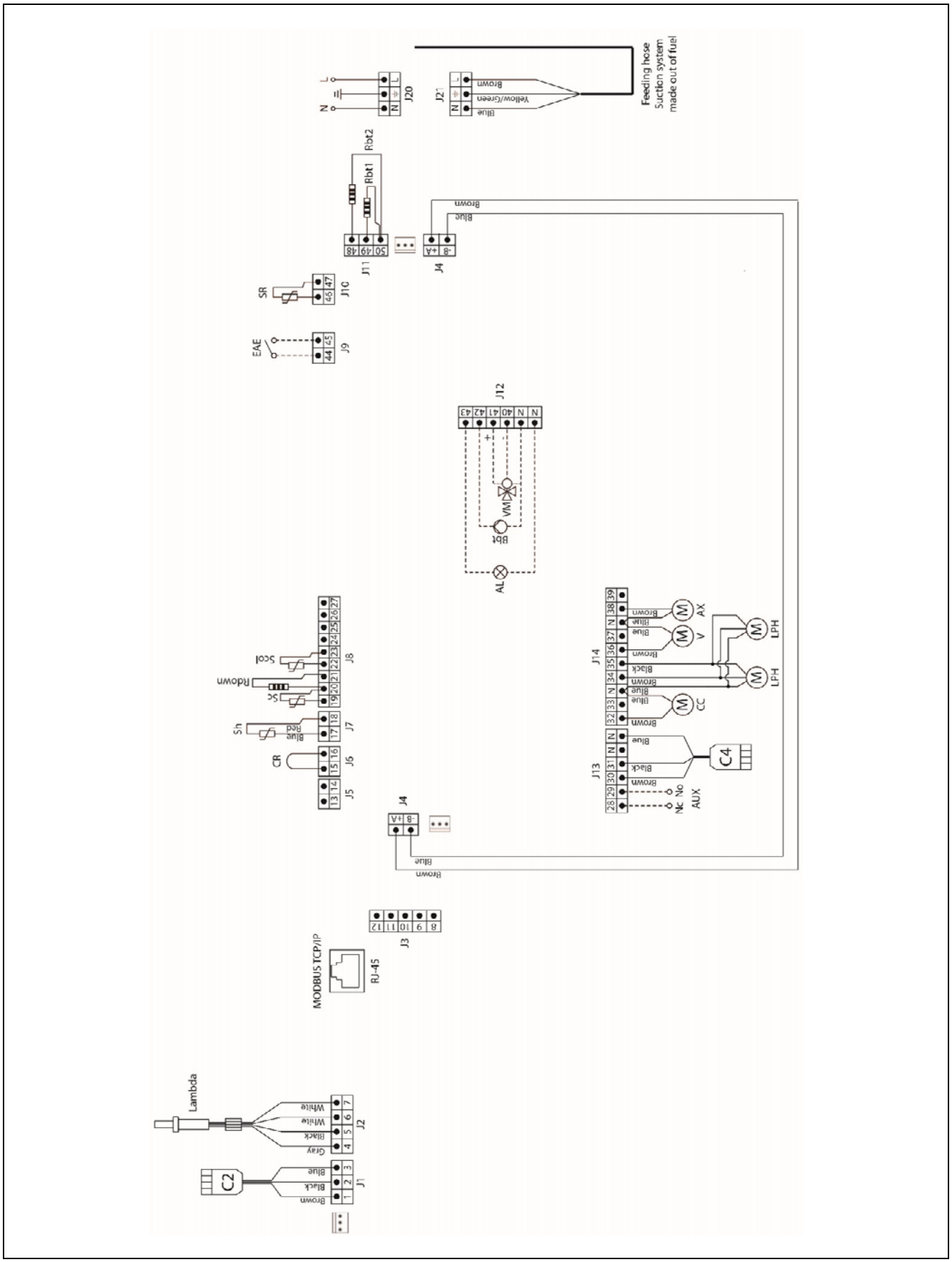
22 DIAGRAMS AND MEASUREMENTS



IC: Ida Boiler 2" H.
RC: Boiler Return 2" H.
SH: Fume outlet.**V:** Drainage outlet ¾" H.
TP: Boiler drain valve outlet 1/2" H.

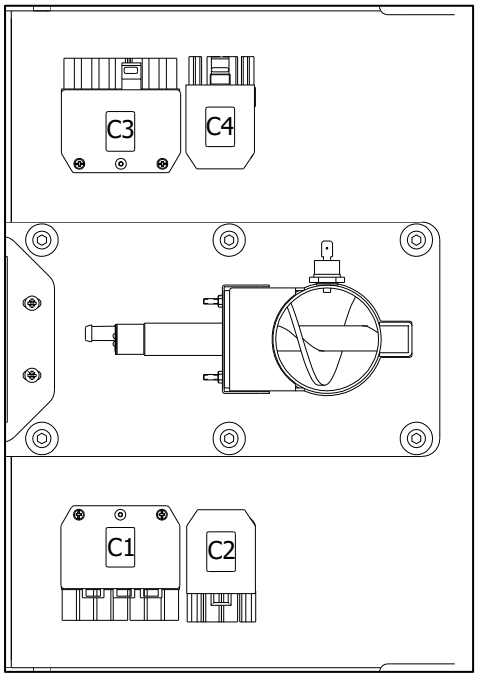
23 CONNECTIONS DIAGRAM

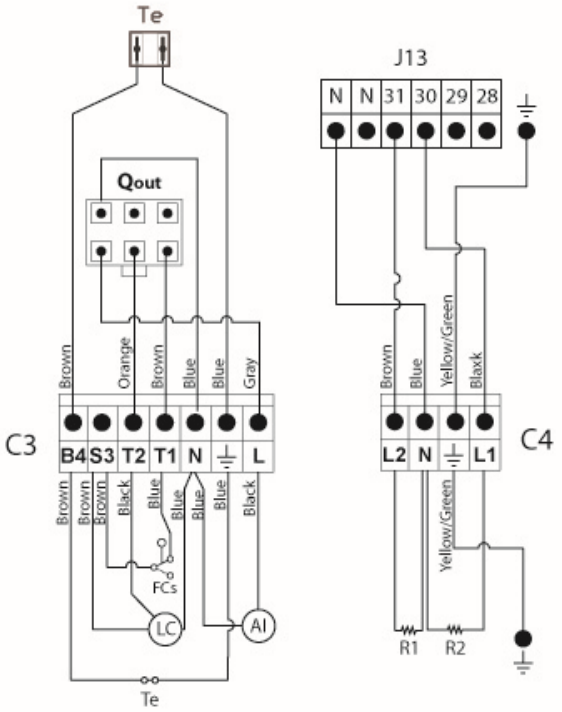
23.1 Boiler

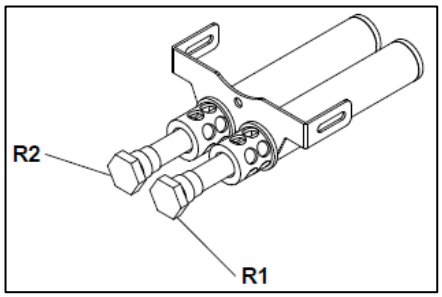


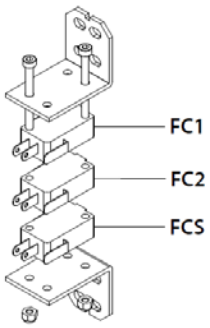
L: Phase.
N: Neutral
N_C: Multifunction relay: Normally closed
N_O: Relay malfunction: Normally open
AUX: Auxiliary outlet
CC: Compressor ash box motor
LPH: Vent cleaning device motor
V: Fan
AX: Pellet feed motor
AL: Alarms Output
Bbt: BT buffer tank feed pump
VM: Mixing valve
CR: Remote Control
Sh: Fume temperature sensor.
Sc: Boiler sensor
Sdown/Rdown: Lower tank probe
Scol: Upper tank probe
EAE: External Alarm Input
SR: Boiler Return sensor
Sbt1/Rbt1: Intermediate sensor 1
Sbt2/Rbt2: Intermediate sensor 2
J1: C2 Connector
J2: Lambda probe connector
J4: Communication connector
J6: Remote Control Connector
J7: Fume sensor connector
J8: Sensor connector
J9: External alarm input connector
J10: Return probe connector
J11: BT intermediate probe connector
J12: Components connector
J13: Components connector
J14: Components connector
J20: Feed connector
J21: Fuel aspiration system feed connector

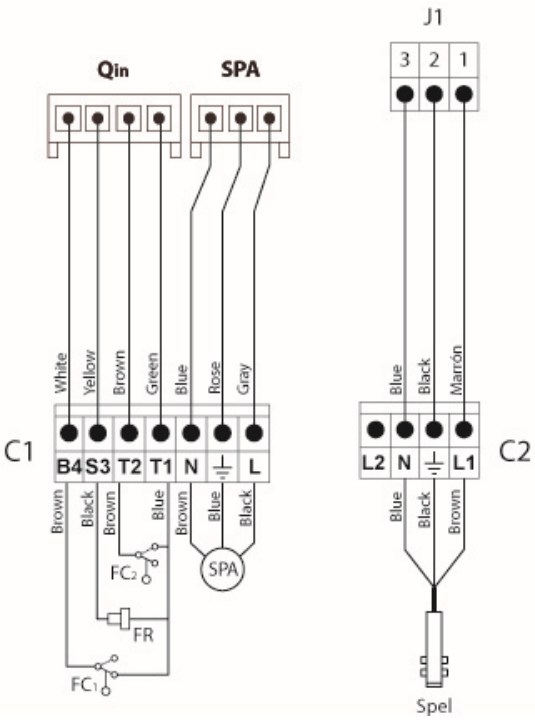
23.2 Burner





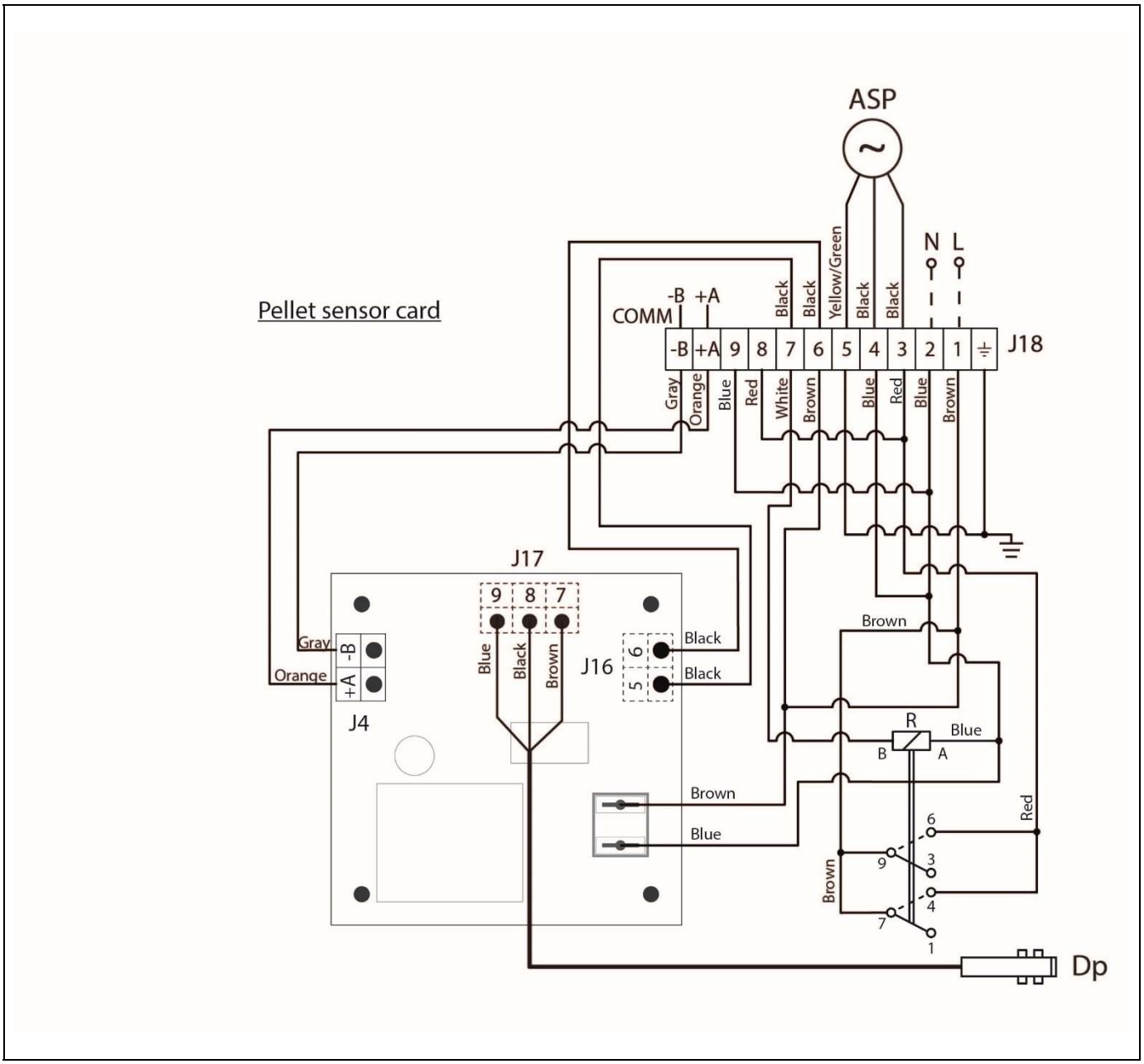




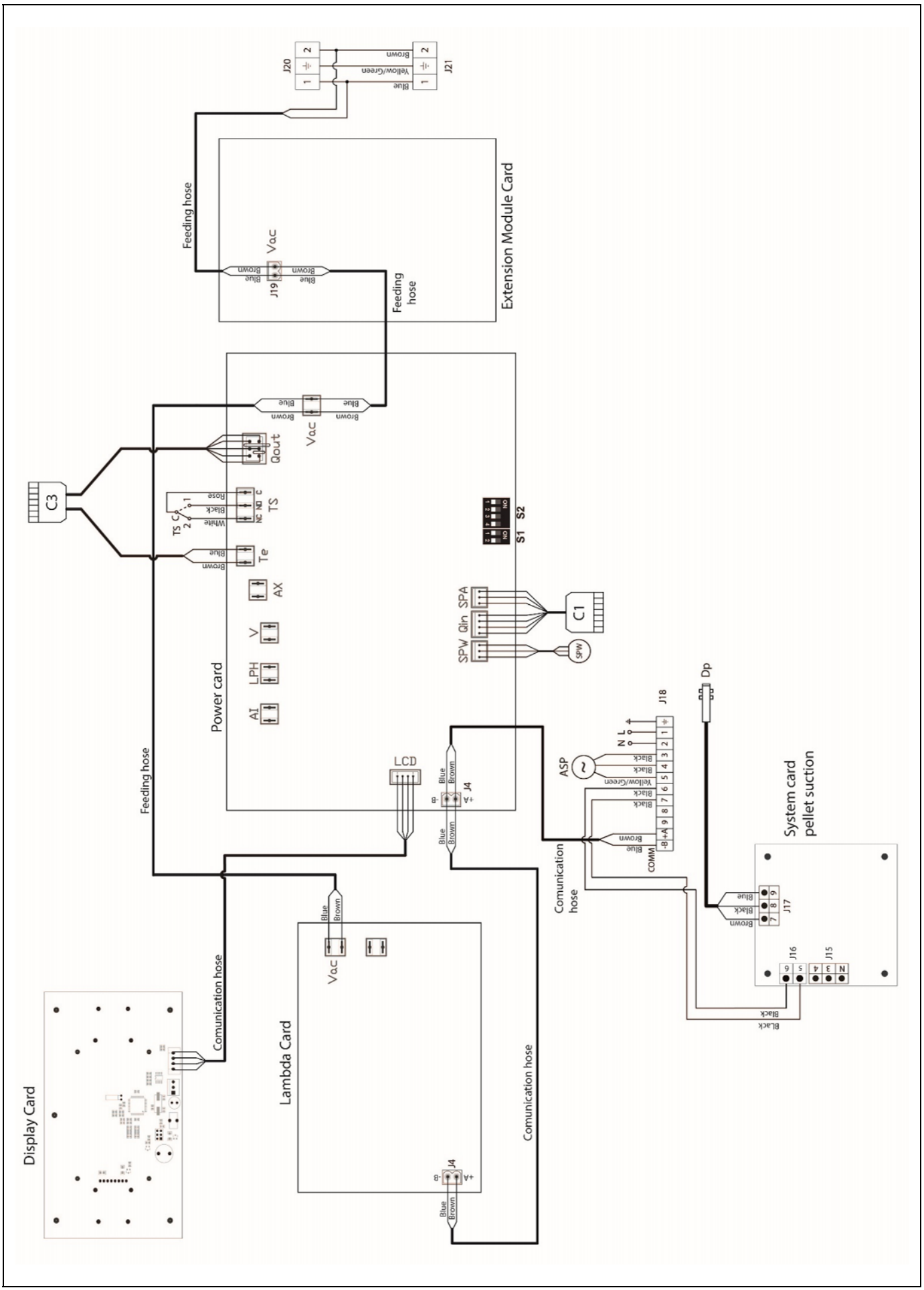


Qout: Burner output connector.
LC: Ash cleaning device motor.
FC_1: Limit switch closed.
FC_2: Limit switch open.
FC_S: Safety limit switch
Qin: Burner input connector.
FR: Photocell.
FCp: Ash cleaning device limit switch.
Te: Pellet safety thermostat
AI: Internal supply line
R_1: Fire resistance
R_2: Fire resistance 2.
SPA: Air pressure sensor.
Spel: Pellet level sensor.

24 ELECTRICAL DIAGRAM



N: Neutral
L: Phase
ASP: Suction turbine
Dp: Pellet filling level sensor
R: Relay
J4: Communication connector
J16: Components connector
J17: Filling level sensor connector
J18: Sensor connector


J20
J21
Brown
Yellow/Green
Blue
Feeding hose
Extension Module Card
Vac
J19
Feeding hose
Power card
Qout
TS
Te
AX
V
LPH
AI
S1 S2
SPA
Qin
SPW
C1
C3
LCD
J4
ASP
J18
N L
Dp
Comunication hose
System card
pellet suction
J17
J16
J15
Display Card
Lambda Card
Comunication hose

Vac:	Supply
Te	Pellet safety thermostat
TS:	Safety thermostat **.**
Qout:	Burner output connector
Qin:	Burner input connector
SP_W:	Water pressure sensor
SP_A:	Air pressure sensor
ASP:	Suction turbine
Dp:	Filling level sensor
J4:	Communication connector
J15:	Connector
J16:	Components connector
J17:	Pellet filling level sensor connector
J19:	Feed connector
J20:	Feed connector
J21:	Fuel aspiration system feed connector
S1,S2:	Boiler model selector

MODEL		BIOCLASS iC 150
Rated heat output (P_n)	kW	145
Performance at maximum power	% (PCI)	92.1
Minimum output power (P_p)	kW	43.4
Performance at minimum power	% (PCI)	94.1
CO at maximum power (10% O_2))	mg/m^3	132
OGC (organic gaseous substances) at maximum power (10% O_2))	mg/m^3	1
Particle content at maximum power (10% O_2))	mg/m^3	20
Particle content at minimum power (10% O_2))	mg/m^3	16
CO at minimum power (10% O_2))	mg/m^3	126
OGC (organic gaseous substances) at minimum power (10% O_2))	mg/m^3	0
Classification (as per EN 303-5)	-	Class 5
Maximum operating pressure	bar	3
Max. operating temperature	°C	80
Maximum safety temperature	°C	100
Water content	litres	202
Minimum flue draught	mbar	0.10
Maximum flue draught	mbar	0,20
Electrical supply	-	230 V~, 50 Hz, 10 A
Fume outlet diameter	mm	200
Mass flow rate of fumes at rated/minimum power	Kg/s	0.089/0.05
Fume temperature at rated/minimum power	°C	140/90
Maximum water content in the fuel	%	7
Minimum return temperature	°C	45ºC
Pressure drop on water side (dT = 20 K)	mbar	26
Weight (net)	kg	607

MODEL			BIOCLASS iC 150
Rated heat output (P_n)		kW	145
Performance at maximum power (η_n)		% (PCS)	85.1
Minimum output power (P_p)		kW	43
Performance at minimum power (η_p)		% (PCS)	86.7
Supply mode		-	Automatic *
Condensing boiler		-	No
Combination boiler		-	No
Cogeneration boiler		-	No
Fuel		-	Wooden pellet Ø6 - 8 mm. Maximum length 35 mm.
Seasonal performance (η_s)		%	83
Seasonal heating emissions	Part.	mg/m^3	18
	COG	mg/m^3	0
	CO	mg/m^3	116
	NO_x	mg/m^3	139
Electricity consumption at rated power (the max.)		kW	0.323
Electricity consumption at 30% of rated power (the min.)		kW	0.180
Electricity consumption in standby mode (P_{SB})		kW	0.005
Energy efficiency index - EEI		-	121
Class			A+

***It is recommended to use the boiler with a hot water tank at a minimum volume of 20 x Pn with Pn indicated in kW.**

25 ALARM CODES

The **BIOCLASS iC 150** boiler is equipped with an electronic control that performs continuous self-testing to detect any boiler malfunctioning. When the electronic control detects a functioning error, this is indicated by an alarm code on the display. The following list includes the possible alarm codes:

code	ALARM	DESCRIPTION
E-01	Open circuit **S_c** boiler sensor.	The boiler sensor is damaged or disconnected. Please contact your nearest official Technical Assistance Service to have it replaced.
E-02	Closed circuit S**S_c** boiler sensor.	
E-03	Open circuit **S_{col}** upper sensor of the tank or needle.	The upper sensor S_{col} is broken or disconnected. Please contact your nearest official Technical Assistance Service to have it replaced.
E-04	Short circuit **S_{col}** upper sensor of the tank or needle.	
E-05	Overheating of fuel inlet, **Te**.	The fuel inlet pipe has exceeded the safety temperature of 80ºC and will lock-out boiler functioning. To unlock the boiler operation, once the temperature has dropped, press the button on the safety thermostat and restore operation by pressing the RESET button on the control panel. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.
E-06	Failure on start up.	Check the fuel content in the reserve tank. Calibrate the feed auger. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.
E-07	Error in "Ash cleaning" start phase.	These alarms are triggered whenever a malfunction is detected in the ash cleaning system of the burner. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.
E-08	Error in "Ash cleaning" final phase.	
E-09	Limit switch error **FCp1 or FCp2** "Ash cleaning".	
E-10	Boiler overheating.	The water in the boiler has exceeded the safety temperature of 95ºC and has locked-out its functioning. The boiler will unlock automatically when the boiler temperature drops to 90ºC. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.
E-11	Safety thermostat, Ts	The boiler has exceeded the safety temperature of 100ºC. The boiler will cut out. To unlock it, press the safety thermostat button when the temperature has dropped. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.
E-12	Burner pellet level sensor enabled	The pellet level sensor of the burner has detected that the inlet pipe is full of pellets. The boiler will unlock automatically when the pipe is emptied. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.
E-13	Insufficient air depression.	Check the correct operation and connection of the air pressure sensor and that the burner and ash drawer are correctly placed in the boiler. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.
E-14	Fall in air depression.	
E-15	Insufficient air depression in pre-flushing.	

code	ALARM	DESCRIPTION
E-18	Water pressure sensor fault.	The water pressure sensor is damaged or disconnected. Please contact your nearest official Technical Assistance Service to have it replaced.
E-19	Low water pressure.	The water pressure of the installation is below the minimum pressure set in parameter P.19 of the *"Technical Menu"* (default value 0.5 bar). The boiler will cut out. To unlock it, fill the installation at a pressure of between 1 and 1.5 bar. This alarm may be set off due to the water having been drained from the boiler or leakage in the installation. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.
E-20	Safety valve fault.	The water pressure of the installation is higher than 3.5 bar. The pressure safety valve is broken. The boiler will lock out until the pressure of the installation drops from 2.5 bar. The installation should be drained until the pressure of the installation is between 1 and 1.5 bar. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.
E-21	Air pressure sensor fault	The air pressure sensor of the burner is broken or disconnected. Contact your nearest official technical assistance service to have it replaced.
E-22	Excessive air depression in the furnace.	The air depression in the furnace is excessive. The burner will lock out until the depression is correct. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.
E-23	Excessive air overpressure in the furnace.	The air overpressure at the inlet to the burner is excessive. The burner will lock out until the depression is correct. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.
E-25	Erroneous calibration.	An incorrect parameter value has been entered or it has been set to Off. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.
E-26	Communication error with the electronic control of the **fuel aspiration system.**	There has been a communication error between the boiler and the electronic control of the **fuel aspiration system**, locking out its operation. When communication is restored operation will unlock automatically. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.
E-27	Lock-out of the **fuel suction system.**	The number of consecutive fuel feed cycles has been exceeded, locking-out the operation of the **fuel suction system**. Inspect the automatic fuel feed installation, ensuring that it is not empty and that there is no fuel clogged in any of the pneumatic piping. To unlock the alarm, press the RESET button on the boiler handle. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.

code	ALARM	DESCRIPTION
E-28	Overpressure of water.	This indicates that the water pressure in the boiler is over 2.5 bar, warning that the installation is in overpressure status. Boiler functioning will NOT cut-out. To restore normal boiler functioning, drain the boiler until it reaches a pressure of 1 - 1.5 bar. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.
E-29	Fuel level sensor.	The fuel filling sensor of the **fuel suction system** is broken or disconnected. Please contact your nearest official Technical Assistance Service to have it replaced.
E-30	Open circuit **Sdown** lower probe in tank.	The lower sensor of the tank S_{down} is broken or disconnected. Please contact your nearest official Technical Assistance Service to have it replaced.
E-31	Lower sensor of tank **Sdown** shortcircuited.	
E-32	Intermediate sensor No.1 of tank **Sbt1** open circuit.	The intermediate sensor of tank Sbt1 is broken or disconnected. Please contact your nearest official Technical Assistance Service to have it replaced.
E-33	Intermediate sensor No.1 of tank **Sbt1** shortcircuited.	
E-34	Intermediate sensor No.2 of tank **Sbt2** open circuit.	The intermediate sensor of tank Sbt2 is broken or disconnected. Please contact your nearest official Technical Assistance Service to have it replaced.
E-35	Intermediate sensor No.2 of tank **Sbt2** shortcircuited.	
E-36	Change of the DIP-switch wrong.	An intervention and change has been made to the position of the boiler model selectors with the boiler connected to the mains. The boiler will lock-out until it is disconnected and reconnected to the mains.
E-37	Communication error with card CCDPB	Communication error with card CCDPB. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.
E-38	Prolonged and Insufficient air depression in the furnace.	Check the correct operation and connection of the air pressure sensor and that the burner and ash drawer are correctly placed in the boiler. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.

code	ALARM	DESCRIPTION
E-39	Insufficient fan speed.	Incorrect operation of the fan. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.
E-40	Drop in fan speed.	
E-41	Prolonged drop in fan speed.	
E 42	Communication error with card CCDPMAX	Communication error with card CCDPMAX If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.
E-43	Ashtray full.	Ash deposit full notice. The boiler will continue to function normally. To reset the notice the ash drawer must be emptied and "Empty ashes" counter reset to zero in the "User" menu (see section "Ashtrayox status").
E-44	Boiler maintenance	Alert to carry out boiler maintenance. Please contact your nearest official Technical Assistance Service so that periodic maintenance can be carried out on the boiler.
E-45	SR open circuit boiler return sensor.	The boiler return sensor is broken or disconnected. Please contact your nearest official Technical Assistance Service to have it replaced.
E-46	Boiler return sensor SR shortcircuited.	
E-49	The reserve pellet tank has no fuel	The hopper is completely empty of pellets. The boiler shuts down to prevent the auger emptying. Check that the suction system is operating properly.
E-51	Communication error between a boiler and the MC Cascade Control.	One of the boilers connected to the MC control has stopped communicating suddenly. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.
E-52	Error due to excessive fume temperature	The temperature of the fumes from the boiler has exceeded the maximum safety temperature. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.
E-54	Bad connection in fumes temperature sensor	The fumes temperature sensor does not measure correctly. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.
E-55	Fumes temperature sensor open circuit	
E-57	Fault in Resistor No.1	Resistor No.1 for igniting the burner is not operating correctly. Please contact your nearest official Technical Assistance Service to have it replaced.
E-58	Fault in Resistor No.2	Resistor No.2 for igniting the burner is not operating correctly. Please contact your nearest official Technical Assistance Service to have it replaced.
E-60	Pellet level sensor of the burner bad connection	The pellet detection sensor in the pellet drop ramp of the burner is broken or badly connected.
E-61	Detection of the burner pellet level sensor i	The pellet level sensor has detected a pellet in the pellet drop ramp of the burner. The boiler will perform safety interlock.

code	ALARM	DESCRIPTION
E-62	Low oxygen concentration.	The lambda sensor has measured an oxygen concentration that is too low over a long period. The boiler will perform safety interlock. Please contact your nearest official Technical Assistance Service to have it replaced.
E-63	High oxygen concentration	The lambda sensor has measured an oxygen concentration that is too high over a long period. The boiler will perform safety interlock. Please contact your nearest official Technical Assistance Service to have it replaced.
E-64	Lambda sensor error	The lambda sensor has given a value outside of the range in the calibration process. While adjusting the combustion with the lambda sensor enabled the boiler will perform safety interlock. Please contact your nearest official Technical Assistance Service to have it replaced.
E-65	Lambda sensor open circuit	The lambda sensor is broken or badly connected. Please contact your nearest official Technical Assistance Service to have it replaced.
E-66	Lambda sensor shortcircuited	
E-68	External alarm	Error generated by an external alarm. The boiler will lock-out until the external alarm has been reset.
E-80	Upper sensor **Scol** of the **MC Cascade control** open circuit	The Scol probe is damaged or disconnected. Please contact your nearest official Technical Assistance Service to have it replaced.
E-81	Upper sensor **Scol** of the **MC Cascade control**shortcircuited	
E-82	Upper sensor **Sdown** of the **MC Cascade control** open circuit	The Scol probe is damaged or disconnected. Please contact your nearest official Technical Assistance Service to have it replaced.
E-83	Upper sensor **Sdown** of the **MC Cascade control**shortcircuited	
E-84	Too many **Sbt** sensors connected simultaneously in the cascade system	Intermediate temperature probes in the buffer tank have been connected. The MC cascade control supports a maximum of 2 intermediate probes. Disconnect the remaining probes. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.
E-86	Maximum power insufficient	The control has reduced the maximum power of the boiler below a suitable level due to measuring an insufficient air quantity in the burner input. If this alarm occurs repeatedly, please contact the nearest official Technical Assistance Service.
E-87	Sensor **Sbt2** connected to the cascade system	An **Sbt2** has been connected to the boiler and will not operate for the cascade system.

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