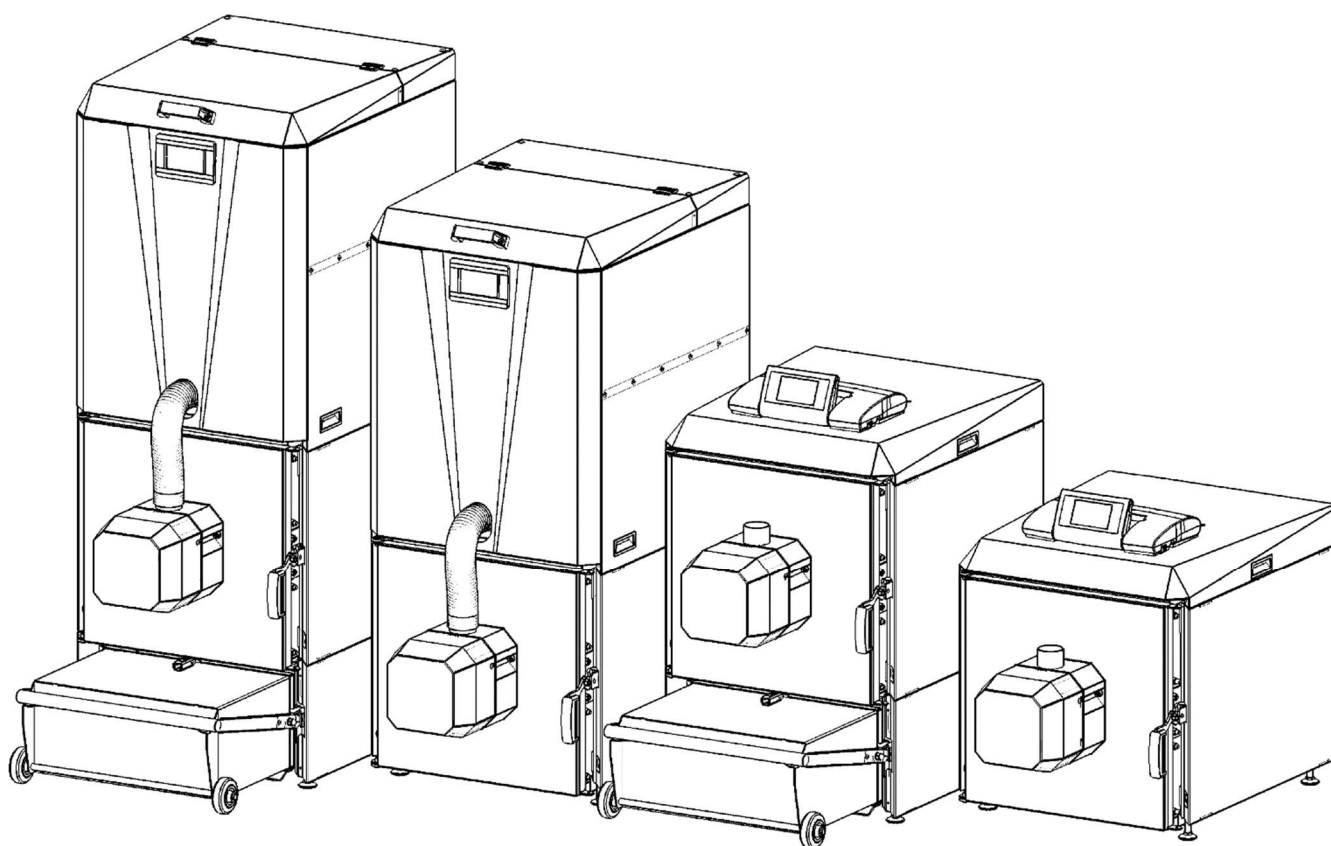


USER AND SERVICE MANUAL

QUAD 10, QUAD 15, QUAD 20, QUAD 25, QUAD 30
MODEL COMFORT / PLUS / PREMIUM



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1 Introduction

WARNING!

- Please read this manual before using the boiler! The heating device may only be used in accordance with this manual,
- Any other use of the device requires the written consent of the manufacturer ,
- The manufacturer of the device is not responsible for the consequences of improper use of the device, contrary to the instructions!

This manual covers the description, construction, technical data, rules of installation and operation, as well as other necessary information enabling safe and trouble-free operation of the Compact pellet boiler . The following instructions / documents are enclosed with the boiler operating and installation manual:

- ROTARY (ROT-POWER) burner instruction manual by KIPI,
- controller a touch panel brand PLUM,

1.1 General description of the boiler

The compact boiler is a water boiler for solid fuel - pellets . Possible heating media are glycol and water. It is available in various construction and range of this power (for a detailed description available in Chapter 2). The following drawings show the main parts of the boiler:

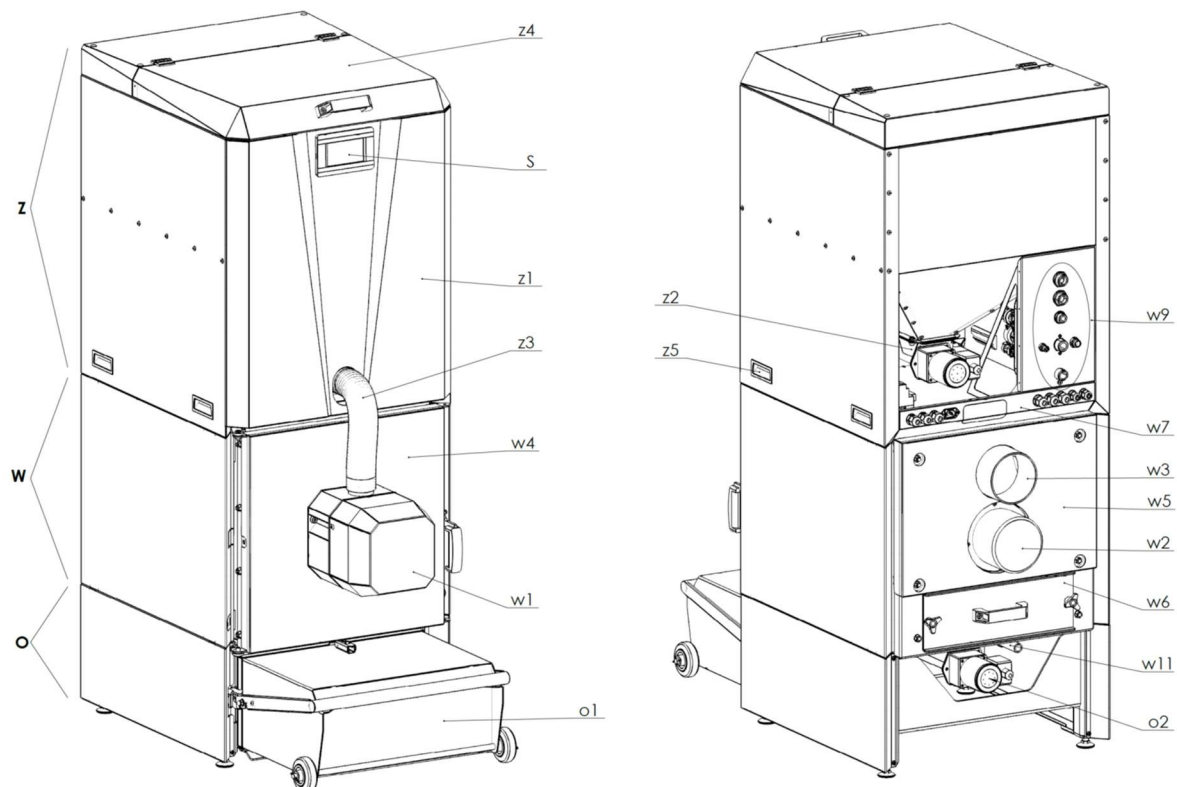


Figure 1 - Main parts of the boiler (on the example of WZO + GP)

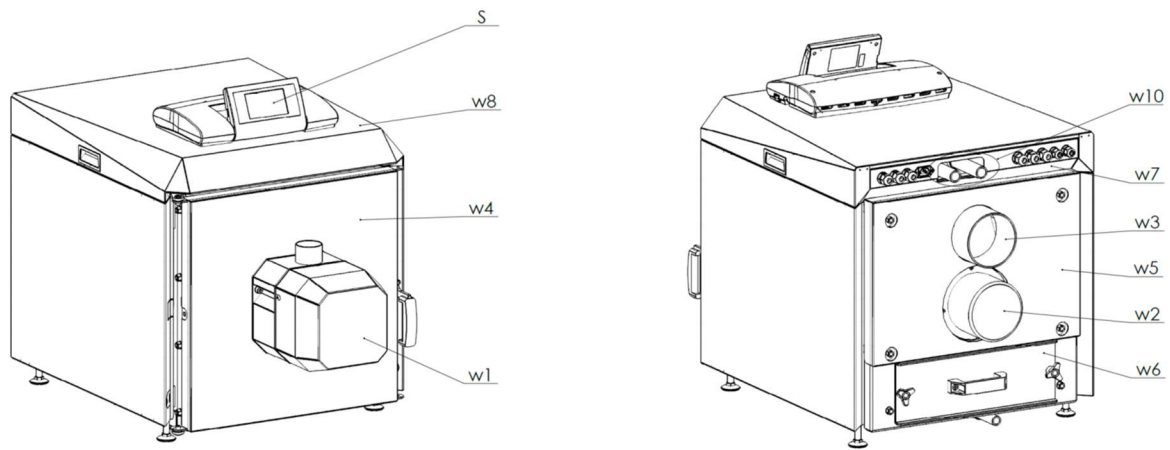


Figure 2 - Main parts of the boiler (example W)

Table I - List of the main parts of the boiler

No.	component	function / application / description
W	EXCHANGER	
w1	burner	Conversion of fuel into thermal energy
w2	Exhaust fan	Providing thrust
w3	Exhaust outlet (flue)	Flue gas discharge to the chimney system
w4	Door	Cleaning the boiler
w5	Back cover	Cleaning the boiler
w6	Rear cover opening	Cleaning the boiler
w7	Power socket strip and electrical components	Electric power supply to the boiler
W8	Top exchanger cover (W, WO)	
w9	Supply and return (WZO + GP and WZ + GP)	Connection to central heating and hot water installations
w10	Supply and return connectors (W, WZ, WO, WZO)	Connection to central heating and hot water installations
w11	Water drain connection	Draining the boiler water block
z	HOPPER	
z1	Front cover	
z2	Fuel feeder (with gear motor)	Automatic fuel feeding.
z3	Fuel feeder spiro pipe	Feeding fuel from the container to the burner
z4	Fuel hopper hatch	Filling the tank with fuel
z5	Tray handles	Removing the tray from the exchanger
o	DUST REMOVAL SYSTEM	
o 1	Ash container	Collecting the resulting ash during boiler operation
o 2	Ash removal system gear motor	Discharge of ash into the ash pan
S.	Controller	Automatic regulation and control of the combustion process

In addition, the following items are attached to the boiler:

- Brush for cleaning the boiler (ramrod)
- DHW temperature sensor

1.2 Description of the intended use

The purpose of the device is to supply the central heating (CH) and central utility water (DHW) installations .

Examples of application objects:

- single-family house
- Small commercial premises

1.3 Standards met by the boiler

This manual and the kompakt boiler meet the following standards and / or directives :

- PN-EN 303-5 2012 - Solid fuel heating boilers with manual and automatic fuel charging with a nominal power up to 500 kW
- MACHINERY DIRECTIVE 2006_42_EC

2 Building

2.1 Division into variants

The compact water boiler is a device with a modular structure. It consists of an exchanger, a container and an automatic ash removal system . Figure 3 shows the division of the boiler into individual modules.

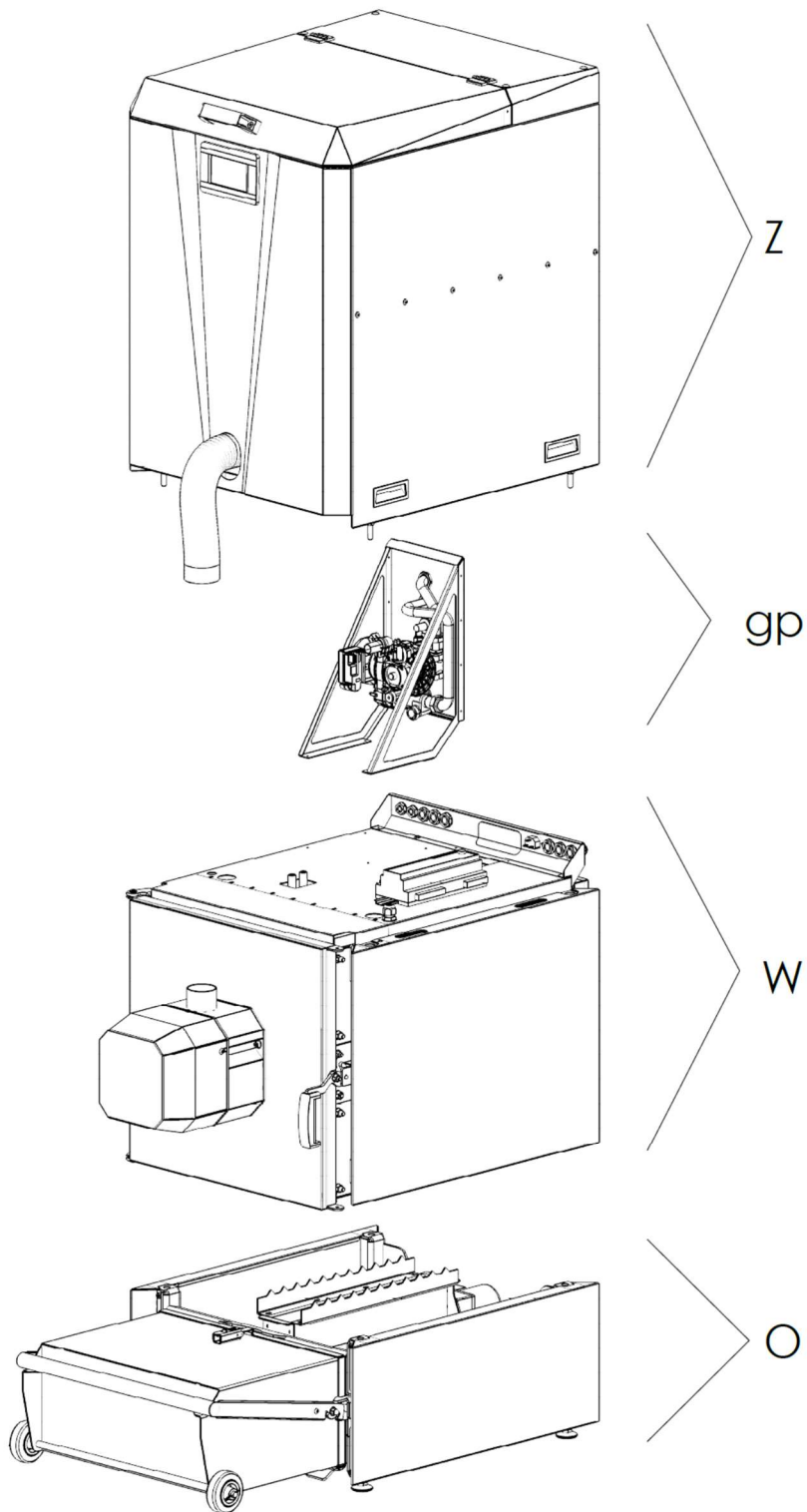
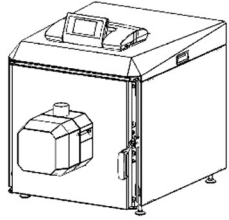
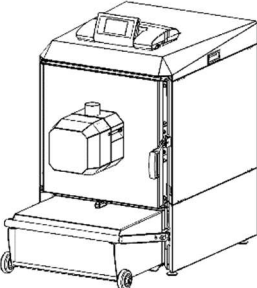
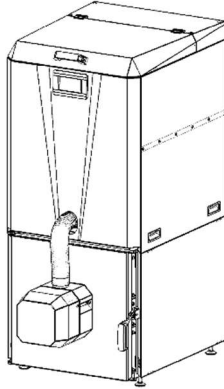
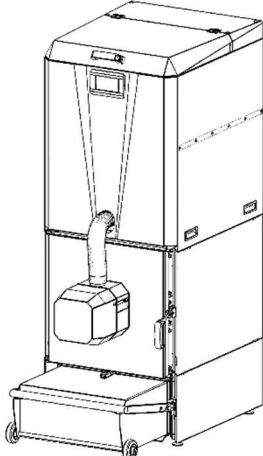


Figure 3 - Modular structure of the boiler

The modular structure of the boiler enables its availability in several different variants. Table II describes all the possible options available.

Table II - Boiler variants

	QUAD	QUAD PLUS	Quad COMFORT	QUAD PREMIUM		
Variant						
	Exchanger	Exchanger + ash removal	Exchanger + tank	Exchanger + ash removal + tank		
			Without pump group	With pump group	Without pump group	With pump group
marking	W	WO	WZ	WZ+gp	WZO	WZO+gp
controller	ecoMAX920		ecoTOUCH 860-P3-C			
<p>NOTE: The chapters in these instructions contain the designations of the boiler variants (eg WO, WZO + gp). This means that a given chapter applies only to selected variants. All other unmarked sections apply to all variants .</p>						

The pump group assembly, replacing some of the boiler installation elements, is available only for variants containing an integrated pellet container (WZ and WZO). Figure 4 and Figure 5 show a fragment of the boiler with or without a pump group installed.

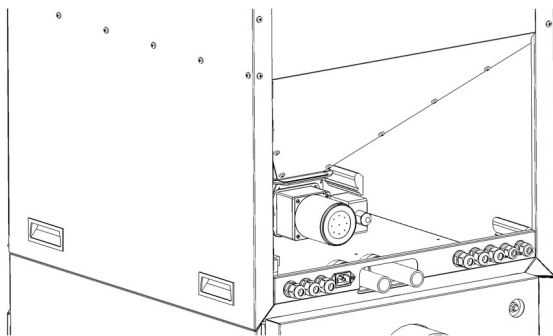


Figure 4 - Boiler in the option without a pump group

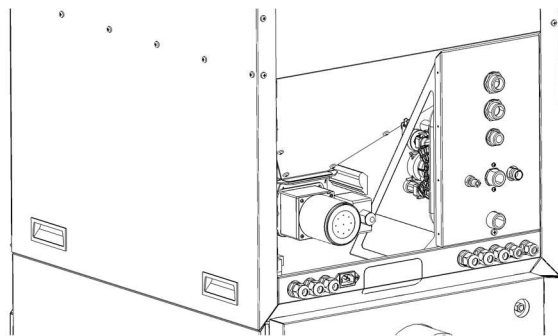


Figure 5 - Boiler with pump group option

2.2 The principle of operation of individual modules

1. Tray (WZ, WZ + GP , WZO, WZO + GP)

Pellet fuel in the hopper (1) goes by gravity to the feeder (2). The feeder consists of a pellet feeding spiral (3) and a supply motor (geared motor) (4). Pellet is forced by a spiral from which the flexible tube ± spiro by (5) goes to the burner, which is an integral part of the heat exchanger.

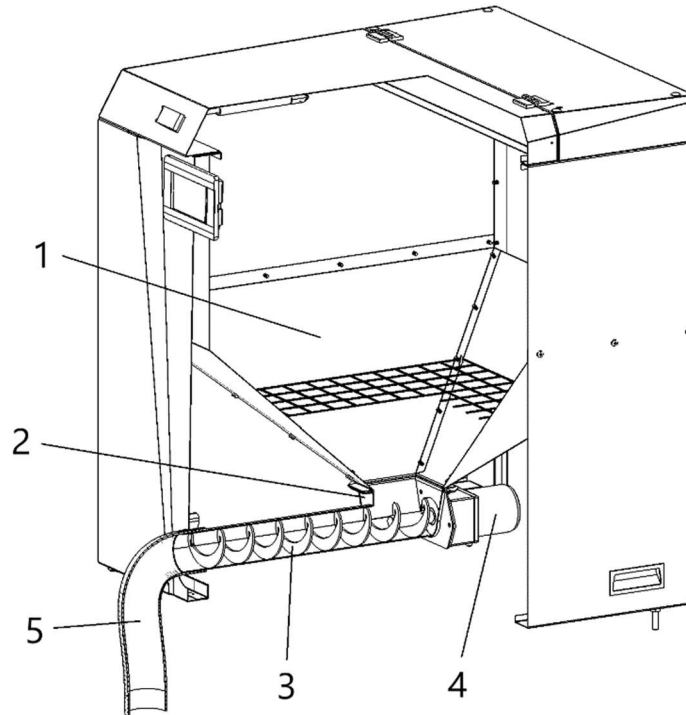


Figure 6 - Hopper principle of operation

2. Exchanger

Compact boiler exchanger converts fuel (pellets) into thermal energy. The thermal energy is transferred to the water circuit through the exchanger. The exchanger has the following features:

- Exhaust fan - creates negative pressure of exhaust gases in the exchanger This prevents unwanted smoke escaping through burner or boiler leaks , and ensures a constant thrust value
- Three-pass system - the combustion chamber is the first line (1). Then the exhaust gases pass through the smoke tubes of the 2nd line (2) to the return chamber (3). The third line consists of smoke tubes with a simple shape (4), which lead the flue gases to the flue chamber (5), from where they are discharged by means of an exhaust fan (6) through the flue (7) to the chimney system.

The filled (colored) areas in Figure 7 show that the boiler waterblock is in direct contact with the water.

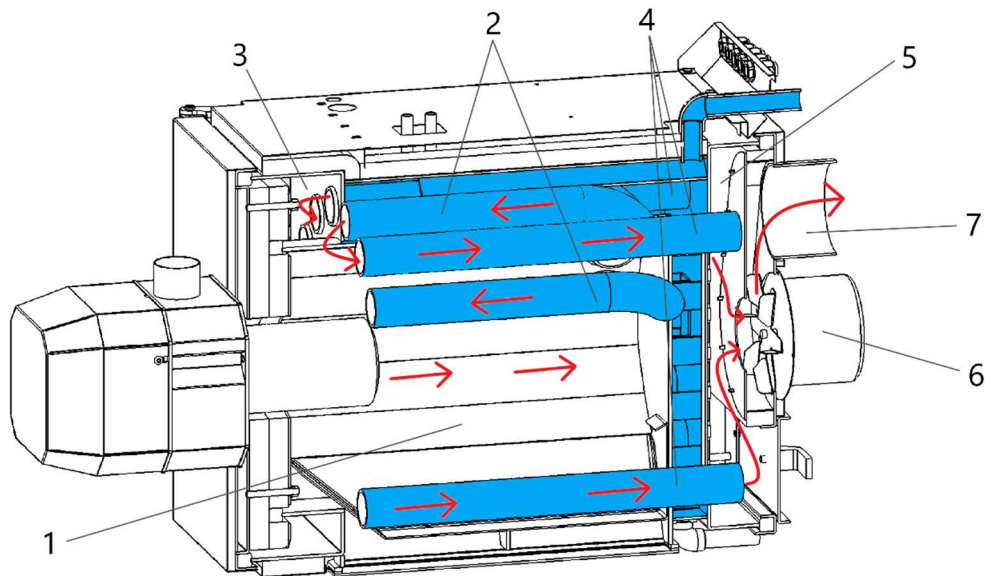


Figure 7 - The principle of operation of the exchanger

- Ash chute - The ash generated during the combustion process is discharged into a special drawer inside the combustion chamber or into the automatic ash removal system - depending on the boiler variant.
- No condensation in the exchanger. Water vapor condenses in the chimney system - see details in chapter 5.4

3. Ash removal (WO, WZO, WZO + gp)

Most of the ash generated during the combustion process goes directly from the combustion chamber (1) to the ash removal spiral (2) . This spiral is driven by a motor (gear motor) (3) . The ash is forced through the ash removal pipe to the ash container (4) .

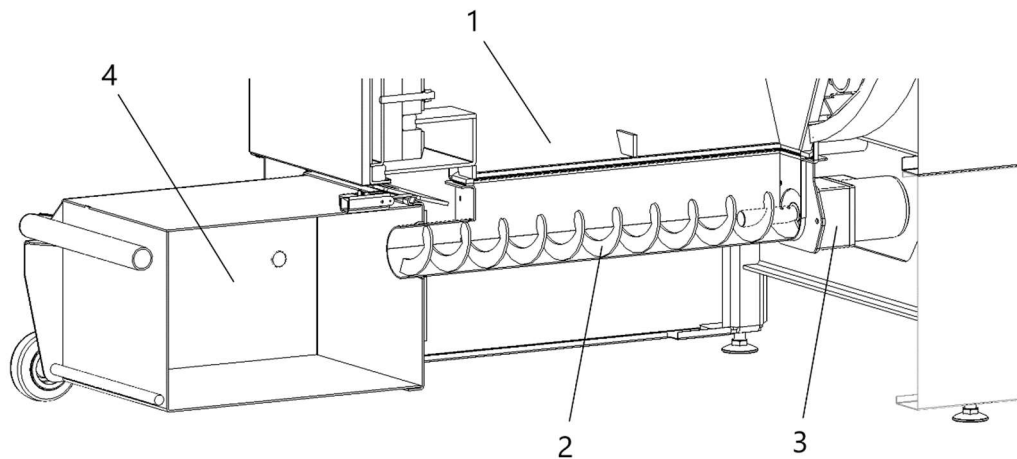


Figure 8 - Ash removal principle

2.3 Division into power series

The compact boiler is available for several different powers (series of types) . Depending on the power of the boiler, different burners of the appropriate series are used. The boiler uses ROTARY (ROT-

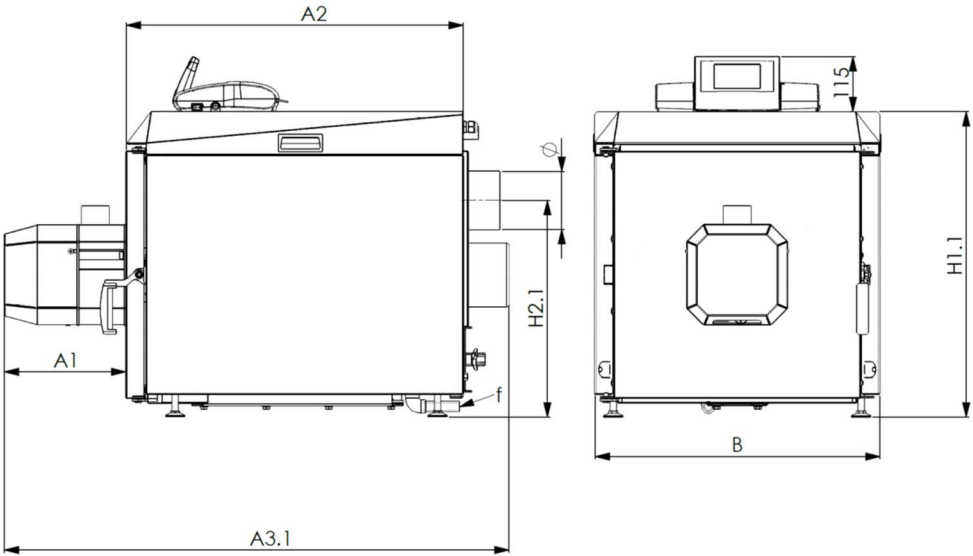
POWER) type pellet burners from Kipi. Table III shows the division of the boiler into power series with the burner used.

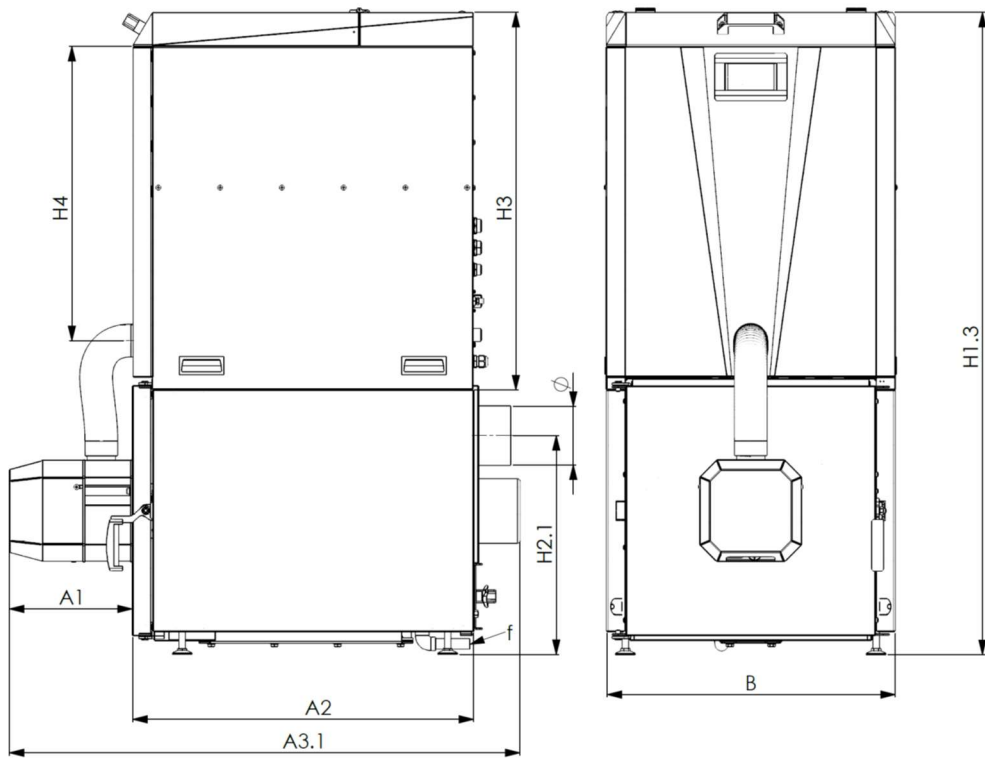
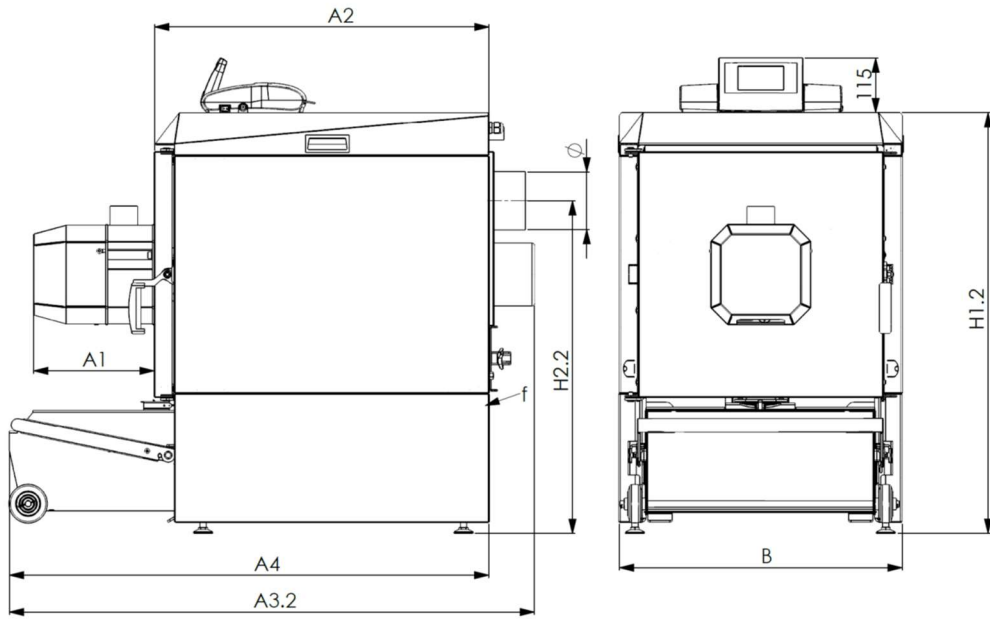
Table III - Boiler power types

Boiler series of types	Nominal capacity of the boiler	Burner used
10-15 kW	10,5 kW	3-10 kW
	15 kW	4-16 kW
20-25 kW	20 kW	5-20 kW
	25 kW	6-26 kW
30 kW	30 kW	8-36 kW

3 Technical Specifications

3.1 Summary of overall dimensions





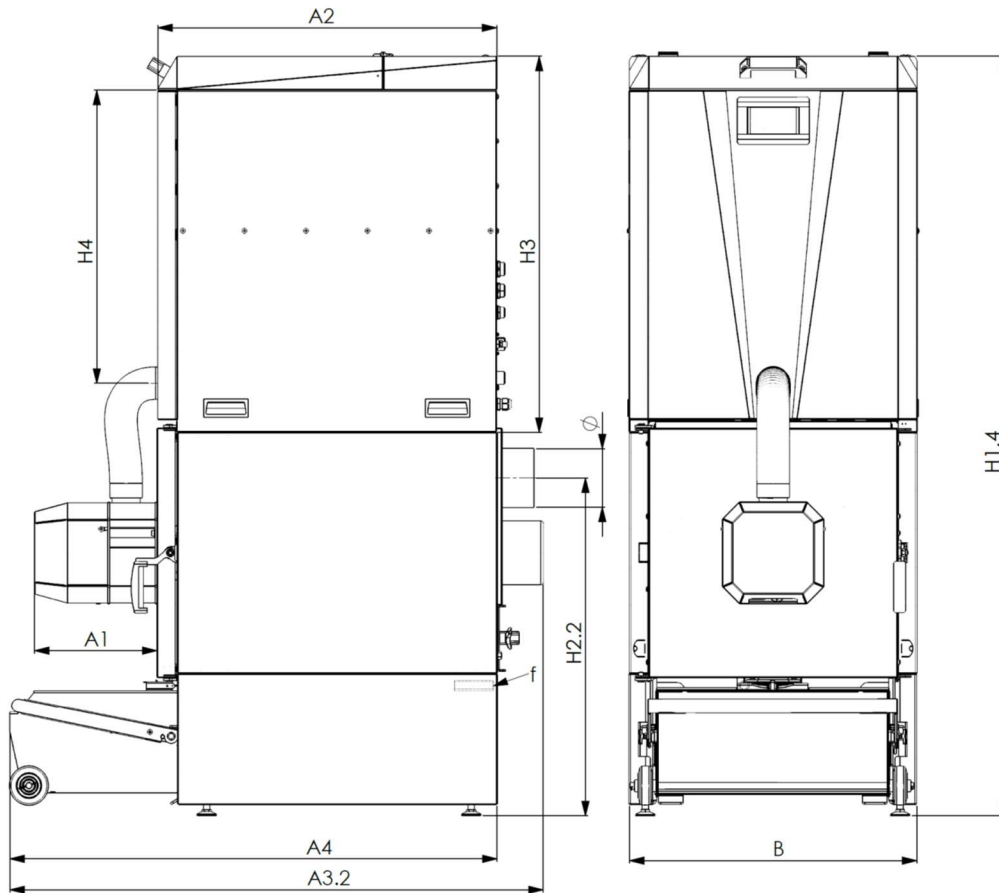


Table IV - List of dimensions of the boiler series of types

Name	Dimension	10-15 kW	20-25 kW	30 kW	unit
	A1	254			mm
	A2	705	780	855	mm
	A3.1	1055	1130	1205	mm
	A3.2	1119	1194	1269	mm
	A4	1022	1097	1172	mm
	B	595	650	705	mm
	H1.1	637	692	747	mm
	H1.2	922	977	1032	mm
	H1.3	1324	1414	1504	mm
	H1.4	1609	1699	1789	mm
	H2.1	452	504	532	mm
	H2.2	737	789	817	mm
	H3	778	813	848	mm
	H4	606	641	676	mm
Flue diameter	φ	127			mm
Tank capacity		155	195	240	l.
Fuel charging hole (see draw Figure 27)	width x length	406 x 555	456 x 610	506 x 665	mm x mm

3.2. Technical parameters

Tabela I - Zestawienie parametrów technicznych kotła

Parameter	Value					Unit
Boiler nominal power	10, 5	15	twenty	25	thirty	kW
Thermal power range	3-10, 5	4-15	5-20	6-25	7-30	kW
The required exhaust draft	MINIMUM 0.15					mbar
Boiler water capacity	thirty		41		52	l.
Exhaust gas temperature (nominal power)	69.1	66.8	67.2	64.8	62.2	° C
Exhaust gas temperature (minimum power)	53.2	51.4	53.4	52.5	52.7	° C
Flue gas mass flow (nominal power)	0.00847	0.0093	0.0115	0.0152	0.0178	kg / s
Flue gas mass flow (minimum power)	0.00403	0.0044	0.0057	0.0062	0.0073	kg / s
Water flow resistance (nominal power)	0.09		0.08		0.08	mbar
Water flow resistance (minimum power)	0.05		0.01		0.01	
Boiler class according to EN 303-5: 2012	5					-
Continuous flammability (nominal power)	47	31	29	23	24	h
Continuous flammability (minimum power)	152	114	114	95	88	h
Temperature controller setting range	50-85					° C
Minimum water temperature in the boiler feed pipe (d)	45					° C
Fuel Type	According to PN-EN-303-5_2012 : C (Pressed wood)					

Amount of auxiliary electricity required (nominal power)	61	62	70	78	85	IN
The required amount of auxiliary electricity (minimum power)	50	41	45	49	52	IN
Required amount of auxiliary electricity (stand-by)	3					IN
Cold water temperature required	45					° C
Required water supply pressure	min 3					bar
Boiler volume						db
Boiler weight						

4 Transport of the boiler

WARNING!

It is forbidden to transport the boiler filled with water and / or fuel. Empty the boiler before transport!

4.1 Delivery of the boiler

The boiler is supplied by the manufacturer on a Euro pallet with standard dimensions of 1200x800 mm. The boiler should be transported on a pallet to its destination, and then removed from it. Similarly, if there is a need to transport the boiler to another place, it should be placed and secured on a pallet, adhering to the following guidelines:

- Pay attention to the weight of the boiler was on his feet, so as not to have the possibility of falling into the boards between the pallet (1) ,
- The boiler should be protected with stretch foil (if necessary)
- The boiler should be attached to the pallet with bandages (2) ,
- Use cardboard angles (3) to prevent damage to the housing

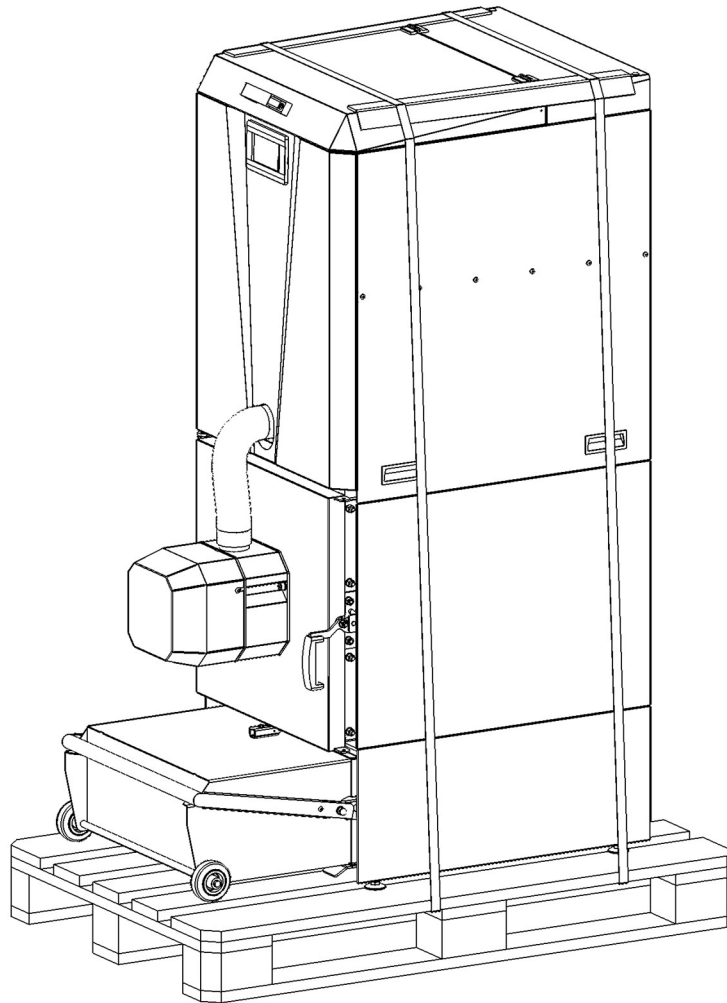


Figure 9 - Method of transporting the boiler

The boiler packed in the above manner can be transported with forklift.

4.2 Unloading from the pallet

Steps when removing the boiler from the pallet:

1. Cut the bandages and remove the mounting angles
2. Unwrap the cauldron from the foil
3. Dismantle the ash container
4. Hold the boiler from below with straps or rope

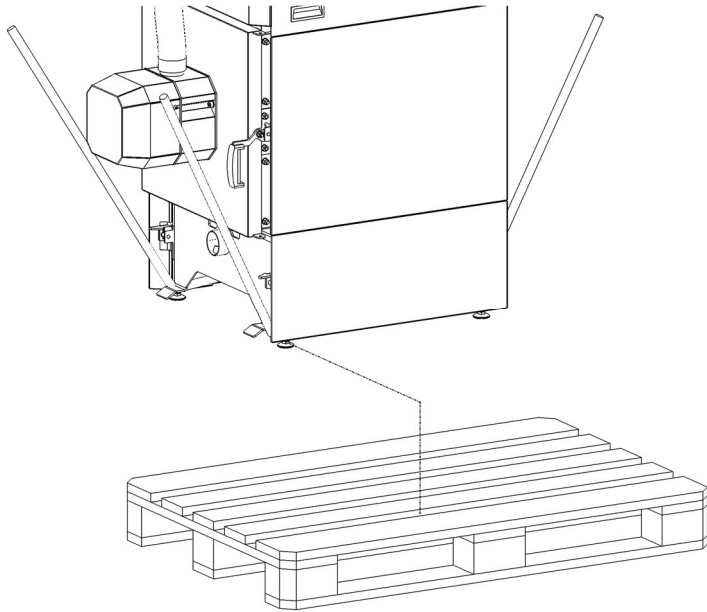


Figure 10 - Removing the boiler from the pallet (WO, WZO, WZO + gp)

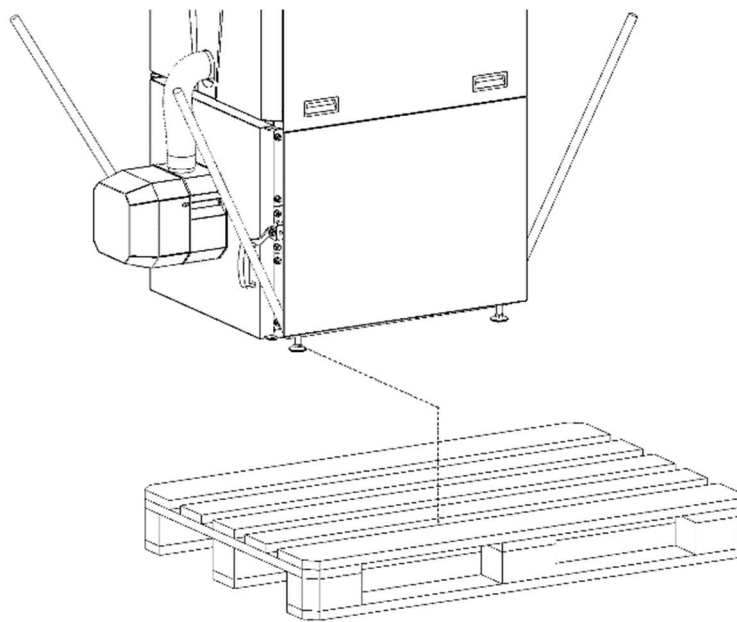


Figure 11 - Removing the boiler from the pallet (W, WZ, WZ + gp)

WARNING!

Dismantle the ash pan before removing the boiler from the pallet

5 Installing the boiler

WARNING! - SAFETY INFORMATION

- *Assembly, installation and first start-up of the boiler must be performed by a trained / authorized specialist in this field*
- *Be sure to use gloves during assembly*

The boiler must be installed before its start-up. The stages of installing the boiler should be carried out in the following sequence:

- a) Place the boiler in a suitable place and at appropriate distances from the walls,
- b) If necessary, change the side of door assembly,
- c) Connect the boiler to the chimney system
- d) Connect the boiler to the heating system (water)
- e) Connect the boiler to the electricity network

WARNING! - SAFETY INFORMATION

Boiler installation or uninstallation can only be performed, and only if:

- *The boiler is turned off and cooled down*
- *The boiler is disconnected from the electrical system*

Before starting the boiler installation, check:

- whether the purchased boiler is free from mechanical defects and damage, e.g. during transport ,
- the plumbing system of central heating works correctly (with no debris, rust), etc., which could cause incorrect operation of the boiler (eg. increase resistance of flow of water in the boiler) .
- the chimney is provided with an insert made of stainless steel, or the way and whether or not a valid string ,
- is there adequate ventilation in the boiler room in accordance with applicable standards,
- whether the electric network has the correct voltage (230 V) and whether the phase cable (L) is properly connected and the electrical socket is secured with a protective contact .

5.1 Positioning the boiler

The boiler must be installed in a separate room - the boiler room. The boiler room must meet the requirements of local regulations and standards for the location of solid fuel boilers.

The floor under the boiler must be made of non-flammable material and have a strength proportional to the weight of the boiler. The boiler itself must be perfectly aligned during installation. The location of the boiler should provide access for maintenance and service. The minimum distances from the walls are shown in Figure 12 .

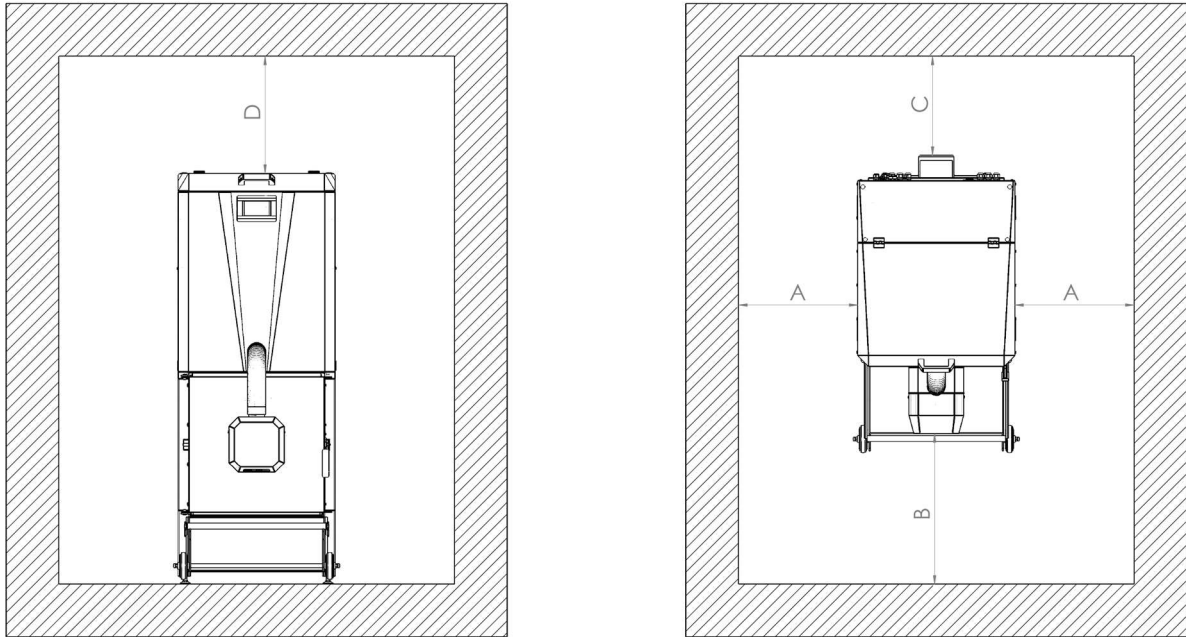


Figure 12 - The minimum dimensions of the walls of A = 0.5 m B = 10m, C = 0.8 m, D = 0.6 m

WARNING! - INFINITION INFORMATION

All combustibile materials (pellet fuel and others) should be kept at a safe distance from the boiler.

5.2 Fitting the burner to the boiler

The burner for the boiler can be mounted or dismounted using an allen key . The figure below shows how to install the burner to the boiler

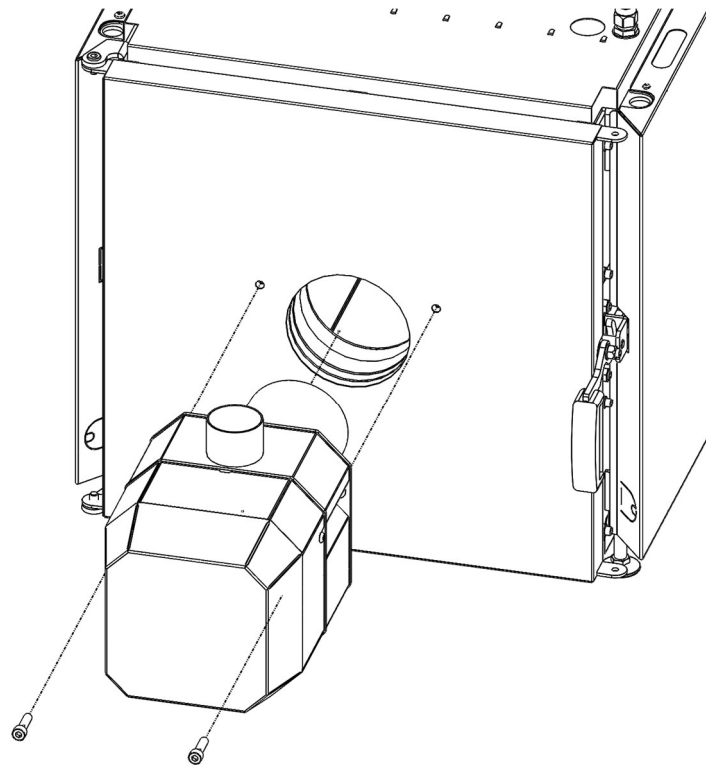


Figure 13 - Installing the burner

5.3 Change of door assembly sides

WARNING!

Before removing the door, first remove the burner.

The manufacturer can supply the boiler with the door that opens to the right or left. If necessary, the installer or user can change the door hinge side. Figure 14 shows how to remove or install the door.

The sequence of steps when removing the door:

1. Unscrew and remove the burner
2. Remove the door handle
3. Unscrew the main screws (hinge) and remove the door,
4. Unscrew the hinge bar
5. Unscrew the blanking screws
6. Door catch - unscrew and disconnect the limit switch wires
7. Break a hole for a hook on the other side of the exchanger (use appropriate tools for this)
8. Screw back all parts symmetrically to the opposite side of the boiler in the reverse order.

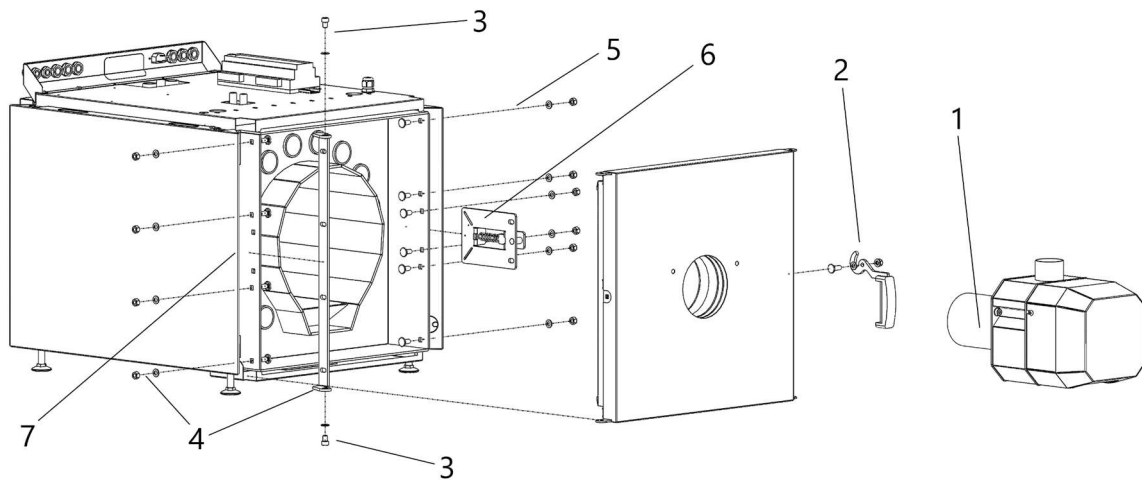


Figure 14 - Changing the door assembly sides

5.4 Disconnecting the chimney installation

WARNING!

It is not allowed to connect any additional devices to the flue to which the boiler is connected, nor to use it additionally for other purposes (e.g. ventilation).

The chimney system to which the compact boiler is to be connected should meet the applicable regulations and standards. Both the diameter of the chimney and the material it is made of should be produced in accordance with DIN EN 13384-1 devices slow-burning.

The compact boiler is characterized by high heat exchange efficiency. This means that the flue gas temperature in the boiler flue is much lower than in conventional boilers, coal or wood. Low flue gas temperature at the boiler outlet and its further decrease in the chimney system generate water vapor condensation on the chimney walls. To avoid the negative consequences of condensation in the chimney system (e.g. stains and eruptions on the internal walls of rooms directly adjacent to the chimney, boiler corrosion) , follow these recommendations:

- the chimney system should be resistant to the accumulation of moisture , made of acid-resistant steel or appropriate ceramic materials,
- if we are dealing with a traditional brick chimney , an insulated stainless steel insert should be used . From To ensure the sound he tightness and reduce the risk of efflorescence on walls,
- condensation drain from the chimney should be provided

WARNING!

The manufacturer is not responsible for any damage caused by plugging the boiler into an improperly adapted chimney system.

In addition, for the boiler to function properly and without failure with the chimney system:

- ensure tight connection of the installation with the boiler flue ,
- regularly clean the chimney system,

The diameter of the boiler flue is 120mm. The boiler can be connected to a chimney system of a different size or shape, but the cross-sectional area must not be smaller than that of the flue . Connecting to an installation with a larger diameter (than the flue diameter) should be made by means of a reduction from the chimney system used during the installation.

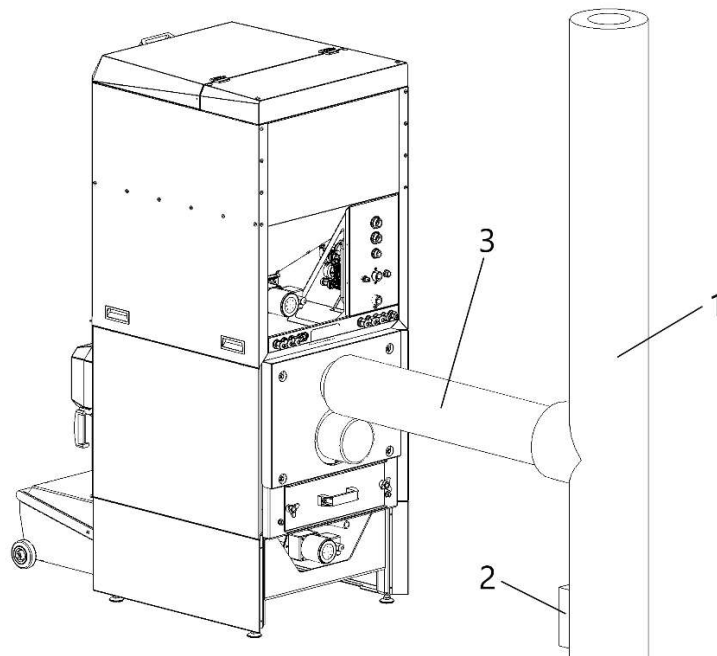


Figure 15 - Connection to the chimney system - simple 1 - Chimney duct; 2 - Chimney cleaning; 3 - Insulated connection to the chimney

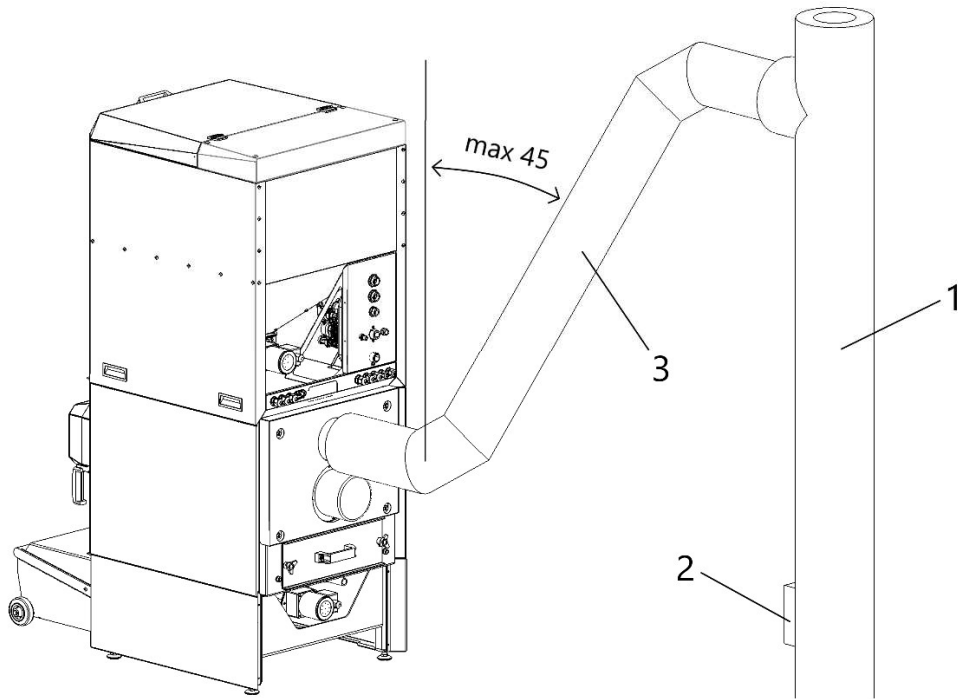


Figure 16 - Connection to the chimney system - inclined 1 - Chimney; 2 - Chimney cleaning; 3 - Insulated connection to the chimney

5.5 Connecting to the heating system and / or hot water system

The boiler can work with a central heating (CH) installation and / or a central utility water (DHW) installation . Boiler connector (see Figure 1 - w9, w10, w11) should be connected to the water installation in accordance with the figures below:

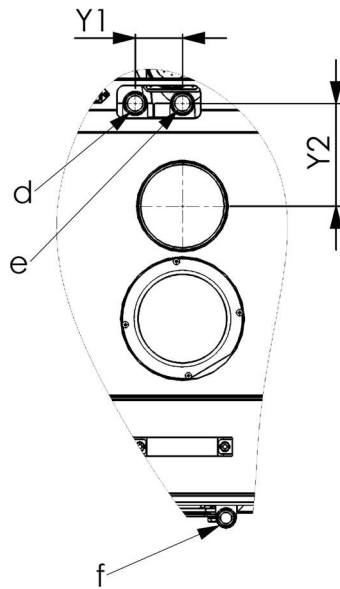


Figure 17 - Boiler connection stubs to the water system (W, WO, WZ, WZO)

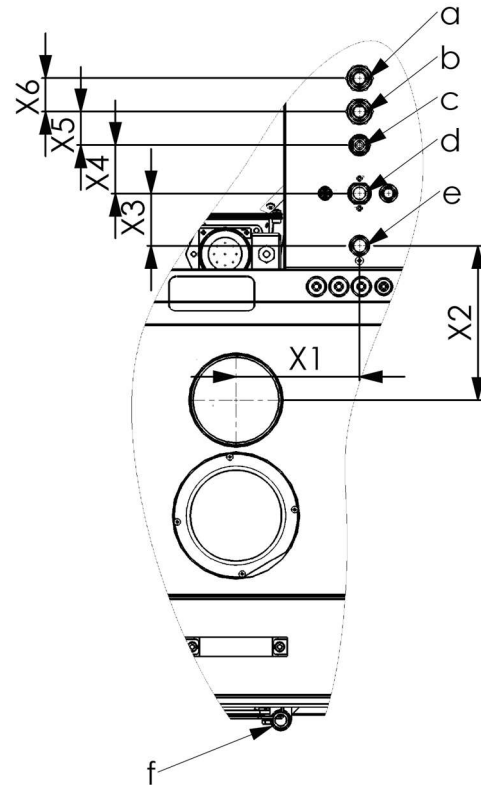


Figure 18 - Boiler connection to water system (WZ + gp , WZO + gp)

Table VI - Description of connectors for connecting the boiler to the water system

Name	Symbol	Dimension			Unit
		10-15 kW	20-25 kW	30 kW	
DHW cold water	a	3/4 "			inch
DHW hot water	b	3/4 "			inch
Filling the boiler	c	1/2 "			inch
System return (Cold water)	d	3/4 "			inch
Supply from the installation (hot water)	e	3/4 "			inch
Water drain	f	1/2 "			inch
	X1	165	193	220	mm
	X2	207	210	237	mm
	X3	70			mm
	X4	65			mm
	X5	45			mm
	X6	45			mm
	Y1	65			mm
	Y2	142	144	172	mm

WARNING!

Between the boiler and the central heating system, cut-off valves should be installed, allowing the boiler to be disassembled without the need to drain water from the entire system.

The boiler can be connected to the installation in many different ways. The installation should be performed by a trained / authorized specialist in this field. Below are presented exemplary diagrams of possible connections of the boiler.

1. Connecting the boiler in a closed system (W, WO, WZ, WZO)

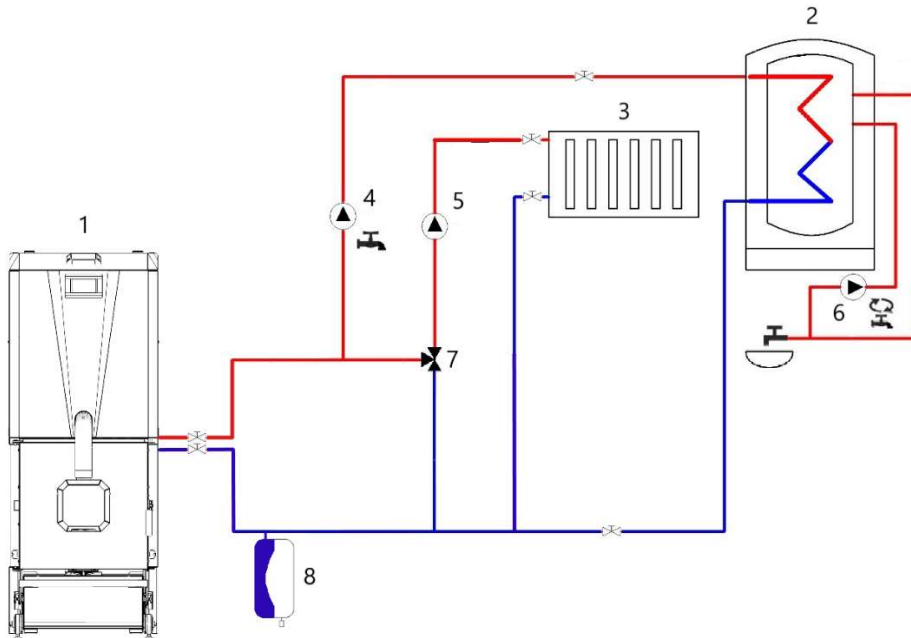


Figure 19 - Diagram of DHW and HW circulation . closed system 1 - boiler, 2 - DHW exchanger , 3 - central heating heaters , 4 - DHW circulation pump , 5 - central heating circulation pump , 6 - circulation pump , 7 - three-way mixing valve , 8 - diaphragm expansion vessel

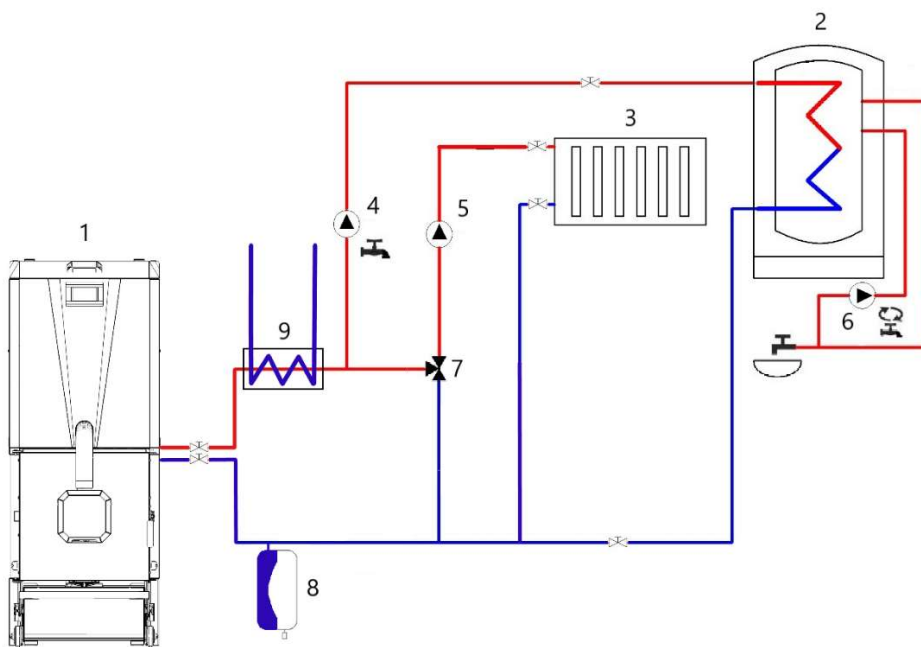
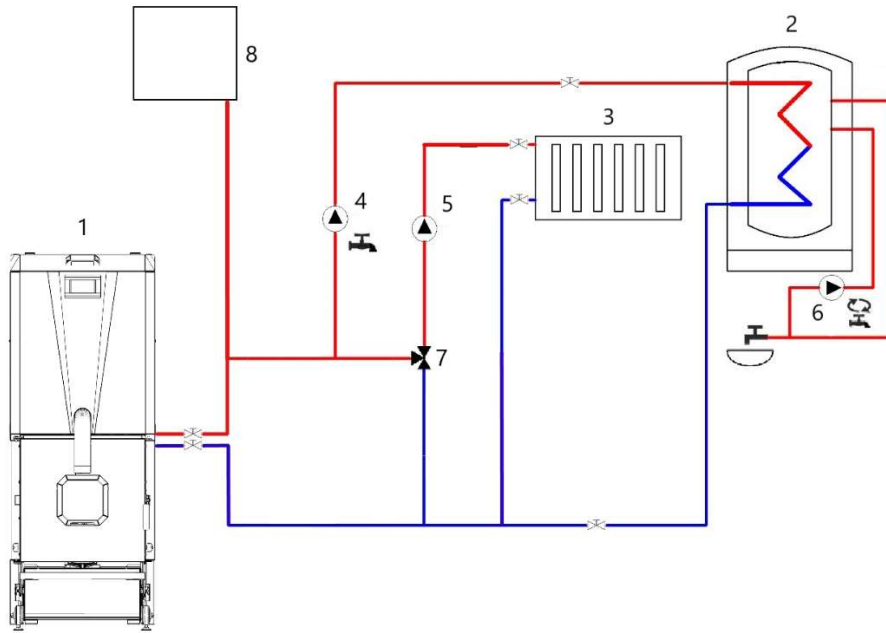


Figure 20 - Diagram of DHW and HW circulation - closed system with a cooling coil . 1 - boiler, 2 - water exchanger 3 - heaters HW 4 - hot water circulation pump , 5 - circulating pump CH , 6 - circulation pump , 7 - the three-way mixing valve , 8 - expansion vessel expansion , 9 - coil quench .

2. Connecting the boiler in an open system (W, CBO, WZ, WZO)



V

Figure 21 - Diagram of HUW and CH circulation . open system 1 - boiler, 2 - DHW exchanger , 3 - CH radiators , 5 - DHW circulation pump , 5 - CH circulation pump , 6 - circulation pump , 7 - three-way mixing valve , 8 - expansion vessel

3. Connecting the boiler with a pump group (WZ + gp , WZO + gp)

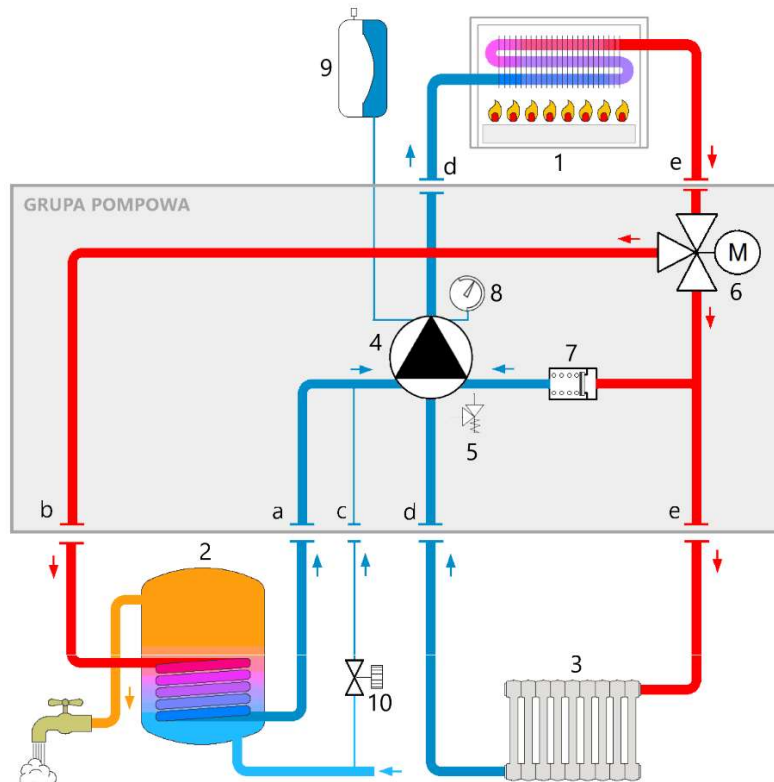


Figure 22 - The principle of operation of the pump group (WZ + gp , WZO + gp) 1 - Boiler, 2 - DHW, 3 - CH, 4 - Pump, 5 - Safety valve, 6 - Three-way valve, 7 - Bypass, 8 - Manometer, 9 - Expansion vessel , 10 - Filling valve.

Moreover, in the variant containing a pump group, the boiler can be connected to the installation with an anti-condensation valve . It opens the central heating circuit after reaching the temperature of 45oC of water in the boiler. The diagram below shows the principle of operation and valve connection.

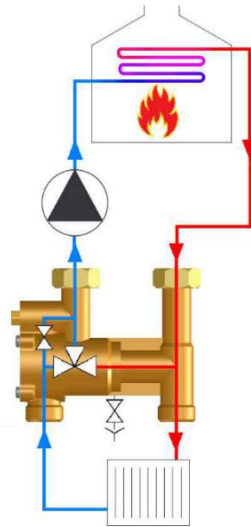


Figure 23 - The principle of operation of the anti-condensation valve

5.6 Connecting to the electrical installation

WARNING!

Electrician qualifications (up to 1kVA) are required to connect the heating system devices (pumps, actuators, pump groups, solenoid valves) .

WARNING! - SAFETY INFORMATION

Before connecting the boiler, make sure to that the boiler is disconnected from any source of voltage!

The boiler is powered by alternating current 230V / 50Hz . The installation should be connected to the controller located under the cover or the tray (depending on the version) . Cables should be fed out through glands located on the boiler's rear strip (See Figure 1 - w7). Before connecting the installation, remove the tray or the cover.

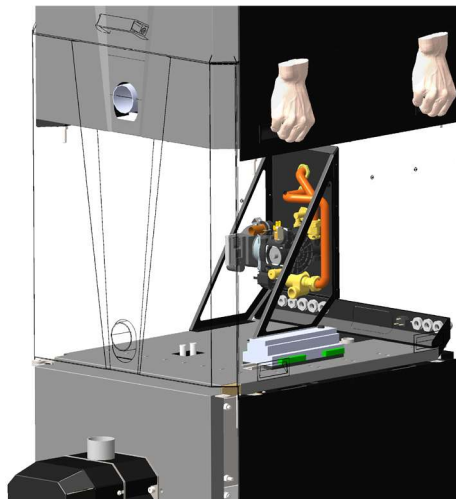


Figure 24 - The location of the controller and chokes

Boiler accessories should be connected in accordance with the diagram below:

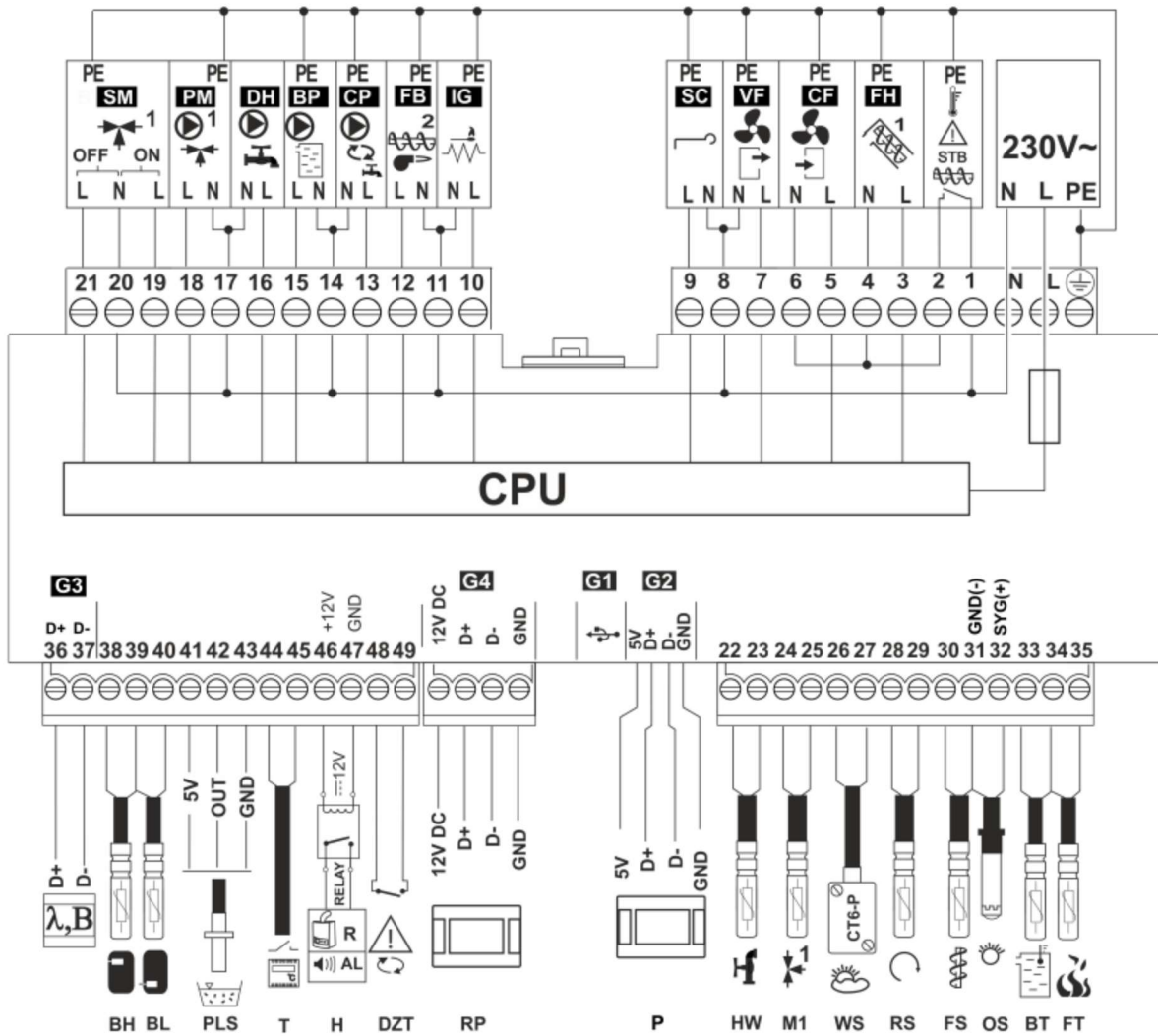


Figure 25 - Diagram of electrical connections of the controller : λ - Lambda probe module, **B** - module for additional heating circuits, **BH** - upper buffer temperature sensor, type CT4, **BL** - lower buffer temperature sensor, type CT4, **PLS** - fuel level sensor, **T** - thermostat room (make- break), **H** - voltage output to control the **R** reserve boiler or to signal alarms **AL**, **RELAY** - 12VDC relay, **DZT** - boiler door opening sensor, **RP** - ecoSTER TOUCH room panel with a room thermostat function, **P** - control panel, **HW** - DHW temperature sensor, type CT4, **M1** - temperature sensor of the regulated circuit (mixer 1), type CT4, **WS** - weather temperature sensor, type CT6-P, **RS** - temperature sensor of water returning to the boiler, type CT4, **FS** - feeder temperature sensor, type CT4, **OS** - optical flame brightness sensor, **BT** - CT4, **FT** boiler temperature sensor - CT2S, **LN PE** temperature sensor, 230V ~ mains supply, **CPU** - control, **STB** -to a input o safety temperature limiter, **FH** - main feeder, **CF** - burner blower fan, **VF** - exhaust fan, **SC** - burner cleaning rotary motor, **IG** - igniter, **FB** - burner feeder, **CP** - DHW circulation pump, **BP** - boiler pump, **DH** - DHW pump, **PM** - mixer 1 pump, **SM** - mixer 1 actuator.

WARNING!

Operation with a pump group requires appropriate control configuration.

The pump group must be connected to the controller using a relay. Connection of the pump group module is presented in the diagram below. It includes only the pump group - apart from the pump group, the boiler must be connected according to Picture nr 25 .

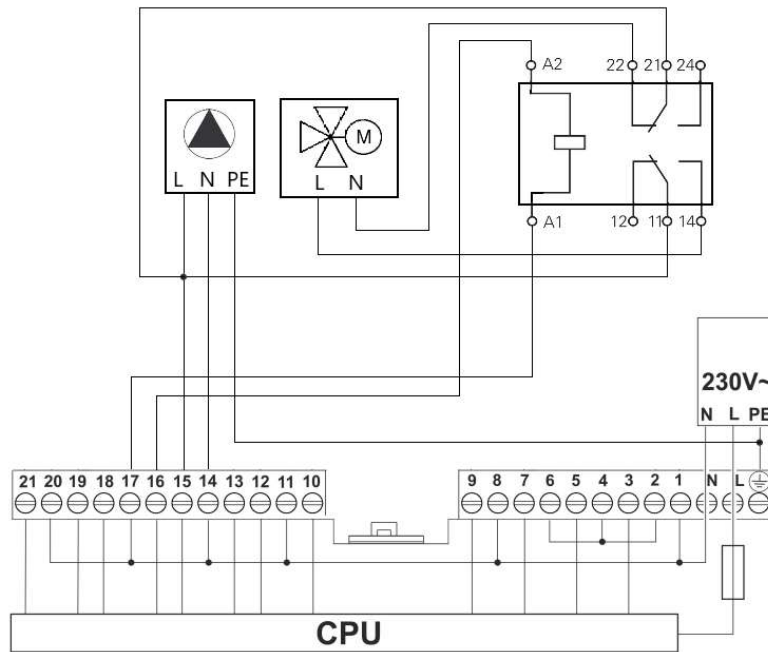


Figure 26 - Diagram of electrical connections for the controller - pump group module (WZ + gp , WZO + gp)

Other options for connecting the boiler to the electrical system are presented in the controller manual attached to the boiler.

6 Using the boiler

Boiler operation includes activities related to boiler start-up, preparation for commissioning, operation modes, extinguishing and cleaning. These steps should be performed in the following order:

- a) Filling the boiler with mains water
- b) Filling the fuel container with pellets (including filling the feeder pipe) (WZ, WZO, WZ + GP , WZO + GP)
- c) Start-up and setting of operating modes
- d) Putting out the boiler
- e) Cleaning the boiler

6.1 Filling and draining the boiler with water

WARNING!

It is forbidden to fill the boiler with water or top it up with water while the boiler is in operation. Allow the boiler to cool down before refilling water.

The boiler must be filled with water via the water drain socket (see Figure 1 - w11) . In the case of the WZ + gp or WZO + gp variant, it is allowed to fill the boiler with connection "c" (see Figure 18) . On the other hand, the boiler can only be emptied using the drain connection.

Fill the boiler with water before starting the boiler start-up procedure. If the boiler has been started and cooled down, the amount of water should be filled up with heated water. It is recommended to use softened water with a PH value of 7. After filling, check the tightness of the boiler and installation .

6.2 Fuel requirements

WARNING!

Only class C1 fuel (compressed pellets) in accordance with PN-EN-303-5 should be used.

Table VII - Required fuel parameters

Fractions	granules
Diameter	$6 \pm 1\text{mm}, 8 \pm 1\text{mm}$
Length	$3.15 \text{ mm} \div 40 \text{ mm}$
The amount of dust	$\leq 1\%$
Bulk density	$\geq 600 \text{ kg / m}^3$
Humidity	$\leq 10\%$
Calorific value	$16.5 \div 19 \text{ MJ / kg}$
Ash	$\leq 0.7\%$

Fuel should be stored in a dry place out of direct sunlight .

6.3 Filling the hopper and feeder (WZ, WZO , WZ + gp , WZO + gp)

WARNING!

Filling the feeder is necessary before the first start, or when the pellet tank is empty and the burner is restarted .

Prepare the container and feeder for boiler operation:

1. **Fill the hopper with pellets - as shown in the picture below.**

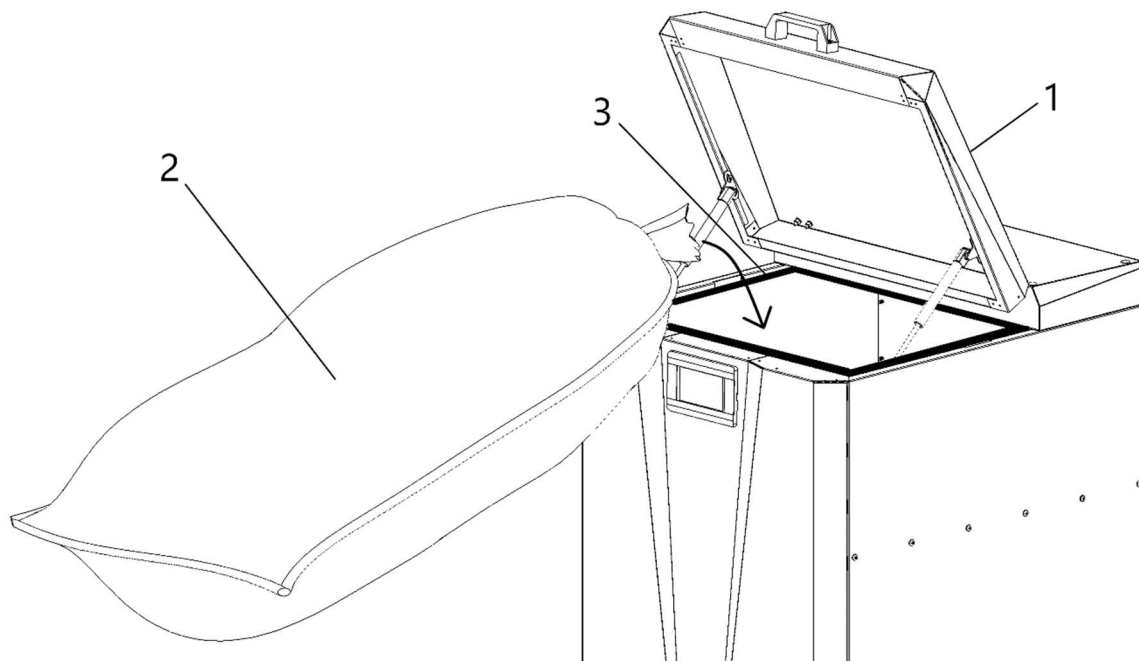


Figure 27 - Filling the hopper with pellets : 1 - opening of the hopper flap, 2 - bag with pellets , 3 - Charging opening (dimensions -> see Table IV)

Feed hopper filled with pellets to the height of the feed opening, marked in the figure above.

2. **Fill the feeder with pellets**

In the controller: *Main menu > Manual control > Feeder ON / OFF*

Or: *Main menu > Boiler settings > Power modulation > Feeder > Feeder filling > Start*

We start the function and wait until the external feeder is filled with pellets .

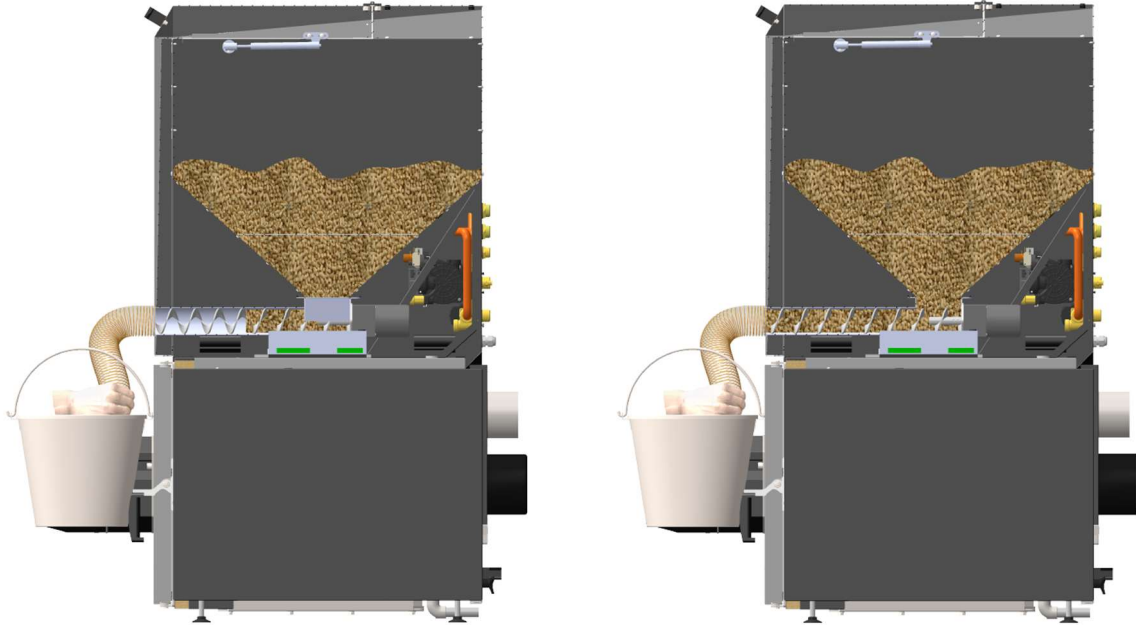


Figure 28 - Filling the feeder

After filling around the feeder wait until the auger is administered pellet within 2-3 minutes (in order to properly fill the tray).

For this purpose, it is best to place a container under the downpipe into which the pellets will fall . Pay attention to the work of the auger - it must work continuously.

3. **Carry out this feeder.**

In the controller: *Main menu > Boiler settings > Power modulation > Feeder > Feeder efficiency test > START*

The feeder test lasts 6 minutes, during this time the auger feeds the pellets in a continuous operation mode . Accordingly, the parameters of pellet dosing during the burner operation are set .

Before the test, pay attention to the whole tray was filled with pellets .

Then perform the test - place a container under the filled device into which the pellets will fall .

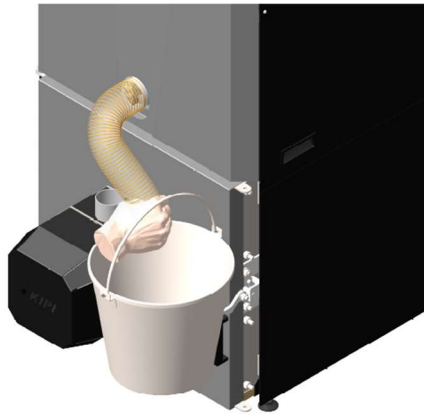


Figure 29 - Feeder test

All pellets that have fallen into the container should be weighed. The result is the mass of pellets that should be entered into the controller: *Main menu> Boiler settings> Power modulation> Feeder> Fuel mass in the test*

WARNING!

Feeder test is necessary for proper regulation and operation of the burner .

WARNING!

Follow instructions in point 3, otherwise pellets feeding dose can be calculated incorrectly and cause burner incorrect operation.

The feeder cannot have a lower capacity than:

Table VIII - Min. Required feeder capacity for each burner power used in the boiler

no	burner power	feeder efficiency
1	10 kW	≥4 kg / h
2	16 kW	≥4 kg / h
3	20 kW	≥ 5 kg / h
4	26 kW	≥ 6, kg / h
5	36 kW	≥8 kg / h

6.4 Boiler start-up and shutdown

WARNING!

Do not start the boiler if it is not filled with water.

The manufacturer recommends that the first start-up be performed by an Authorized Installer at the User's request.

The scope of the first launch includes:

- checking the correctness of installation and operation of the device,
- burner adjustment,
- checking the correctness of operation of the device securing elements,
- filling out the warranty book.

The scope of the first launch does not include:

- removing defects and faults in the installation.

Before starting the startup procedure:

- Make up that test procedure was performed feeder (Section 6.3).
- Check if all wires and cables are connected properly,
- Check if the pellet spiral is properly fastened and the boiler door is tightly closed (Figure 30)



Figure 30 - Checking the installation of the spiro pipe and tightness of the boiler door

- Check if the pump group is correctly programmed in the controller (WZ + gp , WZO + gp):
 - In the controller: *Main menu> Service settings > Show advanced, switch to YES*
 - In the controller: *Main menu> Service settings > CH and HUW settings> heat exchanger, switch to YES*
 - In the controller: *Main menu> HUW settings> Pump operation mode> Priority*

To start the boiler, the controller select: *Main Menu> Set boiler> Set temperature of the boiler , - Enter the temperature we want to reach and maintain the boiler - > Home Screen > ON / OFF*

To turn off the boiler: *Main screen > ON / OFF* Then the boiler goes into the extinguishing mode .

In order to function properly when first starting a boiler , it is advisable to perform measurement of exhaust emissions and the verification values of oxygen in flue gas , by measuring apparatus .

6.5 Modes of operation

Boiler operation is possible only in automatic mode. It provides several modes of operation. The table below presents a brief description of each mode.

Table IX - Available operating modes

Operating mode	Description
LIGHTING	The furnace is automatically fired up.
JOB	The burner works with the set power. Fuel is fed automatically.
SUPERVISION	The burner works at low power so that the furnace does not put out. The transition into this mode occurs automatically after reaching the set parameters. By default, supervision is turned off.
BURNING OFF	In this mode, the rest of the fuel is burnt.
STOP	In this mode, the boiler and burner are extinguished. Exit from this mode will follow automatically after receiving the signal to resume operation (e.g. temperature drop in the boiler).

Moreover, there are two control modes responsible for stabilization of the boiler temperature : Standard and Fuzzy Logic . .

A detailed description of all operating modes and control modes are located ± in the accompanying s instructions controller and the burner.

6.6 Cleaning the boiler

WARNING! - SAFETY INFORMATION

- Switch the boiler off before cleaning
- Wait until the furnace cools down - risk of burns

WARNING! - DANGER OF BURNING !!!

- Switch the boiler off before cleaning
- Use protective clothing (gloves, goggles)
- Wait until the furnace cools down

The boiler can be cleaned of ash using a brush and dustpan or a vacuum cleaner. The manual presents cleaning of the boiler with a vacuum cleaner. The tool attached to the boiler (brush / rod) should be used when cleaning the smoke tubes.

Table X - Summary of the frequency of cleaning of individual components

No.	action	Cleaning frequency
1	Ash tank (WO, WZO)	Depending on the quality and quantity of the burnt pellets - once every 2-6 months
2	Flame tubes	once a month
	Front compartment	once a month (WO, WZO, WZO + gp) once every 2 weeks (W, WZ, WZ + gp)
3	The furnace chamber (W, WZ, WZ + gp)	once a week
4	once every 6 months	once every 6 months
5	Burner	once a week

1. Emptying the ash container (WO, WZO , WZO + GP)

In order to empty the ash container , lift the handle (1) and pull the container (2) out of the boiler.

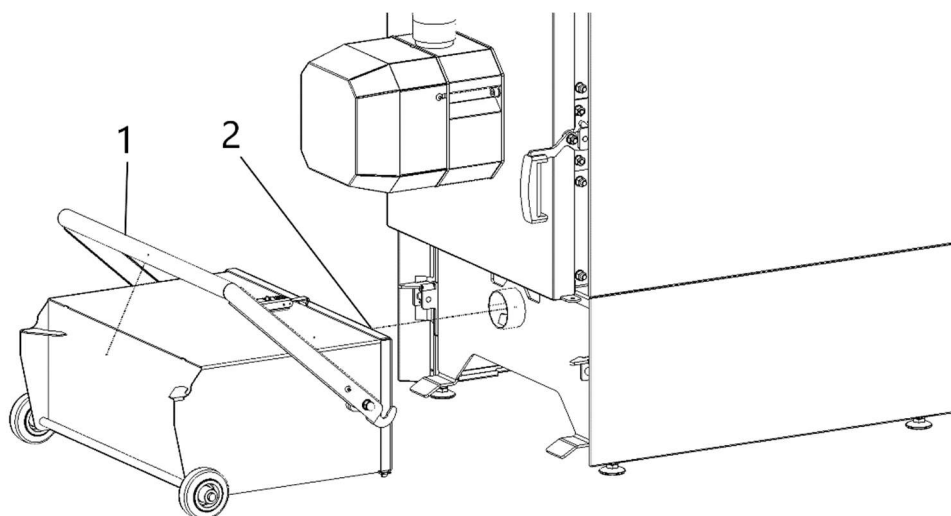


Figure 31 - Removing the ash pan

Place the ash container in a vertical position. Then unfasten the buckle (3), lift the cover (4). Empty the ash from the hopper by tilting it.

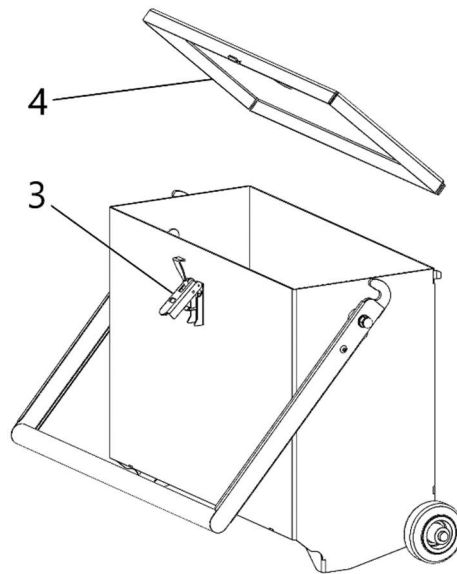
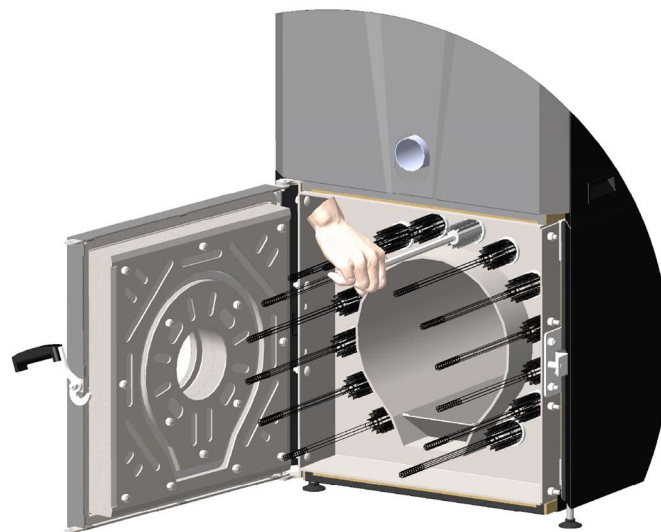
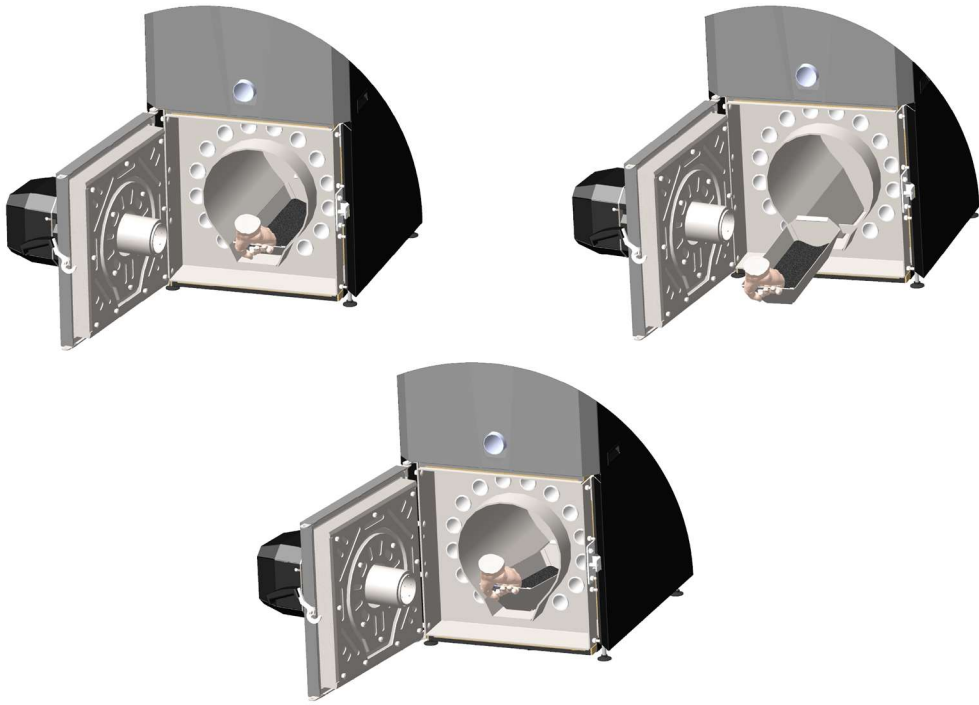


Figure 32 - Emptying the ash container

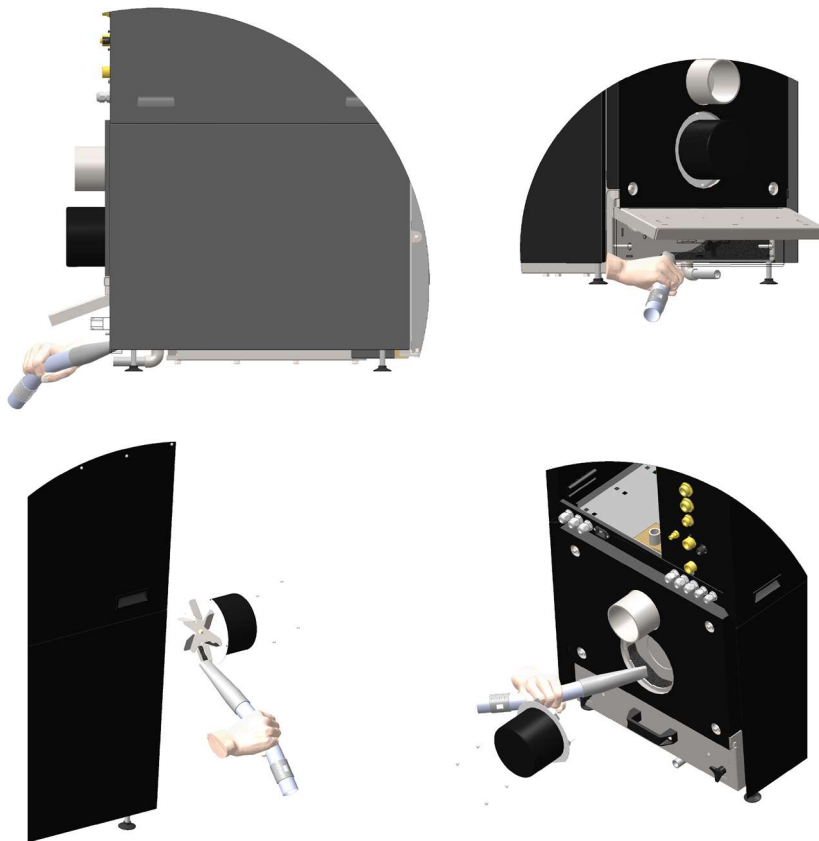
2. **Cleaning the smoke tubes and the front chamber**



3. **Cleaning the combustion chamber (W, WZ , WZ + gp)**



4. **Cleaning the back chamber (including fan)**



5. **Burner cleaning**

Detailed description in attached burner manual.

7 Inspection, service activities and maintenance recommendations

Service inspection recommended once a year by the installer / authorized boiler or burner service . The scope of service activities includes:

- Burner cleaning ,
- Verification for condensation and tightness ,
- Boiler gas tightness verification .

In order to ensure trouble-free operation, as well as to extend the life of the boiler, follow the recommendations below:

- The furnace should be kept clean - by cleaning it regularly. The frequency of this treatment depends on the quality of the fuel, its ash content and humidity, as well as the frequency of burner activation, the size of the CH boiler furnace chamber and the size of the ash pan. On average, it should take place once a week.

Detailed instructions for cleaning the burner are included in the attached burner manual.

- Use only fuels recommended by the manufacturer.
- It is forbidden to burn materials not intended for this purpose.
- Adequate fresh air must be provided.

8 Security systems

The hazards and safety assessment of the device were carried out in the risk assessment. This information has been archived in the technical documentation of the device at the manufacturer's.

8.1 Safety systems in the boiler

1. **Protective mesh in the container (WZ, WZO, WZ + gp , WZO + gp)**

The fuel tank in the boiler is equipped with a protective mesh. It protects against the risk of putting your hand in the pellet feeding spiral in the feeder. The grid is illustrated in Figure 6 .

2. **System of immediate boiler shutdown when the door is opened**

To prevent the risk of the user coming into contact with the flame, a boiler switch-off system was installed at the door handle. Opening the door handle turns the boiler off.

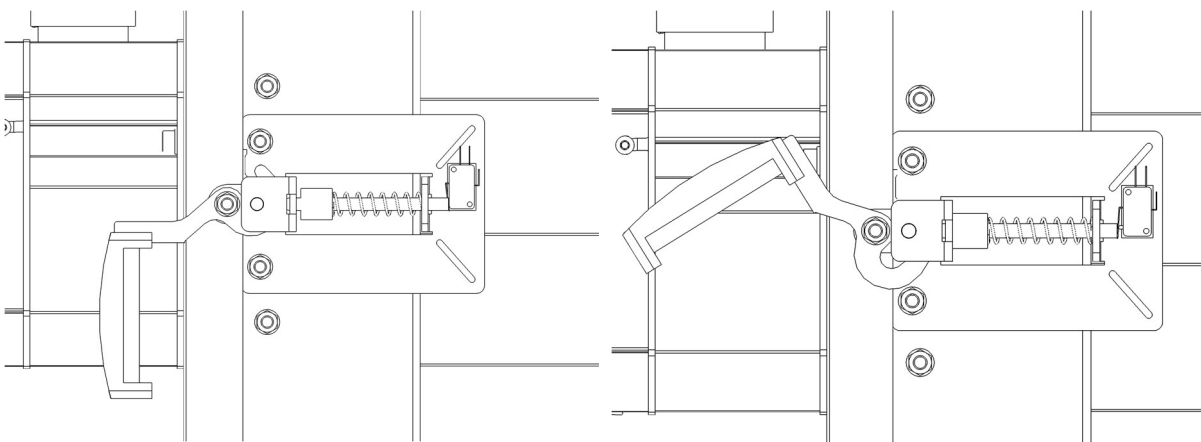


Figure 33 - Security of the door handle

WARNING!

Do not interfere with this system in any way, do not press the spindle manually - only the handle is for "system operation"

3. System of immediate boiler shutdown when the ash tank is removed (WO, WZO)

This system works in the same way as with the door handle. Lifting the ash container handle opens the limit switch and turns off the boiler .

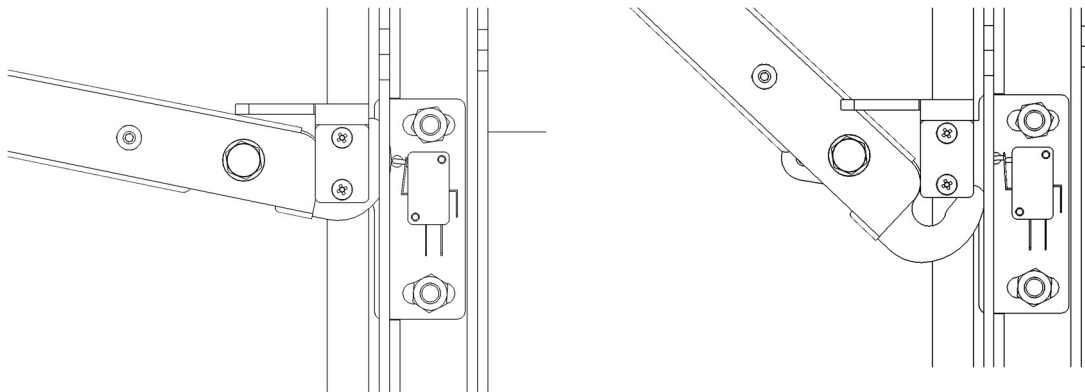


Figure 34 - Protection of the ash container

- 4. Burner temperature sensor - Details in the burner manual**
- 5. Motor verification of the external feeder reducer by the algorithm of the controller and the hardware of the controller**
- 6. Exhaust backflow**

The boiler is secured with a spiro pipe between the burner and the feeder. In the event of flashback in the burner, the pipe will burn. As a result, fuel will no longer be given to the burner.

8.2 Procedure in the event of a failure

Table XI - List of common faults

No.	Fault	The cause of the fault	How to remove the fault
1.	The burner does not ignite Message: "Failed attempt" firing	No fuel in the container	Refill the fuel in the container Perform the auger filling procedure - point 6.2 Clear the error by pressing the knob
		Blockade of fuel feeding augers	Remove the locking element
		Defective igniter	Contact the manufacturer's service point
		Damage of the drives of the feeding augers	Contact the manufacturer's service point
		Slag in the furnace	Clean the combustion chamber
		Photodiode damaged or dirty	Clean the photo diode In the event of damage, contact the manufacturer's service point
2.	Alarm:	Slag or ashes in the furnace chamber of the central heating boiler at the level of the burner combustion chamber	Clean the furnace of the central heating boiler.
		Excessive temperature rise of the housing caused withdrawal of the burner flame from the	The controller will automatically switch to the furnace putting out mode. The alarm can only be cleared by the user.

	"Exceeding the maximum feeder temperature"	combustion chamber (default 90 °C)	
		Insufficient chimney draft.	Verify the value of the chimney draft and take any measures to increase it.
		Slag or ashes in the furnace chamber of the central heating boiler at the level of the burner combustion chamber	Clean the furnace of the central heating boiler.
3.	Alarm: "Damage to the feeder temperature sensor"	Damage to the housing temperature sensor	Contact the manufacturer's service point
4.	Alarm: "Maximum boiler temperature exceeded"	Exceeding the boiler temperature set in the controller	Wait until the water temperature drops below the set value Clear the error by pressing the knob
		Setting too low temperature of the boiler operation	Increase the boiler operating temperature in accordance with the boiler manual
		Exceeding the critical temperature of the boiler (95 °C) - activation of the sensor STB	It is imperative to determine the cause of this error Delete the error by pressing the button in the controller housing
5.	Alarm: "Damage to the boiler temperature sensor"	Boiler temperature sensor failure	Contact the manufacturer's service point
6.	The fan does not turn off when the burner is extinguished	Photodiode damaged or dirty	Clean the photo diode In the event of damage, contact the manufacturer service point
7.	Smoke burner	Too little air supplied to the combustion chamber	Clean the furnace
		Covering the burner air inlet	Clean the burner air intake at the bottom of the burner
		Fan failure	Contact the manufacturer's service point
8.	Too much slag in the furnace	Wrong type of fuel	Use fuel recommended by the P he producer
		Damage to the combustion chamber turning drive	Contact the manufacturer's service point

WARNING!

Any service activities that require intervention in the burner or the screw feeder should be performed after disconnecting the burner from the power source and cooling down the burner.

9 List of spare parts

Table XII - List of spare parts

No.	name of the element
W1	Handle to lock the cat door
W2	Hook for the boiler door

W2.1	Limit switch / connection
W 3	Exchanger - Hinge strip
W4	Exchanger - ash drawer
W5	Exchanger - Automatic ash removal plug
W 6	Exhaust fan
W7	STB
W8	EcoMax 860 controller
W8.1	DIN TH-35 rail mounted
W9	EcoMax 920 controller
W10	Pump group
W10.1	Cold water line
W10.2	Hot water pipe
W11	Housing - Door
W12	Housing - Rear cover
W13	Housing - Rear cover
W14	Housing - Screen insulation cover bottom
W15	Housing - Side
W16	Housing - Side MIRROR
W17	Housing - Top
W18	Housing - Pump group fastening
W19	Burner
W19.1	Burner power cable
W19.2	Spiro tube
Z1	Pellet feeder
Z1.1	Pellet feeder gearmotor
Z1.2	Feeder seal
Z2	The hinges
Z3	Gas shock absorber
Z4	Housing - Front tray
Z5	Housing - Side tray
Z6	Housing - MIRROR tray side
Z7	Housing - Hopper flap
Z8	Housing - Top of the tray
Z9	Housing - Rear tray
Z10	EcoMax 860 controller panel
O 1	Trolley
O2	Trolley-flap
O3	Trolley-handle
O 4	Circle
O 5	Buckle
O6	Frame-hitch
O6.1	Final switch off
O 7	Housing - Side Ash removal
O 8	Housing - Side Ash removal MIRROR
O 9	Ash removal feeder
O9.1	Ash removal feeder gearmotor