

Agro Max

Agricultural waste / industrial boiler



User manual Maintenance and installation

Agro Max

Table of content

Safety provisions	3
1. Introduction	4
1.1. General information	4
1.2. Standards and regulations	4
2. Technical parameters	5
3. Construction	6
3.1. Boiler components	6
3.2. Boiler	7
3.3. Pellet chamber	8
3.4. Burner	8
3.5. Controller	8
3.6. Boiler set	9
4. Boiler installation	10
4.1. Location and position of boiler and pellet chambers	10
4.2. Changing the door direction	11
4.3. Boiler assembly	12
4.3.1 Installation of the burner cleaning mechanism	14
4.4. Connecting the boiler to the chimney	15
4.5. Connecting the boiler to the central heating system	15
4.6. Recommended connection diagrams	16
4.7. Installing the controller	17
4.8. Starting the burner and controller	17
5. Using the boiler	18
5.1. General information and safety	18
5.2. Boiler fuel	18
5.3. Using the boiler in automatic mode	19
5.4. Using the boiler in manual mode (solid fuel)	19
5.4.1 Burning solid fuel with the the controller	19
5.4.2 Burning solid fuel, with the mechanical valve	20
5.5. Maintenance	20
6. Boiler warranty card	21
7. Burner warranty card	22
8. Warranty conditions	23

Agro Max

Safety provisions



During the use of the boiler, its individual parts: chimney, door, individual points of the body – can heat up and cause burns if touched.



Do not allow children to touch or use the boiler without adult supervision.



The boiler can be operated by a capable adult who has carefully familiarized himself with this instruction.



Only a qualified specialist can install the boiler and connect it to the heating and electrical systems.



If you suspect that the boiler has malfunctioned, please contact the organization that installed the boiler or the manufacturer's representative. Do not under any circumstances use a malfunctioning boiler.



Improperly connected and used boiler can cause injury or death.

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1. Introduction

1.1 General information

The **Agro Max** boilers models are characterized by an exceptionally large heat exchanger, which allows to achieve an efficiency of more than 90 percent, and very good tray pellet burners with wide control options.

Before connecting the boiler to the heating system, carefully read this manual to ensure that all boiler components and equipment are working properly.

Agro Max boilers are designed for heating private residential houses, commercial and auxiliary premises. The boilers belong to the so-called low-temperature boilers category, i.e. the average temperature of the heat carrier cannot exceed 90 °C, and the maximum operating pressure - 1.5 bar.

The manufacturer has the right to make minor changes that do not significantly affect the quality of the combustion process and the operation of the boiler.

1.2 Standards and regulations

The boiler must be installed and operated in compliance with the legal requirements of the country to which it is supplied. It must be installed in accordance with the requirements of the maintenance and installation instructions.

Otherwise, the manufacturer assumes no responsibility and does not guarantee repair for any defects.

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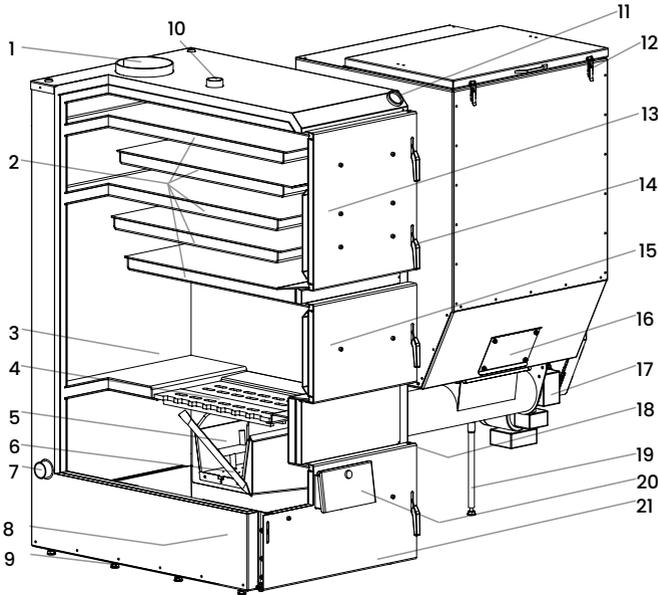
2. Technical parameters

Models and power output		50 kW	70 kW	100 kW
Heated area	Max m ²	500	700	1000
Combustion chamber depth	mm	680	680	980
Combustion chamber load	l/dm ³	140	170	290
"Zenono" burner	kW	15-70	15-70	20-100
Heat exchanger area	m ²	5,9	7,1	11
Combustion chamber opening size	cm	50x34	60x34	70x34
Number of horizontal heat exchangers	pcs	5	5	5
Volume of water in the boiler	l	145	165	280
Weight	kg	550	650	930
Chimney inner-outer diameter	mm	185/195	185/195	200/210
Fuel chamber capacity	l/dm ³	400	600	800
Lowest operating temperature		60° C		
Highest operating temperature		90° C		
Heating efficiency		90%		
Hydraulic connections size		G2 inch		
Highest operating pressure		1,5 bar		
Required draft in the chimney		>20 Pa		

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3. Construction

3.1 Boiler components



1. Chimney

2. Heat exchanger

3. Combustion chamber

4. Cast iron grates

5. Tray burner

6. Mixer

7. Return branch pipe

8. Ash box

9. Adjustable legs

10. Supply branch pipe

11. Thermometer

12. Fastening of the fuel chamber cover

13. Upper door

14. Door handle

15. Fuel loading door

16. Fuel chamber maintenance cover

17. Reducer

18. Blower

19. Adjustable fuel chamber leg

20. Adjustable air valve

21. Bottom door

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3. Construction

3.2 Boiler

The boiler heat exchanger consists of three main zones. Five horizontal heat exchangers (2) are located in the area of the upper door. The upper door (13) is used when it is necessary to clean the surface of the heat exchanger. The solid fuel combustion chamber is in the area of the middle door (15). This chamber is designed to use cheaper solid fuel and is loaded manually. The middle and lower chambers are separated by cast iron grates (4). It is recommended to remove the grates when the boiler is continuously used for burning in automatic mode. The tray burner (5) installed on the side of the boiler and is connected to the fuel chamber. A blower (18) is installed on the side of the boiler, near the fuel supply pipe. The mixer is built into the burner to help burn difficult burning fuel (6). A pull-out ash box (8) is placed under the burner for ash removal. An air valve (20) is installed in the front of the lower door. The boiler controller is installed on the side of the boiler. The internal heat exchanger body of the boiler is made of bent and welded heat-resistant steel sheets, and the finish is made of powder-coated sheets. An insulating layer of glass wool is installed under the boiler finish, which protects against heat loss through the external walls of the boiler. The double doors are sealed with heat-insulating material and painted with heat-resistant paint. Gases generated during the combustion process are removed through the chimney pipe (1) installed in the upper part of the boiler.

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3. Construction

3.3 Pellet chamber

The pellet chamber is designed to store fuel and supply it to the boiler in automatic mode. The chamber can be installed on the left or the right of the boiler, depending on the order. Fuel is loaded into the chamber by opening the lid. Fuel falls down to the bottom, where it is fed to the burner through a feed pipe with the help of a screw-type feeder. After opening the chamber maintenance cover (16), we can access the cleaning opening. It is designed to periodically clean the accumulated pellet dust, which reduces the performance of the pellet feeder. It is possible to install a lid opening sensor.

3.4 Burner

Agro Max boilers use „Zenono“ tray burner that can burn lower-quality, difficult burning pellets and other fuels: wood pellets, grass pellets, grains, oats, beans. A fuel mixer is installed together with the burner, designed to facilitate the burning of extremely difficult burning fuel. This is a high quality, long lasting new generation burner, designed to burn pellets and other fuels. This is the only (and without any competition) burner designed and manufactured in Lithuania. Reliable construction and quality components will allow you to use this burner for a long time.

3.5 Controller

An **Inter Electronics** controller is installed in the boiler. The controller is a modern electronic device designed to control the operation of the pellet boiler using data from various sensors. The device is compact and easy to install. It can control the central heating and hot water circuits and the burner.

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3. Construction

The temperature of the heating circuits can be determined by the data received from the main temperature sensor or the room thermostat, which turns off the boiler pump.



When connecting the thermostat, it is necessary to ensure the minimum heat demand for boiler operation in standby mode.

The compatibility with standard room thermostats allows you to maintain a comfortable temperature in all premises (rooms). Controlling the boiler is easy and simple. The controller can be used in households and small industrial facilities.

3.6 Boiler set

1. Boiler
2. Fuel chamber
3. Fuel supply mechanism
4. Burner
5. Controller
6. Stainless steel burner cleaning mechanism
7. Blower
8. Set of grates
9. Ashtray
10. Boiler cleaning tools
11. Thermometer
12. User manual
13. Turbulators (ordered additionally)

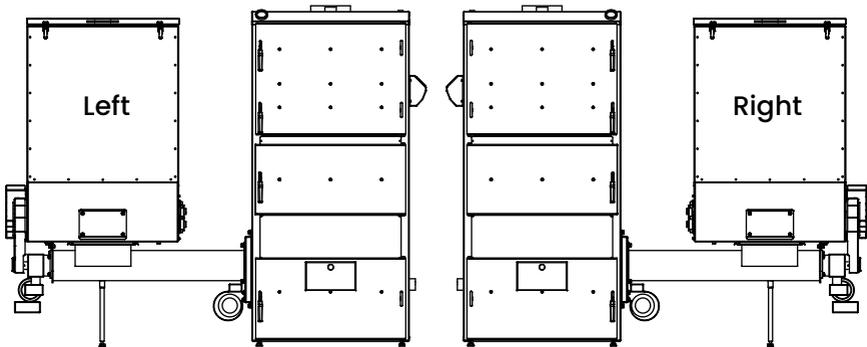
Agro Max boilers are equipped with 400, 600 or 800 liter pellet chambers.

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4. Boiler installation

4.1 Location and position of boiler and pellet chamber

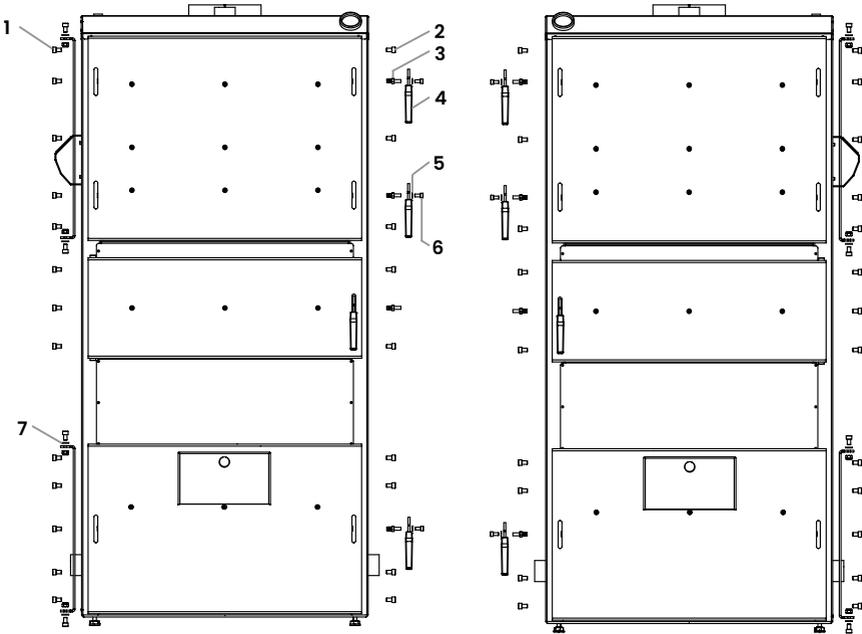
The boiler and pellet chamber must be placed on a hard, smooth and non-flammable dry surface. It should be convenient to access the tray burner, blower, controller, pellet chamber, and fuel supply system, ash collector and other mechanisms. The pellet chamber can be on the left or right side of the boiler depending on the order. The door opening direction can be changed.



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4. Boiler installation

4.2 Changing the door direction



- 1. Screw DIN912 M10x16
- 2. Screw DIN912 M10x12
- 3. Eccentric M10
- 4. Door handle

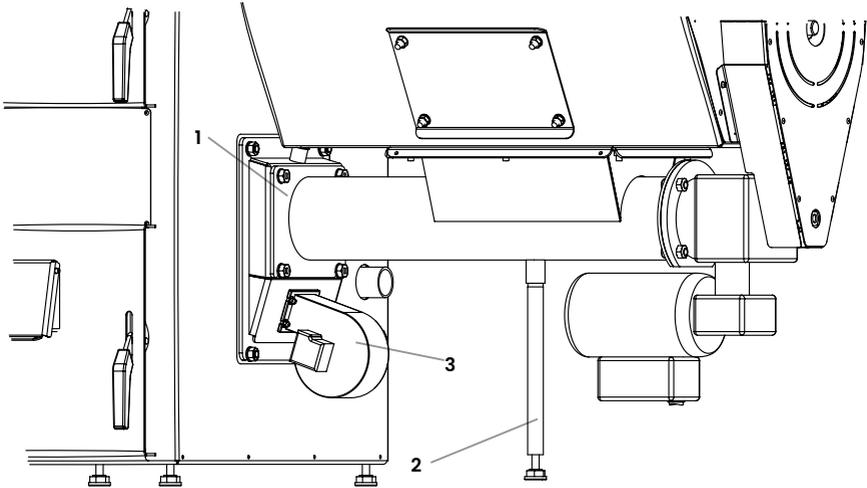
- 5. Spring washer
- 6. Screw DIN 912 M8x16
- 7. Washer M10

The direction of the middle door is changed by turning the door together with the hinge (hinges) away from the boiler body and screwing it on the opposite side of the boiler. The door handle is unscrewed, turned over and screwed back. The direction of the lower and upper doors is changed by turning the door away from the hinge. The hinge is unscrewed from the boiler body and screwed on the opposite side of the boiler. The door is screwed to the hinge, and the door handle is unscrewed from the door and screwed back to the opposite side of the door.

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4. Boiler installation

4.3 Boiler assembly



The fuel supply system and chamber are installed in three stages:

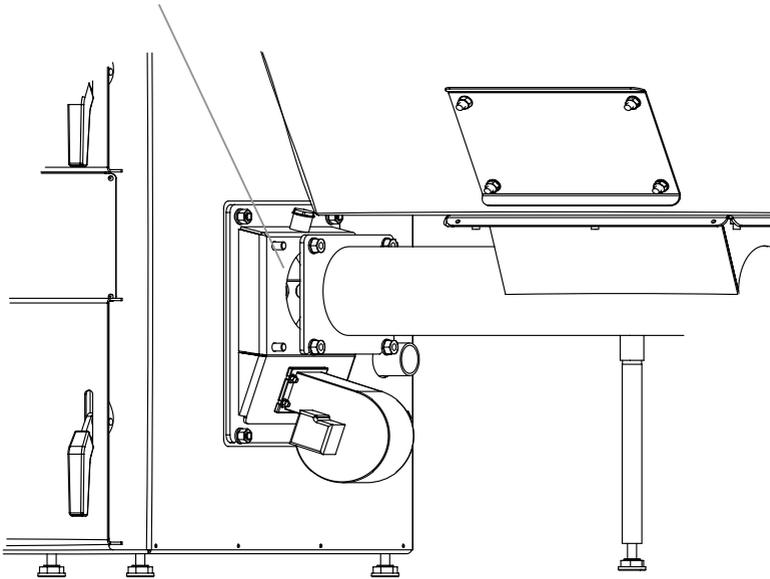
1. The assembled fuel chamber is fixed to the boiler in the appropriate place with four M10 screws (1).
2. The correct height of the fuel chamber and feed pipe is determined by the adjustable leg (3).
3. The blower is fixed under the fuel supply pipe, in the designated place, by fixing with four M6 screws (2).

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4. Boiler installation



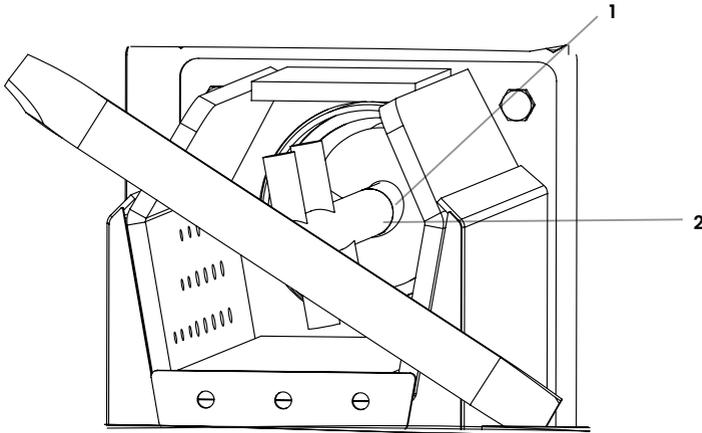
It is necessary to lubricate the connection with heat-resistant silicone before screwing the fuel supply screws to the burner!



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4. Boiler installation

4.3.1 Installation of the burner cleaning mechanism



Installation of the burner cleaning mechanism (hedgehog):

The burner cleaning mechanism (2) is installed in the burner by screwing it to the fuel supply nozzle (1).

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4. Boiler installation

4.4 Connecting the boiler to the chimney

The chimney must be installed according to the requirements of the country where it is installed. The recommended chimney draft is 15–20 Pa. If there is too much draft in the chimney, a draft regulator should be installed.

The boiler branch pipe must be connected to the flue itself with a rigid steel connection of suitable cross-section and shape. The connection of the boiler to the chimney must be properly insulated to prevent burns.

4.5 Connecting the boiler to the central heating system



Delegate the work of connecting the boiler to properly qualified specialists.

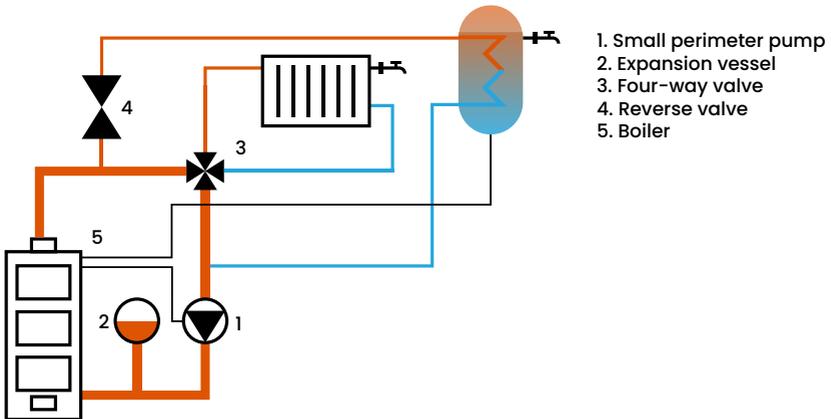
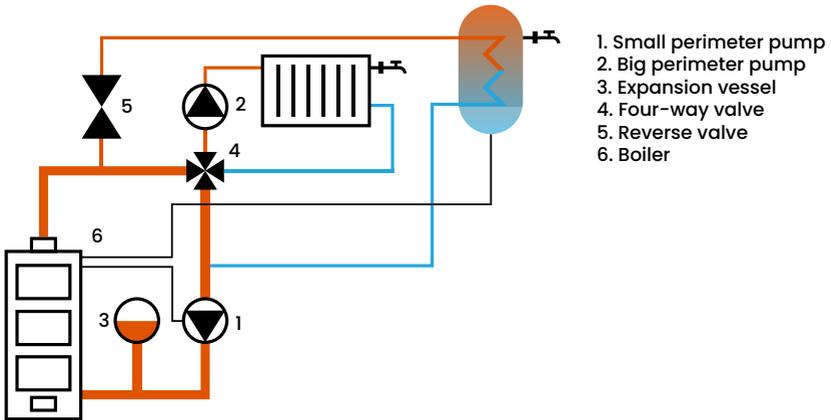
In order to extend the service life of the boiler and to ensure proper use, it is necessary to follow an installation scheme that ensures maintenance of the working temperature of the boiler not below 60°C. With the help of a specialist, make sure that the condition of the boiler, automation, plumbing connections, flue tightness and components are working properly. In a closed heating system, there must be a thermal expansion compensation vessel of suitable capacity (at least 10% of the total liquid volume in the system). Safety valves or valves that restrict flow in this system are prohibited.

Recommended wiring diagrams are provided in subsection 4.6

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4. Boiler installation

4.6 Recommended connection diagrams



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4. Boiler installation

4.7 Installing the controller



Installation, commissioning and tuning of the controller can only be performed by certified specialists. The controller is installed in the upper part of the boiler. The procedure for connecting the controller is included with the controller instruction.



The temperature sensor is installed in the sleeve at the top of the boiler. When installing the temperature sensor in the boiler, it is necessary to lock the sensor in the sleeve to prevent accidental removal. If the temperature sensor falls out of the sleeve, the boiler may boil.

4.8 Starting the boiler, burner and controller



When starting up the boiler for the first time, a certified specialist must train the user on how to use the heating system. Burner start-up, warranty and post-warranty services are carried out by "Zenono" burner manufacturer: +370 618 63071.



The manufacturer is not responsible for the quality of boiler operation and malfunctions if the user starts the burner and controller himself. We recommend delegating the burner start-up work to a certified specialist.

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5. Using the boiler

5.1 General information and safety

Agro Max is a universal pellet boiler, suitable for use with difficult burning pellets, grain products, and cheaper solid fuel using manual loading. Pellets are ignited manually in the burner. The combustion process of both pellets and solid fuel is controlled by the controller.

- Check the operation of the safety valve (no more than 1.5 bar) and open the shut-off valves between the heating boiler and the heating system;
- Check the water pressure in the system;
- The heating system must be filled with water and bled;
- When starting solid fuel, never use flammable liquids - gasoline, paint thinners etc.;
- The smoke extraction system must be reliably connected, sealed and in correct technical order.



If you suspect that the boiler or the heating system is not working properly, stop using it and contact a specialist.

5.2 Boiler firing with coal



When using charcoal in automatic mode, it is necessary to remove the stainless steel cleaning mechanism (turning counterclockwise). An M18 nut is screwed into the place of the mechanism to protect the thread. The thread is lubricated with graphite grease.



When using coal, it is recommended to supply additional air to the fuel chamber. A corrugated stainless steel hose is used for connection, which is connected from the burner to the chamber.

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5. Using the boiler

5.3 Using the boiler in automatic mode

A properly connected boiler can operate in automatic mode depending on the heat demand. The combustion process is managed by a controller based on data received from sensors. The burning intensity is automatically regulated, the temperature of the boiler is changed according to the preset parameters. To set the automatic mode when burning pellets, select: Menu->11 „Advanced parameters“, ->11.9 „Feeder Type“ and select the parameter „Auger“ in the controller. The burner is filled with pellets by selecting: Menu->10 „Manual Mode“ and turning on the feeder. Other receivers can also be tested in this mode. After filling the burner with pellets, the fuel is ignited manually and the automatic mode is activated (return to the main screen of the controller and press the „ESC“ button). For continuous burning of the pellets, it is recommended to remove cast iron grates from the combustion chamber of the boiler. More information about the controller can be found in the controller manual.

5.4 Using the boiler in manual mode (solid fuel)



Before starting to burn solid fuel, make sure that the cast iron grates are in the correct position („VVVVV“). When stacked in reverse, wood fractions and ash fall, clogging the gaps. In this case, the boiler loses its traction and power, the grates bend.

5.4.1 Burning solid fuel with the the controller

The solid fuel burning process and the operation of the entire boiler room are controlled by the same controller. To start burning solid fuel, select: Menu->11 „Advanced parameters“, ->11.9 „Feeder Type“ and select the „Output“ parameter. The controller will start supplying air for burning solid fuel, but will continue to fully control all boiler control processes.

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5. Using the boiler

5.4.2 Burning solid fuel, with the mechanical valve

In the event of a power outage or controller failure, solid fuel combustion is still possible using a mechanical air valve. In this way, the air flow is not automatically regulated. The user must carefully monitor the boiler water temperature.



In the case of low heat demand or too high draft of the chimney, due to the natural air inflow through the fan, intense combustion may occur, so the boiler may overheat.

5.5 Maintenance

Boiler maintenance and cleaning is carried out periodically. The heat exchanger is cleaned by opening the upper door. Cleaning frequency is determined by the need. Cleaning once a week is recommended. Cleaning the heat exchanger more often reduces the amount of fuel consumption. Ash cleaning from the ashtray is carried out as needed, depending on the type of fuel used and ash content. Overfull ashtray can interfere with the correct operation of the burner.

Maintenance of the pellet feeder

Opening the maintenance cover of the pellet chamber allows access to the cleaning opening. It is designed to periodically clean the accumulated pellet dust, which can reduce the performance of the pellet feeder.

Burner maintenance

It is recommended to clean the bed burner every 2 months.

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6. Boiler warranty card

Model _____

Designated power output _____

Serial No. _____

Production year _____

Boiler start-up date _____

Comments

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7. Burner warranty card

Burner type/model _____

Serial No. _____

Purchase date _____

Comments

Signature, stamp

8. Warranty conditions

When selling the boiler, the seller must familiarize the buyer with the terms of the warranty:

1. The manufacturer provides:

- 5-year warranty for the tightness of the boiler heat exchanger.
- 3-year warranty for the burner.
- 2-year warranty for electrical and electronic devices.
- 2-year warranty for the included parts.

The stainless steel cleaning mechanism is not covered by the warranty.

2. The boiler installation scheme must ensure the return water temperature is not less than 60° C.

3. Boiler installation must be performed only by a qualified specialist.

4. During the warranty period, the manufacturer undertakes to carry out free of charge elimination of malfunctions, if they occurred due to the fault of the manufacturer.

5. The warranty does not apply to:

- Failure to submit purchase documents and a stamped warranty sheet.
- Violation of installation, operating instructions or warranty conditions requirements.
- In case of mechanical damage to the boiler.
- After determining that the boiler has been repaired by an outsider.
- In case of natural disasters.

6. Defects detected during the warranty period will be eliminated within 21 working days from the date of the complaint.

7. Costs related to service calls and repairs, if it is determined that the warranty conditions have been violated, are covered by the buyer.

