



Pellets® Fuzzy Logic 2

Service Mannual and Warranty Card



pellets



pellets / oats
50 / 50



pea coal

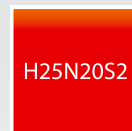


wood



P265
GH

stal
kotłowa



H25N20S2

stal
żaroodporną



Dear user of KOSTRZEWA equipment!

We want to take this opportunity to thank you for choosing our equipment. You have selected the highest quality product of the company known and appreciated throughout the country.

The KostrzeWA company was established in 1978. Since the beginning of activity they are dealing with the production of fossil fuel and biomass-fired boilers for central heating applications. Within their 30 years' activity the company improves and upgrades their equipment so as to be a leader among the Polish manufacturers of solid fuel-fired boilers.

The implementation and designing department for new technologies was created in the company to continually improve the equipment and implement the new technologies. We want to contact with each customer by an intermediary of the companies, which will professionally represent our company.

Your opinion on the activities of our company and our partners is very important to us. Striving to continuously improve the level of our products, we ask you to make any comments about our products and service rendered by our Partners.

Have the warm and comfortable days through the whole year!

KOSTRZEWA sp.j.

Dear Users of Pellets Fuzzy Logic Boiler.

Before you connect and start up the Pellets Fuzzy Logic boiler check the parameters of the chimney according to the data contained in the enclosed table (chimney draft, chimney cross-section), and the device matching with the heated surface (heat demand of the building).

Basic principles for the safe operation of the boiler!!!

1. Read the service manual before starting up the boiler.
2. Before starting up the boiler check that the connection to the central heating system and the flue is in accordance with manufacturer's recommendations.
3. Do not open the doors during the boiler operation.
4. The tank cover must always be tightly closed during the boiler operation.
5. Do not allow the fuel tank to be emptied completely.

For your safety and comfortable use of the boiler, please return the PROPERLY COMPLETED (CONTAINING ALL ENTRIES AND SEALS) last copy of the warranty card and the boiler quality and completeness certificate (the last page of this service and installation manual) to the following address:

SERWIS KOSTRZEWA
ul. Przemysłowa 1, 11-500 Giżycko, POLAND
woj. warmińsko – mazurskie
tel. +48 87 428 53 51 lub +48 87 428 11 34
e-mail: serwis@kostrzeWA.com.pl

Sending back the warranty card will allow us to register you in our database of Pellet Fuzzy Logic users and provide fast and reliable service.

IMPORTANT !!!

PLEASE NOTE THAT FAILING TO RETURN THE WARRANTY CARD OR RETURNING THE WARRANTY CARD AND BOILER QUALITY AND COMPLETENESS CERTIFICATE INCORRECTLY FILLED WITHIN TWO WEEKS FROM THE DATE OF THE BOILER INSTALLATION, HOWEVER NOT LONGER THAN TWO MONTHS FROM THE PURCHASE DATE, RESULTS IN THE LOSS OF WARRANTY FOR THE HEAT EXCHANGER AND ALL COMPONENTS OF THE BOILER. THE LOSS OF WARRANTY WILL CAUSE THE DELAY IN PERFORMING REPAIRS AND NECESSITY TO COVER THE COSTS OF ALL BOILER REPAIRS WITH TRAVEL COSTS OF THE SERVICE PERSONNEL INCLUSIVE.

Thank you for your understanding.
Yours sincerely,

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1.1 Application and advantages of the boiler

Automatic PELLETS FUZZY LOGIC boiler is intended for combustion of solid fuels such like pellets, pea coal, cereals, wood. It can be used to heat single or multi-family houses, smaller resorts, workshops, schools, offices, etc.

- Mechanical or electronic (optional) fuel level indicator
- Economic operation
- Low levels of harmful substances in flue gas;
- High efficiency of the device
- Versatile installation options (left / right side).

1.2 Advantages of Pellets Fuzzy Logic boiler

- Modern design of steel heat exchanger, allowing the achievement of efficiency above 90%;
- Possible combustion of four types of fuels;
- Automatic fuel ignition - pellets;
- Automatic fuel ignition – pea coal;
- Automatic fuel ignition – cereals;
- Automatic operation of the boiler controlled by weather controller and room thermostat;
- To improve the quality of combustion Pellets Fuzzy Logic is fitted with three fans (two pressure and one exhaust);
 - exhaust fan - to eliminate odors and dust in the boiler room; during the combustion of fuels the fan draws flue gas from the boiler to the chimney. Fan rotor, through which flue gas pass, is made of stainless steel;
- Door viewer - to not open the door during operation, a sight glass was mounted to view the flame;
- Flue gas temperature measurement - this feature allows you to control the efficiency of the boiler and its settings. It informs you also about the point at which the boiler heat exchanger must be cleaned;
- Two operation modes;
 - Summer - during the summer season domestic hot water is heated;
 - weather - along with the external temperature sensor and the room temperature controller (standard boiler equipment);
- Modulation of the burner operation by Fuzzy Logic method
 - no feeding and standstill times - automatic power adjustment to the heat demand of the building - from 10% to 100% of the boiler output;
- Lambda probe - infinitely adjustable fan speed (air is tuned by the lambda probe and not by the user. Just press the start button and the boiler will tune the amount of air itself;
- Temperature limiter - the boiler is fitted with the temperature limiter, independent from the boiler control system, which operates at a temperature higher than 95°C; continuous feeder temperature measurement; feeder alarm condition temperature is programmable;
- Automatic control of the mixing valve actuator; measurement and regulation of the temperature of the water returning to the boiler;
- Possible domestic hot water heating;
- Alphanumeric display with backlight - nice and easy to use;
- Menu in English, Polish, German;

2. Technical data of Pellets Fuzzy Logic

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PARAMETR	SI	PFL 15	PFL 25	PFL 40	PFL 50	PFL 75	PFL 100
Rated output	kW	15	25	40	50	75	100
Minimum range	kW	5	8	12	15	23	30
Control range	kW	5 - 15	8 - 25	12-40	15-50	23-75	30-100
Output control method		Fuzzy Logic, PID	Fuzzy Logic, PID	Fuzzy Logic, PID	Fuzzy Logic, PID	Fuzzy Logic, PID	Fuzzy Logic, PID
Boiler class acc.to PN EN 303-5		3	3	3	3	3	3
CO concentration acc. to PN-EN 12809 (o ₂ =10%) for rated output	mg/m ³	283	427	315	184	190	148
Water volume	dm ³	65	80	100	120	150	200
Max. working pressure	bar	2	2	2	2	2	2
Testing pressure	bar	4	4	4	4	4	4
Recommended heating water temperature	°C	70	70	70	70	70	70
Min. temp. of water returning to boiler	°C	50	50	50	50	50	50
Chimney draft	mbar	0.15 – 0.25	0.15 – 0.25	0.15 – 0.25	0.2 – 0.3	0.2 – 0.3	0.4
Flue gas temperature for rated output	°C	140	150	160	160	180	180
Flue gas temperature for min output	°C	90	95	100	100	110	110
Heat exchange area	m ²	–	2.35	–	–	–	–
Fuel charge weight - pellets	kg	80	220	220	320	400	400
Charging hole dimensions	mm	300x300	300x300	350x350	350x350	350x350	350x350
Approximate fuel consumption at rated output (pellets)	kg	3,48	5.8	9,28	11,6	17,4	23.25
Approximate fuel consumption at minimum output (pellets)	kg	1,16	1.9	2,78	3,48	5,33	6,97
Approximate fuel consumption at rated output (pea coal)	kg	2,34	3.9	6,24	7,8	11,70	16,4
Approximate fuel consumption at minimum output (pea coal)	kg	0,78	1.2	1,87	2,34	3,58	3,58
Boiler length (set)	mm	960	1080	1080	1080	1495	1495
Boiler width (set)	mm	990	1150	1280	1270	1410	1580
Boiler height (set)	mm	1050	1230	1230	1230	1565	1565
Supply/return stub pipe	cal	1.5	1.5	1.5	1.5	2.0	2,5
Connecting voltage	V	230	230	230	230	230	230
Max. power consumption min./max	W	140/900	140/900	140/900	200/900	200/900	200/900
Flue diameter	mm	160	160	160	160	200	250

Wood

To achieve the boiler rated output, one shall use the dry wood with a moisture content to 20% (equivalent to 18 months of wood drying under a cover) as a fuel. Using the wood pieces of larger sizes (cut into thicker pieces) extend the time of one charge burning even up to 8 hours.

Pellets prepared according to DIN 51731

- granulation **5 – 8 mm**
- recommended calorific value **17500 – 19500 kJ/kg**
- ash content **max. 0.5 % - 600 to 700 kg per m3**
- moisture content **max. 12 %**
- specific gravity (density) **1.0 – 1.4 kg / dm3**

Pea coal

- granulation **5 – 25 mm**
- recommended calorific value **>23000 kJ/kg**
- ash contents **maks. 12 %**
- moisture contents **maks. 12 %**
- volume of volatilizing compounds **28 – 40 %**
- ash deformation temperature **> 1150°C**
- low sintering
- small bulking

Cereals - oats, triticale, fruit pips

Moisture content to 12%.

4. Description of Pellets Fuzzy Logic Boiler design

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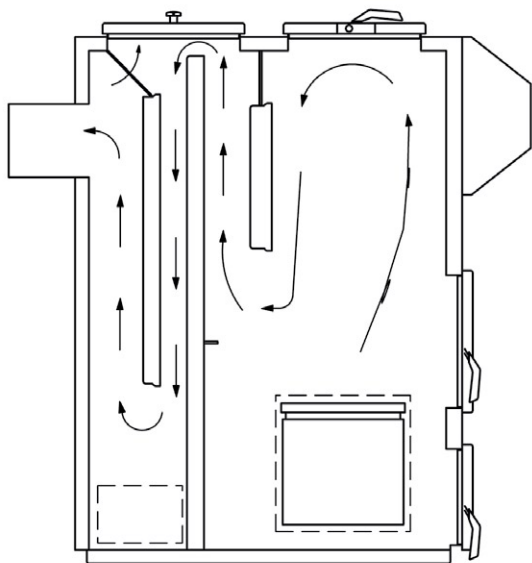


Fig. 01 Flue gas circulation in boiler exchanger

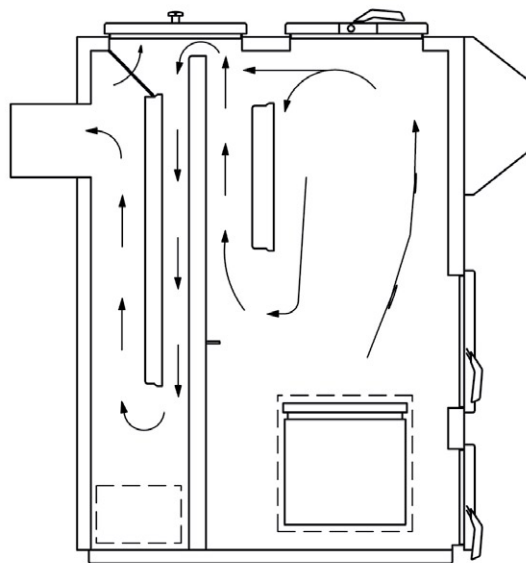
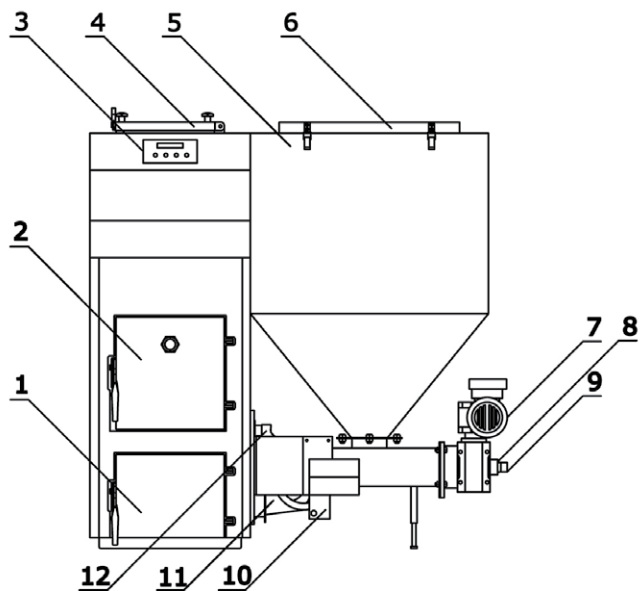
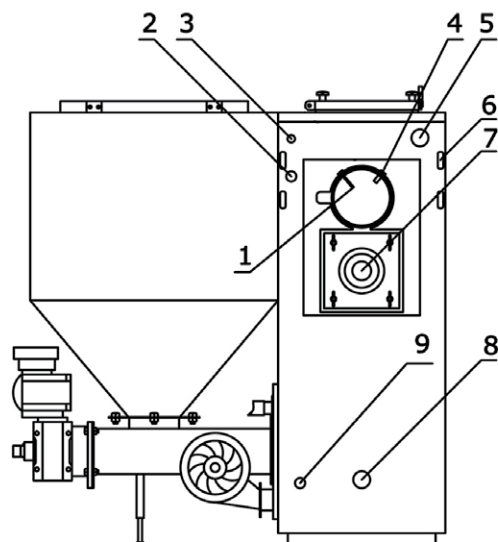


Fig. 02 Flue gas circulation in boiler exchanger



- | | |
|--|---|
| 1. Ash pan door | 8. Locking pin (screw connecting worm with gear unit) |
| 2. Door for cleaning burner and grate installation | 9. Fuel feeder (worm) |
| 3. Boiler control system | 10. Ignition fan |
| 4. Top charging door | 11. Pressure fan |
| 5. Fuel tank | 12. Fuel ignition heater |
| 6. Fuel charging hole to tank | |
| 7. Motor with gear unit (gear-motor) | |

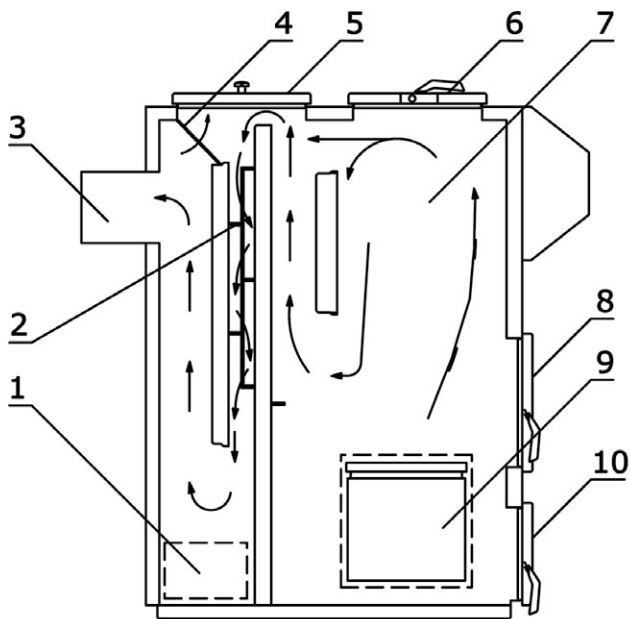
Fig. 03 Boiler design



- | | |
|---|------------------------------------|
| 1. Lambda probe | 6. Wiring system ducts |
| 2. Boiler thermal protection | 7. Exhaust fan |
| 3. Boiler sensor, thermal protection 95°C | 8. Heating medium return to boiler |
| 4. Flue gas sensor | 9. Water drain |
| 5. Heating medium outlet from boiler | |

Fig. 04 Boiler design

4. Description of Pellets Fuzzy Logic Boiler design cont.



- | | |
|-------------------------------------|--|
| 1. Boiler clean out | 7. Charging (combustion) chamber |
| 2. Flue gas swirl vanes | 8. Access door to burner and grate |
| 3. Flue gas outlet (chimney) | 9. Air chamber of the burner with the clean-out at the bottom part |
| 4. Access to clean the third baffle | 10. Ash pan door |
| 5. Cleanout upper door | |
| 6. Charging door for wood | |

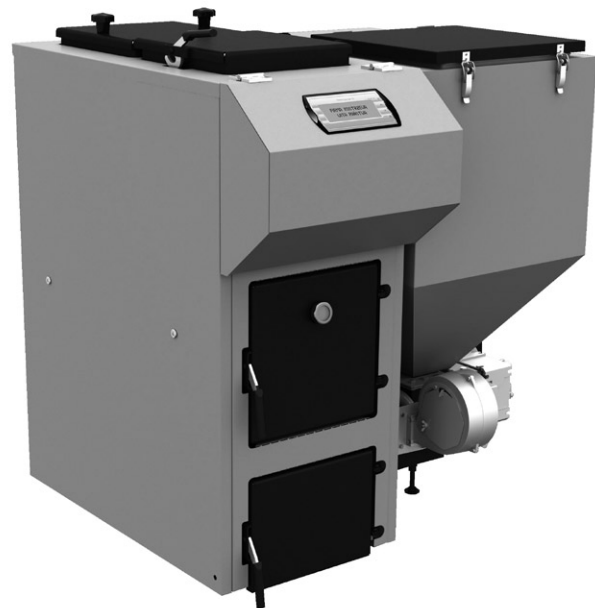


Fig. 05 Boiler design

Fig. 06 Pellets Fuzzy Logic Boiler

5. Pellets Fuzzy Logic accessories.

Standard accessories:

Boiler service and installation manual (1 pcs.)

Cast iron grates (set.)

Flue gas turbulator (1 pc.)

Room controller (1 pc.)

External sensor (1 pc.)

Domestic hot water sensor (1 pc.)

Central heating sensor (1 pc.)

Auxiliary accessories:

Lambda probe module (1 pc.)

Floor heating control module (additional heating circuits) (1 pc.)

Solar system control module (1 pc.)

Boiler equipment allows the user to set:

- boiler temperature
- temperature in the heating circuit according to the room temperature
- domestic hot water temperature (full weather control)
- room temperature
- temperature of water returning from the central heating system. (the function protecting the boiler exchanger);
- igniter heating time (depending on the fuel type)
- operation of the fuel feeder and three fans;
- manual control of the feeder and fan;
- automatic burner output modulation (fuzzy logic)
- automatic air dosage (lambda sensor module)

It is possible to connect the executive modules MU1 to the control system. Each of those modules controls the five heating circuits or controlled room thermostats. The module of additional heating circuits (control of mixing valves). The solar module to control the solar collector.

Thermal sensor

The mechanical protecting device is mounted in the boiler and protects the heating system from overheating. If it is set to 95°C, it means that above this temperature the feeder and fans will be turned off and the central heating and domestic hot water pumps start operation.

Room controller with optional programming (in 7-days cycle)

The digital room thermostat with programming option is used to automatic control of heated rooms.

Fuzzy Logic control method

Advantages of Fuzzy Logic control:

- Fuzzy logic algorithm is more advanced than „pid” algorithm used in other appliances ;
- Reduction of combusted fuel quantities;
- Eliminates formation of impurities and tar in the boiler to a great extent;
- High temperature stability of the boiler operation – eliminates water vapor dripping in the boiler;
- Combustion chamber temperature is high and stabile, thereby the emissivity of carbon oxides is reduced.

Lambda probe

Voltage generated by the cell is transmitted to the Pellets Control controller governing the fuel-air mixture composition in the boiler. This module continuously adjusts the fuel mixture composition, to ensure the most perfect operation of the device under the determined conditions of the boiler load, fuel type and weather conditions and to minimize the emission of carbon monoxide. A properly adjusted air-fuel mixture can save up to 20% of fuel. Control takes place continuously during the entire cycle of the boiler operation.

Locking pin at the feeder inlet

Located at the beginning of the worm conveyor shaft. Possible blockage of the worm conveyor causes the compression of the above component, thereby protecting the engine from damage (after breaking the locking pin clean the burner knee, insert a new locking pin and start up the boiler).

Automatic motor thermal sensor

It is located in the control system housing at the back of the boiler and protects the motor from damage. When the load is not large enough to break the protective device on the feeder clutch and the motor is under greater and greater load and begins to heat up, the automatic thermal sensor trips off the motor. To restart the motor, press the button No. 1.

Temperature sensor on the worm conveyor cover

In the event of the flame (heat) reversal to the feeder it transmits a signal to the boiler controller, which in turn switches off the combustion air fan and forces the feeder operation to remove the heat out of the feeder. This protection works only when the boiler is supplied with electricity.

Flue gas sensor

It is mounted in the chimney flue and measures the flue gas temperature. When the exhaust temperature is above 230 ° C, clean the boiler heat exchanger.

Central heating and domestic hot water pump.

It works according to a proper algorithm, so as to make optimum use of heat.

Mixing valve actuator

This component is used to preset the heating circuit temperature in the central heating system while maintaining a constant temperature in the boiler. The temperature is calculated from the heating curve, external temperature and room temperature.

7.1 Regulations, standards and recommendations

The boiler room should meet the conditions of the building law in force at the site of the boiler installation. In Poland, these provisions are treated by the standard PN-B-02411, and the regulation of the Minister of Infrastructure of 12 April 2002 on the technical requirements to be met by buildings and their location. (Journal of Laws No. 75, item. 690)". The solid-fuel fired boilers should be installed in separated plant rooms and the fuel storage should be located in a separate plant room near the boiler or in the room in which the boiler is installed, however not closer than 40 cm from the boiler. The boiler room should meet the requirements of fire protection and OH&S regulations.

7.2 Recommended boiler room dimensions

- The height of the room shall not be less than two heights of the boiler, however, not less than 2,5 m;
- The distance between the wall and the boiler unit min. 100 mm;
- The distance between the tank and wall min. 600 mm;
- The distance from the rear wall of the boiler to the wall should be min. 300 mm;
- The distance from the front wall should be min. 400 mm;

7.3 Positioning on a non flammable floor

- Boiler should be set on a non-flammable heat insulating pad, which should be greater than the base of the boiler by 2 cm from each side of the boiler;
- If the boiler is located in the basement, we recommend to set the boiler on the foundation of at least 5 cm in height. The boiler must be positioned vertically.

7.4 Safe distance from flammable materials

- During installation and operation of the boiler keep a safe distance of 20 cm from flammable materials;
- In case of flammable materials of C3 flammability degree, which are quick and easy to burn even after removal of ignition sources (such as paper, paperboard, cardboard, wood, plastics), the said distance is doubled, ie. to 40 cm;
- If flammability is not known, the safe distance should also be doubled.

7.5 Ventilation of the boiler room

Air delivery shall take place through the non-closed hole with the minimal cross-section of 200 cm² and the exit to 100 cm above the floor level.

7.6 Chimneys

Chimneys are designed to remove flue gas to the outside in a reliable manner and draw the air for combustion. The chimney draft necessary for this purpose is conditional on:

- temperature difference between hot flue gas and cold air;
- effective height of the chimney;
- chimney cross-section ($\geq 100 \text{ cm}^2$);
- chimney execution (possibly smooth internal surfaces) and the tightness of joints;

The effective chimney height is the height difference between the highest furnace and the chimney outlet. The effective height of individual chimneys must be at least of 4 m, and in the case of the common chimneys for solid and liquid fuels it must be at least of 5 m. The height difference between the two furnaces cannot be greater than 6.5 m.

In the case of sloping roofs the chimneys should terminate within the ridge (the highest edge of the roof), in the area of free movement of wind, thereby avoiding draft interferences and disturbing effect on and by the environment. You should always pay attention to the location of the building in relation to other buildings.

Flammability degree of building compounds and products	Building materials and products
A – noncombustible	sandstone, concrete, bricks, fire-protection plaster, mortar, ceramic tiles, Granite
B - slow-burning	wood-cement boards, glass fiber, mineral Insulation
C1 – slow-burning	beechwood, oak wood, Plywood
C2 - moderately-burning	pine, larch and spruce wood, cork, Sawn wood planks, Rubber floor lining
C3 - easily-burning	Asphaltic board, celluloid compounds, polyurethane, Polystyrene, polyethylene, plastic, etc.

7.7 Selection of a chimney

In most cases, the selection of a chimney based on an approximate method or chimney manufacturer's diagrams is sufficient. In special cases (adverse pressure and temperature dependence; large volume of flue gas) the chimneys are calculated according to BS EN 13384-1 (PN-EN 13384-1).

The diagrams of chimneys contain such input values as the chimney conduction thermal resistance, roughness of the chimney inner walls, flue conduction thermal resistance and coefficients of hydraulic resistance when changing directions of the tubes.

The diagrams of the manufacturers include the relationship between the rated capacity of the heating unit and the effective height of the chimney for the various cross-sections of the chimney.

The diagrams will vary depending on the used fuel (eg. oil, gas, wood), design of furnaces (eg. pressure boiler with a fan burner), flue gas temperature and type of load.

7.8 Chimneys for solid fuel-fired boilers

It should be noted that the solid fuel-fired furnaces with a rated thermal output > 20 kW and w/o fan need their own chimney. For the solid fuel-fired boiler the cross-section of the chimney should be 16cm x 16cm (in Poland - at least 14cm x 14 cm). When the cross-section is different, then the flue gas flows too slow and cools down too much. This in turn leads to problems with the draft and formation of deposits in the chimney. These deposits damage the wall, if sulfuric acid and water vapor contained in flue gas cool below the dew point temperature.

For the solid fuel-fired furnaces the single-layer chimneys made from brick, often occurring in old buildings, can be used. Currently the three-layer chimneys with a smooth surface and good thermal insulation are applied.

7.9 Flue

The flues according to DIN 18160, connect a boiler with a chimney. They can be made as the exhaust pipes or as flue gas ducts. Exhaust pipes are the pipes and fittings, which are distributed in the premises. Flue gas ducts comply with the fire-protection requirements for chimneys and are often made from the same material as the main chimney. The connecting units should be as short as possible and placed with an upslope to the chimney to avoid heat losses and additional resistance. They can not be lead onto other floors. Exhaust pipes should not be laid in the rooms, in which the furnaces cannot be mounted, besides they also should not be mounted in the walls and ceilings.

7.10 Installation and commissioning

The solid fuel-fired boiler must be installed in accordance with applicable regulations by an authorized service company. The boiler commissioning must be carried out by trained service staff of the manufacturer possessing an appropriate license.

7.11 Connecting to the heating system

The hydraulic system should comply with the applicable regulations and standards and must be performed according to building-art principles.

7.12 Requirements for heating system water:

- Water must be transparent and colorless w/o additives and other chemically aggressive substances;
- Water hardness below 20 of
- PH above 8.5

7.13 Connecting to the wiring system

The boiler is designed for supplying voltage 230V/50Hz. Installation should be performed by a qualified person with an easy access to the connecting socket of 230V/10A, grounded. Boiler and boiler room lighting system should have a different power supply circuit.

7. Pellets Fuzzy Logic Boiler location and installation cont.

NOTE!!!

To ensure optimum performance and proper combustion it is required that chimney draft represent the appropriate values from Table No. 1

Due to low flue gas temperature, in order to protect the chimney from moisture and reducing the draft, it is advised to use the chimney inserts from acid-resistant steel or ceramics with condensate discharge to a floor drain.

NOTE!!!

In order to avoid the „dew formation” in the ash pan chamber it is recommended to set the boiler on the thermally insulated floor or put the insulating material under the boiler (for boilers without a double-insulated bottom).

NOTE!!!

Central heating system connected to the boiler must be fitted with a drain cock, which must be at the lowest point and as close to the boiler as possible.

8. Boiler commissioning – Instructions for AS

8. Boiler commissioning – instructions for A.S.

- Commissioning of the boiler must be carried out only by the service personnel trained by the manufacturer, with a current certificate of an authorized service performer of Kostrzewa company.
- Completion of installation and heating test performance must be recorded in the Warranty Card.
- The completed warranty card should be mailed by the user to the address of the manufacturer to register the user in the company system.

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tel. 087 428 53 51

e-mail: serwis@kostrzewa.com.pl

As per controller service manual enclosed on page 29 - **Pellets Control M Fuzzy Logic**

10. While using the Platinum Bio Burner, keep in mind

- The boiler can be operated only by adult persons familiarized with the above service manual. Children cannot stay close to the boiler without presence of adult persons.
- When it comes to penetration of flammable gases or vapors to the boiler room or during the work, at which an increased risk of fire or explosion occurs (gluing, painting, etc.) the boiler should be switched off before starting the work.
- When cleaning the deposit in the knee, the device must be switched off (OFF position).
- It is prohibited to use flammable liquids to fire up the boiler, the boiler must be fired up automatically.
- When adding fuel to the boiler tank the device should be turned off (OFF position).
- When cleaning the boiler, it must be switched off (OFF position).
- Flame can be visually controlled by means of a sight glass incorporated in the door.
- During operation, the boiler cannot be overheated.
- Do not place any flammable objects on the boiler or in its immediate vicinity.
- When removing ash from the boiler any flammable materials cannot be present in a distance of 1500mm to the minimum from the boiler. Ash should be deposited into the fireproof tanks with a cover.
- During operation of the boiler at a temperature lower than 60°C the dew formation on the steel heat exchanger may occur and thereby the corrosion due to low temperature, which shortens the life of the heat exchanger. Therefore, the temperature during operation of the boiler must be at least 60°C.
- After the heating season, clean the boiler and smoke duct thoroughly. Keep the boiler room in clean and dry condition.
- Any tampering with electrical part or changing the boiler design are prohibited.

11. Boiler start up – instructions for user

11.1 First start up of the boiler

- Pour the fuel into the tank (pellets, pea coal, cereal);
- Select fuel type;
- Set the OFF mode on the controller panel;
- Feed the fuel to the burner with a manual fuel feeding function;
- Feed the fuel until it appears on the burner bottom (knee);
- Set the ON mode on the control panel;
- After more then ten minutes the flame will appear, which can be seen via the sight glass on the boiler door.

11.2 Boiler damping

In the case of the planned longer standstill of the boiler set the controller panel into OFF mode.

11.3 Starting up the boiler after fuel depletion

- Remove carbon deposits from the burner knee - applies only to pellets;
- Pour the fuel into the tank (pellets, pea coal, cereals);
- Set the OFF mode on the control panel;
- Feed the fuel to the burner with a manual fuel feeding function;
- During feeding at the feeder turned off remove unburnt fuel from the knee manually (if the unburnt fuel is not removed, your feeder may be blocked and the locking screw (feeder locking pin) may be broken);
- Feed the fuel until pure granulate appears at the bottom of the burner;
- Set the ON mode on the control panel;
- After more then ten minutes the flame will appear, which can be seen via the sight glass on the boiler door.

11.4 Starting up the boiler after the feeder locking pin rupture.

- Remove carbon deposits from the burner knee - applies only to pellets;
- In case of pea coal – remove a large coal lump between the tank and fuel feeder, removing the worm from the feeding tube;
- Pour the fuel into the tank (pellets, pea coal, cereal);
- Set the OFF mode on the control panel;
- Feed the fuel to the burner with a manual fuel feeding function;
- During feeding with the feeder turned off remove unburnt fuel from the knee manually (if the unburnt fuel is not removed, your feeder may be blocked and the locking screw (feeder locking pin) may be broken);
- Feed the fuel until pure granulate appears at the bottom of the burner;
- Set the ON mode on the control panel;
- After more then ten minutes the flame will appear, which can be seen via the sight glass on the boiler door.

11.5 Starting up the boiler with wood as a fuel

NOTE!!!

During wood combustion make sure that the flu gas temperature does not exceed 200°C.

- Set the OFF mode on the control panel;
- Select the fuel type – charging chamber;
- Place additional grates in the boiler;
- Put the pieces of paper on the grate;
- Put the dry wood piece on the grate;
- Fire up the paper pieces using matches;
- Close the boiler door;
- Set the boiler panel into the ON mode;
- Set the boiler preset temperature to 70°C;
- Add some dry wood after several hours;

11.6 Setting up the burner for pellets, pea coal and cereals.

The burner parameters should be set according to Table 3 (a number of the below tables belonging to the table no 3)

Instruction for setting the burner for pellets, cereal*, pea coal.

NOTE!!!

If the boiler is equipped with a lambda probe it is recommended to use the flue gas analyzer to set its characteristic. When setting up the blower output for the subsequent boiler outputs (as described below) the number of oxygen units should be recorded.

- In the chimney-sweep mode for the output at 100%, the blower was set to 50, you should check the number of oxygen units. Note this value to be able to enter the proper value to the probe characteristic later;
- Set the boiler output to 100%;
- Go to the advanced settings and select the chimney sweep mode (yes). For proper output volumes ranging from 20%, 40%, 60%, 80%, 100%, pre-set the output of the blower;
- Start up the boiler in the chimney-sweep mode at 100% output, match the output of the blower. If the blower output is properly matched, the pellets should be between the upper and lower row of the burner holes, the flame should be high and clear, and no smoke should be present in the combustion chamber. When the flame is low, with bright yellow color and the pellet is getting black, increase the fan output by 4 units and wait for 0 min. until the furnace operation stabilization;
- If the air is adjusted properly for 100%, then remaining in the chimney-sweep mode, change the output to 80% and match the air in accordance with the earlier procedure;
- proceed the same way for 60%, 40% and 20%. If all operations were carried out according to the instructions above, set the required temperature of the boiler operation and turn on the boiler (ON).

In the case of pea coal fuel firing the proper method of combustion will be as follows: the flame is high, transparently yellow, and pea coal will be present approximately 3 cm above the upper edge of the burner (a small pile).

11.6 Setting up the burner for pellets, pea coal and cereals cont.

Table 03 part 01

Technical parameters of Pellets® Fuzzy Logic - Pellets			
RPM	Boiler output [kW]	Feeding [s]	Standstill [s]
0,9	15	2,5	10
0,9	20	3,3	10
0,9	25	4,1	10
0,9	30	5,0	10
0,9	35	5,8	10
0,9	40	6,6	10
0,9	45	7,4	10
1,8 / 3,6	50	4,1	10
1,8 / 3,6	55	4,5 / 2,3	10
1,8 / 3,6	60	5,0 / 2,5	10
1,8 / 3,6	65	5,4 / 2,7	10
1,8 / 3,6	70	5,8 / 2,9	10
1,8 / 3,6	75	6,2 / 3,1	10
1,8 / 3,6	80	6,6 / 3,3	10
1,8 / 3,6	85	7,0 / 3,5	10
1,8 / 3,6	90	7,4 / 3,7	10
1,8 / 3,6	95	7,8 / 3,9	10
1,8 / 3,6	100	8,2 / 4,1	10

It is necessary to correctly set the air according to feeding and standstill times (air surplus coefficient 2.0-2.4) developed in the company Kostrzewa® Sp.j.

NOTE!!!

When the fuel falls out unburned increase the amount of air and / or reduce the burner output !

Table 03 part 02

Technical parameters of Pellets® Fuzzy Logic - Pea coal			
RPM	Boiler output [kW]	Feeding [s]	Standstill [s]
0,9	15	1,7	10
0,9	20	2,2	10
0,9	25	2,8	10
0,9	30	3,4	10
0,9	35	3,9	10
0,9	40	4,5	10
0,9	45	5,0	10
1,8 / 3,6	50	2,8 / 1,4	10
1,8 / 3,6	55	3,1 / 1,5	10
1,8 / 3,6	60	3,4 / 1,7	10
1,8 / 3,6	65	3,6 / 1,8	10
1,8 / 3,6	70	3,9 / 1,9	10
1,8 / 3,6	75	4,2 / 2,1	10
1,8 / 3,6	80	4,5 / 2,2	10
1,8 / 3,6	85	4,8 / 2,4	10
1,8 / 3,6	90	5,1 / 2,5	10
1,8 / 3,6	95	5,4 / 2,7	10
1,8 / 3,6	100	9,7 / 2,8	10

It is necessary to correctly set the air according to feeding and standstill times (air surplus coefficient 2.0-2.4) developed in the company Kostrzewa® Sp.j.

NOTE!!!

When the fuel falls out unburned increase the amount of air and / or reduce the burner output !

11. Boiler start up – instructions for user cont.

Table 03 part 03

Power output		Pellets			Pea coal	
P15 or P14 (Pellets Lambda Control)	Burner output	Blower output	Oxygen	Burner output	Blower output	Oxygen
	100%	35	130-160	100%	40	130-160
	80%	30	140-170	80%	35	140-170
	60%	25	150-180	60%	30	150-180
	40%	20	160-190	40%	25	160-190
	20%	18	160-190	20%	22	160-190
P25						
	100%	45	130-160	100%	50	130-160
	80%	40	140-170	80%	45	140-170
	60%	35	150-180	60%	40	150-180
	40%	30	160-190	40%	25	160-190
	20%	28	160-190	20%	32	160-190
P40 or P30 (Pellets Lambda Control)						
	100%	45	130-160	100%	55	130-160
	80%	40	140-170	80%	50	140-170
	60%	35	150-180	60%	45	150-180
	40%	30	160-190	40%	40	160-190
	20%	28	160-190	20%	38	160-190
P50						
	100%	45	130-160	100%	55	130-160
	80%	40	140-170	80%	50	140-170
	60%	35	150-180	60%	45	150-180
	40%	30	160-190	40%	40	160-190
	20%	28	160-190	20%	37	160-190
P75						
	100%	-	130-160	100%	-	130-160
	80%	-	140-170	80%	-	140-170
	60%	-	150-180	60%	-	150-180
	40%	-	160-190	40%	-	160-190
	20%	-	160-190	20%	-	160-190
P100						
	100%	-	130-160	100%	-	130-160
	80%	-	140-170	80%	-	140-170
	60%	-	150-180	60%	-	150-180
	40%	-	160-190	40%	-	160-190
	20%	-	160-190	20%	-	160-190

Table 03 part 04

Sustaining pea coal	Sustaining standstill (min)	Sustaining feeder (s)	Sustaining Blower rundown (s)	Sustaining Blower output (%)
for p15, p25, P40	20	17	90	40
for p50, p75, P100	20	12	90	40

* suggested minimum burner output 40%;

* with P15, P25, P40 models the pressure fan output at pos. 1 (the lowest rpm);

- with P50, P75 models the pressure fan output at pos. 2, 3

- for each device select the maximum burner output for a given fuel (PFL burner setting)

11.7 Mounting the burner tip

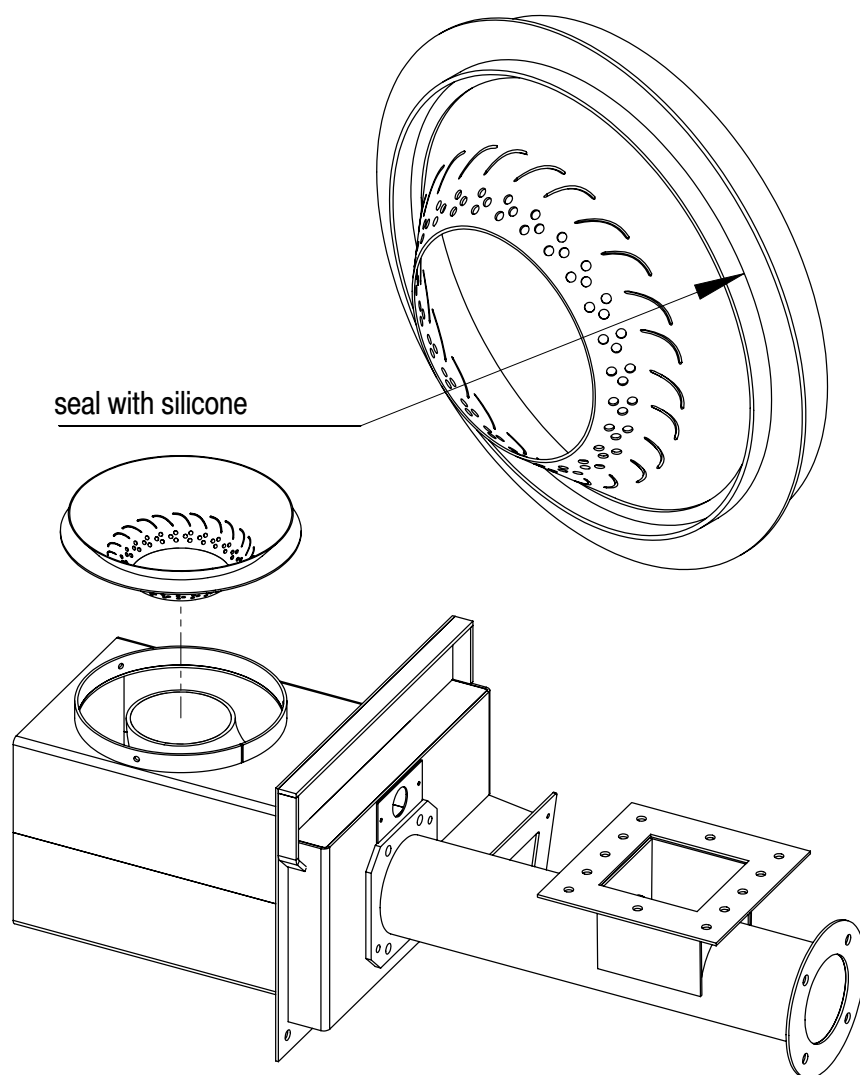


Fig. 07 Mounting the burner tip

11.8 Switchgear diagram

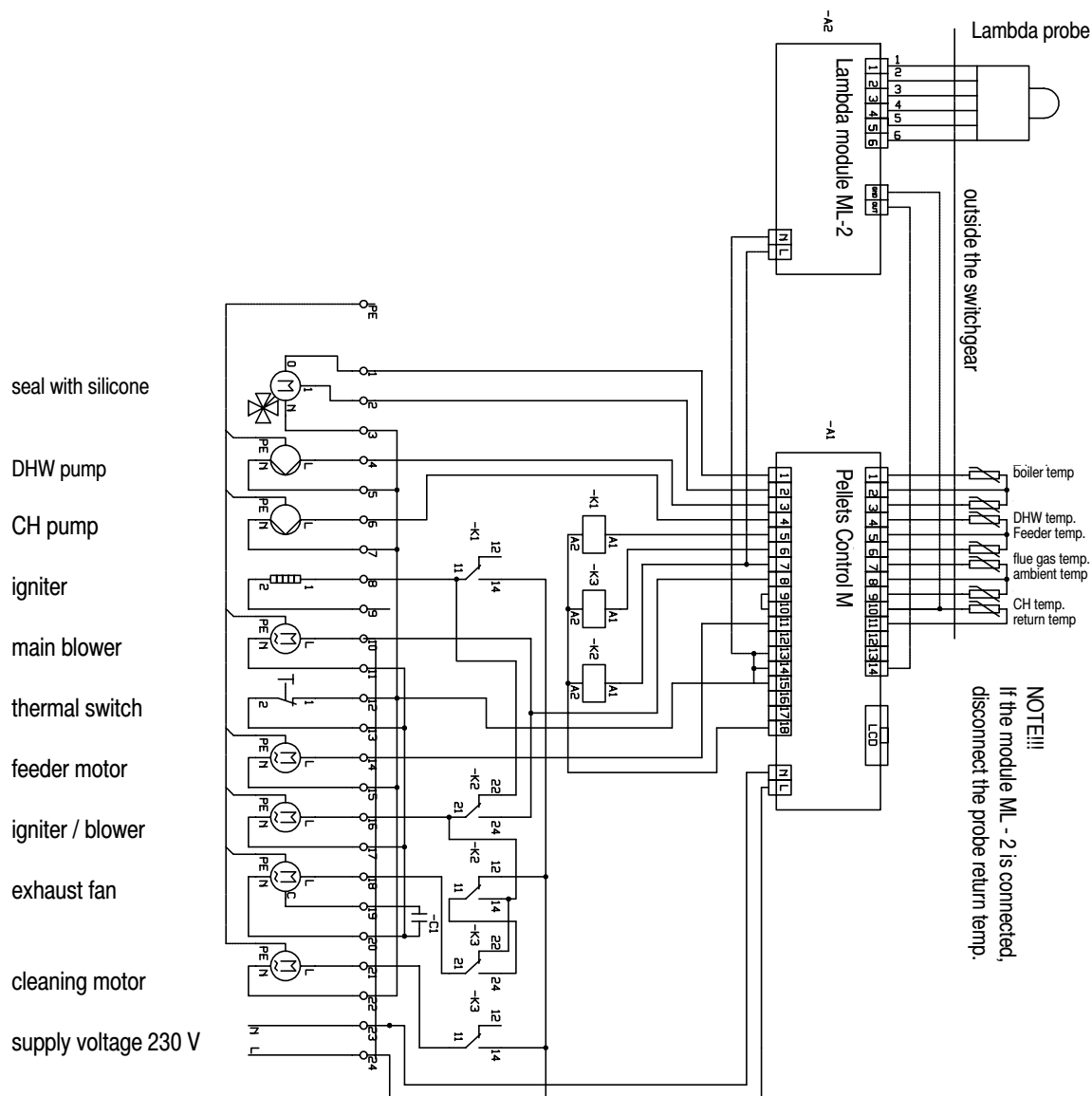


Fig. 08 Switchgear diagram

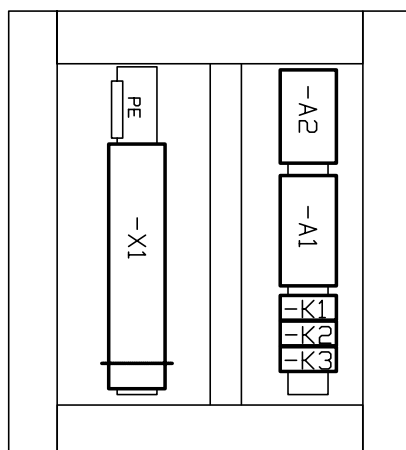


Fig. 09 View of facade

11.10 Symptoms of abnormal combustion

- **unburnt pellets overflow out of the burner; flame is very short; boiler chamber is full of smoke** – check the times of feeding and standstill, increase the air volume by 2 units, wait 10 minutes; adjust (add) the air for so long, until the flame is high and bright, and no smoke will be present in the combustion chamber;
- **unburnt pellets „jump” out of the burner, the flame is very sharp and high, the chamber of the boiler is not smoky, pellets are below the level of the upper air holes** – check the times of feeding and standstill, decrease the air volume by 2 units, wait 10 minutes; adjust (reduce) the air for so long, until the flame is high and bright, and no smoke will be present in the combustion chamber;
- **unburnt pea coal overflows out of the burner, despite of correct combustion process** – reduce the burner output (feeding and standstill times);
- **unburnt pea coal overflows out of the burner, flame is very short, the chamber of the boiler is smoky** – check the times of feeding and standstill, increase the air volume by 2 units, wait 10 minutes, adjust (add) the air for so long, until the flame is high and bright, and no smoke will be present in the combustion chamber.

12. Cleaning and maintenance



NOTE!!! Boiler cleaning can be performed only when the device is disconnected from the mains.

12.1 Cleaning and maintenance

- Regularly clean the ash pan chamber;
- Regularly clean the clean-out chamber;
- Regularly clean the burner chamber;
- Regularly clean the exhaust fan;
- Regularly clean the boiler exchanger;
- Regularly clean the burner knee
- Regularly clean the carbon deposits off the lambda probe with a soft brush after every 100 hours of operation - only the pellets;
- At least once a year, call for AS to perform an annual boiler inspection - obligatory inspection;

12. Cleaning and maintenance cont.



Fig. 10 Cleaning the burner knee off carbon deposits *(only for pellets)*

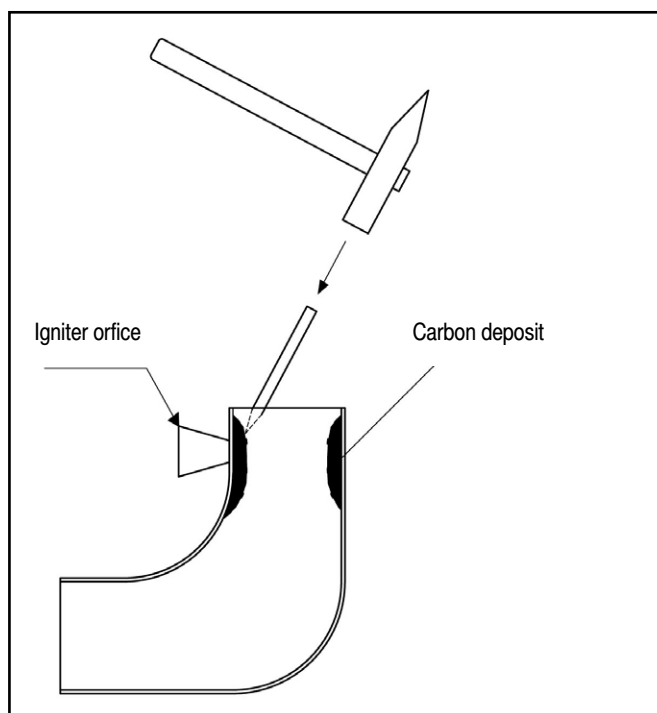


Fig. 11 Cleaning the burner knee off carbon deposits *(only for pellets)*

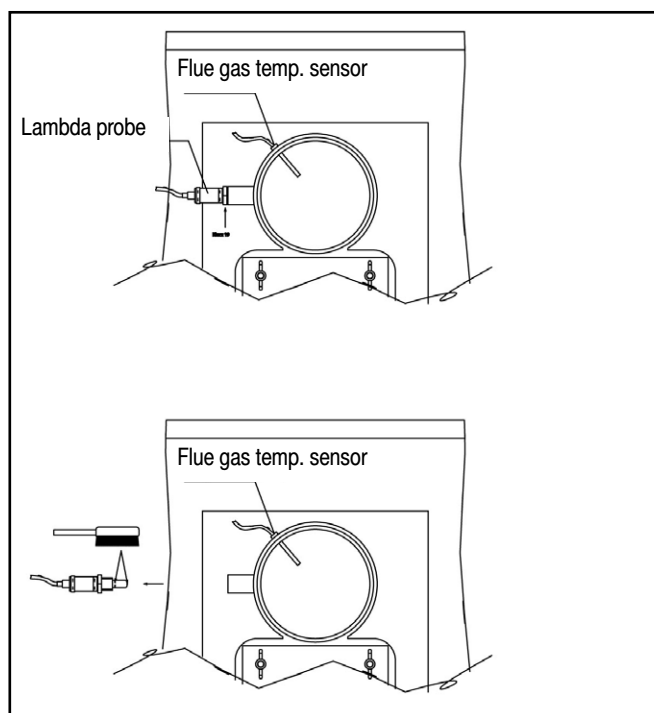


Fig. 12 Cleaning the Lambda probe



Fig. 13 Very dirty combustion chamber.



Fig. 14 Very clean combustion chamber.

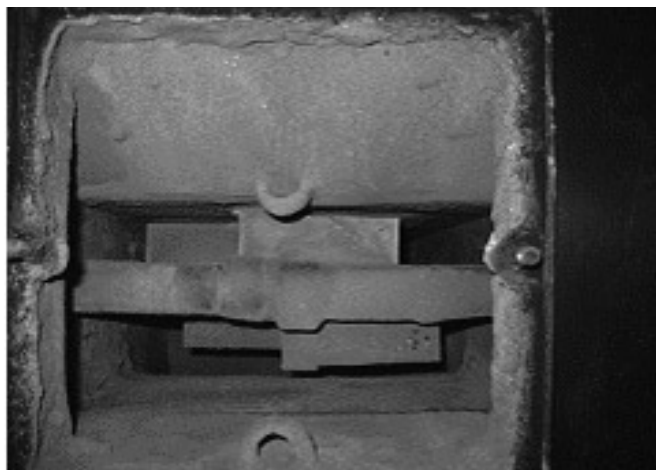


Fig. 15 Very dirty boiler exchange

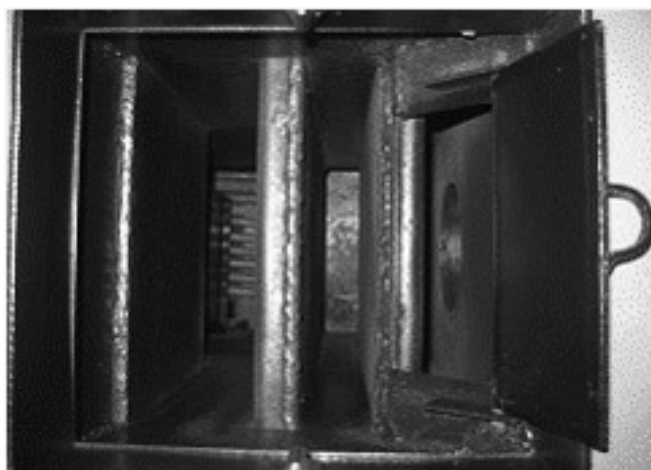


Fig. 16 Very clean boiler exchange

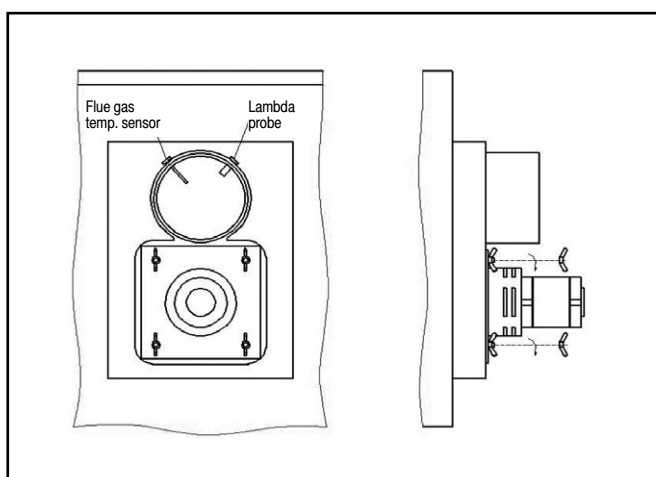


Fig. 17 Exhaust fan disassembly - cleaning.

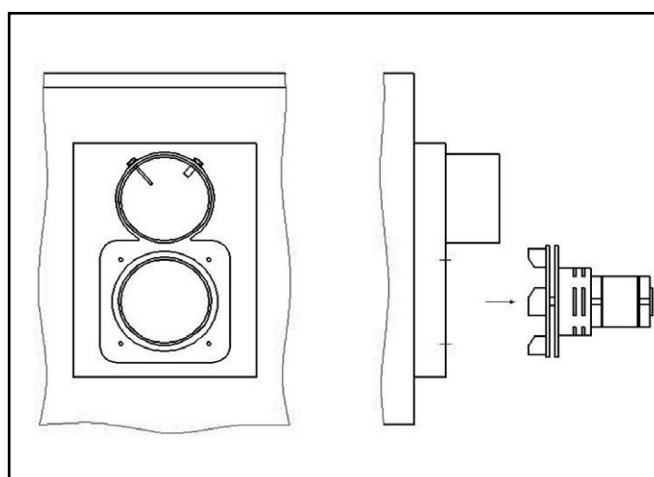


Fig. 18 Exhaust fan disassembly - cleaning.

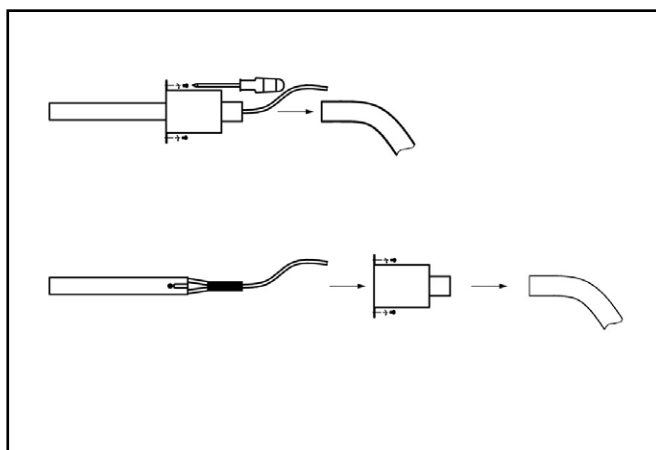


Fig. 19 Igniter replacement

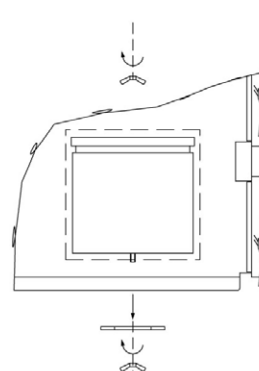


Fig. 20 Boiler chamber cleaning

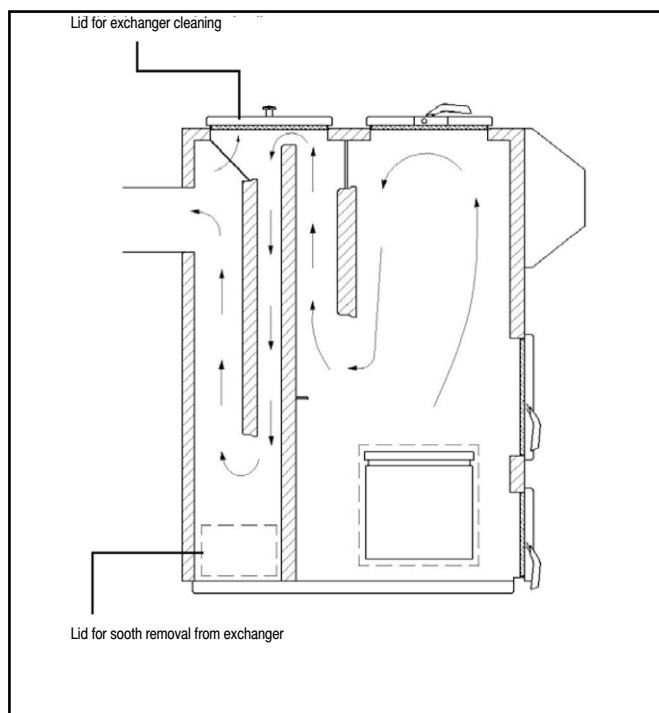


Fig. 21 Exchanger cleaning

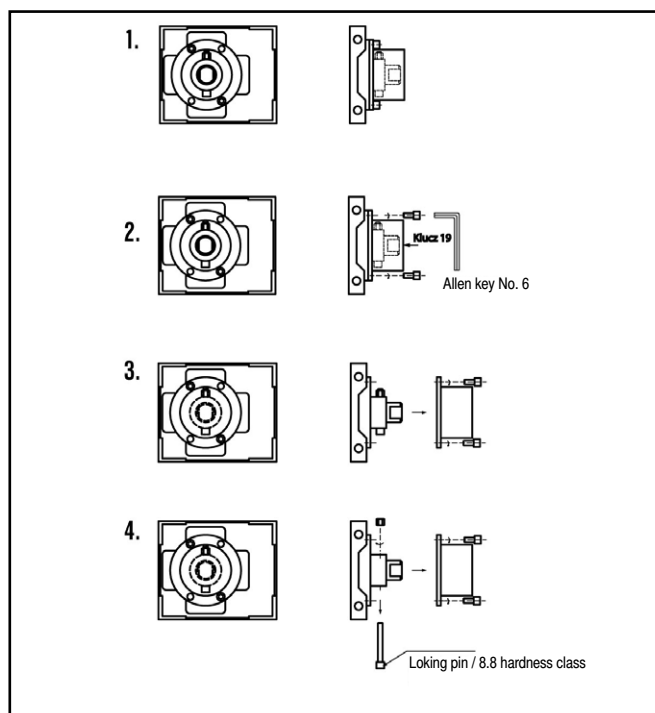


Fig. 22 Locking pin replacement in motoreducer gear unit

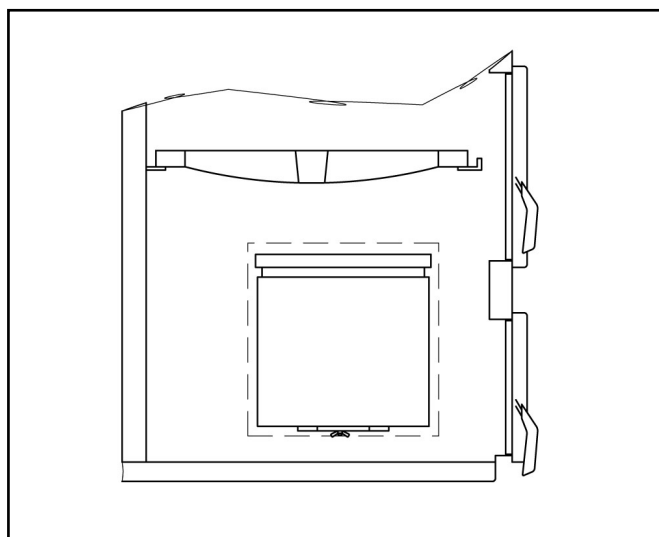


Fig. 23 Grate layout

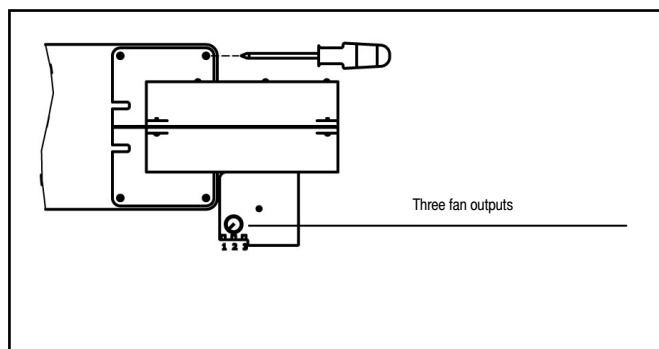


Fig. 24 Pressure fan optional settings

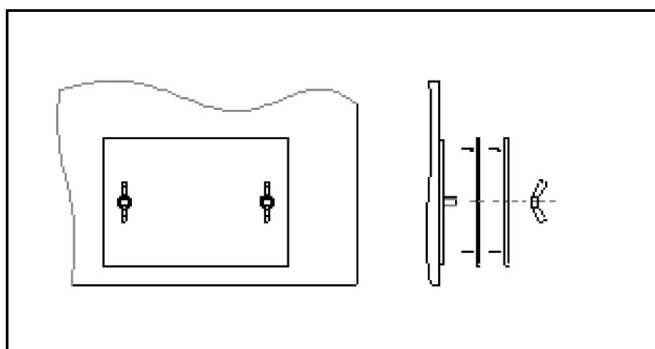


Fig. 25 Boiler cleanout opening method

Failure type	Probable reason for failure	Probable reasons/ suggested remedy
The device does not turn on the igniter - ZAP message does not appear on the controller display	<ul style="list-style-type: none"> • Sensor improperly inserted into connection block; • Flue gas sensor damaged. Flue gas temperature on the display 630 °C. 	<ul style="list-style-type: none"> • Check correctness of sensor connection in the connection block; • Replace flue gas sensor. Ignite fuel manually.
The message „feeder overheating” flashes on the display. The feeder is cold	<ul style="list-style-type: none"> • Sensor improperly inserted into connecting block; • Feeder sensor damaged. Feeder is working all the time. 	<ul style="list-style-type: none"> • Check correctness of sensor connection in the connecting block; • Replace the feeder sensor.
No readings on the controller display	<ul style="list-style-type: none"> • No power supply; • Incorrect connection of plugs and cables of the controller; • too much moisture in the controller. 	<ul style="list-style-type: none"> • Check the boiler connection to power supply source; • Check correctness of plugs installation and connections of the controller.
One of the control panel push-buttons is out of service.	<ul style="list-style-type: none"> • Control panel failure. 	<ul style="list-style-type: none"> • Control panel repair.
Worm conveyor does not rotate despite of signalized activation.	<ul style="list-style-type: none"> • Gera-motor is not powered; • Improper connection of supplying cables; • Feeder blockade; • Gear-motor failure; • Control module failure. 	<ul style="list-style-type: none"> • Check correctness of plugs installation and connections of the controller Module; • Check correctness of connections between gear-motor and worm shaft; • Check the efficiency of feeder channel and the freedom of rotation of the worm shaft in the feeder channel; • Check or replace the condenser (once per year replace the condenser with the new one).
Locking pin breaking (multiple).	<ul style="list-style-type: none"> • Hard material is clogged between the tank and feeder; • Carbon deposit on the burner knee (only for pellets); • Worn worm tip (pellets com out heavily mixed). 	<ul style="list-style-type: none"> • Remove the worm from the feeder and remove hard element; • Hammer out the carbon deposits from the edge of the burner knee and restart the feeder (without removing the worm); • Insert a new worm.

13. Troubleshooting cont.

Failure type	Probable reason for failure	Probable reasons/ suggested remedy
Automatic fuel ignition does not operate.	<ul style="list-style-type: none"> • Improper settings of the heater heating time and fire test; • Improper heater connection; • Clogged outlet hole of hot air from the heater. 	<ul style="list-style-type: none"> • Change setting parameters; • Check correctness of connections of the heater plugs and conduits (including the connecting blocks); • Open the igniter orifice; • Very moist fuel; • Damaged heater (it does not heat up itself).
During combustion a lot of dark smoke appears in the boiler chamber. A lot of unburned fuel drops to the ash pan.	<ul style="list-style-type: none"> • Air volume set improperly; • Feeding and standstill times set improperly for individual output values. 	<ul style="list-style-type: none"> • Increase the amount of air, check the feeding and standstill times (burner output can be set too high).
During combustion a great quantity of flying fuel pieces is present in the boiler chamber. Great quantity of unburnt fuel drops to the ash pan.	<ul style="list-style-type: none"> • Air volume set improperly; • Feeding and standstill times set improperly for individual output values. 	<ul style="list-style-type: none"> • Diminish the amount of air, check the feeding and standstill times (burner output can be set too high)
Boiler does not come up to the preset temperature.	<ul style="list-style-type: none"> • Boiler incorrectly matched with the building; • Failure of sensors; • the temperature sensor of the water returning to the boiler is situated improperly; • Boiler output set too low. 	<ul style="list-style-type: none"> • Check correctness of boiler matching; • Check the sensors; • Check the location of the return sensor (water circulation shall be present in this place); • Check the feeding and standstill times of the burner;
Smoke liberates from the boiler.	<ul style="list-style-type: none"> • Clogged flue; • Clogged boiler extension duct; • Clogged exchanger channels. 	<ul style="list-style-type: none"> • Open the channels.

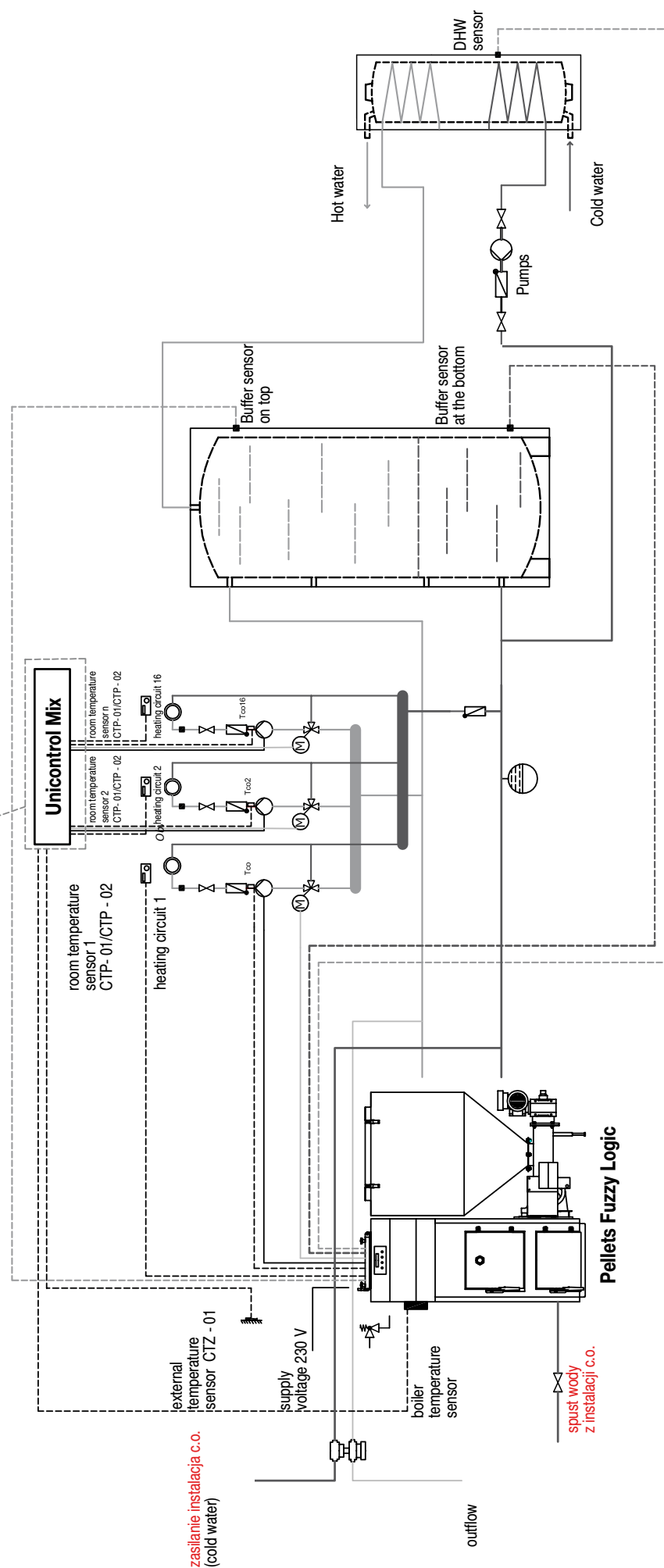
14. Instructions for boiler disposal after expiration of its service life

Due to the fact that components of the boiler are made up of different materials, you can transfer them to the collection point of secondary raw materials, ensuring proper utilization of steel, plastics, etc.

Pellets Fuzzy Logic boiler connection diagram

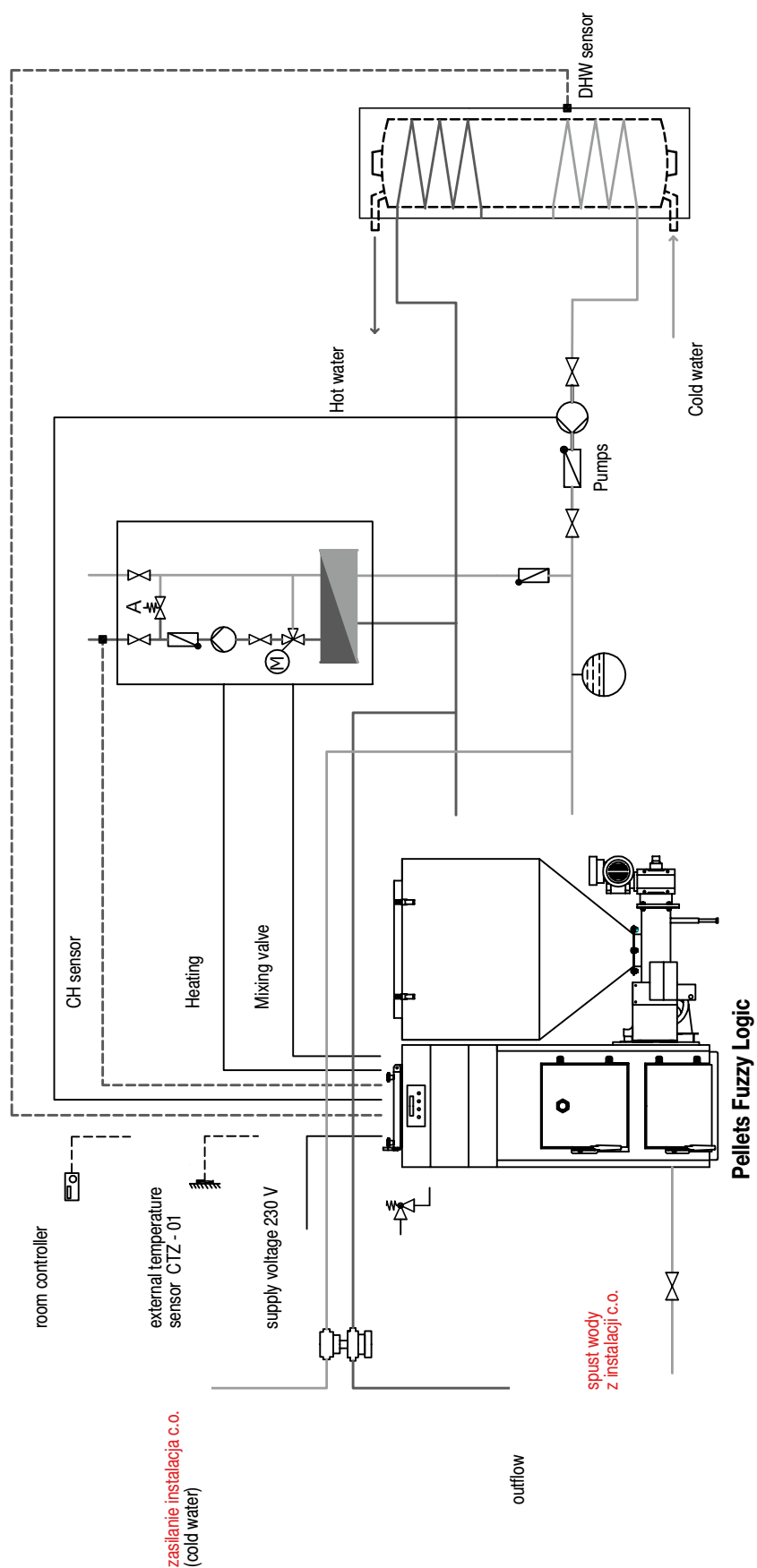
Moduły rozszerzeń

UWAGA!!!
Aby zrealizować wszystkie funkcje układu należy dokupić dodatkowe moduły.



zasilenie instalacja c.o.
(cold water)

Pellets Fuzzy Logic boiler connection diagram





Pellets Fuzzy Logic The Second Generation

Introduction

Pellets Fuzzy Logic The Second Generation boiler controller is a modern microprocessor system, which controls not only the boiler, but also the central heating system in weather and domestic hot water mode.

The device controls the volume of fuel fed through the cyclic operation of the feeder motor and the quantity of air supplied to the combustion process. Thanks to application of solid state relays the blower output is regulated smoothly and the reliability of the control system of the feeder motor is increased many times.

Automatic fuel ignition. Pellets Fuzzy Logic The Second Generation controller allows to automatically ignite the fuel in the retort.

Measurement of flue gas temperature. The controller will allow reading the flue gas temperature, which is essential at the boiler operation with automatic lighting up. Knowing the flue gas temperature is also very helpful in monitoring and control of the boiler.

Weather control provides the maximum thermal comfort, because the heating medium temperature is adjusted as a function of outdoor temperature. Adjustment is done by mixing valve actuator.

Application of the temperature sensor of the heating medium returning from the installation to the boiler reduces water vapor condensation in the boiler and increases its life. Thanks to the advanced algorithm and the possibility of adjusting many parameters, the system can be very flexibly adapted to the needs of the heating system.

The controller is fitted with the output testing function. This function is available in SERVICE MODE and allows you to check the correctness of electrical connections and efficiency of executive modules (pumps, blower, feeder, mixing valve actuator) before starting the boiler.

A large alphanumeric display facilitates communication between the device and the user and the operation is very simple. The new intuitive menus in several languages: Polish, English, German, French.

The lambda sensor ensures proper dosage of air into the combustion process, which significantly simplifies operation, reduces fuel consumption and improves combustion and thereby reduces the emissions of harmful substances to environment (optional boiler equipment).

Precautions

NOTE !!!

Electric shock hazard.

- Before installing or removing the device disconnect power supply in the electrical switchboard.
- Before using the appliance, carefully read all attached instructions.
- Keep the service manual and refer to it for any use of the device in the future.
- Follow all warnings and instructions contained in the service manual.
- Make sure that the device is not damaged in any way. If in doubt, do not use the device and contact the supplier.
- In case of any doubts as to safe operation of the device, you should contact the supplier.
- Pay special attention to any warning signs posted on the housing and packaging of the equipment.
- Use the device for its intended purpose.
- The device is not a toy, do not allow children to play with it.
- Do not allow your children to play with any part of the packaging of the device.
- Prevent an access to small parts such as screws, pins from children. These elements can be supplied with the equipment and if swallowed may cause suffocation of a child.
- Do not perform any mechanical or electrical changes in the device. Such changes may result in improper operation of the device which does not conform with the standards and adversely affect operation.
- Do not put any objects into the device interior through the slots (eg ventilation), it can cause a short circuit, electric shock, fire or damage equipment.
- You can not permit for water, moisture and dust penetration to the device interior, since they can cause a short circuit, electric shock, fire or damage equipment.
- Ensure proper ventilation of the device, do not cover or block any ventilation openings and ensure free flow of air around it.
- The device should be installed inside the premises unless it is prepared to outdoor operation.
- Do not allow the unit to be exposed to shocks and vibrations.
- When connecting, make sure that the mains electrical parameters correspond to the device working range.
- To avoid risk of electric shock the device must be connected to an outlet with the ground terminal. Grounding the outlet must be done properly by a qualified electrician.
- When connecting, make sure that this will not cause overloading the electrical circuit. Avoid connecting the device to the same circuit with motors and other devices causing pulse-type interferences (e.g., washing machines, refrigerators, ...)
- Before connecting any cables and peripherals to the device, it is essential to disconnect the power supply.
- To completely disconnect the unit from power supply the plug must be removed from the wall outlet, especially when it will not be used for a long time.
- Protect the power cord from damage; it should be routed in such a way to not step on it; no objects should be placed on the cable.
- All connections must be made in accordance with the electrical wiring diagram and with the national or local electrical wiring codes.
- This device does not contain any parts, which the user can replace itself. All service operations in addition to cleaning, replacement of the fuse (with the device disconnected from the mains) and setting the functions should be performed by authorized service personnel.
- Before performing any maintenance, it is essential to disconnect the unit from the mains.
- To clean the device housing do not use gasoline, solvents or other chemicals that may damage the housing. It is recommended to use soft cloth.
- If the AC power cord is damaged, absolutely do not use such a device. A damaged cord must be replaced by service personnel with the new one of the same parameters as the original cord.

Disposal of life-expired equipment



The electronic device is made of materials, some of which are suitable for recycling. Therefore, after live expiration it must be delivered to the point of electrical and electronic equipment recovery and recycling, or be returned to the manufacturer. Equipment should not be mixed with other domestic wastes.

Instruction validity

This manual is valid for Pellets controllers with the software version from 8A inclusive. The software version is displayed in the welcome message after connecting the device to the mains. Description of changes in the higher version is on the manufacturer's website: www.estyma.pl

General requirements

- Before using the appliance, carefully read the whole attached instructions.
- An Installer must be an experienced technician.
- Connections made with copper wire should be adapted to work at the temperatures up to +75 ° C.
- All connections must be compatible with the electrical wiring diagram, and national or local electrical codes.

Localization

The devices are provided solely for indoor installation.
After selecting the mounting location, make sure that it meets the following conditions:

- The mounting location must be free from excessive humidity and flammable or corrosive vapors.
- Installation of the unit may not be made near the high-voltage electric appliances, electric machines or welding equipment.
- Make sure ambient temperature at the installation site does not exceed 60 ° C and is not be less than 0 ° C. Humidity should range from 5% to 95% w/o condensation.

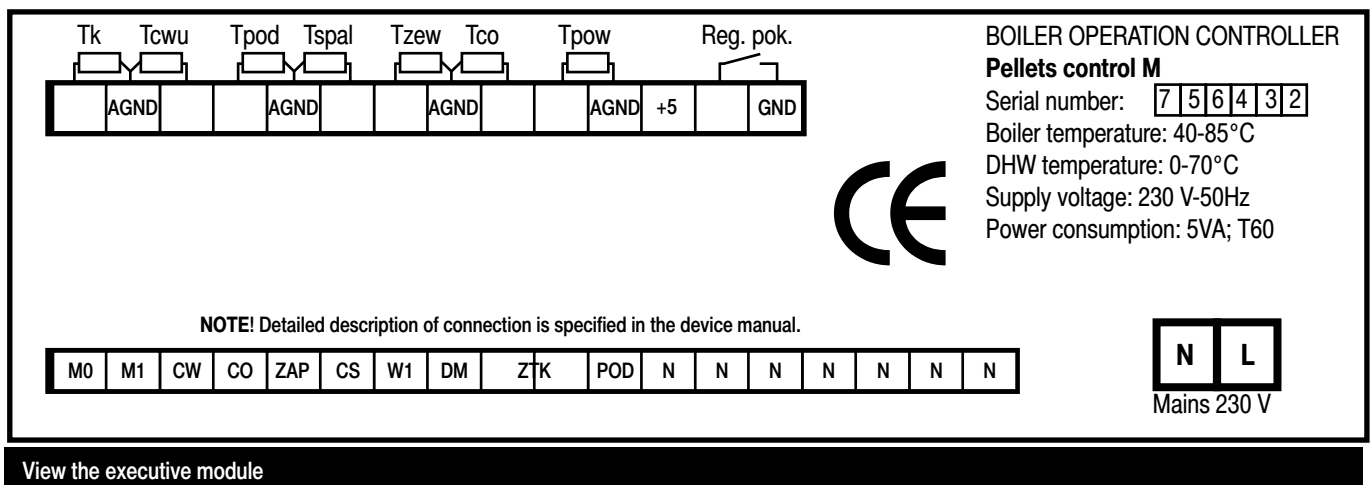
Connection

2-module device is composed of the following components:

- operator panel, a part of the device visible to the user together with a keypad and alphanumeric display. The panel is mounted in the front part of the boiler.
- executive module, which must be mounted on the DIN rail in the switchgear or other enclosure. All the sensors, devices and operator's panel are connected to it.
- band connecting the operator panel with the executive module.

The executive module should to be supplemented with the sensors and executive components necessary for the boiler operation, as needed:

- domestic hot water temperature sensor CTN-02 [Tcwu]
- heating medium temperature sensor downstream the mixer CTN-02 [Tco]
- heating medium return temperature sensor CTN-01 [Tpow]
- external temperature sensor CTZ-01 [Tzew]
- room temperature controller [Reg.pok]
- mixer actuator [M0,M1]
- flue gas temperature sensor CTK-03 [Tspal]



**NOTE!!! Under no circumstances
connect the ground wire (PE) with a neutral one (N)**

Description of exec. compon:	Component:
M0	4-way mixer actuator - M0 - closing
M1	4-way mixer actuator - M1 – opening
CW	domestic hot water heat pump
CO	central heating pump
ZAP	firing up heating component
CS	automatic exchanger cleaning motor (optional equipment)
DM	pressure blower
DMZ	Igniter pressure blower
WW	exhaust fan
ZTK	boiler thermal protection
POD	feeder motor

Description of outputs:	Component:
M0	4-way mixer actuator – M0 – closing
M1	4-way mixer actuator - M1 – opening
CW	domestic hot water heat pump
CO	central heating pump
ZAP	light up heating component (optional boiler equipment)
W1	Lambda probe module supplying output 230~V, relay
CS	control output of automatic exchanger cleaning, relay
DM	Blower
ZTK	Boiler thermal protection
POD	feeder motor

16. Electrical wiring system cont.

Description:	Component description:
Tk	measurement input of boiler temperature sensor; sensor mounted in the boiler measurement orifice
Tcwu	measurement input of dhw temperature sensor; sensor mounted in the dhw exchanger measurement orifice
Tpod	The measuring input of the fuel feeder temperature sensor; the sensor should be mounted in a place that reflects the feeder temperature.
Tspal	measurement input of the flue gas temperature sensor. Warning! Important polarization.
Tzew	measurement input of the external temperature sensor. The sensor should be mounted outside the building to reflect the outdoor temperature.
Tco	heating medium temperature sensor downstream the mixing valve; the sensor should be mounted on the pipe downstream the mixing valve by means of the clamp and insulated. Provide appropriate contact between the sensor and the pipe.
Tpow	heating medium temperature sensor on the return of the heating system; the sensor mounted on the return pipe near the boiler or in a special measuring orifice of the boiler or on the pipe. Ensure proper contact between the sensor and the pipe. Warning! If you use the module of the Lambda probe connect the signal output of the Lambda probe module to the measuring input
Reg.pok.	Room controller input. Connect the room controller with normal open contacts. Contacts closed when heating is required.

Connection should be performed with the wires suitably matched to the electrical system with the maximum cross section of 2.5 mm².

NOTE !!! The device must be connected to a separate electrical circuit fitted with an appropriately sized overcurrent circuit breaker and RCD.

NOTE!!! Connections must be done with the device disconnected from the mains. Connections should be executed by a person possessing proper relevant licenses.

Optional equipment

Additional operator's panel

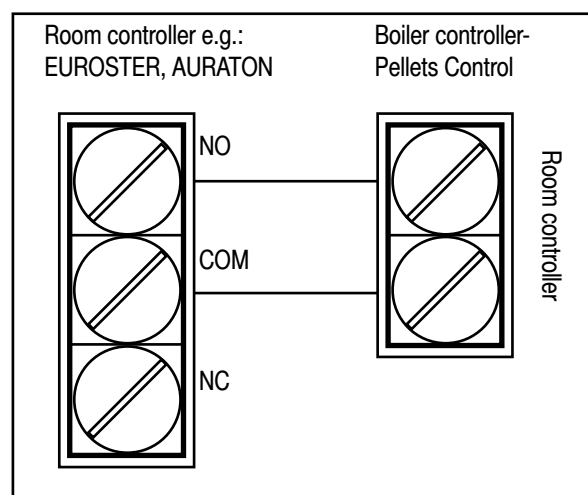
The additional operator's panel „Pellets control“ can be connected to the controller, which can be mounted in another place, such as an apartment, for remote control of the system operation. For more information contact the company Estyma Electronics.

Room controller

The controller can co-operate with any room temperature controller with open contacts.

The controller should be mounted in a place representative in terms of temperature in the apartment and at a height of about 1.5 - 2 m.


Do not install the unit near heat sources (e.g. TV, heaters), direct sunlight or locations subject to drafts, as this will adversely affect the system performances.







Room controller connection





Menu navigation


The device has a hierarchical menu.

To access the main menu, press „ENTER” button .

- main menu, written in capital letters, in which you can navigate using  and , buttons; you should depress „ENTER”  button to enter the submenu. To go one level up, press „ESC”  button.

The main menu is shown in the figure below.

- submenu is used to display and change the operating parameters. To change a parameter, press „ENTER”  button; The parameter to be changed is displayed periodically. The value edition is made with the arrow buttons  and . While editing, you can quit the changes by pressing „ESC”  button.

The changes are accepted by pressing „ENTER” button . For example, the figure below shows the submenu BOILER. The entire menu is presented in the figure on the next page.

NOTE!!!

Data recording takes place after each displaying of the main screen.

```

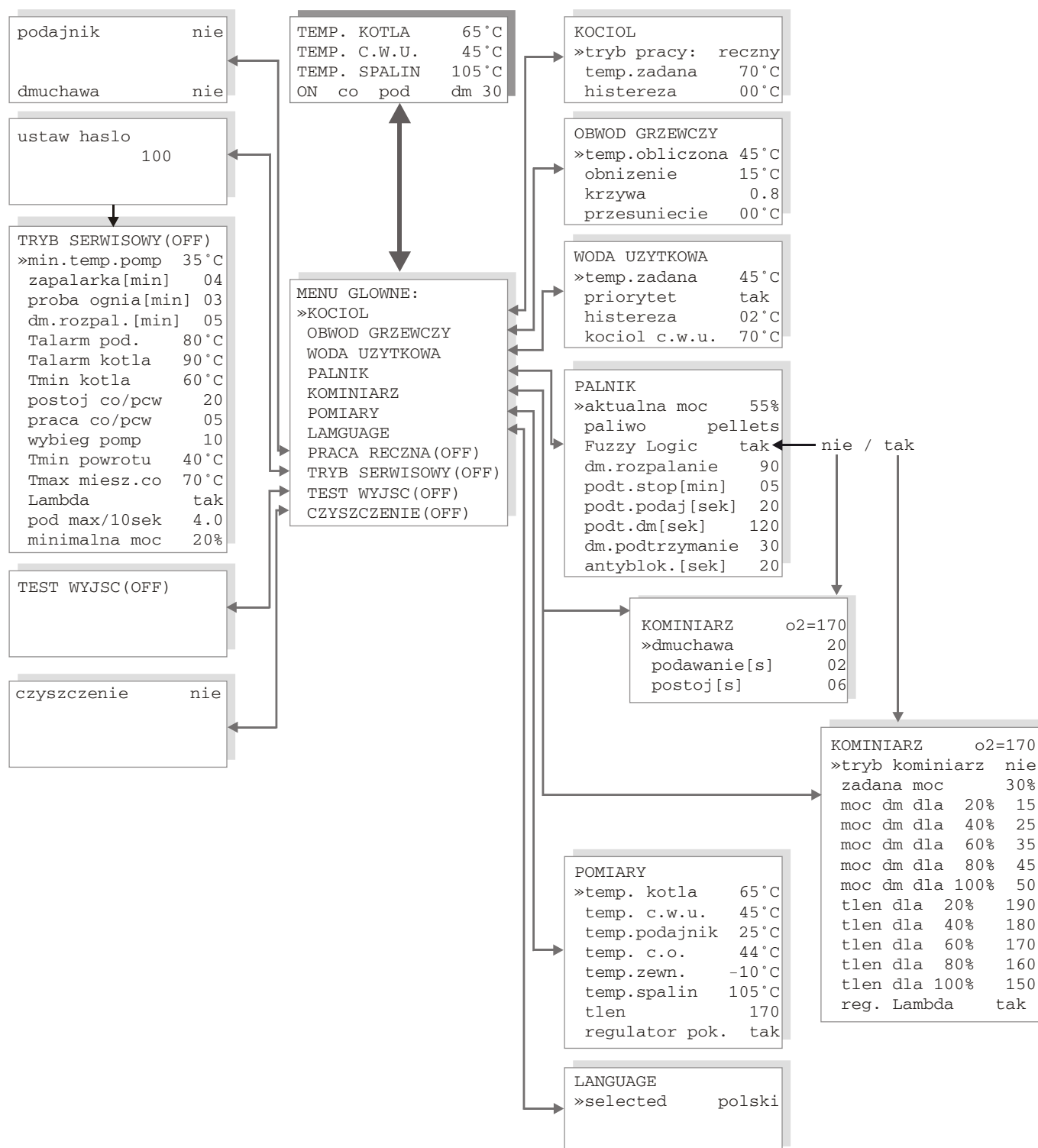
MENU GLOWNE :
»KOCIOL
  OBWOD GRZEWczy
  WODA UżyTKOWA
  PALNIK
  KOMINIARZ
  POMIARY
  LANGUAGE
  PRACA RECZNA(OFF)
  TRYB SERWISOWY(OFF)
  TEST WYJSC(OFF)
  CZYSZCZENIE(OFF)
    
```

Main menu

```

KOCIOL
»tryb pracy:   reczny
temp.zadana    70°C
histereza      00°C
    
```

Boiler submenu



Boiler operation modes

The boiler can operate in one of three modes:

- weather,
- manual
- summer.

The weather mode works in two ways: with or without a mixer actuator. Settings are done in the BOILER submenu.

NOTE!!! Operation modes of the boiler decide about the way of the boiler temperature setting. Thus, even after setting the operation mode of the boiler to manual the mixer actuator control function is performed (provided that you have installed the appropriate sensors).

```
KOCIOL
»tryb pracy:   reczny
temp.zadana    70°C
histereza      00°C
```

Boiler submenu

Weather mode with mixer actuator control

NOTE!!! The controller will enter this mode, provided that the central heating temperature sensor is installed.

In this mode, you must install the supplied external temperature sensor and the central heating and heating medium return temperature sensor. The boiler temperature is determined from the linear approximation of the programmable heating curve, so there is no need to manually change the temperature of the boiler when the external temperature changes. As a rule, it is colder at night as at day. It is the temperature of the boiler as a function of external temperature.

The preset temperature of the boiler is calculated on the basis of this curve and is about 20°C higher.

With open contacts of the room controller the temperature in the heating circuit will be reduced by the value of „c.h. lowering” parameter, which is in the HEATING CIRCUIT submenu.

NOTE!!! When you need hot water heating, the controller automatically changes the temperature of the boiler to rapidly heat the domestic water, then returns to work in line with the characteristic of heating.

Manual mode

In this mode, the user sets the preset temperature of the boiler manually with the parameter „boiler preset temperature”. When you need hot water heating, the controller automatically changes the temperature of the boiler to rapidly heat the domestic water, then returns to work with the temperature preset by the user.

Operation with the mixing valve actuator.

When the central heating temperature sensor is connected to the controller (information about the actuator for the controller), the boiler preset temperature can be set after switching to manual mode. The control of the mixer will work as in the case of the weather mode, but the boiler temperature will be constant.

NOTE!!! The phrase „manual mode” refers only and exclusively to manual setting of the boiler temperature. The control of mixing is carried out independently and is implemented in the same way in both the manual and weather mode.

Summer mode

The controller in this mode is used in summer for hot water heating. In this mode (except for alarm) the circulating pump of the central heating system is not activated.

The boiler preset temperature is set manually with the parameter „boiler preset temp”.

NOTE!!! Central heating pump will be turned on in the event of the boiler overheating alarm.

Boiler preset temperature

The boiler preset temperature is the internal parameter of the controller and it is one of the three temperatures:

- in the weather-mode the boiler preset temperature is calculated from the heating characteristics based on the external temperature,
- in the summer and manual modes, the user enters the preset temperature in the submenu „boiler preset temp.”,
- during heating the domestic hot water (DHW), the controller selects the „boiler temperature for hot water” which may be different than in the manual or weather mode.

NOTE !!! If the boiler temperature for hot water needs is lower than the temperature in manual or weather mode, the preset temperature of the boiler will be the higher one.

```
KOCIOŁ
»tryb pracy:   reczny
temp. zadana   70°C
histereza      00°C
```

Boiler submenu

4-way mixing valve control

The controller controls the 4-way mixing valve. Adjustment consists in maintaining the preset temperature of the heating medium in the heating circuit. The controller also has the task to protect the boiler from too low temperature of the heating medium returning from circulation. The boiler protection takes precedence over the regulation of the central heating temperature. If the temperature of the heating medium returning from the system is too low, the valve is closing. If the minimum return temperature is exceeded the control is taken over by the member liable for maintaining proper temperature downstream the mixer. Setting is performed in the HEATING CIRCUIT submenu.

The preset temperature of the central heating is calculated by the controller with the boiler in the weather or manual mode. The preset temperature downstream the mixer is dependent on the condition of the room controller:

- Closed contacts (heating request) – temperature is determined from the heating curve.
- Open contacts (no heating request) – temperature downstream the mixer is lower by the value of „c.h. temp. lowering” parameter in „C.H. TEMP.” MENU.

The currently calculated preset temperature of the heating circuit is shown by the parameter „calculated C.H. temperature”.

The parameters available in the „SERVICE MODE”; which affect the mixer actuator control:

- „minimum return temperature” – programmed by the heating boiler manufacturer ensures long service life of the boiler.
- „maximum temperature c.h. mixer”; - a parameter that is the upper value of the heating medium temperature downstream the central heating mixer.

NOTE !!!

If the system does not have the installed valve actuator, which would be controlled, disconnect the central heating temperature sensor. It is the information for the controller that there is no mixing valve actuator.

Selection of heating curves

The idea of controlling in the weather mode is the proper selection of the heating characteristic to the heat losses of the structure. The correctly set heating curve causes that the room temperature chosen by the user remains almost constant, regardless of the external temperature.

The proper heating characteristic can often be found only by repeated adjustment and correction over a longer period of time.

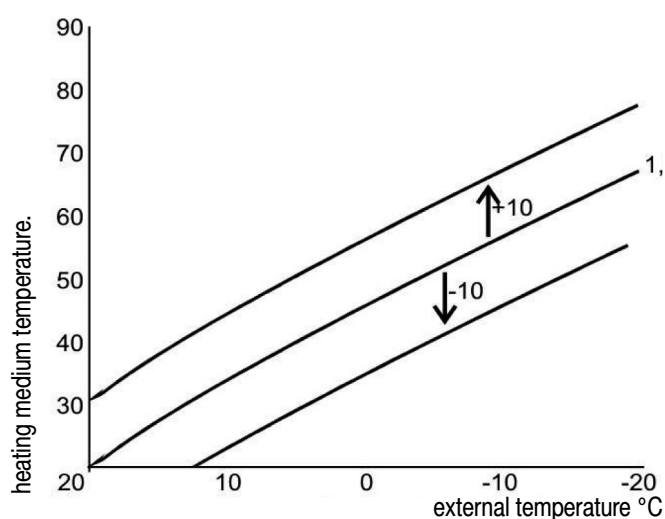
The first chosen characteristic should be one corresponding to the facility from the range of A, B or C.

Symbol	Type of installation:
A	floor heating system
B	Low-temperature heating system
C	Heating system with temperature exceeding 75 °C

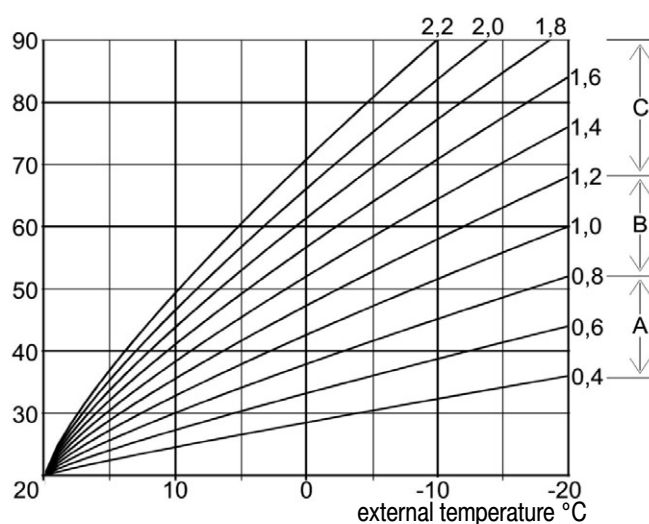
```
OBWÓD GRZEWCZY
»temp.obliczona 45°C
obniżenie       15°C
krzywa          0.8
przesuniecie    00°C
```

Heating circuit medium

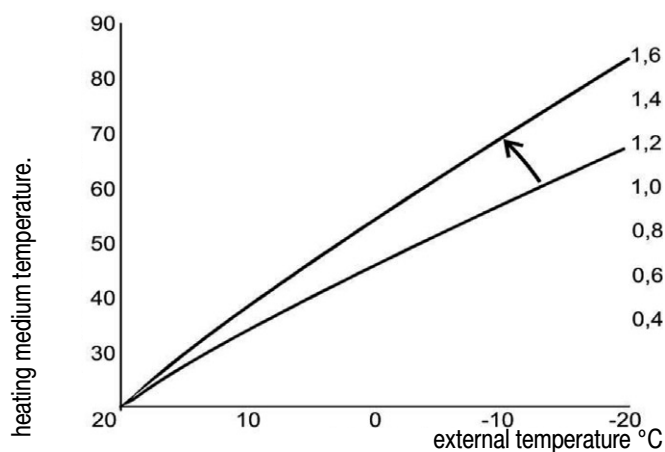
Symptom:	Control method:
Too cold in the whole range of external temperatures.	Increase the offset of the curve.
Too hot in the whole range of external temperatures.	Reduce the offset of the curve.
The temperature proper within the transient period, too cold at low external temperature.	Increase the slope of the curve.
The temperature proper within the transient period, too hot at low external temperatures.	Reduce the slope of the curve.
At low external temperatures the temperature in the building is suitable, but it is too cold within the transient period.	Reduce the slope of the curve, Increase the offset of the curve.
At low external temperatures the temperature in the building is suitable, but it is too hot within the transient period.	Increase the slope of the curve, Reduce the offset of the curve.



BOILER submenu



Heating curve



Change of heating curve slope

Burner output

The controller continuously adjusts the output of the burner, depending on the demand in energy.
The calculated output is shown in the submenu BURNER.

Fuel type

Select the appropriate type of fuel in the submenu „BURNER”, presented in Figure 11. . There are three types of fuels available:

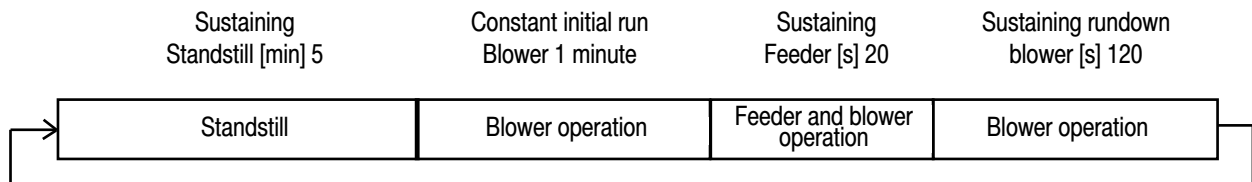
- Pellets – operation with automatic fuel ignition, w/o sustaining mode, only for the boilers with automatic igniter. Pellets and cereals.
- Pea coal – operation with automatic fuel ignition and heat sustaining mode.
- Charging chamber – operation w/o automatic ignition and feeder.

```
PALNIK
»aktualna moc    55%
paliwo           pellets
dm.rozpalanie    90
podt.stop[min]   05
podt.podaj[sek]  20
podt.dm[sek]     120
dm.podtrzymanie  30
```

Burner submenu

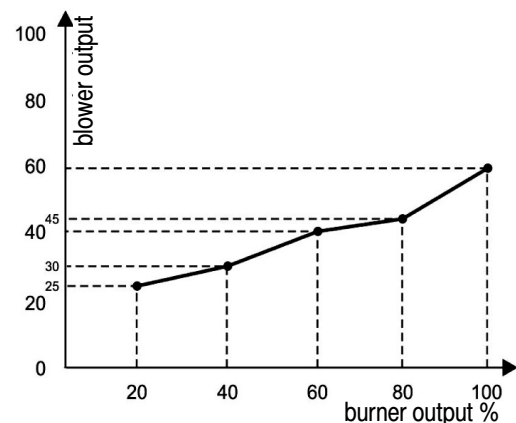
Heat sustaining mode - pea coal

After reaching the maximum allowable temperature, despite the reduction in output the burner goes into the heat sustaining mode. In this mode the fuel and air feeding is performed cyclically according to the enclosed drawing. These parameters should be chosen depending on the type of fuel and the chimney draft so as to avoid significant increase of the boiler temperature and to keep the heat in the burner. The heat sustaining mode is active only with pea coal. The parameters available in the submenu BURNER, see figure: Burner submenu.



Operation in heat sustaining mode

```
KOMINIARZ    o2=170
»tryb kominiarz  nie
zadana moc    30%
moc dm dla 20% 15
moc dm dla 40% 25
moc dm dla 60% 35
moc dm dla 80% 45
moc dm dla 100% 50
tlen dla 20% 190
tlen dla 40% 180
tlen dla 60% 170
tlen dla 80% 160
tlen dla 100% 150
```



Chimney sweep mode

Blower output characteristic

Air volume, lambda probe, chimney sweep mode

An adequate amount of air is needed for proper combustion process. It depends on the type of fuel and the device output. For this reason, for each type of fuel and for each output of the burner, it is necessary to set the appropriate amount of air. This operation should be performed by a person activating the device. These parameters are stored in the nonvolatile memory of the controller.

To this end it is necessary to:

- Set the type of fuel in line with real status,
- Start the device,
- Go to the CHIMNEY SWEEP submenu and activate the „chimney-sweep mode”.
- Adjust the amount of air for the burner output 20,40,60,80 and 100%. The intermediate values will be calculated by approximation from the preset curves. See Figure: *Blower output characteristic*

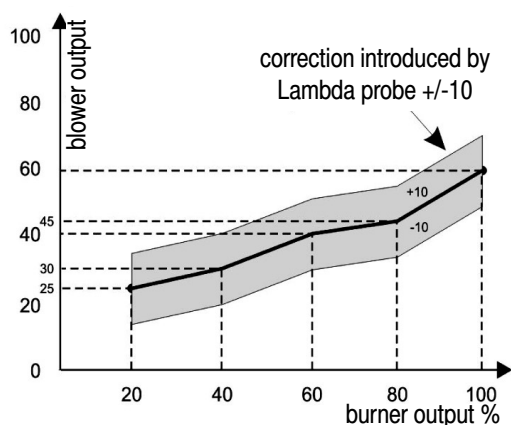
In the case of the control with an additional Lambda module, set the oxygen set points for the individual burner outputs in a similar manner.

The parameters should be entered as specified by the manufacturer of the boiler or according to the flue gas analysis performed with the individual outputs of the burner.

In the case of the blower output control with the additional Lambda module the blower output can be adjusted in the range of ± 10 control units. The said dependence is illustrated in the figure: *Blower output characteristic*

NOTE! After completed regulations turn off the chimney-sweep mode.

When adjusting in the chimney-sweep mode the automatic member controlling the burner output is switched off to perform the measurements and analyses at the constant burner output.



Blower output characteristic at Lambda control

Air at firing up

The amount of air needed in the process of firing up is set with a separate parameter, because it is different from that for the normal operation of the burner. It is set with the parameter „blower firing up”, which is available in „BURNER” menu. See figure: *Burner submenu*

Pump operation

For the correct and long operation of the boiler a suitable temperature of its operation is needed. For this reason, the circulating pumps can operate only after exceeding a minimum temperature of the pump operation. The relevant parameter available in „SERVICE MODE” is „min.temp.pump”.

DHW pump is working for the needs of DHW buffer tank, only when the temperature of the heating medium in the boiler is higher than the domestic hot water. This prevents the loss of energy stored in the previously heated domestic hot water.

Domestic hot water

The boiler with the controller of the Pellets control type is ideal for domestic hot water heating during both the heating season and out of it.

WODA UŻYTKOWA	
»temp. zadana	45°C
prioritytet	tak
histereza	02°C
kocioł c.w.u.	70°C

Domestic water menu

Preset DHW temperature

The supplied sensor CTN-02 should be mounted to the domestic hot water tank.

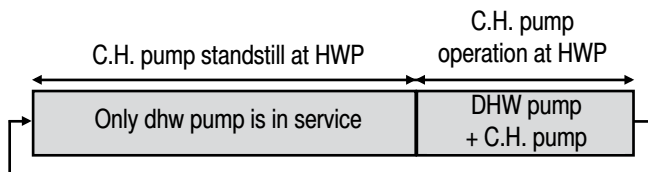
Set the desired temperature of the domestic hot water in DOMESTIC WATER submenu. This temperature should not be too high to minimize the losses associated with storage and transfer. The factory setting is 45 °C. The View of the submenu shown in Figure: *Domestic water menu*

If the boiler is to be unused for an extended period of time or if you perform any work on the boiler it must absolutely be switched off by disconnecting from the mains.

Advanced DHW priority

The controller can operate in two modes of domestic water heating (previously known from the automatic solutions of gas and oil boilers) with a priority of hot water (recommended) or without. When working with the priority, when there is a need for DHW heating, only the DHW pump is working, so the water gets the set temperature more quickly.

To prevent the temperature drop in the rooms during the DHW heating, when the hot water pump is running for longer than 10 minutes (default setting) and the preset DHW temperature is not reached, then the CH pump will be switched on in parallel for 2 minutes (default setting). The parameters available in the service mode are: "CH pump standstill at hwp", and "CH pump operation at hwp".



Pump operation during heating in priority

DHW hysteresis loop

The hot water hysteresis loop is a parameter determining the time in which the hot water should be heated. When the water temperature in the storage tank falls below the preset temperature less by the hysteresis loop, the heating process begins. The value of the hysteresis loop is set in the submenu „DHW hysteresis loop“.

DHW boiler preset temperature

When you need domestic hot water heating, the preset boiler temperature is the temperature set with the parameter „DHW boiler“.

NOTE!!! This temperature must be higher than the preset DHW temperature.

Menu language

The controller is fitted with three programming languages: Polish, English, German. Language is selected in the menu „LANGUAGE“. The factory setting is: Polish.

Starting up

To start up the device press „ESC“ button for 3 seconds, the same applies to disable the controller. The current status is shown on the main screen:

- OFF –switched off (active alarm condition maintenance and manual work of blower and feeder)
- ON – switched on

NOTE!!! When the display shows the word „OFF“, the device is in a standby mode and is still powered; in the event of an alarm condition proper preventive procedures will be taken up (switching on the pumps or feeder).

The display (main screen) shows the current status of each device.

TEMP. KOTLA	65 °C
TEMP. C.W.U.	45 °C
TEMP. SPALIN	105 °C
ON co pod	dm 30

Main screen

Displayed abbreviation means that the control output of a given device was switched on.



Abbrev. Name of device	
Abbrev.	Description:
CO	central heating circulating pump operation
CW	dhw circulating pump operation
zap	Heating component operation
pod	Feeder operation
dm	Blower operation
00	Mixer closing
01	Mixer opening

NOTE!!! At the temperature lower by 2°C than the alarm temperature of the boiler the pumps are started in the initial alarm mode. If the temperature does not exceed the alarm temperature, this situation is not stored in the controller memory.

- feeder overheating; alarm is indicated when the feeder temperature exceeds „feeder alarm temperature” which is set in the „SERVICE SETTINGS”. The taken up action consists in starting the feeder motor to expel the heat from the feeding tube.j.
- no fire / fuel; alarm is indicated in the absence of fuel or flame in the burner.

First firing up

If you work with the feeder then you have to activate the feeder after filling it with fuel to transport the fuel into the combustion chamber. To do this, go to the menu „MANUAL OPERATION”.

To enable / disable the feeder, you must press the button .
To disable the blower, press the button .

The feeder should run until the fuel fills the combustion chamber to its half volume; Turn off the feeder with „-” button. Then ignite the fuel with a properly prepared kindling (if you work with the igniter, switch the controller to ON mode, the fuel will ignite automatically.) After firing up, return to the main screen and start up the machine.


NOTE!!!

In case of alarm you should determine the cause of the alarm condition occurrence and remove it.

- BTP protection (boiler thermal protection) is independent from the work of the microprocessor system.

In the case when the temperature exceeds 94oC, an independent mechanical thermal switch will be activated, which disconnects the blower supply.

Alarm conditions and protections

The controller signals the fact that the alarm situation occurred by flashing display backlight. After pressing „Enter”  button; the message about the type of alarm is displayed. The controller signals the following alarm conditions:

- overheating of the boiler, alarm is indicated when the temperature exceeds the „boiler alarm temperature”, which is set in the „SERVICE SETTINGS”. The action taken in this case consists in switching on the circulation pumps regardless of the operation mode until the boiler temperature drop.

Parameter:	Value:
Supply voltage	~230V / 50Hz \pm 10%
Power consumption (controller)	< 5 VA
CH pump	100 W
DHW pump	100 W
Igniter	900 W
Blower	150 W
Feeder motor	200 W
Automatic exchanger cleaning motor	100 W
Mixer actuator	50 W
Range of boiler temperature settings	45 - 85°C
Range of DHW temperature settings	35 - 70°C
Temperature measurement accuracy	\pm 4°C
Ambient temperature	0 - 60°C
Humidity	5 - 95% w/o condensation
Boiler alarm temperature	80 - 95°C
Feeder alarm temperature	50 - 80°C

19.1. Warranty

KOSTRZEWA Sp. j. hereby grants:

- **6 years** – warranty for the integrity of the boiler heat exchanger since the device commissioning, however 6 years and 2 months from the date of sale to the maximum.

The remaining components are granted with:

- **2 years** warranty for: control systems, worm feeder, gear motor and fans.
- **2 years** warranty for: lambda probe module
- **1 year** warranty for: lambda probe (measuring component)
- **1 year** warranty for: measuring sensors, heating component (igniter), burner tips – cast-iron and steel.

The warranty applies only on the territory of Poland.

The manufacturer undertakes to repair faulty components.

Okres gwarancji na każdą część wymienioną tj. wentylatory, zapalarka, motoreduktor, czujnik spalin nie ulega zmianie nawet w przypadku wymiany podzespołu na inny - gwarancja obowiązuje nadal od momentu zakupu urządzenia.

19.2. Warranty extension

You can extend the warranty by buying the WARRANTY PACKAGE. The WARRANTY PACKAGE prices are available on www.kostrzewa.com.pl or in the office of the manufacturer.

19.3. To cover the device with warranty it is necessary to:

- make first paid start-up of the device by Factory Service with confirming statement in the warranty card;
- make an annual paid inspection of the boiler by Factory Service by the end of the warranty period with confirming statement in the warranty card;
- connect the boiler to the heating system, which can be performed by the installer possessing a general authorization to installation with confirming statement in the warranty card.

All repairs and maintenance out of the user's scope of actions described in the Service Manual, can be carried out only by Factory Service of Kostrzewa. List of authorized service technicians and factory service is available on website: www.kostrzewa.com.pl

The „zero” start-up is paid. The user pays the travel expenses of the Factory Service of Kostrzewa. The current price list and scope of mandatory actions during the first start-up is available on website www.kostrzewa.com.pl or in the office of the manufacturer.

19.4. Warranty does not cover:

- **wirnik wentylatora wyciągowego.**
- gaskets, door rope seal, door insulation board along with a screen, control system fuse, boiler ceramics, condensers, feeder locking pin replacement, carbon deposits accumulating on the knee of the burner, boiler control system setup after fuel change, contamination of the boiler heat exchanger, exhaust swirl vanes.
- Any information on defects must be notified no later than 7 days after the fault detection, in written form (record of complaint) to the point of sale or point of service.
- Boiler manufacturer is not liable for incorrectly selected power of the device.
- It is prohibited to check the boiler integrity by means of compressed air.
- The user is obliged to reimburse for the service call in case of:
 - Unjustified calls for service (not observing the service manual of the boiler);
 - Repair of damage resulting from the user's fault;
 - lack of opportunities to perform the repair due to reasons beyond the service staff control (e.g. no fuel, no chimney draft, leaks in the heating system)



NOTE!!!

Warranty does not cover damage caused by:

- lightning discharges;
- surges in the power grid;
- fire;
- floor or boiler inundation.

19.5. Loss of warranty occurs:

- If you have not returned to the manufacturer: the page „warranty card” - sending the document is the responsibility of the user.
- If the mandatory form „Tables of settings for Pellets Fuzzy Logic controller” was not completed by Authorized Service” after each year of the boiler operation.
- If the mandatory form „ Pellets Fuzzy Logic boiler commissioning and familiarization with the principles of service” was not completed as well as the form „List of steps to be performed by the person making the first start up of the Pellets Fuzzy Logic boiler” and / or the Warranty Card is missing the boiler number, purchase date, dealer and installer's stamps and signatures, user data (name, surname, address) and sale document numbers.
- if the boiler is connected to the heating system, which does not meet the applicable legal regulations.
- Maintenance and operation inconsistent with the Service Manual.
- performing repairs by persons not authorized by the manufacturer.

Damage due to failure to comply with these conditions may not be the subject of a warranty claim.

If the boiler is working according to the principles outlined in this service and installation manual of the boiler, it does not require any special intervention of the service company.

The manufacturer has the right to make any changes to the boiler design within the frame of modernization of the product, which may not be included in this manual.

Responsibilities of the Authorized Service during the first start-up are available on the manufacturer's website

www.kostrzewa.com.pl

NOTE!!!

The boilers can be operated in the closed system subject to adherence to the requirements of DIN EN 303-5: 2002 and BS EN 12809: 2006 using the sensor and protective coils.

The duties of the Factory Service does not include:

1. Introduction of the boiler to the boiler room.
2. Routing the wires from external devices to the control system.
3. Boiler room adaptation to the standards in force for the first start-up.
4. Fuel provision during the first start-up.

The duties of the Factory Service include:

1. Checking the ventilation in the boiler room.
2. Checking the tightness of the doors (or applying silicone or cord replacement - paid according to price list.)
3. Checking the accuracy of hydraulic connections.
4. Checking the correctness of the flue connection.
5. Checking the electrical connections in the controller.
6. Checking the tightness of the feeder tank door.
7. Checking the connections of the feeding assembly with the boiler body.
8. Checking the position of the burner crown and disc.
9. Checking that all electrical conduits of fans, gear motor, igniter and sensors are not damaged.
10. Checking that no modifications were made at the boiler (a description in the notes).
11. Checking the indications and the location of all sensors.
12. Cleaning the heat exchanger (deposit removal).
13. Cleaning the burner, knee (deposit removal).
14. Mandatory replacement of flue gas temperature sensor and capacitors (extra charge).
15. Mandatory replacement of the worm locking pin (extra charge).
16. Checking the condition of the worm (the diameter of the tip -5% of wear is assumed as normal, but above 10%'s wear of diameter, the worm replacement is recommended).
17. Information about available software upgrades.
18. Adjustment of the boiler operation with the fuel used (feeding time, standstill time and blower output).
19. Mandatory replacement of the gear motor and exhaust fan capacitor (extra charge).

List of actions to be performed by a person carrying out the first start-up of the Pellets Fuzzy Logic boiler

No	Actions to be performed	V **	Notes ***
1	Check the operation of the boiler room ventilation.		
2	Check the room lighting (Is it sufficient to service and repair the boiler?).		
3	Checking the access to the sites that require periodic maintenance (cleanouts, controller, fuel tank, gear motor, fans)		
4	Checking the tightness of hydraulic connection between the boiler and the heating system.		
5	Checking the tightness of the boiler connection with the flue.		
6	Check the amount of fuel in the tank (whether it is sufficient to run the boiler)		
7	Checking the tightness of the tank doors (are their closed with two catch bolts)		
8	Checking if the electrical cables of fans, gear motor, igniter and sensors have not been damaged during transport, and whether their fixing in the aforementioned devices is correct.		
9	Checking the connection of all electrical wires in the controller (pull each wire with a force of about 2 - 5 [N]) .		
10	Checking the connection blocks mounting in the controller.		
11	Checking the flue gas temperature sensor mounting in the flue.		
12	Checking the connection of factory made electrical wiring (pumps, external temperature sensor, room controller).		
13	Checking the connection block as to presence of a keeper (FTP (feeder thermal protection)connection).		
14	Checking the connection of the feeding assembly with the boiler body and gear-motor and the tank with the feeder tube (in case of boiler disassembly for transportation to a boiler room).		
15	Checking the position of the burner crown and disk on the mixing chamber.		
16	Checking the indications and position of sensors (flue gas, boiler, feeder, dhw, external, c.h. return, c.h. supply temperature)		
17	Performance of control outputs tests in service mode. Setting the weather characteristic for a given building.		
18	Podać typ układu oraz zabezpieczeń (otwarty - zamknięty)		
19	Sprawdzić doprowadzenia napowietrzenia kotłowni.		

(*) - uncheck if the boiler is properly installed, mounted or adjusted

(**) - make an entry in the event of a conflict with the installation, assembly or adjustment principles

Boiler installation address:

Signature and stamp of the person who starts up the boiler:

street: house no.:

.....

zip code: _ _ - _ _ _

place:

Boiler start up date:



For the manufacturer. Please send to the address:

SERWIS KOSTRZEWA, ul. Przemysłowa 1, 11-500 Giżycko, POLAND

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List of actions to be performed by a person carrying out the first start-up of the Pellets Fuzzy Logic boiler

No	Actions to be performed	V **	Notes ***
1	Check the operation of the boiler room ventilation.		
2	Check the room lighting (Is it sufficient to service and repair the boiler?).		
3	Checking the access to the sites that require periodic maintenance (cleanouts, controller, fuel tank, gear motor, fans)		
4	Checking the tightness of hydraulic connection between the boiler and the heating system.		
5	Checking the tightness of the boiler connection with the flue.		
6	Check the amount of fuel in the tank (whether it is sufficient to run the boiler)		
7	Checking the tightness of the tank doors (are their closed with two catch bolts)		
8	Checking if the electrical cables of fans, gear motor, igniter and sensors have not been damaged during transport, and whether their fixing in the aforementioned devices is correct.		
9	Checking the connection of all electrical wires in the controller (pull each wire with a force of about 2 - 5 [N]) .		
10	Checking the connection blocks mounting in the controller.		
11	Checking the flue gas temperature sensor mounting in the flue.		
12	Checking the connection of factory made electrical wiring (pumps, external temperature sensor, room controller).		
13	Checking the connection block as to presence of a keeper (FTP (feeder thermal protection)connection).		
14	Checking the connection of the feeding assembly with the boiler body and gear-motor and the tank with the feeder tube (in case of boiler disassembly for transportation to a boiler room).		
15	Checking the position of the burner crown and disk on the mixing chamber.		
16	Checking the indications and position of sensors (flue gas, boiler, feeder, dhw, external, c.h. return, c.h. supply temperature)		
17	Performance of control outputs tests in service mode. Setting the weather characteristic for a given building.		
18	Podać typ układu oraz zabezpieczeń (otwarty - zamknięty)		
19	Sprawdzić doprowadzenia napowietrzenia kotłowni.		

(*) - uncheck if the boiler is properly installed, mounted or adjusted

(**) - make an entry in the event of a conflict with the installation, assembly or adjustment principles

Boiler installation address:

Signature and stamp of the person who starts up the boiler:

street: house no.:

zip code: _ _ - _ _ _

place:

Boiler start up date:



For the manufacturer. Please send to the address:

SERWIS KOSTRZEWA, ul. Przemysłowa 1, 11-500 Giżycko, POLAND

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Karta zainstalowania kotła Pellets Fuzzy Logic

Boiler factory number (*)

Boiler output (*)

Numer modułu wykonawczego (*)

Numer modułu sondy lambda (*)

Numer katalogowy modułu (*)

Numer katalogowy sondy lambda (*)

User (name and surname) (**)

Address (street, town, zip code) (**)

Tel/Fax. (**)

e-mail

Software version (*)

Data instalacji kotła (dd/ mm/ rok)(***)

Nazwa firmy instalacyjnej(***)

Adres firmy instalacyjnej (ulica, miasto, kod pocztowy)(***)

.....(***)

.....(***)

**UWAGA!!! Odesłanie wypełnionej
„Karty zainstalowania kotła Pellets Fuzzy Logic”
do producenta jest koniecznym warunkiem zachowania gwarancji.**

.....
Podpis i pieczęć instalatora

.....
Podpis użytkownika

(*) - wypełnia producent (**) - wypełnia użytkownik (***) - wypełnia instalator

Boiler factory number	(*)	Boiler output	(*)
Numer modułu wykonawczego	(*)	Numer modułu sondy lambda	(*)
Numer katalogowy modułu	(*)	Numer katalogowy sondy lambda	(*)
User (name and surname)	(**)		
Address (street, town, zip code)	(**)		
Tel/Fax.	(**)		
e-mail	Software version	(*)	

Not completed warranty card is not valid.

Type of measurement	Rated output
Chimney draft (Pa)	
Flue gas temperature (°C)	
Fuel type	

- During the start-up carried out by the service company the boiler did not show any defects.
- He was given the service and installation manual of the boiler with completed warranty card and the confirmation of the quality and completeness of the boiler.
- He was familiarized with the operation and maintenance of the boiler.

Installer
(seal and signature)

Distributor
(seal and signature)

.....

Installation date:

Sales date:

User signature :

.....

Manufacturer's sales document number (*) Distributor's sales document number (***)

Company starting up the boiler
(seal and signature)

Start up date

(*) - completed by manufacturer (**) - completed by user (***) - completed by distributor



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Boiler factory number (*)

Boiler output (*)

Numer modułu wykonawczego (*)

Numer modułu sondy lambda (*)

Numer katalogowy modułu (*)

Numer katalogowy sondy lambda (*)

User (name and surname) (**)

Address (street, town, zip code) (**)

Tel/Fax. (**)

e-mail

Software version (*)

Not completed warranty card is not valid.

The user hereby confirms that:

- During the start-up carried out by the service company the boiler did not show any defects.
- He was given the service and installation manual of the boiler with completed warranty card and the confirmation of the quality and completeness of the boiler.
- He was familiarized with the operation and maintenance of the boiler.

Installer
(seal and signature)

Distributor
(seal and signature)

.....

[illegible]

Installation date:

Sales date:

User signature :

.....

.....

Manufacturer's sales document number (*)

Distributor's sales document number (***)

Company starting up the boiler
(seal and signature)

Start up date

.....

(*) - completed by manufacturer (**) - completed by user (***) - completed by distributor

Tables of settings for Pellets Fuzzy Logic



OBLIGATORY !!! Tables are obligatory completed by the Authorized Service at the first boiler start-up.

Boiler

SETTING	VALUE
Operation mode	
Preset temperature	
Hysteresis	

Heating circuit

SETTING	VALUE
Calculated temperature	
Lowering	
Curve	
Offset	

Domestic water

SETTING	VALUE
Preset temperature	
Priority	
Hysteresis	
DHW boiler	

Burner

SETTING	VALUE
Current output	
Fuel	
Fuzzy Logic	
Blower lighting up	
Sustain.stop [min]	
Sustain.feeder [sec]	
Sustain.blower [sec]	
Blower sustaining	
Antiblock.[sec]	

Chimney sweep

SETTING	VALUE
Chimney sweep mode	
Preset output	
Bl. output for 20%	
Bl. output for 40%	
Bl. output for 60%	
Bl. output for 80%	
Bl. output for 100%	
Oxygen for 20%	
Oxygen for 40%	
Oxygen for 60%	
Oxygen for 80%	
Oxygen for 100%	
Lambda control	

Service mode

SETTING	VALUE
Min.pumps.temp.	
Igniter [min]	
Fire test [min]	
Bl.firing up [min]	
Talarm feeder	
Talarm boiler	
Tmin boiler	
Standstill ch/hwp	
Operation ch/hwp	
Pump rundown	
Tmin return	
Tmax mix.c.h	
Lambda	
Feeder max /10 sec	
Minimum output	



For the manufacturer. Please send to the address:

SERWIS KOSTRZEWA, ul. Przemysłowa 1, 11-500 Giżycko, POLAND

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Commissioning of Pellets Fuzzy Logic boiler and familiarization with the principles of service

Boiler factory number

No	Check list	V **
1	Do you know the overall design of the boiler?	
2	Was the way of operation of the four-way mixing valve presented to you?	
3	Are you aware of the process of condensation in the boiler ?	
4	Do you know the working conditions of the boiler, at which condensation can occur ?	
5	Do you know the effects of long-term boiler operation at the conditions at which water vapor condensation (dripping) occurs?	
6	Are you familiarized with the method of grate installation and wood firing principles ?	
7	Are you familiarized with the way of firing up any kind of fuel ?	
8	Do you know how to change the fuel type from the control panel ?	
9	Do you know the modes of operation of the boiler and how they work ?	
10	Do you know how to set the desired temperature of the boiler?	
11	Do you know the way to set the desired temperature of hot water?	
12	Do you know what the hysteresis loop is and what is its function at the hot water and boiler temperature control ?	
13	Do you know how to change the preset burner output from the control panel and what do the symbols 100 - 40 mean ?	
14	Do you know how to change the blower output at the burner output 100 - 40 respectively and how these changes affect the way of fuel combustion ?	
15	Do you know the reason for breaking the screw connecting the gear-motor with the feeder worm and the method of mounting the new screw (M6x50 class 8.8)?	
16	Do you know the principle of anti-blocking function operation ?	
17	Do you know the types of alarms, which are displayed on the control board and the way of the boiler protection from hazards ?	
18	Do you know the way of cleaning the boiler together with exchanger to remove the residues of solid fuel combustion ?	
19	Do you know how to clean the burner and reopen the through-hole of hot air from the automatic igniter?	

(*) - uncheck in case of proper installation, mounting or boiler control

(**) - make an entry in the event of a conflict with the installation, assembly or adjustment principles

Signature and stamp of the person who starts up the boiler:

Signature of trained person

Boiler factory number	(*)	Boiler output	(*)
Numer modułu wykonawczego	(*)	Numer modułu sondy lambda	(*)
Numer katalogowy modułu	(*)	Numer katalogowy sondy lambda	(*)
User (name and surname)	(**)		
Address (street, town, zip code)	(**)		
Tel/Fax.	(**)		
e-mail	Software version	(*)	

Not completed warranty card is not valid.

Type of measurement	Rated output
Chimney draft (Pa)	
Flue gas temperature (°C)	
Fuel type	

- During the start-up carried out by the service company the boiler did not show any defects.

Installer
(seal and signature)

Distributor
(seal and signature)

* * * * *

Installation date:

Sales date:

User signature :

.....

.....

Manufacturer's sales document number (*) Distributor's sales document number (***)

Company starting up the boiler
(seal and signature)

Start up date

(*) - completed by manufacturer (**) - completed by user (***) - completed by distributor

**For the manufacturer. Please send to the address:**

SERWIS KOSTRZEWA, ul. Przemysłowa 1, 11-500 Giżycko, POLAND

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**Warrant Card - II year - review
Pellets Fuzzy Logic**

Boiler factory number (*) Boiler output (*)

Numer modułu wykonawczego (*) Numer modułu sondy lambda (*)

Numer katalogowy modułu (*) Numer katalogowy sondy lambda (*)

User (name and surname) (**)

Address (street, town, zip code) (**)

Tel/Fax. (**)

e-mail Software version (*)

Not completed warranty card is not valid.

Type of measurement	Rated output
Chimney draft (Pa)	
Flue gas temperature (°C)	
Fuel type	

The user hereby confirms that:

- During the start-up carried out by the service company the boiler did not show any defects.

Installer
(seal and signature)Distributor
(seal and signature)

.....

.....

Installation date:

Sales date:

User signature :

.....

.....

.....

Manufacturer's sales document number (*) Distributor's sales document number (**)

Company starting up the boiler
(seal and signature)

Start up date

.....

.....

(*) - completed by manufacturer (**) - completed by user (***) - completed by distributor

Tables of settings for Pellets Fuzzy Logic



OBLIGATORY !!! Tables are obligatory completed by the Authorized Service at the second annual inspection.

Boiler

SETTING	VALUE
Operation mode	
Preset temperature	
Hysteresis	

Heating circuit

SETTING	VALUE
Calculated temperature	
Lowering	
Curve	
Offset	

Domestic water

SETTING	VALUE
Preset temperature	
Priority	
Hysteresis	
DHW boiler	

Burner

SETTING	VALUE
Current output	
Fuel	
Fuzzy Logic	
Blower lighting up	
Sustain.stop [min]	
Sustain.feeder [sec]	
Sustain.blower [sec]	
Blower sustaining	
Antiblock.[sec]	

Chimney sweep

SETTING	VALUE
Chimney sweep mode	
Preset output	
Bl. output for 20%	
Bl. output for 40%	
Bl. output for 60%	
Bl. output for 80%	
Bl. output for 100%	
Oxygen for 20%	
Oxygen for 40%	
Oxygen for 60%	
Oxygen for 80%	
Oxygen for 100%	
Lambda control	

Service mode

SETTING	VALUE
Min.pumps.temp.	
Igniter [min]	
Fire test [min]	
Bl.firing up [min]	
Talarm feeder	
Talarm boiler	
Tmin boiler	
Standstill ch/hwp	
Operation ch/hwp	
Pump rundown	
Tmin return	
Tmax mix.c.h	
Lambda	
Feeder max /10 sec	
Minimum output	

Boiler factory number	(*)	Boiler output	(*)
Numer modułu wykonawczego	(*)	Numer modułu sondy lambda	(*)
Numer katalogowy modułu	(*)	Numer katalogowy sondy lambda	(*)
User (name and surname)	(**)		
Address (street, town, zip code)	(**)		
Tel/Fax.	(**)		
e-mail	Software version	(*)	

Not completed warranty card is not valid.

Type of measurement	Rated output
Chimney draft (Pa)	
Flue gas temperature (°C)	
Fuel type	

- During the start-up carried out by the service company the boiler did not show any defects.

Distributor
(seal and signature)

User signature :

.....

.....

Manufacturer's sales document number (*) Distributor's sales document number (***)

Start up date

(*) - completed by manufacturer (**) - completed by user (***) - completed by distributor

**For the manufacturer. Please send to the address:**

SERWIS KOSTRZEWA, ul. Przemysłowa 1, 11-500 Giżycko, POLAND

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**Warrant Card - III year - review
Pellets Fuzzy Logic**

Boiler factory number (*) Boiler output (*)

Numer modułu wykonawczego (*) Numer modułu sondy lambda (*)

Numer katalogowy modułu (*) Numer katalogowy sondy lambda (*)

User (name and surname) (**)

Address (street, town, zip code) (**)

Tel/Fax. (**)

e-mail Software version (*)

Not completed warranty card is not valid.

Type of measurement	Rated output
Chimney draft (Pa)	
Flue gas temperature (°C)	
Fuel type	

The user hereby confirms that:

- During the start-up carried out by the service company the boiler did not show any defects.

Installer
(seal and signature)Distributor
(seal and signature)

.....

.....

Installation date:

Sales date:

User signature :

.....

.....

.....

Manufacturer's sales document number (*) Distributor's sales document number (**)

Company starting up the boiler
(seal and signature)

Start up date

.....

.....

(*) - completed by manufacturer (**) - completed by user (***) - completed by distributor

Tables of settings for Pellets Fuzzy Logic



OBLIGATORY !!! Tables are obligatory completed by the Authorized Service at the third annual inspection.

Boiler

SETTING	VALUE
Operation mode	
Preset temperature	
Hysteresis	

Heating circuit

SETTING	VALUE
Calculated temperature	
Lowering	
Curve	
Offset	

Domestic water

SETTING	VALUE
Preset temperature	
Priority	
Hysteresis	
DHW boiler	

Burner

SETTING	VALUE
Current output	
Fuel	
Fuzzy Logic	
Blower lighting up	
Sustain.stop [min]	
Sustain.feeder [sec]	
Sustain.blower [sec]	
Blower sustaining	
Antiblock.[sec]	

Chimney sweep

SETTING	VALUE
Chimney sweep mode	
Preset output	
Bl. output for 20%	
Bl. output for 40%	
Bl. output for 60%	
Bl. output for 80%	
Bl. output for 100%	
Oxygen for 20%	
Oxygen for 40%	
Oxygen for 60%	
Oxygen for 80%	
Oxygen for 100%	
Lambda control	

Service mode

SETTING	VALUE
Min.pumps.temp.	
Igniter [min]	
Fire test [min]	
Bl.firing up [min]	
Talarm feeder	
Talarm boiler	
Tmin boiler	
Standstill ch/hwp	
Operation ch/hwp	
Pump rundown	
Tmin return	
Tmax mix.c.h	
Lambda	
Feeder max /10 sec	
Minimum output	

Boiler factory number	(*)	Boiler output	(*)
Numer modułu wykonawczego	(*)	Numer modułu sondy lambda	(*)
Numer katalogowy modułu	(*)	Numer katalogowy sondy lambda	(*)
User (name and surname)	(**)		
Address (street, town, zip code)	(**)		
Tel/Fax.	(**)		
e-mail	Software version	(*)	

Not completed warranty card is not valid.

Type of measurement	Rated output
Chimney draft (Pa)	
Flue gas temperature (°C)	
Fuel type	

- During the start-up carried out by the service company the boiler did not show any defects.

Distributor
(seal and signature)

User signature :

.....

.....

Manufacturer's sales document number (*) Distributor's sales document number (***)

Start up date

(*) - completed by manufacturer (**) - completed by user (***) - completed by distributor

**For the manufacturer. Please send to the address:**

SERWIS KOSTRZEWA, ul. Przemysłowa 1, 11-500 Giżycko, POLAND

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**Warrant Card - IV year - review
Pellets Fuzzy Logic**

Boiler factory number (*) Boiler output (*)

Numer modułu wykonawczego (*) Numer modułu sondy lambda (*)

Numer katalogowy modułu (*) Numer katalogowy sondy lambda (*)

User (name and surname) (**)

Address (street, town, zip code) (**)

Tel/Fax. (**)

e-mail Software version (*)

Not completed warranty card is not valid.

Type of measurement	Rated output
Chimney draft (Pa)	
Flue gas temperature (°C)	
Fuel type	

The user hereby confirms that:

- During the start-up carried out by the service company the boiler did not show any defects.

Installer
(seal and signature)Distributor
(seal and signature)

.....

.....

Installation date:

Sales date:

User signature :

.....

.....

.....

Manufacturer's sales document number (*) Distributor's sales document number (**)

Company starting up the boiler
(seal and signature)

Start up date

.....

.....

(*) - completed by manufacturer (**) - completed by user (***) - completed by distributor

Tables of settings for Pellets Fuzzy Logic



OBLIGATORY !!! Tables are obligatory completed by the Authorized Service at the fourth annual inspection.

Boiler

SETTING	VALUE
Operation mode	
Preset temperature	
Hysteresis	

Heating circuit

SETTING	VALUE
Calculated temperature	
Lowering	
Curve	
Offset	

Domestic water

SETTING	VALUE
Preset temperature	
Priority	
Hysteresis	
DHW boiler	

Burner

SETTING	VALUE
Current output	
Fuel	
Fuzzy Logic	
Blower lighting up	
Sustain.stop [min]	
Sustain.feeder [sec]	
Sustain.blower [sec]	
Blower sustaining	
Antiblock.[sec]	

Chimney sweep

SETTING	VALUE
Chimney sweep mode	
Preset output	
Bl. output for 20%	
Bl. output for 40%	
Bl. output for 60%	
Bl. output for 80%	
Bl. output for 100%	
Oxygen for 20%	
Oxygen for 40%	
Oxygen for 60%	
Oxygen for 80%	
Oxygen for 100%	
Lambda control	

Service mode

SETTING	VALUE
Min.pumps.temp.	
Igniter [min]	
Fire test [min]	
Bl.firing up [min]	
Talarm feeder	
Talarm boiler	
Tmin boiler	
Standstill ch/hwp	
Operation ch/hwp	
Pump rundown	
Tmin return	
Tmax mix.c.h	
Lambda	
Feeder max /10 sec	
Minimum output	

Boiler factory number	(*)	Boiler output	(*)
Numer modułu wykonawczego	(*)	Numer modułu sondy lambda	(*)
Numer katalogowy modułu	(*)	Numer katalogowy sondy lambda	(*)
User (name and surname)	(**)		
Address (street, town, zip code)	(**)		
Tel/Fax.	(**)		
e-mail	Software version	(*)	

Not completed warranty card is not valid.

Type of measurement	Rated output
Chimney draft (Pa)	
Flue gas temperature (°C)	
Fuel type	

- During the start-up carried out by the service company the boiler did not show any defects.

Installer
(seal and signature)

Distributor
(seal and signature)

Installation date:

Sales date:

User signature :

.....

.....

Manufacturer's sales document number (*) Distributor's sales document number (***)

Company starting up the boiler
(seal and signature)

Start up date

(*) - completed by manufacturer (**) - completed by user (***) - completed by distributor

**For the manufacturer. Please send to the address:**

SERWIS KOSTRZEWA, ul. Przemysłowa 1, 11-500 Giżycko, POLAND

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**Warrant Card - V year - review
Pellets Fuzzy Logic**

Boiler factory number (*) Boiler output (*)

Numer modułu wykonawczego (*) Numer modułu sondy lambda (*)

Numer katalogowy modułu (*) Numer katalogowy sondy lambda (*)

User (name and surname) (**)

Address (street, town, zip code) (**)

Tel/Fax. (**)

e-mail Software version (*)

Not completed warranty card is not valid.

Type of measurement	Rated output
Chimney draft (Pa)	
Flue gas temperature (°C)	
Fuel type	

The user hereby confirms that:

- During the start-up carried out by the service company the boiler did not show any defects.

Installer
(seal and signature)Distributor
(seal and signature)

.....

.....

Installation date:

Sales date:

User signature :

.....

.....

.....

Manufacturer's sales document number (*) Distributor's sales document number (**)

Company starting up the boiler
(seal and signature)

Start up date

.....

.....

(*) - completed by manufacturer (**) - completed by user (***) - completed by distributor

Tables of settings for Pellets Fuzzy Logic



OBLIGATORY !!! Tables are obligatory completed by the Authorized Service at the fifth annual inspection.

Boiler

SETTING	VALUE
Operation mode	
Preset temperature	
Hysteresis	

Heating circuit

SETTING	VALUE
Calculated temperature	
Lowering	
Curve	
Offset	

Domestic water

SETTING	VALUE
Preset temperature	
Priority	
Hysteresis	
DHW boiler	

Burner

SETTING	VALUE
Current output	
Fuel	
Fuzzy Logic	
Blower lighting up	
Sustain.stop [min]	
Sustain.feeder [sec]	
Sustain.blower [sec]	
Blower sustaining	
Antiblock.[sec]	

Chimney sweep

SETTING	VALUE
Chimney sweep mode	
Preset output	
Bl. output for 20%	
Bl. output for 40%	
Bl. output for 60%	
Bl. output for 80%	
Bl. output for 100%	
Oxygen for 20%	
Oxygen for 40%	
Oxygen for 60%	
Oxygen for 80%	
Oxygen for 100%	
Lambda control	

Service mode

SETTING	VALUE
Min.pumps.temp.	
Igniter [min]	
Fire test [min]	
Bl.firing up [min]	
Talarm feeder	
Talarm boiler	
Tmin boiler	
Standstill ch/hwp	
Operation ch/hwp	
Pump rundown	
Tmin return	
Tmax mix.c.h	
Lambda	
Feeder max /10 sec	
Minimum output	

Boiler factory number	(*)	Boiler output	(*)
Numer modułu wykonawczego	(*)	Numer modułu sondy lambda	(*)
Numer katalogowy modułu	(*)	Numer katalogowy sondy lambda	(*)
User (name and surname)	(**)		
Address (street, town, zip code)	(**)		
Tel/Fax.	(**)		
e-mail	Software version	(*)	

Not completed warranty card is not valid.

Type of measurement	Rated output
Chimney draft (Pa)	
Flue gas temperature (°C)	
Fuel type	

- During the start-up carried out by the service company the boiler did not show any defects.

Distributor
(seal and signature)

User signature :

.....

.....

Manufacturer's sales document number (*) Distributor's sales document number (***)

Start up date

(*) - completed by manufacturer (**) - completed by user (***) - completed by distributor

**For the manufacturer. Please send to the address:**

SERWIS KOSTRZEWA, ul. Przemysłowa 1, 11-500 Giżycko, POLAND

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**Warrant Card - VI year - review
Pellets Fuzzy Logic**

Boiler factory number (*) Boiler output (*)

Numer modułu wykonawczego (*) Numer modułu sondy lambda (*)

Numer katalogowy modułu (*) Numer katalogowy sondy lambda (*)

User (name and surname) (**)

Address (street, town, zip code) (**)

Tel/Fax. (**)

e-mail Software version (*)

Not completed warranty card is not valid.

Type of measurement	Rated output
Chimney draft (Pa)	
Flue gas temperature (°C)	
Fuel type	

The user hereby confirms that:

- During the start-up carried out by the service company the boiler did not show any defects.

Installer
(seal and signature)Distributor
(seal and signature)

.....

.....

Installation date:

Sales date:

User signature :

.....

.....

.....

Manufacturer's sales document number (*) Distributor's sales document number (**)

Company starting up the boiler
(seal and signature)

Start up date

.....

.....

(*) - completed by manufacturer (**) - completed by user (***) - completed by distributor

Tables of settings for Pellets Fuzzy Logic



OBLIGATORY !!! Tables are obligatory completed by the Authorized Service at the sixth annual inspection.

Boiler

SETTING	VALUE
Operation mode	
Preset temperature	
Hysteresis	

Heating circuit

SETTING	VALUE
Calculated temperature	
Lowering	
Curve	
Offset	

Domestic water

SETTING	VALUE
Preset temperature	
Priority	
Hysteresis	
DHW boiler	

Burner

SETTING	VALUE
Current output	
Fuel	
Fuzzy Logic	
Blower lighting up	
Sustain.stop [min]	
Sustain.feeder [sec]	
Sustain.blower [sec]	
Blower sustaining	
Antiblock.[sec]	

Chimney sweep

SETTING	VALUE
Chimney sweep mode	
Preset output	
Bl. output for 20%	
Bl. output for 40%	
Bl. output for 60%	
Bl. output for 80%	
Bl. output for 100%	
Oxygen for 20%	
Oxygen for 40%	
Oxygen for 60%	
Oxygen for 80%	
Oxygen for 100%	
Lambda control	

Service mode

SETTING	VALUE
Min.pumps.temp.	
Igniter [min]	
Fire test [min]	
Bl.firing up [min]	
Talarm feeder	
Talarm boiler	
Tmin boiler	
Standstill ch/hwp	
Operation ch/hwp	
Pump rundown	
Tmin return	
Tmax mix.c.h	
Lambda	
Feeder max /10 sec	
Minimum output	

Record of conducted warranty and post-warranty inspections and repairs of Pellets Fuzzy Logic Boiler

Record date	Performed action	Signature and seal Authorized Service	Customer signature

Record of conducted warranty and post-warranty inspections and repairs of Pellets Fuzzy Logic Boiler

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Record date	Performed action	Signature and seal Authorized Service	Customer signature



Name and address of the distributor company:

Name and address of the installer company:

Name and surname:

Full address:

.....

Telephone no:

[illegible]

.....
legible signature of the claimer

Pellets Fuzzy Logic - Service Manual- ENGV 10.11



Name and address of the distributor company:

Name and address of the installer company:

Name and surname:

Full address:

.....

Telephone no:

[illegible]

.....
legible signature of the claimer

KOSTRZEWA
Experts in biomass heating



Name and address of the distributor company:

Name and address of the installer company:

Name and surname:

Full address:

.....

Telephone no:

[illegible]

.....
legible signature of the claimer

Pellets Fuzzy Logic - Service Manual- ENGV 10.11

KOSTRZEWA®
Experts in biomass heating



Land of the Great
Masurian Lakes

Contact

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