



INSTRUCTION MANUAL

SVAROG **ECOPELLET**

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Introduction

Dear Customer, thank you for purchasing a heating boiler from Kensol Sp. z o. o. We hope that the use of the device will meet your expectations and provide you with much satisfaction. The heating boiler was designed and manufactured in accordance with applicable norms and standards, guaranteeing safe and reliable operation. Operation with strict adherence to the recommendations contained in the manual attached to the device will ensure optimal and reliable operation of the central heating boiler for many years. The product is not intended for use by persons with reduced physical/mental capabilities or lack of experience and knowledge, if they are supervised or instructed by a person responsible for their safety. Operation by children is prohibited.

Symbols used in the manual



ATTENTION!

Very important information, always read it if it appears in a given place.





TIP!

It is worth reading this information, it makes it easier to use.

Introductory steps (User)

Activities to be performed when accepting the Kensol Sp. z o.o.:

- carefully check whether the delivered boiler is complete (Chapter: Boiler equipment) and whether the boiler has not been damaged during transport,
- compare the nameplate mounted on the boiler casing on the left or right side with your order,
- read the user manual carefully - it contains information needed for the proper use of the boiler.

 kensol		Kensol Sp. z o. o. 44-151 Gliwice ul. Daszyńskiego 609A tel +48 603 909 013 www.kensol.pl	
SVAROG ECOPELLET			
Boiler type	<input type="text"/>	Electrical connection	<input type="text"/>
Model	<input type="text"/>	Boiler class	<input type="text"/>
Serial No.	<input type="text"/>	Permissible pressure [bar]	<input type="text"/>
Date of production	<input type="text"/>	Temp. max. [°C]	<input type="text"/>
Nominal power [kW]	<input type="text"/>	Water volume [L]	<input type="text"/>
Power range [kW]	<input type="text"/>	Power consumption operation/start-up [W]	<input type="text"/>
Type of work	<input type="text"/>	Boiler category	<input type="text"/>
Nominal heat load	<input type="text"/>	Range of heat input	<input type="text"/>
Type of fuel	Wood pellets in accordance with pt. 5.3 (Table 9) of standard PN-EN 303-5+A1:2023-5 (diameter: 6 ± 1mm; 8 ± 1mm; length 3,15 ≤ L ≤ 40; moisture content ≤ 10%; ash content ≤ 0.7%; calorific value >17 MJ / kg)		
Manufactured in Metal - Fach Technika Grzewcza Sp. z o. o. ul Sikorskiego 66, 16-100 Sokółka			
			

If you encounter any problems, please contact the service department or the authorized service of Kensa Sp. z o. o.. These people have appropriate training and access to original parts enabling proper service and installation of Kensa Sp. z o.o., confirmed by a certificate issued at the company's headquarters.

General information (User)

Technical and Operational Documentation is one of the parts of the product, it is delivered together with the purchased central heating boiler. The Technical and Operational Documentation contains data on the construction, installation and use of boilers with a self-cleaning pellet burner of the SVAROG ECOPELLET series. Careful reading of the user manual will ensure correct and safe use of our boiler..



ATTENTION!

The user is advised to follow all instructions regarding the device contained in this Technical and Operational Documentation, the Warranty Conditions and generally applicable legal regulations.

The boilers are delivered assembled. They are set and attached to the pallet permanently. Additional security measures are used in the form of foil packaging. When transporting the boiler, it should be secured against shifting or rotation on the car's cargo bed using safety equipment, e.g. belts. Transport of boilers should be carried out in accordance with the rules regarding the transport of materials. Loading and unloading must be carried out using lifting equipment (forklift) with a capacity of more than 1000 kg.

Application (User | Installer)

The boilers are intended for heating residential buildings such as: single-family and multi-family houses, farm buildings, public utility buildings, and hot water. They are equipped with an automatic fuel feeding system. Thanks to the use of modern design solutions, the SVAROG ECOPELLET boiler achieves high efficiency. Correct operation and achievement of the boiler's full capabilities depend on the quality of the installation, appropriate chimney draft, and proper operation and maintenance of the boiler.



ATTENTION!

The boilers are intended for operation in open and closed water systems with gravity or forced circulation, with protections in accordance with the requirements of the applicable standard PNB- 02413 Heating and District Energy and a closed system in accordance with the standard PNEN 12828 Heating installations in buildings. Projects.

Boiler equipment (User))

The scope of delivery includes both basic and additional elements, depending on the order placed. Upon receipt, carefully inspect the product to check whether it has been damaged during transport and check whether the equipment is complete. The elements of the basic and additional equipment are described below.

Basic equipment:	Unit of measurement	Quantity
Central heating boiler	pcs.	1
Microprocessor controller – supports: See the controller’s operating manual.	pcs.	1
Self-cleaning fuel feeding system with a pellet burner	set	1
Fuel tank	pcs.	1
Boiler cleaning tools: <ul style="list-style-type: none">▪ poker▪ brush▪ scraper	set	1
Boiler leveling feet	pcs.	4
Additional equipment:	Unit of measurement	Quantity
LAMBDA PROBE module*	ecoNET300	1
Additional module B/C	pcs.	1
Room thermostat	eSTER_x40	1
LAMBDA SONDA module	pcs.	1
Documentation:	Unit of measurement	Ilość
Technical and operational documentation of the boiler	pcs.	1
User manual and warranty card for the controller	pcs.	1
Instruction manual and warranty card for the blower fan	pcs.	1

* Accessory equipment is not included in the basic kit of the boiler and must be purchased separately.



ATTENTION!

The user should carefully read the operating instructions for the regulator, fan and feeder with the self-cleaning pellet burner .



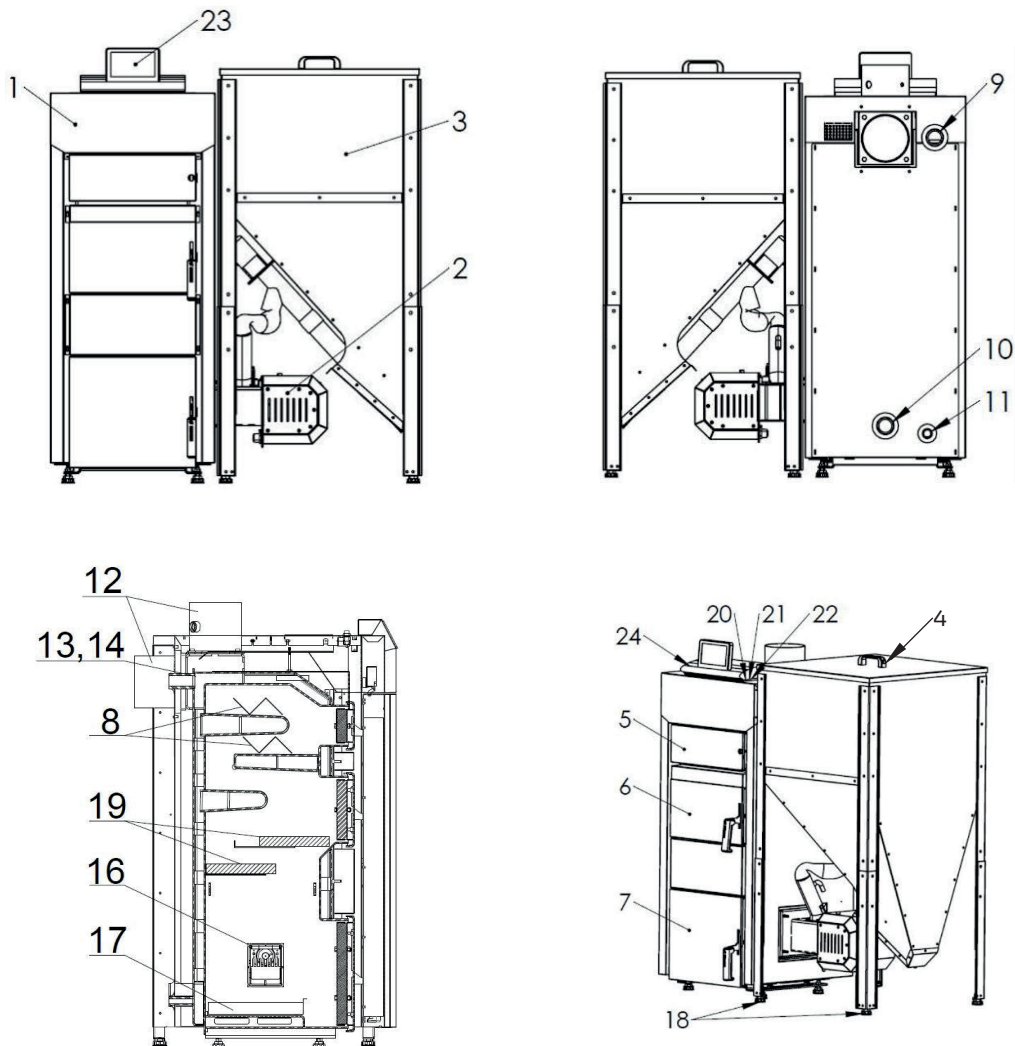
ATTENTION!

Kensol Sp. z o. o. reserves the right to introduce changes in technical parameters, equipment and specifications of the offered goods without prior notice.

Basic elements of boiler construction (User | Installer)

The water body is made as a welded structure from certified steel sheets P265GH (for walls washed by exhaust gases) and S235JR (for water jacket elements). The automatic feeder supplies fuel (pellet) to the pellet burner located in the combustion chamber on the side of the boiler. In part of the combustion chamber, refractory concrete slabs were placed horizontally. The convection part of the boiler consists of horizontal water channels in which exhaust gas turbulizers are placed. The boiler exchanger is insulated with mineral wool covered with thin-walled sheet metal. The insulated bottom of the boiler is water-cooled. The exhaust flue does not have a throttle. It is possible to change the location of the flue on the rear wall (directed horizontally) or on the upper wall of the boiler (directed vertically). The ash pan for combustion waste is located under the burner. The steel door is lined with insulating boards from the inside. The boiler is equipped with feed and return connections for boiler water with a diameter of G 1 1/2", a water drain pipe with a diameter of G 3/4", a regulator and STB sensor connector. The boiler operation and combustion process are controlled by a microprocessor regulator.

SVAROG ECOPELLET Boiler



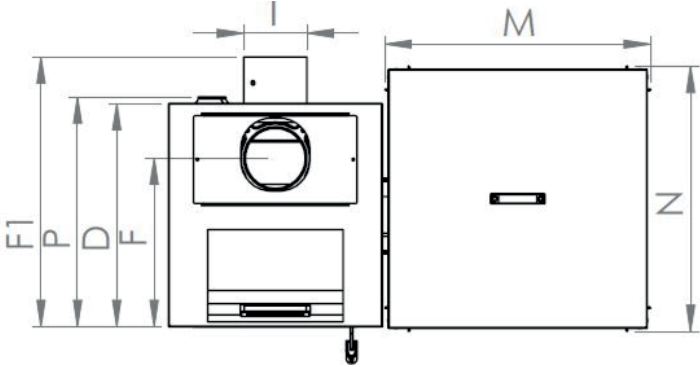
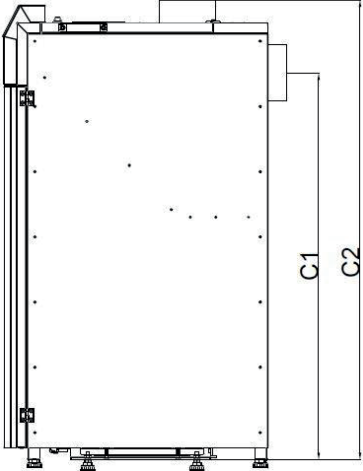
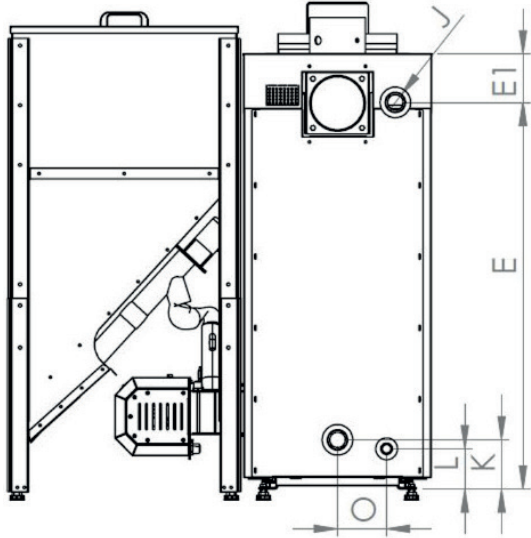
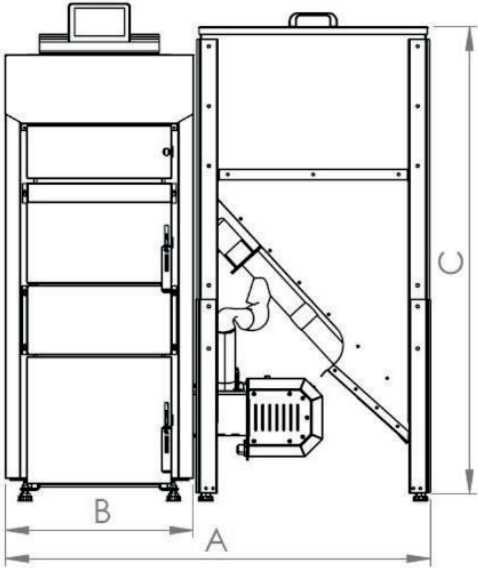
- | | |
|---|--|
| 1. Exchanger | 13. Boiler temperature sensor mounting sleeve |
| 2. Self-cleaning pellet burner | 14. STB mounting sleeve |
| 3. Fuel tank | 15. Boiler door |
| 4. Hopper inspection door | 16. Torch head |
| 5. Cleaning door | 17. Ash pan drawer |
| 6. Inspection doors | 18. Leveling feet |
| 7. Ash pan doors | 19. Laying refractory concrete slabs during boiler operation |
| 8. Exhaust gas turbulators | 20. STB |
| 9. Supply connector with thread G 1 1/2" | 21. Main switch |
| 10. Return connector with thread G 1 1/2" | 22. Fuse |
| 11. Drain connector with thread G 3/4" | 23. Controller display |
| 12. Chopuch | 24. Controller |

Boiler technical data (User | Installer)

Parameters	SI unit	Boiler model			
		SVAROG ECOPELLET 16	SVAROG ECOPELLET 20	SVAROG ECOPELLET 25	SVAROG ECOPELLET 32
Nominal thermal power	[kW]	16	20	25	32
Boiler power range	[kW]	4,8-16	6-20	7,5-25	9,6-32
Water capacity	[L]	48	60	71	80
Maximum working pressure	[bar]	3	3	3	3
Maximum operating temperature	[°C]	80	80	80	80
Test pressure	[bar]	4,5	4,5	4,5	4,5
Boiler class	[-]	5	5	5	5
Boiler efficiency	[%]	92	92	92	93
Fuel tank capacity	[L]	280	280	280	280
Fuel	[-]	pellets in accordance with point 5.3 (Table 9) of the PN EN 303-5:2021 standard: (diameter: 6 ± 1 mm; 8 ± 1 mm, length $3.15 \leq L \leq 40$, humidity $\leq 10\%$, ash content $\leq 0.7\%$, calorific value >17 MJ / kg)			
Electrical connection	[-]	2A;~230V; 50Hz			
Electrical power consumption	[W]	115	115	115	115
Electrical power consumption (temporary when firing up)	[W]	415	415	415	415
Temperature controller setting range	[°C]	60-80 (every 1°C)			
Chimney draft required	[Pa]	18	19	20	22
Exhaust gas mass flow	[g/s]	12,1	13,6	17,6	21,7
Exhaust gas temperature at nominal power	[°C]	111,84	120,18	123,32	127,66
Exhaust gas temperature at minimum	[°C]	71,85	73,64	100,94	108,86
Calculated flow resistance ΔT [10K]	[mbar]	0,57	0,90	1,41	2,03
Calculated flow resistance ΔT [20K]	[mbar]	0,14	0,22	0,35	0,50
Boiler weight	[kg]	335*	405*	445*	495*

*Boiler weight +/- 5kg.

Boiler dimensions (User | Installer)



ATTENTION!

Boiler feet are available:
 - from SVAROG ECOPELLET 16 to SVAROG ECOPELLET 32
 Their height is 30 mm.

Type	Svarog Ecopellet 16	Svarog Ecopellet 20	Svarog Ecopellet 25	Svarog Ecopellet 32
A	1205	1205	1255	1255
B	530	530	585	585
C*	1330	1330	1450	1450
C1	1100	1155	1155	1190
C2*	1345	1400	1400	1490
D	560	630	720	720
E*	1100	1160	1160	1255
E1	140	140	140	145
F	425	495	585	580
F1	675	745	835	865
G	G3/4"	G3/4"	G3/4"	G3/4"
H	G11/2"	G11/2"	G11/2"	G11/2"
I	160	160	160	180
J	G11/2"	G11/2"	G11/2"	G11/2"
K*	140	140	140	140
L*	115	115	115	115
M	665	665	665	665
N	665	665	665	665
O	140	140	140	140
P	575	645	740	740

*The dimensions do not include the height of the boiler leveling feet.

Security automation and regulation (User | Installer)

1. The boiler automation allows you to set:

- boiler temperature;
- hot water temperature;
- fuel feeder operation;
- manual control of the fan feeder.

2. Thermal sensor

The mechanical STB protection is located in the boiler and protects the heating system against overheating.

It is set to

95 °C. Above this temperature, it turns off the fan, turning on the central heating and hot water pumps, as well as two

additional ones, and opens the mixing valve.

3. A rising screw feeder feeding fuel to the burner.

Fuel (User)

The fuel for firing boilers equipped with a self-cleaning pellet burner is:

pellets in accordance with point 5.3 (Table 9) of the PN EN 303-5:2021 standard:

- diameter: 6 ± 1 mm; 8 ± 1 mm;
- length $3.15 \leq L \leq 40$;
- humidity $\leq 10\%$;
- ash content $\leq 0.7\%$;
- calorific value >17 MJ/kg;

The fuel should not contain stones, pieces of wood or other impurities..

Requirements for the boiler room and boiler installation (User | Installer)

In Poland, boiler rooms built for solid fuel should meet the requirements of the standard PN-87/B-02411 „Boiler rooms

built for solid fuel” and Journal of Laws 2015.0.1422. They are divided into two types:

1. For small boiler rooms up to 25 kW of power, the following requirements should be met:

- the boiler should be located as centrally as possible in relation to the heated rooms and in a separate room;
- the material from which the floor in the boiler room will be made should be non-flammable; in the case of flammable material, the floor should be covered with a 0.7 mm thick steel sheet at a minimum distance of 50 cm from the edge of the boiler; the boiler should be placed on a foundation made of non-flammable materials, protruding 0.05 m above the floor level and edged with steel angles;
- there should be artificial lighting in the room, natural lighting is also recommended;
- placing the wheel in the room should allow free access to the boiler during cleaning and maintenance; the distance from the back of the boiler to the wall should not be less than 70 cm, the side of the boiler from the wall not less than 100 cm, and the front of the boiler from the opposite wall not less than 200 cm;
- supply and exhaust) ensured ;
- supply ventilation should take place through an unclosed opening with a cross-section of at least 200 cm² and

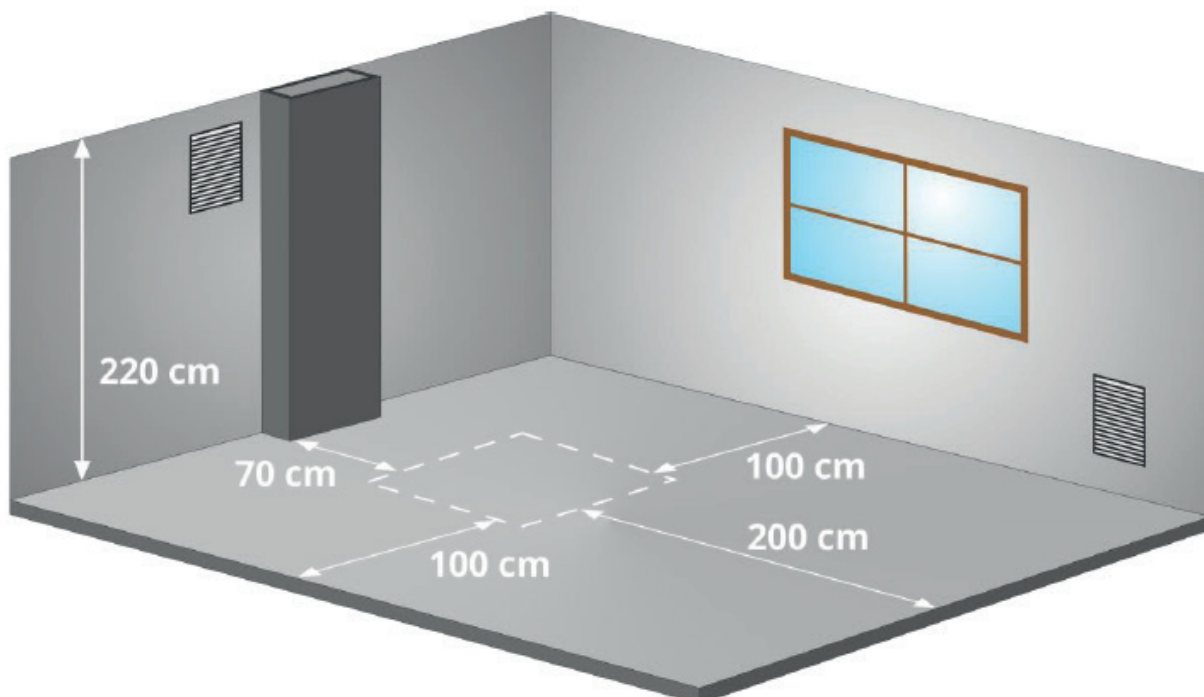
located up to a maximum of 100 cm above the floor level;

- exhaust ventilation should be provided through an exhaust duct made of non-flammable material with a minimum cross-section of 14 x 14 cm with an inlet opening under the ceiling of the boiler room; the exhaust duct should be led above the roof and placed near the chimney; there cannot be devices on the exhaust duct that allow it to be closed;
- the cross-section of the chimney should be not less than 20 x 20 cm;
- there should be a floor drain in the floor of the boiler room;
- the optimal place for fuel storage is a separate room located near the boiler room;
- ash and slag should be collected in appropriate containers that can be emptied daily.

2. Boiler rooms with a thermal power of 25 kW should additionally meet the following requirements:

- the distance of the furthest boiler from the chimney, with gravity draft, cannot exceed 50 cm of the chimney height;
- the fuel storage and slag storage should be located next to the boiler hall at a storage height of up to 220 cm with a free space above the fuel of at least 50 cm;
- devices and equipment enabling vertical and horizontal transport of fuel and slag should be taken into account;
- the fuel storage room should have natural, unforced ventilation, enabling one complete air exchange per hour in the fuel storage room and three complete air changes per hour in the slag storage room;
- entrance doors to the boiler room should be non-flammable (fire resistance class 0.5), minimum width 80 cm, opening outwards; they should have a handleless closing system enabling them to be opened outwards under pressure and inwards using a handle;
- ventilation requirements are the same as for boiler rooms with lower power; Additionally, in boiler rooms with a power exceeding 400 kW, in addition to the supply and exhaust ventilation, there should be mechanical ventilation, switched on periodically when feeding fuel and removing slag from the boilers, ensuring a minimum of 10 full air changes per hour;
- in the boiler room, natural lighting should be taken into account, illuminating the boiler from its front, and the window area should be at least 1/15 of the boiler room floor area; half of those installed should be openable; electric lighting and an electrical socket with a voltage not exceeding 24 V should also be located in the room;
- there should be a sewage well in the floor allowing for water cooling, and its capacity should be equal to the water capacity of the largest boiler, but not more than 2 m³;
- in the boiler room, heat pipes should be insulated;
- Boiler positioning with the minimum required distances is shown in the boiler room diagram below.

Minimum distances for placing the boiler in the boiler room:



**ATTENTION!**

Mechanical exhaust ventilation should not be used in the boiler room.

**ATTENTION!**

Ensuring the supply of sufficient fresh air to the boiler room will enable effective fuel combustion.

**ATTENTION!**

It is necessary to prevent the formation of excessive amounts of carbon dioxide in the room..

**ATTENTION!**

More detailed information regarding the requirements for the construction of a boiler room can be found in the Regulation of the Minister of Infrastructure of March 12, 2009.

**TIP!**

The above-mentioned provisions are guidelines that need to be verified as the regulation is subject to amendment.

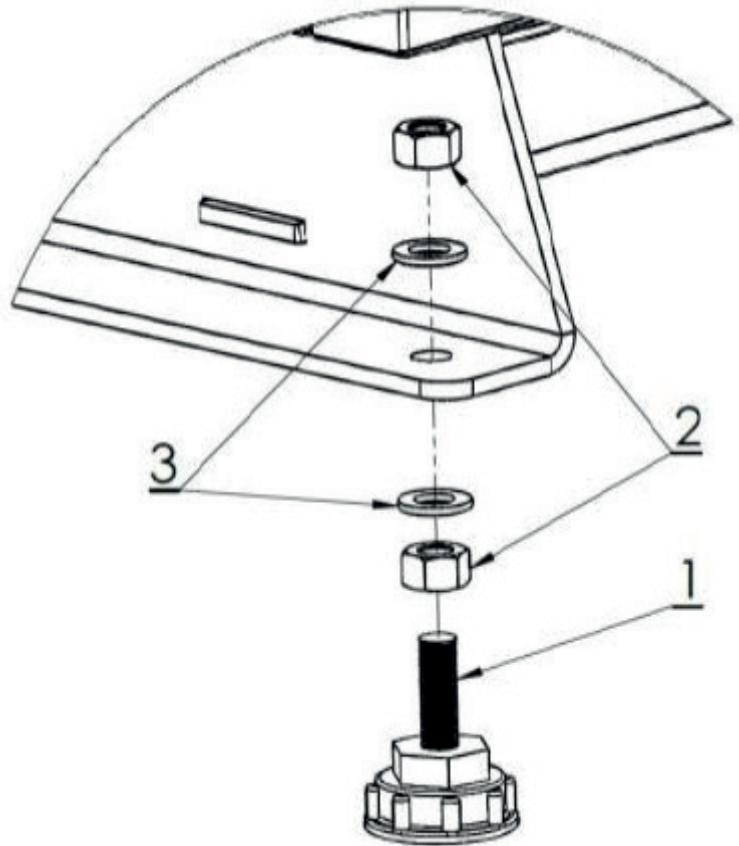
Boiler installation (User | Installer)

An important element of the installation is the correct positioning and leveling of the SVAROG ECOPELLET boiler, the boilers do not require special foundations. Leveling the boiler is made easier by adjustable feet. The boiler must stand vertically.

1. Check whether the set includes four feet.
2. Use a spirit level to level the boiler in relation to the ground. If the boiler is in a horizontal position, the installation of feet is not required.
3. Screw the four feet into the designated holes.
4. Use a spirit level to level the boiler

How to install boiler leveling feet

1. Adjustable foot, 4 pcs
2. M10 nut, 8 pcs
3. Washer Ø10, 8 pcs



ATTENTION!

An incorrectly leveled boiler may be damaged.



ATTENTION!

It is unacceptable to place the boiler in a humid or wet room, as this accelerates corrosion, leading to the destruction of the boiler in a short time.

The boiler should be placed on a heat-insulating, non-flammable pad, which on each side of the boiler should be 2 cm larger than the boiler base. If the boiler is located in the basement, it is recommended that it be placed on a foundation of at least 5 cm. Substrate strength as well as fire protection conditions. are key guidelines when placing the boiler in the right place, they include:

- 20 cm safe distance from flammable materials,
- 40 cm for flammable materials with flammability grade C3,
- 40 cm if the flammability level is not known.

The degree of flammability of building masses and products

A - Non-flammable

B - Hard to burn

C1 - Hard to burn

C2 - Medium burning

C3 - Easily flammable

Building masses and products

Sandstone, concrete, bricks, fireproof plaster, mortar, ceramic tiles, granite

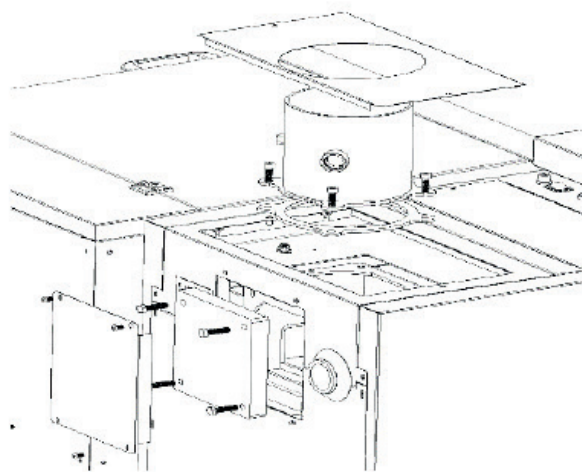
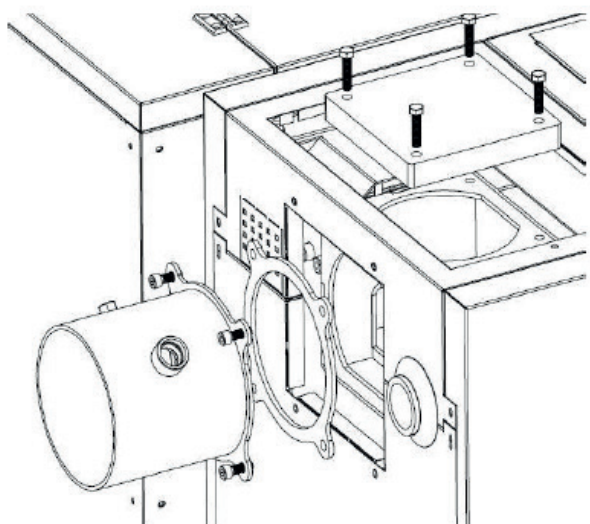
Wood-cement boards, glass fibers, mineral insulation

Beech wood, oak wood, plywood

Pine, larch and spruce trees cork, sawn wood boards,

Asphalt plywood, celluloid masses, polyurethane, polystyrene, polyethylene, plastic, PVC

Changes to the flue mounting



Connection of the boiler with the heating installation (Installer)

The boiler should be connected to the central heating system by a company authorized by the manufacturer, and the correct connection should be confirmed on the warranty card attached to this manual. The boiler should be connected according to the manufacturer's recommendations and in accordance with these instructions.



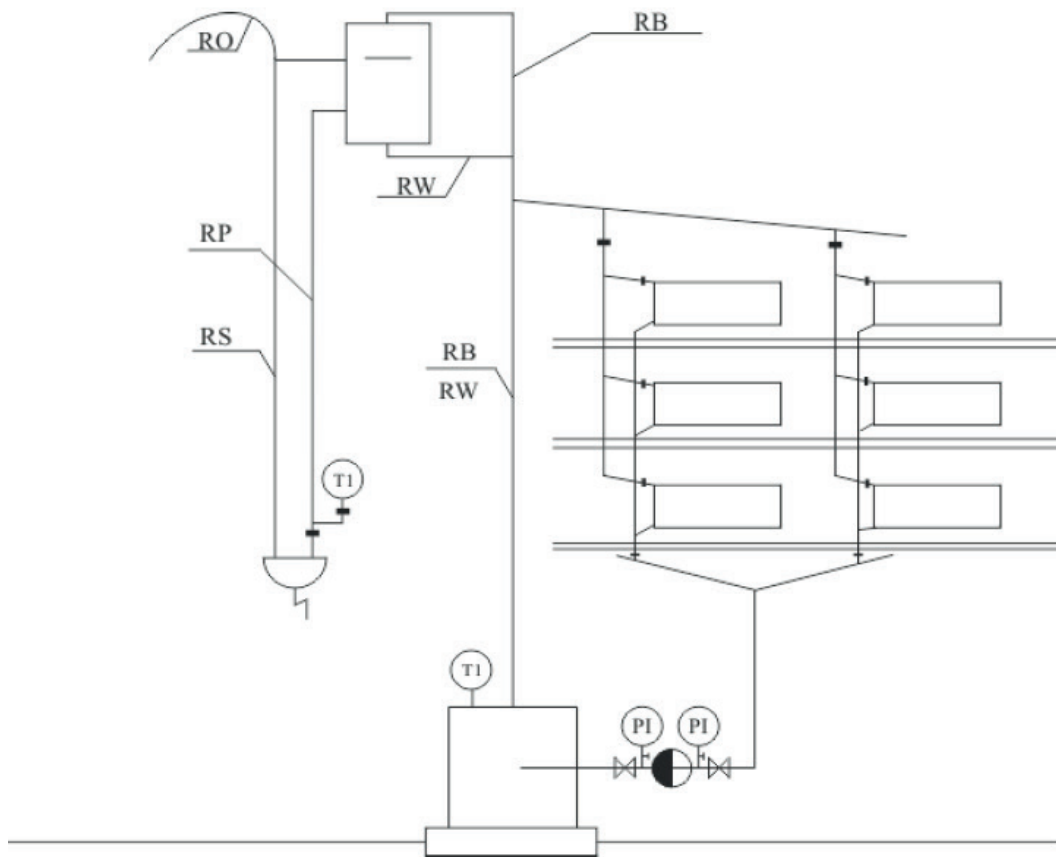
ATTENTION!

It is recommended that the boiler be started for the first time in accordance with the guidelines contained in the Technical and Operational Documentation by a person with valid authorizations - (Information on persons authorized to start the boiler is available from the Manufacturer - tel. +48 603 909 013).

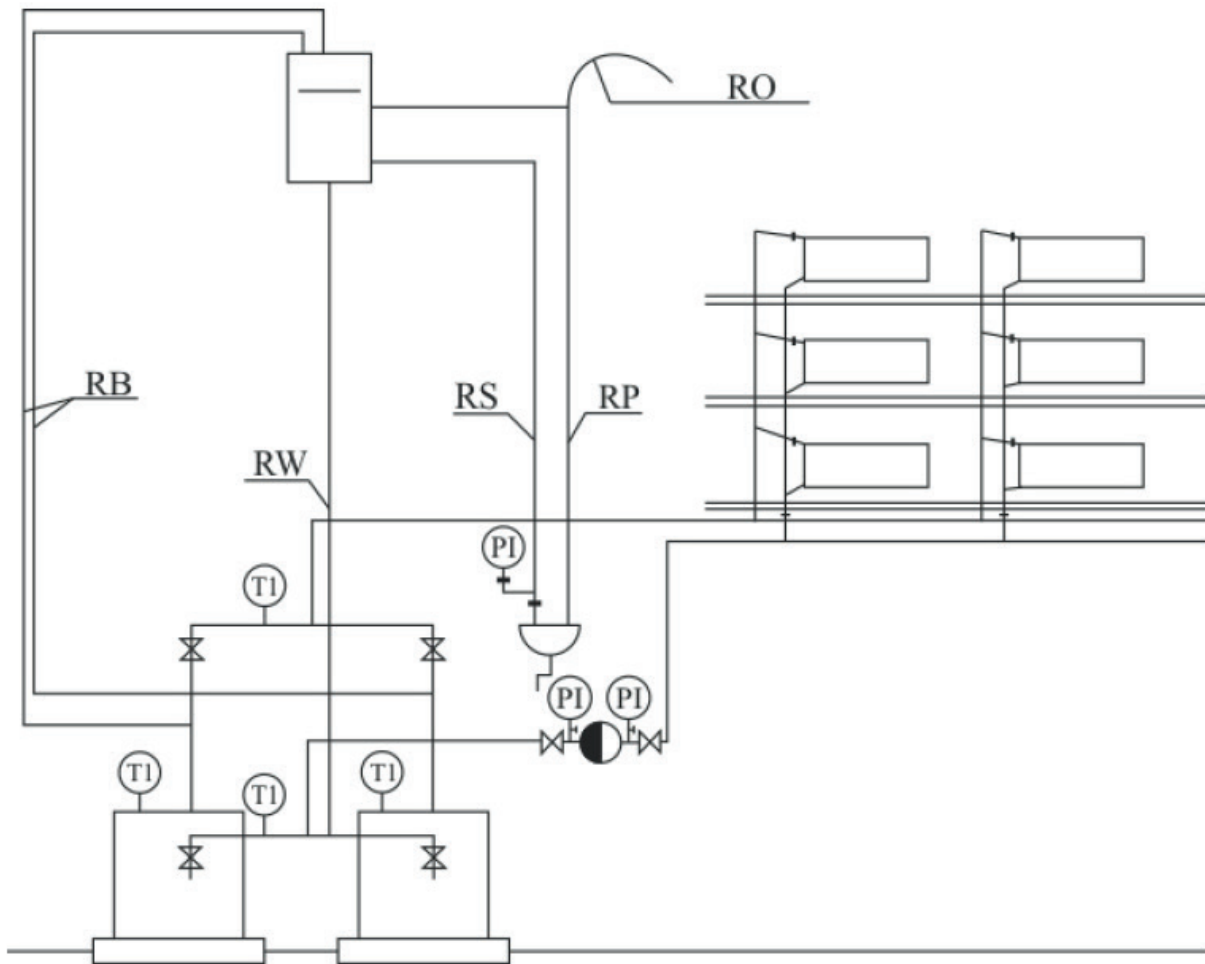


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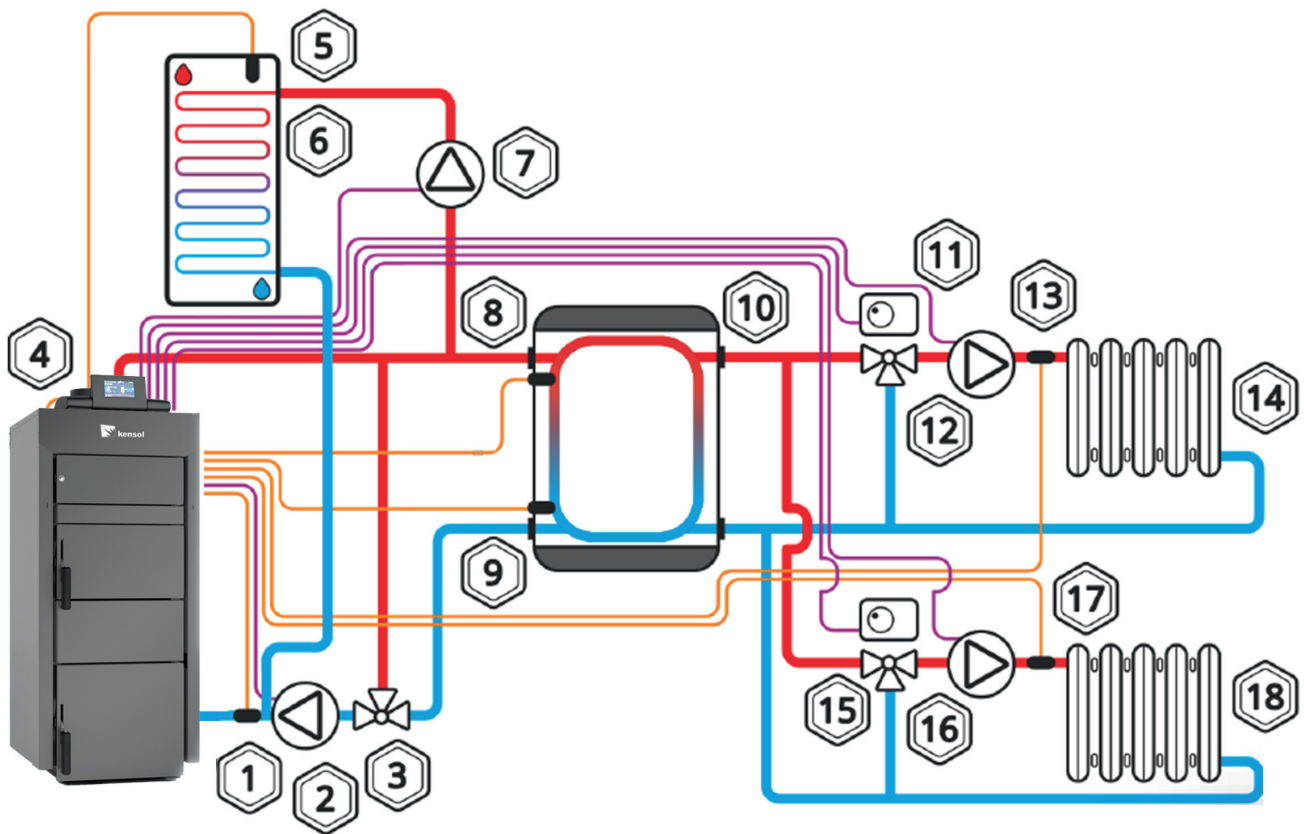
The temperature of water returning from the installation to the central heating boiler should not be lower than 45°C.



Description	Description
RO	Vent pipe
RW	Expansion pipe
RS	Signaling pipe
RP	Overflow pipe
RB	Safety pipe
T1	Temperature
P1	Pressure



Designation	Description
RO	Vent pipe
RW	Expansion pipe
RS	Signaling pipe
RP	Overflow pipe
RB	Safety pipe
T1	Temperature
P1	Pressure



1. Return sensor
2. Boiler pump
3. 3-way thermostatic valve
4. Boiler sensor
5. Domestic hot water sensor
6. Domestic hot water tank
7. Domestic hot water pump
8. Upper buffer sensor
9. Lower buffer sensor
10. Buffer tank
11. 3-way valve with actuator 1
12. Mixer pump 1
13. Mixer sensor 1
14. Heating circuit 1
15. 3-way valve with actuator 2*
16. Mixer pump 2*
17. Mixer sensor 2*
18. Heating circuit 2*

*The operation of the second circuit is possible after installing an additional B module of the controller

Connection of the boiler with the heating installation in a closed system (Installer)

It is important to use elements that protect the installation against overheating and excessive pressure increase when installing the boiler in a closed heating system, and to use a controller that regulates the temperature during the combustion process.



ATTENTION!

The central heating installation in a closed system must meet the requirements of the PN-EN 12828:2006 standard - Heating installations in buildings and PN-EN 303-5:2012 - Solid fuel heating boilers with manual and automatic fuel loading.

Part	Description
STB	Safety temperature limiter with manual return to starting position
Cooling coil	Cools down the installation when the temperature exceeds 97°C
VST 112 valve	It prevents the flame from returning to the solid fuel feeder by flooding the fuel in the event of excessive temperature increase
Pressure expansion vessel	Preventing excessive pressure build-up
Safety fittings	It includes a safety valve, pressure gauge and air vent



ATTENTION!

Boilers installed in a closed system must be equipped with all safety devices.



ATTENTION!

The cooling coil or cooling valve must be connected to the water supply network. The power source cannot be a hydrophore set, as it requires electricity for proper operation.

The coil installed in the installation's feed is connected to a pipe with cold water, which flows through it only when the thermal valve with a sensor immersed in the boiler's feed opens after exceeding the set temperature. The water passes through the coil and receives heat from the boiler's water jacket, and is then discharged to the cooling well, as directing hot water directly into the sewage pipes could damage them.

The coil is able to lower the water temperature in the boiler jacket by several degrees within a dozen or so seconds. If the water temperature in the boiler jacket drops below the set value, the valve closes the water supply to the coil. In this solution, the high quality of the exchanger and valve is very important, allowing the protection to be turned on and off even several times in succession.

In solutions with a safety coil built into the boiler, e.g. thermal protection is used.

Solid fuel boilers with automatic fuel feeding do not pose a significant risk of uncontrolled temperature increase in the central heating system, because the amount of fuel fed to the burner is small. Moreover, in the event of an increase in temperature, protections and operations are automatically activated without user intervention. The alarm will occur when the feeder temperature exceeds the Max. feeder temperature parameter. If the feeder temperature rises above this value, the controller will turn off the feeder and start the shutdown procedure. Thanks to the appropriate design of SVAROG ECOPELLET boilers, the risk of fire penetrating the fuel tank is small, which is prevented by a rising screw feeder feeding fuel to the burner.



ATTENTION!

The gas pressure in the expansion vessel should be checked and properly adjusted before using the boiler. The operation of the expansion vessel should be checked once a year.



ATTENTION!

The safety valve should be installed on the heat source or in its close vicinity, e.g. on the installation supply cable, in an easily accessible place.



ATTENTION!

The safety valve should prevent the maximum operating pressure from being exceeded by no more than 10%.

Requirements for the expansion vessel (Installer)

Each open system heating installation should be equipped with an expansion vessel, the task of which is to absorb the increase in the volume of water filling the installation and vent it. This vessel should be installed at the highest point of the installation, if possible in a vertical line above the boiler(s).

The volume of the expansion vessel can be estimated by assuming the unit capacity in relation to one kW of thermal efficiency is 1-2 dm³. expansion vessel is equipped with a stub pipe for connecting the rising safety pipe, the falling safety pipe and the overflow pipe and the connected vent.

The diameter of the vent pipe and overflow pipe is at least:

$$d = 15 + 1,39 \sqrt{\dot{Q}} \quad [\text{mm}]$$

\dot{Q} - boiler efficiency [kW]

The most important requirements for safety devices are as follows:

- expansion vessel should have a volume of approximately 3.5% of the volume of water in the heating system including the boiler,
- each boiler should absolutely have a safety pipe and an overflow pipe,
- the installation should be equipped with a signaling and expansion pipe and a vent connector for the expansion vessel. If several boilers are installed, each of them should be equipped with a safety pipe in accordance with the principles specified in PN-91/B02413 - protection of open system water heating installations. No shut-off valves may be installed on safety and overflow pipes, and the pipes and vessel must be protected against freezing.

Connecting the boiler to the electrical installation (Installer)

The boiler is designed to be connected to 230V/50Hz voltage. Installation should be performed by a qualified person. The 230V/10A connection socket with grounding should be easily accessible. The boiler power supply and the boiler room lighting should have a different circuit. The completion of the installation and the heating test must be recorded in the Warranty Card. The completed Warranty Card should be sent to the manufacturer's address by the user in order to register the user in the company's system.



ATTENTION!

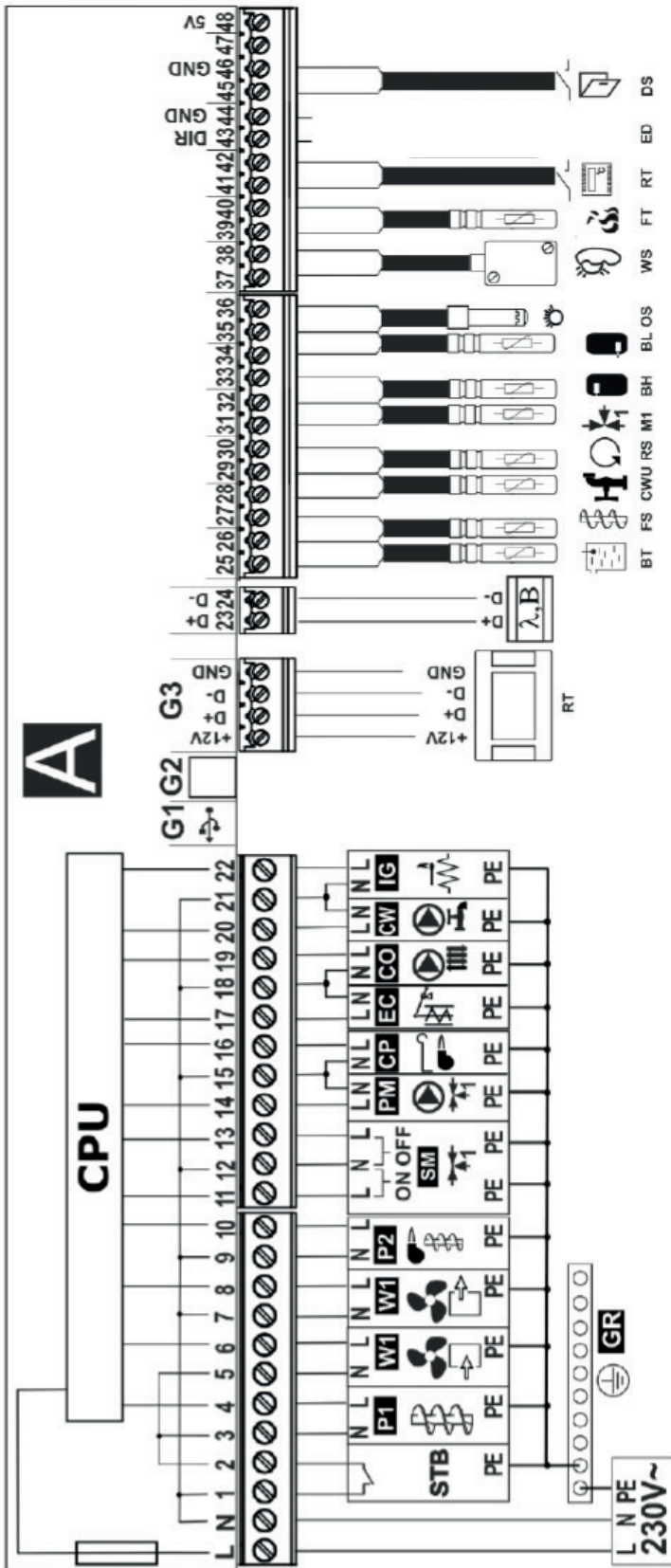
The first start-up of the boiler must be carried out only by a service trained by the manufacturer, with a current certificate of an Authorized Service Technician, Distributor of Kensol sp. z o.o. or a person with SEP qualifications up to 1.5 kV .



ATTENTION!

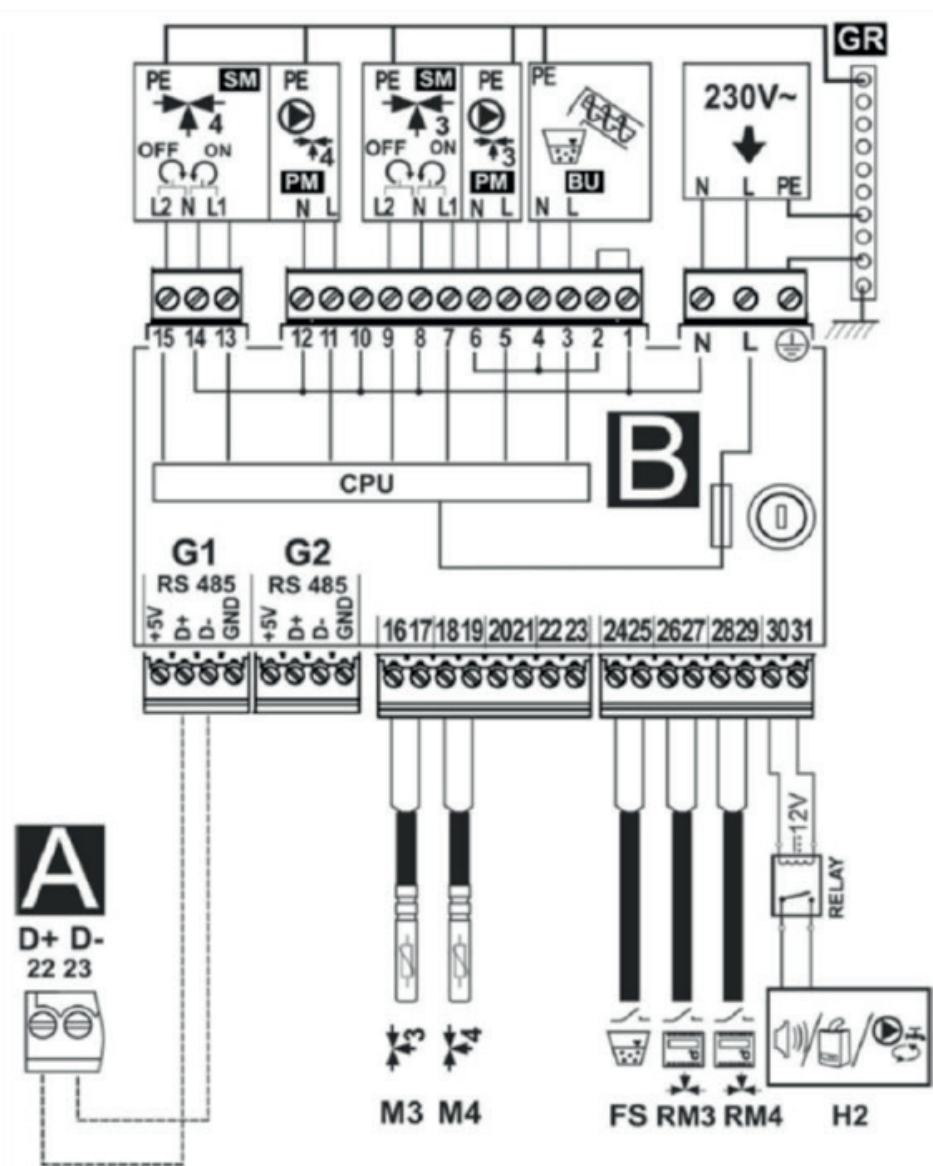
All pumps, mixer, relay, igniter, etc. are not included in the controller's equipment.

Electrical diagram of the boiler connection - KP-Multi



L N PE - 230V~ mains supply,
 1-2 - STB - input to the safety temperature limiter,
 3-4 - P1 - main feeder,
 5-6 - W1 - blower fan,
 7-8 - W2 - exhaust fan,
 9-10 - P2 - feeder 2 (in burner),
 11-13 - SM - mixer 1 actuator,
 14-15 - mixer pump 1,
 15-16 - CP - grate cleaning actuator,
 17-18 - C - circulation pump,
 18-19 - CO - boiler or buffer loading pump,
 20-21 - CW - DHW pump,
 21-22 - igniter,
 23-24 - λ, B - lambda probe module, module "B"/"C" for operating additional heating circuits,
 25-26 - BT - boiler temperature sensor type CT4,
 26-27 - FS - fuel feeder temperature sensor type CT4,
 28-29 - CWU - domestic hot water temperature sensor type CT4,
 29-30 - RS - temperature sensor of water returning to the boiler type CT4,
 31-32 - M1 - temperature sensor of the regulated mixer circuit type CT4,
 32-33 - BH - upper buffer temperature sensor type CT4,
 34-35 - BL - lower buffer temperature sensor type CT4,
 35-36 - OS - optical flame brightness sensor,
 37-38 - WS - weather temperature sensor type CT6-P,
 39-40 - FT - exhaust gas temperature sensor type CT2S,
 41-42 - RT - universal mixer thermostat (No-Nc),
 45-46 - DS - input to the fuel tank flap or door opening sensor,
 RT G3 - control panel and, in addition, a room panel

Electrical connection diagram - additional module B / C



Electrical connection diagram - additional module B / C, where::

L N PE - mains supply 230V~,

3-4 - BU - fuel feeder from the bunker to the boiler tank,

5-6 - PM - mixer pump 2

7-9 - SM - mixer actuator 2

11-12 - PM - mixer pump 3

13-15 - SM - mixer actuator 3

16-17 - temperature sensor of the regulated circuit (mixer 2) type CT4

18-19 - temperature sensor of the regulated circuit (mixer 3) type CT4

24-25 - fuel level sensor for operating the BU feeder,

26-27 - room thermostat for mixer 2

28-29 - room thermostat for mixer 3,

30-31 - H2 - voltage input for controlling the reserve boiler or for signaling alarms or for the hot water circulation pump,

A - controller KP-Multi

Connecting the boiler to the chimney (Installer)

Smoke pipes

The purpose of the smoke ducts is to reliably discharge exhaust gases outside and suck in air enabling fuel combustion. The chimney draft required for this depends on:

- temperature difference between hot exhaust gases and cold air,
- effective height of the chimney,
- chimney cross-section not less than 20 x 20 cm,
- the construction of the chimney (possibly smooth internal surfaces) and the tightness of the joints.

The effective height of the chimney is the height difference between the highest fireplace and the chimney exit. The effective height of individual chimneys must be at least 4 m, and of common chimneys for solid and liquid fuels, at least 5 m. The difference in height between two fireplaces cannot be greater than 6.5 m. In the case of sloping roofs, chimneys should end at the ridge (the highest edge of the roof), in the area of free wind flow. This prevents draft disturbances. Always pay attention to the position of the building in relation to other buildings.

Chimney selection

In most cases, an approximate method or selection according to the chimney manufacturer's diagrams is sufficient to select a chimney. In special cases (unfavorable pressure and temperature relationships, large volume of exhaust gases), chimneys are calculated in accordance with the applicable standard. Low exhaust gas temperature at the boiler's nominal power may result in the emission of wet flue gases, soot deposition, and insufficient chimney draft.

This may lead to moisture and corrosion of brick chimneys. It is recommended to use a chimney liner:

- in new buildings, a ceramic flue gas discharge system resistant to condensate, thermally insulated and with a condenser is recommended ,
- in existing buildings, it is recommended to modernize the brick chimney by using a single- or double-wall chimney system made of stainless steel (intended for solid fuel boilers).

Chopuch

The boiler is connected to the chimney by a flue and a smoke duct. A flue consists of pipes and fittings that are placed in rooms. Flues meet fire protection requirements for chimneys and are often made of the same material as the main chimney. Smoke ducts should be made of non-flammable products. The ducts or casing of smoke ducts should meet the requirements specified in the Polish Standard for fire tests of small chimneys. It is allowed to make the casing of 12 cm thick full brick, built on cement-lime mortar, with external plaster or grouting. Connectors should be as short as possible and placed with a slope towards the chimney to avoid heat loss and additional resistance. They cannot be led to other floors. Exhaust gas pipes should not be placed in rooms where fireplaces cannot be installed, and they should not be placed in walls or ceilings. Due to the low temperature of exhaust gases, acid-resistant or ceramic chimney inserts with condensate drainage to the sewage grate should be used to protect the chimney against moisture and reduce draft. A distance of at least 6 m should be maintained between the chimney and the nearest edge of the tree crown.

Starting the boiler (User | Installer)

ATTENTION!



The controller settings are freely adjustable due to the variety of existing central heating installations, the building's heat demand as well as the calorific value of the fuel. The user sets the boiler operating parameters himself. This activity is not subject to service.

Before lighting the fire in the boiler, check whether the installation has been carried out correctly and whether it is properly filled with water - until it is poured through the overflow pipe from the expansion vessel .

To fill the entire installation or fill gaps, the most suitable solution would be softened water/chemically treated water, distilled water or rainwater. In addition, check whether the self-cleaning pellet burner is cleaned of unburnt fuel, ash and slag from previous burning and whether ash has been removed from the ash pan.

During the lighting period, close all doors. After achieving a stable flame, switch the regulator to automatic operation, starting the automatic fuel feeder and fan.

Set the desired boiler operating temperature, usually 70-80 °C. From this moment, the boiler will operate automatically, according to the settings set by the user on the regulator, following the regulator's operating instructions intended for the user and attached to this manual.

Periodically check the burning process through the viewing door. Ash and slag from the burned fuel gradually fall into the ash container, causing the burner to self-clean. If a piece of slag gets stuck between the boiler wall and the burner, it should be removed with a grapple or a hook.

The regulator protects the boiler against: exceeding the permissible water temperature in the boiler, embers returning to the fuel feeder, and turns off the entire system in the event of lack of fuel.

There is a sensor on the feeder pipe that reacts when the flame returns from the burner to the feeder. In such a case, the fan is immediately turned on and the feeder (located in the burner) is started continuously and the feeder is stopped in the pipe feeding from the tank.

The boiler user should carefully read the operating instructions for the microprocessor regulator intended for the user.

When starting a cold boiler or for the first time, the phenomenon of „boiler sweating” may occur, giving the impression of a leak. In such a case, an intensive combustion process (70-80°C) should be carried out to dry and heat the boiler and the chimney for up to 2-3 days. .

To increase the life of the boiler, it is recommended to maintain the water temperature in the boiler at least 60 °C. In this situation, maintaining an appropriately low temperature in radiators in the autumn and spring period can be achieved, among others, by:

- correct selection of the boiler to the size of the rooms to be heated,
- using three- or four-way mixing valves, manually or automatically controlled, between the water supply and return.

Maintaining the continuity of the burning process requires periodic refilling of the tank with fuel. The frequency of refilling depends on the intensity of the burning process and should be determined individually based on experience.

On average, it is replenished every 1-3 days. Empty the ash container with the same frequency.

Lack of fuel causes the combustion process to permanently stop and requires re-ignition in the boiler.

To save fuel, keep the combustion chamber and boiler convection channels clean. In the combustion chamber, the walls and smoke tubes should be cleaned through the combustion and ash pan doors and the cleanout.

**ATTENTION!**

Remember to close the feeder cover tightly.

**ATTENTION!**

When opening the door, do not stand in front of the boiler, as it may cause burns.

Please remember this when using the boiler (User)

- the boiler may only be operated by adults who have read the operating instructions;
- children are prohibited from staying near the boiler without the presence of adults;
- if flammable gases or vapors enter the boiler room or during work during which there is an increased risk of fire or explosion (gluing, painting, etc.), the boiler should be turned off before starting the work;
- when cleaning carbon deposits in the burner or gutter, the boiler should be turned off („STOP” position);
- when adding fuel to the tank, the boiler should be turned off („STOP” position);
- flammable liquids must not be used to light the boiler, the boiler should ignite automatically (using an igniter);
- before cleaning the boiler, the device should be turned off („STOP” position) and cooled down;
- the boiler must not be overheated in any way during operation;
- flammable objects must not be placed on the boiler or in its immediate vicinity;
- when removing ash, flammable materials cannot be closer than 150 cm from the boiler;
- ash should be placed in heat-resistant dishes with a cover;
- when the boiler is operated at a temperature lower than 60°C, condensation of the steel exchanger may occur and thus cause corrosion as a result of the low temperature, which shortens the life of the exchanger; therefore, the temperature during boiler operation must be at least 60°C;
- after the end of the heating season, the boiler and the smoke duct should be thoroughly cleaned;
- the boiler room should be kept clean and dry.

**ATTENTION!**

The product is not intended for use by persons with reduced physical/mental capabilities or lack of experience and knowledge, unless these persons are supervised or instructed by a person responsible for their safety.

**ATTENTION!**

Any independent interference in the electronics or the structure of the boiler is prohibited.

Cleaning and maintenance (User)



ATTENTION!

The boiler can only be cleaned with the device disconnected from the electrical network.

To save fuel, keep the combustion chamber and boiler convection channels clean. In the combustion chamber, clean the walls and shelves through the cleaning and inspection doors. The boiler exchanger and ash pan are also regularly cleaned. Cleaning should be done using wire brushes on extension cords. The above activities should be performed during periodic boiler shutdown, preferably every 100 hours of boiler operation. The boiler should be thoroughly cleaned once a month.

Instructions for decommissioning the boiler after its service life has expired (User)

Before scrapping the boiler, disconnect all electronic components from it. They are disposed of in accordance with the European Directive 2002/96/EC concerning the consumption of electronic and electrical equipment. For proper disposal, please contact the manufacturer of electronic components in accordance with the above-mentioned European Directive. Steel elements from which the boiler is made should be scrapped in designated places (scrap collection).



ATTENTION!

A used boiler intended for scrapping and its components should not be disposed of with general waste.

Spare parts list (User | Installer)

Spare parts	Article
Sensors	boiler sensor, Feeder sensor, DHW sensor
Drivers	KP-Multi regulator
Fans	WPA 097 fan RMS-108, RMS 120 fan
Igniter	300W igniter
Probe	Lambda Sensor Kit, Lambda Sensor Sleeve
Feeder	Burner feeder screw, Hopper feeder
Instrumentation	rubber grommet,, Revision seal Flap seal Gasket for the feeder,, Door handle

Failure Report (User)



ATTENTION!

In the case of an unjustified service call, the customer covers the cost of labor



TIP!

Online application: <https://kensol.pl/pl/reports>



TIP!

Support: +48 603 909 013

EC/EU declaration of conformity

Producer:

METAL-FACH Technika Grzewcza Sp. z o. o
Street Sikorskiego 66
16-100 Sokółka
NIP 545-182-60-12

Product name and purpose:

Steel central heating boiler for solid fuel with automatic fuel charging.

Type: SVAROG ECOPELLET

Factory number:

Year of production:

The above-mentioned subject matter of this EU declaration of conformity is in compliance with the relevant requirements of EU harmonization legislation .

Reference documents:

1. Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery
2. Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to electromagnetic compatibility
3. Directive 2014/68/EU of the European Parliament and of the Council of 15 May 2014 on the harmonization of the laws of the Member States relating to the making available on the market of pressure equipment
4. Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits
5. Commission Regulation (EU) No 2015/1189
Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 laying down general principles for establishing ecodesign requirements for energy-related products
6. Commission Regulation (EU) No 2015/1187
Directive 2010/30/EU of the European Parliament and of the Council of 19 May 2010 on the indication by labeling and standard product information of the consumption of energy and other resources by energy-related products
7. Commission Regulation (EU) No 2015/863 (ROSHIII)
Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment
8. Regulation E (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006

Technical documentation:

1. Standard PN EN 303-5+A1:2023-5 Solid fuel heating boilers with manual and automatic fuel charging with a nominal power of up to 500 kW.
2. PN EN 1708-1:2020 Welding Basic solutions for steel welded joints Part 1. Pressure elements.
3. PN EN 60335-1 2012 Household and similar electrical appliances Safety in use Part 1: General requirements.
4. PN EN 60335-2-102 2006/A1:2010 - Household and similar electrical appliances - Safety in use - Part 2-102: Particular requirements for appliances burning gas, oil and solid fuels and having electrical connections.
5. PN EN 61000-6-2:2008 Electromagnetic compatibility (EMC) - Part 6-2: General standards - Immunity in industrial environments.

6. PN EN 61000-6-3:2008/A1:2012 Electromagnetic compatibility (EMC) - Part 6-3. General Standards -- Emission standard for residential, commercial and light industrial environments.
7. PN-EN IEC 63000:2019-01 Technical documentation for the assessment of electrical and electronic products with regard to the limitation of hazardous substances.

This declaration of conformity is issued under the sole responsibility of the manufacturer.

The product is marked with the following symbols:

Place and date:



Sokolka, 05/2024

Approvers:

President of the
Management Board:
Jacek Kucharewicz

Handwritten signature of Jacek Kucharewicz in blue ink. To the right of the signature is a black rectangular stamp with the text "PREZES ZARZADU" in white capital letters. Below the stamp, the name "Jacek Kucharewicz" is printed in a smaller font.

Production director
(Person authorized to prepare
technical documentation):
Eliasz Kasperuk

Handwritten signature of Eliasz Kasperuk in blue ink. To the left of the signature is a black rectangular stamp with the letters "MF" in white. To the right of the signature is a black rectangular stamp with the text "DYREKTOR PRODUKCJI" in white capital letters. Below the stamp, the name "Eliasz Kasperuk" is printed in a smaller font.



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