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INSTRUCTIONS FOR USE

of the Prefabricated

Accumulative Fireplace

PKA 250 L 45 x 33 GD

FREE-STANDING ACCUMULATIVE WOODSTOVE

in a **hybrid version** for burning wood gas generated from pellets or burning firewood

The device complies with the PN-EN 15250:2009 standard

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1) DEVICE PURPOSE

The accumulative space heater is designed to heat a specific area of one room in a building (e.g. a combined living room, dining room and kitchen, continuously for a period of 8-12 hours. With a typical heat demand of a modern building (approximately 20 W/m2), due to the size of a single fuel load specified by the manufacturer 3.8 kg of pellets or, in the hybrid version, alternatively 4.5 kg of firewood/wood briquettes and generating 16 kWh of energy heating, the device is intended for direct stable and sustainable heating of:

- in a period of 8 hours - approx. 100 m2
- within a period of 12 hours - approx. 70 m2,

depending on the outside temperature and building type.

2) CONSTRUCTION/INSTALLATION

The device must be installed in accordance with the Installation Instructions provided by the Manufacturer. The installation and commissioning of the device, as well as training in its proper operation and use, should be entrusted to a craftsman with confirmed professional qualifications or to a contractor with a Certificate or recommendation from the Manufacturer. If the user installs the device themselves or has it installed by other contractors, to obtain a warranty for safe use and fulfill the conditions of the warranty issued by the Manufacturer, they must obtain confirmation of the correctness of the device installation from a person authorized by the Manufacturer, e.g. a local Master of Masonry or a Master Chimney Sweep, and in this way obtain permission to use the device. This fact must be confirmed in the designated place on the Warranty Card issued by the Manufacturer.

3) FUEL APPLICATION / LOADING

a. Loading with pellets

The pellet used to load the device must be labelled Class A 1 (compliant with the PN-EN ISO 17225-2 standard). It is recommended that the pellet used (6 mm) comes from a pellet manufacturer recommended by the device manufacturer and is of a quality that allows to meet the conditions needed for its gasification in the generator device located under the wood gas burner. The burner is placed above the generator chamber behind the glass door of the combustion chamber, in the part of the heating device that transfers heat directly to the surroundings.

The loading size is determined by the technical conditions of the device presented in the Technical Data Sheet. For PKA 250L it is 3.8 kg of pellets loaded manually (with the supplied shovel) up to the height of the notches in the internal burner column. Loading must be periodic only, i.e. subsequent loading may only take place after the previous burning cycle has been completely completed, i.e. after the hearth has gone out and the embers have burned to ashes on the grate at the bottom of the generator chamber. You cannot make a new charge of pellets if the grate has not been thoroughly cleaned of ash residues with the included wire brush. It is recommended to check whether the holes in the grate are completely unblocked. This can be done by turning the middle, lower burner to the right and lifting the grate. If the grate holes are blocked and require additional cleaning, they should be pulled outside (if its structure allows it).

Under no circumstances should partial recharges be made while burning (there is a risk of a gas explosion) and the loading door must not be opened before the generator has been completely extinguished and the combustion cycle is completed. After completing the pellet gasification and wood gas combustion process, wait at least 1 hour for the temperature drop of the generator, burner and combustion chamber to drop. Accumulation heaters require some time to radiate the accumulated thermal energy and cool down before their next heating cycle. The natural and typical period between charging cycles is 8-12 hours. If we want to shorten this period due to the necessary heating of an excessively cold room, it should be done approximately 1 hour after the completion of the previous burning cycle, to prevent excessive overheating of the external heating surfaces of the device.

b. **Loading of the wood**

In the hybrid appliance, optionally **wood biomass can be burned as fuel** in the form of **small pieces of wood** (less than 7 cm in diameter and up to 33 cm in length) or **wood briquettes.** The loading size should be approximately 4.5 kg. The wood must be dry - below 20%, and preferably around 16% moisture. The typical wood loading interval should be 8-12 hours. If we want to burn more often than every 8 hours, e.g. every hour, the size of a single batch/load of wood or briquettes must be **reduced by half**. The number of additional loads should be such as not to overheat the external surfaces of the device.

4) ADJUSTMENT – CHOICE OF BURNING METHOD: GAS or optionally WOOD

The handle of the air supply regulator for pellet gasification and wood gas combustion is located in front of the glass loading door on the LEFT side (marked with the letter **G**), and the handle for the regulator for burning lump wood/briquettes is located on the RIGHT side (marked with the letter **W**). The direction of opening or closing the air flow is illustrated by the cutouts in the regulator handle (smaller or larger air supply). Before loading pellets for gasification and burning with wood gas, you should OPEN the air flow on the left pull rod (G) by moving it to the right, and at the same time CLOSE the air flow on the right pull rod (W) by moving it to the left. When burning wood, do the opposite (see Figure 1).

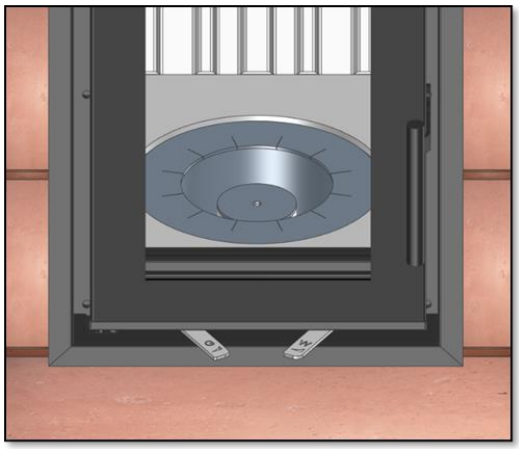


Fig.1 Setting of regulators when choosing combustion of wood gas generated from pellets

NOTE: After completing the burning cycle, cut off the air supply by setting both rods in the closed position, i.e. both to the left (see Figure 2). If the device is optionally equipped with an automatic air supply controller, this operation will be performed by the controller. Do not close the air supply before the ember on the grate of the generator chamber has completely extinguished.

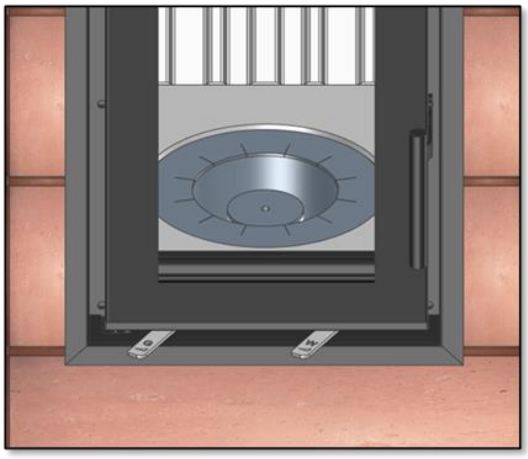


Fig.2 Setting of regulators after closing the air supply

5) SEQUENCE OF OPERATIONS FOR THE FIRING CYCLE WITH GAS GENERATED FROM PELLET

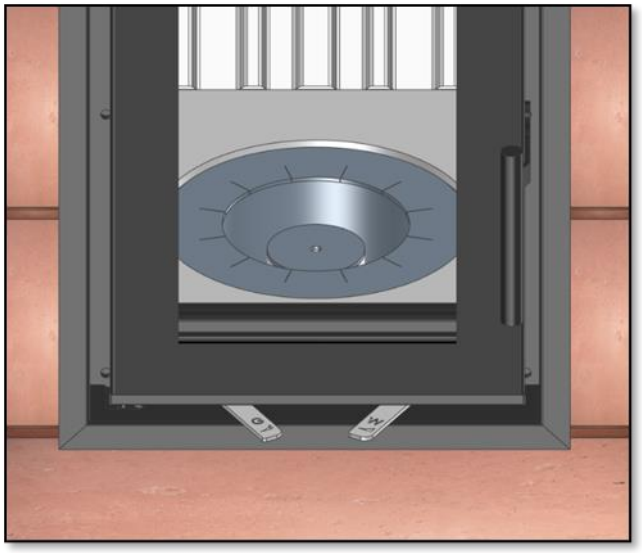


Fig.3 Setting of regulators when choosing to born wood gas generated from pellets

When selecting the PELLET AND WOOD GAS BURNING option, after properly setting the air supply handles (see Figure 3), you should:

a. Open the glass loading door and use the included wire brush to thoroughly **clean the grate** located at the bottom of the gas generator so that the grate cutouts are completely unobstructed. For easier cleaning of the grate, you can remove the inner burner column by turning it fully to the left. After thoroughly cleaning the grate, replace the internal burner column. To check and see if the grate has been properly cleaned, you can turn the inner burner column fully to the right and lift it along with the grate. The incomplete cleaning of the grate reduces the airflow, resulting in incomplete gasification. This can lead to disturbances and even the impossibility of proper gasification, necessitating the cumbersome removal of ungasified wood charcoal

   NOTE: when the device is still too hot, use the included protective glove when cleaning the grate before loading pellets again.

b. Using the included shovel, **fill the gas generator chamber with pellets** to the full height, i.e. to the height directly below the holes (slits) supplying air to the burner located in the combustion chamber of the device. Pellet grains scattered around the burner during feeding can be scraped into the generator chamber with a wire brush. When loading pellets, which is 3.8 kg for the PKA 250 L type, one 15 kg bag of pellets should be enough for 4 loadings, i.e. for 4 burning cycles and four 8-12 hour typical heating periods, appropriate for the heated surface of this type and the size of the accumulative heater.

   NOTE: Just as traditional heat storage tiled stoves were typically burned EVERY DAY as the primary and main source of heat, modern accumulative space heaters made of a new generation of refractory materials (Akubet) will also provide the highest thermal and operational comfort even when burned daily. In this way, a specific area of the house, previously usually heated by convection with fossil fuels, will now be heated with the healthiest heat by infrared radiation, obtained from

climate-neutral wood biomass (RES), which also ensures the lowest heating costs and full independence from the electricity supply. Comfort of operation - an average of 5 minutes for loading and many hours of maintenance-free heating period, determine and in practice enable the use of this type of appliance every day as the primary heat source.

c. **Initiate the process of pellet gasification and wood gas combustion** by pouring grill lighter/ethanol (poured into the included container - a bottle with a measuring cup) over the top surface of the pellet and ignite it with a lighter with a longer tip (so as not to burn yourself). You should use approximately one measuring cup of the ignition liquid bottle (you can purchase larger amounts of liquid ignition from the device manufacturer).

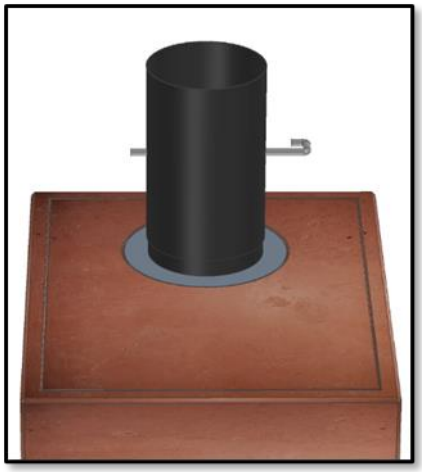
d. If the device is equipped with an electronic automatic air supply controller, after initiating combustion, turn it on/check its operation.

e. If the device, following the traditional technology used in fireplaces, has been equipped by the installer with a chimney damper (with a cutout), you should open the full passage of smoke to the chimney by setting the damper handle in the vertical position.

The chimney damper handle set in the vertical position – for full passage of exhaust gases to the chimney (in the initial phase of fireplace ignition)

f. **Close the loading door and monitor** through the door glass the initiation of the gasification process of the upper/visible layer of pellets and the appearance of the first flames of burning wood gas. After a few minutes - with proper chimney draft and proper air supply (primary air) for gasification and (secondary air) for combustion of the produced wood gas, the flames of the light yellow fire should increase more and more until they reach (after heating the combustion chamber) their full height under the limiting deflector height of the combustion chamber.

g. After heating the firebox and reaching full flame height ‘under the deflector’, in a device equipped with a chimney damper, you should restrict the passage of exhaust gases to the chimney by turning the damper handle to the horizontal position.



The handle of the chimney damper is set in a horizontal position, limiting the passage of exhaust gases into the chimney (after heating the combustion chamber and maximizing flame expansion).

h. If, after the firebox has heated up, the draft and combustion rate increase excessively (there may be audible effects), reduce the air supply by moving the left handle of regulator ‘G’ to the left, but by no more than half the range of movement.

i. After approximately 1.5 hours the high yellow flames of the fire characterizing the combustion phase of the gas produced from the gasification of wood biomass - pellets, will begin to decrease, turning into shorter, blue flames characterizing the transition of the generator to the charcoal gasification phase. In the first period, during the gasification of wood biomass - pellets, charcoal is created in the generator chamber, which is then further gasified, and the resulting syngas burns, giving the effect of characteristic blue, shorter fire flames. At the end of the gasification process and after the flames of the burning gas disappear (after about 3 hours), on the grate at the bottom of the generator chamber, we can see a thin layer of red embers, which quickly burns and goes out, and it becomes dark inside the generator chamber.

j. When there are no more ember particles at the bottom of the grate, the burning process should be considered completed and it is necessary to CLOSE THE AIR SUPPLY to the device.

NOTE: in the case of the automatic controller, check whether it has also cut off the air supply at this moment if not, contact the installer to correct and adapt its operation to the chimney and the conditions in which the device is installed.

k. **Do not open the loading door** during the pellet gasification and wood gas combustion process, i.e. **before closing/cutting off the air supply**. During the entire 8-12 hour heating period, the air supply to the device must remain closed/cut off, otherwise it will cool down too quickly and the accumulated heat will escape into the chimney.

l. If the chimney draft is too high, when the length of the flames is too high and they wrap around the deflector, the air flow to the gas generator should be gradually reduced, until the correct flame height is obtained (the flames should end directly below the deflector). Too much reduction/closing of the air supply may result in disruption of the charcoal gasification phase, which will result in an excessive reduction in the intensity of the "blue flame" phase, i.e. combustion of gas produced from charcoal.

m. In unfavorable weather conditions or too low draft, do not reduce the air supply and leave it in the maximum open position.

n. If immediately after initiating the pellet gasification process (burning out the kindling), the yellow flame does not develop to the height "under the deflector" or after a few or a dozen or so minutes it decreases or even disappears, it means that the primary air is not getting through the grate in the correct way. the amount necessary to gasify the pellets (e.g. dirty grate, improperly set regulators, lack of draft in the chimney, defective pellets, etc.). In such a case, leave the device with the air supply open until it naturally goes out and cools down (usually until the next day). You should then remove the pellets from the device with a fireplace vacuum cleaner or otherwise, e.g. by pulling out the internal burner and throwing the pellets into the chamber under the grate.

o. If the internal glass in the loading door is dirty, it is usually enough (after it has cooled down) to wipe it with a paper towel moistened with water or, if that does not help, with ethanol used as starter.

p. In the lowest part of the PKA heater, behind a decorative grille, there are doors to **the drawers for the ash** tray. When cleaning the gas generator grate, a small amount of ash falls into a container/drawer which should be emptied after filling. To do this, open the ash door and remove the ash drawer. This is usually necessary after approximately 40 burning cycles - which also depends on the type of pellet. If the container is hot, use the protective glove provided by the manufacturer. The ashes can be scattered in the garden or poured into an appropriate container (made of metal or other fire-resistant material). Place the empty drawer back under the grate, close the ash door tightly and install the decorative grille.

6) SEQUENCE OF OPERATIONS FOR OPTIONAL WOOD BURNING

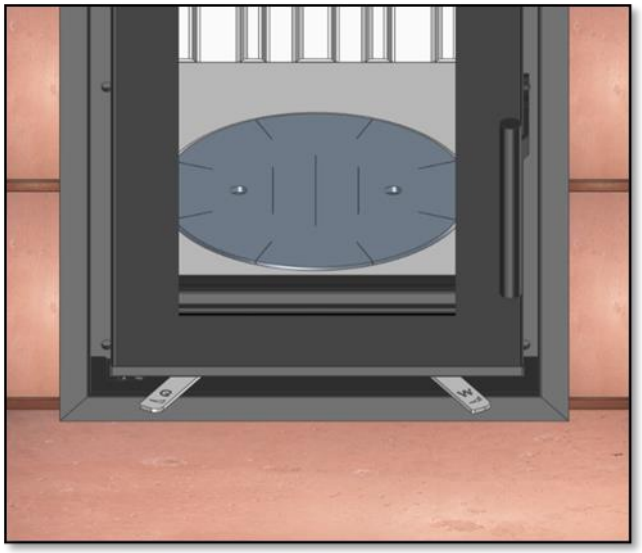


Fig.4 Setting regulators when choosing to burn wood logs

a. Select the position for burning wood on the handles of the air regulator rods (handle **W** moved to the right and handle **G** moved to the left), i.e. an open, full air supply for burning wood in the combustion chamber and a closed air supply to the pellet gas generator.

   NOTE: In the non-hybrid version of the device - i.e. intended only for burning wood or only for burning wood gas generated from pellets - the device has only one handle of the cable regulating the combustion air supply, which must be set in the appropriate position.

b. **Cover/close** the gas burner with the steel (in the hybrid device version) with the cover provided by the Manufacturer to prevent ash from burning wood from falling into the generator chamber

c. Then, just like when burning wood in a stove or fireplace, after opening the loading door, insert the appropriate amount of wood for this type of PKA (4.5 kg) and arrange it loosely enough to leave free spaces between the logs/branches/briquettes. for the air flow, which will flow onto them "from above", flowing out from the gap above the door and the gaps in the side walls of the firebox.

d. Place solid kindling under the upper layer of finely cut wood and light it with a match or lighter. This will be the so-called "firing from the top".

e. If the device, following the traditional technology used in fireplaces, has been equipped by the installer with a chimney damper (with a cutout), you should open the full passage of smoke to the chimney by setting the damper handle in the vertical position.

f. You should close the loading doors and not open them until the combustion process is complete. It is necessary **to check** through the glass loading door whether the ignited kindling ignited pieces of wood (briquet), whether they started the combustion process and whether the fire began to spread to other pieces of wood/briquettes. If the kindling burnt out and the fire did not spread to the wood mass, check whether there is an air supply for combustion (and in the device equipped with an automatic air supply regulator - whether it has been activated and opened to 100%). If not, put more kindling back in and re-light it.

g. **Do not open the loading door** while the portion of loaded wood is burning and do not make additional partial loads of wood (briquet) during this burning period. The device has been secured by the Manufacturer in such a way that unauthorized opening of the door during the burning cycle will cause discomfort, "smelling" the room and the release of compounds generated during the wood burning phase (and even triggering an electronic carbon monoxide detector). Then it is then necessary to ventilate the room.

h. After heating the firebox and reaching full flame height ‘under the deflector’, in a device equipped with a chimney damper, you should restrict the passage of exhaust gases to the chimney by turning the damper handle to the horizontal position.

i. If, after the firebox has heated up, the draft and combustion rate increase excessively (there may be audible effects), reduce the air supply by moving the left handle of regulator ‘G’ to the left, but by no more than half the range of movement.

j. If the internal glass in the loading door is dirty, it is usually enough (after it has cooled down) to wipe it with a paper towel moistened with water or, if that does not help, with ethanol used as starter.

k. To remove ash from the fireplace, do so only when an excessive amount has accumulated (above the lower door frame) using a metal fireplace shovel. Leave a thin layer of ash, known as the ‘ash bed.’ You can use a specialized fireplace vacuum cleaner if the ash in the fireplace is completely extinguished.

l. The next loading, typical for this type of accumulative appliance, should take place only after 8-12 hours. If, due to the need to achieve thermal comfort faster, this period must be shortened, it is necessary to reduce the size of the next fuel charge **by half.** Failure to follow this rule in accumulative heaters may risk of damage to the device and the chimney. Next refill of wood/briquettes cannot take place while the fire flames are burning or when the embers in the fireplace are still very hot and bright red (if the appliance has been equipped with a damper, it must be opened before opening the door).

m. It is recommended that, for maintaining high thermal and operational comfort, the device, as a typical storage heater, should be used **daily**, similar to how traditional room stoves have been used for centuries for basic room heating. Our accumulation fireplace, despite

small fuel loads, should be used similarly to traditional small room stoves – that is, daily. With this usage pattern, it will provide the highest comfort of operation and the most cost-effective, as well as stable heating – independent of weather conditions and electricity supply. This way, it will economically achieve climate goals and produce clean and climate-neutral thermal energy – approximately 7-11 MWh annually. It will also guarantee emissions from wood combustion at levels significantly lower than the limit requirements of the Ecodesign. Additionally, by operating without electricity, it reduces electricity consumption, resulting in a smaller carbon footprint, especially when electricity is primarily generated today from coal or other fossil fuels.

7) ADDITIONAL INFORMATION

a. All activities and behaviors related to the operation of the device described above in the Manual should be communicated directly to the future user by an **authorized contractor/installer**, first verbally, and then demonstrated by practical firing of the device. After a practical presentation of how to operate the device and burn it, its future user should, under the supervision and presence of the contractor/installer, repeat all the activities related to starting the burning process. It is extremely important, especially when burning gas generated from pellets, because it is an innovative technology not yet as popular as burning wood in fireplaces. Only after this "training" of the future user has been completed, the Installer can make an entry in the Warranty Card authorizing the device to be put into use and to benefit from the Manufacturer's Warranty.

b. When using the device, **general health and safety and fire protection rules** must be followed.

c. In the PKA type intended for burning only **woody biomass – wood logs**, the provisions of this Manual must be observed - taking into account differences in the provisions regarding the rules and conditions for burning wood gas generated from wood pellets.

d. It is **prohibited** to burn waste and non-recommended fuels, including liquid fuels.

e. When loading piece wood, do not use mechanical exhaust ventilation. It is recommended to use Smartflow **chimney caps** that stabilize the chimney draft and protect against violent gusts and unfavorable weather conditions.

f. If the external parts of the device are hot to the touch during use, exercise caution (Do not touch hot surfaces, e.g. glass).

g. The high-temperature external surfaces of the device **must not be rapidly cooled**, e.g. by excessively intensive ventilation of the room with cold air.

h. If soot ignites in an uncleaned chimney and causes a fire, close the air supply to the fireplace, do not open the fireplace door, evacuate people from the endangered rooms and call the Fire Brigade. After extinguishing the fire in the chimney, before continuing to operate the stove, it is recommended that the technical condition of the chimney be checked by a specialist - a **chimney sweeper**. Maintain chimney inspection and cleaning periods in accordance with applicable regulations regarding chimneys

i. Any modification of the device is not allowed. Use spare parts only from the manufacturer.

j. The device is not suitable for installation in a common chimney system (chimney with multiple connections).

THE DECLARATION OF PERFORMANCE

PKA 250L 45x33 GD – for wood gas generated from pellets

Essential characteristics		Performance properties		Harmonized technical Specification
Values measured in accumulation mode with periodic feeding of pellets				**PN-EN 15250:2009, Commission regulation (EU) 2015/1185**
Weight of the complete device / Weight of storage modules		kg	580	
Nominal thermal output of the device		kW	8,7	
Pellet loading weight		kg	3,8	
Average consumption per hour		kg/h	2,04	
Useful heating output in a 12-hour cycle		kW/12h	1,39	
Efficiency		%	89,2	
Flue gas mass flow		g/s	9,1	
Chimney draft required		Pa	12	
Temp. exhaust gases at the device outlet at nominal output		°C	128,4	
Minimum air inlet diameter Ø		mm	100	
The total amount of heat accumulated by the heater		kJ	60 040	
Heating period		h	11,87	
Distances from flammable materials:				
Heating walls		cm	100	
Firebox windows		cm	100	
Operating tools (maximum temperature increases)				
Door handle*		K	23,2	
Combustion regulator handles (metal)		K	15,1	
Emission:				
CO	mg/Nm$^{3/}$ 13% O_2	197	%	0,016
NO_x (PN-EN 16510-1:2018-08)	mg/Nm$^{3/}$ 13% O_2	95		
OGC (PN-EN 16510-1:2018-08)	mg/Nm$^{3/}$ 13% O_2	8		
PM dust (PN-EN 16510-1:2018-08)	mg/Nm$^{3/}$ 13% O_2	9		
The device meets the PN-EN 15544:2009 standard and emission requirements: European Commission Ecodesign (Commission Regulation (EU) 2015/1185); BImSchV (Stuff 2); 15a BVG (2015); LRV; Conto termico 5 stars				

* The manufacturer provides tools to ensure safe touching of operating devices

The performance properties of the product are consistent with the set of values declared in point 7. This declaration of performance is issued in accordance with Regulation (EU) No. 305/2011 under the sole responsibility of the manufacturer identified in point 3

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EKO PIECOKOMINKI

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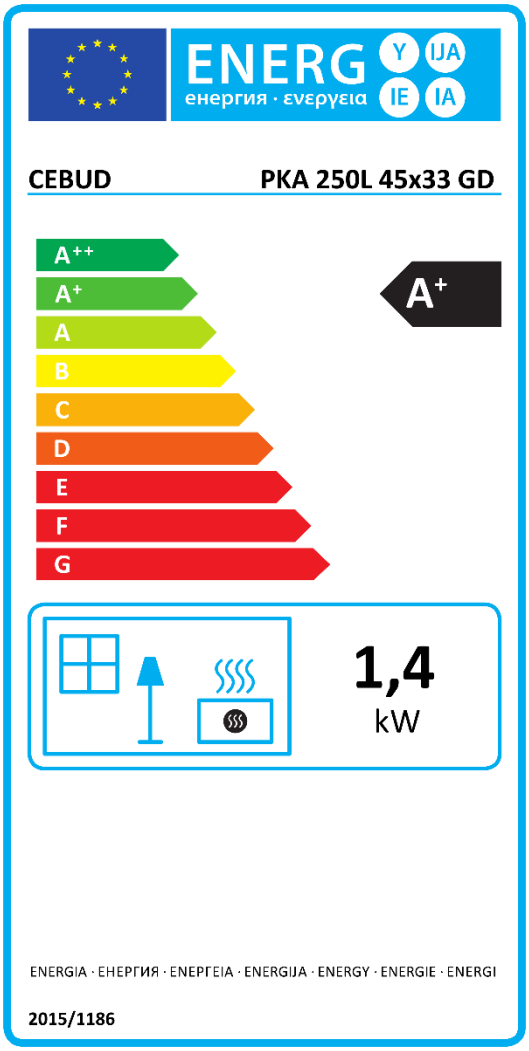
PN-EN 15250:2009
Slow heat release appliance fired by solid fuel
PKA 250L 45x33 GD

Minimum distance to adjacent combustible materials Front/side	100 cm
Emission in combustion products	
Carbon monoxide emission	0,016 %
NO_x emission	95 mg/m³
Hydrocarbon emission	8 mg/m³
Particulate matter emission	9 mg/m³
Flue gas temperature	128,4 °C
Efficiency	89,2 %
Space heating output in 12h cycle	1,39 kW
Pellet loading weight	3,8 kg

Thermal storage capacity

100 % Peak of	50 % Peak of	25 % Peak of
after 3,33 h	8,67 h	11,87 h

Fuel types: wood pellets



THE DECLARATION OF PERFORMANCE

PKA 250L 45x33 – for wood biomass

Essential characteristics				Performance properties	Harmonized technical Specification
Values measured in accumulation mode with periodic feeding of pellets					PN-EN 15250:2009, Commission Regulation (EU) 2015/1185
Weight of the complete device / Weight of storage modules				kg 580	
Nominal thermal output of the device				kW 22,2	
Wood loading weight				kg 4,5	
Average consumption per hour				kg/h 6	
Useful heating output in a 12-hour cycle				kW/12h 1,39	
Efficiency				% 82,5	
Flue gas mass flow				g/s 23,1	
Chimney draft required				Pa 12	
Temp. exhaust gases at the device outlet at nominal output				°C 197,1	
Minimum air inlet diameter Ø				mm 100	
The total amount of heat accumulated by the heater				kJ 59 940	
Heating period				h 13,35	
Distances from flammable materials:					
Heating walls				cm 100	
Firebox windows				cm 100	
Operating tools (maximum temperature increases)					
Door handle*				K 28,9	
Combustion regulator handles (metal)				K 21,1	
Emission:					
CO	mg/Nm$^{3/}$ 13% O_2	1007	%	0,0810	
NO_x (PN-EN 16510-1:2018-08)	mg/Nm$^{3/}$ 13% O_2	149			
OGC (PN-EN 16510-1:2018-08)	mg/Nm$^{3/}$ 13% O_2	108			
PM dust (PN-EN 16510-1:2018-08)	mg/Nm$^{3/}$ 13% O_2	25			
The device meets the PN-EN 15544:2009 standard and emission requirements: European Commission Ecodesign (Commission Regulation (EU) 2015/1185); BImSchV (Stuff 2); 15a BVG (2015); LRV					

* The manufacturer provides tools to ensure safe touching of operating devices

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PN-EN 15250:2009
Slow heat release appliance fired by solid fuel
PKA 250L 45x33

Minimum distance to adjacent combustible materials Front/side	100 cm
Emission in combustion products	
Carbon monoxide emission	0,081 %
NO_x emission	149 mg/m³
Hydrocarbon emission	108 mg/m³
Particulate matter emission	25 mg/m³
Flue gas temperature	197,1 °C
Efficiency	82,5 %
Space heating output in 12h cycle	1,39 kW
Wood loading weight	4,5 kg

Thermal storage capacity

100 % Peak of	50 % Peak of	25 % Peak of
after 4,18 h	9,35 h	13,35 h

Fuel types: wood logs