Rocket heater „GAMERA 7 H_2O“

Hyper-efficient wood stove with boiler

Producer: AGNON LTD,Bulgaria

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TECHNICAL DESCRIPTION

WARNING!

Before use read these instructions carefully!

(Better read it once now, rather than looking for it if a trouble happens)

TECHNICAL SPECIFICATIONS

- Material: Steel, Vermiculite, fire grade concrete
- Finish: Cast Gray paint
- Fuel: Wood, eco briquettes
- Fuel length, max: 40 cm
- Fuel diameter, max: 7 cm
- Burn time: 45-90 min.
- Fuel outlet: Bottom back (optional left/right)
- Flue pipe dimension: Ø150mm/153 cm^2 cross section
- Dimensions (HxWxD): 98/52/70cm
- Water system connection: 3/4 inch male
- Cold water entrance: 37cm from the ground
- Hot water exit: 92cm from the ground
- Weight: 150 kg
- Shipping weight: 175 kg.
- Shipping dimensions: 115/60/80 cm.
- Warranty: 2 years

Technical data according to EN 13240

Nominal dry heat output: 24 000 BTUs (7 kW)

Boiler power output: 24 000 BTUs (7kW)

Heating area: ~100m^2

Heating volume: ~230m^3

Efficiency: 89,3%

Output water temperature: 50-65^o C

CO emission (13% O_2): 0,0298%

Flue gas temperature: 139,7° C

Recommended chimney draught: 12Pa

Flue gas mass flow: 8,23 g/s

Operational type: Intermittent

TECHNICAL DESCRIPTION

The highly efficient rocket heater Gamera is intended for heating of private houses and public premises using solid fuel. The indicated heat power have been fixed after investigations according to standardized conditions. Achieving the desired power depends on the selected fuel with the necessary caloricity and humidity; its subsequent kindling and refueling; the regulation of the primary air; the organizing of effective air heat exchange etc.

Gamera H2O are made of basic sheet iron for the body, 1,5 mm thick, and 5 mm for the top plates. Burning chamber is made of 30 mm thick vermiculite plates with 950 kg/m^3 density. The fireboxes is made out of fire grade concrete and have a door with thermo shock glass ceramics.

For calculating the necessary power, it must be taken into account that for the heating of one cubic meter, 25 to 180 Watts are necessary, depending on the exposure, the insulation, the outside temperature and the wind. It is known that the correlation between the price and the caloricity of the chosen fuel indicates that the heating with solid fuel is the most economical method.

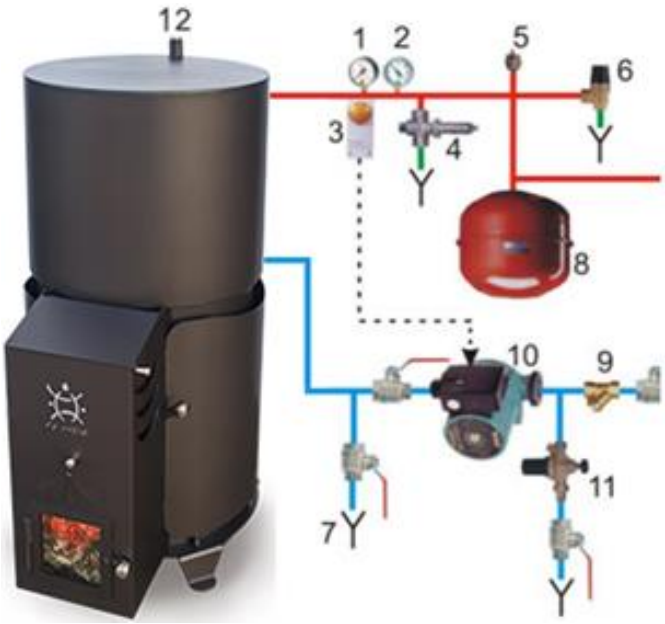
INSTALLATION INSTRUCTIONS

When installing the product, all local laws and regulations must be complied, including those relating with national or European standards. The heater is placed on a stable horizontal fireproof floor with enough carrying capacity. For protecting the floor a stable and fireproof base can be used, which
shall stick out before the heater at least 30cm in front and 5cm at the side.
In the radiating area of the heater, at a distance of 70cm in front and 50cm around it there shall not be any objects burnable and damageable by the radiated heat.
Prior to connect (Before connecting) the fireplace to the chimney, consult a skilled worker.
The connecting elements (rosette and smoking pipes) shall be fixed tightly and lasting, so that they may not get into (enter) the passage section of the chimney.
The smoking pipes shall have the same size as the connecting pipe of the fireplace.
It is advisable that the heater work with a separate chimney. If other heating appliances are connected to the same chimney, it shall be calculated for that.
Fresh air shall enter (get in) the fireplace at least 4 m3/h for each kilowatt from its heat output. When necessary a flow from adjacent premises or outside air is
ensured.
The burning process of the heater shall not feel shortage of air on the action of gravitational or forced aspirations, since this is a prerequisite for
insufficient combustion or returning of flue gases in the premises.
Ensure that air vents in the room where the fireplace is located are not blocked!
Avoid using mechanical fan vents in a room with a fireplace.
This may cause negative pressure and draw poisonous gasses into the room.

GENERAL RULES AND RECOMMENDATIONS

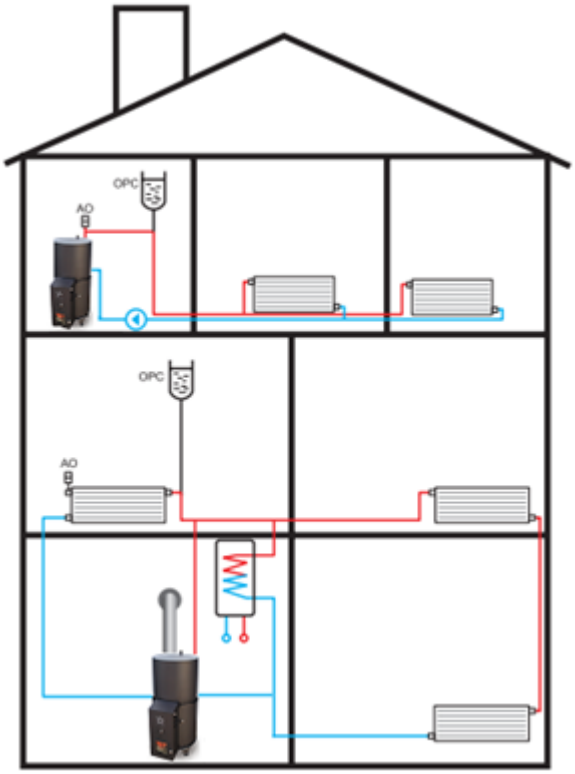
1. Before the installation building, it is recommended the heat losses to be calculated by a specialist for the concrete case.
2. We recommend the fireplace to be connected to an open heating system. When connected in a closed system, it must be safeguarded (foolproof) with a
   safety hydraulic valve, set at 2 bar.
3. De-aeration of each branch and element of the installation in each moment of its operation has to be ensured.
4. All elements of the installation must be ensured against freezing, especially if the expansion vessel or other parts of it are located in non-heated premises.
5. In the installations with forced circulation the pump must be provided with UPS - an accumulator with a transducer 12 V/220/V50 Hz on autonomous regime.
   It is recommended that the circulation pump be switched on and off by a thermostat, duplicated with a manual electrical switch.
6. The first service cleaning of the pump filter must be done immediately after testing the installation.
7. If an old installation is used, then it shall be repeatedly sluiced to remove the accumulated (lodged) residue, which would precipitate on the surfaces of the water jacket.
8. Coal with increased sulfur content must not be used and don't allow the coal get wet.
9. Fresh and wet wood or vegetation shall not be used. The logs shall be stored at least two years in a dry and airy place.
10. The circulating water shall not be drained out during the non-heating season.

EXAMPLE FOR GAMERA H2O IN A PRESSURISED SYSTEM



1. Manometer
2. Thermometer 120° C.
3. Electric(al) thermostat.
4. Thermal safety valve.
5. Automatic deaerator.
6. Safety hydraulic valve 1,5 bar.
7. Drainage, draining.
8. Closed expansion vessel.
9. Filter.
10. Circulation pump.
11. Automatic supplementing group.
12. Manual deaerator

EXAMPLE FOR GAMERA H2O IN UNPRESSURISED SYSTEM



OPERATION INSTRUCTIONS

To utilize the appliance correctly and prevent any accidents please follow the instructions in this manual. Before initiating any action the user must have red and completely understood the contents of this operation manual.

This appliance must not be used or manipulated by people suffering from psychic or mental disorders, people with limited vision and children (unless taught by the responsible person).

The heater must be used only as intended. Any other use should be considered incorrect and risky.

Most surfaces are very hot and should be handled with fireproof gloves.

Never start a fire if the glass is broken.

Before attempting any cleaning or maintenance make sure that the fire is completely extinguished and the appliance is cool.

Always clean the ash from the previous run before starting a fire.

Never attempt to start a fire or burn highly flammable materials or liquids.

Do not use the appliance to burn waste/garbage. This can lead to unpredictable results. Waste materials have various chemical composition and cannot burn completely, therefore the exhaust gases become very toxic. All heaters are designed and tested for use with dry wood without paint and glue.

Incorrect installation and usage or poor maintenance (not conforming to this manual) may lead to injury and/or damage.

The user is completely responsible for correct installation and exploitation of this appliance, which dispenses the manufacturer from responsibility for all his/her actions or inactions.

FUEL

Wood:

Always use quality firewood. This will give you optimal results any other fuel may damage the heater. Quality firewood should be dried so that the water content is maximum 20%.
To achieve this, the wood should be chopped at the latest in late winter or early spring. It should be cut and stacked so that air circulates around it. Optimal log diameter is 5 cm max. The stacks should be covered on top so as to avoid absorbing excessive rainwater. The logs should be taken indoors in autumn for use during the winter season. The amount of energy obtainable from of 1 kg of quality firewood varies very little. On the other hand the specific weight of the different kinds of wood varies considerably.
As an example, a certain volume of birch will provide less energy (kWh) than the same volume of oak, which has a higher specific weight.
The amount of energy produced by 1 kg quality firewood is about 3.8 kWh. 1 kg of completely dry firewood (12% humidity) produces about 5 kWh, while firewood with a humidity level of 60% produces around 1.5 kWh/kg.

Consequences of using damp wood may include:

- Decrease in the burning efficiency.
- Appearance of soot/tar on the glass.
- The heater emits little warmth.

Be especially careful never to lay a fire using any of the following materials:

- Household waste, plastic bags, etc.
- Painted or impregnated wood (highly toxic).
- Chipboard or laminated boards.
- Driftwood.

This may harm the product and pollute the atmosphere.

Attention! Never use combustible liquids such as petrol, kerosene, red spirit or similar to start the fire. This may cause harm to both yourself and the product.

Eco briquettes:

- Eco briquettes with diameter up to 5cm and hole in the center are recommended;
- Eco briquettes can be combined with woods;

Pellets:

- Pellets can be used only with special add-on sold separately;
- With mounted pellets add-on can be burned only pellets and it should be dismounted to burn wood and eco briquettes;

LIGHTING

Attention! When lighting your stove for the first time it is advised to only light small fires. When the stove is lit for the first time, residue from the manufacturing process such as glues, paints and seals will burn off and smoke as the stove adjusts to the heat. When the stove reaches operating temperature for the first time, the thermal paint will off-gas for about 30-45 minutes, as is typical for most wood stoves. Ventilate the room by opening doors and windows until the vapors around the stove have been cleared out. The stove will only off-gas one time, and only the first time you light it.

Before lighting the stove, ensure that any build-up in the fire box has been removed

Loading:

Fuel (wood logs, briquettes) is loaded vertically through the opening at the top of the firebox. Lift the top cover and place 3 to 4 pieces of wood about 2-3cm thick. Before them place some thinner pieces;

Through the front glass door put some fire starters and/or paper;

Close the top cover and the air intake valve so that only the front door remains open.

Before starting the fire check that there is initial draft from the chimney. This can be done easily by approaching the flame from the lighter near by the door opening. If the flame bends inward there is some draft.

Light up the paper and/or the fire starters and wait for the fire become stable then close the glass door and open the intake valve located above it.

Attention! The air intake valve must remain open during operation. It should be closed after the fire have extinguished to prevent loosing warm air from the room.

After 5-10 minutes the fire should be strong. Now you can add more logs bigger in size (up to 7cm) until the firebox is 75% (3/4) filled. Avoid filling the firebox completely. There should be at least 25% free space for proper airflow.

The recommended maximum size of the wood logs/eco briquette is 7cm in diameter. This limitation is imposed from the requirement that a minimum of 3 logs should burn together in order to sustain each other. If you try to burn only one piece of wood it will most probably extinguish.

To achieve more intensive fire and higher output power use more logs that are smaller in size.

To extend the refuel period use 3-4 bigger logs.

Attention! During operation do not open the front glass door. It is intended only for starting the fire and cleaning the burning chamber.

Note! If you are experiencing low draught or you need to boost the fire to achieve quick initial warming you can load the fuel horizontally as described below:

Make sure the wood logs fit on the bottom of the burning chamber and the glass door can be closed. The logs must be shorter than 40cm.

Put 2 to 3 pieces of wood about 2-3cm thick. Above them place some thinner pieces. On top insert long stripes of paper until the burning chamber is filled half of its height.

Light up a piece of paper and insert it in the bottom of the burning chamber.

When stable fire is achieved and the heater does not smoke in the room close the glass door and load more fuel vertically through the top opening.

When using eco-briquettes start the fire as described above and after achieving stable burning load some eco-briquettes vertically through the top opening.

Starting the heater in pellet mode is done with gas fire torch for 3-5 minutes.

INDICATIONS FOR NORMAL OPERATION

The fire should be intensive with strong flames and distinctive sound. If it smolders the heat riser does not get hot enough and the burning becomes ineffective, like in a regular hard fuel heater. This leads to higher fuel consumption and more pollution. If the appliance is used regularly in smolder mode soot builds up on the inner surface of the body which decreases its efficiency.

Warning! If there is a red glow on the top plate this is a sign for overloading. Stop feeding fuel and limit the air intake until the fire intensity reaches normal levels. Load the necessary amount of fuel without overloading the heater.

Warning! Never put water in the fire. This will cause damage to the heater. The appliance can handle short term overloading so just stop adding fuel until the fire reaches normal intensity.

If you need to abruptly extinguish the fire use sand.

CLEANING, MAINTENANCE AND STORAGE

The ashes on the bottom of the burning chamber should be cleaned after each cycle.

Do not store the ash in plastic containers.

Each season remove the ash that builds on the bottom of the heater through the flue connector.

Dust clean the outer surfaces with moist cloth when the appliance is cool.

Do not use detergents and/or abrasive agents.

Repaint with suitable thermal resistant spray paint.

The glass can be cleaned with moist cloth or if necessary remove the door and wash with detergent.

When you need to suspend the heater for longer periods (at the end of the heating season) remove the ash from the burning chamber to prevent damage due to moist agglomeration. Also remove the ashes at the bottom of the appliance through the flue exit with dust cleaner or by hand.

Do not try to alter the appliance.

If there is a damage in the burning chamber contact the manufacturer.

The company performs warranty and post-warranty service of the burning chamber.

Manufacturer: AGNON Ltd., Bulgaria

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