

PRITY

FIREBOXES TO BUILD IN WITH AIR HEAT EXCHANGER

TECHNICAL DESCRIPTION

The fireboxes are intended for local heating of the premises, in which they have been installed and air heating of distant premises. They are made of low-carbon sheet steel and include: combustion chamber, heat exchanger of stainless steel, door of the firebox with glass ceramics, cast iron grate, cast iron comb, fire bricks, outlet of the smoke gases with a valve, drawer for ashes with a valve for regulation of the primary air.

The combustion chamber is surrounded by double walls, between which air circulates, which is transported from a fan for heating of distant premises.

The outside surface of the firebox heats the ambient air. Its movement is free, gravitational or through built-in fans.

With the help of the valves for primary air and on the outlet of the flue gases is achieved stageless regulation of the heat power of the firebox.

	Max heat power, kW	Dimensions, cm	Mass, kg
Firebox PRITY CF	18	66x61x117	150
Firebox PRITY 2CF	18	73x73x113	188
Firebox PRITY TCF	18	108x60x114	190
Firebox PRITY TC2F	20	108x60x131	215

The indicated data are valid only with a built system of convection of the heat, transferred from the combustion chamber.

The indicated heat power of the models was fixed after investigations according to standardized conditions. Achieving the desired power depends on the selected fuel with the necessary calorificity and humidity; its subsequent kindling and adding; the regulation of the primary and the secondary air as well as the draught; the organizing of effective air heat exchange etc.

All models are made of basic sheet iron for the body of the fireplace, 2 mm thick, and a plate 3÷4 mm. They are equipped with a cast iron grate, doors for refueling, ash-tray, brick-facing, and a valve for decreasing pressure when the draught of the chimney increases. The fireboxes have thermo shock glass ceramics, and the ovens have hardened glass.

To calculate the necessary power, you must have in mind that for the heating of 1m³ of room power from 25 to 180 W is necessary, depending on the exposure and the insulations, the ambient temperature and the winds.

It is known that the correlation between the price and the calorificity of the chosen fuel indicates that the heating with solid fuel is the most economical method. As a result of the long experience and the tests carried out in the laboratories of "Prity 95" Ltd., optimum characteristics and efficiency till 80 % for all produced fireboxes, fireplaces and stoves have been achieved.

INSTALLATION INSTRUCTIONS

When installing the firebox, all local laws and regulations must be complied, including those relating with national or European standards.

The firebox is placed on a stable horizontal fireproof floor with enough carrying capacity. It is faced with building materials, which form its design. Before the door there must be a stable and fireproof base, which shall stick out before the fireplace at least 50 cm.

In the radiating area of the firebox there shall not be any objects burnable and damageable by the radiated heat.

Prior to connect (Before connecting) the firebox 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 firebox work with a separate chimney. If other heating appliances are connected to the same chimney, it must be calculated for that.

Fresh air must enter (get in) the firebox at normally from 5 to 7 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 fireplace 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.

The forced circulation of the air through the firebox is realized by means of double sucking centrifugal fan (220V, 50Hz, 101W).

To avoid dust scattering in the heated premises, as well as the pollution of fan, we recommend cleaning of the air entering the firebox for heating by means of filters.

Attention! The plug of the fan shall be switched on only in neutral earthed Schuko contact in good working condition!

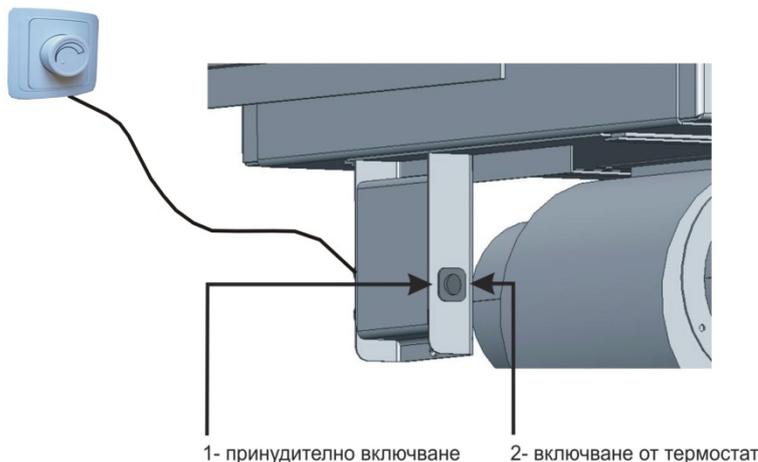
By means of the switch K the two operating modes can be selected:

- 1 - Forced switching on'
- 2- Switching on by a thermostat when heating the air, respectively – switching off when cooling down.

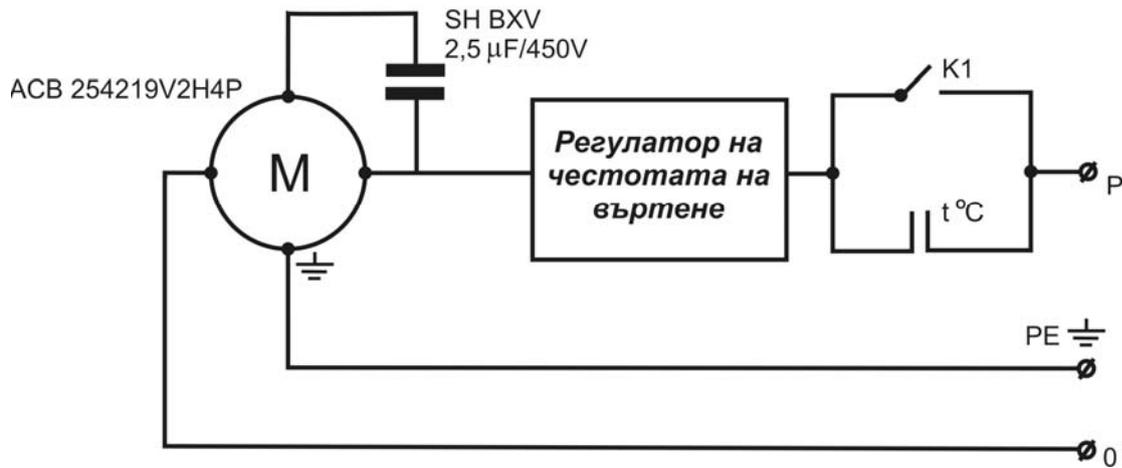
The fans of the fireboxes with air pipes are equipped with a voltage regulator, through which their revolutions are regulated. This allows air supply to the heated premises with the flow desired by the customer.

Voltage regulator (Regulator of the rotational speed of the fan)

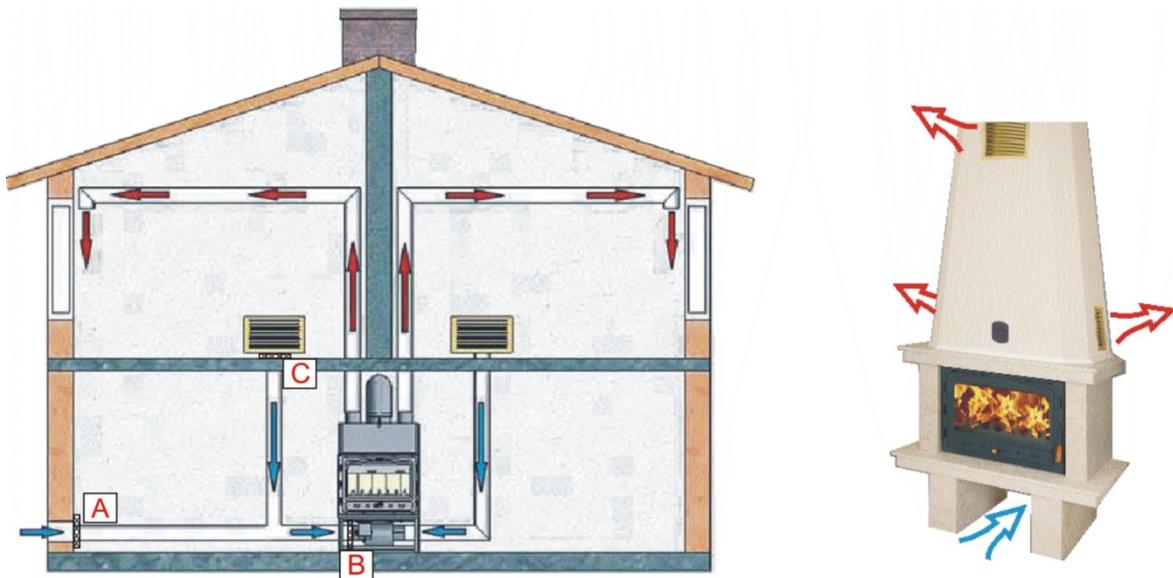
Регулатор на честотата на въртене



1 – forced switching on 2- switching on by a thermostat



Here is an exemplary diagram of connection of the firebox with air pipes to the heated premises:



A,B, C – possible places for assembly of an air filter.

When facing of the firebox with decorative elements conditions for natural circulation must be ensured in the space between the firebox and the facing. The feeding of the fan with air not filled with smoke and dust shall be ensured.

OPERATION INSTRUCTIONS

Fuel

Use only raw chemical natural wood, as well as wooden briquettes without adhesives.

It is important that the wood be dry. Dry are called those logs which have humidity under 20 %. This is achieved when they stay in a dry and airy place at least for 2 years. The wood shall be kept chopped and arranged, as their thickness shall be between 5 and 15 cm.

Why humid wood must not be used?

1. The humidity in the wood decreases their warmth when burning. A big part of the heat is spent on evaporation of the water, and the rest can turn out insufficient to ensure the necessary heating. For example, 20 kg humid wood can mean 10 kg dry wood and 10 litres water, added to the fire.
2. The water vapour decreases the combustion temperature and contributes to the formation of soot which accumulates and forms a black hard layer on the walls of the combustion chamber, glass ceramics, pipes and the chimney.
3. The pollution of the environment increases because the gases leave the chimney unburnt.

Kindling

The destination of the kindling is to warm the walls of the combustion chamber, the pipes and the chimney up to create draught through a stable blazing fire without being necessary to open the door often to finish its preparation.

1. Before kindling clean the ash off the grate.
2. Open the valves for the primary air and for the flue gases completely.
3. Put two chopped pieces of wood in the combustion chamber, parallel to one another, from both sides of the grate.
4. Crush a paper and put it on the front part of the grate among the logs. Don't use glossy or impregnated paper.
5. Put small dry twigs or sticks on the paper. It is preferable easy burning kindling of softwood. Arrange the kindling, so that it may not fall down and stifle the arising fire. Put some finely chopped logs on the kindling.
6. Kindle the paper. When the paper burns up, close the door of the combustion chamber.
7. Leave the valve of the primary air entirely open, until the flame spread all over the whole combustion chamber.

The purpose is to kindle the firebox from the first attempt, with one matchstick without unnecessary fuss and repeated adding of paper and kindling.

The thermo resistant paint, with which the fireboxes have been painted, is dried by compulsion in the producer's factories, and during the first one or two kindles it self-bakes and becomes mechanically stable. During the self-baking the room is aired from the released evaporations

Fuelling with wood

The radiated heat from the fire is not permanent in time, since the logs burn in the best way in cycles. Cycle is the time from the kindling of the logs put on the embers till their reduction to a new layer of embers. Each cycle can ensure heating for various periods of time depending on how much logs and how big they are and how they are fuelled.

Do not add only one or two logs. Their bigger number is necessary to form a layer of embers, which retains the warmth and maintains the burning.

The finely chopped logs, flung about crosswise burn more quickly because the entering air is able to reach all the pieces simultaneously. Such arrangement is suitable when the heat is necessary to be given off intensively.

To achieve a long stable fire, gather the embers on the grate and put bigger logs compactly on them. The close and parallel arrangement of the logs prevents penetrating of air and flames among them and preserves the interior of the pile to burn later. Open entirely the primary air. When the logs most outside kindle, decrease the air to achieve the intensity of burning desired by you.

How many logs are necessary depends on the output (power) of the fireplace and the desired heating. The amount of dry logs to fuel is 0.36 to 0,5 kg per hour for each kilowatt useful heat output. The smaller number is for drier logs.

Signs of right burning

1. Burning must run in the presence of flames till the logs convert into embers. The purpose is not to allow any smouldering and smoking. The smoke is no normal product during the burning of the logs, and it is a consequence of bad combustion.
2. If there are fireproof bricks in the firebox, they must maintain their natural colour in yellow-brown, not in black.
3. With dried logs and sufficient primary air an immediate kindling must be achieved on each new refueling.
4. The glass ceramics of the door (if there is any) must remain clean.
5. The gases going out of the top of the chimney must be transparent or white. The grey smoke indicates that there is smouldering or bad burning.

Chimney

The chimney is intended to draw the combustion products out of the fireplace and to throw them away in the atmosphere beyond (outside the limits of) the abode.

The upward draught or the “pulling” of the chimney is a result of the combination between its height and the difference in the temperatures of the flue gases and the air outside. The column of hot flue gases in the chimney has smaller weight than the equivalent column cold air outside, so that the pressure in the lower end in the warm chimney is smaller than the atmospheric (air) pressure outside. This quite small difference in the pressures creates the draught.

The lower draught is a prerequisite for difficult kindling or returning of flue gases, and it is overcome through quick kindling and burning of dry, thin and fast-burning sticks and paper. After kindling of the fire and warming up of the chimney, its draught increases. For economical regime and high efficiency after the warming up of the chimney, the draught must be decreased to 5-10 Pa, so that there may be no return of the flue gases (smoking) with a closed door.

The main causes of insufficient draught are the following:

- layering of soot inside the chimney, which decreases its diameter and increases the resistance of the rising flue gases;
- a cracked wall of the chimney or a loose rosette;
- loose smoke pipes, or pipes pushed deeply in the chimney, as in this way they decrease the diameter or plug up the chimney;
- The use of a single chimney with a small draught by several stoves on the same level (in close proximity);
- Smoking also appears when the weather outside has suddenly got warmer - the warm gases from the kindling of the fire can't escape through the cold chimney. In this case a bigger amount of quickly burning sticks and paper is used. The same effect takes place while attempting to kindle a fire on the first (ground) floor, provided the same or an adjacent chimney is already being used by a fireplace on the top floor;
- when the ceiling is not air-tight or there are open windows on an upper floor, the effect “staircase-chimney” takes place, creating a reverse draught;
- When a chimney is located in an area of overpressure caused by a wind.

On right connection, servicing and maintenance the firebox doesn't give off smoking emissions in the premises. If nevertheless this occurs, the premises are aired and the cause of the filling with smoke must be found out and removed.

Don't burn: garbage, stuck or painted softwood, plywood or boards of wooden parts, wooden sleepers or other refuse containing artificial chemical admixtures, since poisons don't burn, but only change their composition and when they are thrown away in the atmosphere, they lead to unpredictable consequences.

Cleaning, maintaining and preservation

On purchase the firebox shall be kept from mechanical damages.

During operation the door of the firebox must be closed. When opening of the door to refuel, the openings for the primary air are closed and one shall be careful not to drop down fuel and prevent it from falling out of the firebox.

The power of the firebox is regulated with the help of the valves for the primary air and on the outlet for the flue gases.

Don't touch the firebox with your bare hands, while it is hot.

The ash-pan shall be cleaned daily. Don't throw the ash in plastic vessels.

Clean regularly the passage sections off the flue gases in the firebox and the pipes.

The painted surfaces are cleaned with a damp cloth. Don't use cleaning detergents. If you want to freshen the paint, use a suitable phial of sprayer.

The glass pane is wiped with a damp towel, and when necessary it can be washed with cleaning detergents or water after removing from the door.

To prevent the condensation and a possible corrosion, when the firebox is not operated for a long time (for example during the non-heating period), it must be cleaned from the ash and remainders of fuel, and the adjusting elements – open, for a better circulation around and through the firebox.

During repair works turn the power supply off.

Repair works on the electrical part must be performed only by qualified electrician.

Do not perform any unauthorized modifications in the design!

During repairs only original spare parts by the producers shall be used.

- The company operates a guarantee and post-guarantee service and can replace water jackets.

- The guarantee is not valid for fireboxes with bulging water jackets, which are a result of the increased pressure in the system beyond the admissible one on incorrect installation.

- It is recommended that the installation be done by a skilled specialist.

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