A.D. METALNA INDUSTRIJA VRANJE
RADNIČKA BR: 1

STOVE USED FOR LOCAL HEATING
ALFA TERM 27

This product meets the requirements of the Ecodesign Directive in terms of efficiency and air pollution level, in order to contribute to the reduction of energy consumption and negative environmental impact.

INSTALLATION, SETUP AND OPERATION INSTRUCTIONS

ENG_V.1.2

0. TECHNICAL DATA

HEATING CAPACITY WITH THE GRATE IN DOWN POSITION:	
Nominal heating capacity (wood)	27,21 kW
Heating capacity by radiation of heat (wood)	5,93 kW
Heating capacity to water (wood)	21,28 kW
HEATING CAPACITY WITH THE GRATE IN UP POSITION:	
Nominal heating capacity (wood)	20 kW
Heating capacity by radiation of heat (wood)	6kW
Heating capacity to water (wood)	14 kW
REQUIRED CHIMNEY DRAFT	20 Pa
FLUE PIPE CONNECTION DIAMETER	150 mm
HEIGHT FROM THE FLOOR TO FLUE PIPE CONNECTION AXIS	690 mm
STOVE DIMENSIONS:	
Width	900 mm
Height	850 mm
Depth	600 mm
OVEN DIMENSIONS:	
Width	330 mm
Height	260 mm
Depth	440 mm
FIREBOX DIMENSIONS:	
Width	315 mm
Height (min/max)	264/460 mm
Depth	414 mm
FIREBOX DOOR OPENING (width/height)	175/200 mm
FLOW AND RETURN PIPE CONNECTIONS	R1" RS
THERMO VALVE AND SAFETY VALVE CONNECTIONS	R1/2" RU
COOLING PIPE CONNECTIONS	R1/2" RS
BOILER VOLUME	25 l
HEATING VOLUME WITH THE GRATE IN DOWN POSITION:	340 – 450 m^3 (total)
Heating volume by radiation of heat	90 – 115 m^3
Hot water (radiator) heating volume	250 – 335 m^3
HEATING VOLUME WITH THE GRATE IN UP POSITION:	250 – 330 m^3 (total)
Heating volume by radiation of heat	75 – 100 m^3
Hot water (radiator) heating volume	175 – 230 m^3
MAXIMUM OPERATING PRESSURE	0.25 MPa
MAXIMUM OPERATING TEMPERATURE	90 °C
WEIGHT (gross/net)	202/186 kg

Note:

The heating power is shown for stoking dry beech wood with lower heating power Hd=4255W/kg.

DEAR BUYERS!

Thank You for the trust you showed us buying our stove for floor heating. We assure You that You have chosen a quality and economic product that is a result of many years of experience of this factory in the production of stoves and furnaces for floor heating.

We hope that we fully met Your requirements in terms of design, as well as in terms of the surface of living area that you can heat.

Please carefully read these instructions before connecting the stove and adhere to every advice provided herein.

! CAUTION

-IT IS MANDATORY TO INSTALL A THERMAL DRAIN VALVE TOGETHER WITH THE THERMAL THERMAL PROTECTION OF THE SO CALLED THERMAL FUSE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE USER'S MANUAL.

-IT IS MANDATORY TO INSTALL A CONTACT THERMOSTAT IN ORDER TO CONTROL THE CIRCULATION PUMP AT A MINIMUM RECOMMENDED SET TEMPERATURE OF 57°C.

-IT IS MANDATORY TO USE FIREWOOD WITH A HUMIDITY PERCENTAGE OF LESS THAN 25% OR FIREWOOD THAT HAS BEEN STORED IN A DRY OPEN SPACE FOR TWO YEARS

-THE MINIMUM INSTALLED POWER OF THE HEATING SYSTEM MUST NOT BE LESS THAN 65% OF THE NOMINAL POWER OF THE STOVE AND THE MAXIMUM INSTALLED POWER OF THE HEATING SYSTEM MUST NOT BE MORE THAN 100% OF THE NOMINAL POWER OF THE STOVE.

-THE CHIMNEY TO WHICH THE STOVE IS CONNECTED MUST MEET THE REQUIREMENTS PROVIDED IN THE USER MANUAL.

-WHEN CONNECTING THE APPLIANCE TO THE CHIMNEY, NEVER USE FLEXIBLE HOSES INSTEAD OF FLUE PIPES.

Contents:

1. PURPOSE

Solid fuel stove for local heating is used for:

- cooking,
- baking,
- heating of apartments, houses and office premises, domestic hot water production.

It is most often used as a stove for local heating, however, it can also be installed for central heating.
This stove is intended for household use and may not be used for commercial purposes.

2. THE RESPONSIBILITY OF THE MANUFACTURER

Upon publishing this Manual, ALFA PLAM **will not accept any civil or legal responsibility, either direct on indirect, due to:**

- **Accidents occurred due to the non-observance of the standards and specifications stated in this Manual,**
- **Accidents occurred due to the improper operation or use of the solid fuel by the user,**
- **Accidents occurred due to any modifications and repairs not approved by ALFA PLAM,**
- **Poor maintenance,**
- **Unpredictable events,**
- **Accidents occurred due to the use of spare parts that are not original spare parts or that are not intended for these models of the solid fuel.**

The installer of the solid fuel shall take the full responsibility for the installation.

2.1. THE BASIC CHARACTERISTICS OF THE USER

The solid fuel must be used by adult and responsible people.
Make sure that children do not approach the solid fuel, when it is in use, with the intention of playing.
Children must not approach the solid fuel, while in function, with the intention of playing. This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge. if they are supervised by an elderly person who is familiar with the instructions of use. Children cannot carry out the cleaning and maintenance of the solid fuel, if they are not supervised by an elderly person.

2.2. THE TRANSPORTATION AND USE OF THE SOLID FUEL – HANDLING

During the use of the solid fuel care should be taken that the solid fuel is not leaned forward because the centre of gravity of the solid fuel is oriented forward.
While moving the solid fuel, which must be carried out absolutely safely, ensure that the forklift truck has a carrying capacity that is higher than the weight of the solid fuel it should lift. Avoid twitches and abrupt movements.
ALL THE PACKAGING MATERIAL SHOULD BE REMOVED AWAY FROM THE REACH OF CHILDREN AS THE MATERIALS CONTAINED IN THE PACKAGING MAY CAUSE SUFFOCATION. THESE INCLUDE PLASTIC BAGS, FILMS, STYROFOAM, ETC.

2.3. THE RESPONSIBILITY OF THE INSTALLER

The responsibility of the installer is to perform all the checkups of the flue piping, air intake/supply, as well as all the solutions required for the installation (incorporation) of your solid fuel.
The responsibility of the installer is to ensure that the solid fuel is in compliance with local regulations applicable in the place where the solid fuel is installed (incorporated).
The use of the solid fuel must be in accordance with the instructions given in this Manual for use and maintenance, as well as with all the safety standards prescribed by local legal regulations applicable in the place where the solid fuel is installed (incorporated).
The installer must **verify (confirm):**

- The type of the solid fuel that is being installed,
- Whether the room in which the solid fuel is being installed is appropriate, which is expressed as the minimum size of the room required for the installation as prescribed by the solid fuel manufacturer,
- Instructions of the heat generator manufacturer, related to the requirements of the smoke discharge system (smoke discharge ducts and pipes),
- The internal cross section of the chimney, material the chimney is made of, cross-sectional uniformity, whether there are any obstacles and barriers in the chimney,
- The height and vertical extension of the chimney,
- The height above the sea level at the place of installation/incorporation,
- The existence and suitability of a wind resistant protective cover of the chimney,
- The possibility of providing the external air intake and the size of required openings,
- The possibility of the simultaneous use of the solid fuel which is to be installed, together with the other equipment already existing in that place.

If the results of all the checkups are positive, then the installer may proceed with the incorporation/installation of the solid fuel. The instructions provided by the solid fuel manufacturer, as well as the fire prevention standards and safety standards must also be observed.
When the installation is completed, the system must be put into a trial operation for at least 30 minutes in order to check up all the packing and seals of the system.
When the incorporation and significant details are completed, the installer is obliged to provide the client with the following:

- The Use and Maintenance Manual issued by the solid fuel manufacturer (if such a manual has not been delivered with the solid fuel),

– The documents required for the compliance with existing standards.

3. APPEARANCE AND STRUCTURE OF STOVE WITH BOILER FOR HEATING (Fig. 1)

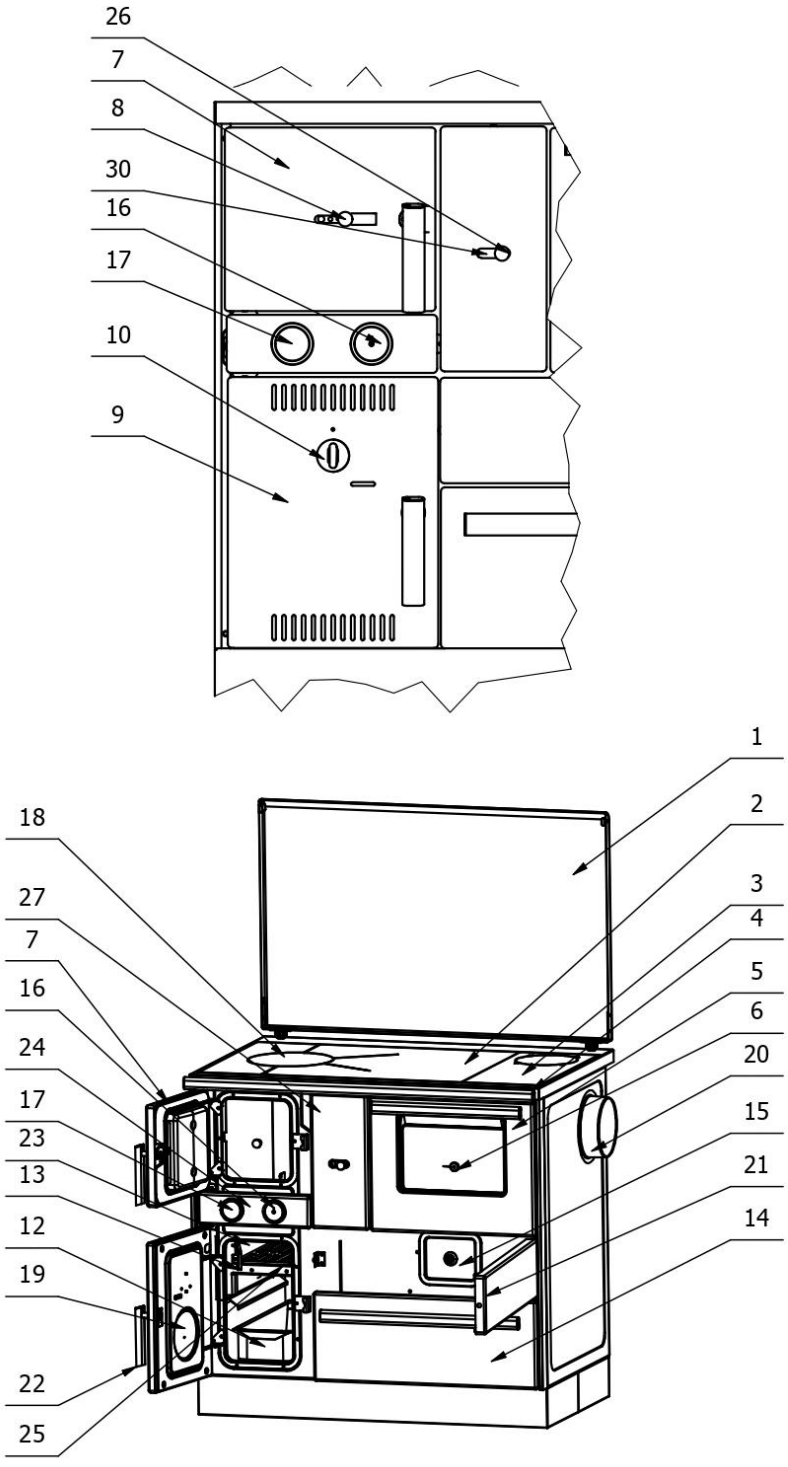


Figure 1

1. Stove cover
2. Cooktop (hotplate)
3. Cooktop extension
4. Damper open and close knob
5. Oven door
6. Oven thermometer
7. Firebox door
8. Secondary air regulator knob
9. Ash pan door
10. Thermostat (combustion regulator) knob
12. Ash pan (ash box)
13. Grate holder
14. Wood box
15. Cleaning access plate
16. Pressure gauge
17. Thermometer
18. Cooktop lid
19. Thermostat (combustion regulator) damper
20. Smoke pipe connection
21. Cleaning access plate
22. Handle
23. Grate support
24. Additional lid
25. Lever support
26. Tertiary air regulator knob
27. Tertiary air regulator cover
28. Cleaning access plate – smaller
30. Tertiary air regulator

4. SAFETY AND RELIABILITY OF STOVE OPERATION

The stove used for local heating is designed to ensure maximum operational safety.

Stove operational safety is ensured by the following three elements:

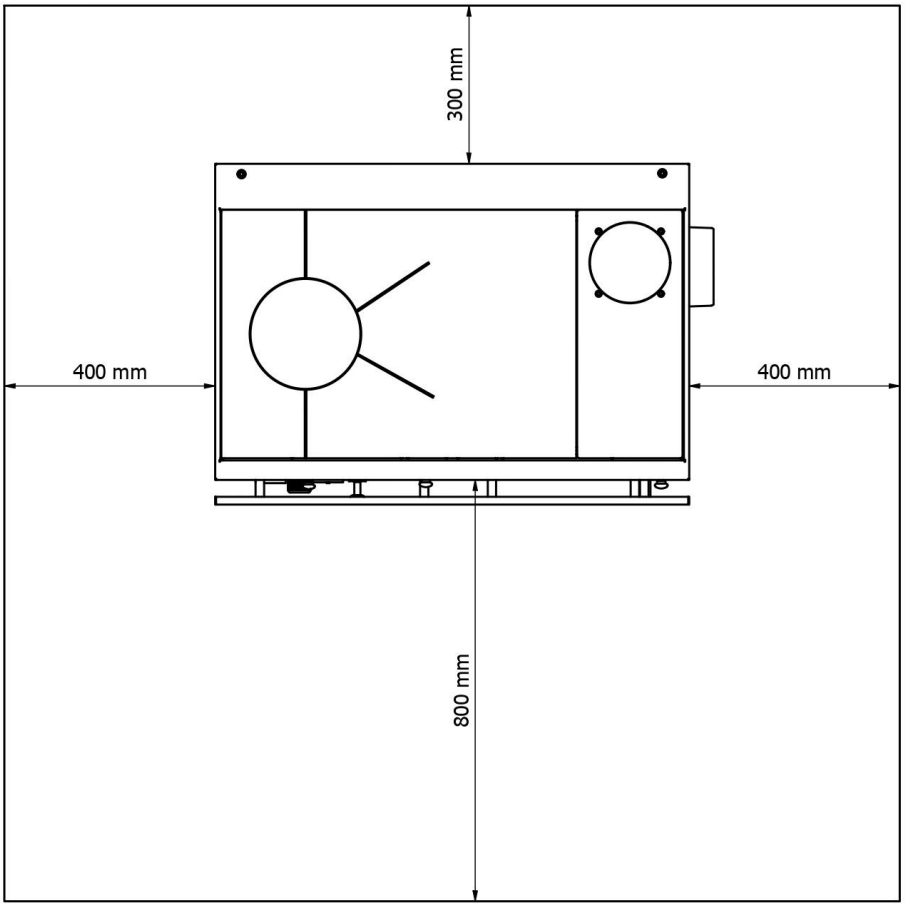
- combustion regulator (thermostat) (Fig. 1, Item 10), located in the ash pan door, which automatically shuts the air supply into the firebox when the preset water temperature in the boiler is reached,
- Thermal valve (thermal fuse) (Fig. 7, Item 13 and Fig. 7a) when installed in the heating system serves as a thermal fuse if the stove becomes overheated,
- - safety valve (Fig. 7 and 8, Item 5) which MUST be installed on an R1/2" connection (Fig. 4, Item 4.)
- NOTE:
- Thermal valve and safety valve are not delivered with stove, while the thermostat is installed on the stove's ash pan door.

5. INSTALLING THE STOVE

- The stove can be installed in the kitchen or at any other appropriate place.
- The substrate under the stove should be noncombustible.
- In the event of a combustible substrate (wood, plastics), place a metal sheet plate which should extend the sides of the stove by 10 cm and the front side by 40 cm.
- Furniture and objects adjacent to or in the vicinity of the stove should not be made of combustible materials. However, if they are made of combustible materials, minimum

If a cabinet is mounted above the stove, minimum clearance between the stove's cooktop and the cabinet should be at least 40 cm.

- Combustible materials (e.g. wallpapers, door casings, doors, etc.) require a clearance to flue pipes of at least 20 cm. This clearance can be reduced if flue pipes are thermally insulated and if the temperature of surrounding objects does not exceed 80°C.
- The stove should be placed in a horizontal position or with its back slightly raised (3-4 mm).



All minimum safety distances are indicated on the product data plate, DO NOT use lower values than specified (see INFORMATION ON CE MARKING).

5.1. INSTRUCTIONS FOR COMBUSTION AND VENTILATION

Combustion air must be supplied to the rooms where the range is installed. The room must be constantly ventilated.

An fresh air opening must be located in the lower part of the room and air should enter through it.

A) Supply of combustion air by means of a pipeline through the basement. This connection option leads to a preheating of the combustion air, which is useful for a good and clean combustion. The installation of pipelines in the basement is simple.

B) Supply of combustion air through the basement. The combustion air is preheated. The basement space must be separated from the ventilation system of the house and open to the outside. High levels of dust and moisture should be avoided.

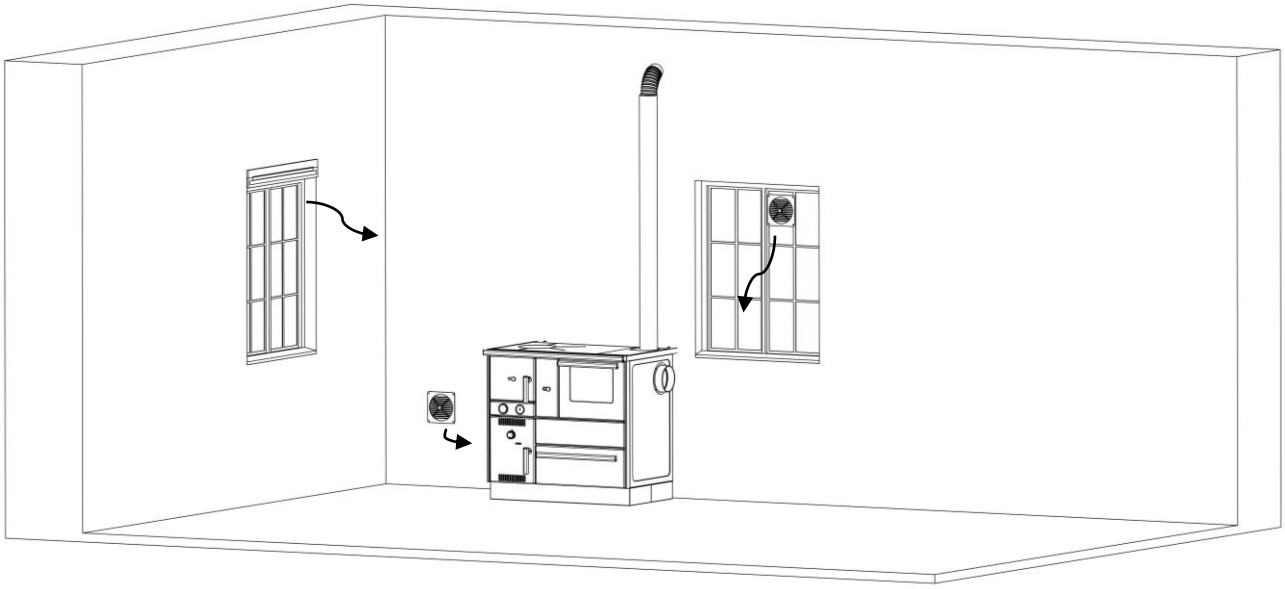
C) Supply of combustion air from above. Air supply from above can only be performed with tested chimney systems.

In this case, it is necessary to calculate the dimensions of the chimney!

D) Supply of combustion air directly from outside. If combustion air is directly supplied through the outer wall, it shall be only be slightly preheated, which is unfavorable for a clean combustion. In this case there is also risk of condensation!

NOTE: We do not recommend these versions of air supply! However, if you use these options, consult a qualified professional.

In the room where the heating device is installed, it is necessary to ensure sufficient supply of fresh air. If the windows and doors are hermetically sealed or if there are air-extracting devices, such as hoods, hair dryers, fans etc., in the room where the range is installed, combustion air (fresh air) must be supplied from outside. In any case, this should be discussed with a competent chimney sweep before installing the range.



Supply of fresh air in the room where the range is installed

6. CONNECTING TO CHIMNEY

Inspect the unpacked stove and study the stove parts and accessories, and in particular, make sure that:

- asbestos-free sealing wires, which ensure tight sealing and prevent uncontrolled entry of air, are fitted in special ducts of the firebox door, ash pan, cleaning access plate and cooktop frame,
- combustion regulator (thermostat) correctly opens and closes the thermostat damper (Fig. 1, Item 19), by using the regulation knob (Fig. 1, Item 10),
- grate holder (Fig. 1, Item 13) is properly fitted on its supports and that it is easily opened.

Place the chimney connection (collar), which is delivered together with the stove and placed inside the wood box, and screw it on the outlet on the cooktop or on the side outlet. First remove the cover and use the same screws to fasten the collar.

NOTE:

If your chimney is of unsatisfactory or dubious quality, we recommend that you attach the collar on the cooktop outlet and not on the side outlet.

The stove will reach its nominal heating capacity if the draft in the chimney is 20 Pa. A chimney ensuring good draft is the basis of proper functioning of the stove. The chimney not only affects the stove's output, but also the combustion quality. Chimney draft directly depends on the chimney's cross-section, height, internal wall roughness and the difference between the temperature of gas and external air. We recommend the following chimney sizes that ensure good draft:

Stove type	Nominal heating capacity (kW)	Chimney height (m)				
		5	6	7	8	9
ALFA TERM 27	wood	Clear opening dimensions (mm)				
	27,56	Ø200	145x200	Ø160 145x145	Ø160 145x145	Ø160 145x145

- Having a properly operating chimney and observing other requirements with respect to the material specified below, ensures flawless stove operation.
- If chimney draft exceeds 20 Pa, install a damper inside the flue pipe.
- Chimney connection should be vertically positioned.
- Horizontal pieces of flue pipes over 0.5 m long should slope upwards by 10° toward the chimney.
- Flue pipe connection, flue pipes and chimney may not taper.
- All joints, including the chimney, must be well sealed and there must be no soot or dirt inside the flue pipes.
- Protect the chimney from the cold (thermally insulate the chimney). This specially refers to chimneys made of metal sheets or chimneys built on exterior walls.
- Flue pipes that are not thermally insulated and that are placed in a vertical position may not be over 1.25 m long.

Draft intensity is checked using a candle (Fig. 2).

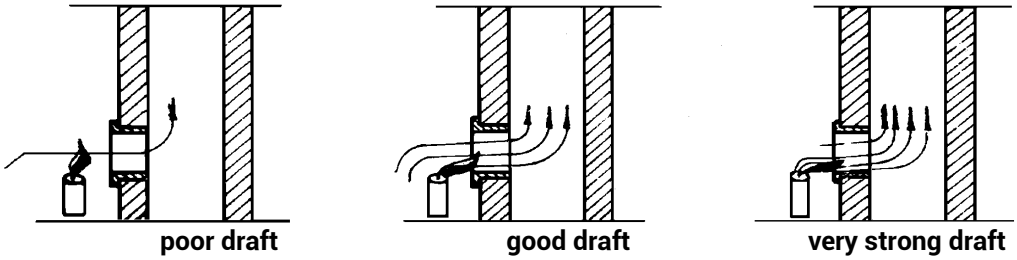


Figure 2

A chimney is properly functioning, if it meets the following conditions (Fig. 3):

- If it extends the height of the rooftop (ridge, highest point) by at least 0.5 m,
- If it extends the height of the house adjacent to the chimney, tree or other barrier,
- If it is built inside house walls or, if the chimney is built on the outside walls, it must be well insulated,
- If the chimney connection is tightly connected to the chimney, if the connection is extended,
- If it is properly cleaned and free of birds nests, dirt and soot,
- If the flue pipe does not enter deeply inside chimney opening, since this reduces the space for the smoke to exit,
- If all other required openings and cleaning access plates are well shut (sealed) to prevent generation of "false" air,
- If its duct is independent from other installation and has no cap on top.

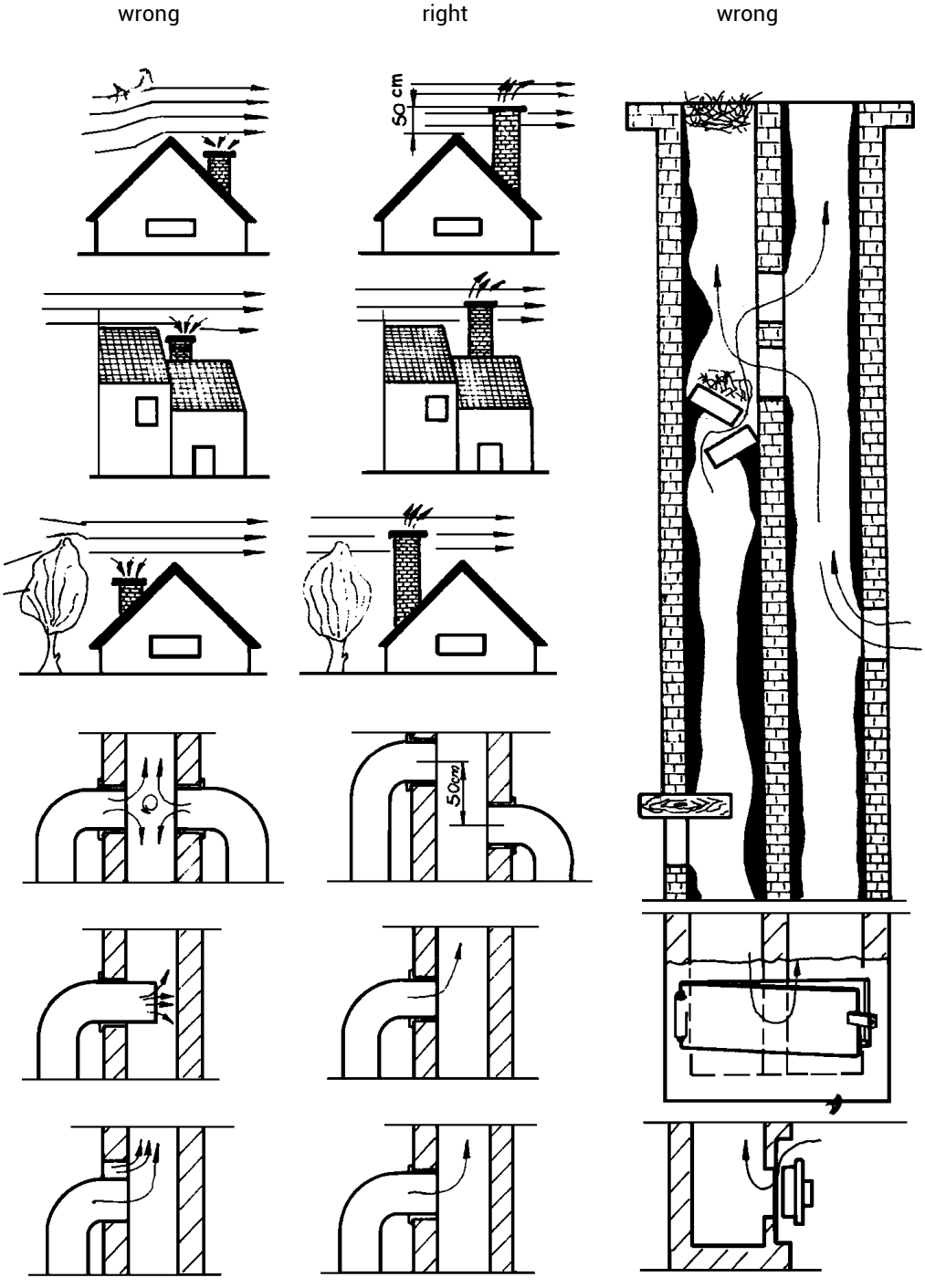
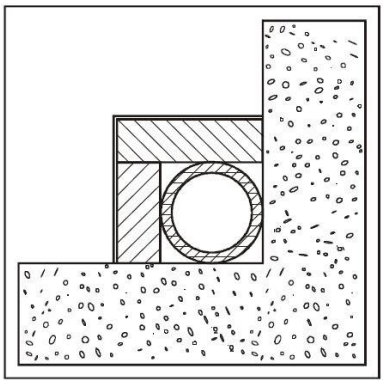
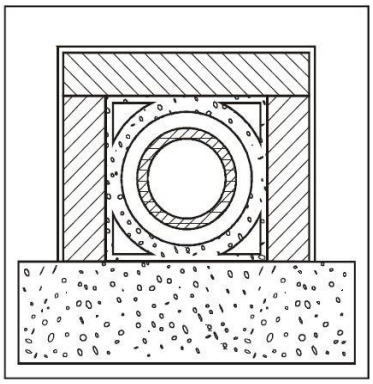


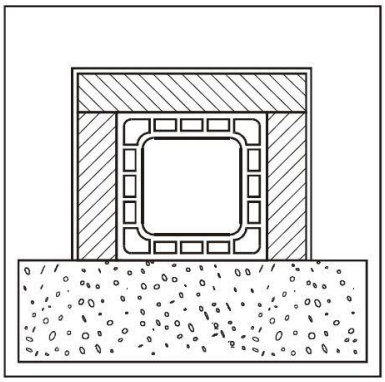
Figure 3



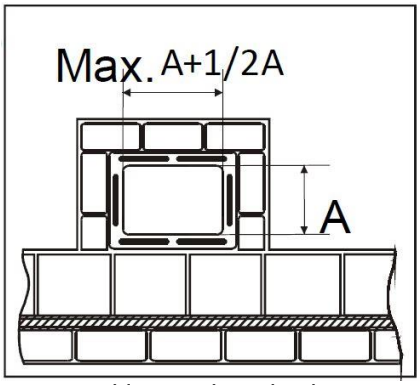
AISI 316 steel chimney with double insulated chamber, made of material resistant to 400°C. Optimal efficiency 100%



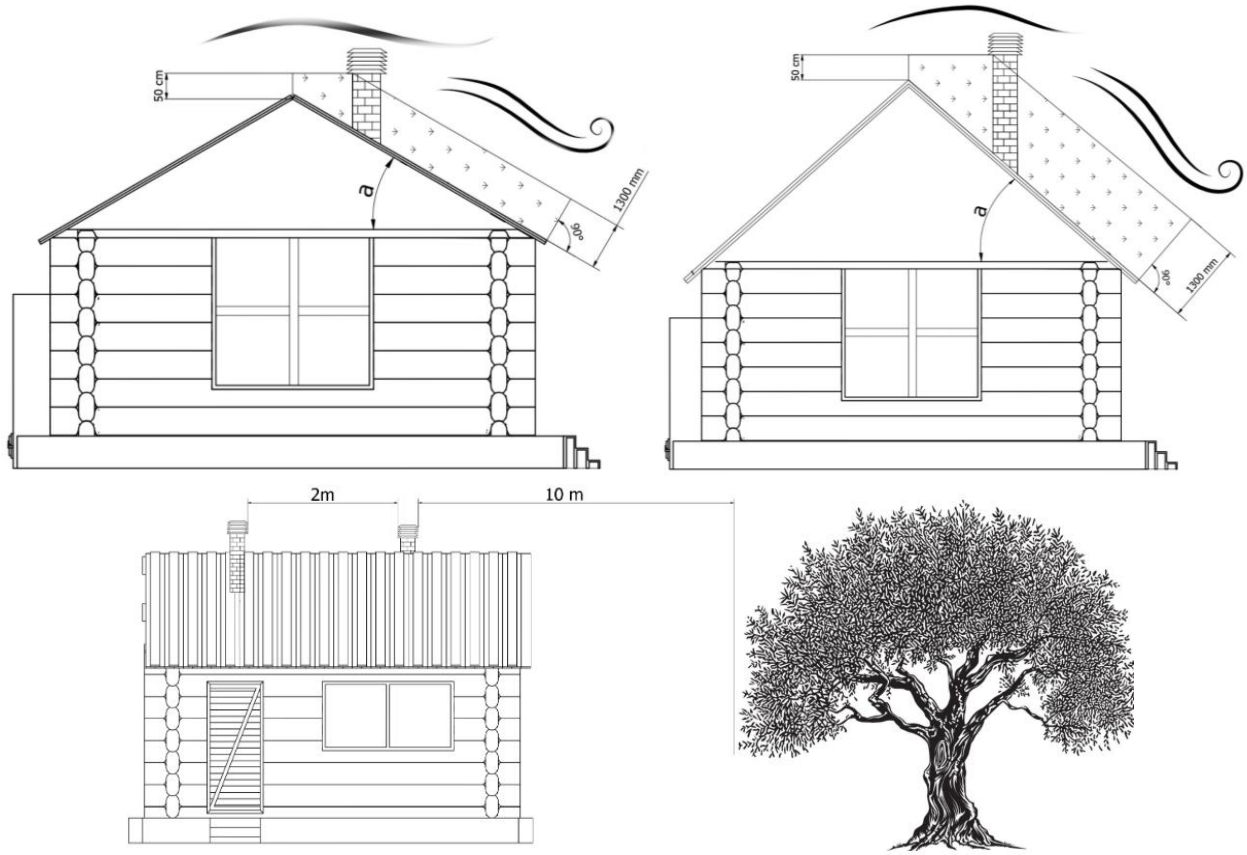
Fireproof chimney with double insulated chamber and an outer lining of lightweight concrete. Optimal efficiency 100%



Traditional clay chimney with recesses. Optimal efficiency 80%



It is forbidden to use chimney pipes that have a rectangular internal cross-section with a ratio that differs from the plan. Modest efficiency 40%



Chimney - positioning and distance

7. INSTALLING THE STOVE IN THE WATER HEATING SYSTEM

The stove should be installed by a professional, in accordance with appropriate design.

The stove is intended for local and central heating.

The stove can be installed in closed or open heating circuit. Conform to the standards: JUS M.E7.201 and JUS M.E7.202. Closed and open circuit diagrams are shown on Fig. 7 and Fig. 8.

The back of the boiler and connections are shown in Fig. 4 where:

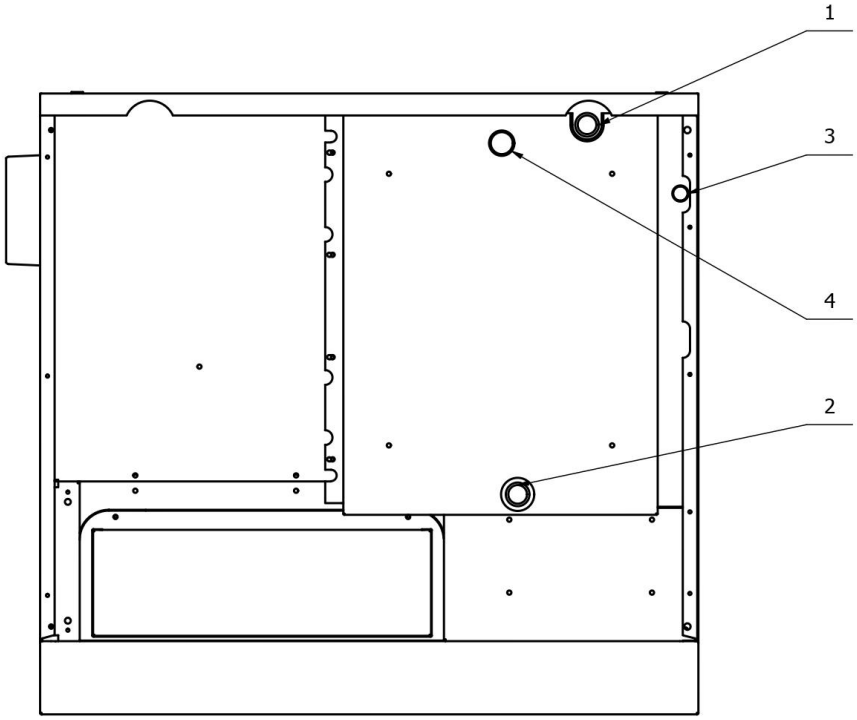


Figure 1
- Item 1 is an R1" connection with an outer thread for the flow pipe,
- Item 2 is an R 1" connection with an outer thread for the return pipe,
- Item 3 is an R1/2" connection with an inner thread for installation of the thermal valve safety pipe,
- Item 4 is an R1/2" connection with an inner thread for safety valve installation.

7.1. FLOW PIPE AND RETURN PIPE (Fig. 4, Items 1 and 2 and Fig. 7 and 8, Items 3 and 10)

The size of the flow pipe and return pipe outlets is 1" and may not be reduced or tapered before the first branch. Use 1" steel pipe or copper pipe of outer diameter Ø 28 mm (or larger diameter).

While installing the system, absolutely make sure that pipe slopes are 0.5% (5 mm of pipe length) and that the air is released from the system (from the boiler, pipes, radiators).

You can install a combination temperature and pressure gauge on the flow pipe, although both thermometer and pressure gauge are installed at the front of the stove.

On the return pipe, install a by-pass line with a pump, expansion vessel and a spigot for filling up and emptying the system. When you install the pump, take note of the pump's direction.

Note:

Only install the by-pass line if there are conditions for gravity heating.

7.2. THERMAL VALVE WITH BUILT-IN THERMAL PROTECTION AND ADDITIONAL ELEMENTS FOR CONNECTION

To install thermal valve it is necessary to purchase and install:

1. Thermal valve with built-in thermal protection type 544, 1/2", product Caleffi (Fig. 7a) and Fig. 7, Item 13.
2. Slope pressure regulator with manometer 1/2", the same or similar as shown in Fig. 7b and Fig. 7, Item 19.
3. Filter for cold water at the input of the water supply to the thermal valve, Fig. 7, Item 20
4. Filter for hot - boiling water intake of the boiler and water outlet of thermal valve, Fig. 7, Item 21.

Note:

These components are not included with product for central heating you bought!

Installation of thermal valve with built-in thermal protection (Fig. 7, Item 13 and Fig. 7a) with additional elements ensuring safe operation, such as pressure regulator (Fig. 7, Item 19 and Fig. 7b). Water filter on the boiler intake (Fig. 7, item 20) and water filter on the boiler outlet in closed central heating system is MANDATORY. This specially refers to a closed system, when the radiators are submerged and where in case of termination of the pump operation for any reason, the water temperature in the boiler rapidly increases and overheating occurs very quickly.

In the open central heating system, installation of thermal fuse is not mandatory.

7.2.1. THERMAL VALVE WITH BUILT-IN THERMAL PROTECTION (Fig. 7, Item 13 and Fig. 7a)

Thermal fuse is installed near the stove, depending on the available space. It can be installed in any position. You should take into account the direction of cold water intake and hot water outlet from the boiler which is clearly marked on the valve body.

The thermal fuse probe (Fig. 7, Item 22) is best to place in the thermal valve connection (Fig. 7, Item 18). It can be placed on the discharge - distribution pipe (Fig. 7, Item 3) but at a distance from the boiler of 500 mm the most or at the highest point of the boiler before the exhaust pipes.

Seal it with hemp or other sealing material by tightening.

Fig. 7 shows the thermal valve installation diagram.

The device is of one piece with the thermal valve and valve for filling.

Valve opening temperature is 100°C (+0°C/-5°C).

The fluid recommended in the installation is water and glucose antifreeze of 30%.

Note:

At reaction, and valve operation, during fluid cooling in an overheated boiler part of the new fluid is injected into the boiler, but the part is also ejected from the boiler. It will be poured down the drain. If the antifreeze is in the installation you must keep in mind that a certain percentage will go out and pour down the drain!

We recommend the thermal valve Caleffi type 544, 1/2" as shown in Figure 7a.

7.2.2. SLOPE PRESSURE REGULATOR 1/2" WITH MANOMETER (Fig. 7, Item 19 and Fig. 7b)

When installing the thermal valve it is required to mount the slope pressure regulator as shown in Fig. 7, Item 19. The pressure that is maintained by pressure regulator must be set at a higher pressure than the pressure that is in the heating system. If you do not have a higher water pressure of at least 0.8 bar compared to the pressure in the heating system thermal valve will not work or cannot inject cold water into the boiler that needs to be cooled.

Pressure regulator should be set to 2.8 to 3 bars.

You should take into account the direction of placing the slope pressure regulator!

7.2.3. WATER FILTER OF THE BOILER INTAKE (Fig. 7, Item 20)

In front of the slope pressure regulator on water intake from water supply line it is necessary to install a filter that will clean the water from solid objects, primarily of sand, which can damage the tap seal or seals of the thermal valve and the slope pressure regulator.

This filter does not need to be resistant to high water temperatures due to cold water that flows through.

7.2.4. WATER FILTER OF THE BOILER OUTLET (Fig. 7, Item 21)

It is required to install the filter on the boiler outlet which will clean the hot - boiling water from dirt and solid objects that can damage the tap seals, or seals of the thermal valve.

This filter must be resistant to water temperatures up to 150°C.

NOTES:

- After the completion of thermal valve activation, checking the pressure in the installation and filling the system with cold water is mandatory.

- In cases where antifreeze is used, after filling the installation with water it is required to check percentage content of antifreeze in a mixture of water and antifreeze!

7.3. SAFETY VALVE (Fig. 7 and 8, Item 5 and Fig. 4, Item 6)

An R1/2" connection (Fig. 4, Item 6) is welded at the back of the boiler, under the cooktop frame, on which a safety valve MUST be fitted. The safety valve should be 2.5 to 3 bars. You can fit it directly on the connection or at a distance from the connection of at least 1 m, provided that there is no block valve between the boiler and the safety valve.

In general, safety valve is not fitted in open circuits, but we advise you to fit it nonetheless, as another safety precaution for the boiler and the system (in case of emergency).

NOTE:

If the safety valve is not fitted as described above, the warranty will not be valid.

7.4. THERMOMETER AND PRESSURE GAUGE (Fig. 1, Items 16 and 17 and Fig. 5)

Thermometer and pressure gauge are installed on the stove, on the additional lid (Fig. 1, Item 24) between the firebox door and the ash pan door (Fig. 1, Items 16 and 17, and Fig. 5) and therefore it is not necessary to install them.

Thermometer, Item 17, shows the temperature of water in the boiler (operating temperature) in ºC.

Pressure gauge, Item 16, shows the pressure of water in the boiler or the system in bars.

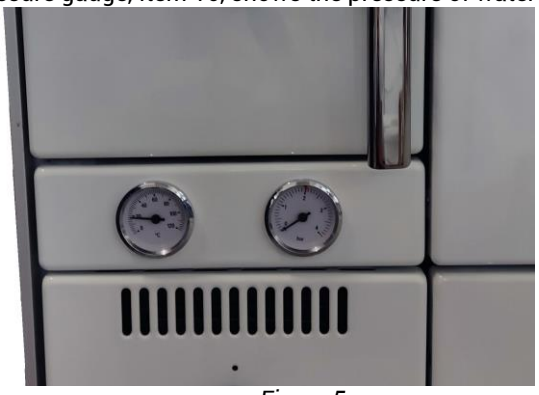


Figure 5

Figure 6

8. PRACTICAL INSTRUCTIONS AND HEATING SYSTEM OPERATION ADVICE

- We recommend you to use a closed circuit, due to corrosion hazard related to open circuits.
- All connections must be well sealed and tightened.
- Before startup, the entire system needs to be tested with water under 2.4 bar pressure.
- It is recommended to discharge the water from the system at least once, to empty the system of dirt.

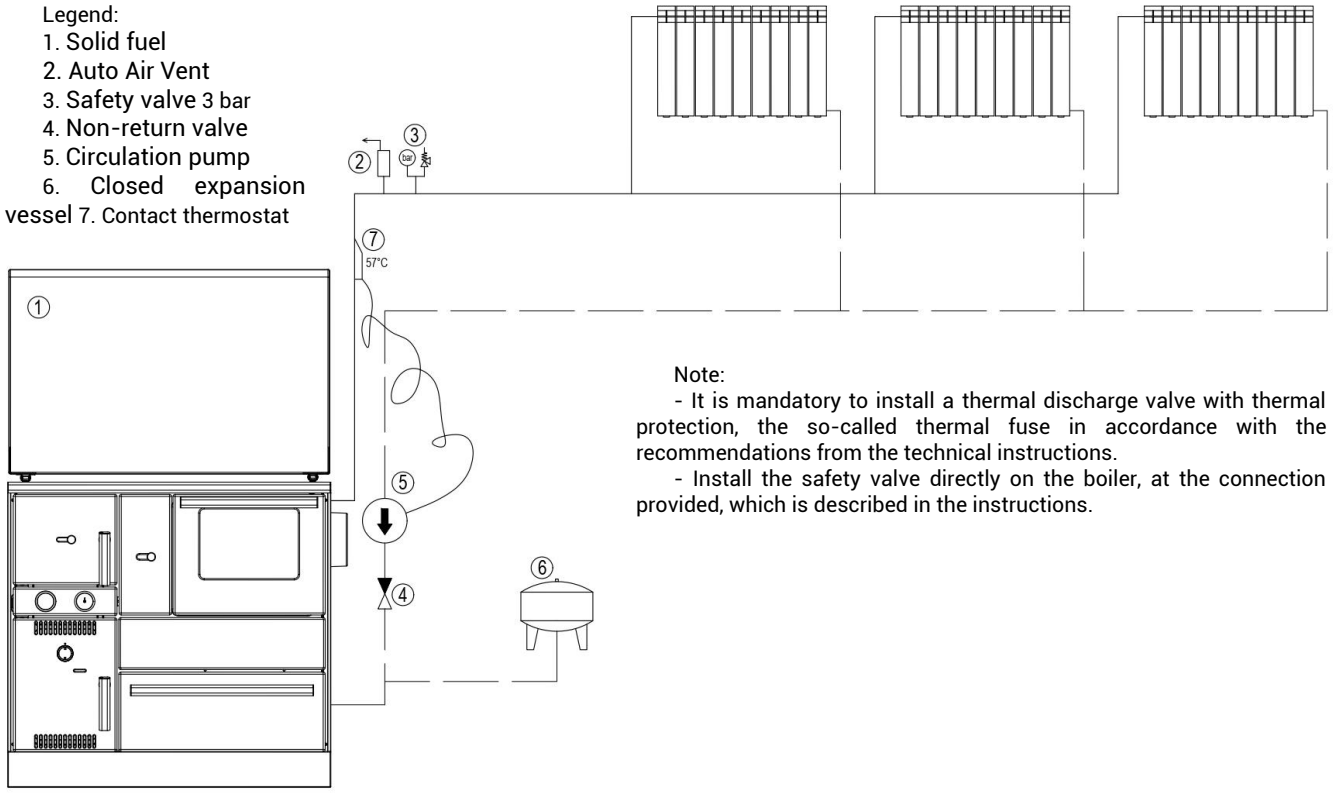
- For a system to which only the "Alfa term 27" stove is connected, we recommend an expansion vessel of 25 (l) and not more than 18 (l), which should be fitted on the return pipe, as close to the boiler as possible, and no block valves can be fitted between the boiler and expansion vessel.

In order to reduce the risk of condensation, it is recommended to use a three-way mixing valve with a fitting thermostat when installing the solid fuel.

We recommend that you do not adjust the water temperature below 57 ºC due to possible condensation of the boiler, neither above 75ºC.

Scheme of the hydraulic installation of a solid fuel (radiator heating)

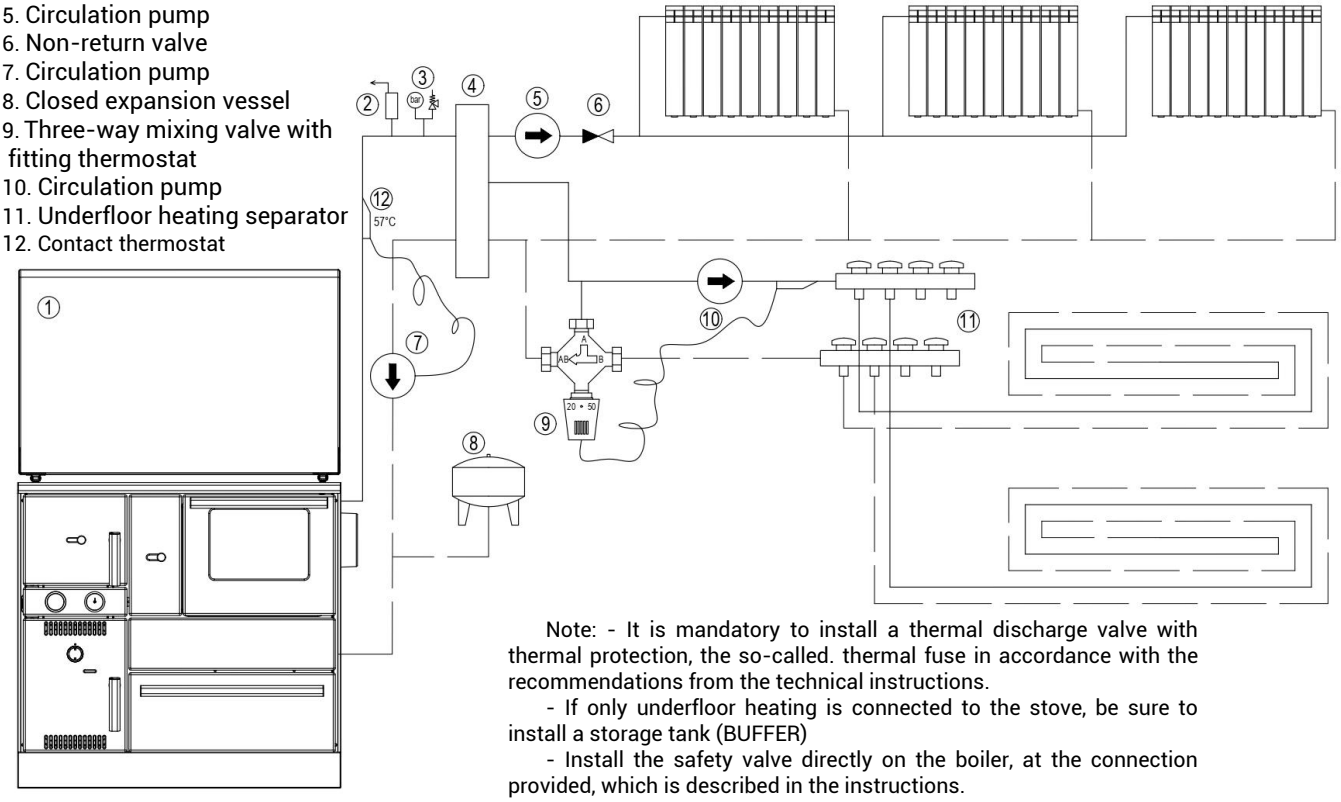
Legend:
1. Solid fuel
2. Auto Air Vent
3. Safety valve 3 bar
4. Non-return valve
5. Circulation pump
6. Closed expansion vessel
7. Contact thermostat



Note:
- It is mandatory to install a thermal discharge valve with thermal protection, the so-called thermal fuse in accordance with the recommendations from the technical instructions.
- Install the safety valve directly on the boiler, at the connection provided, which is described in the instructions.

Scheme of the hydraulic installation of a solid fuel (radiator and floor heating)

Legend:
1. Solid fuel
2. Auto Air Vent
3. Safety valve 3 bar
4. Hydraulic crossover
5. Circulation pump
6. Non-return valve
7. Circulation pump
8. Closed expansion vessel
9. Three-way mixing valve with fitting thermostat
10. Circulation pump
11. Underfloor heating separator
12. Contact thermostat



Note: - It is mandatory to install a thermal discharge valve with thermal protection, the so-called. thermal fuse in accordance with the recommendations from the technical instructions.
- If only underfloor heating is connected to the stove, be sure to install a storage tank (BUFFER)
- Install the safety valve directly on the boiler, at the connection provided, which is described in the instructions.

Figure 7a

Figure 7b

- It is preferable to install an R1" multistage pump with a flow rate capacity that always meets current system needs. Install block valves immediately downstream and upstream of the pump to enable removal of pump for repairs, replacement etc. without discharging the water from the system.
- Install the spigot used for filling and discharging the system on the return pump at the lowest point of the system.
- Prior to startup, fill the system with water as follows:

a) for open circuits, fill the system using the spigot for filling and discharge, until the water starts to leak from the expansion vessel's overflow pipe,

b) for closed circuits, system pressure (operating pressure) should be 0.1 ÷ 0.15 mPa (1 ÷ 1.5 bar).

In both cases, slowly fill the system so that air can escape through air release valves. If the valves are not opened automatically, open them manually until water starts to leak, and then close them.

- Do not discharge water from the heating system even during summer, because it protects the inside of the system from oxidation (corrosion).
- If you will not use the boiler for a longer period during winter and no antifreeze mixture is pored into the system, it is best if you discharge water from the system. While discharging the system, open the radiator valves, air release valves and other system blocking elements.
- You may not light a fire if water in the boiler is frozen or if there is not enough water in the boiler.

9. STARTUP AND LIGHTING THE FIRE

Before you light the fire for the first time, the entire local (central) heating system should be filled with water and well bled, and the stove should be properly connected to the chimney, as described in the foregoing items.

NOTE: The stove may not be used without water. It must be connected to the system, which is connected to consumers (radiators) with the power of no less than 14 KW.

When the system is cold, power regulator (combustion regulator, thermostat) damper located on the ash pan door (Fig. 1, Items 10 and 19) should be open. Pull out the damper open and close knob (Fig. 1, Item 4 and Fig. 15). This opens the damper and enables you to light the fire. Later, when the fire has been burning for a while, set the damper to an appropriate position, depending on the chimney draw and desired power, and push the knob back. This closes the damper and enables maximum yield of combustion and thereby better heating, cooking and baking. During this process, fire box and ash pan door (Fig. 1, Items 7 and 9) must be closed, if you need controlled burning. Fire lighting damper is opened only while the fire is being lit (10 to 15 minutes).

Fire is lit in the stove the same way as in other solid fuel stoves. Fire is lit with the ash pan door and grate holder open (Fig. 9 and Fig. 10). Grate holder (Fig. 1, Item 13 and Fig. 9) is opened by lifting and pulling. When the fire starts burning, you may load wood, but do not fill the firebox at once and divide the fuel necessary to fill the firebox in two or three portions and load them into the firebox in 10 ÷ 15 minute intervals. A stove loaded in such way can burn for 1 to 6 hours, depending on combustion strength in the stove or on the regulator (thermostat) setting.

Figure 9

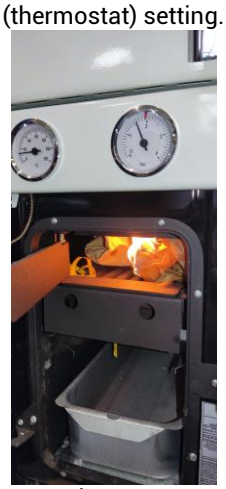


Figure 10

Figure 11

The firebox can also be filled from the cooktop (Fig 12). Lift the cooktop lid using a wrench and load the fuel.

It is not recommended to burn organic or other waste in the stove (plastic bags, bones, etc.) because this causes formation of tar deposits on the flue duct walls, which can cause a fire.

Each time you load the fuel, we recommend that you let the fire burn at maximum strength for at least half an hour, because the first to burn out are all the volatile constituents of the fuel that are usually the main causes to condensate formation in the stove.

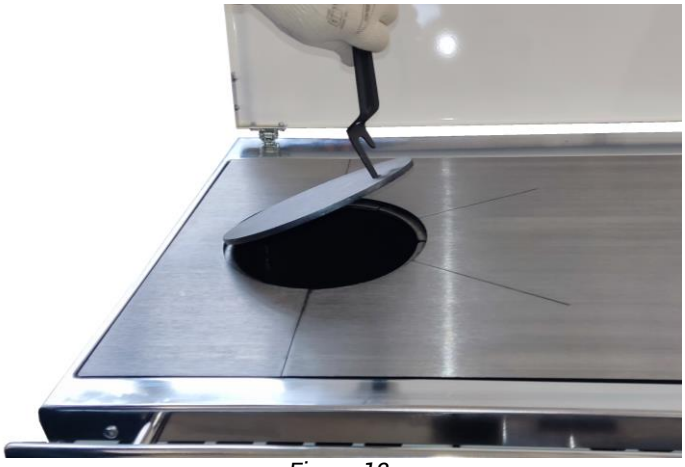


Figure 12

10. USING THE GRATE IN THE UP AND DOWN POSITION

For cooking, baking and heating during transitional season, the grate is in up position (Fig. 11) to ensure that the flame directly reaches the cooktop and saves cooking, baking and heating costs.

The stove is delivered with the grate in the down position. To move the grate from down to up position, take the following steps:

- Remove the cooktop from the stove and open the firebox and ash pan door.
- Use your hand, through the ash pan opening and ash pan, to lift the front of the grate and pull it out of its holder.
- Place the grate on the supports (4 pcs) welded inside the boiler firebox, at the front and in the back (2 + 2 pcs) (Fig. 1, Item 23). Place the grate at an angle (slanted) so that the back of the grate can be fitted first, and then lower the front of the grate. Put the cooktop back on the frame.
- The grate is placed in the down position (Fig. 9 and 10) the same way as it is placed in the up position.

Notes:

- Grate in the down position enables better heating of water, heating more radiators and larger living areas, but cooking is more difficult.
- When the grate is in the up position, water is less heated, and less radiators and a smaller living area can be heated, but cooking is much easier.
- Baking is the same in both positions of the grate.

11. AUTOMATIC REGULATION

Stove power is adjusted using the thermostat (power regulator, combustion regulator), which is located in the ash pan door and which automatically sets the regulator damper depending on the regulation knob setting (Fig. 1, Items 10 and 19) and the temperature of water in the boiler. Regulation knob has several positions that are written on the knob as specified in Table 1:

Table 1

Regulator knob position	0	3	4	5	7	9
Temperature of water in the stove (°C)	Regulator closed	30	40	50	70	90

In the power regulation system, air regulator (damper) fully controls combustion air supply if other openings are closed.

12. SECONDARY AND TERTIARY AIR REGULATORS

Secondary air regulator is placed in the firebox door (Fig. 1, Item 8 and Fig. 13). It controls additional lighting of fire and burning unburned flue gases. It is opened and closed manually using the knob on the firebox door.

Leave the secondary air regulator open when the fire in the stove is lit.

Tertiary air regulator (Fig. 1, Item 30) is located behind the tertiary air regulator cover (Fig. 1, Item 27). It controls additional lighting of fire and burning unburned flue gases. It is opened and closed manually using the tertiary air regulator knob (Fig. 1, Item 26).

Leave the tertiary air regulator closed when burning wood.

13. COOKING, BAKING AND FRYING

During heating season, the stove is used mainly for heating. For faster baking, cooking and frying, use only dry firewood.

The damper used for starting the fire must be closed and power regulator must be open. After you finish baking, cooking or frying, place the power regulator in desired position.

While baking, increase the temperature of the water in the system to at least 60°C and, if necessary, close some of the radiators during baking and adjust the oven temperature to the food being baked.

NOTE: If necessary, rotate the pan during baking.

14. FUEL

Fuel can be stored in the fuel box (Fig. 14). The fuel box is moved on guides. If you want to take the fuel box out of the stove, you must lift it to remove it from the guides.

Use the fuel specified in Table 2 to ensure the nominal heating capacity of the boiler at chimney draft of 20 Pa.

Do not burn coal dust, sawdust or waste that generates large quantities of smoke!

Figure 13

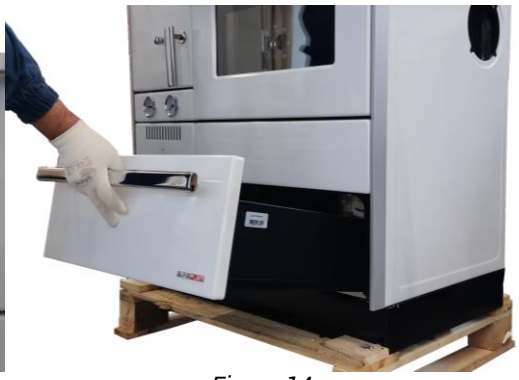


Figure 14

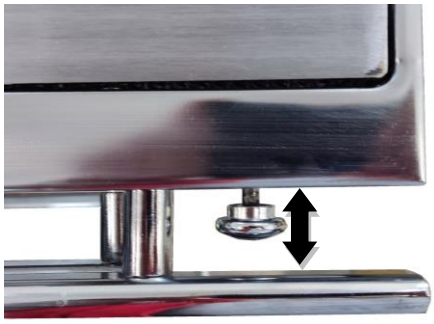


Figure 15

Table 2

Fuel	Calorific value (kJ/kg)
Dry beech firewood	15,300

NOTE:

To ensure the nominal heating capacity and maximum yield, we recommend you burn dry beech wood cut at the length of L = 33 cm.

15. CLEANING AND MAINTENANCE

Each time before loading the fuel, clean the grate using a small shovel by opening the grate holder or through open firebox door. Remove the ashes from the ash pan at least once a day and remove the larger residues by opening the ash pan door and grate holder. All surfaces of the stove that are in contact with flue gases must be regularly maintained and cleaned using a small shovel. Clean heating areas guarantee cost-effective stove operation. It is recommended to clean the stove once a month or more often, if necessary.

Do not clean enameled surfaces and stove frame using wire brush or wire sponge because it could damage the enamel and safety lining, but use wet cloth, cleaning agents and mild detergent instead. Clean the oven after each use while still hot. After cleaning, leave the oven door open for a few minutes to prevent bad odors the next time you heat the oven.

Clean the cooktop occasionally using fine sandpaper, and in the event of longer breaks, apply acid-free oil on the cooktop (vegetable oil). Remove burnt material from the cooktop with a spatula, knife or treat it with graphite, ashes from the ash pan or oil.

It is prohibited to cool down the stove by making an artificial draft or by using water to cool down the firebox.

16. CONSERVING THE STOVE

At the end of the heating season, clean the stove from ashes and soot. Discharge the water only if any repairs need to be carried out on the installation. If the system is not used during heating season, poor a certain amount of antifreeze liquid into the system or discharge the water to prevent freezing.

17. TROUBLESHOOTING

Table 3

RB	Faults	Possible cause	Elimination
1	**Water pressure in installation is slowly decreasing**	The installation does not seal	Check the sealing of welded connections, threaded fasteners, nuts etc.
2	**Cold radiators on the highest installation point and a sound is heard**	Air in the installation and low pressure in the installation	Increase pressure in the installation and release air from the installation and from radiators
3	**Moisture builds up in the boiler**	1. Condensation of flue gases	1. Compare the total power of the installed radiators with the power of the stove. If the total power of the installed radiators is greater than the total power of the stove delivered to the water, replace the furnace with a stronger one, or adjust the number of radiators to the power of the stove.
4	**The radiators do not heat along the entire length**	Air in radiators	Release air from radiators through the vent valve

5	**The safety valve drains water from the installation, and the pressure is less than 3 (2,5) bar**	Safety valve failure	Replace safety valve
	The pressure in the installation is more than 3 (2,5) bar and the safety valve does not drain water from the installation	Safety valve failure	Replace safety valve
6	**Sudden water temperate increase in the installation**	Air in the installation	Perform radiator venting
		Closed valves towards radiators	Open all valves in the heating system and provide normal water circulation in the installation
		Circulation pump failure	The circulation pump should be repaired or replace it thereby allowing operation of the heating system
		Electrical power loss	You should open all valves that reduced the heating system. This mostly refers to the "by-pass" valve. Stop or reduce stoking with strong control so that the water temperature in the system would not exceed 90°C until electricity arrives.
7	**Sudden pressure increase in the installation while water temperature increase**	Decreased pressure in the expansion vessel or completely empty. Remove the cover or the vessel valve cap and release some air through the valve. If the membrane is destroyed, water shall leak from the valve, and if it is only half-empty, only air will come out	If water is leaking from the valve, replace the expansion vessel. If only air comes out from the valve, remove the installation vessel and pump it. The pressure in the vessel must be equal to or greater than height difference of the highest and lowest installation point. Example: For height difference of 5m. the pressure is Pmin.≥0,5 bar.
		Air in the installation	Perform venting of the installation
8	**The circulation pump does not switch on or blow a fuse**	No power on the electrical connection. Loose connectors.	Check and tighten the screws at the connection spots. Check and if necessary, replace the fuses, eliminate the malfunction of the motor or installation connection
		Capacitor failure	Replace the capacitor
		Rotor blockage	Before the start of each heating, examine the easy rotor turning. Hot water deposition may lead to rotor blockage. Turn around the motor shaft with a wrench until free turning of the rotor is enabled.
		The pump is blocked due to sediment	Disassemble and clean the pump.
9	**The thermometer or manometer does not show the amount of temperature or water pressure in the installation**	Thermometer or manometer failure	Replace the thermometer or manometer
10	**Noise (sounds) from the eating system**	Defective pump. Great clearance between the rotor shaft and bushings	Reduce pump speed. Replace the pump envelopes or the entire pump
		The pump is functioning at too high speed	Select low speed.
		Air in installation	Release air from the heating system

		Loose knobs or some screw on the solid fuel	Tighten knobs and screws
11	**Sounds in the pump**	The pressure at the pump suction part is to low	Increase system pressure or check the expansion vessel.
12	**The solid fuel overheats, loud noise (cracking) is heard in the boiler of the solid fuel.**	Electricity outage has occurred, the circulation pump does not work and the boiler of the solid fuel overheats. There is a danger of boiler rupture.	To avoid this occurrence, it is best to have backup battery power supply of the circulation pump with an inverter.
			Installation of a thermal exhaust valve (Fig. 7, pos. 13) is required as additional security against solid fuel overheating.
			If you do not have backup supply of the circulation pump or a thermal exhaust valve installed, then you should open the bypass valve connected in parallel with the circulation pump on the pipeline system and remove embers from the solid fuel.
13	**Cooling thermal fuse is activated (thermo valve) because water temperature increased over 95°C due to:**	- loss of electricity	This is proper and do not touch anything. When the system is cold, thermal valve will be closed. After that, check the pressure in the installation and fill the system to the required.
		- open ashtray door and no regulated combustion	Close the ashtray door and through the knob on the cover of the ashtray door and thermostat, reduce the water temperature in the system.
		- the grate is in lower position and small number of radiators are switched on	Transfer the grate to upper position or switch on some other radiator. Keep the ashtray door closed.
14	**Water condensate in the boiler**	Damp heating material	Change heating material
		Too low temperature of returning water from the heating system	Insert combined valve or switch off some radiator from the heating system
15	**Outlet water temperature is not appropriate (low)**	Non-calorific heating material	Change heating material
		Heating system is oversized (a large number of radiators)	Switch of some radiators
		Little heating material is inserted in the firebox	Increase the quantity of heating material in the firebox
16	**Fire does not burn regularly**	Weak flue draft	Make a new flue or repair the old one
		Flue pipe connections do not seal. The doors on the solid fuel and the flue do not seal. The flue draws “false air”.	Seal all connecting spots so that “false air” would not occur
17	**There is not enough heat in baking, cooking**	The thermostat is set to a lower temperature	Increase water temperature through a thermostat or shortly open the ashtray door
18	**There is too much heat in baking, cooking**	The thermostat is set to a high temperature	Reduce water temperature through the thermostat or stoke moderately
19	**The boiler-solid fuel releases smoke during initial startup**	Combustion and heating of the solid fuel and flue	It is normal for the solid fuel to release some smoke during initial startup, and this stops after some time.
20	**The boiler-solid fuel releases smoke during regular use**	Uncleaned flue, flue pipes and solid fuel	Clean the internal part of the flue, the flue pipe and solid fuel.

		Damp heating materials of the heating materials you use intensively release smoke	Change heating material. Use dry hating material and heating material that does not release smoke
		Overloaded firebox	Fill the firebox slowly, gradually, in a couple of times
		Bad flue	Repair or make a new flue
21	**The grate is stuck when cleaning is performed**	Some spike is stuck, slag or something else on the grate	Clean the grate of undesirable objects

18. Outline dimensions of ALFA TERM 27 stove

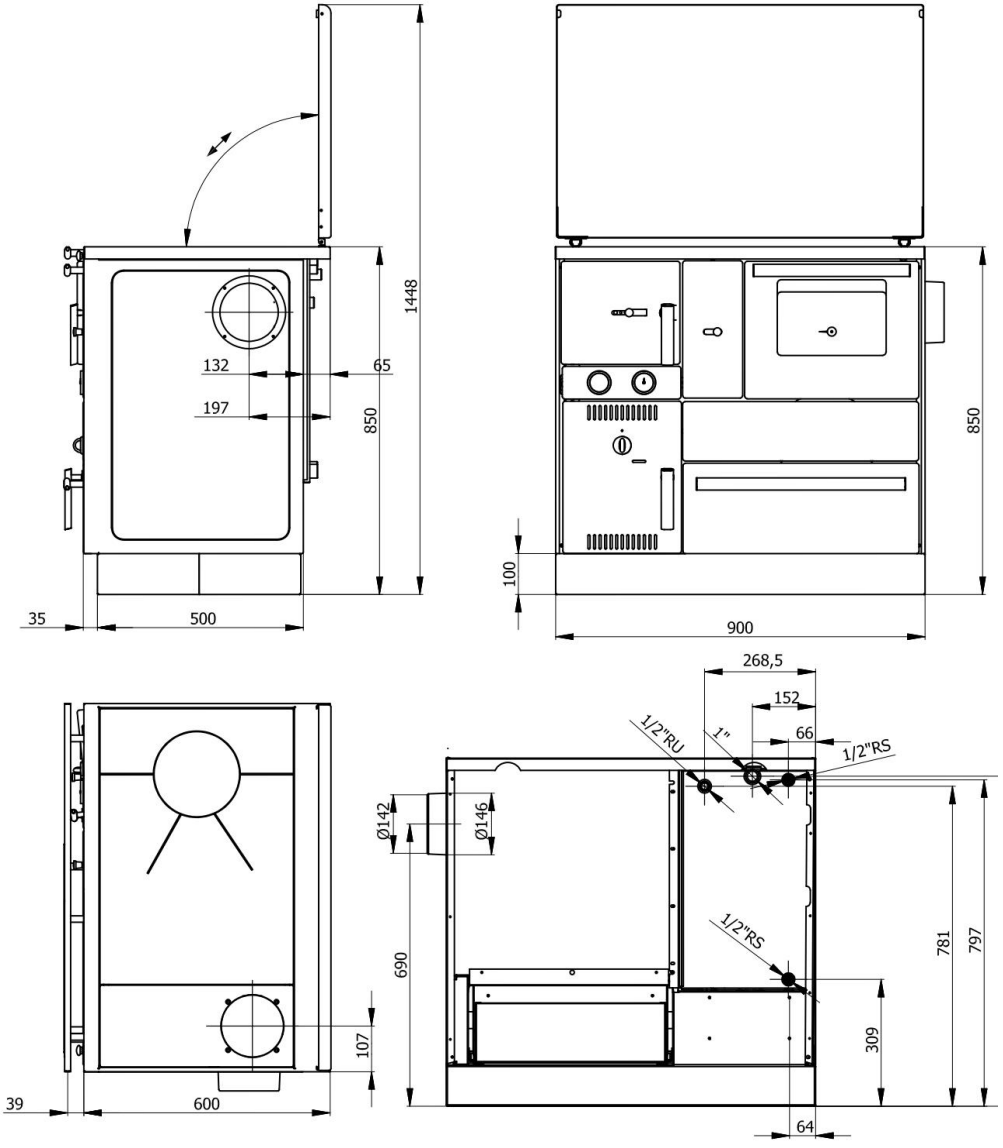


Figure 16

19. DETERMINING THE REQUIRED HEAT OUTPUT

There is no absolute rule that would allow the calculation of the required heat output. This power is determined by the space you want to heat, but it also largely depends on the insulation. On average, the required heat output for a properly insulated room would be **30 kcal h per m³** (at an outdoor temperature of 0°C).

		Indicative combustion value		**Required quantity in the ratio of 1 kg of dry wood**
Fuel	**Unit**	**kcal/h**	**kW**	
Dry wood (15% moisture)	kg	3600	4.2	1.00
Wet wood (50% moisture)	kg	1850	2.2	1.95

20. TURNING THE APPLIANCE OFF

In the event of fire or overheating, close the air inlet covers and DO NOT open the fireplace door. Extinguish the fire with appropriate means (home fire extinguisher...). NEVER USE WATER TO EXTINGUISH THE FIRE! Also notify local firefighters in case of fire. Follow local fire protection regulations!