

Tunguska

TERMOFOR[®]
SIBERIAN STOVES, HEATERS AND FIREPLACES

The wood-burning sauna stove



OPERATION MANUAL

Made in Russia

Warmth comes from Siberia

Thank you for purchase of «Termofor» Company's products.

This maintenance manual is intended to learning of work principle, operating rule and service regulations of The wood-burning sauna stove «Tunguska» (hereinafter – the stove). The maintenance manual contains instructions needed for correct and safe operation of the stove.

Persons will be allowed to installation and operation of the stove after learning this manual.

With regards,
The company «Termofor».

This document is protected by copyright law. Whole or part reproduction of this document is banned without preliminary notice and receipt of permission from the company «Termofor».

The company «Termofor» reserves the right to make modifications in the construction of the stove which do not decline the useful quality without updating its accompanied documentation.

TABLE OF CONTENTS

| | |
|--|----|
| 1. Application | 4 |
| 2. Classical stove for sauna house (sauna) | 4 |
| 3. Design features 2011 | 5 |
| 4. Characteristic of existing heat-resistant steel. Expressions and commentaries | 5 |
| 5. Model series | 6 |
| 6. Specifications | 6 |
| 7. Stove structure and operation | 9 |
| 8. Marking and packing of the stove | 11 |
| 9. Suitable application | 11 |
| 10. Servicing | 26 |
| 11. Current repair | 27 |
| 12. Warranty | 28 |
| 13. Storing | 29 |
| 14. Carriage | 29 |
| 15. Utilization..... | 30 |
| 16. Delivery set | 30 |

1. APPLICATION

The wood-burning stove with stones section «Tunguska» for heating of sauna's steam room and its adjacent rooms. Also, the stove is destined for steam generation and water heating.

The stove is destined for private use in Russian sauna and renders possible to get all comfortable combinations of temperature and humidity of air.

- ✓ *ATTENTION! If using of the stove «Tunguska» for commercial purposes and, also, continuous heating of stove for more than 10 hours, when working load will increase six-tenfold. Period of working time of the stove greatly is reduced at such conditions and manufacturer declines all warranties.*

2. CLASSICAL STOVE FOR sauna HOUSE (sauna)

The stoves of such design take up the leading positions for sales in many regions of Russia. More than once the stoves were awarded prizes at international specialized exhibitions and were acknowledged as the best consumer product produced in Novosibirsk city.

The design of stoves is based on the studies of domestic and foreign samples, own expertise and experience as a producer, and the most important subject to all remarks and requests made by many thousands of experts and amateurs of Russian sauna house (sauna) who had already purchased the stoves.

The use of heat-resisting high-alloy stainless steel with the content of chromium not less than 13% allowed to minimize the thickness of stove fire chamber walls up to 2-3 mm without causing any harm to its service life. This helped to considerably reduce the weight of the stove and as the result its heat inertness.

Due to the above described the walls of the stove become hot very quickly and as well quickly start to heat the air of a steam room, stones and adjoining rooms of the sauna house (sauna) through the open doors of the steam room.

Chemically-inert surface of the sauna stove at which chromium forms a passive film minimizes such an unwanted effect as “oxygen combustion” in the heated room.

The effective heat-exchange circuit is implemented at the design of the sauna stove, heating surfaces are highly developed. The total area of heating surfaces for «Tunguska» sauna stove comprises to 1.46 m².

For after-burning of the exhausted gases and thorough warming up of the stones section there is a special channel that supplies additional air into the gas pipe channels of the stove.

All the potential places in the horizontal gas pipe channels of the stove where soot can accumulate are burned out by open flame through the specially designed gaps.

The deep non-aerated stones section is warmed up by the open flame from five sides and has the closing upwards pyramidal shape that concentrate the heat emission from the walls of the stones section into its central part for the maximum warming up of stones. Heavy weight of the stones set into the stones section of the sauna stove provides stable temperatures in the steam room and is the powerful steam-generating unit.

Heating surfaces are covered with external casing-convector that considerably increases warming up of the air in the steam room. Besides the casing-convector screens off the high-level infra-red radiation emitted from the burning hot walls of the fire chamber.

The sauna stove is equipped with fuel channel that allows to stoke the stove from the adjoining room.

Long shutter gate made of solid foundry-iron provides the sustained and powerful firewood combustion that is so necessary for the stove in a sauna house (sauna).

3. DESIGN FEATURES 2011

- Updated design. Decorative external parts were produced with the use of modern technologies.
- The concept of thermal strength uniformity that prolongs the service life of the sauna stove was embodied. The thickness of fire chamber details, exposed to the highest thermal load was increased up to 50%.
- External casing was made solid, ventilation holes are only at the front wall for the maximum screening off from the high-level infra-red radiation emitted from the fire chamber.

4. CHARACTERISTIC OF EXISTING HEAT-RESISTANT STEEL. EXPRESSIONS AND COMMENTARIES

Heat-resistant or scaling resistance means capacity of metal to stand against corrosive attack of gases at high temperatures (not to be confused with high-temperature strength).

Heat-resistant of steel is enhanced by chrome doping. Chrome creates an inactive film on a surface of steel, which does not be subjected by corrosion till limiting temperature called as temperature of oxide scale formation beginning.

Heat-resistant of steel and temperature of oxide scale formation beginning rises with increase of chrome content.

Steel is deemed heat-resistant when it contents mass fraction of chrome 13 % and more.

Steel divides into low-alloyed, medium-alloy and highly alloyed depending on alloying elements content.

Steel is deemed highly alloyed when it contents alloying elements 10% and more.

Colloquially, popular phrase "stainless steel" is not standardized expression. Expression "corrosion resistant steel" corresponds with this expression in modern materials science.

A key differentiator of corrosion resistant steel is chrome content 12,5% and more.

- ✓ *Steel used in manufacture of stoves «Tunguska» - is heat-resistant, highly alloyed, corrosion resistant (stainless) in accordance with above stated characteristics.*

Temperature of oxide scale formation beginning of applied steel is not less 750C, and it is confirmed by certificates of manufacturers.

For comparison: temperature of oxide scale formation beginning of constructional or «carbon» steel is no more than 400C, it is greatly low than temperature of walls of functioning wood-burning stove.

Heat-resistant steel is more expensive than traditionally applied «carbon» steel. Its share in manufacturing costs of stove corresponds near 50%. Therefore, in the process of selection chemical compositions of steel, a manufacturer excludes those alloying elements and technical operations its processing which don't increase heat-resistance and lead to unjustified increase in the cost.

Stereotypical perception of stainless steel as mirror surface is erroneous. Mirror surface of household stainless steel products is achieved by special expensive removal of dark oxide film from surface of sheet. This action is not needed under manufacture of wood-burning stoves.

The manufacturer considers that buyers of stoves «Tunguska» shall only pay for those special characteristics of steel which are needed for its using into wood-burning stoves.

Upon storage and operation of stoves in condition of higher humidity, traces of surface corrosion on non-painted area are allowed. These traces don't influence upon operational characteristics of product.

5. MODEL SERIES

Basic models «Tunguska 2011», «Tunguska 2011 Vitra», «Tunguska XXL 2013» and «Tunguska XXL 2013 Vitra» are produced in lots. These models have general surface appearance, design features and operating principle. Differences between models consist in capacity size of a steam room, dimensions, a type of fuel channel and door of the stove.

The models «Tunguska 2011» and «Tunguska XXL 2013» have modification with a short fuel channel.

All models can be completed by fixed heat exchange unit. The stove has various color version of a convector.

6. SPECIFICATIONS

Specifications are presented in Table 1. Overall sizes of stove are presented in figures 1-4. Installation dimensions of the stove (aperture under fuel channel) are presented in clause 9.6.

There are following acceptable fuel types: fuel wood, peat briquette, woodchip briquette for enclosed-type heaters.

Recommended volume of hot-water tank of a samovar type «Baykal» is 55-72 l. Recommended volume of outboard hot-water tank is 63 l.

Heat time of a vapor room from 20°C till 100°C is approximately 60 min subject to correct thermal protection.

- ✓ *ATTENTION! Hot-water tanks and heat exchange unit of samovar type «Kostakan» aren't included into delivery set.*

The capacity of built-in heat exchange unit (for the model with the heat exchange unit) equals to 1.2 l. The size of the connecting thread of heat exchange unit fitting equals to G3/4. Mounting dimensions are presented in figure 2.

Table1. Specifications of the stove with stones section «Tunguska 2011» and «Tunguska 2011 Vitra».

| Model | Tunguska 2011 | Tunguska 2011 Vitra | Tunguska XXL 2013 | Tunguska XXL 2013 Vitra |
|--|---------------|---------------------|-------------------|-------------------------|
| Calculated capacity size for space heating, CBM | 8-18 | | 12-24 | |
| Width, mm | 415 | 500 | 415 | 500 |
| Depth, mm (total) | 830 | 850 | 990 | 1010 |
| Depth, mm (without including length of a fuel channel) | 590 | 590 | 750 | 750 |
| Height, mm | 810 | 810 | 810 | 810 |
| Mass, kg | 56 | 63 | 70 | 77 |
| Capacity size of stones section, l | 24 | 24 | 37 | 37 |
| Mass of loaded stones, kg | 60 | 60 | 92 | 92 |
| Capacity size of combustor, l | 46 | 46 | 61 | 61 |
| Maximum capacity of fuel load, l | 30 | 30 | 40.5 | 40.5 |
| Maximum length of a log, mm | 500 | 500 | 660 | 660 |
| Diameter of attachable a flue, mm | 115 | 115 | 115 | 115 |
| Minimal height of a flue from fire-bar, m | 5 | 5 | 5 | 5 |

- ✓ *ATTENTION! Maximum capacity size for space heating is determined by terms of providing with effective convection heat transfer and standards of overall thermal resistance of walling by SNIP (CHuII) (construction norms and rules) 23-02-2003.*

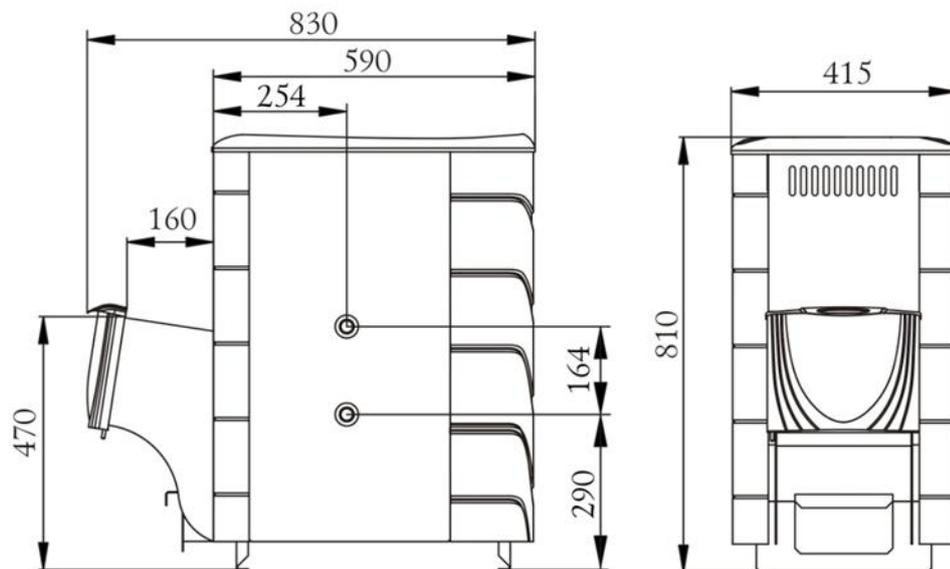


Figure1. Overall sizes of the stove «Tunguska 2011»

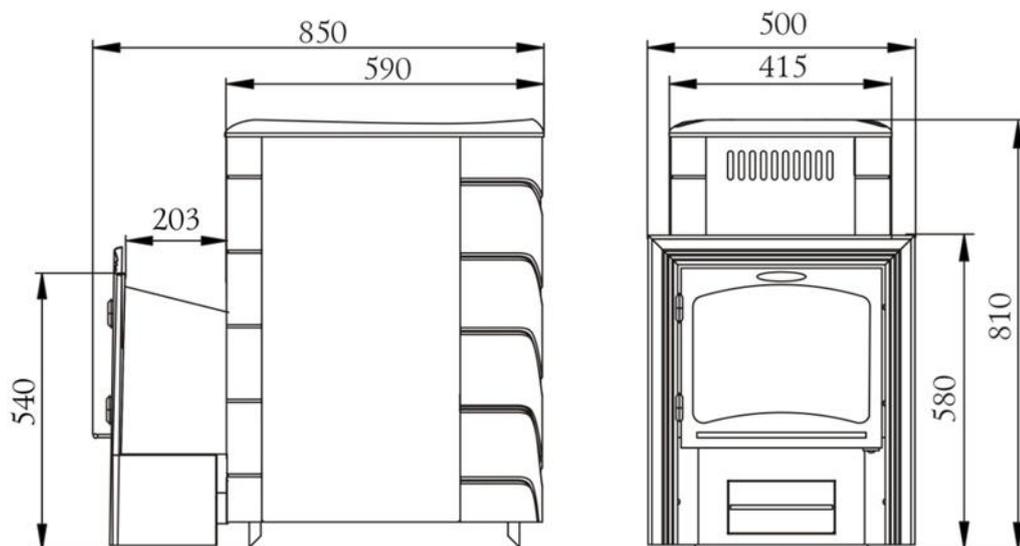


Figure2. Overall sizes of the stove «Tunguska 2011 Vitra»

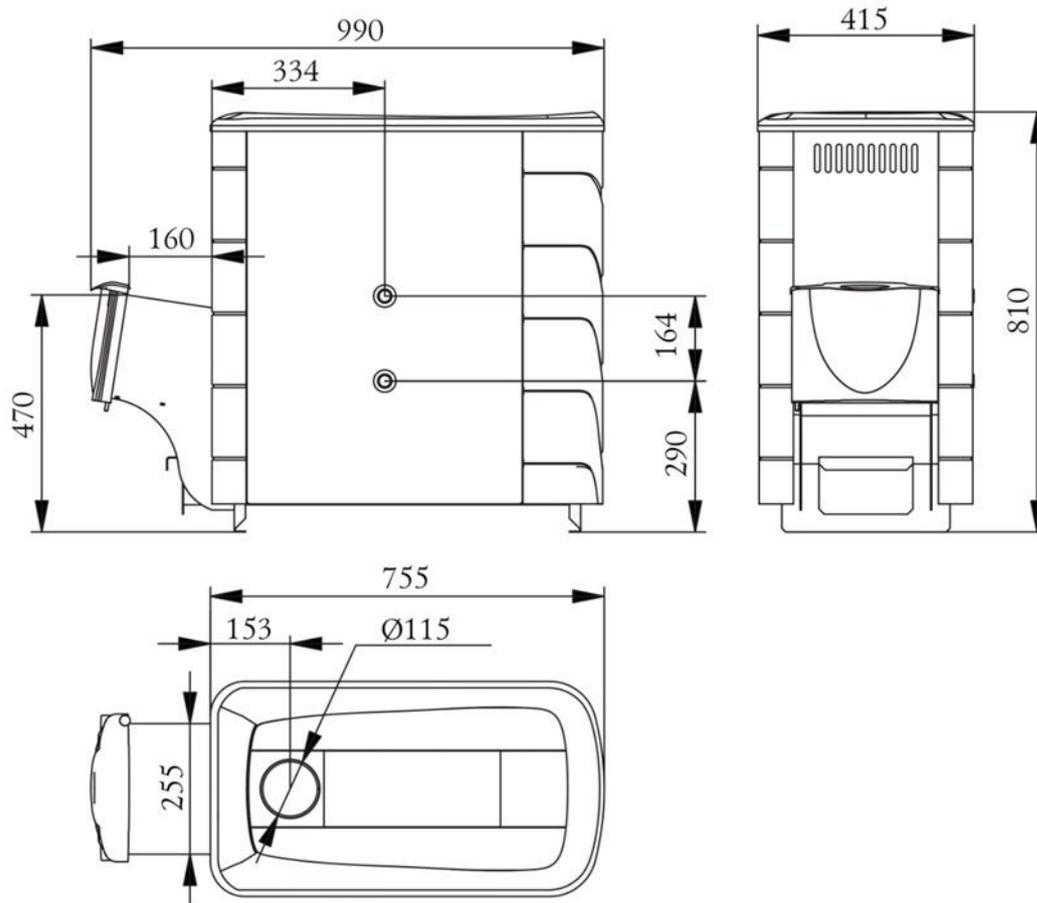


Figure3. Overall sizes of the stove «Tunguska XXL 2013»

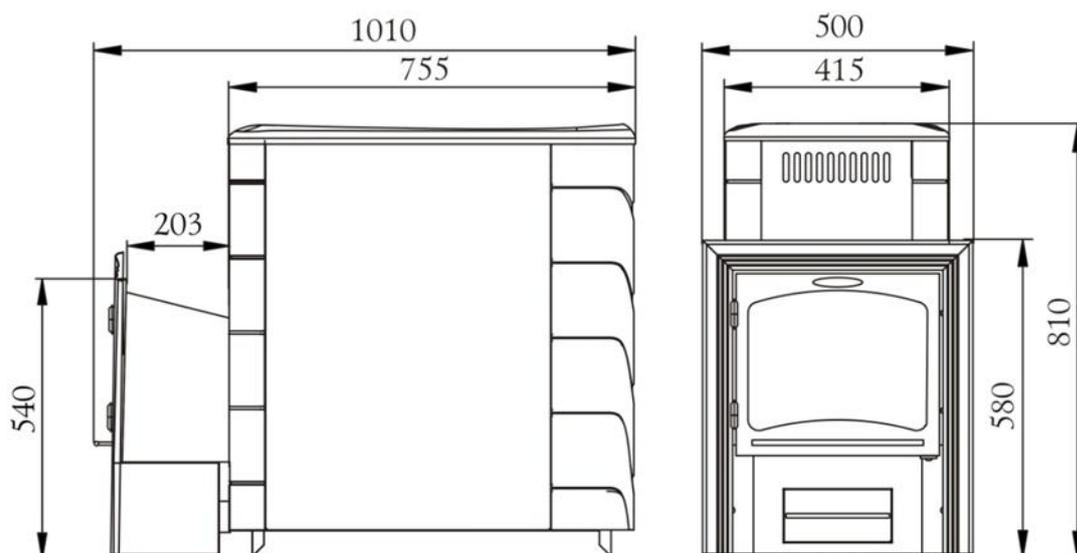


Figure4. Overall sizes of the stove «Tunguska XXL 2013 Vitra»

7. STOVE STRUCTURE AND OPERATION

The stove «Tunguska» operates in a regime of active combustion under temperature rise in a sauna. The stove operates in an economic regime under selected temperature maintenance.

Overall view and layout of the main elements of the stove are presented in figure 5.

In «Tunguska» sauna stoves the firebox (4) and the deep non-aerated stones section (1) are made of heat-resisting high-alloy stainless steel with the content of chromium not less than 13% and walls thickness of 3 mm.

The casing-convector (8) covering the heating surfaces of the stove accelerates the heating of air in the steam room by means of powerful convectional flow it generates. Besides it screens off the high-level infrared radiation emitted from the burning hot walls of the fire chamber and this creates mild warmth in the steam room and serves as the protection from accidental touching the stove during its operation.

Special channel (2) supply the secondary air into gas pie channels of the stove for after burning of the exhausted gases and thorough warming up of the sauna heater.

The stove would be heated by using an outboard fuel channel from the adjacent room. Also, the stove would be heated by using modification with a short fuel channel from the steam room.

Revolvible door of the combustor opens to a necessary angle for accessible and secure fuel load.

For models «Tunguska 2011» and «Tunguska XXL 2013» the door is produced in two interchangeable versions: the steel door (11) with the function of external panel self-cooling and the door of special design with translucent screen made of heat-resistant glass Schott Robax® (12).

«Tunguska 2011 Vitra» and «Tunguska XXL 2013 Vitra» models are equipped with panoramic fuel channel (9) and the door with translucent screen made of heat-resistant glass Schott Robax® with diagonal of 17°. In the upper part of the door there is a gap for pyrolysis self-cleaning of the translucent screen from soot accumulation.

The screen made of heat-resisting glass enables to visually control the burning process and simply admire the view of fire.

Fire-bar (5) made of solid foundry-iron is installed into the lower part of the fire chamber. Under the fire chamber there is the ash-pit with ash-drawer (6).

During functioning of the stove, primary air, needed for combustion, is moved through ajar ash box (6) and fire-bar (5) to fuel. Fire-bar renders possible to overload the combustion process and to get a powerful heat-temperature flame at the moment of ignition. It provides equable burning of fuel wood. «Tunguska 2013 XXL» and «Tunguska 2013 XXL Vitra» models have more deep fire box, cast iron shutter gate is installed full-depth of the fire chamber providing fuel combustion even in the farthest corners.

Ash falls into ash box through holes of fire-bars. The stove can be cleaned by use of ash box during functioning of the stove.

Fumes move to flue through branch pipe with diameter 115 mm.

For model with heat exchange unit (10) the heat exchange unit is fasten inside the side wall, symmetrical holes closed by blind plugs (3) are at the opposite wall of the fire chamber. The heat exchange unit allows to heat water in the remote tank; and its location inside the fire chamber considerably accelerates the heating process.

Elements of the sauna stove not bearing the heavy thermal load are made of structural steel.

The external surface of the stove is covered with heat-resistant organic-silicon enamel of KO-868 type.

✓ *ATTENTION! The manufacture reserves the right to introduce changes into the sauna stove design not impairing its consumer properties.*

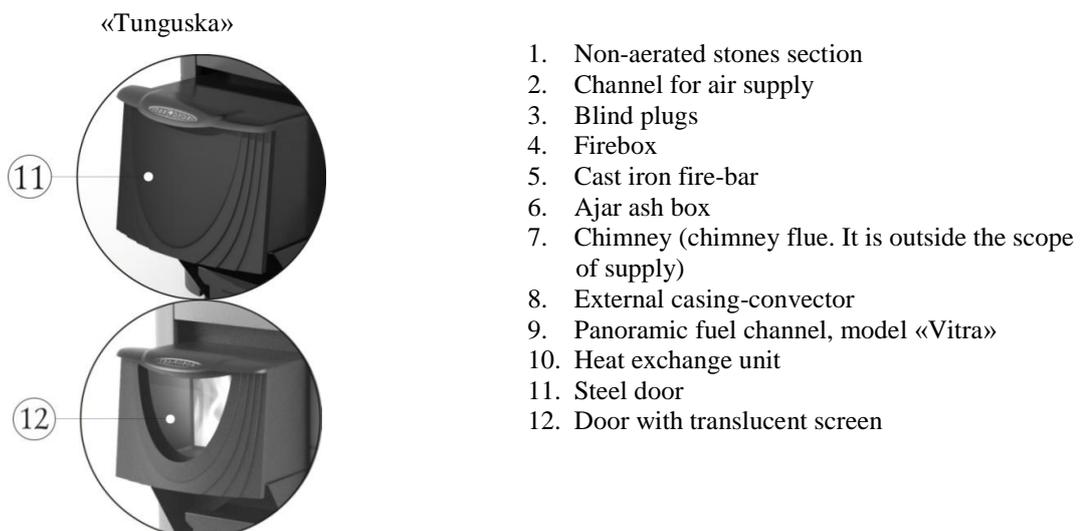
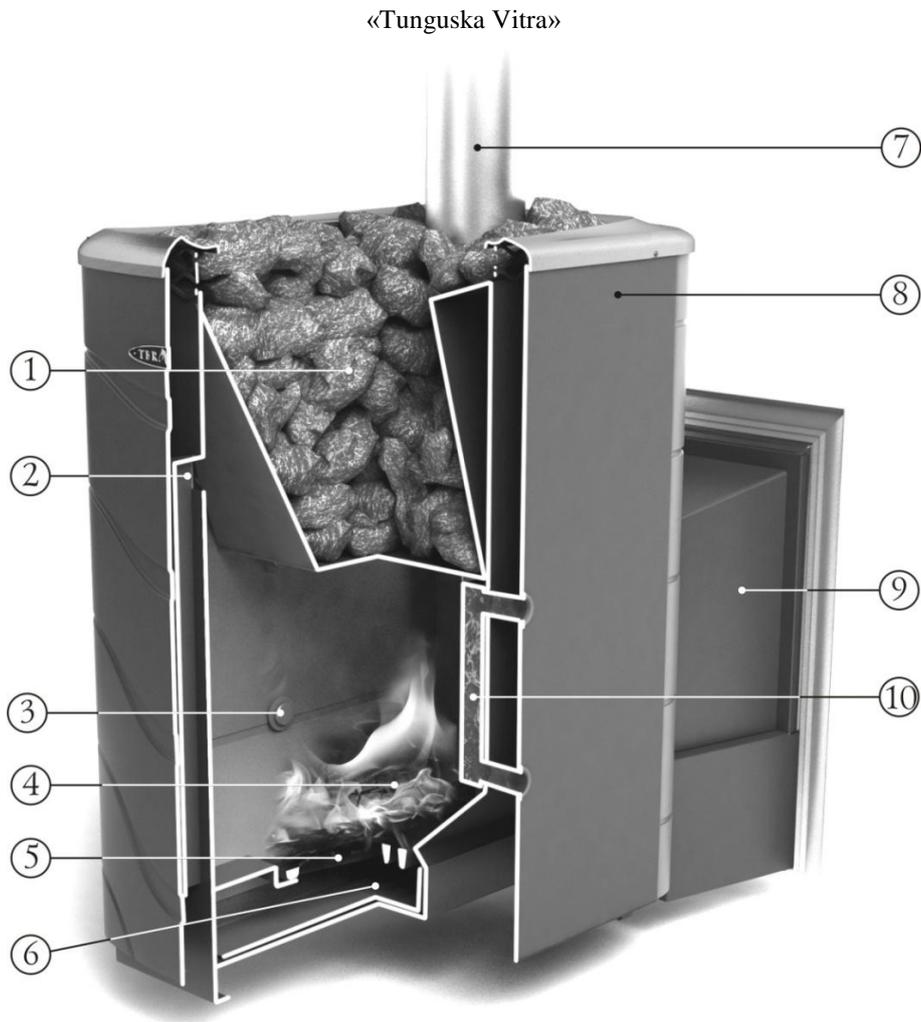


Figure 5. layout of the main elements of the stove «Tunguska». Modification with heat exchange unit.

8. MARKING AND PACKING OF THE STOVE

8.1. Marking

On a stove there is an information code plate with details about a model of a stove, its mass, factory serial number, production date of a stove and other technical features, and also the information on certificates for this model.

8.2. Packing

A stove is packed in a transport pack. Maintenance manual in a packaging bag and components are enclosed in the stove combustor.

On a pack of a stove at the front part there is a label with information about a model of a stove, its mass, design features and production date.

8.3 Procedure of remove the packaging by a consumer

1. Cut a packing tape
2. Remove cardboard boxes
3. Remove a polyethylene
4. Pull from a stove maintenance manual and components (if available) and take off a packing
5. Take away blocks and turn off fixing bolts
6. Remove advertising stickers from a surface of a protective film.

9. SUITABLE APPLICATION

9.1. Operational constraints

- ✓ *ATTENTION! Don't use the stove for industrial premises of categories A (A), B (B), V (B) of fire and explosion safety in accordance with NPB (НПБ) 105-95 (classification of premises and buildings of fire and explosion safety).*
- ✓ *ATTENTION! Don't use matters as fuel which aren't mentioned under point 6.*
- ✓ *ATTENTION! Expressly prohibited using charcoal and coal briquettes as fuel.*
- ✓ *ATTENTION! Don't use alcohol-containing means, benzene, kerosene and other highly inflammable matters for ignition. Don't use a glossy paper, trimmings of wood particle boards, laminated flooring board, orgalite because these matters would evolve noxious substances under burning, and would be cause of outburst and damage of a stove.*
- ✓ *ATTENTION! Don't use the stove with an empty heat exchange unit and a hot-water tank or an unconnected system of water heating (if available).*
- ✓ *ATTENTION! Don't use the stove inappropriately.*
- ✓ *ATTENTION! Don't use the stove in autohouses, trailers and tents.*
- ✓ *ATTENTION! Don't commit overheating of the stove at the time of its operation.*

Overheating of the stove can be identified by red glow of the metal in the dark.

This situation can appear upon the uncontrolled air supply into the fire box. For example, when the door is open. The stove warming up may lead to dangerous conditions of the stove operation and its premature breakdown.

9.2. Commissioning of the stove

- ✓ *ATTENTION! At the time of the first heating of the stove applied on the metal industrial oils and light volatile compounds of organosilicone enamel evolve smoke and smell, which aren't evolved in the following.*

People having chest troubles and owners of the pets susceptible to smoke (for example birds) should take precaution measures.

The first heating of the stove it is necessary making open-air with fire prevention discipline, at least one hour, with charging of a fire box in half in the regime of active combustion.

For correct operation of the stove, at the time of the first heating it is necessary to organize a temporary flue with height at least 2m.

For the model of stove with built-in heat exchange unit it is necessary to organize temporary water heating system during the first pre-heating.

- ✓ *ATTENTION! Don't make mechanical action to a surface of a stove till complete cooling and final polymerization of paint at the time of the first heating in order to avoid damage of a lacquer coating.*
- ✓ *ATTENTION! The first heating of the model "Vitra" shall be carried out with opened door of combustor to prevent smoked translucent screen.*

Please, make sure in normal functioning of the all components of the stove and protective constructions. A faulty stove is not permitted to operation.

An efficient stove:

- Doesn't have external damages of a carcass.
- A door freely revolves on hinges, closely adjoins to a carcass and is efficiently fixed by a lock.
- A translucent screen on a door (if available) doesn't have damages.
- Fire-bar is safe without burnouts and cracks.
- An ash drawer has to freely move and it closely adjoins to a carcass in the closed position.
- A heat exchange unit (if available) doesn't have any damages.

9.3. Stones for stones section

It is necessary to load special stones into stones section. The manufacturer recommends using gabbrodiabase, peridotite, talcum peach, jadeite. These volcanic rocks possess a beautiful pattern and composed of durable minerals against physical and chemical action. Also, these volcanic rocks don't contain harmful impurities. These volcanic rocks possess considerable heating capacity, stand against large, repeated temperature differential. Also, stones are fireproof and don't break. Irregular shape of stones and difference of its sizes provide maximum filling of stones section and maximal area of heat output.

- ✓ *ATTENTION! Stones of unknown origin can contain, numerously, harmful sulfides and radionuclides, which make its useless and even dangerous for using in a sauna.*

Stones shall be rinsed by scrub brush in flowing water before load.

Do not put stones higher than a top level of the stove, because stones will not heat-up to temperature needed for quality steam formation.

- ✓ *Attention! Exclude the possibility of excessive water supply to the non-burning hot stones. In this case the intensive stones section walls oxidation process will take place due to the direct contact of water and metal. This reduces the service time of the stones section and as the result of its burning-through.*
- ✓ *Attention! Hot steam exhaust from the stones section takes place when water is supplied to the non-burning hot stones. Supply water carefully.*

During the long use of the stove it is necessary to carry out the shift of stones not less than once per year. At the same time the pebble gravel should be removed and destroyed stones should be replaced with the new ones.

9.4. Preparation of premises to installation of the stove

Protect from fire constructions of premises:

- Walls (or partition) of inflammable materials have to be protected with plaster with thickness 25 mm on an expanded metal or a metal plate on an asbestos paper with thickness 10 mm, from a floor to a level of 250 mm above the top of the stove.
 - A wall (or partition), through which fuel channel pass, shall be from nonflammable materials from a floor to a level of 250 mm above the top of the stove. Recommended thickness of a wall is 125 mm.
 - A floor under the stove has to be protected by a foundation from brick at least two coating or other nonflammable material at a distance of 380 mm from a wall of the stove.
 - A floor of inflammable and combustible with difficulty materials in front of a door of a combustor has to be protected with a metal plate with size 700×500 mm with length its side along the stove.
 - Make a fireproof partition in a passage of a flue through a ceiling.
 - At the time of installation of a flue in premises with a roof of inflammable materials a flue has to be protected with a spark arrester of gauze with an opening with size no more 5×5 mm, also have to block with nonflammable roofing materials a space around a chimney.
- ✓ *ATTENTION! A place of installation the stove and chimney will be done in accordance with SNIP (CHuII) (construction norms and rules) 41-01-2003 or, in accordance with technical standards of a country, where the stove would be exploited.*

9.5. Air change in a steam room

It is recommended to organize a balanced system of ventilation for provision of good air change (see figure 7).

A hole for fresh air intake (9) with a section about 100 square centimeters is made in a floor as closely as possible to the stove or under the stove.

A hole for used air exhaust (6) is made in a wall just below of a level of a ceiling as far as possible from the stove. For more moist and cold air exhaust, a vertical box (8) is installed to a top hole. A vertical box possesses a vent hole at a distance not more than 50 cm from a floor.

It is recommended to install adjustable latches (7) in air inlet and exhaust outlet for possibility to control air exchange.

- ✓ *ATTENTION! It is necessary to provide constant inflow of fresh air into the room where the stove is operating. The breach of the condition may lead to unstable operation of the stove and appearance of dangerous situations such as poisoning with carbon monoxide, fire breaking-out.*

9.6. Stove assembly

- ✓ *ATTENTION! All the stove assembly and stones setting into the stones section works shall be carried out only after total cooling off of the stove.*
- ✓ *ATTENTION! The stove is heavy. Make sure that you have the possibilities and equipment for its moving.*
- ✓ *ATTENTION! It is prohibited to install the stove in the places where the stove will create obstacles for people moving during evacuation.*
- ✓ *ATTENTION! It is necessary to carry out the installation of smoke sensors and gas detectors in the rooms where the stove is installed.*

Mount the stove to the specially prepared place. Make sure that the stove is assembled and installed correctly.

Provided after reading this manual you still have any doubts concerning the stove correct installation you should consult the stove assembly specialist who is aware of all the aspects of safe and correct installation of stoves.

A scheme of installation of the stove is presented in figure 7. Distance from the door of the combustor till the wall opposite will be at least 1250 mm. Distance between the top of the stove and an unguarded ceiling will be at least 1200 mm.

Distance between an external surface of the stove, flue and wall will be at least 500 mm, for constructions of inflammable materials will be 380 mm, for constructions of inflammable and combustible with difficulty materials which are protected by a metal plate on an asbestos paper with thickness 10 mm or with plaster on expanded metal with thickness 25 mm.

Do not install the stove into the niche in a wall or into the fire place.

Distance from the side of a fuel channel till a wall shall be at least 30 mm. If thickness of a wall is 125 mm then a door of a combustor will have the most correct position.

Wall opening for fuel channel from the level of support feet shall have the following dimensions (height × width):

- for «Tunguska 2011» and «Tunguska XXL 2013» models — 480×270 mm
- for «Tunguska 2011 Vitra» and «Tunguska XXL 2013 Vitra» models — 545×410 mm

For installation of the model «Vitra» on the site of operation it is necessary:

1. Unscrew self-tappers 8 ps. that fixes a door with a frame to a fuel channel and remove a door; (see Figure 6)
2. Install the stove on the site of operation (edge of a fuel channel shall emerge from another side of a baffle);
3. Install back a door with a frame. I will be fixed by self-tappers.

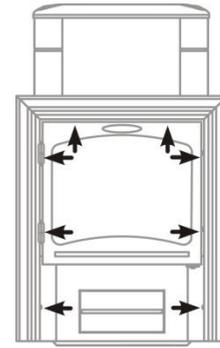
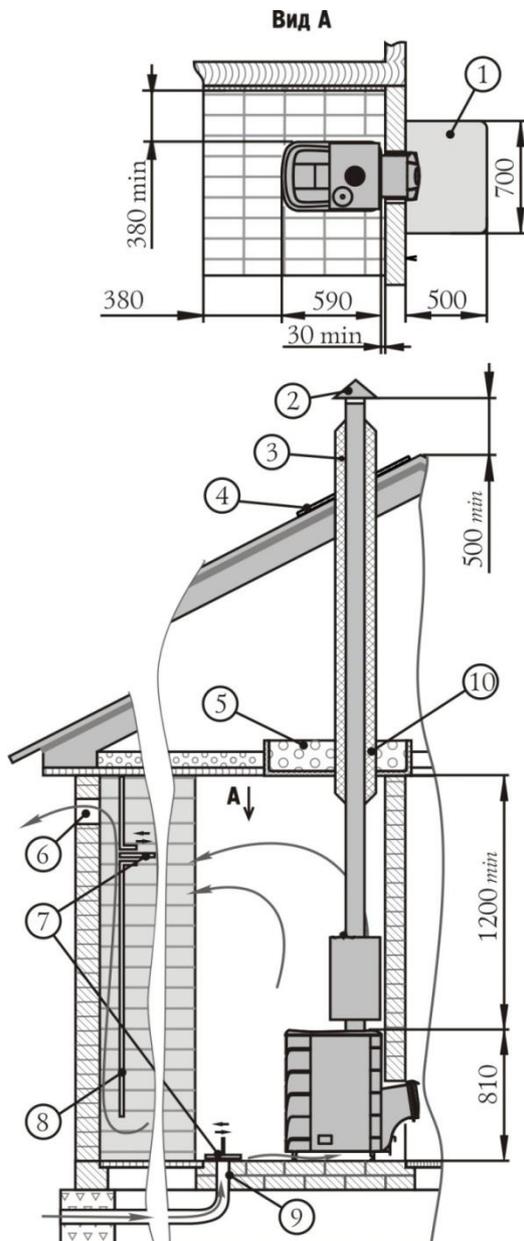


Figure 6. Door disassembling under installation of the stove «Vitra»



-  a metal plate on a heat-insulation material (an asbestos paper with thickness 10 mm)
-  wood (inflammable material)
-  a thermal insulation of a nonflammable material (haydite/dross/ basalt wool)
-  bricks and so on (a nonflammable material)
-  a material of foundation (nonflammable)

1. A sheet in front of a combustor
2. A flue cover
3. Flue with a thermal insulation of type «sandwich construction»
4. An overlap of a nonflammable material for a roof
5. A roof splicing
6. A hole for used air exhaust
7. Adjustable latches
8. A vertical box
9. A hole for fresh air intake
10. Start-sandwich

Figure 7. Installation of the stove in inflammable material premise

For the models «Tunguska 2011» and «Tunguska XXL 2013», the stove is installed on the site and then a door put on a fuel channel. A door is included in a delivery set.

Installation of a door on the models «Tunguska 2011» and «Tunguska XXL 2013»:

1. Remove a stop quick-detachable collar, then remove the axis out of the door, see figure 8.a;
2. Install the door on sleeves of a fuel channel and unite holes;
3. Set an axis from bottom to top through holes. Place a groove under a collar in the top part of an axis, see figure 8.b;
4. Install a stop quick-detachable collar in a groove on an axis, see figure 8.c.

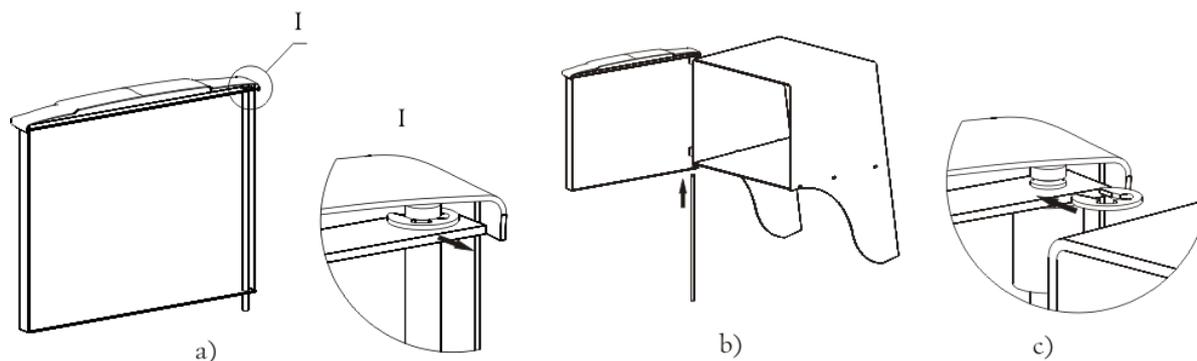


Figure 8. Assembly of the door under installation of the stove «Tunguska»

The stones shall be set into the stones section after the end of the stove mounting and its connection to all the necessary systems.

9.7. Stove pipe assembly

During the use of the stove, the stove pipe shall be treated very carefully.

Stove pipe (chimney stack) – is the means of air ventilation of exhausted gases, it provides the draught that facilitates the constant air intake into the heating equipment necessary for normal burning process. The stove is designed only for operation with natural draught.

The stove shall have its own stove pipe.

- ✓ *ATTENTION! It is prohibited to connect the stove to any air ducts except for the cases when the air duct is designed only for operation as the stove pipe.*
- ✓ *ATTENTION! It is prohibited to connect the stove to the stove pipe that is connected to another equipment or heating unit.*
- ✓ *ATTENTION! The stove does not draw. The draught is made only with the stove pipe.*

The stove pipe has two functions for the stove trouble-free operation. The first – is the piping of exhaust gases generating during the fuel combustion. The second – is draught for air intake into the fire chamber for combustion maintenance.

Draught – is the natural air or gases movement through the stove pipe. It generates due to the feature of warm air to go upwards.

As far as the warm air moves in the stove pipe the low pressure is generated in the place of the stove connection to the stove pipe. The greater pressure from the outside of the stove makes the air move into the area of lower pressure – into the area of fire box. Thus the air intake into the fire chamber happens. This constant air inflow is the draught.

The stove won't be operating effectively if there is no draught of the definite value.

✓ *The optimal draught for operation of stoves of «Termofor» trademark equals to 12 ± 2 Pa.*

Provided the excessive draught the considerable air flow will be entering the fire chamber and this will lead to the stove overheating. Fire hazard may appear.

With the insufficient draught the insufficient amount of air for fuel proper and complete combustion will be entering the fire chamber and this may lead to smoke generation in the room. The creosote generation increases upon the formation of excessive smoke in the stove pipe and that may ignite creating the fire hazard in a house.

Creosote — is colourless (sometimes yellowish or yellow-green), inflammable, hardly soluble in water oily liquid with strong smell and pungent taste extracted from wood and coal tar. This is the mixture of phenols mainly guaiacol and cresols. Soluble in alcohol and ether. Poisonous.

Creosote will inevitably be generated in your stove and stove pipe. To reduce the speed of its generating it is necessary to:

Use only dried billets that were dried during the period for not less than one year.

Use hardwood of broadleaf woods that is more compact (more heavy) and combust with the higher temperature.

Before the use of the stove check and amend all that can influence the draught. Reducing or increasing of draught may influence the draught by set of different factors, some of them may change in the course of time. Factors influencing the draught:

Atmospheric pressure – may act from outside of a room, from inside and from both side by turns. Weather conditions to which the high pressure conforms (clear and cold days) usually create the perfect conditions for combustion.

Negative pressure outside the heated room – is created with the help of ventilation facilities such as: ventilation inside the sauna room, draft hood, equipment for clothes drying, boilers with forced draught. Upon the negative pressure the air flow in the stove pipe will go backwards at that «negative draught» or «backdraught» is created.

Negative pressure can be neutralized by opening the door or window in the room with the stove.

The stove pipe temperature – the draught in the warmed up stove pipe is better than in the cold one. The cold stove pipe quickly cools off hot gases going upwards and this will prevent their further going upwards. Combustion of the first fuel charge will be enough for the stove pipe warming.

Stone stove pipes and stove pipes with section larger than the heating device are warmed up for a considerably longer period of time.

The chimney stack shall have minimal number of elbows. The straight pipe is preferable. The use of more than two piping may lead to the draught loss and possible smoke generation.

The manufacturer recommends to use modular thin-walled chimney stacks made of high-alloy, corrosion-resisting steel of «Termofor» trademark with the diameter of 115 mm. They are effective, durable and required thee minimum expenses for assembling and during operating.

For reliable fastening of the units together it is necessary to use «collar-strainer»; the use of self-drilling screws is allowed if necessary.

In case of installation of thick-walled metal, ceramic, asbestos-cement or other chimney stack of greater weight it is necessary to unload the stove from its weight.

- ✓ *ATTENTION! The manufacturer shall not be responsible for the influence of external factors on the reduction of natural draught in the stove pipe.*
- ✓ *ATTENTION! It is prohibited to use chimney stacks with galvanic coating.*
- ✓ *ATTENTION! Do not use pipes from different manufacturers in the stove pipe.*
- ✓ *ATTENTION! To avoid the smoke blowing into the heated room all the places of chimney stack units connection against each other and the stove it is necessary to compact with high-temperature sealant (not less than 1000°C) providing the air-tightness of the pipe junctions.*
- ✓ *ATTENTION! The junction of stove pipe units in overlaps and fire block is prohibited.*
- ✓ *ATTENTION! The section of chimney stack located in the zone of sub-zero temperatures shall be obligatory heat insulated by non-combustible material, withstanding temperatures not less than +400 °C.*

The ideal solution for chimney stack – is the installation of ready-made pipe units with heat insulation of «sandwich» type of «Termofor» trademark.

In case of connection of the stove to fixed built-in stove pipe or in other cases it is not recommended to deflect the axis of chimney stack from the vertical line for more than 45°.

- ✓ *ATTENTION! sauna stove and chimney stack assembly shall be carried out by qualified workers from the specialized construction and installation company in compliance with the requirements of SNIP 41-01-2003 (construction norms and rules) or in compliance with technical norms of the country where the stove will be used.*
- ✓ *ATTENTION! It is strictly prohibited to make dismountable the connections of the stove with the stove pipe or other structural elements of the room.*
- ✓ *ATTENTION! In case of fire in the stove pipe shut the dampers of air supply into the fire chamber, leave the room and immediately call the firemen.*

In case of fire in the stove pipe it is necessary to have a clear scheme of actions that shall be elaborated by consulting the specialist. After the fire in the stove pipe will die down, the stove pipe shall be cleaned and checked for the destructions. Make sure that there are no flammables around the stove pipe.

9.8. Stoves with heat exchange unit

Stoves with heat exchange unit help to locate the tank for hot water outside the steam room and install it in wash room. «Termofor» heat exchange units are produced in two variants:

- 1) heat exchange unit of «samovar» type installed at the outlet nozzle of the stove pipe (do not supplied as part of package);
- 2) built-in heat exchange unit, installed at the wall of fire chamber inside the stove (supplied with the stove of corresponding model);

For the first variant water in the heat exchange unit is heated due to hot gases piped into chimney stack. Such heat exchange unit can be moved by its connecting pipe in any direction.

For the second variant – water heating is carried out due to the direct contact of heat exchange unit walls with the flame in the fire chamber.

Built-in heat exchange unit with factory assembly is installed from right (or left) side of the stove. If necessary it can be shifted to another side of the stove – this will allow to install the hot water tank from the side convenient to the Consumer.

Heat exchange units are made of heat-resisting high-alloy stainless steel with the content of chromium not less than 13%.

«Termofor» company recommends along with «Tunguska» sauna stove use the heat exchange unit «Kostakan» of «samovar» type of «Termofor» trademark.

9.9. Shift of built-in heat exchange unit

Holes in fire chamber and convector walls (in models with heat exchange unit) for the connecting pipes output are on the both sides of the stove that is why the heat exchange unit can be shifted if necessary to another side.

It is recommended to carry out the shift of built-in heat exchange unit before the stove assembly. Provided the stove has been already installed and is in use then it is necessary to carry out its disassembling.

✓ *ATTENTION! All works shall be carried out when the stove is fully cooled off.*

For heat exchange unit shift to another side it is necessary (convector and heat exchange unit fastening for all models of «Tunguska» sauna stove are analogous):

1. Remove the convector frame by unscrewing 4 self-drilling screws (fig. 9);
2. Remove the convector by unscrewing 5 self-drilling screws (fig. 10);
3. Remove the heat exchange unit (fig. 11) by unscrewing 2 nuts and taking it off the holes, the gaskets shall stay on the nipples;
4. Remove 2 blind plugs by unscrewing nuts and taking off the blind plugs from the holes;
5. Insert the heat exchange unit into the holes on the other side of the stove and fasten it with nuts;
6. The rest holes shall be fastened with blind plugs;
7. Carry out the convector assembly in the reverse order (see cl. 2-1).

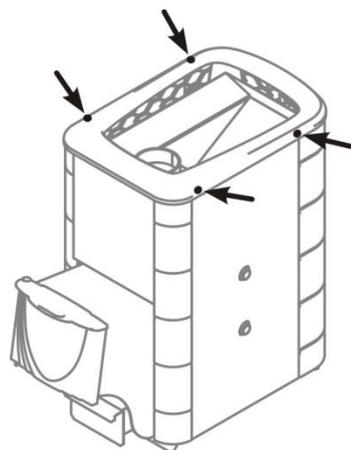


Figure 9. Disassembling of «Tunguska» sauna stove convector frame

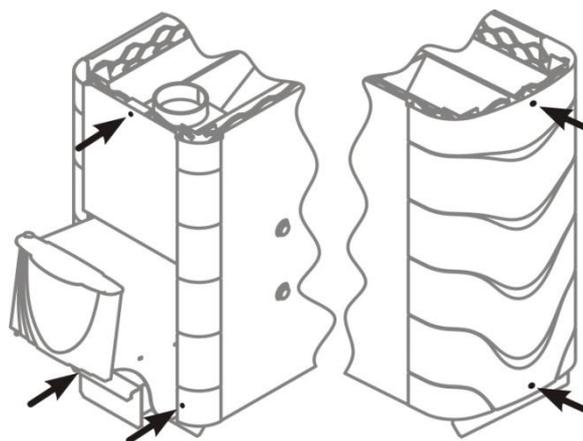


Figure 10. «Tunguska» sauna stove convector disassembling

- ✓ *ATTENTION! During the heat exchange unit shift the gaskets made of non-combustible material shall be located from the inner side of the fire chamber.*

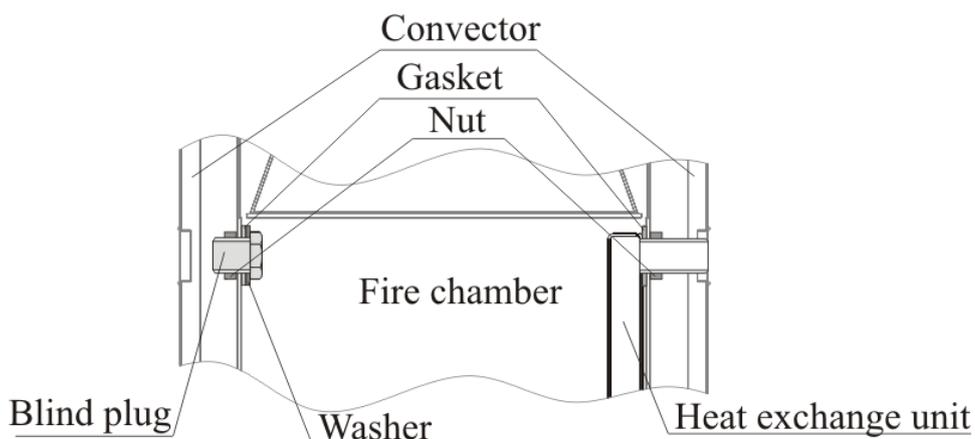


Figure 11. «Tunguska» sauna stove heat exchange unit and blind plugs disassembling

9.10. Installation of a water heating system

- ✓ *ATTENTION! Don't connect a heating system to a heat exchange unit.*

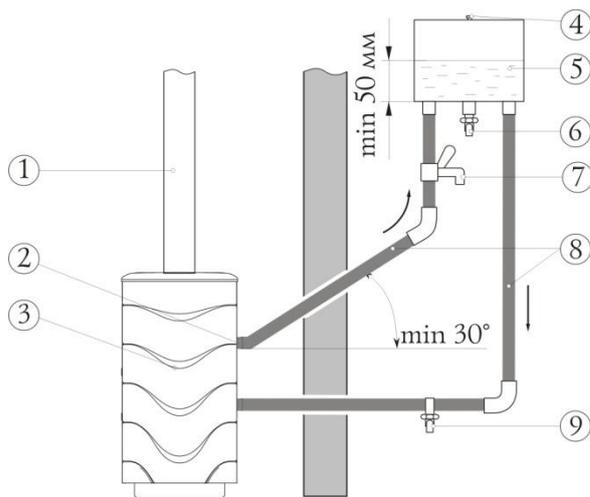
A general scheme of installation of a water heating system is presented in figure 12 – with a fixed heat exchange unit; 13 – with heat exchange unit of «samovar» type. Elements of a water heating system including a heat exchange unit aren't supplied as part of delivery set.

A water heating system consists of:

- A heat exchange unit (2) with two fitting adapter;
- Connective pipes (pipeline) (8);
- An outboard tank (5) for hot water with two fitting adapters for connecting to a heat transfer system and one fitting adapter for installation of a tap of hot water distribution;
- A tap for hot water (6), a threeway tap (7) and a tap for water drain from a system (9).

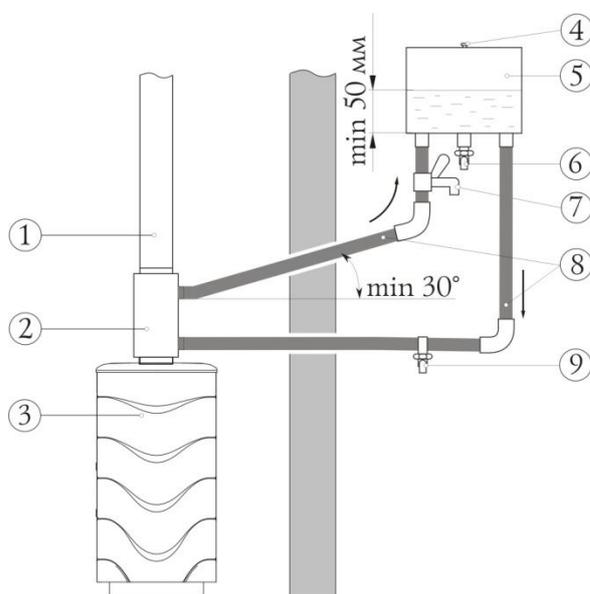
At the time of installation of a water heating system, a bottom of an outboard tank for hot water shall be over of a level of a top fitting adapter of a heat transfer device no less than 30 cm.

- ✓ *ATTENTION! At the time of pipelines installation, don't permit its sagging in horizontal segments. It is recommended to install these pipelines at an angle of up no less than 30°.*
- ✓ *ATTENTION! Don't use pipes with work temperature of operation less than +95°C for a water heating system.*



1. Chimney
2. Fixed heat exchange unit
3. Stove «Tunguska»
4. Connection with atmosphere
5. Outboard tank for hot water
6. Tap for hot water
7. threeway tap
8. Connective pipes
9. Tap for water drain

Figure 12. Scheme of installation of a water heating system with using the fixed heat exchange unit



1. Chimney
2. Heat exchange unit «Kostakan» of «samovar» type
3. Stove «Tunguska»
4. Connection with atmosphere
5. Outboard tank for hot water
6. Tap for hot water
7. Connective pipes
8. Connective pipes

Figure 13. Scheme of installation of a water heating system with using the heat exchange unit «Kostakan» of «samovar» type

- ✓ *ATTENTION! Don't use connecting elements of a pipe fitting with nominal width less than nominal width of fitting adapter of a heat exchange unit.*
- ✓ *ATTENTION! It is prohibited to exceed the operating pressure in the water heating system for more than 0.05 MPA (0,5 kgs/cm²) during the use of "Tunguska" sauna stove with the heat exchange unit.*
- ✓ *ATTENTION! Pressure test of the system by higher pressure shall be carried out when the heat exchange unit is switched off.*
- ✓ *ATTENTION! Only clear water shall be filled to a water heating system. It shall meet requirements of quality in the context of salt, iron, lime content and other.*

If necessary to get hot water at a short time then it will be permitted to make water distribution before its entry to a tank. For this purpose, it is necessary to connect a threeway tap (7) to a pipe of hot line

between a top fitting adapter of a heat transfer device and an outboard tank in a convenient place for you (figures 12 and 13).

To connect the remote hot water tank to a built-in heat exchange unit it is necessary to have the connecting pipes (pipeline) with connecting thread G 3/4.

Provided the pipeline has internal thread then it is simply screwed to the nipple of the heat exchange unit (see fig. 14).

Provided the pipeline has external thread then it is screwed through a reducing socket with the internal thread G 3/4. (see fig. 15)

It is necessary to compact thread connections by plumbing sealant or PTFE-4 band GOST24222-80 (GOST – national state standard).

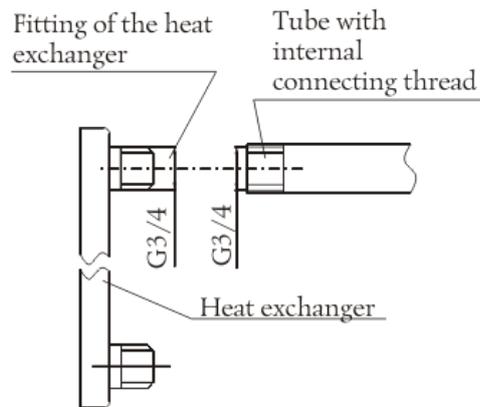


Figure 14. Direct connection of the pipeline.

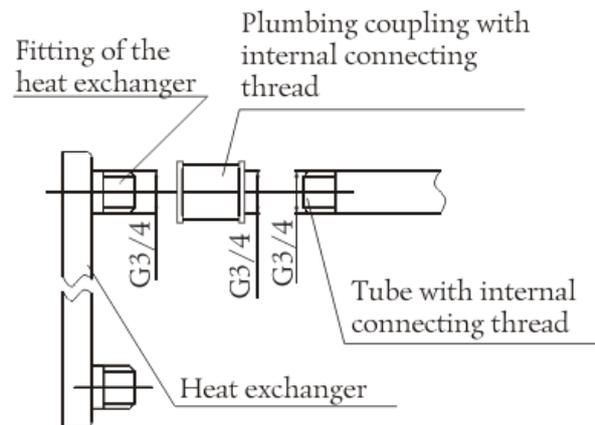


Figure 15. Pipe connection through coupling.

9.11. Hot water tank assembly

- ✓ *ATTENTION! Hot water tank is the unit of extra high hazard that is why it is necessary to exercise caution while being near it.*
- ✓ *ATTENTION! “Termofor” company is not responsible for improper fastening of the tank.*
- ✓ *ATTENTION! Avoid corrosive substances entering the hot water tank and water heating system.*
- ✓ *ATTENTION! It is prohibited to pour water into the empty tank and (or) fill in empty water heating system (if any) after stove starting up until the full cooling off of the stove and the tank.*

Two types of tanks can be used for hot water with the stove «Tunguska»: «outboard» tank and «samovar» type.

An outboard tank is fixed on a wall of steam room or washing room in a convenient place for a consumer. Then, it is connected to a heat transfer device through the use of a pipeline (scheme of installation of a water heating system, see point 9.10). Water in a tank is heated by its circulation through a heat transfer.

- ✓ *ATTENTION! To avoid injuries and burns it is necessary to provide maximum reliable fastening of the tank to the wall.*

- ✓ *ATTENTION! The wall at which the remote tank is installed shall support the weight of the tank fully filled in with water.*

A tank of «samovar» type is fixed on outlet branch pipe of the chimney. Water is heated by warm of outgoing flue gases into the chimney.

When water starts to boil cold water shall be added into the tank.

Don't pour the water in tank up to the top because when water starts to boil it may spill over.

- ✓ *ATTENTION! It is prohibited to misuse the tank.*
- ✓ *ATTENTION! It is prohibited to use defective tank having visual damages and (or) leakages.*
- ✓ *ATTENTION! It is prohibited to use the tank under excessive pressure that differs from the atmospheric one.*
- ✓ *ATTENTION! It is prohibited to touch the warmed up to high temperatures surfaces of the tank with bare hands or with other parts of body in order to avoid burns and damages.*

«Termofor» company recommends to use «Tunguska» sauna stove along with tanks of «Termofor» trademark.

9.12. Operation of the stove

- ✓ *ATTENTION! Make sure in presence of a flue draft before heating of the stove.*
- ✓ *ATTENTION! The stove shall be used only by people, who know rules of operation to avoid personal injuries.*

Before regular heating of the stove, it is necessary to check the firebox and ash drawer and if it would be necessary to clear its from ash and other items (unburned fuel, foreign objects (e.g. nails) remained from past using of the stove.

It is necessary to lay the firewood on the fire-bar through the door. At the time of heating, that to provide an intensive ignition of a fuel and air access to a combustion zone, it is necessary to lay not tightly the firewood and a little push the ash drawer.

Do not load the fire chamber up to the top – this may lead to a dangerous situation when the door will be open. Always shut the door after starting the stove up.

- ✓ *ATTENTION! Do not burn the firewood in a fuel channel. It can lead to deformation of a door and smoke spreading in a sauna.*
- ✓ *Attention! It is prohibited to stoke the stove with the open door except for the cases of re-starting up. This may lead to appearance of dangerous modes of stove operation, smoke entering the heated room and fire breaking-out.*
- ✓ *ATTENTION! Don't use constrained air-feeding in the ash drawer.*

To reduce the amount of pollutant emissions it is necessary to start the ignition from the upper part of the fuel and during the use of the stove add firewood into the fire chamber by small portions.

Fire box shall be filled with small and medium firewood for quick achievement of high temperature in a steam room with more economic expense of firewood (regime of temperature increase). Large-size firewood shall be put into the bottom and smaller ones to the top. Put the kindling wood on top of the firewood.

Ash hole shall be closed and big firewood shall be loaded into the combustor for supporting of stones' temperature and air in a steam room. Sensible quantity of firewood is 3-4 pcs.

For the emergence of a stable chimney draft after heating of the stove is needed a little time. Small smoke emission in a premise is possible if would be opened the door of the just heated working in the regime of temperature increasing stove. Burning of the first fuel is sufficient for flue preheat and developing of a chimney draft which prevents fuming.

In the following, air flow, affecting the combustion rate, would be regulated with opening or closing of the ash drawer.

For laying a regular batch of fuel, it is necessary completely close the ash drawer and to slowly open the door after some seconds.

Be careful during the regular firewood adding to not put out the fire.

For ending of the stove's operation, please, wait till completely burning-out of a fuel, thereafter, clearing the stove from ash and to close fully the door, the ash drawer and the gate.

- ✓ *ATTENTION! Don't extinguish fire with water.*
- ✓ *ATTENTION! Little deformation of metal is possible in the combustor at the time of stove's operation. It doesn't disturb of hermiticity of weld seams. It isn't a sign of defective products.*
- ✓ *ATTENTION! If temperature in a premise is less than +5°C at the period of pause in the stove's work, then water will be drained from a system of water heating.*

9.13. Characteristic faults and methods of elimination

| Trouble type | Possible cause | Troubleshooting |
|---|--|--|
| Disturbance of a burning process | Chimney draft has deteriorated | Clean the chimney |
| Emergence of fuming | Chimney draft has deteriorated | Clean the chimney |
| Emergence of smell | Evaporation of remains of oils and volatile components of enamel | Preheat the stove in accordance with point 9.2. in a place of installation with maximum ventilation of a premise |
| Drops on an external surface of a tube | Insufficient impermeability of joints of chimney | Densify joints with heat-proof sealant |
| Slow heating of a premise | Insufficient heat insulation of a premise Incorrectly selected stove | Insulate a premise Select a stove of higher power |
| Burnout of the fire-bar and (or) side walls | Have used a fuel with high burning temperature Overheating of the stove | Repair or replace the stove, thereafter, use recommended fuel |

9.14. Security measures at the time of the stove operation

Before the beginning of heating season the stove shall be tested. In the case of a fault, the stove shall be repaired. A faulty stove is not permitted to operation. See signs of an efficient stove under point 9.2.

- ✓ *ATTENTION! Don't leave an unattended heating stove and, also, don't trust children and people, who are in a state of drug, alcoholic or other toxic intoxication controlling the stove.*
- ✓ *ATTENTION! Don't touch to heated till high temperature of surfaces of the stove with hand without defense and other exposed parts of a body to avoid burns and injuries.*
- ✓ *ATTENTION! Don't locate a chimney, other inflammable materials on the plate in front of the combustor or nearer of 0,5 m to the surface of the stove.*
- ✓ *ATTENTION! To avoid an accident contact with a heat surface of the stove it is recommended to make a barrier in the form of a netting or a fender of nonflammable material which shalln't prevent air flow near of the stove.*
- ✓ *ATTENTION! Don't install a closed sheathing, which would prevent free convective stream.*
- ✓ *ATTENTION! Don't dry any things and objects on a partly cold surface of the stove.*
- ✓ *ATTENTION! Carbon monoxide generation may be deathful.*

Carbon monoxide has neither smell nor colour, and is generated during the combustion of wood, coal, oil, gas and other combustion agents. It is important to have good draught and reliable ventilation system so that combustion products were exhausted through the stove pipe. Correctly installed stove designed so that to be maximally safe during operation, nevertheless it is recommended to install the carbon monoxide sensors.

The sensors shall be installed at a distance from the stove to avoid false actuation. During the assembly and service maintenance of smoke sensors it is necessary to follow the instruction provided by the manufacturer for their assembly and location.

It is recommended to install the sensors at the level of «table» (but not close to the ceiling) to avoid false actuation. Make sure that sensors actuate for the presence of carbon monoxide. In case of fire alarm (sensor actuation):

- Pay attention to the signs of poisoning with carbon monoxide: headache, sickness, sleepiness.
- Increase the intensity of ventilation (open windows, doors)
- Make sure that door and ash-drawer at the stove are shut tight
- Check – if there is smoke from the stove (through the air dampers)
- Check the connecting pipe and stove pipe for the presence of blowing, smoke obstacle, and back-draught.
- Check carbon monoxide sensors for false actuation.

It is strictly prohibited to change the system of air supply into the fire chamber if you want to increase the flame. The changes of air supply into the fire chamber differing from the designed one will create dangerous conditions for the stove use.

- ✓ *ATTENTION! Place power lead and electrical equipment in the safety area described in the manual.*

During the economical combustion takes place the intensive generation of tar and other organic fumes that are mixing with exhausted steam and generated creosote. Creosote fumes condensate at relatively cold surfaces of the stove pipe and may be accumulated there. And if afterwards they ignite this creates extreme temperatures in the chimney stack and may lead to ignition of materials surrounding the pipe and cause fire.

- ✓ *ATTENTION! Provided the creosote ignition in the stove pipe shut all air dampers of the stove, leave the room and call the firemen.*
- ✓ *ATTENTION! Stove for sauna house (sauna) can be the reason for fire ignition.*

Open and close the door only by the handle. Raked out ashes and drosses from the combustor shall be extinguished with water and shall be located in a special fireproof place.

10. SERVICING

- ✓ *ATTENTION! Don't perform a mechanical cleaning and servicing of the stove till its full cooling.*

10.1. Servicing of the stove and the chimney

Maintenance work of the stove and the chimney shall be regularly done for most efficient and safety operation of the stove.

Sweep chimneys and stoves before the beginning of heating season and also during it in accordance with the «Rules of fireproof routine in the Russian Federation» at least:

- Once in three months for stoves;
- Once in two months for continuous furnaces and fire-places;
- Once in month for ovens and other stoves of continuous (long-term) heat.

It is necessary to use the stove, out of bounds of the Russian Federation, in accordance with technical standards of a country, where the stove would be exploited.

Involvement of experts for checking and sweeping a chimney is preferable.

- ✓ *ATTENTION! The company «Termofor» doesn't have responsibility for consequences of unqualified work to sweeping and checking of the chimney or the stove.*

The chimney can be cleaned both mechanically (with special devices, such as bristle brushes, brushes, loads, scrapers) and chemically (with the special chemical purifier «log-sweep»). A bristle brush would be selected depending on a form and a cross-sectional size of a tube.

- ✓ *ATTENTION! Take necessary measures to protect eyes and anatomical airways from a dust and soot at the time of a mechanical cleaning of chimneys.*

- ✓ *ATTENTION! Read instruction through carefully and follow recommendation of a manufacturer of chemical purifiers. Not recommend using compositions for carbon burning-off are self-made.*

10.2. Service maintenance of door translucent screen

To prevent soot accumulation at the translucent screen (glass) it is necessary to clean it from time to time.

Accumulation of acidulous thin coating (of soot) will as the result erode and weaken the glass of the translucent screen.

It is important to obey the following instructions so that the glass can be used for a long period of time.

On the regular basis inspect the glass for chips and cracks. Provided any cracks or chips are found immediately put out the stove and address the manufacture for glass replacement issue.

Don't slam the door; don't otherwise hit the glass. When shutting the door make sure that billets and other objects do not stick out from the fire chamber so that not to damage the glass.

Don't start up fire near the glass or in such a manner that during the burning process it may be close to the glass.

When cleaning the glass do not use materials that can scratch or in other way damage the glass. Scratches on the glass may during the use lead to glass destruction.

Never try to clean the glass while it is still hot. Before kindling the glass shall be completely dry.

Never put into the stove materials that can ignite explosively. Even small explosion in the closed space is capable to smash out the glass.

Glass cleaning from sooty deposits shall be carried out as and when necessary by soft cloth wetted with special solution for fireplace and stove glasses in accordance with the instruction.

It is prohibited to use the stove with damaged translucent screen. In case of glass damages for its replacement it is necessary to install only high-temperature ceramic glass with thickness of 4 mm and correct dimensions. For correct replacement order see cl. 11.

Do not use instead of the glass the heat-strengthened glass or thickened window glass. Contact the manufacturer for the glass replacement issue.

11. CURRENT REPAIR

A damage of a varnish-and-paint coating, at the time of operation, would lead to emergence of corrosion. It is not the warranty case. The manufacturer recommends refreshing the paint of the carcass with a heat-proof organosilicone enamel of type KO-868.

The built-in heat exchange unit undergoes the highest temperatures exposure that is why the metal it is made of during the stove operation may change its shape or burned through. If such an event took place the heat exchanging unit shall be replaced. Such damage appears as the result of breach of service instructions and is not a warranty event.

Heat exchange unit replacement is carried out analogously to the re-installment described in cl. 9.9.

In case of translucent screen (glass) damage at the door of «Vitra» model it shall be replaced as follows (see fig. 16):

1. Unscrew two nuts fixing the clamp (figure 17.I), and disassemble it and distance bushings.
2. Remove the glass from the stop.
3. Take new glass and if it doesn't have thread sealing tape stick them: tape of 20 mm in width is stuck from the top and from below the glass, in a «II» shape (figure 17.I), tape of 10 mm in width is stuck vertically, along the lateral sides of the glass (figure 17.II).
4. Insert the glass into the stop, at that the tape stuck from the lateral sides (vertical) shall be pressed between the glass and the door frame (figure 17.II).
5. Fix the glass with the clamp and tighten the clamp with nuts.

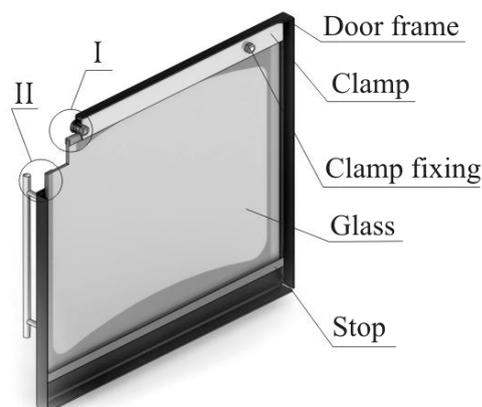


Figure 16. Repair of translucent screen of «Vitra» model door

- ✓ *ATTENTION! Nuts fastening the clamp are screwed to the mounting bolts through the remote plugs (Figure 17.1).*

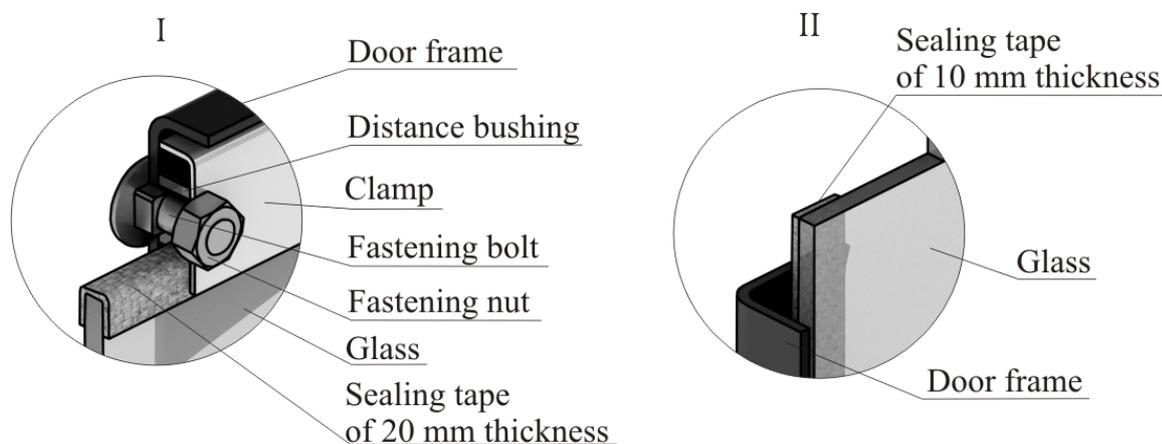


Figure 17. Fastening of translucent screen of the «Vitra» model door

12. WARRANTY

Warranty period for the product is 12 months from the date of transfer it to the Consumer.

If the Consumer finds an inadequacy in the stated specifications (features) of the Products, the Consumer will have the right to address his Claim to the organization (the Client) which has sold these Products.

Herewith, the Client has right to address to the Manufacturer that settle the Claim.

If an identified misstatement is satisfied the following conditions, the Manufacturer will make reworking the Products integrally or its unit (in accordance with decision of the Manufacturer), substituting a damaged unit or its elements, free of charge or compensating for damage by other means (with the approval of the Consumer):

- 1) It has established that a defect is in 12 months from the date of transfer the Products to the Consumer;
- 2) It has established that a defect is due to the fault of the company «Termofor».

Warranty doesn't apply to the Products and also its units or elements which have been changed by the Consumer. Warranty doesn't apply to elements of the Products which shall be substituted at the time of normal operation.

The Manufacturer doesn't give warranty to the products if the Consumer wouldn't fulfill the requirements of the Maintenance manual.

If the Consumer (a person who has installed the product) wouldn't follow the technical requirements of products installation and operation it leads to release of the Manufacturer from liability.

Warranties are ended from the time of determine of conditions stated above and in the future will not be renewed.

13. STORING

The product shall be kept in the pack in accordance with GOST (ГОСТ) 15150-69, group 3 (enclosed premises with a free ventilation without artificially adjustable climate conditions) at a temperature from -60 till +40°C and relative air humidity no more than 80% (at a temperature of +25°C).

In air of a premise of storing the product shalln't be aggressive substances (acid fumes, alkalies).

Storage requirements concern to storehouses of the Consigner and the Consumer.

An expiration date of the product in a consumption package without reconsevation is no more than 12 month.

14. CARRIAGE

14.1 Conditions of carriage

Carriage of the product is permitted in a transport packaging by all types of transport (including heated airproof compartments of aircrafts no limits distance).The kind of carriage shall be small and low-rise at the time of waggonage.

At the time of carriage of the product it shall be provided for defense from intrusion of dust and rainfall. Canting of the product is not allowed.

14.2 Preparation for carriage

The products shall be fastened for guarantee of steady position and excluding mutual displacement and strokes before carriage.

The requirements of handling instructions on the package shall be strictly observed at the time of load handling.

15. UTILIZATION

The stove and its elements shall be dismantled and sent to utilization at the time of end of operating life or breakdown of the stove (in consequence of improper operation).

At the time of disconnect the stove and its elements from the flue shall protect eyes and anatomical airways from a dust and soot in the elements of the system which have arisen during the operation.

✓ *ATTENTION! Dismantle the stove only after its full cooling.*

The product does not contain in its composition dangerous or toxicant substance which would cause harm human health or environments. At the time of end of operating life, the stove is not danger for life, human health and environments. As a result of this, the product can be utilized in accordance with the rules of utilization of common industrial waste.

16. DELIVERY SET

The table lists the delivery set

| Model of the product | Stove | Door of combustor | Axis of the door with spacer | Mittens | Maintenance manual | Package |
|-------------------------|-------|-------------------|------------------------------|----------|--------------------|---------|
| | 1 pcs | 1 pcs | 1 pcs | 1 couple | 1 pcs | 1 pcs |
| Tunguska 2011 | • | • | • | • | • | • |
| Tunguska 2011 Vitra | • | | | • | • | • |
| Tunguska XXL 2013 | • | • | • | • | • | • |
| Tunguska XXL 2013 Vitra | • | | | • | • | • |

CERTIFICATE OF ACCEPTANCE AND GUARANTEE

The wood-burning stove with stones section «Tunguska» of the model _____

_____ produced by Kontur, LLC, 43 2ya Shkolnaya st.,
Novosibirsk, Russia, 630032 in accordance with requirements of government standards and
current technical documentation, correspond to the technical specification 4858-001-0136596940-
2011 and is found fit for operation.

Head of quality control department _____ / _____
Signature Clarification of signature

Date of issue “ ___ ” _____ 20 ____

Special marks:

EXTERIOR CHECK CERTIFICATE

The consumer should carry out an exterior check of the goods for the purpose of carcass' wholeness and the presence of the all delivery set at the moment of purchase of the stove.

Don't have claims to an exterior form and completeness of set

The Customer _____ / _____ / _____ 20 ____
Name, surname Signature

SALE CERTIFICATE

Date of sale “ ___ ” _____ 20 ____

Place of seal of trading organization

The item is certified

Information about certificates can be obtained from the website www.termofor.ru

Informational center for consumers:

«Termofor», LLC

Legal adress: 630033, 62/3 Mira st., Novosibirsk, Russia

Wholesale department: +7 383 353-71-39

Retail department: +7 383 230-00-85

E-mail: termofor@termofor.ru

www.termofor.ru

© 2001—2014 “TERMOFOR” Company. All rights reserved.
Marks and names "Термофор», «Termofor», «M» are registered trademarks of "Termofor" company.
The wood-burning sauna stove «Tunguska». Operation Manual.