

# INDIGIRKA-2

**TERMOFOR**<sup>®</sup>  
SIBERIAN STOVES, HEATERS AND FIREPLACES

## ELECTRICITY GENERATING HEATING AND COOKING WOOD BURNING STOVE

### WARNING

#### FOR YOUR SAFETY:

1. Read the installation, operation, and maintenance instructions thoroughly before installing or operating this equipment.
2. Failure to follow these instructions could result in fire or explosion, which could cause property damage, personal injury, or death.
3. Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage.
4. For Outdoor Use Only



*Warmth comes from Siberia!*

**INSTALLATION AND OPERATION OWNER'S MANUAL**

**Made in Russia**

**Dear Customer!**

**Termofor, one of the leading heating and sauna wood stove manufacturers in Russia, congratulates you on your purchase and wishes that you get maximum satisfaction from your wood stove.**

**In this manual we provide you with technical advice regarding installation, operation and maintenance of the chosen model you have bought. Please read carefully before operating your appliance and keep the manual for future reference.**

**Thank you,**

**Termofor.**

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*Company Termofor reserves the right to make insufficient alterations in the design of the stove, which do not impair its consumer properties, without updating the accompanying documentation.*

# IMPORTANT SAFEGUARDS

**DANGER:** Failure to mind the dangers, follow warnings and cautions in this manual may result in serious bodily injury or death, or in a fire or an explosion causing damage to property.

- This stove is primarily for outdoor use. Do not use the stove for permanent indoor heating or cooking.
- Do not use the stove in rooms intended for sleeping or permanent residence.
- Do not use in or on boats or recreational vehicles.
- Do not use on wooden decks, wooden furniture or other combustible surfaces.
- Do not use in an explosive atmosphere.
- Do not store or use gasoline or other flammable liquids or vapors within 25 feet (7.5 m) of this appliance.
- Keep the surrounding area clear and free from combustible materials such as firewood, wet clothing, gasoline and other flammable vapors and liquids, etc.
- Do not alter stove in any manner.
- Do not use the stove unless it is completely assembled and all components are securely fastened and tightened.
- This stove is designed to burn natural wood. It is strictly forbidden to use coal and coal briquettes.
- Do not start a fire with vapors, chemicals or fluids such as gasoline, engine oil, alcohol, etc.
- Do not touch the stove or its parts while they are hot and educate all children of the danger of a high-temperature appliance. Children and pets should be supervised when they are in the area close to the burning stove or in the same room.
- Never touch cooking surface, ash drawer and other components to check their temperature.
- Do not touch metal parts of the stove until it has completely cooled to avoid burns, unless you are wearing protective gear (pot holders, gloves, mittens, etc.).
- Wear protective gloves when adding fuel to retain desired heat mode.
- Do not let the stove become hot enough for any part to glow red.
- Attempts to achieve heat output rates that exceed design specifications can result in steel distortion and damage.
- Do not connect to the electrical clamp outlets electrical devices with power consumption over 50W. Such connection may damage the electricity generating components.
- When connecting electrical devices to the external outlets make sure that polarity of terminals is correct.

# CHARACTERISTIC FEATURES

The electricity generating heating and cooking wood burning stove “INDIGIRKA-2” (further stove or INDIGIRKA-2) is designed for prolonged heating, generation of the electric power, cooking and food warming. The stove is very useful especially in emergency situations (wildlife, low temperatures, disasters etc.) and is interesting for fishermen, hunters, tourist, travelers, rescuers and other people, who will need temporarily heat and energy resources.

This stove can be used at the outside temperature from -30C(-22F) up to 40C (104F).

The appliance does not contain any hazardous and toxic substances that can impair men’s health or the environment.

## Features and advantages

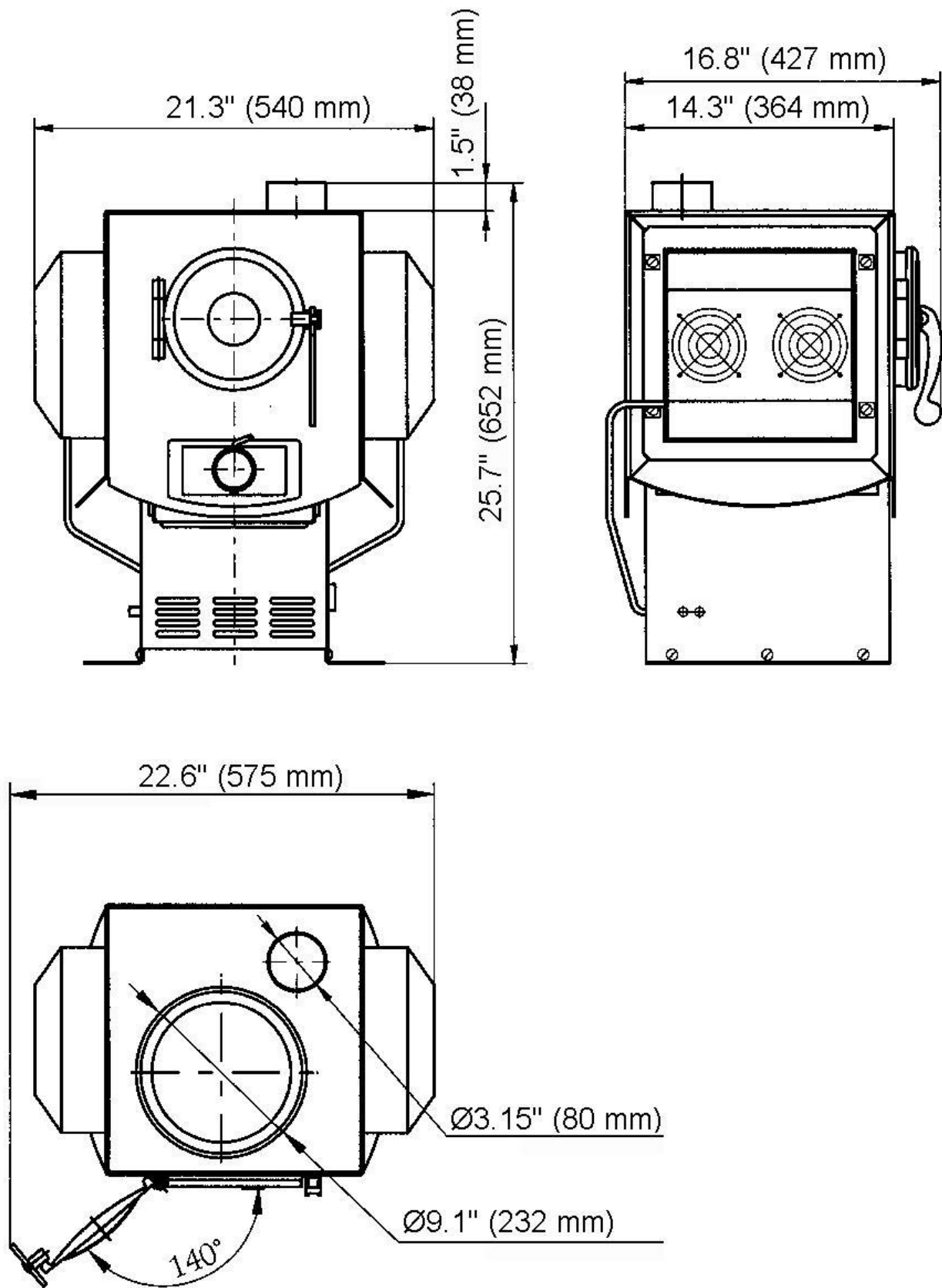
- The small weight and dimensions allow transportation of the stove and installation in any accessible place.
- During the process of heating or cooking, which are the primary purposes of the stove, it generates the direct current of 12 volts and power not less than 50 watts
- The electricity generators enter stable operation mode 12 – 15 minutes after fire starts. During burning thermoelectric generators produce electricity, which is transferred to the control block and then to the external clamp outlets.
- The thermoelectric generators supply enough energy to light 2-3 energy-efficient bulbs, charge a notebook, a cell phone, an iPod or Reader, a camera or watch a portable TV or radio.
- It’s not very much – but in emergency situations it will allow you to use most portable devices you have used before. You may want to keep it safe in your backyard, just in case.
- The project was developed by “Termofor” in association with “Kryotherm” (a company based in Saint-Petersburg, Russia). The same types of generators made by our partner are used in the defense industries, space technologies and other high-tech spheres.
- The cooking surface allows cooking on the surface or even over an open fire in pans of various sizes. You can load fuel from the top too, or clean the upper part of the stove if needed.
- This stove is designed to burn natural wood. Higher efficiencies and lower emissions generally result from burning air dried seasoned hardwoods, as compared to softwoods, green or freshly cut hardwoods. It is possible to temporarily burn pellets, wood briquettes, charcoal. It is strictly forbidden to use coal as fuel.
- The primary air, needed for burning is fed through the small gate in the ash drawer and the grate to the fuel.
- The small gate in the ash drawer is used to regulate air feed, providing a clean burn.
- Ash falls through the grate into the ash drawer. Once the ash drawer is full empty the drawer outside to keep things clean. It is safe to pull out the ash drawer while the stove is burning.
- Combustion gases are directed through the flue of 3.15” (80 mm) in diameter, located at the top of the stove.

## SPECIFICATIONS AND DIMENSIONS

Specifications are given in Table 1. External dimensions are given in the Picture 1.

Heated space, up to		1700 cu.ft. ( 50 cu.m)
Max power		13700 BTU/h (4 kW)
Exterior Dimensions	Width	21.3” (540 mm)
	Depth	16.8” (427 mm)
	Height	25.7” (652 mm)
Weight		119 lb. (54 kg)
Door size (diameter)		7” (178 mm)
Firebox volume		1.45 cu. ft. (41 l)
Fuel capacity		1 cu. ft. (30 l)
Length of logs, maximum		14” (36 cm)
Flue size		3.15” (80 mm)
Flue height, minimum		10 ft (3 m)
Number of flue pipes (included)		9 pcs
Area of heating surface		6.5 sq.ft. (0.6 sq.m.)
Output power		50W
Output voltage		12V

Table 1.Specifications of the Electricity generating, heating and cooking wood burning stove INDIGIRKA-2.



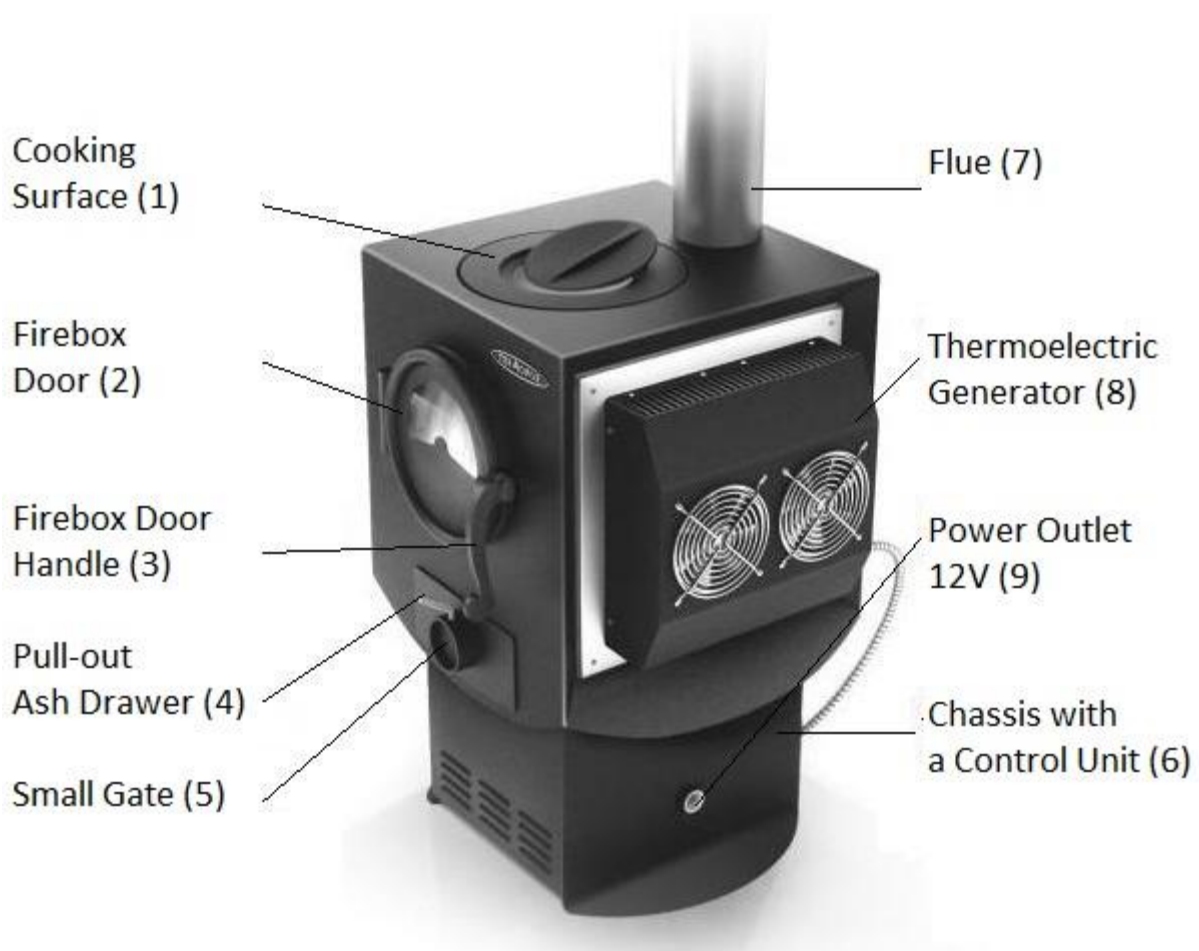
Picture 1.External dimensions of the stove INDIGIRKA-2.

## DESCRIPTION AND DESIGN

The stove body is an all-welded structure of rectangular shape.

The firebox is made of heat-resistant high-alloy stainless steel, 0.08” (2 mm) thick, consisting not less than 13% of chromium.

Thanks to this stove walls get hot quickly and quickly begin to warm the heated area. The use of this material allows significantly reduce the weight and increase the efficiency of the device.



Picture 2. General view and components of the stove INDIGIRKA-2

Chromium forms a passive skin on the surface of the stove and makes it chemically inert. This minimizes such undesirable effect, as a burnout of oxygen in a heated area.

The grate is made of a sheet of heat-resistant high-alloy stainless steel 0.12” (3 mm) thick and is designed to force the burning process and get a powerful high-temperature flame.

Stove components, which do not carry a large thermal working load, are made of structural steel of 0.06” (1.5 mm) thick.

Two Thermoelectric Generators B25-12 (further TEG) (8) are installed on the side surfaces. The specification of the generator is in your TEG passport. At the bottom part of the stove, on the non-rising Chassis, there is a TEG Control Unit (6), consisting of a Control Unit and a group of Clamp Outlets.

Connectors for electrical consumers are located on the exterior walls. On one side there is a Power Outlet 12V Connector (9) (like a cigarette lighter in a car) to which could be connected a T-joint outlet.

On the other side there are two Clamp Outlets, which can be used as an electrical socket.

The total electric power of connected consumers can reach not less than 50W.

The Firebox Door (2) rotates on a hinge, opens to 140 ° and has a cavity with an installed seal. The Locking mechanism securely locks the door in closed position by turning the Handle (3). The door there has a glass window to allow a visual monitoring of combustion.

Ash and combustion remains fall through the slits of the grate into the Ash Drawer (4). This drawer can also be used to clean the stove without interrupting the burning. Also, it is used to effectively regulate the intensity of burning due to the built-in Small Gate (5), which serves to feed air into the combustion chamber.

The control unit is separated from the ash drawer and other hot parts with heat-resistant mineral wool, such as “Rock wool wired mat-80” with a coating of aluminum foil (may be used a different brand with similar properties). The upper surface of the stove is used as a Cooking Surface (1).

**Caution!** The cooking surface is heated to high temperatures

The outer surface of the stove is covered with a heat-resistant silicone enamel type KO-868 with a maximum burnout temperature of 1100°F (600°C).

Company produces another model “INDIGIRKA-2 Handle” in this model line, which is designed with handles at the upper part of the stoves. Handles are intended for carrying purposes and for protection of expensive thermoelectric generators from the occasional strokes and falls.

## CLEARANCES

The minimum clearances to combustible materials can be decreased by installing fire-proof shields between the floor or walls and the stove. Those shields must be installed permanently, if you plan to use the installation site periodically.

Fire-proof shield recommendations: ceramic tiles 1" (25 mm) thick, or an equivalent non-combustible material, on fire-proof supports, or a metal sheet of minimum 0.06" (1.5 mm) on fire-proof supports.

When installing the stove in a temporarily room, cabin, premises, construction areas, the installation site should be protected from fire.

### Floor:

Before and under the firebox door it is strictly recommended to install a minimum 0.06" (1.5 mm) metal sheet of dimensions 20" x 27" (500 mm x 700 mm) on fire-proof supports, long side along the stove.

Combustible material's floor under the stove must be protected from fire with a metal sheet on fire-proof supports, and the clearance from the stove's bottom to the floor should be not less than 4" (100 mm).

The minimum clearance from the floor to ash drawer's bottom should be:

- a) clearance from combustible or semi-combustible floor to the ash drawer's bottom –not less than 5.5" (140 mm).
- b) clearance from non-combustible floor to the ash drawer's bottom – at the floor level



**Walls:**

Walls of combustible materials must be protected from fire with ceramic tiles 1" thick, or an equivalent non-combustible material, on fire-proof supports, or with a metal sheet minimum of 0,06" (1.5 mm) on fire-proof supports.

The protection's height should be from the floor to the level of 10" (250 mm) over the top of stove.

The minimum clearance from the wall to the nearest surface or side of the stove and flue should be:

- a) clearance from combustible or semi-combustible wall to the stove and flue – not less than 20" (500 mm).
- b) clearance from the wall, protected by a metal sheet, to the stove and flue – not less than 15" (380 mm)
- c) clearance from the non-combustible wall to the stove and flue – not less than 4" (100 mm)
- d) clearance from the firebox door to the nearest wall – not less than 50" (1250 mm)

**Ceiling:**

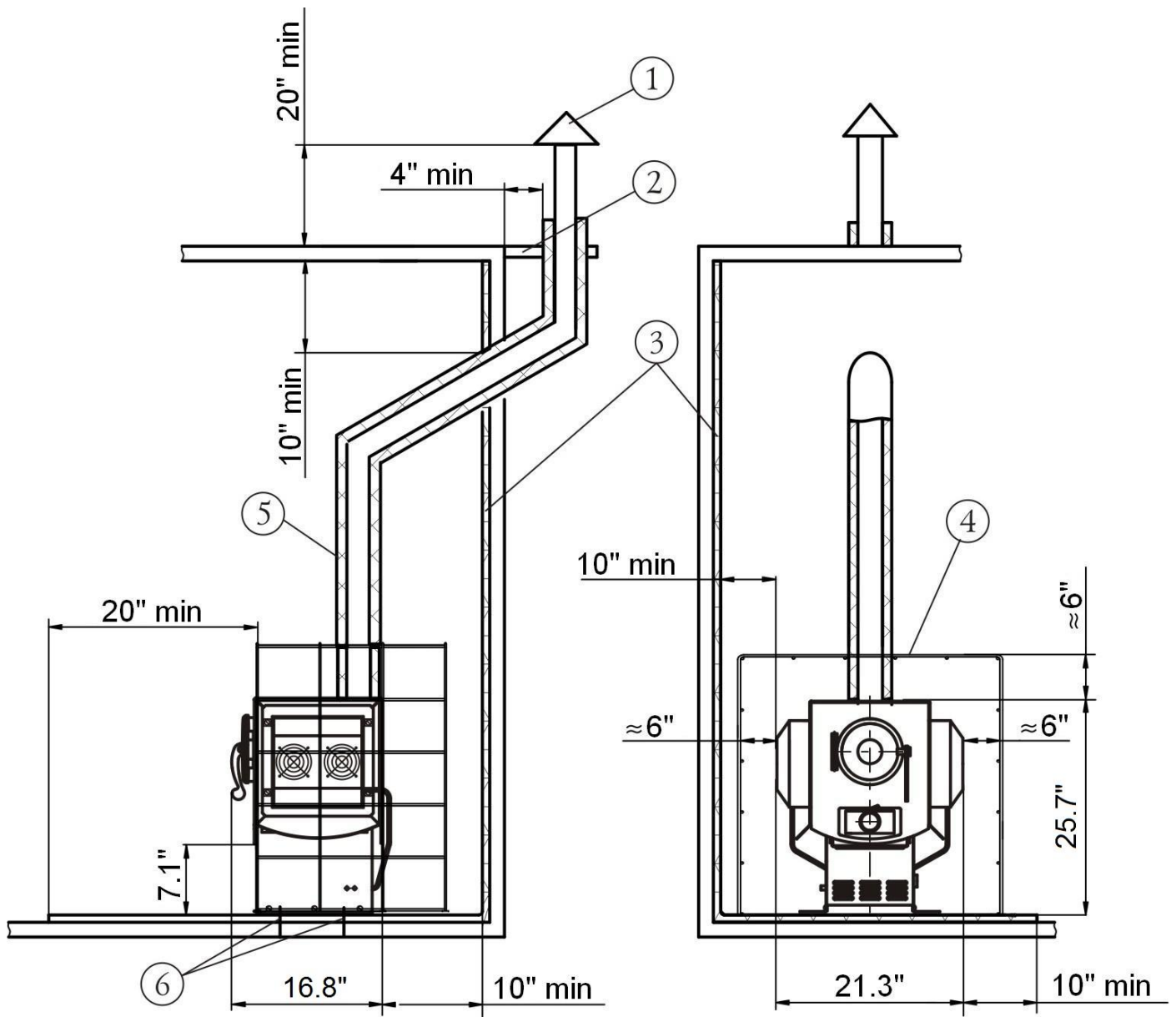
The clearance between the top of the stove and the ceiling should be not less than 50" (1250 mm).

The minimum clearances to combustible materials can be decreased by installing fire-proof shields between the floor or walls and the stove. Those shields must be installed permanently, if you plan to use the installation site periodically.	
<b>Fire-proof shield recommendations</b>	Ceramic tiles 1" (25 mm) thick, or an equivalent non-combustible material, on fire-proof supports, or a minimum of 0.06" (1.5 mm) metal sheet on fire-proof support
<b>Floor</b>	
- clearance to combustible and hard combustible	5.5" (140 mm)
- clearance to noncombustible	at the floor level
- additional requirement	Before and under the firebox door it's strictly recommended to install a minimum of 0.06" (1.5 mm) metal sheet on fire-proof supports, sheet dimensions 20" x 27" (500 mm x 700 mm), with long side along the stove
<b>Walls</b>	Ceramic tiles 1" (25 mm) thick, or an equivalent non-combustible material, on fire-proof supports, a minimum of 0.06" (1.5 mm) metal sheet on fire-proof supports, from the floor to the level above 10" (250 mm) of the stove's level
- clearance to combustible and hard combustible	20" (500 mm)
- clearance to a sheet metal on fire-proof supports	15" (380 mm)
- clearance to non-combustible	4" (100 mm)
- clearance to firebox door	50" (1250 mm)
<b>Ceilings</b>	
- clearance to ceiling	50" (1250 mm)

# INSTALLATION

When choosing the flue, you must consider its compatibility with the proposed stove, check recommended fuel, efficiency, ease of assembly, disassembly and maintenance, and compliance with fire regulations.

Flue line should have a minimum number of bends. The straight flue line is preferable. The flue height, measured from the grate to the mouth, should be not less than 16.5 ft (5 m).



- |                                       |   |
|---------------------------------------|---|
| 1. Flue cap                           | 2. Bracket  |
| 3. Metal sheet on fire-proof supports | 4. Fence of non-combustible material                                |
| 5. Flue heat insulation               | 6. Attaching points for additional securing to the floor, if needed |

Picture 3. Example of the stove installation

The interior diameter of the flue must be identical to the stove's smoke exhaust. A flue which is too small may cause draft problems, while a large flue favors the rapid cooling of the gas, deposition of creosote and a risk of fire.

The height of the flue, measured from the roof, should be:

- a) not less than 20" (500 mm) over a flat roof
- b) not less than 20" (500 mm) over the ridge of the roof or parapet - when the flue is located within 5 ft (1.5 m) of the ridge or parapet
- c) not below the ridge of the roof or parapet - when the flue is located within 5 - 10 ft (1.5 – 3 m) of the ridge or parapet
- d) not below a line, drawn from the ridge down at 10° angle to the horizon, - when the flue is located at a distance of more than 10 ft (3 m) from the ridge or parapet.

The top of flue should be higher than the roof of adjacent buildings.

It's recommended to install metal spark catchers with meshes of less than 0.2" (5 mm).

**Attention!** To prevent leakage of smoke into the heated room all the joints between the sections of the flue and between the flue and the stove must be sealed with a heat-resistant sealant, ensuring the integrity of flue joints.

When installing the flue through the ceiling it's necessary to perform cutting for a fire block. The fire block must exceed the thickness of the ceiling by 2.75" (70 mm). You should not rest or rigidly connect the fire block with building elements.

Spacing between the ceiling and the fire block should be filled with non-combustible materials (expanded clay, slag, basalt wool, sand etc.).

The distance from the outer surface of the flue without insulation to the rafters, roof battens and other parts of the roof of combustible and semi-combustible materials should be not less than 10" (250 mm). And for a non-combustible flue insulation – not less than 5" (130 mm).

The space between the flue and roof structures of combustible and semi-combustible materials should be covered with non-combustible roofing materials.

It is not recommended to incline the axis of the flue from the vertical by more than 45°.

The distance between the vertical axis of the stove's flue collector and the vertical axis of the flue should not be more than 3.2 ft (1 m).

It is strictly forbidden to perform non-separable connections of the stove with a flue pipe.

**Caution!** The section of flue, located in the zone of sub-zero temperatures (32° F), must always be insulated with materials, which can withstand temperatures up to +750° F (+400° C)

Make sure that the temperature of flue walls in the zone of sub-zero temperatures is at least 210° F (100° C). This will prevent condensation of moisture, from flue gases.

For the flue line the manufacturer recommends to use a modular thin-walled stainless steel flue pipe with a diameter of 2.5" (63 mm). We highly recommend to use finished heat-resistant flue pipes "sandwich", which can withstand the temperatures up to 850—1000° F (450—550° C).

They are efficient, durable and require minimal labor for installation and operation. Flue pipes are connected in the following way: «the lower one goes inside the top one». In this case, an additional draft will be created and it will not allow the leakage of smoke through the joints of the flue system into the room.

It should be taken into account that the use of thick-walled pipes leads to rapid deposition of soot and formation of condensation on inner walls of pipes. The reason is longer time needed to warm thick walls with rough inner surface as opposed to recommended pipes with polished inner surface.

## OPERATION

Before operation, ensure the normal functioning of all components of the stove, of the flue pipe and protective structures and thoroughly ventilate the room.

**Attention!** When you fire the stove for the first time, an unpleasant smell may emit because of burnout of industrial oil, deposited on the metal, and volatile components of silicone enamel. You will notice an odor and perhaps see some vapor rise from the stove surface; this is normal. The special high temperature paint, that your stove is finished with, will cure as your stove heats. The first usage of the stove should be produced in the open air with fire safety measures, for at least 1 hour, with a maximum load of the firebox.

Before the operation, check and, if necessary, clean the flue line of soot. As a precaution it is recommended to clean the flue at least once every two months.

There are many ways to build a fire. The basic principle is to light easily-ignitable tinder or paper, which ignites fast burning kindling, which in turn ignites slow-burning firewood.

**Attention!** You have an unusual stove, which produces electricity. This description doesn't concern this matter. For the operation with electricity generation refer to the next chapter.

**Attention!** Before start of operation the stove should be inspected and repaired. A malfunctioning stove is not allowed for operation.

**Attention!** Make sure that no combustibles are in the area close to the stove. Be sure the room is adequately ventilated and the flue is unobstructed.

1. Place several wads of crushed paper on the firebox floor.
2. Lay dry sticks of kindling on top of the paper.
3. Pull out the ash drawer to provide intense ignition of fuel.
4. Light the paper in the stove. NEVER light or rekindle stove with kerosene, gasoline, or charcoal lighter fluid; the results can be very dangerous.
5. Once the kindling is burning quickly, lay wood in the firebox. To ensure the access of air into the combustion zone lay firewood loosely. Stack the pieces of wood with care
6. After 5 to 10 minutes, when the fire is well established, smoothly push the ash drawer and open the small gate on the ash drawer. To regulate the intensity of burning, which affects the combustion rate, adjust the air supply by opening or closing the small gate on the ash drawer. The angle of a small gate opening is determined experimentally during the operation.
7. When you are ready to reload the stove, add more logs as long as there are hot coals. Large logs burn slowly, holding a fire longer. Small logs burn fast and hot, giving quick heat.

**Danger!** Do not light a fire with flammable vapors, chemicals or fluids such as gasoline, engine oil, alcohol etc. Do not burn treated wood, colored paper, cardboard, solvents or garbage. During the combustion they can release hazardous gases. Do not use coal!

**Danger!** Do not leave unattended stove burning and do not delegate supervision to children.

**Danger!** Do not lay fuel and other combustible substances and materials on the front cover sheet.

- Danger!** Do not touch surfaces of the stove, heated to high temperatures, with bare hands or other open parts of the body to avoid burns and injuries.
- Danger!** Open and close the door only with the handle. Do not lay combustible materials within 20” (0.5 m) of the surface of the stove.
- Danger!** It is prohibited to dry any clothes and objects, even on a partially cooled surface of the stove.
- Caution!** In order to avoid accidental contact with hot surfaces of the stove there should be a fence of noncombustible material.
- Caution!** Ash and slag, raked from the firebox and ash-drawer, must be shed with water and disposed of in a specially reserved fireproof place.
- Attention!** Do not over-fire. Over-firing may ignite creosote or will damage the stove and flue pipe. To prevent over-firing your stove, follow next recommendations and warnings:
- Do not use flammable liquids, vapors, chemicals, etc.
  - Do not overload with firewood
  - Do not burn trash or large amounts of scrap lumber
  - Do not admit too much air to the combustion chamber; the preferred mode for your stove is prolonged burning with a low burn rate.
  - Do not make any changes to the appliance to increase combustion air.

## **OPERATION IN ELECTRICITY GENERATING MODE**

- Attention!** Before start of operation the stove should be inspected and repaired. A malfunctioning stove is not allowed for operation.
- Attention!** Make sure that no combustibles are in the area close to the stove. Be sure the room is adequately ventilated and the flue is unobstructed.

1. Place several wads of crushed paper on the firebox floor.
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3. Pull out the ash drawer to provide intense ignition of fuel.
4. Light the paper in the stove. NEVER light or rekindle stove with kerosene, gasoline, or charcoal lighter fluid; the results can be very dangerous.
5. Once the kindling is burning quickly, lay wood in the firebox. To ensure the access of air into the combustion zone lay the firewood loosely. Stack the pieces of wood with care
6. After 5 to 10 minutes, when the fire is well established, smoothly push the ash box and open the small gate on the ash drawer. To regulate the intensity of burning, which affects the combustion rate, adjust the air supply by opening or closing the small gates on the ash drawer. The angle of a small gate opening is determined experimentally during the operation.
7. Once Thermoelectric Generators are warmed up enough, it is possible to connect consumer electronics. You can ensure in their operability when fans start to rotate in both TEGs, and the indicator lights on the voltage regulator (if included).

8. Consumer electronics is connected to the Power Outlet 12V Connector (9) (like a cigarette lighter in a car) or to the Clamp Outlets (complying with polarity). You can connect appliances that work at a voltage of 12V with a total power consumption not exceeding 50 W.
9. If there is a stop of fans in at least one of TEGs, it means that TEG's heating is insufficient. In this case you can smoothly pull out the Ash Drawer to provide more air feed, and/or add more fuel in the firebox.
10. When you are ready to reload the stove, add more logs as long as there are hot coals. Large logs burn slowly, holding a fire longer. Small logs burn fast and hot, giving quick heat.

**Attention!** Do not connect appliances to the stove with a total power consumption exceeding 50W it can lead to failure of the thermoelectric generators and voltage regulator.

***Possible malfunctions:***

Malfunction	Cause	Removal
Connected consumer electronics don't operate	TEG's heating is insufficient	Add more fuel in the firebox, and/or pull out the Ash Drawer to provide more air feed
	Total power consumption exceeds 50W	Disconnect excessive appliances until the total consumption is below 50W
Fans don't rotate	TEG's heating is insufficient	Add more fuel in the firebox, and/or pull out the Ash Drawer to provide more air feed

## MAINTENANCE

Replacement of structural elements should be done only by qualified specialists.

**Danger!** Clean and maintain the stove only after full cooling-off.

For most efficient and safest operation of the stove provide a good working order of the flue system.

The inner surface of the flue should be as smooth as possible, do not contribute to the accumulation of moisture and soot, and do not interfere with extraction of gases and combustion products. For the same reason you should provide smallest possible number of bends and joints in the flue pipe.

During the operation of the stove soot accumulates and moisture condenses on the inner surface of flue.

This could lead eventually to deterioration of draft in the flue, leakage of smoke and fire hazard.

The degree of pollution and dirt depends on fuel used and operating conditions. If you use softwood soot formation on inner surface of pipes is more intense. Condensation of moisture may be a result of inadequate insulation or green wood usage. It is recommended to burn aspen logs to reduce the layer of soot.

The flue system must be checked and inspected periodically, at least:

- a) If made of bricks - once in three months
- b) If made of heat-resistant concrete – once a year
- c) heating and cooking stoves - three times a year (before and in the middle of the heating season, as well as in the spring)
- d) heating stoves and furnaces – once a year (before the heating season)

We recommend employing qualified specialists to inspect and clean the flue pipe.

The flue cleaning may be done both mechanically (using special tools, ruffs, brushes, scrapers etc.) and chemically.

**Danger!** Take necessary measures to protect eyes and respiratory tract from dust and soot during mechanical cleaning of flues. Don't forget to cover or take away furniture and easy soiled materials.

Ruffs are selected depending on shape and size of the flue and the pipe's cross-section size.

**Attention!** Read carefully and follow the recommendations of the manufacturer of chemical cleaning agents. It is not recommended to use self-made formulations for soot burning.

## MALFUNCTIONS

A properly installed stove should not smoke. If yours stove does, check the following:

- Has the flue had enough time to get hot?
- Is the smoke passage blocked anywhere in the stove, flue connector or flue?
- Is there enough air supply?
- Is the smoke flow impeded by too long horizontal section of the pipe or too many bends?
- Is weak draft perhaps caused by a leaky flue, cold area outside flue, too large a diameter of the flue, too short length, or the flue being too close to trees or higher buildings?

Malfunction	Cause	Removal
Malfunction of combustion process	Deteriorated draft in the flue pipe	Clean the flue pipe
Streaks on outer surface of the flue	Insufficient tightness of flue joints	Seal joints with a heat-resistant sealant

## BASICS OF THERMOELECTRICITY

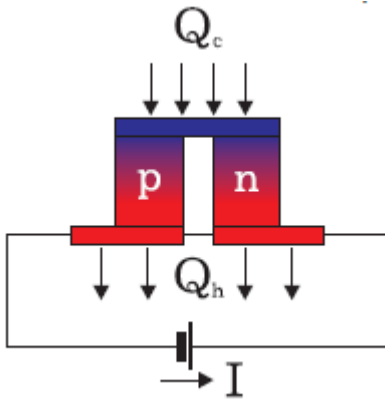
If you are curious about how your stove generates electricity, please read these brief notes.

Two basic thermoelectric effects were discovered in the XIX century by European scientists.

The first was Thomas Seebeck, who in 1821 discovered the phenomenon of direct conversion of heat into electric power; the second one was Jean Peltier, who discovered a solid state heat pump.

In the period from 1940 through the 1950's the Russian academic A.F. Ioffe and his colleagues synthesized semiconductor alloys, which put these effects into practice and that enabled full scale production of thermoelectric cooling and power generating devices for wide use in various fields of human activity.

A basic thermoelectric unit is a thermocouple, which consists of p-type and n-type semiconductor elements, or pellets. Copper commutation tabs are used to interconnect pellets that are traditionally made of Bismuth Telluride-based alloy.

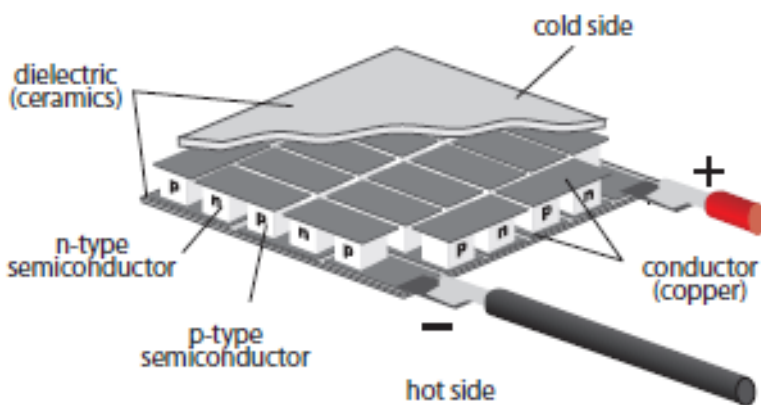


Usually thermocouples are combined with a module where they are connected electrically in series and thermally in parallel between two ceramic plates.

Peltier phenomenon consists of the following. A contact potential difference always appears at the point of junction of two different metals or semiconductors. If the electric current passes through them the potential difference at the junction assists or counteracts the flow. So as the current passes against the field of the potential difference the electrical source needs to expend additional energy to make the current pass through the junction and this additional energy consumption results in heat energy output at the junction.

If the field of the potential difference has the same direction as the current the field supports it and enforces the movement of the charges. This energy is drawn from the substance and as a result the temperature at the junction is reduced.

So, one side of the thermoelectric module is cooled and the other is heated.



If the heat dissipation from the thermoelectric module's hot side is provided efficiently, for example by a heat sink, the temperature of the cold side could get down to tens of degrees below the ambient temperature. In case the current changes its polarity the hot and cold sides would invert.

Any power plant produces waste heat, which can be used to generate additional power using a thermoelectric generator (a form of energy recycling). This is potentially an enormous market.

In thermoelectric generators of the stove INDIGIRKA, when heated on one side and forced cooling of the other between, the ceramic plates creates a sufficient temperature difference to generate electric current.

## PACKAGING AND TRANSPORTATION

The stove is packed in packaging materials. A set of flue pipes is laid inside the stove without additional packaging. If extra flue sections are required for proper operation they must be purchased separately. Instruction for installation, operation and maintenance is in the packaging bag, embedded in the middle tube, which is visible when you open the door.



The label is on the front packaging of the stove and contains information on the stove model, weight, design features and manufacturing date.

No other appliance has the same serial number as yours. The serial number is stamped onto the label. This serial number will be needed in case you require service of any type. Please fill in for your future references:

Model: INDIGIRKA-2  
Serial Number: \_\_\_\_\_  
Purchase Date: \_\_\_\_\_  
Purchased From: \_\_\_\_\_

**Attention!** Save Your Bill of Sale.

To receive full warranty coverage, you will need to show evidence of the date you purchased your stove. Do not mail your Bill of Sale to us.

We suggest that you attach your Bill of Sale to this page so that you will have all the information you need in one place should the need for service or information occur.

Transportation of the stove is allowed only in the original manufacturer packaging by any transport, subject to safeguards written on the packaging.

The stove is painted with heat-resistant silicone enamel, which will gain the ultimate strength only after first burning. Until then treat painted surfaces with caution.

The stove comes with a complete assembly of components. The set includes:

Electricity generating, heating and cooking wood burning stove INDIGIRKA-2	– 1 pcs
Ash Drawer	– 1 pcs
Pipes of flue (flue line option)	– 9 pcs
Thermoelectric generator B25-12	– 2 pcs
Control unit	– 1 pcs
Owner’s manual	– 1 pcs
Certificate of TEG B25-12	– 1 pcs
Packaging	– 1 pcs

## **LIMITED FIVE-YEAR WARRANTY**

Warranty starts on the date of purchase by the original owner (End User). After installation, if any of the components manufactured by Termofor Co. Ltd. (further Termofor) in the appliance are found to be defective in materials or workmanship, Termofor will, at company's option, replace or repair the defective components at no charge to the original owner. Termofor will also pay for reasonable labor costs incurred in replacing or repairing such components for a period of components warranty. Any products presented for warranty repair must be accompanied by a dated proof of purchase.

### **FIVE-YEAR WARRANTY**

The following components are warranted against deterioration not resulting from physical or handling damage for 5 (five) years to the original owner, subject to proof of purchase: Cooking surface, firebox door, firebox door handle, pull-out ash drawer, small gate, chassis with control unit, power outlet 12V.

### **THREE YEARS WARRANTY**

Termofor warrants the components and materials in your wood stove, which are not mentioned above, to be free from manufacturing and material defects for a period of 3 (three) years from date of purchase.

## **CONDITIONS, EXCLUSIONS AND LIMITATION OF LIABILITY**

- This warranty applies to the original owner and is, provided the purchase was made through an authorized dealer or distributor, and the appliance remains in its original place of installation.
- The maximum amount recoverable under this warranty is limited to the purchase price of the product.
- In no event shall Termofor be liable for any incidental or consequential damages caused by defects in the product.
- Adjustments, regular maintenance, cleaning and temporary repairs, or the failure to duplicate the problem in the home is not covered under this warranty.
- This warranty does not extend to or include surface finish on the appliance or terminations, door gaskets, glass gaskets, glass discoloration, wool or other ceramic insulating materials. Rust and/or corrosion on any of the metal surfaces, cast iron components, baffles, doors, or firebox area are not covered by this warranty.
- Noise resulting from minor expansion, contraction, or movement of certain parts is normal and complaints related to this noise are not covered by this warranty.
- Termofor's obligation under this Limited Five-Year Warranty does not extend to damages resulting from: (1) installation, operation or maintenance of the appliance not in accordance with the installation instructions; operating instructions and the listing agent identification label furnished with the appliance; (2) installation which does not comply with local building codes; (3) shipping, improper handling, improper operation, abuse, misuse, accident or non-authorized repairs; (4) environmental conditions, inadequate ventilation or drafting caused by tight sealing construction of the structure; (5) use of fuels other than those specified in the operating instructions; (6) installation or use of components not supplied with the appliance or any other components not expressly authorized and approved by Termofor; and/or (7) modification of the appliance not expressly authorized and approved by Termofor in writing.
- This warranty does not apply to non-Termofor components or other accessories used in conjunction with installation of this product.

- This warranty is void if the appliance has been over-fired or operated in atmospheres contaminated by chlorine, fluorine, or other damaging chemicals the appliance is subject to prolonged periods of dampness or condensation, or there is any damage to the appliance or other components due to water or weather damage which is the result of, but not limited to, improper chimney or venting installation.
- Termofor's liability under this warranty is limited to the replacement and repair of defective components or workmanship during the applicable period. Termofor may fully discharge all of its obligations under such warranties by repairing the defective component(s) at Termofor's discretion.
- This warranty is expressly in lieu of other warranties, express or implied, including the warranty of merchantability of fitness for purpose and of all other obligations or liabilities. Termofor does not assume for it any other obligations or liability in connection with the sale or use of the appliance. In states that do not allow limitations on how long an implied warranty lasts, or do not allow exclusion of indirect damage, those limitations of exclusions may not apply to you. You may also have additional rights not covered in this Limited Five-Year Warranty.
- Termofor reserves the right to investigate any and all claims against the Limited Five-Year Warranty and decide upon method of settlement.

**IF WARRANTY SERVICE IS NEEDED:**

- If you discover a problem that you believe is covered by this warranty, you must report it to your dealer within 30 days, giving them proof of purchase, the purchase date, and the model name and serial number.
- Check with your dealer in advance for any costs to you when arranging a warranty. Mileage or service charges are not covered by this warranty. This charge can vary.
- Any appliance or part thereof that is repaired or replaced during the limited warranty period will be warranted under the terms of limited warranty for a period not to exceed the remaining term of the original limited warranty or six(6) months, whichever is longer.