

WARMTH OF HEART AND HOME

DEFRO
home

operating manual
heating stove with water jacket

DEFRO HOME HYDROFIRE

DEKLARACJA ZGODNOŚCI WE
EC DECLARATION OF CONFORMITY

nr DH 27/P1/01/2023

DEFRO R. Dziubeła spółka komandytowa

26-067 Strawczyn, Ruda Strawczyńska 103A

DEKLARUJE / DECLARES

z pełną odpowiedzialnością, że produkt / *with all responsibility, that the product*

Wolnostojący ogrzewacz na drewno/ Wood heating stove

DEFRO HOME HYDROFIRE

(typ/type DEFRO HOME HYDROFIRE)

został zaprojektowany, wyprodukowany i wprowadzony na rynek zgodnie z następującymi dyrektywami:
has been designed, manufactured and placed on the market in conformity with directives:

Rozporządzenie Parlamentu Europejskiego 305/2011 / Regulation of the European Parliament 305/2011

Dyrektywa ErP 2009/125/WE / Directive ErP 2009/125/EC

Rozporządzenie Delegowane Komisji (UE) 2015/1186 / Commission Delegated Regulations (EU) 2015/1186

Rozporządzenie Komisji (UE) 2015/1185 / Commission Regulation (EU) 2015/1185

i niżej wymienionymi normami zharmonizowanymi:

and that the following relevant Standards:

PN-EN 13240:2008

dokumentacja techniczna / technical documentation

Wyrób oznaczono znakiem:

Product has been marked:



Ta deklaracja zgodności traci swą ważność, jeżeli w ogrzewaczu pomieszczeń DEFRO HOME HYDROFIRE wprowadzono zmiany, został przebudowany bez naszej zgody lub jest użytkowany niezgodnie z instrukcją obsługi. Niniejsza deklaracja musi być przekazana wraz z ogrzewaczem pomieszczeń w przypadku odstąpienia własności innej osobie.

This Declaration of Conformity becomes invalid if any changes have been made to the DEFRO HOME HYDROFIRE Space heater, if its construction has been changed without our permission or if the space heater is used not in accordance with the operating manual. This Declaration shall be handed over to a new owner along with the title of ownership of the space heater.

Wolnostojący ogrzewacz na drewno DEFRO HOME HYDROFIRE jest wykonywany zgodnie z dokumentacją techniczną przechowywaną przez:

DEFRO HOME HYDROFIRE Wood heating stove has been manufactured according to technical documentation kept by:

DEFRO R. Dziubeła spółka komandytowa, 26-067 Strawczyn, Ruda Strawczyńska 103a.

Imię i nazwisko osoby upoważnionej do przygotowania dokumentacji technicznej: Mariusz Dziubeła

*Name of the person authorized to compile the technical documentation: **Mariusz Dziubeła***

Imię i nazwisko oraz podpis osoby upoważnionej do sporządzenia deklaracji zgodności w imieniu producenta: Robert Dziubeła

*Name and signature of the person authorized to compile a declaration of conformity on behalf of the manufacturer: **Robert Dziubeła***

Dwie ostatnie cyfry roku, w którym oznakowanie zostało naniesione: 23

Two last digits of the year of marking: 23

Ruda Strawczyńska, dn.01.07.2023

miejsce i data wystawienia

place and date of issue.


Robert Dziubeła
prezes zarządu / CEO

Dear Customer,

We would like to inform you that we make every effort to offer products of quality fulfilling the most restrictive standards and warranting operational safety. All devices are produced in accordance with the requirements of relevant EU directives and have a CE safety mark confirmed by the Declaration of Conformity EC.



We appreciate all your comments and proposals regarding our level of service. We appreciate your comments and proposals regarding our devices and the level of service provided by our Partners and Technical Support/Service.

DEFRO R. Dziubeta sp.k.

Szanowny Kliencie,

We would like to thank you for choosing the high-quality DEFRO product which will ensure your safety and operational reliability.

As our customers, you can always count on the help of the DEFRO Service Centre, which is ready to ensure the continuous efficiency of your equipment.


Please note that in order to use the equipment safely and efficiently, it is crucial to get familiar with the following directions.

- Read and follow this Operating Manual - useful remarks concerning the proper operation of the equipment can be found there.
- Determine if all parts have been delivered or if the fireplace was not damaged during transport.
- Check the data on the rating plate against the warranty card.
- Prior to starting the device, check the flue connection against connection recommendations included in this manual and appropriate national regulations.

Basic usage rules are to be obeyed while using the equipment. Do not open the doors during the operation of the device.

DEFRO Service Centre or Authorized DEFRO Service should be always contacted when any intervention is necessary because only these parties have original spare parts and are properly trained within the scope of installation and operation of DEFRO equipment.

For your safety and equipment use convenience please get acquainted with this operating manual and send back a correctly filled copy of the Warranty Card to the following address:

 DEFRO R. Dziubeta sp.k. - Centrum Serwisowe
Ruda Strawczyńska 103a
26-067 Strawczyn

 serwis@defro.pl

By sending back your Warranty Card, you will be registered in our DEFRO products users' database, and we will be able to provide you with quick and professional technical support.

If you do not send back a correctly filled in Warranty Card and the equipment quality and completeness receipt within the period of up to two weeks after the date of installation but no longer than within six months, after purchasing, the warranty will become invalid! This results in delays with repairs and the necessity of covering costs of service and travelling expenses.

Thank you for understanding.

Yours sincerely,

DEFRO R. Dziubeta sp.k.

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1. INFORMATION

The operating manual is an integral and essential part of the product and must be forwarded to the user also in case when the product is handed over. Users should carefully read the manual and save it for the future because all remarks included there are important guidelines concerning safety during installation, usage and maintenance.

Installation of heating stove must be carried out in accordance with the mandatory standards in the country of destination, according to guidelines of the manufacturer and by qualified personnel. Improper installation of the device can be a reason for personal injuries and damage to property for which the manufacturer is not liable.

The heating stove can be used only for the purpose it was explicitly intended. Any other use should be treated as inappropriate and in consequence as dangerous.

In the case of error during installation, usage or maintenance works caused by non-observance of the legislation, applicable regulations or instructions contained in this manual (or others, delivered by the manufacturer) the manufacturer rejects any contractual or non-contractual liability for resulting damages and the warranty for the device becomes void.

All illustrations, pictures and photos are only indicative.

Versions of the publication

Due to continuous improvement of the product DEFRO reserves the right to update this publication without prior notice.

The content of this Operating Manual is a property of DEFRO. Any copying, duplicating, or publishing of content of this User's Manual without the prior written consent of DEFRO is forbidden.

Manual storage and browsing of its contents.

We recommend taking care of this manual and storing it in an easily and quickly available location. If this manual has been lost, damaged or destroyed you should request a copy in the sales outlet or directly from the Manufacturer providing identification data of the product. All the most important information included in the operating manual is marked with "bold" and has symbols pointing out the user's attention to hazards which can be present during the operation of the heating stove. Symbols used in the text are explained below:



Danger!

A direct threat to life and health! Non-compliance with the recommendations marked in this way and misuse may result in death or major injuries.



Danger!

Danger from electrical voltage! Incorrect installation and incorrect electrical connections may cause danger to life by electric shock.



Note!

Warning symbol indicating that you should read carefully and understand the given information, to which it relates. Non-compliance with these recommendations may result in major damage to the equipment and create a hazard for the user or the environment.



Danger!

A direct threat to health! Non-compliance with the recommendations distinguished in this way may cause a fire or burns.



Hint!

Informative symbol. Useful information and hints are marked in this way.

2. BASIC SAFETY RULES

2.1. Safety warnings



- The national and local provisions should be met.
 - The equipment should be installed in compliance with the legal standards applicable in the given location, region or country
 - The equipment should be used by persons (including children) of impaired physical, sensory, and mental capabilities and by persons without experience and required knowledge provided that such operation is not carried out under their supervision or after proper instruction by a person responsible for their safety.
 - You should always observe the guidelines given in the operating manual to ensure the correct use of the equipment and to prevent accidents.
 - Operation and adjustment should be carried out by adults. Errors and incorrect settings can cause hazardous situations and/or incorrect operation.
 - Prior to any operations the user (or any person operating the equipment) should read and understand the whole contents of this manual.
 - Equipment should be used only as intended. Each other use is considered as misuse and hazardous as a consequence.
 - The equipment should not be used as a ladder or object to lean against.
 - Prior to installation, you should make sure that the substrate will resist the force of the equipment considering its weight.
 - In the case of disturbances in operation, the equipment can be restarted only when the occurred problem has been removed and the equipment is brought back to its original condition.
 - The user is fully responsible for misuse of the product and relieves DEFRO from any civil and criminal liability.
 - All types of modifications or replacement of equipment parts with non-original components or without authorization may present a risk for the operator and relieve DEFRO from any civil and criminal liability.
 - Incorrect installation or maintenance (incompatible with the contents of this manual), can cause injuries to people, animals or property damage. Then DEFRO shall be relieved of any civil or criminal liability.
-
- Part of the equipment surface is very hot (doors, handle, window panel, flue gas discharge pipe, etc.). You should avoid direct contact with such components without suitable protective clothing or protective equipment such as e.g. heat-resistant gloves.
 - Do not touch the window panel after heating up the equipment.
 - Keep children away from the equipment when it is operating because each hot surface can cause burns.
 - It is forbidden to start up the equipment when the doors are opened or the window panel is cracked.
 - Do not place and dry the underwear on the equipment. Possible dryers for hanging underwear or similar should be located at an adequate distance from the equipment - fire hazard.

- It is absolutely forbidden to open the doors if the flue is on fire. Then call the appropriate services.
- It is recommended to keep a 400 mm distance between the hot parts of the equipment and medium inflammable materials; otherwise, use commercially available insulation materials. Apply this hint also for furniture, curtains etc. Minimum distances are given in point 5.2 of the operating manual.
- It is absolutely forbidden to use flammable liquid for equipment firing up.
- If the substrate, on which the equipment is located, is made of inflammable materials, such as parquet or floor lining then you should place a protective plate under it (the plate should protrude 250-300 mm from the front of the equipment).

2.2. Warnings related to the operation



- Equipment should be shutdown in case of failure or incorrect operation.
- Fuel used in the equipment should meet the conditions described in this manual.
- Internal parts of the equipment should not be washed with water.
- Avoid contact with water; above all do not wash any painted surfaces until they are fully cured. The coating on new devices is not an anti-corrosion coating; heat-resistant paint achieves its protective properties only after curing under the influence of heat (after several ignitions).
- Do not expose the body to the action of hot air for a long period of time. Do not heat excessively the room where you are staying and where the equipment is installed. It may have an adverse impact on physical condition and be a reason of health problems.
- Equipment should be installed in rooms with fire protection and equipped with all required components such as supply (with air) and flue gas discharge.
- Equipment and cladding made of ceramics should be stored in rooms free from moisture and they cannot be exposed to adverse effects of the weather.
- It is not recommended to place the body of the equipment directly on the floor and if such a floor is made of inflammable materials, it should be properly insulated.
- To facilitate possible interventions by the technical personnel you should not place the equipment inside the closed rooms and just by the walls which can also disturb air intake.
- Always make sure and check whether the doors of the combustion chamber are tightly closed when the equipment is operating.
- Equipment consumes the exact amount of air that is required for the combustion process; it is recommended to connect the equipment for air intake from outside using a suitable pipe and through a special outlet located at the back of the equipment.

ADDITIONAL INFORMATION



- You should contact the sales outlet or qualified personnel authorized by DEFRO in the case of any problems. Request original spare parts if the repair is necessary.
- Use only fuel with properties compatible with the recommendations of this operating manual.
- Check and clean flue gas discharge ducts (connecting piece to flue) periodically.

- Store this manual carefully because it should be available for a whole period of equipment operation. In the case of sale or giving the equipment to the other user you should always make sure whether the product has the manual enclosed.
- Request a new copy from the authorized sales outlet in the DEFRO company if it has been lost.

3. INTENDED USE

The DEFRO HOME HYDROFIRE heating stove is intended for combustion of hardwood e.g. beech, hornbeam, oak, acacia, maple, birch etc. with moisture content below 20%. It is intended for the heating of houses and spaces where it is installed. It can be also used as an additional source of thermal power.

The DEFRO HOME HYDROFIRE heating stove is equipped with a water system intended for supplying of central heating system. It can operate as only or additional source of supply for the CO system.



The DEFRO HOME HYDROFIRE heating stove with a water system can be operated only after connecting to the central heating system and filling it with water. Only then proper heat discharge is ensured. Operation of the equipment without water and outside the CO system results in loss of warranty.

4. TECHNICAL SPECIFICATION

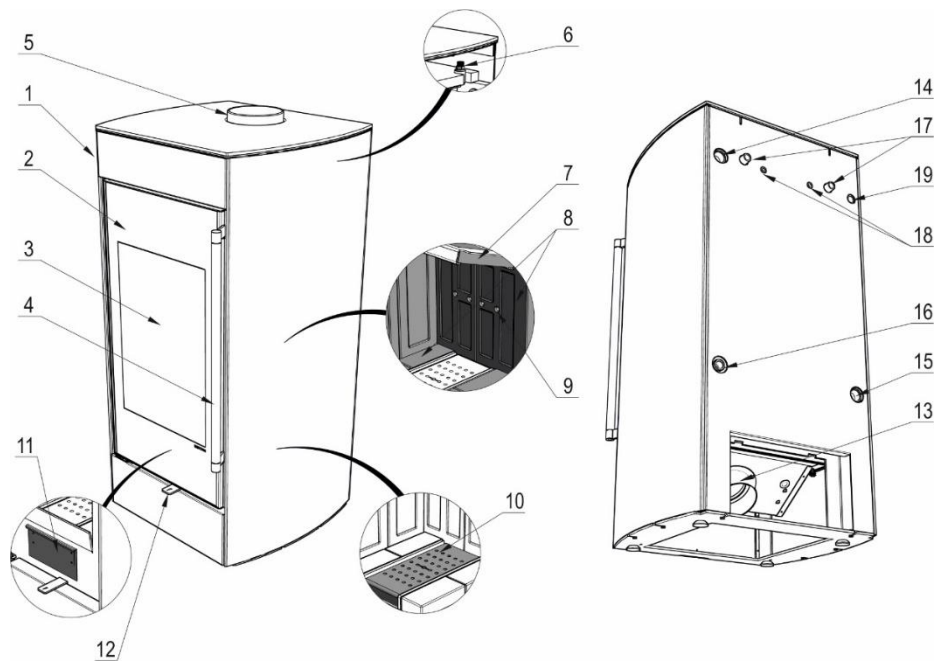
4.1. Design

The body of the stove is made of steel sheets connected by welds. Internal sheets of the body washed with flue gas are 4 mm thick. External sheets of the body are 3 mm thick. The external part of the stove is covered with a thin-walled sheet. The sides and rear wall of the steel combustion chamber are lined with chamotte fittings (8 pic. 1).

Fuel is charged into the furnace chamber through the charging doors (2 pic. 1) equipped with heat-resistant glass (3 pic. 1). Furnace of the heating stove is equipped with a horizontal grate (10 pic. 1). Ash from the combusted fuel falls to the steel drawer (11 pic. 1). Ceramic deflector is installed in the upper part of the furnace chamber above the grate (7 pic. 1). Then, flue gas flows between three water tubes with $\varphi_{out.} = 70$ mm in diameter and are directed to the vertical flue gas with $\varphi_{out.} = 150$ mm (5 pic. 1) in diameter. Adjustment of primary and secondary air is made at the front side of the equipment (12 pic. 1).

Air for fuel combustion is drawn through the socket with 124 mm in diameter (13 pic. 1) to the bin located above the ash box. Secondary air is led by four openings from the back of the furnace chamber.

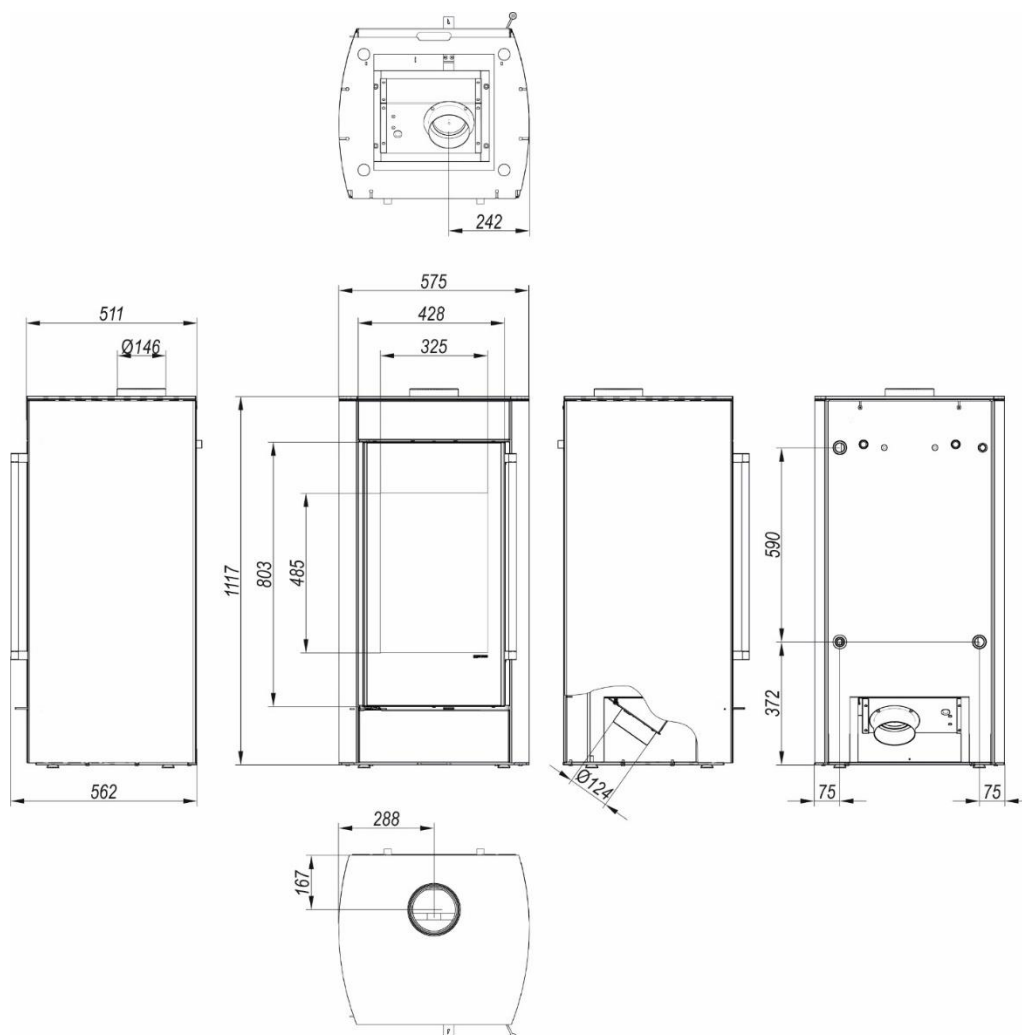
The combustion chamber is encased with the water system, which removes a considerable amount of heat and transfers it to water located inside. Part of the ambient air is heated directly by the furnace through the window panel and the water system in the upper part of the stove. The stove is equipped with a so-called combustion chamber.



Picture 1. Design of DEFRO HOME HYDROFIRE heating stove.

1 - housing, 2 - doors, 3 - glass pane, 4 - handle, 5 - flue, 6 - vent, 7 - flue gas deflector made of vermiculite, 8 - ceramic linings of the furnace chamber, 9-openings of the flue gas afterburning system, 10-grate, 11-ash container, 12-air inflow adjustment slider, 13-air intake vent, 14-supply socket, 15-return socket, 16-blowdown connection, 17-inlet/outlet of cooling coil pipe, 18-assembly bushes for temperature sensors, 19-1/2 socket

4.2. Technical data



Picture 2. Dimensions (in mm) of the DEFRO HOME HYDROFIRE heating stove.

Table 1. Technical data of the DEFRO HOME HYDROFIRE heating stove.

Specification / device type	Unit	DEFRO HOME HYDROFIRE
Rated power	kW	9,3
Heat output of water cycle	kW	7,5
Thermal power returned to the environment	kW	1,8
Max. permissible work pressure	bar	2
Flue size	mm	146
Diameter of bottom air intake (inlet)	mm	124
Efficiency	%	84,3
Seasonal energy efficiency	%	74
CO emission for 13% O ₂	% / mg/m ³	0,074 / 921
Flue gas temperature	°C	245
Flue gas stream for nominal power	g/s	6,9
Minimum draught at rated power	Pa	12
Recommended single fuel charge	kg	~2,0
Average fuel consumption	kg/h	~2,6
Recommended length of chunks	mm	250
Weight	kg	~205
Water capacity	l	33
Legs adjustment range	mm	20
Fuel type		dry hardwood (max. 20% of moisture content)
Type of heating stove		of periodic combustion

4.3. Equipment

The heating stove is delivered on a pallet, foil-wrapped and fully assembled. The scope of delivery can include additional components and sub-assemblies, according to the order. Components that are standard equipment are specified in table 2.

Table 2. Equipment of the DEFRO HOME HYDROFIRE heating stove.

Standardowe	j.m.	ilość
Heating stove operating manual	pcs.	1
Heating stove warranty book	pcs.	1
Ceramic lining of furnace chamber	set	1
DH sponge	pcs.	1
Handle for removing the grate	pcs.	1
A plug covering the upper connector of the flue	pcs.	1
Equipment at an additional cost	jm	
Additional third window	pcs.	1
STB safety thermostat with damper	pcs.	1
Black metal handle	pcs.	1

4.4. Fuel parameters

The heating stove is intended for the combustion of wood from deciduous trees (oak, hornbeam, ash, beech, birch) with moisture content below 20% (wood seasoned in proper conditions for at least 2 years). The recommended length of chunks of wood is 250 mm.

It is not allowed to use wet wood (extensive contamination and soot emission and decrease of energy efficiency of the heating stove).

It is forbidden to use all other fuels, min. coal, softwood from coniferous trees, wood from tropical trees and any liquid fuels.

It is forbidden to burn any type of litter and wood waste. Firing with inadmissible materials in the fireplace may result in damage to the stove and life and health hazards to the users (toxic flue gas from chemicals).



Use of bad quality fuel or incompatible with the above-mentioned recommendations would cause irregularities in the operation of the equipment and can lead to loss of warranty and decline of the liability for the product.

The heating stove is not a heater intended for the combustion of waste and forbidden fuels cannot be combusted in it.



Wood should be seasoned minimum of two (2) years. Firing with wet wood, with low calorific value, decreases the efficiency and has an adverse influence on the dry stove's life-time.

It is not recommended to use softwood and resinous woods as fuel. It causes intensive smoke concentration and the necessity to clean the equipment and flue more often.

It is forbidden to combust coal, wood from tropical trees, chemical products, liquid fuels etc., e.g. oil, alcohol, petrol, naphthaline, laminated, impregnated boards etc., paper, cardboard, old clothes, wastes.

It is forbidden to exceed the recommended amount of charged fuel, because it may cause overheating of the equipment.

DEFRO R. Dziubela sp.k. does not accept liability for damages caused or improper burning of fuel if the fuel used is prohibited.

4.5. Spare parts

To obtain information on the availability of spare parts for the heating stove or inquiries about equipment servicing please contact with the DEFRO Service Center or the Authorized DEFRO Service..



DEFRO R. Dziubela sp.k.
Centrum Serwisowe
Ruda Strawczyńska 103a
26-067 Strawczyn



serwis@defro.pl

5. TRANSPORT AND INSTALLATION

5.1. Transport and storage

The heating stove is delivered on a pallet, foil-wrapped and fully assembled. It is recommended to transport the heating stove, in such packing condition, as close as possible target location for installation, which will minimize the possibility of damage of the device housing.

All remaining parts of the packing should be removed in such a way that it will not pose any hazard to people and animals.

Appropriate lifts are to be used for lifting and lowering the heating stove. For transport, the heating stove is to be secured against moving and tilting on a vehicle's platform by means of belts, wedges and wooden blocks.



The heating stove is to be transported in a vertical position!

The heating stove is to be stored in a non-heated room, under a roof and with efficient ventilation.

Before the installation you should check completeness of the delivery, its condition and **remove all transport protections!**

5.2. Working environment



The heating stove should be installed in compliance with the requirements of the currently applicable standards and legal regulations and detailed regulations of the target country. In Poland, these conditions are regulated by the Regulation of the Minister of Infrastructure of 12 April 2002 on technical conditions which should be fulfilled by buildings and their location. (Journal of Laws no. 75 of 2002 item 690 as amended) and Polish Standard PN-EN 13240:2008 Room heaters fired by solid fuel. Requirements and tests.

The heating stove should be installed in a suitable location allowing opening of the doors and carrying out regular maintenance works. The environment should be:

- adapted to operating conditions,
- equipped with a power supply of 230V/50Hz,
- equipped with a suitable flue gas exhaust system,
- equipped with an external ventilation system,
- equipped with an earthing system with a CE certificate.

Correct setting of the heating stove is necessary to obtain a satisfactory heating level for the residential unit. Prior to the assembly, it is necessary to select a suitable position for heating stove installation. Check the minimum safe distances from materials susceptible to heat or inflammable materials such as load-bearing walls and other walls or wooden components, furniture

Installation of the heating stove should observe the following safety rules:

- a minimum distance of 200 mm from the side and rear of the medium inflammable materials,
- minimum distance 800 mm from the front wall, where the medium inflammable materials cannot be located,
- objects made of highly inflammable materials should be located at a distance minimum of 2000 mm from the furnace.

If it is not possible to maintain the above-indicated distances, then you should apply process and building measures to avoid fire hazards. In the case of contact with a wooden wall or wall made of other inflammable material, it is appropriate to insulate the flue gas discharge pipe.



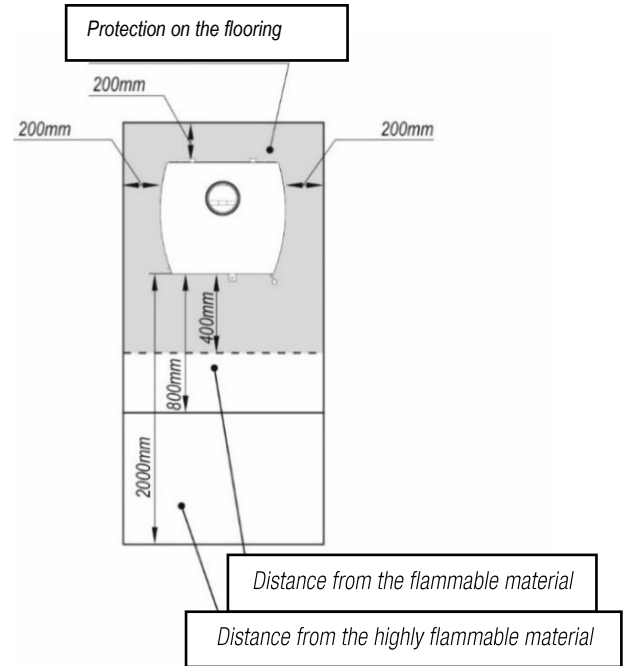
In the case of a floor made of inflammable materials, it is appropriate to prepare a plane protecting the floor and execute protection in accordance with the standards applicable in the given country.

The heating stove should be located on a substrate with suitable load-bearing capacity. In accordance with Polish Standards, each square meter of the floor slab in the single-family building should transfer a load of 150 kg. If this condition is fulfilled, the heating stove manufactured by DEFRO can be installed without needing to reinforce the floor slab.

Nonetheless, if you are not sure about the design of the floor slab, where the heating stove is to be installed, you should absolutely contact with building designer to reinforce the floor slab or execute a special structure distributing the weight on a larger area.



The flooring in the room, where the heating stove is to be installed, should be properly dimensioned, to maintain the load.



Picture 3. Minimum safe distances during setting of heating stove.

To ensure the correct operation of the heating stove you should ensure the suitable inflow of air required for combustion (it is appropriate to ensure approx. 40 m³/h) in accordance with the installation standards and standards applicable in the given country. The volume of the surrounding environment should not be less than 30 m³. You should assume that the combustion of 1 kg of wood requires ~8 m³ of air.

Air should be supplied through fixed openings of a minimum 100 cm² cross-section made in the walls (near the heating stove) and directed to the outside. These openings should be made in a way that ensures that they cannot be plugged.

Air can be supplied from adjacent rooms, provided that they are equipped with an external air supply, and they are not intended for a bedroom and bathroom, and where fire hazard is not present, for example: garages, woodsheds, inflammable materials storage. You should absolutely observe recommendations of the applicable standards.

Outlets from the exhausts, which are operated with the heating stove in the same room or in the rooms connected with ventilation, may be troublesome.

If the additional heat source is installed then it is required to ensure the supply of a sufficient amount of air for combustion and ventilation



It is forbidden to install the heating stove in bedrooms, bathrooms and other rooms where other heating equipment without independent air inflow are installed (fireplace, heating stove, etc.).

It is also forbidden to set the heating stove in explosive atmospheres.

It is forbidden to use mechanical exhaust ventilation and exhaust equipment.

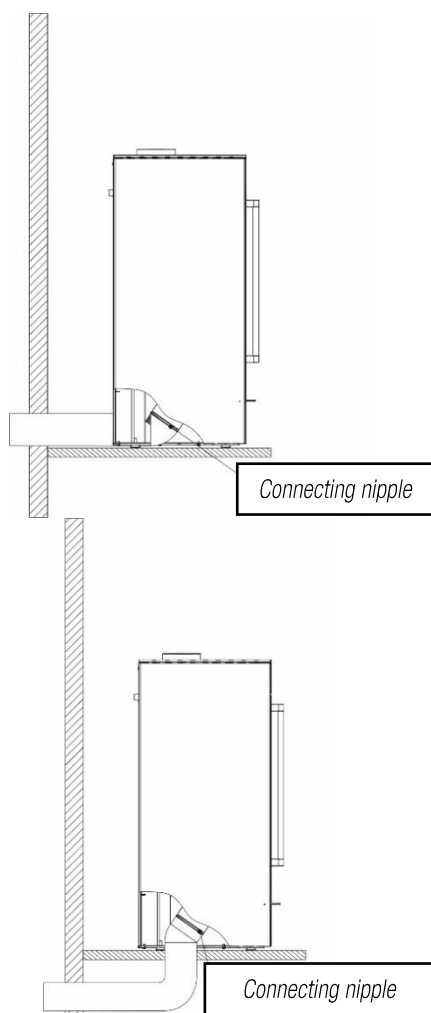
5.3. Connection to external air intake

The room, where the heating stove is installed, should be equipped with the inflow of air in the minimum amount required for the correct combustion process and for room ventilation. This can be done by executing fixed vents in walls directed to the outside or through independent or common ventilation ducts.

The external wall near the heating stove should have a through opening with a free cross-section of 100 cm² protected with a grille on the internal and external sides, for this purpose. Supply grilles should not be closed automatically. Furthermore, the air intake should be:

- directly connected to the room, where the heating stove is to be installed,
- protected with a grille, metal net or suitable cover not restricting minimum cross-section,
- located in a way preventing plugging it,
- located with consideration of proper distances preventing swirling of air (with respect to the windows).

The DEFRO HOME HYDROFIRE series heating stove offers two versions of connection of the external air inlet: from the back or bottom of the heating stove. Diagrams presenting two types of connections are presented below.



Picture 4. Connection of the DEFRO HOME HYDROSLIM heating stove to the external air inlet.

5.4. Installation to the flue

The heating stove should be connected to individual (flue gas) flue. The size of the chimney draught should equal to 12 ± 2 Pa.

During the execution of the opening for the flue gas discharge pipe, you should consider the possible occurrence of inflammable materials. If the opening will pass through the wooden wall or wall made of material sensitive to heat then you should maintain the minimum distance from flammable material (value given on the certification label of the pipe), with possible additional insulation using proper materials (thickness 1.3 - 5 cm, heat conductivity min. 0.07 W/m °K).

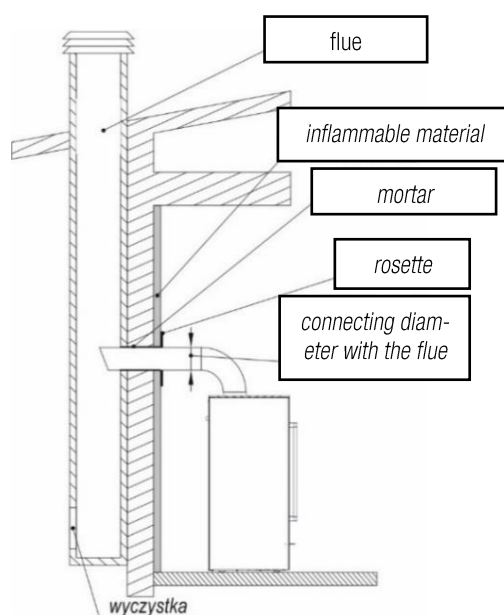
As an alternative it is recommended to use insulated industrial pipe, which can be also used outdoors, to avoid the occurrence of condensate.

For correct operation, the connector between the heating stove and flue or smoke duct should be executed acc. to the below recommendations

- horizontal sections should have a minimum slope of 3% towards the top,
- length of the horizontal section should be minimal and should not exceed 2/3 metre,
- number of changes of directions, inclusive of the use of the "T" component, should not exceed 4.

Chimney or individual smoke duct should meet the following requirements:

- be resistant to combustion products, water-proof and suitably insulated, in compliance with conditions of use,
- be made of materials resistant to normal mechanical stresses, heat, the action of combustion products and possible condensate,
- be vertical with the change of axis direction not exceeding 45°,
- be adequately separated with void space or suitable insulation from combusted and inflammable materials,
- have preferably circular internal cross-section: square or rectangular cross-section should have rounded corners with a radius not smaller than 20 mm,
- internal cross-section should be constant, free and independent,
- have a rectangular cross-section with a maximum ratio between two sides equal to 1.5.
- have a chimney cap with a suitable cross-section (not smaller than the doubled cross-section of the chimney or flue duct), which protects against the ingress of rain and snow to the chimney system and ensures the discharge of flue gas also in the case of wind presence.



Picture 5. Connection of DEFRO HOME HYDROFIRE heating stove to the flue.



It is forbidden to use mechanical exhaust ventilation.

The fireplace insert should not be used if the heating stove's draught is too low.

The room, where the heating stove is to be installed, should be vented on a regular basis.

Installation to flue should ensure access for cleaning of the connector and the whole chimney system should be equipped with proper inspection openings closed with tight doors.

Due to the emission of condensate also flue should be resistant to its action, therefore it is recommended to use ceramic system chimneys or chimneys with acid-resisting insert.

5.5. Installation in central heating system

The stove is equipped with a water system allowing the operation in the central heating system. The water system is equipped with a protecting heat exchanger (cooling coil) and it is ready for operation in the closed system.

Connection of the stove's water system should be made in compliance with the applicable standards and regulations and in particular with the following documents:

- The Regulation of the Minister of Infrastructure of 12 March 2009 on technical conditions which should be fulfilled by buildings and its location.
- Standard PN-EN 12828:2014 - Heating systems in buildings - Designing of water central heating systems



In the case of installation of the stove in a country other than Poland, it is obligatory to apply the relevant requirements and standards of this country.

Before installation of the equipment, you should make a test connection of the water system to the central heating system and then enter the working pressure in the system to check its tightness. The stove should be installed when all leaks in the water systems have been excluded.

Picture 6 presents the exemplary connection diagram for the water system of the stove in the heating system.



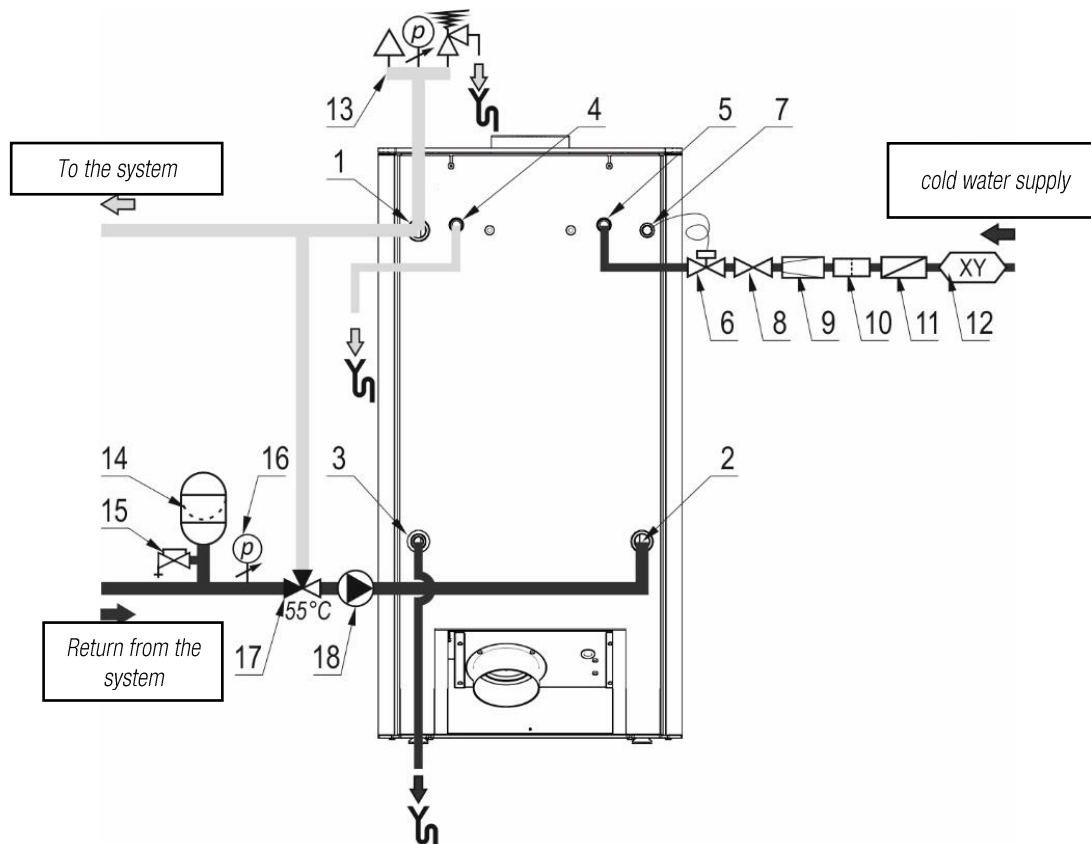
A protecting heat exchanger (protecting coil pipe) should be connected to the water supply system ensuring continuous water inflow, also if the electric power is not available.

Protecting heat exchanger is intended only for emergency heat collection and should not be used as a flow, utility water heater.

The stove's water system is equipped with one supply connection and one return connection.



It is required to install thermal protection in the system preventing the return of water with temperature below the dew point (55 °C). Lack of such protection leads to a dramatic decrease in heating efficiency and damage to the equipment. Failure to observe this recommendation may cause loss of the warranty.



Picture 6. Diagram of exemplary connection of water system of the DEFRO HOME HYDROFIRE stove with heating system in the closed system.

1- connection for water supplying the system, 2- connection for return water from system, 3-blowdown connection, 4-water inlet to coil pipe, 5-water outlet from coil pipe, 6- BVTs valve, 8- DVTS valve temperature sensor, 8-valve, 9-pressure reducer, 10-filter, 11-non-return valve, 12-anti-contamination valve, 13-safety group, 14-membrane expansion vessel, 15-dome valve, 16-pressure gauge, 17-thermostatic valve 55°C; 18-circulating pump

It is required to install a safety valve in the closed system. Its task is to protect the water system and installation against exceeding of maximum allowable working pressure. The valve should be factory set to 2 bar.

If the allowable pressure is exceeded the safety valve discharges excess of water and steam through the discharge pipe decreasing pressure in the system. Therefore, you should ensure safe water and steam outflow from a safety valve (e.g. to the sewage system).

The valve should be installed as close as possible to the heat source. It can be installed directly on the outlet of the socket supplying the system.



It is recommended to use safety fittings, the so-called safety unit, which consists of a safety valve, manometer and vent.

Connections of the water system with the central heating system should be made using threaded or flanged joints.



Installation of the water system of the stove by welding results in loss of warranty!!!

Stove installation should be carried out by a person or company with suitable qualifications and authorizations.

It is in the user's interest to ensure that installation is made in accordance with the regulations in force and that the installing company gives a warranty for correctness and good quality of workmanship which should be confirmed by a stamp and sign on the warranty card of the equipment.

The hydraulic system of the water system of the stove should be made in compliance with the currently applicable standards and regulations. All national and local provisions should be met!

6. USAGE AND OPERATION

6.1. Introductory remarks



Do not touch the heating stove during the first firing-up, because the paint is hardening during this stage.

Touching the paint could result in the uncovering of the steel surface.

It is possible to refresh it using spray paint of the same colour if necessary.



It is good practice to ensure efficient ventilation during the first firing-up because a small amount of smoke and paint odour will be emitted from the heating stove.

Do not stay near the heating stove. It is required to vent the room. Smoke and paint odour will disappear after approx. one hour of operation. However, we remind you that they are not harmful to health.

The heating stove is subject to expansion and shrinkage during the warming and cooling down stage which may cause slight squeaks. This is an absolutely normal phenomenon because the structure of the equipment is made of rolled steel and this phenomenon shall not be considered a defect.

It is very important to avoid excessive overheating of the heating stove at the beginning but to reach the required temperature gradually. Use low heating powers. During the next firing-up of the heating stove, it will be possible to use the whole available thermal output. This will avoid damage of ceramic tiles, welds and steel structures.



Do not expect the immediate effects of heating!

6.2. Filling water system with water

Make sure that the central heating (CO) system is correctly filled with water, which should be clean, clear and without any admixtures prior to start up. Filling the water system with water should be carried out only when it has been cooled down.

Water quality has an essential influence on the life of the water system and the whole central heating system. Water should have the following parameters:

- pH reaction:
 - 8,0 ÷ 9,5 – in steel and cast iron systems;
 - 8,0 ÷ 9,0 – made of copper and mixed materials steel/copper;
 - 8,0 ÷ 8,5 – for systems with aluminium radiators;
- total hardness < 20 °f,
- free oxygen content < 0.1 mg/l, recommended < 0.05 mg/l,
- chlorides content < 60 mg/l.



Before connecting the stove with the water system to the old central heating system user should carry out flushing to remove sludge remaining in the radiators and pipes.

Fill the system with water prior to firing up of the stove. Filling with water should be carried out using installed fixtures for filling and emptying, which should be located at the lowest point of the heating system. This process should be carried out slowly in order to deaerate the system.

To check if the system has been filled with water, the straight-run valve located on the signalling pipe should be opened for a few seconds. Continuous water outflow means that the system has been filled in correctly. Any water refills should take place in the boiler's inactivity period.



It is unacceptable and strictly forbidden to refill water in the system during the DEFRO HOME HYDROFIRE stove's operation, especially when its temperature is high as it may lead to its damage or crack.

Water can be refilled only due to its losses by evaporation. Other decrements such as system leakage are inadmissible as they may lead to the creation of boiler scale resulting in permanent damage to the water system.

6.3. First start-up and operation

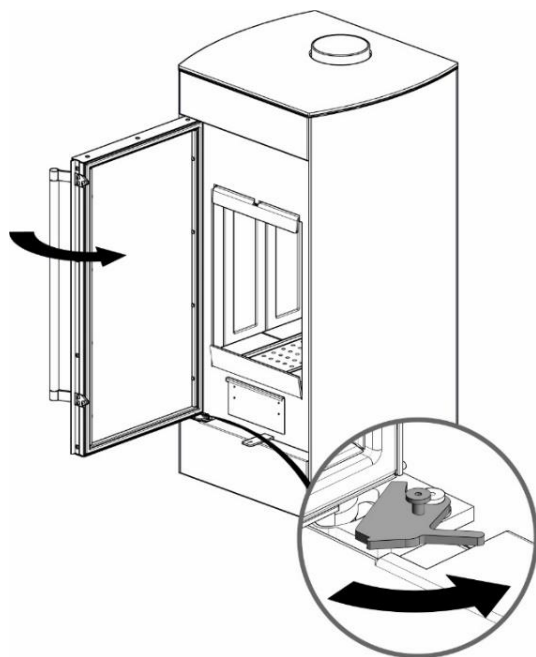


Only the AUTHORIZED SERVICE of the MANUFACTURER may check the correctness and integrity of the equipment connection, preparation for operation according to this manual and applicable regulation and first start-up and train the user within the scope of equipment operation and servicing.

Start-up preparation

- check whether the regulations related to OHS and fire safety as well as the requirements included in this Operating Manual are met;
- perform an internal inspection of the equipment;
- check the flow capacity of air intake and openings supplying the air to the equipment.
- perform inspection of system equipment;
- check whether the system is filled with water;
- check the tightness of the heating system and control the pressure in the system;
- check conditions of the chimney system and correctness of equipment connection to the chimney;
- check the condition and flow capacity of the ventilation system

The doors of the heating stove are equipped with a self-closing mechanism. The doors will be automatically locked in this position after opening. To re-close the doors you should release the lock as presented in the following picture.



Picture 7. Self-closing mechanism.

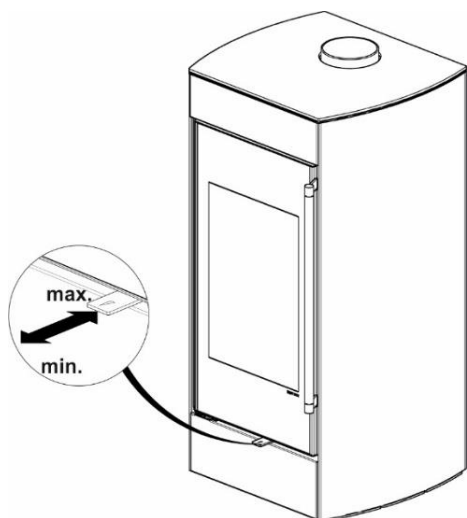
Firing from the top is a recommended method of firing of the stove. Prior to firing up, you should set a slider of air inflow adjustment to maximum opening (marking on the handle, presented in picture 8). Then open the doors of the heating stove and place fuel on the grate as follows: place split thick chunks at the bottom, then another layer of thinner chunks. Place small slivers at the top, where you may additionally place eco-friendly kindling.

It is important to ensure free space (approx. 1 cm) between each of the chunks.

The recommended single fuel charge is given in table 1.



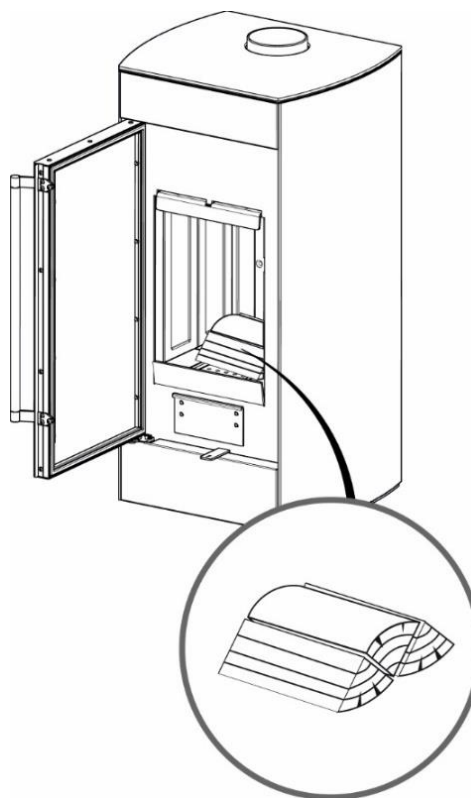
It is forbidden to use other materials than described in this manual for firing up, in particular flammable chemicals such as: oil, petrol, solvents and others.



Picture 8. Setting air inflow adjustment button in the maximum opening position.

You should use only hardwood (recommended beech, oak, hornbeam, birch), preferably debarked, of low moisture content (below 20%).

During combustion, the doors should be opened only when the fuel is being added. Recharging should be made only when only an ignition layer, in the form of a glow, remains in the furnace. Before adding the wood, it is required to spread the remaining layer of glow and refill the combustion chamber with wood - in accordance with picture 9. The intensity of the combustion process should be set with the "air inflow adjustment slider". The correct flame should have a light-yellow colour and a length of approx. 20-40 cm, depending on the power of the equipment, after approx. 2-3 minutes from charging. If there are problems obtaining the correct flame in a short time - you should increase the opening of a flow damper and set the target position after firing up.



Picture 9. Method of fuel arrangement



Never stand in front of the heating stove while opening the doors. Burn risk.



Pay special attention to avoid damage to the ceramics during refuelling.

The odour of paint from the body will be released during the first several hours of combustion. This is completely normal. You should strongly vent the room at that time. Check the tightness of joints once again when fuel is completely burned out and equipment has been cooled down.



Housing components will be very hot during operation. You must exercise caution.

Empty the ash drawer prior to each successive start-up of the equipment (see chapter 7.2.1). The window panel should also be cleaned. Do not use sharp materials. It will damage the surface of the window panel and screen printing.

6.4. Shutdown (damping)

Damping is executed by the closing inflow of primary air. In such a case you should wait until the fuel completely burns out in a natural way.

If it is necessary to quickly dampen a flame you should charge the furnace chamber with dry sand or ash. It is not allowed to dampen a flame by pouring it with water because it may damage components of the equipment.



After a longer break in the equipment's operation, you should check the flow capacity of the flue.

6.5. Low-temperature corrosion

Heating stoves with water system should be operated with differences between supply and return temperatures within the range of 10-20°C and return water temperature not smaller than 55°C. While operating the water system with central heating water temperature below 60°C, water vapour contained in flue gas condenses on the equipment's walls. During the initial period of operation, the above-mentioned condensate may leak from the stove.

Longer operation at lower temperatures may lead to corrosion resulting in a shorter water system's life. Hence, it is not recommended to use the equipment if the temperature of the water supplying the central heating system is below 60°C.

To ensure the proper, failure-free and effective operation of the heating stove it is recommended to use it with the water system, on 80% of its rated power and with a temperature of water in equipment not lower than 65 °C. It is also recommended to install a mixing valve.



To ensure the correct operation of the stove with the water system it should be protected against corrosion caused by the return of water with a temperature below the dew point from the central heating system. The temperature of return water should have min. 55 °C.

If the temperature of water supplying the central heating system is below 60°C, water system operation leads to intensified precipitation of tarry substances from burnt fuel resulting in deposits of tar sludge in the heat exchanger and flue, reducing the efficiency of the heating stove and, in the first instance, leads to the risk of soot ignition in the chimney.

7. CLEANING AND MAINTENANCE



It is a good practice to ensure good ventilation in the room during the cleaning of the stove.



All operations related to cleaning all components should be carried out when the heating stove is completely cold. It is required to use protective gloves.

It is forbidden to clean the equipment (all painted components and gaskets) using chemicals, liquids and moist cloths, towels, industrial wipers etc. Discolorations and sources of corrosion may occur if the mentioned rules are not observed, and they are not covered by the warranty.

7.1. Water system

At least twice a year you should carry out inspection and maintenance of all components ensuring the safe operation of the water unit and central heating system, including the safety valve and thermal safety valve. If a longer break in the operation of the stove is planned and if it is possible that temperature will fall below 0°C then you should discharge water from the central heating system to prevent freezing of water in the system and its damage. Check the filling of the central heating system with water prior to each start-up after a longer break in the operation of the stove.



At least twice a year you should carry out inspection and maintenance of the safety valve, thermal safety valve and other components ensuring safe operation of the water system and whole central heating system.

Check the level of water in the central heating system after each longer break in operation of the DEFRO HOME HYDRO-FIRE pellet stove.

7.2. Basic operations and cleaning by the user

Any service and maintenance works are to be carried out with meticulous care and only by adults familiar with this manual. The heating stove should not be cleaned in the presence of children.



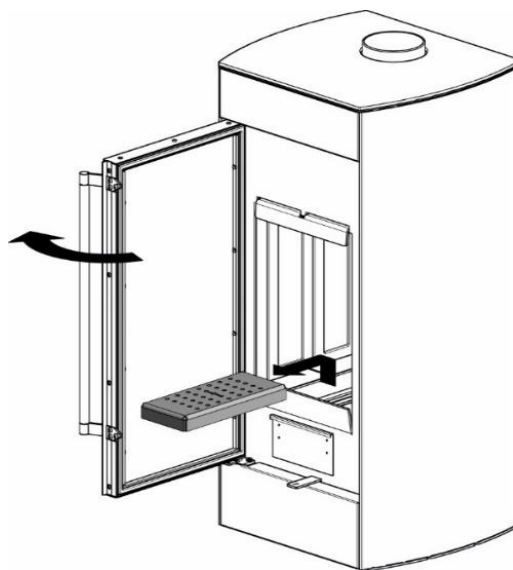
Any service and maintenance works are to be carried out with meticulous care and only by adults familiar with this manual. The heating stove should not be cleaned in the presence of children.

Protective gloves, glasses and headgear are to be worn to operate the equipment.

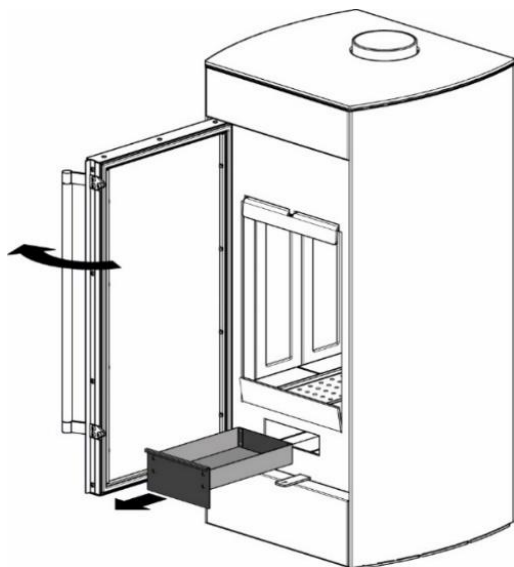
7.2.1. Cleaning before each starting

Prior to every successive start-up of the equipment the grate should be cleaned and the ash container should be emptied, handling the ash with due care. The cleaning procedure is presented in the following pictures 10 and 11. Dust can be removed using a vacuum cleaner only if it is completely cold. Use a vacuum cleaner adapted to removing particles of a specified size for this purpose.

Re-install the grate in the furnace and insert the ash drawer when the cleaning is completed.



Picture 10. Grate removal



Picture 11. Removal of a drawer from the ash-pan.

7.2.2. Window panel cleaning

The window panel may be cleaned only and exclusively when the equipment does not operate and is at room temperature.

Before each cleaning of the glass pane, it is required to protect the painted components and surfaces, and gaskets against flooding, because it has an impact on quicker wear and tear of the components.

We recommend using only the DH sponge to clean the glass panes. We do not recommend using any liquid for cleaning of glass panes or chemicals. The absence of protection of the cords surrounding the glass panes causes loss of their properties, soaking with chemicals and reactions with high temperature that results in damage to the glass pane.

The sponge is intended only to clean the glass panes, it should not be used for gaskets or metal parts. It is not suitable for cleaning glass panes with pyrolysis. The sponge may be used several times, depending on the degree of soiling of the glass pane. Use the grey side for cleaning and brush it off each time after use.

Do not use products that may scratch the glass pane. The ash may contain substances that will scratch the glass ceramics.



It is forbidden to use abrasive agents or materials, because they may scratch the glass surface.

It is forbidden to use chemical cleaning agents, because in case of contact with such agents, they may cause damage to the components of the equipment, that is printed on the glass pane, glass pane, gaskets, and painted surfaces.



Do not open doors to clean the window panel during the operation of the equipment. Cleaning of window panels is possible only when the equipment is cold.

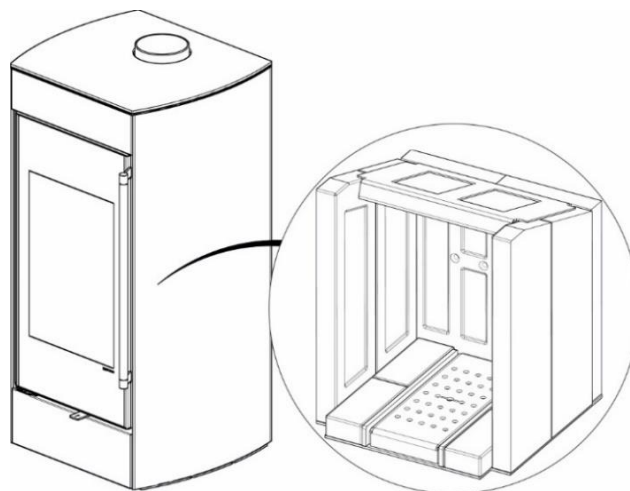
7.2.3. Doors/gaskets

Abrasive surfaces of doors and closing mechanisms should be occasionally lubricated with graphite grease. Carry out inspection and cleaning of the whole stove prior to each heating season. Pay special attention to the condition of gaskets, replace them if necessary.

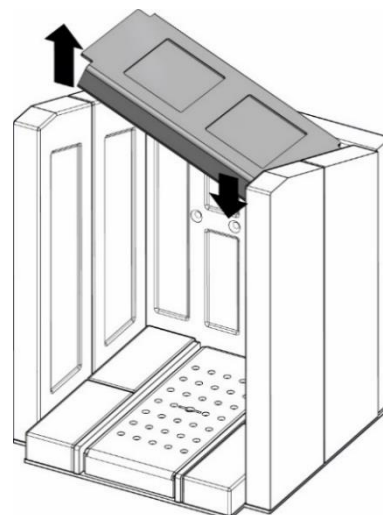
During disassembly, you should pay special attention to the presence of the pull-type spring in the bottom hinge, which is part of the door's self-closing mechanism.

7.2.4. Furnace chamber

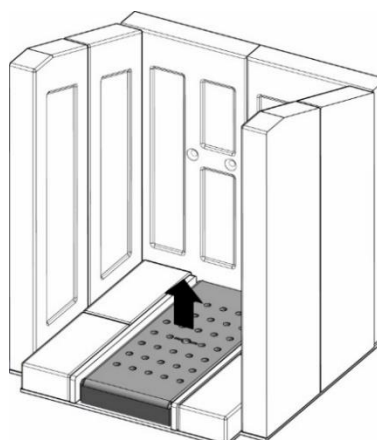
Clean the furnace chamber of the heating stove periodically, depending on moisture content and type of wood used. It is required to remove the plates of the chamber in the orders presented in the following pictures for this purpose.



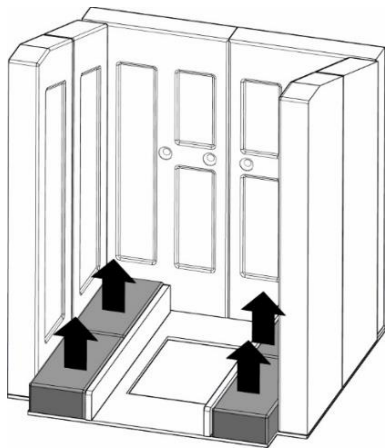
1. Furnace chamber



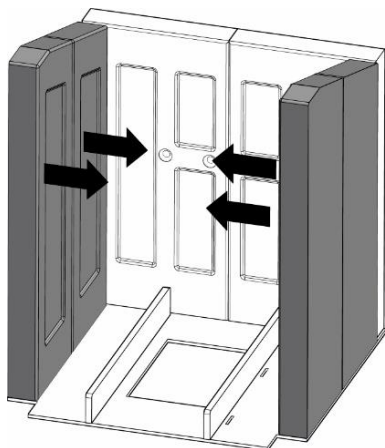
2. Disassembly of deflector



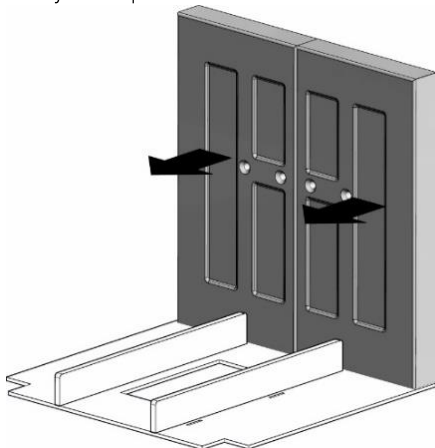
3. Grate disassembly.



4. Disassembly of plates laid on the stove floor



5. Disassembly of side plates



6. Disassembly of plates from the rear wall of the stove.

Picture 12. Order of removal of the heat-resistant plates of the furnace chamber.

7.2.5. Flue

In compliance with applicable regulations, you should clean the flue twice (2) a year. Flue should be cleaned by a chimney sweep company and this fact should be documented in this manual.



Flue gases coming out of blocked chimneys are dangerous. The chimney and connector should be kept clean. They should be cleaned before each heating season.



After a longer break in the equipment's operation, you should check the flow capacity of the flue.

7.3. Periodic inspection by authorized service

After the heating season, it is necessary to clean the chamber through which flue gas is flowing. This cleaning is obligatory and is intended to remove all combustion residues.



Periodic inspection of the equipment should be carried out only by a qualified manufacturer's service.

7.4. Shutting down

It is recommended to completely shutdown the heating stove and clean the equipment when each heating season is finished.

8. TROUBLESHOOTING

Some anomalies indicating irregularities in operation can occur during the operation of the equipment. It can be caused by incorrect installation of the equipment without observation of the applicable building regulations or provisions of this manual or by external causes e.g. natural environment.

Below you will find the most frequent causes of incorrect operation of the equipment with their solutions.

Smoke draw back when the doors are opened:

- too rapid opening of the doors (open the doors slowly);
- if the chimney damper has been installed as a chimney draught regulator - open the chimney damper each time when the doors are opened;
- insufficient air inflow to the room, where the equipment is installed (ensure proper ventilation in the room or supply air to the combustion chamber in compliance with guidelines in the manual);
- atmospheric conditions: low pressure, mists and precipitation, sharp changes in temperature;
- insufficient chimney draught (carry out chimney sweep inspection of the flue).

Insufficient heating or damping:

- too low amount of fuel in a furnace (charge furnace in compliance with the manual);
- the too high moisture content of wood used for combustion (use wood with moisture content <20%) a large part of obtained energy lost in the water evaporation process;
- too low chimney draught (carry out chimney sweep inspection of the flue).

Insufficient heating despite good combustion in the combustion chamber:

- low calorific "soft" wood (use wood as recommended in the manual);
- too high moisture content of wood used for combustion (use wood with moisture content <20%);
- too fragmented wood, too thick chunks of wood:

Excessive contamination of window panel:

- the low intensity of combustion (combustion with a very small flame, use only dry wood as fuel);
- using resinous softwood as a fuel (use dry hardwood as a fuel foreseen in the stove operating manual).

The correct operation can be disturbed by atmospheric conditions (air moisture content, fog, wind, atmospheric pressure) and sometimes by closely located high facilities.

In the case of repeated problems, you should turn to a chimney sweep company to confirm the reason for such a condition and to indicate the best solution for the problem.

9. MEASURES IN CASE OF FIRE IN THE FLUE /SOOT IGNITION/.



Systematic cleaning of smoke ducts should be performed to prevent soot ignition in the chimney.

Soot ignition in the chimney is the burning of particles deposited inside chimney (flue) channels; the deposits are formed in the course of the heating equipment's operation and were not cleaned by chimney sweeps. In the case of a soot fire in the chimney the following recommendations should be observed:

- call the Fire Brigade at 998 or 112, give information about what is happening and give detailed directions on what is happening and how to get to the given building;
- damp a fire in the chimney by closing the inflow of cold air to the furnace chamber;
- close the stove's door and clean holes tightly to cut off the air supply (due to lack of air the fire will eventually stop);
- check the whole chimney channel for any cracks which might result in fire spreading to the rooms;
- prepare fire quenching means, e.g. fire extinguisher, fire blanket, a hose connected to the water system, water in a container;
- make rooms and necessary information available to the Fire Brigade.



It is strictly forbidden to pour water into the chimney - the risk of blowout.

Untight chimney channels can be a source of burning sparks or very hot flue gas, including insensible carbon monoxide.



Chimneysweep should be called after a soot fire in the chimney to perform cleaning of ducts and to inspect their technical condition.

10. REMOVAL DUE TO WEAR-OUT

The heating stove is made of materials neutral to the environment. After worn out of the heating stove parts connected with screws should be disassembled by unscrewing and welded parts must be cut. Components of the heating stove are subject to standard waste disposal, mostly as steel scrap. Take safety precautions during disassembly of the equipment by using appropriate hand-held and mechanical devices as well as personal protective equipment (gloves, clothes, apron, glasses).

11. REMARKS ON HEATING STOVE USAGE



The following rules for safe operation of the heating stove should be strictly observed and introduced.

- 1) The heating stove can be used only by adults, who have familiarised themselves with this operating manual and have been trained in the scope of usage.
- 2) It is forbidden for children to be in the neighbourhood of the heating stove without adult persons.
- 3) Flammable liquids must not be used for torching the fuel; only solid fuel (e.g. tourist), paper can be used etc.
- 4) Flammable materials must not be placed on the heating stove and in its vicinity.
- 5) It is forbidden to dampen a fire in a furnace with water.
- 6) It is forbidden to use a heating stove with a cracked window panel.
- 7) You should use the fuel recommended by the manufacturer.
- 8) Never stand in front of the heating stove while opening the doors. Burn risk.
- 9) Flammable materials cannot be located closer than 1500 mm while removing ash from the heating stove. Ash is to be put into heat-resistant containers with a lid.

- 10) After the heating season has finished, the heating stove and smoke channel are to be precisely cleaned.
- 11) Point corrosion spots are allowed because they do not impact the correct operation of the equipment and do not reduce its performance. They may occur as a result of incorrect storage of equipment (e.g. in rooms of high moisture content).
- 12) A phenomenon of condensation of water steam - condensate, may occur during operation.

PRODUCT SHEET

in accordance with the Commission Regulation no. 2015/1186
on the execution of the Directive of the European Parliament
and the Council 2010/30/EU and the Regulation 2017/1369

Name and address of the equipment supplier:

DEFRO R. Dziubela spółka komandytowa
26-067 Strawczyn
Ruda Strawczyńska 103A

Equipment parameters

Supplier's model identifier	DEFRO HOME HYDROFIRE
Energy efficiency class	A+
Direct thermal output of the product	1,8 kW
Indirect thermal output	7,5 kW
Energy efficiency Index	112
Performance at rated thermal output	84,3
Efficiency at minimal load	N/A
Special precautions	Consider guidelines included in the Service Manual delivered by the manufacturer each time before assembly, start-up or maintenance of the equipment

PRODUCT SHEET

in accordance with the Commission Regulation 2015/1185

on the execution of the Directive of the European Parliament and the Council 2009/125/EC

Equipment parameters

Model identifier(s): DEFRO HOME HYDROFIRE

Indirect heating functionality: [yes/∅]

Direct heat output: 1,8 (kW)

Indirect heat output: 7,5 (kW)

Fuel	Preferred fuel (only one):	Other suitable fuel(s):	η_s [%]:	Space heating emissions at nominal heat output				Space heating emissions at minimum heat output			
				PM	OGC	CO	NO _x	PM	OGC	CO	NO _x
				mg/Nm ³ (13 % O ₂)				mg/Nm ³ (13 % O ₂)			
Wood logs with moisture content ≤ 25 %	yes	no	74	40	120	1500	200	n/a	n/a	n/a	n/a
Compressed wood with moisture content < 12 %	no	no									
Other woody biomass	no	no									
Non-wooden biomass	no	no									
Anthracite and dry steam coal	no	no									
Hard coke	no	no									
Low temperature coke	no	no									
Bituminous coal	no	no									
Lignite briquettes	no	no									
Peat briquettes	no	no									
Blended fossil fuel briquettes	no	no									
Other fossil fuel	no	no									
Blended biomass and fossil fuel briquettes	no	no									
Other blend of biomass and solid fuel	no	no									

Characteristics when operating with the preferred fuel only

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Heat output				Useful efficiency (NCV as received)			
Nominal heat output	P_{nom}	9,3	kW	Useful efficiency at nominal heat output	$\eta_{th,nom}$	84,3	%
Minimum heat output (indicative)	P_{min}	n/a	kW	Useful efficiency at minimum heat output (indicative)	$\eta_{th,min}$	n/a	%
Auxiliary electricity consumption				Type of heat output/room temperature control (select one)			
At nominal heat output	e_{lmax}	-	kW	single stage heat output, no room temperature control		yes/ no	
At minimum heat output	e_{lmin}	-	kW	two or more manual stages, no room temperature control		yes/no	
In standby mode	e_{lSB}	-	kW	with mechanic thermostat room temperature control		yes/no	
Permanent pilot flame power requirement				with electronic room temperature control		yes/no	
Pilot flame power requirement (if applicable)	P_{pilot}	-	kW	with electronic room temperature control plus day timer		yes/no	
				with electronic room temperature control plus week timer		yes/no	
				Other control options (multiple selections possible)			
				room temperature control, with presence detection		yes/no	
				room temperature control, with open window detection		yes/no	
				with distance control option		yes/no	

Contact details/ Name and address of the manufacturer or its authorised representative.

DEFRO R. Dziubela spółka komandytowa
26-067 Strawczyn
Ruda Strawczyńska 103A

Robert Dziubela – president of the management board

DEFRO
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