

The logo for DEFRO HOME, featuring the brand name in a clean, white, sans-serif font. The word 'DEFRO' is on the top line and 'HOME' is on the bottom line, both in all caps. The background of the entire page is a dark grey with a complex, low-poly geometric pattern in various shades of grey and white.

DEFRO HOME

operating manual

fireplace with water system

DEFRO HOME RIVA series

SM ☐ ME ☐ LA ☐

BL ☐ BP ☐

SHORT ☐

G ☐

**DEKLARACJA ZGODNOŚCI WE
DECLARATION OF CONFORMITY EC**

nr 63/R-2/01/2017

DEFRO Spółka z ograniczoną odpowiedzialnością Spółka komandytowa

00-403 Warszawa, ul. Solec 24/253
Manufacturing plant:
26-067 Strawczyn, Ruda Strawczyńska 103A

DEKLARUJE / DECLARES

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

Wkład kominkowy powietrzny / Fireplace DEFRO HOME RIVA

(typ/type DEFRO HOME RIVA)

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

został

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

i niżej wymienionymi normami zharmonizowanymi:

and that the following relevant Standards:

PN-EN 13229:2002

dokumentacja techniczna / technical documentation

Wyrób oznaczono znakiem:

Product has been marked:



Ta deklaracja zgodności traci swą ważność, jeżeli we wkładzie kominkowym DEFRO HOME RIVA wprowadzono zmiany, została przebudowana bez naszej zgody lub jest użytkowana niezgodnie z instrukcją obsługi. Niniejsza deklaracja musi być przekazana wraz z wkładem kominkowym w przypadku odstąpienia własności innej osobie.

This Declaration of Conformity becomes invalid if any changes have been made to the DEFRO HOME RIVA Fireplace, if its construction has been changed without our permission or if the air 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 air heater.

Wkład kominkowy DEFRO HOME RIVA jest wykonywany zgodnie z dokumentacją techniczną przechowywaną przez:
DEFRO HOME RIVA Fireplace has been manufactured according to technical documentation kept by:
DEFRO Spółka z ograniczoną odpowiedzialnością Sp. k., Zakład produkcyjny: 26-067 Strawczyn, Ruda Strawczyńska 103a.

Imię i nazwisko osoby upoważnionej do przygotowania dokumentacji technicznej: Mariusz Dziubela
Name of the person authorized to compile the technical documentation:

Imię i nazwisko oraz podpis osoby upoważnionej do sporządzenia deklaracji zgodności w imieniu producenta: Robert Dziubela
Name and signature of the person authorized to compile a declaration of conformity on behalf of the manufacturer:

Dwie ostatnie cyfry roku, w którym oznakowanie zostało naniesione: 18
Two last digits of the year of marking:

Warszawa, 15.01.2018
miejsce i data wystawienia
place and date of issue.

Robert Dziubela
prezes zarządu / CEO

Dear Customer,

We would like to inform you that we make every efforts 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 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 Sp. z o.o. Sp. K

Content of this Operating Manual is a property of DEFRO Sp. z o.o. Sp. k..
Any copying, duplicating, publishing of content of this Manual
without prior written consent of DEFRO Sp. z o.o. Sp. k. is forbidden.

Dear Customer,

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 continuous efficiency of your fireplace.

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

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

Basic fireplace usage rules are to be obeyed while using the dry stove. Do not open the doors during 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 boilers.

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



DEFRO Sp. z o.o. 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 heating boilers 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 fireplace 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 the costs of service and travelling expenses.

Thank you for understanding.
Yours sincerely,

DEFRO Sp. z o.o. Sp. k.

Table of Contents

| | | |
|--------|---|----|
| 1. | INFORMATION..... | 5 |
| 2. | BASIC SAFETY RULES..... | 5 |
| 2.1. | Safety warnings | 5 |
| 2.2. | Warnings related to operation..... | 6 |
| 3. | INTENDED USE..... | 6 |
| 4. | TECHNICAL SPECIFICATION..... | 6 |
| 4.1. | Design..... | 6 |
| 4.2. | Equipment..... | 10 |
| 4.3. | Fuel parametrs | 10 |
| 4.4. | Spare parts..... | 10 |
| 5. | TRANSPORT AND INSTALLATION..... | 10 |
| 5.1. | Transport and storage..... | 10 |
| 5.2. | Working environment..... | 10 |
| 5.3. | Hot air distribution system..... | 12 |
| 5.3.1. | Gravity system for hot air distribution..... | 12 |
| 5.3.2. | Forced system for hot air distribution..... | 12 |
| 5.4. | Connection to external air intake | 12 |
| 5.5. | Installation to flue..... | 12 |
| 5.6. | Installation in central heating system | 13 |
| 6. | USAGE AND OPERATION..... | 14 |
| 6.1. | Filling water system with water..... | 14 |
| 6.2. | Introductory remarks..... | 14 |
| 6.3. | First start-up and operation | 15 |
| 6.4. | Damping..... | 15 |
| 6.5. | Low temperature corrosion..... | 15 |
| 7. | CLEANING AND MAINTENANCE..... | 15 |
| 7.1. | Basic operations and cleaning by the user..... | 16 |
| 7.2. | Cleaning before each starting..... | 16 |
| 7.3. | Window panel cleaning | 16 |
| 7.3.1. | Doors/gaskets | 16 |
| 7.3.2. | Furnace chamber..... | 16 |
| 7.3.3. | Flue..... | 16 |
| 7.3.4. | Water system | 16 |
| 7.4. | Periodic inspection by authorized service..... | 17 |
| 7.5. | Doors disassembly..... | 17 |
| 7.6. | Window panel dismantling..... | 17 |
| 7.7. | Disassembly of deflectors..... | 17 |
| 7.8. | Disassembly of ceramic tiles | 18 |
| 7.9. | Shutting the stove down..... | 19 |
| 8. | TROUBLESHOOTING | 19 |
| 9. | MEASURES IN CASE OF FIRE IN THE FLUE /SOOT IGNITION/..... | 20 |
| 10. | REMOVAL DUE TO WEAR-OUT | 20 |
| 11. | REMARKS ON FIREPLACE INSERT USAGE | 20 |
| 12. | PRODUCT WARRANTY TERMS AND CONDITIONS..... | 20 |
| 12.1. | Warranty conditions "48h Service"..... | 21 |
| 13. | WARRANTY CARD | 23 |
| 14. | CARRIED OUT WARRANTY REPAIRS AND MAINTENANCE..... | 24 |
| 15. | WARRANTY CARD /copy to send back/ | 25 |
| 16. | COMPLAINT FORM..... | 27 |
| 17. | COMPLAINT FORM..... | 29 |
| 18. | COMPLAINT FORM..... | 31 |
| 19. | REGISTER OF INSPECTIONS OF SMOKE DUCTS..... | 33 |

1. INFORMATION

Operating manual is an integral and essential part of the product and must be forwarded to the user also in the case when the property is transmitted. The user 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 fireplace 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.

A fireplace 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 case of error during installation, usage or maintenance works caused by non-observance of the legislation, regulations in force 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 pictures, photos and drawings are for illustration purposes only.

Versions of publications

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, publishing of content of this User's Manual without the prior written consent of DEFRO is forbidden.

Manual storage and browsing its contents

We recommend to take care of this manual and store it in 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 are marked with "bold" and have symbols pointing out user's attention to hazards which can be present during operation of the dry stove with water jacket. 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.
- Equipment should be installed in compliance with the legal standards applicable in the given location, region or country.
- The equipment should not be used by a person (including children) of impaired physical, sensory, 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 setting can cause hazardous situations and/or incorrect operation.
- Prior to any operations the user (or any person operating the equipment) should read and understand 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 fireplace insert considering its weight.
- In 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 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 contents of this manual), can cause injuries of people, animals or property damage. Then DEFRO shall be relieved of any civil or criminal liability.
- Part of fireplace insert 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 of the fireplace insert.
- Keep children away from the equipment when it is operating because each hot surface can cause burns.
- It is forbidden to use a fireplace insert when the glass 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 distance min. 400 mm between hot parts of the fireplace insert 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 OPERATION



- Equipment should be shutdown in case of failure or incorrect operation.
- Fuel used in the fireplace insert should meet the conditions described in this manual.
- Internal parts of the fireplace insert should not be washed with water.
- Do not allow contact with water, and first of all, do not wash any varnished coatings before they cure. The coating of new devices is not an anti-corrosion coating, heat-resistant paint only gains its protective properties after curing under the influence of heat (after several firings).
- 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 for 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.
- Fireplace insert 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 body of the fireplace insert directly on the floor and if such floor is made of inflammable materials it should be properly insulated.
- To facilitate possible interventions by the technical personnel you should not place the fireplace insert inside the closed rooms and just by the walls what can also disturb air intake.
- Always make sure and check whether doors of the combustion chamber are tightly closed when the equipment is operating.
- Equipment consumes exact amount of air which is required for combustion process; it is recommended to connect the iron stove to air intake from outside using suitable pipe and through a special outlet located at the back of the equipment.

ADDITIONAL INFORMATION



- In case of any problems you should contact sales outlet or qualified personnel authorized by DEFRO. 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 case of sale of giving the equipment to the other user you should always make sure whether the product has the manual enclosed.
- Request a new copy from authorized sales outlet in DEFRO company if it has been lost.

3. INTENDED USE

DEFRO HOME RIVA fireplace insert as a furnace with manual fuel charge is intended for enclosing or installation into a recess. Housing

should not be permanently bonded with the insert, you should have an option to disassemble it.

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

DEFRO HOME RIVA fireplace insert is equipped with water system intended for supplying of the central heating system. It can operate as only or additional source of supply for the CO system.

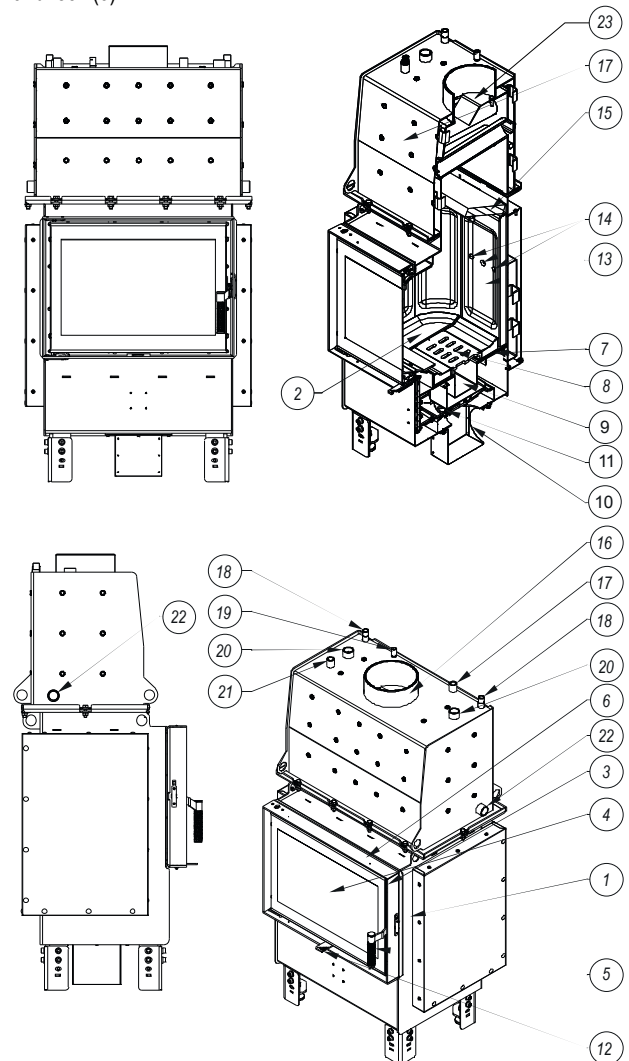


DEFRO HOME RIVA fireplace insert with water system can be operated only after connection to the central heating system and filling it with water. Only then proper heat discharge is ensured. Operation of the equipment without water and outside the CO system results in loss of warranty.

4. TECHNICAL SPECIFICATION

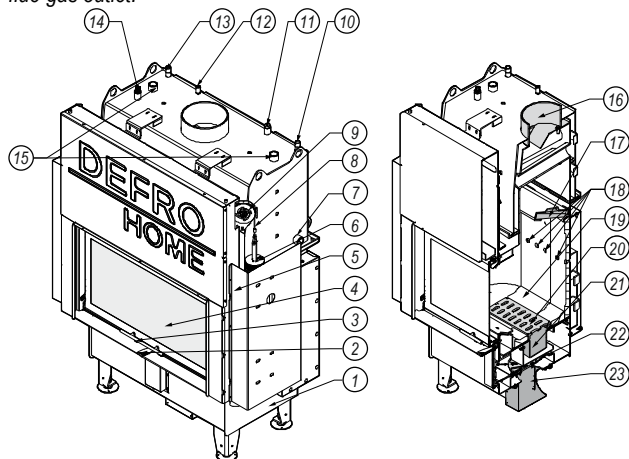
4.1. DESIGN

Body (1, picture 1) of the DEFRO HOME RIVA fireplace insert is a steel jacket, with a combustion chamber located inside (2). Floor creating a chamber for air intake is a basis for the insert. The rear wall and side walls of the combustion chamber are lined with claddings made of concrete insulating refractory. The front wall of the combustion chamber is restricted by a steel door (3) with heat-resistant window panel (4) and lock (5).



Picture 1. Design of DEFRO HOME RIVA fireplace.

1 – body, 2 – furnace chamber, 3 – doors, 4 – fire-proof window panel, 5 – handle with lock, 6 – frame, 7 – floor, 8 – grate, 9 – ash-pan container, 10 – air intake socket, 11 – adjustment of air inflow, 12 – slider for adjustment of air inflow, 13 – claddings made of fire-proof concrete, 14 – openings from flue gas afterburning system, 15 – deflector, 16 – flue, 17 – assembly connection of thermal protection sensor of the outflow - $\Phi\frac{1}{2}$ ", 18 – heat exchanger sockets - $\Phi\frac{1}{2}$ ", 19 – assembly connection of temperature sensor - $\Phi\frac{1}{2}$ ", 20 – supply sockets for central heating system - $\Phi 1"$, 21 – assembly connection of the vent - $\Phi\frac{1}{2}$ ", 22 – return sockets of central heating system - $\Phi 1"$, 23 – steel deflector of flue gas outlet.



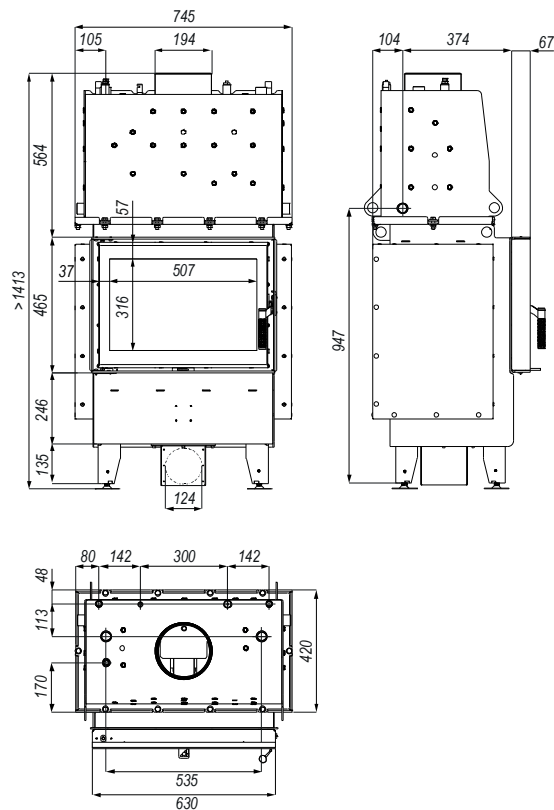
Rysunek 2. Budowa wkładu kominkowego DEFRO HOME RIVA w wersji G z drzwiami podnoszonymi.

1 – body, 2 – slider for adjustment of air inflow, 3 – handle with lock, 4 – fire-proof window panel, 5 – door mechanism cover, 6 – counterweight, 7 – return sockets of central heating system - $\Phi 1"$, 8 – link, 9 – pulley, 10, 13 – heat exchanger sockets - $\Phi\frac{1}{2}$ ", 11 – assembly connection of thermal protection sensor of the outflow - $\Phi\frac{1}{2}$ ", 12 – assembly connection of temperature sensor - $\Phi\frac{1}{2}$ ", 14 – assembly connection of the vent - $\Phi\frac{1}{2}$ ", 15 – supply sockets for central heating system - $\Phi 1"$, 16 – steel deflector of flue gas outlet, 17 – deflector, 18 – openings from flue gas afterburning system, 19 – claddings made of fire-proof concrete, 20 – grate, 21 – ash-pan container, 22 – adjustment of air inflow, 23 – air intake socket.

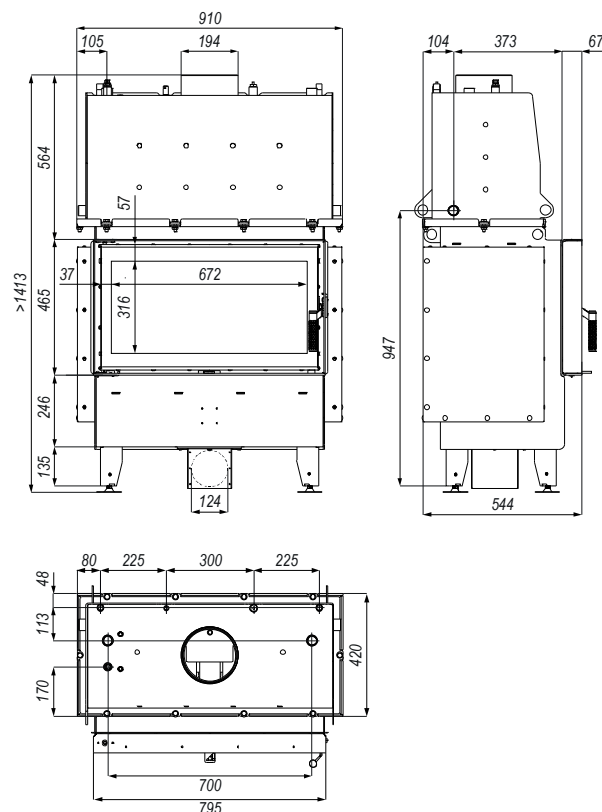
Fuel is combusted on the cast-iron grate (8) installed on the base. Ash-pan container (9) is located under the grate. Deflector (15) is located over the combustion chamber. It directs flue gas flow and improves the degree of heat exchange.

Air necessary for combustion process is supplied through an air intake socket (10) equipped with an adjustment mechanism (11). The air intake is located in the floor of the fireplace insert. Openings for flue gas afterburning system (14) are additionally located in the rear wall of the furnace chamber.

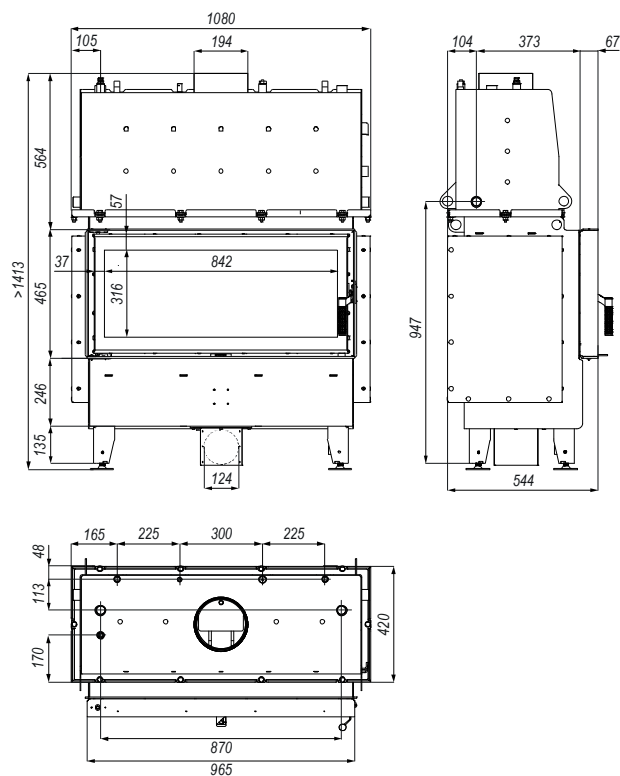
Steel water system is installed on top of the fireplace body. The top plate of the system is equipped with connecting sockets for the pipe supplying the central heating system (20), control (17) and supply (18) for protecting heat exchanger, a temperature sensor (19) and socket for the vent (21). Left and right wall of the system is equipped also with connecting sockets for return pipe (22) from the central heating system. Flue gases are removed to the chimney through a flue located in the upper wall of the water system.



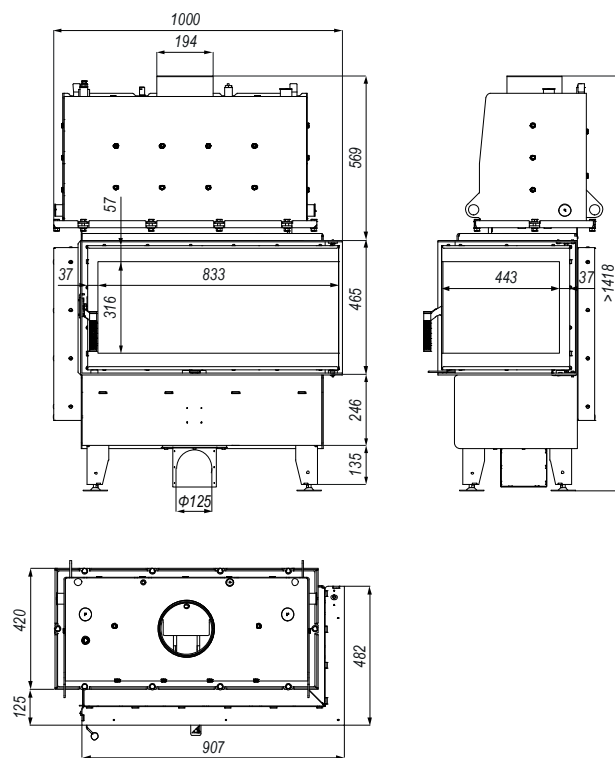
Picture 3. Projections with dimensions of DEFRO HOME RIVA SM fire-place insert.



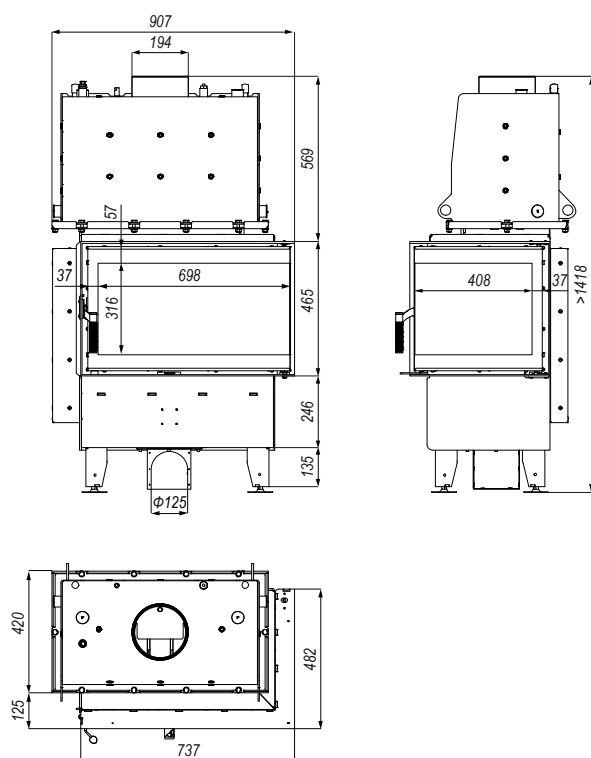
Picture 4. Projections with dimensions of DEFRO HOME RIVA ME fire-place insert.



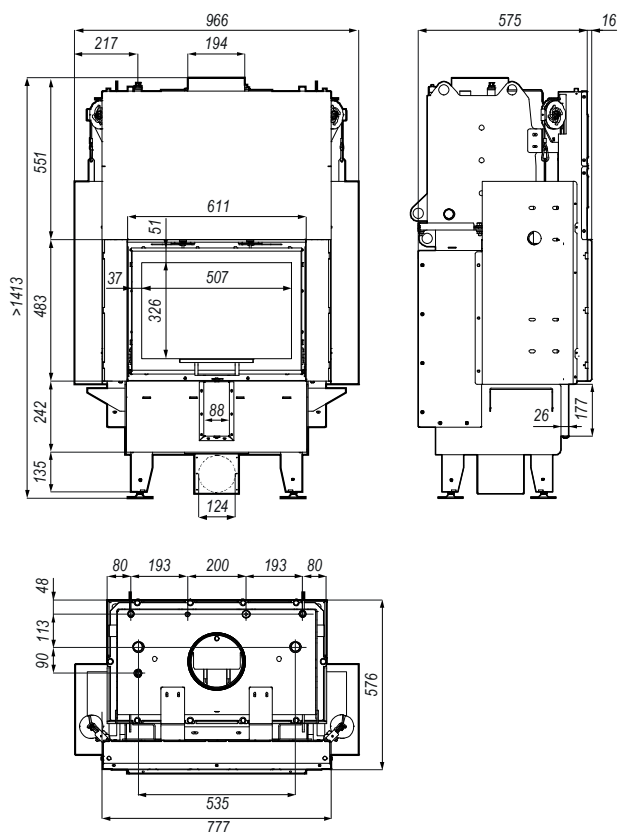
Picture 5. Projections with dimensions of DEFRO HOME RIVA ME fireplace insert.



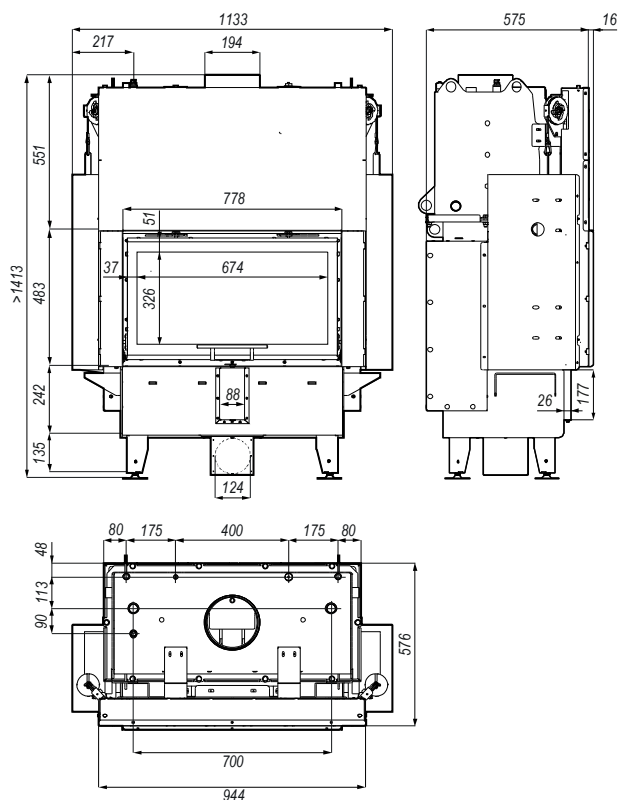
Picture 7. Projections with dimensions of DEFRO HOME RIVA ME BP fireplace insert..



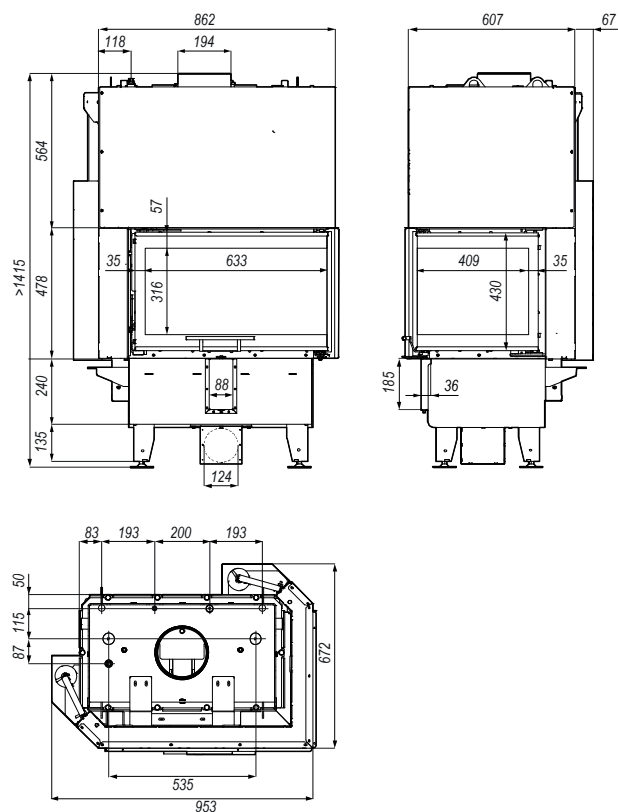
Picture 6. Projections with dimensions of DEFRO HOME RIVA SM BP fireplace insert.



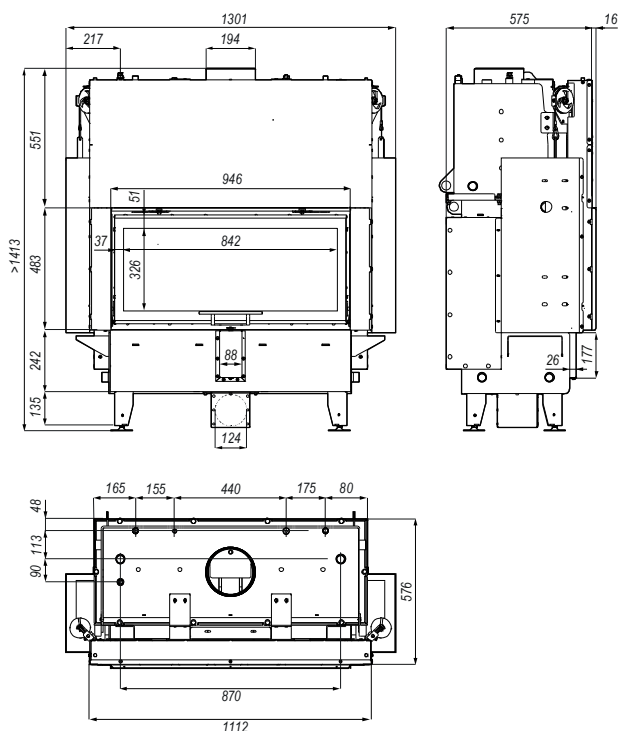
Picture 8. Projections with dimensions of DEFRO HOME RIVA SM G fireplace insert.



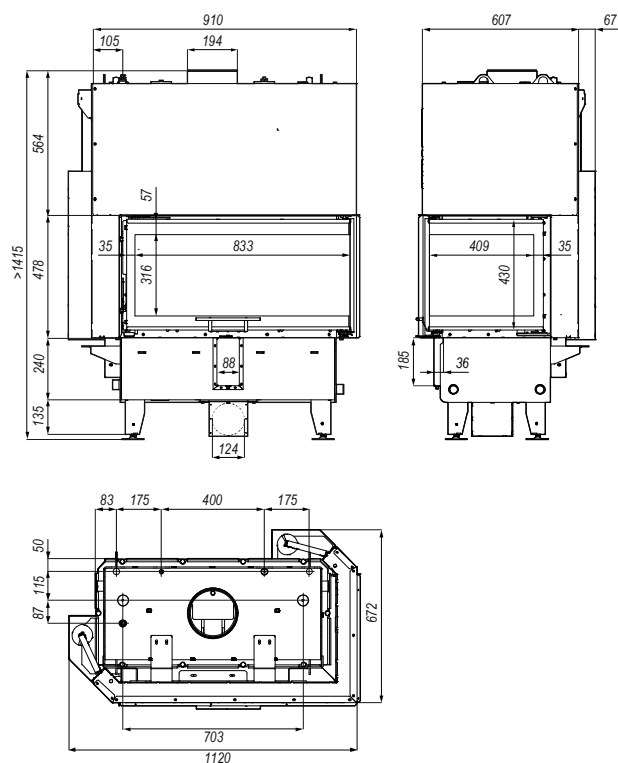
Picture 9. Projections with dimensions of DEFRO HOME RIVA ME G fireplace insert.



Picture 11. Projections with dimensions of DEFRO HOME RIVA SM BP G fireplace insert.



Picture 10. Projections with dimensions of DEFRO HOME RIVA LA G fireplace insert.



Picture 12. Projections with dimensions of DEFRO HOME RIVA ME BP G fireplace insert.

Table 1. Technical data of fireplace.

| Specification / device type | Unit | DEFRO HOME RIVA SM | DEFRO HOME RIVA ME | DEFRO HOME RIVA LA |
|--|---|--------------------------|--------------------------|--------------------------|
| Nominal power | kW | 16 | 19 | 22 |
| Thermal power of water cycle | kW | 8 | 9 | 12 |
| Max. permissible work pressure | bar | 2.0 | 2.0 | 2.0 |
| Power range | kW | 11-19 | 13-21 | 15-26 |
| Flue size | mm | 200 | 200 | 200 |
| Efficiency | % | 88 | 81 | 80.1 |
| Seasonal energy efficiency | % | 78 | 71 | 70 |
| CO emission for 13% O ₂ | % | 0.1 | 0.07 | 0.09 |
| Combustion temperature | °C | 192 | 274 | 289 |
| Weight ¹⁾ | kg | 265±5 | 315±5 | 385±5 |
| Water capacity | l | 45 | 55 | 65 |
| Flue gas stream for nominal power | g/s | 10.3 | 16.77 | 17.76 |
| Minimum draught at rated power | Pa | 12±2 | 12±2 | 12±2 |
| Fuel consumption | kg/h | 4.7 | 6.2 | 6.7 |
| Recommended single charge | kg | 3-3,5 | 3,5-4 | 4-6 |
| The maximum length of chunks | mm | 350 | 400 | 500 |
| Fuel type | dry hardwood (max. 20% of moisture content) | | | |
| Heater type - with periodic combustion | | | | |

¹⁾ Device weight depends on the selected design version and its equipment.

4.2. EQUIPMENT

The fireplace is delivered on a pallet, foil-wrapped and is fully assembled. The scope of delivery can include additional components and subassemblies, according to the order of the user. Components which are standard equipment are specified in table 2.

Table 2. Equipment of fireplace.

| Standard equipment of fireplace | Unit | Quantity |
|---|------|----------|
| Operating manual for fireplace | pcs. | 1 |
| The ceramic lining of the furnace chamber | set | 1 |

4.3. FUEL PARAMETERS

A fireplace insert is intended for combustion of wood from deciduous trees (oak, hornbeam, ash, beech) with a moisture content below 20% (wood seasoned in proper conditions for at least 2 years). The maximum length of chunks is given in table 1. It is allowed to use wood briquette.

It is not allowed to use wet wood (extensive contamination of fireplace and soot emission and a decrease of furnace energy efficiency).

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 combust all types of litter and wood wastes. Firing with inadmissible materials in the fireplace may result in damage to the fireplace and life and health hazard for 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 fireplace is not a furnace intended for combustion of wastes and forbidden fuels cannot be combusted in it.

Wood should be seasoned minimum two years. Firing with wet wood, with low calorific value, decreases the efficiency and has an adverse influence on dry stove lifetime.

It is not recommended to use softwood and resinous woods as a 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, naphthalene, laminated, impregnated boards etc., paper, cardboards, old clothes, wastes.

DEFRO Sp. z o.o. Sp. k. does not accept liability for damage caused or improper burning of fuel if the fuel used is prohibited.

4.4. SPARE PARTS

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

| | | | |
|--|---|--|-----------------|
| | DEFRO Sp. z o.o. Sp. k. Service Centre Ruda Strawczyńska 103a 26-067 Strawczyn | | serwis@defro.pl |
|--|---|--|-----------------|

5. TRANSPORT AND INSTALLATION

5.1. TRANSPORT AND STORAGE

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

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



The fireplace is to be transported in a vertical position!

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



Fireplace insert DEFRO HOME RIVA 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 its location. (Journal of Laws no. 75 of 2002 item 690 as amended) and Polish Standard PN-EN 13229:2002 Inset appliances including open fires fired by solid fuels. Requirements and tests.

A fireplace insert is to be stored in a non-heated room, under a roof and with efficient ventilation.

Prior to installation it is to be determined if all parts have been delivered and if they are in good technical condition and remove all transport protections!

In the version of the insert with lift-up doors (G versions), it is absolutely necessary to check the arrangement of the cables with the snap hooks so that they run vertically on both sides of the block, do not catch on other elements and do not block the mechanism.



Before lifting the doors in G version fireplaces for the first time, the transport locks must be removed!

Failure to follow the above recommendation may result in malfunctions in the operation of the door mechanism, and even lead to its damage. For damages resulting from non-application of this recommendation, DEFRO Sp. z o.o. Sp. k. is not responsible.

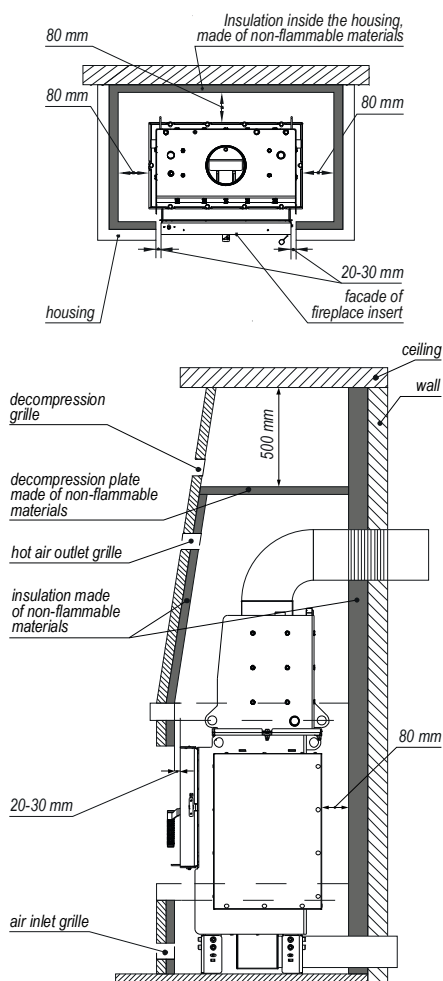
5.2. WORKING ENVIRONMENT

Fireplace insert 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 power supply 230V/50Hz,
- equipped with a suitable flue gas exhaust system,
- equipped with an external ventilation system,
- equipped with an earthing system with CE certificate.

The structure of the housing should be made in such a way that it is possible to assemble and disassemble it without damaging the housing and the insert.

Correct setting of the insert is necessary to obtain the satisfactory heating level of the residential unit. Prior to assembly it is necessary to select a suitable position for stove installation. Check minimum safe distances from materials susceptible to heat or inflammable materials such as load-bearing walls and other walls or wooden components, furniture etc. Exemplary installation of fireplace insert is presented on picture 13.



Picture 13. Exemplary installation of fireplace insert.

WARNING !!!

Lack of expansion joint may be a reason of equipment damage what is connected with loss of the warranty rights.

Installation of the fireplace insert should observe the following safety rules:

- minimum distance 80 mm from side and rear of the non-flammable materials,
- minimum distance 400 mm from 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 in distance minimum 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 case of contact with wooden wall or wall made of other inflammable material it is appropriate to insulate flue gas discharge pipe.



In the case of the 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.

Fireplace insert should be located on a substrate with suitable load-bearing capacity. In accordance with the 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 fireplace insert manufactured by DEFRO can be installed without needing to reinforce the floor slab.

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



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

To ensure correct operation of fireplace insert you should ensure 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 combustion of 1 kg of wood requires ~8 m³ of air.



If several inserts are to be used in one room the air demand should be met for each insert.

Insert housing should ensure access of air necessary for ventilation, air circulation in the housing. In the bottom part of the installation (under the insert) it is appropriate to ensure air supply openings ensuring air supply for combustion. To ensure correct discharge of hot air from the hood you should install exhaust openings ended with ventilation grilles. This opening should be made in a way ensuring that they cannot be plugged. They should be ended with grilles.

There should be dilatation around the fireplace door frame, i.e. a minimum distance of not less than 5 mm. When designing the development, a possible cover (which is an optional element) should also be taken into account, so that after its installation, the minimum dilatation between the frame and the construction is also maintained.

The active area of the grille should be selected correspondingly to the power of the insert. It is assumed that it should equal to 40 - 60 cm² per 1 kW of the power of the insert. Recommended active surfaces:

- fireplace insert power to 10 kW - grille cross-section min. 500 cm²,
- fireplace insert power to 15 kW - grille cross-section min. 700 cm²,
- fireplace insert power over 15 kW - grille cross-section min. 800-1200 cm² and more.

Air can be supplied from adjacent rooms, provided that they are equipped with 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.

Temperature over the insert, inside the hood, is very high. Therefore it is necessary to install a decompression relief plate inside the hood, in distance ~40cm from the ceiling of the room. It prevents heating of the ceiling in the room, heat losses and forces installation of exhaust grilles below it emitting the heat from the relief chamber over the insert. Relief grilles are installed alternately on both sides of the housing - below and over relief plate.

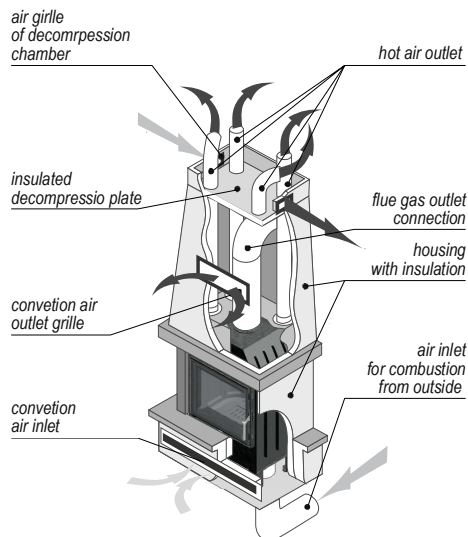


Before installing the fireplace insert with raised doors (versions G), check the correct operation of the lifting mechanism, in particular the arrangement of the lines with carabiners.

5.3. HOT AIR DISTRIBUTION SYSTEM

5.3.1. GRAVITY SYSTEM FOR HOT AIR DISTRIBUTION

DEFRO HOME RIVA fireplace insert gives back approx. half of the power to the environment when the air is being heated. In case of heating of small areas, e.g. room where the fireplace insert is installed, and adjacent rooms, you should select gravity system for air distribution, when the hot air will raise upwards to the chamber in heating ducts by way of thermal lifting forces.



Picture 14. Hot air distribution system.

Using of the gravity system you should use properly insulated and short (not exceeding 3 m) distributing ducts. For this system it is not recommended to distribute hot air to too many rooms. Also use of too long pipes (over 3 m from the flue) increases resistance and decreases air flow velocity what causes that gravity flow is not effective.

5.3.2. FORCED SYSTEM FOR HOT AIR DISTRIBUTION

Application of forced system for hot air distribution (DGP) requires the installation of air supply device (turbine). It sucks hot air heated by the fireplace insert and forces it to all branches of the system. In such case you should use a pipe connecting flue with an air supply unit with the biggest possible cross-section and the smallest possible length



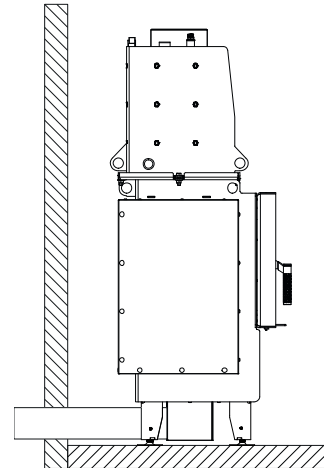
Installation of the DGP system should be entrusted to a specialized company, which will check heat demand for the given area and will correctly design connection system and arrangement of the individual parts.

5.4. CONNECTION TO EXTERNAL AIR INTAKE

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

The external wall near the stove should have through the opening, protected with grille on the internal and external side, for this purpose. Furthermore, the air intake should be:

- directly connected with the room, where the fireplace insert is to be installed,
- protected with 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 (e.g. with respect to the windows).



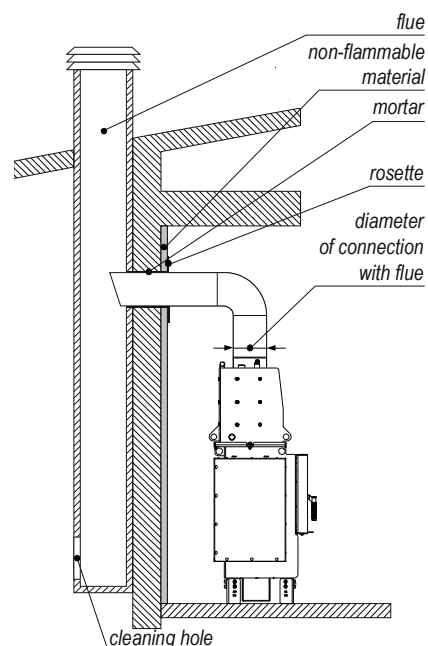
Picture 15. Connection of fireplace insert to external air intake.

5.5. INSTALLATION TO FLUE

Fireplace insert should be connected to the individual flue. Size of chimney draught should equal:

- minimum draught $- 6 \pm 1 \text{ Pa}$,
- medium, recommended draught $- 12 \pm 2 \text{ Pa}$,
- maximum draught $- 15 \pm 2 \text{ Pa}$.

Prior to permanent installation of the fireplace insert you should make sure whether a condition of recommended draught is met. If the draught is too small then you should disassemble a steel deflector of flue gas outlet (part 23 on figure 1) and re-check whether the condition of recommended draught is met.



Picture 16. Connection of fireplace insert to flue.

During execution of opening for 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 obligatory maintain 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 an insulated industrial pipe, which can be also used outdoors, to avoid the occurrence of condensate.

For correct operation connector between the fireplace insert and flue or smoke duct should be executed acc. to the below recommendations:

- horizontal sections should have a minimum slope 3% towards the top,
- length of the horizontal section should be minimum and should not exceed 2/3 meter,
- a number of changes of directions, inclusive of 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 a 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 the maximum ratio between two sides equal to 1.5.



It is forbidden to use mechanical exhaust ventilation.
The fireplace insert should not be used if the chimney draught is too low.

If the chimney draught is too low you should disassemble steel deflector on flue gas outlet.

5.6. INSTALLATION IN CENTRAL HEATING SYSTEM

DEFRO HOME RIVA fireplace insert is equipped with water system allowing operation in the central heating system. The water system, located on top of the fireplace body, is equipped with a protecting heat exchanger (cooling coil), so it is possible to install it both in open and closed system.

The connection of chimney'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 12828:2006 - Heating systems in buildings - Designing of water central heating systems;



The central heating system is to meet requirements specified by the Polish Standard PN-91/B-02413 on the protection of open system water heating devices and pressure vessels.

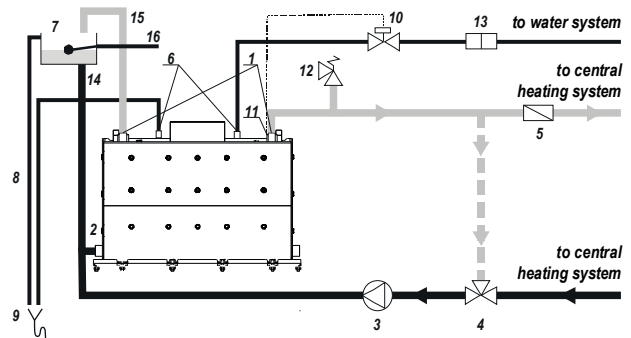
In case of installation of the fireplace insert in a country other than Poland it is obligatory to apply relevant requirements and standards of this country.

Before installation of the fireplace insert you should make a test connection of the water system to the central heating system and then enter working pressure in the system to check its tightness. Fireplace insert should be embedded when all leaks in the water systems have been excluded.

Pictures 17 and 18 presents connection diagrams for the water system of the DEFRO HOME RIVA fireplace insert in the heating system.

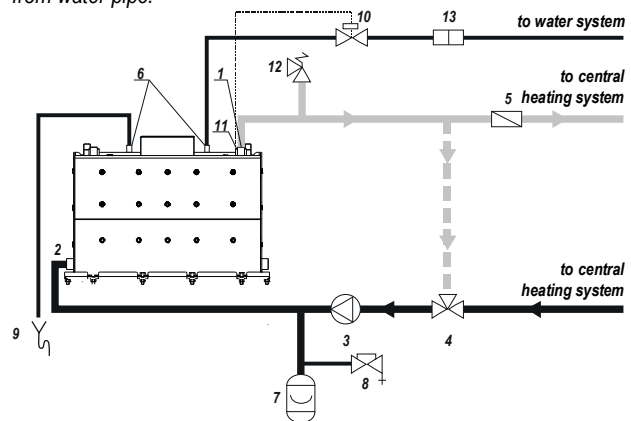
The water system in the DEFRO HOME RIVA fireplace insert is equipped with two supply and two return sockets so it is possible to select hook up points to the central heating system. For the correct and effective operation of the water system locations for connection to the central heating system should be in the cross-arrangement, that is left supply socket and right return or right supply socket and left return.

Thermal protection of the outflow (10) is a valve, which based on the temperature signal from the sensor (11) will be opened if the safe operating temperature of the water system will be exceeded. Water from water system flowing through the heat exchanger cools the water system down decreasing water temperature from the central heating system and then it is discharged to the sewage system.



Picture 17. Diagram of the exemplary connection of the water system of the DEFRO HOME RIVA fireplace with the heating system in the open system.

1 – hot water outflow socket, 2 – cold water inlet socket, 3 – circulating pump, 4 – mixing three-way thermostatic valve, 5 – non-return flap valve, 6 – sockets of protecting heat exchanger, 7 – expansion vessel with float, 8 – sweep pipe, 9 – sewage system, 10 – thermal protection of outflow, 11 – thermostatic valve sensor, 12 – pressure safety valve, 13 – filter, 14 – expansion tube, 15 – safety pipe, 16 – power supply from water pipe.



Picture 18. Diagram of the exemplary connection of the water system of the DEFRO HOME RIVA fireplace with the heating system in the closed system.

1 – hot water outflow socket, 2 – cold water inlet socket, 3 – circulating pump, 4 – mixing three-way thermostatic valve, 5 – non-return flap valve, 6 – sockets of protecting heat exchanger, 7 – diaphragm expansion vessel, 8 – filling and emptying fixtures, 9 – sewage system, 10 – thermal protection of outflow, 11 – thermostatic valve sensor, 12 – pressure safety valve, 13 – filter



- 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.**

To ensure correct operation of the water system it is necessary to meet the condition that temperature of water returning from the CO system is not lower than 50 °C (dew point for wood with moisture content 20%). This is connected with steam condensation on cold walls of the fireplace insert (so called insert's sweating), which leads to a decrease in lifetime and heating efficiency. This phenomenon can be avoided applying various methods, e.g. by setting higher temperature of water in the water system and adjustment of temperatures in heated rooms using thermostatic valves or using mixing systems. Function of thermal protection against drop of return water temperature below the dew point is implemented by a mixing three-way thermostatic valve (4), which based on the measured value of installed temperature sensor opens correspondingly valve with hot water mixing it with cold water from return - in case of examples (Picture 17 and Picture 18).



It is required to install thermal protection in the system preventing the return of water with a temperature below the dew point (50 °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.

It is required to installed safety valve (12) in the closed system. Its task it to protect the water system and installation against exceeding of maximum allowable working pressure. The valve should be factory set to 2.0 bar and should prevent exceeding of maximum operating pressure by not more than 10%.

Valve should be installed as a close heat source as possible: it can be installed directly in free supply socket or on pipe supplying the installation, in an easily accessible location.

If the allowable pressure is exceeded the safety valve discharges an 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 sewage 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 fireplace insert by welding results in loss of warranty!!!**
- **Fireplace insert installation should be carried out by person or company with suitable qualifications and authorizations.**
- **It is in user's interest to look after that installation is made in accordance with the regulations in force and that installing company gives a warranty for correctness and good quality of workmanship what should be confirmed by a stamp and sign on warranty card of the stove.**
- **The hydraulic system of the water system of fireplace insert 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. FILLING WATER SYSTEM WITH WATER

Make sure that the CO system is correctly filled with water, which should be clean, clear and without any admixtures prior to starting up.

Filling 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 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 <0.05mg/l,
- chlorides content <60mg/l.



Before connecting the fireplace 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 fireplace. Filling with water should be carried out through the return socket of the water system or installed fixture for filling and discharging (8, picture 18). 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 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 during fireplace insert'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.**

6.2. INTRODUCTORY REMARKS

Prior to installation of the fireplace insert you should make several test fire ups. During test firing up you should check the operation of the chimney damper and the other mechanical systems of the equipment.

During the initial period after installation the fireplace insert should be operated with power equal to approx. 30% of rated power and increase temperature gradually. It allows gradual removal of internal stresses preventing the occurrence of thermal shocks. Furthermore, such a method of operation improves the durability of the insert.

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

Do not stay near the stove during several first fire ups. It is also required to vent the room. Smoke, the odour of paint, silicone and other materials used for execution of the installation will disappear after several fire ups. However, we remind that they are not harmful to health.



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



No to use non-installed fireplace insert. Test firing up is an exception.

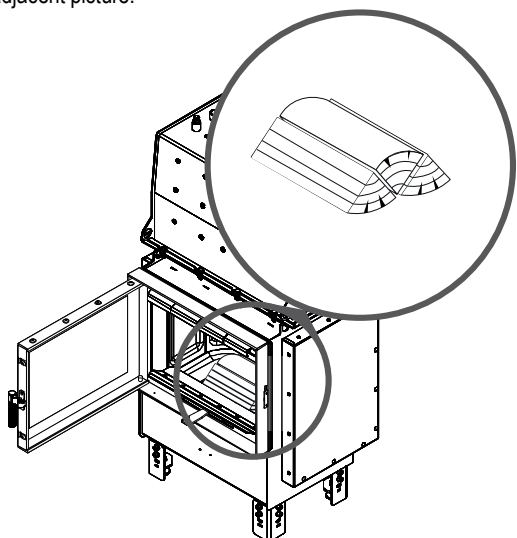
6.3. FIRST START-UP AND OPERATION

Prior firing up you should set a slider of air inflow adjustment to the maximum opening (marking on the handle, presented on the adjacent picture). Then, open the doors of the insert and place fire starter and fragmented wood, then charge approx. 1 kg of dry hardwood, fire up and close the doors.

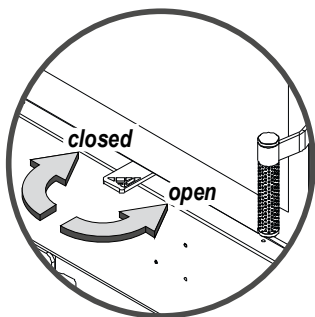


It is forbidden to use other materials than described in this manual for firing up, in particular flammable chemicals such as: oil, petrol, solvents and others.

After firing up refill combustion chamber with wood, placing fuel in a way that reasonably fills the combustion chamber. Recommended single fuel charge is given in table 2. Method of fuel laying is shown on the adjacent picture.



Picture 19. Method of fuel arrangement during firing up



Picture 20. Setting of slider for air inflow adjustment

The intensity of the fuel combustion process should be adjusted by proper setting of the air supply adjustment slider. Doors of fireplace insert should be closed during operation of the fireplace insert.

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 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.

You should control the level of filling of the container with ash. Overfilling of container results in lack of cooling of the grate and limits air supply for combustion. To empty the container you should damp a fireplace, close inflow of air for combustion and wait until surface and parts of the fireplace insert cool down. Then open doors of the insert, remove the grate and take out the container. Remove ash from container and re-install in the body of the insert. It is recommended to empty ash container prior to each successive start-up of the equipment.

Do not fill the furnace completely with wood. The charge should not exceed 1/3 of the volume of the combustion chamber. You should use only hardwood (recommended beech, oak, hornbeam) of low moisture content (below 20%).

During combustion the doors should be opened only when the fuel is being added. Prior to adding the wood you should wait until flames fall down and charge is completely burnt out leaving an igniting layer of glow. After firing up refill combustion chamber with wood, placing fuel in a way that reasonably fills the combustion chamber for the combustion period expected by the user based on personal experience. The intensity of the fuel combustion process should be adjusted by proper setting of the air supply adjustment slider.



Never stand in front of the fireplace insert door while opening. Burn risk.

6.4. DAMPING

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

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



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

6.5. LOW TEMPERATURE CORROSION

Fireplace inserts with water system should be operated with differences between supply and return temperatures within the range 10-20°C and return water temperature not smaller than 50°C. While operation, if the central heating water temperature is below 60°C, water vapour contained in flue gas condenses on the fireplace's walls. During the initial period of operation, the above mentioned condensate may leak from the fireplace.

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

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



To ensure correct operation of the water system it should be protected against the 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. 50 °C.

If the temperature of water supplying 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, reduces efficiency of the fireplace insert and, in the first instance, leads to the risk of soot ignition in the chimney.

7. CLEANING AND MAINTENANCE



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



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

7.1. BASIC OPERATIONS AND CLEANING BY THE USER.

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

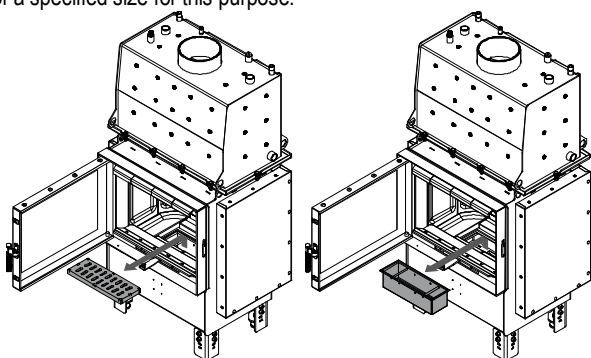


Any service and maintenance works are to be carried out with meticulous care and only by adults familiarized with this manual. The dry fireplace insert should not be cleaned in the presence of children.

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

7.2. CLEANING BEFORE EACH STARTING

Prior to every successive start-up of the equipment the ash container should be cleaned and emptied, handling the ash with due care. Remove grate, then ash container using handles, and remove the remaining dust. Dust can be removed using vacuum cleaner only if it is completely cold. Use vacuum cleaner adapted to remove the particles of a specified size for this purpose.



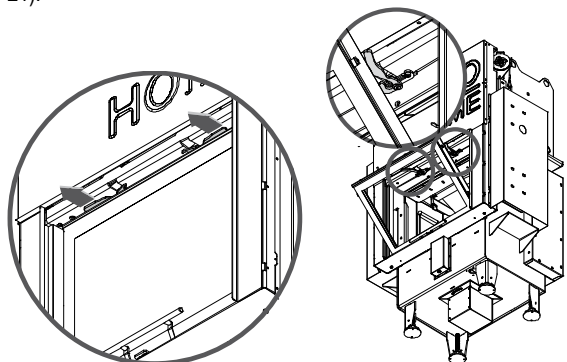
Picture 21. Removing grate and ash container.

Re-install the ash container below the grate after the cleaning, making sure that its position is correct.

7.3. WINDOW PANEL CLEANING

It is recommended use a dry brush to clean the ceramic glass. If the contamination is significant use suitable cleaning agent spray and spray little amount and then clean the window panel with a cloth.

In the G version of the DEFRO HOME RIVA fireplace insert, the glass should be cleaned when the door is in a tilted position. Fireplaces with front doors have bolts in the upper part of the door frame (figure 21).



Picture 22. Location of bolts enabling the opening of the raised door in the tilted position of the DEFRO HOME RIVA fireplace insert, version G.



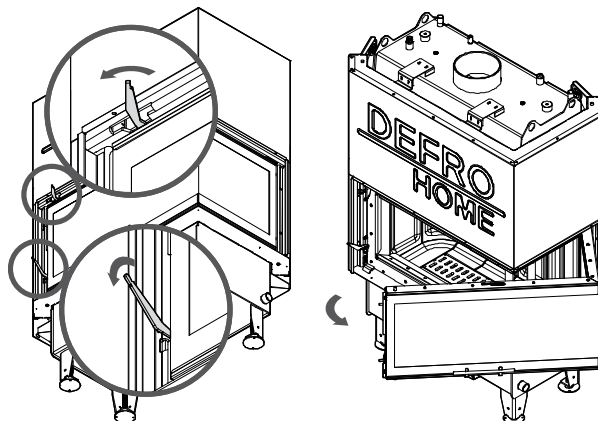
Do not use abrasive products and do not spray the product for window panel cleaning on painted parts and gaskets of fireproof doors (cord made of ceramic fiber).



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



For DEFRO HOME RIVA inserts in G version use the tilt position only when cleaning, do not open the door while burning in the fireplace.



Picture 23. Location of bolts enabling the opening of the raised door in the tilted position of the DEFRO HOME RIVA fireplace insert, version BP G and BL G.

7.3.1. DOORS/GASKETS

Abrasive surfaces of doors and closing mechanism 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.

7.3.2. FURNACE CHAMBER

Clean furnace chamber of the insert periodically, depending on moisture content and type of wood used.

7.3.3. FLUE

In compliance with applicable regulations you should clean the flue two times a year. The flue should be cleaned by a chimneysweep company and this fact should be documented in this manual.



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



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

7.3.4. WATER SYSTEM

At least twice a year you should carry out inspection and maintenance of all components ensuring safe operation of the water unit and central heating system, including safety valve and thermal safety valve. If a longer break in operation of fireplace insert 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 to fill of the central heating system with water prior to each start up after a longer break in operation of the fireplace insert.



- 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 RIVA fireplace insert.**

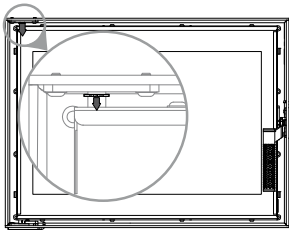
7.4. PERIODIC INSPECTION BY AUTHORIZED SERVICE

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.

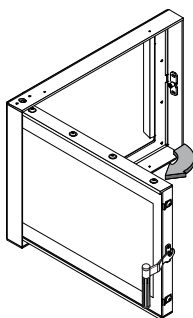


Periodic inspection of the equipment should be carried out only by a qualified manufacturer's service.

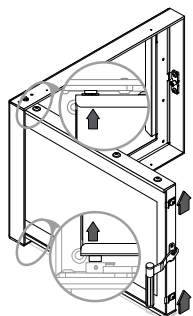
7.5. DOORS DISASSEMBLY



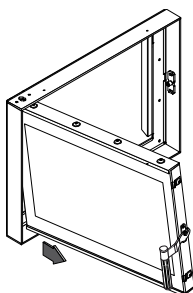
1. Slide protecting ring downwards maximally.



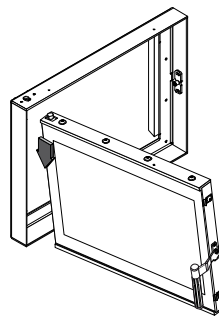
2. Open the doors.



3. Lift the doors fully upwards to remove bottom pin of the hinge from a sleeve.



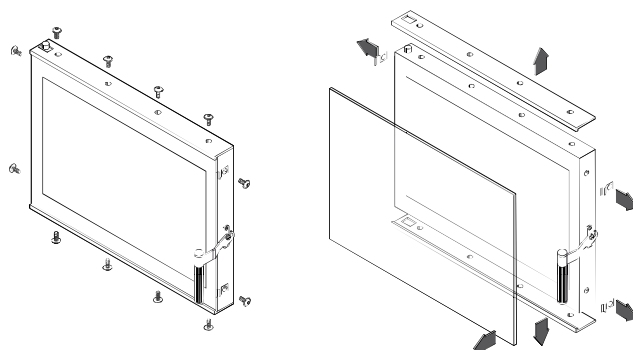
4. Tilt doors from bottom to outside to ensure that the bottom pin of the hinge is outside the frame.



5. Lower the doors to ensure that the upper pin of the hinge leaves the upper opening of the frame and remove the doors

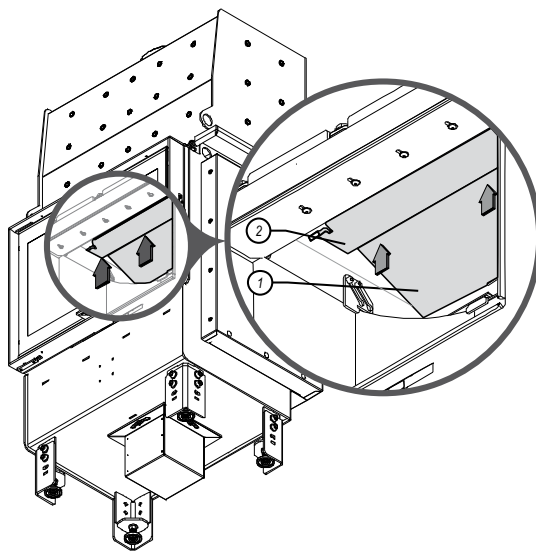
7.6. WINDOW PANEL DISMANTLING

It is possible to disassemble the window panel after the doors have been disassembled. The best way is to disassemble the window panel when the doors are in horizontal position (e.g. when such doors lie on the table).

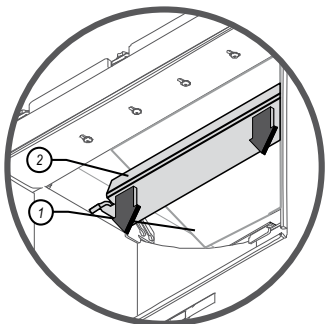


Picture 24. Window panel dismantling from doors.

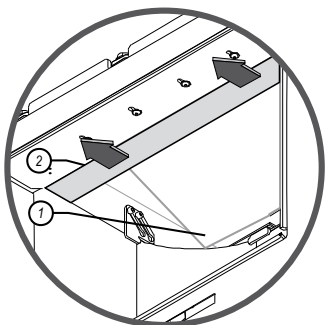
7.7. DISASSEMBLY OF DEFLECTORS



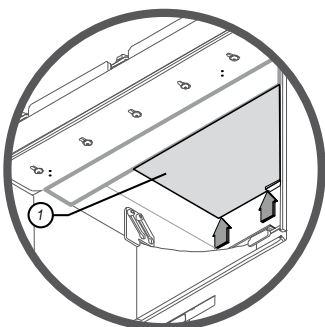
1. Lift deflector (1) with fixing beam (2).



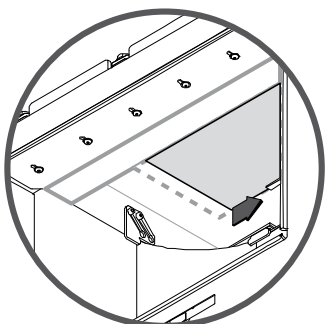
2. Lower the beam down holding the deflector.



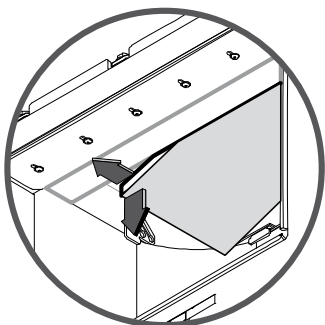
3. Move the beam forward to the maximum extent.



4. Lift and align the deflector, to place it above the structure holding the beam.

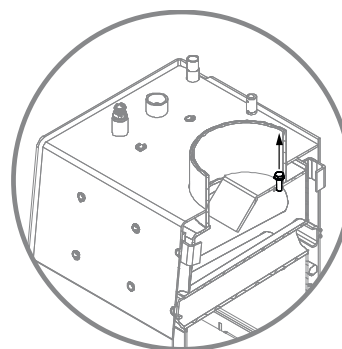


5. Slide the deflector to the right (or left).

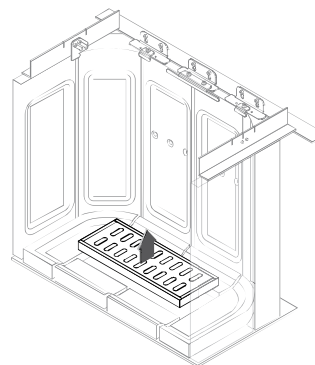


6. Slide deflector slightly to the front. One side of the deflector should be in free space between the shifted beam, rear and side wall of the fireplace and lower free end of the deflector. Remove deflector in such position

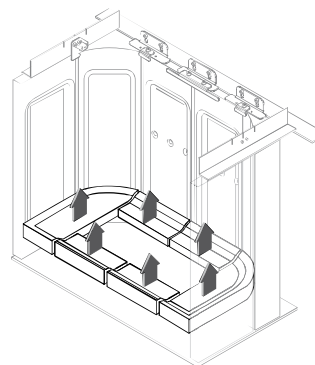
Disassembly of steel deflector (part 23 on figure 1), located on flue gas outlet is based on the removal of fixing screw - as presented on the below figure.



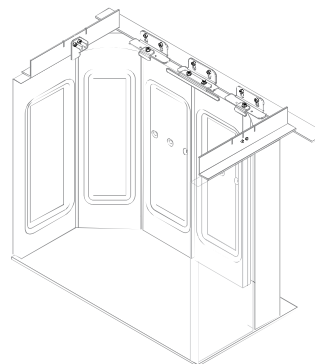
7.8. DISASSEMBLY OF CERAMIC TILES



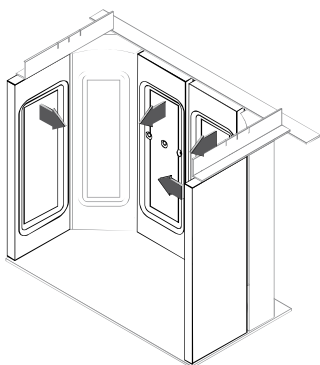
1. Remove grate.



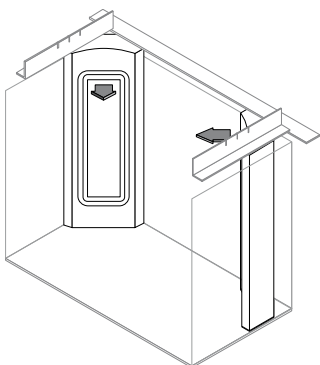
2. Remove plates laying on the floor of the insert.



3. Remove the screws fixing vertical ceramic plates.

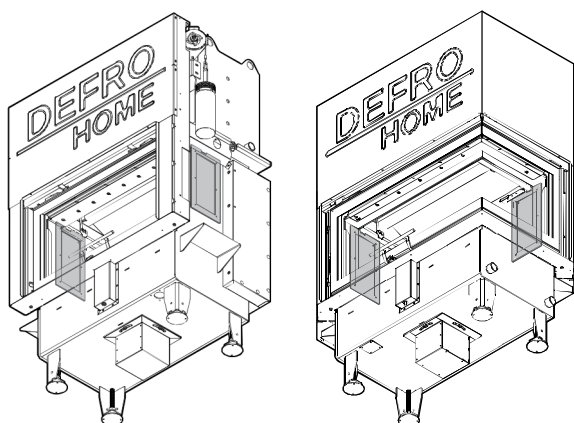


4. Remove side plates first.



5. Remove corner plates at the end.

7.9. INSPECTION HOLES



Picture 25. Disassembly of covers of the inspection holes in side walls of the DEFRO HOME PRIMA insert in G version.

Inspection holes are located in both side walls of the fireplace insert DEFRO HOME RIVA G. They are intended only for use by the qualified service of the manufacturer to ensure access during adjustment and maintenance works. Access to these holes is possible after dismantling claddings made of heat-resistant concrete (description of the disassembly in chapter 7.6). Picture 25 illustrates the disassembly of covers for DEFRO HOME RIVA G and DEFRO HOME RIVA BP/BL G.



Inspection holes are intended only for use by the qualified service of the manufacturer during adjustment and maintenance works.

7.10. SHUTTING THE STOVE DOWN

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

8. TROUBLESHOOTING

Some anomalies indicating irregularities in operation can occur during 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 of the equipment with their solutions.

Smoke draw back when the doors are opened:

- the too rapid opening of the doors (open the doors slowly);
- if 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 chimneysweep inspection of the flue).

Insufficient heating or damping:

- too low amount of fuel in the 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 water evaporation process;
- too low chimney draught (carry out chimneysweep inspection of the flue).

Insufficient heating despite good combustion in combustion chamber:

- low calorific "soft" wood (use wood as recommended in the manual);
- the 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:

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

The too high temperature in the water system or too high difference of temperatures between water system and water in the central heating system:

- circulating pump in the central heating system does not operate (pump switched off, damaged or power failure);
- air lock of the central heating system;
- closed cut-off valves.



Correct operation can be disturbed by an atmospheric condition (air moisture content, fog, wind, atmospheric pressure) and sometimes by closely located high facilities.

In case of repeated problems you should turn to chimneysweep company to confirm the reason of such 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 burning of particles deposited inside chimney (flue) channels; the deposits are formed in the course of heating equipment's operation and were not cleaned by chimney sweeps. In the case of soot fire in the chimney the following recommendations should be observed:

- call Fire Brigade at 998 or 112, give information about what is happening and give detailed directions what is happening and how to get to the given building;
- damp a fire in the chimney by the closing inflow of cold air to the furnace chamber;
- close fireplace's door and cleaning holes tightly to cut off 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 spread to the rooms;
- prepare fire quenching means, e.g. a fire extinguisher, a 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 a blowout.

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



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

10. REMOVAL DUE TO WEAR-OUT

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

11. REMARKS ON FIREPLACE INSERT USAGE



The following rules of safe operation of the fireplace inserts should be strictly observed and introduced.

- 1) The fireplace insert can be used only by adult persons, who have familiarized 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 fireplace insert without adults.
- 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 fireplace insert and in its vicinity.
- 5) During the fireplace insert's operation the heating water temperature should not exceed 90°C.
- 6) It is forbidden to damp a fire in a furnace with water.
- 7) It is forbidden to use a fireplace insert with cracked window panel.
- 8) You should use fuel recommended by the manufacturer.
- 9) Never stand in front of the doors while opening. Burn risk.

- 10) While removing ash from the fireplace insert flammable materials cannot be located closer than 1500 mm. Ash is to be put into heat-resistant containers with a lid.
- 11) After a heating season has finished, the fireplace insert and smoke duct are to be precisely cleaned.

12. PRODUCT WARRANTY TERMS AND CONDITIONS

- 1) Placing warranty statement, which contents correspond to the provisions of this document, the Guarantor - manufacturer of the product - DEFRO Sp. z o.o. Sp. k. with seat in Warsaw, 00-403 Warszawa, ul. Solec 24/253, entered in the Register of Entrepreneurs of the National Court Register by the District Court in Warsaw for the capital city of Warsaw, XII Commercial Division of the National Register of Entrepreneur under the number KRS 0000620901, NIP: 9591968493, REGON: 363378898, manufacturing plant: Ruda Strawczyńska 103A, 26-067 Strawczyn, gives the Purchaser a warranty for the sold product on terms and conditions specified below.
- 2) The guarantee refers to a fireplace insert type with serial number (the subject of agreement - fireplace insert) under the condition that the product has been fully paid. Due to suitable, proven and unified standards of sales the warranty covers only product purchased in authorized points of sales of the Guarantor or from authorized distributors. A full list of authorized companies is available on the website www.defro.pl.
- 3) When the whole price will be paid and the product will be issued to the user also the warranty card will be issued. In the warranty card is missing the Purchaser should immediately contact with the Seller to obtain this document, while its lack has no influence on validity and period of the warranty given based on this statement, but it can have an influence on correct, timely processing of obligations resulting from this warranty by the Guarantor.
- 4) To allow Guarantor efficient operation the Purchaser should immediately after issuance of the product, send back a copy of correctly completed Warranty Card to the address of the Guarantor (Ruda Strawczyńska 103a, 26-067 Strawczyn). Correctly filled Warranty Card has a date, stamp and signatures in designated locations.
- 5) The Purchaser receives Warranty Terms and Conditions, Warranty Card as well as Operating Manual containing conditions for boiler's usage, installation guide and parameters regarding the chimney, fuel and boiler water.
- 6) The Guarantor guarantees that the equipment works correctly provided that all conditions specified in the Operating Manual have been met, especially with respect to parameters applying to fuel, connection to the chimney system. The warranty covers product used in compliance with its intended use and information provided in the service manual. A guarantor is not responsible for the effect of normal wear and tear of the product which is connected with the operation.
- 7) The warranty authorizations period commences on the date of issuance of the product to the Purchaser and equals:
 - a) 5 years for correct operation of the equipment,
 - b) 2 years for claddings made of heat resisting concrete - Ceramiton, while the warranty does not cover discolorations, complete change of colour or deterioration of top coat,
 - c) 1 year for the grate, deflector and gaskets of the fireplace,
 - d) elements subject to wear-out are not covered by the Warranty; these include: ceramic hardened glass, screws, nuts, handles etc.
- 8) The Warranty is valid in the Republic of Poland.
- 9) During the warranty period, the Guarantor ensures free-of-charge repairs of any physical defects of the product within the period of:
 - a) 14 days after the fault report, unless the repair requires replacement of constructions elements of the product;
 - b) 30 days after the fault report, if the repair requires replacement of constructions elements of the product; subject to point 3 and 4 of this warranty conditions.

- 10) If, as a result of considering the warranty claim the defective product has been replaced with new one or the significant repairs have been made, then a new warranty period is applied counting from the date of delivery of the replaced or repaired product. In the case when only part, belonging to the claimed product, is replaced then the new warranty period is applied only for this part. In other cases the warranty period is prolonged by a period when the operation of the product was impossible due to a filed claim.
- 11) Registration of any physical fault to be repaired during the warranty period (fault registration) should be made by the Purchaser immediately after a fault has been found and no later than after 14 days.
- 12) Any fault is to be registered with the Guarantor (Ruda Strawczyńska 103a, 26-067 Strawczyn) by sending a complaint sheet contained in this operating manual, filled in and stamped by an authorized point of sale or authorized distributor. The fault registration should contain:
 - a) type, capacity, serial number, manufacturer number (the information is located on the rating plate),
 - b) date and place of purchase,
 - c) a brief description of the fault,
 - d) detailed address and phone number of Purchaser.

If the following cases are complained about: incorrect combustion in the device, tar deposits, smoking through the door; the fault registration should be supplemented with a copy of a chimney sweep expertise certifying that the flue meets all requirements specified in the operating manual for a given boiler's capacity.
- 13) The Guarantor shall not be responsible for exceeding of the periods mentioned in point 9 above or the Guarantor or its representatives will be ready to remove the defect within the date agreed with the Purchaser and will not be able to carry it out due to a reasons not attributable to the Guarantor (e.g. lack of proper access to devices, lack of energy or water, force majeure, Purchaser is not present etc.).
- 14) If the Guarantor, despite being ready to carry the repair, will not be able to carry out the warranty repair twice because of the reasons attributable to the Purchaser then it is assumed that Purchaser had resigned from the claim included in the guarantee claim. Notification about the same defect in this mode is not possible.
- 15) If the fault complained about cannot be removed and after three repairs the product is still faulty but can be used, the Purchaser has the following rights:
 - a) to obtain a discounted price for the product, proportionally to the use value of the product;
 - b) replace the product with one free of faults.
- 16) The product can be replaced if the Guarantor decides it cannot be repaired.
- 17) The Guarantor does not accept liability for the inappropriate choice of product with respect to the heated area (e.g. device of too low or too high power with respect to requirements). It is recommended to choose a device with cooperation with a design office or the Guarantor. The Guarantor is not liable for loss of data saved in the equipment and for economical losses and lost profits.
- 18) The guarantor will refuse realization of Purchaser's claims resulting from this document in the case when:
 - a) will state damage or ripping of leaden seals,
 - b) identification of product will be impossible (that is conformity of the presented product with a document describing the equipment, replaced or illegible documents),
 - c) damages resulting from incorrect transport carried out or ordered by Purchaser,
 - d) particular components of the equipment were willfully replaced with non-genuine, used etc., repairs outside the authorized service of the Guarantor etc.
 - e) damages are mechanical, chemical, thermal and they are not resulting from causes in the sold product.
 - f) damages concerns wearing parts, especially: screws, nuts, handles, ceramic and sealing elements,
 - g) damages resulting from product usage inconsistently with the operating manual, that is especially when incorrect equipment operation resulting from lack of chimney draught or inappropriate power of the equipment,
 - h) Faults are not significant and do not have an impact on the use value of the product.
- 19) This warranty does not cover:
 - a) products used for business purposes or industrial uses;
 - b) components of electrical equipment;
 - c) damages caused by the other connected equipment, devices or accessories other than these recommended by the Guarantor.
 - d) damages occurred as a result action of external impacts, among other: by the action of force majeure;
 - e) damages caused by animals,
- 20) Warranty repairs accepted by the Guarantor are carried out free of charge. The guarantor can charge the costs connected with warranty claim only in the case when a claim is not accepted as a result of stating circumstances which are listed in points 17 and 18 mentioned above.
- 21) Notification of complaint can be considered positively only in case of:
 - a) keeping the time-limits mentioned in this document;
 - b) fulfilling the other terms and conditions of the warranty;
 - c) presentation of product proof of purchase - that is an invoice or fiscal receipt, the other proof of purchase, in compliance with the regulations;
- 22) Device installation can be carried out by a person holding general installation qualifications but an entry and stamp in the Warranty Card are required.
- 23) Device's first start-up, any repairs and other activities, which are not supposed to be carried out by the User according to the operating manual, can be carried out only by an authorized service trained by the Guarantor. Device's first start-up is payable by the Purchaser.
- 24) Warranty repair is made in the location when the product is operated. If claim applies to part of the product, including electronic equipment /electronic controller, fan etc. than the given part should be sent to the Guarantor at his expense. Returning faulty equipment is a condition to accept the claim and replace this equipment for free. Not returning the above mentioned part within 7 working days will be a subject to not accept the claim and to charge its costs to the buyer.
- 25) Provisions of this document do not limit in any way authorizations resulting from the claim submitted on the basis of statutory warranty. The warranty also had no influence on the other claims of the Purchaser, according to the provisions of the law - including these concerning nonconformity of goods with the contract. The purchaser can exercise powers from the statutory warranty regardless of powers resulting from the guarantee. If the purchaser exercises his powers resulting from the warranty, the period for execution of powers resulting from the warranty will be suspended from the date of notice about the defect. This period will be continued from the date of refusal by the Guarantor about the execution of obligations resulting from the warranty or ineffective lapse of time for their execution.
- 26) To all matters not settled in this Warranty Card and document the provisions of the Civil Code Art. 577 - 581 shall apply.

12.1. WARRANTY CONDITIONS "48H SERVICE"

- 1) The "48h Service" program covers equipment manufactured by DEFRO Sp. z o.o. Sp. k.
- 2) Any complaints are to be made at a sales outlet or directly at the Company on the fax. no. 41 303 80 85, e-mail: serwis@defro.pl, or by a letter to company's address.
- 3) Fault registration can be completed if the Purchaser has a purchase confirmation and has filled in the Warranty Card correctly including a complaint sheet.

- 4) The DEFRO Sp. z o.o. Sp. k. "48h service" does its best to remove any faults which make it impossible/difficult for the equipment to operate within the period of two business days from the day of fault registration.
- 5) Fault removal time may be prolonged for reasons not dependent on DEFRO Sp. z o.o. Sp. k. , such as the necessity of replacement of construction elements, lack of spare parts at the supplier, adverse weather conditions /force majeure/.
- 6) Failure to carry out repairs within this period cannot constitute a ground for any claims against DEFRO Sp. z o.o. Sp. k. and Authorized Service Partner.
- 7) To facilitate contact with service, service hotline for Customers has been set up: 509 702 720 and 509 577 900. If you call on these numbers, you will receive the necessary information and help with any service issue.

We kindly inform that possible replacement of equipment component, with the working one, claimed by the user is not unambiguous with the admission of equipment user's warranty claims and does not end the complaint processing procedure. DEFRO reserves the right to charge the equipment's user with component replacement/repair costs, which after expertise/repair was stated as damaged by the factors independent of the boiler's manufacturer (e.g. short-circuit in electric system, overvoltage, flooding, mechanical damages not visible to the naked eye etc.) and which damages were not able to state during repairing in location of equipment operation by the service, within 60 days from date of carrying out the repair. DEFRO will issue an appropriate invoice for replacement/repair of the subject component with enclosed expertise protocol. At the same time we inform, that lack of payment for the invoice including the above mentioned costs within 14 days from its issuance results in irrevocable loss of warranty for the used equipment and this information will be entered into our computer supervision system for boilers within the warranty period. The date when the due amount is credited to the bank account given in the mentioned invoice is treated as payment date.

WARRANTY CARD

Confirmation of equipment's quality and completeness

In accordance with the conditions stated herein, warranty for a fireplace insert type

DEFRO HOME RIVA operated in accordance with the operating manual has been issued.

Equipment manufacturing number*

Equipment power*

User /name and surname/**

Address /street, city, postal code/**

tel./fax** e-mail**

Sale date

Installation date

Start-up date

.....
(stamp and signature of a salesperson)

.....
(stamp and signature of a salesperson)

.....
(stamp and signature of the company starting
up the fireplace insert)

The user confirms that:

- the equipment has been delivered as complete;
- the device showed no failure during the first start-up carried out by a service company,
- has received the Operating Manual and equipment's installation manual with this Warranty Card filled in;
- has been familiarised with equipment's operation and maintenance.

.....
city and data

.....
user signature

* filled by the manufacturer

** filled by the user

The Customer and the installation and service company confirm by their own signature that their personal data can be processed for service register purposes according to the Data Protection Act of 29 August 1997 Journal of Laws no. 133, item 883.

DEFRO Spółka z ograniczoną odpowiedzialnością Spółka komandytowa

• 00-403 Warszawa, ul. Solec 24/253 • tel. 041 303 80 85 • biuro@defro.pl • www.defro.pl •

14. CARRIED OUT WARRANTY REPAIRS AND MAINTENANCE.

| No. | date | fault description, repaired element, description of repairs | comments | Stamp and signature of Service |
|-----|------|--|----------|-----------------------------------|
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
| 7. | | | | |
| 8. | | | | |
| 9. | | | | |
| 10. | | | | |



WARRANTY CARD

Confirmation of equipment's quality and completeness

In accordance with the conditions stated herein, warranty for a fireplace insert type

DEFRO HOME RIVA operated in accordance with the operating manual has been issued.

Equipment manufacturing number*

Equipment power*

User /name and surname/**

Address /street, city, postal code/**

.....

tel./fax** e-mail**

Sale date

Installation date

Start-up date

.....

(stamp and signature of a salesperson)

(stamp and signature of a salesperson)

(stamp and signature of the company starting
up the fireplace insert)

The user confirms that:

- the equipment has been delivered as complete;
- the device showed no failure during the first start-up carried out by a service company,
- has received the Operating Manual and equipment's installation manual with this Warranty Card filled in;
- has been familiarised with equipment's operation and maintenance.

.....
city and date

.....
user signature

* filled by the manufacturer

** filled by the user

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COMPLAINT FORM

made on..... in connection with complaint no.

SUBJECT OF COMPLAINT

EQUIPMENT TYPE: Equipment manufacturing date:
Equipment serial no.: Equipment purchase date:

CLAIMANT

Name and surname:
Detailed address:

Phone number:

DETAILED DESCRIPTION OF QUALITY FAULTS OR FAULTS RESULTING FROM THE MANUFACTURER'S FAULT

.....
.....
.....
.....

OTHER FAULTS.....

.....

CLAIMANT LODGES WARRANTY CLAIM FOR (SELECT APPROPRIATE):

Warranty repair ☐ Paid repair ☐ Post-warranty paid the repair ☐

CLAIMANT REQUESTS.....

In the case when a claim is not taken into consideration because circumstances, mentioned in p. 17 and 18 of the Warranty Terms are discovered, the CLAIMANT agrees to cover the costs incurred by the manufacturer's service.

.....

(city and data)

(sign of claimant)

(signature of serviceman)

FAULT REMOVAL - to be filled by service

Date of informing the service technician about fault hour

Name and surname of a service technician

The way of fault removal

.....

Advice (DESCRIPTION)

.....

END OF COMPLAINT

Name and surname of service technician: Fault removal date:.....

The justness of complaint: Duration of repair:

Fault (defect) has been removed, the equipment operates correctly. I hereby confirm the removal of the fault. I declare that I have familiarised myself with conditions of warranty on the basis of which I wish to register my complaint and I agree for processing my personal data for complaint register purposes according to the Data Protection Act of 29 August 1997 (Journal of Laws No. 133 item 833).

.....

(city and data)

(sign of claimant)

(signature of serviceman)

ATTENTION! In the case when a claim is not taken into consideration because circumstances, mentioned in p. 17 and 18 of the Warranty Terms are discovered, the CLAIMANT agrees to cover the costs incurred by the manufacturer's service.*

*cost per man-hour and travelling expenses are calculated according to the current price list available at www.defro.pl.



COMPLAINT FORM

made on.....in connection with complaint no.

SUBJECT OF COMPLAINT

EQUIPMENT TYPE: Equipment manufacturing date:
Equipment serial no.: Equipment purchase date:

CLAIMANT

Name and surname:
Detailed address:

Phone number:

DETAILED DESCRIPTION OF QUALITY FAULTS OR FAULTS RESULTING FROM THE MANUFACTURER'S FAULT

.....
.....
.....
.....

OTHER FAULTS.....

.....

CLAIMANT LODGES WARRANTY CLAIM FOR (SELECT APPROPRIATE):

Warranty repair ☐ Paid repair ☐ Post-warranty paid the repair ☐

CLAIMANT REQUESTS.....

In the case when a claim is not taken into consideration because circumstances, mentioned in p. 17 and 18 of the Warranty Terms are discovered, the CLAIMANT agrees to cover the costs incurred by the manufacturer's service.

.....

(city and data)

(sign of claimant)

(signature of serviceman)

FAULT REMOVAL - to be filled by service

Date of informing the service technician about fault hour

Name and surname of a service technician

The way of fault removal

.....

Advice (DESCRIPTION)

.....

END OF COMPLAINT

Name and surname of service technician: Fault removal date:.....

The justness of complaint: Duration of repair:

Fault (defect) has been removed, the equipment operates correctly. I hereby confirm the removal of the fault. I declare that I have familiarized myself with conditions of warranty on the basis of which I wish to register my complaint and I agree for processing my personal data for complaint register purposes according to the Data Protection Act of 29 August 1997 (Journal of Laws No. 133 item 833).

.....

(city and data)

(sign of claimant)

(signature of serviceman)

ATTENTION! In the case when a claim is not taken into consideration because circumstances, mentioned in p. 17 and 18 of the Warranty Terms are discovered, the CLAIMANT agrees to cover the costs incurred by the manufacturer's service.*

*cost per man-hour and travelling expenses are calculated according to the current price list available at www.defro.pl.



COMPLAINT FORM

made on.....in connection with complaint no.

SUBJECT OF COMPLAINT

EQUIPMENT TYPE: Equipment manufacturing date:
Equipment serial no.: Equipment purchase date:

CLAIMANT

Name and surname:
Detailed address:

Phone number:

DETAILED DESCRIPTION OF QUALITY FAULTS OR FAULTS RESULTING FROM THE MANUFACTURER'S FAULT

.....
.....
.....
.....

OTHER FAULTS.....

.....

CLAIMANT LODGES WARRANTY CLAIM FOR (SELECT APPROPRIATE):

Warranty repair ☐ Paid repair ☐ Post-warranty paid the repair ☐

CLAIMANT REQUESTS.....

In the case when a claim is not taken into consideration because circumstances, mentioned in p. 17 and 18 of the Warranty Terms are discovered, the CLAIMANT agrees to cover the costs incurred by the manufacturer's service.

.....

(city and data)

(sign of claimant)

(signature of serviceman)

FAULT REMOVAL - to be filled by service

Date of informing the service technician about fault hour

Name and surname of service technician

Way of fault removal

.....

Advice (DESCRIPTION)

.....

END OF COMPLAINT

Name and surname of service technician: Fault removal date:.....

The justness of complaint: Duration of repair:

Fault (defect) has been removed, the equipment operates correctly. I hereby confirm the removal of the fault. I declare that I have familiarized myself with conditions of warranty on the basis of which I wish to register my complaint and I agree for processing my personal data for complaint register purposes according to the Data Protection Act of 29 August 1997 (Journal of Laws No. 133 item 833).

.....

(city and data)

(sign of claimant)

(signature of serviceman)

ATTENTION! In the case when a claim is not taken into consideration because circumstances, mentioned in p. 17 and 18 of the Warranty Terms are discovered, the CLAIMANT agrees to cover the costs incurred by the manufacturer's service.*

*cost per man-hour and travelling expenses are calculated according to the current price list available at www.defro.pl.




19. REGISTER OF INSPECTIONS OF SMOKE DUCTS

| date | stamp and signature of a chimneysweep | date | stamp and signature of a chimneysweep |
|------|---------------------------------------|------|---------------------------------------|
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**PRODUCT SHEET IN ACCORDANCE WITH THE EU REGULATION 2015/1187
SUPPLEMENTING THE DIRECTIVE OF THE EUROPEAN PARLIAMENT AND
THE COUNCIL 2010/30 EU**

Name and address of the equipment supplier

DEFRO Spółka z ograniczoną odpowiedzialnością Spółka komandytowa
00-403 Warszawa
Ul. Solec 24/253
Manufacturing plant:
26-067
Ruda Strawczyńska 103A

| PARAMETERS OF THE EQUIPMENT | UNIT | MODEL IDENTIFICATION | | |
|---|------|---|--|---|
| | | DEFRO HOME RIVA SM SHORT DEFRO HOME RIVA SM BL SHORT | DEFRO HOME RIVA ME SHORT DEFRO HOME RIVA ME BL SHORT | DEFRO HOME RIVA LA SHORT |
| Energy efficiency class | - |  |  |  |
| Direct thermal power | kW | 8.1 | 9.4 | 10,2 |
| Indirect thermal power | kW | 7.6 | 11,1 | 12,0 |
| Energy efficiency Index EEI | - | 118 | 108 | 106 |
| Efficiency at nominal thermal power | % | 88,0 | 81,1 | 80,1 |
| Efficiency at minimal thermal power | % | N/A | N/A | N/A |
| Special precautions during assembly, installation or maintenance of the equipment | - | Consider guidelines included in the Service Manual delivered by the manufacturer each time before assembly, start-up or maintenance of the equipment. | | |



www.defrohome.pl

DEFRO[®]
heating technology

DEFRO Spółka z ograniczoną odpowiedzialnością Spółka komandytowa
00-403 Warszawa, ul. Solec 24/253
Manufacturing plant:
Ruda Strawczyńska 103 A
26-067 Strawczyn
tel.: 41 303 80 85, biuro@defro.pl
NIP 9591968493