# OPOP NATURO
# User Manual

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# 1. INTRODUCTION

Dear Customer,
Thank you for choosing a product from our range and becoming one of our valued customers. We wish you true comfort with your new product and hope it will serve you reliably for many years to come. Our entire team has contributed to this outcome, and now you can too – by thoroughly reading the user manual and adhering to all prescribed rules and regulations.

# 2. BOILER CHARACTERISTICS

The OPOP NATURO steel hot-water gasification boiler is designed for both single-storey and central heating systems in family homes or suitable industrial facilities, with a maximum heating water hydrostatic head of 20 metres. The OPOP NATURO boiler belongs to the highest emission class and is intended for burning solid fuels, specifically dry, split firewood. The boiler must be connected to a chimney suitable for its output. For optimal operation, in addition to professional installation and proper use, it is essential to ensure sufficient draught. This boiler has been certified by the Engineering Test Institute in Brno in compliance with ČSN EN 303-5+A1:2023.

# 3. TECHNICAL DESCRIPTION

## 3.1 External features of the boiler

The OPOP NATURO boiler is equipped with a front-loading door for adding firewood. Firewood can be loaded either lengthwise or crosswise, as described in the *Boiler operation* section. The loading door is fitted with a primary air damper, which supplies the main air necessary for optimal performance and clean combustion. This damper can be manually adjusted using a screw to set a fixed open position or connected to a draught regulator for automatic operation. In the latter case, it is essential to ensure that the damper remains open at least 1 cm at all times, allowing minimal airflow in order to maintain proper combustion and prevent excessive soot build-up or smoke escaping through the chimney.

The ash door is located at the lower front of the boiler, containing one or two ashpans (depending on the boiler size). These must be emptied regularly.

On the right-hand side of the boiler, there is a grate lever that operates the sliding grate inside. A short forwards-and-back movement of the lever clears the grate's openings, a task that can be performed regularly, even while the boiler is burning fuel. Pushing the lever to its full extreme position removes the sliding grate completely, allowing ash to fall into the ashpan – this is typically done after the fuel has burned out to clean the grate of ash.

The grate lever can be relocated to the opposite side of the boiler, and the front door hinges can similarly be swapped from right to left. Further details can be found in the sections *Changing the position of the grate lever* and *Changing the door opening direction*.

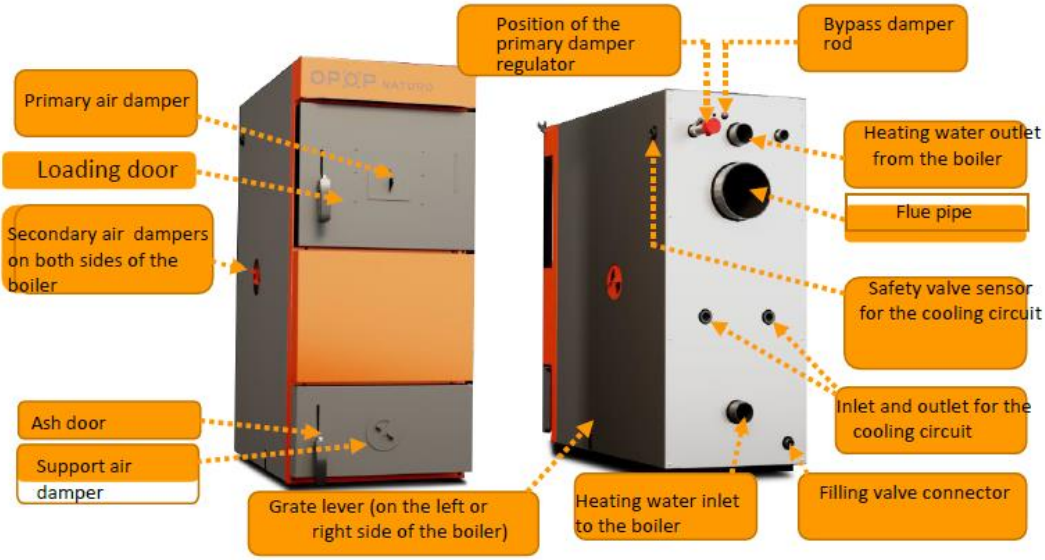
On both sides of the boiler, there are secondary air dampers. These dampers should remain closed when lighting the boiler to maximise chimney draught. Once the boiler is fully loaded with firewood, the secondary air dampers can be opened to the marked position. The purpose of secondary air is to improve emissions and ensure the combustion of gases at a higher flame temperature. If the secondary air dampers remain closed during operation at nominal output, the flame may lack sufficient air for combustion, leading to excessive soot accumulation in the heat exchanger and flue. For more information on setting the dampers, refer to the *Boiler operation* section.

In the upper corners on both sides of the boiler, there is a connector for attaching a cooling circuit valve sensor. This sensor monitors the boiler temperature and activates the valve if the boiler overheats (i.e. if the temperature exceeds approximately 95 °C). The valve then allows cold water to flow into the cooling circuit, located at the rear of the boiler. Further details about the cooling circuit can be found in the section *Protecting the boiler from overheating*.

At the rear of the boiler, you will find connectors for integrating the boiler into the heating system. These connectors can be equipped with U26-type flanges, enabling the boiler to be interchangeable with U26 models without requiring modifications to the system's pipework – allowing for a straightforward replacement without altering pipes or the flue. Also located at the rear are the flue outlet and, at the bottom, a connector for the filling valve, which is included as part of the boiler accessories.

Another feature at the upper rear of the boiler is the bypass damper rod. When the rod is pulled out, the bypass damper is closed (when the boiler is in operation). Pushing the rod in opens the bypass damper (used during ignition and when adding fuel). More details about the bypass damper can be found in the *Boiler operation* section.

At the top of the boiler, there is a thermo-manometer that measures the water temperature and pressure inside the boiler. Additionally, the upper rear section of the boiler houses a cleaning access door, located under a protective cover. This door is used for easy heat exchanger access and cleaning.


Position of the primary damper regulator
Bypass damper rod
Primary air damper
Loading door
Secondary air dampers on both sides of the boiler
Heating water outlet from the boiler
Flue pipe
Safety valve sensor for the cooling circuit
Inlet and outlet for the cooling circuit
Ash door
Support air damper
Grate lever (on the left or right side of the boiler)
Heating water inlet to the boiler
Filling valve connector

## 3.2 Internal features of the boiler

Inside the boiler, there are two grates. One is a sliding grate, which moves using the grate lever, and the other is a fixed slanted grate, which is suspended on hooks and does not move. The loading chamber is lined with shielding plates, which protect the boiler plate from combustion by-products, thus extending the boiler's lifespan. These plates, or rather the ash behind them, must be cleaned before the season – the shielding plates are removable. More information can be found in the *Cleaning the boiler* section.

At the bottom of the loading chamber is a refractory brick lining, through which the flame passes into the rear section of the boiler. The purpose of the refractory brick lining is to maintain the highest possible flame temperature and ensure clean combustion, provided there is sufficient primary and secondary air supply.

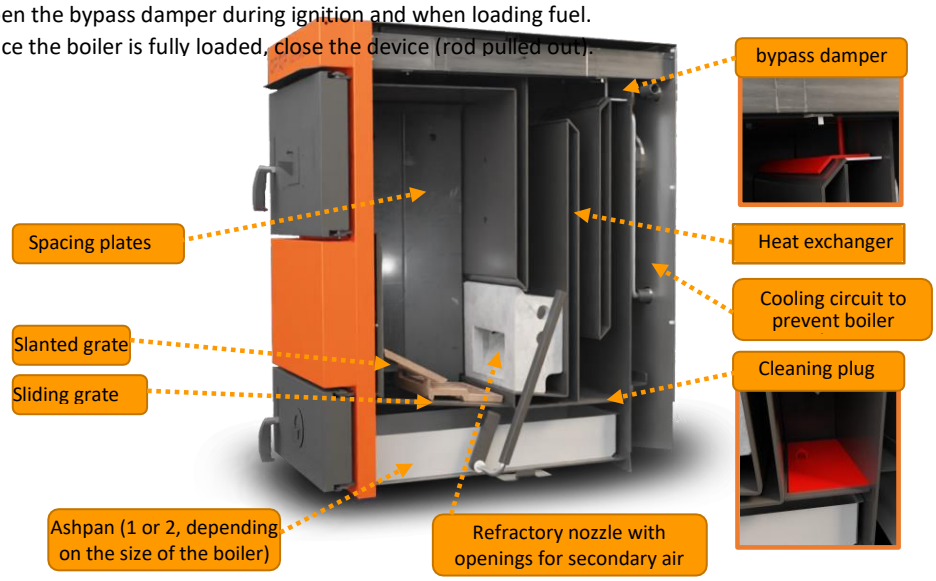
One or two ashpans are beneath the grates, depending on the size of the boiler.

At the rear of the boiler is a partition heat exchanger, where heat from the flame is transferred to the system water. Below the heat exchanger is a cleaning plug. This separates the heat exchanger from the ashpan section and must always be properly seated during operation. Removing the cleaning plug allows the ash from the heat exchanger to fall into the ashpan. More information about the cleaning plug can be found in the *Cleaning the boiler* section.

The upper part of the heat exchanger includes the bypass damper. When in the open position (rod pushed in inserted), it serves as a bypass, providing an easier pathway for the flue gases to bypass the heat exchanger and go directly to the chimney.

Open the bypass damper during ignition and when loading fuel.

Once the boiler is fully loaded, close the device (rod pulled out).



## 4. TECHNICAL SPECIFICATIONS

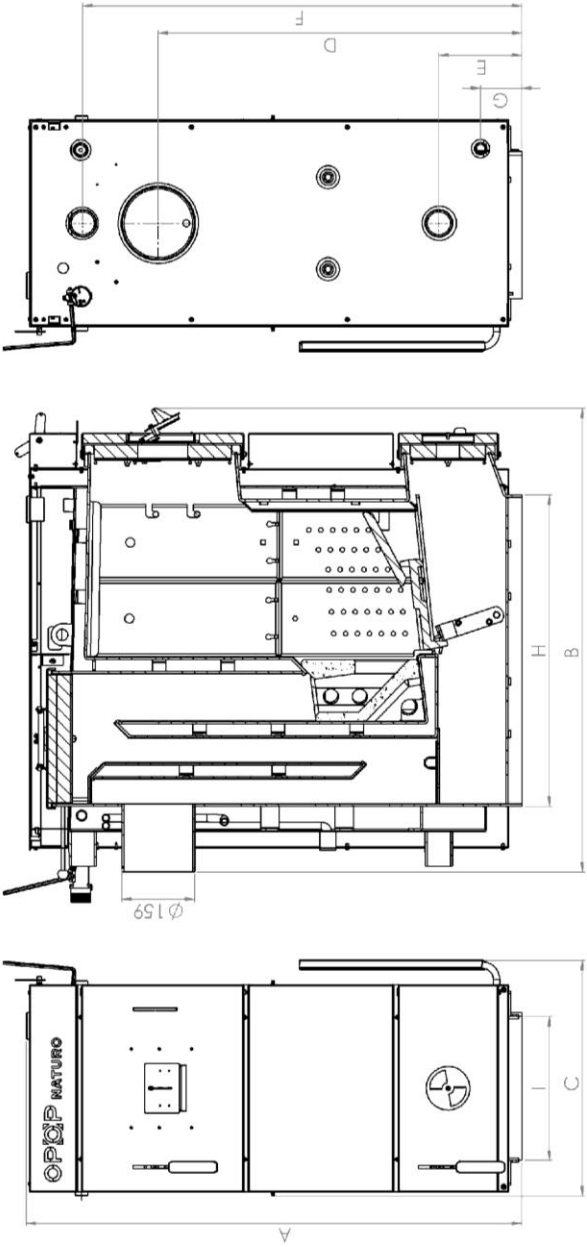
| OPOP NATURO 16 | | |
|---|---|---|
| **Data name** | **Unit** | **wood** |
| Operational draught – minimum | Pa | 16 |
| Operational draught – recommended | Pa | 18–22 |
| Nominal heat output | [kW] | 16 *3 |
| Efficiency | [%] | 88.6 |
| Boiler class as per ČSN EN 303-5+A1 | | 5 |
| Warranty-approved fuel | | Firewood |
| Water volume | [ l ] | 67 |
| Flue pipe diameter | [mm] | 159 |
| Log length | [mm] | 25–31 *1 |
| Fuel consumption | [kg/h] | 4.4 |
| Measured burn time at nominal output | [h] | 3 |
| Heating water temperature range | [°C] | 65–80 |
| Fuel chamber volume | [ l ] | 66.5 |
| Filling opening dimensions | [mm] | 270 x 315 |
| Heating surface area | [$m^2$] | 2.5 |
| Flue gas temperature at nominal output (average) | [°C] | 180 |
| Flue gas temperature range during full operation | [°C] | 130–250 |
| Maximum heating water overpressure | [MPa] | 0.2 |
| Test overpressure of heating water | [MPa] | 0.3 |
| Flue gas mass flow at nominal output | [kg/s] | 0.011 |
| Burn time at nominal output | [h] | >3 |
| Hydraulic loss at *DT*= 20/10 K | [mbar] | 1.36–5.1 |
| Storage tank volume | [l] | 800 *2 |

*1 Log length depending on the length of the wood – lengthwise or crosswise

*2 The actual size of the storage tank must be proposed by the designer.

*3 Measured with hardwood with an average moisture content of 15%.

| | | Naturo 12 | Naturo 16 | Naturo 20 | Naturo 25 | Naturo 30 |
|---|---|---|---|---|---|---|
| Boiler weight | [kg] | | 241 | | | |
| inlet/outlet connection (external thread) | Js | | G2" | | | |
| Cooling loop circuit (internal thread) | Js | | G 1/2" | | | |
| Drain and fill connection (internal thread) | Js | | G 1/2" | | | |
| Connection for output regulator installation (internal thread) | Js | | G 3/4" | | | |
| A – total boiler height | [mm] | | 1082 | | | |
| B – total boiler depth | [mm] | | 1011 | | | |
| C – boiler width | [mm] | | 517 | | | |
| D – flue pipe location | [mm] | | 794 | | | |
| E – location of inlet water connector | [mm] | | 181 | | | |
| F – location of outlet water connector | [mm] | | 958.5 | | | |
| G – location of drain water connector | [mm] | | 90 | | | |
| H – boiler base depth | [mm] | | 675 | | | |
| I – boiler base width | [mm] | | 314 | | | |
| Boiler body wall thickness (water/flame) | [mm] | | 5 | | | |
| Boiler body wall thickness (water) | [mm] | | 3 | | | |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## 5. List of replaceable spare parts

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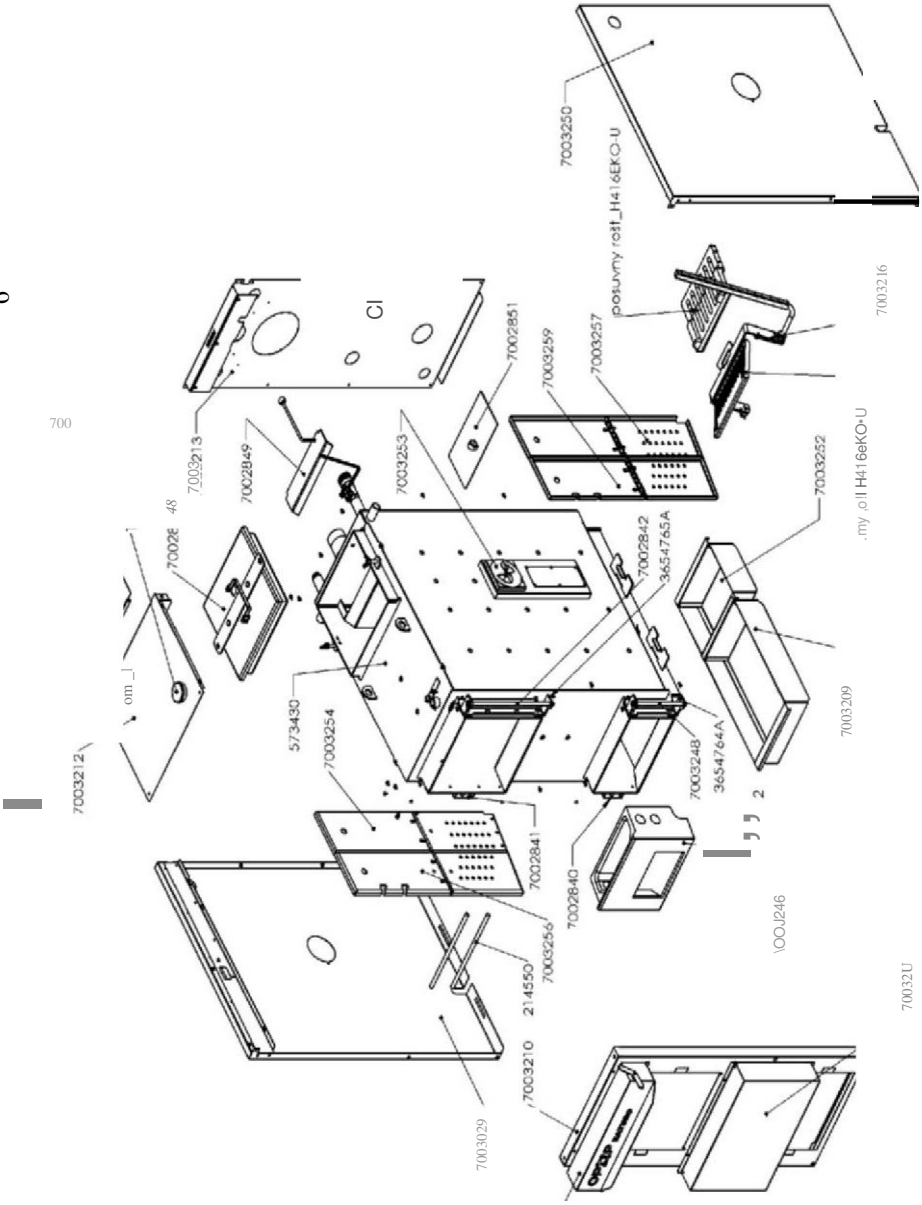

| Part number | Name | Quantity | Part number | Name | Quantity |
|---|---|---|---|---|---|
| 573430 | Weldment assembly | 1 | 7003250 | Right side cover assembly | 1 |
| 7002848 | Cleaning door assembly | 1 | 7003257 | Spacer plate, right rear | 1 |
| 7002849 | Cleaning flap assembly | 1 | 7003259 | Spacer plate, right front | 1 |
| 7002851 | Cleaning plug | 1 | 7003211 | Assembled front cover with logo | 1 |
| 7002840 | Front door closure assembly | 1 | 7003214 | Front cover, middle | 1 |
| 3654764A | Loading door hinge | 1 | 7003212 | Upper cover assembly | 1 |
| 7003248 | Door pin assembly | 1 | 3655300 | Rear upper cover | 1 |
| 7002843 | Ash door | 1 | 214550 | Guard | 2 |
| 7002841 | Front door closure assembly | 1 | 214400 | Handle pin 2 | 2 |
| 7003209 | Front ashpan assembly | 1 | 3654765A | Loading door hinge | 1 |
| 7003252 | Rear ashpan assembly | 1 | 7002842 | Door pin assembly | 1 |
| 7003253 | Air regulation II | 2 | 7002844 | Loading door | 1 |
| 7003029 | Left side cover assembly | 1 | 7003216 | Grate mechanism assembly | 1 |
| 7003210 | Front cover assembly | 1 | 7003254 | Spacer plate, left rear | 2 |
| 7003213 | Rear cover assembly | 1 | 7003256 | Spacer plate, left front | 1 |
| 5771012 | OPOP NATURO 16 nozzle | 1 | 7003246 | Front cover plate | 1 |
| | | | | | |
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## 6. Safety instructions for boiler installation

The boiler must always be installed in accordance with applicable standards and regulations. The manufacturer's safety instructions must be followed.

Before starting the boiler, ensure that it is fully assembled (components that need to be installed after delivery are stored in the ashpan as part of the boiler's accessories).

We recommend having the boiler professionally inspected once a year, preferably before the heating season, focusing on the correct connection of the flue, expansion vessel, wear on the grates, etc., and ensuring the correct functioning of the cooling circuit and draught regulator.

**Connection to the chimney**

The boiler may only be installed to a chimney that complies with ČSN 73 4201:2010 (Chimneys and Flue Pipes).

A hot water boiler may be connected only with the approval of a chimney service.

The boiler must be connected to a dedicated flue pipe that provides sufficient draught for all practical operating conditions.

The flue pipe, secured in the flue socket and connected to the appliance's flue collar, must be properly assembled and installed to prevent accidental or spontaneous disconnection. It is recommended that the flue pipe from the boiler to the chimney be no longer than 1 metre, with a recommended upward incline of at least 10° towards the chimney. The connection should be direct, with no more than one bend.

**Connection to the heating system**

The hot water system must be installed according to ČSN 06 0310:2014 (Heating systems in buildings – design and installation), ČSN 06 0830:2014 (Heating systems in buildings – safety devices), ČSN 07 7401 (Water and steam for thermal power equipment with steam pressure up to 8 MPa), and ČSN EN 303-5+A1:2023 (Heating boilers – Part 5: Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 500 kW).

The boiler and flue pipe must comply with fire safety regulations ČSN 06 1008:1997 (Fire safety of thermal equipment), ČSN EN 13501-1:2019 (Fire classification of construction products and building elements – Part 1: Classification using data from reaction-to-fire tests), and must be installed at a safe distance of 400 mm from combustible materials. This safe distance must be maintained even when the combustibility of materials has not been proven.

The safe distance can be reduced by half when using Class A non-combustible heat-insulating shielding boards, at least 5 mm thick, placed 25 cm away from the protected combustible material (air insulation).

**Classification of construction products and components based on fire reaction (according to ČSN 73 4201)**

a) non-combustible materials – which comply with the fire reaction class A1 or A2 as per ČSN EN 13 501-1.

b) combustible materials – with fire reaction classes B, C, D, E, and F as per ČSN EN 13 501-1.

**Boiler placement – important warnings**

The boiler can be installed according to ČSN 33 2000-3:1995 in basic environments AA5/AB5.

It is not permissible to install boilers in living spaces, including hallways. A continuous air supply for combustion must be provided to the room where the boiler is installed.
The boiler must be installed in compliance with the requirements of ČSN 06 1008 – Fire safety of thermal equipment. No combustible materials should be placed on, or within the safe distance from, the boiler. The safe distance must also be maintained in relation to furnishings, kindling, and fuel in the boiler room.

The boiler must be placed on a non-combustible heat-insulating base, which should extend at least 300 mm beyond the boiler on the side of the ash door and at least 100 mm on all other sides.

If there is a risk of transient combustion gases or vapours, or if there is a temporary fire or explosion risk during certain works (such as laying linoleum, PVC, etc.), the appliance must be switched off before the risk arises.

**Boiler and fuel placement in relation to required working space**

- a minimum of 1,000 mm of working space must be left in front of the boiler
- the minimum distance between the back of the boiler and the wall is 400 mm
- at least one side of the boiler must allow for access to the back with a minimum space of 400 mm

- it is not allowed to store fuel behind or beside the boiler at a distance of less than 400 mm.
- Fuel must not be stored between two boilers in the boiler room
- The manufacturer recommends maintaining a distance of at least 1,000 mm between the boiler and the fuel, or storing fuel in a different room from where the boiler is installed.

**Instructions for the installation and use of pressure expansion vessels for steel boilers**

1) The supply pipe to the pressure expansion vessel must be as short as possible, without shut-off valves, and must allow for expansion. The expansion vessel must be positioned in a way that prevents it from being heated by radiant heat.
2) Every heating system must be designed according to ČSN 06 0830 (Safety devices for central heating and hot water systems), and must be equipped with at least one reliable safety valve located on the outlet pipe or on the boiler, as well as a manometer (pressure gauge). The location, installation, and clearances of the safety valves must comply with ČSN 06 0830.
3) If the safety valve is not functioning correctly, it is necessary to check that it is properly set to open at an overpressure of 180 kPa. If the safety valve is incorrectly set, it must be re-set and verified.
4) The installation and setting of the safety valve, and the installation and testing of the air pressure (gas medium) in the pressure expansion vessel, may only be carried out by an authorised organisation. Before the system is filled with water, the air pressure (gas medium) in the pressure expansion vessel must be measured to ensure that the overpressure in the expansion vessel corresponds to the pressure exerted by the height of the water column in the heating system.

5) The heat source must be equipped, among other things, and in accordance with ČSN 06 0830 and ČSN EN 303-5+A1, with a draught regulator in the case of solid fuel boilers. The maximum operating temperature is limited to 90 °C.
6) The pressure expansion vessel and supply pipe must be protected to stop the water from freezing.
7) The value of the gas overpressure in the expansion vessel should be adjusted by venting it to the value of the hydrostatic pressure in the system when cold. Venting is done via the automatic valve on the pressure expansion vessel, and overpressure is measured using a manometer designed for measuring tyre pressure. After adding water to the system, adjust the pressure to a value no higher than 10 kPa above the hydrostatic head in the system.
8) After filling the system with water, mark, on the manometer, the adjusted hydrostatic head and the maximum pressure in the system once the water temperature reaches 90 °C.
9) If there are changes in the pressure difference during operation according to the marked lines, or if the minimum or maximum pressure is exceeded, the system must be checked, properly vented, and water should be added when cold. Additionally, the gas pressure in the expansion vessel must be adjusted according to the manufacturer's instructions.
10) An external inspection of each pressure expansion vessel – including a check of the filling pressure – must be performed at least once a year.
11) A project for each heating system must be prepared and approved, and equipment for the removal of excess heat must be installed. The boiler installation and connection must then follow this plan.
12) If the pressure expansion vessel is correctly selected, the actual pressure difference should not exceed 60 kPa for water temperatures in the system ranging from 10°C to 90°C. This pressure difference can be tested during a heating test, where the water is heated from cold in the system.

**Connection of boiler with overheating protection device**

The OPOP Naturo boiler is equipped, in accordance with the requirements of ČSN EN 303-5+A1:2023 and Government Regulation No 26/2003, with a safety heat exchanger for dissipating excess heat. This device ensures that the maximum water temperature in the boiler does not exceed 110 °C. The safety heat exchanger is designed as a flow water heater, controlled at the inlet by a thermostatic discharge valve.

The connection dimensions of the boiler's sleeves are compatible with the TS 130 safety discharge valve with sensor by Honeywell or an equivalent valve from another manufacturer. This valve is not included in the standard boiler package and must be purchased separately.

**Operating principle:** the safety valve sensor is inserted into the sleeve located on the upper side of the boiler. The sensor monitors the water temperature in the boiler. If the water temperature rises to 95 °C, the valve begins to open automatically, allowing water to flow into the built-in safety heat exchanger. This water absorbs the excess heat, thereby preventing the boiler from overheating. Once the water in the boiler cools, the valve starts closing automatically, eventually stopping the flow of cold water into the safety heat exchanger completely. This process may repeat several times, depending on the amount of fuel in the loading chamber or the duration of reduced heat demand from the heating system.

- a thermostatic valve must always be connected to the water inlet of the cooling circuit to ensure the cooling circuit is not subjected to constant utility water pressure

- failure to make the recommended connection of the cooling circuit to the boiler as per the operating instructions may lead to overpressure in the cooling circuit, potentially causing leakage. Damage caused in this way is not covered by warranty
- for proper valve operation, the valve must be connected to a continuous supply of cooling water with a minimum pressure of 2 bar (ideally from a public water supply) and a temperature of approximately 15 °C
- the valve's functionality must be checked at least once a year

## 7. Safety instructions for boiler operation

For safe and economical operation, the boiler must be used in accordance with these instructions.

The boiler may be left unattended provided that the output is set appropriately to prevent overheating of the system – this includes connecting the cooling circuit valve, regulating the primary damper, and correctly matching the boiler's output to the heating system.

During operation, certain parts of the boiler (e.g. fuel loading, cleaning, the ash door, and the flue pipe) may reach high temperatures. Touching these parts could result in burns, so protective gloves should be used.

Only adults familiar with these instructions may operate the boiler. Children must not be left unsupervised near the boiler.

It is forbidden to use flammable liquids to ignite the boiler or to increase its nominal output during operation in any way (i.e. to overfire the appliance).

The user may only perform routine maintenance and, where appropriate, replace parts with the spares supplied. Tampering with the boiler's construction, altering its function, or operating a damaged product is strictly prohibited.

The boiler may be cleaned only when it is completely extinguished, i.e. when there is no burning fuel inside.

The boiler manufacturer is not responsible for the components of the heating system, the correct use of the boiler, or the correct selection of the boiler type and output.

**Boiler condensation and tar build-up**

Condensation is very likely to occur during the initial or subsequent firings of the boiler. This is manifested as excessive moisture and may be visible as dark liquid in the ashpan. It results from low water temperatures in the boiler (below the dew point of 65 °C) and low flue gas temperatures. The condensation will subside after combustion residues have partially settled on the walls and once the boiler heats above 65 °C. This is not a product defect. Every boiler is thoroughly pressure-tested, and the possibility of leakage is virtually excluded.

Causes of boiler tar build-up:

- low chimney draught. If persistent, this may require structural modifications. If temporary, it is caused by weather conditions
- damp fuel

- prolonged operation at low temperatures below the dew point of flue gases (65 °C)
- incorrectly sized boiler relative to the heat loss of the space being heated
- boiler ignition with the bypass damper closed
- improper operation.
- A permanently closed primary air damper, resulting in insufficient combustion air for optimal burning.

*Note:*

Since the flue gas dew point is around 65 °C, condensation will only occur when the flue gases cool down in the boundary layer on the walls of the boiler to a temperature below 65 °C. If condensation is observed in the fuel loading chamber, this indicates that the fuel is too damp. In these cases, condensation may also flow into the ashpan compartment, even if the water temperature in the boiler is above 65 °C.

It is recommended that a minimum operating temperature higher than 65 °C be maintained, as lower temperatures may lead to the condensation of water vapour in the flue gases, which may adversely affect the proper operation and lifespan of the boiler.

It is important to follow several key principles to ensure safe and efficient operation of the boiler.

- diligent operation
- adequate chimney draught
- clean boiler (draughts and vents)
- sealed boiler – properly installed and sealed cleaning, loading, and ash door
- proper boiler output for the space to be heated
- sufficiently dried fuel

## AVERAGE MOISTURE CONTENT OF WOOD (%)

| Drying time | Quantity stored freely | | Quantity stored 3 months after felling under a protective roof | | Logs 50 cm long, stored 3 months after splitting under a protective roof | | Logs 50 cm long, stored immediately after splitting under a protective roof | |
|---|---|---|---|---|---|---|---|---|
| | G | K | G | K | G | K | G | K |
| 0* | 75 | 78 | 76 | 78 | 75 | 78 | 73 | 76 |
| 3 months | 48 | 62 | 48 | 61 | 44 | 61 | 36 | 40 |
| 6 months | 37 | 46 | 32 | 45 | 29 | 35 | 25 | 29 |
| 9 months | 33 | 38 | 27 | 37 | 26 | 28 | 23 | 28 |
| 1 year | 36 | 35 | 26 | 33 | 25 | 27 | 24 | 27 |
| 1.5 years | 18 | 27 | 18 | 21 | 17 | 17 | 15 | 16 |
| 2 years | 16 | 24 | 16 | 17 | 16 | 14 | 14 | 13 |
| 2.5 years | 15 | 24 | 15 | 18 | 15 | 14 | 13 | 13 |

** Initial moisture* *K – roundwood* *G – quarters*

# 8. Installation of boiler and accessories

## 8.1 Installation of the inlet and outlet water connectors

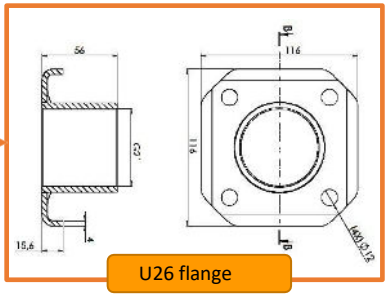
The boiler is fitted with connectors for the inlet and outlet water with external G2” threads. These can be directly used for connection to heating system pipes using union nuts and sealing rings.

Since the OPOP NATURO boiler has the same connection dimensions as U26 cast-iron boilers, U26 flanges can be used. These flanges screw onto the boiler connectors. The boiler can then replace the old U26 boiler without changing the heating system’s pipes or flue. Sealing gaskets must be inserted between the flanges.

Standard connection with threads

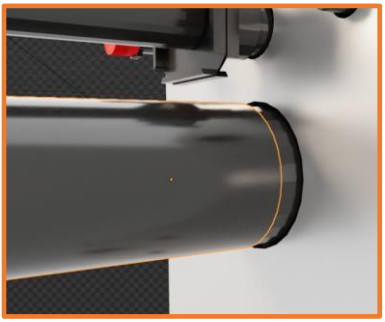
Connection to flanges

U26 flanges are optional accessories for all OPOP Naturo boilers.
The connection is identical to U26 boilers, including the dimensions and position of the flue



U26 flange

## 8.2 Flue installation



The flue pipe diameter is 159 mm. The flue should be connected to the boiler in such a way that the connection is tight, preventing any exhaust fumes from escaping into the room. There should be an inspection and cleaning hole in the flue so that the entire flue can be cleaned of soot build-up.

The flue length should be as short and straight as possible, avoiding unnecessary bends. Any bend in the flue reduces chimney draught and worsens the exhaust gas flow from the boiler to the chimney. Low chimney draught can result in smoke during loading, poor combustion, tar build-up, and low boiler performance.

Therefore, it is crucial for the chimney to be properly sized, and for the flue to be kept as short as possible – ideally straight from the boiler directly into the chimney at a minimum upward angle of 10° or more. Also ensure that any heat source installation includes a valid inspection report of the flue system, including the measured chimney draught. The minimum operational chimney draught is 16 Pa, measured by the testing facility during boiler certification.

## 8.3 Filling valve installation

At the lower rear of the boiler, there is a G 1/2” connector with an internal thread for connecting the filling/bleed valve. This valve can be found among the boiler accessories in the ashpan compartment. After filling the boiler/system with water, close the valve. The maximum overpressure of the heating water is 2 bar. Keep in mind that as the water in the system heats up, the pressure increases. Therefore, water pressure of up to 2 bar corresponds to the pressure of water in its heated state. In the cold state, the pressure in the heating system will be lower. Exceeding the specified pressure may lead to excessive stress on the boiler welds over time. Low operational pressure may cause poor water circulation in the boiler and system, which could lead to air pockets – for instance, where part of the radiator remains cold. This is an installation issue downstream of the boiler, which needs to be resolved by the installation company responsible for the system’s implementation, or the company that installed the boiler in the system.

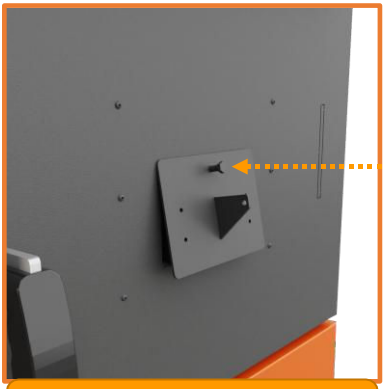
## 8.4 Boiler overheat protection

Under standards currently in force, all solid fuel boilers must have overheat protection. A cooling circuit is therefore integrated into the boiler. At the rear of the boiler, there are two connectors side by side, with internal G 1/2” threads. These connectors are interchangeable. Choose one for the inlet of water into the cooling circuit. The other will then be used for the outlet of water from the cooling circuit. Install a thermostatic valve at the inlet to the cooling circuit. The cooling circuit is normally dry. Water is released into the cooling circuit only if the boiler overheats, which opens the thermostatic valve.

On the sides of the boiler, at the top, there are connectors for connecting the safety valve sensor. The safety valve includes a sensor with a sleeve that screws into the connector on the boiler. There is a connector for the sensor on both sides of the boiler, so the unused side should be sealed.

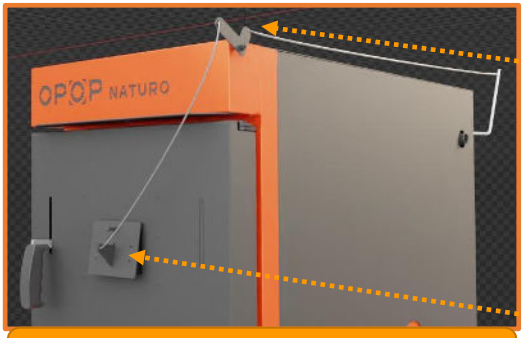
## 8.5 Installation of the primary damper regulator

The primary air damper controls the boiler's output and combustion quality. It can be adjusted manually using an adjustable screw. Alternatively, it can be connected to a primary damper regulator chain. If the damper is connected to a regulator chain, the screw on the damper should be set to allow for minimal opening. As such, the damper will never be fully closed. It is recommended that it be set so that it is always at least 1 cm open. A fully closed damper may cause the flame to be extinguished, or result in tar build-up in the boiler. The user needs to find the correct minimum opening position based on specific conditions such as chimney draught, fuel dryness, heating system size, etc. The rule is that the minimum opening should be set so that the boiler does not overheat, but still maintains proper combustion. This requires the customer to perform several firings and experiments to find the ideal position for the damper.



Option 1: opening with a screw (without a damper regulator)

If the damper regulator is not to be used, be sure to seal all connectors associated with it, i.e. the connector for the draught regulator, and the connectors for the sensors of the draught regulator on the left and right sides of the boiler.




Option 2: primary damper regulator at the rear, controlled via a side pulley

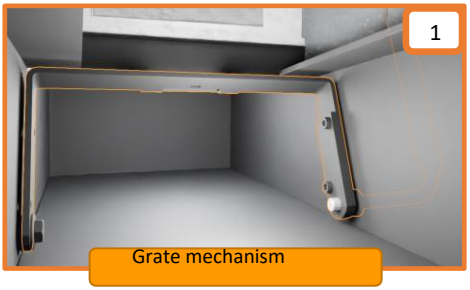
Side pulley, through which the damper regulator chain is guided.
The chain is divided into two parts.

The pulley, with its oscillating motion, assists in opening or closing the primary damper.

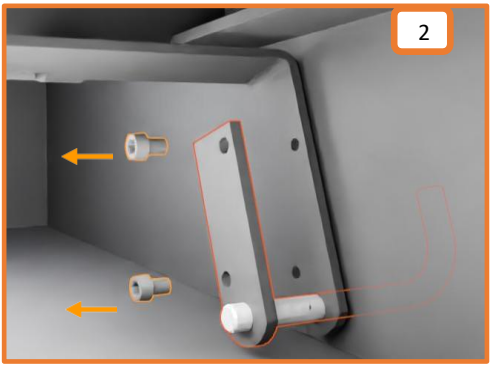
Primary air damper

## 8.6 Changing the position of the grate lever

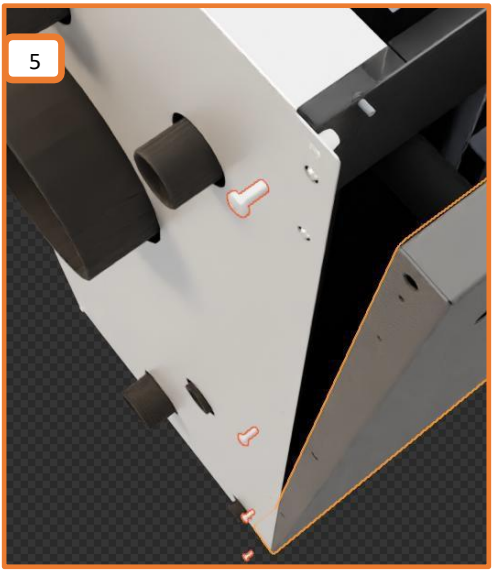
The grate lever is used to move the sliding grate. This enables the grate to be cleaned. Move the lever to the second limit position to allow all the ash to fall into the ashpan. By default, the lever is installed on the right-hand side of the boiler. However, you can switch the lever to the left-hand side if this configuration is more convenient for you by following the instructions below.



Grate mechanism



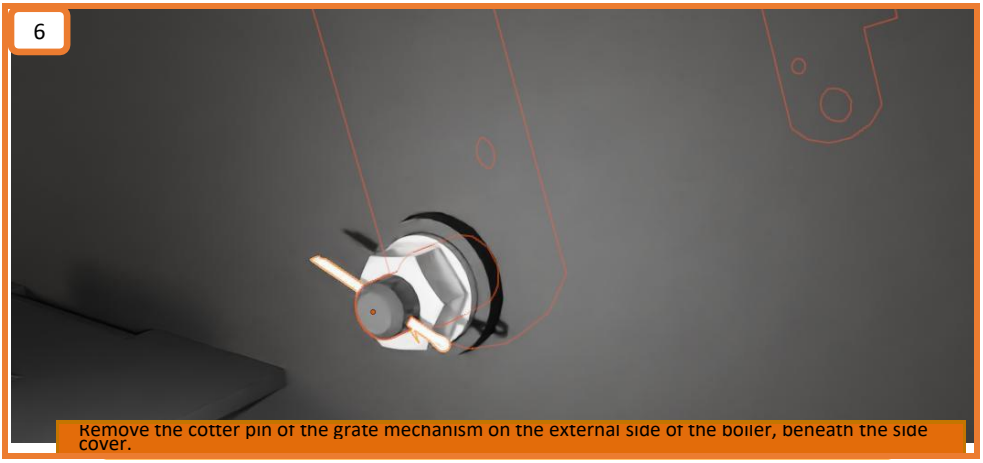
Side cover removal – top screw



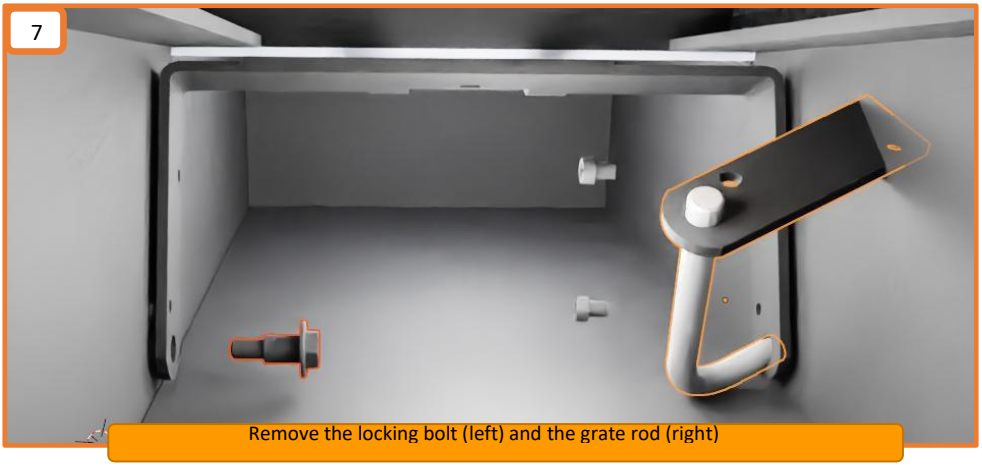
Side cover removal – bottom screw

For better access to the grate mechanism's cotter pin on the external side, near the lever, it is recommended to remove the side cover. The side cover is secured with screws. One is located at the top and can be accessed after removing the upper cover,

which also houses the thermo-manometer (*fig. 3*). Another screw is located near the ash door at the bottom (*fig. 4*). Additional screws are located at the rear of the boiler (*fig. 5*).




Remove the cotter pin of the grate mechanism on the external side of the boiler, beneath the side cover.

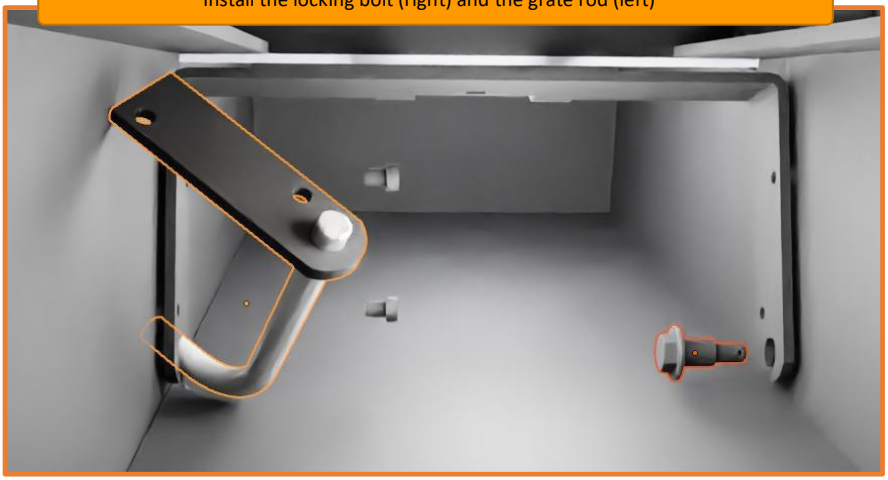



Remove the locking bolt (left) and the grate rod (right)

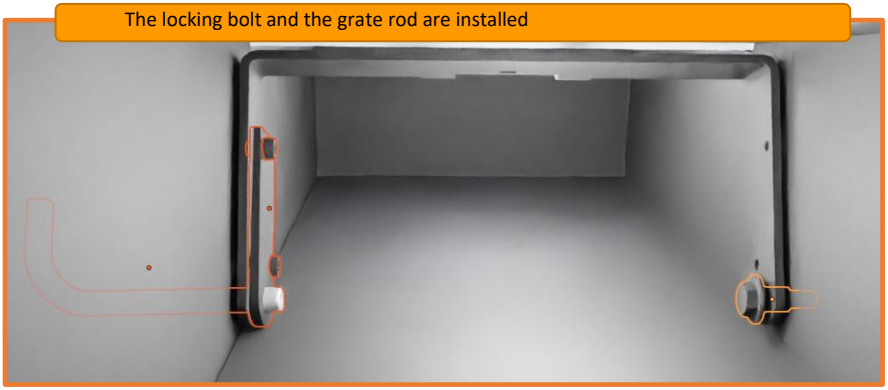
After removing the cotter pin, take out the pin holding the grate mechanism on the left-hand side. Remove the grate rod from the right-hand side. This can be done by sliding it out as indicated in *fig. 7*.

Then, reinstall the mechanism on the opposite side. See the procedure below.

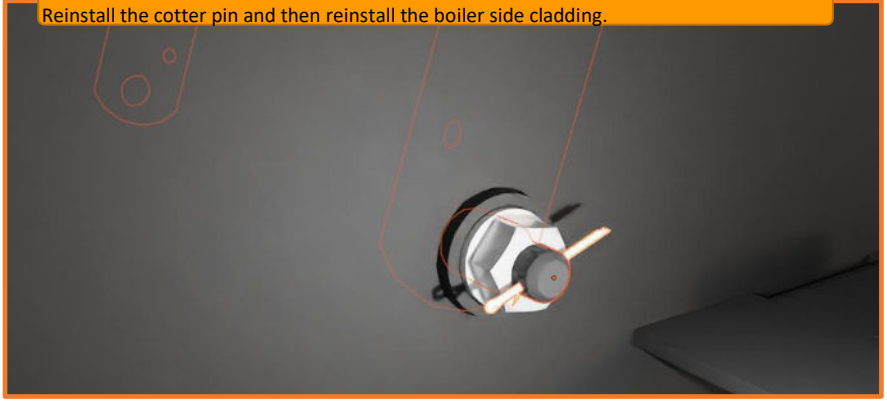
Install the locking bolt (right) and the grate rod (left)



The locking bolt and the grate rod are installed

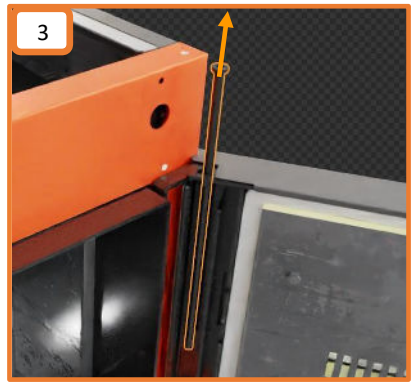


Reinstall the cotter pin and then reinstall the boiler side cladding.

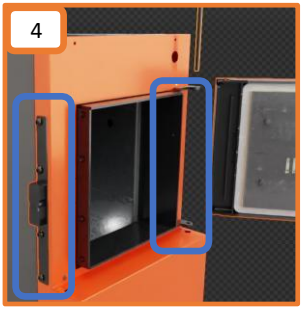


## 8.7 Changing the direction in which the front door opens

To change the door opening, you must first unscrew the front cover with the OPOP logo. 4 screws hold this cover in position. 2 can be found at the front bottom of the cover, see *fig. 1*. The other two can be found after removing the upper cover, see *fig. 2*.

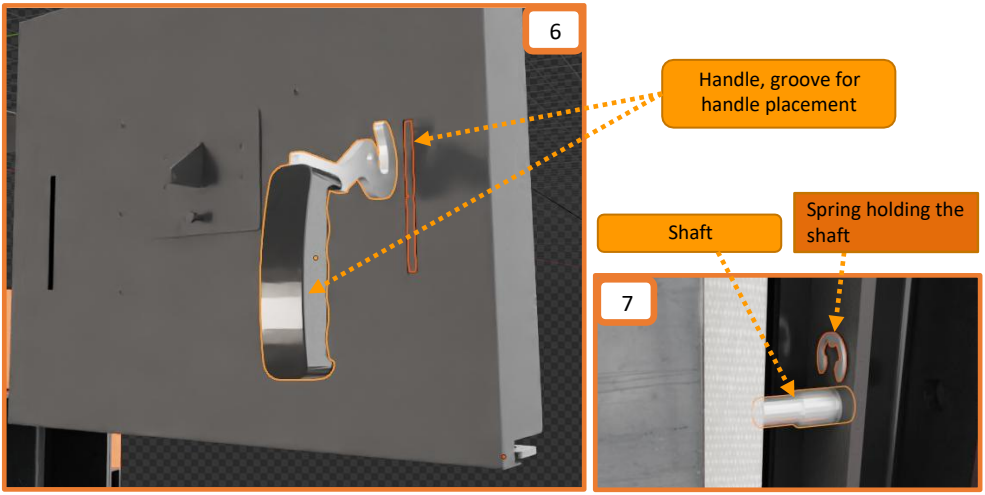



You can then remove the shaft around which the door rotates by moving it upwards. The door can now be removed, see *fig. 3*. There are brackets on both sides of the filling opening. On the left side, there is a bracket into which the hook of the door closing handle slides. On the right side of the filling opening, you will find a bracket in which the door shaft you removed in the previous step was inserted. Swap these two brackets. The shaft bracket will now be on the left, and the door closing bracket will be on the right. See *fig. 4 and fig. 5*.



The door can then be slid into place and secured with the shaft. The final step is to reposition of the door closing handle and the locking pin to the opposite side of the door. Note that a groove is burned into the door to position the handle on the other side, as shown in *fig. 6*. Remove the handle by taking out the pin around which the handle pivots. Use a small screwdriver or similar device to help remove the spring that holds the pin in place, as shown in *fig. 7*.

Then, reinstall the handle and pin on the opposite side in the same way, as shown in *fig. 6 and fig. 7*.




In the same way, you can change the direction in which the bottom ash door opens.

## 8.8 Checking the position of the cleaning plug.

The cleaning plug sits at the bottom of the heat exchanger to prevent a false draught from the ashpan compartment into the chimney. This cleaning plug is removed only when cleaning the heat exchanger. When the plug is removed, ash from the heat exchanger falls into the ashpan. More information about the cleaning plug can be found in the section on cleaning.

During operation, the cleaning plug must always be in position, horizontal and free of leaks.

The cleaning plug must lie tightly at the bottom of the heat exchanger, with no leaks.

### 8.9 Checking the movement of the bypass damper.

The bypass damper has a rod extending from the upper rear part of the boiler (a lever with a black ball as a handle). Check that there is nothing blocking the movement of the rod. Slide the handle towards the boiler and then out of the boiler.

- The rod inserted into the boiler means the bypass damper is open – a shorter path for the flue gases to the chimney. This is used during ignition and when adding fuel.
- The rod extended out of the boiler means the bypass damper is closed – the flue gases pass through the boiler heat exchanger. This is used during normal operation after the boiler has heated up and the fuel is loaded.

### 8.10 Checking the movement of the sliding and slanted grate.

By moving the grate lever, you slide the sliding grate in the loading chamber closer to the nozzle. Check the sliding movement of the grate before first igniting the boiler.

- Grate lever tilted backwards – the sliding grate is prepared for ignition and operation.
- Grate lever tilted forwards – the sliding grate is open for cleaning.

## 9. Boiler operation

***Before starting up the boiler for the first time, it is necessary to:***

1) Check that the boiler and the entire heating system are filled with water or another heat-transfer medium and properly vented.
2) Check the tightness of the exhaust ducts.
3) Check the position of the cleaning plug to prevent false air from being drawn into the heat exchanger compartment.
4) If you are using a primary damper regulator, it must be connected by a chain to the damper on
the loading door.

***Ignition:***

1) Place paper as close as possible to the nozzle opening on the sliding grate in the boiler, then enough small pieces of wood and kindling on top.
2) Insert the bypass damper rod at the top rear of the boiler into the boiler – this opens the bypass damper and shortens the flue gas path to the chimney.
3) Adjust the primary air damper so that the screw in the damper ensures the damper opens as far as possible. If you do not want to adjust the damper with each ignition, leave the loading door slightly open (a small crack is enough) during ignition to prevent the flame from being extinguished due to lack of air. Once the flame is ignited, you can close the door, provided that the primary damper is open enough to keep the flame from going out.

If you have low chimney draught and smoke escapes from the door while the door is ajar, we recommend that you keep the door closed during ignition. Supply air into the boiler via the open primary damper – screw in the screw in the damper to open the damper.

4) Close the secondary air dampers on both sides of the boiler during ignition. This reduces the demand on the chimney draught and slightly increases the draw from the loading chamber to the heat exchanger.

5) Ignite the wood with additional paper placed in the loading chamber or a similar solid fire starter (Pepo).

6) Once the fine wood and kindling catch fire, you can add one or two larger logs. Continue to supply enough air to the boiler either through the primary damper or via the slightly open loading door.

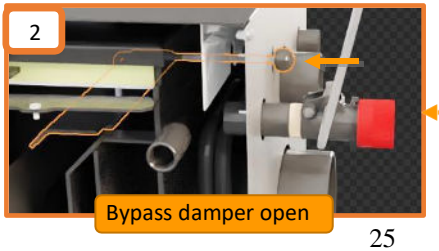
7) Wait a minute, then add the remaining logs up to the edge of the hopper and close the loading door. Wood can be loaded into the hopper either lengthwise or crosswise, as shown in *fig. 7* below.

8) Return the primary damper to its original position. The damper screw should be set so that the damper maintains a minimum opening of 1 cm. The draught regulator then opens and closes the damper as needed.

> Keep in mind that how well the boiler burns depends on many external factors, including chimney draught, wood dryness, wood type, boiler cleanliness, proper boiler performance relative to the heating system, etc. Therefore, a little experimentation is needed to determine the minimum primary damper opening. You want to supply enough air to the boiler to avoid tar build-up and ensure clean combustion, but you also don't want to overheat the boiler.

9) Set the secondary dampers on the sides of the boiler to the marking. This air helps to improve the combustion emission parameters.

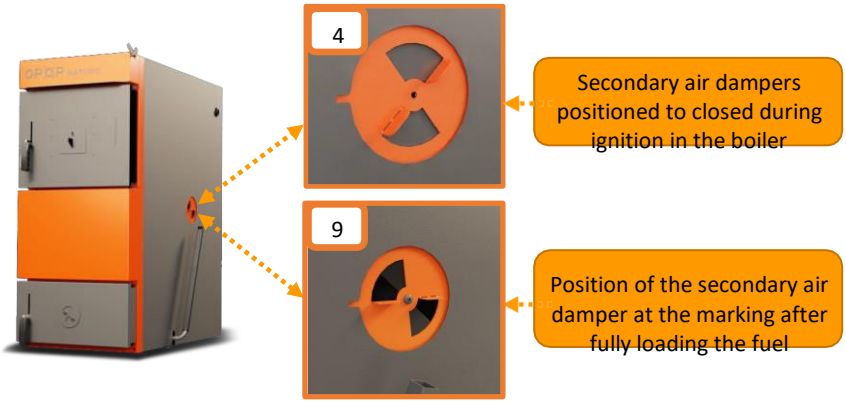
10) Extend the bypass damper rod so that the damper is closed.




This position of the bypass damper during ignition
ensures a shorter flue gas path outside the heat exchanger section of the boiler.

How well the flue gases are drawn into the chimney with the bypass damper open mainly depends on sufficient chimney draught.

Opening the primary damper during ignition using the screw on the damper



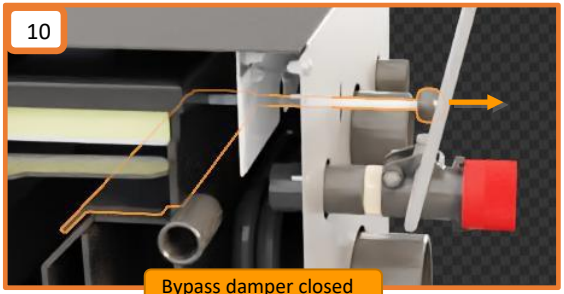

Secondary air dampers positioned to closed during ignition in the boiler

Position of the secondary air damper at the marking after fully loading the fuel

Wood placed lengthwise

Wood placed crosswise

Minimum opening of the primary damper – the damper should never be fully closed




Bypass damper closed

***Re-loading and opening the loading doors:***

It is very important to know that during the main combustion in the boiler, it is not recommended to open the boiler door. In all wood gasification boilers, combustion by-products accumulate in the loading chamber. These by-products disappear when there is only a hot layer remaining in the loading chamber, i.e. glowing embers with no burning pieces of wood. These glowing embers create minimal smoke. This is therefore the ideal time to load a new batch of wood.

The measured burn time at nominal output can be seen in the parameters table in section 4. This value is measured in a state testing facility during certification testing. For boiler users, this should serve only as an estimate, as the burn time is influenced by many parameters.

In practice, it is necessary to track how long it takes for all the wood in the boiler to burn, leaving only glowing embers. After that, new wood can be loaded by following the procedure described below.

Before reloading fuel:
Depending on the heat demand and combustion intensity, fuel may need to be added to the boiler while it is in operation. Add fuel about 10–12 cm thick to the glowing embers. Before loading more fuel, do a manual grate (min. 2 times). Before adding fuel, use cleaning tools to clear the opening at the bottom of the combustion chamber nozzle so that the fuel burns smoothly and the nozzle is not clogged.

Optimal embers for refuelling.

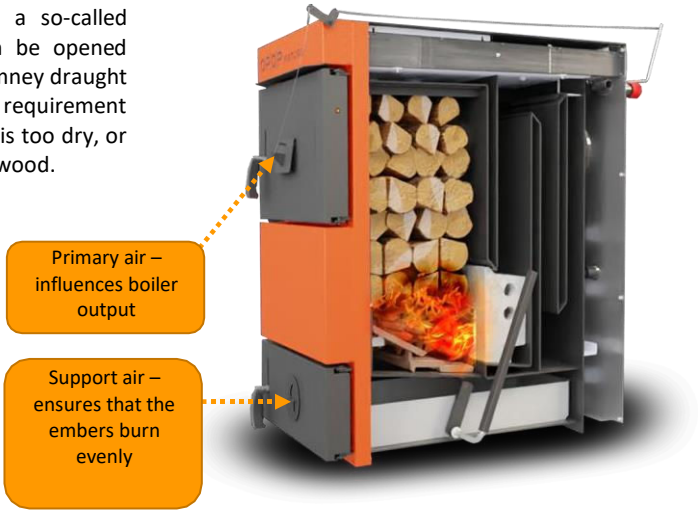
In the boiler, there are only glowing embers, with no pieces of burning wood – minimal smoke when reloading.

The minimum burn time at nominal output is measured at 3 hours. Even then, there will probably still be burning wood in the boiler.

It is important to track how long the glowing embers remain in the boiler in your conditions and to add fuel only onto

***Use of the supportive damper:***

On the ash door, there is a so-called support damper, which can be opened during combustion if the chimney draught does not meet the minimum requirement or if the wood you are using is too dry, or if you are using only soft dry wood.




In these circumstances, the fuel in the loading chamber burns quickly, and the height of the glowing embers may grow to such an extent that they clog the nozzle. This leads to reduced boiler output and smoke may escape into the room through the open primary damper in the loading door. The reason for this is usually low chimney draught or overly dry wood.

Opening the support damper after ignition (i.e. when the boiler is fully loaded) will help the embers to burn off more quickly.

If you experience smoke escaping into the room or a reduction in boiler output during operation, open the lower support damper 1 to 2 cm to accelerate the burning of the embers. The degree to which you open it will depend on the situation and requires experimentation. The more you open the support damper, the faster the embers will burn off, and the clearer the nozzle will become. This helps when the chimney draught is low.

To quickly increase output, the support damper on the ash door can be opened fully for about 15 minutes after loading the boiler.

However, if you open the lower damper too much, the support damper may cause smoke to escape through the upper primary damper. Therefore, only open the support flap 1 to 2 cm.

If there is no problem with chimney draught and combustion is proceeding normally, without clogging the nozzle with excessively high embers, you can close the support damper. This results in slower combustion and higher embers, which will keep the fire in the boiler longer – meaning less frequent reloading is required.

## 10. Boiler and heating system maintenance

To achieve the highest operating efficiency and thus the best boiler performance, the internal parts of the boiler body must be properly cleaned regularly, approximately once a week (depending on the intensity of heating and the quality of the fuel used). This is done by scraping the build-up from the walls with a scraper and steel brush, which are included among the boiler's accessories. **CAUTION! Always clean the boiler when it is cold.** An uncleaned boiler is less efficient and has lower output.

**When cleaning, follow these steps:**

a) Remove the cleaning door. Then, using cleaning tools, remove the cleaning plug. The cleaning plug seals the space between the rear vent of the partition and the ashpan. This plug is pulled out through the central shaft.

Removal of cleaning door

b) Using a scraper and steel brush, scrape off the ash and soot from the boiler walls. After removing the dirt, replace the cleaning plug and, shining a torch in the ashpan compartment, make sure the cleaning plug is properly installed – in a horizontal position, with the loop facing up, without any leaks.

c) Close the cleaning door and adequately tighten the two wing nuts of the cleaning door.

d) Also clean the hopper in the front part of the boiler through the open loading door, scraping the surfaces of the shielding plates. The shielding plates can be removed from the boiler occasionally (e.g. twice a year) so that the surfaces of the boiler behind the shielding plates can be cleaned.

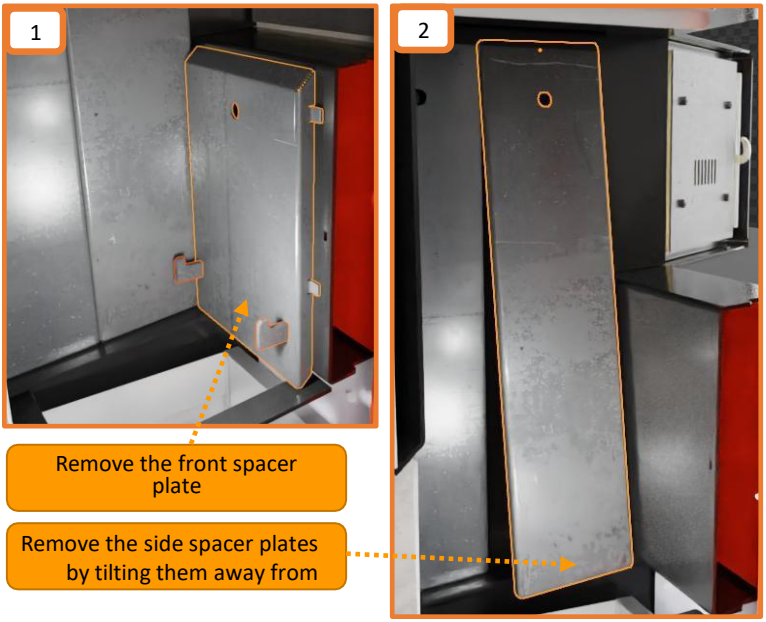
Hooking of the cleaning plug using cleaning tools

e) Using short movements with the grate lever, remove any remaining ash from the grates. If the grate holes are clogged, use cleaning tools to clear them.

f) Open the ash door and remove the ashpans (one or two, depending on the size of the boiler). Empty the contents of the ashpan, clean the bottom of the boiler to remove any remaining ash and debris that may have fallen outside the ashpans during cleaning or grating, and close the ash door.

During this task, ash should be placed in fireproof containers with lids. Not least, be sure to wear protective gear and observe personal safety.

The shielding spacer plates in the loading chamber can be removed. They are hinged. You can remove them by moving them upwards and away from the boiler body. The sequence for removing the plates is shown below: first, *fig. 1* (front spacer plate), then *fig. 2* (side spacer plate).




The ashpan in the boiler is pulled out through the open ash door. Note that, depending on the size of the boiler, there will be either one or two ashpans in the boiler's ashpan compartment.

The flue pipe must be cleaned through the inspection opening or openings. These should be regularly cleaned, just like the chimney itself. The entire flue path, from the flame to the chimney outlet, must be clear and clean.

## 11. Determination of the storage tank size

Calculation of the minimum tank volume:

Vsp = 15 Tb x Qn (1-0.3 x (QH/Qmin))

Where: Vsp ..... volume of the storage tank in litres
Tb ..... burn time in hours
Qn ..... nominal heat output in kW

QH ..... thermal load of the buildings in kW

Qmin .... minimum heat output in kW

The dimensions of the storage tank must be determined based on the output, the type of fuel used, and whichever has the largest storage tank. This storage tank is not required if the calculated volume is less than 300 litres.

OPOP Naturo series boilers meet the conditions of emission class 5 and EcoDesign according to ČSN EN 303-5. They meet this class when operating at nominal output. If the nominal output is higher than the instantaneous heat demand of the building, excess heat must be directed to the storage tank. When the tank is fully charged, the boiler must be shut down, and heating should be provided from the storage tank. After the heat in the tank has been depleted, the boiler can be restarted. The storage tank ensures thermal comfort while maintaining the quality operation of the boiler. Hydraulic diagrams for connecting boilers to a storage tank are available in the OPOP design documentation.

## 12. Waste disposal

Packaging material (paper and wood) can be burned in stoves. PP tape, unburned residues, and ash should be disposed of as household waste.

After the stove has reached the end of its service life, dispose of the casing and grates as metal waste, and the insulating material should be taken to a scrap yard.

Wooden slatting is designed for single use and cannot be reused as a product. Its disposal is subject to Act No 185/2001 on waste and amending certain other acts, as amended. Used packaging materials comply with the conditions for placing packaging on the market, as laid down in Act No 477/2001 on packaging and amending other acts, as amended.

## 13. Troubleshooting

The boiler does not provide sufficient output:

- have the chimney inspected by a professional company
- use prescribed fuel that does not exceed the prescribed moisture content
- check the tightness of the cleaning door
- check that the cleaning opening is sealed with the cleaning plug
- check the position of the bypass damper
- check the flue gas path for leaks
- clean the boiler and flue gas ducts
- loading fuel into the boiler vertically reduces boiler output

Water is boiling in the boiler:

- high hydraulic resistance in the heating system, especially if it is a gravity-fed system
- excessive chimney draught – reduce the draught
- clean the heating system by flushing, or install a circulation pump
- The boiler is too large for the heating system

The boiler emits smoke into the room during loading or operation:

- Uncleaned boiler or flue gas paths
- Low chimney draught
- Blocked nozzle when burning non-prescribed fuel
- Loading fuel before there are only embers in the boiler

Tar build-up, especially in the boiler exchanger, ashpan, or flue gas path behind the boiler:

- Uncleaned boiler or flue gas paths
- Low chimney draught
- Boiler throttling – not enough primary and secondary air entering the boiler
- Wet fuel
- No protection against low-temperature corrosion

The boiler does not burn, or it goes out:

- Uncleaned boiler or flue gas paths
- Low chimney draught
- Blocked nozzle when burning non-prescribed fuel
- Wet fuel
- Non-prescribed fuel
- Fuel fed vertically into the boiler

## 14. Regulations and standards

ČSN 06 0310 – Central heating. Design and installation.
ČSN 06 0830 – Safety devices for central heating and domestic hot water heating.
ČSN 06 1008 – Fire safety of local appliances and heat sources (boilers up to 50 kW).
ČSN 06 1610 - Parts of flue gas ducts of domestic appliances.
ČSN 07 0245 – Hot water and low-pressure steam boilers. Hot water boilers up to 50 kW.

Technical requirements:
ČSN 07 7401 – Water and steam for thermal energy equipment with a working pressure up to 8 MPa.
ČSN EN 13 501-1+A1 – Classification of building products and building construction.
Part 1: Classification according to the results of fire reaction tests.
ČSN 73 0831 – Fire safety of buildings. Assembly spaces.
ČSN 73 4201 – Chimneys and flue pipes. Design, execution, and connection of fuel appliances.
ČSN 73 4210 – Construction of chimneys and flue pipes and connection of fuel appliances.
ČSN EN 303-5 – Central heating boilers for solid fuels.
163/2002 – Government Regulation
26/2003 – Government Regulation
185/2001 – Waste Act
477/2001 – Packaging Act
34/1996 – Consumer Protection Act

## 15. Energy efficiency

| I. | II. | III. | IV. | V. | VI. |
|---|---|---|---|---|---|
| supplier's name or trademark | supplier's model identification | energy efficiency class | nominal heat output in kW | energy efficiency index | seasonal heating energy efficiency (%) |
| **OPOP s.r.o.** | **OPOP NATURO 12** | | | | |
| **OPOP s.r.o.** | **OPOP NATURO 16** | **A+** | **16** | **114** | **78** |
| **OPOP s.r.o.** | **OPOP NATURO 25** | | | | |
| **OPOP s.r.o.** | **OPOP NATURO 30** | | | | |

## 16. Identification labels:

| Model identification: **OPOP NATURO 16** | | | | | |
|---|---|---|---|---|---|
| Condensing boiler: | no | Cogeneration boiler for solid fuels: | no | Combination boiler: | no |
| Fuel loading mode: manual | Manual: the boiler should be operated with a hot water storage tank with a minimum volume of x(*) litres/ Automatic: it is recommended that the boiler be operated with a hot water storage tank with a minimum volume of x(**) litres | | | | |

| **Fuel** | **Preferred fuel (only one):** | **Other suitable fuel(s):** |
|---|---|---|
| Wood logs, moisture content ≤ 25% | yes | no |
| Wood chips, moisture content 15–35% | no | no |
| Wood chips, moisture content > 35% | no | no |
| Pressed wood in the form of pellets or briquettes | no | no |
| Wood shavings, moisture content ≤ 50% | no | no |
| Other wood biomass | no | no |
| Non-wood biomass | no | no |
| Hard coal | no | no |
| Lignite (including briquettes) | no | no |
| Coke | no | no |
| Anthracite | no | no |
| Briquettes made from a mixture of fossil fuels | no | no |
| Other fossil fuel | no | no |
| Briquettes made from a mixture of biomass (30–70%) and fossil fuels | no | no |
| Other mixture of biomass and fossil fuels | no | no |
| **Operational characteristics when using preferred fuel:** | | |
| Seasonal indoor heating energy efficiency ηs [%]: | **78** | |
| Energy efficiency index (EEI): | **114** | |
| Energy efficiency class: | **A+** | |

| **Name** | **Designation** | **Value** | **Unit** | **Name** | **Designation** | **Value** | **Unit** |
|---|---|---|---|---|---|---|---|
| **Useful heat output** | | | | **Useful efficiency** | | | |
| At nominal heat output | Pn(***) | **16** | kW | At nominal heat output | ηn | **79.3** | % |
| At [30%] nominal heat output, if applicable | Pp | not applicable | kW | At [30%] nominal heat output, if applicable | ηp | not applicable | % |
| **Cogeneration boilers for solid fuels: electric efficiency** | | | | **Auxiliary electricity consumption** | | | |
| At nominal heat output | ηel,n | | % | At nominal heat output | elmax | not applicable | kW |
| | | | | At [30%] nominal heat output, if applicable | elmin | not applicable | kW |
| | | | | Built-in secondary emissions-reduction device, if applicable | | not applicable | kW |
| | | | | In standby mode | PSB | not applicable | kW |

| Contact details | **OPOP s.r.o.**, Zašovská 750, Valašské Meziříčí, 757 01 |
|---|---|

(*) Tank volume = 45 × Pr × (1 – 2.7/Pr) or 300 litres, whichever is higher, where Pr is expressed in kW
(**) Tank volume = 20 × Pr, where Pr is expressed in kW
(***) For the preferred fuel, Pn equals Pr

## 17. Warranty policy

The points listed below must be met not only to comply with the warranty policy, but also to ensure the correct installation of the boiler according to valid standards, safety requirements, and to ensure the smooth operation of the boiler.

1. The heating system must be filled with water that meets the requirements of ČSN 07 7401, and its hardness must not exceed the specified parameters. The use of antifreeze mixtures is not recommended by the manufacturer.
2. The boiler must be connected to the system in accordance with applicable regulations and standards.
3. The flue gas path must be checked by a chimney company before the boiler is installed. Request an inspection report, including the basic parameters of the flue gas path, such as the chimney diameter, length, and draught.
4. The flue pipe should not be longer than 1 m and must be fitted with a cleaning opening. The flue pipe may only be longer if the chimney draught has been measured and recorded no further than 30 cm from the boiler and meets the minimum operational draught requirements.
5. The OPOP boiler must be installed in a separate boiler room specially designed for heating purposes. The boiler room must provide enough space for the installation and maintenance of the boiler. Sufficient fresh air circulation for combustion must be ensured.
6. The boiler must never be installed in open spaces, on balconies, in habitable areas, such as kitchens, living rooms, bathrooms, and bedrooms, or in spaces where there are explosive and flammable materials.
7. It is recommended that the boiler be installed on a concrete base made of fire-resistant material.
8. The following minimum clearance for handling should be ensured around the boiler: 60 cm from the back and sides, 100 cm from the front.
9. During installation and operation, a safe distance of 200 mm from combustible materials must be maintained.
10. Fuel should not be stored behind the boiler or stacked next to the boiler at a distance less than 800 mm.
11. Fuel must not be stored between two boilers in the boiler room.
12. Maintain a distance of at least 1000 mm between the boiler and the fuel, or store fuel in a different room from where the boiler is installed.
13. Only warranty-approved fuel specified in the boiler's user manual should be used.
14. The manufacturer is not responsible for the quality of the fuel in terms of combustion quality, ash quantity, or frequency of boiler cleaning, as these are influenced by external factors such as fuel quality, dust and moisture in the fuel, chimney draught, or incorrect combustion process settings.
15. The use of flammable liquids (e.g. petrol, alcohol) for igniting the boiler is prohibited.
16. It is prohibited to overheat the boiler in any way during operation.
17. If there is a danger of flammable vapours or gases entering the boiler room, or during activities that pose a temporary fire or explosion risk (e.g. the gluing of floor

coverings, use of flammable paints), before starting the work the boiler must be shut down.

18. When the heating season ends, the boiler and flue pipe must be thoroughly cleaned. The boiler room must be kept clean and dry.
19. It is prohibited to interfere with the structure or electrical wiring of the boiler.
20. The manufacturer is not responsible for damage caused by improper settings or operation of the product.
21. The standard warranty period does not apply to parts subject to wear and tear, including asbestos sealing cords, granulated plates, and refractory nozzles. These parts, however, serve their function for a long time if the boiler and its components are operated in accordance with the user manual.
22. The manufacturer is not responsible for rust on the boiler and its components, as this is always caused by external factors such as room humidity, fuel quality, or improper installation without protection against low-temperature corrosion.
23. The boiler must be protected against low return water temperature using a valve that prevents cold water from entering the boiler. The minimum acceptable return water temperature is set by the manufacturer at 65 °C.
24. The manufacturer is not responsible for the condensation of cold air in the flue path, as this must be prevented by correct installation and proper combustion process settings in the boiler.
25. The manufacturer is not responsible for smoke escaping from the boiler into the room if this is caused by low chimney draught, improper boiler installation, incorrect combustion process settings, or improper use of the boiler.
26. The manufacturer is not responsible for damage to components caused by handling, transport, incorrect settings, improper use, or other external causes not directly related to the function of the individual boiler components.
27. The installation of the boiler, additional boiler devices, and their correct set-up and start-up are the responsibility of the installation company that makes the sale to the end customer.

## 18. Warranty certificate

**For the OPOP NATURO Hot Water Boiler**

**Manufacturer:** OPOP s.r.o., Valašské Meziříčí
**Tel.:** 571 675 589, **fax:** 571 611 225

Date of dispatch from the factory:_____

**Terms of warranty:** The user is required to entrust commissioning, regular maintenance, and fault rectification to authorised service professionals only. This warranty certificate includes certification of quality and completeness. The manufacturer confirms that the product has been inspected and complies with technical standards and ČSN EN 303-5+A1:2023. We guarantee the quality, functionality, and construction of the boiler for 24 months from the date of sale to the end consumer, but no longer than 30 months from the dispatch date from the production facility. We will repair any defects resulting from faulty material, faulty design, or faulty construction at our expense, on condition that the boiler:

- is in normal technical condition, and is operated, as per the user manual
- is connected to a chimney flue in accordance with ČSN 73 4201:2010
- has not been subjected to mechanical damage (no unauthorised interventions, except those permitted in the user manual)
- the chimney draught according to ČSN 303-5+A1:2023 must meet the value stated in this standard (or the values specified in this manual, based on the type of boiler)
- the consumer must present this warranty certificate, properly filled in, when making a claim
- the manufacturer's instructions for the use of pressure expansion vessels are followed
- if the purchaser does not complete the sale of the product within the statutory warranty period, all responsibility for any defect lies with the purchaser
- costs associated with claim processing will be charged to the purchaser
- the insulation under the loading door and the refractory nozzle is considered to be a consumable, and cannot be claimed if damaged

When reporting a defect, always present this warranty certificate, provide the exact address, and describe the circumstances under which the defect occurred. The method and location of the repair will be determined by our company.

Date and signature of boiler sale: ……

Date and signature of boiler installation: ……

Date and signature of commissioning: ……

*Steel weldment* – we guarantee its permanent tightness for two years from the date of dispatch from the production facility. We provide an extended warranty of 60 months if a pressure expansion vessel is not used in the heating system, the required temperature range of the heating water is maintained, and the leak is due to faulty material or welding work. For the warranty to be accepted for a leaking steel weldment, it must be conclusively proven that the water in the boiler was caused by a weldment leak, not by the condensation of cooled air. The warranty will not be accepted for defects caused by improper operation or if the boiler is connected to a heating system that does not meet the basic operational conditions for the boiler. If the warranty is recognised during the extended warranty period, we will provide the user with a replacement weldment via parcel delivery or personal collection. If the faulty weldment is not returned to the manufacturer within 30 days of the date of dispatch or handover of the replacement weldment, the user will be charged for the full cost of the weldment, including transport costs thereof.
During the extended warranty period (i.e. 60 months), a replacement weldment is guaranteed for 24 months from the date of collection. The boiler weldment is coated with black, water-based paint, which may peel. Peeling paint does not affect the boiler's functioning. After the first ignition, the paint will burn off.

**Claim procedure:**

1) Submit, in person, by post, or by email, the confirmed warranty certificate and proof of payment of the product to the installation company that installed the boiler.
2) Provide the exact address and, if applicable, a phone number, and describe the circumstances under which the incident occurred.
3) Standard warranty resolution methods:
   a) return of the defective part for replacement
   b) if the process outlined above under (a) is not possible, the manufacturer reserves the right to determine the method, timing, and repair process by its service worker or authorised partner
   c) the user must allow the manufacturer to carry out repairs as described in (b)
   d) if the user does not allow access for the repair, the manufacturer considers the claim to be closed
   e) if the defect is irreparable, the user has the right to a replacement part
   f) if the claim is deemed unjustified (i.e. no defect or leak is confirmed by the service technician), the user will be billed for any inspection or travel costs incurred by the technician
   g) The consumer must submit claims to their supplier – the installation company or shop where the product was purchased.
   h) If a heavily soiled claimed boiler is sent to the manufacturing facility, the company will clean it, and the cleaning costs will be passed on to the user

*Dear Customer,*
*We are delighted that you have decided to purchase our product. This decision entitles you to a 20% discount on spare parts. To take advantage of this offer, please complete the registration form and send it to the following address:*

***OPOP s.r.o.***
***Sales Department***

***Zašovská 750***
***757 01 Valašské Meziříčí***

*Upon receiving the completed form, we will promptly send you a Customer Card, which will entitle you to discounts on spare parts from the manufacturer. When ordering spare parts, please ensure that you always provide your Customer Card number.*

*Thank you for your confidence in us.*

Cut here and send to our address
……

## 19. REGISTRATION FORM

**You may also register at our website at www.opop.cz**

First name…….. Product serial number…….

Surname…….. Dealer……..

Street and building number …….. Product type

…….. City……

Postcode……..

Phone number (optional)……

Email ……

Signature……

## CONTACT INFORMATION

Below you will find a complete directory of contacts to help you obtain comprehensive information, from product orders and spare parts to technical support for installed OPOP products.

## Sales Department

Phone:
(+420) 571 675 240
(+420) 571 675 108
(+420) 571 675 589

Email:
sales@opop.cz

## Spare Parts

Phone:
(+420) 571 675 578

Email:
nahradnidily@opop.cz

## Servicing

Phone:
(+420) 571 675 252

Email:
servis@opop.cz

**OPOP s.r.o.**
Zašovská 750
757 01 Valašské Meziříčí
Bank:
UNI CREDIT BANK, Account No 1008228004/2700
Company Registration No 14091704, VAT No CZ14091704
Phone: Sales Department: 571 675 589, Secretariat: 571 611 250, Production: 571 675 405
Supplies: 571 675 114, Financial Department: 571 675 472
Fax: 571 611 225