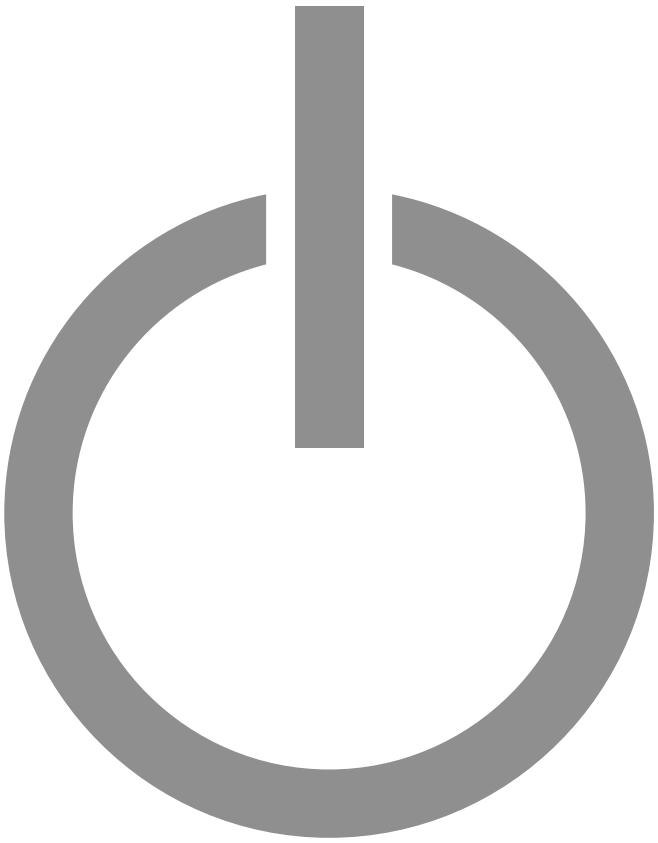
Operation Manual

Comfortable
heating. With wood!

HDG Euro 30/40/45/50



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Content

1 Notes on this manual

1.1 Introduction

SAFE AND SIMPLE OPERATION

This Operating manual contains important instructions on the boiler

HDG Euro 30/40/45/50

and how to operate it properly and safely. Following these instructions helps to avoid dangers, prevent repair costs and downtimes, maintain reliability and extend the life expectancy of the heating system.

READING THE OPERATING MANUAL

This Operating manual must be read and observed by everyone who operates or works on the HDG Euro 30/40/45/50.

TECHNICAL CHANGES

We continuously develop and improve our boilers. The information in this edition was correct at the time of going to press.

We reserve the right to make changes which may then differ from the technical details and illustrations in this Operating manual.

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GUARANTEE

The terms and conditions of the guarantee of your (central-heating) boiler can be found in the enclosed information sheet.

SYMBOLS USED

In this Operating manual, the following designations and symbols are used for particularly important information:

1. Instructions to the operator
2. Work through the steps in the sequence specified.

✓ Result of the action described

✎ Cross reference for more explanation

- List
  - List

1.2 Structure of the operating manual

The operating manual is structured as follows:

Chapter	This explains ...
1 Notes on this manual	... how to use this operating manual.
2 Safety notes	... everything on the subject of safety that you should consider when using the heating system.
3 Mode of operation	... the structure and all of the features of the heating system.
4 Planning and installation	... how to properly plan and install the heating system.
5 Commissioning the system	... how the heating system is put into initial service.
6 Using the heating system	... how to properly operate the heating system.
7 Cleaning and servicing the heating system	... how to clean the heating system and who is responsible for its maintenance.
8 Notes on dismantling and disposal	... what has to be considered when dismantling and disposing of the heating system.

Table 1/1 - Structure of the operating manual

1.3 Glossary

Term	Explanation
Actuator	This is a component that carries out a certain function in the heating system, for example the thermal safety device (TAS).
Central module	Pre-fabricated connection strip for electrical components
Flue gas fan	Creates a vacuum inside the boiler and provides the boiler with air for combustion.
HDG Control	Boiler and heating system controller.
Lambda sensor	Electrical component which monitors residual oxygen levels in the flue gas.
Reload signal	Electrical signal (in the form of an LED on the control unit) which serves as a prompt to reload the fuel chamber.
Safety temperature limiter	An automatic device that interrupts and locks the supply of energy and combustion air when the maximum permissible boiler temperature is reached. The energy supply or combustion air supply can only be re-enabled after the boiler temperature has fallen below a preset limit and has been reset by hand or by means of a tool.
Sensor	Monitors certain parameters (e.g. temperature) and sends them to the control system for analysis.
Thermal safety device	Safety device that allows cold water to flow through the safety heat exchanger if the boiler becomes too hot.

Table 1/2 - Glossary

2 Safety notes

2.1 Intended use

Basic system design principles

Basic principles

The heating system was built using state-of-the-art technology and conforms to recognised safety regulations. Nevertheless, there is still a risk of injury or death to users or bystanders, and of adverse effects upon the heating system or upon other material goods. **Have your specialist heating company provide you with detailed instructions on the operation of the heating system**.

Using the heating system

Only use the heating system when it is in perfect condition. Use it properly, as intended, be aware of safety and hazards, and observe the Operating manual. Have any faults which could impair safety fixed immediately.

This device can be used by children over 8 years old and people with reduced physical, sensory or mental capabilities or a lack of experience and knowledge, provided they are supervised or have been instructed on the safe use of the device and understand the resulting risks. Children may not play with the device. Cleaning and user maintenance must not be carried out by children without supervision.

Basic principles for the content of the operating manual

Scope

The content of this operating manual is intended exclusively for the planning, installation and operation of the HDG Euro 30/40/45/50 boiler. The further implementation of applicable standards and guidelines, for example regarding installation of the heating system (pipework, etc.), is not part of this operating manual. HDG does not assume any liability for this.

Proper and improper operation

Purpose of the heating system

The HDG Euro 30/40/45/50 boiler is designed for the standard use of burning untreated wood, for example in the form of split logs, pressed wood briquettes and chippings, in water heating systems.

Any other application is considered improper use. The manufacturer will accept no liability for any damage resulting from improper use. The operator bears sole responsibility in such cases.

Proper use includes adherence to the installation, operation and maintenance requirements specified by the manufacturer.

Modification of the specified operating values will affect the heating system's control programme and could lead to malfunctions. Only trained maintenance and operating personnel may undertake modifications to the operating values.

For more information on fuel, see chapter "3 Mode of operation", section "3.4 Fuel quality requirements".

2.2 Residual risks

Despite all precautions, the following residual risks remain:

Caution!

Hot surfaces

Contact with the hot surfaces of the boiler (such as the flue gas pipe) can result in burns. Even after the boiler is switched off, the surfaces only cool down slowly.

Wait until the boiler has cooled down before touching non-insulated components.

Danger!

Danger of asphyxiation due to carbon monoxide

If the boiler is in operation, carbon monoxide can be emitted through the open doors or lids.

Always keep the doors and lids closed. Only open them when the boiler has finished burning. Do not leave them open any longer than necessary and never leave them open unattended.

Warning!

Danger of fire

When the heating system is in operation, open doors and lids constitute a fire hazard. Furthermore, combustion residue (ash, charcoal etc.) can reignite after being removed from the boiler.

Always keep the doors and lids closed. Only open them when the boiler has finished burning. Do not leave them open any longer than necessary and never leave them open unattended. Put the annealed combustion residue in the ash pan of a non-flammable and closable container.

Danger!

Danger of explosion

A concentration of carbon monoxide that is too high can result in an explosion.

Observe the flue draught requirement of the chimney.

Caution!

Risk of injury from automatically driven components

Working on the flue gas fan can lead to hand injuries due to the moving parts.

When working on the flue gas fan, disconnect it from the mains.

Danger!

Electric shock

Working on live components (such as the central module) can result in an electric shock.

Work on the live components may only be carried out by a qualified electrician. Make sure the system is disconnected from the mains and prevented from being switched on again.

Warning!

The boiler is under pressure.

2.3 Warnings and safety symbols used

The following warnings and safety symbols are used in this Operating manual :

Danger!

Dangerous electrical current or voltage

Work in areas marked with this symbol may only be performed by a qualified electrician.

Warning!

Hazardous area

Working in areas marked with this symbol can lead to serious injuries or to extensive material damage.

Caution!

Hand injuries can occur

Working in areas marked with this symbol can lead to hand injuries.

Caution!

Hot surfaces

Working in areas marked with this symbol can lead to burns.

Warning!

Danger of fire

Working in areas marked with this symbol can lead to a fire.

Danger!

Danger of asphyxiation due to lack of oxygen

When working in areas marked with this symbol, there is a danger of asphyxiation due to high concentrations of carbon monoxide.

Warning!

Automatic start-up

Working in areas marked with this symbol can lead to injuries due to automatic start-up.

Danger!

Danger of explosion

A concentration of carbon monoxide that is too high can result in an explosion.

Warning!

Danger from suspended loads

Working in areas with this symbol may involve danger from falling objects.

Important!

Frost danger

Only install the heating system in a frost-proof room.

Instructions regarding disposal

Additional information for the operator

2.4 Duty of information

READING THE OPERATING MANUAL

Any person performing tasks on this system must read the Operating manual prior to beginning work, particularly the chapter “2 Safety notes”.

This is especially important for persons who only occasionally work on the heating system, for example when cleaning or servicing it.

The Operating manual must always be kept readily accessible at the place where heating system is installed.

3 Mode of operation

3.1 Overview

FRONT VIEW OF HDG EURO 30/40/45/50

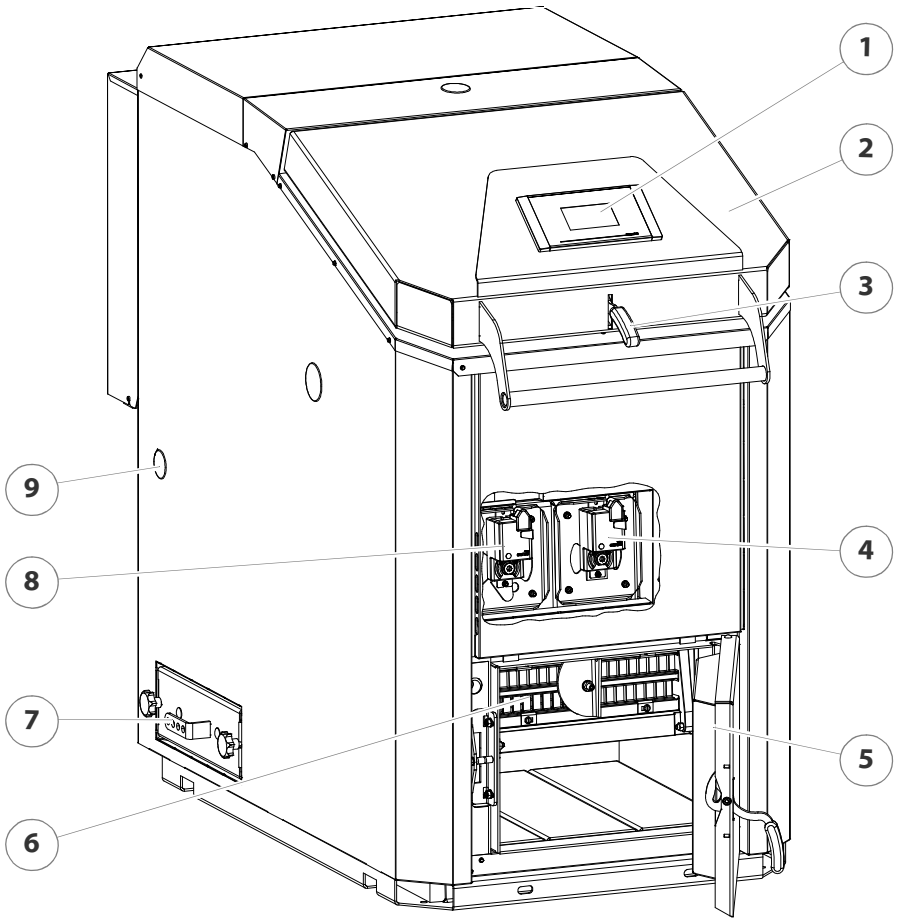


Figure 3/1 - Front view of HDG Euro 30/40/45/50

1 Control unit HDG Control Touch
2 Fuel chamber door
3 Fuel chamber door locking device
4 Actuator primary air
5 Ash door
6 Upright grate flap
7 Fly ash door
8 Actuator secondary air
9 Immersion sleeve cover cap for return temperature sensor

Cross-section of HDG Euro 30/40/45/50

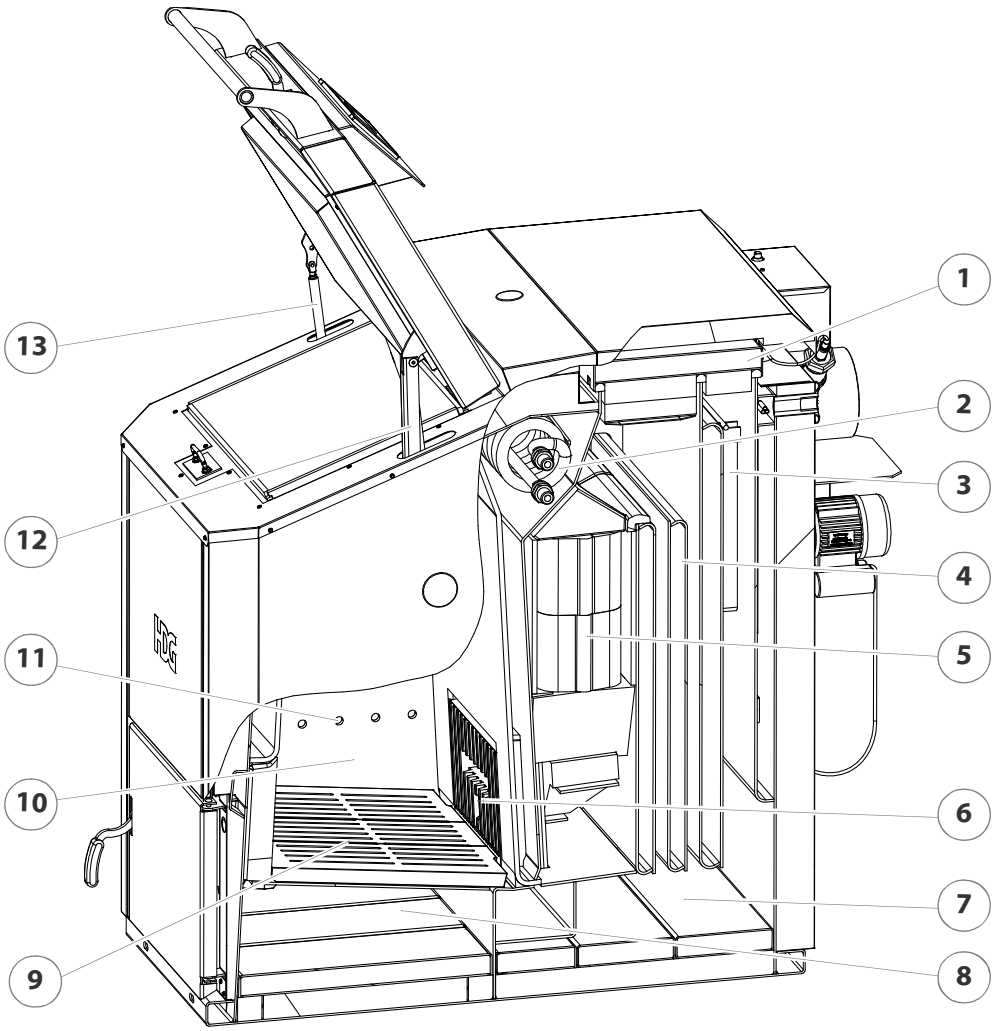


Figure 3/2 - Cross-section of HDG Euro 30/40/45/50

1 Cleaning shaft lid
2 Safety heat exchanger
3 Flue gas deflector plate
4 Heat exchanger surfaces
5 Secondary combustion chamber with chamber stones
6 Burner nozzle
7 Flue ash compartment
8 Ash compartment
9 Flat grate
10 Fuel chamber
11 Primary air inlets
12 Pneumatic with safety stop
13 Pneumatic spring

Rear and side view of HDG Euro 30/40/45/50

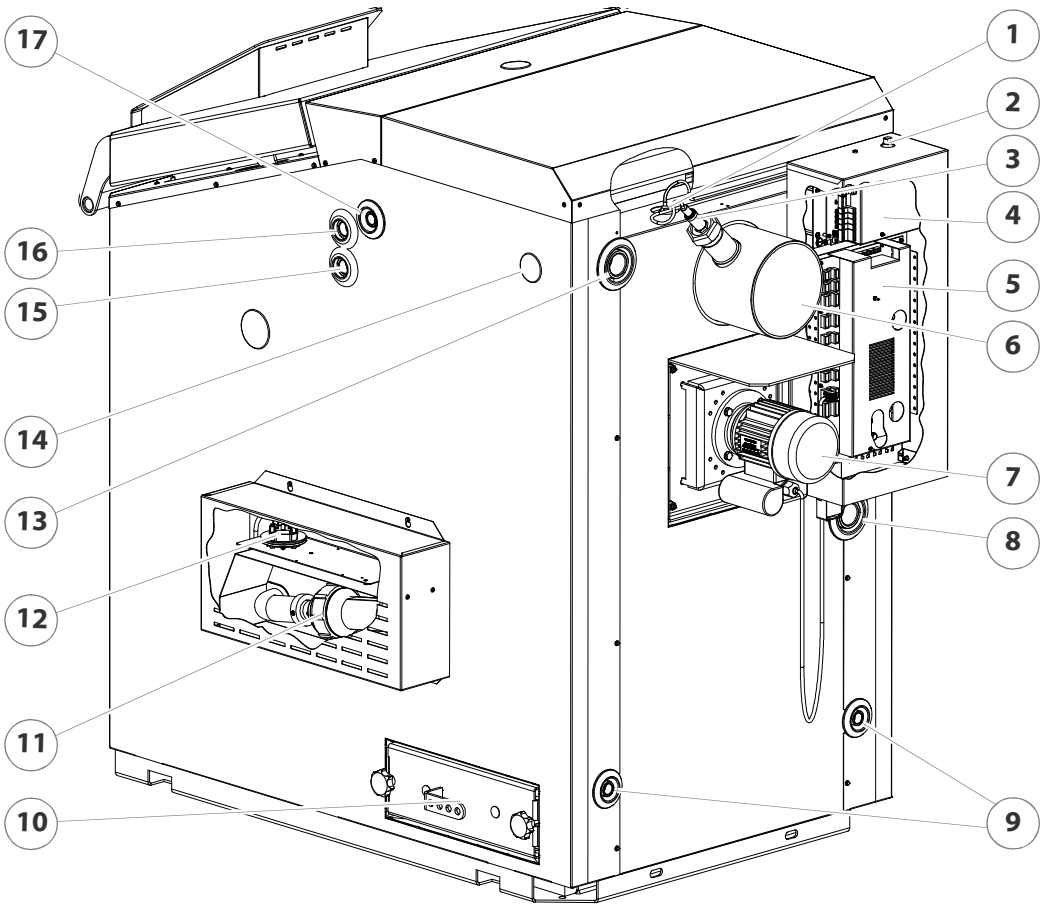


Figure 3/3 - Rear and side view of HDG Euro 30/40/45/50

1 Flue gas temperature sensor
2 STL release button
3 Lambda sensor
4 EM4 expansion module (optional)
5 Central module
6 Flue pipe connection 180 mm
7 Flue gas fan
8 Return connection (DN 32 inside thread)
9 Filling/draining connection (DN 15 IG)
10 Fly ash door
11 Ignition fan (only in connection with HDG automatic ignition)
12 Differential pressure switch (only in connection with HDG automatic ignition)
13 Supply connection (DN 32 inside thread)
14 Immersion sleeve cover cap for flow/return and STL sensors
15 Safety heat exchanger outlet (DN 20, inside thread)
16 Safety heat exchanger inlet (DN 20, inside thread)
17 Connection of immersion sleeve for thermal safety device (DN 15 inside thread)

3.2 Functional description

Boiler HDG Euro 30/40/45/50

General information

The HDG Euro 30/40/45/50 is a special boiler for the firing of wood up to 50 cm in length. The HDG Control Touch system regulates the combustion and output as well as the weather-compensated heating. The HDG Euro 30/40/45/50 boiler and the HDG Control Touch system are harmonised with one another and form a functional unit. This enables wood to be converted into heat energy in an environmentally sound and convenient manner.

Combustion process

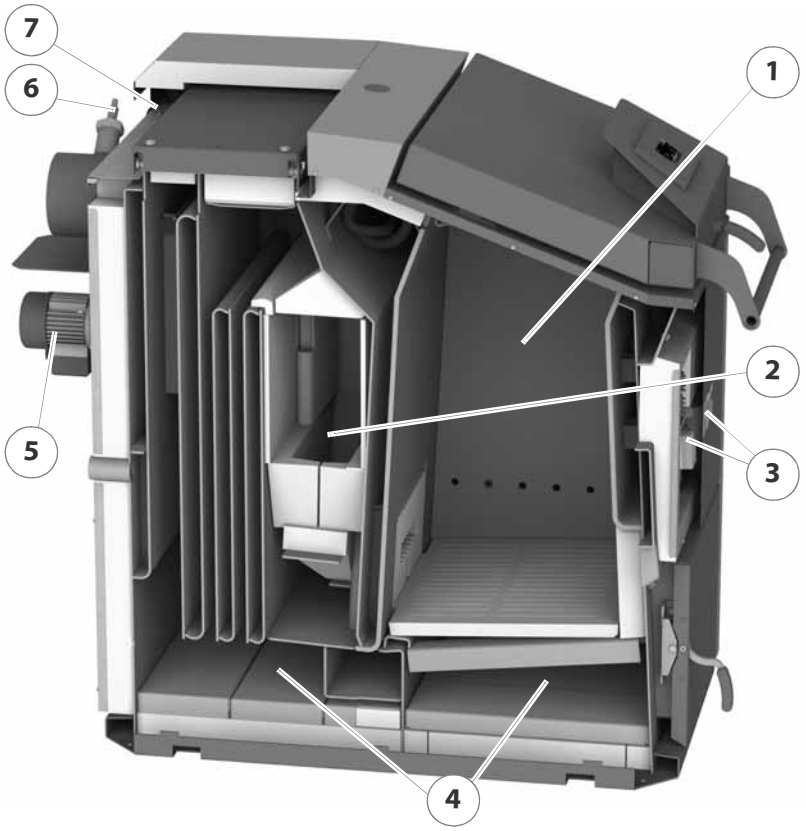


Figure 3/4 - Boiler HDG Euro 30/40/45/50

Inside the HDG Euro 30/40/45/50 boiler, fuel which has been manually placed in the fuel chamber (1) and ignited is degassed through the addition of primary air.

The resulting wood gas is mixed with secondary air in the combustion chamber (2) where it is burnt off.

Ashes are collected in the large ash compartments (4) for combustion ash and fly ash.

The air necessary for combustion is supplied as required via the flue gas fan (5) and two actuators with metering mechanisms (3).

The lambda sensor (6), the boiler temperature sensor and the flue gas temperature sensor (7) are used to do the following:

- To continuously monitor the firing
- To adjust the boiler output
- To minimise emissions
- To optimise boiler efficiency

BOILER AND WEATHER-COMPENSATED HEATING CONTROL HDG CONTROL

BOILER CONTROL UNIT

The HDG Control boiler control unit is the electronic hub of the boiler. It consists of the ready-to-use central module and control unit HDG Control Touch on the fuel chamber door of the boiler. Using the control unit, you can regulate the boiler and call up information on the current process.

HEATING CIRCUIT CONTROL

The HDG Control controls the entire energy management of the heating system including the following, depending on the version:

- Accumulator management
- Weather-compensated heating circuits
- Domestic hot water heating
- Peak load boiler control
- Local heating transfer (mains pump)
- Solar system for hot water and support of the heating system

✎ For a description of the HDG Control boiler and weather-compensated heating control, refer to the “HDG Control” operating manual.

3.3 Technical data

Type of boiler	HDG Euro 30	HDG Euro 40	HDG Euro 45	HDG Euro 50
Performance data (measured according to DIN EN 303-5)				
Nominal thermal power	30 kW	40 kW	45 kW	48 kW
Minimum thermal power	-	30 kW		
Boiler efficiency at nominal thermal power	92.6 %	92.3 %	92.1 %	92.0 %
Electrical power consumption at nominal thermal power	94 W	125 W	145 W	157 W
Electrical connection: • Voltage • Frequency • Back-up fuse	AC 1x230 V 50 Hz 10 A			
General boiler data				
Boiler class	5			
Maximum permissible operating pressure	3 bar			
Maximum supply temperature	95 °C*			
Minimum return temperature	60 °C			
Water capacity	178 l			
Fuel chamber capacity	220 l			
Weight (net)	979 kg / 1029 kg with scale liner			
Planning data for flue calculation (DIN EN 13384-1)				
Flue gas temperature (Tw) at • Nominal thermal power • Minimum thermal power	 140 °C 140 °C	 160 °C 140 °C	 170 °C 140 °C	 180 °C 140 °C
Flue gas mass flow at • Nominal thermal power • Minimum thermal power	 0.0160 kg/s 0.0160 kg/s	 0.0220 kg/s 0.0160 kg/s	 0.0240 kg/s 0.0160 kg/s	 0.0260 kg/s 0.0160 kg/s
CO_2content at nominal thermal power	16.4 %	16.7 %	16.8 %	16.9 %
CO_2content at lowest thermal power	14 %			
Flue draught requirement (Pw)	13 Pa	14 Pa	15 Pa	
Diameter flue pipe connection	180 mm			
Height at middle of the flue gas pipe connection	1106 mm			
Water-side connections				
Supply and return connections (bushing)	DN 32, inside thread			
Safety heat exchanger connections (bushing)	DN 20, inside thread			
Connection for filling/draining (bushing)	DN 15, inside thread			
Recommended pipe dimensions (minimum)	DN 32			

Table 3/1 - HDG Euro 30/40/45/50 technical data

Type of boiler	HDG Euro 30	HDG Euro 40	HDG Euro 45	HDG Euro 50
Water-side resistance at nominal thermal power • 10 K • 20 K	2400 Pa 640 Pa			
Other information				
Burning duration per filling with fuel in accordance with fuel recommendations	Beech: up to 7 h Spruce: up to 6 h	Beech: up to 6 h Spruce: up to 5 h	Beech: up to 5 h Spruce: up to 4 h	
Sound pressure level	< 70 dB(A)			
Min. air inlet cross section	150 cm^2			

Table 3/1 - HDG Euro 30/40/45/50 technical data

*Maximum operating temperatures of up to 110 °C can also briefly occur.

3.4 Fuel quality requirements

The HDG Euro 30/40/45/50 boiler is designed for the standard use of burning untreated wood in the form of logs, wood chips, shavings and pressed wood briquettes.

LOG WOOD

With regard to the quality standards for solid fuel the DIN EN ISO 17225 “Biogenic solid fuel - fuel specifications and classes - classification of wood chips” applies.

- Part 5 “Classification of log wood”
- Part 4 “Classification of wood chips”
- Part 3 “Classification of wood briquettes”

In accordance with this standard, the properties of fuels that can be used with the HDG Euro 30/40/45/50 are specified below in more detail.

Essential criteria are the length, diameter and water content of the fuel.

LENGTH AND DIAMETER

For the log wood boiler HDG Euro 30/40/45/50, firewood with a length of up to 50 cm (L50) can be used. The maximum diameter of the firewood is specified as D15 (diameter of maximum 15 cm).

The firewood must be split at least once so as to provide an optimal surface for gasifying the wood. The major proportion of the firewood should measure between 8 and 12 cm in diameter.

WATER CONTENT

When selecting fuel, note that the calorific value of the wood is primarily dependent on the water content. The more water contained in the wood, the smaller the calorific value, since the water vaporises in the course of the burning process and thereby consumes heat. This leads to a decreased efficiency and thus to higher fuel consumption. A higher water content in the fuel also

results in a steadily decreasing output of the (central-heating) boiler, greater amounts of ash and smoke, as well as making it increasingly unfit for storage. In addition, this can lead to extensive tarring of the boiler, the flue pipe and chimney, and cause a chimney fire.

Logs should therefore be split before they are cured. This is done in order to achieve a water content which makes them suitable for burning within a reasonable amount of time (approx. two years).

The maximum permissible water content of log wood for the HDG Euro 30/40/45/50 is 20% (M20).

For technical considerations, a representative calorific value is selected depending on water content. For burning that is both economical and low on emissions, the calorific value should not be less than 4 kWh/kg.

Water content	Moisture	Calorific value	Relative wood consumption
10.0 %	11.1 %	4.6 kWh/kg	87 %
20.0 %	25.0 %	4.0 kWh/kg	100 %
26.0 %	35.0 %	3.7 kWh/kg	110 %
30.0 %	42.9 %	3.4 kWh/kg	120 %

Table 3/2 - Calorific value depending on water content

WOOD CHIPS

Essential criteria for the definition of the property classes are particle size, moisture content and ash content of the fuel.

PARTICLE SIZE

In accordance with DIN EN ISO 17225-4, the fuel specifications for wood chips are classified in P45S. The numeric value of the P class refers to the size of the wood chips in mm, which fit through a circular mesh with the indicated sieve opening size.

P class	Main content (mass fraction min. 60%)	Fine content (% by weight) ≤ 3.15 mm	Coarse content (% by weight) Max. length, max. cross section
P45S	3.15 mm < P ≤ 45 mm	≤ 10 %	≤ 10 % > 63 mm, all ≤ 200 mm, cross section of the outsized particles ≤ 6 cm^2

Table 3/3 - Particle size

- P45S

For HDG Euro 30/40/45/50, wood chips classified in the P45S category or larger can be used as fuel.

WATER CONTENT

The water content in accordance with DIN EN ISO 17225-4 for property class A1 with M10 (≤ 10 %) or M25 (≤ 25 %) differs here from the water content for property class A2 with M35 (≤ 35 %). The maximum permissible water content for wood chips is 20 % (M20) and therefore corresponds to the property class A1.

ASH CONTENT

For operating the boiler in an environmentally-friendly way, a low ash content is required. At the same time, this also minimizes the content of elements critical for combustion. Inorganic substances which are aerosol forming, such as potassium, chlorine or sodium are the main factors determining dust emissions in combustion. These elements are predominantly found in the needles, leaves and bark of the tree. Well-prepared, pure wood types, such as delimbed energy wood without needles, leaves and only a minimal proportion of bark, have the lowest content of elements critical for combustion. They are therefore recommended for use in residential boiler systems.

The ideal ash content is a maximum of 1.0% by weight (A1.0) which complies with property class A1. When using wood chips with a higher ash content (property class A2 and B1/2) , secondary measures (filter technology) may be necessary for complying with the dust emission values according to the 1st Federal Emission Control Ordinance (2nd stage).

PRESSED WOOD BRIQUETTES IN ACCORDANCE WITH DIN EN ISO 17225-3

Pressed wood briquettes are pressed shavings, with or without various forms of additives, with a diameter of more than 25 mm.

Essential criteria for the definition of the property classes are the length and diameter, moisture content and ash content of the fuel.

LENGTH AND DIAMETER

- D100/L500

The diameter of the briquettes must not exceed 100 mm and the length must not exceed 500 mm.

WATER CONTENT

The water content must not exceed a maximum of 12 % (M12) for property class A1 and a maximum of 15 % (M15) for property class A2 and B.

ASH CONTENT

The ideal ash content is a maximum of 1.0% by weight (A1.0) which complies with property class A1. When using pressed wood briquettes with a higher ash content (A2 and B) , secondary measures (filter technology) may be necessary for complying with the dust emission values according to the 1st Federal Emission Control Ordinance (2nd stage).

If shavings are used as fuel for the HDG Euro 30/40/45/50, this will lead to a reduction in the nominal thermal power.

RECOMMENDED FUEL

It is important that fuel is used according to HGD fuel specifications in order to guarantee compliance with emission limit values according to the 1st Federal Emission Control Ordinance (1st and 2nd stage). In particular, all fuel requirements concerning size, water

content and ash content must be met. Without the use of secondary measures (filter technology), only fuels of property class A1 are suitable for this in each case.

Pay particular attention to the fuel quality, both when ordering and at delivery.

Important!

If there is a significant change of fuel, the system must be reset accordingly and checked for emissions by authorised specialists.

HDG recommends log wood with a length of L50 (50 cm), a maximum diameter of D15 (max. 15 cm) and a water content of M20 (20%). For kindling, we recommend log wood with a diameter of D5 (2–5 cm).

For fuel in accordance with section §3 (1) items 6 and 7 (German ordinance 1.BImSchV), as well as for wood chips and shavings/ pressed wood briquettes, HDG recommends that these fuels only be used if the HDG Euro 30/40/45/50 boiler is equipped with the special accessory **scale liner**.

Permitted fuel in accordance with 1st Federal Emission Control Ordinance (Germany)

Additional quality requirements apply in Germany independently of the fuel specification in accordance with DIN EN ISO 17225. In accordance with Section 3 (1) of the 1st Federal Emission Control Ordinance, the fuel classes 4 (log wood), 5 (shavings), 5a (wood briquettes) and also fuel classes 6 and 7 may be used in the HDG Euro 30/40/45/50 heating system.

Fuel class 6 Painted, varnished or coated wood including remains thereof, provided no wood protection agents have been applied or are present as the result of a treatment, and coatings do not contain organic halogen compounds or contain heavy metals.

Fuel class 7 Plywood, chipboard, fibreboard or otherwise glued wood including remains thereof, provided no wood protection agents have been applied or are present as the result of a treatment, and coatings do not contain organic halogen compounds or heavy metals.

Fuel classes 6 or 7 may only be used in a wood processing plant at 30 kW or more nominal thermal power. In the case of painted, varnished or coated wood, it should be noted that greater stress can be placed on the wear parts such as the combustion chamber, burner nozzle or lambda sensor, which may reduce their service lives.

4 Planning and installation

4.1 Dimensions

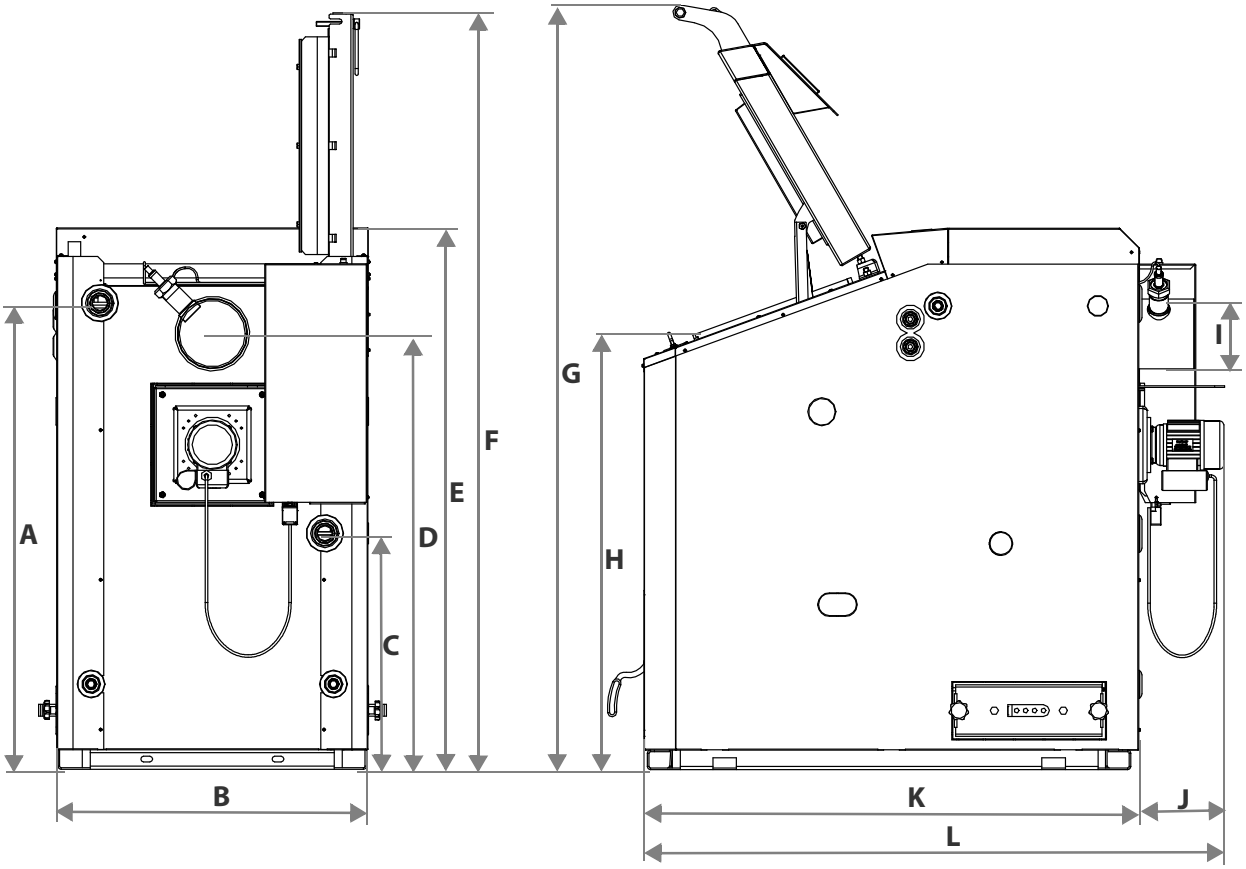


Figure 4/1 - Dimensions

		HDG Euro 30/40/45/50
A	Supply connection height	1184 mm
B	Boiler width (without attachments)	793 mm
C	Return connection height	599 mm
D	Height at middle of the flue gas pipe connection	1106 mm
E	Boiler height	1374 mm
F	Height with open cleaning shaft lid	1920 mm
G	Height with open fuel chamber door	1941 mm
H	Height at edge of fuel chamber 1105 mm	1105 mm
I	Diameter of flue pipe connection 180 mm	180 mm
J	Flue gas fan overhang	216 mm
K	Boiler length	1256 mm
L	Length of boiler incl. flue gas fan	1472 mm

Table 4/1 - Dimensions

		HDG Euro 30/40/45/ 50
	Fill opening dimension	560 x 410 mm

Table 4/1 - Dimensions

4.2 Structural requirements

FURNACE ROOM

APPLICABLE REGULATIONS

Local building regulations always apply. In Germany, individual state regulations on boilers and furnaces also apply.

Building regulations may differ from country to country and state to state.

For this reason, consult a qualified specialist for the planning and installation of your boiler room.

Make sure there is an adequate supply of fresh air to the furnace room so that there is enough air available for the combustion process in all of the installed boilers, and to protect the operator from the hazards of insufficient oxygen.

INSTALLATION

A base is not necessary for installation of the boiler. Ensure alignment on a horizontal plane.

Observe the fire safety regulations.

To ensure unhindered operation and maintenance of the heating system, it is imperative that the heating system is installed in accordance with the specifications of HDG Bavaria GmbH and that the minimum spacing requirements are observed.

Also note that the thresholds in DIN 4109 "Soundproofing in building construction" may not be exceeded.

More detailed information can be found in the relevant local and national regulations.

Also observe the accident prevention regulations of the official safety organisations.

We recommend that objects which are not needed for the operation or maintenance of the heating system are not stored in the furnace room.

Required room sizes and minimum clearances

Danger!

When installing the pipes for the heating system, observe the dimensions of the boiler and ensure the minimum clearances.

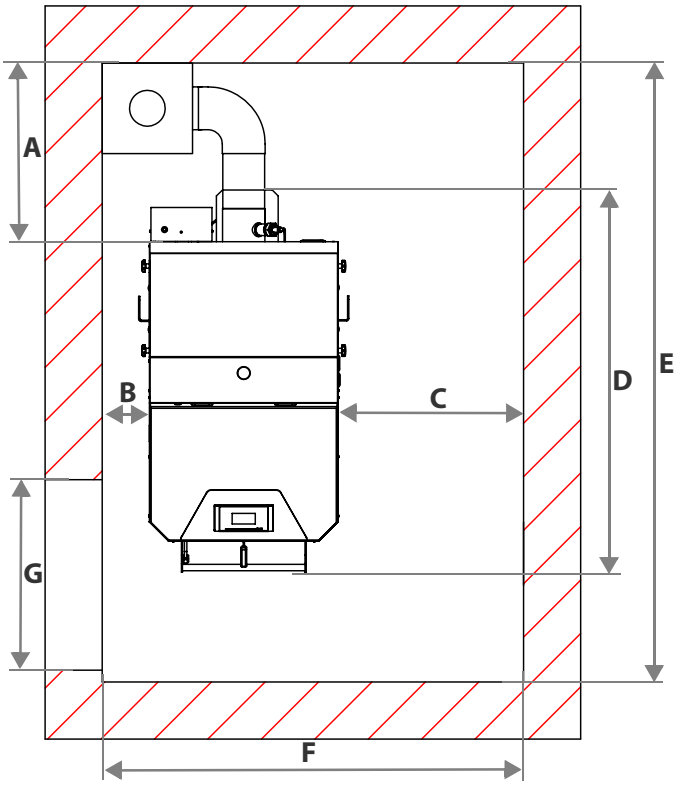


Figure 4/2 - Required room sizes and minimum clearances

	HDG Euro 30/40/45/50
A	at least 750 mm
B	at least 200 (or 800) mm
C	at least 800 (or 200*) mm
D	1610 mm
E	at least 2600 mm
F	at least 1800 mm
G	at least 800 mm
Minimum ceiling height	2000 mm
Recommended room height	2300 mm
Installation dimensions	1380 x 800 x 1610 mm

Table 4/2 - Room sizes and minimum clearances

*does not apply in connection with HDG automatic ignition system

4.3 Connections

Chimney

According to EN 303-5, the entire flue system must be installed in such a way that contamination, condensation and insufficient flue draught are avoided. Here note that, in the accessible operational area of the boiler, flue gas temperatures of less than 160 K above room temperature may arise.

✎ The required flue gas values are listed in chapter "3 Mode of operation", section "3.3 Technical data".

The benefits of the HDG Euro 30/40/45/50 can only be enjoyed if all of the prerequisites for good combustion are ensured. The heating system and chimney form a single functional unit and must be adapted to one another in order to guarantee fault-free and economical operation.

Since the flue gas temperature may lie below 100°C when the system is under partial load, a chimney/flue is required which meets the requirements of DIN EN 13384-1: 2003-03 "Thermal and fluid dynamic calculation methods". If it does not meet this standard, contact your specialist heating company or chimney technician.

When planning the flue system, a flue calculation based on DIN EN 13384-1 must be performed by authorised specialists.

Another essential criterion is meeting the flue draught requirement. This depends on three major factors.

Chimney characteristics

The requirements for minimising the draught loss in the chimney are:

- Good thermal insulation to avoid the flue gases cooling down too quickly.
- Smooth interior surface to reduce the flow resistance.
- A tight seal of the chimney to avoid outside air leaking in. Air penetrating from the outside speeds up the cooling of the flue gases.

These requirements correspond to chimneys of the type conforming to DIN EN 13384-1: 2003-03 "Thermal and fluid dynamic calculation methods".

Free-standing chimneys require particularly good insulation.

Chimney dimensions

The system may only be connected to a chimney which has been dimensioned in accordance with DIN EN 13384-1, taking into account the fuel planned and the expected load, and which meets local building regulations for the installation site.

A chimney can only be designed with full knowledge of the on-site conditions. This includes taking into account the following factors:

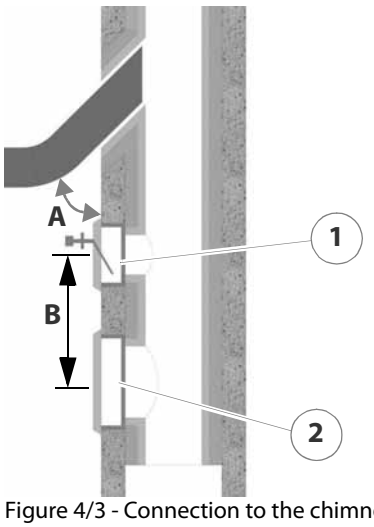
- Building location
  - Surrounding hills/slopes

  - Wind direction
- Location of the chimney in the roof
  - The opening of the chimney must be at least 0.5m above the highest edge of roofs with a slope of more than 20° or at least 1.0 m higher than roof surfaces which slope at 20° or less.
- The effective height of a chimney is measured from the flue entrance into it to the end of the chimney.

Connecting the boiler to the chimney

The firing system must be connected with a connecting piece which is as short as possible, at an angle which is less than 30 - 45° to the chimney. You should aim for a connecting piece with a maximum length of 1 m using just one fitting.

Every additional fitting results in a greater pressure loss in the exhaust path and should thus be avoided. The same is true for overly long connecting pieces. If, for constructional reasons, these must be longer than 1 m, they should be adequately insulated (at least 5 cm of mineral wool or equivalent material) and, if possible, fitted with an upward inclination.



1 Auxiliary air unit

2 Cleaning door

A) Chimney approx. 30° - 45°

B) Clearance at least 50 cm

Figure 4/3 - Connection to the chimney

The following should also be considered:

- The connecting piece may not protrude into the chimney.
- If the system flue gas pipe has a larger diameter than the chimney, the connecting piece must reduce its diameter to that of the connection. In this case, the connecting piece should taper as gently as possible.
- Use bends rather than elbows; the radius of the elbow may not be less than the diameter of the pipe.
- The chimney should be vertical and straight, if possible without deformations (take particular care in older buildings).
- All of the cleaning doors and measurement hatches on the chimney must have tight seals.
- To reduce the entry of additional cold air, only attach one heat generator per chimney.

- To prevent dust from escaping, the flue pipe must be sealed with heat-resistant silicone.

Electrical system

The directives of 2006/95/EC (low voltage guidelines) must be followed for the electrical connections to the system. The electrical connection must be made on a separate isolating unit.

✎ The required connection values are described in chapter "3 Mode of operation", section "3.3 Technical data".

Water

The coatings formed by stones in the heat generator can have a detrimental effect on the efficiency of the heating/boiler system and can lead to damage and faults.

Important!

The heating system must be filled with water in accordance with VDI guideline 2035, "Avoiding damage in hot water heating systems".

Antifreeze agents may only be used after prior consultation with HDG.

Using an accumulator

When calculating the thermal requirements of buildings, e.g. according to DIN EN 12831 "Method for calculating the normal heating load", the lowest outside temperature of the relevant climate zone (e.g. -15 °C) is used. These conditions only apply a few days per year, thus, the thermal performance of the heating system is greater than required on most days when heating is needed.

As the boiler for this system is rated for a nominal load, the use of an accumulator is required.

The size of the accumulator must be adapted to the boiler type, the type of wood and the building's heating requirements. In terms of 1. BImSchV, the minimum capacity of the accumulator is 12 litres per litre of fuel chamber capacity; however, the required 55 litres per kW of nominal thermal power must be maintained.

For the HDG Euro 30/40/50 boiler, the minimum accumulator volume is 3000 litres.

Important!

Please also observe DIN EN 303-5 as well as the individual comfort requirements of the customer for the capacity of the accumulator.

SAFETY DEVICES

Safety devices (e.g. boiler safety module, insufficient water cutout, etc.) must be installed in accordance with DIN EN 12828: 2003 "Design of water-based heating systems in buildings".

RETURN TEMPERATURE

Operating temperatures which are too low significantly shorten the service life of the boiler. Water vapour contained in the flue gas could be released in the form of condensation if the temperature drops below the dew point (approx. 50 - 55 °C), especially in the area around the water-cooled heat-exchanger surfaces. This condensation, in combination with combustion residue, can lead to corrosion.

For these reasons, a return temperature control must be installed for the HDG Euro 30/40/45/50 heating system. The return temperature control causes the water from the boiler return flow to be mixed with the water from the boiler supply flow until the minimum return temperature has been reached.

✎ The minimum return temperature is listed in chapter "3 Mode of operation", section "3.3 Technical data".

The control of the return temperature is handled by the HDG Control control unit.

The return temperature control consists of a 3-way mixing valve with a 230 V servo drive (running time 120 - 240 s) and a circulation pump from energy efficiency class A. For the HDG Euro 30/40/50, we recommend

- Wilo 30/1-7.5, 3-way mixing valve DN 32 (or equivalent)

The pipe dimensions must be adapted to meet the requirements at the site. Take the water-side connections of the boiler for the supply and return into account.

✎ See chapter "3 Mode of operation", section "3.3 Technical data".

The hydraulic system must be installed in accordance with specific technical principles of heating engineering. Take into account the stop cocks required for maintenance work and repairs.

The return temperature control is not designed for the use of a gravity brake and this should therefore not be installed.

The return temperature control must be installed according to the specifications of HDG Bavaria.

4.4 Hydraulic connection

The hydraulic connection depends on the schematic diagram selected in the respective HDG Control system.

✎ See the supplied schematic diagram and electrical circuit diagram.

4.5 Scope of delivery

The heating system is delivered on a pallet.

Included in the scope of delivery:

- HDG Euro 30/40/50 boiler
- Cleaning tools
- Control unit for HDG Control
- Accessories
- Operating documentation

4.6 Installing the heating system

Requirements

The heating system must be installed by a specialist heating company and an electrician.

Danger!

Risk of material damage and injury due to incorrect installation

Installing the system requires comprehensive specialist knowledge. If installed by untrained persons, the heating system can be damaged and persons may be injured due to secondary damage.

Only allow authorised specialists to perform the installation.

Danger!

Dangerous electrical current or voltage

Working on live components can result in an electric shock.

Switch off the mains supply to the heating system during the installation.

INSTALLING THE BOILER

Warning!

Danger from suspended loads

The boiler weighs over 950 kg. If the boiler is dropped during transport, persons can be seriously injured and the boiler can be damaged.

When installing the boiler, use suitable lifting equipment.

1. Remove the packaging from the boiler.

The boiler packaging can be taken to the local recycling company.

TRANSPORT WITH A CRANE

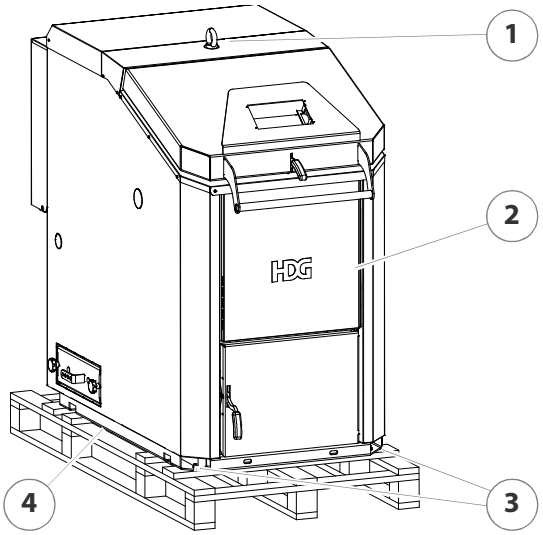


Figure 4/4 - Transport with a crane

2. Attach suitable lifting equipment, such as a crane, to the eyebolt (1).

✓ The boiler can now be moved with a crane.

3. Undo the M8 nuts (3) on the four corners of the boiler (2) using a 13 mm spanner.
4. Raise the boiler (2) and remove the pallet (4).
5. Set down the boiler (2) at the planned location while observing the minimum clearances.

✎ See section "4.2 Structural requirements", under "Required room sizes and minimum clearances".

6. Align the boiler (2) with plastic plates or flat steel strips (not included in the scope of delivery) so that it is horizontal.
7. Remove the eyebolt (1).
8. Place the cover cap on the control console.

✓ The HDG Euro 30/40/45/50 boiler has been placed in position.

Transporting with a pallet truck

1. Transport the boiler with a pallet truck in compliance with the minimum clearances to the required installation site.

✎ See section “4.2 Structural requirements”, under “Required room sizes and minimum clearances”.

Important!

When using the installation aid, observe the required minimum clearance of 60 cm to the side walls in order to be able to later remove the aid.

Also observe the minimum clearance of 150 cm in front of and behind the boiler so that you can remove the pallet.

The final installation position of the boiler must be adjusted afterwards if necessary.

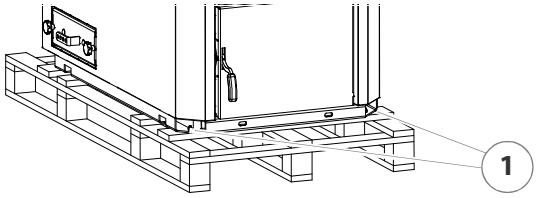


Figure 4/5 - Removing screws

2. Undo the M8 nuts (SW13) (1) on the 4 corners of the boiler.
3. Remove the four screws with which the boiler is fixed to the pallet.

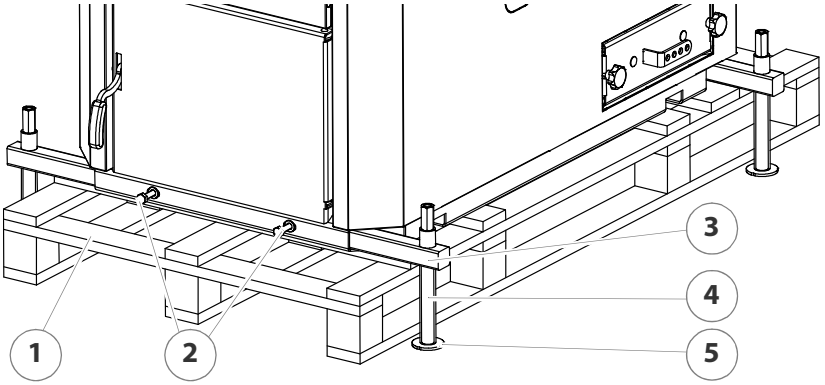


Figure 4/6 - Attaching the installation aid

4. Push each of the square shafts (3) into the guides intended for them.
5. Secure the square shafts with the M12 screws (SW19) (2).
6. Place the respective spacer plates (5) under the installation aid.
7. Turn each of the M16 spindles (4) (SW24) until the boiler is completely supported on the installation aid.
8. Remove the pallet (1).

Warning!

Danger of injury

If you screw a spindle on a corner down completely, there is the risk that the boiler will tip over. This could cause serious injuries as well as damage to the boiler.

Turn each of the spindles in alternating brief turns.

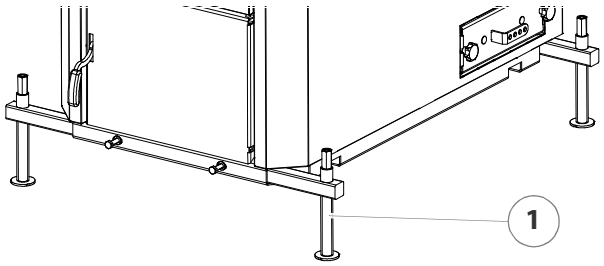


Figure 4/7 - Using the installation aid

9. Screw down the M16 spindles (SW24) (1) on the four corners in brief alternating turns until the boiler rests completely on the floor.
10. Align the boiler with plastic plates or flat steel strips (not included in the scope of delivery) so that it is horizontal.
11. Remove the installation aid.

✓ The HDG Euro 30/40/45/50 boiler has been placed in position.

Removing transport safety device

The inner transport safety device **must** be removed from the combustion chamber before commissioning. The outer transport safety device may be left in the boiler.

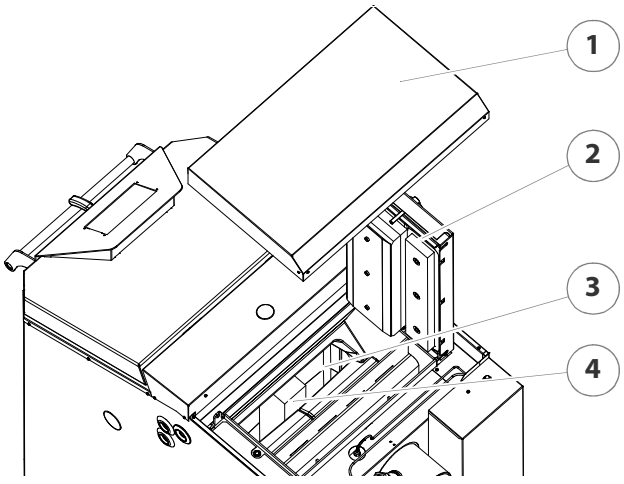


Figure 4/8 - Removing transport safety device

1. Remove the upper cover (1) by lifting it upward.
2. Open the cleaning shaft lid (2).

Caution!

Danger of injury

The cleaning shaft lid is heavy and may fall shut. This could injure hands and fingers.

Take care each time you open or close the cleaning shaft lid that it does not unexpectedly fall shut.

3. Carefully pull the inner transport safety device (4) out of the combustion chamber (3).

The inner transport safety device (1) can be disposed of with the rest of the waste.

4. Close the boiler in the reverse order.

✓ The transport safety device has been removed.

INSTALLING THE HDG CONTROL UNIT

The cable set for the HDG Control control unit is already connected on the central module at the time of delivery.

REMOVING THE COVER

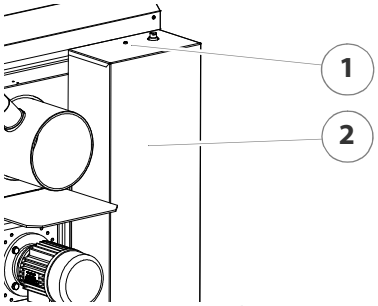


Figure 4/9 - Removing the cover

1. Undo the screws (1) on the cover (2) of the central module using a Phillips screwdriver and take off the cover (2) of the central module.

INSTALLING THE CONTROL UNIT

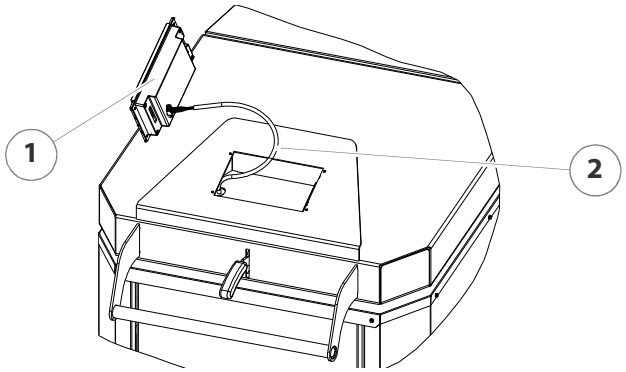


Figure 4/10 - Connecting the control unit

2. Connect the plugs of the bus cable (2) with the HDG Control Touch control unit (1).

✎ See “Electrical plan HDG Euro 30/40/45/50”.

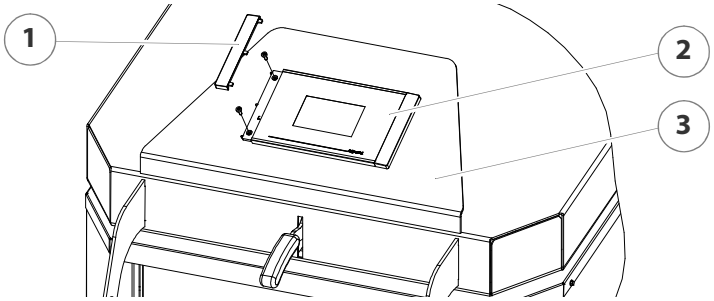


Figure 4/11 - Installing the control unit

3. Install the HDG Control Touch control unit (2) with the four Phillips screws on the control console (3).
4. Insert the two side covers (1) onto the control unit.

Flow/return and STL sensors

The flow/return and STL sensors are already installed upon delivery.

Expansion module

Installing expansion module EM4

Depending on the hydraulic application, an EM4 expansion module may have to be used.

Important!

If the EM4 expansion module is used, this must be installed on the rear above the central module. If expansion module EM8 or EM8+4 is used alternatively or in addition, it must be installed on the external housing outside the boiler.

✎ For connecting the expansion module, refer to the “Electrical plans HDG Euro 30/40/45/50”.

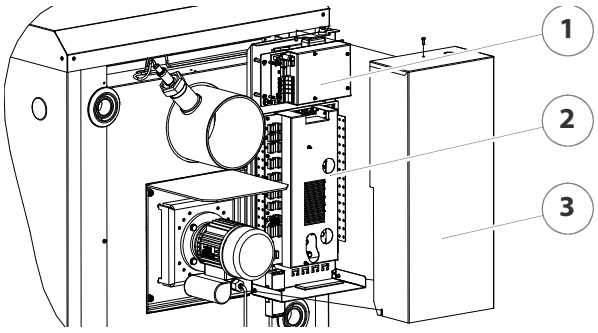


Figure 4/12 - Installing the EM4 expansion module

1. Install the EM4 expansion module (1) above the central module (2).
2. Connect the EM4 (1) expansion module.

✎ See “Electrical plans HDG Euro 30/40/45/50”.

3. Install the cables and sensors on expansion module EM4 according to the hydraulic wiring diagram.

✓ Expansion module EM4 is installed.

Connecting the cables

Caution!

Malfunctions due to incorrect cabling

If live cables and sensor cables are installed in the same ducts, it can cause the sensors to malfunction.

Ensure that the live wires and the sensor cables are installed in different cable ducts.

1. Route all the cables and sensors to the central module and any expansion module(s).
2. Connect all the cables on the central unit and any expansion module(s).

✓ See "Electrical plan HDG Euro 30/40/45/50".

Please note that here only the assembly of the HDG Control unit is described.

The remaining electrical installations depend on the hydraulic system and can be installed based on the specifications for the respectively selected system.

3. Replace the cover (3) on the central module.

✓ The HDG Control unit is now installed.

Installing the HDG automatic ignition

The HDG automatic ignition is available as an option and not included in the standard scope of delivery.

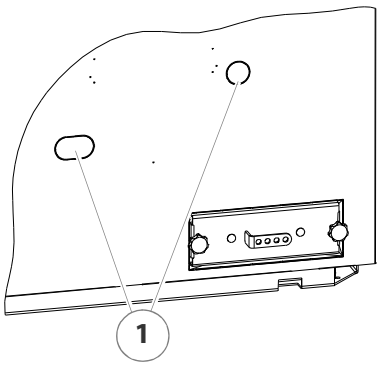


Figure 4/13 - Pressing out the cladding sections

1. Press out the two perforated cladding sections (1).

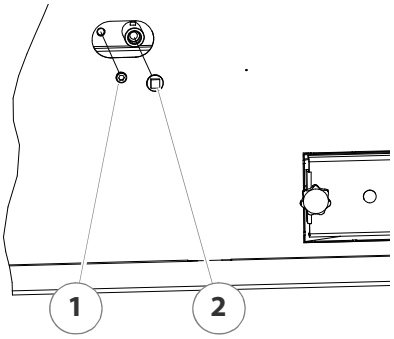


Figure 4/14 - Dismantling the dummy plugs

2. Dismantle the dummy plugs (SW8 hexagon socket screws) (1) for connecting the differential pressure switch.
3. Dismantle the dummy plugs (square SW14) (2) for connecting the ignition pipe.

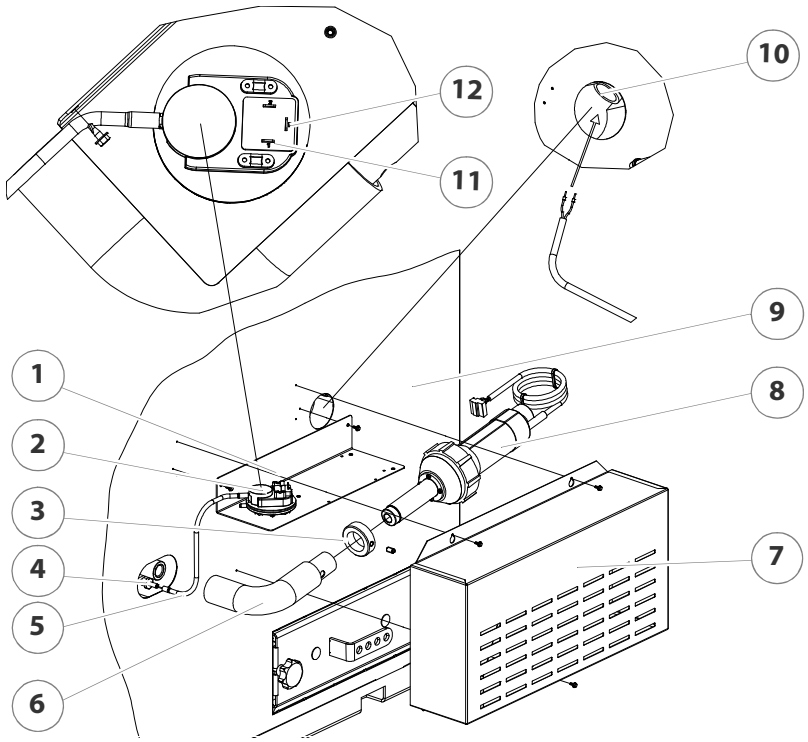


Figure 4/15 - Installing the HDG automatic ignition

4. Install the ignition pipe (6) (including fibre-glass insulation) on the connection provided on the boiler.
5. Using the self-tapping screws, install the assembly plate (1) with the preassembled differential pressure switch (2) on the side cladding (9).
6. Screw the hose nozzle (4) into the connection for the differential pressure switch on the boiler.
7. Insert the silicone hose (5) on the hose nozzle (4) and on the top connection on the differential pressure switch (2).
8. Place the adjusting ring (3) on the ignition pipe (6).
9. Push the ignition fan (8) into the ignition pipe (6).
10. Using the M8 hexagon socket screw (SW4) on the adjusting ring (3), secure the ignition fan (8) in the ignition pipe (6).
11. Insert the flat plug receptacle of the brown wire from the cable for the differential pressure switch (2) into socket 1 (11).

12. Insert the flat plug receptacle of the white wire from the cable for the differential pressure switch (2) into socket 3 (12).
13. Run the cables from the differential pressure switch (2) and from the ignition fan (8) through the empty pipe (10) to the central module.
14. Using the self-tapping screws, install the side cover (7) on the side cladding (9).

✓ The HDG automatic ignition is now installed.

4.7 Connecting the chimney

✎ See section “4.3 Connections”, paragraph “Chimney” in this chapter.

1. Connect the flue gas pipe to the chimney connection.
2. Make sure that the connecting piece does not protrude into the chimney.
3. Seal the connection to the chimney with highly fireproof silicone or with a suitable mortar.

✓ The boiler is now connected to the chimney.

4.8 Electrical system

The electrical connections must be made in accordance with DIN IEC 60364 “Setting up low-voltage electrical installations”.

✎ The technical details are described in chapter “3 Mode of operation”, section “3.3 Technical data”.

✎ The electrical diagram and the hydraulic plan are enclosed with the documents provided.

4.9 Water

Important!

The heating system must be filled with water in accordance with VDI guideline 2035, “Avoiding damage in hot water heating systems”.

Before putting the system into operation, the pressure of the diaphragm expansion vessel must be adjusted for the conditions in the heating system and in the building.

After putting the system into operation, heat up the system to the maximum boiler temperature and bleed air from the system again to make sure that there are no air pockets.

4.10 Connecting the thermal safety device

In accordance with DIN EN 12828, heating systems must be equipped with safety devices to prevent the maximum operating temperature from being exceeded. The safety heat exchanger serves to protect the boiler against overheating and may not be used for other purposes (i.e. as a regular heat exchanger). If the heat transfer capacity is suddenly lost (for example, if the circulation pump for raising the return temperature fails), heat production cannot be stopped as quickly as with an oil- or gas-fired boiler. When the maximum operating temperature is exceeded, the thermal safety device (TAS) is triggered and cold water flows through the safety heat exchanger. The resulting excess energy is thus dissipated by this "emergency cooling". (This is an alternative to fast regulation.)

However, the safety heat exchanger and thermal safety device can only serve their purpose if the following requirements have been met:

- A flow pressure of at least two bar must be available at the cold water inlet of the safety heat exchanger.

Because they depend on the mains power supply, mains-dependent stand-alone supply systems are not sufficiently reliable and are not permitted!

- The distance between the supply and return lines of the thermal safety device and the safety heat exchanger should not be less than their nominal width. The supply line may not be equipped with a shut-off valve.
- Water must be able to flow freely through the system.
- The flow pressure at the flue pipe connection on the boiler may not significantly exceed the prescribed value.

The TAS must be inspected annually by a qualified technician to test that it is working properly.

The thermal safety device must be installed according to guidelines from HDG Bavaria.

Important!

In order to prevent leaks, avoid turning the connections of the safety heat exchanger anticlockwise when installing the thermal safety device.

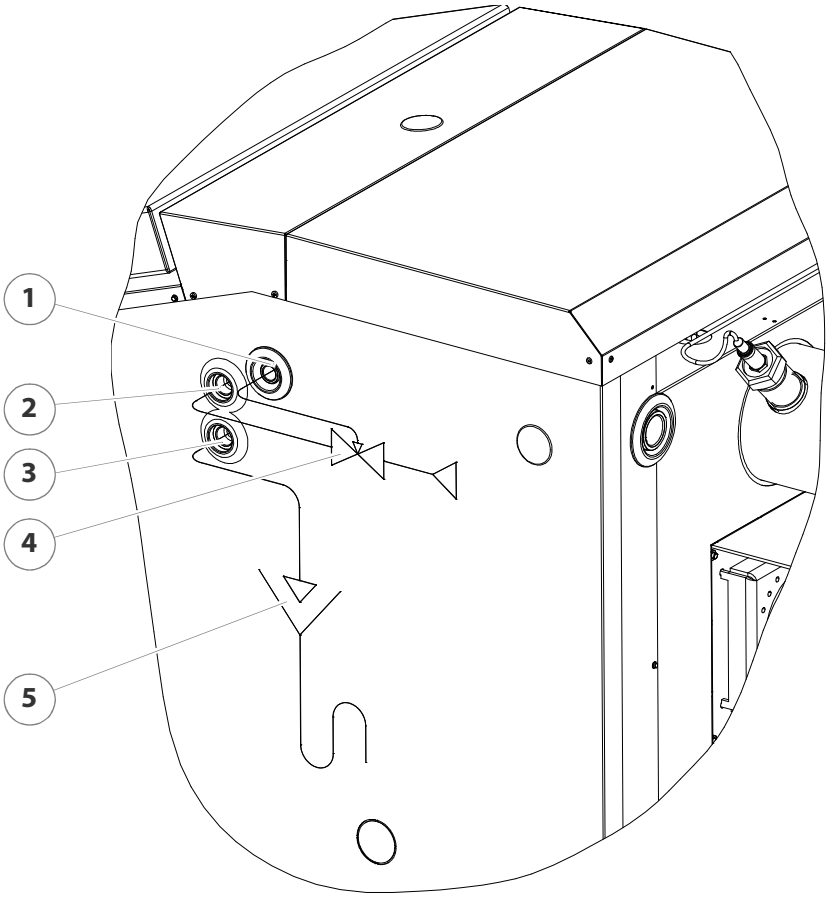


Figure 4/16 - Thermal safety device

1 Connection bushing for TAS immersion sleeve, DN 15 inside thread
2 Safety heat exchanger inlet (DN 20 inside thread)
3 Safety heat exchanger outlet (DN 20 inside thread)
4 Thermal safety device (TAS)
5 Runoff connection to drainage system

5 Commissioning the system

The heating system is initially commissioned by specialists from HDG Bavaria or from an authorised HDG partner.

Commissioning includes an introduction to the operation and maintenance of the heating system as well as measurements to determine exhaust emissions and combustion performance.

Danger!

Material damage and injury due to incorrect commissioning

Commissioning the system requires comprehensive expertise. If this commissioning is done by an untrained person, the heating system could be damaged.

Only allow authorised specialists to perform the commissioning.

5.1 Requirements

The following requirements must be met to ensure there are no problems during commissioning.

- The boiler is installed properly.
- The heating system has been filled with water as specified.
- The heating system has been bled.
- The pressure of the membrane expansion vessel has been adapted to on-site conditions.
- All required DIN EN 12828 safety devices have been installed and are ready for operation.
- The power supply to all components is ensured. (Makeshift solutions are not sufficient!)
- The chimney installation corresponds to the legal regulations.
- All doors and openings on the boiler and on the chimney connection pipe have been checked for a proper seal.
- Air supply for combustion has been provided.
- A sufficient amount of fuel is available.

5.2 Procedure

✎ See the “HDG Control” operating manual, chapter “Commissioning the system”.

SWITCHING ON THE HEATING SYSTEM

1. Switch on the circuit breaker for the mains electricity supply, or otherwise ensure the unit is provided with power.
2. Turn on the emergency heating switch (if one has been installed).

✓ The heating system is now under voltage.

✓ The indicator lamp in the emergency heating switch will light up.

✓ The control is activated.

✎ See the "HDG Control" operating manual, chapter "Commissioning the system".

TESTING SYSTEM COMPONENTS

Important!

For safety reasons, the system component test may only be conducted when there is no fuel in the boiler and there are no remaining embers.

The system component test can only be conducted in the "*Ready*" state.

PROCEDURE

✎ See the "HDG Control" operating manual.

Depending on the hydraulic system selected, the system component test must be performed for additional components.

SETTING THE PRIMARY AIR GUIDE AND THE GRATE HEIGHT FOR THE RESPECTIVE FUEL

An optimum gasifying of the fuel and thus an efficient combustion can only be achieved if the boiler is preset for the fuel to be used and its burning properties. Adapting to the on-site conditions is also of critical importance.

A switching of the basic fuel type, e.g. from softwood to hardwood, requires a resetting of the boiler to the changed requirements of the fuel!

Control element	Softwood (e.g. spruce)	Hardwood (e.g. beech) or chippings
Air slit on air adjuster plate (threshold of upper ash door)	• 7 mm	• 10–15 mm
Air damper on upright grate flap	• closed above • open halfway below	• closed above • open halfway below
Flat grate	• bottom	• raised 55 mm

Table 5/1 - Setting of the primary air guide and grate height

The above settings are suitable for operating the HDG Euro 30/40/45/50 boiler for materials with technical burning characteristics in accordance with the recommended fuel.

If other fuels are used, these factory presets may need to be adapted. To do so, consult an authorised specialist.

Important!

The following described activities may only be performed by authorised specialists.

Setting the air adjuster plate

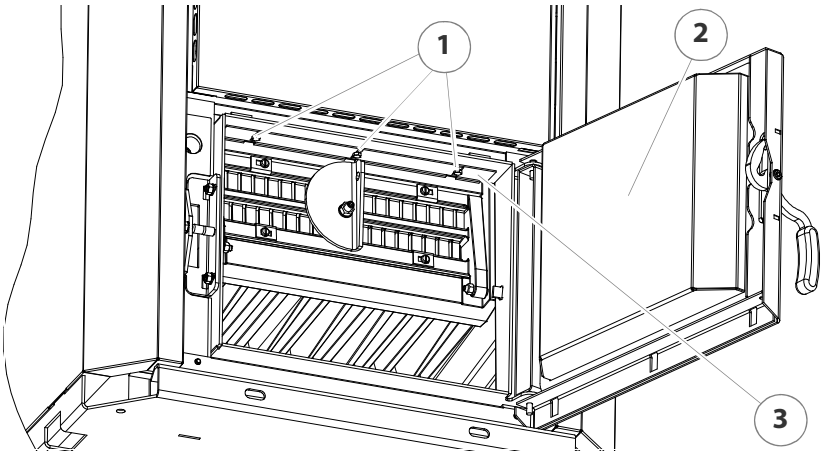


Figure 5/1 - Setting the air adjuster plate

1. Open the ash door (2).
2. Release the three M6 retaining screws (1) using a 10 mm spanner.
3. Adjust the setting of the air adjuster plate (3) for the technical burning characteristics of the fuel material.
4. Retighten the M6 screws (1) with a 10 mm spanner.
5. Close the boiler in the reverse order.

✓ The air adjuster plate is now set.

ADJUSTING THE AIR DAMPER

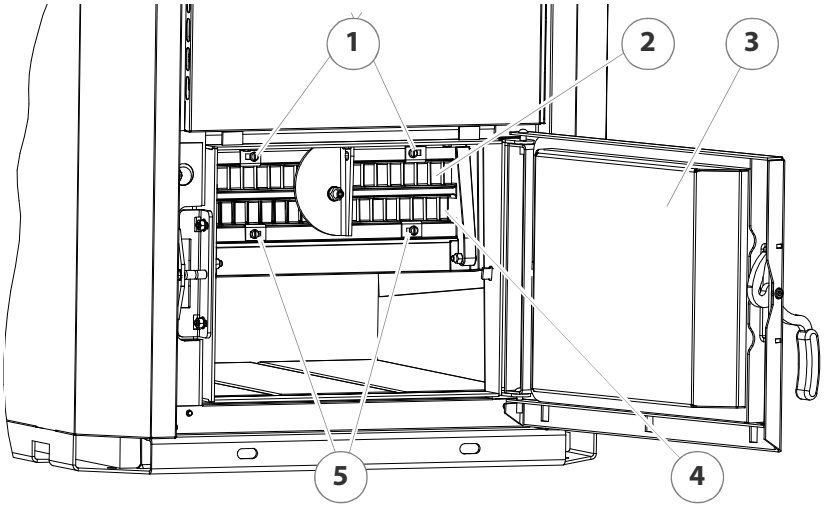


Figure 5/2 - Adjusting the air damper

1. Open the ash door (3).
2. Release the four retaining screws (1 + 5) with a flat-bladed screwdriver.
3. Adjust the upper and lower air damper (4 + 2) on the upright grate flap.
4. Retighten the retaining screws (1 + 5).
5. Close the boiler in the reverse order.

✓ The air damper is adjusted.

GRATE LIFTER

With the log wood boiler HDG Euro 30/40/45/50, the grate lifting bar is delivered separately. The flat grate elements are in the lowest position at the time of delivery.

The position of the grate lifter can be changed in order to correct the gas quantity during degassing and thus avoid pulsating (sudden igniting due to lack of oxygen) or insufficient flue gas temperatures. This is required in the case of larger deviations from the recommended fuel or deviations from the required temperatures in order to ensure safe operation of the log wood boiler.

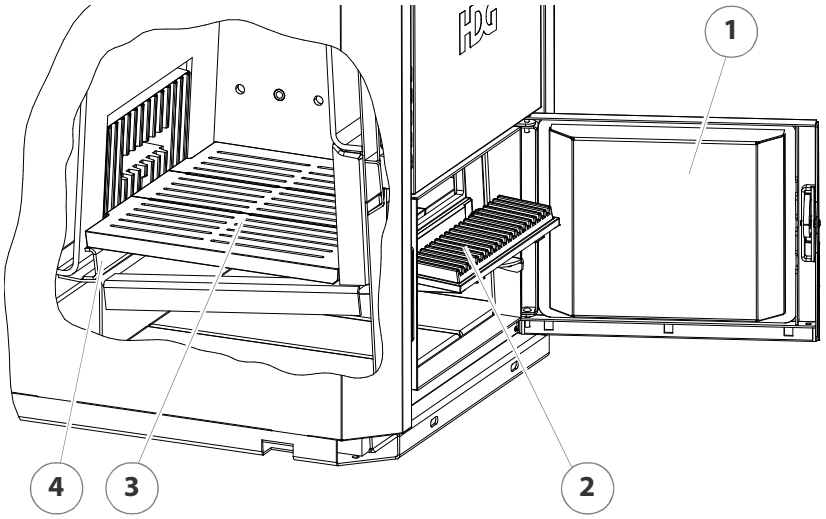


Figure 5/3 - Grate lifter

1. Open the ash door (1).
2. Open the upright grate flap (2).

The three flat grate elements are of differing width. Make sure that the flat grate elements are put back in the correct manner and order.

Caution!

Danger of injury

The flat grate elements are heavy. Hands and fingers could be crushed during their removal/installation.

Exercise caution so that your hands and fingers do not become caught.

3. Take the flat grate elements (3) out toward the front.
4. Set the grate lifting bar (4) on the support.
5. Insert the flat grate elements (3).
6. Close the boiler in the reverse order.

✓ The grate lifting bar is now set.

6 Using the heating system

6.1 Control unit for HDG Control

✎ You can find all information and instructions for setting up and operating the boiler and weather-compensated heating control of the HDG Control in the "HDG Control" operating manual.

The HDG Control Touch control unit is located on the front of the HDG Euro 30/40/45/50 boiler.

6.2 Switching on the heating system

REQUIREMENTS

✎ See the "HDG Control" operating manual, chapter "Commissioning the system".

In order for the heating system to be switched on, it must first have been put into service by an authorised specialist.

EMERGENCY HEATING SWITCH

The system is connected to the mains supply through an emergency heating switch (provided by the customer) or through a circuit breaker in the mains distribution box of the building.

Danger!

Dangerous electrical current or voltage

Working on live components can result in an electric shock.

The heating system can only be completely de-energised by switching off the mains circuit breaker or the emergency heating switch.

1. Switch on the heating system at the corresponding circuit breaker or the emergency heating switch provided by the customer.

✓ The heating system is now under voltage.

✓ The control is activated.

✓ The heating system is switched on and ready for operation.

FUEL SELECTION

Important!

When changing fuel, e.g. from softwood to hardwood, please also consider the consequential changes in respect of the combustion properties. Otherwise faults may occur in the combustion and in the operation of the heating system.

If necessary, the settings of the heating system must be adjusted for the changed fuel.

If the fuel is changed, the primary air guide or the grate height may also need to be adjusted. These adjustments should only be performed by authorised specialists.

✎ See chapter “5 Commissioning the system”, section “5.2 Procedure”, paragraph “ Setting the primary air guide and the grate height for the respective fuel”.

6.3 Heating up the system

Caution!

Hot surfaces

Contact with the hot surfaces of the boiler can lead to burns.

Wait until the boiler has cooled down before touching non-insulated components.

Warning!

Danger of asphyxiation due to carbon monoxide

If the boiler is operating, carbon monoxide can be emitted through the open fuel chamber door.

Do not leave the fuel chamber door open any longer than necessary.

Warning!

Danger of fire

When the boiler is in operation, open doors constitute a fire danger.

Do not leave doors open any longer than necessary and never leave them open unattended. Check that the hatches are closed every time you heat or reload.

Danger!

Danger of explosion

A concentration of carbon monoxide that is too high can result in an explosion.

Observe the flue draught requirement of the chimney.

Caution!

Danger of injury

The fuel chamber door is heavy and may fall shut. This could injure hands and fingers.

Take care each time you open or close the fuel chamber door that it does not unexpectedly fall shut.

We recommend wearing leather gloves when heating up the system.

REQUIREMENTS

Caution!

Damage caused by unintended fuel fomentation

Residual embers in the fuel chamber can lead to unintended fuel fomentation. This can cause the heating system to overheat and, subsequently, for dangerous operating conditions to arise.

Ensure when filling that residual embers do not under any circumstances remain in the fuel chamber.

When the *Reload* indicator flashes red, there are no more embers in the fuel chamber.

PROCEDURE

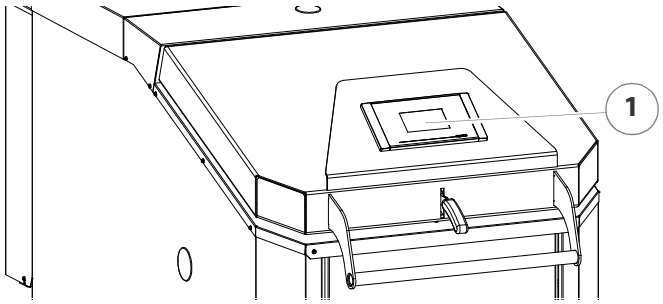


Figure 6/1 - Pressing the reload button

1. Press the *Reload* button on the HDG Control Touch control unit (1).

✓ The *Fill up / Reload* window appears in the display.

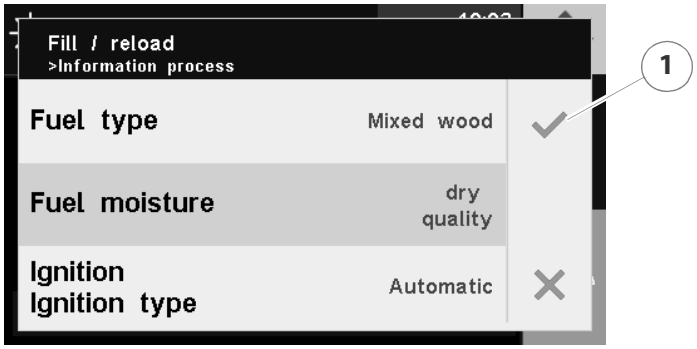


Figure 6/2 - Ignition - changing settings

2. If you do not want to change any settings, confirm your input by pressing the *Confirm* button (1).

✓ The *Do not open fuel chamber door* message appears in the display.

✓ The flue gas fan is running.

3. Continue without changing the settings with point 17.

CHANGING THE SETTINGS

4. If you wish to change the settings, press the appropriate setting.
5. Press the *Wood type*.

✓ The *Wood type selection* window appears in the display.

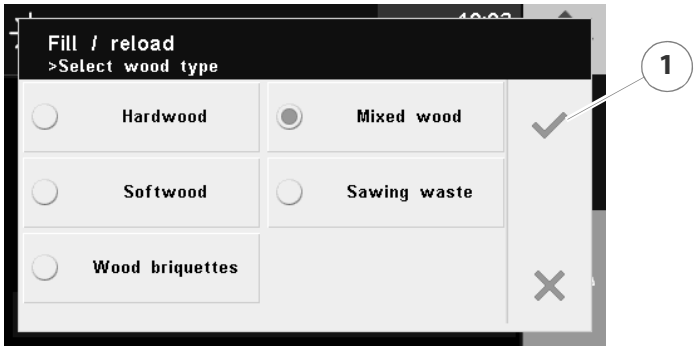


Figure 6/3 - Query wood type

6. Select the type of wood used.
7. Confirm your input by pressing the *Confirm* button (1).

✓ The *Fill up / Reload* window appears in the display again.

8. Press *Wood moisture*.

✓ The *Wood moisture selection* window appears in the display.

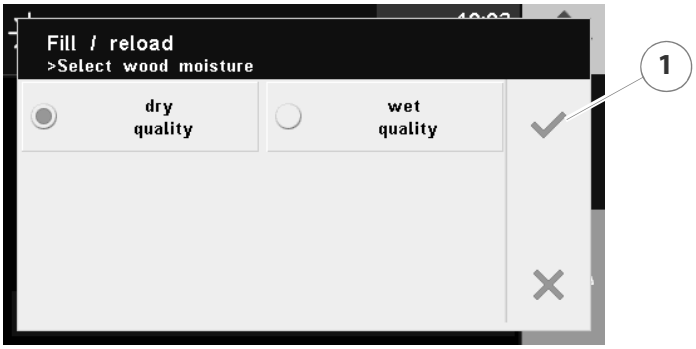


Figure 6/4 - Query wood moisture

9. Select the wood moisture of the fuel.

10. Confirm your input by pressing the *Confirm* button (1).

✓ The *Fill up / Reload* window appears in the display again.

11. Press the *Ignition mode*.

✓ The *Ignition mode selection* window appears in the display.

Ignition modes

- Manual: The fuel is ignited manually (with firelighters).
- Electrical: The fuel is automatically ignited by the ignition fan directly after filling, regardless of the accumulator temperature, weekly programme or consumer requirement.
- Automatic: The fuel is automatically ignited depending on the selected setting (accumulator temperature, weekly programme or consumer requirement)

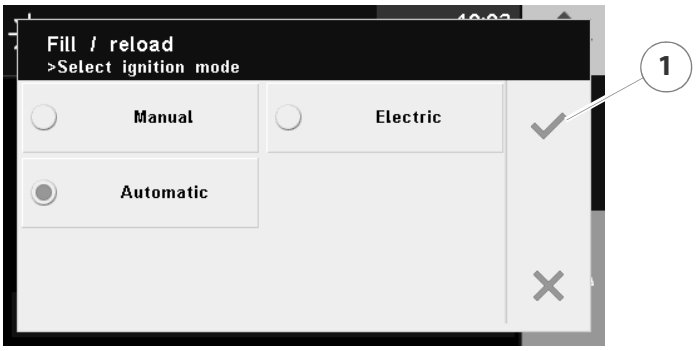


Figure 6/5 - Query ignition mode

12. Select the desired ignition mode.

13. Confirm your input by pressing the *Confirm* button (1).

✓ The display shows - for prior selection of *Automatic* ignition mode - the *Automatic ignition selection* window.

14. Select the type of automatic ignition.

15. Confirm your input by pressing the *Confirm* button (1).

Automatic ignition

- Accumulator temperature: The automatic ignition starts after the set reloading temperature is undershot.
- Accumulator temperature and weekly programme: The automatic ignition starts after the set accumulator temperature is undershot and if the enable time is reached at the same time in accordance with the set weekly programme.
- Accumulator temperature and requirement: The automatic ignition starts after the set accumulator temperature is undershot and if there is a requirement from a consumer (heating circuits, domestic hot water) at the same time.
- Accumulator temperature, requirement and weekly programme: The automatic ignition starts after the set accumulator temperature is undershot and if there is a requirement from a consumer (heating circuits, domestic hot water) at the same time and the enable time is reached in accordance with the set weekly programme.

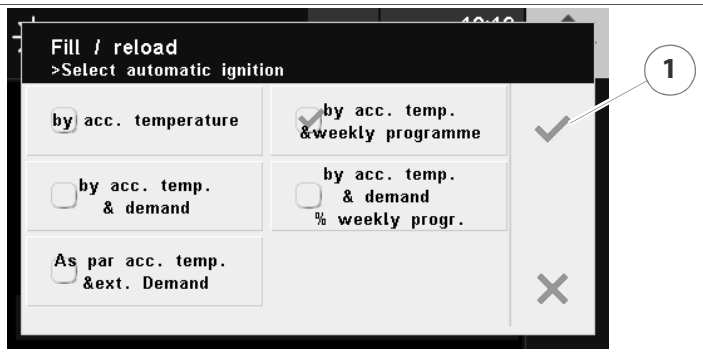


Figure 6/6 - Query automatic ignition

✓ The *Fill up / Reload* window appears in the display again.

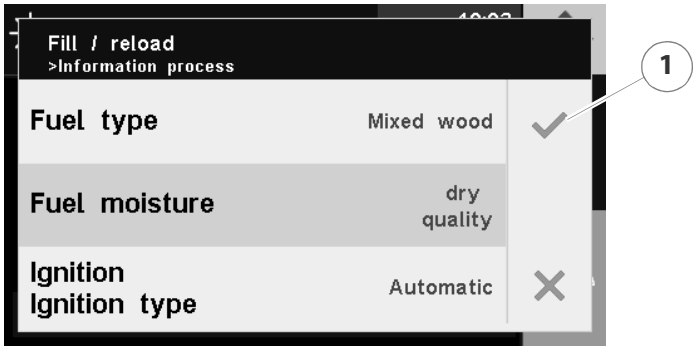


Figure 6/7 - Ignition - changing settings

16. Confirm your input by pressing the *Confirm* button (1).

✓ The *Do not open fuel chamber door* message appears in the display.

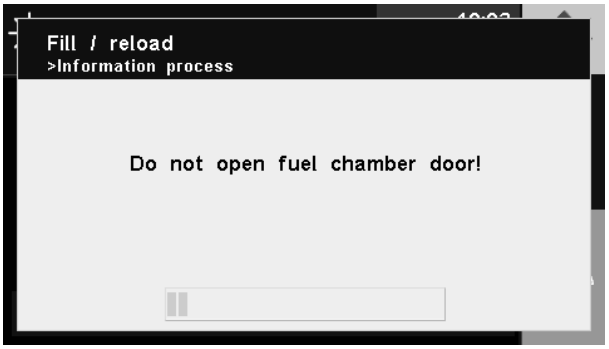


Figure 6/8 - Do not open the fuel chamber door

✓ The flue gas fan is running.

DO NOT CHANGE THE SETTINGS

17. Wait until the progress bar is full.

✓ The *Open fuel chamber door to safety position* message appears in the display.

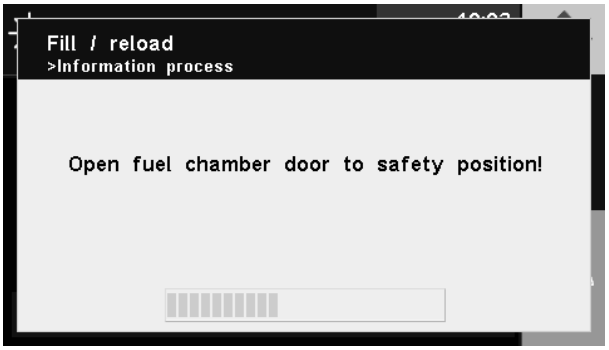


Figure 6/9 - Opening the fuel chamber door to the safety position

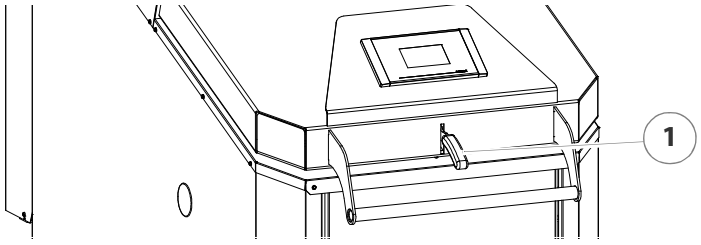


Figure 6/10 - Unlocking the fuel chamber door

18. Press the lock (1) of the fuel chamber door downward.

19. Wait until the progress bar is full.

✓ The *Open fuel chamber door slowly* message appears in the display.

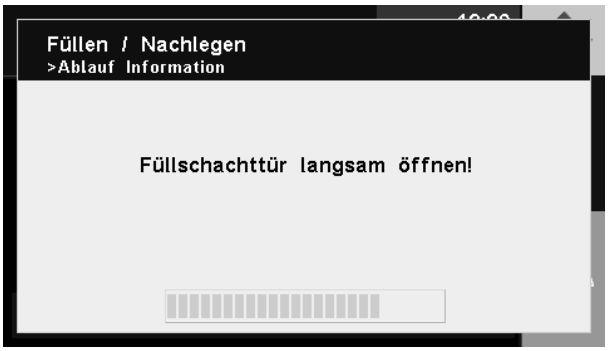


Figure 6/11 - Open the fuel chamber door slowly

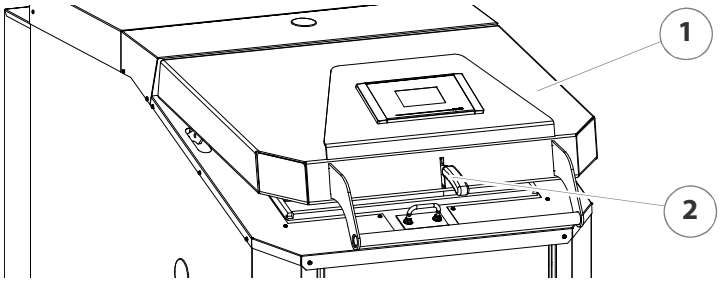


Figure 6/12 - Opening the fuel chamber door

20. Lift the lock (2) of the fuel chamber door and open the door (1) slowly until it is horizontal.

✓ The fuel chamber door opens automatically.

✓ The catch on the right pneumatic spring latches in place.

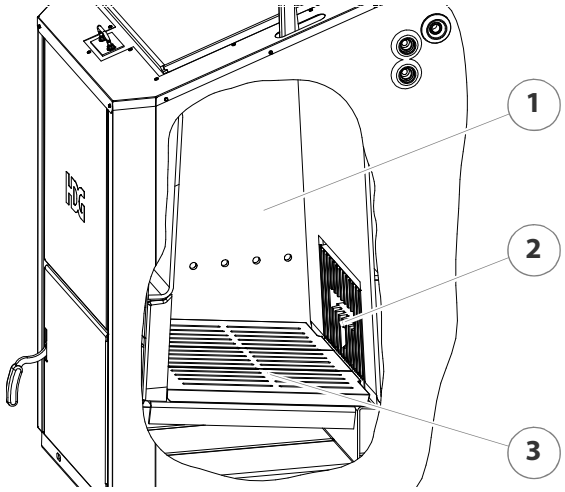


Figure 6/13 - Removing ash

21. Use the supplied cleaning tool to remove the loose ash from the grate (3).

22. Leave any unburnt pieces of wood on the grate (3).

For kindling, we recommend log wood with a diameter of D5 (2–5 cm).

MANUAL IGNITION

23. Place highly flammable material (small, dry pieces of wood, paper, cardboard) in front of the burner nozzle (2) on the grate (3) and stack it 15 to 20 cm high.

We recommend using bio-firelighters consisting of wood shavings soaked in paraffin. In contrast to newsprint, these firelighters are smokeless, odourless and free of pollutants.

24. Ignite the fuel.

25. Allow the fuel to generate a good fire.

Only put in as much wood as the heating system and accumulator can absorb as energy.

26. Fill up the fuel chamber (3) with fuel.

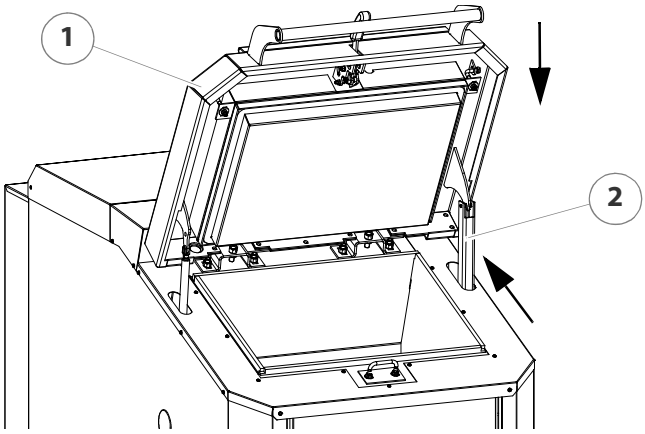


Figure 6/14 - Closing the fuel chamber door

27. Press the catch (2) of the fuel chamber door to the back.

✓ The fuel chamber door can now be closed.

28. Close the fuel chamber door (1).

✓ The *Clean, reload, ignite* message appears in the display.

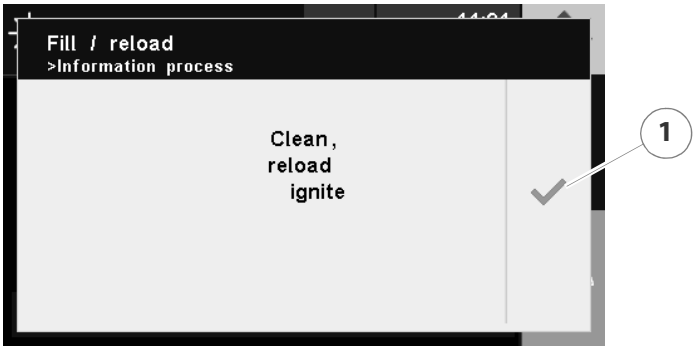


Figure 6/15 - Cleaning, reloading, igniting

29. Confirm your input by pressing the *Confirm* (1) button.

✓ The *Ignite* message appears in the display.

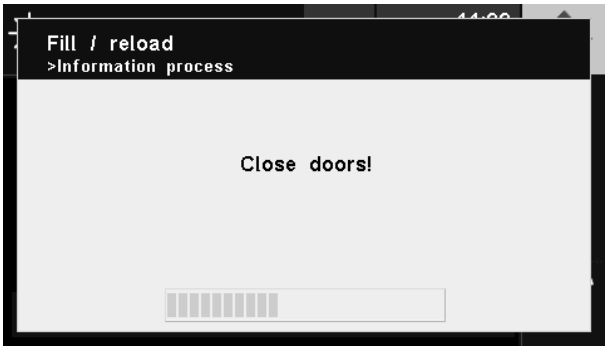


Figure 6/16 - Ignition

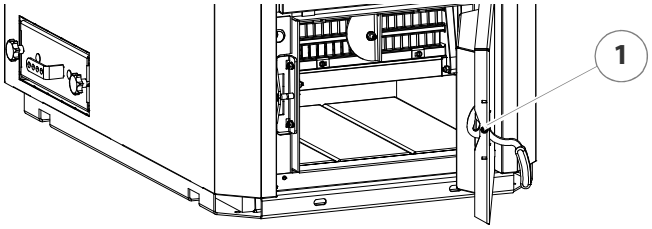


Figure 6/17 - Opening the ash door

30. Open the ash door (1).

31. Wait until the progress bar is completely full.

✓ The *Close doors* message appears in the display.

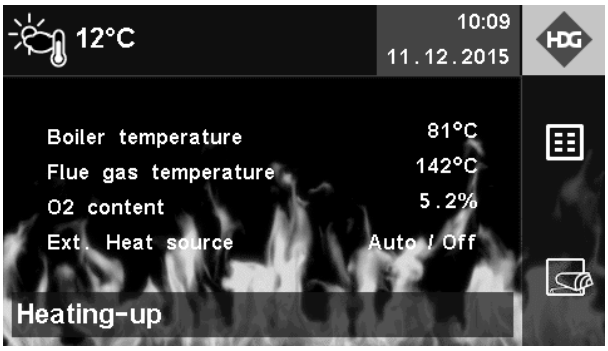


Figure 6/18 - Closing the doors

32. Close the ash door (1).

✓ The HDG Euro 30/40/45/50 boiler is now heated up.

ELECTRICAL IGNITION

16. Place some highly flammable material (small pieces of dry wood) in front of the igniter gun and approx. 15 - 20 cm high on the burner nozzle on the grate.

17. Lay some small pieces of cardboard in front of the igniter gun on the wood inside the fuel chamber.

Only put in as much wood as the heating system and accumulator can absorb as energy.

18. Fill up the fuel chamber with fuel.

19. Close the fuel chamber door.

✓ The *Clean, reload, ignite* message appears in the display.

Figure 6/19 - Cleaning, reloading, igniting

20. Confirm your input by pressing the *Confirm* (1) button.

✓ The *Close doors* message appears in the display.

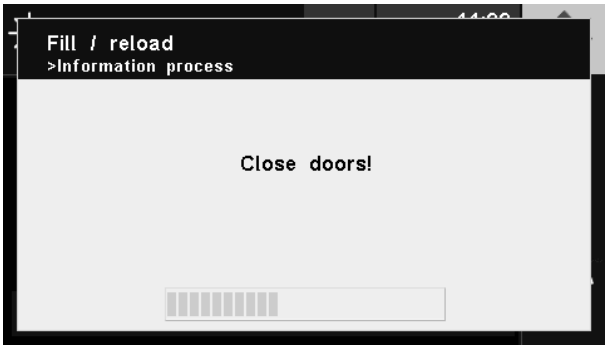


Figure 6/20 - Closing the doors

21. Make sure that all of the doors are closed.

22. Wait until the progress bar is full.

✓ The *Underpressure test* message appears in the display.

Figure 6/21 - Underpressure test

The differential pressure switch enables the ignition fan if the preset underpressure is reached.

23. Wait until the progress bar is full.

✓ The ignition fan starts.

✓ The *Ignite* message appears in the display.

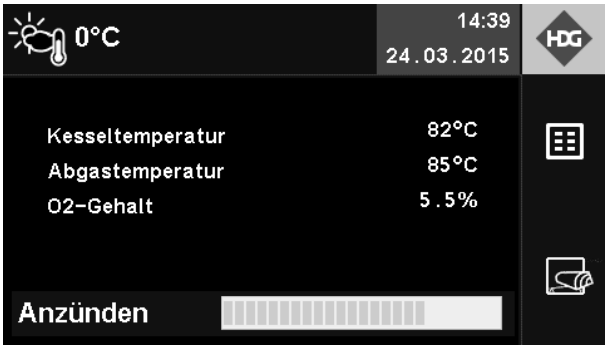


Figure 6/22 - Ignition

✓ The HDG Euro 30/40/45/50 boiler is now heated up.

AUTOMATIC IGNITION

16. Place some highly flammable material (small pieces of dry wood) in front of the igniter gun and approx. 15 - 20 cm high on the burner nozzle on the grate.

17. Lay some small pieces of cardboard in front of the igniter gun on the wood inside the fuel chamber.

Only put in as much wood as the heating system and accumulator can absorb as energy.

18. Fill the fuel chamber according to the percentage specified on the display.

19. Close the fuel chamber door.

✓ The *Clean, reload, ignite* message appears in the display.

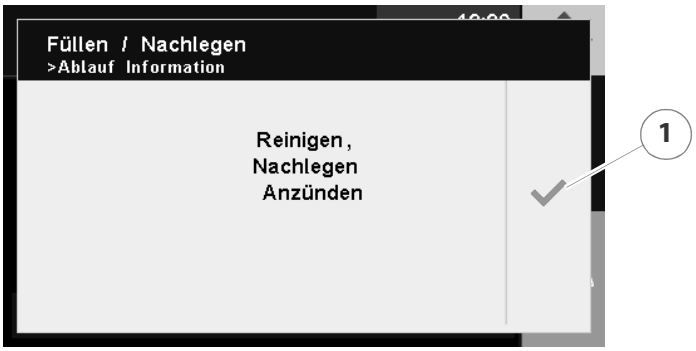


Figure 6/23 - Cleaning, reloading, igniting

20. Confirm your input by pressing the *Confirm* (1) button.

✓ The *Close doors* message appears in the display.

Figure 6/24 - Closing the doors

21. Make sure that all of the doors are closed.

22. Wait until the progress bar is full.

✓ The *Ready for ignition* message appears in the display.

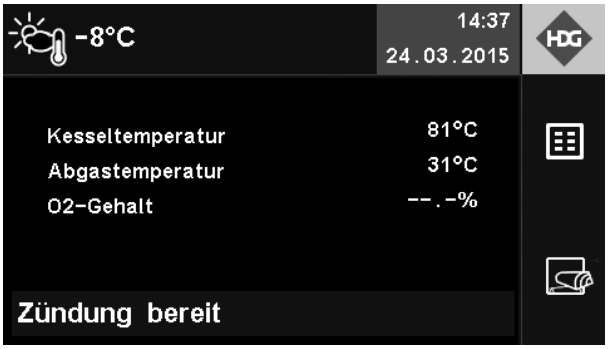


Figure 6/25 - Ready for ignition

✓ The HDG Euro 30/40/45/50 boiler is ready for automatic ignition.

6.4 Performing a chimney sweep test

In Germany, there is a legal requirement that heating systems with nominal thermal power in excess of 4 kW be inspected annually by a qualified combustion engineer to see that federal emission limits for small and medium-sized boiler systems are met (1st Federal Emission Control Ordinance).

INITIAL TEST

The operating company must notify the responsible combustion engineer of the installation of the heating system before it is commissioned, and must also arrange an appointment for the chimney sweep test within four weeks of commissioning. To ensure a stable operating ability, sufficient heat transfer must occur while operating at full load.

TEST EVERY TWO YEARS

In Germany, regular inspections every two years must be carried out in accordance with the requirements of the federal emission limits (1.BImSchV).

Caution!

Material damage and injury due to incorrect chimney sweep test

The chimney sweep test requires comprehensive technical knowledge.

Only allow authorised specialists to perform the chimney sweep test.

BEFORE THE TEST

1. Clean the boiler completely about three to four days before the chimney sweep test.

✎ See section “7.1 Cleaning and servicing schedule” in Chapter “7 Cleaning and servicing the heating system”.

2. Clean the lambda sensor and check that it is securely mounted, tighten if necessary.

✎ See section “7.1 Cleaning and servicing schedule” in Chapter “7 Cleaning and servicing the heating system”.

On the day of the test

Important!

- The boiler must have been heated at least once during the period between the cleaning and the chimney sweep test.
- Oak wood, wood briquettes, boards, scrap wood and wood chips are not suitable for the chimney sweep test.
- At the start of the test the boiler temperature should not be below 60 °C. The temperature of the accumulator should not be higher than 60°C. Ensure that the heating circuit has sufficient heat transfer capacity.
- The heating system must be fitted with a chimney draught regulator to ensure that the maximum permissible flue draught requirement of 20 Pa is not exceeded.
- At the start of test, the residual oxygen value should be below 6%. The boiler must not set to the **AFO** operating status (firing optimisation - only for HDG LC1 plus/HDG LC2 plus).
- Having the test repeated by the combustion engineer or by HDG specialists will incur charges.

1. On the day of test, heat up the boiler one hour before the scheduled appointment.

✎ See section “6.3 Heating up the system” in this chapter.

2. Only fill the fuel chamber up half way.
3. Use log wood according to fuel recommendation (split, dry wood) with a length of 50 cm, a maximum diameter of maximum 10 cm and a maximum water content of 20%.

During the test

Danger!

Danger of asphyxiation due to carbon monoxide

If the boiler is in operation, carbon monoxide can be emitted through the open doors or lids.

Always keep the doors and lids closed. Do not leave them open any longer than necessary and never leave them open unattended.

1. Press the lock of the fuel chamber door downward.
2. Lift the lock of the fuel chamber door and open the door slowly until it is horizontal.

✓ The fuel chamber door opens automatically.

✓ The catch on the right pneumatic spring latches in place.

3. Tamp the embers and remaining logs together in the fuel chamber in the presence of the combustion engineer.

Important!

The bed of embers must come up to over the burner nozzle!

4. Fill the fuel chamber half way up evenly and densely with logs according to the fuel recommendation.
5. Close the fuel chamber door.
6. Wait about 10 - 15 minutes and then start the HDG Control chimney sweep test.
7. Press the *Main menu* button in the standard display.

✓ The display switches to the main menu.

8. Press the *Messages / Maintenance* field.

✓ The display switches to the *Messages / Maintenance* area.

9. Press the *Chimney sweep test* field.

✓ The display switches to *Chimney sweep test*.

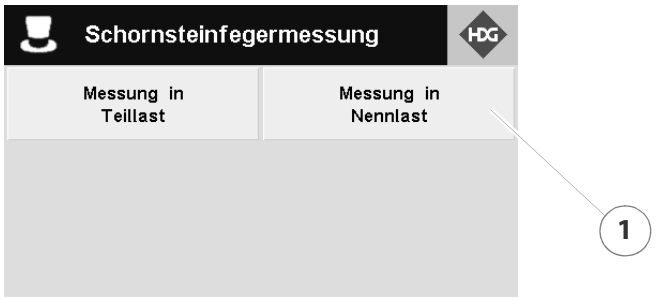


Figure 6/26 - Chimney sweep test nominal load/partial load

10. Press *Test in nominal load* (1), to carry out the chimney sweep test in nominal load operation.

✎ A security query appears.

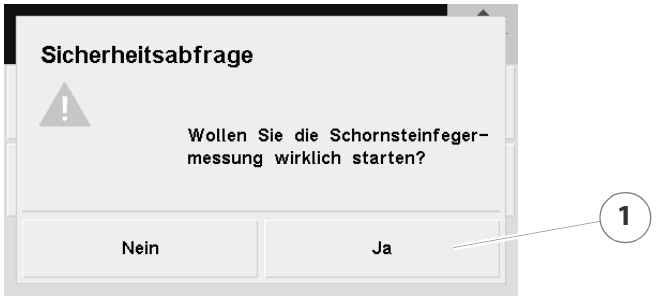


Figure 6/27 - Chimney sweep test security query

11. Press *Yes* (1).

✓ The display switches to the chimney sweep test.

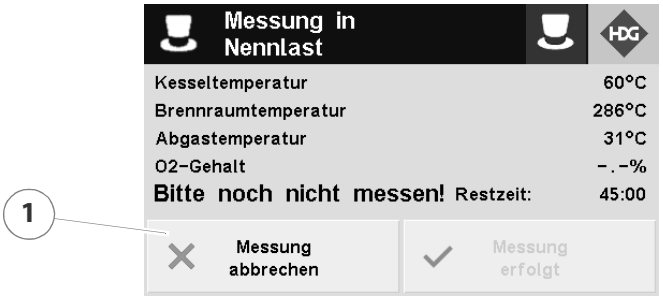


Figure 6/28 - Chimney sweep test

✓ All heating components are activated for heating components.

✓ *Do not test yet!* is shown on the display

Pressing the *Cancel test* button (1) cancels the chimney sweep test.

12. Hold off with the test until the thresholds set for the boiler temperature and for the combustion chamber temperature have been exceeded.

✓ The display will then show *Measurement done*.

✓ The chimney sweep test can be started.

If you do not change the operating mode within 45 minutes, the heating system will automatically return to the previous operating mode.

6.5 Switching off the heating system for repair work

1. Allow the fire in the boiler to burn out and cool off.

Important!

Frost danger

Only completely shut off the power to the heating system if the danger of frost can be ruled out.

2. Switch the heating system off.

✎ See the "HDG Control" operating manual, chapter "5 Using the control unit", section "5.3 Switching off the heating system".

There is still electrical voltage in the system.

3. Switch off the emergency heating switch (if installed) or the corresponding mains electricity circuit breaker.

✓ The heating system is switched off and without current.

6.6 Troubleshooting

If a fault occurs in the heating system, this is shown in the display of the HDG Control.

✎ See the “HDG Control” operating manual, chapter 10 “Troubleshooting”.

7 Cleaning and servicing the heating system

GENERAL INFORMATION

To ensure fault-free and safe operation, certain cleaning and maintenance work is necessary. This effort will also help you avoid expensive repairs, provided you observe the recommended intervals.

The cleaning and maintenance work can also be performed by an authorised specialist heating company where a servicing contract has been concluded.

SPARE PARTS

Only use genuine HDG spare parts. You can obtain HDG spare parts from your specialist heating company.

7.1 Cleaning and servicing schedule

The specified cleaning intervals are guidelines.
These intervals may vary according to the quality of the fuel and the power used by the heating system.

Interval	Component	See page ...
Weekly / as required	• Clean fuel chamber and ash compartment • Inspect pneumatic springs	65 68
Monthly (during the heating period, approx. 240 operating hours)	• Clean heat exchanger surfaces and combustion chamber • Clean burner nozzle	69 71
Every 6 months (approx. 900 operating hours)	• Cleaning the flue gas pipe • Cleaning the lambda sensor • Cleaning the flue gas temperature sensor • Cleaning primary air inlets	72 73 74 74
Annually (approx. 1800 operating hours)	• Cleaning the flue gas fan • Cleaning the air control unit • Inspecting the door seals for leaks • Cleaning the ignition fan	75 76 77 79

Table 7/1 - Cleaning and servicing schedule

7.2 Procedure

GENERALLY APPLICABLE SAFETY INSTRUCTIONS

Warning!

Danger of asphyxiation due to carbon monoxide

When the boiler is in operation, carbon monoxide can be emitted through the open doors, lids or other cleaning openings.

When performing cleaning and maintenance work, do not leave the cleaning openings, doors and lids open any longer than necessary.

Caution!

Danger of burns from hot surfaces

During operation, the boiler surfaces under the cladding are hot. Even when turned off, they only cool down slowly.

Switch the heating system off and only start with the cleaning and maintenance work when the surfaces have cooled down.

Warning!

Danger of fire

When the heating system is in operation, open doors and lids constitute a fire hazard.

Always keep the doors and lids closed. Only open them when the boiler has finished burning. Do not leave them open any longer than necessary and never leave them open unattended.

Warning!

Danger of fire from combustion residues

The combustion residue (ash, coal, etc.) can catch fire again after being removed from the boiler.

Let the combustion residue cool off before you vacuum and put the ashes in an appropriate, non-flammable container.

Important!

Before the start of the cleaning and maintenance tasks, the display of the HDG Control Touch control unit must show the *Ready* message.

Cleaning tools

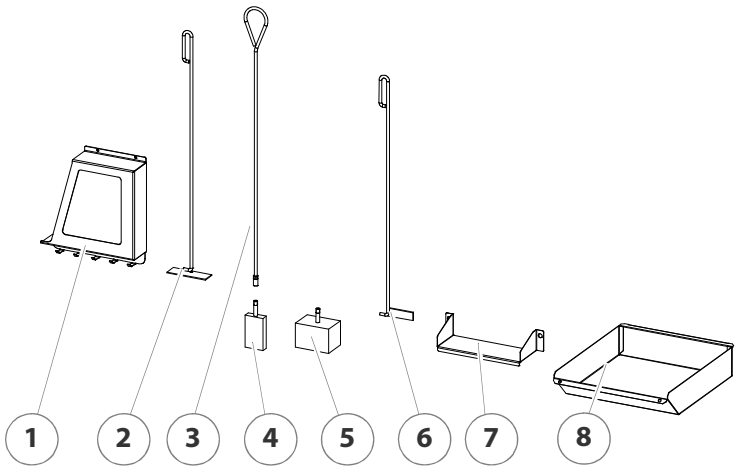


Figure 7/1 - Cleaning tools

1 Wall holder
2 Scraper
3 Brush handle
4 Small brush
5 Large brush
6 Poker
7 Flue ash removal plate
8 Ash pan

Cleaning the fuel chamber and ash compartment

Important!

✎ Observe the "Generally applicable safety instructions" in this section.

Caution!

Danger of injury

The fuel chamber door is heavy and may fall shut. This could injure hands and fingers.

Take care each time you open or close the fuel chamber door that it does not unexpectedly fall shut.

Cleaning the fuel chamber

1. Allow the fire in the boiler to burn out and cool off.
2. Press the *Reload* button.

✓ The *Fill up / Reload* window appears in the display.

3. Confirm your entry by pressing the *Confirm* button.

✓ The *Do not open fuel chamber door* message appears in the display.

✓ The flue gas fan is running.

4. Wait until the progress bar is full.

✓ The *Open fuel chamber door to safety position* message appears in the display.

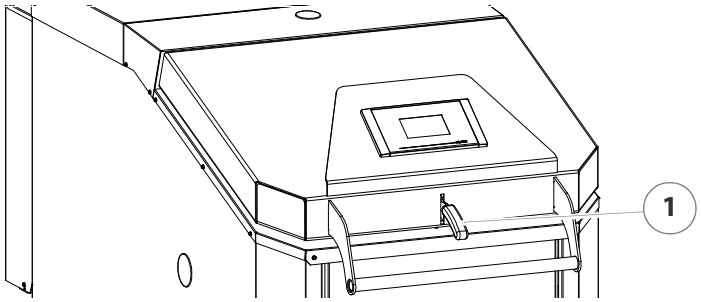


Figure 7/2 - Unlocking the fuel chamber door

5. Press the lock (1) of the fuel chamber door 1 downward.

6. Wait until the progress bar is full.

✓ The *Open fuel chamber door slowly* message appears in the display.

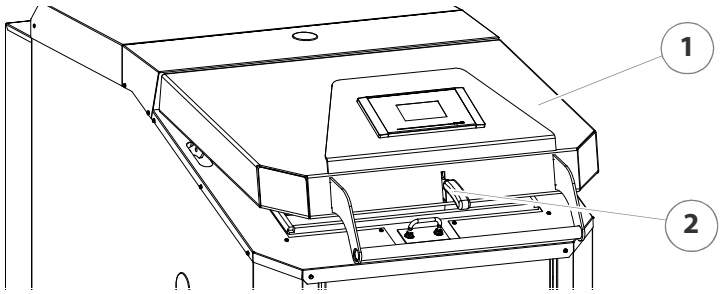


Figure 7/3 - Opening the fuel chamber door

7. Lift the lock (2) of the fuel chamber door and open the door (1) slowly until it is horizontal.

✓ The fuel chamber door opens automatically.

✓ The catch on the right pneumatic spring latches in place.

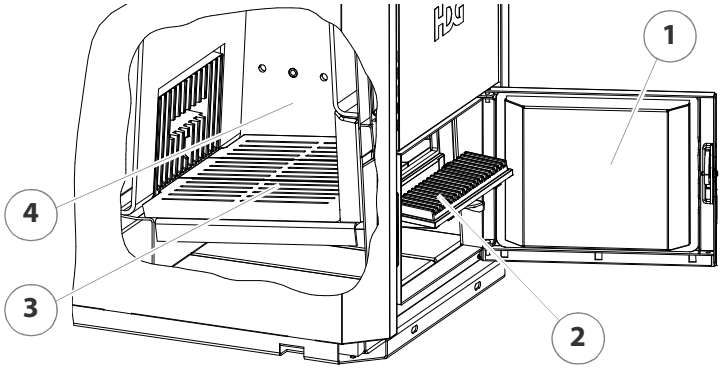


Figure 7/4 - Cleaning the fuel chamber

8. Open the ash door (1).

9. Open the upright grate flap (2).

10. Check the fuel chamber (4) for ash and any other dirt and, if necessary, remove this from the grate (3) using the supplied cleaning tools.

Important!

Special attention must be paid to the corners of the fuel chamber in order to free them of any tar deposits and encrustations.

11. Use the supplied cleaning tools to remove tar deposits and encrustations from the corners of the fuel chamber (4).
12. Clean the frame of the upright grate flap (2) so that it closes again with a tight seal.
13. Leave any unburnt pieces of wood and charcoal in the fuel chamber (4).
14. Close the upright grate flap.

CLEANING THE ASH COMPARTMENT

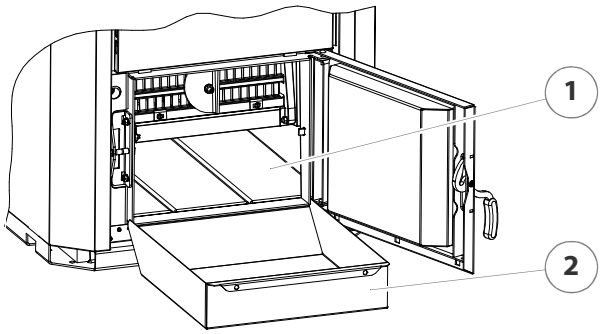


Figure 7/5 - Cleaning the ash compartment

15. Check the ash compartment (1).
16. Place the ash pan (2) in front of the ash compartment (1).
17. Use the scraper to sweep the combustion residue into the ash pan (2).
18. Empty the combustion residue into a fireproof container.
19. Close the boiler in the reverse order.
20. The *Clean, reload, ignite* message appears in the display.
21. Press the *Confirm* button.
22. Press the *Reload* button.

✓ The *Fill/Reload* message appears in the display.

23. Press the *Cancel* button.

✓ The security query *Do you really want to switch off the boiler?* appears in the display.

Press the *Confirm* button.

✓ The *Ready* message appears in the display.

✓ The fuel chamber and the ash compartment are now clean.

INSPECTING THE PNEUMATIC SPRINGS

Important!

✎ Observe the “Generally applicable safety instructions” in this section.

1. Allow the fire in the boiler to burn out and cool off.

Caution!

Danger of injury

The fuel chamber door is heavy and may fall shut. This could injure hands and fingers.

Take care each time you open or close the fuel chamber door that it does not unexpectedly fall shut.

2. Open the fuel chamber door.

✎ See “Cleaning the fuel chamber” in “Cleaning the fuel chamber and ash compartment” in this section.

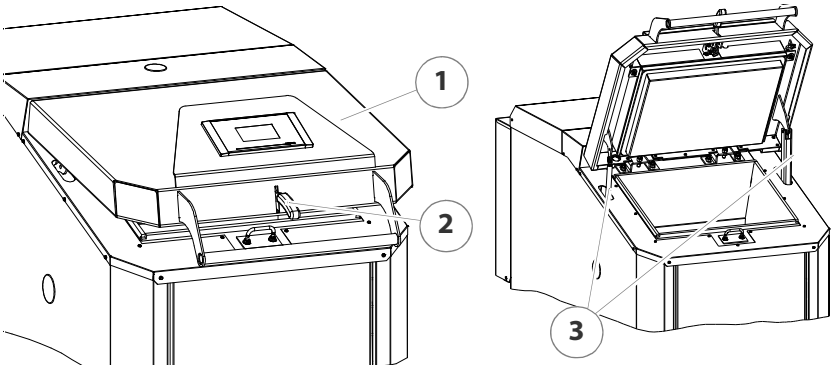


Figure 7/6 - Inspecting the pneumatic springs

3. Lift the lock (2) of the fuel chamber door (1) and open the door (1) slowly until it is horizontal.

✓ If the fuel chamber door opens quickly from the horizontal position, the pneumatic springs (3) are in order.

✓ If the fuel chamber door does not open from the horizontal position or has to be lifted, the pneumatic springs (3) must be replaced.

Have the pneumatic springs replaced by qualified specialists.

Important!

The tension of the spring for the fuel chamber door catch must be regularly inspected.

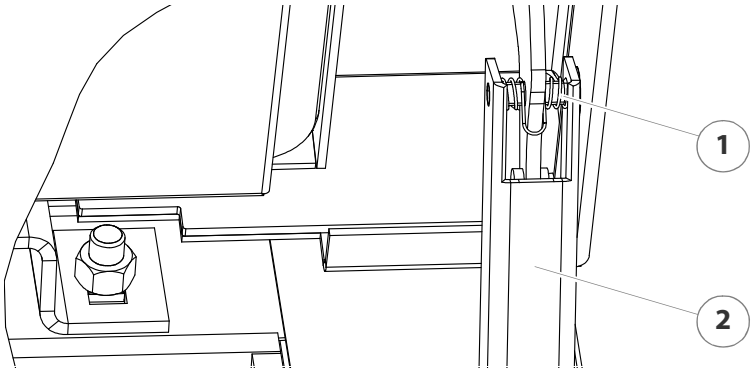


Figure 7/7 - Inspecting the fuel chamber door catch

4. Regularly inspect the spring (1) of the catch (2) for the fuel chamber door for proper tension.

✓ If the spring (1) presses the catch (2) of the fuel chamber door forward all the way to the limit stop, the spring tension is in order.

✓ If the spring (1) does not apply pressure to the catch (2), in other words, the catch is no longer pressed forward all the way to the limit stop, the spring must be replaced.

Have the spring replaced on the catch of the fuel chamber door by authorised and qualified specialists.

5. Close the boiler in the reverse order.

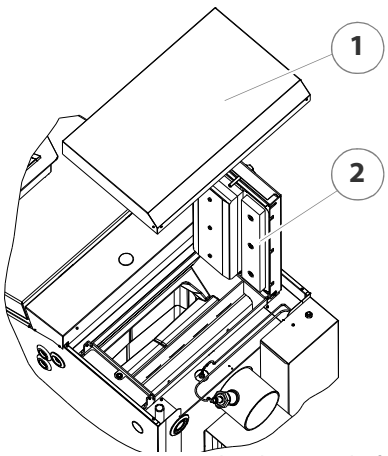
✓ The pneumatic spring inspection is completed.

CLEANING THE HEAT EXCHANGER SURFACES AND COMBUSTION CHAMBER

Important!

✎ Observe the "Generally applicable safety instructions" in this section.

1. Allow the fire in the boiler to burn out and cool off.



2. Remove the upper cover (1) by lifting it upward.
3. Open the cleaning shaft lid (2).

Figure 7/8 - Opening the cleaning shaft lid

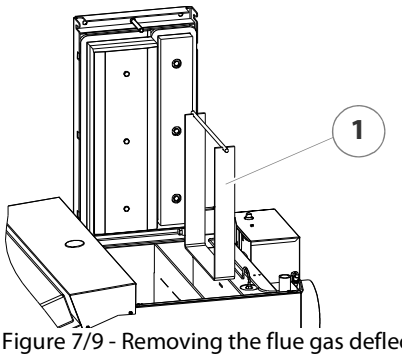


Figure 7/9 - Removing the flue gas deflector plate

4. Pull out the flue gas deflector plate (1) in an upward direction.

Important!

When cleaning the heat exchanger surfaces, always first push the cleaning brush all the way down and through before you pull it up again, so that the wire bristles of the brush are not bent.

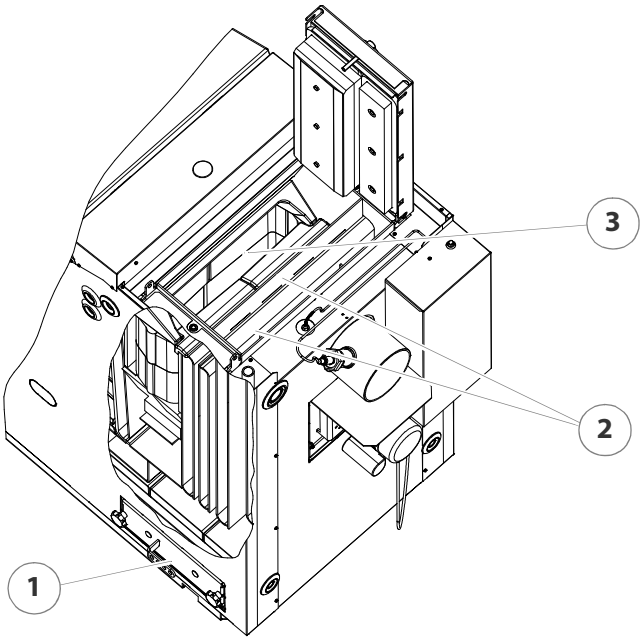


Figure 7/10 - Cleaning the heat exchanger surfaces and combustion chamber

5. Clean the heat exchanger surfaces (2) with the small and large cleaning brushes.
6. Use a vacuum cleaner to remove any deposits and dust in the area of the combustion chamber (3).
7. Reinstall the flue gas deflector plate.
8. Loosen the two star-grip screws on left and right hand sides of the boiler and remove one of the flue ash doors (1).

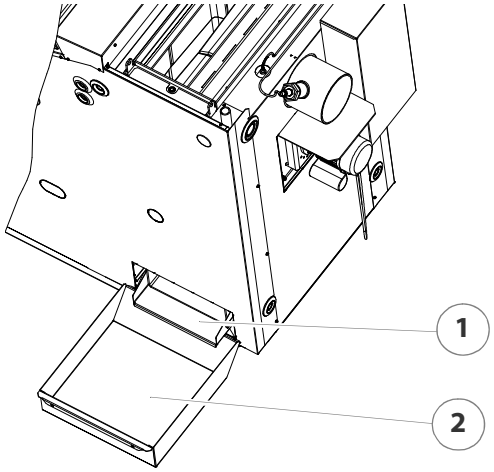


Figure 7/11 - Removing the flue ash

9. Place the flue ash removal plate (1) on the threaded rod for the flue ash door.
10. Place the ash pan (2) under the flue ash removal plate (1).
11. Use the scraper to sweep the flue ash into the ash pan (2).
12. Empty the flue ash into a fireproof container.
13. Close the boiler in the reverse order.

✓ The cleaning of the heat exchanger surfaces and combustion chamber is completed.

CLEANING THE BURNER NOZZLE

Important!

✎ Observe the “Generally applicable safety instructions” in this section.

1. Allow the fire in the boiler to burn out and cool off.
2. Open the fuel chamber door.

✎ See “Cleaning the fuel chamber” in “Cleaning the fuel chamber and ash compartment” in this section.

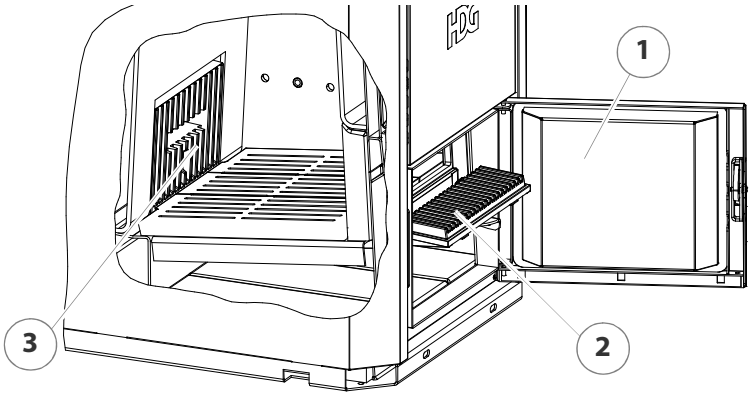


Figure 7/12 - Cleaning the burner nozzle

3. Open the ash door (1).
4. Open the upright grate flap (2) behind the door.
5. Clean the burner nozzle (3) with a vacuum cleaner.
6. Close the boiler in the reverse order.

✓ The cleaning of the burner nozzle is completed.

CLEANING THE FLUE GAS PIPE

Important!

✎ Observe the "Generally applicable safety instructions" in this section.

1. Allow the fire in the boiler to burn out and cool off.

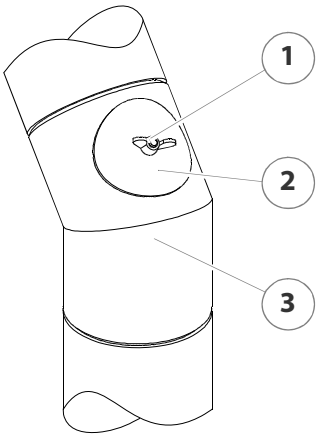


Figure 7/13 - Cleaning the flue gas pipe

2. Unscrew the wing nut (1) on the inspection hatch cover (2).
3. Remove the inspection hatch cover (2) from the flue gas pipe (3).
4. Check whether the flue gas pipe (3) needs cleaning.
5. If necessary, extract the ash from the flue gas pipe (3) using a vacuum cleaner.
6. Sweep any deposits into the flue gas collection box, but not in the direction of the boiler.
7. Screw the inspection hatch (2) securely back onto the flue gas pipe (3) with the wing nut (1).

✓ The cleaning of the flue gas pipe is completed.

CLEANING THE LAMBDA SENSOR

Important!

✎ Observe the “Generally applicable safety instructions” in this section.

1. Allow the fire in the boiler to burn out and cool off.

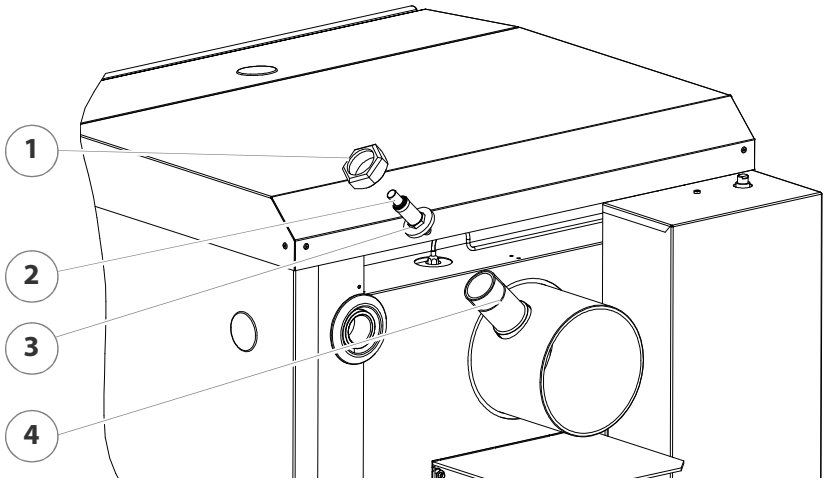


Figure 7/14 - Cleaning the lambda sensor

2. Unscrew the union nut (1) with a pipe wrench.
3. Remove the lambda sensor (2) and the steel washer (3) under it from the connection nozzle (4) of the flue gas pipe.

Important!

Steel bristles will damage the lambda sensor.

4. Clean the lambda sensor (2) with a vacuum cleaner.
5. Clean out any deposits inside the connection nozzle (4).

Important!

When reinstalling the lambda sensor, make sure its seal is intact.

Use a pipe wrench to tighten the union nut (1). Do not tighten the lambda sensor excessively. Never tighten the lambda sensor by the shaft body.

6. Reinstall the lambda sensor (2) in the reverse sequence.
7. Check the lambda sensor (2) for a secure fit.
8. Carefully tighten the lambda sensor (2) with a 22 mm spanner.

✓ The cleaning of the lambda sensor is completed.

Cleaning the flue gas temperature sensor

Important!

✎ Observe the “Generally applicable safety instructions” in this section.

1. Allow the fire in the boiler to burn out and cool off.

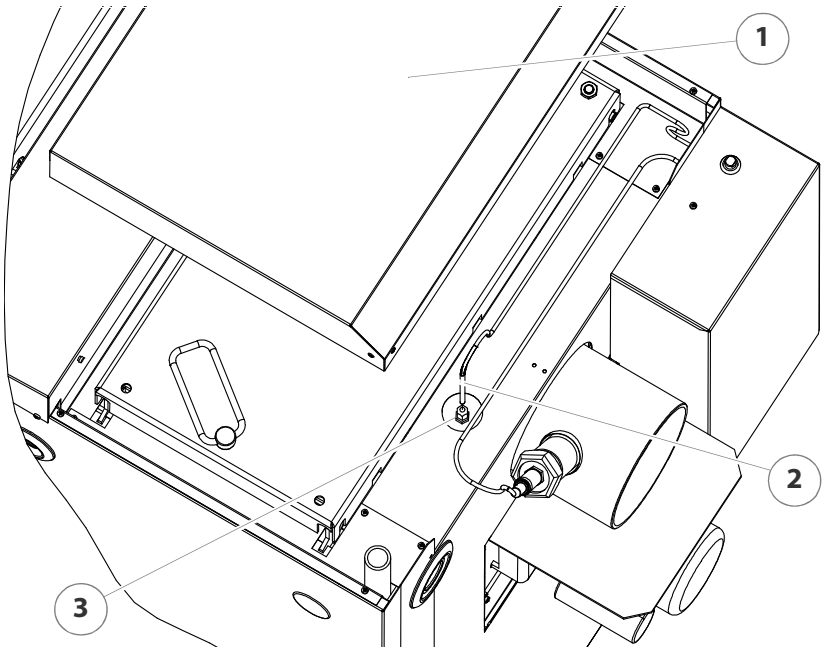


Figure 7/15 - Cleaning the flue gas temperature sensor

2. Remove the upper cover (1) by lifting it upward.
3. Loosen the M10 union nut (SW 17) (3) and pull the flue gas temperature sensor (2) out of the clamp screw connections.
4. Clean the sensor surface with a moist cloth.
5. Reinstall the flue gas temperature sensor (2) in the reverse sequence.
6. Close the boiler in the reverse order.

✓ The flue gas temperature sensor has been cleaned.

Cleaning the primary air inlets

Important!

✎ Observe the “Generally applicable safety instructions” in this section.

1. Allow the fire in the boiler to burn out and cool off.
2. Open the fuel chamber door.

✎ See “Cleaning the fuel chamber” in “Cleaning the fuel chamber and ash compartment” in this section.

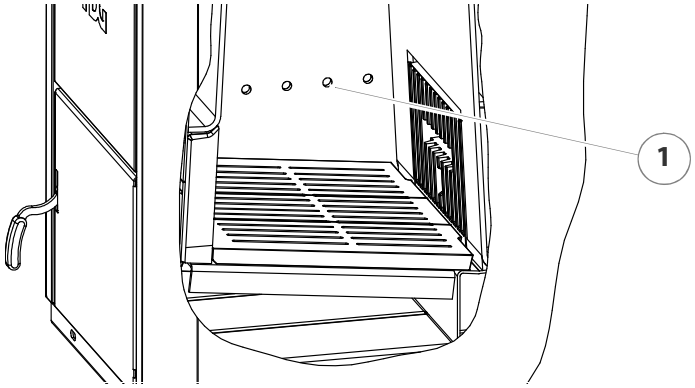


Figure 7/16 - Cleaning the primary air inlets

3. Free both sides of the primary air inlets (1) of dirt deposits with a suitable tool (e.g. the thin end of a poker).
4. Vacuum each primary air inlet (1) with a vacuum cleaner until cleared.
5. Close the boiler in the reverse order.

✓ The cleaning of the primary air inlets is completed.

CLEANING THE FLUE GAS FAN

Important!

✎ Observe the "Generally applicable safety instructions" in this section.

Caution!

Risk of injury from automatically driven components

Working on the flue gas fan can lead to hand injuries due to the moving parts.

Disconnect the boiler from the power mains when working on the flue gas fan.

1. Allow the fire in the boiler to burn out and cool off.

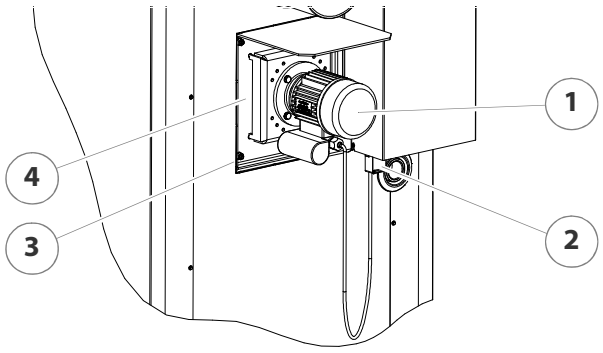


Figure 7/17 - Removing the flue gas fan

2. Disconnect the plug (2) from the flue gas fan (1).

3. Remove the four M8 nuts (3) with a 13 mm spanner.
4. Remove the flue gas fan (1), including the flange plate (4), from the boiler.

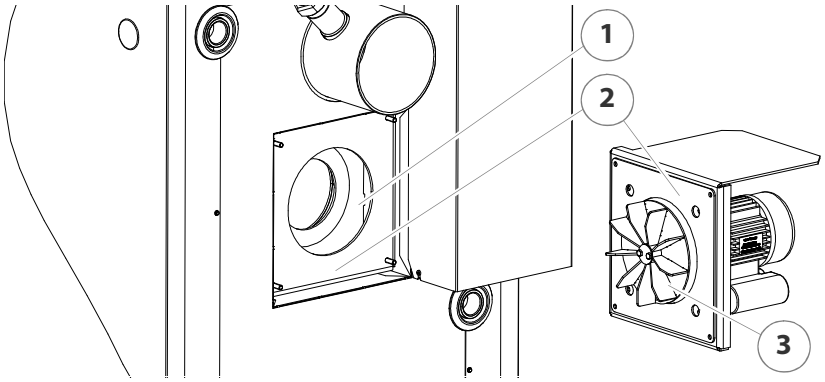


Figure 7/18 - Cleaning the flue gas fan

5. Clean the flue gas collection box (1).
6. Clean the fan wheel (3) and the annular gap behind it with a cleaning tool.
7. Inspect the seal and the contact surfaces (2) around the flue fan and the flue gas collection box.
8. Replace the seal if it is damaged.
9. Reinstall the flue gas fan in the reverse sequence.

✓ The flue gas fan has been cleaned.

CLEAN AIR CONTROL UNIT

Important!

✎ Observe the “Generally applicable safety instructions” in this section.

1. Allow the fire in the boiler to burn out and cool off.

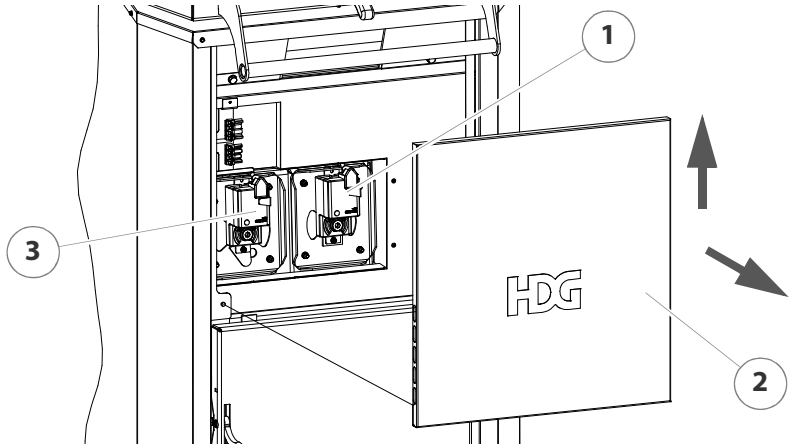


Figure 7/19 - Cleaning the air control unit

2. Lift up on the cladding (2) of the air control unit (1 + 3) and pull it out towards the front.
3. Use a fine brush and a vacuum cleaner to remove dust deposits from the air control unit (1 + 3).
4. Carefully press on the two rotary vanes behind the actuators and make sure that these are movable.
5. Close the air control unit in reverse order.

✓ The air control unit is cleaned.

Inspecting the door seals for leaks

Important!

✎ Observe the "Generally applicable safety instructions" in this section.

Checking the fuel chamber door

1. Allow the fire in the boiler to burn out and cool off.
2. Open the fuel chamber door.

✎ See "Cleaning the fuel chamber" in "Cleaning the fuel chamber and ash compartment" in this section.

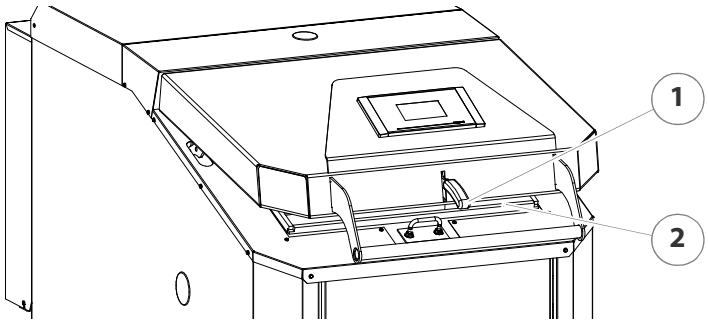


Figure 7/20 - Checking the fuel chamber door for leaks

3. Clamp a sheet of paper (approx. 30 cm long and 2 cm wide) between the contact surface (2) and the seal of the fuel chamber door (1).
4. Close the fuel chamber door (1).
5. Pull on the paper.

✓ If the paper moves, the door is not properly sealed.

If a correction to the fuel chamber door is necessary, consult a qualified specialist.

✓ If the paper does not move, the door is properly sealed.

6. Repeat the procedure from step 2 to step 5 until you have inspected all four of the contact surfaces (2).
7. Remove the paper and close the fuel chamber door (1).

Checking the ash door

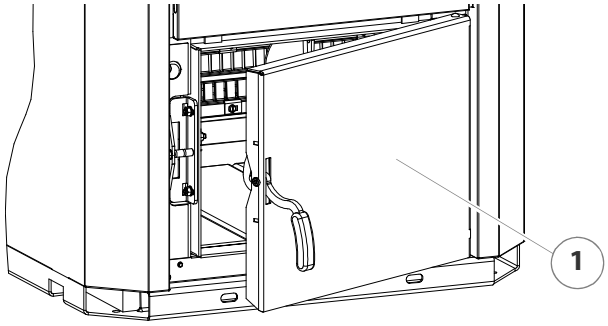


Figure 7/21 - Checking the ash door for tightness

8. Check the sealing of the ash door (1) exactly as described above under “Checking the fuel chamber door”.

If a correction to the ash door is necessary, consult a qualified specialist.

Checking the fly ash door

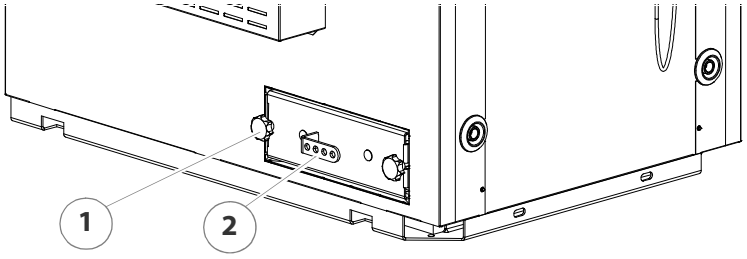


Figure 7/22 - Checking the fly ash door for tightness

9. Make sure that both fly ash doors (2) have a tight seal.
10. Tighten the two star-grip screws (1) if necessary.

CHECKING THE CLEANING SHAFT LID

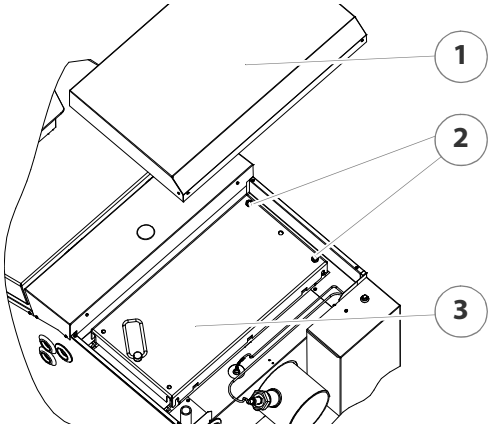


Figure 7/23 - Checking the cleaning shaft lid for leaks

11. Remove the upper cover (1) by lifting it upward.
12. Check the sealing of the cleaning shaft lid (3) exactly as described above under “Checking the fuel chamber door”.
13. If not tight, tighten the M12 hex nuts (2) of the hinges one revolution each using a 19 mm spanner.
14. Check the seal again.

✓ The cleaning shaft lid is sealed.

15. Close the boiler in the reverse order.

✓ The door seals have been checked.

CLEANING THE IGNITION FAN

The ignition fan is only available in connection with the HDG automatic ignition system.

Important!

✎ Observe the “Generally applicable safety instructions” in this section.

Caution!

Danger of burns from hot surfaces

The hot air nozzle of the ignition fan becomes very hot during operation. Even when turned off, it only cools down slowly.

Switch the heating system off and only start with the cleaning and maintenance work once the hot air nozzle has cooled down.

1. Allow the fire in the boiler to burn out and cool off.
2. Switch the heating system off.

✎ See the "HDG Control" operating manual, chapter "5 Using the control unit", section "5.3 Switching off the heating system".

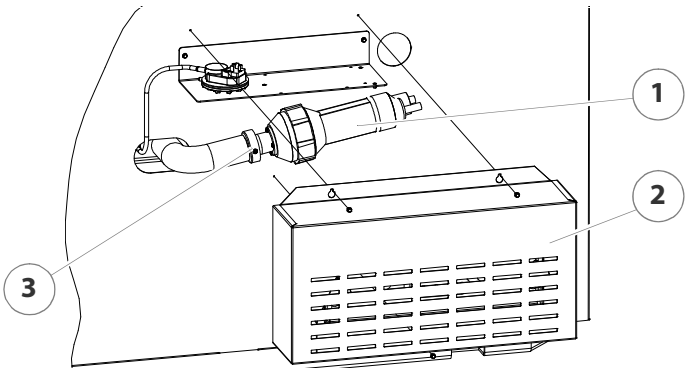


Figure 7/24 - Removing the cover

3. Undo the Phillips screw and remove the side cover (2).
4. Loosen the M8 hexagon socket screw (SW4) on the adjusting ring (3).
5. Pull the ignition fan (1) out of the retainer.

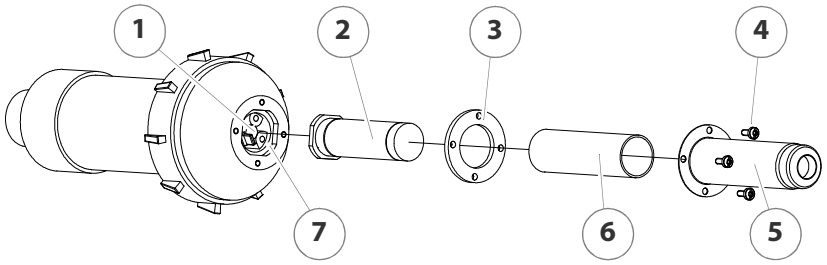


Figure 7/25 - Checking and cleaning the ignition fan

6. Unscrew the four M4 stainless steel slotted screws (4) of the hot air nozzle (5).
7. Pull off the hot air nozzle (5).
8. Remove the insulating tube (6) and the seal (3).
9. Pull the heating element (2) out of the plug contacts (7).
10. Check the heating element (2) for dirt.
11. Remove any dirt by blowing it off.
12. Check the photocell (1) for dirt.
13. Remove any dirt using a cotton swab.
14. Reinstall the ignition fan into the heating system in the reverse sequence.
15. Re-starting the heating system.

✎ See the "HDG Control" operating manual, chapter "5 Using the control unit", section "5.2 Switching on the heating system".

✓ The cleaning of the ignition fan is completed.

8 Notes on dismantling and disposal

8.1 Dismantling

Danger!

Material damage and personal injury due to incorrect dismantling

Dismantling the system requires comprehensive specialist knowledge. If the boiler is dismantled by an untrained person, injuries may occur.

Only allow authorised specialists to dismantle the system.

The boiler can be dismantled as follows:

1. Allow the fire in the boiler to burn out and cool off.

Danger!

Dangerous electrical current or voltage

The heating system can only be completely de-energised by switching off the mains circuit breaker or the emergency heating switch.

2. Switch off the heating system at the emergency heating switch or the mains circuit breaker.

✎ See chapter “6 Using the heating system”, section “6.5 Switching off the heating system for repair work”.

✓ The system has been de-energised.

✓ The control is deactivated.

3. Disconnect the boiler from the electrical power supply.
4. Once it has cooled down, drain the heating water from the system.
5. Observe the safety regulations for personnel when disconnecting the boiler from the heating system.
6. Dismantle the individual components of the boiler.

✓ The boiler has been dismantled.

8.2 Disposal

The following components are made of steel and can be recycled via a local recycling centre.

- (Central heating) boiler
- Cladding

The electrical components can also be recycled via a local recycling centre.

Fibreglass, mineral wool and plastic parts should be brought to the relevant waste disposal centres.

Oily or greasy components and condensers may only be disposed of through a specialist waste disposal centre.

9 Declaration of Conformity

EC Declarationof Conformity

in accordance with Section A of Part 1 of Annex II of the EC Directive 2006/42 on machinery

Producer:
HDG Bavaria GmbH, Heating system for wood
Siemensstraße 22
D-84323 Massing

Resident of the EC authorized to assemble the adequate technical documentation:
Stefan Holfelder
HDG Bavaria GmbH, Heating system for wood
Siemensstraße 22
D-84323 Massing

Description and identification of the machinery:

Product:	HDG Euro V3.0
Type:	HDG Euro 30V3.0/40V3.0/45V3.0/50V3.0

We definitely declare hereby that the machinery complies with each and every relevant provision of the following EC Directives:

2006/42/EC:2006-05-17	EC Directive on machinery 2006/42/EC
2006/95/EC:	(Low Voltage Directive) Directive of the European Parliament and of the Council of 12 December 2006 on the harmonisation of the laws of Member States relating to Electrical Equipment designed for use within certain voltage limits (codified version) (1)
2004/108/EC:	Directive 2004/108/EC of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC
97/23/EC:	(Pressure Equipment) Directive 97/23/EC on the approximation of the laws of the Member States concerning pressure equipment

In accordance with section 2 of article 7 the applied harmonized regulations are to be found under:

EN 60335-1:2002	Household and similar electrical appliances Safety - Part 1: General requirements
EN ISO 12100-1:2003-11	Safety of machinery — Basic concepts, general principles for design - Part 1: Basic terminology, methodology
EN ISO 12100-2:2003-11	Safety of machinery — Basic concepts, general principles for design - Part 2: Technical principles
EN 60204-1:2006-06	Safety of Machinery - Electrical Equipment of Machines - Part 1: General requirements
EN ISO 14121-1:2007	Safety of machinery –Risk assessment - Part 1: Principles (ISO 14121-1:2007)

Further technical standards and specifications applied are to be found under:

EN 303-5:1999	Part 5: Heating boilers for solid fuels, hand and automatically fired, nominal heat output of up to 300 kW. Terminology, requirements, testing and marking

Massing, 13.03.2013

Place, date

Signature
Martin Ecker
CEO

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