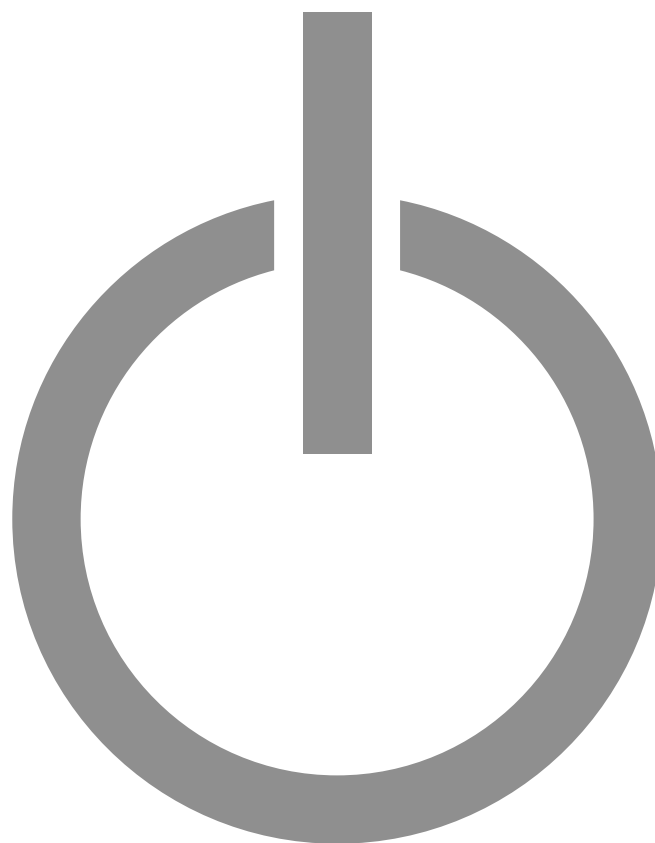


# Operation Manual



*Comfortable  
heating. With wood!*

# HDG Compact 99 - 200





# Content

1	Notes on this manual .....	8
1.1	Introduction.....	8
1.2	Structure of the operating manual .....	9
1.3	Glossary.....	10
2	Safety instructions.....	11
2.1	Intended use .....	11
	Basic system design principles.....	11
	Basic principles on the content of the operating manual .....	11
	Proper and improper manner of operation.....	11
2.2	Residual risks.....	12
2.3	Warnings and safety symbols used.....	14
2.4	Duty of information .....	15
3	Mode of operation .....	16
3.1	Overview.....	16
	Front side of HDG Compact 99/100/105/115.....	17
	Back side of HDG Compact 99/100/105/115.....	18
	Front side of HDG Compact 150/194/199/200.....	19
	Back side of HDG Compact 150/194/199/200 .....	20
3.2	Functional description.....	21
	Combustion process .....	21
	Delivery system.....	22
	HDG Control.....	22
	Control modes.....	23
3.3	Technical data.....	24
3.4	Fuel quality requirements.....	26
	Permissible fuel.....	26
	Wood chips .....	27
	Wood pellets .....	28
	Recommended fuel .....	29
4	Planning and installation .....	31
4.1	Planning the heating system.....	31
	Required room sizes and minimum spacing.....	31
	Dimensions.....	32
	Boiler room.....	32
	Fuel bunker.....	33
	Delivery system versions .....	34
4.2	Connections .....	36
	Chimney .....	36
	Electrical system .....	38
	Water.....	39
	Dimensions of the flue pipe side of the HDG Compact 99 - 115 .....	41
	Dimensions of the back side of HDG Compact 99 - 115 .....	42

Dimensions of the flue pipe side of the HDG Compact 150 - 200 .....	43
Dimensions of the back side of HDG Compact 150 - 200 .....	44
4.3 Scope of delivery .....	45
4.4 Installing the heating system .....	46
Requirements .....	46
Placing the boiler .....	47
Installing the feeding system .....	47
Attaching the pressure equalisation hose .....	49
Installing ash container(s) .....	50
Installing the central ash removal system .....	51
Fitting the buffer probe .....	54
Installing the EMD-C 215 Exclusiv control cabinet .....	55
Connecting the chimney .....	55
4.5 Delivery system .....	55
General information .....	55
HDG hose junction .....	56
4.6 HDG cyclone dust extractor .....	60
4.7 Electrical system .....	60
4.8 Water .....	60
4.9 Thermal safety device .....	61
4.10 Hydraulic system .....	63
5 Commissioning the system .....	64
5.1 Requirements .....	64
5.2 Procedure .....	65
Switching on the heating system .....	65
Setting the display language .....	65
Checking the actuators in manual operation .....	65
Filling the ash accumulation bin .....	67
Filling the fuel bunker .....	68
Adapting parameters .....	68
6 Using the heating system .....	69
6.1 Overview of the controls and display components .....	69
Main switch .....	69
Emergency stop .....	69
Additional controls .....	69
Control cabinet model EMD-C 215 Exclusiv .....	70
HDG Controlunit .....	71
6.2 Switching on the heating system .....	72
6.3 Switching off the heating system .....	73
6.4 Operating statuses .....	73
6.5 Calling up information, selecting and modifying parameters .....	75
6.6 ON/OFF menu .....	77
Procedure .....	77
Setting the base load / peak load boiler .....	77
Setting operating times .....	78
Setting the control, boiler activation, ignition and Lambda Stop .....	80
Adjusting the ash removal setting .....	82

Changing the cleaning system setting .....	82
Modifying the dust removal setting .....	83
Modifying the extraction setting .....	84
Modifying the pellet vacuum delivery system setting .....	84
Modifying the moving floor setting .....	85
6.7 °C/QUANTITY menu .....	86
Procedure .....	86
Viewing flue gas temperature .....	86
Setting the boiler supply and return temperature .....	87
Reading values from the controller .....	87
Fixed value - Setting the material and air quantity .....	87
Selecting a material type .....	88
Defining the switch on/off times for the boiler .....	88
Integrating the peak load boiler .....	89
Peak load boiler monitoring .....	90
Entering the combustion chamber temperature setting .....	90
Entering material and temperature settings .....	91
Entering the primary air setting .....	91
Entering the residual oxygen setting .....	92
Entering the secondary air setting .....	92
Adapting the material quantity/O <sub>2</sub> .....	93
Setting underpressure control values .....	94
6.8 TIME menu .....	94
Procedure .....	94
Setting the filling, ignition and fan activation .....	95
Setting pre-air, heating up and burning out .....	95
Setting the ash removal and ember sustaining functions .....	95
Setting the cleaning function .....	96
Setting filling delay of dosage tank .....	96
Setting filling delay of dosage transition .....	97
Setting the moving floor delivery system .....	97
Setting the agitator .....	98
Setting the peak load boiler .....	98
Setting the cycles of the pellet auger .....	98
Setting the hopper extraction system .....	99
Hopper extraction system - setting additional parameters .....	99
Central ash removal system - setting lag time .....	100
Service messages - setting reminder time .....	100
Main cleaning - setting times .....	101
Setting the day, date and time .....	101
6.9 MANUAL menu .....	102
Procedure .....	102
Combustion air and ignition fan .....	103
Ash removal, main cleaning, dust removal and cleaning system .....	103
Return pump and return mixing valve .....	103
Feeding and dosage .....	104
Feeding, dosage and delivery system .....	104
Feeding, metering, vacuum fan and delivery system .....	105
Hose junction and pellet auger .....	105
Feeding, metering and lateral auger .....	105

Moving floor.....	106
6.10 SERVICE menu.....	106
Procedure .....	106
Chimney sweep test .....	108
Operating hours counter .....	108
Setting reverse feeding and ignition temperature.....	109
Setting the boiler overheating temperature or hysteresis, minimum return temperature and combustion chamber stop temperature .....	110
Modifying the dosage pause min. or impulse min. and feed system lag time or feed system lead time parameters .....	110
Ignition fan .....	111
Fuel quantity 1st Modifying filling and air start setting .....	111
Ash removal system minimum pause .....	112
Testing servo motors for air control units .....	112
Calibrating the lambda sensor.....	112
Flue gas temperature .....	113
Underpressure control .....	114
Setting chimney sweep test.....	114
Setting interface RS485 .....	115
Modbus RTU - setting web server.....	116
Modbus RTU - setting DDC .....	116
Setting Profibus DP- DDC .....	116
Entering password .....	117
Resetting parameters to the factory default .....	117
6.11 INFO menu.....	118
6.12 Filling the fuel bunker .....	118
Requirements.....	118
Procedure for filling with wood fuel products .....	119
Procedure for filling of pellets .....	119
6.13 Performing the chimney sweep test.....	119
Before the test .....	120
During the test .....	120
7 Cleaning and servicing the heating system .....	122
7.1 Cleaning and maintenance schedule .....	122
7.2 Procedure.....	123
Generally applicable safety instructions.....	123
Cleaning tools .....	124
Checking and cleaning the stepped grate .....	124
Checking and emptying the ash container .....	125
Lubricating the feeding system.....	128
Checking the drive chains .....	128
Cleaning the control unit.....	132
Check and clean the cleaning shaft and turbulators .....	132
Checking and cleaning the ignition fan .....	137
Checking and cleaning the lambda sensor .....	139
Inspecting and cleaning the flue pipe.....	140
Checking and cleaning the ash removal system .....	141
Checking and cleaning the pressure equalisation hose .....	142
Checking the fill level indicator .....	143

Checking the plug contacts .....	145
Inspecting the fuel bunker .....	146
8 Troubleshooting .....	147
8.1 Procedure .....	147
8.2 Possible faults .....	147
9 Notes on dismantling and disposal .....	156
9.1 Dismantling .....	156
9.2 Disposal .....	157
10 Warranty .....	158
10.1 Scope .....	158
10.2 Conditions .....	158
10.3 Warranty exclusions .....	158
11 Appendix .....	159
12 Index .....	160

# 1 Notes on this manual

## 1.1 Introduction

### EASY AND SAFE OPERATION

This operating manual contains important instructions on the

- HDG Compact 99/100/105/115
- HDG Compact 150/194/199/200

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 service life of the heating system.

### READING THE OPERATING MANUAL

This operating manual must be read and applied by everyone who operates or works on the heating system HDG Compact 99 - 200.

### TECHNICAL CHANGES

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

All details in these instructions on standards, regulations and worksheets should be checked before use and should be compared with the regulations applying locally at the site where the system is installed.


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

### COPYRIGHT

Written permission is required from HDG Bavaria GmbH for reprinting, storage in a data-processing system or transmission by electronic, mechanical, photographic or any other means, and for copies or translations of this publication, in whole or in part.

### SYMBOLS USED

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

1. Instructions to the operator
  - ✓ 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 Troubleshooting	... how to rectify faults in the heating system.
9 Notes on dismantling and disposal	... what has to be considered when dismantling and disposing of the heating system.
10 Warranty	... the terms and conditions of the warranty.

Table 1/1 - Structure of the operating manual

## 1.3 Glossary

Term	Explanation
Actuator	This is a component which carries out a certain function in the heating system, e.g. the stoker auger.
Ash walking floor	Transport unit for carrying the fly ash to the ash removal auger.
Delivery system	Fuel transport system - carries fuel from the bunker to the dosing unit or to the intermediate container.
Feeding system	Feeds the fuel to the boiler by means of the rotary feeder and the stoker auger.
Display	Display of the HDG Control unit in the refrigerator.
Ash removal motor	Powers the ash removal augers and the ash walking floor
Ash removal augers	These transport the combustion chamber ash and fly ash into the exterior ash containers.
Main switch	Switches off the mains supply to the entire heating system.
HDG Compact 99 - 200	Boiler for burning wood chips, shavings and wood pellets
HDG Control	Electronic control unit of the boiler, feeding system and delivery system.
Heating system	Comprised of boiler and corresponding accessories.
Extinguishing device	Extinguishes what is within the delivery system if the temperature of the contents exceeds 90 °C.
Emergency stop	Must be used in an emergency - interrupts all actuators; does not switch off the mains supply to the entire heating system.
Sensor	Records certain parameters (temperature, fill level) and forwards them to the control for analysis.
Stoker auger	Carries the fuel from the rotary feeder into the combustion chamber.
Turbulator	Component for improving heat transfer from the flue gas to the heat exchanger surface
Rotary feeder	Part of the feeding system - separates the combustion chamber from the silo and transport unit and acts as back-burn protection.

Table 1/2 - Glossary

# 2 Safety instructions

## 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.

### BASIC PRINCIPLES ON 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 Compact 99 - 200 heating systems. Any further implementation of applicable standards, for example with regard to the installation of the heating system (pipework, etc.) is not part of this operating manual. HDG Bavaria does not assume any liability for this.

### PROPER AND IMPROPER MANNER OF OPERATION

#### PURPOSE OF THE HEATING SYSTEM

The HDG Compact 99 - 200 heating system is designed for the standard use of burning wood fuel products made from untreated wood in the form of wood chips, shavings and pellets for the purpose of warm water heating.


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 program and could lead to malfunctions. Only trained maintenance and operating personnel may undertake modifications to the operating values.

The use of materials with other technical burning characteristics requires comprehensive modification of the control parameters by qualified specialists.



 For more information on fuel, see section "3 Mode of operation" in chapter "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 can lead to burns.

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

---



### **Danger!**

Danger of asphyxiation due to lack of oxygen

If the boiler is operating, carbon monoxide can be emitted through the cleaning or inspection openings.

Do not leave these open any longer than necessary.

---



### **Warning!**

Danger of fire

Opening doors and lids to hot combustion residues can pose the danger of fires.

Keep the openings closed during operation, and when performing cleaning work, allow the combustion residues to cool down before you place them in a fireproof container.

---



### **Warning!**

Danger from suspended loads

The boiler weighs over 1000 kg. If the boiler is dropped during transport, persons can be seriously injured and the boiler can be damaged.

Make sure that you use appropriate lifting gear when placing the boiler.

---



**Warning!**

Danger of injury

The cleaning shaft lid is very heavy and can fall shut. Hands and arms could thereby be crushed.

Take care not to bump into the opened cleaning shaft lid and cause it to fall shut.

---



**Danger!**

Danger of explosion due to carbon monoxide

When the boiler is in operation, carbon monoxide escaping from open cleaning or inspection hatches can cause explosions.

Do not leave these open any longer than necessary.

---



**Warning!**

Risk of injury from automatically driven components

When working on the automatic ash removal or automatic cleaning systems, hands and arms could be injured.

Turn off the main switch when performing any work on automatically driven components.

---



**Danger!**

Dangerous electrical current or voltage

The circuit boards and electrical components carry current.

Have work on electrical components performed only by a qualified electrician and turn the main switch off.

---



**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.

---



**Warning!**

Hand injuries can occur

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

---



**Warning!**

Automatic start-up

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

---



**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.



**Danger!**

Danger of explosion

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



**Warning!**

Suspended loads

When working in areas marked with this symbol, there is a danger of falling objects.



**Caution!**

Frost danger

Work on locations marked with this symbol can lead to frost damage.



Instructions regarding disposal



Additional information for the operator

## 2.4 Duty of information

### READING THE OPERATING MANUAL

Every person performing any tasks on the system is required to read the Operating manual prior to beginning work, particularly the chapter “2 Safety instructions”.

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

The heating system HDG Compact 99 - 200 is equipped as standard with the following:

- Automatic ash removal to the exterior ash container.
- Automatic cleaning of the heat exchanger surfaces.

The version of the heating system installed depends on whether the feed system is to be fitted

- on the right side or
- on the left side.

When selecting the feeding unit for the HDG Compact 99 - 200 heating system, you can choose between the following:

- TBZ 150 for feeding wood chips, planing shavings and pellets.
- Pellet vacuum delivery system with TBZ 80 for feeding the pellets.

The HDG Compact 99 - 200 heating system can also be equipped with the following delivery systems:

- Flexi-blade delivery system FRA
- Jointed arm delivery system
- Walking floor delivery system
- Silo delivery system
- Pellet delivery system

Regarding the volume of the ash box, there are three different options:

- 80 l (standard)
- 140 l (optional)
- 240 l (central ash removal)



Unless otherwise specified, the product version with the TBZ 150 feed system on the left-hand side and the ash box with 80 l volume will be illustrated and described in this Operating manual.

---



## FRONT SIDE OF HDG COMPACT 99/100/105/115

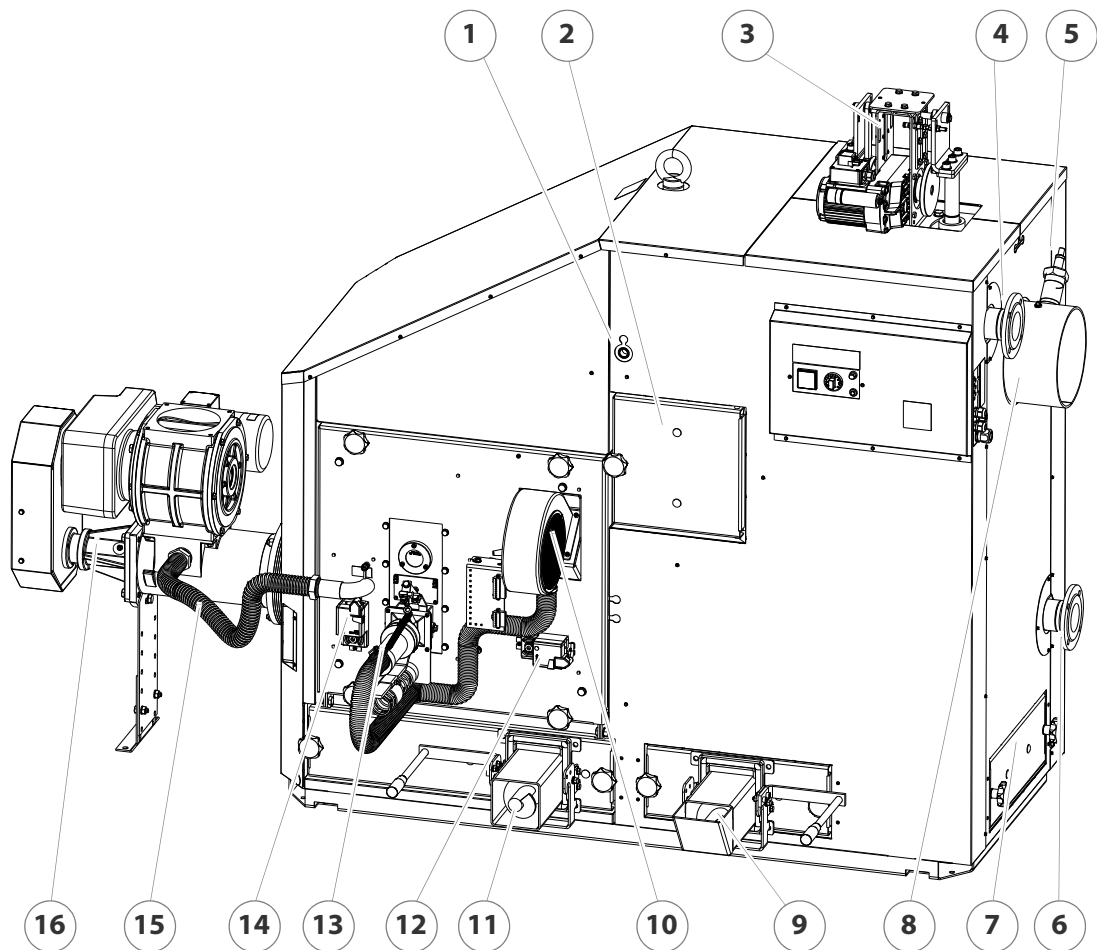


Figure 3/1 - Front side of HDG Compact 99/100/105/115

- 1 Combustion chamber temperature sensor
- 2 Fly ash chamber inspection door
- 3 Cleaning system drive
- 4 Boiler supply connection (DN 65)
- 5 Lambda sensor
- 6 Boiler return connection (DN 65)
- 7 Fly ash chamber cleaning door
- 8 Flue pipe connection
- 9 Fly ash removal auger
- 10 Combustion fan
- 11 Combustion chamber ash removal auger
- 12 Servo motor for secondary air
- 13 Ignition fan
- 14 Servo motor for primary air
- 15 Pressure equalisation hose
- 16 Feeding system

BACK SIDE OF HDG COMPACT 99/100/105/115

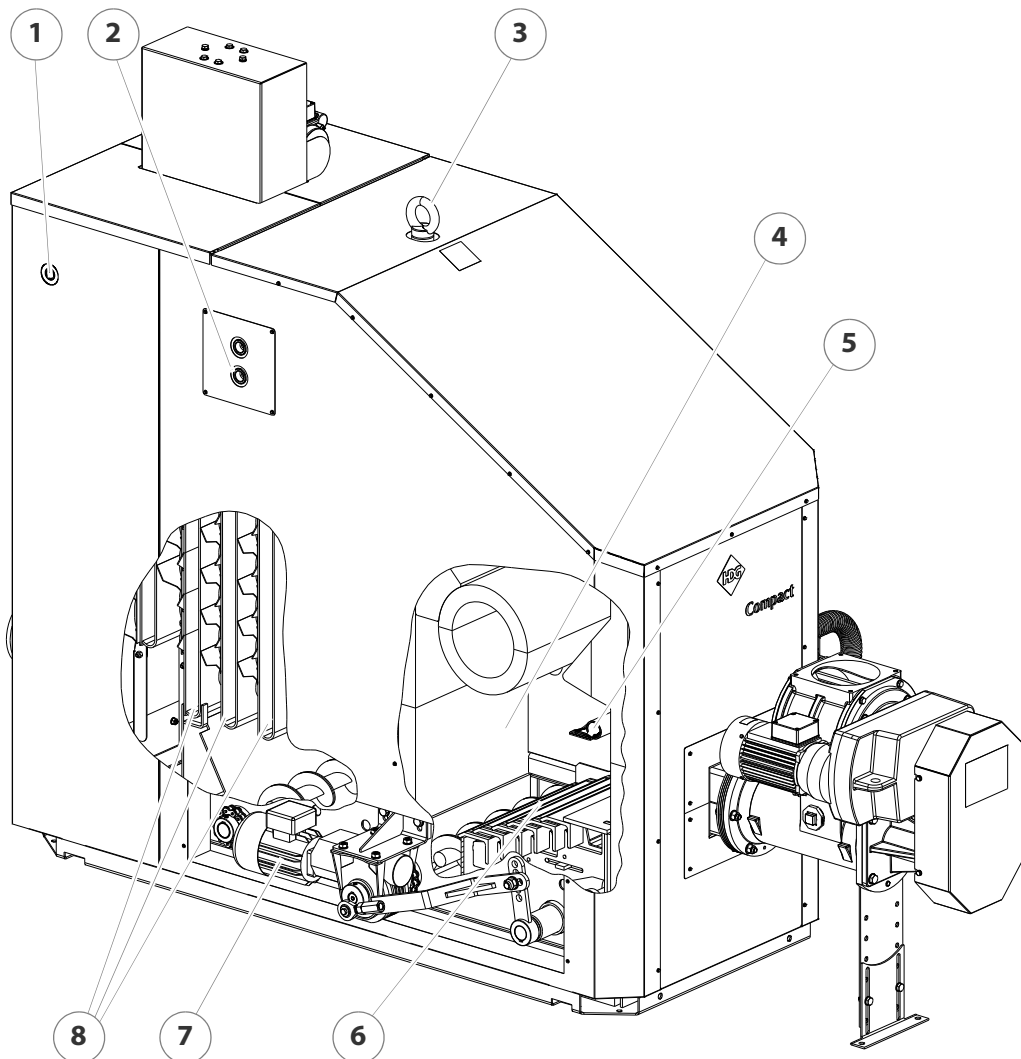


Figure 3/2 - Back side of HDG Compact 99/100/105/115

- 1 Connection of immersion sleeve for thermal safety device (DN 15, inside thread)
- 2 Safety heat exchanger connections (DN 20, outside thread)
- 3 Eyebolt for crane transport
- 4 Combustion chamber
- 5 Fill level indicator
- 6 Stepped grate
- 7 Ash removal motor
- 8 Heat exchanger surfaces with cleaning turbulators in between

## FRONT SIDE OF HDG COMPACT 150/194/199/200

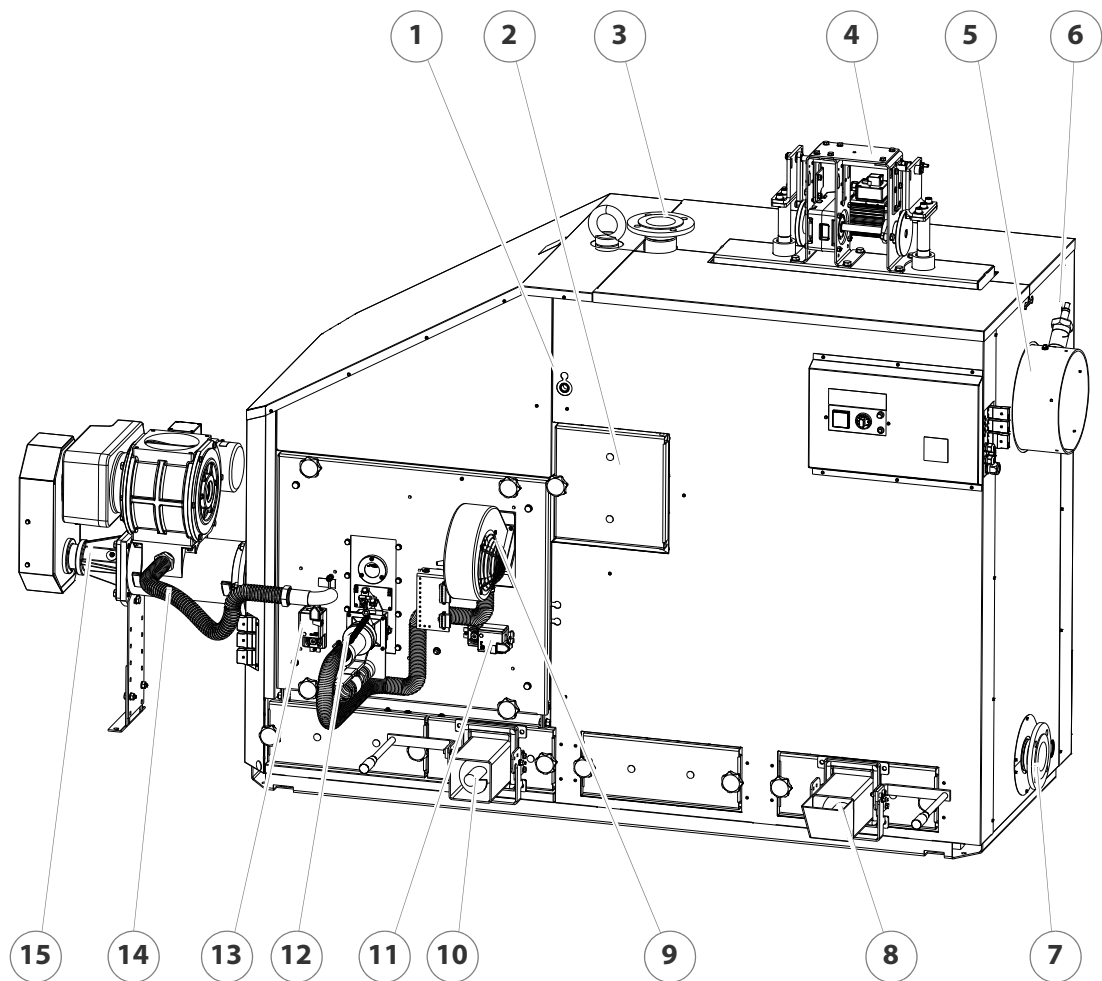


Figure 3/3 - Front side of HDG Compact 150/194/199/200

- 1 Combustion chamber temperature sensor
- 2 Fly ash chamber inspection doors
- 3 Boiler supply connection (DN 80)
- 4 Cleaning system drive
- 5 Flue pipe connection
- 6 Lambda sensor
- 7 Boiler return connection (DN 80)
- 8 Fly ash removal auger
- 9 Combustion fan
- 10 Combustion chamber ash removal auger
- 11 Servo motor for secondary air
- 12 Ignition fan
- 13 Servo motor for primary air
- 14 Pressure equalisation hose
- 15 Feeding system

BACK SIDE OF HDG COMPACT 150/194/199/200

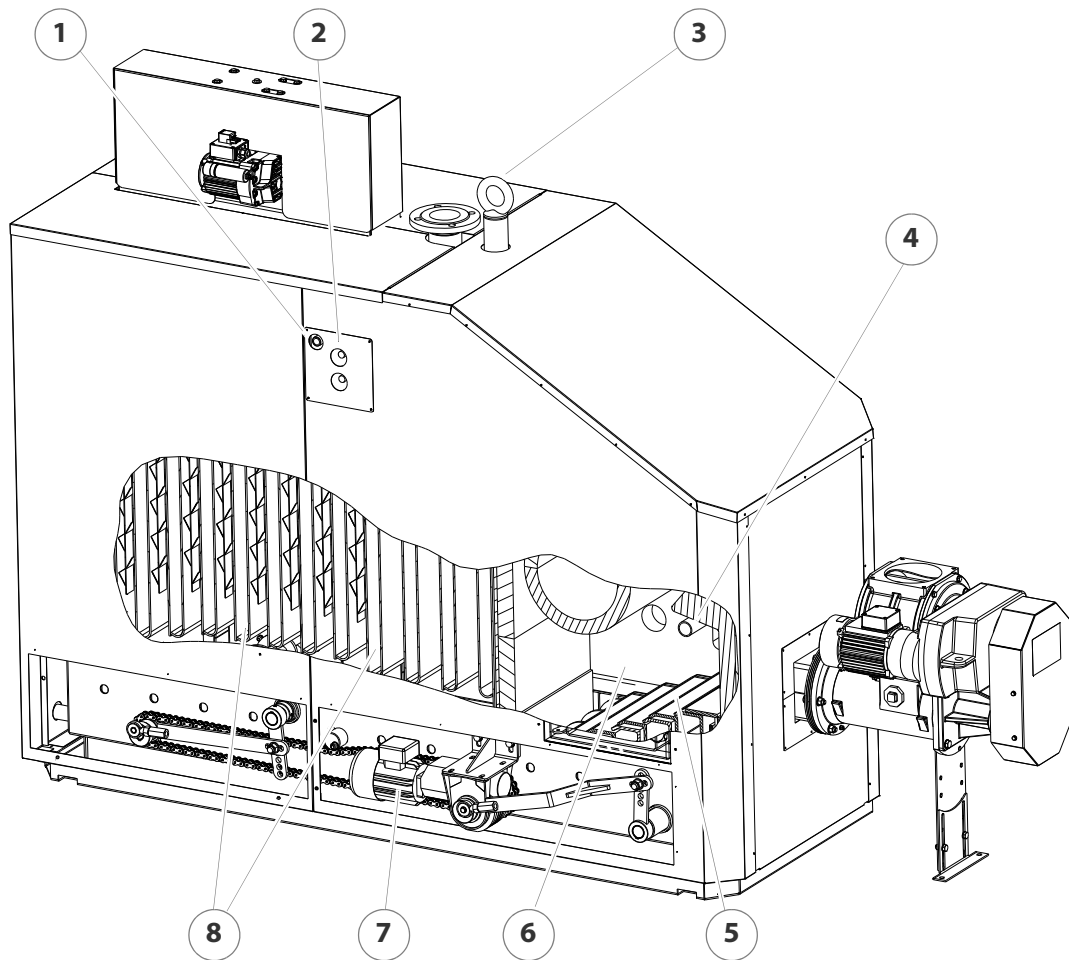


Figure 3/4 - Back side of HDG Compact 150/194/199/200

- 1 Connection of immersion sleeve for thermal safety device (DN 15, inside thread)
- 2 Safety heat exchanger connections (DN 20, outside thread)
- 3 Eyebolt for crane transport
- 4 Fill level indicator
- 5 Stepped grate
- 6 Combustion chamber
- 7 Ash removal motor
- 8 Heat exchanger surfaces with cleaning turbulators in between

## 3.2 Functional description

The HDG Compact 99 - 200 heating system may contain the following components:

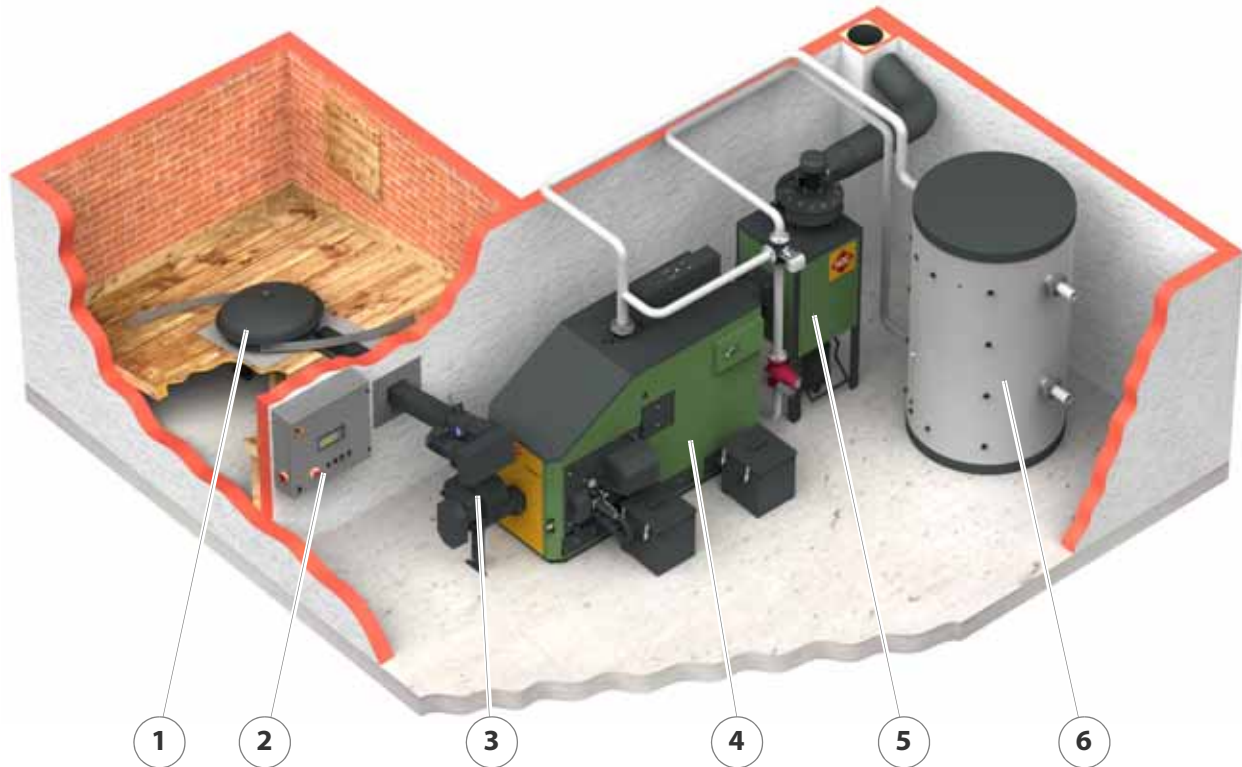


Figure 3/5 - Overview

- 1 Delivery system
- 2 Control cabinet
- 3 Feeding system
- 4 HDG Compact 99 - 200 boiler
- 5 HDG cyclone dust extractor
- 6 Accumulator

### COMBUSTION PROCESS

With the HDG Compact 99 - 200 heating system, the fuel is automatically fed from the bunker into the combustion chamber of the boiler via the delivery and feeding systems. The combustion fan is already activated here in order to eliminate any possible residual combustion gases or negative flue pressure conditions along the combustion path.

Once the filling cycle is complete, the fuel introduced into the combustion chamber is automatically ignited with an electrical ignition fan. During the subsequent heating-up phase, the specified fuel feed quantity is set.

Following the heating-up phase, the system switches to automatic operation. In this mode, combustion is carried out according to the entered control options.

In order to free the grate from ash which collects during combustion, every second grate segment of the grating moves back and forth periodically. The automatic cleaning system cleans the heat exchanger surfaces using the turbulators which move up and down.

The combustion chamber ash and air space ash are propelled into the individual external ash containers by the automatic ash removal system using delivery augers.

The air necessary for combustion is supplied as required via two servo motors.

Via sensors:

- Continuously monitor the firing;
- Adapt boiler output for the heat requirements
- Minimise emissions; and
- Optimise boiler efficiency.

#### DELIVERY SYSTEM

The delivery system is in the fuel bunker.

The fuel is transported from the fuel bunker to the dosing unit or to the intermediate container.

The delivery system is controlled through the HDG Control.

#### HDG CONTROL



Figure 3/6 - HDG Control control unit

The boiler control HDG Control unit in the control cabinet is the electronic hub. This is a freely programmable PLC control.

Via the control unit, you can adjust the heating system HDG Compact 99 - 200 and obtain information on the current process status.

The current operating temperature is displayed.

## CONTROL MODES

You can choose between four control modes:

- **Fixed value:**
  - Constant feed rate and constant combustion air flow-rate (even in emergency operation)
- **Combustion control:**
  - Constant, specified combustion chamber temperature and optimal combustion through modification of primary and secondary air and fuel quantity
  - No output regulation
  - Preferred method of operation with buffer tank
- **Control of combustion and power:**
  - Output supplied is adjusted to heat used with optimised combustion
  - Operation without accumulator
- **Oil burner**
  - An oil burner is also fitted to the boiler.
- **Log wood:**
  - Only suitable for emergency operation

## 3.3 Technical data

Boiler type	HDG Compact 99 Wood chips / pellets	HDG Compact 100 Wood chips / pellets	HDG Compact 105 Wood chips / pellets	HDG Compact 115 Wood chips / pellets
<b>Performance data (measured according to DIN EN 303-5)</b>				
Nominal thermal power	99.0 kW	100.0 kW	105.0 kW	115.0 kW
Minimum thermal output	30.0 kW	30.0 kW	31.5 kW	34.5 kW
Boiler efficiency at nominal thermal power	90.4 / 91.5 %	90.4 / 91.5 %	90.4 / 91.4 %	90.4 / 91.3 %
Electrical connection: Voltage	230 / 400 V			
Frequency	50 Hz			
Back-up fuse	20 A			
<b>General boiler data</b>				
Boiler class	3			
Maximum permissible operating pressure	3.0 bar			
Maximum supply temperature	95 °C			
Minimum return temperature	60 °C			
Water capacity	210 l			225 l
Weight (net)	1540 kg			1585 kg
<b>Planning data for flue calculation (DIN EN 13384-1)</b>				
Flue gas temperature (Tw) at				
• Nominal thermal power	200 °C			
• Minimum thermal power	140 °C			
Flue gas mass flow at				
• Nominal thermal power	0.0610/0.0650kg/s	0.0610/0.0650kg/s	0.0642/0.0673kg/s	0.0681/0.0682kg/s
• Minimum thermal power	0.0210/0.0200kg/s	0.0210/0.0200kg/s	0.0223/0.0209kg/s	0.0246/0.0223kg/s
Flue draught requirement (Pw)	20/10* Pa			
Diameter of flue gas pipe connection	250 mm			
Height at middle of flue pipe connection	1250 mm			
<b>Water-side connections</b>				
Supply and return connections (flange)	DN 65			
Connection for safety heat exchanger (bushing)	DN 20, inside thread			
Connection for drain (bushing)	DN 15, inside thread			
Recommended pipe dimensions (minimum)	DN 65			
Water-side resistance at nominal thermal power, 10 K	6500 Pa			
<b>Other</b>				
Sound pressure level emitted	< 70 dB(A)			
Minimum Air inlet cross-section	250 cm <sup>2</sup>	250 cm <sup>2</sup>	260 cm <sup>2</sup>	280 cm <sup>2</sup>

Table 3/1 - Technical data

\*in combination with the HDG cyclone dust separator with flue gas fan



Boiler type	HDG Compact 150 Wood chips / pellets	HDG Compact 194 Pellets	HDG Compact 199 Wood chips	HDG Compact 200 Wood chips / pellets
<b>Performance data (measured according to DIN EN 303-5)</b>				
Nominal thermal power	150.0 kW	194.0 kW	200.0 kW	190.0 kW
Minimum thermal output	45.0 kW	47.0 kW	57.0 kW	57.0/47.0 kW,
Boiler efficiency at nominal thermal power	90.4 / 90.7 %	90.1 %	90.4 %	90.4 / 90.1 %
Electrical connection: Voltage	230 / 400 V			
Frequency	50 Hz			
Back-up fuse	20 A			
<b>General boiler data</b>				
Boiler class	3			
Maximum permissible operating pressure	3.0 bar			
Maximum supply temperature	95 °C			
Minimum return temperature	60 °C			
Water capacity	450 l			
Weight (net)	2140 kg	2220 kg	2220 kg	2220 kg
<b>Planning data for flue calculation (DIN EN 13384-1)</b>				
Flue gas temperature (Tw) at				
• Nominal thermal power	200 °C	200 °C	200 °C	230°C
• Minimum thermal power	130°C	140 °C	150 °C	150°C
Flue gas mass flow at				
• Nominal thermal power	0.0927/0.0878kg/s	0.1060kg/s	0.1290kg/s	0.1180/0.1060kg/s
• Minimum thermal power	0.0338/0.0294kg/s	0.0370kg/s	0.0460kg/s	0.0440/0.0370kg/s
Flue draught requirement (Pw)	20/13*	20/18* Pa	20/15*	20/15*
Diameter of flue gas pipe connection	300 mm			
Height at middle of flue pipe connection	1250 mm			
<b>Water-side connections</b>				
Supply and return connections (flange)	DN 80			
Connection for safety heat exchanger (bushing)	DN 20, inside thread			
Connection for drain (bushing)	DN 25, inside thread			
Recommended pipe dimensions (minimum)	DN 80			
Water-side resistance at nominal thermal power, 10 K	6000 Pa			
<b>Other</b>				
Sound pressure level emitted	< 70 dB(A)			
Minimum Air inlet cross-section	350 cm	438 cm	468 cm	430 cm

Table 3/2 - Technical data

\*in combination with the HDG cyclone dust separator with flue gas fan

## 3.4 Fuel quality requirements

### PERMISSIBLE FUEL

The HDG Compact 99 - 200 heating system is designed for the standard use of burning wood fuel products made from untreated wood in the form of wood chips, shavings and wood pellets.

According to §3 (1) 1. In accordance with German law BimSchV, the fuel classes 4, 5a, 6, and 7 may be used in this heating system.

FUEL CLASS 4

Untreated log wood including adhering bark, such as wood chips.

FUEL CLASS 5

Untreated wood (not log wood), such as shavings.

FUEL CLASS 5A

Pellets made of untreated wood in the form of wood pellets or wood briquettes

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 containing 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 wearing parts such as wall lining, fill level and lambda sensors, which may reduce their service lives.

COMPOSITION OF THE FUEL

Knowledge of the fuel composition forms the basis for the combustion calculation and the treatment of operating issues relating to firing technology. In addition to combustible substances, the fuels also contain varying amounts of non-combustible components, so called inert components

With an increasing ratio of inert components, the thermal temperature drops and the amount of ash and cinder dirt on the heating surfaces is increased.

## WOOD CHIPS



With regard to the quality standards for wood chips, DIN EN 14961-4 "Solid biofuels - fuel specifications and classes - wood chips for non-industrial use" applies

Regarding the origin of the wood, a distinction is made between category A1 and A2. For A1 the wood comes from trunk wood and chemically untreated wood residue; for category A2 the wood of the entire tree and forestry waste can be used. Wood from both category A1 and A2 can be used in HDG boilers.

Essential criteria are the particle size, moisture content and ash content of the fuel.

### PARTICLE SIZE

In accordance with DIN EN 14961-4, the fuel specifications for wood chips are separated into

- P31.5

Wood chips with a typical particle size smaller than 31.5 (P31.5) are a machine-compatible material suitable primarily for small systems. Oversized pieces (end pieces) could lead to malfunctions during system operation. Higher proportions of finer content (dust) can lead to high emissions and ejection of glowing particles.

Wood chips from category P31.5 can be used as fuel in all HDG wood chip boilers. For P31.5 wood chips, at least 75% of the wood chips (by weight) must be between 8 mm and 31.5 mm. The fine content (<31.5 mm) may not exceed a max. of 8 % by weight. A max. of 6% by weight of the wood chips may be longer than 45 mm; lengths greater than 120 mm are not allowed. The numeric value of the P class refers to the size of the wood chips in mm, which fit through a round opening with the indicated sieve opening size. The cross-section of the oversized particles must be smaller than 2 cm<sup>2</sup>.

- P45

Medium wood chips with a particle size of up to 45 mm (P45) are used in larger systems, but can however, depending on the diameter of the conveyor auger, also still be suitable for small systems.

Wood chips from category 45 can be used as fuel in all HDG Compact 99 - 200 wood chip boilers. For P45 wood chips at least 75% by weight of the wood chips must measure between 8 mm and 45 mm. The fine content (<31.5 mm) may not exceed a max. of 8 % by weight. A max. of 6% by weight of the wood chips may be more than 63 mm and 3.5% by weight may be over 100 mm. Lengths greater than 120 mm are not permissible. The numeric value of the P category refers to the size of the wood chips in mm, which fit through a round opening with the indicated sieve size. The cross-section of the oversized particles must be smaller than 5 cm<sup>2</sup>.

### WATER CONTENT

When selecting fuel, note that the heating value of the wood is primarily dependent on the water content. The more water contained in the wood, the smaller the thermal value since the water vaporises in the course of the burning process and thereby consumes heat.

This results in lower efficiency and thereby leads to greater wood consumption. Increasing moisture in the fuel material also causes reduced efficiency, greater amounts of ash and smoke, as well as making it increasingly unfit for storage.

The maximum permissible water content of the wood chips for the HDG Compact 99 - 200 is 30 % (M30).

For technical considerations, a representative thermal value is selected depending on water content. For burning that is both economical and low on emissions, the thermal value should not be less than 3 kWh/kg.

Water content	Moisture	Thermal value	Relative wood consumption	Combustion temperature
10.0 %	11.1 %	3.9 kWh/kg	113 %	1150 °C
20.0 %	25.0 %	3.4 kWh/kg	130 %	1100 °C
26.0 %	35.0 %	3.1 kWh/kg	151 %	1070 °C
30.0 %	42.9 %	2.9 kWh/kg	171 %	1040 °C

Table 3/3 - Thermal value depending on water content

**ASH CONTENT**

The ash content for wood in category 2 is higher than that of category A1 due to the higher proportion of bark, needles and leaves.

The maximum permissible ash content of wood chips for the HDG Compact 99 - 200 is 1.5 % by weight (A1.5).

**WOOD PELLETS**



With regard to the quality standards for wood pellets, DIN EN 14961-2 "Solid biofuels - fuel specifications and classes - wood pellets for non-industrial use" applies.

Wood pellets are pressed into a cylindrical shape. They consist of untreated shavings and sawdust from the wood processing industry as well as unprocessed forestry waste. They have a standardised diameter and length. They are pressed at a very high pressure and have a very low water content. The energy contained in 2 kg of pellets corresponds approximately to the energy contained in a litre of heating oil.

In accordance with DIN EN 14961-2, the fuel specifications for wood pellets are separated into categories A1 and A2. The diameter of the employed pellets must be in accordance with D06.

- A1/D06

The diameter of the pellets must be 6 mm +/- 1 mm. The length of the pellets must measure between 31.5 mm and 40 mm. A maximum of 1% by weight of the pellets may be longer than 45 mm. The water content must be less than 10% (M10), the ash content must be less than 0.7% by weight (A0.7).

- A2/D06

The diameter of the pellets must be 6 mm +/- 1 mm. The length of the pellets must measure between 31.5 mm and 40 mm. A maximum of 1% by weight of the pellets may be longer than 45 mm. The water content must be less than 10% (M10), the ash content must be less than 1.5% by weight (A1.5).

Standard	A1 wood pellets	A2 wood pellets
Length	3.15 - 40 mm	3.15 - 40 mm
Diameter Ø	D06: 6 mm +/-1 mm	D06: 6 mm +/-1 mm
Thermal value	16.5 - 19 MJ/kg or 4.6 - 5.3 kWh/kg	16.3 - 19 MJ/kg or 4.5 - 5.3 kWh/kg
Density (spec. gravity)	1.0 – 1.4 kg/dm <sup>3</sup>	min. 1.12 kg/dm <sup>3</sup>
Bulk weight	min. 600 kg/m <sup>3</sup>	min. 600 kg/m <sup>3</sup>
Water content	max. 10 %	max. 10%
Ash content	max. 0.7 %	max. 1.5%
Fine material	max. 1.0 %	max. 1.0 %
Sulphur content	max. 0.03 %	max. 0.03%
Nitrogen content	max. 0.3 %	max. 0.5%
Chlorine content	max. 0.02 %	max. 0.02%
Additive	max. 2.0 %	max. 2.0 %

Table 3/4 - Burning characteristics of wood pellets

### RECOMMENDED FUEL

Suitable as fuel for the heating system HDG Compact 99 - 200 are wood chips, shavings and wood pellets. In order to uphold the emission values specified in BImSchV, all fuel requirements, e.g. size, water content, ash content, must be fulfilled.

#### WOOD CHIPS

HDG Bavaria recommends wood chips with particle size P31.5. The fuel should have as little water content as possible, with a 20% water content (M20) being ideal. The drier the fuel, the higher the thermal value and the better the burning that is achieved. High quality fuel aids in energy conservation and maintains the operating safety of your heating system. The optimal ash content is 1% by weight (A1.0).

For HDG Compact 99 - 200 heating systems, it is possible to use wood fuel products of grain size P45 with a maximum water content of up to 30 %. However, reduced nominal thermal power, reduced efficiency, increased fuel consumption and greater wear and tear on the

heating system may then result. Fuels with a higher water content are not suitable for burning. The maximum permissible ash content is 1.5 .% by weight. (A1.5).

WOOD PELLETS

For operation of the heating system with wood pellets, HDG Bavaria recommends wood pellets from category A1 according to DIN EN 14961-2 or, alternatively, with the certificate "ENplus" or "DINplus".



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



**Important!**

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

NOMINAL THERMAL VALUE  
DEPENDING ON WATER  
CONTENT

The following table indicates the maximum nominal thermal value depending on water content, in reference to the fuels approved for the HDG Compact 99 - 200 in accordance with DIN EN 14961 "Solid biofuels - fuel specifications and classes".

	Wood chips P45, M20, A1.0 (A1.5) or Pellets A1, A2	Wood chips P45, M25, A1.0 (A1.5)	Wood chips P45, M30, A1.0 (A1.5)	Shaving briquettes A1, A2, D60, L50	Planing/saw shavings A1, A2, M20, A1.0 (A1.5)
HDG Compact 99	99 kW	89 kW, (86 kW)	84 kW, (79 kW)	92 kW	84 kW, (79 kW)
HDG Compact 100	100 kW	90 kW, (87 kW)	85 kW, (80 kW)	93 kW	85 kW, (80 kW)
HDG Compact 105	105 kW	93 kW, (90 kW)	87 kW, (82 kW)	95 kW	87 kW, (82 kW)
HDG Compact 115	115 kW	103 kW, (100 kW)	97 kW, (92 kW)	105 kW	97 kW, (92 kW)
HDG Compact 150	150 kW	145 kW (140 kW)	138 kW (135 kW)	145 kW	138 kW (135 kW)
HDG Compact 194	194 kW	-	-	-	-
HDG Compact 199	200 kW	179 kW (174 kW)	172 kW (169kW)	184 kW	172 kW (169 kW)
HDG Compact 200	190 kW	180 kW (175 kW)	173 kW (170 kW)	185 kW	173 kW (170 kW)

Table 3/5 - Max. nominal thermal value depending on water content

# 4 Planning and installation

## 4.1 Planning the heating system

### REQUIRED ROOM SIZES AND MINIMUM SPACING

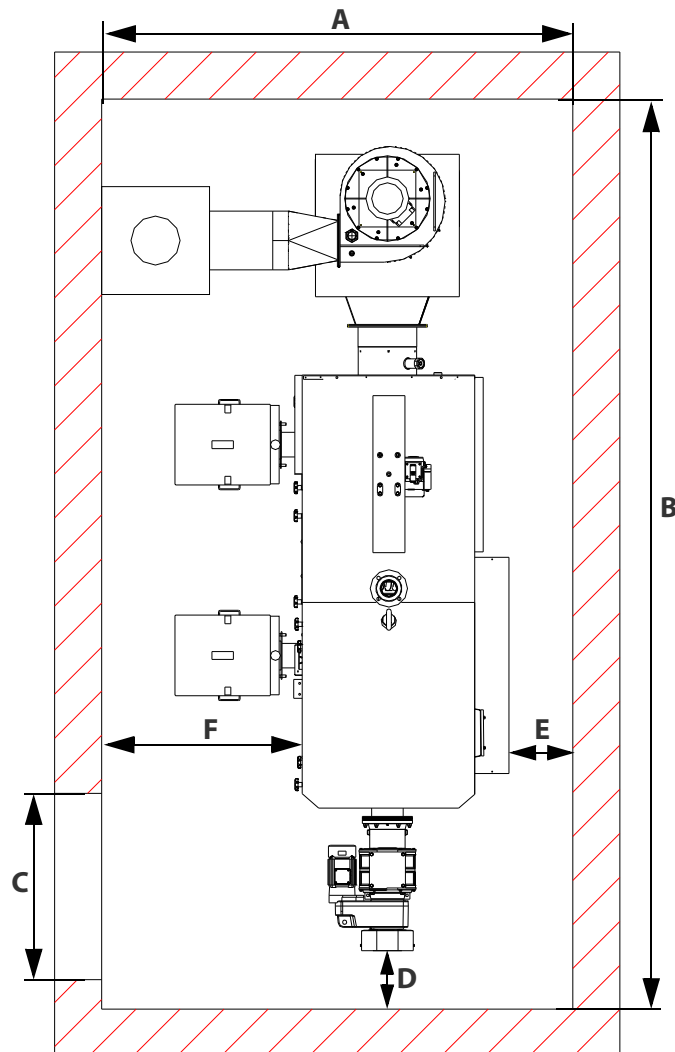


Figure 4/1 - Necessary room sizes and minimum spacing

	A	B	C	D	E	F
HDG Compact 99/100/105/115	2280	3500	813	280	330	1000
HDG Compact 150/194/199/200	2400	4650	935	280	330	1000

Table 4/1 - Minimum size (mm)

- Minimum ceiling height: 2250 mm / optimal ceiling height: 2500-2750 mm

### DIMENSIONS

The following table contains the dimensions of the boiler.

	HDG Compact 99/100/105/115	HDG Compact 150/194/199/200
Length	1130 mm*	1370 mm*
Width	1980 mm	2410 mm
Height	1890 mm	1940 mm

Table 4/2 - Dimensions

\*without ash container

### BOILER ROOM

#### APPLICABLE REGULATIONS

Furnaces for solid fuels with a nominal thermal power of more than 50 kW may only be installed in special boiler rooms.

Local building regulations always apply. In Germany, individual state regulations on boilers and furnaces (FeuVO) 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 heating room.

#### INSTALLATION

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

A base is not necessary for installation of the heating system. Ensure that it is aligned on a horizontal plane.



Observe the fire safety regulations.

To ensure unhindered operation and maintenance of the heating system, you must ensure that the heating system is installed to our specifications and that the minimum spacings are maintained.

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

More detailed information can be found in the respective ordinances of the German states.



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 boiler room.



## FUEL BUNKER

The fuel bunker should have the following characteristics:

- dry
- dust-proof
- statically suitable
- accessible for the filling process
- free of other installations, especially in existing buildings
- adapted to fuel requirements

The refilling intervals should be kept as long as possible. The heating system should be located so that the noise generated does not exceed DIN 4109, "Soundproofing in building construction".

### PROPER DIMENSIONING

The size of the fuel bunker depends on the heating system, the determined thermal load, the resulting annual fuel requirements and existing building conditions. Practice has shown that filling the fuel bunker four to six times per heating period is desirable.

### PASSAGE THROUGH THE WALL

The passage through the wall normally has to be made in the wall between the heating room and the fuel bunker. Its position depends on the distance and the position of the HDG Compact heating system within the room and the customer's installation diagram. The passage through the wall between the heating room and the fuel bunker should have a width of 70 cm and height of 70 cm in order to allow the assembly of the delivery auger.

### VENTILATION OF FUEL BUNKERS

Wood fuel products with higher moisture can cause relatively high air humidity in the fuel bunker. Cold surfaces may thereby experience a drop below the dew point and develop condensation water. This condensation water often occurs on non-insulated lids, doors or cold walls and can result in a further moistening of the fuel.

It is therefore recommended to provide a suitable ventilation system that corresponds to the building's features.

### DELIVERY SYSTEM VERSIONS

#### Delivery version 1 - Dosage directly to TBZ

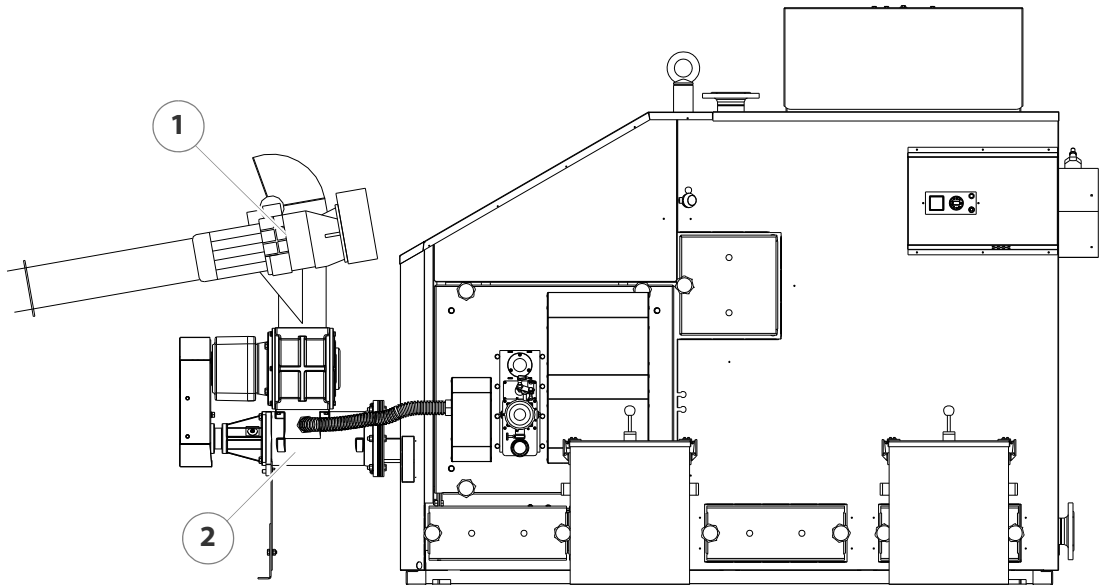


Figure 4/2 - Delivery system version 1

- 1 Dosage
- 2 Feeding system

#### Delivery version 2 - Dosage, conveyor auger to TBZ

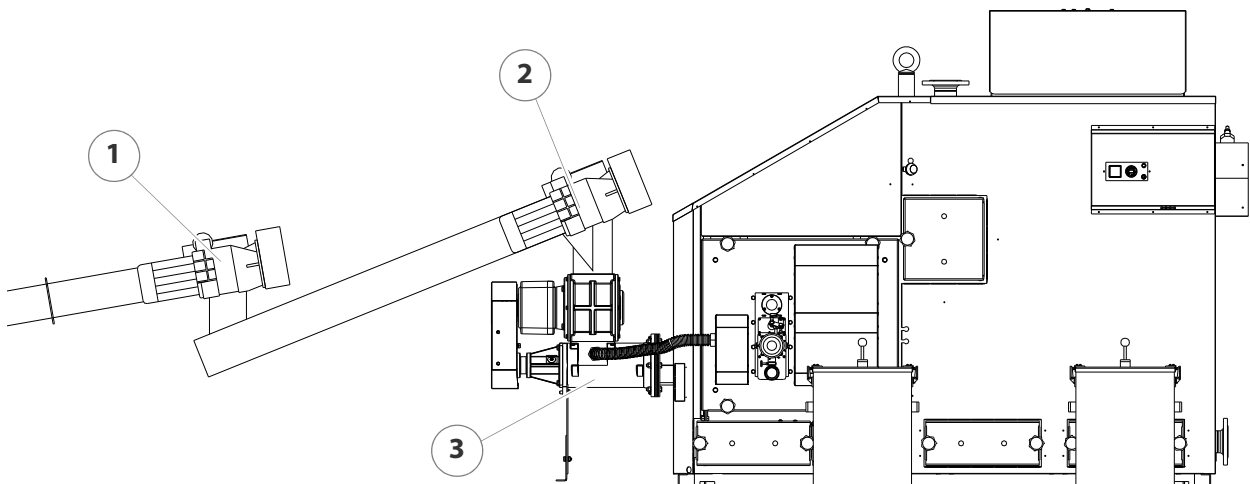


Figure 4/3 - Delivery system version 2

- 1 Dosage system II (motor of delivery system runs along with dosage system)
- 2 Dosage
- 3 Feeding system

### Delivery version 3 - External delivery

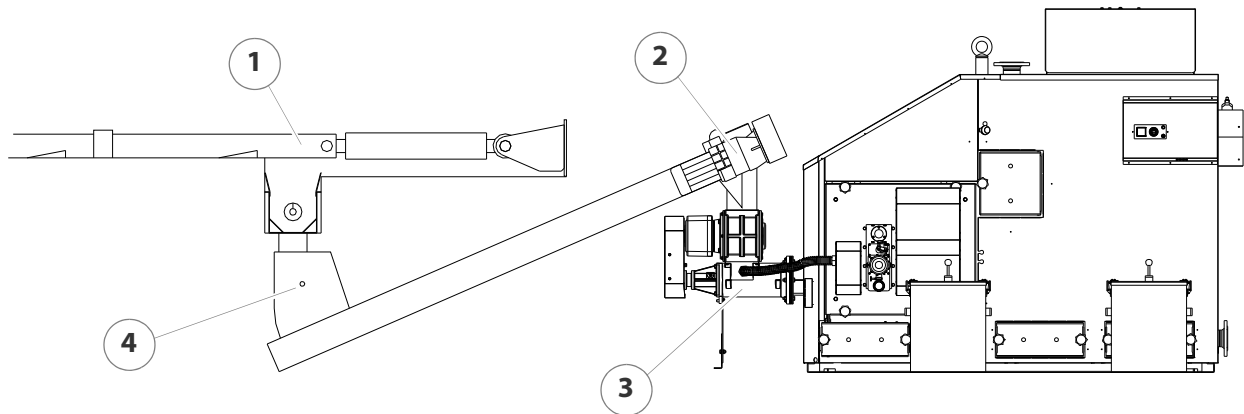


Figure 4/4 - Delivery system version 3

- 1 Delivery system
- 2 Dosage
- 3 Feeding system
- 4 Fill level indicator

### Delivery version 4 - sloping auger delivery, silo delivery system

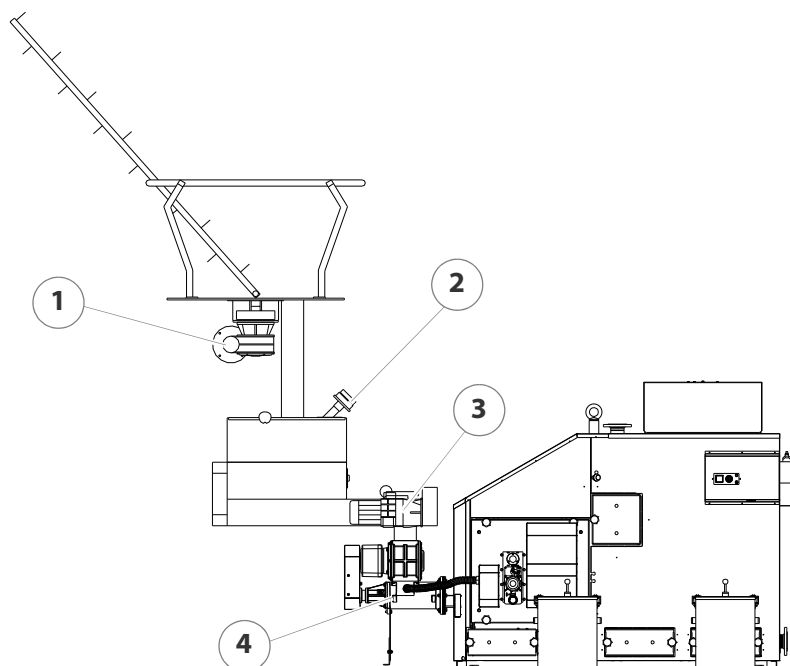


Figure 4/5 - Delivery system version 4

- 1 Delivery system
- 2 Fill level indicator
- 3 Dosage
- 4 Feeding system

**Delivery version 5 - pellet vacuum container**

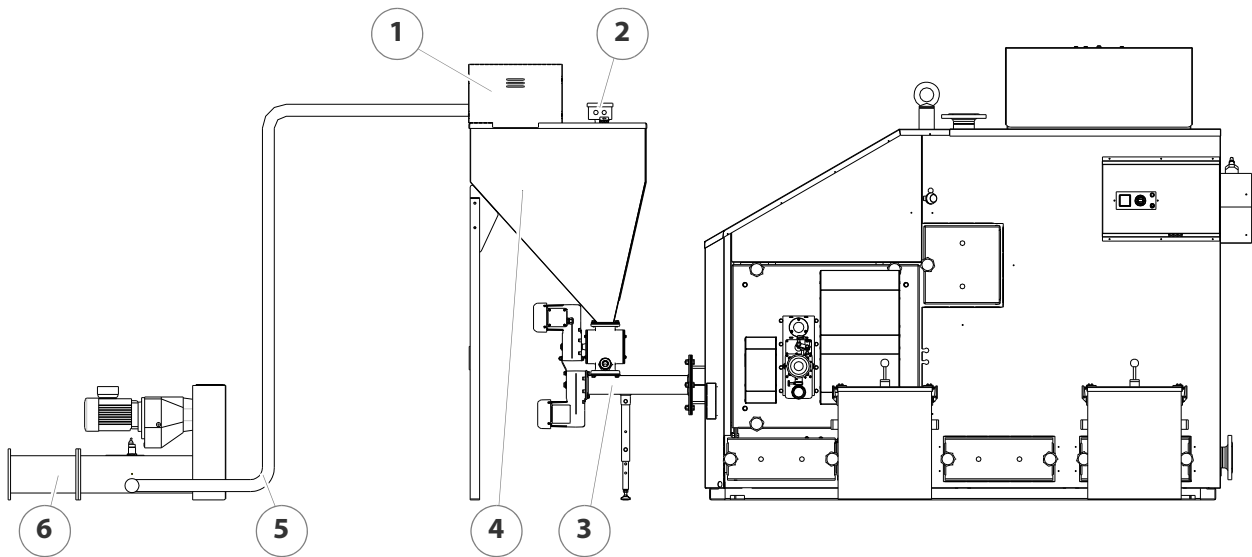


Figure 4/6 - Delivery system version 5

- 1 Vacuum + noise insulation hood
- 2 Fill level indicator
- 3 Feeding system
- 4 Pellet vacuum container
- 5 Pellet suction line
- 6 Pellet delivery auger

## 4.2 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 it is to be noted 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 Compact 99 - 200 can only be reaped if all of the factors necessary for good combustion are carefully adjusted. 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 temperature may lie below 100 °C when the system is partially loaded, 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.

#### CHIMNEY CHARACTERISTICS

Another essential criterion is to achieve the correct conveying pressure. This depends on three major factors.

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.
- Chimney well-sealed 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 according 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:

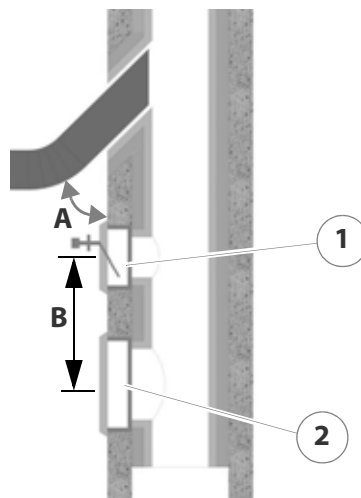
- Location of the house
  - Surrounding hills/slopes
  - Wind direction
- Location of the chimney in the roof
  - The opening of the chimney must be at least 0.5 m above the highest edge of roofs with a slope of more than 20° or at least 1.0 m higher than roof surfaces which slope at 20° or less.
- The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

#### CONNECTING THE BOILER TO THE CHIMNEY

The boiler must be connected to the flue 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 overlong connecting pieces. If, for constructional reasons, they have to be

longer than 1 m, they should be adequately insulated (at least 5 cm of mineral wool or equivalent material) and, if possible, should be fitted with an upward inclination.



- 1 Auxiliary air unit
- 2 Cleaning door
- A) Chimney approx. 30° - 45°
- B) Clearance at least 50 cm.

Figure 4/7 - Connection to the chimney

To compensate for irregularities in the flue draught of the chimney, HDG Bavaria recommends installing an auxiliary air unit in the flue pipe, or even better, in the chimney itself as shown in Figure 4/7 - Connection to the chimney.

The following should also be considered:


- The connecting piece may not protrude into the chimney.
- If the system flue pipe has a larger diameter than the chimney, the connecting piece must reduce to the diameter 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 kinks (take particular care in older buildings).
- All of the cleaning and measurement hatches on the chimney must be tightly sealed.
- 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.

No electrical installations, such as power sockets, distribution boxes, lights or light switches may be located in the fuel bunker. Any lights must be suitable for use in areas at risk of explosion. The VDE regulations for rooms with a risk of dust explosion must be followed.

## CONTROL CABINET

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

The HDG Control unit is located in the EMD-C 215 Exclusiv control cabinet. The cables are inserted from the top of the control cabinet and the wiring is connected in accordance with the supplied circuit diagrams.

## ACCUMULATOR SENSOR

The temperature sensors are immersion sensors with a moulded cable and serve to measure the temperature of the buffer tank.

## WATER

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

## USING AN ACCUMULATOR



Antifreeze agents may only be used after consultation with HDG.

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. This condition only applies a few days per year, thus, the thermal performance of the heating system is greater than required on most days when heating is needed. For this reason, the HDG Compact 99 - 200 is fitted as standard with power control and automatic ignition.

**It is, however, highly recommended to use an accumulator even with automatic boiler systems.**

The size of the accumulator will depend on the nominal thermal power of the boiler and on the thermal requirements of the building. As a benchmark value, 20 litres per kilowatt boiler power can be used. This results in a boiler burning duration of approximately one hour at full-capacity operation, during which the accumulator is completely filled. The emptying time of the accumulator at 25% nominal load amounts to 3.7 hours for this type of design, with an assumed usable temperature difference of 40 Kelvin.

One advantage of a buffer tank is the low number of operating hours for the system and fewer start phases due to extended heating periods, which leads to a reduction in the proportion of external energy and to lower wear of the mechanical components.

One further advantage of the accumulator is in summer operation when only hot water is required. When operating in this mode, the accumulator helps avoid frequent ON/OFF switching.

**For the above-mentioned reasons, we recommend a buffer tank even for automatic boiler systems.**


## SAFETY DEVICES

Safety devices are to be installed in accordance with DIN EN 12828: 2003 “Design of water-based heating systems in buildings”.

### RETURN TEMPERATURE CONTROL

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 Compact 99 - 200 heating system. The return temperature control causes the water from the boiler return line to be mixed with the water from the boiler supply line 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 return temperature is regulated by the HDG control unit.

The return temperature control consists of a 3-way mixing valve with a 230 V servo drive (running time 120-140 s) and a circulation pump from energy efficiency class A. We recommend for the

- HDG Compact 99/100/105/115: Wilo 30/1-8, 3-way mixer DN 40 (or comparable)
- HDG Compact 150/194/199/200: Wilo 50/1-9, 3-way mixer DN 65 (flange) (or comparable)



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 the chapter entitled “3 Mode of operation”, section “3.3 Technical data”.

---

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



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

---

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



DIMENSIONS OF THE FLUE PIPE SIDE OF THE HDG COMPACT 99 - 115

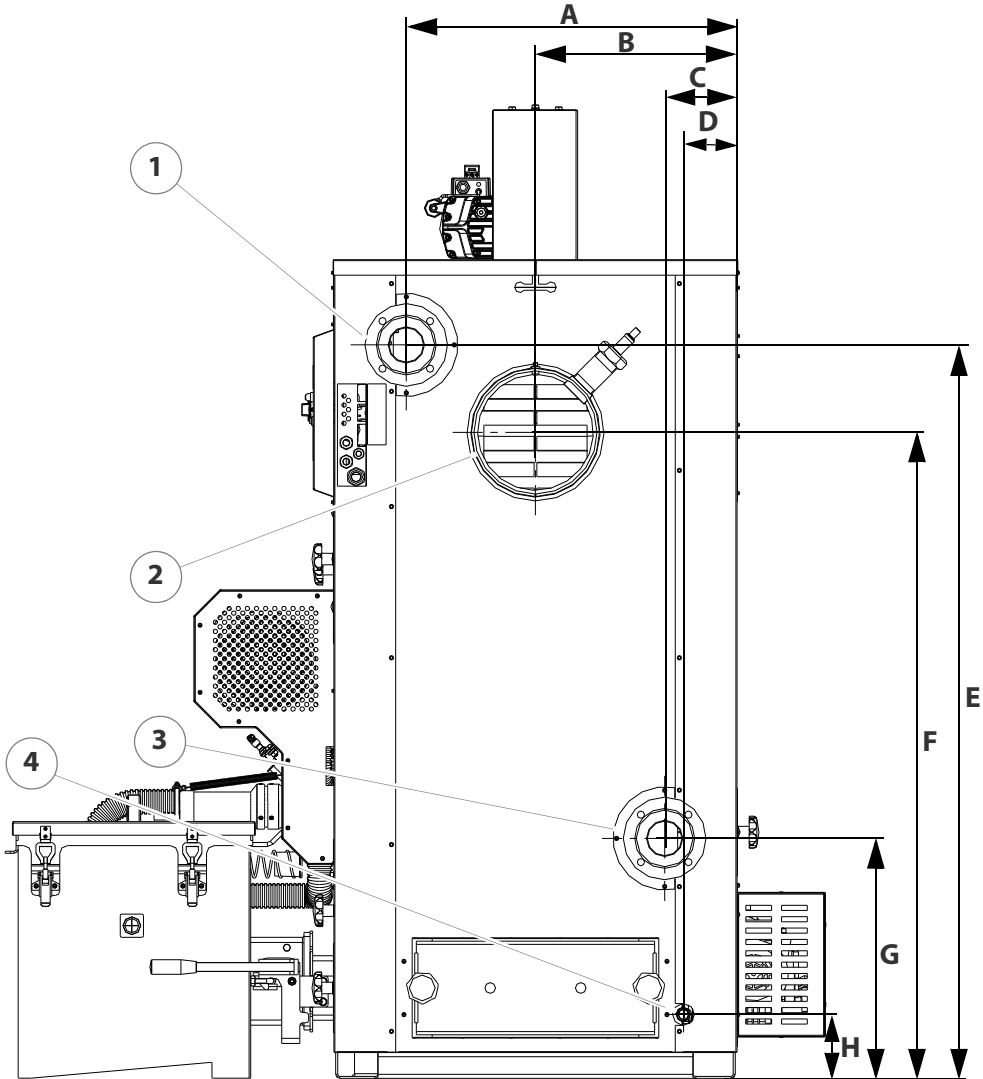


Figure 4/8 - Dimensions of the flue pipe side of the HDG Compact 99 - 115

- 1 Boiler supply connection (DN 65 flange)
- 2 Flue pipe connection Ø 250 mm
- 3 Boiler supply connection (DN 65 flange)
- 4 Filling / draining connection (DN 15, inside thread)

	A	B	C	D	E	F	G	H
HDG Compact 99 - 115	640	390	140	104	1420	1250	464	124

Table 4/3 - Dimensions of the flue pipe side of HDG Compact 99 - 115 (mm)

DIMENSIONS OF THE BACK SIDE OF HDG COMPACT 99 - 115

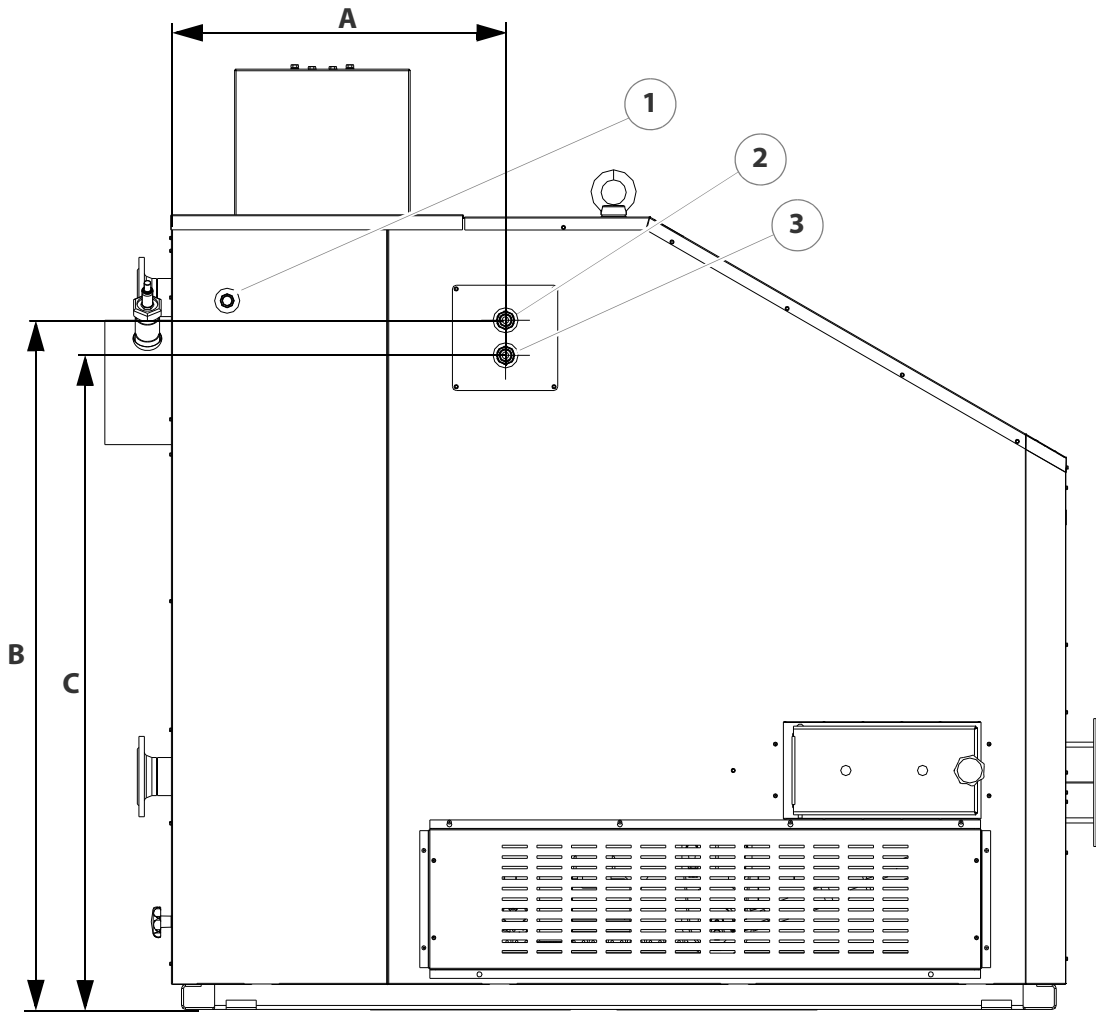


Figure 4/9 - Dimensions of the back side of HDG Compact 99 - 115

- 1 Connection of immersion sleeve for thermal safety device (DN 15, inside thread)
- 2 Safety heat exchanger inlet (DN 20, inside thread)
- 3 Safety heat exchanger outlet (DN 20, inside thread)

	A	B	C
HDG Compact 99 - 115	666	1374	1304

Table 4/4 - Dimensions of the flue pipe side of HDG Compact 100/105 (mm)

DIMENSIONS OF THE FLUE PIPE SIDE OF THE HDG COMPACT 150 - 200

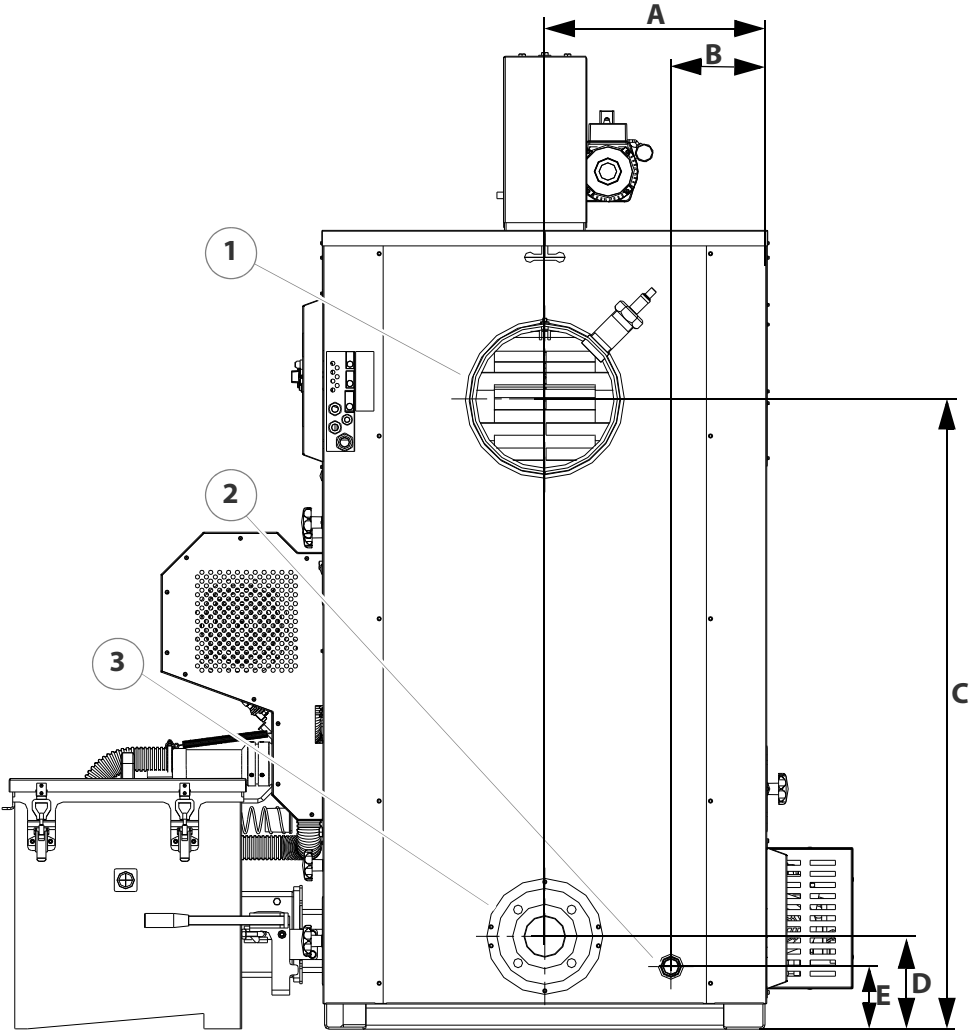


Figure 4/10 - Dimensions of the flue pipe side of the HDG Compact 150 - 200

- 1 Flue pipe connection Ø 300 mm
- 2 Filling / draining connection (DN 25, inside thread)
- 3 Boiler supply connection (DN 80 flange)

Model	A	B	C	D	E
Compact 150 - 200	440	190	1250	184	124

Table 4/5 - Dimensions of the flue pipe side of HDG Compact 150/200 (mm)

DIMENSIONS OF THE BACK SIDE OF HDG COMPACT 150 - 200

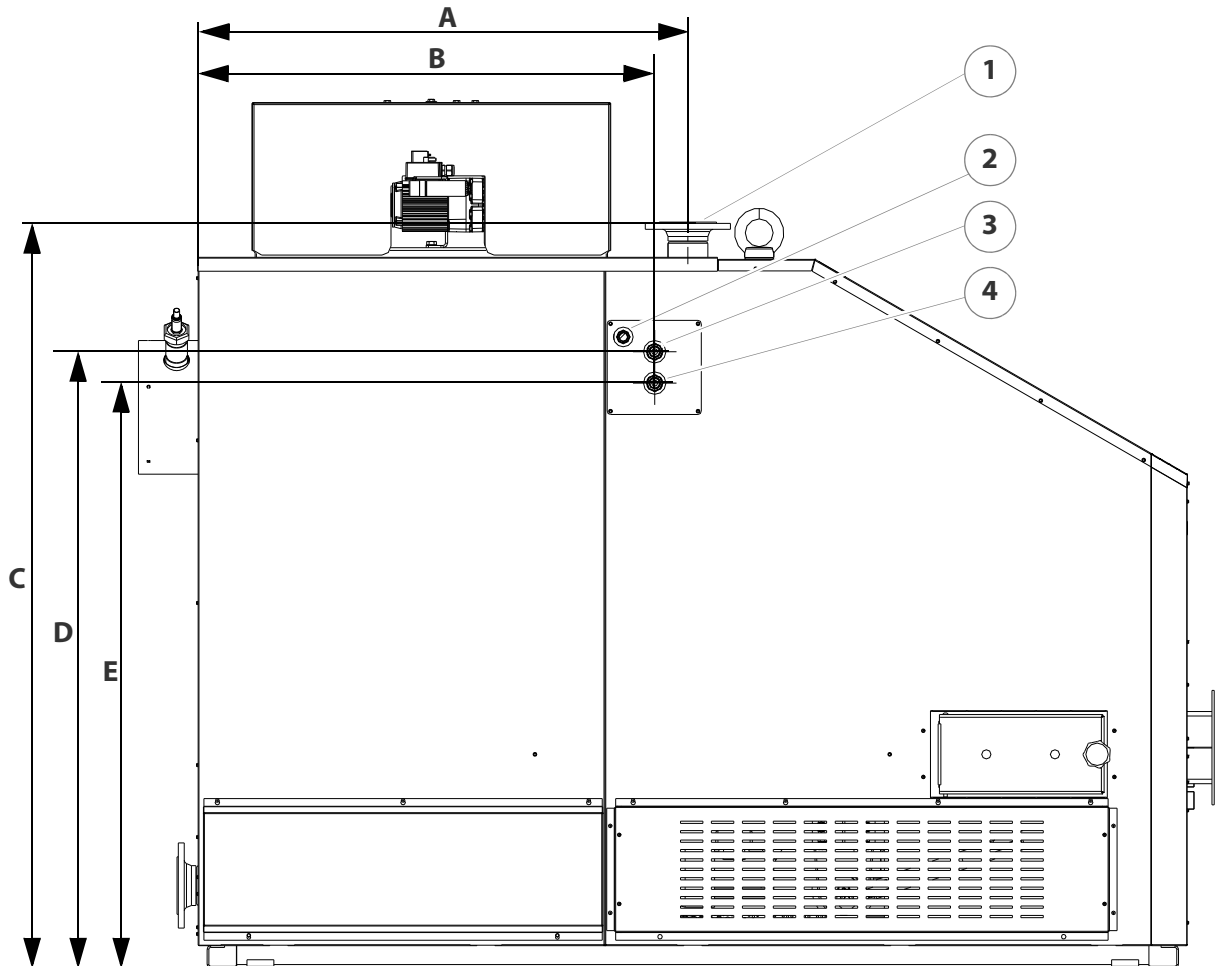


Figure 4/11 - Dimensions of the back side of HDG Compact 150 - 200

- 1 Boiler supply connection (DN 80 flange)
- 2 Connection of immersion sleeve for thermal safety device (DN 15, inside thread)
- 3 Safety heat exchanger inlet (DN 20, inside thread)
- 4 Safety heat exchanger outlet (DN 20, inside thread)

Model	A	B	C	D	E
Compact 150/200	1100	1014	1650	1374	1304

Table 4/6 - Dimensions of the flue pipe side of HDG Compact 150 - 200 (mm)

## 4.3 Scope of delivery

Included in the scope of delivery:

- HDG Compact 99 - 200 boiler
- Control cabinet model EMD-C 215 Exclusiv
- Feeding system (customer-specific)
- Delivery system (customer-specific)
- Cleaning tools
- Operating documentation

Upon delivery, check that the scope of delivery matches the information on the delivery note.



Figure 4/12 - HDG Compact 100 boiler condition as delivered

The heating system HDG Compact 99 - 200 (1) is delivered on two rectangular wooden planks (2). These wooden planks are intended only for transportation and should be removed before installing the system in its planned location.

## 4.4 Installing the heating system

### REQUIREMENTS

The heating system will initially be commissioned by specialists from HDG Bavaria or from an authorised HDG partner and a qualified 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.

---



#### **Important!**

When laying the pipelines, observe the minimum required clearances.

 See section “4.1 Planning the heating system” in this chapter.

---



#### **Important!**

Due to the noise, we recommend acoustic insulation measures for components which are in contact with the floor, wall or ceiling of the heating room.

---



The following figures and diagrams show the version of the heating system HDG Compact 99 - 200 with the feeding system TBZ 150 on the left side of the boiler.

Please keep this in mind if your version has a feeding system on the right.

---

## PLACING THE BOILER

## TRANSPORT

**Warning!**

Danger from suspended loads

The boiler weighs over 1000 kg. If the boiler is dropped during transport, persons can be seriously injured and the boiler can be damaged.

Make sure that you use appropriate lifting gear when placing the boiler.

Ensure that the chain hoist is correctly secured to the eyebolt of the boiler during crane transport of the heating system.

## INSTALLATION SITE

There are several options for transporting the HDG Compact 99 - 200 boiler. It can be performed with a crane, forklift or a lifting truck.

1. Transport the boiler using suitable lifting equipment.
  2. Place the boiler at the planned location while observing the minimum clearances.
- See section "4.1 Planning the heating system", paragraph "Required room sizes and minimum spacing" in this chapter.
3. Align the boiler with plastic plates or flat steel strips (not included in the scope of delivery) so that it is horizontal.
  4. Unscrew the ring bolt from the boiler.
- ✓ The boiler has been set up.

## INSTALLING THE FEEDING SYSTEM

## ATTACHING THE ADAPTER PIPE

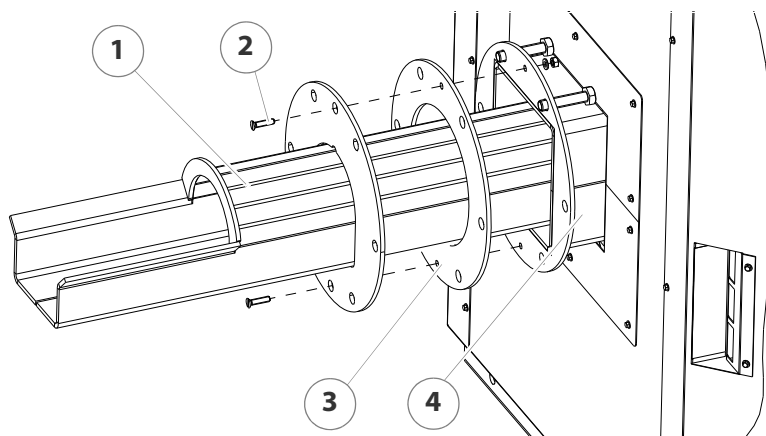


Figure 4/13 - Attaching the adapter pipe

1. Slide the adapter pipe (1) with the seal (3) into the feed channel (4).
2. Align the seal (3) with the holes.
3. Poke a hole through the seal (3) for the centring screw (2).

4. Insert the centring screw (1) toward the boiler through the holes and screw it tight with the M6 nut using a 10 mm spanner.

ATTACHING THE FEEDING SYSTEM



**Warning!**

Danger of injury

The feeding system is very heavy. Hands and feet could be crushed when it is lifted.

Only lift the feed system using suitable lifting equipment.

---

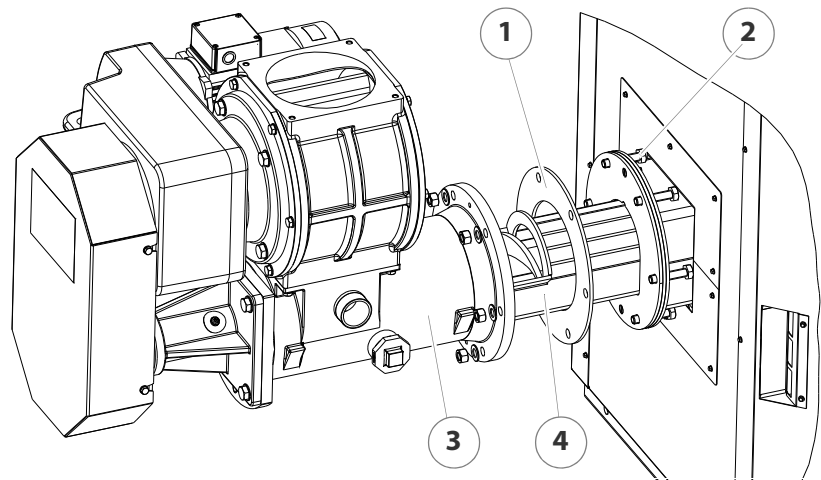
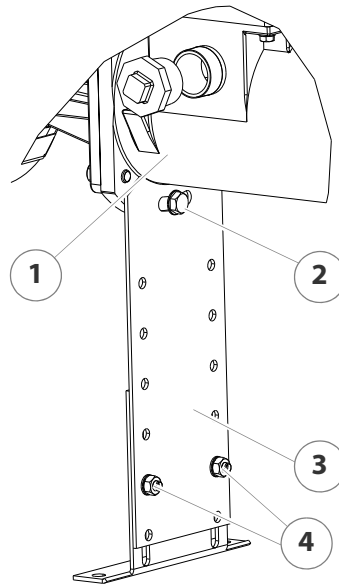


Figure 4/14 - Attaching the feeding system

5. Insert the M12 screws (2) from the boiler through the holes.
6. Insert the second seal (1) on the adapter pipe (4).
7. Slide the feeding system (3) onto the adapter pipe (4).
8. Bolt on the feeding system (3) with the M12 nuts using an SW19 spanner.



FITTING THE SUPPORT LEG



9. Bolt the support leg (3) with an M12 screw (2) onto the feeding system (1) using an SW19 spanner.

10. Fix the support leg (3) to the floor as required (screws and screw anchors are not included in the scope of delivery).

11. Align the feeding system (1) horizontally with the two M10 screws (4).

Figure 4/15 - Fitting the support leg

✓ The support leg is attached.

CONNECTING THE FEEDING SYSTEM

12. Connect the plug of the feeding system at the appropriate place on the plug board at the front of the boiler.

🔧 See the provided circuit diagram.

✓ The feeding system is connected and mounted.

ATTACHING THE PRESSURE EQUALISATION HOSE

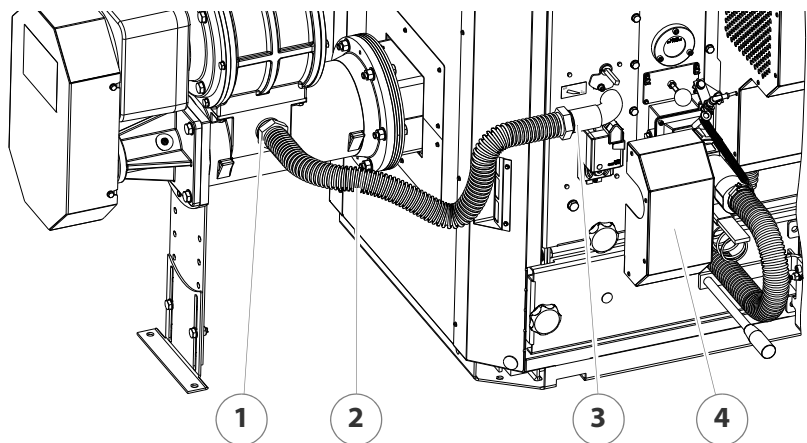


Figure 4/16 - Attaching the pressure equalisation hose

1. Place the rubber seal on the connections of the pressure equalisation hose (2).

2. Attach the union nuts DN 32 to the feed system (1) and the boiler (3).

✓ The pressure equalisation hose is connected.

3. Remove the servo motor cover (4).

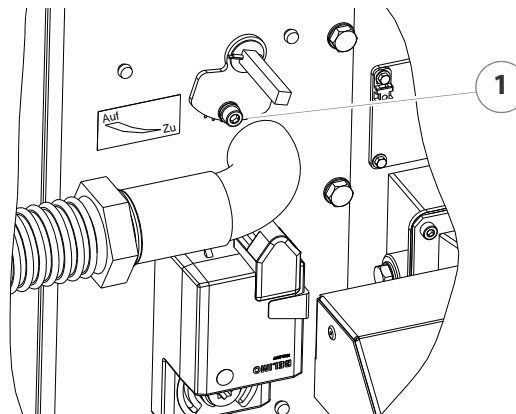


Figure 4/17 - Setting the pressure equalisation regulator

4. Set the position indicator (1) for the pressure equalisation regulator to approximately "Half open" using a 5 mm hexagon socket screw.
  5. Fit the servo motor cover.
- ✓ The pressure equalisation regulator is set.

#### INSTALLING ASH CONTAINER(S)

##### ASH CONTAINER 80 L

1. Remove the ash containers from the packaging.

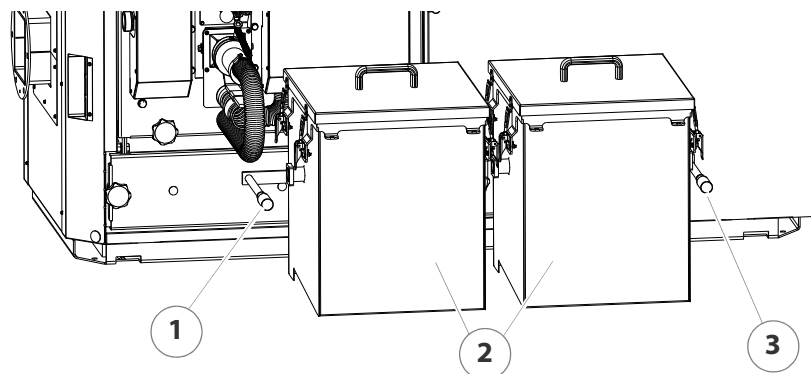
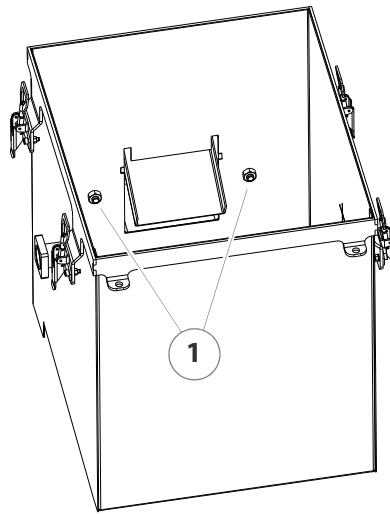


Figure 4/18 - Installing ash container(s)

2. Lift up the two clamp handles (1, 3).
  3. Insert the ash containers (2) on the ash removal pipe.
  4. Press the clamp handles downward.
- ✓ Grasp the clamp handles and press the ash containers against the seal of the ash removal door.
5. If the clamp handles do not clamp, adjust them as follows.



1. Remove the cover from the ash container.
2. Release the external nuts on the ash container.
3. Adjust the ash container with the interior nuts (1) until the clamping handles latch firmly.
4. Screw on the nuts and check that the clamp handles clamp firmly.

Figure 4/19 - Adjusting the ash containers

- ✓ Grasp the clamp handles and tighten the ash containers solidly on the ash removal door.
5. Close the ash containers in the reverse sequence.
- ✓ The ash containers are mounted and adjusted.

ASH CONTAINER 140 L



Optionally, for the HDG Compact 99 - 200 heating system 140 l ash containers can be installed instead of 80 l ash containers.

Installation and adjustment is performed in the same way as with the 80 l ash containers.

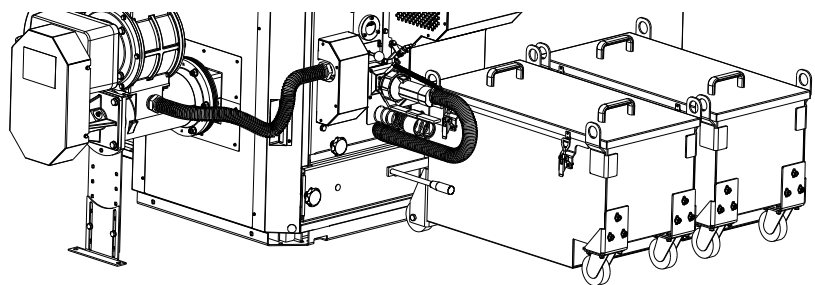


Figure 4/20 - Ash container 140 l

**INSTALLING THE CENTRAL ASH REMOVAL SYSTEM**



For the HDG Compact 99 - 200 heating system, a central ash removal system is optionally available for delivering the combustion ash and fly ash to a 240 l ash bin.

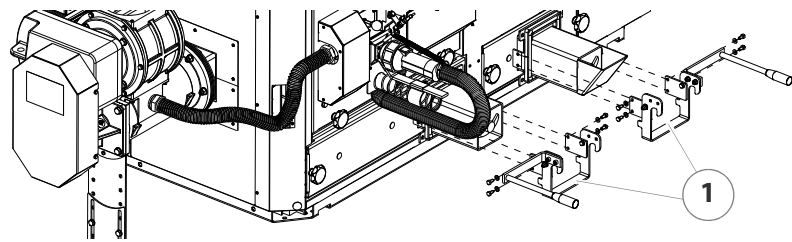


Figure 4/21 - Removing clamping devices

1. Remove both clamping devices (1) from the ash removal doors using an SW13 spanner.

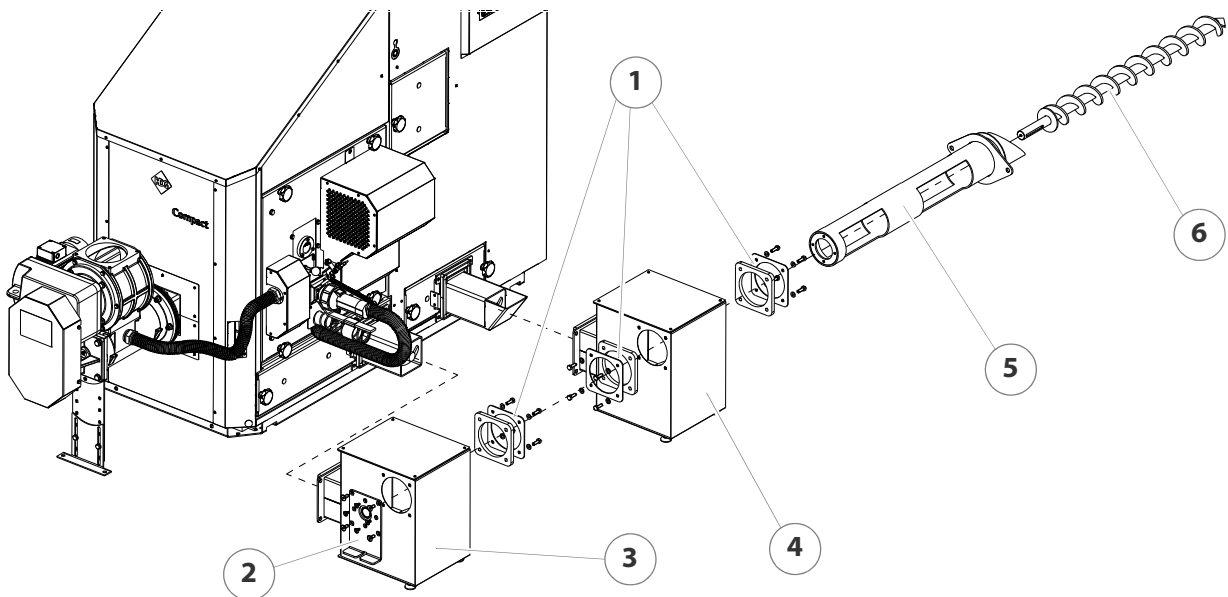


Figure 4/22 - Pre-assembling the central ash removal system

2. Push the auger trough (5) through the flange plates (1) and seals into the ash accumulation bins (3, 4).



**Important!**

Then secure all screws for the assembly of the central ash removal system, without tightening them.

3. Install the flange plates (1) with the M10 screws (spanner size SW17) and washers on the ash accumulation bins (3, 4).
4. Install the torque support (2) using the M10 hexagon socket screws (spanner size SW6) on the ash accumulation bin (3).
5. Install the auger trough (5) using the M8 hexagon socket screws (spanner size SW5) on the torque support (2).
6. Push the ash removal auger (6) through the auger trough (5).

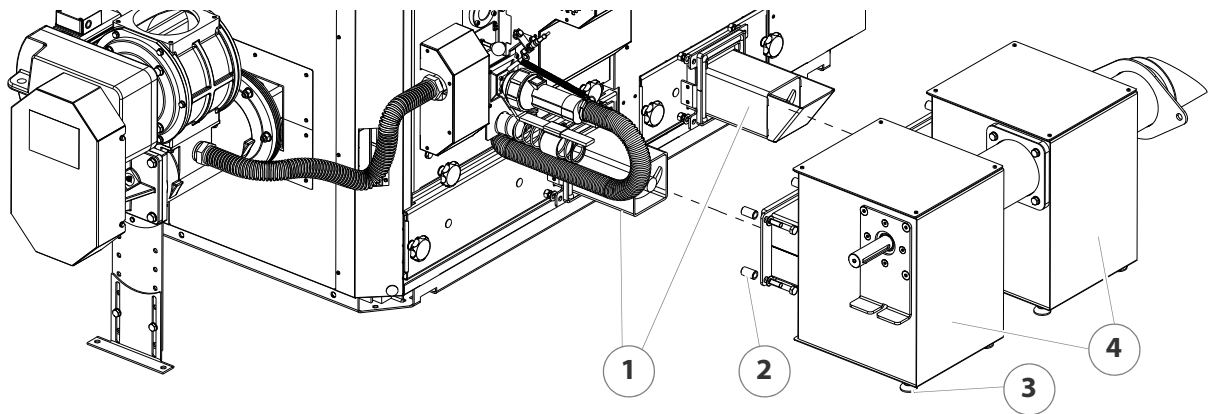


Figure 4/23 - Installing the ash accumulation bins

7. Push both ash accumulation bins (4) onto the door necks of the ash removal doors (1).
8. Use the spacers (2) during installation of the ash accumulation bins (4).
9. Install the ash accumulation bins (4) on the ash removal doors (1) with the M12 screws and nuts (spanner size SW19) and washers.
10. If necessary, compensate for any unevenness on the floor with the aid of the adjustable legs (3) on the ash accumulation bins (4).
11. Tighten all the screws on the central ash removal system.

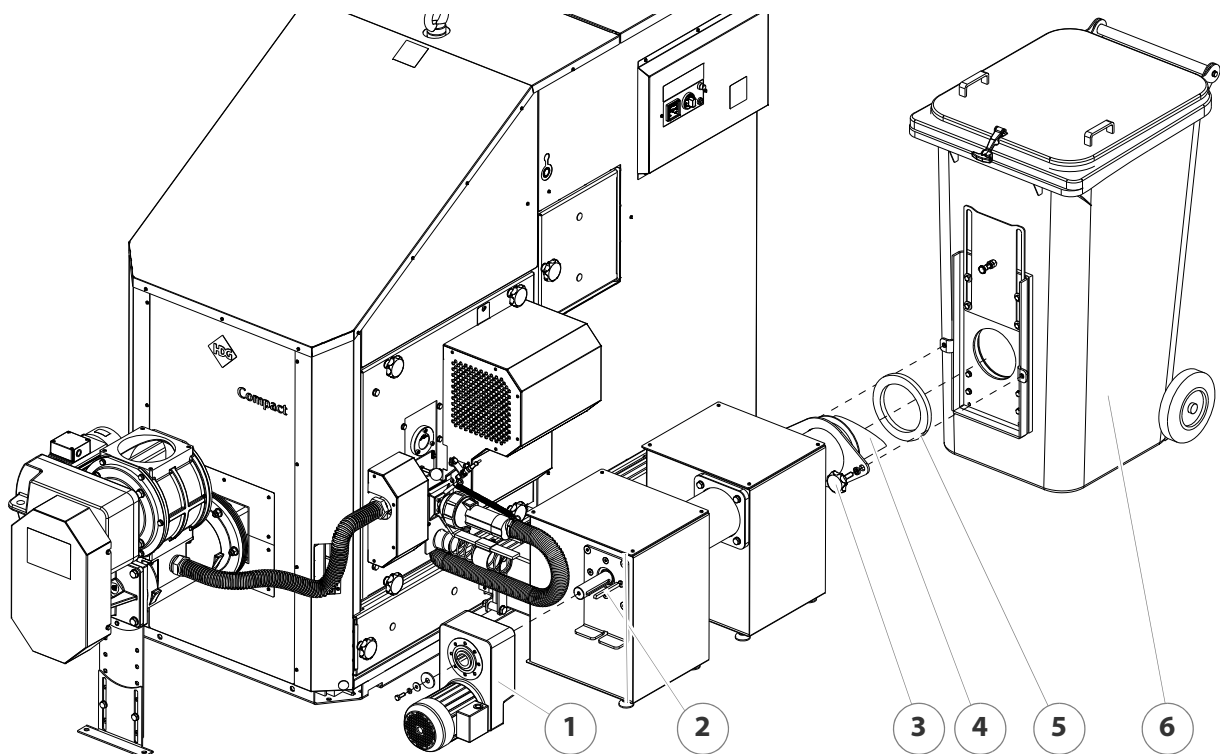


Figure 4/24 - Installing the motor and ash bin

12. Insert the feather key (2) into the ash removal auger.

13. Install the drive motor (1) on the ash removal auger using the M8 screw (spanner size SW13) including the spring ring and washers.

14. Slide the ash bin (6) with the intermediary seal (5) onto the auger trough (4).

15. Secure the ash bin (6) using the star-grip screws (3).

✓ The central ash removal system is now installed.



**Caution!**

Material damage and injury due to burn-back or smoke

If the ash accumulating bins are not at least half-filled when commissioning or re-starting after a cleaning, there is a danger of back-firing or smoke from the boiler. This can cause damage to the heating system or injury to persons.

Make sure that both ash accumulation bins (1) are at least half-filled with ash, sand, etc.

---

**FITTING THE BUFFER PROBE**



The sensors for the buffer tank are in the EMD-C 215 Exclusiv control cabinet for further use.

---

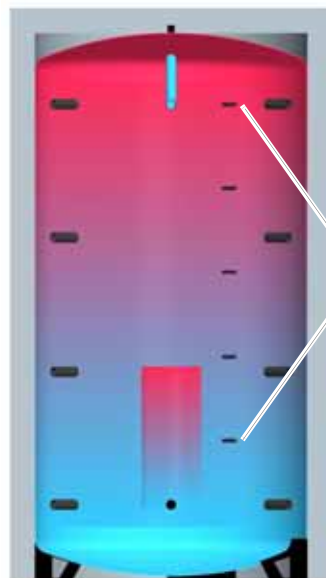


Figure 4/25 - Installing the sensors

1. Seal the immersion sleeves of the sensors with a suitable sealing material and position them at the points indicated in the figure 4/25.
2. Guide the sensors into the immersion sleeves.
3. Insert the prefabricated plug connections into the terminals specified in the circuit diagram.

✓ The sensors are installed.



For a hydraulic diagram without buffer tank, these sensors are not present and must be taken out of the corresponding parameters.

---

### INSTALLING THE EMD-C 215 EXCLUSIV CONTROL CABINET



#### Warning!


Danger of injury

The control cabinet is heavy. Hands and feet could be crushed during installation.

Observe the following when installing the EMD-C 215 Exclusiv control cabinet:

- The HDG Compact 99 - 200 heating system is supplied with a 10 m cable for connecting the boiler with the control cabinet. Install the control cabinet within range of the connection cable.
- Install the control cabinet at least one metre from the flue pipe.
- Prevent the control cabinet from tipping by fixing it to the wall securely.
- If possible, install the control cabinet in such a way that you can see boiler when operating the control panel of HDG Control.
- Install the control cabinet at a height comfortable for you to operate.

### CONNECTING THE CHIMNEY

 See section "4.2 Connections" in this chapter.

1. Connect the flue pipe to the chimney connection or with the HDG cyclone dust extractor.
  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.

## 4.5 Delivery system

### GENERAL INFORMATION

The description for planning, installation and operation of the employed delivery system can be found in the corresponding operating manual.

 See the operating manual, "Delivery system".

**HDG HOSE JUNCTION**



In order to combine several HDG PSS or FRA-PSS pellet delivery systems on an HDG pellet vacuum container, the HDG hose junction can be used. It is positioned between the transfer stations of the PSS augers and pellet vacuum container.

Accordingly, installation of the hose junction is performed after installation of the vacuum and return hose on the transfer station of the PSS auger.

See the operating manual for the HDG pellet delivery system PSS or FRA-PSS and the HDG pellet vacuum system, chapter 4 "Planning and Installation", section 4.5 "HDG pellet vacuum system", paragraph "Installing the vacuum and return hose".

SCOPE OF DELIVERY

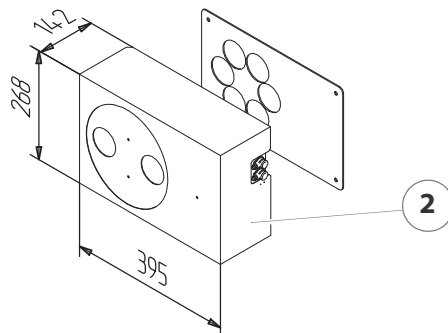
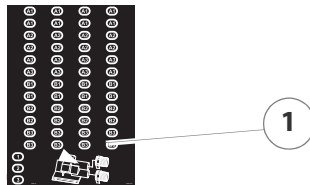


Figure 4/26 - Accessories for delivery system with suction sensors

- 1 Hose junction incl. cover plate
- 2 Label for inscription

GENERAL INFORMATION

The HDG hose junction can be installed on a wall or free-standing with the stand.



**Important!**

The hose junction must be installed using the supplied metal dowels in such a way as to ensure problem-free access from outside.

Using the stand, the hose junction can be installed free-standing in the room.

LABEL



The vacuum hoses are labelled A1, A2 or A3, and the return hoses B1, B2 or B3, depending on the number of pellet augers.



## WALL PENETRATION

A wall penetration of ca. 220 mm is necessary to mount the hose junction on a wall.

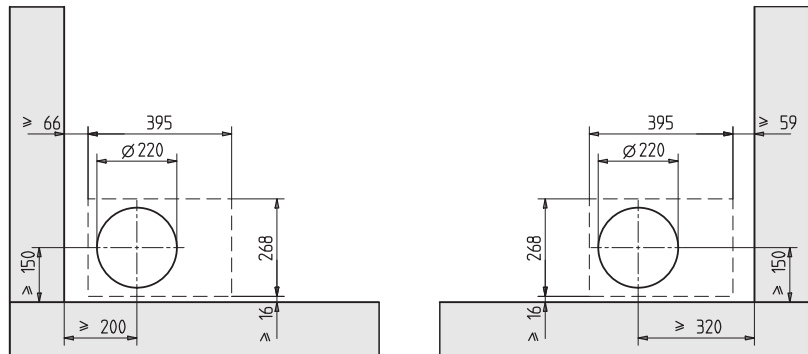


Figure 4/27 - Wall penetration for hose junction

## INSTALLATION

1. Mount the cover plate provisionally on the interior wall using the dowels, diameter 8 mm, and the provided screws.

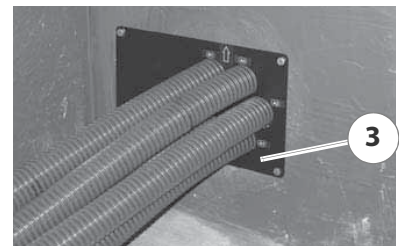
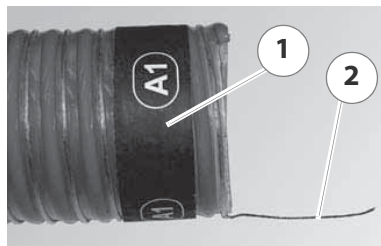


Figure 4/28 - Cutting and laying hose

2. Expose the earthing lead (2) at the hose end.
3. Label the hose end with the provided A1 label (1).
4. Insert the hose end through the A1 opening in the cover plate (3) until the outside of the hose is flush with the wall.

**Important!**

Observe the minimum bending radius of 30 cm.

5. Proceed with hoses A2, A3 or B1, B2, B3 exactly as described above.



For easier hose mounting, the hose junction should be at the same height as the hose (e.g. support with wooden boards).

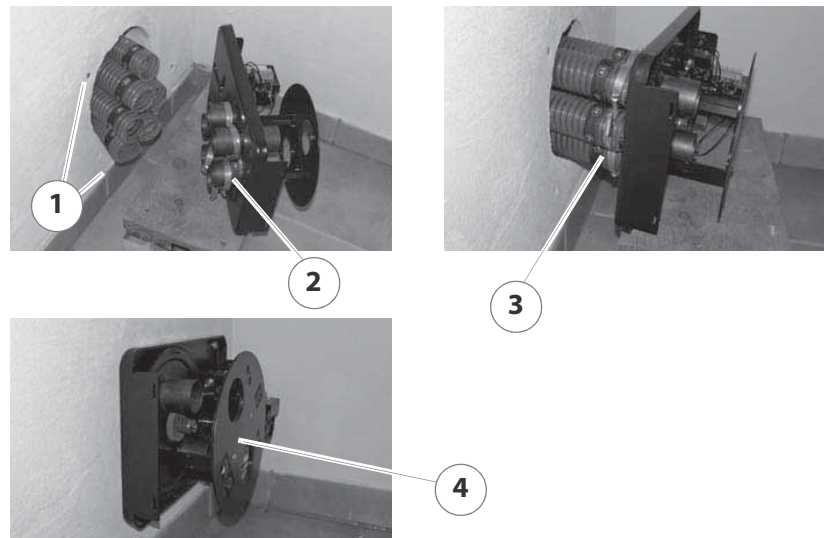


Figure 4/29 - Installing hose on hose junction

6. Drill the mounting holes (1) for the metal dowels, diameter 10 mm, in the wall.
7. Remove the cover on the front of the hose junction.
8. Place the hose clamps (2) over the connection nozzles of the hose junction.



**Important!**

The earthing leads in the hoses must be in contact with the connection nozzles!

9. Place the labelled hoses (3) on the hose junction connections.
10. Secure the hoses (3) with the aid of the hose clamps.
11. Mount the hose junction (4) on the wall.

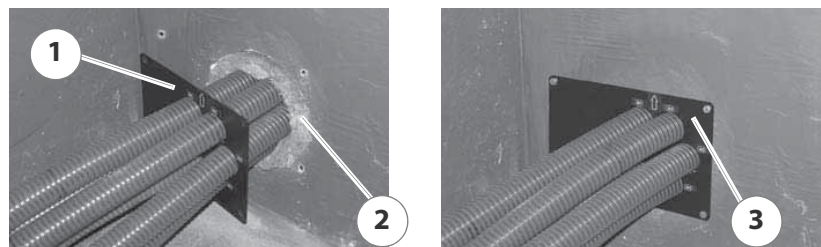


Figure 4/30 - Installing the cover plate

12. Dismantle the cover plate (1) in the storage room.
13. Fill the wall penetration with mineral wool (2).
14. Mount the cover plate (3) on the wall.



We recommend laying the vacuum and return air hose between the hose junction and the boiler in Polokal pipes.

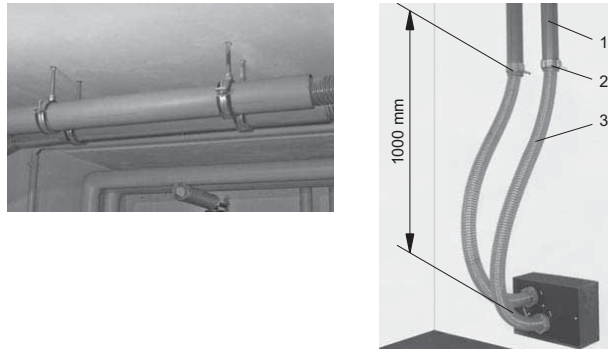


Figure 4/31 - Vacuum and return air hose in Polokal pipes

- 1) Polokal pipes 80 mm
- 2) Do not clamp hoses in a fixed position
- 3) Hose length up to first attachment min. 1450 mm

The hoses must be long enough for the hose junction and may not be attached in a fixed position (hoses are rotated 180°). Distance and hose length to the initial attachment must be upheld.

15. Adapt the length of the vacuum and return air hoses.
16. Expose the earthing lead at the hose end ca. 5 cm.
17. Bend the earthing lead inward.
18. Label both hoses with the provided A and B labels.

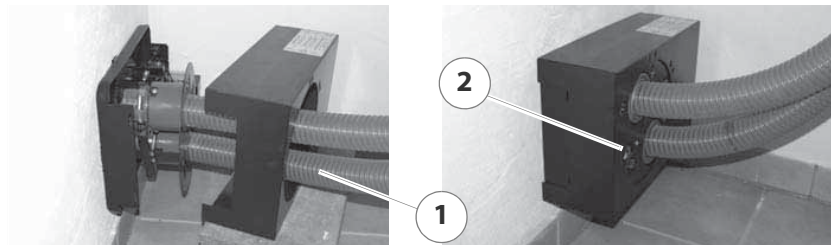


Figure 4/32 - Connecting the suction and return hoses


19. Place the hose clamps on the hose junction connections.




**Important!**

The earthing leads in the hoses must be in contact with the connection nozzles!

20. Place the labelled hoses (1) on the hose junction connections.
  21. Secure the hoses (1) with the aid of the hose clamps.
  22. Replace the cover (2) on the hose junction.
- ✓ The HDG hose junction is now installed.

 For further procedures in the attachment of the hoses, see the operating manual for the HDG pellet delivery system PSS or FRA-PSS and the HDG pellet vacuum system, chapter 4 "Planning and Installation", section 4.5 "HDG pellet vacuum system", paragraph "Installing the vacuum and return hose".

## 4.6 HDG cyclone dust extractor

 All information and instructions regarding the functioning, installation, start-up, maintenance/cleaning etc. can be found in the accompanying "Operating and Maintenance Manual for the HDG Cyclone Dust Extractor".


### UNDERPRESSURE CONTROL

Optionally available is an HDG underpressure control with frequency converter and differential pressure transmitter for adaptation to changing chimney conditions. It creates an automatic adjustment to the underpressure required with output and combustion control and thereby improves the of the partial load capacity of the system.

 See the "HDG underpressure control" manual.

## 4.7 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 the chapter "3 Mode of operation", section "3.3 Technical data".

1. Install the electrical connections in accordance with the provided circuit diagrams.

 The circuit diagrams can be found in the supplied documentation.

## 4.8 Water

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

The diaphragm expansion vessel must be constructed in accordance with DIN EN 13831 "Closed expansion vessels with built-in diaphragm for integration in water installations".

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.

The safety devices must be implemented in accordance with DIN EN 12828 “Heating systems in buildings” and the correspondingly harmonised national standard DIN 4751, Part 2 “Closed, thermostatically safeguarded heat generating systems with supply temperatures of up to 120 °C; safety equipment”.

In Germany, the requirements of the German energy conservation ordinance (EnEV) are to be met.

## 4.9 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 excess energy generated is thus dissipated by the “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 and a flow rate of 1800 l/h must be available at the cold water inlet of the safety heat exchanger.



Mains-dependent, stand-alone supply systems are not safe enough due to dependence upon the power supply!

- The distance between the supply and return lines of the thermal safety device and the safety heat exchanger should 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 connection on the boiler may not significantly exceed the prescribed value.



The thermal safety device is to be inspected annually by an authorised, qualified technician to verify that it is functional.

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.

HDG COMPACT 99 - 115

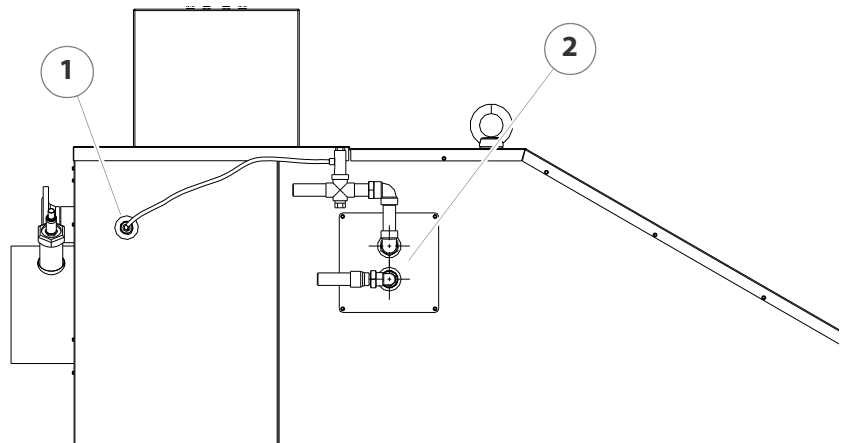


Figure 4/33 - Installing the HDG Compact 99 - 115 thermal safety device

- 1 Connection of immersion sleeve for thermal safety device (DN 15 female)
- 2 Safety heat exchanger connections (DN 20, inside thread)

HDG COMPACT 150 - 200

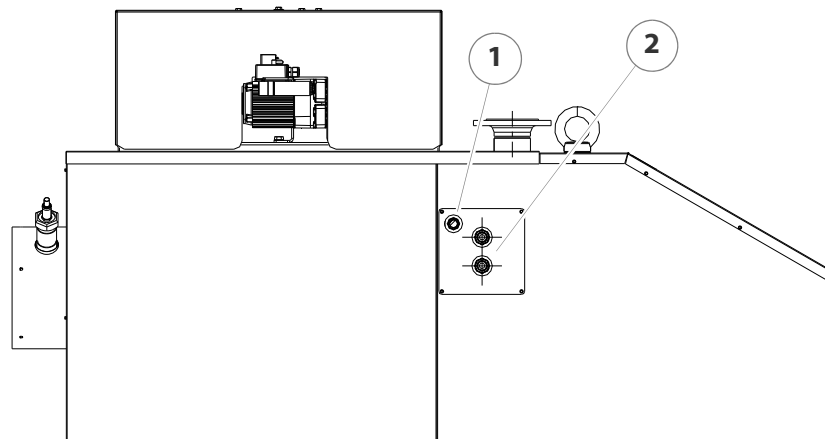


Figure 4/34 - Installing the HDG Compact 150 - 200 thermal safety device

- 1 Connection of immersion sleeve for thermal safety device (DN 15 female)
- 2 Safety heat exchanger connections (DN 20, inside thread)

## 4.10 Hydraulic system

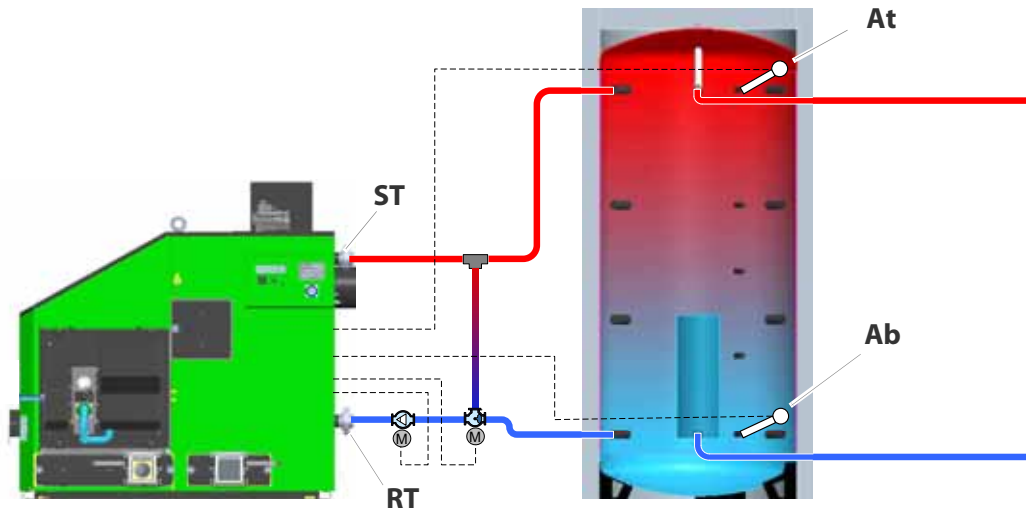


Figure 4/35 - Hydraulic system

HDG Control	
ST	Supply temperature sensor (boiler temperature)
RT	Return temperature sensor
At	Acc. top
Ab	Acc. bottom



The hydraulic system is only suitable for the indicated purpose and in the specified manner. Any deviation from this usage could make adjustments necessary.

Consult with a trained specialist on issues relating to the hydraulic system.

# 5 Commissioning the system

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

The commissioning includes an introduction to the operation and maintenance of the heating system as well as performing measurements on the system to determine exhaust emissions and firing 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 conditions must be met before the system can be commissioned without faults:

### SWITCH OFF THE MAINS SUPPLY

- Is the circuit breaker of the mains supply to the heating system switched off?

### CHECK THE MECHANICAL STRUCTURE OF THE FEEDING SYSTEM

- Does the mechanical structure meet the specifications of this operating manual?

### CHECK THE HYDRAULIC CONNECTIONS

- Do the mechanical connections meet the specifications of this operating manual?
- Has the safety equipment been installed to conform to the applicable standards and guidelines?

### CHECK THE MECHANICAL STRUCTURE OF HDG COMPACT

- Does the mechanical structure meet the specifications of this operating manual?



CHECK THE ELECTRICAL  
CONNECTIONS**Danger!**

Danger from electrical current or voltage!

Isolate the mains cable to the heating system.

- Are all the sensors and actuators connected correctly?
- Has the mains power supply cable been correctly connected?
  - L1 on terminal X11
  - L2 on terminal X12
  - L3 on terminal X13
  - Neutral conductor on terminal X14
  - Earthing conductor on terminal X15.
- Are the connection cables properly attached between the boiler and the control cabinet?

## 5.2 Procedure

### SWITCHING ON THE HEATING SYSTEM



1. Turn the heating system main switch on.

✓ The control is activated.

✓ After a start-up phase, the display will first of all show a switch-on message and then the standard display.



2. Set the engage switch to "1".

✓ The display switches to **Heating ON**.

✓ The heating system is now switched on.

### SETTING THE DISPLAY LANGUAGE

Different languages can be set for the display texts.

🔗 See the chapter entitled "6 Using the heating system", section "6.5 Calling up information, selecting and modifying parameters".

### CHECKING THE ACTUATORS IN MANUAL OPERATION

In the **MANUAL** menu you can manually test the functionality of all actuators, e.g. drive motors, fans and electrical mounted parts.




**Danger!**

Material damage and injury due to incorrect operation.

Activating the following parameters requires comprehensive technical expertise. If the parameters are not activated by trained personnel, the heating system can be damaged and dangerous operating conditions can arise.


COMBUSTION AIR AND IGNITION FAN

The fans can be activated manually in this sub-menu.

 See chapter “6 Using the heating system”, section “6.9 MANUAL menu”, paragraph “Combustion air and ignition fan”.


ASH REMOVAL, MAIN CLEANING, DUST REMOVAL AND CLEANING SYSTEM

In this submenu, the grate with the ash removal auger, main cleaning, dust removal and cleaning system can be activated manually.

 See chapter “6 Using the heating system”, section “6.9 MANUAL menu”, paragraph “Ash removal, main cleaning, dust removal and cleaning system”.


BACKFLOW PUMP AND BACKFLOW VALVES

This submenu is used to activate the return pump and return mixing valve.

 See chapter “6 Using the heating system”, section “6.9 MANUAL menu”, paragraph “Return pump and return mixing valve”.


FEEDING AND METERING

This submenu is used to manually activate the feeding and metering from the wood fuel product bunker.

 See chapter “6 Using the heating system”, section “6.9 MANUAL menu”, paragraph “Feeding and dosage”.


FEEDING, METERING AND EXTRACTION

In this submenu, the feeding and the delivery system can optionally be activated together with the dosing auger lying in between.

 See chapter “6 Using the heating system”, section “6.9 MANUAL menu”, paragraph “Feeding, dosage and delivery system”.


FEEDING, METERING, VACUUM FAN AND DELIVERY SYSTEM

In this submenu, the feeding, vacuum fan and delivery system can optionally be activated together with a dosing auger lying in between.

 See chapter “6 Using the heating system”, section “6.9 MANUAL menu”, paragraph “Feeding, metering, vacuum fan and delivery system”.

HOSE JUNCTION AND PELLET AUGER

This submenu is used to manually activate the hose junction and corresponding pellet auger.

 See chapter “6 Using the heating system”, section “6.9 MANUAL menu”, paragraph “Hose junction and pellet auger”.

### FEEDING, METERING AND LATERAL AUGER

In this submenu, the feeding and the transverse auger can optionally be activated together with the dosing auger lying in between.

See chapter “6 Using the heating system”, section “6.9 MANUAL menu”, paragraph “Feeding, metering and lateral auger”.

### SLIDING TRAY

This submenu is used to manually activate the drive of the moving floor (if installed).

See chapter “6 Using the heating system”, section “6.9 MANUAL menu”, paragraph “Moving floor”.

Once the functionality of all the actuators is checked in manual operation, the HDG Compact 99 - 200 heating system can be operated in accordance with the set control mode.

### FILLING THE ASH ACCUMULATION BIN



The following section is only relevant when operating the HDG Compact 99 - 200 heating system with a central ash removal system.



#### Caution!

Material damage and injury due to backfiring or smoke

If the ash accumulation bins are not at least half-filled when commissioning or re-starting after a cleaning, there is a danger of backfiring or smoke from the boiler. This can cause damage to the heating system or injury to persons.

Make sure that both ash accumulation bins are at least half-filled with ash or sand.

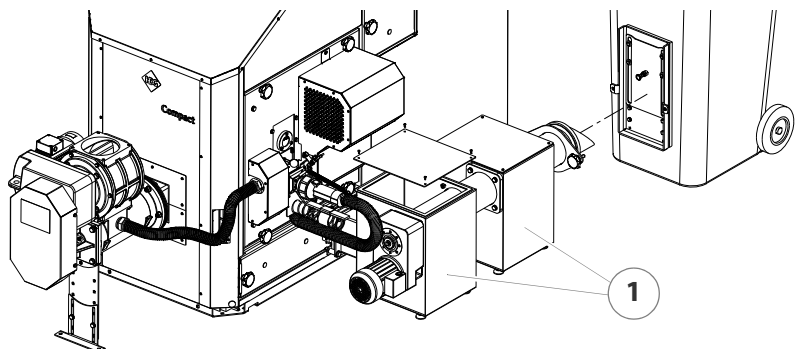


Figure 5/1 - Filling the ash accumulation bin

1. When commissioning the system, make sure that both ash accumulation bins (1) are at least half-filled with ash, sand, etc.

### FILLING THE FUEL BUNKER

---



The fuel bunker may only be filled once the actuators have been tested.

1. Before filling the fuel bunker, check the rotational direction, the intermediate base, the leaf springs and the dosing plate of the delivery system.




#### **Warning!**

Damage to delivery system during filling

If the heating system is not switched on during filling of the fuel bunker, the overload protection of the delivery system could be triggered when the heating system is switched on after the filling.

When filling the fuel bunker for the first time, activate the delivery system by switching in manual operation.

2. Fill the fuel bunker.

 See the chapter entitled “6 Using the heating system”, section “6.12 Filling the fuel bunker”.

✓ The fuel bunker is filled.

### ADAPTING PARAMETERS

---



#### **Danger!**

Material damage and injury due to incorrect settings!

Adjusting these parameters requires comprehensive specialist knowledge. If the parameters are adjusted by an untrained person, the heating system can be damaged.

Only allow authorised specialists to make adjustments to the parameters.

The parameters of the HDG Control unit are programmed with the predefined factory settings upon delivery. The predefined values of the factory settings are intended for operation with wood chips.

In practice, operators usually have their own heating system requirements. Differences result from, for example, the sit-specific requirements or the heating fuel. If the heating system is operated with wood pellets or chips, the relevant parameters must be changed.

In all cases, it is necessary to check the predefined parameters and, if necessary, change them accordingly before commissioning the system.

# 6 Using the heating system

## 6.1 Overview of the controls and display components

### MAIN SWITCH



The main switch is located on the side of the control cabinet. The heating system can be shut down using the main switch.

### EMERGENCY STOP



The emergency stop switch is located on the front plate of the control cabinet. If the emergency stop switch is pressed, all moving parts of the heating system are switched off.



### Danger!

Danger from electrical current or voltage!

The heating system is **not** rendered voltage-free by switching off with the emergency stop switch. The heating system is only voltage-free if the main switch is turned off.

If the emergency stop switch is pulled out, the *Acknowledge fault* button must first be pressed. Only then will all moving parts of the heating system be switched back on and operational.

### ADDITIONAL CONTROLS



Engage switch:

- switches the heating system on or off.



“System operation” indicator light

- lights up when the heating system is switched on.



*Acknowledge fault* key

- flashes when there is a fault.
- lights up when a fault is eliminated.
- must be pressed after rectifying a fault.

CONTROL CABINET MODEL EMD-C 215 EXCLUSIV



Figure 6/1 - Control cabinet model EMD-C 215 Exclusiv

- 1 Lock mechanism of control cabinet
- 2 Main switch
- 3 Emergency stop
- 4 *Acknowledge fault* button with fault light
- 5 "System operation" indicator light
- 6 Engage switch
- 7 HDG Control control unit

## HDG CONTROLUNIT

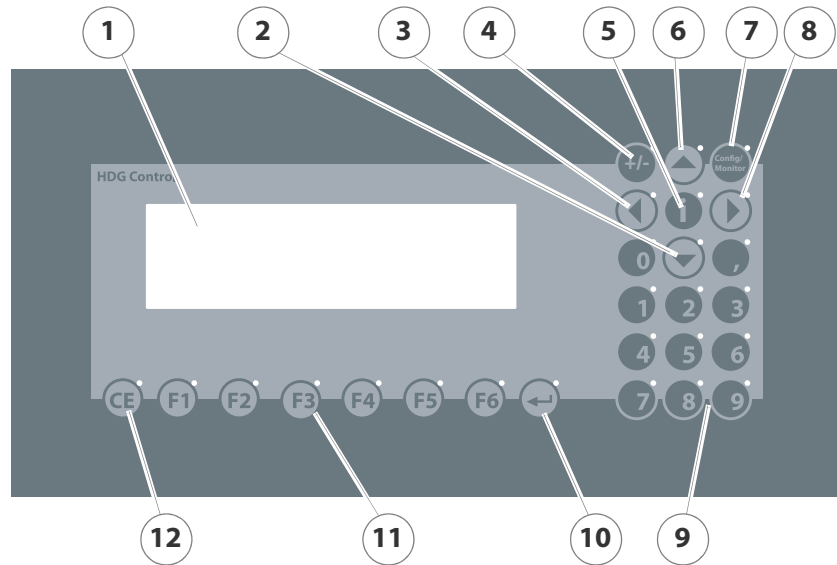


Figure 6/2 - HDG Control control unit

- 1 Display
- 2 *Down arrow* button
- 3 No function assigned
- 4 *Plus/minus sign change* button
- 5 *Program version info / Language selection* button
- 6 *Up arrow* button
- 7 *Configuration* button
- 8 No function assigned
- 9 Numerical keypad
- 10 *Enter or Input* button
- 11 *Function* buttons (F1 to F6)
- 12 *CE* button

The control unit of the HDG Control is located in the front plate of the control cabinet.

Through the control unit, you can adjust the HDG Control and obtain information on current processes.

## DISPLAY

The display shows the selected information and parameters.

BUTTONS

The heating system can be operated using the buttons.



Not all keys are always activated on the keypad.

Depending on the menu, various buttons may be deactivated.

If a button is activated, a diode is lit in the upper right corner of the button. Pressing the button will trigger the respective function.

The individual buttons have the following functions:



*Arrow keys*

- Switch between individual parameters in a display.



*Plus/Minus button*

- Changes the initial sign in front of numerical values.



*Program version info key*

- Displays the software version and enables changing the language.



*Function (1 - 5) keys*

- In the standard display, these buttons enable access to various menus, e.g. the **ON/OFF** menu, as well as the triggering of functions which are shown in the bottom line of the display.



*Function F6 key*

- In the bottom line above the *F6* button, **END** is always visible. Press the *F6* button to exit any submenu and return to the standard display.



*Keys of the numerical keypad*

- The keys of the numerical keypad are used to enter settings and times.



*Enter or Input key*

- Confirms the changed value.
- One step forwards.



*Configuration button*

- If the HDG Control is traded, the *configuration* key is used to confirm adoption of the previous hours of operation.

## 6.2 Switching on the heating system

REQUIREMENTS

Before the heating system is switched on, the following requirements must be met:

- The heating system has been commissioned by authorised specialists.
- The fuses of the power supply are switched on.
- The main switch on the heating system is turned off.
- No operating mode is displayed on the control unit of the HDG Control.





PROCEDURE



- The fuel bunker is filled.
- ✎ See section “6.12 Filling the fuel bunker” in this chapter.

1. Turn the heating system main switch on.

- ✓ The control is activated.
- ✓ After a start-up phase, the display will first of all show a switch-on message and then the standard display.



2. Set the engage switch to “1”.

- ✓ The display switches to **Heating ON**.
- ✓ The heating system is now switched on.

## 6.3 Switching off the heating system

The heating system can be switched off from any operating mode.



**Warning!**

Frost danger!

Only switch off the heating system completely if you are certain there is no danger of frost.



1. Set the engage switch to “0”.

- ✓ The heating system is switched off; the supplying of fuel is stopped; the combustion air fan continues running for a preset burn-out time.

2. Allow the heating system to burn out until the combustion air fan switches off.



3. Turn the heating system main switch off.

- ✓ No operating mode is displayed on the control unit of the HDG Control.
- ✓ The heating system has been de-energised.

## 6.4 Operating statuses

The heating system goes through the following states during operation:

Operating status	Description
<b>Heating OFF</b>	<ul style="list-style-type: none"> <li>• The main switch is turned on.</li> <li>• The engage switch is at “0”.</li> </ul>

Table 6/1 - Operating statuses

Operating status	Description
<b>1.Filling furnace</b>	<ul style="list-style-type: none"> <li>• The current combustion chamber temperature is lower than the preset ignition temperature.</li> <li>• This operating status is maintained until the preset time for filling the combustion chamber has been reached, the fill level indicator signals or the combustion chamber temperature exceeds the ignition temperature.</li> </ul>
<b>Ignition</b>	<ul style="list-style-type: none"> <li>• The preset ignition temperature has not been exceeded.</li> <li>• The ignition fan is running and the combustion fan will start after the preset delay.</li> <li>• This operating status is maintained until the preset time for ignition has been reached or the combustion chamber temperature exceeds the ignition temperature.</li> </ul>
<b>Pre-ventilation</b>	<ul style="list-style-type: none"> <li>• The fan is activated in order to remove the remaining gases from the combustion chamber.</li> </ul>
<b>Heating-up phase</b>	<ul style="list-style-type: none"> <li>• The feed quantity is increased by increments.</li> <li>• This operating status is maintained until the preset time for heating up or the preset temperature in the combustion chamber have been reached.</li> </ul>
<b>Automatic control</b>	<ul style="list-style-type: none"> <li>• Only for “Combustion control” or “Combustion and output control” mode.</li> <li>• The heating system runs automatically according to the configured control mode.</li> </ul>
<b>Autom. uncontrolled</b>	<ul style="list-style-type: none"> <li>• Operation of the heating system in “Fixed value” mode.</li> </ul>
<b>Burn-out phase</b>	<ul style="list-style-type: none"> <li>• The preset boiler temperature has been reached.</li> <li>• The boiler has been switched off.</li> <li>• This operating status is maintained until the preset burn-out time has elapsed.</li> </ul>
<b>Log wood emergency operation</b>	<ul style="list-style-type: none"> <li>• Emergency operation of the heating system in “Log wood” mode.</li> <li>• The combustion chamber must be filled through the inspection door and ignited manually.</li> </ul>
<b>Temperature reached</b>	<ul style="list-style-type: none"> <li>• The current boiler temperature is higher than the preset boiler temperature.</li> <li>• No demand on buffer.</li> <li>• The boiler temperature is higher than the set temperature on the regulating thermostat and the burn-out phase is complete.</li> </ul>
<b>Timer off</b>	<ul style="list-style-type: none"> <li>• Operating status outside of the set enable time.</li> <li>• The heating system is not in operation.</li> </ul>
<b>Emergency operation active</b>	<ul style="list-style-type: none"> <li>• A sensor in the heating system is faulty.</li> <li>• The boiler operates in accordance with the parameter values from the submenu “Fixed value settings”.</li> </ul>

Table 6/1 - Operating statuses (continuation)

Operating status	Description
<b>Not enabled</b>	<ul style="list-style-type: none"> <li>The heating system is controlled via an external heating circuit regulator.</li> <li>There was no enable command from the superordinate heating circuit regulator.</li> </ul>
<b>Lambda stop</b>	<ul style="list-style-type: none"> <li>The residual oxygen value for combustion has fallen below the minimum.</li> <li>The heating system waits until the minimum residual oxygen value has been reached again.</li> </ul>
<b>Material stop</b>	<ul style="list-style-type: none"> <li>The fill level indicator in the combustion chamber has signalled.</li> <li>There is too much material in the combustion chamber.</li> <li>The heating system waits until the fill level indicator enables filling again.</li> </ul>
<b>Combustion chamber temperature stop</b>	<ul style="list-style-type: none"> <li>The maximum permitted temperature in the combustion chamber has been exceeded.</li> <li>The heating system waits until the combustion chamber falls back below the maximum permitted temperature.</li> </ul>

Table 6/1 - Operating statuses (continuation)

## 6.5 Calling up information, selecting and modifying parameters

On the display of the control panel for the HDG Control, you can call up various information as well as select and modify parameters.

Due to the freely programmable design and the numerous options in heating system combinations, especially in regard to the extraction technology, the number of parameters can vary greatly.

### STANDARD DISPLAY

The standard display shows you various information, such as operating status of the heating system, hours of operation, boiler temperature and the time.

<b>Heating OFF</b>				<b>0.0</b>	
<b>hours</b>					
<b>Boiler temp.</b>		<b>: 40 °C</b>	<b>15:55</b>		
<b>ON</b>	<b>°C</b>	<b>TIME</b>	<b>MAN.</b>	<b>SERVICE</b>	<b>INFO</b>
<b>OFF</b>	<b>QUANT</b>				
	<b>ITY</b>				

PROGRAM VERSION /  
LANGUAGE SELECTION



1. Press the *information* key.
- ✓ The program version will appear in the display.

Program info	
Basic program:	COMP_12a / 15.12.11
Program file:	
Program date:	15.12.11 Doebereiner
Program update:	



2. Press the *F6* key to select the menu language
- ✓ The display switches to the submenu **Language selection**.

Language selection					
	1-13				
Language	: 1 - German				
		FIELD	CHOOSE		END



3. Press the *F4* key under the **FIELD** command.



4. Press the *F4* key under the **CHOOSE** command and select the desired menu language.



By pressing the *F6* key under the **END** command, you can exit the **Language selection** menu window without changing the setting.



5. Confirm the desired menu language with the *Enter* key.
- ✓ The desired menu language is set.



The following pages show all practically available menu windows. In actuality, only those menu windows are available to the operator which are relevant for the heating system version.



**Danger!**

Material damage and injury due to incorrect settings!

Changing the following parameters requires comprehensive technical expertise. If the parameters are changed by untrained individuals, the heating system can be damaged and dangerous operating conditions can arise.

Have changes to the following parameters made only by authorised specialists.

## 6.6 ON/OFF menu

### PROCEDURE

1. Press the **F1** key under the standard display screen.  
✓ You are in the **ON/OFF** menu.
2. Scroll with the **F1** or **F2** key to the previous or next submenu.
3. Use the **F3** key under the **FIELD** command in the respective submenu to select the desired parameter.
4. Press the **F4** key under the **CHOOSE** command and select the desired setting.
5. Confirm each change with the *Enter* key.  
✓ The desired parameter is set.
6. Press the **F6** key under the **END** command to exit the submenu.  
✓ The standard display is restored.

### SETTING THE BASE LOAD / PEAK LOAD BOILER



This is an optional submenu and only available with double heating systems.

This menu can be used to integrate an additional peak load boiler using a third accumulator temperature sensor. With a double heating system, both boilers store energy in the accumulator. If the base load boiler cannot charge the accumulator by itself, the peak load boiler switches on for support.

This menu allows you to configure which heating system will be the base load boiler and the which will be the peak load boiler in a double heating system. A changeover is required after a certain amount of operating hours so that both boilers will have approximately the same number of operating hours over several years.

See "Procedure" in this section.

Changeover base load/peak load		1-01			
Base load	Peak load				
Boiler-1	Boiler-2				
After operating hours		:	0 /	0 hr	
		FIELD	CHOOSE		END

CONTROLLING BOILER-2

Boiler activation must be set to “**External**” on Boiler 2 with parameter 1-05 . Boiler 2 is controlled by a relay (K21) of Boiler 1. A normally-open contact of K21 is wired to the outgoing terminals 68/69/70 on terminal strip X2. Boiler 2 likewise has terminals 68/69/70 on terminal strip X2, which are internally wired to the PLC input “External demand”. In order to ensure this function works properly, it is necessary to lay a connecting line (recommended: flexible control cable of the type YSLY-JZ 3 x 1.0 mm ) between the two control cabinets.

FUNCTION OF THE RETURN PUMP



The return pump always runs if there is demand on the boilers and the combustion chamber temperature exceeds 200 °C. This means that Boiler 1 must receive demand signals from the accumulator sensor and Boiler 2 must receive the external demand signal from Boiler 1.

SETTING OPERATING TIMES

In this menu you can view and set the operating times of the heating system. There are two switch-on and switch-off cycles available per weekday.

BOILER OPERATING TIMES

 See “Procedure” in this section.

Switch on/off times - Display			1-02
On: 00:00	On: 00:00	Time:15:55	
Off: 24:00	Off: 00:00		
: Day		: Monday	
		EDIT	END



1. In the **Show switch on/off time 1-02** submenu, press the **F4** key under the **EDIT** command in the bottom line of the display.
- ✓ The display switches to the **Enter switch on/off time 1-03** submenu.

Enter switch on/off time			1-03
On: 00:00	On: 00:00	Time:15:55	
Off: 24:00	Off: 00:00		
Day		: Monday	
		CHOOSE	END

- ✓ The day of the week and the first switch-on time are shown in black.



2. Press the **F4** key under the **CHOOSE** command in the display to select the day of the week that is to be reset.
3. Set the times using the numerical keypad.



If you want the heating system to be ready for operation 24 hours a day, the first switch-on time must be set to **ON: 00:00** and the first switch-off time to **OFF: 24:00!**



4. Confirm each change with the *Enter* key.

✓ The cursor moves to the next digit pair.



5. Press the *F4* key again under the **CHOOSE** command in the display to select the next day of the week that is to be reset.



6. Press the *F6* key under the **END** command to exit the **Enter switch on/off time 1-03** submenu.

✓ The operating times of the heating system are set.

✓ The display switches to **Show switch on/off time 1-02**.



7. Press the *F6* key under the **END** command to exit the **Display switch on/off time 1-02** submenu.

✓ The standard display is restored.

PELLET HOPPER OPERATING TIMES



This is an optional submenu and only available with pellet hoppers.



1. Press the *F1* key under the standard display screen.

✓ You are in the **ON/OFF** menu.



2. Scroll with the *F2* key to the submenu **Switch on/off time - Hopper 1-04**.

Switch on/off time - Hopper 1-04

On: 00:00      On: 00:00      Time:15:55  
 Off: 24:00      Off: 00:00

Day : Monday



EDIT

END

✓ The first switch-on time is shown in black.



3. Set the times using the numerical keypad.



4. Confirm each change with the *Enter* key.

✓ The cursor moves to the next digit pair.



5. Press the *F6* key under the **END** command to exit the **Switch on/off time - Hopper 1-04** submenu.

✓ The standard display is restored.



**SETTING THE CONTROL, BOILER ACTIVATION, IGNITION AND LAMBDA STOP**

SETTING THE CONTROL MODES

The heating system can be operated in different control modes. These are:

- **Fixed value**
  - In this version, the combustion is not optimised and there is no output regulation. The combustion air supply and fuel quantity is fixedly set and remains unchanged.
- **Combustion control**
  - In this version the combustion is optimised. The primary and secondary air supplies and the fuel quantity are adapted automatically within a specified range of combustion. There is no output regulation. (Standard setting for use of accumulator).
- **Control of combustion and output**
  - In addition to the combustion control, this version also regulates the output of the heating system for the demand.
- **Oil burner**
  - In this version, an oil burner must be installed in the boiler. This control mode switches off all units except the return pump and return mixing valve. If the regulating thermostat on the boiler has enabled this, the oil burner and the return mixing valve regulate according to the set return temperature. If not enabled, the return mixing valve closes and only opens briefly in the case of a higher temperature.
- **Log wood**
  - This mode is suitable only for **emergency operation**. The combustion air fans are switched on or off according to the boiler temperature.

 See "Procedure" in this section.

<b>Setting</b>		<b>1-05</b>			
<b>Control</b>	<b>: Fixed value</b>				
<b>Activate boiler</b>	<b>: Accumulator temperature sensor</b>				
<b>Ignition</b>	<b>: On</b>				
<b>Lambda stop</b>	<b>: On</b>				
		<b>FIELD</b>	<b>CHOOSE</b>		<b>END</b>



The standard setting for systems with accumulators is **Combustion control**.



## SELECTING AND SETTING BOILER ACTIVATION

In boiler activation mode, there are various ways of switching the heating system on and off.

- **Accumulator temperature sensor**

- In this version, the heating system is switched on and off through two accumulator temperature sensors. After falling below the preset temperature at the “Acc. top” sensor, the boiler is started. After exceeding the preset temperature at the “Acc. bottom” sensor, the boiler is switched off.

 See section “6.7 °C/QUANTITY menu” in this chapter.

- **Accumulator and external**

- In this version, the heating system is switched on and off if the accumulator temperature sensor has enabled this and there is a simultaneous external demand.

- **Accumulator or external**

- In this version, the heating system is switched on and off if the accumulator temperature sensor has enabled this or there is a simultaneous external demand.

- **On**

- In this version, the heating system is switched on and off through the boiler supply temperature sensor. The accumulator temperature sensors are ignored.

- **Thermostat**

- In this version, the heating system is switched off through the boiler supply temperature sensor and switched on through the accumulator thermostat.

- **External**

- In this version, the heating system is switched on and off through an external controller. Observe the terminal connection points on the circuit diagram in the control cabinet.

 See “Procedure” in this section.



The standard setting for systems with accumulators is **Acc. temp. sensor**.

## ACTIVATING OR DEACTIVATING AUTOMATIC IGNITION

The automatic ignition function can be switched off, thus activating the function for sustaining the embers.

 See “Procedure” in this section.





The standard setting is **On**.

Sustaining the embers is only performed in emergency operation!

ACTIVATING THE FUNCTION  
“LAMBDA STOP”



If the specified minimum residual oxygen value is not met, the fuel feeding is interrupted until the residual oxygen values are again within the acceptable range.

-  See “Procedure” in this section.
-  For the setting of the minimum lambda value, see section “6.7 °C/ QUANTITY menu”, paragraph “Entering the residual oxygen setting”.

ADJUSTING THE ASH REMOVAL SETTING

The movement of the stepping grate and the ash removal system can be switched off.

-  See “Procedure” in this section.

<b>Setting</b>		<b>1-06</b>			
<b>Ash removal</b>		<b>: Automatic</b>			
			<b>CHOOSE</b>		<b>END</b>





The standard setting is **Automatic**.

CHANGING THE CLEANING SYSTEM SETTING

The automatic heat exchanger cleaning system can be switched off.

-  See “Procedure” in this section.

<b>Setting</b>		<b>1-07</b>			
<b>Cleaning system</b>		<b>: On</b>			
			<b>CHOOSE</b>		<b>END</b>



The standard setting is **On**.



### MODIFYING THE DUST REMOVAL SETTING

The fan for the HDG cyclone dust extractor, if available, can be set to four different operating modes.

- **0-Off**
  - In this mode, the fan for the de-dusting function is not available or not in operation.
- **1-Continuous**
  - In this mode, the fan is continuously in operation, e.g. for cleaning work.
- **2-Heating up**
  - In this mode, the fan for the de-dusting function is only in operation during the heating up phase. After the heating up phase, it switches off.
- **3-Automatic**
  - Depending on the local site conditions and fuel characteristics, this mode may be required as a flue support to stabilise operation. The fan starts and continues running through the operating mode **Automatic**. Afterwards it switches off.
- **4-During combustion**
  - In this mode, the fan is in operation if the combustion fan of the heating system is running.

In addition, in this menu it can be set if an underpressure control was activated.

 See "Procedure" in this section.

Setting		1-08			
Dust removal		: 4-During combustion			
Underpressure control		On			
		FIELD	CHOOSE		END



Standard setting for dust removal is **4-with combustion**.


The mechanical setting options on the fan itself should also be noted.

**MODIFYING THE EXTRACTION SETTING**

The heating system can, for example, include a separate delivery system for a shaving silo. In addition, the flexi blade delivery system can be employed for extraction in combination with an additional conveyor auger. Extraction can be controlled in various ways.

- **Cycles**



- In this version, the extraction runs in a cycle with configurable pause intervals and runtimes.

 For setting options, see the section “6.8 TIME menu” in this chapter.

- **Continuous running**

- In this version, the extraction runs continuously upon demand.

 See “Procedure” in this section.

Setting		1-09			
Delivery system		: Cycles			
			CHOOSE		END



The standard setting is **Cycles**.

**MODIFYING THE PELLET VACUUM DELIVERY SYSTEM SETTING**

Optionally, the heating system can also be operated with a pellet vacuum delivery system.



- **1 Suction point**

- In this variant, the pellet vacuum delivery system is operated without hose junction.

- **2/3 Suction points**

- In this variant, the pellet vacuum delivery system is operated with hose junction with 2 or 3 suction points.

 See “Procedure” in this section.

Setting Pellet vacuum delivery system		1-10			
Vacuum delivery system		: 1 Suction point			
Operating mode		: Automatic			
		FIELD			END






The standard setting is 1 **Suction point**.

**MODIFYING THE MOVING FLOOR SETTING**

A moving floor delivery system can be an optional component of a heating system. The individual scraper blades of the moving floor can be separately controlled.

- **Off**
  - In this version, all scraper blades are switched off.
- **Auto scraper 1**
  - In this version, only scraper 1 of the moving floor is controlled.
- **Auto scraper 2**
  - In this version, only scraper 2 of the moving floor is controlled.
- **Auto scraper 1 + 2**
  - In this version, both scraper blades of the moving floor are alternately controlled.
- **Manual mode**
  - In this version, the moving floor scrapers can be controlled by hand. The manual control function in the **Manual** menu is enabled.


 See "Procedure" in this section.


<b>Setting</b>		<b>1-11</b>			
<b>Moving floor</b>		<b>: Manual mode</b>			
		<b>FIELD</b>			<b>END</b>


## 6.7 °C/QUANTITY menu


In this menu, you can view and set temperatures, combustion air quantity, fuel type/quantity and control parameters. All target values can be modified. The actual values displayed indicate the current status.


### PROCEDURE


- 

1. Press the *F2* key under the standard display screen.  
 ✓ You are in the °C/**Quantity** menu.
- 

2. Scroll with the *F1* or *F2* key to the previous or next submenu.  
 ✓ The first resettable parameter is shown in black.
- 

3. Enter the desired value using the numerical keypad.
- 

4. Confirm each change with the *Enter* key.  
 ✓ The desired parameter is set.
- 

5. Scroll with the *Up* or *Down* key to the previous or next submenu.  
 ✓ The next resettable parameter is shown in black.
6. Repeat steps 3 to 5 for additional parameters.
- 



7. Press the *F6* key under the **END** command to exit the submenu.  
 ✓ The standard display is restored.

### VIEWING FLUE GAS TEMPERATURE





This is an optional submenu and only available when operating the boiler with flue gas temperature sensor.

 See "Procedure" in this section.

°C /					
Quantity		2-01			
Flue gas temperature					
:		99 °C			
					END

### SETTING THE BOILER SUPPLY AND RETURN TEMPERATURE

 See "Procedure" in this section.

°C /					
Quantity		2-02			
Boiler temp.	:	80 / 60 °C			
Return temp.	:	60 / 50 °C			
Comb. chamber temp.	:	600 / 331 °C			
Residual oxygen	:	8.0 / 8.6 %			
					END





The **Boiler temperature** target value must not fall below 70°C and must not exceed 85°C. The **Return temperature** target value must not fall below 60°C. **Comb. chamber temp.** and **Residual oxygen** cannot be changed!

### READING VALUES FROM THE CONTROLLER



You can read off the relevant values in the display.

 See "Procedure" in this section.

Values from controller					
		2-03			
Material quantity	:	50.0 / .40.0 %			
Material difference	:	.0 / 50.0 %			
Primary air	:	25 / 1 %			
Secondary air	:	20 / 1 %			
					END

### FIXED VALUE - SETTING THE MATERIAL AND AIR QUANTITY

 See "Procedure" in this section.

Fixed value settings					
		2-04			
Material quantity	:	40.0 / .40.0 %			
Primary air	:	15 / 1 %			
Secondary air	:	80 / 1 %			
Comb. chamber temp.	:	600 / 331 °C			
					END



In this menu, the settings of the fuel and air quantities are fixed value presets for “Fixed value” operation only.

See section “6.6 ON/OFF menu”, under “Setting the control, boiler activation, ignition and Lambda Stop”.

### SELECTING A MATERIAL TYPE

In this menu you can choose from four different heating material settings. The varying quality of the heating material can also be taken into account. All parameters can be newly defined and reset for each type of material.

See “Procedure” in this section.

<b>Material type</b>					<b>2-</b>
05					
<b>Material</b> 1 : ( <b>Material_1</b> )					
					<b>END</b>



The standard setting for start-up is usually **Material: 1**.

Independent modification of settings for adapting to the fuel should be made under another fuel type so as not to change the startup settings. For example, save the start-up setting under **Material: 2** and only then modify this setting.

### DEFINING THE SWITCH ON/OFF TIMES FOR THE BOILER

This menu is used to define the switch on/off times of the boiler based on the temperature sensor of the accumulator. The switching on and off of the boiler can be changed by adapting the temperature.

- **Temp. acc. top below**
  - If this temperature set for the top accumulator sensor is not met, the boiler switches back on.
- **Temp. acc. bottom above**
  - If the temperature set for the bottom accumulator sensor is exceeded, the boiler switches off.





Temperature adjustment using the accumulator sensors is only available if the boiler activation is set to “Accumulator temperature sensor”.

See section “6.6 ON/OFF menu”, under “Selecting and setting boiler activation”.

See “Procedure” in this section.

<b>Boiler on/off</b>		<b>2-06</b>			
On: Temp. acc. top below		70	/	58°C	
Off: Temp. acc. bottom above		65	/	51°C	
					<b>END</b>



The standard setting for the boiler switch-on temperature for **Temp. acc. top below** is 70 °C.



The standard setting for the boiler switch-off temperature for **Temp. acc. bottom above** is 65 ?.

### INTEGRATING THE PEAK LOAD BOILER



This is an optional submenu and only available with double heating systems (if necessary, also with oil/gas boilers).

This menu can be used to integrate an additional peak load boiler using a third accumulator temperature sensor. The switch-on and switch-off temperatures of the accumulator for the peak load boiler are set here.

- **Temp. acc. top below**
  - If this temperature set for the upper accumulator sensor is not met, the peak load boiler switches on.
- **Temp. acc. middle above**
  - If this temperature set for the middle accumulator sensor is exceeded, the peak load boiler switches off.

See “Procedure” in this section.

<b>Peak load boiler</b>		<b>2-07</b>			
On: Temp. acc. top below		55	/	68°C	
Off: Temp. acc. middle above		65	/	65°C	
					<b>END</b>

**PEAK LOAD BOILER MONITORING**



This is an optional submenu and only available with double heating systems (if necessary, also with oil/gas boilers).

This menu can be used to integrate an additional peak load boiler using a third accumulator temperature sensor.

The ACT temperature on the accumulator middle sensor must be below the SET temperature

If the set value for the temperature increase is not reached within the specified delay time, the peak load boiler is automatically activated.

See "Procedure" in this section.

Peak load boiler		2-08			
Monitoring of accumulator temp. at top					
Temp. rise less than		5 / 68°C			
Delay time		30 / 0 m			
					END

**ENTERING THE COMBUSTION CHAMBER TEMPERATURE SETTING**

This menu is used to set the furnace temperature range for operation with combustion and output control.

- **MAX**
  - The boiler attempts to reach this maximum temperature at full load.
- **MIN**
  - This minimum temperature is the lower limit for partial-load operation of the boiler.



The combustion chamber temperature settings apply for **Combustion control** as well as **Combustion and output control**.

See section "6.6 ON/OFF menu", under "Setting the control, boiler activation, ignition and Lambda Stop".

See "Procedure" in this section.

Comb. chamber temp.		PID-1		6-01	
MAX: 600°C	T_SET: 80°C	KP:	5.00		
MIN: 400°C	T_ACT: 0°C	TN:	900.00		
		TV:	10.00		
SET: 600°C					
					END



The standard setting is **MAX** 600°C and **MIN** 400°C.

**ENTERING MATERIAL AND TEMPERATURE SETTINGS**

In this menu, you can define the fuel quantity for controlled operation of the boiler. The furnace temperature setting is also set for the control type "Combustion control".



The material settings apply for **Combustion control** as well as **Combustion and output control**.

See section "6.6 ON/OFF menu", under "Setting the control, boiler activation, ignition and Lambda Stop".

See "Procedure" in this section.

<b>Material quantity</b>		<b>PID-2</b>	<b>6-02</b>
<b>MAX: 28.0%</b>	<b>CCT_SET: 600°C</b>	<b>KP: 5.00</b>	
<b>MIN: 15.0%</b>	<b>CCT_ACT: 50°C</b>	<b>TN: 100.00</b>	
		<b>TV: 0.00</b>	
<b>SET: 15.0%</b>	<b>Factor : 50%</b>	<b>KP_ 17.90</b>	
			<b>END</b>



The difference between fuel quantity **MAX** and **MIN** should be specified as a range (approx. 25%) adapting to the required value.

**ENTERING THE PRIMARY AIR SETTING**

In this menu, you can set the primary air quantity for controlled operation of the boiler.



The primary air settings apply for **Combustion control** as well as **Combustion and output control**.

See section "6.6 ON/OFF menu", under "Setting the control, boiler activation, ignition and Lambda Stop".

See "Procedure" in this section.

<b>Primary air</b>		<b>R-1</b>	<b>6-03</b>
<b>Air_Max : 30%</b>	<b>Fue_Set: 15.0%</b>		
<b>Air_Min : 25%</b>	<b>Set_Air: 25.0%</b>		
			<b>END</b>



The difference between primary air quantity **Air\_Max** and **Air\_Min** should be specified as a range adapting to the required value (approx. 25 %).

**ENTERING THE RESIDUAL OXYGEN SETTING**

This menu is used to enter the residual oxygen setting for controlled operation of the boiler.



The residual oxygen setting applies for **Combustion control** as well as **Combustion and output control**.

See section "6.6 ON/OFF menu", under "Setting the control, boiler activation, ignition and Lambda Stop".

See "Procedure" in this section.

O2 preset value		R-2	6-04
O2_MAX:	8.0 %	CCT_SET:	600°C
O2_MIN:	8.0 %	CCT_ACT:	50°C
O2_SET:	8.0 %		
O2_ACT:	12.8		
			END



The standard setting for **O2\_Max** and **O2\_Min** is 8.0%.

**ENTERING THE SECONDARY AIR SETTING**



In this menu, you can set the secondary air quantity for controlled operation of the boiler. The O2 minimum value for the Lambda Stop function can also be defined.



The secondary air setting applies for **Combustion control** as well as **Combustion and output control**.

See section "6.6 ON/OFF menu", under "Setting the control, boiler activation, ignition and Lambda Stop".

See "Procedure" in this section.


Secondary air		O2	PID-3	6-05
Max: 100%	SET: 8.0%	KP: 200.0		
Min: 20%	ACT: 12.8%	TN: 200.0		
ACT: 100%	MIN: 5.0%	TV: 0.0		
				END



The standard setting for the secondary air is 100% for **Max** and 20% for **Min**.



If this O2 minimum value is not met, the Lambda Stop function is triggered.


 See section "6.6 ON/OFF menu", under "Activating the function "Lambda Stop".

#### ADAPTING THE MATERIAL QUANTITY/O2



This menu allows fuel to be increased or adapted within a range defined by the Delta Min/Max values.



The material quantity/O2 settings apply for **Combustion control** as well as **Combustion and output control**.

 See section "6.6 ON/OFF menu", under "Setting the control, boiler activation, ignition and Lambda Stop".

 See "Procedure" in this section.

Fuel quantity modification by O2 R-3		6-06
Delta_FUE_MIN:	-10%	FUE_SET: 15.0%
Delta_FUE_MAX:	10%	FUE_ACT: 15.0%
Delta_FUE_ACT:	0%	
Delay :	10s	
		END





The standard setting for **Delta FUE\_MIN** is -10 % and 10 % for **Delta FUE\_MAX**.

**SETTING UNDERPRESSURE CONTROL VALUES**

In this menu, the settings for fan speed with the HDG cyclone dust extractor and the underpressure value for the underpressure control can be defined.

 See "Procedure" in this section.

PID pressure control fan				6-07	
MAX	: 100%	P_Min	: -10pa	KP:	20
MIN	: 20%	P_Max	: -50pa	TN:	40
ACT	: 90%	P_Set:	-20pa	TV:	0
Fact.:	73%	P_Ist	: -25pa	KP_:	30.0
					END






The standard setting is 100% for **MAX** and 20% for **MIN**.



## 6.8 TIME menu


In this menu you can view and set all time parameters relating to ignition, de-ashing, cleaning and delivery systems. All target values can be modified. The actual values displayed indicate the current status.



**PROCEDURE**



- 


1. Press the *F3* key under the standard display screen.  
 You are in the **Time** menu.
- 

2. Scroll with the *F1* or *F2* key to the previous or next submenu.  
 The first resettable parameter is shown in black.
- 

3. Enter the desired value using the numerical keypad.
- 

4. Confirm each change with the *Enter* key.  
 The desired parameter is set.
- 





5. Scroll with the *Up* or *Down* key to the next submenu.  
 The next resettable parameter is shown in black.
6. Repeat steps 3 to 5 for additional parameters.
- 

7. Press the *F6* key under the **END** command to exit the submenu.  
 The standard display is restored.

### SETTING THE FILLING, IGNITION AND FAN ACTIVATION

This submenu is used to set the time for the initial filling with fuel and the running time of the ignition fan. You can also set the time after which the combustion fan is added during the igniting phase.

 See "Procedure" in this section.

Time	3-01
1st filling	: 6.0 / 0.0 m
Ignition	: 6.0 / 0.0 m
Fan activation	: 3.0 / 0.0 m
 	 
	END



When changing the fuel, the parameters **1st filling** and **Ignition** must be regulated to avoid malfunctions during ignition.

### SETTING PRE-AIR, HEATING UP AND BURNING OUT

This submenu enables you to set the pre-ventilation time for fanning the fuel without material feeding, the heating up time during which the fuel quantity is heated to the target value, and the burn-out time during which material feeding is stopped and the combustion fan switches off after a specified time.

 See "Procedure" in this section.

Time	3-02
Pre-ventilation	: 30 / 0 s
Heating up	: 7.0 / 0.0 m
Burning out	: 30.0 / 0.0 m
 	 
	END



### SETTING THE ASH REMOVAL AND EMBER SUSTAINING FUNCTIONS

This submenu is used to set the time for the grate motion and thus the de-ashing interval. In addition, the time interval for the material feeding can be influenced if the **Ignition** parameter is set to **Off**.



The **Keep glow** setting is only used as an "emergency" function should the ignition fan fail!

 See "Procedure" in this section.

<b>Time</b>		<b>3-03</b>			
Ash removal	runtime	:	12	/	0 s
Ash removal	pause time	:	70.0	/	0.0 m
Keep glow	runtime	:	10	/	0 s
Keep glow	pause time	:	10.0	/	0.0 m
					<b>END</b>





When changing the heating material, the burn-out behaviour must be checked on the grate of the boiler. If necessary, adjust the **Ash removal pause** parameter. In general, only this parameter should be changed and the **Ash removal feed** parameter only changed in exceptional instances.

#### SETTING THE CLEANING FUNCTION

In this submenu you can set the time for the movements of the cleaning system as well as scanning of the limit switch.

 See "Procedure" in this section.

<b>Time</b>		<b>3-04</b>			
Cleaning system	pause time	:	24.0	/	0.0 h
Cleaning system	runtime	:	140	/	0 m
Cleaning system	monitoring	:	40	/	0 s
					<b>END</b>



When changing the heating material, the burn-out behaviour of the boiler must be checked in the area of the heat exchanger surfaces. If necessary, adjust the **Cleaning pause time** parameter. In general, only this parameter should be changed and the **Cleaning system runtime** parameter only changed in exceptional instances.


#### SETTING FILLING DELAY OF DOSAGE TANK



In this submenu you can set a time-delayed switching on for the silo delivery system. If the fill level indicator in the dosage tank signals that more fuel is required, the extraction switches back on after the specified time has elapsed.



This parameter is an optional submenu and only available for heating systems with metering tank and fill level indicator.



 See "Procedure" in this section.

<b>Time</b>					<b>3-05</b>
<b>Delay filling</b>					
<b>Dosage tank TFD 160</b>					<b>: 3.0 / 0.0 m</b>
					<b>END</b>



**SETTING FILLING DELAY OF DOSAGE TRANSITION**

In this submenu you can set a time-delayed switching on for the silo delivery system. If the fill level indicator in the dosage transition signals that more fuel is required, the extraction switches back on after the specified time has elapsed.



This is an optional submenu and only available for heating systems with dosage transition and fill level indicator.

 See "Procedure" in this section.

<b>Time</b>					<b>3-06</b>
<b>Delay filling</b>					
<b>Dosage transition</b>					<b>: 3.0 / 0.0 s</b>
					<b>END</b>



**SETTING THE MOVING FLOOR DELIVERY SYSTEM**

In this submenu you can enter settings for a moving floor delivery system.



This parameter is an optional submenu and only available with moving floor delivery systems.

 See "Procedure" in this section.

<b>Moving floor</b>					<b>3-07</b>
<b>Moving floor runtime</b>					<b>: 10.0 / 0.0 s</b>
<b>Moving floor pause time</b>					<b>: 10.0 / 0.0 s</b>
<b>Moving floor delay time</b>					<b>: 10.0 / 0.0 s</b>
<b>Moving floor lead time</b>					<b>: 0.0 / 0.0 s</b>
					<b>END</b>

### SETTING THE AGITATOR

In this submenu you can enter the settings for the lag time of the agitator in connection with a moving floor delivery system.



This is an optional submenu and only available with moving floor delivery systems and double heating systems.

See "Procedure" in this section.

<b>Agitator</b>					<b>3-08</b>
<b>Agitator lag time</b>					<b>: 2.0 / 0.0 s</b>
					<b>END</b>

### SETTING THE PEAK LOAD BOILER

In this submenu you can set the times for the peak load boiler.



This is an optional submenu and only available with peak load boilers.

See "Procedure" in this section.

<b>Time</b>					<b>3-09</b>
<b>Peak-load boiler</b>					
<b>Delay time</b>					<b>10 / 0 m</b>
<b>Minimum runtime</b>					<b>: 20 / 0 m</b>
					<b>END</b>

### SETTING THE CYCLES OF THE PELLET AUGER

In this submenu you can set the time interval for a timed cycle of the pellet auger.



This is an optional submenu.

This setting is only available when the delivery system is set to "Cycles".

See section "6.6 ON/OFF menu", under "Modifying the extraction setting".

See "Procedure" in this section.

<b>Time</b>						<b>3-10</b>
<b>Delivery system runtime</b>	:	2.0	/	0.0	s	
<b>Delivery system pause time</b>	:	4.0	/	0.0	s	
						<b>END</b>

**SETTING THE HOPPER EXTRACTION SYSTEM**

In this submenu you can enter settings for a hopper extraction system, such as the lead times and lag times.



This is an optional submenu and only available with hopper extraction systems.

See "Procedure" in this section.

<b>Pellet hopper</b>						<b>3-11</b>
<b>Vacuum fan lead time</b>	:	10	/	0	s	
<b>Vacuum fan lag time</b>	:	10	/	10	s	
<b>Delay fill level indicator</b>	:	60	/	60	s	
<b>Start filling hopper in</b>	:	30	/	1.0	m	
						<b>END</b>

**HOPPER EXTRACTION SYSTEM - SETTING ADDITIONAL PARAMETERS**

In this submenu you can enter additional settings for a hopper extraction system.



This is an optional submenu and only available with hopper extraction systems.

See "Procedure" in this section.

<b>Pellet hopper</b>						<b>3-12</b>
<b>Max. vacuum fan runtime</b>	:	25	/	0	m	
<b>Max. vacuum fan pause time</b>	:	25	/	0	m	
<b>Number of fill attempts</b>	:	3	/	0	x	
						<b>END</b>

**CENTRAL ASH REMOVAL SYSTEM - SETTING LAG TIME**

This submenu is used to set the lag time for the central ash removal system.



This is an optional submenu and only available with central ash removal systems.

See "Procedure" in this section.



<b>Time</b>	<b>3-13</b>
<b>Ash conveyor lag time</b>	<b>: 120 / 0 s</b>
<b>END</b>	

**SERVICE MESSAGES - SETTING REMINDER TIME**

This submenu can be used to set various times at which service messages should appear.

- **WA Empty ash box**
  - When the set runtime of the ash removal auger is exceeded, the warning "Please empty ash box" appears. The heating system does not shut off at the appearance of this warning. The "0" setting deactivates this function.
- **ST Empty ash box**
  - When the set runtime of the ash removal auger is exceeded, the fault message "Ash box full" appears. The heating system shuts off at this fault. The "0" setting deactivates this function.
- **WA Lubricate screw stoker**
  - When the set runtime of the screw stoker is exceeded, the warning "Please lubricate screw stoker" appears. The heating system does not shut off at the appearance of this warning. The "0" setting deactivates this function.
- **WA Lubricate cleaning system**
  - When the set runtime of the cleaning system is exceeded, the warning "Please lubricate cleaning system" appears. The heating system does not shut off at the appearance of this warning. The "0" setting deactivates this function.

See "Procedure" in this section.

Time		3-14			
WA Empty ash box:	20.0/ 0.2 m				
ST Empty ash box:	25.0/ 0.2 m				
WA Lubricate screw stoker:	150.0/ 0.0 h				
WA Lubricate cleaning system:	45.0/ 1.0 m				
				RESET	END





1. Press the **F5** key under the **RESET** command to reset the times.

**MAIN CLEANING - SETTING TIMES**

This submenu is used to set the times for the main cleaning.

- **Operating hours in stand-by**
  - If this set time is exceeded after several heating cycles, a main cleaning is carried out after the next system start-up. The "0" setting deactivates this function.
- **Operating hours in continuous operation**
  - When this set time is exceeded during a burning process, the boiler burns out and a main cleaning is carried out. The system then re-starts. The "0" setting deactivates this function.
- **Cleaning time**
  - Setting the runtime of the grate cleaning. The "0" setting deactivates this function.

 See "Procedure" in this section.

Time		3-15			
Operating hours Stand-by op.:	6.0/ 0.0 h				
Operating hours Continuous op.:	12.0/ 0.0 h				
Cleaning time :	15/ 0 s				
					END

**SETTING THE DAY, DATE AND TIME**

In this submenu you can enter the current day, date and time.

 See "Procedure" in this section.

<b>Time</b>					<b>3-16</b>	
<b>Day/    Date    /    Time</b>						
<b>Set: 04 / 29.03.2012 / 23:10</b>						
<b>Act.: 04 / 29.03.2012 / 23:10</b>						
				<b>Clock</b>	<b>END</b>	
				<b>OK</b>		

✓ The **Day** parameter is shown in black.

2. Change the setting with the numerical keypad.



The day setting can be set to any day of the week; for Monday the setting is **Day 01**.



3. Press the *Enter* button.

✓ The input is saved; the next parameter **Date** is shown in black.

4. Set the additional parameters as required in the same manner.



5. Press the **F5** key under the command **Clock OK** to confirm the entered values.

✓ The entered settings are saved and shown in the **Act** line.



6. Press the **F6** key under the **END** command to exit the **Time 3-20** submenu.

✓ The standard display is restored.

## 6.9 MANUAL menu

This menu can be used to functionally test all actuators such as drive motors, fans and electrical mounted parts.

### PROCEDURE



1. Press the **F4** key under the display of the standard display screen.

✓ You are in the **MANUAL** menu.



2. Scroll with the **F1** or **F2** key to the previous or next submenu.



3. Use the **F3** key under the **FIELD** command in the respective submenu to select the desired parameter.



4. Press the **F4** or **F5** key to test the actuators in manual operation.





5. Press the **F6** key under the **END** command to exit the submenu.

✓ The standard display is restored.

**COMBUSTION AIR AND IGNITION FAN**


The fans can be activated manually in this sub-menu.



 See "Procedure" in this section.

<b>Manual</b>					<b>4-01</b>
Comb. air fan Ignition fan					
		<b>FIELD</b>	<b>ON</b>		<b>END</b>

**ASH REMOVAL, MAIN CLEANING, DUST REMOVAL AND CLEANING SYSTEM**

In this sub-menu, the grate with the ash removal auger, main cleaning, dust removal and cleaning system can be activated manually.



 See "Procedure" in this section.

<b>Manual</b>					<b>4-02</b>
Grate + ash removal                      Dust removal Cleaning system Main cleaning					
		<b>FIELD</b>	<b>ON</b>	<b>OFF</b>	<b>END</b>

**RETURN PUMP AND RETURN MIXING VALVE**


This submenu is used to activate the return pump and return mixing valve.


 See "Procedure" in this section.

<b>Manual</b>					<b>4-03</b>
Return pump Open return valve Close return valve					
		<b>FIELD</b>	<b>ON</b>	<b>OFF</b>	<b>END</b>

### FEEDING AND DOSAGE

This submenu is used to manually activate the feeding and metering from the wood fuel product bunker.

 See "Procedure" in this section.

<b>Manual</b>					<b>4-04</b>	
<b>Feeding system Dosage</b>						
		<b>FIELD</b>	<b>FOR- WARD</b>	<b>BACK</b>	<b>END</b>	



#### **Danger!**



Material damage and injury due to incorrect operation.

Activation of the **BACK** parameter is only possible during feeding and may only be used for short cycles of max. 3 seconds.

### FEEDING, DOSAGE AND DELIVERY SYSTEM

In this submenu, the feeding and the delivery system can optionally be activated together with the dosing auger lying in between.

 See "Procedure" in this section.

<b>Manual</b>					<b>4-05</b>	
<b>Feeding system Dosage Delivery system</b>						
		<b>FIELD</b>	<b>FOR- WARD</b>	<b>BACK</b>	<b>END</b>	



#### **Danger!**

Material damage and injury due to incorrect operation.



Activation of the **BACK** parameter is only possible during feeding and may only be used for short cycles of max. 3 seconds.



**FEEDING, METERING, VACUUM FAN AND DELIVERY SYSTEM**

In this submenu, the feeding, vacuum fan and delivery system can optionally be activated together with a dosing auger lying in between. Also, the pellet hopper can be filled.

 See "Procedure" in this section.

<b>Manual</b>				<b>4-06</b>	
<b>Feeding</b>		<b>Filling container</b>			
<b>Dosage</b>					
<b>Vacuum fan</b>					
<b>Delivery system</b>					
		<b>FIELD</b>	<b>FOR- WARD</b>	<b>BACK</b>	<b>END</b>

**Danger!**



Material damage and injury due to incorrect operation.

Activation of the **BACK** parameter is only possible during feeding and may only be used for short cycles of max. 3 seconds.

**HOSE JUNCTION AND PELLETT AUGER**

This submenu is used to manually activate the hose junction and corresponding pellet auger.



 See "Procedure" in this section.

<b>Manual</b>				<b>4-07</b>	
<b>Hose junction Pos.1.</b>		<b>Pellet auger Pos.1</b>			
<b>Hose junction Pos.2.</b>		<b>Pellet auger Pos.2</b>			
<b>Hose junction Pos.3.</b>		<b>Pellet auger Pos.3</b>			
		<b>FIELD</b>	<b>ON</b>		<b>END</b>

**FEEDING, METERING AND LATERAL AUGER**

In this submenu, if there is a walking floor delivery system the feeding and the transverse auger can optionally be activated together with the dosing auger lying in between.

 See "Procedure" in this section.

<b>Manual</b>					<b>4-08</b>
Feeding Dosage Lateral auger					
		<b>FIELD</b>	<b>FOR- WARD</b>	<b>BACK</b>	<b>END</b>



**Danger!**



Material damage and injury due to incorrect operation.

Activation of the **BACK** parameter is only possible during feeding and may only be used for short cycles of max. 3 seconds.

**MOVING FLOOR**

This submenu is used to manually activate the drive of the moving floor (if installed).

 See "Procedure" in this section.

<b>Manual</b>					<b>4-09</b>
Hydraulic moving floor Cylinder 1 moving floor Cylinder 2 moving floor					
		<b>FIELD</b>	<b>ON</b>		<b>END</b>

## 6.10 SERVICE menu

**PROCEDURE**



**Important!**

Modifying the settings in this menu is only permitted in consultation with authorised specialists of HDG Bavaria GmbH!



1. Press the *F5* key under the display of the standard display screen.  
✓ You are in the **SERVICE** menu.

<b>Service</b>					<b>5-01</b>
<b>Digital inputs 0-15</b>		00000000 00000000			
<b>Digital outputs 0-15</b>		00000001 00000000			
					<b>END</b>

✓ The display switches to the **Service 5-01** submenu in which the signal states of the digital inputs and outputs are shown.



2. Press the **F2** key and scroll to the **Service 5-03** submenu.

<b>Service</b>					<b>5-03</b>
<b>Analog input channel 0</b>		0	1	0	
	2	0	3	128	
		*	*	*	<b>END</b>

✓ The display switches to the submenu in which the analog input channels are shown.



3. Simultaneously press the keys **F3**, **F4** and **F5** under the display.

✓ You are now in submenu **Service 5-04**.



4. Scroll with the **F1** or **F2** key to the previous or next submenu.

✓ The first resettable parameter is shown in black.



5. Enter the desired value using the numerical keypad.



6. Confirm each change with the **Enter** key.

✓ The desired parameter is set.



7. Scroll with the **Up** or **Down** key to the next submenu.

✓ The next resettable parameter is shown in black.

8. Repeat steps 5 to 7 for additional parameters.



9. Press the **F6** key under the **END** command to exit the submenu.

✓ The standard display is restored.

**CHIMNEY SWEEP TEST**



When operating the heating system without an accumulator, the chimney sweep test can also be carried out in partial load mode with 30% of the nominal thermal power.

- **30%**
  - Starts the partial load measurement
- **100%**
  - Starts the partial load measurement



1. Press the *F5* key under the display of the standard display screen.
  - ✓ You are in the **SERVICE** menu.
  - ✓ The display changes to the **Service 5-01** submenu.



2. Press the *F4* key under the “Chimney sweep inspection” symbol.

<b>Chimney sweep test</b>					<b>5-02</b>
<b>Temperature reached</b>					
<b>Boiler temperature</b>	:				<b>48°C</b>
<b>Comb.chamber temp.</b>	:				<b>529°C</b>
<b>Measurement time</b>	:				<b>75 / 0 m</b>
		<b>30%</b>	<b>100%</b>		<b>END</b>



3. Press the *F3* or *F4* key to start the chimney sweep test.
  - ✓ The chimney sweep test is carried out.

**OPERATING HOURS COUNTER**

Various operating hours are displayed. Pressing the *RESET* key for more than 3 seconds resets all operating hours.



See “Procedure” in this section.

<b>Operating hours counter</b>					<b>5-04</b>
<b>Boiler</b>	:				<b>0:00:00</b>
<b>Dosage</b>	:				<b>0:00:00</b>
<b>Feeding</b>	:				<b>0:00:00</b>
<b>Ash removal</b>	:				<b>0:00:00</b>
					<b>END</b>

## SETTING REVERSE FEEDING AND IGNITION TEMPERATURE

- **Delay reverse movement**
  - This submenu is used to change the delay in the reversal of the feed system. The feed system reverses for overcurrent if the rotary feeder becomes blocked. The change of rotational direction is then delayed by this amount of time.
- **Reverse moving runtime**
  - The running time of the reversal in which the feed system runs backwards can also be corrected. This value is limited to a maximum of three seconds.
- **Reverse moving attempts**
  - The maximum number of possible reverse attempts can be set.
- **Ignition temperature**
  - If the temperature in the hot combustion chamber exceeds this value, the HDG Control does not switch on the ignition fan for starting the heating system.



 See "Procedure" in this section.

<b>Service</b>					<b>5-05</b>
<b>Delay reverse movement</b>	<b>:</b>				<b>00.7 s</b>
<b>Reverse moving runtime</b>	<b>:</b>				<b>01.0 s</b>
<b>Reverse attempts</b>	<b>:</b>				<b>3 x</b>
<b>Ignition temperature</b>	<b>:</b>				<b>150 °C</b>
					<b>END</b>

**SETTING THE BOILER OVERHEATING TEMPERATURE OR HYSTERESIS, MINIMUM RETURN TEMPERATURE AND COMBUSTION CHAMBER STOP TEMPERATURE**

- **Boiler overheat temperature**
  - When the set boiler temperature is exceeded by this set value, the boiler shuts off.
- **Boiler temperature hysteresis**
  - The boiler temperature hysteresis is used to set a temperature difference between the temperature at which the heating system is switched on and the temperature at which it is switched off (only for “Boiler activation on”).
- **Minimum return temperature**
  - Set the minimum return temperature. This limits the minimum value of the return temperature in parameter 2-02.
- **Combustion chamber temperature stop**
  - After the set temperature is exceeded, the heating system switches to the operating state Combustion chamber temperature stop.



 See “Procedure” in this section.

<b>Service</b>	<b>5-06</b>
Boiler temp. Overheating :	5 °C
Boiler temperature hysteresis:	2 °C
Minimum return temperature:	60 °C
Combustion chamber temp. stop :	750 °C
 	<b>END</b>

**MODIFYING THE DOSAGE PAUSE MIN. OR IMPULSE MIN. AND FEED SYSTEM LAG TIME OR FEED SYSTEM LEAD TIME PARAMETERS**

- **Dosage pause min. and dosage impulse min.**
  - These parameters are used to set the minimum pause intervals and running time of the extraction for the fuel metering.
- **Feed system lag time**
  - This parameter determines the lag time of the rotary feeder and the stoker auger. The continued running empties the auger channel when the heating system is shut off.
- **Feeding system lead time**
  - After a prior Lambda stop, combustion chamber temperature stop or material stop, the feed system starts early by the amount of the set value.

 See "Procedure" in this section.



<b>Service</b>					<b>5-07</b>
<b>Dosage pause_min.</b>		<b>:</b>	<b>5.0 / -1.5 s</b>		
<b>Dosage impulse_min.</b>		<b>:</b>	<b>5.0 / 5.0 s</b>		
<b>Feed system lag time</b>		<b>:</b>	<b>60.0 / .0 s</b>		
<b>Feed system lead time</b>		<b>:</b>	<b>0.0 s</b>		
					<b>END</b>

### IGNITION FAN

You can set the phase and form in which the ignition fan is patched in to aid the start-up procedure. Three settings are available in each phase:

- Off: The ignition fan is not yet activated in this phase.
- Fan: Only the fan of the ignition fan is activated.
- Fan + heating: The ignition fan switches on completely (fan + heating).



 See "Procedure" in this section.

<b>Ignition fan</b>					<b>5-08</b>
<b>with 1st filling</b>		<b>:</b>	<b>Off</b>		
<b>with pre-ventilation</b>		<b>:</b>	<b>Off</b>		
<b>with heating up</b>		<b>:</b>	<b>Off</b>		
					<b>END</b>

### FUEL QUANTITY 1ST MODIFYING FILLING AND AIR START SETTING

- **Fuel quantity 1st filling**
  - Change the fuel quantity of the first filling in heating up mode.
- **Air start setting**
  - These parameters determine the air quantity of the primary air and secondary air for heating up mode.

 See "Procedure" in this section.

<b>Service</b>					<b>5-09</b>
<b>Fuel quantity 1st filling</b>		<b>:</b>	<b>25.0 %</b>		
<b>Primary air start</b>			<b>25 %</b>		
<b>Secondary air start</b>		<b>:</b>	<b>80 %</b>		
					<b>END</b>

### ASH REMOVAL SYSTEM MINIMUM PAUSE

The minimal pause time for the ash removal system can be set.

See "Procedure" in this section.

<b>Service</b>	<b>5-10</b>
<b>Ash removal system minimum pause</b>	<b>: 25.0 m</b>
<b>END</b>	

### TESTING SERVO MOTORS FOR AIR CONTROL UNITS



Entering the value 100% opens the motors fully; 0% closes them fully. After exiting this submenu, all settings are reset to their original value!

See "Procedure" in this section.

<b>Service</b>	<b>5-11</b>
<b>Primary air servo motor</b>	<b>: 28 / 28 %</b>
<b>Secondary air servo motor</b>	<b>: 63 / 63 %</b>
<b>END</b>	

### CALIBRATING THE LAMBDA SENSOR



During the test procedure, do **not** close this submenu.

**Duration: approx. 15 minutes!**

The calibration of the lambda sensor can only be performed when the heating system is in a cooled state and should be performed once yearly.

The voltage of the lambda sensor must reach -7.0 mV within 15 minutes.

1. Open the **SERVICE** menu and scroll to the **Service 5-03** submenu.

See "Procedure" in this section.

2. Simultaneously press the keys *F3*, *F4* and *F5* under the display.







3. Press the F2 key and scroll to the **Service 5-12** submenu.

<b>Service</b>					<b>5-12</b>
<b>Lambda sensor test:</b>					<b>: -Off-</b>
<b>Lambda set value</b>					<b>21.0% / 12.8%/0 mV / .0 mV</b>
<b>Test duration 15 minutes</b>					<b>: 00.0 m</b>
		<b>Start</b>	<b>Stop</b>		<b>END</b>

- ✓ The test mode **Off** message is shown in black.



4. Press the F3 key to start the lambda sensor test.

- ✓ The calibration of the lambda sensor begins; the message **-ON-** appears in the display. The minute counter starts running. The lambda sensor heater switches on, the main fan starts and the secondary air supply opens.

If the voltage of -7.0 mV is reached after 15 minutes, the lambda sensor test has been successfully completed.

- ✓ The testing of the lambda sensor is completed.



5. Press the F6 key under the **END** command to exit the **Service 5-12** submenu.

- ✓ The standard display is restored.

#### FLUE GAS TEMPERATURE

- **Cleaning system start**

- When this set temperature is exceeded, the cleaning system starts up.

- **Max. flue gas temperature**

- When this set temperature is exceeded, the fault message "Flue gas temperature too high" appears and the boiler switches off.





- **Fault delay**

- The fault message "Flue gas temperature too high" appears after this set delay time has elapsed.

- **Incline**

- System-specific parameter, can only be set and modified by authorised HDG technicians.





 See "Procedure" in this section.

<b>Flue gas temperature</b>		<b>5-13</b>
Cleaning system start	: 220 / 50 °C	
Maximum flue gas temperature:	250 / 50 °C	
Fault delay	: 1.0 m	
Incline	: 2	
 	 	<b>END</b>

### UNDERPRESSURE CONTROL

- **Negative pressure limit**
  - If this set value is not met, the boiler switches to "Burn out".
- **Positive pressure limit**
  - If this set value is exceeded, the boiler is stopped as with an "Emergency stop".
- **Delay grate pressure switch**
  - The response time of the pressure switch can be set.
- **Vacuum fan rotational speed uncontrolled**
  - When the underpressure control is deactivated (parameter 1-08), the flue gas fan runs at the set speed.

 See "Procedure" in this section.



<b>Underpressure control settings</b>		<b>5-14</b>
Underpressure limit	: -350 / -377 pa	
Overpressure limit	: 10 / -377 pa	
Delay Grate pressure switch	: 5.0 / 0.7 m	
Vacuum fan speed uncontr.	: 90 %	
 	 	<b>END</b>

### SETTING CHIMNEY SWEEP TEST

- **Enabling boiler temperature**
  - After this set boiler temperature is exceeded, the chimney sweep test is enabled.
- **Enabling combustion chamber temperature**
  - After this set combustion chamber temperature is exceeded, the chimney sweep test is enabled.

- **Boiler set temperature 30/100%**
  - The boiler set temperature for the chimney sweep test in partial load (30%) and nominal load (100%) can be set.
- **Combustion chamber set temperature 30/100%**
  - The combustion set temperature for the chimney sweep test in partial load (30%) and nominal load (100%) can be set.

 See "Procedure" in this section.

<b>Chimney sweep test</b>					<b>5-15</b>
Enabling boiler temperature : 70 / 60 °C					
Enabling combustion room temp.: 450 / 328 °C					
Boiler temp. Set 30/100% : 85 / 85 °C					
Set comb. chamber temp. 30/100% :480/ 570 °C					
					<b>END</b>



### SETTING INTERFACE RS485

- **Interface RS485**

Setting options:

- without interface
- Modbus RTU web server
- Modbus RTU DDC
- Profibus DP DDC



 See "Procedure" in this section.

<b>Setting interface RS485</b>					<b>5-16</b>
Interface type :without interface					
		<b>FIELD</b>			<b>END</b>

### MODBUS RTU - SETTING WEB SERVER

The address of the controller can be set here (esp. with multiple systems).



 See "Procedure" in this section.

Modbus RTU setting - web server					5-17
Modbus address					: Address = 1
		FIELD			END

### MODBUS RTU - SETTING DDC


- **Modbus address**
  - Setting of PLC address for a Modbus network
- **Modbus baud rate**
  - Setting of transmission speed of the PLC for a Modbus network
- **Modbus rights**
  - Setting of the minimum required rights or enabling of only certain PLC parameters in a Modbus network



 See "Procedure" in this section.

Modbus RTU setting - DDC					5-18
Modbus address					: Address = 1
Modbus baud rate					: 9,600 Baud
Modbus rights					: 2-Heating specialist
		FIELD			END

### SETTING PROFIBUS DP- DDC


- **Profibus address**
  - Setting of PLC address for a Profibus network
- **Profibus rights**
  - Setting of the minimum required rights or enabling of only certain PLC parameters in a Profibus network



 See "Procedure" in this section.

<b>Setting Profibus DP - DDC</b>					<b>5-19</b>
<b>Profibus address</b> : Address = 1					
<b>Profibus rights</b> : 3-HDG					
		<b>FIELD</b>			<b>END</b>

### ENTERING PASSWORD



For protection against undesired operation, a password can be defined. After 300 sec. of inactivity, the controller logs out of the main screen. Reactivation is then only possible with the entering of the previously set password. The "0" setting deactivates this function.

 See "Procedure" in this section.

<b>Service</b>					<b>5-20</b>
<b>Enter password (4-digit):</b>					<b>0</b>
<b>(Entering 0 deactivates the password!!!)</b>					
					<b>END</b>

### RESETTING PARAMETERS TO THE FACTORY DEFAULT

 See "Procedure" in this section.

<b>Service</b>					<b>5-21</b>
<b>Factory setting</b>		<b>F4</b>	<b>+</b>	<b>F5</b>	
<b>Runtime (adopt with "conf")</b>					<b>.0 h</b>
					<b>END</b>

✓ The **Operating hours** parameter is shown in black and the hours of operation can be read.



#### Important!

All settings that were previously made will be irrevocably overwritten!



6. Press the *F4* and *F5* keys to adopt the factory settings.

✓ The factory settings are adopted.



7. Press the *F6* key under the **END** command to exit the **Service 5-21** submenu.

✓ The standard display is restored.

## 6.11 INFO menu

This menu displays the current / archived 20 errors with date and time.



1. Press the *F6* key under the standard display screen.

✓ You are in the **INFO** menu.

✓ The display changes to the **Error info** submenu.

<b>Fault information</b>					<b>1-12</b>
05/05 049 ST boiler overtemperature					
Date: 07.04			Time: 8:26		
Plus	Minus		Arch.		END



2. In the display, press the *F1* key under the plus sign or *F2* under the minus sign to scroll forward or backward through the error messages.



3. Press the *F4* or *F3* key to switch between the most recent fault and the archived faults.



4. In the fault archive, press the *F5* key under the **RESET** command to delete the fault.



5. Press the *F6* key under the **END** command to exit the **Fault information** menu.

✓ The standard display is restored.

## 6.12 Filling the fuel bunker

### REQUIREMENTS


The following requirements must be met before the fuel bunker can be filled.

- The fuel bunker must have initially been approved by an authorised specialist.
- The fuel bunker must be dry and free of any foreign bodies.
- Large dust deposits must be removed (for pellet bunkers).
- The requirements of government safety organisations must be met.

**PROCEDURE FOR FILLING WITH WOOD FUEL PRODUCTS**

1. Turn the heating system main switch on.

✓ The control is activated.

 See section “6.2 Switching on the heating system” in this chapter.

2. Check whether the delivery system is running.

**Caution!**

Damage to delivery system during filling

If the heating system is not switched on during filling of the fuel bunker, the overload protection of the delivery system could be triggered when the heating system is switched on after the filling.


Check each time when filling that the delivery system is running.

3. Fill the fuel bunker.

✓ The filling of the fuel bunker is completed.

**PROCEDURE FOR FILLING OF PELLETS**

1. Turn on the main switch of the heating system.

 See section “6.2 Switching on the heating system” in this chapter.


✓ The heating system is switched off.

2. Recheck that the heating system is switched off.

3. Inform the tanker driver that the pellet bunker can be filled.

4. After filling is completed, close the injection and extraction nozzles.

5. Re-starting the heating system.

 See section “6.2 Switching on the heating system” in this chapter.

✓ The filling of the pellet bunker is completed.

## 6.13 Performing the chimney sweep test

In Germany, there is a legal requirement (1. BlmschV) 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.

**INITIAL INSPECTION**

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).

---



#### **Warning!**

Material damage and injury due to incorrect chimney sweep test


The chimney sweep test requires comprehensive technical knowledge.

Only permit authorised specialists to perform the chimney sweep test.


---

#### **BEFORE THE TEST**

1. Clean the heating system completely about 2-3 days prior to the test.

 See the chapter entitled “7 Cleaning and servicing the heating system”, section “7.1 Cleaning and maintenance schedule”.

2. Check that the lambda sensor is securely mounted and tighten it if necessary.

 See the chapter entitled “7 Cleaning and servicing the heating system”, section “7.1 Cleaning and maintenance schedule”.

#### **DURING THE TEST**



At the start of the measurement, the boiler temperature should not exceed 75 °C. If there is an accumulator, its temperature should not exceed 60°C. Ensure there is sufficient heating demand placed on the heating circuit.

The chimney sweep measurement must be performed when operating at full load. (It is absolutely essential to avoid the heating up and burning out phases.) Having the measurement repeated by the combustion engineer or by HDG specialists will incur charges.

---

Please observe the following when carrying out the chimney sweep test:

- Make sure that there is sufficient fuel in the fuel bunker to avoid interruption of material feeding during the measurement.
- No fault should be present in the system.



1. Press the *F5* key under the standard display screen.

✓ You are in the **Service** menu.



- ✓ The display changes to the **Service 5-01** submenu.

<b>Service</b>				<b>5-01</b>	
<b>Digital inputs 0-15</b>		00000000 00000000			
<b>Digital outputs 0-15</b>		00000001 00000000			
					<b>END</b>



2. Press the *F4* key under the **“Chimney sweep test”** symbol.

<b>Chimney sweep test</b>				<b>5-02</b>	
<b>Heating OFF</b>					
<b>Enabling boiler temperature :</b>		<b>60°C</b>			
<b>Enabling comb. chamber temp.:</b>		<b>325°C</b>			
<b>Measurement time</b>		<b>: 75 / 0 m</b>			
		<b>30%</b>	<b>100%</b>		<b>END</b>

- ✓ You are now in the **Chimney sweep mode 5-02** submenu.



When operating the heating system without an accumulator, the chimney sweep test can also be carried out in partial load mode with 30% of the nominal thermal power.



3. Press the *F3* key under the **30%** command to start the chimney sweep test.



4. Press the *F4* key under the **100%** command to start the chimney sweep test in nominal load operation.

- ✓ The **Heating** message appears in the display.
- ✓ Once the specified temperatures have been reached, the display shows the **Measurement enabled** message.
- ✓ The measurement is carried out.



Press the *F6* key under the **End** command to cancel the chimney sweep test.

The chimney sweep test is also cancelled if the specified time for the measurement is exceeded.

# 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 through a servicing contract.

## SPARE PARTS



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

## 7.1 Cleaning and maintenance schedule



The specified maintenance intervals are guidelines. Depending on the quality of the fuel and the power used by the heating system (more frequent on/off operation) the intervals may vary.

Interval	Component	See page ...
Weekly / as required	• Checking and cleaning the stepped grate	124
	• Check and empty the ash container	125
	• Lubricate the feeding system (every 150 operating hours)	128
monthly	• Checking the drive chains	128
every 6 months	• Cleaning the control unit	132
	• Check and clean the cleaning shaft and turbulators*	132
	• Checking and cleaning the ignition fan	137
	• Check and clean the lambda sensor	139
	• Checking and cleaning the flue pipe	140
	• Checking and cleaning the ash removal system	141
	• Checking and cleaning the pressure equalisation hose	142
yearly	• Check the fill level indicator	143
	• Check the plug contacts	145
before every second filling	• Inspect the fuel bunker	146

Table 7/1 - Cleaning and maintenance schedule

\*At least twice yearly; possibly more often depending on the quality of the fuel

## 7.2 Procedure

### GENERALLY APPLICABLE SAFETY INSTRUCTIONS



#### Warning!

Danger of asphyxiation due to carbon monoxide

If the boiler is in operation, carbon monoxide can be emitted through opened 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!

Risk of injury from automatically driven components

If the heating system is switched on, automatically driven components can unexpectedly start running. Limbs or fingers could become caught and crushed.

Switch the heating system off before performing any cleaning or maintenance work on automatically driven components.



#### Important!

When applying lubricants, oils and grease, observe the specifications of the respective manufacturer.



The following illustrations of the HDG Compact 150/200 serve to visualise the cleaning and maintenance work. The construction of the HDG Compact 100/105 heating system differs only slightly. The approach to cleaning and maintenance work, however, is identical.

In some cases, additional illustrations of the HDG Compact 100/105 model are provided.

### CLEANING TOOLS

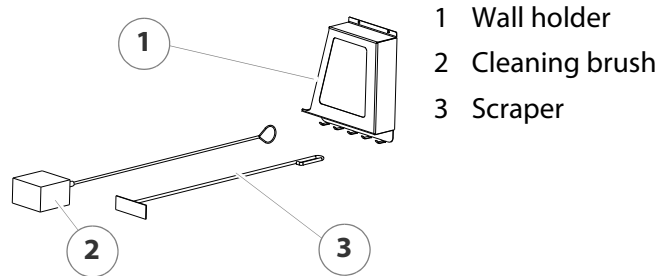


Figure 7/1 - Cleaning tools

### CHECKING AND CLEANING THE STEPPED GRATE



#### Important!

See “Generally applicable safety instructions” in this section.

1. Switch the heating system off.
- See the chapter entitled “6 Using the heating system”, section “6.3 Switching off the heating system”.
2. Allow the fire in the heating system to burn out and cool down.

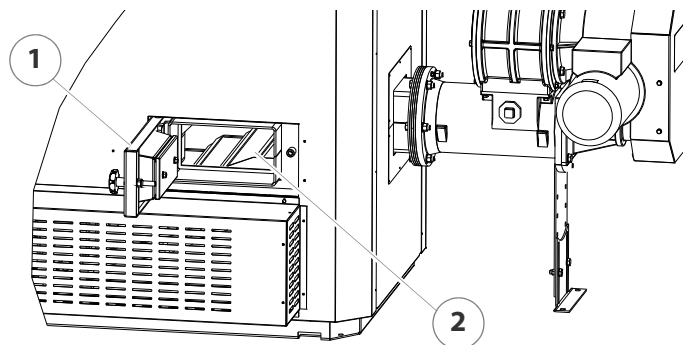


Figure 7/2 - Cleaning the grating

3. Open the combustion chamber door (1).
4. Inspect the grate (2) for encrustations of cinder or foreign bodies.
5. Remove any encrustations, if necessary with a suitable cleaning instrument.
6. After cleaning, close the combustion chamber door (1).
7. Switch the heating system back on.
- See the chapter entitled “6 Using the heating system”, section “6.2 Switching on the heating system”.
- ✓ The cleaning of the stepping grate is completed.

## CHECKING AND EMPTYING THE ASH CONTAINER

**Important!**

See “Generally applicable safety instructions” in this section.

**Caution!**

Danger of fire from combustion residues

Hot combustion residues can lead to a fire.

Allow the ash to cool and place it only in a suitable fireproof container.

## ASH CONTAINER

1. Switch the heating system off.

See the chapter entitled “6 Using the heating system”, section “6.3 Switching off the heating system”.

2. Allow the fire in the heating system to burn out and cool down.

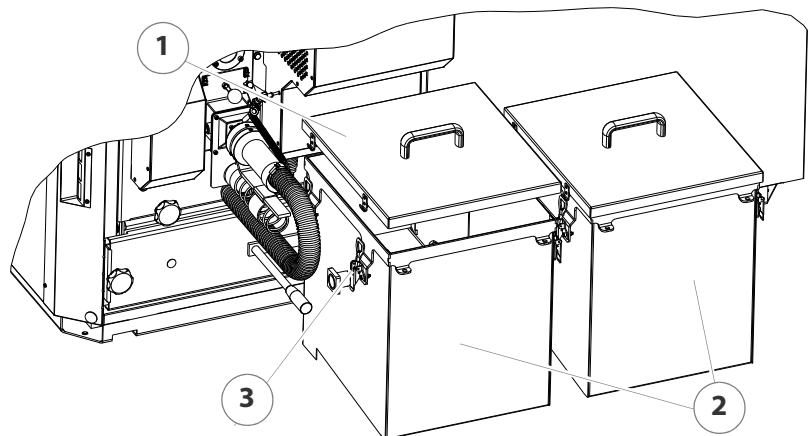


Figure 7/3 - Checking the ash containers

3. Open the ash door (3).

4. Lift up the lid (1) and remove it.

5. Check the fill level of the ash containers (2).

✓ If the ash containers (2) are full, empty them.

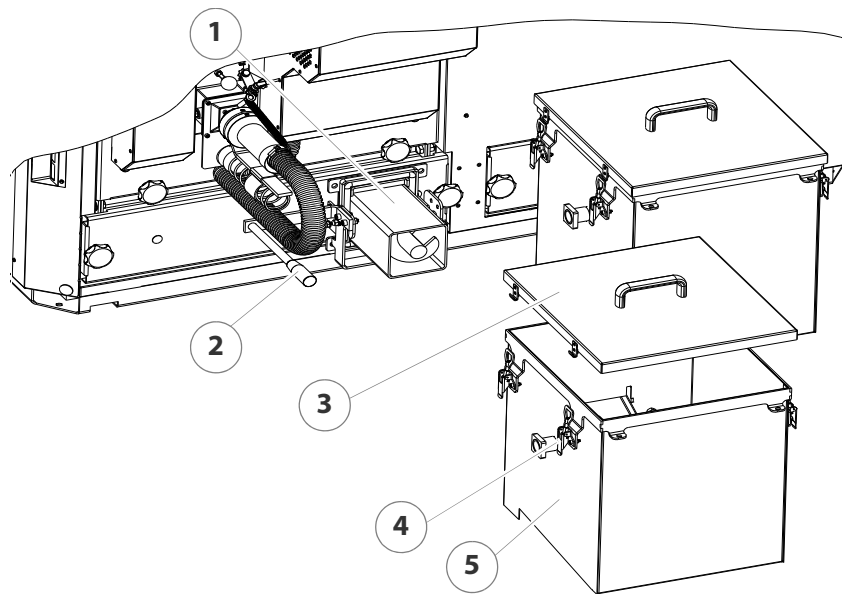




Figure 7/4 - Emptying the ash box

6. Lift up the clamp handle (2) and release the stop on the ash container (5).
7. Pull the ash container (5) forward away from the ash channel (1) of the ash removal system.
8. Open the clamp locks (4).
9. Lift up the lid (3) and remove it.
10. Empty the ash into a fireproof container.
11. Reinsert the ash container (4) in the heating system in the reverse order.
12. Switch the heating system back on.  
 See the chapter entitled "6 Using the heating system", section "6.2 Switching on the heating system".
13. Inspection and emptying of the ash containers has been completed.

#### CENTRAL ASH REMOVAL SYSTEM

1. Switch the heating system off.  
 See the chapter entitled "6 Using the heating system", section "6.3 Switching off the heating system".
2. Allow the fire in the heating system to burn out and cool down.

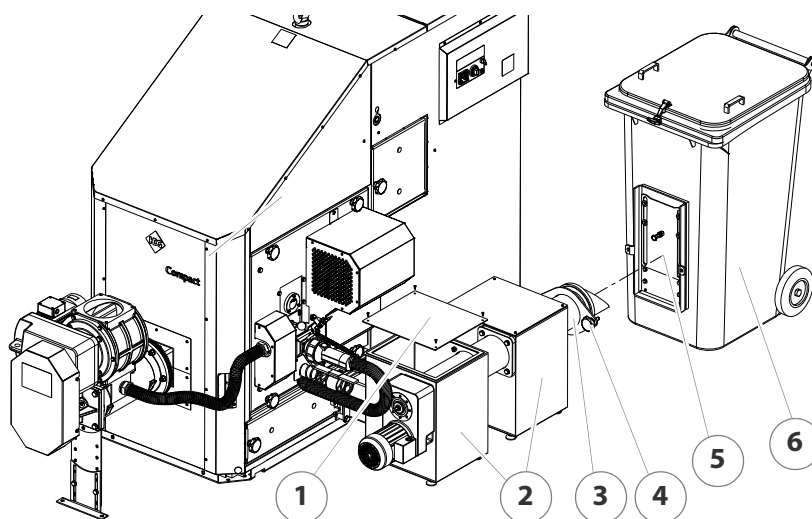


Figure 7/5 - Check and empty the central ash removal system

3. Check the filling level of the ash bin (6).
  - ✓ If the ash bin (6) is full, empty it.
4. Release the star-grip screws (4).
5. Carefully pull the ash bin (6) out of the auger trough (3).
6. Close the ash bin (6) with the sliding guard (5).
7. Empty the ash into a fireproof container.
8. Dismantle the cover (1) of the ash accumulation bin (2).
9. Check the ash accumulation bin (2) for cinder and foreign bodies and remove these if necessary.

**Caution!**

Material damage and injury due to burn-back or smoke

If the ash accumulating bins are not at least half-filled when commissioning or re-starting after a cleaning, there is a danger of burn-back or smoke from the boiler. This can cause damage to the heating system or injury to persons.

Make sure that both ash accumulation bins (1) are at least half-filled with ash, sand, etc.

10. Make sure that both ash accumulation bins (1) are at least half-filled with ash, sand, etc.
11. Replace the covers of the ash accumulation bins and the ash bin in the reverse sequence.
12. Switch the heating system on again.
  - 🔧 See the chapter entitled "6 Using the heating system", section "6.2 Switching on the heating system".
  - ✓ The central ash removal system has been checked and emptied.

### LUBRICATING THE FEEDING SYSTEM

---

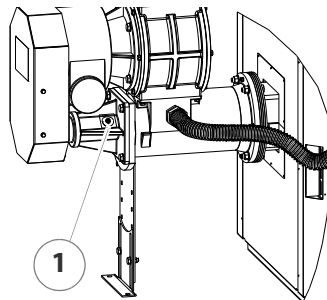


#### Important!

See “Generally applicable safety instructions” in this section.

---

The feeding system must be lubricated every 150 operating hours.



1. Place the grease gun on the lubricating nipple (1).
  2. Press three strokes of grease into the feeding system.
- ✓ The feeding system is lubricated.

Figure 7/6 - Lubricating the feeding system

### CHECKING THE DRIVE CHAINS

---



#### Important!

See “Generally applicable safety instructions” in this section.

---

CHECKING THE DRIVE CHAINS OF  
THE HDG COMPACT 99 - 115  
ASH REMOVAL SYSTEM



#### Warning!

Risk of injury from automatically driven components

When the heating system is switched on, the gears and drive chains that move the various augers rotate. Fingers could be crushed during cleaning and maintenance work.

Switch the heating system off before checking the drive chains.

---

1. Switch the heating system off.  
 See the chapter entitled “6 Using the heating system”, section “6.3 Switching off the heating system”.
2. Allow the fire in the heating system to burn out and cool down.



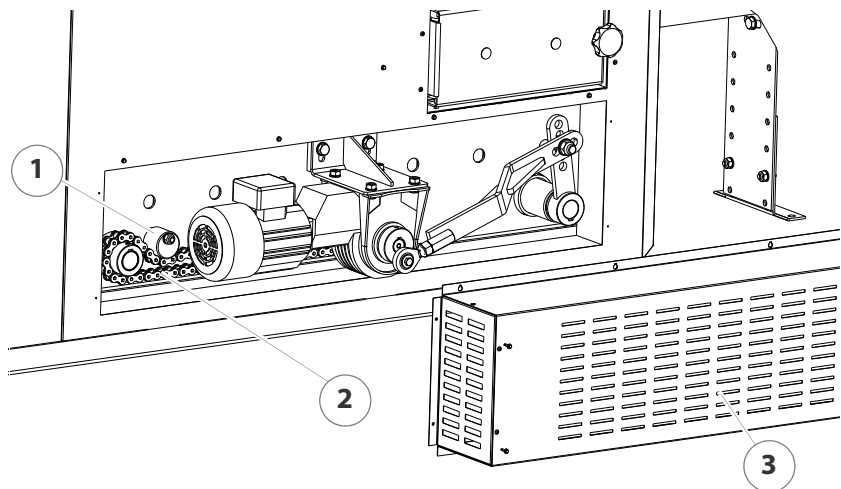


Figure 7/7 - Checking the drive chain of the HDG Compact 100/105 ash removal system

3. Unscrew the cover screws on the back of the heating system and remove the cover (3).
4. Check the chain tension (2).
  - ✓ If the drive chain has approximately 1 cm play, the tension is correct.
  - ✓ If the drive chain has more play, it must be tightened.
5. Loosen the locking screw on the chain tensioner (1).
  - ✓ The chain tensioner can be moved.
6. Move the chain tensioner (1) downwards until the drive chain again has sufficient tension.
7. Secure the chain tensioner (1) in this position.
  - ✓ The drive chain is tightened.
8. Replace the cover (3) on the boiler.
9. Switch the heating system on again.
  - 🔧 See the chapter entitled “6 Using the heating system”, section “6.2 Switching on the heating system”.
  - ✓ The check of the ash removal system drive chain is completed.

**CHECKING THE DRIVE CHAINS OF  
THE HDG COMPACT 150 - 200  
ASH REMOVAL SYSTEM**

1. Switch the heating system off.
  - 🔧 See the chapter entitled “6 Using the heating system”, section “6.3 Switching off the heating system”.
2. Allow the fire in the heating system to burn out and cool down.

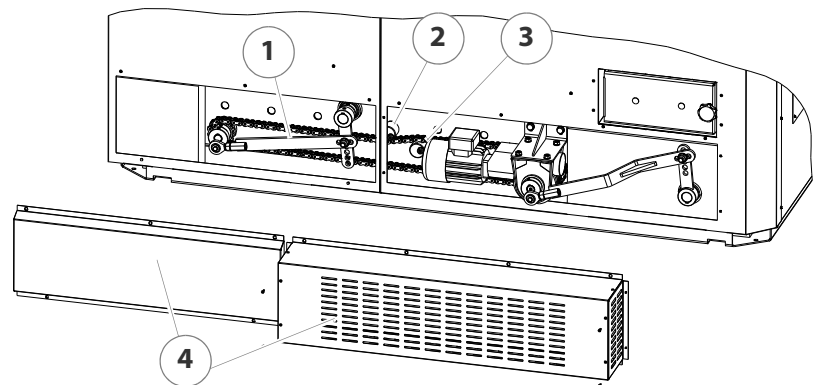


Figure 7/8 - Checking the drive chain of the HDG Compact 150/200 ash removal system

3. Unscrew the screws of both the covers on the back of the heating system and remove the covers (4).
4. Check the chain tension (1).
  - ✓ If the drive chain has approximately 1 cm play, the tension is correct.
  - ✓ If the drive chain has more play, it must be tightened.
5. Loosen the locking screws on the chain tensioners (2, 3).
  - ✓ The chain tensioners can be moved.
6. Move the chain tensioners (2, 3) to the side until the drive chain once again has sufficient tension.
7. Secure the chain tensioners (2, 3) in this position.
  - ✓ The drive chain is tightened.
8. Replace both covers of the boiler.
9. Switch the heating system on again.
  - 🔧 See the chapter entitled “6 Using the heating system”, section “6.2 Switching on the heating system”.
  - ✓ The check of the ash removal system drive chain is completed.

CHECKING THE DRIVE CHAIN OF  
THE FEEDING SYSTEM



**Warning!**

Risk of injury from automatically driven components

When the heating system is switched on, the gears and drive chains that move the various augers rotate. Fingers could be crushed during cleaning and maintenance work.

Switch the heating system off before checking the drive chains.

1. Switch the heating system off.
  - 🔧 See the chapter entitled “6 Using the heating system”, section “6.3 Switching off the heating system”.

2. Allow the fire in the heating system to burn out and cool down.

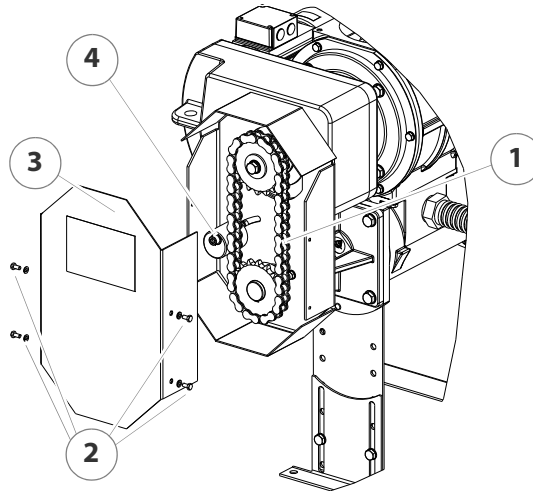


Figure 7/9 - Checking the feeding system drive chain

3. Release the 10 mm screws (2) of the cover (3) on the feeding system and remove them.
4. Check the chain tension (1).
  - ✓ If the drive chain has approximately 1 cm play, the tension is correct.
  - ✓ If the drive chain has more play, it must be tightened.
5. Loosen the locking screw on the chain tensioner (4).
  - ✓ The chain tensioner can be moved.
6. Move the chain tensioner (4) to the side until the drive chain has sufficient tension again.
7. Secure the chain tensioner (4) in this position.
  - ✓ The drive chain is tightened.
8. Replace the cover (3) on the feeding system.
9. Switch the heating system on again.
  - 🔧 See the chapter entitled “6 Using the heating system”, section “6.2 Switching on the heating system”.
  - ✓ The check of the feeding system drive chain is completed.

### CLEANING THE CONTROL UNIT



Figure 7/10 - HDG Control unit

1. Clean the control unit with a moist, lint-free cloth.
  2. For stubborn dirt, use a mild detergent.
  3. Wipe the control unit dry with a soft cloth.
- ✓ The control unit has been cleaned.

### CHECK AND CLEAN THE CLEANING SHAFT AND TURBULATORS



#### Important!

 See "Generally applicable safety instructions" in this section.

HDG COMPACT 99 - 115




#### Warning!

Danger of injury

The cleaning shaft lid is very heavy and can fall shut. Hands and arms could thereby be crushed.

Take care not to bump into the opened cleaning shaft lid and cause it to fall shut.

1. Set the engage switch to "0".  
 See the chapter entitled "6 Using the heating system", section "6.3 Switching off the heating system".
2. Allow the fire in the heating system to burn out and cool down.

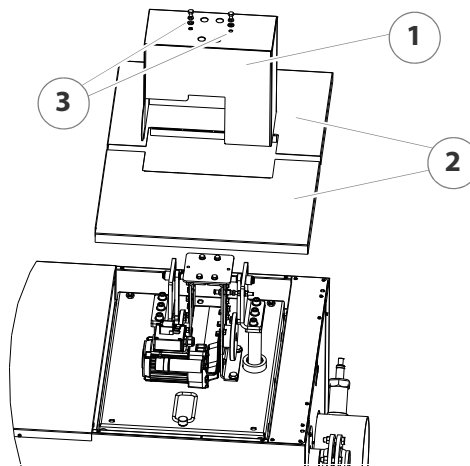


Figure 7/11 - Removing the cover

3. Loosen both M10 screws (3) with an SW17 spanner and remove the cover (1) of the cleaning system motor.
4. Pull out both the other cover sections (2) towards the front or back.
5. Move the cleaning system downward in manual operation.



See chapter "6 Using the heating system", section "6.9 MANUAL menu", paragraph "Ash removal, main cleaning, dust removal and cleaning system".

6. Hold the *F4* key under the **On** command down longer than three seconds.
- ✓ The cleaning system moves downward.
7. Release the *F4* key as soon as the cleaning system reaches its lowest position.
8. Switch the heating system off.

See the chapter entitled "6 Using the heating system", section "6.3 Switching off the heating system".

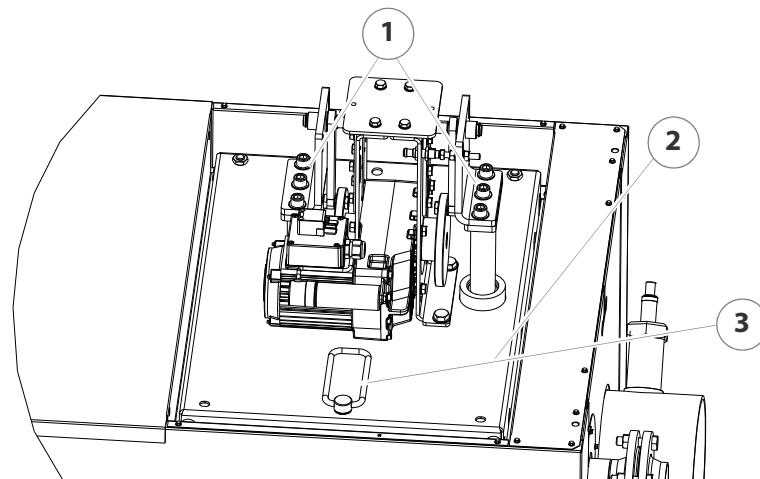


Figure 7/12 - Folding out the cleaning shaft lid

9. Release the two middle SW10 hexagon socket screws(1).
10. Unscrew the fastening screw (3).
11. Fold open the cleaning shaft lid (2) towards the back.

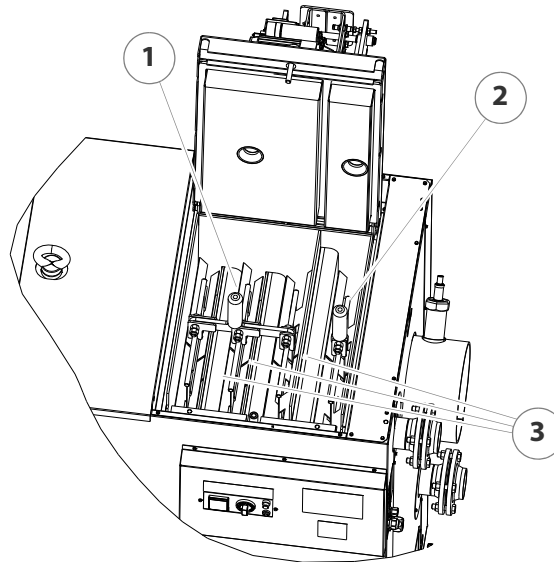


Figure 7/13 - Pulling out the turbulators

12. Dismantle the wide crossbeam (1) of the turbulators if necessary.
13. Pull out the turbulators on the guide crossbars (1, 2) in an upward direction.
14. Visually inspect the cleaning turbulators for encrustations and remove these with a suitable tool.
15. Brush off the heat exchanger surfaces (3) with a suitable tool (e.g. cleaning brush, included in delivery).
16. Clean the guide crossbars (1, 2) and lubricate them with heat-resistant grease.
17. Reassemble the cleaning system and the cleaning shaft lid in the reverse sequence.



For easier assembly, align the push rods of the turbulators centred to the heat exchanger surfaces.


---



Tighten the two hexagon socket screws of the cleaning shaft lid. Then turn the screws a quarter-turn back in the opposite direction.

---

18. Switch the heating system on again.

 See the chapter entitled "6 Using the heating system", section "6.2 Switching on the heating system".

19. Move the cleaning system upward in manual operation.

HDG COMPACT 150 - 200

✎ See chapter “6 Using the heating system”, section “6.9 MANUAL menu”, paragraph “Ash removal, main cleaning, dust removal and cleaning system”.

✓ The cleaning shaft and the turbulators are cleaned.

1. Set the engage switch to “0”.

✎ See the chapter entitled “6 Using the heating system”, section “6.3 Switching off the heating system”.

2. Allow the fire in the heating system to burn out and cool down.



### Warning!

Danger of injury

The elements of the cleaning shaft lid are heavy.

When dismantling or assembling the three elements of the cleaning shaft lid, make sure hands and arms are not crushed.

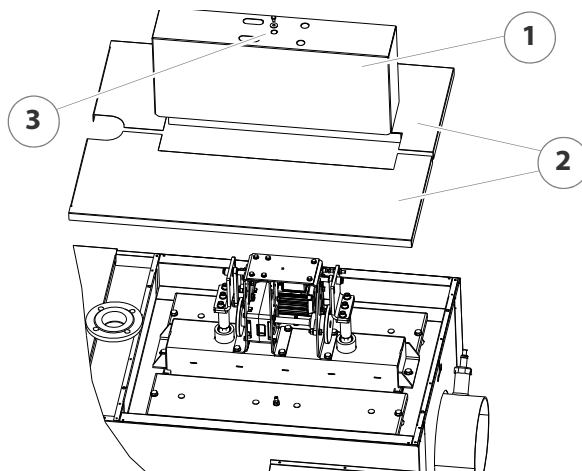


Figure 7/14 - Removing the cover

3. Loosen both M8 screws (3) with an SW13 spanner and remove the cover (1) of the cleaning system motor.

4. Pull out both the other cover sections (2) towards the front or back.


5. Move the cleaning system downward in manual operation.



✎ See chapter “6 Using the heating system”, section “6.9 MANUAL menu”, paragraph “Ash removal, main cleaning, dust removal and cleaning system”.

6. Hold the *F4* key under the **On** command down longer than three seconds.

✓ The cleaning system moves downward.

7. Release the *F4* key as soon as the cleaning system reaches its lowest position.
8. Switch the heating system off.  
 See the chapter entitled “6 Using the heating system”, section “6.3 Switching off the heating system”.

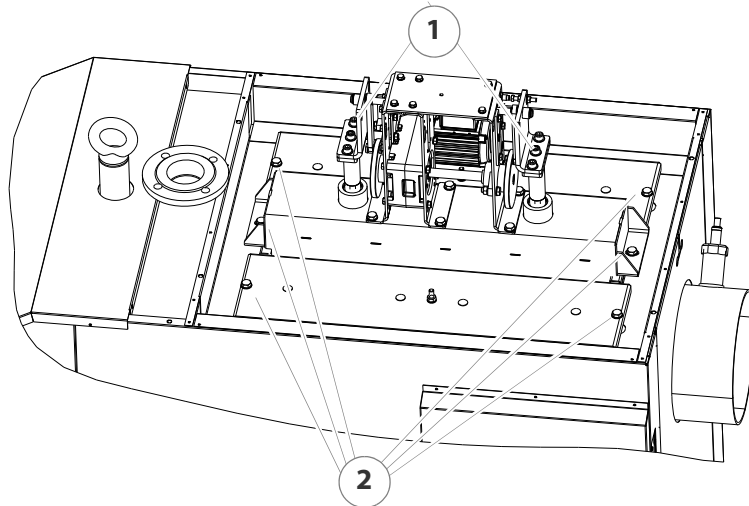


Figure 7/15 - Opening the cleaning shaft lid

9. Release the two middle SW10 hexagon socket screws(1).
10. Release the six M12 fastening screws of the three-part cleaning shaft lid (2) with an SW19 mm spanner.

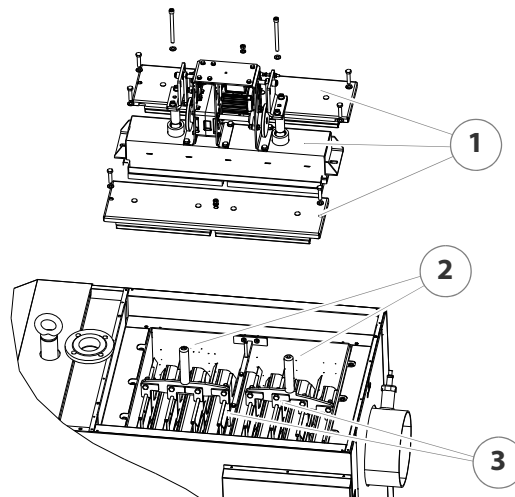


Figure 7/16 - Pulling out the cleaning turbulators

11. Lift the three-part cleaning shaft lid (1) up and out.
12. Dismantle both crossbeams (2) from the turbulators if necessary.
13. Pull out the turbulators in an upward direction.
14. Visually inspect the cleaning turbulators for encrustations and remove these with a suitable tool.
15. Brush off the heat exchanger surfaces(3) with a suitable tool (e.g. cleaning brush, included in delivery).



16. Clean the guide crossbars (2) and lubricate them with heat-resistant grease.

17. Reassemble the cleaning system in the reverse order.



For easier assembly, align the push rods of the cleaning turbulators centred to the downstream heat exchange surfaces.


---




Tighten the two hexagon socket screws of the cleaning shaft lid. Then turn the screws a quarter-turn back in the opposite direction.

---

18. Switch the heating system on again.

 See the chapter entitled “6 Using the heating system”, section “6.2 Switching on the heating system”.

19. Move the cleaning system upward in manual operation.

 See chapter “6 Using the heating system”, section “6.9 MANUAL menu”, paragraph “Ash removal, main cleaning, dust removal and cleaning system”.

✓ The cleaning shaft and the turbulators are cleaned.

#### CHECKING AND CLEANING THE IGNITION FAN

---



#### Important!

 See “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 cools down very slowly.

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

---

1. Switch off the heating system.

 See the chapter entitled “6 Using the heating system”, section “6.3 Switching off the heating system”.

2. Allow the fire in the heating system to burn out and cool down.

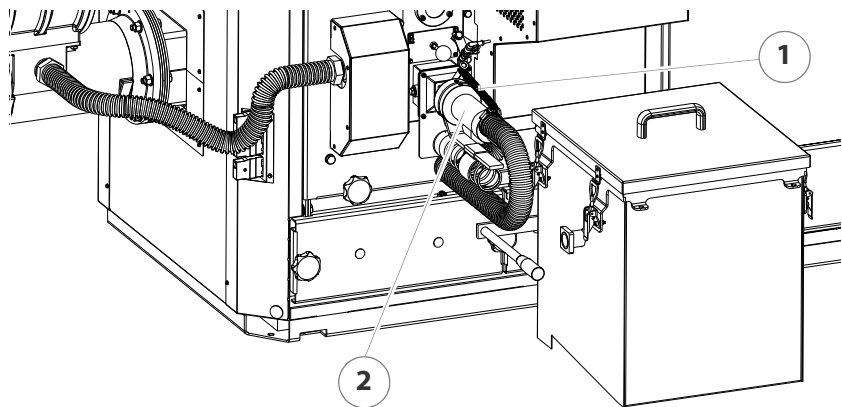


Figure 7/17 - Disassembling the ignition fan

3. Loosen the screw tension spring (1) and pull the ignition fan (2) out of the retainer.

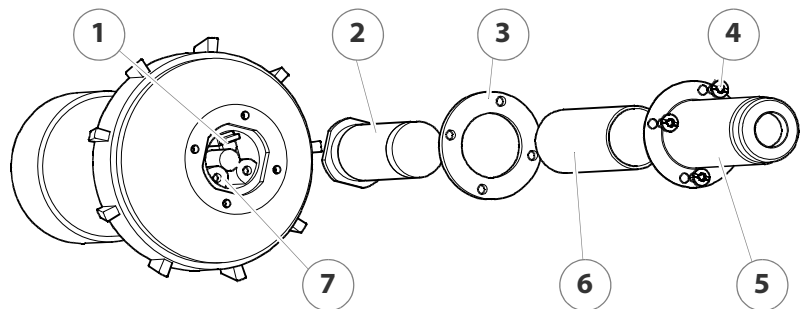



Figure 7/18 - Checking and cleaning the ignition fan

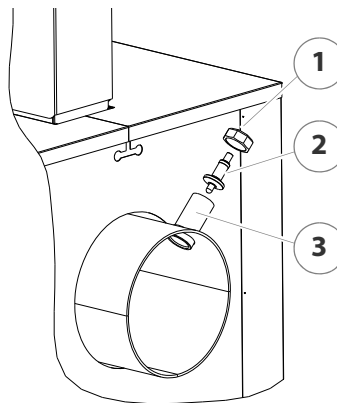
4. Unscrew the four M4 screws (4) out of the hot air nozzle (5).
  5. Pull off the hot air nozzle (5).
  6. Remove the insulating tube (6) and the seal (3).
  7. Pull the heating element (2) out of the plug contacts (7).
  8. Check the heating element (2) for dirt.
  9. Remove any dirt by blowing it off.
  10. Check the photocell (1) for dirt.
  11. Remove any dirt using a cotton swab.
  12. Reassemble the ignition fan back into the heating system in the reverse sequence.
  13. Switch the heating system on again.
-  See the chapter entitled "6 Using the heating system", section "6.2 Switching on the heating system".
- ✓ The inspection and cleaning of the ignition fan system is completed.

## CHECKING AND CLEANING THE LAMBDA SENSOR

**Important!**

See “Generally applicable safety instructions” in this section.

1. Switch the heating system off.
- See the chapter entitled “6 Using the heating system”, section “6.3 Switching off the heating system”.
2. Allow the fire in the heating system to burn out and cool down.



3. Unscrew the union nut (1) with a pipe wrench.
4. Pull the lambda sensor (2) with insulating washer out of the connection nozzle (3) of the flue pipe.

Figure 7/19 - Cleaning the lambda sensor

**Important!**

Steel bristles will damage the lambda sensor.

To clean the lambda sensor, use a fine brass brush instead of a steel brush.

5. Brush off the lambda sensor (2) with a brass brush.
6. Clean out any deposits inside the connection nozzle (3).

**Important!**

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

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

7. Reinstall the lambda sensor (2) in the reverse sequence.
8. Check that the lambda sensor is securely fit.
9. Carefully tighten the lambda sensor with an SW22 spanner.
10. Switch the heating system on again.
- See the chapter entitled “6 Using the heating system”, section “6.2 Switching on the heating system”.
11. Calibrate the lambda sensor.
- See chapter “6 Using the heating system”, section “6.10 SERVICE menu”, paragraph “Calibrating the lambda sensor”.
- ✓ The cleaning of the lambda sensor is completed.

### INSPECTING AND CLEANING THE FLUE PIPE



#### Important!

See “Generally applicable safety instructions” in this section.



#### Caution!

Danger of burns from hot surfaces

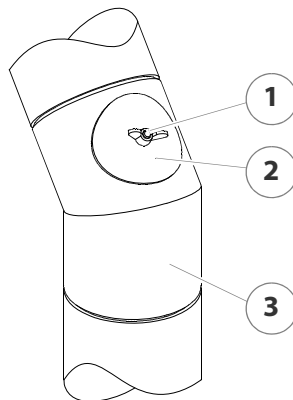
The surface of the flue pipe becomes very hot during operation. Even when turned off, it only cools down slowly.

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

1. Switch the heating system off.

See the chapter entitled “6 Using the heating system”, section “6.3 Switching off the heating system”.

2. Allow the fire in the heating system to burn out and cool down.



3. Unscrew the wing nut (1) on the inspection hatch cover (2).

4. Remove the inspection hatch cover (2) from the flue pipe (3).

5. Check whether the flue gas pipe (3) needs cleaning.

6. If necessary, suction the ash out of the flue pipe using a vacuum cleaner (3).

Figure 7/20 - Cleaning the flue gas pipe

7. Fasten the inspection hatch cover firmly on the flue pipe with the wing nut.

8. Switch the heating system on again.

See the chapter entitled “6 Using the heating system”, section “6.2 Switching on the heating system”.

✓ The cleaning of the flue pipe is completed.

## CHECKING AND CLEANING THE ASH REMOVAL SYSTEM

**Important!**

See “Generally applicable safety instructions” in this section.

HDG COMPACT 99 - 115

1. Switch the heating system off.

See the chapter entitled “6 Using the heating system”, section “6.3 Switching off the heating system”.

2. Allow the fire in the heating system to burn out and cool down.

3. Remove the ash containers.

See section “Checking and emptying the ash container” in this chapter.

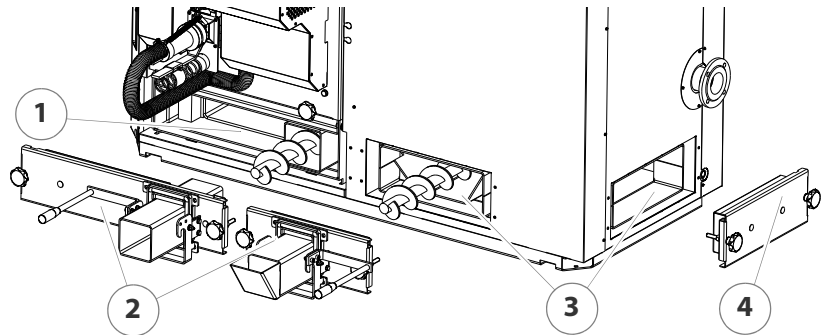


Figure 7/21 - Inspecting and cleaning the C100/105 ash removal system

4. Unscrew the star-grip screws and remove the ash removal system doors (2, 4) for the ash and fly ash chamber towards the front.

5. Check the ash chamber (1) and the fly ash chamber (3) for foreign bodies, encrustations and clumps of ash and remove these if necessary using a cleaning utensil (e.g. a scraper, included in delivery, or a vacuum cleaner).

6. Mount the components in the reverse sequence.





Next time you switch on the heating system it is possible that smoke may be emitted into the ash container. For this reason, ensure that the ash containers are roughly half full following cleaning of the automatic ash removal system.

7. Switch the heating system on again.

See the chapter entitled “6 Using the heating system”, section “6.2 Switching on the heating system”.

✓ The inspection and cleaning of the ash removal system is completed.

### HDG COMPACT 150 - 200

1. Switch the heating system off.  
 See the chapter entitled “6 Using the heating system”, section “6.3 Switching off the heating system”.
2. Allow the heating system to cool off.
3. Remove the ash containers.  
 See section “Ash container” in this chapter.

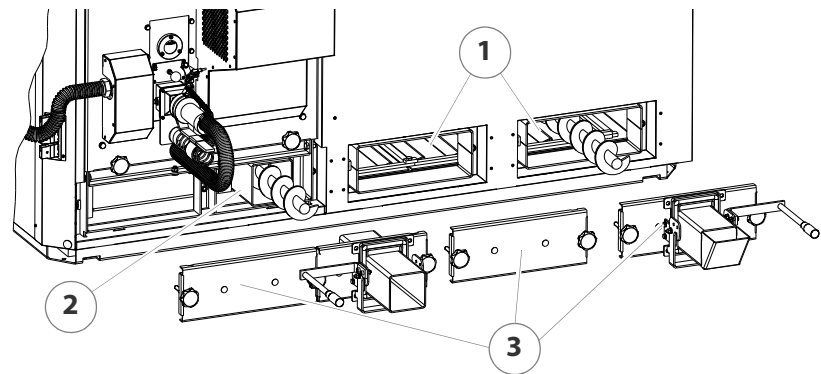



Figure 7/22 - Inspecting and cleaning the C150/200 ash removal system

4. Unscrew the star-grip screws and remove the ash removal system doors (3) for the ash and fly ash chamber towards the front.
5. Check the ash chamber (2) and the fly ash chamber (1) for foreign bodies, encrustations and clumps of ash and remove these if necessary using a cleaning utensil (e.g. a scraper, included in delivery, or a vacuum cleaner).
6. Mount the components in the reverse sequence.



Next time you switch on the heating system it is possible that smoke may be emitted into the ash container. For this reason, ensure that the ash containers are roughly half full following cleaning of the automatic ash removal system.


7. Switch the heating system on again.  
 See the chapter entitled “6 Using the heating system”, section “6.2 Switching on the heating system”.
- ✓ The inspection and cleaning of the ash removal system is completed.

### CHECKING AND CLEANING THE PRESSURE EQUALISATION HOSE



#### Important!

 See “Generally applicable safety instructions” in this section.

1. Switch the heating system off.  
 See the chapter entitled “6 Using the heating system”, section “6.3 Switching off the heating system”.
2. Allow the fire in the heating system to burn out and cool down.

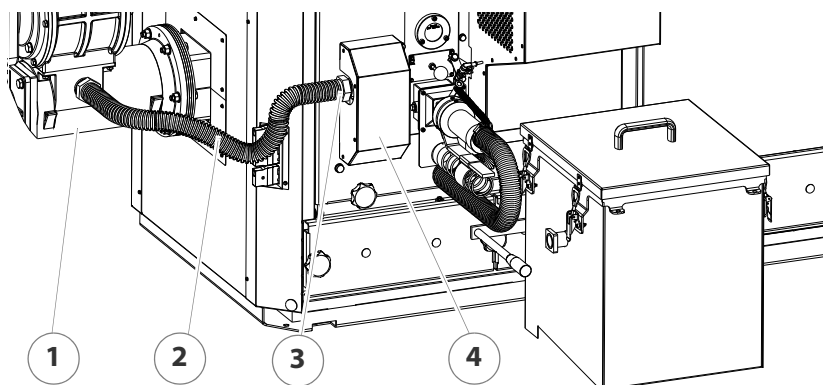


Figure 7/23 - Checking and cleaning the pressure equalisation hose

3. Remove the cover (4) from the front hatch.
  4. Unscrew the DN 40 union nuts on the connection pieces of the feed system (1) and on the connection pieces on the boiler (2) using a pipe wrench.
  5. Detach the pressure equalisation hose (2).
  6. Inspect the pressure equalisation hose (2) for dirt and dislodge it if necessary by forceful shaking and careful bending.
  7. Check both connections (1, 3) for dirt and remove it if necessary.
  8. Mount the pressure equalisation hose in the reverse sequence.
  9. Switch the heating system on again.
- 🔧 See the chapter entitled "6 Using the heating system", section "6.2 Switching on the heating system".
  - ✓ The inspection and cleaning of the pressure equalisation hose is completed.

#### CHECKING THE FILL LEVEL INDICATOR



#### Important!

- 🔧 See "Generally applicable safety instructions" in this section.

The steel pipe of the fill level indicator protrudes into the combustion chamber. Constant contact with the fuel and flame can cause the fill level indicator to wear.

1. Switch the heating system off.
- 🔧 See the chapter entitled "6 Using the heating system", section "6.3 Switching off the heating system".
2. Allow the fire in the heating system to burn out and cool down.
  3. Remove the ash containers.

🔗 See section “Ash container” in this chapter.

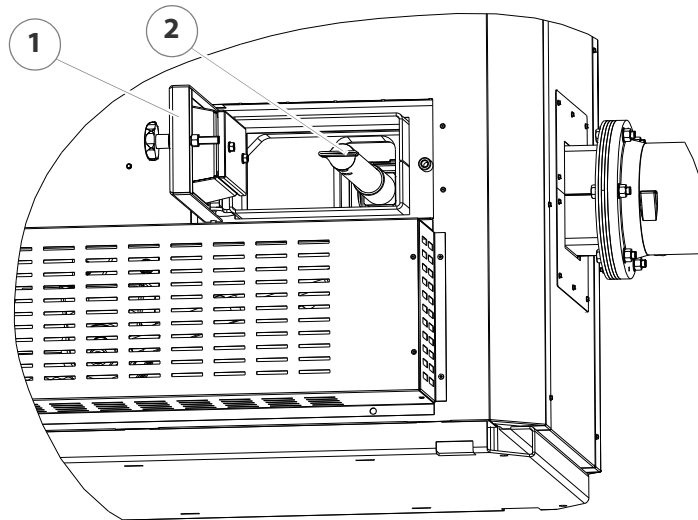


Figure 7/24 - Check the fill level indicator

4. Open the combustion chamber door (1) on the back of the heating system.
5. Check the steel pipe (2) of the fill level indicator for wear.



**Important!**

If the steel pipe is worn, it must be replaced.

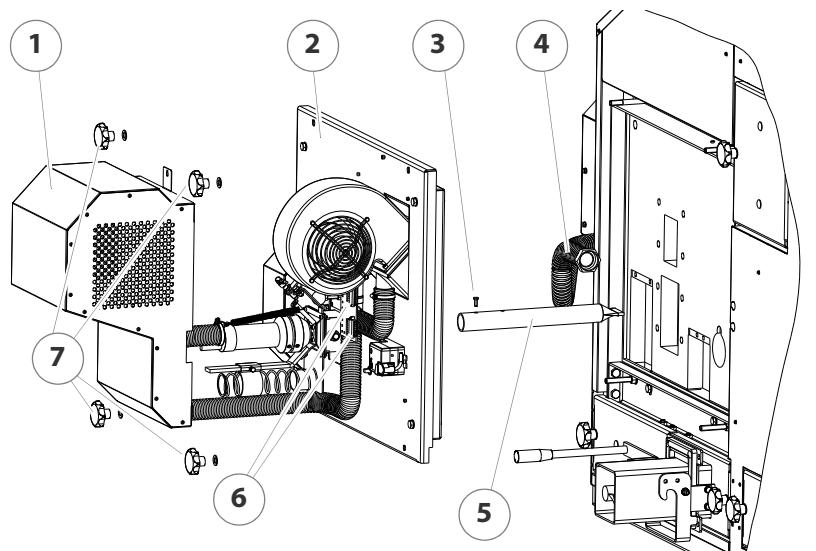



Figure 7/25 - Replacing the fill level indicator

6. Remove the cover (1) on the front hatch (2).
7. Disconnect both the plugs from the connections for the electrical plug contacts (6).
8. Remove the pressure equalisation hose (4) from the front hatch (2).

🔗 See section “Checking and cleaning the pressure equalisation hose” in this chapter.



9. Unscrew the star-grip screws (7) on the front hatch (2).
  10. Remove the front hatch (2) by lifting towards the front.
  11. Check the steel pipe of the fill level indicator (5) for wear and replace it if necessary.
  12. If you have to replace the steel pipe, remove the retaining screw (3) by pulling it upwards.
  13. Fit the new steel pipe in reverse order.
  14. Mount the components in the reverse sequence.
  15. Switch the heating system on again.
-  See the chapter entitled "6 Using the heating system", section "6.2 Switching on the heating system".
- ✓ The inspection of the fill level indicator is completed.

#### CHECKING THE PLUG CONTACTS

---



#### **Danger!**

Dangerous electrical current or voltage

The plug boards and electrical components carry current.

Have work on electrical components performed only by a qualified electrician and turn the main switch off.

---

The HDG Compact 100/105/150/200 heating system is connected to the EMD-C 215 Exclusiv control cabinet with various cables. The connections for these are located on the front and flue pipe sides of the boiler.

1. Check the electrical plug contacts are securely fit.
- ✓ The electrical plug contacts have been checked.

### INSPECTING THE FUEL BUNKER

---



#### **Important!**

 See “Generally applicable safety instructions” in this section.

---



#### **Caution!**


Risk of injury from automatically driven components

When the heating system is turned on, the delivery auger rotates in the fuel bunker. Hands and feet could thereby be crushed.

Switch the heating system off before you enter the fuel bunker. Follow the advisories of government safety organisations.

---

1. Switch the heating system off.

 See the chapter entitled “6 Using the heating system”, section “6.3 Switching off the heating system”.


2. Allow the fire in the heating system to burn out and cool down.

3. Open the access hatch.

4. Inspect the fuel bunker for the burning of unsuitable residues or foreign bodies and remove these if necessary.

5. Close the access hatch.

6. Switch the heating system on again.

 See the chapter entitled “6 Using the heating system”, section “6.2 Switching on the heating system”.

✓ The fuel bunker is cleaned.

# 8 Troubleshooting



If a fault occurs in the heating system, the *Acknowledge fault* key flashes and the fault is shown in the display. Faults can be fixed as follows.

## 8.1 Procedure

1. Look for the displayed fault's cause and remedy in Table 8/1 - Faults.

2. Fix the fault, or have it fixed.



✓ The *Acknowledge fault* key lights up.

3. Acknowledge the fault with the *Acknowledge fault* key.



4. For faults which affect **safety**, switch the main switch off and back on again after waiting 10 seconds.

✓ The fault message is no longer shown in the display.

✓ The fault is fixed.

## 8.2 Possible faults



Possible fault and warning messages are divided into three categories:

**ES:** Emergency stop

**FA:** Fault

**WA:** Warning

No.	Fault	Cause	Remedy
ES001	Emergency stop	<ul style="list-style-type: none"> <li>Emergency stop switch was pressed</li> <li>Emergency stop switch was not connected properly or is not connected</li> </ul>	<ul style="list-style-type: none"> <li>Unlock emergency stop switch and confirm with the <i>Acknowledge fault</i> key</li> <li>Check the electrical connection</li> </ul>
ES017	Overpressure in the combustion chamber	<ul style="list-style-type: none"> <li>Overpressure in the combustion chamber</li> <li>Heat exchanger contaminated</li> </ul>	<ul style="list-style-type: none"> <li>Clean heat exchanger</li> <li>Press the <i>Acknowledge fault</i> key</li> </ul>

Table 8/1 - Faults

No.	Fault	Cause	Remedy
ES018	Negative pressure control defective	<ul style="list-style-type: none"> <li>• Fault at the frequency converter of the negative pressure control</li> </ul>	<ul style="list-style-type: none"> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA033	Power supply available again	<ul style="list-style-type: none"> <li>• Power failure</li> <li>• Main switch off</li> </ul>	<ul style="list-style-type: none"> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA034	Switching on	<ul style="list-style-type: none"> <li>• The system was switched on</li> </ul>	<ul style="list-style-type: none"> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA035	Safety chain missing	<ul style="list-style-type: none"> <li>• Relay in control cabinet faulty</li> <li>• Over temperature</li> <li>• Low on water</li> <li>• Overfilling triggered</li> <li>• Fuel bunker door end switch is disconnected</li> </ul>	<ul style="list-style-type: none"> <li>• Check relay in control cabinet</li> <li>• Check for excessive temperature</li> <li>• Check for insufficient water</li> <li>• Check for overfilling</li> <li>• Check fuel bunker door end switch</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA036	Analogue module failed	<ul style="list-style-type: none"> <li>• Analogue module faulty</li> <li>• Analogue module without power</li> <li>• Bus cable disconnected or not connected properly</li> </ul>	<ul style="list-style-type: none"> <li>• Check the analogue module and power supply</li> <li>• Check the bus cable</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA037	Digital module failed	<ul style="list-style-type: none"> <li>• Digital module faulty</li> <li>• Digital module without power</li> <li>• Bus cable disconnected or not connected properly</li> </ul>	<ul style="list-style-type: none"> <li>• Check the digital module and power supply</li> <li>• Check the bus cable</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA041	Motor protection triggered	<ul style="list-style-type: none"> <li>• Motor incorrectly connected</li> <li>• Motor overload</li> <li>• Motor is faulty</li> <li>• Motor cable faulty</li> <li>• Protected switch faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Check the motor connection</li> <li>• Check the drive</li> <li>• Check the motor</li> <li>• Check the motor cable</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA049	Excessive boiler temperature	<ul style="list-style-type: none"> <li>• Supply temperature has exceeded 95°C</li> <li>• Relay in control cabinet faulty</li> <li>• Connection cable faulty</li> <li>• STB faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Let the boiler cool down</li> <li>• Check the relay</li> <li>• Check the connection cable</li> <li>• Check STB</li> <li>• Check the electrical connection</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>

Table 8/1 - Faults (continuation)

No.	Fault	Cause	Remedy
FA050	Flue gas temperature too low	<ul style="list-style-type: none"> <li>• Connection cable faulty</li> <li>• Improperly worked clamping point</li> <li>• Ignition fan is faulty</li> <li>• Analogue module faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Check connection cable</li> <li>• Check clamping points</li> <li>• Check ignition fan</li> <li>• Check analogue module</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA051	Ignition fault 3 attempts!	<ul style="list-style-type: none"> <li>• Ignition fan is faulty</li> <li>• Connection cable faulty</li> <li>• Combustion temperature sensor is faulty</li> <li>• Line to combustion chamber temperature sensor faulty</li> <li>• No material available</li> </ul>	<ul style="list-style-type: none"> <li>• Check ignition fan</li> <li>• Check the electrical connection</li> <li>• Check combustion chamber temperature sensor</li> <li>• Check fuel bunker</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA052	Water pressure out of range	<ul style="list-style-type: none"> <li>• Water pressure outside of the set range</li> </ul>	<ul style="list-style-type: none"> <li>• Check pressure switch (min./max.)</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA053	Low on water	<ul style="list-style-type: none"> <li>• Too little water in cycle</li> <li>• Relay in control cabinet faulty</li> <li>• Connection cable faulty</li> <li>• Insufficient water cutout faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Refill water</li> <li>• Check the relay</li> <li>• Check the connection cable</li> <li>• Check the insufficient water cutout</li> <li>• Check the electrical connection</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA054	Oil burner plug seal	<ul style="list-style-type: none"> <li>• Oil burner plug seal not locked</li> <li>• Faulty limit switch</li> <li>• Connection cable faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Check lock</li> <li>• Check limit switch</li> <li>• Check the connection cable</li> <li>• Check the electrical connection</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA055	Combustion temperature sensor is faulty	<ul style="list-style-type: none"> <li>• Combustion temperature sensor is faulty</li> <li>• Line from combustion chamber temperature sensor faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Check the combustion chamber temperature sensor/line and replace if necessary</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA056	Flue gas temperature sensor faulty	<ul style="list-style-type: none"> <li>• Flue gas temperature sensor faulty</li> <li>• Line from exhaust temperature sensor faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Check the exhaust temperature sensor/line and replace if necessary</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>

Table 8/1 - Faults (continuation)

No.	Fault	Cause	Remedy
FA057	Exhaust temperature too high	<ul style="list-style-type: none"> <li>Exhaust temperature above set maximum value</li> </ul>	<ul style="list-style-type: none"> <li>Press the <i>Acknowledge fault</i> key</li> </ul>
FA058	Ash box full	<ul style="list-style-type: none"> <li>Set monitoring time for ash removal augers exceeded</li> </ul>	<ul style="list-style-type: none"> <li>Empty ash box</li> <li>Reset time in the parameter <b>3-14</b> with <i>RESET</i></li> <li>Press the <i>Acknowledge fault</i> key</li> </ul>
FA065	Feed system overfilling	<ul style="list-style-type: none"> <li>The overfilling cover was opened</li> <li>Faulty limit switch</li> <li>Connection cable faulty</li> <li>Material blockage</li> </ul>	<ul style="list-style-type: none"> <li>Close overfilling cover</li> <li>Check limit switch</li> <li>Check the electrical connection</li> <li>Remedy material blockage</li> <li>Press the <i>Acknowledge fault</i> key</li> </ul>
FA066	Overfilling dosage	<ul style="list-style-type: none"> <li>The overfilling cover was opened</li> <li>Faulty limit switch</li> <li>Connection cable faulty</li> <li>Material blockage</li> </ul>	<ul style="list-style-type: none"> <li>Close overfilling cover</li> <li>Check limit switch</li> <li>Check the electrical connection</li> <li>Remedy material blockage</li> <li>Press the <i>Acknowledge fault</i> key</li> </ul>
FA067	Overfilling Delivery system	<ul style="list-style-type: none"> <li>The overfilling cover was opened</li> <li>Faulty limit switch</li> <li>Connection cable faulty</li> <li>Material blockage</li> </ul>	<ul style="list-style-type: none"> <li>Close overfilling cover</li> <li>Check limit switch</li> <li>Check the electrical connection</li> <li>Remedy material blockage</li> <li>Press the <i>Acknowledge fault</i> key</li> </ul>
FA068	Overfilling Trough auger 2	<ul style="list-style-type: none"> <li>The overfilling cover was opened</li> <li>Faulty limit switch</li> <li>Connection cable faulty</li> <li>Material blockage</li> </ul>	<ul style="list-style-type: none"> <li>Close overfilling cover</li> <li>Check limit switch</li> <li>Check the electrical connection</li> <li>Remedy material blockage</li> <li>Press the <i>Acknowledge fault</i> key</li> </ul>
FA069	Lateral auger overfilling	<ul style="list-style-type: none"> <li>The overfilling cover was opened</li> <li>Faulty limit switch</li> <li>Connection cable faulty</li> <li>Material blockage</li> </ul>	<ul style="list-style-type: none"> <li>Close overfilling cover</li> <li>Check limit switch</li> <li>Check the electrical connection</li> <li>Remedy material blockage</li> <li>Press the <i>Acknowledge fault</i> key</li> </ul>

Table 8/1 - Faults (continuation)

No.	Fault	Cause	Remedy
FA070	Dosing container overfilling	<ul style="list-style-type: none"> <li>• The overfilling cover was opened</li> <li>• Faulty limit switch</li> <li>• Connection cable faulty</li> <li>• Material blockage</li> </ul>	<ul style="list-style-type: none"> <li>• Close overfilling cover</li> <li>• Check limit switch</li> <li>• Check the electrical connection</li> <li>• Remedy material blockage</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA071	Foreign bodies in rotary feeder	<ul style="list-style-type: none"> <li>• Foreign bodies in feed system or stoker auger</li> <li>• Transformer in control cabinet faulty</li> <li>• Motor is faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Check for foreign bodies</li> <li>• Moving forwards and backwards in the manual menu</li> <li>• Check transformer in control cabinet</li> <li>• Check the motor</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA073	Fuel bunker door end switch	<ul style="list-style-type: none"> <li>• Fuel bunker door was opened</li> <li>• Faulty limit switch</li> <li>• Connection cable faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Close the door</li> <li>• Check limit switch</li> <li>• Check the cable</li> <li>• Check the electrical connection</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA074	Check material stop limit switch	<ul style="list-style-type: none"> <li>• Limit switch triggered 1 filling at start</li> </ul>	<ul style="list-style-type: none"> <li>• Check the fill level indicator</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA077	Overfilling of pellet auger	<ul style="list-style-type: none"> <li>• The overfilling cover was opened</li> <li>• Faulty limit switch</li> <li>• Connection cable faulty</li> <li>• Material blockage</li> </ul>	<ul style="list-style-type: none"> <li>• Close overfilling cover</li> <li>• Check limit switch</li> <li>• Check the electrical connection</li> <li>• Remedy material blockage</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA078	Overfilling of pellet auger at hose junction position 1	<ul style="list-style-type: none"> <li>• The overfilling cover was opened</li> <li>• Faulty limit switch</li> <li>• Connection cable faulty</li> <li>• Material blockage</li> </ul>	<ul style="list-style-type: none"> <li>• Close overfilling cover</li> <li>• Check limit switch</li> <li>• Check the electrical connection</li> <li>• Remedy material blockage</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>

Table 8/1 - Faults (continuation)

No.	Fault	Cause	Remedy
FA079	Overfilling of pellet auger at hose junction position 2	<ul style="list-style-type: none"> <li>• The overfilling cover was opened</li> <li>• Faulty limit switch</li> <li>• Connection cable faulty</li> <li>• Material blockage</li> </ul>	<ul style="list-style-type: none"> <li>• Close overfilling cover</li> <li>• Check limit switch</li> <li>• Check the electrical connection</li> <li>• Remedy material blockage</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA080	Overfilling of pellet auger at hose junction position 3	<ul style="list-style-type: none"> <li>• The overfilling cover was opened</li> <li>• Faulty limit switch</li> <li>• Connection cable faulty</li> <li>• Material blockage</li> </ul>	<ul style="list-style-type: none"> <li>• Close overfilling cover</li> <li>• Check limit switch</li> <li>• Check the electrical connection</li> <li>• Remedy material blockage</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA081	Moving floor safety chain	<ul style="list-style-type: none"> <li>• Relay in control cabinet faulty</li> <li>• Hydraulic float switch faulty</li> <li>• Fuel bunker door was opened</li> <li>• Emergency stop button on boiler was pressed</li> </ul>	<ul style="list-style-type: none"> <li>• Check relay in control cabinet</li> <li>• Check float switch</li> <li>• Check bunker door end switch</li> <li>• Unlock emergency stop button</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA082	Check moving floor hydraulic oil level	<ul style="list-style-type: none"> <li>• Oil level in hydraulic component too low</li> <li>• Float switch faulty</li> <li>• Connection cable faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Check oil level</li> <li>• Check float switch</li> <li>• Check the cable</li> <li>• Check the electrical connection</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA083	Emergency stop for moving floor	<ul style="list-style-type: none"> <li>• The emergency stop switch of the moving floor was pressed</li> <li>• Cable faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Unlock emergency stop button</li> <li>• Check the cable</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA084	Moving floor lateral auger overfilling	<ul style="list-style-type: none"> <li>• The overfilling flap was opened</li> <li>• Faulty limit switch</li> <li>• Connection cable faulty</li> <li>• Material blockage</li> </ul>	<ul style="list-style-type: none"> <li>• Close the overfilling flap</li> <li>• Check switch</li> <li>• Check the electrical connection</li> <li>• Remedy material blockage</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>

Table 8/1 - Faults (continuation)



No.	Fault	Cause	Remedy
FA085	Moving floor motor protection triggered	<ul style="list-style-type: none"> <li>• Motor incorrectly connected</li> <li>• Motor overload</li> <li>• Motor is faulty</li> <li>• Motor cable faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Check the motor connection</li> <li>• Check the drive</li> <li>• Check the motor</li> <li>• Check the motor cable</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA086	Moving floor fuel bunker door end switch	<ul style="list-style-type: none"> <li>• Fuel bunker door was opened</li> <li>• Faulty limit switch</li> <li>• Connection cable faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Close the door</li> <li>• Check limit switch</li> <li>• Check the cable</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
FA087	Moving floor hydraulic unit pressure switch defective	<ul style="list-style-type: none"> <li>• Pressure switch faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Check pressure switch and replace if necessary</li> <li>• Press the <i>Acknowledge fault</i> key</li> </ul>
WA193	Boiler temperature sensor faulty	<ul style="list-style-type: none"> <li>• Supply sensor faulty</li> <li>• Line faulty</li> <li>• Analogue module faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Check supply temperature sensor</li> <li>• Check the electrical connection</li> <li>• Replace analogue module</li> </ul>
WA194	Return line sensor faulty	<ul style="list-style-type: none"> <li>• Return line sensor faulty</li> <li>• Line faulty</li> <li>• Analogue module faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Check return line sensor</li> <li>• Check the electrical connection</li> <li>• Replace analogue module</li> </ul>
WA195	Buffer probe top faulty	<ul style="list-style-type: none"> <li>• Buffer probe faulty</li> <li>• Line faulty</li> <li>• Analogue module faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Check buffer probe</li> <li>• Check the electrical connection</li> <li>• Replace analogue module</li> </ul>
WA196	Buffer probe centre faulty	<ul style="list-style-type: none"> <li>• Buffer probe faulty</li> <li>• Line faulty</li> <li>• Analogue module faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Check buffer probe</li> <li>• Check the electrical connection</li> <li>• Replace analogue module</li> </ul>
WA197	Buffer probe bottom faulty	<ul style="list-style-type: none"> <li>• Buffer probe faulty</li> <li>• Line faulty</li> <li>• Analogue module faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Check buffer probe</li> <li>• Check the electrical connection</li> <li>• Replace analogue module</li> </ul>
WA208	Replace buffer battery	<ul style="list-style-type: none"> <li>• Memory battery of control unit discharged</li> </ul>	<ul style="list-style-type: none"> <li>• Replace memory battery</li> </ul>
WA209	Cleaning system faulty	<ul style="list-style-type: none"> <li>• Motor incorrectly connected</li> <li>• Motor overload</li> <li>• Motor is faulty</li> <li>• Motor cable faulty</li> <li>• Faulty limit switch</li> </ul>	<ul style="list-style-type: none"> <li>• Check the motor connection</li> <li>• Check the drive</li> <li>• Check the motor</li> <li>• Check the motor cable</li> <li>• Check limit switch</li> </ul>

Table 8/1 - Faults (continuation)

No.	Fault	Cause	Remedy
WA210	Lambda sensor Heating element faulty	<ul style="list-style-type: none"> <li>• Heating element of lambda sensor faulty</li> <li>• Lambda probe faulty</li> <li>• Relay in control cabinet faulty</li> <li>• Fuse F12 blown</li> </ul>	<ul style="list-style-type: none"> <li>• Check the electrical connection</li> <li>• Replace lambda probe</li> <li>• Replace relay</li> <li>• Unlock automatic circuit breaker F12</li> </ul>
WA211	Lambda sensor check	<ul style="list-style-type: none"> <li>• Heating element of lambda sensor faulty</li> <li>• Lambda probe faulty</li> <li>• Analogue module faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Check the electrical connection</li> <li>• Replace lambda probe</li> <li>• Check analogue module</li> </ul>
WA212	Lambda probe faulty	<ul style="list-style-type: none"> <li>• Heating element of lambda sensor faulty</li> <li>• Lambda probe faulty</li> <li>• Analogue module faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Check the electrical connection</li> <li>• Replace lambda probe</li> <li>• Check analogue module</li> </ul>
WA213	Check pellet vacuum container filling level	<ul style="list-style-type: none"> <li>• Pellet storage space empty</li> </ul>	<ul style="list-style-type: none"> <li>• Check pellet storage space and fill if necessary</li> </ul>
WA215	Delay at anticlockwise hose junction	<ul style="list-style-type: none"> <li>• Hose junction blocked</li> <li>• Faulty reference limit switch</li> <li>• Fuse triggered</li> <li>• Motor incorrectly connected</li> <li>• Motor overload</li> <li>• Motor is faulty</li> <li>• Motor cable faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Check hose junction</li> <li>• Check reference limit switch</li> <li>• Check fuse</li> <li>• Check the motor connection</li> <li>• Check the drive</li> <li>• Check the motor</li> <li>• Check the motor cable</li> </ul>
WA216	Delay at clockwise hose junction	<ul style="list-style-type: none"> <li>• Hose junction blocked</li> <li>• Faulty reference limit switch</li> <li>• Fuse triggered</li> <li>• Motor incorrectly connected</li> <li>• Motor overload</li> <li>• Motor is faulty</li> <li>• Motor cable faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Check hose junction</li> <li>• Check position limit switch</li> <li>• Check fuse</li> <li>• Check the motor connection</li> <li>• Check the drive</li> <li>• Check the motor</li> <li>• Check the motor cable</li> </ul>
WA217	Moving floor approval missing	<ul style="list-style-type: none"> <li>• Switch in control cabinet not switched on</li> <li>• Fault not acknowledged</li> </ul>	<ul style="list-style-type: none"> <li>• Switch on the switch in the control cabinet</li> <li>• Acknowledge fault</li> </ul>
WA218	The moving floor is switched off	<ul style="list-style-type: none"> <li>• Information on moving floor activity</li> </ul>	
WA219	Check pellet storage space 1 filling level	<ul style="list-style-type: none"> <li>• Pellet storage space 1 empty</li> </ul>	<ul style="list-style-type: none"> <li>• Check pellet storage space 1 and fill if necessary</li> </ul>
WA220	Check pellet storage space 2 filling level	<ul style="list-style-type: none"> <li>• Pellet storage space 2 empty</li> </ul>	<ul style="list-style-type: none"> <li>• Check pellet storage space 2 and fill if necessary</li> </ul>

Table 8/1 - Faults (continuation)

No.	Fault	Cause	Remedy
WA221	Check pellet storage space 3 filling level	<ul style="list-style-type: none"> <li>• Pellet storage space 3 empty</li> </ul>	<ul style="list-style-type: none"> <li>• Check pellet storage space 3 and fill if necessary</li> </ul>
WA225	Please empty the ash box!	<ul style="list-style-type: none"> <li>• Set monitoring time for ash removal augers exceeded</li> </ul>	<ul style="list-style-type: none"> <li>• Empty ash box</li> <li>• Reset time in the parameter 3-14 with <i>RESET</i></li> </ul>
WA226	Please lubricate the screw stoker bearing!	<ul style="list-style-type: none"> <li>• Set monitoring time for screw stoker exceeded</li> </ul>	<ul style="list-style-type: none"> <li>• Lubricate screw stoker</li> <li>• Reset time in the parameter 3-14 with <i>RESET</i></li> </ul>
WA227	Please lubricate cleaning system!	<ul style="list-style-type: none"> <li>• Set monitoring time for cleaning system exceeded</li> </ul>	<ul style="list-style-type: none"> <li>• Lubricate cleaning system</li> <li>• Reset time in the parameter 3-14 with <i>RESET</i></li> </ul>

Table 8/1 - Faults (continuation)

# 9 Notes on dismantling and disposal

## 9.1 Dismantling



---

### **Danger!**

Material damage and injury due to incorrect dismantling.


Dismantling the system requires comprehensive specialist knowledge. If the heating system is dismantled by an untrained person, injuries are possible.

Only allow authorised specialists to dismantle the system.

---

The heating system can be dismantled as follows.

1. Switch the heating system off.

 See the chapter entitled “6 Using the heating system”, section “6.3 Switching off the heating system”.

✓ The heating system is switched off; the supplying of fuel is stopped; the combustion air fan continues running for a preset burn-out time.

2. Allow the heating system to burn out and wait until the combustion air fan switches off.



3. Turn the heating system main switch off.

✓ The heating system has been de-energised.

4. Switch the circuit breaker for the heating system off.

5. Disconnect the heating system from the electrical power supply.

6. Once it has cooled down, drain the heating water from the system.

7. Observe the safety regulations for personnel when disconnecting the boiler from the heating system.

8. Dismantle the individual components of the heating system.

✓ The heating system has been dismantled.

## 9.2 Disposal

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

- Boiler without motors
- Cladding
- Feeding system without motor
- Transfer station without motor
- Delivery system

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

Fibreglass, mineral wool and plastic parts such as suction hoses etc. should be handed in to the respective waste disposal centres.

The geared motors used consist largely of materials which can be recycled. If a geared motor cannot be handed over complete to a suitable company for proper disposal, proceed as follows:

1. The gear oil must be drained into a suitable container.
2. The geared motor should be dismantled into its separate components and cleaned if necessary.
3. Metal parts should be recycled.



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

# 10 Warranty

## 10.1 Scope

For the boiler body, we have extended the compulsory warranty period from two to five years (approximately 9000 hours of operation at most).

For electrical and other components, the warranty period is two years.

## 10.2 Conditions

In addition to any legal stipulations, the following legal requirements must also be met for all warranty claims:

- The heating system must be commissioned by our customer service department or by an authorised specialist company.
- The heating system must be operated as specified in the Operating manual.
- The installation of the heating system and the hydraulic components must meet the requirements in the operating manual and the specified HDG hydraulic diagrams.
- The heating system must be installed according to the applicable rules, regulations and guidelines.
- The fuel quality must correspond to the requirements specified by HDG Bavaria GmbH.
- An HDG delivery system must be used.

## 10.3 Warranty exclusions

The warranty does not cover:

- Damage due to improper use or installation, or damage caused by inadequate maintenance or by operation of the equipment or heating system in an impermissible way.
- Damage caused by external influences (such as fire, water, lightning, excess voltage) and normal wear and tear (such as seals, etc).
- Damage due to an excessively high number of hours of boiler operation.

# 11 Appendix



## EC Declaration of 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 Compact Heizanlage  
Type: HDG Compact 100/105/150/200

### 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 of the European Parliament and of the Council of 29 May 1997 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 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 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 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, 10.04.2012

Place, date

Signature  
p. p. Martin Ecker  
head of development

# 12 Index

## Symbols

"System operation" indicator light ..... 69, 70  
 °C/QUANTITY menu ..... 86

## A

Accumulator ..... 39  
 - Installing the sensors ..... 54  
 - Sensor ..... 39  
 Acknowledge fault button ..... 69, 70  
 Actuator ..... 10, 65  
 Air inlet cross section ..... 24, 25  
 Antifreeze agent ..... 39  
 Ash container  
 - 140 l ..... 51  
 - 80 l ..... 50  
 - Installation ..... 50  
 Ash containers  
 - Checking and emptying ..... 125  
 Ash removal auger ..... 10, 17, 19  
 Ash removal system  
 - Checking and cleaning ..... 141  
 - Checking the drive chain ..... 128

## B

Boiler class ..... 24, 25  
 Boiler return ..... 17, 19, 41, 43  
 Boiler room ..... 32  
 Boiler supply ..... 17, 19, 41, 44  
 Buttons ..... 72

## C

Central ash removal system ..... 16  
 - Checking and emptying ..... 126  
 - Installation ..... 51  
 Check and clean the cleaning shaft and turbulators ..... 132  
 Checking ..... 145  
 Checking the drive chains ..... 128  
 Chimney ..... 36  
 - Connection ..... 55  
 Chimney sweep test ..... 108, 114, 119  
 Cleaning and maintenance schedule ..... 122  
 Cleaning tools ..... 124  
 Combustion chamber ..... 18, 20  
 Combustion chamber temperature sensor .. 17, 19  
 Combustion control ..... 23, 80  
 Combustion fan ..... 17, 19

Combustion process ..... 21  
 Commissioning the system ..... 64  
 Control ..... 10, 22  
 - Cleaning the control unit ..... 132  
 - Control unit ..... 70, 71  
 Control cabinet ..... 39, 70  
 - Installation ..... 55  
 Control modes ..... 23  
 Control of combustion and output ..... 23, 80  
 Controls and display components ..... 69  
 Cyclone dust extractor ..... 60

## D

Delivery system ..... 10, 16, 21, 22, 55  
 - Versions ..... 34  
 Dimensions ..... 32, 41, 42  
 DIN EN 14961 ..... 27  
 DINplus ..... 30  
 Dismantling ..... 156  
 Display ..... 10, 71  
 Drain ..... 24, 25, 41, 43

## E

Efficiency ..... 24, 25  
 Electrical connection ..... 24, 25  
 Electrical system ..... 38, 60  
 Emergency stop ..... 10, 69, 70  
 energy efficiency class A ..... 40  
 Engage switch ..... 69, 70  
 ENplus ..... 30

## F

Faults ..... 147  
 Feeding system ..... 10, 16, 17, 19, 21  
 - Checking the drive chain ..... 130  
 - Installation ..... 47  
 - Lubrication ..... 128  
 Fill level indicator  
 - Checking ..... 143  
 Fixed value ..... 23, 80, 87  
 Flue draught requirement ..... 24, 25, 38  
 Flue gas mass flow ..... 24, 25  
 Flue gas pipe connection 17, 19, 24, 25, 41, 43  
 Flue gas temperature ..... 24, 25, 36  
 Flue pipe  
 - Checking and cleaning ..... 140  
 Fuel ..... 26, 29  
 Fuel bunker ..... 33  
 - Checking ..... 146



- Filling ..... 68, 118
- Fuel class ..... 26
- H**
- Heating system
  - Switching off ..... 73
  - Switching on ..... 72
- Hose junction ..... 56
- Hydraulic system ..... 63
- I**
- Ignition fan ..... 17, 19
  - Checking and cleaning ..... 137
- INFO menu ..... 118
- Installation ..... 32
- Installing the boiler ..... 47
- K**
- Konformitätserklärung ..... 159
- L**
- Lambda sensor ..... 17, 19
  - Calibration ..... 112
  - Checking and cleaning ..... 139
- Language ..... 65, 76
- Log wood emergency operation .... 23, 74, 80
- M**
- Main switch ..... 10, 69, 70
- MANUAL menu ..... 102
- Manual mode ..... 65
- N**
- Nominal thermal power ..... 24, 25
- O**
- Oil burner ..... 23, 80
- ON/OFF menu ..... 77
- Operating pressure ..... 24, 25
- Operating statuses ..... 73
- P**
- Peak load boiler ..... 77, 89, 90
- Peak load oil burner ..... 90
- Pipe dimensioning ..... 24, 25
- Pressure equalisation hose ..... 17, 19
  - Checking and cleaning ..... 142
  - Installation ..... 49
- Proper and improper operation ..... 11
- R**
- Residual risks ..... 12
- Return temperature
  - Setting ..... 87
- Return temperature control ..... 40
- Return temperature, minimum ..... 24, 25
- Room height ..... 31
- Room sizes and minimum spacing ..... 31
- Rotary feeder ..... 10
- S**
- Safety devices ..... 39
- Safety heat exchanger ..... 61
  - Connection ..... 18, 20, 24, 25, 42, 44
- Scope of delivery ..... 45
- Selecting a material type ..... 88
- Sensor ..... 10
- SERVICE menu ..... 106
- Servo motor
  - Primary air ..... 17, 19
  - Secondary air ..... 17, 19
- Setting operating times ..... 78
- Setting the date ..... 101
- Setting the time ..... 101
- Sound pressure level ..... 24, 25
- Spare parts ..... 122
- Stepped grate ..... 18, 20
  - Checking and cleaning ..... 124
- Stoker auger ..... 10
- Supply temperature, maximum ..... 24, 25
- T**
- Technical data ..... 24
- Thermal safety device ..... 18, 20, 42, 44, 61
- TIME menu ..... 94
- U**
- Underpressure control ..... 60, 114
- V**
- Vacuum and return air hose ..... 56
- W**
- Warnings and safety symbols ..... 14
- Warranty ..... 158
- Water ..... 39, 60
- Water content ..... 24, 25
- Water-side connections ..... 24, 25
- Weight ..... 24, 25
- Wood chips ..... 27, 29
- Wood pellets ..... 26, 28, 30

NOTICE



**HDG Bavaria GmbH**  
Heizsysteme für Holz  
Siemensstraße 22  
D-84323 Massing  
Tel. +49(0)8724/ 897-0  
info@hdg-bavaria.com  
www.hdg-bavaria.com