Operation manual
Wood chip boiler
ECO-HK 20-60kW

HARGASSNER
HEIZTECHNIK MIT ZUKUNFT

Exactly read, follow and save these instructions

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Foreword

Dear customer!

The AUTOMATIC WOODBIOMASS BOILER from HARGASSNER GmbH is a state of the art product and is manufactured to latest productions standards.

Keep this operation manual available inside the boiler door .

The operation manual includes:
- getting introduced to the boiler
- and how to use this boiler according to its determination

This operation manual contains important hints, to operate the boiler
- safely
- appropriate
- and economically

The observance of this manual helps:
- Avoiding risks
- Reduction of reparation costs and downtimes
- Enhance the reliability and the boiler life time

Additionally to this operation manual you find:
- Installation manual of the boiler
- Wiring diagram and sensor overview of the boiler
- Hydraulic schemes
- Installation protocol and commissioning checklist
- Safety sticker for the fuel storage room

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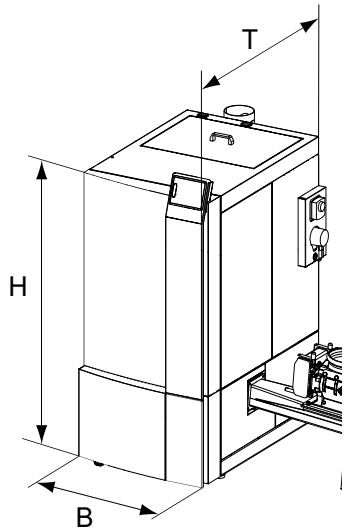
Chapter I: Technical data

1 Type plate and CE-conformity

2 Dimensions



Dimensions in (...) are for ECO-HK 40 - 60

Term	Description	Value	Unit
B	Total width	660 (745)	[mm]
T	Total depth	1220 (1310)	[mm]
H	Total height incl. Touch display	1455 1550	[mm]
	Total weight	490 (560)	[kg]

3 Intended purpose

The AUTOMATIC BIOMASS BOILER is designed to heat up water only. The only fuels allowed for this boiler are those, which are separately defined by Hargassner GmbH. Use the boiler in technically safe condition only. Rectify errors immediately.
The appropriate operation also covers observation of all items of this operation manual and the carrying out of inspection- and maintenance works.

4 Fuel quality

use fuels according to **EN 14961** only

	CAUTION
	☞ use Hargassner GmbH released and permitted fuels only! ☞ if using other fuels, it is absolutely necessary to have consultation by Hargassner GmbH. ☞ Have feasibility evaluated by Hargassner GmbH

4.1 Wood chips (B1)

For proper extraction of the fuel storage room and to ensure perfect combustion, use Wood chips, Class **B1** according to **ÖNORM EN 14961- 4:2011** only.

- Water content M10 - M35
- Size P16(A/B) - P31.5

4.2 Wood Pellets (A1)

Ensure quality standards, when wood pellets are ordered and delivered.
Quality criteria:

- least possible dust content
- hard and shiny surface of wood pellets
- 100% natural wood, no additives, etc.
- Wood pellet class **A1** according to **ÖNORM EN 14961-2**

Calorific value	Density	Diameter	Length	Fine dust content
4.4 - 5.3 kWh/kg	600 kg/m³	6 ±1 mm	3.15-40 mm	< 1%

4.3 Miscanthus (E)

For non-woody fuels like Miscanthus, also ensure quality standards.
Quality criteria:

- lowest possible dust-/foreign objects rate
- not additives, etc.
- Fuel class **E** according to **ÖNORM EN 14961-1**
- Size P16(A/B) - P31.5

4.4 Inadmissible fuels

- Fuels with water content >35%
  - ↳ Formation of condensate
    - ↳ increased risk of corrosion of the boiler
- Saw dust, grinding dust
- Paper / Cardboard
- Chip boards, impregnated timber
- Black coal, brown coal or lignite
- Waste
- Plastics

5 Construction of the boiler room:

Boiler room must executed according to legislation in your country.

⇨ Siehe Montageanleitung “Ausführungen des Heizraumes”

- Keep air openings of the boiler free.
- Do not store any flammable materials in the boiler room.
- Execute the boiler room in frost-proof condition.
- fireproof, plane and solid floor- and ceiling construction
- Correctly install heating main switch according to authorised electrician (depending on building regulations).
- Fire extinguisher

⇨ Siehe Montageanleitung “Feuerlöscher”

6 Construction of the fuel storage room:

Boiler room must executed according to legislation in your country.

- No electrical installation or devices inside the storage room; all lines to be installed concealed.
- Watch for sound insulation at the wall opening for the extraction auger (transmission of structure-borne sound)
- Protection against moisture, water and dust.

D A N G E R

Dust explosion in fuel storage room

Burning through explosive and flammable dust (sawdust).

- No motors in the fuel storage room
  ☞ except agricultural buildings
- No other source of ignition (e.g. light) in the storage room
- No electrical equipment (e.g. light switch) in the storage room
- No welding works in dusty environment

7 Execution of heating circuits

A proper execution of the heating circuits is essential for optimum operation of the boiler.

⇨ See enclosed hydraulic schemes

The design of accumulators, pumps and mixing valves has to be carried out according to legislation and through a heating professional.

8 Back end protection

If the temperature in the return is below the set value in the control an admixture of flow water takes place.

The installation of a back end protection for the correct operation is mandatory.

⇨ Siehe Montageanleitung “Rücklaufanhebegruppe”

9 Flue pipe - chimney dimensions

⇨ Siehe Montageanleitung “Kaminanschluss - Rauchrohr”

KESSEL TYPE	NENN WÄRME LEISTUNG	ABGAS TEMP.	CO_2	MASSEN-STROM	notwendiger Förderdruck	KAMINZUG max. Begrenzung	RA-DM	WASSERSEITIGER WIDERSTAND	
								dT 10°	dT 20°
	KW	°C	%	KG/S	Pa	Pa	m	mbar	mbar
ECO-HK 20	20,00	140	14	0,0104	5	10	0,150	22,6	5,9
ECO-HK 30	32,00	150	14	0,0154	5	10	0,150	49,8	13,0
ECO-HK 35	35,00	160	14	0,0180	5	10	0,150	67,0	17,5
ECO-HK 40	40,00	140	14	0,0205	5	10	0,150	80,1	20,9
ECO-HK 50	49,00	150	14	0,0235	5	10	0,150	118,8	31,0
ECO-HK 60	60,00	160	14	0,0309	5	10	0,150	173,7	46,0

10 Electrical connection

⇨ Siehe Montageanleitung “Elektrische Installationen”
⇨ See according to electrical schematics

Dimensions in (...) are for ECO-HK 40 - 60

Electrical energy	Characteristics	Unit
Voltage	400	[V] ±5%
Frequency	50	[Hz] ±5%
Fuse	13	[A]
Power consumption	100 (170)	[W]

- the electrical connection has to be executed according to the enclosed electro-wiring diagram through a licensed and authorised electrician
- Main power switch outside of the boiler room (acc. to building regulations)
- max. back-up fuse **13 A** (C-Character)
- capable main switch
- It is absolutely imperative that the intrinsically safe cables are **permanently installed**
  - appropriate mechanical components must be selected and used
- in-phase connection **L** and **N** (see wiring diagramm)
- Connect potential equalisation
- use highly flexible leads (e.g. **H05VV-F**)

Chapter II: Safety regulations

1 General safety advices

1.1 Obligation to instruct, external personnel, children

D A N G E R

Non-observance of the safety regulations!

Death, injury, damage through inappropriate installation.

- Observe safety instructions of the boiler and in the operation manual!
- Exactly read the user manual PRIOR commissioning.
  ☞ in the cladding door is a storage compartment.

External, not authorised people

Death, injury, damage through inappropriate installation.

- Works on the boiler through qualified and experienced personnel only. Determine boiler supervisor.
- Keep out external, not authorised and not trained people from the boiler room and the storage room.
- No transfer of control entry codes.
- Observe legal minimum age of personnel.
- Place prohibition sign in front of boiler room door and fuel storage door.

Works on electrical equipment may only be carried out through

- an professional electrician
- according to electrical standards.

Work on hydraulic systems must be carried out only by personnel with specialised knowledge and experience in hydraulics!

1.2 Special measures prior commissioning through the operator

- Licensing requirements for safe operation and accident prevention regulations must be observed!
- Do execute verifications prior first start up.
  ⇨ see “Checks prior commissioning” on page 28.
- Do execute verifications prior commissioning.
  ⇨ see “Inspections prior starting up the boiler” on page 30.

1.3 Key issuing

D A N G E R

Unauthorised commissioning!

Commissioning through Hargassner authorised staff only.

- Prevent unauthorised commissioning.
  ☞ Blockmainpower switch and keep keys safe.

2 Remaining risks

If the boiler is operated appropriately and professionally
the following remaining risks must be observed:


D A N G E R

Hot surfaces, hot ash!

Burns through hot boiler components

- Prior any maintenance works
  - ❑ Shut down and cool down boiler.
- Do not grasp into the boiler during operation.
- Wear heat resistant gloves.
  - ☞ The ash in the ash box does save heat.
- Do not empty hot ash into dustbin.
  - ☞ Put ash in closed, not-flammable vessels only.

Hot water

Scalds through sprinkling, hot water.

- Check hoses, lines and connections periodically for leakages, wear and tear or any other damage!
- Rectify damages immediately.
- Prior any maintenance works on the circulation water system, de-pressurise the unit
- Check, if all valves are in correct position.


D A N G E R

Dust explosion in fuel storage room

Burning through explosive and flammable dust (Pellet dust).

- No motors in the fuel storage room (acc. to country-specific regulations)
  - ☞ except agricultural buildings
- No other source of ignition (e.g. light) in the storage room
- No electrical equipment (e.g. light switch) in the storage room
- No welding works in dusty environment


D A N G E R

Risk of deflagration, explosion and burning

Burns through explosively combustion of residual gases (CO) in the combustion chamber.

- Open combustion door carefully
  - ☞ Slightly in the beginning.
  - ☞ Hold back body and face from the combustion door
    - ↳ To avoid any burning risks
- The risk of deflagration increases significantly after uncontrolled conditions. (e.g. power loss)
- At / after a power loss, do NOT open the combustion door
- Do not open combustion door during heating operation



D A N G E R

Rotating augers and moving parts in the area of the ash extraction, stoker auger and the fuel extraction!

Amputation, crushing of hands through touching moving parts or augers.

- Omit access to augers or motors at operating boiler.
- Do not perform any works on the plant, if any other person is in the danger zone.
  ☞ Secure / lock fuel storage room
- Remove blockages and perform cleaning only with tools and at switched-off boiler status. Also lock **<mainpower switch>**.

Unpredictable operation conditions

- The spring blades of the agitator system are retracted under the cover disc if the storage room is filled completely.
  ☞ These springs may shoot up suddenly.
- Watch out for the spring position when entering the fuel storage room.
- Remove fuel bridges with rods or shovels only
- Wear safety shoes
- Observe fuel storage room sticker!

D A N G E R

Works on the control

Touching open or free terminals, cables and equipment components can lead to severe injury or death!

- Oberserve information signs.
- Prior any works:
  ☞ Check that there is NO VOLTAGE with voltmeter.

D A N G E R

Flue gases in the boiler room / building

Flue gases can lead to serious poisoning

- Check boiler doors and seals
  ⇨ see “Cleaning intervals” on page 32.
- Burning creosote-treated wood (Paint, varnish, impregnation) results in toxic ash.
  ☞ Avoid skin and eye contact.

C A U T I O N

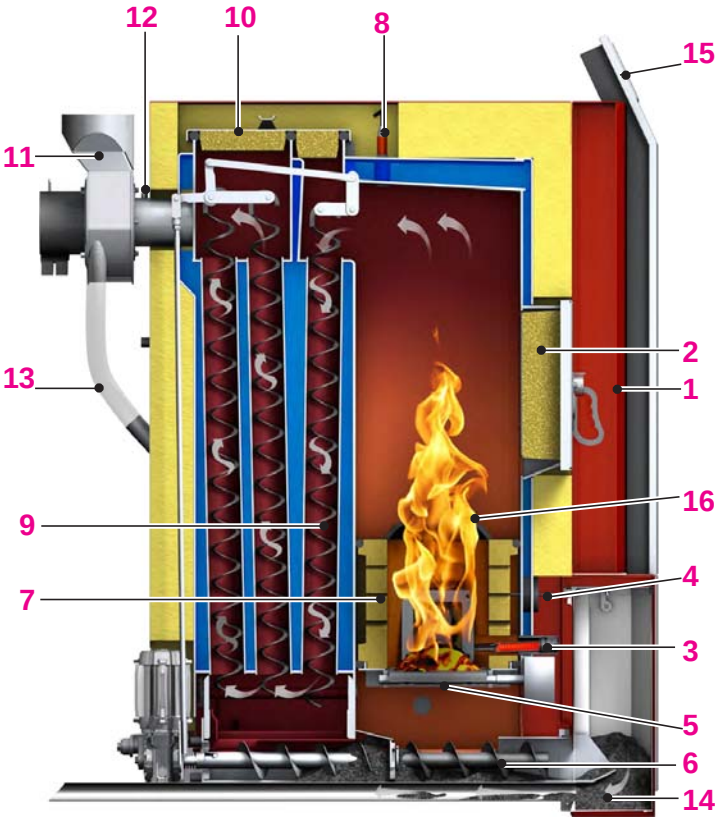
Manual mode

Unpredictable operation conditions

- During manual mode no monitoring of limit switches or motors is performed.
  ☞ Reverse operation of augers max. 2 [Sec.]
- Manual mode is only allowed to be executed by trained staff.

Chapter IV: Boiler construction

1 Overview of components



Pos	Description
1	Boiler door
2	Combustion door
3	Ignition
4	Firebed monitoring
5	Double rotary step grate
6	Ash auger
7	Refractory
8	Lambda sensor
9	Turbulators
10	Cleaning lid
11	Exhaust fan
12	Flue gas sensor
13	Recirculation
14	Ashbox *(Suction cleaning optionally)*
15	Control unit
16	Flame concentration jet

The boiler unit consists of the combustion chamber and the heat exchanger and controls the combustion air with air flaps and the exhaust fan.
The lambda sensor consistently monitors the flue gases. The integrated sensors monitor the temperatures of the boiler and flue gases. The turbulators clean the heat exchanger through a rod. With the all new developed de-ash system, the boiler cleans itself at regular intervals. The ash extraction auger transports the fly ash, as well as the grate ash into the completely integrated ash box. Optionally a suction system into a 300 Litre ash bin is available for the ash.
The ignition of the pellets takes place through the high-efficient automatic ignition*(300 W).*

1.1 Function

- Fuel transport from the storage room
- Transport into the combustion chamber
- Ignition and combustion of the fuel
- Control of energy transfer to the water based system
- Cleaning of the boiler and the ash extraction into the box
- Evacuation of the flue gases

1.1.1 Operating modes

- Automatic operation
- HWS operation
- Manual mode
- OFF (Frost protection and residual heat use activated)

Chapter V: Control

D A N G E R

Wrong operation of the control!

Risk of injury, damage of the boiler through unpredictable operation mode.

- Operation of the control through trained staff only.
- Access to all functions of the control is protected through Codes in the control.
  - ☞ Service level and installer level.
  - ☞ Codes may not be forwarded to not authorised staff.

1 Layout of the control

The categorisation of the control is divided in:

- Display of current information about the boiler system
  - ⇨ Menu see “Standard menu” on page 13.
  - ⇨ Menu see “Menu tree - Info” on page 17.
- Settings through the customer
  - ⇨ Menu see “Customer settings” on page 21.
- Settings through the installer at commissioning
  - ⇨ Menu see “Installer level” on page 49.
- Settings through Hargassner service staff only
  - ⇨ Menu see “Parameter list - Customer” on page 55.

1.1 Touch- Screen, control unit

The control unit is executed through a Touch screen

☞ Handling through finger pressure on the display.

❒ Scrolling in the menu through 

☞ For a better understanding the menu commands are placed within the <arrows>

❒ Back to the previous menu with  **<Standard>**

❒ Back to the standard menu - at any time with <Standard>.  **<Standard>**. (eventually press 2 times)

❒ Activate the desired operation mode with selector switch 

<Function>.

❒ Activate input field through pressing.

↳ Display of values in "red" colour

❒ Change the active values: 

↳ Values flash "red"

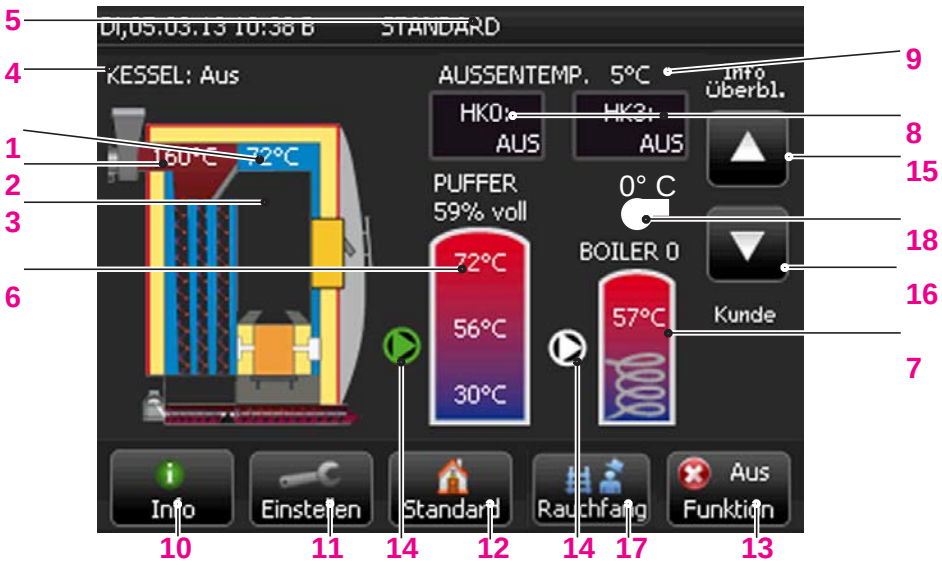
↳ Buttons flash "green"

❒ Enter, save or change of a value through with  (SAVE).

❒ Short cuts to customer parameters through pressing to the according graphic in the standard menu.

☞ possible at: Boiler-, Accumulator-, HWS-, External boiler and heating circuit - graphics

1.2 Standard menu



Pos	Description	Function
1	Boiler temperature	Display of the current boiler temperature
2	Boiler- flue gas temperature	Display of the current flue gas temperature
3	Boiler- Output	Display of the current boiler temperature
4	Status display of the boiler	⇨ see “Status indication of the boiler:” on page 15.
5	Status display of the control Display of the current menu name	• Description of the active menu • Error (red flashing) ⇨ see “List of errors” on page 36. • Current position in menu tree • Boiler STOP in days ☞ Operation of boiler without correct ID-card
6	Temperature display in accumulator *(if available)* Display accumulator filling volume in [%]	Current temperatures (top, mid, bottom) of accumulator sensors currently filled heat capacity
7	Temperature display in HWS	Display of the current water temperature in the HWS
8	Status display of heating circuits	• OFF Heating circuits switched off • Sun - Heating circuits in day mode • Moon - Heating circuits in reduced mode • Frost - Heating circuits in frost protection mode
9	Display of outside temperature	Outside temperature measured at outside sensor
10	Info	Display of add. text for active function (if available)
11	Settings	Change to customer, installer or service level or setup menu.
12	Standard	Display of standard menu. Before every menu, a switch to the standard menu is possible. After 10 minutes of no activity, the display switches back to "Standard"
13	Off Function Function	Choose operation mode of the boiler. ⇨ see “Operation modes” on page 14.
14	Pump	Operation mode of pump: green: Pump runs; white: Pump stop
15	Info	• Change to the Info-Level
16	Customer	• Change to the Customer-Level
17	Chimney sweep	Through pressing the Chimney sweep-Button, a special programme is started to measure the flue gas consistency.
18	External boiler	Status display of external boiler (if available) green: released; white: locked

2 Operation modes

Choose operation mode of the boiler

❒ 

Press **<Function>**

2.1 Automatic

-  **<Auto>** (for **Winter**operation for heating and domestic hot water)
  - ↳ Control: Boiler, Accumulator, Heating circuits, HWS
  - ↳ additional control of the heating circuits with remote control
  - ⇨ see “Optional remote controls FR35 / FR40 (digital) and FR25 (analogue)” on page 26.

2.2 HWS operation

 **<HWS>** (for **summer operation** - domestic hot water only)
- ↳ Control: Boiler, Accumulator, HWS
- ↳ Heating circuits
  Heat circuit pumps off, mixing valve position "Closed"

2.3 Manual

-  **<Manual>**
  - to test single functions of the boiler separately
  - ☞ (Motors, pumps, etc.)
  - ↳ Boiler control switched off
  - ↳ HWS pump off
  - ↳ Heating circuits:
    Heat circuit pumps off, mixing valve position "Closed"
  - ↳ all automatic boiler functions are "OFF"

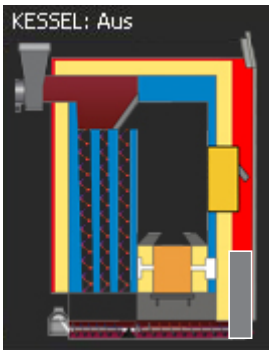
2.4 Off

-  **<Off>**
  - ↳ Control: Boiler OFF
  - ☞ Frost protection function activated
  - ↳ HWS pump off
  - ↳ Heating circuits:
    Heat circuit pumps off, mixing valve position "Closed"

2.5 Chimney sweep - button

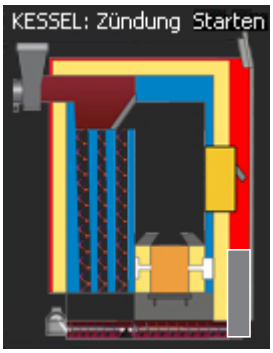
Button for the chimney sweep to manually switch the boiler ON or OFF during emission tests.
If an accumulator is connected, the control automatically changes to **100% combustion**if the chimney sweep button is pressed.
All programmed control functions of the boiler are switched off by pressing this button. The boiler operates at 100% heating output, assumes very low outside temperatures and tries to transports as much as possible heat into the heating system. All regulating devices like thermostatic head valves and automatic control valves must manually be opened to ensure the appropriate heat transfer. This function ends after 2 hours automatically.
If the chimney sweep button is pressed and no accumulator is connected the control offers 2 possibilities: **Full load measurement** or **Part load measurement**.
All programmed control functions of the boiler are switched off in part load measurement. The boiler controls up to 100% combustion. After 15 min. full load - the heat output is reduced to 50%. After 5 min. a message is shown on the display "Start measuring".

3 Status indication of the boiler:



Because of the measured temperatures of the boiler and the flue gas temperature, the boiler control recognises the status of the boiler fully automatically.

„Boiler Off“:
if no heat requirement from heat circuits or the HWS is notified, or the accumulator takes care of the demand, the boiler switches to **"Off"**.



„Start ignition“:

Fuel is being transported into the combustion chamber and the boiler monitors, ifan autonomous ignition is possible due to remaining ember.

„Boiler Ignition“:

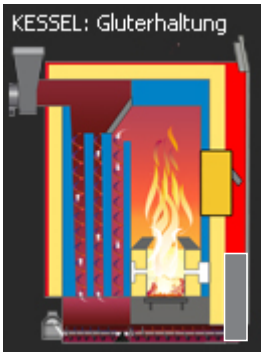
The electric ignition starts and the fuel if ignited.

„Boiler combustion“:
Depending on heat demand and required boiler temperature the exhaust fan (air volume) and the Lambda sensor controls the optimum fuel amount

- ☞ Combustion output range from 50 - 100 [%]

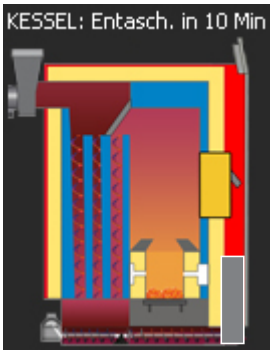
„Boiler burnout“:

- ☞ Primary air to 100 %
- ☞ Exhaust fanoutput to 100 %



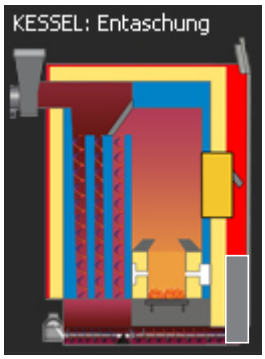
"Slumber mode":

if the heat demand drops below the minimum boiler output, the status changes temporary to
"Slumber mode"



"Boiler deash. in x Min":

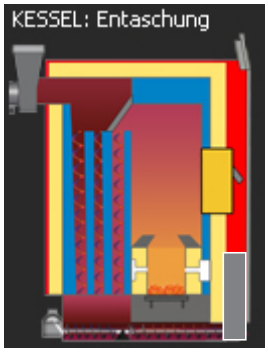
if the maximum combustion time is exceeded, no more fuel is added and the boiler burns out.



"Boiler deash":

Only the ash grate performs a full rotation until it stops at original position. The turbulators clean the heat exchanger tubes.

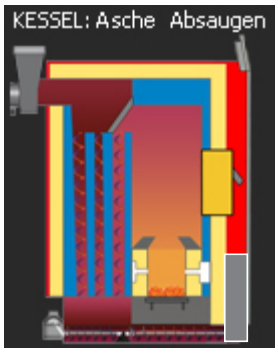
- the ash falls onto the ash auger and is transported and compressed in the ash box
- afterwards the boiler returns to the required boiler status



"Boiler de-ash":

Both rotary grates are opened completely and the turbulators clean the heat exchanger tubes

- the ash falls onto the ash auger and is transported and compressed in the ash box
- afterwards the boiler returns to the required boiler status



"Boiler ash - suction": (optionally)

the ash suction turbine is started and the ash box is vacuumed

- afterwards the boiler returns to the required boiler status

4 Menu tree - Info

❒ Press **<Standard>** 

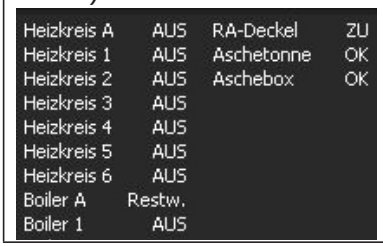
in the menu

❒ Use arrows to move within the menu 

Set: Set value
IS: current value (Position)
❒ Press 
to change to parameters directly

Info Overview

Info / Overview Heat circuits / HWS / Accumulator (depending on parametrisation)	Heat circuits A - 6 ON / OFF HWS A - 3 ON / OFF Accumulator ON / OFF RA - lid OPEN / CLOSED Ash bin OK / FULL Ash box OK / FULL ...	Overview about the current "Condition" of the parametrised heating system components



Info FLP

Info District line pump (FLP)	Pump ON / OFF	Pump runs / off

Info Heat Circuits

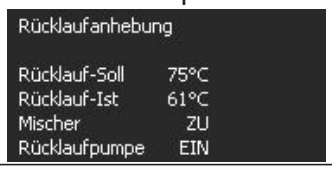
Info / heat circuits 1 - A (depending on parametrisation)	 OFF / ON	Heat circuit for radiators or floor heating ☞ for floor heating: Heating curve below 1.0 Status of heat circuit ☞ to be changed through pressing Operation mode button ☞ if a manual change of the operation mode is made, it is shown - on which device - the change has been made. • BOILER / APP / FR35 / FR40 / HKM / HKR / SMS
		
	Flow-Set	Calculated Flow-Set temperature
	Flow-Is	Current flow temperature
	Pump ON / OFF	Pump runs / off
	Mixer OFF / OPEN / CLOSED	Mixer OFF / opens (OPEN) / closes (CLOSED)

Info HWS

Info / HWS 1 - A (depending on parametrisation)	HWS loading ON / OFF	HWS loading is active / not active
	HWS-Set	Set temp. in HWS
	HWS-Is	Current HWS temperature
	Pump ON / OFF	HWS pump switched ON / OFF
	Release circulation pump YES / NO	at parametrised circulation pump Circulation pump temporally released YES / NO
	Circulation pump ON / OFF	Circulation pump runs / off

Info Back end protection

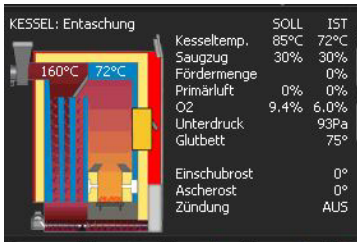
Info Back end protection



Pump ON / OFF	Pump runs / off

Info Boiler

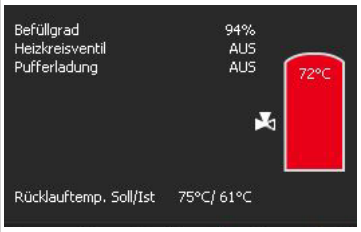
Info / Boiler

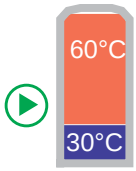


Boiler status	current status of the boiler
Boiler temperature Set / Is	Water temperature in the boiler - measured with boiler sensor
Exhaust fan	Exhaust fan speed in % of maximum
Delivery rate	the currently necessary fuel rate
Primary air flap Set / Is	Primary air flap position in % of maximum
O_2 Set/Is	Flue gas oxygen value in % - measured on the lambda sensor
Negative pressure	Negative pressure in Pascal - measured at the neg. press. box
Stoker grate	Stoker grate turn in ° of "Zero point"
Ash grate	As grate turn in ° of "Zero point"
Ignition	Ignition active / not active

Info Accumulator

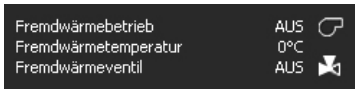
Info / Accumulator



Filling level	Heat quantity in the accumulator in % of set accumulator temperature
Accumulator pump ON / OFF	Accumulator pump runs / Off
	Display of the sensor temperatures on the accumulator Colour of the accumulator: ☞ Filling level: 80% => red ☞ Filling level: 30% => blue ☞ Filling level between 30-80% => blue / red
Return mixer OFF / OPEN / CLOSED	Return mixer stop / opens / closes
Return temperature Set /Is	Temperature of boiler - return

Info External heat

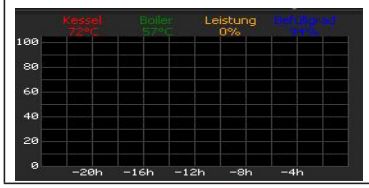
Info / External heat



Burner	Blocked, released
External heat temperature	current external heat sensor temperature
External heat valve ON / OFF	External heat valve ON / OFF
External heat pump ON / OFF 	External heat pump ON / OFF

Info Trend

Info Trend



Boiler temperature HWS temperature Power Accumulator filling level	Diagram of the last 24 hours

Info electricity

Info electricity

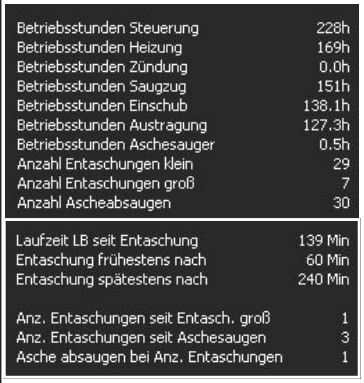
Einschub	0.0A
Austragung	0.0A
Ascheschnecke	0.0A
Einschubrost	0.0mA
Ascherost	0.0mA

Stoker
Agitator
Ash auger
Stoker grate

List of current electricity consumption

Info Counter

Info Counter



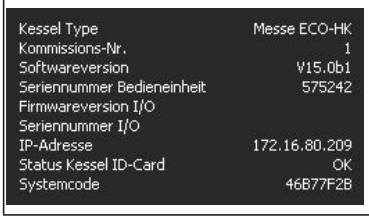
Betriebsstunden Steuerung	228h
Betriebsstunden Heizung	169h
Betriebsstunden Zündung	0.0h
Betriebsstunden Saugzug	151h
Betriebsstunden Einschub	138.1h
Betriebsstunden Austragung	127.3h
Betriebsstunden Aschesauger	0.5h
Anzahl Entaschungen klein	29
Anzahl Entaschungen groß	7
Anzahl Ascheabsaugen	30
Laufzeit LB seit Entaschung	139 Min
Entaschung frühestens nach	60 Min
Entaschung spätestens nach	240 Min
Anz. Entaschungen seit Entasch. groß	1
Anz. Entaschungen seit Aschesaugen	3
Asche absaugen bei Anz. Entaschungen	1

Control / Heating
Ignition / Exhaust fan
Stoker / Extraction
Ash suction
Number of de-ash cycles
Number of ash suction cycles

Overview about current operation hours

Info serial number

Info serial number

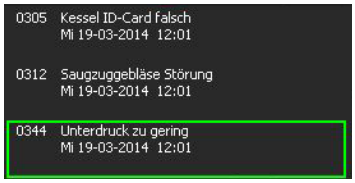


Kessel Type	Messe ECO-HK
Kommissions-Nr.	1
Softwareversion	V15.0b1
Seriennummer Bedieneinheit	575242
Firmwareversion I/O	
Seriennummer I/O	
IP-Adresse	172.16.80.209
Status Kessel ID-Card	OK
Systemcode	46B77F2B

Boiler type / Comm-No.	set boiler type / Commissioning number
Software version	Software of control
Sr-No. Control	Serial number Touch display
Firmware version I/O	Software of boiler - control board
Serial number I/O	Serial number of boiler - control board
IP-Address	automatically or manually set IP-address
Status Boiler ID-Card	OK

Info Error

Info Error



0305 Kessel ID-Card falsch
Mi 19-03-2014 12:01

0312 Saugzuggebläse Störung
Mi 19-03-2014 12:01

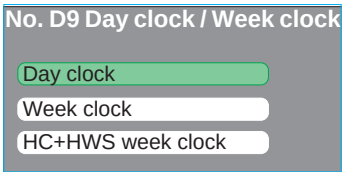
0344 Unterdruck zu gering
Mi 19-03-2014 12:01

Error number and Description

Overview of current errors.
Once the fault is rectified, the error message is no longer shown
⇨ see “List of errors” on page 36.

4.1 Menu „Week clock", „Day clock“

Installer level



To set start- and stop times for heating circuits and the HWS

Day clock

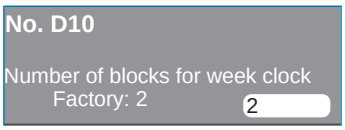
to set the same start- and stop times for each day for all heating circuits and the HWS

Week clock

to set different start- and stop times for each day for all heating circuits. The settings of the HWS remain on day clock.

HC+HWS week clock

to set different start- and stop times for each day for all heating circuits and the HWS



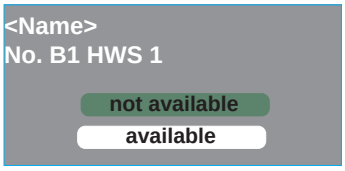
<Number of blocks for week clock>: maximum 7 blocks
to set different heating times for different week days.
E.g. 2 blocks: Monday - Friday, Saturday - Sunday

Pos	Description	Function
1	Number of the menu displayed	for day clock 1,2,3; for week clock 1a, 1b, 1c
2	Description of the menu displayed	
3	Selection of the day Monday to Sunday	• Display of active chosen days ↳ green box
4 5	ON - times OFF - times	• Setting of heating- / reduction times for the chosen days • For each day, 2 On- / Off times may be set with **<+>** / **<->** (in 30 minutes steps) • Display of active chosen time ↳ red font
6	**<+>** / **<->**	• change of active chosen time (in 30 minutes steps)
7		• For saving active changes

5 Customer settings

5.1 HWS control

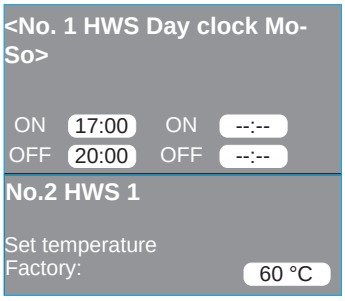
Installer level



For accumulator with internal HWS or external HWS
Set the **<No. 1 HWS Day- Week clock>** and the
<No. 2 Set- temperature „HWS“> especially for each HWS.

- in operation mode <**Auto**> or **<HWS>** active

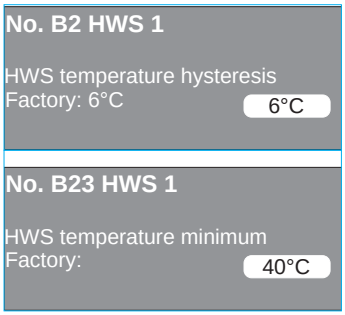
Customer level

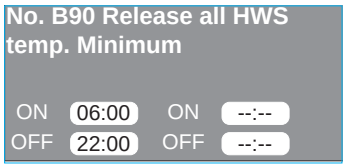


Set the **<No. 1 HWS Day- Week clock>**
If the HWS volume is calculated correctly, it is recommended to load the storage once a day. (in the morning or in the evening)

- For HWS loading, the HWS is loaded at the set time **<No. 1 HWS Day- Week clock>** to the set **<No. 2 Set- temperature „HWS“>**

Installer level



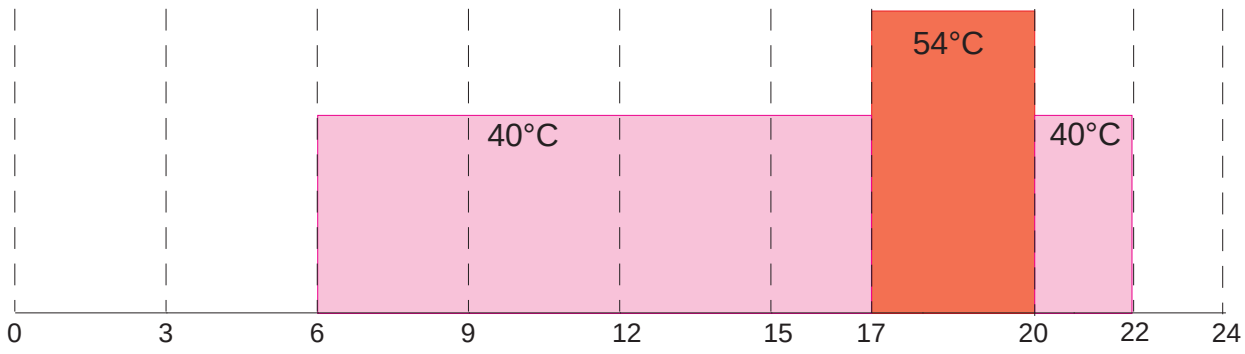


Within the **<N.0 HWS Day- Week clock>** the loading takes place, if the HWS is below the set value minus inclination.

↳ Example:
<No. 2 Set- temperature „HWS“> (60°C),
<No. B2 HWS temperature switch difference> (6°C)
=> HWS loading starts at **54 [°C]**

- Outside of the **<No. 1 HWS Day- Week clock>** the loading takes place:
  ☞ If the HWS temperature is below
  „<No. B3 HWS temperature minimum>
  ↳ HWS loading to **<No. 2 Set- temperature „HWS“>**
  ☞ and within the additional release times
  No. B90 Release all HWS temp. Minimum>
- Outside of the set times **<No.1 HWS Day- Week clock>** and **<No. B90 release all HWS temp. Minimum>** no HWS loading takes place

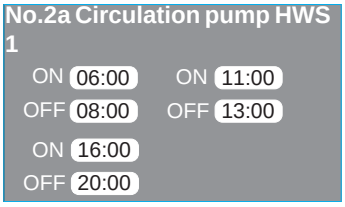
5.1.1 Monitored HWS temperatures (acc. factory settings):



HWS loading starts if the HWS temperature drops below 40 / 54 [°C].

5.2 Circulation pump for hot water

Customer level



The circulation pump pumps hot water in cycles from the HWS to the consumer, to immediately provide hot water if long distances have to overcome. Settings for the circulation pump may be performed for each HWS parametrised in the control. Release times for the circulation pump

☞ Defines the starting times of the circulation pump

Parametrisation of the circulation pump

⇨ see “Parameter B - HWS:” on page 51.

5.3 Legionella programme

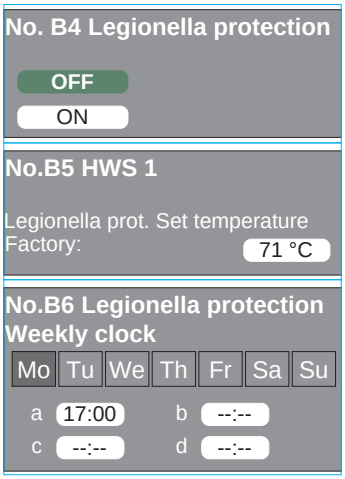
D A N G E R

Temperature settings for Legionella protection

If HWS temperature is not mixed and set very high - Risk of burning because of hot water!
If HWS temperature is set too low - Legionella bacteria will not be entirely removed!

- Set temperature to 70 [°C].
  ☞ With a temperature of 70 [°C] for 3 minutes - all bacteria will be killed.
- Risk of burning - if HWS-circuit is not mixed - install mixing valve.
- Siehe Montageanleitung “Brauchwassermischer”

Installer level



The legionella protection programme starts if **Legionella protection - ON>** especially for each activated HWS.

- The legionella protection programme heats up the HWS at the set time **<No. B6 Legionella protection Weekly clock>** to the set temperature **<No. B5 Legionella protection Set- Temperature „HWS“>.**
  ☞ Activation of the programme - up to 4 times a day

N O T E

Recommended settings for the legionella protection programme

- Start of the protection programme within the time **<No. 1 HWS Day- Week clock>**
- Private family home: 1 x weekly
- Gastronomy, hotels, etc...daily activation of legionella protection programme (subject to local regulations)

5.4 Control of heat circuits

- activated in mode <**Auto**> for the heat circuits (1-6 and A), parametrised by the installer.

5.4.1 Temperature control

The control of the heating circuits works with:

- „**Heating**“ to the set room temperature
- „**Reduction**“ to the reduced room temperature
- „**Off**“ - no room temperature control
- „**Frost protection**“ (only pumps are on)

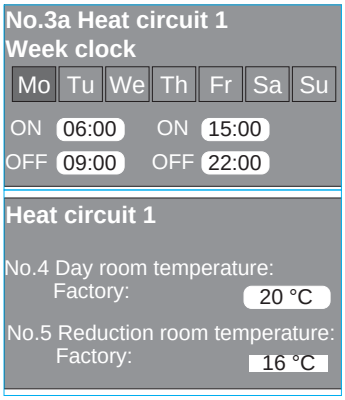
The control calculates the average outside temperature.
Adjustment of set value settings for the room temperature
(Day-reduction temperatures):

- only in small steps
  - ☞ that a thermal state of inertia of the changed temperature can be reached.
  - ☞ The changed indoor climate will be recognised the next day.

Remote control:
A slightly change of the set room temperature
<No. 4 Day room temperature> of +/- 3 [°C] can be made directly on the remote control.
⇨ see “Optional remote controls FR35 / FR40 (digital) and FR25 (analogue)” on page 26.

5.4.2 Heating

Customer level

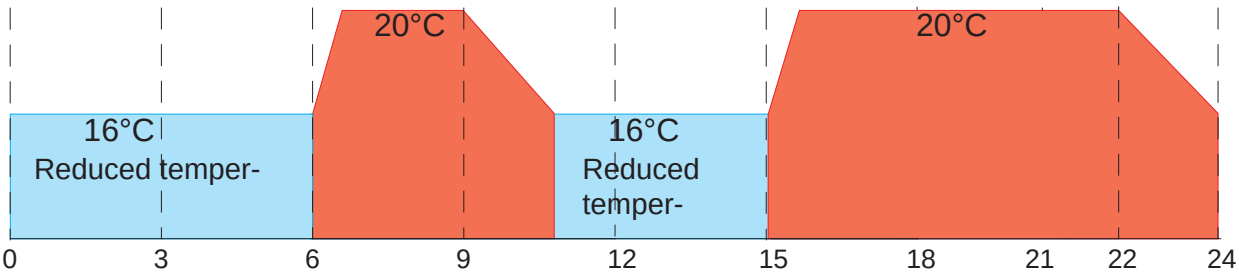


- Set heating times at **<No. 3a Daily / Weekly clock>**
  - ☞ In-between are automatically times for reduction.

- Set the desired room temperature
  <No. 4 Day room temperature> between 14 - 26 [°C]
  <No. 5 Reduced room temperature> between 8 - 20 [°C]

Calculation of the flow temperature:
⇨ see “Heating curve (Steepness)” on page 25.

Graph - room temperature (acc. to factory settings)



E.g.: On / Off times according to factory settings for day / reduced mode

5.4.3 Outside temperature - Shut down

Installer level

No.D12 Outside temp. Shut down
separately
all HC together

<No. D12 separately>- thresholds to be set separately for each heat circuit.
<all HC together>- Same thresholds for all heat circuits.

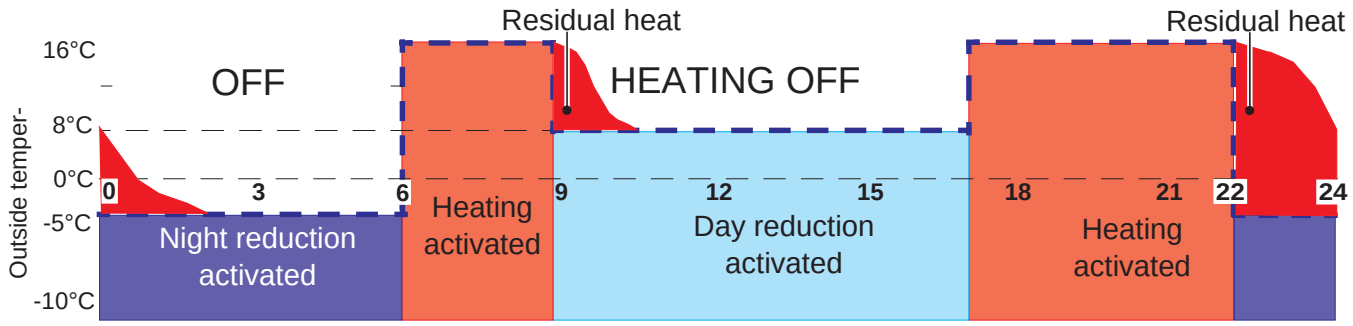
3 different outside-temperature thresholds for heat circuits to be shut down
☞ depending on heating programme and time

Customer level

Heat circuit 1-6 & A
Heating off
No.11 above outside temperature
Factory: 16°C
No.12 at day reduction
Factory: 8°C 8°C
No.13 at night reduction
Factory: - -5°C

<No. 11,12,13 „Heating off“> depending on outside temperature

- **<Heating off at outside temp. over>**- No. 11 (16°C)
  ☞ If the average outside temperature exceeds the set value, the heat circuit will be switched off (Summer shut down).
- **<Heating off at day reduction>**- No. 12 (8°C)
  ☞ If the average outside temperature exceeds the set value at day-reduction mode, the heat circuit will be turned off.
- **<Heating off at night reduction>**- No. 13 (-5°C)
  ☞ If the average outside temperature exceeds the set value at night-reduction mode, the heat circuit will be switched off.



5.4.4 Reduction

Installer level

No.D5 Switch day-reduction mode
ON 06:00
OFF 22:00

- Reduced room temperature **<No. D5 Reduced room temperature>**
  ☞ Day reduction between 06:00 - 22:00
    ↳ Night reduction from 22:00 to 06:00

5.5 HWS-priority control

Installer level

No. B60 HWS priority operation
ON
OFF

For a fast loading of the HWS a short switch-off of the heat circuits takes place:
<ON>: (Priority control)

- Heat circuits with **Pumps**:
  ❒ Switch off of heat circuit pumps
  ☞ during the complete HWS loading
    ↳ immediate HWS loading
    ↳ no heat transfer from the boiler to the heat circuits

Service level

No. N3 HWS 1-3, A
Flow reduction factor
Factory: 1.0 1.0

- Heat circuits with **mixer**:
  ❒ Reduction of the heat circuits during HWS loading
  ☞ during the complete HWS loading
    ↳ immediate HWS loading
    ↳ reduced heat transfer from the boiler to the heat circuits

↳ Calculation of the flow temperature reduction:
Example: Boiler SET: 60; Boiler IS: 45; Reduction factor 1.0; => Reduction heat circuit flow temperature for: (60-45)*1.0)= 15 °C
<OFF>: No switch off of the heat circuit pumps during HWS loading

5.6 Frost protection

Installer level

No. D2 frost protection
Pump on if outs. temp. below
Factory: 1 °C
1°C

No. D3 frost protection
Flow-Set temperature
Factory: 7°C
7°C

Two safety steps to activate the frost protection function

- Outside temperature below parameter **<No. D2 Frost prot. >** (1°C)
  ↳ Start up of heat circuit pumps, Mixers remain „**Closed**“
- Boiler- or flow temperature below parameter
  <No. D3 Frost protection> (7°C)
  ↳ Start up of the boiler and mixing valve control activated

5.7 Accumulator control

⇨ see “Parameter C - Accumulator” on page 52.

5.8 Blockage protection

To prevent any blockage of pumps or mixing valves after a long period of stand-still, the devices starts automatically.

- Every Monday at 12:00 a.m.
- Start heat circuit pumps (1 Minute)
- Mixing valves open and close once

5.9 Heating curve (Steepness)

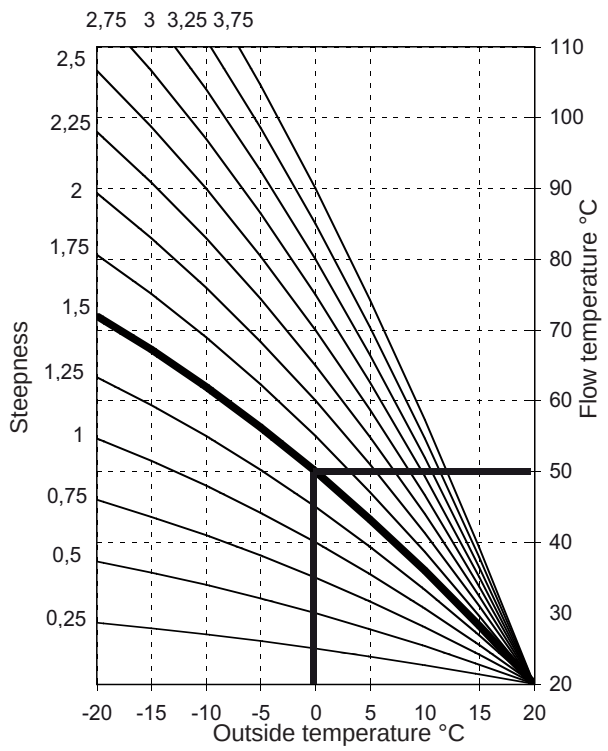
Installer level

No. A2 Heat circuit 1
Steepness
Factory: 1.6
1.6

- Adjustment of the steepness of the heating curve **<No. A2 Heat circuit 1>**

Prerequisite for a stable room temperature at varying outside conditions:

- accurate adjustment of the heating curve
- correct dimensioning of the boiler accoring to heat demand calculation.



The heating curve defines the flow temperature according to the average outside temperature.
☞Selectable for each heat circuit (1-6).
The displayed curve is for a room temperature 20 °C
☞For any other desired room temperature:
move curve parallel (upwards / downwards)
Example:
Heat circuit with: Steepness: 1.5; Day-room temp.: 20 °C
Boiler in heating mode; Outside temperature: 0 °C
=> Flow temperature: 50 °C
Change heating curve only in small steps, so a thermal state of inertia of the changed temperature can be reached.
☞The changed indoor climate will be recognised the next day.

6 Optional remote controls FR35 / FR40 (digital) and FR25 (analogue)

One heat circuit may be parametrised per remote control.

- one heat circuit or extension control board (**HKA** *digital remote controls only*)
- 2 heat circuits per extension module (**HKM 0 - 2**)
- 2 heat circuits per heat circuit controller (**HKR** 1 - 8)

6.1 Digital remote control FR35

The remote control may be parametrised with or without room temperature sensor. FR35 is also available in radio version.

⇨ Please see installation manual of remote control

Only in operation mode **<Automatic>** Auto Function

- Selection of operation modes of the boiler
- Selection of modes at remote control

Operation modes:

OFF

The heat circuit is switched off (except frost protection mode)

Automatic

Boiler operates on regular Day / Week mode

CONTINUOUS - REDUCTION

Boiler switches to permanent reduction mode

CONTINUOUS - HEATING

Boiler switches to permanent heating mode

PARTY

Boiler switches to heating mode and changes automatically to AUTO at next set heating time

REDUCTION

Boiler switches to reduction mode and changes automatically to AUTO at next set heating time

Fine adjustment of room temperature:

/ : Increase / Decrease for +/- 3 °C

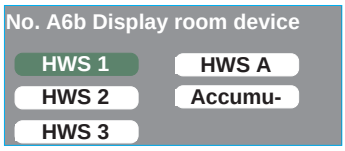
Fault lamp:

Lights up if error occurs

Display - Parameters:

Select which temperature should be shown on the remote control (FR35)

- HWS temperatures 1 - 3 and A
- Accumulator filling level



6.2 Digital remote control FR40

With the FR40, the room temperature may easily be changed and also heating or reduction settings may be adjusted. All heating temperatures and times may be adjusted with the FR40. All functions of the boiler control may be changed with the FR 40 from the remote control position.

⇨ Please see installation manual of remote control

Operation modes:

OFF

The heat circuit is switched off (except frost protection mode)

AUTOMATIC

Boiler operates on regular Day / Week mode

CONTINUOUS - REDUCTION

Boiler switches to permanent reduction mode

CONTINUOUS - HEATING

Boiler switches to permanent heating mode

PARTY

Boiler switches to heating mode and changes automatically to AUTO at next set heating time

REDUCTION

Boiler switches to reduction mode and changes automatically to AUTO at next set heating time

Fine adjustment of room temperature:

+: Increase up to 3 [°C]

-: Reduction up to 3 [°C]

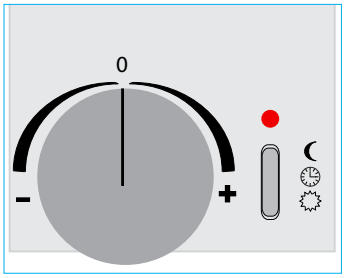
6.3 Analogue remote control FR25 (only at HKM- or HKR heat circuits)

The remote control may be installed with or without room sensor.

⇨ Please see installation manual of remote control

Only in operation mode **<Automatic>** Auto Function

Rocker switch:

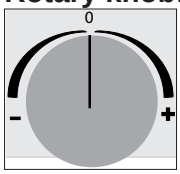


Boiler switches to permanent reduction mode

Boiler operates on regular Day / Week mode

Boiler switches to permanent heating mode

Rotary knob:



Fine adjustment of room temperature:

+: Increase up to 3 [°C]

-: Reduction up to 3 [°C]

Fault lamp:

Lights up if error occurs

Chapter VI: Commissioning

C A U T I O N

Moving parts in the area of the fuel extraction system, ash extraction system and combustion grate.

Risk of crushing!

- Make sure that no persons stay in any danger zone.
- Do not grasp in any reachable mechanical parts.
- Do not stand on the boiler system.
- Make sure that no foreign parts (tools, etc...) remain within any boiler component.

D A N G E R

Switch on through trained and authorised personnel Risks through unpredictable operating conditions!

- Switch on / First start up shall be carried out through **Hargassner GmbH or specially trained staff** !

1 Checks prior commissioning

☑ safety on-site and plumbing and electrical installations

⇨ Siehe Montageanleitung “Einrichtungen bauseits”

☑ Boiler assembly

❒ Check all necessary components

☞ to correct assembly, correct function, correct rotation of all motors, etc.

☞ to correct placement of combustion chamber lining

2 Start of commissioning

After professional installation and inspection of all necessary safety requirements the commissioning can be performed according to the enclosed commissioning check list.

A T T E N T I O N

The **Commissioning** must be executed through a technician with Hargassner commissioning certificate. The completed commissioning check list must be sent back within 30 days after commissioning, including the commissioning identification number to , **otherwise the warranty is voided** . A copy remains in the commissioning book on-site.

2.1 Customer instructions

☑ Explain "Cleaning- and maintenance intervals"

⇨ see “Cleaning intervals” on page 32.

☑ Explain "Inspections prior any fuel refill"

⇨ see “Inspections prior starting up the boiler” on page 30.

☑ Explain "How to operate and troubleshooting"

⇨ see “Rectify and clear errors” on page 35.

Chapter VII: Operation

1 Safety instructions

D A N G E R

Missing, defective or bridged safety devices and boiler parts!

Death, injuries, damages caused by not correctly operating or missing safety devices or plant parts.

- Check safety devices and boiler components carefully for proper and intended function.
- Safety devices should not be modified or bypassed.
- In case of malfunction or defect, perform immediate repair measures.
- Place, position and function of all safety devices must be known.

1.1 Measures in case of danger

1.1.1 Fire in the boiler room

❒ Switch-off main switch prior any fire-fighting operations
↳ Disconnect main power supply
☞ Switch-off the boiler and unplug the unit from the mains

1.1.2 After power loss

Do not open the boiler door or touch any parts of the boiler at/after power loss
☞ Danger of deflagration
☞ Danger of crushing through augers

After the electrical supply is switched on again, the control starts in **"Heat up"** mode and monitors the flue gas temperature.
↳ Flue gas temperature increases
☞ The boiler is in combustion mode and the control controls the heat transfer according to set parameters

1.1.3 Leak in heating water system (no water)

If insufficient water pressure occurs, there is also insufficient heat transfer from the boiler to the heat circuits, HWS and accumulator.
↳ Danger of boiler overheating
❒ Do not continue to heat up the boiler.
❒ Fix leakiness
❒ fill / refill water system
❒ Check water pressure

1.1.4 Check boiler for leakages (Smoke)

❒ Do not continue to heat up the boiler
❒ Check sealings of doors and maintenance openings and renew

1.1.5 Auger blockage

Do not touch the augers
☞ Danger of crushing at sudden release of blockages
❒ Press**<Reverse>** - Button of the blocked auger
☞ max. 2 seconds
❒ Remove blockages and clean augers with tools only.
☞ Switch-off and lock**<Main switch>**

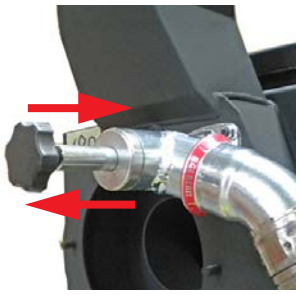
2 Start-up boiler for the first time

After finished commissioning the boiler may be started the first time. Please proceed as follows.

☞ for first fill, only use a small amount of fuel, distribute it under the spring blades
  ☞ Install a "sloping floor" with fuel

❒ switch to operation mode „AUTO“ or „HWS“
  ↳ Boiler starts automatically if hot water is needed

3 Settings recirculation (optionally)



❒ For clinker-causing agro-fuels like
Corn cobs or miscanthus, the recirculation damper is pulled out completely. Press in the damper in 5mm steps daily, check the ash every day. If clinker still occurs - pull out the damper again (for 5mm)

❒ If wood chips or wood pellets are used, the damper is pushed in completely. If clinker appears for any reason also with wood chips or wood pellets, proceed as previously described.

4 Inspections prior starting up the boiler

☑ Check water pressure in the boiler-, heat-, HWS- and accumulator circuit.
☑ Monitor touch display for news (Errors, boiler status).
☑ Rectify errors
☑ Check and lock fuel storage room

Kapitel VIII: Cleaning, Maintenance

D A N G E R

Rotating augers and moving parts !

Amputation, crushing of hands through touching moving parts or augers.

- Omit access to augers or motors at operating boiler.
- Fix ash box correctly on the boiler and lock.
- Do not perform any works on the plant, if any other person is in the danger zone.
- Remove blockages and clean augers with tools only.

C A U T I O N

Moving parts in the fuel extraction system, hollow space formation in the fuel storage room

Unpredictable operation conditions

- The spring blades of the agitator system are retracted under the cover disc if the storage room is filled completely.
  ☞ These springs may shoot up suddenly.
- Remove fuel bridges with rods or shovels only
- Wear safety shoes
- Observe fuel storage room sticker!

D A N G E R

Disconnect main power supply

Touching open or free terminals, cables and equipment components can lead to severe injury or death!

- Disconnect power supply prior any cleaning or maintenance works.
  ☞ Switch-off and lock**<Main switch>**

D A N G E R

After <Main switch off> or <OFF> - mode:

Risk of injury due to grasping into a danger zone - Re-commissioning!

Crushing, amputation.

- After actuation of the **<Main switch off>** or **<OFF>** switch, do not grasp into any danger zone.
- Prior any works on the boiler and its equipment, switch off the **<Main switch>** and protect the main switch against resetting with a professional padlock. Hand out the key for a lock to the person in charge only.
- Rectify error.
- Check at re-commissioning that no person is in any danger zone.

1 Cleaning intervals

D A N G E R

Risk of fire and explosion

Risk of burning through inflammable materials.

☞ Do not spray any inflammable sprays on hot surfaces.
(e.g: Lubricate moving parts in the combustion chamber
☞ Spray drops can cause explosive fire.

- Do not use any inflammable lubricants
- Let boiler (combustion area) cool down.

Risk of fire in the vacuum cleaner

- Let ash cool down prior vacuum-cleaning

A T T E N T I O N

Check sealings

Formation of dust and smoke due to boiler leakages

- Clean sealing surfaces with industrial alcohol and a dry and soft (scratch-free) cloth only.
- Make sure the cleansing material is evaporated before commissioning!

A T T E N T I O N

Empty ash box on regular intervals!

Dirt and breakdown through ash escape.

- Depending on maintenance interval, empty and clean the ash box.
- If the ash box is overfilled, ash may escape from the box.
- Ash box must be positioned correctly and locked on both sides.

❒ For best performance of the boiler it is necessary to clean the boiler extensively.
☞ or after an error or several operating hours
☞ at least once a year

☞ Cleaning intervals change or shorten depending on level of fuel quality

Depending on country regulation and nominal heating output of the boiler, a professional maintenance through the manufacturer of the boiler must be carried out in regular intervals. (Every 1-3 year(s)) The maintenance has to be carried out through Hargassner trained and authorised personnel.

☞ Hargassner Maintenance contract

1.1 Maintenance contract

If you sign a maintenance contract with Hargassner, the cleaning and maintenance takes place during the annually carried out service through Hargassner authorised personnel.

1.2 Weekly/monthly cleaning and maintenance

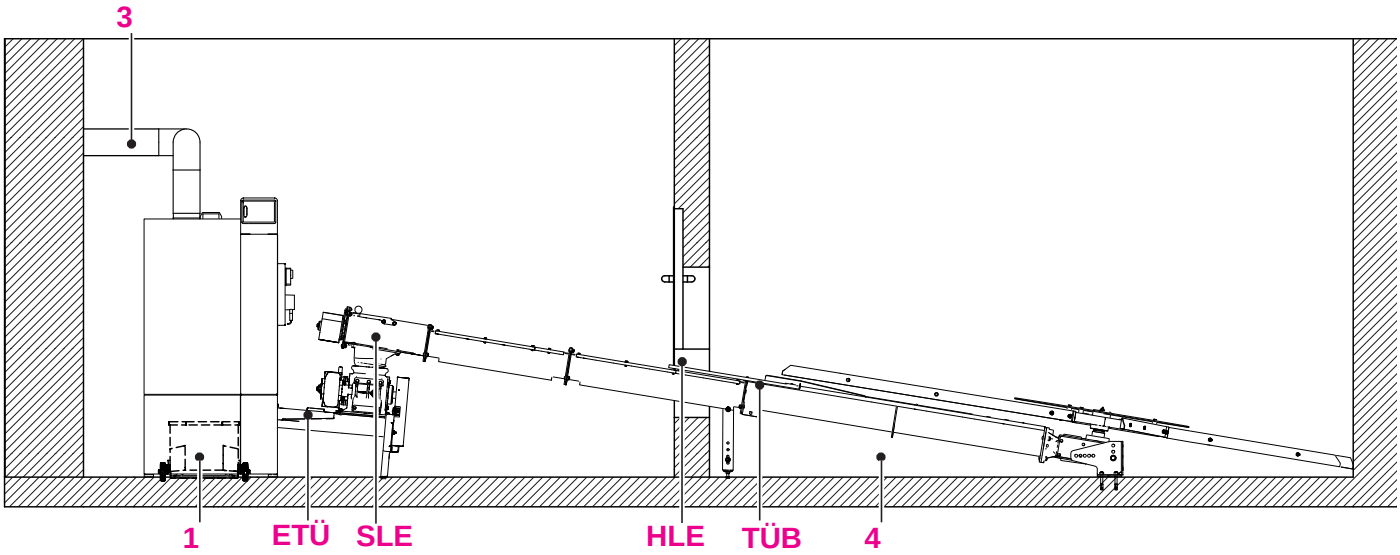
1.2.1 Weekly intervals

- ❒ once a week, check the boiler and fuel storage visually.
  - ↳ rectify identified defects immediately
- ❒ Empty ash box **(1)** if required
- ☞ At regular operation small cracking may occur in the refractory.
  These cracks are stress crackings, and an expansion joint is built.
  This process (stress crackings) is normal and does not cause any problems or affect the function of the boiler.
  As a result, there is no right to claim under guarantee.

1.2.2 Monthly intervals

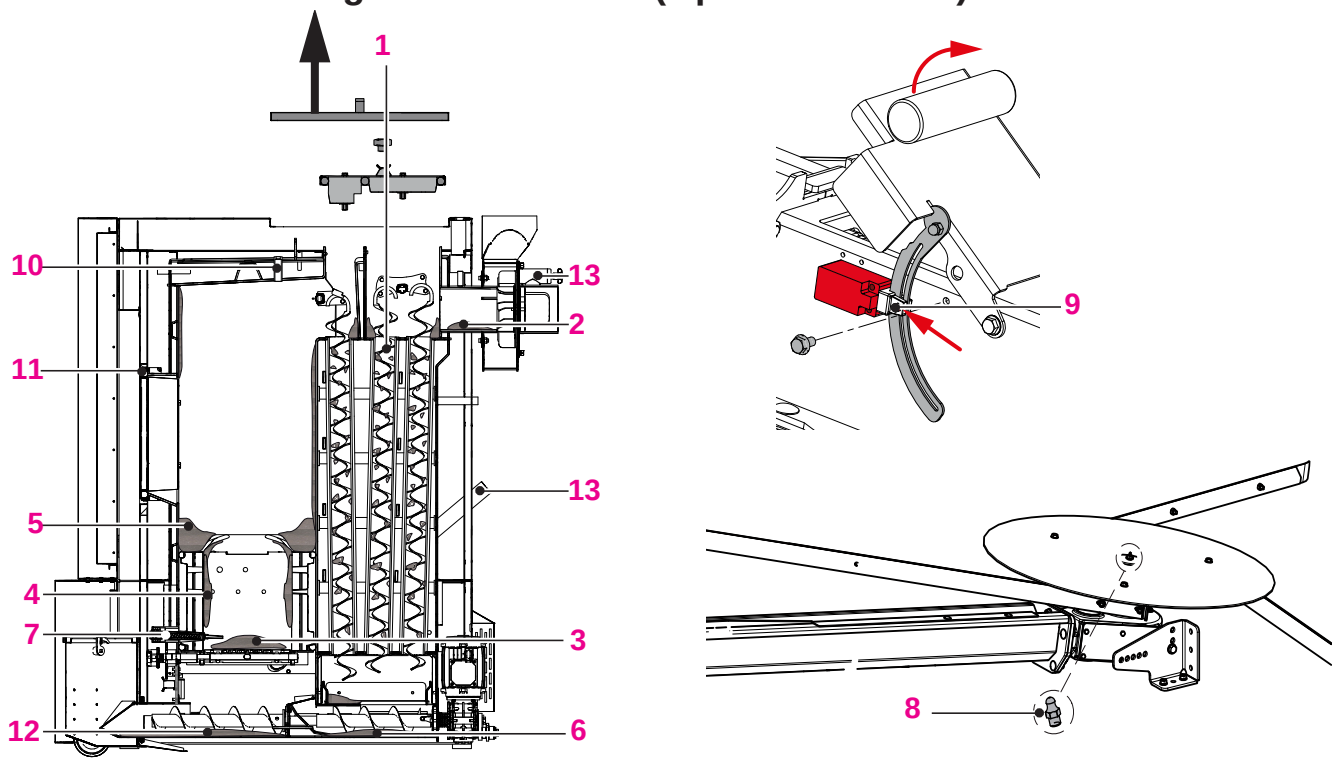
- ⇨ See maintenance book "Monthly checks"

- ❒ Check all safety devices **(2)**.
  (acc.to Austrian law and fire authorities TRVB H118)
  - ☞ this may be waived if an annual inspection through the manufacturer is made (Siehe “Maintenance contract”)
- ❒ Check of the flue pipe **(3)**
- ❒ appropriate condition of the boiler room
- ❒ Readiness of portable fire extinguishers
- ❒ appropriate storage of ash
- ❒ Remove debris **(4)** under the agitator
  - ☞ after each emptying of the storage room



Pos.	Tasks of maintenance	Intensity m = monthly
1	☑ Clean and empty ash box (*optionally ash suction)*	as required
2	☑ Safety devices (Main switch, RSE, ETÜ, HLE / SLE, TÜB)	1x m *(waives at maintenance contract)*
3	☑ Check and clean flue pipe *(more often at excessive contamination)*	1x m
4	☑ Remove debris and larger wood pieces	after each storage room emptying

1.3 Annual cleaning* / after an error (Operation hours)



Pos.	Tasks of maintenance	Pos.	Tasks of maintenance
1	❒ Pull out turbulators, tap off and clean the turbulator space	8	❒ Grease the agitator grease nipple
2	❒ Vacuum exhaust fan and flue pipe	9	❒ Grease rivet at position switch
3	❒ Clean rust holes	10	❒ Disconnect, remove and clean the lambda sensor
4	❒ Clean combustion chamber with ash cleaner	11	❒ Check sealings
5	❒ Remove and clean flame concentration plate	12	❒ Remove ash under the grate (especially at ash grate)
6	❒ Remove maintenance opening and clean fly ash space	13	❒ Vacuum recirculation
7	❒ Clean ignition	14	❒ Check safety devices (Main switch, ETÜ, HLE, SLE, TÜB, warning devices)

***** The cleaning has to be performed depending on operation hours and fuel-quality.

1.3.1 Cleaning of Lambda sensor

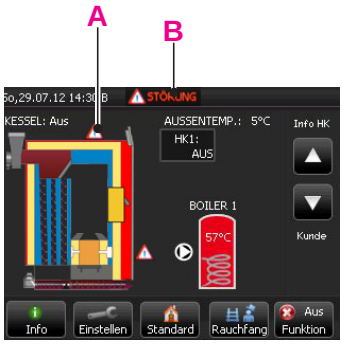
❒ Disconnect sensor and unscrew
❒ Place sensor head down
❒ and remove dirt with a soft cloth
☞ Debris falls down

	N O T E
☞	• Do NOT "tap" the sensor! • Do not blow with compressed air • Do not touch the sensor with sharp items and do not use any chemicals for cleaning (Brake cleaning fluid, etc...)

Chapter IX: Troubleshooting

	ATTENTION
	Changes compared to regular operation **Injuries, Damages of the boiler** • due to higher heating output, higher temperatures or vibrations of motors, unusual noises or smells, release of safety devices, etc. • Immediately call the installer / Hargassner • Perform mandatory maintenance and inspection tasks regularly.

1 Errors

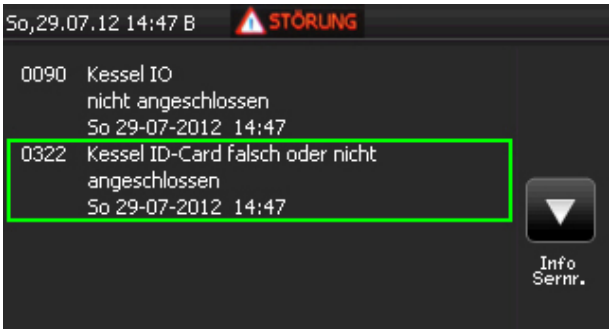


Error messages to be read on the touch display.

☞ on the Standard-Display a warning triangle appears at the position where the error occurs **(A)**

The following instructions to rectify errors **are aimed for the direct user of this boiler.**

If it is not possible to rectify the error through the operator, the installer / Hargassner must be informed.



1.1 Rectify and clear errors

After rectification of the error:

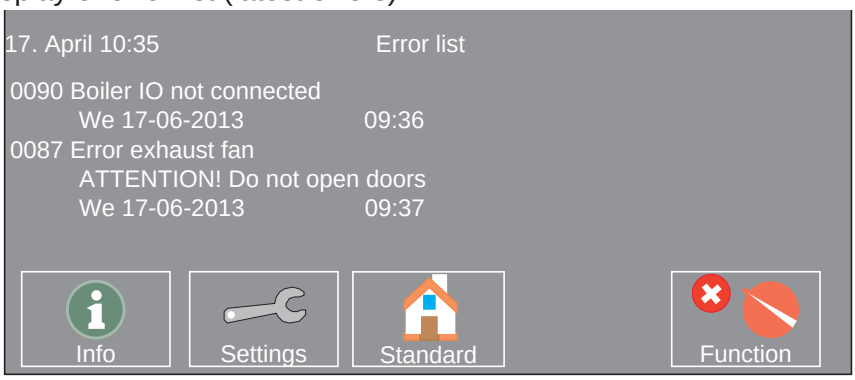
❒ Press 

1.2 Retrieve error list

If error messages occur:

❒ Press **<ERROR> (B)** button

↳ Display of error list (latest errors)



2 List of errors

No.	Origin	Reason / Problem	Solution (when done solving - push the Enter button)
No display	Green lights H7 board do not light	Fuse F13 defective, or L1 missing, or connection from control board to the operating unit defective or missing	Replace fuse F13 (see board sticker); Check power supply L1, or cable from control board to operating unit;
1	Attention Over temperature - STB triggered“	Over temperature on the boiler or STB-supply defective or overheated at manual heating, air in the heating system or pump(s) defective	Cool down boiler, remove protective cap and press the button on the STB (boiler front); Let STB - supply be checked by an electrician; check pumps, call service department and change the control board;
2	Over current stoker auger	Gagger in auger channel or rotary valve, knife of rotary valve defective or blockage in the auger	Remove debris, use parameter No. 4 in "Manual" mode and drive auger forward or backward, (Check motor current on display); replace eventually worn out auger parts; check electronic motor protection; call service department
3	Over current fuel extraction auger	Gagger in the extraction channel or auger blockage	Remove debris, use parameter No. 3 in "Manual" mode (No. 3a for RA-2) and drive auger forward or backward, (Check motor current on display); replace eventually worn out auger parts; check electronic motor protection; call service department
5	Over current connection auger	Gagger in the extraction channel or auger blockage	Remove debris, use parameter No. 5 in "Manual" mode and drive auger forward or backward, (Check motor current on display); replace eventually worn out auger parts; check electronic motor protection; call service department
6	Thermal protection stoker auger	Overload of motor through debris or electronic motor protection set incorrectly	Remove debris, use parameter No. 4 in "Manual" mode and drive auger forward or backward, (Check motor current on display); replace eventually worn out auger parts; check electronic motor protection; check rotary valve for stiffness; call electrician or service department and change control board;
7	Thermal protection extraction auger	Overload of motor through debris or electronic motor protection set incorrectly	Remove debris, use parameter No. 3 in "Manual" mode and drive auger forward or backward, (Check motor current on display); replace eventually worn out auger parts; check electronic motor protection; call electrician or service department and change control board;
8	Thermal protection ash auger	Overload of motor through debris or electronic motor protection set incorrectly	Remove debris, use parameter No. 2 in "Manual" mode and drive auger forward or backward, (Check motor current on display); replace eventually worn out auger parts; check electronic motor protection; this error may also be a result of a stiff heat exchanger cleaning system or a sluggish fly ash extraction; call electrician or service department and change control board;
9	Thermal protection connection auger	Overload of motor through debris or electronic motor protection set incorrectly	Remove debris, use parameter No. 5 in "Manual" mode and drive auger forward or backward, (Check motor current on display); replace eventually worn out auger parts; check electronic motor protection; call electrician or service department and change control board;
10	Flue gas sensor connected incorrectly	Sensor connected incorrectly (only at commissioning) or control board defective	Have connection polarity checked by an electrician, otherwise replace the sensor or the left board;
11	Interruption flue gas sensor	Sensor not connected or connection interrupted	Connect sensor; check cable and contacts; replace sensor or board;
12	Boiler sensor short circuit	Short circuit in the sensor or in supply line	Let cables or sensor check by an electrician.
13	Interruption boiler sensor	Sensor not connected or connection interrupted	Connect sensor; check cable and contacts; replace the defective sensor with another sensor, if there's a different error, replace the sensor. If the same error is shown, replace the control board.

No.	Origin	Reason / Problem	Solution (when done solving - push the Enter button)
14	Short circuit HWS 1 sensor	Short circuit in the sensor or in supply line	Connect sensor; check terminal points and plugs and check parametrisation in the installer level; let cable and contacts check by an electrician; Hint: Exchange the alleged sensor plug with another plug, if another error occurs the sensor is defective and must be changed; if the same error occurs the extension module HKM0 has to be changed; call service department;
15	Interruption HWS 1 sensor	Sensor not connected or connection interrupted	
16	Outside sensor short circuit	Short circuit in the sensor or in supply line	
17	Interruption outside temperature sensor	Sensor not connected or connection interrupted	
18	Short circuit flow sensor HC1	Short circuit in the sensor or in supply line	
19	Interruption flow sensor HC1	Sensor not connected or connection interrupted	
20	Short circuit flow sensor HC2	Short circuit in the sensor or in supply line	
21	Interruption flow sensor HC2	Sensor not connected or connection interrupted	
22	Short circuit remote control sensor HC1	Short circuit in the sensor or in supply line of FR25	for short circuit: Check clamp points; the resistance value of the remote control must be in position "Auto" between 3340 Ohm and 3626 Ohm (Room temperature between 5°C and 25°C); for interruption: Connect the remote control, check connections and clamping points as well as the corresponding parameters No. A6 (or A16, A26, A36, A46, A56, A66) in the installer level settings; otherwise replace the remote control or the extension module HKM0 and contact service deparment;
23	Interruption remote control sensor HC1	FR25 sensor not connected or connection interrupted	
24	Short circuit remote control sensor HC2	Short circuit in the sensor or in supply line of FR25	
25	Interruption remote control sensor HC2	FR25 sensor not connected or connection interrupted	
26	Ignition time over-run	the flue gas temp. did not rise for the set value (P41) within the ignition attempt time (P1), or the O2 did not drop within the time (P1) and the duration (P43) under the value (P42); no or too wet material; too much ash/ clinker in the combustion chamber; flue gas sensor not in the flue pipe; ignition defective	Check installation of the flue gas sensor and clamp points; check fuel; if the negative pressure value is not reached, check all sealings at all maintenance openings, also check correct function of the exhaust fan; Check ignition in manual mode (No. 11); clean ignition tube; Check ash extraction in manual mode (No.2); check fuel level sensor (at cold boiler condition, manually lift for 90°C and compare with "Info Boiler"; let cables, clamps and plug check by an electrician;
27	Flue gas temperature under-run	During combustion the flue gas temperature drops under the set value (K14) for the set duration of (K15)	Check installation of flue gas sensor; too wet fuel; too much ash or clinker in the combustion chamber; check proper function of the agitator, stoker auger and de-ash in manual mode (No.3, No.4, No.5), clean combustion chamber;
28	Allowed O2-stop time over-run	Contact error of the lambda sensor or lambda sensor defective	Lambda sensor very intensely dirtied (clean), then perform a function check in manual mode No. 13; let check terminal points and plugs by an electrician; replace the lambda sensor; the boiler system can run without lambda sensor with reduced heating output until replacement; disconnect lambda sensor and confirm;
30	Low battery. Please exchange!	Batteries powering date/time memory are close to being empty	Exchange battery of the control unit
34	Accumulator sensor top - short circuit	Short circuit in the sensor or in supply line	see No. 0014 to No. 0021; Position and parametrisation of sensors on the boiler or at HKM 0-2 possible;
35	Interruption accumulator sensor top position	Interruption in the sensor or in supply line	
36	Accumulator sensor bottom - short circuit	Short circuit in the sensor or in supply line	
37	Interruption accumulator sensor bottom position	Interruption in the sensor or in supply line	
38	Accumulator sensor mid - short circuit	Short circuit in the sensor or in supply line	
39	Interruption accumulator sensor mid position	Interruption in the sensor or in supply line	

No.	Origin	Reason / Problem	Solution (when done solving - push the Enter button)
45	Back end protection temperature not reached	Back end protection pump set incorrectly or mixer defective. The first two times a warning occurs, the third time the boiler switches off. Error must be rectified	Check correct return sensor position; set pump correctly; Exchange pump or use bigger pump; check return mixer function (when available); call installer; ATTENTION: affects boiler life time!
46	Return sensor - short circuit	Short circuit in the sensor or in supply line	see No. 0014 to No. 0021;
47	Interruption return sensor	Interruption sensor or in cable or sensor not available	
52	Short circuit external sensor	Short circuit in the sensor or in supply line	
53	Interruption external sensor	Interruption in the sensor or in supply line	
62	GSM module not connected	No connection between GSM-module and control	Check data cable; LED on the GSM-module; On-/Off switch on GSM-module (should not be set to OFF); replace GSM-module;
65	GSM module transmission error	GSM-module was not able to send SMS due to insufficient credit on the SIM-card or no connection to the net provider.	Check credit amount on SIM-card and charge if necessary or activate SIM-card; Check GSM-signal with mobile phone from the same provider and eventually re-position or extend antenna;
67	Parameter error. Load factory settings.	Internal error in the parameter memory	Check parameters and make adjustments where necessary; change the boiler control unit if the error persist despite the changes;
90	Boiler IO not connected	Bus-cable-connection or board defective	Change bus-cable-connections, control unit, boiler control board; call service department;
91	Max. control board temperature exceeded.	too high temperature at control board location, control board is dirty or does not cool down	Temporary, slightly open control box covers, to cool down the board; blow the dust from the board, call service department;
100	Extension module HKM 1 not connected	no connection (CAN1 - blue bus) to extension module 1	Set the extension module's address switch to "1"; check HC's connection and bus wiring; replace extension module 1;
103	Short circuit HWS 2 sensor	Short circuit in the sensor or in supply line	see No.0014 to No.0021 on extension module HKM 1
104	Interruption HWS 2 sensor	Interruption in the sensor or in supply line	
107	Short circuit flow sensor HC3	Short circuit in the sensor or in supply line	
108	Interruption flow sensor HC3	Interruption in the sensor or in supply line	
109	Short circuit flow sensor HC4	Short circuit in the sensor or in supply line	
110	Interruption flow sensor HC4	Interruption in the sensor or in supply line	
111	Short circuit remote control sensor HC3	Short circuit in the remote control FR25 or in supply line	see No.0022 - No.0025 on extension module HKM 1
112	Interruption remote control sensor HC3	Short circuit in the remote control FR25 or in supply line	
113	Short circuit remote control sensor HC4	Short circuit in the remote control FR25 or in supply line	
114	Interruption remote control sensor HC4	Short circuit in the remote control FR25 or in supply line	
120	Extension module HKM 2 not connected	no connection (CAN1 - blue bus) to extension module 2	Set the extension module's address switch to "2"; check HKM's connection and bus wiring; replace extension module 2;

No.	Origin	Reason / Problem	Solution (when done solving - push the Enter button)
125	Short circuit HWS 3 sensor	Short circuit in sensor or in supply line	see No.0014 to No.0021 on extension module HKM 2
126	Interruption HWS 3 sensor	Interruption in sensor or in supply line	
127	Short circuit flow sensor HC5	Short circuit in sensor or in supply line	
128	Interruption flow sensor HC5	Interruption in sensor or in supply line	
129	Short circuit flow sensor HC6	Short circuit in sensor or in supply line	
130	Interruption flow sensor HC6	Interruption in sensor or in supply line	
131	Short circuit remote control sensor HC5	Short circuit in the remote control FR25 or in supply line	see No.0022 - No.0025 on extension module HKM 2
132	Interruption remote control sensor HC5	Short circuit in the remote control FR25 or in supply line	
133	Short circuit remote control sensor HC6	Short circuit in the remote control FR25 or in supply line	
134	Interruption remote control sensor HC6	Short circuit in the remote control FR25 or in supply line	
135	Heat circuit control board A (HCA) not connected	no connection (CAN1 - blue bus) to heat circuit control board HCA *(installed on boiler or at HKM 0-2)*	Set the extension module's address switch to "A"; check HC's board connection and bus wiring; replace extension module A;
136	Short circuit flow sensor HCA	Short circuit in sensor or in supply line	see No.0014 to No.0021 Heat circuit board A
137	Interruption flow sensor HCA	Interruption in sensor or in supply line	
138	Short circuit HWS A sensor	Short circuit in the sensor or in supply line	
139	Interruption HWS A sensor	Interruption in the sensor or in supply line	
140	Extension module HKM 0 not connected	no connection (CAN1 - blue bus) to extension module 0	Set the extension module's address switch to "0"; check HKM's connection and bus wiring; replace extension module 0;
150	No connection to heat circuit controller HKR 1	Bus-Communication CAN2 (red Bus) to HKR interrupted, Bus cable defective; HKR defective; power supply missing at HKR; boiler control board or control defective; internal BUS-cable defective; terminating resistors set incorrectly	Check HKR display (fuses); LED flashes at BUS-Communication; check terminating resistors; Check voltage / polarity at CAN-BUS-plug (ca. 2 V between L and Minus (-), or. H and Minus (-)) -> BUS-connection short circuit / interruption, internal BUS-cable, check boiler control board (Voltage 2V), replace control or HKR; Check HKR-address (only at commissioning); see user manual HKR;
151	No connection to heat circuit controller HKR 2		
152	No connection to heat circuit controller HKR 3		
153	No connection to heat circuit controller HKR 4		
154	No connection to heat circuit controller HKR 5		
155	No connection to heat circuit controller HKR 6		
156	No connection to heat circuit controller HKR 7		
157	No connection to heat circuit controller HKR 8		
210 - 216	Remote FR35 not connected (HKA - HC6)	no connection to digital remote control FR35	Check parameter A6 (or A16, A26, A36, A46, A56, A66); check bus wiring; replace digital remote control; see user manual FR35;
220 - 226	Remote FR40 not connected (HKA - HC6)	no connection to digital remote control FR40	Check parameter A6 (or A16, A26, A36, A46, A56, A66); check bus wiring; replace digital remote control; see user manual FR40;
230	Communication error to leading boiler *(only at cascade control)*	no connection to the leading boiler (Boiler A)	Check parameter F1: must be set to "Cascade available" at each other boiler; Check parameter F2: each boiler has to have a unique IP-address (no duplicated addresses); Check BUS-wiring; check internal BUS cable between control unit and control board;
231	Slave boiler failed *(only at cascade control)*	no connection to one of the slave boilers (Boiler B-F)	Check parameter F6: correct number of slave boilers set; see No. 0230
232	Error slave boiler *(only at cascade control)*	An error has occurred on the following slave boiler	This message will only be shown on the leading boiler (Boiler A). The leading boiler and the other slave boilers continue as normal. Confirm message on the leading boiler and rectify the error on the slave boiler.

No.	Origin	Reason / Problem	Solution (when done solving - push the Enter button)
240 - 246	Connected remote control does not match with parametrisation (HKA - HC6)	Remote control parametrisation does not match with parametrisation heat circuit remote control	Check parametrisation of the remote control and the heat circuits; see user manual of the according remote control;
305	Boiler-ID-card wrong	Boiler-ID wrong	Change Boiler-ID, Boiler trial for 30 days with incorrect Boiler-ID
306	Boiler-ID-card missing	Boiler-ID or connection defective	Change Boiler-ID, Boiler trial for 30 days with incorrect Boiler-ID
309	Ash box full! (Warning)	Ash box full or stiffness of the ash auger	Empty ash box; Heating to be continued; Control tries to drive the ash auger every 5 minutes; if this does not work => Error 314
310	Did not reach initiator cleaning rod and de-ash final position	Cleaning rod and ash extraction do not return to original position after cleaning	Check cleaning rod and fly ash damper that they are easy running (Manual mode No.2, the initiator function is shown), check rubber pads and rod; Check correct function of initiator (behind the cover, next to the control board); (Heating operation to be temporary continued)
311	Did not reach initiator cleaning rod and deash stroke level		
312	Error exhaust fan	The required exhaust fan speed has not been reached	Test exhaust fan in manual mode (No.1); check if green and black plug are connected correctly on the fan; Clean casing and fan impeller, the motor must be smooth running; let check plugs and clamp ports through an electrician; replace the motor;
313	Incorrect position of ash box	The ash box or the cover is not placed correctly and close enough to the safety switch.	Fix ash box tight on boiler; ash box cover must be closed; let safety switch, cables, clamp points and plugs check by an electrician; (heating operation to be continued, de-ash and ash suction is blocked)
314	Ash box full!	Ash box full or stiffness of the ash auger	Empty ash box, check ash auger for smooth operation (Manual mode No.2); disassemble ash ejector flange, pull blockage rod (behind the cover, below the stoker) and pull out ash auger in front; overfill in the ash room below the grates or fly ash overfill or debris in the ash auger; remove blockages; call service department:
315	Position switch RA-lid partly opened (Warning)	Lid of the extraction auger not completely closed, cable defective or material jam in the RA	Heating operation to be continued; Control tries 4 times to empty the auger; if not possible Error 366
316	Position switch RA-lid open	Lid of the extraction auger open or switch not connected	Stop screw has been removed and lid is opened; Safety switch connected? (Switch position displayed on the Info window); safety switch, cables, clamp points and plugs to be checked by an electrician;
317	Position switch of connection auger RA-lid partly opened (Warning)	Lid of the connection extraction auger not completely closed, cable defective or material jam in the connection auger	Heating operation to be continued; Control tries 4 times to empty the auger; if not possible Error 368
318	Position switch Connection - RA-lid open	Lid of the connection extraction auger open or switch not connected	Stop screw has been removed and lid is opened; Safety switch connected? (Switch position displayed on the Info window); safety switch, cables, clamp points and plugs to be checked by an electrician;
319	Position switch RA-lid 1 open	Lid of the extraction auger 1 open or switch not connected	
320	Position switch RA-lid 2 open	Lid of the extraction auger 2 open or switch not connected	
321	Stoker grate - position not reached	The stoker grate can not reach the set position (0° position)	Empty stoker grate in manual position (No.6); remove debris from the grate ash room; check grate motor; check position sensor and magnetic transmitter; (Heating operation to be temporary continued at defective grate, unplug the grate motor, set grate manually into horizontal position and confirm error)
322	Ash grate - position not reached	The ash grate can not reach the set position (0° position)	Empty ash grate in manual position (No.7); remove debris from the grate ash room; check grate motor; check position sensor and magnetic transmitter; (Heating operation to be temporary continued at defective grate, unplug grate motor, set grate manually into horizontal position and confirm error)
323	Stoker-grate sensor invalid signal	Position sensor stoker grate is not connected or defective	Cables, clamp points and plugs to be checked by an electrician, replace sensor;

No.	Origin	Reason / Problem	Solution (when done solving - push the Enter button)
324	Ash-grate sensor invalid signal	Position sensor ash grate is not connected or defective	Cables, clamp points and plugs to be checked by an electrician, replace sensor;
325	Primary air flap defective	The primary air flap can not reach the set position or does not move	Test primary air flap in manual mode (No.12); Through pressing the release, the primary air flap can be moved manually and may be checked to smooth operation. (behind the covers, below the stoker); (Heating operation may be temporary continued at defective primary flap, therefore set manually to 30%); cables, clamp points and plugs to be checked by an electrician; replace flap motor
326	Primary air flap not connected	Primary air flap is not connected or defective	(Heating operation may be temporary continued at defective primary flap, therefore set manually to 30%); cables, clamp points and plugs to be checked by an electrician; replace flap motor
327	Fuel level sensor invalid signal	Position sensor ash grate is not connected or defective	(Heating operation may be temporary continued at defective sensor, therefore disconnect sensor and enter); cables, clamp points and plugs to be checked by an electrician; replace sensor;
328	Emergency stop has been operated	Emergency stop operated or plug with bridge removed	Unlock emergency stop or re-insert plug with bridge Clamp (64 / 65)
329	Negative pressure sensor defective	Negative pressure box is not connected or defective	(Heating operation may be temporary continued at defective sensor (with reduced heating output), therefore disconnect sensor and enter); cables, clamp points and plugs to be checked by an electrician; replace sensor;
330	Safety bridge relays defective	Board defective	Replace board and call service department.
331	Safety switch storage room open	Emergency stop operated or plug with bridge removed	Unlock emergency stop or re-insert plug with bridge
335	Temperature in fuel storage room 2 exceeded	Temperature in fuel storage room 2 exceeded	If the warning device in the fuel storage room (TÜB) triggers, immediately initiate further measures (call fire department); if the error is due to a defective control board, the heating operation may be temporary continued with without the TÜB sensor; (Set parameter D21 to "not available" => DANGER: no warning at exceeded fuel storage room temperature!)
336	Temperature in fuel storage room exceeded	Temperature in fuel storage room exceeded	
337	Temperature in the stoker auger exceeded	The temperature on the stoker auger is high, because the flue connection is minimised or a burn back occured	Check boiler, flue pipe and exhaust fan for dust or ash and clean; if burn back, check the tightness of the rotary valve; remove the tube from the negative pressure box and blow in direction of the boiler.
338	Interruption TÜB 2 sensor	Interruption or short circuit in the sensor or in supply line	see No.0014 to No.0021 the heating operation may be temporary continued without TÜB; (Set parameter D21 to "not available" => DANGER: no warning at exceeded fuel storage room temperature!)
339	Short circuit TÜB 2 sensor		
340	Interruption TÜB sensor		
341	Short circuit TÜB sensor		
342	Interruption ETÜ sensor		
343	Short circuit ETÜ sensor		
344	Negative pressure too low	The speed-controlled exhaust fan does not reach the desired negative pressure in the boiler	all boiler openings must be closed (Maintenance openings, combustion door); check neg. pressure box, exhaust fan and flue pipe; blow through neg. pressure tube in direction of the boiler; Check clamp points, cables and plugs;
349	Lambda sensor not connected or defective	Contact error of the lambda sensor or lambda sensor defective	Lambda sensor very intensely dirtied (clean), then perform a function check in manual mode No. 13; let check terminal points and plugs by an electrician; replace the lambda sensor; the boiler system can run without lambda sensor with reduced heating output until replacement; disconnect lambda sensor and confirm;

No.	Origin	Reason / Problem	Solution (when done solving - push the Enter button)
350	!Ash suction de-activated! Ash bin full or sensor disconnected.	The sensor in the ash bin reports "Full" or not connected	Empty ash box; clean sensor; if no sensor is available set parameter D6a to "without sensor"; cables, clamp points and plugs to be checked by an electrician;
351	Ash suction emergency shut down	for manual shut down during ash suction	Message disappear after ash suction process has finished
352	Delivery rate too low! Check fuel	The fuel delivery rate is too low	Fuel storage low, refill; Check spring blades on agitator; bridging of fuel; wrong fuel set (parameter 19)
353	Fuel storage empty or firebed sensor pinned	Fuel storage is empty or the firebed sensor does not move any more	Fuel storage is empty, refill: Check agitator system and stoker auger in manual mode (No.3 and No.4); check fuel level sensor's ease of movement; remove debris; check correct installation of sensor, magnet and connection shaft of tongue;
354	Calibrate firebed sensor	Wrong boiler type (L/R) set or sensor defective;	Check parameter Z1a; Calibrate Firebed sensor (GBF) new; replace sensor;
360	Over current agitator auger 1	Bulky part in the auger channel	see No. 003
361	Over current agitator auger 2		
362	Thermal protection agitator auger 1	Overload of motor through debris or electronic motor protection set incorrectly	see No. 007
363	Thermal protection agitator auger 2		
364	Position switch RA1 - cover lid open (warning)	Lid of the extraction auger 1 not completely closed, cable defective or material jam in the RA-1	Heating operation to be continued; Control tries 4 times to empty the auger; if not possible Error 367
365	Position switch RA2 - cover lid open (warning)	Lid of the extraction auger 2 not completely closed, cable defective or material jam in the RA-2	Heating operation to be continued; Control tries 4 times to empty the auger; if not possible Error 368
366	Material jam RA-lid	Lid of the extraction auger not completely closed, cable defective or material jam in the RA	Fuel jam, remove debris; lid of extraction auger must be completely closed; safety switch, cables, clamp points and plug to be checked by an electrician;
367	Material jam RA 1 - lid	Lid of the extraction auger 1 not completely closed, cable defective or material jam in the RA-1	
368	Material jam RA 2 - lid	Lid of the extraction auger 2 not completely closed, cable defective or material jam in the RA-2	
410	no fuel in RA-1 Currently extraction from RA-2	Fuel empty at RA-1	Refill fuel at RA-1; Control switches to fuel supply through RA-2;
411	no fuel in RA-2 Currently extraction from RA-1	Fuel empty at RA-2	Refill fuel at RA-2; Control switches to fuel supply through RA-1;
412	no fuel	Fuel empty at RA1 & RA2;	Refill fuel;
413	no fuel in RA-1 Extraction changed to RA-2	Fuel empty at RA-1	Refill fuel at RA-1; Control switches to fuel supply through RA-2;
414	no fuel in RA-2 Extraction changed to RA-1	Fuel empty at RA-2	Refill fuel at RA-2; Control switches to fuel supply through RA-1;
415	no fuel in RA-1	Fuel empty at RA-1;	Refill fuel at RA-1;
416	no fuel in RA-2	Fuel empty at RA-2;	Refill fuel at RA-2;
902	Fault memory has been initialised	no problem, only for protocol	no further actions; if this message occurs frequently please call the electrician (many power blackouts, poor clamp points in the power supply; check connections between control and control boards; check all cables as well)
903	Restart (Power ON)		

No.	Origin	Reason / Problem	Solution (when done solving - push the Enter button)
5210	Hardware test stoker auger failed	Stoker auger Neutral line not connected	Connect neutral line to motor star point or at the control board (implicitly use 5-pole cable!); change the plug of the as defective shown motor (on the control board) with another motor plug, if another error occurs, replace the motor or the supply, if the same error occurs - call service department (temporary emergency operation possible, see "no hardware test" at the end of troubleshooting)
5220	Hardware test agitator failed	Room agitator RA-1 Neutral line not connected	
5230	Hardware test ash auger failed	Ash auger Neutral line not connected	
5240	Hardware test connection auger failed	Connection auger Neutral line not connected	
5250	Hardware test agitator RA-2 failed	Room agitator RA-2 Neutral line not connected	
5310	Motor stoker auger not connected or fuse F4,F5,F6 defective	Motor cable supply or fuse F4,F5 or F6 defective	check fuses and replace if needed (see stickers) or check motor cable; Exchange the alleged motor plug with another plug, if another error occurs the motor the supply is defective and must be changed; if the same error occurs the control board has to be changed; call service department;
5320	Motor agitator not connected or fuse F1,F2,F3 defective	Motor cable supply or fuse F1,F2 or F3 defective	
5330	Motor connection auger not connected or fuse F7,F8,F9 defective	Motor cable supply or fuse F7,F8 or F9 defective	
5340	Motor ash auger not connected or fuse F10, F11 or F12 defective.	Motor cable supply or fuse F10,F11 or F12 defective	
5350	Motor agitator RA-2 not connected or fuse F7,F8,F9 defective	Motor cable supply or fuse F7,F8 or F9 defective	
5410	Exhaust fan not connected (only at pulse package control)	Cables, plugs or exhaust fan defective	Connect exhaust fan correctly (113/PE/N); Check plug for proper fit; call service department (temporary emergency operation possible, see "no hardware test" at the end of troubleshooting);
5420	Ignition heater not connected	Cables, plugs or ignition defective	Connect ignition correctly (PE/N/118); Check plug for proper fit; call service department;
5430	Stoker grate motor not connected	Cables, plugs or motor defective	Connect stoker grate motor correctly (114/PE/N/115); Check plug for proper fit; call service department (temporary emergency operation possible, see "no hardware test" at the end of troubleshooting);
5440	Ash grate motor not connected	Cables, plugs or motor defective	Connect ash grate motor correctly (116/PE/N/117); Check plug for proper fit; call service department (temporary emergency operation possible, see "no hardware test" at the end of troubleshooting);
5630	Fuse F14 defective	Fuse defective	check fuses and replace if needed (see stickers)
5631	Fuse F15 defective		
5632	Fuse F16 defective		
6100	Supply phase sequence incorrectly	phases L1/L2/L3 are interchanged	Call electrician and connect phase sequence correctly; then check correct rotation of stoker, extraction and ash auger(s) in manual mode!
6200	Supply phase is missing	Low voltage or blackout L2/L3 Fuse in meter box defective.	Supply and fuses to be checked by professional electrician; call service department, change control board.
6301	STB triggered or not connected	After restart of the control, hardware test was not performed; sensor or switch not connected;	Restart required; see No.001
6313	Incorrect position of ash box		Restart required; see No.313
6316	RA-lid open		Restart required; see No.316
6318	Connection auger - lid open		Restart required; see No.318
6320	RA2-lid open		Restart required; see No.320
6328	Emergency stop has been operated		Restart required; see No.328
6331	Safety switch storage room open		Restart required; see No.331
9000	Firmware IO-board	After software update the control identified an obsolete firmware of IO-board	Update of firmware through service department;

☞ Errors No. 5210-5250 and No. 6300-6331 are only possible after restart of the control or operating the main switch

2.1 Temporary emergency operation (Restart without HW-test)

If the error is clearly a result of a defective control board, and the connected component works correctly; the control may be run in **temporary emergency operation** (until the service department arrives) without Hardware-Test.

❒ switch to operation mode „MANUAL“ on the display
❒ navigate to the according manual parameter
❒ confirm <without HW-test>

☞ Boiler operates with max. 60% heating output

Chapter X: Parameters

1 Parameters Manual operation level

D A N G E R

Inactive safety functions at mode „Manual“!

- <MANUAL> functions shall only be executed through trained personnel.
- Boiler must be in **„OFF“** mode.
- Ensure that there are no persons in the danger zone.

This operation mode is only to:
- Check several electrical functions
- check equipment after errors manually!

Scrolling in the menu through

To activate the function hold button!
☞ Permanently active: Double click on button **<ON>**
☞ only at activated service level
To exit the check: Press **<OFF>**

To navigate menus
↳ only the latest chosen function is active
↳ Previous function will be inactive

No. 1 Manual 0 U/min
Neg. pressure 93 Pa
Exhaust fan
ON

❒ Functional check of exhaust fan
☑ Speed reached: ca. 3,500 rpm

No. 2 Manual 0.0 A, Initiator ON
Forward 10 rounds + Grate | Backward 10 rounds

❒ Function and rotation check of ash extraction motor
☞ 10 rounds with (without) grate or manual forward or backward movement
☞ Press backward button only **BRIEFLY**
☞ Motor current range - see service level (Q11, Q12)

No. 3 Manual 0.0 A
Agitator-1
Forward | Backward

❒ Function and rotation check of storage room extraction motor (RA1)
☞ manual Forward and Backward of the motor to clear any blockages
☞ Press backward button only **BRIEFLY**
☞ Motor current range - see service level (R40, R41)
☞ for double - agitator, the additional parameter **No. 3a** is shown

No. 4 Manual 0.0 A
Stoker auger
Forward | Backward

❒ Function and rotation check of ash stoker auger motor
☞ manual Forward and Backward, to fill the stoker auger
☞ Press backward button only **BRIEFLY**
☞ Motor current range - see service level (R10, R11)

No. 5 Manual 0 mA
Connection auger
Forward | Backward

❒ Function and rotation check of connection auger motor **(OPTIONALLY)**
☞ manual Forward and Backward of the motor to clear any blockages
☞ Press backward button only **BRIEFLY**
☞ Motor current range - see service level (R50, R51)

No. 6 Manual
Stoker grate
Pos 0°
Forward | Backward
Close grate

❒ Function and rotation check of stoker grate motor
☞ Manual Forward or Backward of the motor
☞ at activated service level the calibration may be re-started
☞ at commissioning and after each maintenance

No. 7 Manual
Ash grate
Pos 0°
Forward Backward
Close grate

- ❒ Function and rotation check of ash grate motor
  - ☞ Manual Forward or Backward of the motor
  - ☞ at activated service level the calibration may be re-started
    - ☞ at commissioning and after each maintenance

No. 8 Manual
Stoker grate / ash grate
Pos 0°/0°
Electricity 0mA/0mA
Forward Backward

- ❒ combined function- and rotation check of stoker grate and ash grate
  - ☞ manual Forward or Backward of the motors

No. 9 Manual
Firebed sensor
Pos 75°/0.00V
Offset 190°
Calibration

- ❒ Calibration of firebed sensor
  - ☞ only at activated service level

No.10 Manual Ra: 0.0A/Es: 0.0A
Fill combustion chamber
Start / RA1 Start / RA2

- ❒ at new start of the boiler, the empty augers may be refilled manually.
  - ☞ prevents an error due to missing fuel

No. 11 Manual
Ignition
Ignition

- ❒ Function check of ignition
  - ☞ After a maximum of 1 minute, the coil should be hot
  - ☞ After 3 minutes the ignition coil switches off

No. 12 Manual
Primary air flap
SET: 0%
IS: 0%
OPE CLO

- ❒ Function and position check of the primary air flap (SET/IS)
  - ☞ 100% - „OPEN“; 0% - „CLOSED“
  - ❒ Position at both extremes **0%** and **100%**
    - ❒ Press **<OPEN>**, **<CLOSED>**
      - ↳ Change of IS - value

No. 13 Manual
Lambda-sensor
Lambda Voltage/Correction 0.0/0.0 mV
O2: 6.0% RGT: 160°C

Calibrate lambda sensor (Duration approx. 5 minutes)
- ❒ Press **<Test Start>**
  - ↳ After approx. 5 minutes the voltage of the sensor should be around -7.0 [mV]
    - ☞ Values between -2 and -12 [mV] are in tolerance

Calibrate lambda sensor (Duration approx. 15 minutes)
- ☞ only at activated service level
- ❒ remove lambda sensor and flue gas sensor
- ❒ Clean lambda sensor and screw-in sleeve
- ❒ Press **<Start Calibration>**
  - ↳ After approx. 15 minutes the voltage of the sensor should be around -7.0 [mV]
    - ☞ Values between -2 and -12 [mV] are in tolerance

	N O T E
☞	**After the test: Tighten lambda sensor sufficiently** **Put flue gas sensor back in!**

No. 14 Manual
Ash suction
ON

- ❒ Function check of ash suction turbine **(OPTIONALLY)**

No. 15 Manual
Burnout-function

Burnout-function is deactivated
Start
Exhaust fan 0 rpm
O2 6.0%
Firebed-level 75°
Flue gas sensor 160°C

❒ Automatic burnout function in case of error

No. 20 Manual
R-pump, acc. pump or bypass pump

ON

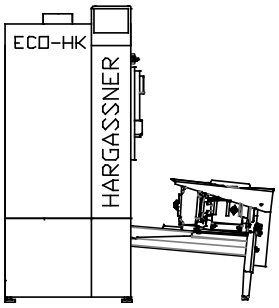
❒ Function check or short-term manual operation of the parametrised pump

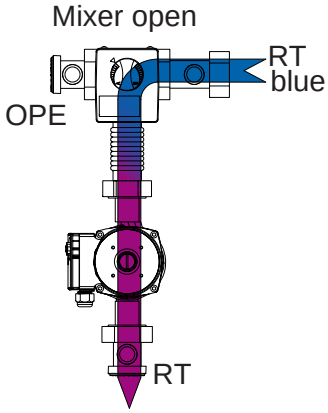
No. 21 Manual
Return mixer

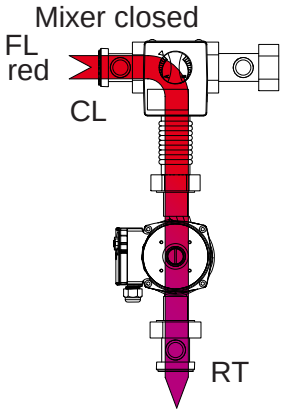
OPE CLO

❒ Function and rotation check of return mixer
- ☞ The mixer is "closed" - when the circuit is closed, the mixer is "open" - when the return is open
- ☞ During operation the return temperature increases when the mixer "closes" and the return temperature decreases when the mixer "opens".

Picture shows BEP for boiler "left" of stoker auger







No. 22 Manual
Heat circuit valve accumulator or external heat

ON

❒ Function check of heat circuit valve or external heat valve
- ☞ acc. to parametrisation (Acc. or ext. heat)

No. 23 Manual
District heating pump 1

ON

❒ Function check or short-term manual operation of district heating pump 1

No. 24 Manual
External heat circuit / District heating pump 2

ON

❒ Function check or short-term manual operation of external heat circuit or district heating pump 2

No. 25 Manual
Fault lamp

ON

❒ Function check or short-term manual operation of fault lamp

No. 26 Manual
Horn TÜB (Temperature
ON

❒ Function check or short-term manual operation of the horn - TÜB

No. 30 Manual
HWS pump 1
ON

❒ Function check or short-term manual operation of HWS loading pump 1
☞ only at connected **HKM 0**
☞ No. 40, 50 and 60 for HWS pump A, 2 and 3
☞ HWS pump A, 2 and 3 only at connected **HKM A**, **HKM 1** and **HKM 2**

No. 31 Manual
Circulation pump HWS 1
ON

❒ Function check or short-term manual operation of HWS circulation pump 1
☞ only at connected **HKM 0**
☞ No. 41, 51 and 61 for HWS circulation pump A, 2 and 3
☞ HWS circulation pump A, 2 and 3 only at connected **HKM A**, **HKM 1** and **HKM 2**

No. 32 Manual
Heat circuit pump 1
ON

❒ Function check or short-term manual operation of heat circuit pump 1
☞ only at connected **HKM 0**
☞ No. 42, 52 and 62 for Heat circuit pump A, 3 and 5
☞ HWS pump A, 3 and 5 only at connected **HKM A**, **HKM 1** and **HKM 2**

No. 33 Manual
Mixer heat circuit 1
OPE CLO

❒ Function and rotation check of mixer - heat circuit 1
☞ only at connected **HKM 0**
☞ No. 43, 53 and 63 for heat circuit mixer A, 3 and 5
☞ Heat circuit mixer A, 3 and 5 only at connected **HKM A**, **HKM 1** and **HKM 2**

No. 34 Manual
Heat circuit pump 2
ON

❒ Function check or short-term manual operation of heat circuit pump 2
☞ only at connected **HKM 0**
☞ No. 44, 54 and 64 for Heat circuit pump A, 4 and 6
☞ HWS pump A, 4 and 6 only at connected **HKM A**, **HKM 1** and **HKM 2**

No. 35 Manual
Mixer heat circuit 2
OPE CLO

❒ Function and rotation check of mixer - heat circuit 2
☞ only at connected **HKM 0**
☞ No. 45, 55 and 65 for heat circuit mixer A, 4 and 6
☞ Heat circuit mixer A, 4 and 6 only at connected **HKM A**, **HKM 1** and **HKM 2**

No. 36 Manual
External heat circuit pump 1
ON

❒ Function check or short-term manual operation of external heat circuit pump 1
☞ only at connected **HKM 0**
☞ No. 56 and 66 for external heat circuit pump 2 and 3
☞ external heat circuit pump 2 and 3 only at connected HKM 1 and HKM 2

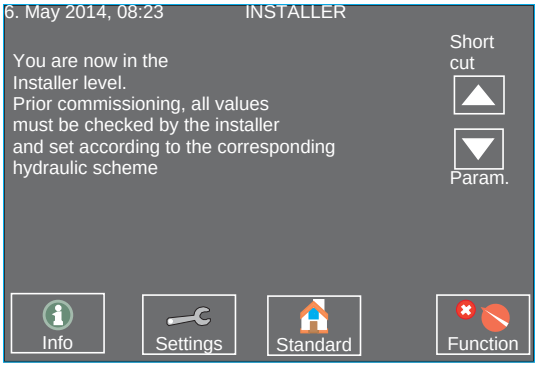
No. 70 - No. 74 Manual

Boiler sensor	**72°C**
Flue gas sensor	**160°C**
Return sensor	**61°C**
Acc. temp. top	**72°C**
Acc. temp. mid	**56°C**
Acc. temp. bottom	**30°C**

❒ Display of the current sensor values
☞ acc. to parametrised heating system

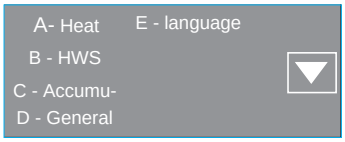
2 Installer level

❒ Enter the installer level with **<Settings> - <Installer>**
❒ access with code: **33**



↳ You are now in the installer level.
☞ Prior commissioning, all values must be checked by the installer and set according to the corresponding hydraulic scheme.

☑ Navigation:



For commissioning:
❒ Arrows key down: to parameters
↳ Selection of all parameters

For fast change of parameters
❒ press arrow key up: Short cuts
☞ Short cuts to parameter sets:
- A - Heat circuits (A1, A2,...)
- B - HWS (B1, B2,...)
- C - Accumulator (C1, C2,...)
- D - General (D1, D2,....)
- E - Languages (E1)

2.1 Parametrisation of heat circuits and HWS:

☑ Extension module 0:
- Heat circuit 1 (No. A1 - No. A9)
- Heat circuit 2 (No. A11 - No. A19)
- HWS 1 (No. B1 - No. B8)

☑ Extension module 1:
- Heat circuit 3 (No. A21 - No. A29)
- Heat circuit 4 (No. A31 - No. A39)
- HWS 2 (No. B11 - No. B18)

☑ Extension module 2:
- Heat circuit 5 (No. A41 - No. A49)
- Heat circuit 6 (No. A51 - No. A59)
- HWS 3 (No. B41 - No. B48)

☑ Heat circuit board **(HC A)**
- Heat circuit A (No. A61 - No. A69)
- HWS 3A(No. B61 - No. B68)

☞ The parameters of the extension module and the additional heat circuit board are only displayed when hardware is connected.

2.2 Parameter A - heat circuits:

<NAME>
No. A1 Heat circuit 1
Not available
Pump
Mixer

3 options:
- Heat circuit not available
- Heat circuit with pump
- Heat circuit with pump and mixer

☞ No. A1 to **<Not available> =>** No. A2 to No. A6 not displayed
☞ through pressing on **<NAME>** each heat circuit may be named separately (e.g.: Living room,...) Living room,...)

No. A2 Heat circuit 1
Steepnes 1.6
Factory 1.6

Describes the ratio between flow temperature change to outside temperature change (see chart - heat curve).
☞ Range: 0.2... 3.5
☞ Recommended settings:
- Floor heating: 0.3... 1.0
- Radiator: 1.2... 2.0
- Convector: 1.5... 2.0

☞ Change in small steps only and for a longer period

No. A3 Heat circuit 1
Flow temperature
Minimum 30°C
Factory:

Minimum limit for heat circuit 1 flow temperature.
☞ In heating- or reduction mode, this flow temperature won't be underrun.
☞ Range: 1... 80 [°C]

No. A4 Heat circuit 1
Flow temperature
Maximum 70°C
Factory:

Maximum limit for heat circuit 1 flow temperature.
☞ In heating- or reduction mode, this flow temperature won't be overrun.
☞ Floor heating system: To avoid overheating of the floor heating system, an additional electro-mechanical thermostat must be installed, which interrupts the power supply to the associated heating circuit pump.

No. A5 Heat circuit 1
Mixer run time 90 Sec
Factory: 90

Numerical input of the actual value (see mixer type plate).
☞ Duration from closed to open condition
☞ Range: 10... 300 [s]

No. A6 Remote control
Not available FR40 (digital)
FR25 (analogue)
FR35 (digital)

4 options:
- Heat circuit without remote control
- Heat circuit with analogue remote control FR25
- Heat circuit with digital remote control FR35
- Heat circuit with digital remote control FR40

No. A6a Heat circuit 1 Remote
with room sensor
without room sensor

The remote control may be installed with or without room sensor.
⇨ see “Optional remote controls FR35 / FR40 (digital) and FR25 (analogue)” on page 26.

No. A6b HC1 Display remote
HWS A HWS 3
HWS 1 Accumulator

Setting, what should be shown on parametrised remote control FR35.

No. A6c HC1 Display remote
☐ HC A ☐ HWS A ☐ Distr.l.
☐ HC 1 ☐ HWS 1 ☐ Ext. HC
☐ HC 2 ☐ Accumu- ☐ Error

Setting, what should be shown on parametrised remote control FR40.

No. A7 Heat circuit 1 District
no district line
District line 1
District line 2

Activate district heat pump (1 or 2) when heat circuit pump 1 runs.

No. A8 Heat circuit 1
Summer-bath heating
NO
YES

Activation of summer-bath heating function of the corresponding heat circuit.
☞ Heat circuit will be switched on (depending on timer settings) if accumulator is on temperature.
☞ Is only activated in menu "HWS"
☞ if **<ON>** is selected, parameters **A8a - A8c** are displayed

No. A9 Heat circuit 1 Screed
OFF
ON

Activation of screed heating function of the corresponding heat circuit.
☞ if **<ON>** is selected, parameters **A9a - A9f** are displayed
⇨ see “Parameter list - Installer” on page 57.

No. A11,21,31,41,51
Heat circuit 2,3,4,5,6
Not available
Pump
Mixer

A11: Second additional heat circuit (on extension module 0)
A21, A31: If extension module 1 is used
A41, A51: If extension module 2 is used
A61: If heat circuit control board **A** is used
Range: See **A1 „Heat circuit 1“ - A9 „Heat circuit 1“**

2.3 Parameter B - HWS:

No. B1 HWS 1
Not available
available

❒ For heating systems with HWS 1, set to **<available>**
↳ Control of HWS 1 activated
☞ Parameter No. B1 on **<not available>**
↳ also parameters HWS No. B2 to No.B4 are not displayed
☞ through pressing on **<NAME>** each heat circuit may be named separately (e.g.: Main house,...)

No. B2 HWS 1
HWS temperature hysteresis
Factory: 6°C
6°C

☞ Range: 1... 40 [°C]
⇨ see “HWS control” on page 21.

No. B23 HWS 1
HWS temperature minimum
Factory:
40°C

Lower HWS limit temperature.
↳ if HWS temperature underrun value set in the control, HWS loading starts.
☞ within the time set (Parameter No. B90)
☞ independent from HWS - time programme (Customer level No. 1)
☞ Range: 1... 80 [°C]

No. B4 Legionella protection
OFF
ON

Activation of the Legionella protection programme

No.B5 HWS 1
Legionella prot. Set temperature
Factory:
70 °C

☞ Range: 10... 75 [°C]
↳ Risk of burning if domestic hot water is not mixed
⇨ see “Legionella programme” on page 22.

No.B6 Legionella protection Weekly clock
Mo Tu We Th Fr Sa Su
a 17:00 b --:--
c 00:00 d --:--

Set start times and days for legionella protection.
☞ Start legionella protection during HWS loading

No. B7 HWS 1 District line
no district line
District line 1
District line 2

Activate district heat pump (1,2) when HWS pump 1 runs.

No. B8 Circulation pump HWS 1
Not available
Available

Settings for circulation pump can be performed for each HWS parametrised in the control.
⇨ see “Circulation pump for hot water” on page 22.

No.B8a Circulation pump HWS 1
Run time
Factory: 180
180 Sec

Run time: The pump runs 180 [sec] and afterwards a downtime of 15 [min] follows until the next cycle.

No.B8b Circulation pump HWS 1
Down time
Factory: 15 Min
15 Min

The run time depends on the length of heating lines and on the heat loss in the lines. (Insulation)

No. B11 - B31 HWS 2,3 and A
Not available
Available

B11: If extension module 1 is used
B21: If extension module 2 is used
B31: If heat circuit control board **A** is used
Range: See **B1 „HWS 1“ - B9 „HWS 1“**

No. B60 HWS priority operation
OFF
ON

⇨ see “HWS-priority control” on page 24.

No. B90 Release all HWS temp. Minimum
ON 06:00 ON --:--
OFF 22:00 OFF --:--

HWS loading time outside of „HWS Day-Week clock (No. 1)
☞ if HWS temperature below value set (Parameter No. B3)
⇨ see “HWS control” on page 21.

2.4 Parameter C - Accumulator

No. C1a Back end protection
Bypass pump | R-Mixer+R-Pump | R-Mixer+DH-P.1 | R-Mixer+Acc.

4 setting possibilities: acc. to hydraulic scheme
- Bypass pump
- Return mixer with district heating pump 1
- Return mixer with accumulator loading pump
- Return mixer with return pump (low loss header)

No. C1b Return mixer
Mixer run time (Kp)
Factory: 140
140 Sec

Enter actual mixer run time
- ☞ Duration from closed to open condition
- ☞ Range: 10... 300 [s]

No. C2 Accumulator
not available | Accumulator with | Acc. with heat | Accumulator with | Accumulator with

5 setting possibilities: acc. to hydraulic scheme
- not available
- Accumulator with heat circuit valve
  - ↳ for low-temperature heat circuits (e.g.: floor- or wall heating circuits)
- Accumulator with **one** sensor
  - ↳ at hydraulic scheme **HP3** with accumulator unloading control
- Accumulator with **two** sensors
  - ↳ at hydraulic scheme **HP4** with accumulator loading and unloading control
- Accumulator with **three** sensors
  - ↳ at hydraulic scheme **HP5** with accumulator loading (part load operation) and unloading control

No. C3 Accumulator
Accumulator/ HWS | Accumulator/HWS externally

2 setting possibilities: acc. to hydraulic scheme
- Accumulator/HWS integrated
  - ↳ Accumulator with integrated HWS (Domestic hot water coil or external hot water heat exchanger)
- Accumulator with external HWS
  - ↳ for existing differential control between accumulator and HWS - set: „Accumulator / HWS integrated“

No. C3a Accumulator
Accumulator sensor | Accumulator | Accumulator sensor | Accumulator sensor

4 setting possibilities: acc. to hydraulic scheme
- for existing accumulator and extension module, the acc. sensor assignment may be chosen
  - Acc. in the boiler room => Choose **<Accumulator sensor - Boiler>**
  - Acc. next door (HKM) => Choose **<Accumulator sensor - HKM1/2>**

No. C3b Accumulator
HWS sensor A | HWS sensor 3 | HWS sensor 1 | HWS sensor 2

4 setting possibilities: acc. to hydraulic scheme
- ☞ Selection which HWS sensor is integrated in the acc.
  Parameter No. C3 **<Acc/HWS internally>**

No. C4
Switch off temperature acc. sensor bottom
Factory: 0°C
60°C

Setting the acc.-set temperature
- ☞ Displays only, if parameter **C2** is set to **<Acc. with 2 sensors>** or **<Acc. with 3 sensors>**
  - ↳ If heat is requested, the accumulator is by default loaded to **C4** = 60 [°C] (sensor 2 bottom)
  - ☞ Range: 20... 80 [°C]

No. C4a Accumulator
Boiler set temperature at accumulator loading
Factory: 78°C
78°C

Adjusting the boiler set temperature at acc. loading
- ☞ Displays only, if parameter **C2** is set to **<Acc. with 2 sensors>** or **<Acc. with 3 sensors>**
  - ↳ at acc. loading with 2 or 3 sensors, the **boiler** operates at the temperature **C4a** = 78 [°C]
  - ☞ Range: 20... 100 [°C]

No. C4 Accumulator
ON --:-- ON --:--
OFF --:-- OFF --:--

<Setting times for - forced accumulator loading
- ☞ Displays only, if parameter **C2** is set to **<Acc. with 2 sensors>** or **<Acc. with 3 sensors>**
  - ↳ Acc. forced loading at set times and activated set temperature **C4** = 60 [°C] (Accumulator sensor bottom)
  - ☞ e.g. for peak loads in the morning (e.g. 4am - 10am)

No. C6a External heat circuit
external heat circuit set temperature 69°C
Factory: 69°C

Adjusting the boiler set temperature at activated external heat circuit
- ☞ if the value is changed and parameter **C7** is set to **<external pump>** , also the service-parameter **L5** = 50 [°C] has to be adjusted
  - ☞ **L5** ca. 5 - 10 [°C] less than **C6a**

No.C7 Function pump exit
District heating pump 2
external pump

2 setting possibilities: acc. to hydraulic scheme
- External heat circuit pump
  - ↳ Boiler is heated to the temperature set in parameter **C6a**
  - ↳ external heat circuit pump is switched on at release temperature (Parameter **L5**)
- District heating pump
  - ↳ District heating pump runs, if a heat circuit - or HWS pump switches on (and is parametrised to "district heating")

No. C8 External heat circuit and
no district line
with district line 1
with district line 2

Set, if the external heat circuit is referred to the district heating pump 1 or 2
- ↳ District heating pump runs if one of the referred pumps run

No. C9 External heat
not available
Oil/Gas
Solid fuel

3 setting possibilities: acc. to hydraulic scheme
- not available
- Oil- / Gas- boiler
- Solid fuel - boiler

2.5 Parameter D - General

No. D1a HKM 0 Display
HC A, HC 1, HC 2, HWS A, HWS 1, Accumu-, Distr.l., Ext. HC, Error

Selection regarding display possibilities at connected HKM 0
- Parameter No. D1b at connected HKM 1
- Parameter No. D1c at connected HKM 2

No. D2 frost protection
Pump on if outs. temp. below 1°C
Factory: 1 °C

Outside temperature below set value
- ↳ all heat circuit pumps on (mixer is **„Closed“**)
- ↳ Heat circuits with mixer are controlled to temperature No. D3.

⇨ see “Frost protection” on page 25.

No. D3 frost protection
Flow-Set temperature 7°C
Factory: 7°C

Flow temperature (for heat circuits with mixer) under set value
- ↳ **„Open“** mixers of heat circuits

No.D5 Switch day-reduction mode
ON 06:00 ON --:--
OFF 22:00 OFF --:--

Switch point, at which time the logic changes from night- to day settings. (Parameter 12,13)

⇨ see “Outside temperature - Shut down” on page 24.

No. D6a Ash suction
not available
with ash bin
without ash bin

3 options:
- not available
- Ash suction with ash bin
- Ash suction without ash bin

No. D6b Release ash suction
ON 06:00 ON --:--
OFF 22:30 OFF --:--

The fully automatic ash suction process will be performed within the set time
- ☞ irritating noise during the de-ash or cleaning

No. D6r Release de-ash wood chip
ON 06:00 ON --:--
OFF 22:30 OFF --:--

The automatic de-ash and cleaning process is executed only within the set times
- ☞ depending on parametrised fuel
  - Wood chips => D6r
  - Pellets => D6s
  - Miscanthus => D6t
- ☞ irritating noise during the de-ash or cleaning

No. D7 all heat circuits
Summer switch off - hold time
Factory: 120
120 Min

Summer switch off: Outside temperature falls below 16°C (Parameter No.11)
↳ If the time to shut down the boiler (reduction) is now shorter than 2 hours
↳ the boiler does not start

No. D8 Daylight saving time
no autom. switch
autom. switch

change clock automatically from daylight saving time to winter time.

No. D9 Day clock / Week clock
Day clock
Week clock
HC+HWS week clock

Display day- or week clock in the customer level.
⇨ see “Menu „Week clock", „Day clock““ on page 20.
☞ Day-clock: Heat circuits and HWS on day clock
☞ Week-clock: Heat circuits on week clock, HWS on day clock
☞ HC+HWS week clock: Heat circuits and HWS on week clock

No. D10
Number of blocks for week clock
Factory: 2
2

Number of blocks to set for week clock in the customer level.
☞ Range: 1... 7

No. D11 Holiday mode released
NO
YES

activates the holiday mode for the time set at parameter - Customer level No.16
☞ all heat circuits together or separated (Parameter No. D11a)

No.D12 Outside temperature shutdown
separately
all HC together

Outside temperature thresholds to set separately for each heat circuit.
Identical thresholds for all heat circuits
⇨ see “Outside temperature - Shut down” on page 24.

No.D13 Outside sensor
Not available
Available

no outside sensor required
↳ **<not available>** for active, external heat circuits

No.D20 ETÜ
Not available
Available

The stoker auger - temperature monitoring (ETÜ) is parametrised by default

No.D21 TÜB
Not available
Available

If a temperature monitoring of the fuel storage room **(TÜB)** is required (depending on state law and regulation) this has to be activated
☞ Parameter No. D21a at double-RA

No.D22 Double Agitator
Switch over time
Factory: 300
300 Min

Setting, after how many minutes the agitator switches to the other agitator

2.6 Parameter E - languages

Language
German
French
Italian
English
Spanish

Selection of the desired language
(optionally) German

3 Parameter list - Customer

Reset to factory settings:
<Settings> - <Service level> - <Special feat.> - <No. Z4 Load factory settings>

Menu	Description	Factory	Is	Is
Extension module 0				
No.1	HWS 1 Day clock	ON 17:00 00:00 OFF 20:00 00:00		
to parametrise "Week clock" (menu no. D9 in installer settings)				
No.1a	HWS 1	Mo Tu We Th Fr Sa So ON 17:00 00:00 OFF 20:00 00:00		
No.1b	HWS 1	all off		
No.2	HWS 1 Set temperature	60°		
No. 2a	HWS 1 circulation pump	ON 17:00 00:00 OFF 20:00 00:00		
No.3	Heat circuit 1 Day clock	ON 06:00 15:00 OFF 09:00 22:00		
to parametrise "Week clock" (menu no. D9 in installer settings)				
No.3a	Heat circuit 1	Mo Tu We Th Fr Sa... ON 06:00 15:00 OFF 09:00 22:00		
No.3b	Heat circuit 1	.....So ON 06:00 00:00 OFF 22:00 00:00		
No.4	Heat circuit 1 Day-room temp.	20° C		
No.5	Heat circuit 1 Reduction-room temp.	16° C		
No.6	Heat circuit 2 Day clock	ON 06:00 15:00 OFF 09:00 22:00		
to parametrise "Week clock" (menu no. D9 in installer settings)				
No.6a	Heat circuit 2	Mo Tu We Th Fr Sa So ON 06:00 15:00 OFF 09:00 22:00		
No.6b	Heat circuit 2	.....Su ON 06:00 00:00 OFF 22:00 00:00		
No.7	Heat circuit 2 Day-room temp.	20° C		
No.8	Heat circuit 2 Reduction-room temp.	16° C		
Heat circuit board A				
HP 1	HWS A day clock	ON 17:00 00:00 OFF 20:00 00:00		
HP 2	HWS A Set temperature	60°		
HP 3	HWS A Day clock	ON 06:00 15:00 OFF 09:00 22:00		
HP 4	Heat circuit A Day-room temp.	20°		
HP 5	Heat circuit A Reduction-room temp.	16°		
Extension module 1				
H 1	HWS 2 Day clock	ON 17:00 00:00 OFF 20:00 00:00		
H 2	HWS 2 Set temperature	60°		
H 3	Heat circuit 3 Day clock	ON 06:00 15:00 OFF 09:00 22:00		
H 4	Heat circuit 3 Day-room temp.	20°		
H 5	Heat circuit 3 Reduction-room temp.	16°		
H 6	Heat circuit 4 Day clock	ON 06:00 15:00 OFF 09:00 22:00		
H 7	Heat circuit 4 Day-room temp.	20°		
H 8	Heat circuit 4 Reduction-room temp.	16°		

Extension module 2					
H 11		HWS 3 Day clock	ON 17:00 00:00 OFF 20:00 00:00		
H 12		HWS 3 Set temperature	60°		
H 13		Heat circuit 5 Day clock	ON 06:00 15:00 OFF 09:00 22:00		
H 14		Heat circuit 5 Day-room temp.	20°		
H 15		Heat circuit 5 Reduction-room temp.	16°		
H 16		Heat circuit 6 Day clock	ON 06:00 15:00 OFF 09:00 22:00		
H 17		Heat circuit 6 Day-room temp.	20°		
H 18		Heat circuit 6 Reduction-room temp.	16°		
If "Outside temperature shut down - separated" is chosen (Installer level No. D12), different temperatures per heat circuit may be set.					
No.	11	Heating off at outside temperature over	16°		
No.	12	Heating off at day reduct. outside temp. over	8°		
No.	13	Heating off at day reduct. outside temp. over	-5°		
Through parametrisation "Outside temp. Day/N." (Service level No. M10) also for external heat circuits, outside temp. shut down may be set.					
No.	15	Holiday mode	not active		
No.	16	Holiday mode	from... - to...		
No.	18	Ash suction	not active		
No.	19	Fuel	Wood chips		
No.	19a	Extraction system	equal emptying		
No.	20	Date / Time			
No.	21	Release remote maintenance	not released		
No.	21a	autom. deactivation of release	10 Min.		

4 Parameter list - Installer

Installer-settings (Settings / Installer / Code33)

		Menu	Description	Factory	Is
Heat circuit 1	A	1	**Heat circuit 1**	not avail.	
	A	2	HC 1 steepness	1.60	
	A	3	HC 1 flow temp. Min	30°	
	A	4	HC 1 flow temp. Max.	70°	
	A	5	HC 1 mixer run time	90s	
	A	6	Remote HC1	not avail.	
	A	7	HC1 district line	no dl	
	A	8	Summer-bath heating HC1	off	
	A	9	Screed hea. HC1	off	
	A	9a	Screed hea. HC1 Flow-rise	5°C	
	A	9b	Screed hea. HC 1 Flow-set reduction	10°C	
	A	9c	Screed hea. HC1 rise after	1 day(s)	
	A	9d	Screed hea. HC1 Flow-Min.	20°C	
	A	9e	Screed hea. HC1 Flow-Max.	45°C	
	A	9f	Screed hea. HC1 hold time	4 day(s)	
Heat circuit 2	A	11	**Heat circuit 2**	not avail.	
	A	12	HC 2 steepness	1.60	
	A	13	HC 2 flow temp. Min	30°	
	A	14	HC 2 flow temp. Max.	70°	
	A	15	HC 2 mixer run time	90s	
	A	16	Remote HC2	not avail.	
	A	17	HC2 district line	no dl	
	A	18	Summer-bath heating HC2	off	
	A	19	Screed hea. HC2	off	
	A	19a - 19f	Screed hea. Parameter HC2	acc. factory set.	
Heat circuit 3	A	21	**Heat circuit 3**	not avail.	
	A	22	HC 3 steepness	1.60	
	A	23	HC 3 flow temp. Min	30°	
	A	24	HC 3 flow temp. Max.	70°	
	A	25	HC 3 mixer run time	90s	
	A	26	Remote HC3	not avail.	
	A	27	HC3 district line	no dl	
	A	28	Summer-bath heating HC3	off	
	A	29	Screed hea. HC3	off	
	A	29a - 29f	Screed hea. Parameter HC3	acc. factory set.	

		Menu	Description	Factory	Is
Heat circuit 4	A	31	**Heat circuit 4**	not avail.	
	A	32	HC 4 steepness	1.60	
	A	33	HC 4 flow temp. Min	30°	
	A	34	HC 4 flow temp. Max.	70°	
	A	35	HC 4 mixer run time	90s	
	A	36	Remote HC4	not avail.	
	A	37	HC4 district line	no dl	
	A	38	Summer-bath heating HC4	off	
	A	39	Screed hea. HC4	off	
	A	39a - 39f	Screed hea. Parameter HC4	acc. factory set.	
Heat circuit 5	A	41	**Heat circuit 5**	not avail.	
	A	42	HC 5 steepness	1.60	
	A	43	HC 5 flow temp. Min	30°	
	A	44	HC 5 flow temp. Max.	70°	
	A	45	HC 5 mixer run time	90s	
	A	46	Remote HC5	not avail.	
	A	47	HC5 district line	no dl	
	A	48	Summer-bath heating HC5	off	
	A	49	Screed hea. HC5	OFF	
	A	49a - 49f	Screed hea. Parameter HC5	acc. factory set.	
Heat circuit 6	A	51	**Heat circuit 6**	not avail.	
	A	52	HC 6 steepness	1.60	
	A	53	HC 6 flow temp. Min	30°	
	A	54	HC 6 flow temp. Max.	70°	
	A	55	HC 6 mixer run time	90s	
	A	56	Remote HC6	not avail.	
	A	57	HC6 district line	no dl	
	A	58	Summer-bath heating HC6	off	
	A	59	Screed hea. HC 6	off	
	A	59a - 59f	Screed hea. Parameter HC6	acc. factory set.	
Heat circuit A	A	61	**Heat circuit A**	not avail.	
	A	62	HC A steepness	1.60	
	A	63	HC A flow temp. Min	30°	
	A	64	HC A flow temp. Max.	70°	
	A	65	HC A mixer run time	90s	
	A	66	Remote HC A	not avail.	
	A	67	HC A6 district line	no dl	
	A	68	Summer-bath heating HC A	off	
	A	69	Screed hea. HC A	off	
	A	69a - 69f	Screed hea. Parameter HC A	acc. factory set.	

		Menu	Description	Factory	Is
HWS 1	B	1	HWS 1	available	
	B	2	HWS 1 temp. switch difference	6°	
	B	3	HWS 1 temperature minimum	40°	
	B	4	Legionella protection	OFF	
	B	5	Legionella prot. Set temp.	70°	
	B	6	Legionella prot. release temp.	Mo - 17:00	
	B	7	HWS 1 district line	no dl	
	B	8	Circulation pump HWS 1	not avail.	
	B	8a	Circulation pump - run time	180s	
	B	8b	Circulation pump - stop time	15min	
HWS 2	B	11	HWS 2	not avail.	
	B	12	HWS 2 temp. switch difference	6°	
	B	13	HWS 2 temperature minimum	40°	
	B	14	Legionella protection	OFF	
	B	15	Legionella prot. Set temp.	70°	
	B	16	Legionella prot. release temp.	Mo - 18:00	
	B	17	HWS 2 district line	no dl	
	B	18	Circulation pump HWS 2	not avail.	

		Menu	Description	Factory	Is
HWS 3	B	21	HWS 3	not avail.	
	B	22	HWS 3 temp. switch diff.	6°	
	B	23	HWS 3 temperature minimum	40°	
	B	24	Legionella protection	OFF	
	B	25	Legionella prot. Set temp.	70°	
	B	26	Legionella prot. rel. temp.	Mo-19:00	
	B	27	HWS 3 district line	no dl	
	B	28	Circulation pump HWS 3	not avail.	
HWS A	B	31	HWS A	not avail.	
	B	32	HWS A temp. switch diff.	6°	
	B	33	HWS A temp. minimum	40°	
	B	34	Legionella protection	No	
	B	35	Legionella prot. Set temp.	70°	
	B	36	Legionella prot. rel. temp	Mo - 17:00	
	B	37	HWS A district line	no dl	
	B	38	Circulation pump HWS A	not avail.	

HWS 1-A	B	60	HWS - priority control	ON	
	B	90	Release all HWS temp. Min.	06:00-22:00	

		Menu	Description	Factory	Is
General	D	1a,b ,c	HKM 0, 1, 2 - Touch Display	Selection-window	
	D	2	Frost prot. Pump on under Outs.temp.	1°	
	D	3	Frost prot. Flow set temp.	7°	
	D	5	Changeov. Day-reduction	06:00-22:00	
	D	6a	Ash suction	not avail.	
	D	6b	Release ash suction	06:00-22:30	
	D	6r,s, t	Release deash Wood chips, Pellets, Miscanthus	06:00-22:30	
	D	7	HC 1-6 summer shut down. blocking time	120min	
	D	8	Daylight saving time - auto switch	Auto	
	D	9	Day- / Week clock	Day-clock	
	D	10	Dis. Blocks for week clock	2	
	D	11	Release holiday mode	No	
	D	11a	Holiday mode	all HC	
	D	12	Outside temp. - Shut down	all HC	
	D	13	Outside sensor	not avail.	
	D	20	ETÜ-Stoker auger temp. monitoring	available	
	D	21	TÜB-Temperature monitoring fuel storage room	not avail.	
	D	22	Add. function	not avail.	
	E	1	Language	German	

		Menu	Description	Factory	Is
Accumulator	C	1a	Back end protection	Return-Mixer+ Acc.-pump	
	C	1b	Return mixer run time	90s	
	C	2	Acc. or external operation	not avail.	
	C	3	Accumulator-HWS	externally	
	C	3a	Accumulator-sensor	Boiler	
	C	4	Switch off temperature acc. sensor bottom	60°	
	C	4a	Acc. loading boiler set temp.	78°	
	C	5	Forced acc. loading / day clock	00:00	
	C	6a	Boiler set temp. external HC	69°	
	C	7	Pump exit (Ext.-/ Dist.Hea.-Pump 2)	not avail.	
	C	8	Ext. HC at Distr.hea.-pump	no dl	
	C	9	External heat	not avail.	

Info	Description	Value	Value
	Operation hours Control		
	Operation h. HEATING SYS.		
	Operation h. Ignition		
	Operation h. Exhaust fan		
	Operation h. Stoker		
	Operation h. Agitator		
	Number of de-ash cycles		

5 Parameter list - Service

Values in (...) are for ECO-HK 40-60

Menu		Description	Factory	Menu	Description	Factory
J - GSM	J1	Waiting time SMS alert	5 Min	J3	Time to clear	10 Min
	J2	GSM-Module Reset	No	J4	Auto Reset GSM	Auto Reset GSM
K - Boiler	K1	Boiler combustion - min. heat output	50 %	K14	Boiler flue gas temp. error under	70 °C
	K2	Regulator - max. output at combustion	100 %	K15	Boiler time flue gas temp. error	15 Min
	K3r	Boiler exhaust fan speed 100% output wood chips	see list below	K20	Boiler TÜB max. temp. fuel storage room	60 °C
	K3s	Boiler exhaust fan speed 100% output pellets	see list below	K21	Boiler ETÜ max. temp. stoker auger	50 °C
	K3t	Boiler exhaust fan speed 100% output miscanthus	see list below	K29	Boiler max. control board temperature exceeded	60 °C
	K10	Boiler min. temperature with bypass	75 °C	K30	Boiler chimney sweep set temperature	78 °C
	K10a	Boiler minimum temperature	78 °C	K31	Boiler chimney sweep run time	120 Min
	K11	Boiler maximum temperature	85 °C	K32	Boiler chimney sweep max. heat output - full load	100 %
	K12	Boiler temperature switch difference	6 °C	K32a	Boiler chimney sweep max. heat output - partial load	50 %
	K13	Boiler set temperature superelevation	4 °C	K40	Boiler output limit at error	60 %
L - Pumps	L1	Pumps district line pump 1 release temperature	58 °C	L7	Pumps HWS pump 2 release temp.	63 °C
	L2	Pumps district line pump 2 release temperature	59 °C	L7a	Pumps HWS pump 3 release temp.	62 °C
	L3	Pumps heat circuit pump 1 release temperature	60 °C	L7b	Pumps HWS pump A release temp.	63 °C
	L4	Pumps heat circuit pump 2 release temperature	61 °C	L10	Return Minimum	58 °C
	L4a	Pumps heat circuit pump 3 release temperature	62 °C	L10a	Return differential	see list below
	L4b	Pumps heat circuit pump 4 release temperature	63 °C	L10b	Return differential Auto-adjust range	0
	L4c	Pumps heat circuit pump 5 release temperature	62 °C	L10c	BEP pump release temperature	52 °C
	L4d	Pumps heat circuit pump 6 release temperature	63 °C	L11	Pumps Back end protection error under	50 °C
	L4e	Pumps heat circuit pump A release temperature	62 °C	L12	Return time for error back end protection	60 Min
	L4i	Pumps heat circuit pump 1 release temperature	30 °C	L12a	Return return mixer interval	10 Sec
	L4j	Pumps heat circuit pump 2 release temperature	31 °C	L12b	Return mixer reset time (Tn)	15 Sec
	L4k	Pumps heat circuit pump 3 release temperature	32 °C	L12c	Return mixer run time	0.8 Sec
	L4l	Pumps heat circuit pump 4 release temperature	33 °C	L12d	Open return mixer at first start up	17 %
	L4m	Pumps heat circuit pump 5 release temperature	32 °C	L13	Type of BEP-pump	HE-pump
	L4n	Pumps heat circuit pump 6 release temperature	33 °C	L20	Return controller RL-Set Kp	1
	L4o	Pumps heat circuit pump A release temperature	32 °C	L21	Return controller RL-Set Tn	1000 Sec
	L5	Pumps external heat circuit release temperature	64 °C	L22	Return controller RL-Set Tv	0 Sec
	L6	Pumps HWS pump 1 release temp.	62 °C	L24	Return Acc mid set	60 °C

Menu		Description	Factory	Menu	Description	Factory
M - Heat circuits	M1	all heat circuits - pumps on if boiler temperature over	92 °C	M8	Heat circuit 1 min. mixer run time	0.3 Sec
	M1a	all heat circuits - outside temperature for safety circuit	-10 °C	M9	Heat circuit 2 min. mixer run time	0.3 Sec
	M2	all heat circuits - residual heat use until boiler below	40 °C	M9a	Heat circuit 3 min. mixer run time	0.3 Sec
	M3	all heat circuits - boiler superelevation after flow temp.	10 °C	M9b	Heat circuit 4 min. mixer run time	0.3 Sec
	M4	Heat circuit 1 influence factor remote control	1	M9c	Heat circuit 5 min. mixer run time	0.3 Sec
	M5	Heat circuit 2 influence factor remote control	1	M9d	Heat circuit 6 min. mixer run time	0.3 Sec
	M5a	Heat circuit 3 influence factor remote control	1	M9e	Heat circuit A min. mixer run time	0.3 Sec
	M5b	Heat circuit 4 influence factor remote control	1	M10	external HC	without outs. temp.
	M5c	Heat circuit 5 influence factor remote control	1	M11	all heat circuits proportional coefficient	100 %
	M5d	Heat circuit 6 influence factor remote control	1	M12	all heat circuits differential temp. for mixers	1 °C
	M5e	Heat circuit A influence factor remote control	1	M20	all heat circuits mixer reduction release difference	0 °C
	M7	all heat circuits reduction delay	15 Min			

N - HWS	N1	all HWS - hot water storage pump on at outs. temp. over	90 °C	N5	all HWS - boiler superelevation legionella protection	5 °C
	N2	all HWS - difference temp. for HWS pump	1 °C	N6	all HWS	Residual heat several time
	N3	all HWS - hot water storage priority circuit factor	1	N7	all HWS - boiler superelevation at HWS loading	10 °C
	N4	all HWS - HWS pump after run time res. heat	5 °C			

O - Accumulator	O1	Acc. superelevation heat circuit set temp.	5 °C	O8	Accumulator fill level reference temp.	75 °C
	O2	Acc. superelevation heat circuit set temp.	5 °C	O9	Accumulator HWS difference control	ON
	O3	Acc. Superelevation HWS-Set temp.	5 °C	O10	External heat switch on temp.	60 °C
	O4	Acc. switch difference HWS temp.	1 °C	O11	External heat differential	2 °C
	O5	Acc. boiler-acc. base temperature	58 °C	O12	External heat blockage time	15 Min
	O6	Acc. difference temp.	5 °C	O13	Acc. Residual heat use until boiler temp. under	65 °C
	O7	Accumulator pump On - KT-Differential	5 °C			

P - Ignition	P1	Ignition time overrun	15 Min	P31	Delta O2 Ignition off	1 %
	P2r	Firebed-Set at ignition Wood chips	50 ° (65 °)	P40	Flue gas temp. - change combustion	100 °C
	P2s	Firebed-Set at ignition Pellets	42 ° (57 °)	P41	Flue gas temperature rise	30 °C
	P2t	Firebed-Set at ignition Misanthus loose	50 ° (65 °)	P42	O2 Max at change to combustion	15 %
	P3	Exhaust fan max if ignition ON	75 %	P43	Time O2 Max at change to combustion	10 Sec
	P4	Neg. pressure set at ignition	105 Pa	P44	Primary air at change to combustion	0 %
	P5	Hysteresis firebed-level	10 °	P50	Delivery rate for ignition at def. Firebed sensor (GBF)	40 %
	P6	Exhaust fan at kindling	100 %	P51	Delivery time for ignition at def. Firebed sensor (GBF)	180 Sec
	P10	second ignition attempt after	7 Min	P60	max. O2 drop for Primary air flap close	-0.2 %
	P11	Firebed sensor superelevation	5 °	P61	Primary air flap CLOSED for	10 Sec
	P12	Neg. press. superelevation	-10 Pa	P62	Interval for max. O2 decline	10 Sec
	P30	Ignition on at O2 >	19 %			

Menu		Description	Factory	Menu	Description	Factory
Q - Ash extraction	Q0	Start de-ash	no	Q20s	Delay grate turn Pellets	20 Sec
	Q1	Min. run time combustion	60 Min	Q20t	Delay grate turn Miscanthus loose	0 Sec
	Q2r	Max. run time combustion Wood chips	240 (180) Min	Q21r	Grate rounds Wood chips	1
	Q2s	Max. run time combustion Pellets	300 Min	Q21s	Grate rounds Pellets	1
	Q2t	Max. run time combustion Miscanthus loose	120 Min	Q21t	Grate rounds Miscanthus loose	2
	Q3r	Burnout time wood chips	10 Min	Q22	Stop time for major de-ash	120 Min
	Q3s	Burnout time pellets	15Min	Q23r	Nr. of forced major de-ash cycles Wood chips	6
	Q3t	Burnout time miscanthus loose	10 Min	Q23s	Nr. of forced major de-ash cycles Pellets	10
	Q4r	Exhaust fan max. at burnout wood chips	80 %	Q23t	Nr. of forced major de-ash cycles Miscanthus loose	1
	Q4s	Exhaust fan max. at burnout pellets	80 %	Q25	max. motor current rotating grate	160 mA
	Q4t	Exhaust fan max. at burnout miscanthus loose	80 %	Q26	Grate motor return run time	10 Sec
	Q10r	Ash initiator impulse wood chips	20	Q30	Grate opening	0 °
	Q10s	Ash initiator impulse pellets	14	Q50	Cleaning ash suction after de-ash	1x
	Q10t	Ash initiator impulse miscanthus loose	30	Q51r	Time ash suction wood chips	60 Sec
	Q11	max. motor current de-ash	2.5 A	Q51s	Time ash suction pellets	60 Sec
	Q12	Nominal motor current de-ash	1.2 A	Q51t	Time ash suction miscanthus loose	100 Sec
	Q20r	Delay grate turn wood chips	0 Sec	Q52	Exhaust fan at ash suction	30 %

R - Stoker unit / Agitator	R1r	Stoker firebed set value wood chips	60 ° (75 °)	R41	Agitator nominal motor current RA (0.18kW Motor)	0.7 A
	R1s	Stoker firebed set value pellets	52 ° (67 °)	R41a	Agitator nominal motor current RA (0.25kW Motor)	1.2 A
	R1t	Stoker firebed set value miscanthus loose	60 ° (75 °)	R41b	Agitator nominal motor current RA-2 (0.18kW Motor)	0.7 A
	R2	Stoker time warning delivery rate	45 Min	R41c	Agitator nominal motor current RA-2 (0.25kW Motor)	1.2 A
	R10	Stoker max. motor current stoker	1.7 A	R42	Return time agitator	5 Sec
	R11	Stoker nominal motor current stoker	1.2 A	R50	max. motor current connection auger	1.7 A
	R13	Stoker max. return time stoker	5 Sec	R51	Nominal motor current conn. auger	1.2 A
	R20r	Stoker - pulse wood chips	10 Sec	R52	Return time connection auger	10 Sec
	R20s	Stoker - pulse pellets	30 Sec	R53r	Connection auger reduc. Connection auger - pulse wood chips	see list below
	R20t	Stoker - pulse miscanthus loose	10 Sec	R53s	Connection auger reduc. Connection auger - pulse pellets	see list below
	R30r	Agitator factor RA-delivery rate wood chips	see list below	R53t	Connection auger reduc. Connection auger - pulse miscanthus loose	see list below
	R30s	Agitator factor RA-delivery rate pellets	see list below	R60	Stoker red. if firebed sensor over set	7 °
	R30t	Agitator factor RA-delivery rate miscanthus loose	see list below	R61	Stoker time overfill	30 Sec
	R40	Agitator max. motor current RA (0.18kW motor)	1.2 A	R62	Stoker delivery rate at overfill	70 %
	R40a	Agitator max. motor current RA (0.25kW motor)	1.6 A	R63	Stoker overfill-stop off if Firebed sensor set	0 °
	R40b	Agitator max. motor current RA-2 (0.18kW motor)	1.2 A	R64	Stoker delivery rate red. after overfill	90 %
	R40c	Agitator max. motor current RA-2 (0.25kW motor)	1.6 A			
S - Lambda-Sensor	S1r	Lambda O2-Set value wood chips	7.00 (8.00) %	S3	Lambda CO2-Stop-difference	3.00 %
	S1s	Lambda O2-Set value pellets	8.00 %	S4	Lambda O2-increase part load	2,40 (1,40) %
	S1t	Lambda O2-Set value miscanthus loose	8.50 %	S9	Lambda - exhaust fan at Lambda-calibration	60 %
	S2	Lambda chimney sweep O2-Set value full load	6.00 %	S10	Lambda exhaust fan post run until O2 over	14.00 %

Menu		Description	Factory	Menu	Description	Factory
T - Control	T1	Control - flue gas temperature minimum	100 °C	T30	Control - primary air (O2) Kp	4.5
	T2	Control - flue gas temp. maximum	200 °C	T31	Control - primary air (O2) Tn	20
	T3	Control - Flue gas temp. Limiter Kp	1	T32	Control - primary air (O2) Tv	5
	T4	Control - Flue gas temp. Limiter Tn	250 Sec	T33	Control - Primary air factor D-filter	2
	T5	Control - Corr. Flue gas temp at 150 °C	-10 °C	T34	Control - Primary air neg. boost	1
	T10	Control - Boiler temp. controller Kp	2	T35	Control - Boiler primary air maximum	100 %
	T11	Control - Boiler temp. controller Tn	600 Sec	T36	Control - Primary air def. lambda sensor	25 %
	T12	Control - Boiler temp. controller Tv	100 Sec	T40	Control - neg. press. controller Kp	0.1
	T13	Control - Boiler temp. controller T1	100	T41	Control - neg. press. controller Tn	4 Sec
	T14	Control - Boiler temp. Control - xw_exp	1.5	T42	Control - neg. press. controller Tv	0 Sec
	T20	Control - delivery rate firebed Kp	1	T50	Exhaust fan Kp	65
	T21	Control - delivery rate firebed Tn	250 Sec	T51	Exhaust fan Tn	30 Sec
	T22	Control - delivery rate firebed z	0	T60	Service sensor stoker grate offset (L)	-45
	T23	Control - delivery rate firebed Min	0	T60a	Service sensor stoker grate offset (R)	45
	T24	Control - delivery rate firebed Max	105	T61	Service sensor ash grate offset (L)	45
	T25	Control - delivery rate at def. Firebed sensor Kp	4	T61a	Service sensor ash grate offset (R)	-45
	T26	Control - delivery rate at def. Firebed sensor Tn	120 Sec	T62	Service sensor firebed offset (L)	190
	T27	Control - delivery rate at def. Firebed sensor Min	0	T62a	Service sensor firebed offset (R)	190
	T28	Control - delivery rate at def. Firebed sensor Max	105			

U - Neg. press. (NP) / Exhaust fan	U1	Neg. press. NP set at 30% exhaust fan	25 (30) Pa	U20	Exhaust fan - motor type	EC-Motor
	U2	Neg. press. NP set at 80% exhaust fan	125 (150) Pa	U21	Exhaust fan control max. RPM	3400
	U10	Neg. press. boarder Warning/Error	50 %	U22	Exhaust fan speed tolerance	30 %
	U11	Neg. press. time until error	30 Sec			

Z - Special functions	Z1	Boiler type	ECO-HK.....kW	Z4	Load factory settings	Customer / Inst. / Service
	Z1a	Boiler type	right / left	Z4a	Release load factory parameter file	Customer / Inst. / Service
	Z1b	Add. function	not avail.	Z5	Reset operation hours	yes / no
	Z1d	RA Motor	0.18 kW	Z7	Total reset	yes / no
	Z1e	RA-2 Motor	0.18 kW	Z7a	Backup of boiler-ID	yes / no
	Z2	Load parameters	yes / no	Z8	Commission-No.	...
	Z3	Save parameters	yes / no	Z9	Error list	List of errors

Parameters with different values per type:		ECO-HK20	ECO-HK30	ECO-HK35	ECO-HK40	ECO-HK50	ECO-HK60
K3r	Boiler exhaust fan speed 100% output wood chips	60 %	70 %	80 %	55 %	70 %	80 %
K3s	Boiler exhaust fan speed 100% output pellets	60 %	70 %	80 %	55 %	70 %	80 %
K3t	Boiler exhaust fan speed 100% output miscanthus	60 %	60 %	60 %	55 %	70 %	70 %
L10a	Return differential	18	18	18	18	19	20
R30r	Agitator factor RA-delivery rate wood chips	40 %	45 %	50 %	60 %	70 %	85 %
R30s	Agitator factor RA-delivery rate pellets	12 %	13 %	15 %	19 %	21 %	25 %
R30t	Agitator factor RA-delivery rate miscanthus loose	45 %	50 %	50 %	85 %	100 %	100 %
R53r	Connection auger factor RA-delivery rate wood chips	40 %	45 %	50 %	60 %	70 %	85 %
R53s	Connection auger factor RA-delivery rate pellets	12 %	13 %	15 %	19 %	21 %	25 %
R53t	Connection auger factor RA-delivery rate miscanthus loose	45 %	50 %	50 %	85 %	100 %	100 %

6 Parameter - Setup /data logging

❒ Choose **„Setup“** menu
❒ press
❒ Choose„**Setup**“

„Display-Settings“:

❒ „01“ Display - Standby: deactivate or automatic
❒ „02“ Display - Standby after: (10 min. - factory set.)
↳Display switches in standby mode after set time
❒ „03“ Display - Backlight: Set the intensity of the backlight
☞from 100% - 10%

„Network“:

❒ „04“ Obtain IP address: manually or automatically
☞ if setting **<manually>** is chosen, parameters „05 - 09“ appear
❒ „010“ NetBIOS Name: entered „Name“ of the boiler in the network
☞ max. 15 letters

„GSM-Module“:

❒ „020 - 022“ GSM-dial number: saved numbers to which messages may be sent
☞ if setting **<manually>** is chosen, parameters „05 - 09“ appear

All data from the boiler and the combustion process will be saved in the boiler control memory. Additionally the data may be saved on the SD- Card inserted.

„Parameterdownload SD“:

Save set parameters to SD-Card inserted
❒ Press **<Save parameters>**

„Data recording SD“:

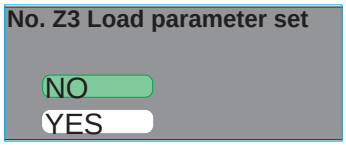
Additional saving of latest boiler data to SD-Card
❒ Press **<Start SD-Logging>**
↳ Logging of boiler data
☞ To finish data logging
❒ press **<finish SD-Logging>**

„**Internal memory**“:
(Feature active during service level password confirmation) Save single boiler date to SD-Card
❒ Choose data
❒ Press **<Copy>**
↳ copy the records to the SD-Card

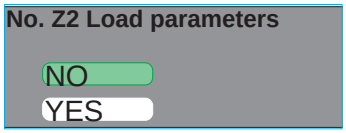
6.1 Reset parameters to factory settings

❒ press
❒ Choose „**Service**“
❒ Choose **„Z-Special features“** menu
❒ Choose **„No Z4 Load factory settings.“**
❒ Choose **Customer/Installer/Service** - parameters and press **<Enter>**
↳ Reset all chosen parameters to factory settings

6.2 Save / load latest parameter file control internal



To save latest parameters
For example: prior any changes



For reloading of saved parameters

Chapter XI: Appendix

	n o t i c e
☞	**Please be advised that we are not responsible for damages or malfunctions resulting from non-observance of the operation manual.**

7 Copyright notice

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7.1 Special measures prior commissioning through the operator

Licensing requirements for safe operation and accident prevention regulations must be observed!

7.2 Liability

The AUTOMATIC BIOMASS BOILER is a state-of-the-art product and manufactured and tested according to recognised safety regulations. However, improper use may cause lethal hazards for the operator or third parties or may damage the unit and other property.

The AUTOMATIC BIOMASS BOILER must only be operated as intended and in technically perfect condition!
Especially, errors tending to affect the safety shall be cleared immediately!

The liability for the function of the AUTOMATIC BIOMASS BOILER must be borne by the owner or user, if the device has been used by persons without the necessary knowledge from Hargassner GmbH , the device has been improperly used, serviced or repaired or has been handled in a manner that does not conform to proper use.
In the interest of the continuous development and improvement of our products, we reserve all rights to make technical changes to the information contained in our printed material. Changes, errors and printer's errors do not justify claims for damages.
Only Original- Hargassner- spare parts must be used.
In addition to the guidelines in this operation manual, please follow general guidelines for safety and accident prevention. The AUTOMATIC BIOMASS BOILER must at least 15 minutes prior be separated from the mains prior any maintenance works on the boiler (Service, unscrew covers, etc.) Hargassner GmbH shall not be liable for direct or consequential damage resulting from failure to observe the technical instructions, guidelines and recommendations. The vast experience of latest production technology and highest quality standards from **Hargassner GmbH** guarantee the reliability of this boiler system. **Hargassner GmbH** can under no circumstances be held liable for improper operation of the product, for damage to the product itself or for consequential damage caused by the product if the damage has been caused by incorrect use or handling of the product.
The customer has NO warranty claims:

- if heating fuel is missing wrong or of poor quality
- if damages occur through incorrect assembly, misuse or lack of maintenance
- if the installation manual and operation manual is NOT observed
- for defects that do not affect the performance of the system. E.g.: Paint defects,....
- for damages arising from force majeure like fire, flooding, lightning stroke, electrical surge, power loss, ...
- if a non-licensed installer or non-licensed plumber installs the product
- for damages arising through air pollution, very dusty surrounding, aggressive vapours, corrosion through oxygen (non diffusion-resistant plastic tubing), installation in inappropriate rooms (laundry room, ...) or through further use, even though a defect has been recognised.

For the correct reparation, maintenance and service, or any other error not mentioned in this manual, **Hargassner GmbH** has to be contacted prior any works on the plant.
Warranty and liability of the general terms and conditions of **Hargassner GmbH** are not to be extended because of hints pointed out in this manual.
The **safety instructions** in this manual must be observed. Only use **Hargassner GmbH** - spare parts or **Hargassner GmbH** released, equivalent spare parts. Constant technical innovations mean that we reserve the right to modify the design of our products and services without notice.
For any questions always prepare the Hargassner **Boiler number** .

We wish you the best with your BIOMASS BOILER.