



# OPERATION AND MAINTENANCE

**KWB Classicfire Typ CF1**

*CF1*





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# Foreword

## About this manual

This manual contains all the required information for operating and controlling. The chapter sequence corresponds to the recommended workflow. For further queries please contact your sales partner or KWB Customer Service.

KWB – Kraft und Wärme aus Biomasse GmbH including its country representatives and authorised competence partners are hereinafter referred to as KWB.

**Our objective is to constantly improve our products and manuals – we would appreciate your comments and suggestions.**

You can find all contact data on the KWB home page [www.kwb.net](http://www.kwb.net).

If you find any errors or mistakes, please let us know at: [doku@kwb.at](mailto:doku@kwb.at)

**Original manual – Subject to change. No responsibility accepted for errors and omissions!**

## Explanation of the Formatting

### Work steps

We use different symbols for the requirements, the actual work steps and the results

- ↘ Requirement
- ↔ Work step
- ↳ Result

### Side text

Keywords at the left of the text columns help you identify the contents of the paragraph.

### Cross references

You can recognise a reference to another section in this document by an arrow and the page number in square brackets. Example: **About this manual [▶ 8]**

## Please note

### Grading of the safety instructions

KWB protects you in the documents with the most internationally secure and modern warning system. Signal words, colours and texts change with increasing danger:

<b>NOTE</b>	<b>General information</b> We use this display to indicate and describe <b>important information</b> .
 <b>CAUTION</b>	<b>Beginning hazard</b> We use this display to indicate and describe <b>beginning hazards</b> . If these stated hazards are <b>not observed, injuries, property damage and environmental damage</b> can occur.
 <b>WARNING</b>	<b>Medium hazard</b> We use this display to indicate and describe hazards. If this warning is <b>not observed, severe or fatal injuries</b> can occur.

**DANGER****Serious hazard**

We use this display to indicate and describe **hazards**. **If this warning is not observed, severe or fatal injuries occur!**

**General safety instructions**

- **Do not alter the system in any way!**
- Close all provided covers before you place the system into operation!
- Unplug the connector before you perform any service or open the control!
- Always disconnect the power supply to the boiler and conveyor system (main switch) before you enter the fuel storage room.

**NOTE****Proper installation by specialists**

- ↳ The entire installation, integration and commissioning of the heating system may only be carried out by expert specialists of KWB or their partners.
- All the work must conform to the specifications stated in the KWB manuals and local regulations.

**Comply with the safety instructions****NOTE****Please comply with the safety instructions**

Your system has been tested for safety and it satisfies the applicable standards, directives and regulations.

Failure to comply with the safety instructions or improper use poses danger of material damage. In addition, failure to comply with the safety instructions or improper use also poses a life-threatening hazard!

**Please read and follow the manual****NOTE****Please read the instructions carefully before installation or commissioning!**

Compliance with the instructions and proper installation or commissioning is a prerequisite for a warranty provided by KWB.

- If you are unsure about anything, please refer to the instructions or contact the KWB customer service.
- ↳ You will find all instructions for our heating systems in the KWB PartnerNet: <http://partnet.kwb.net/>

**Legal****Intellectual Property**

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All catalogues, brochures, diagrams, drawings, manuals and control and adjustment programmes etc. are protected as intangible property and always remain the intellectual property of KWB. Any use, reproduction, distribution, publication, processing and/or other transfer to third parties requires the prior written consent of KWB.

When operating the contractual goods, the installation, operating and other technical regulations and instructions from KWB must be strictly observed and adhered to.

**NOTE****Warranty**

- ↳ The manufacturer's KWB warranty specifies proper installation and commissioning of the system as a prerequisite. Defects and damage due to improper installation, commissioning and operation are excluded from the warranty!
- The manufacturer's instructions must be complied with to ensure proper system function. Knowledge of the manuals is a prerequisite.
- Use only original parts or parts that have been expressly approved by the manufacturer.
- If something is not clear, please look it up in this manual or contact the KWB customer service.

**Liability / Warranty**

Any change and / or modification of the contractual goods or in the operation of the contractual goods not expressly authorised by KWB in writing or their operation in conjunction with other devices or accessories the compatibility of which has not been expressly confirmed by KWB, any inappropriate operation/use (e.g. the use of fuels and/or water not in accordance with standards which do not correspond to VDI 2035 or ÖNORM H 5195-1; inappropriate and / or excessive use) leads to the exclusion of the warranty. Any liability or warranty for compatibility of the contractual goods with other products, systems, plants or parts, as well as the suitability thereof for a specific use shall be excluded unless expressly permitted in writing.

**Intended use**

KWB boilers heat water for central heating systems. The application, operation and maintenance of KWB systems must, without exception, be performed as described in the instructions.

Only the fuels specified in the Operating instructions in Section **Intended fuels** [► 17] may be used without exception.

Any other use shall be deemed IMPROPER. The responsibility for resultant damage shall lie with those who operate and use the system.

**Structural measures****NOTE****Establishing the constructional requirements**

- ↳ Compliance with the locally applicable regulations, and proper execution of the structural measures lies solely within the system owner's sphere of responsibility and is a prerequisite for the guarantee and warranty requirement.  
KWB does not accept any liability, nor does it offer any warranties for any type of constructional measures.
- Comply with all locally applicable, legal, submission, construction and implementation regulations when creating the structural requirements! In addition, comply with KWB installation guidelines!
- Without laying claim to an exhaustive treatment of the issue at hand and without suspension of any conditions imposed by the authorities, we recommend the Austrian preventative fire protection directive TRVB H118 and the ÖKL technical bulletin No. 56 and No. 66 in the applicable version.

## Boiler room requirements

### Floor:

- Concrete, bare or tiled
- Even, horizontal
- Dry
- Able to carry max. load
- Non-flammable (Flammability classification A1 pursuant to EN 13501)

### Customer-provided fire protection

Building part	Fire protection design according to EN 13501
Floor, walls	fire resistant: REI 90
Bearing walls, floors, roofs	fire resistant: REI 90
Horizontal supports and other supports	R 90
Boiler room door	fire retardant: EI <sub>2</sub> 30 c opening in escape direction, closing automatically
Connecting door to the fuel storage room	fire retardant: EI <sub>2</sub> 30 c; closing automatically
Heating room windows	fire retardant: E 30; not to be opened

### Fire extinguisher

### Lighting, electrical system

- NO storage of flammable agents in the boiler room.
- NO direct connection to rooms in which flammable gases or liquids are stored (Garage, storeroom etc).
- Place a portable fire extinguisher of the specified size (at least 6 kg fill weight EN 3) outside of the boiler room next to the boiler room door.
- Make sure that permanently installed lighting and an electrical supply line to the heating system are available.
- Place the light switch at an easily accessible location outside the boiler room next to the boiler room door.
- Leave sufficient reserve cable in the boiler room in case you wish to connect the boiler with other bus participants.

### Ventilation

- Two air vents must be installed; one close to the ground and one close to the ceiling; the air intake opening must lead directly into the open. If other rooms must be crossed to do this, this air duct must have an envelope according to EI 90 (EN 13501)!
- The size of the non-closing opening is dependent on the rated power of the heating system: Calculate the opening with 5 cm<sup>2</sup> per kW, but no less than 400 cm<sup>2</sup>.
- Fit a protective grille with a non-flammable mesh width < 5 mm on the outside of ventilation openings into the open.
- When installing the openings and air ducts, you must ensure that no outside and weather-related influences (leaves, snow, ...) impair the air flow.
- Do not use any chlorine-containing cleaning or operating agents (e.g. chlorine gas plant for swimming pools) or hydrogen halides in the boiler room.
- Keep all boiler air intake openings free of dust.
- If not specified otherwise in the applicable provisions regarding the structural equipment of the boiler room, the following standards apply for the design and dimensioning of the air ducts:

### Note on standards:

ÖNORM H 5170 – Construction and fire-protection requirements

### Frost protection Room temperature

- Provide frost protection for all water lines and district heating pipes.
- Ensure a minimum temperature of 10°C in the boiler room as stipulated in EN 12831. Lower temperatures change the lubricating characteristics to an extent that the reliable operation of the drive aggregates would no longer be ensured.

**Safety**

- Ensure a maximum temperature of 40 °C.
- Do not store flammable materials in the boiler room. Avoid direct connections to rooms in which flammable gases or liquids (e.g. parking garage) are stored.

**Protection against rodents and other animals**

- No flammable items must be placed on the boiler for drying purposes (e.g. clothing, ...).
- The system must be protected against damage from and nesting of animals (rodents, ...).

**Sea level**

- Please contact the manufacturer if the boiler is to be installed at more than 2000 metres above sea level.

## Implementation advice

### Notes on standards

The installation and commissioning of the system must be carried out in accordance with fire protection and building-code regulations. If not regulated otherwise on a national level, the following standards and regulations apply in their most recent version:

#### General standards for heating systems

EN 303-5	Heating boilers for solid fuels, manually and automatically stoked boilers, nominal heat output up to 500 kW
EN 12828	Heating systems in buildings - Design for water-based heating systems
EN 13384-1	Chimneys - Thermal and fluid dynamic calculation methods Part 1: Chimneys serving one heating appliance
ÖNORM H 5151	Design of central hot water heating system with or without hot water generation
ÖNORM M 7510-1	Directives for the inspection of central heating systems Part 1: General requirements and one-time inspections
ÖNORM M 7510-4	Directives for the inspection of central heating systems Part 4: Simple inspection of boiler systems for solid fuels

#### Standards for building code-related installations and safety-related equipment

ÖNORM H 5170	Heating system - Requirements to building and safety technology as well as fire and environmental protection
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#### Standards for heating water generation

ÖNORM H 5195-1	Prevention of damage from corrosion and lime scale formation in hot water heating systems with operating temperatures of up to 100 °C (Austria)
VDI 2035	Prevention of damage in hot water heating systems (Germany)
SWKI BT 102-01	Water quality for heating, steam, cooling and a/c systems (Switzerland)
UNI 8065	Technical standard regulating hot water generation. DM 26.06.2015 (Ministerial order with minimum requirements) Comply with provisions of the standard and the respective amendments.

## Regulations and standards for permissible fuels

1. BImSchV	First ordinance of the German Federal Government for the execution of the German Federal Emission Protection Regulation (BImSchV) (Ordinance on Small and Medium Combustion Plants) – as promulgated on 26 January 2010, BGBl. 2010 Part I No.4
EN ISO 17225-3	Solid biofuels, fuel specifications and classes Part 3: Wood briquettes for non-industrial use
EN ISO 17225-5	Solid biofuels, fuel specifications and classes Part 5: Log wood for non-industrial use

## Heating system installation and approval

The boiler must be operated in a closed heating system. The installation is based on the following standards:

### Note on standards

EN 12828 – Heating systems in buildings

**Note: Every heating system must be approved!**

The installation or conversion of a heating system must be reported to the supervisory authority (monitoring authority) and must be approved by the building authority:

- **Austria:** report to the building authority of the municipality / magistrate
- **Germany:** report to the chimney sweep/building authority

## Chimney connection / chimney system



Pursuant to EN 303-5, the entire exhaust system must be designed so that potential sooting, insufficient conveyance pressure and condensation are prevented. In this respect, we would like to point out that in the permissible boiler operating range, temperatures of less than 160 K above room temperature may occur.

The exhaust gas temperatures in a cleaned state and additional exhaust gas values can be found in the following table.

The connecting piece should be installed via the shortest path possible and, if possible, ascending on an incline of 30 – 45° to the chimney, and must be insulated. The entire exhaust system must be designed pursuant to EN 13384-1.

In addition, local or legal provisions apply!

**Note:** The chimney must be approved by the chimney sweep!

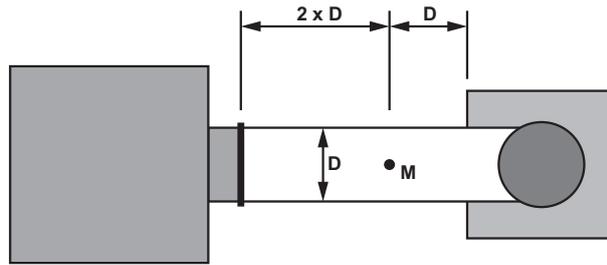
### Draft limiter

Generally, we recommend installing a draft limiter. If the maximum permissible conveyance pressure indicated in the design data for the exhaust gas system is exceeded, a draft limiter must be installed!

**Note:** The draft limiter should be installed directly under the inlet of the exhaust pipe as constant negative pressure is ensured here.

### Measuring opening

To measure the emissions of the system, a suitable measuring opening must be installed in the connecting piece between boiler and chimney system.



There should be a straight inlet path before the measuring opening (M) at a distance of about twice the diameter (D) of the connecting piece. After the measuring opening, there should be a straight outlet path at a distance of about one time the diameter of the connecting piece.

The measuring opening must always be kept closed while the system is in operation.

It must be kept in mind for the measuring opening that the outer diameter of the sampling probes may be up to 13 mm. To prevent incorrect false air intake, the diameter of the measuring opening must not exceed 21 mm.

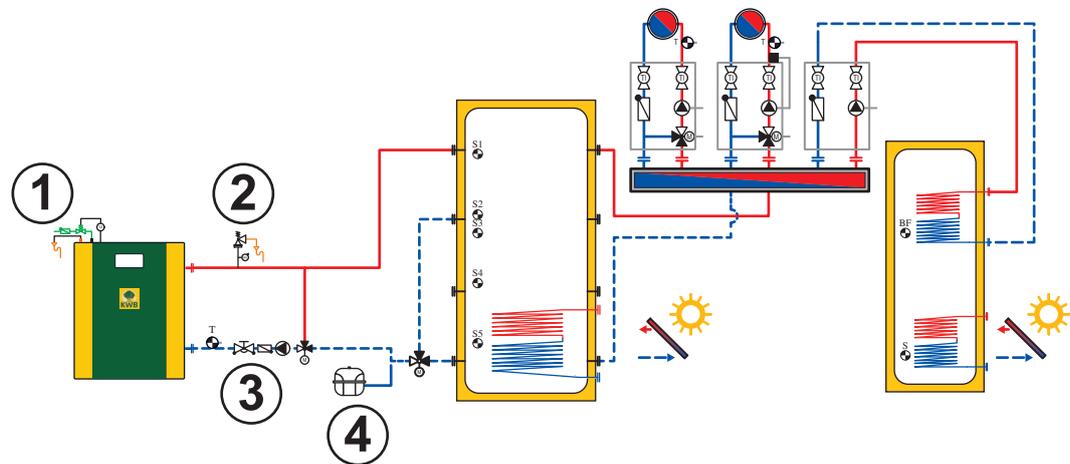
**Exhaust gas system design data**

Designation	Unit	KWB Classicfire type CF1 15 kW	KWB Classicfire type CF1 20 kW
Exhaust gas temperature at nominal load	°C	150	170
Exhaust gas temperature at partial load	°C	–	130
Exhaust gas mass flow at nominal load	kg/s	0.010	0.013
Exhaust gas mass flow at partial load	kg/s	–	0.007
Required conveyance pressure at nominal load	Pa	8	8
	mbar	0.08	0.08
Required conveyance pressure at partial load	Pa	–	8
	mbar	–	0.08
Maximum permissible conveyance pressure	Pa	30	30
	mbar	0.3	0.3
Exhaust gas pipe diameter	mm	129	129

# 1 Overview

## 1.1 Safety elements

We have taken the following measures in order to maximize the safety of our systems.



1	Thermal discharge safety valve	2	Safety valve
3	Return flow boost with pump	4	Expansion tank

### Safety temperature limiter [STB]

This system stops the combustion if the boiler temperature exceeds 100 °C:

- The induced draught is switched off and the air shutter is closed.
- The pumps will continue to run.
- This alarm will be displayed on the boiler control unit:

**02.00 Safety thermostat! Boiler overheating! [▶ 75]**

### Thermal discharge safety valve

The thermal discharge safety valve is an integrated safety device against the boiler overheating as required by EN 303-5:2012. The connection must be carried out according to the hydraulic diagram.

If the temperature exceeds a certain value (94 to 98 °C), the thermal discharge safety valve opens and cold water is introduced into the safety heat exchanger.

The discharge safety valve must be connected with a pressurized water supply network through an **unblockable** connection. With cold water pressure greater than 6 bar a pressure reducer valve is also required. The min. cold water pressure is 2 bar.

Possible triggers: sudden shutdown, boiler circuit pump failure, black-out, defect boiler temperature sensor

When the boiler pressure reaches 3 bar, the safety valve opens and discharges hot (!) heating system water!

You must comply with EN ISO 4126-1:2013 requirements, diameter according to EN 12828 or national standard.

Among other things, the safety valve must be installed at the boiler or in direct vicinity to the boiler to make sure it is accessible and that there are NO shut-off devices between the boiler and the safety valve!

**Lambda probe**

The broadband lambda probe adapts the combustion to various fuel qualities.

**Limit switch for casing door**

When the casing door is opened, the induced draught fan will immediately start to run to ensure negative pressure.

**Additional safety elements**

You must also comply with local regulations and DIN 18896 regarding the operation of a "fire place".

**Main switch**

This switches the power supply of the system on and off. All components are de-energized as a result.

**WARNING****Uncontrolled combustion due to premature switch-off**

- ↳ If the boiler is switched off via the main switch during heating operations, the boiler goes into an uncontrolled state!
- Wait until the operating status "ready" or "fire out" is displayed before switching off the boiler via the main switch!

**NOTE****Overheating due to an uncontrolled shutdown**

If the system is shut down abruptly, the boiler can no longer dissipate the heat and could overheat. This would first trigger the safety temperature limiter and subsequently the thermal discharge safety valve.

## 1.2 Residual risks

**WARNING****Uncontrolled combustion due to premature switch-off**

- ↳ If the boiler is switched off via the main switch during heating operations, the boiler goes into an uncontrolled state!
- Wait until the operating status "ready" or "fire out" is displayed before switching off the boiler via the main switch!

**WARNING****Burn injuries due to hot surfaces!**

Surface behind the casing door can become very hot during operation!

- ↳ Ensure that the system is switched off and has cooled down before touching the surface!
- Use suitable protective gloves when adding fuel.
- Only operate the boiler at the respectively intended handholds.
- Insulate exhaust pipes and do not touch them during operation.

 <b>WARNING</b>	<p>Perform work according to this operating manual only! Improper work can put you in life-threatening situations due to a lack of experience!</p> <ul style="list-style-type: none"> <li>↳ Risk of fire, explosion and electric shock from open casing, an open combustion chamber door or maintenance cover</li> <li>↳ Asphyxiation risk due to carbonisation gases from smouldering fuel when the combustion chamber door or maintenance cover is open!</li> <li>↳ Before inspections/cleaning on/in the boiler: <ul style="list-style-type: none"> <li>→ Let the fuel burn out and the boiler cool down!</li> <li>→ Switch off the system (main switch to "0").</li> <li>→ Pull the plug and secure the system against being switched on again.</li> <li>→ Let the system cool down. Only open the casing, combustion chamber door and maintenance cover when the system is <b>cold</b> and de-energised!</li> </ul> </li> </ul>
 <b>DANGER</b>	<p><b>Life-threatening danger due to toxic combustion gases</b></p> <ul style="list-style-type: none"> <li>↳ When burning rubbish, toxic gases are emitted that may destroy the boiler: these include chipboards and other glued laminated wood products, plastic materials, rubber, PVC, varnish, etc.</li> <li>→ Only burn fuels intended for this system!</li> </ul>
 <b>CAUTION</b>	<p><b>Explosions through ignition aids</b></p> <ul style="list-style-type: none"> <li>→ NEVER ignite and heat the boiler with liquid fuels, such as gasoline!</li> </ul>

## 1.3 Chimney requirements

**Switzerland:** Systems in Switzerland: Low-emission operation according to VHe homologation is only guaranteed when the system can be operated at low exhaust gas temperatures of the smallest thermal output (30% of nominal output). Usually, this requires a condensation-resistant chimney. If you have any questions about this, please contact your installation company.

Due to the high boiler efficiency rate, the chimney design should be executed so that it is resistant to moisture. A moisture-resistant chimney design means that there will be no moisture penetration or damage to the brickwork, even though the temperature level in the exhaust gas path remains permanently below the exhaust gas dewpoint (see EN 13384 / DIN 18160).

## 1.4 Intended fuels

 <b>DANGER</b>	<p><b>Life-threatening danger due to toxic combustion gases</b></p> <ul style="list-style-type: none"> <li>↳ When burning rubbish, toxic gases are emitted that may destroy the boiler: these include chipboards and other glued laminated wood products, plastic materials, rubber, PVC, varnish, etc.</li> <li>→ Only burn fuels intended for this system!</li> </ul>
 <b>CAUTION</b>	<p><b>Explosions through ignition aids</b></p> <ul style="list-style-type: none"> <li>→ NEVER ignite and heat the boiler with liquid fuels, such as gasoline!</li> </ul>

### Reliable fuels

The following fuels, which have to meet the respective standards, are exclusively permitted for system operation:

- **Log wood**

Log wood pursuant to EN ISO 17225 – part 5: log wood class A2 / D15 L50 (in Germany additionally fuel class 4 (§3 of the 1st BImSchV, as amended))

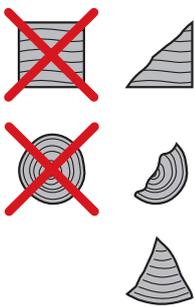
- Length: max. 55 cm (M25)
- Moisture content (w): between 15% and 25% (corresponds to wood moisture (u) of between 17% and 33%)

**Note:** If the moisture content falls below 15%, it is recommended to adjust the combustion control to the fuel. Contact your heating system company or the KWB customer service!

See also section **Increased exhaust gas duct cleaning efforts [► 74]** in the operating instructions

**These must not contain any foreign objects (stones, plastic materials)!**

### Tips on how to store wood



- Split larger log wood pieces before you store them.
- Store the wood in a sunny and dry and well-ventilated spot (e.g. storage at the edge of the forest instead of inside the forest) and keep it protected against weather influences.
- When storing at a building wall, it is preferable to use the side facing the sun and to keep a distance of 5-10 cm to the building wall.
- Create a dry surfaces on which to place the wood, ventilated, if possible, by placing round pieces of timber, palettes, etc.
- Store the daily fuel amount used in heated rooms, if possible (e.g. in the room where the boiler is located).

### Relationship of moisture content to storage period

Newly harvested timber has a moisture content of approximately 50 to 60%. During storage, the moisture content of the log wood decreases depending on how dry the storage location is and what the ambient temperature is.

Storage	Wood type	Moisture content	
		15 – 25%	below 15%
Storage in heated and ventilated rooms (approx. 20°C)	Softwood (e.g. spruce)	approx. 6 months	after 1 year
	Hardwood (e.g. beech)	1 – 1.5 years	after 2 years
Stored outside (protected against weather influences, exposed to wind)	Softwood (e.g. spruce)	2 summers	after 2 years
	Hardwood (e.g. beech)	3 summers	after 3 years

### Partially admissible fuels

- **Wood briquettes**

Partially admissible wood briquettes for non-industrial use according to EN ISO 17225 – part 3: wood briquettes class B / D100 L500 form 1 - 3 (in Germany additional fuel class 5a (§3 of the 1st BImSchV, as amended))

- Diameter: 5-10 cm
- Length: 5-50 cm

### Instructions for use

- The ignition of wood briquettes must be carried out using log wood pursuant to EN 17225-5 (at least two log wood layers underneath the wood briquettes).
- The fill room must be filled to max. 3/4 as the wood briquettes expand during combustion.
- When burning wood briquettes, issues may occur during combustion. In this case, adjustments must be made by qualified personnel.  
Contact your heating system company or the KWB customer service!

### Inadmissible fuels

The use of fuels which are not defined in the section "Intended fuels", particularly the burning of waste is not permitted.



#### CAUTION

##### Boiler damage due to the use of inadmissible fuels

- ↳ The combustion of inadmissible fuels leads to increased cleaning expenditures and damage to the boiler due to the build-up of aggressive deposits and condensation; this invalidates the warranty! Moreover, the use of non-standard fuels may strongly impair the combustion!
- Only use admissible fuels!

## 1.5 Solar control

#### NOTE

##### Follow the manufacturer's instructions!

- Follow the manufacturer's instructions with respect to the installation and commissioning of the solar system.
- Follow the manufacturer's hazard and safety instructions.

### Flushing and filling of the solar system

For safety reasons, filling must be carried out exclusively during times without sunlight or with covered collectors. Particularly in areas which experience frost, a 42% antifreeze-water mixture must be used. To protect the materials from excessive thermal loads, the filling and commissioning of the system should occur within a short time, but at most after 4 weeks. If this is not possible, the flat seals should be renewed before commissioning to prevent leaks.

**Attention:** If the antifreeze is not pre-mixed, it must be mixed with water before filling!

You must use the manufacturer-recommended antifreeze!

It is possible that collectors that have once been filled cannot be fully emptied. For this reason, collectors may even for pressure and function tests only be filled with the water/antifreeze mix when there is danger of frost. Alternatively, the pressure test can be performed with compressed air and leak locator spray.

### Operating pressure

Observe the manufacturer-recommended maximum operating pressure.

### Bleeding

The system must be bled:

- During commissioning (after filling)
- 4 weeks after commissioning
- If required (e.g. during faults)



#### WARNING

##### Risk of scalding from steam or hot heat transfer fluid!

- Only activate the bleed valve if the temperature of the heat transfer fluid < 60 °C. The collectors must not be hot when the system is emptied!
- ↳ Cover the collectors and, if possible, empty the system in the morning.

### **Check the heat transfer fluid**

The heat transfer fluid must be checked every 2 years for frost protection and pH value.

- Check the frost protection with the antifreeze tester and replace or refill, if necessary! Setpoint approx.  $-25\text{ °C}$  to  $-30\text{ °C}$  depending on the climatic conditions.
- Check the pH-value with an indicator stick (setpoint approx. pH 7.5):  
Replace the heat transfer fluid if the limit ph-value of  $\leq \text{pH } 7$  is undershot.

### **Collector maintenance**

Warranty claims only in connection with the supplier's original antifreeze and properly performed installation, commissioning and maintenance. Installation by a certified technician in strict adherence to the instruction description is required to justify the claim.

### **Mass flow rate**

A specific flow rate of  $30\text{ l/m}^2\text{h}$  must be selected up to a collector field size of approx.  $25\text{ m}^2$  to ensure good collector performance.

## 2 Safety

### 2.1 Please note

#### 2.1.1 Grading of the safety instructions

In this documentation, warnings with the following hazard levels are used to indicate direct dangers and important safety regulations:

<b>NOTE</b>	<b>General information</b> We use this display to indicate and describe <b>important information</b> .
 <b>CAUTION</b>	<b>Beginning hazard</b> We use this display to indicate and describe <b>beginning hazards</b> . If these stated hazards are <b>not observed, injuries, property damage and environmental damage</b> can occur.
 <b>WARNING</b>	<b>Medium hazard</b> We use this display to indicate and describe hazards. If this warning is <b>not observed, severe or fatal injuries</b> can occur.
 <b>DANGER</b>	<b>Serious hazard</b> We use this display to indicate and describe <b>hazards</b> . <b>If this warning is not observed, severe or fatal injuries occur!</b>

#### 2.1.2 General safety instructions

- **Do not alter the system in any way!**
- Close all provided covers before you place the system into operation!
- Unplug the connector before you perform any service or open the control!
- Always disconnect the power supply to the boiler and conveyor system (main switch) before you enter the fuel storage room.

<b>NOTE</b>	<b>Proper installation by specialists</b> <ul style="list-style-type: none"> <li>↘ The entire installation, integration and commissioning of the heating system may only be carried out by expert specialists of KWB or their partners.</li> <li>→ All the work must conform to the specifications stated in the KWB manuals and local regulations.</li> </ul>
-------------	--

### Comply with the safety instructions

<b>NOTE</b>	<b>Please comply with the safety instructions</b> Your system has been tested for safety and it satisfies the applicable standards, directives and regulations.  Failure to comply with the safety instructions or improper use poses danger of material damage. In addition, failure to comply with the safety instructions or improper use also poses a life-threatening hazard!
-------------	---

## Please read and follow the manual

### NOTE

#### Please read the instructions carefully before installation or commissioning!

Compliance with the instructions and proper installation or commissioning is a prerequisite for a warranty provided by KWB.

→ If you are unsure about anything, please refer to the instructions or contact the KWB customer service.

↳ You will find all instructions for our heating systems in the KWB PartnerNet: <http://partnet.kwb.net/>

## 2.2 Pictograms used

The following command, prohibition and warning signs are used in the documentation and/or at the boiler.

According to the Machine Directive, signs attached directly at the danger location of the boiler warn of direct dangers or signal safety-relevant behaviours. These stickers must not be removed or covered up.

Command sign (safety colour blue)			
	General command signs		Use mask
	Follow instructions		Use welding mask
	Use hearing protection		Before maintenance and repair disconnect from mains
	Use eye protection		Check barrier
	Earth before use		Keep closed
	Disconnect plug from the mains!		Use gas detector
	Use foot protection		Continuous ventilation to the outside is required
	Use hand protection		Ventilation required

Command sign (safety colour blue)			
	Use protective clothing		Entry only with a second person on the outside! In the event of an accident first call for help!
	Use face guard		Only certified technicians
	Use head protection		Only certified electricians

Prohibition sign (safety colour red)			
	General prohibition signs		No access for persons with pace-makers or implanted defibrillators
	Unauthorized access prohibited		Reaching in prohibited
	Smoking is prohibited		Stepping on the surface is prohibited
	No open flames; Fire, open ignition sources and smoking are prohibited		

Warning signs (safety colour yellow)			
	General warning sign		Warning of automatic start-up
	Warning of explosive substances		Warning of danger of crushing
	Warning of obstructions on the ground		Warning of flammable substances
	Warning of danger of falling		Warning of sharp object

Warning signs (safety colour yellow)			
	Warning of low temperature / frost		Warning of hand injuries
	Warning of danger of slipping		Warning of rollers running in opposite direction
	Warning of electrical voltage		Warning of optical radiation
	Warning of suspended load		Warning of flammable materials
	Warning of hot surface		Warning of suffocation risk

## 2.3 Stickers

### NOTE

#### Hazard due to missing safety sticker

- ↳ Safety stickers save lives! They protect you against injuries and prevent damage to property and equipment!
- Ensure the correct use of the heating system: Attach ALL stickers as indicated in the instructions!
- Give the unused stickers to the operator of the heating system and instruct the operator regarding the possible hazards and/or consequences!
- Order any missing or incorrect stickers from KWB.

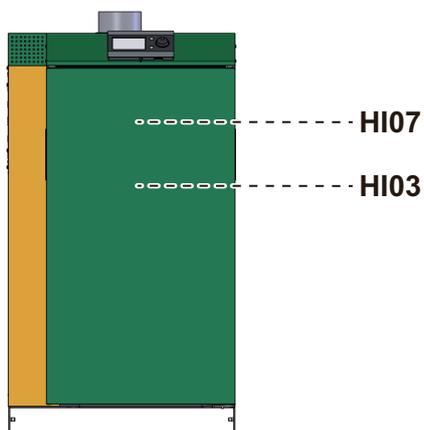
→ Make sure that the following stickers are placed at their respective spots.

→ Order missing stickers using the respectively required article number:

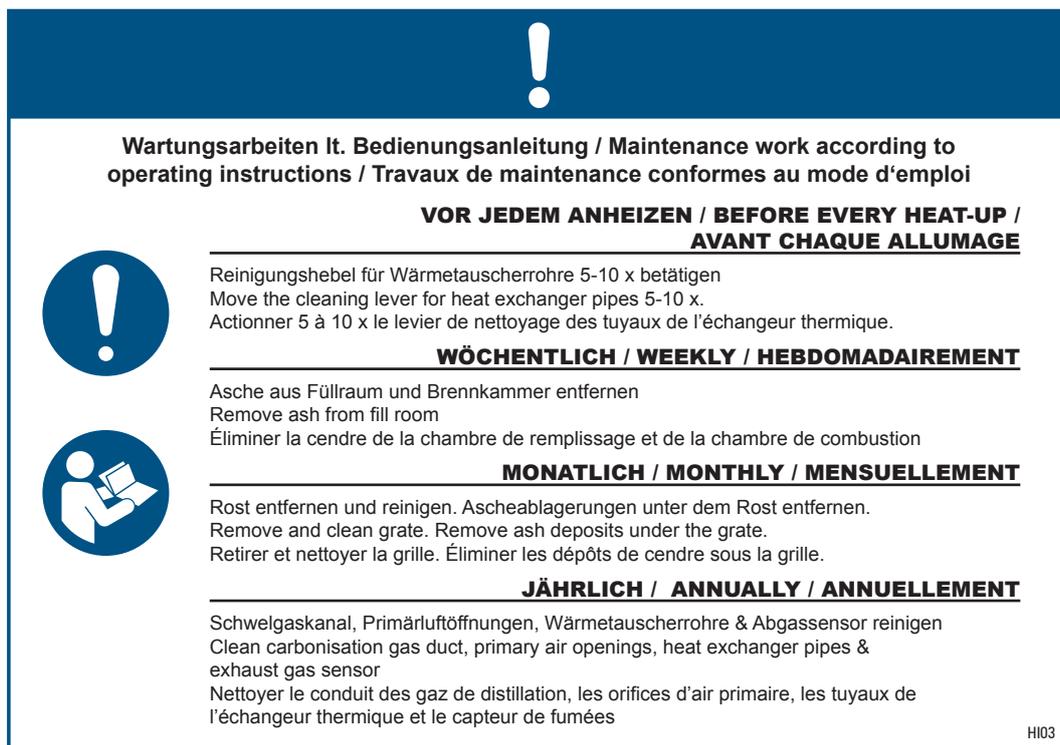
27-2000234 – Languages: DE | EN | FR

27-2000235 – Languages: ES | IT | SL

### 2.3.1 Stickers on the front part

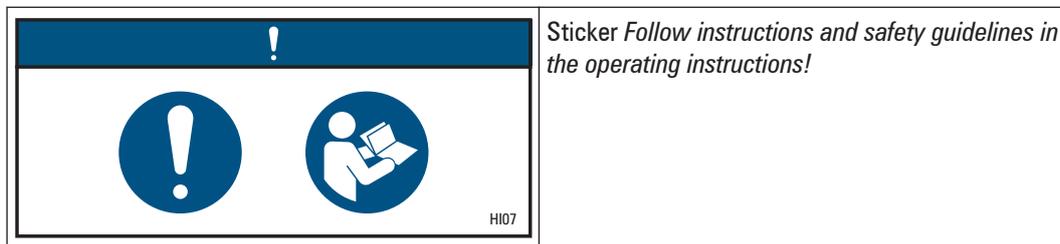


(HI03) → Check whether the sticker *Maintenance overview* has been attached to the inside of the casing door:

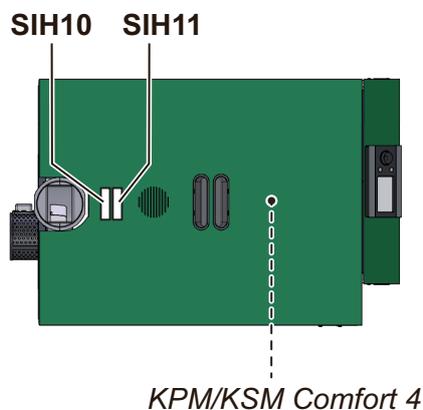


Sticker *Maintenance overview* (symbol display)

(HI07) → Check whether the sticker *HI07* has been attached to the fill room door:



## 2.3.2 Stickers on the top part



Check whether the following stickers are attached to the cover of the control box and are clearly visible:

Check whether the sticker showing the plug assignment of the KWB Comfort 4 has been attached to the inside of the control cabinet cover plate so it is easy clearly visible:

**Stecker Kessel-Power-Modul [KPM]  
Plug, boiler power module [KPM]  
Fiche module d'alimentation de chaudière [KPM]**

	Versorgung 230/400 V <sub>AC</sub> / Power supply 230/400 V <sub>AC</sub> / Alimentation 230/400 V <sub>CA</sub>
100	STB / STL / STB
111	Saugzug (Pin 4-5-6) / Induced draught (pin 4-5-6) / Tirage (broches 4-5-6)
120	Mischer RLA / Mixer return flow boost / Mélang. MTR
	Kessel- od. Pufferladepumpe / Boiler or buffer charging pump / Pompe d'alimentation de chaudière ou de ballon tampon
121	Schnell-Ladeventil Puffer 0 / Quick-charge valve Buffer 0 / Vanne de charge rapide Ballon tampon 0
122	Zubringer- od. Ladepumpe Puffer 0 / Supply or charge pump Buffer 0 / Pompe d'alimentation ou de charge ballon tampon 0
123	Multifunktionsausgang 3 / Multi-function output 3 / Sortie multifonctions 3
124	Multifunktionsausgang 1 / Multi-function output 1 / Sortie multifonctions 1
125	Reserve Sicherheits-Eingang, z.B. Wassermangel- Sicherung / Reserve safety input, e.g. low water pressure switch / Entrée de sécurité de réserve, par ex. sécurité manque d'eau
128	Not-Halt (bei reinem Stückholzbetrieb gebügelt) / Emergency stop (bridged for pure log wood operation) / Arrêt d'urgence (shunté en cas de mode bois en bûches exclusif)
129	Schalter Aschebehälter entfernt (Pin 1-3) (beim CF1 gebügelt) / Ash container switch removed (pin 1-3) (bridged in the CF1) / Commutateur bac à cendres retiré (broches 1-3) (shunté sur la CF1)

	Sensor Überfüllschutz-Deckel Förderkanal (Muss bei EF2, CF1 und CF2 gebügelt bleiben!) / Sensor, overflow protection cover conveyor channel (Must remain bridged in EF2, CF1 and CF2) / Capteur couvercle de protection de trop-plein conduite d'alimentation (doit rester shunté avec EF2, CF1 et CF2 !)
131	Temp.überwachung Lagerraum (TÜB) (gebügelt oder verwendet) / Temp. monitoring storage room (TMFS) (bridged or used) / Surveillance de la température du local de stockage (CTC) (shuntée ou utilisée)
132	Hausbus [OUT] / House bus [OUT] / Bus domestique [OUT]
134	Kesselbus [OUT] / Boiler bus [OUT] / Bus chaudière [OUT]
137	Kessel BGE 24 V <sub>DC</sub> / Boiler BGE 24 V <sub>DC</sub> / Chaudière MCE 24 V <sub>DC</sub>

**Stecker Kessel-Signal-Modul [KSM]  
Plug, boiler signal module [KSM]  
Fiche module de signaux de la chaudière [KSM]**

200	Lambdasonde / Lambda probe / Sonde lambda
205	Türkontakt / Door contact / Contact de porte
	Saugzug Drehzahl (Pin 4-5-6) / Induced draught fan speed (pin 4-5-6) / Vitesse du tirage (broches 4-5-6)
211	Luftklappe AUFZU (Pin 2-6-10) / Position (Pin 4-8-12) / Air shutter OPEN/CLOSED (pin 2-6-10) / position (pin 4-8-12)
213	Clapet d'air : OUVERT/FERMÉ (broches 2-6-10) / position (broches 4-8-12).
217	Rücklauf-Temp. / Return flow temp. / Temp. de retour
218	Kesselvorlauf-Temp. / Boiler forward flow temp. / Temp. de départ de la chaudière
220	Abgas-Temp. / Exhaust gas temp. / Temp. des fumées
235	Kesselpumpe PWM 1 / Boiler pump PWM 1 / MLI pompe de la chaudière 1
237	Außen-Temp. / Outside temp. / Temp. extérieure

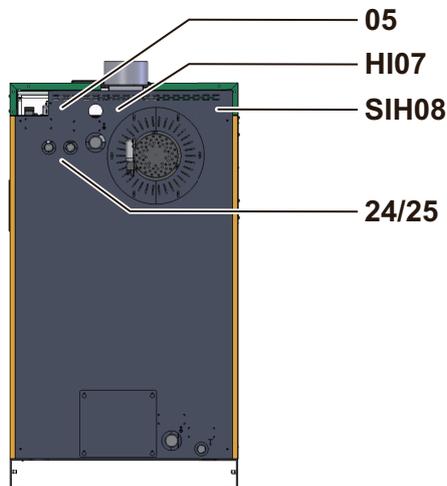
238	Puffer-Temp. 1 / Buffer temp. 1 / Temp. ballon tampon 1
239	Puffer-Temp. 2 / Buffer temp. 2 / Temp. ballon tampon 2
240	Puffer-Temp. 3 / Buffer temp. 3 / Temp. ballon tampon 3
241	Puffer-Temp. 4 / Buffer temp. 4 / Temp. ballon tampon 4
242	Puffer-Temp. 5 / Buffer temp. 5 / Temp. ballon tampon 5
243	Versorgung 24 V <sub>DC</sub> GSM-Modul / Power supply 24 V <sub>DC</sub> GSM module / Alimentation 24 V <sub>DC</sub> module GSM
247	Kesselbus [IN] KPM #135 / Boiler bus [IN] KPM #135 / Bus chaudière [IN] KPM #135
248	Kesselbus [OUT] / Boiler bus [OUT] / Bus chaudière [OUT]
250	RS232 GSM-Modul / RS232 GSM module / Module GSM RS232

xxx ... Interne Anschlüsse / internal connections /  
Raccordements internes  
xxxx ... Externe Anschlüsse / external connections /  
Raccordements externes

KPM/KSM CF1

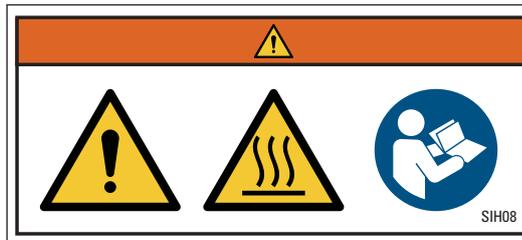
Plug list KPM/KSM – KWB Comfort 4 (symbol display)

### 2.3.3 Stickers on the rear side



→ Check the legibility of the stickers in the rear:

**Hot surfaces!  
(SIH08)**



**Warning - Hot surface!**

Follow the instructions!

Danger of burn injuries on hot parts and at the ex-  
haust pipe during work at the hot boiler!

Maintenance should only be carried out when the  
boiler has fully cooled down!

Power supply  
(05)

	<p>Power supply</p>
--	---------------------

Follow the instructions!  
(HI07)

	<p><b>Follow the instructions!</b> Follow instructions and safety guidelines in the operating instructions! Improper boiler maintenance and failure to follow instructions in the system documentation will void the warranty.</p>
--	--

Thermal discharge safety valve  
(24 / 25)

<p>Inflow</p>	<p>Discharge</p>	<p>Stickers on both thermal discharge safety valve pipes: The thermal discharge safety valve assumes a cold water pressure of 2–3.5 bar and triggers at a boiler temperature of 95 °C!</p>
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### 2.3.4 Stickers for the storage room

→ Always ensure that the storage room warnings are attached to the door of the storage room!

(SIH04)

	<p><b>Sticker storage room log wood!</b> Sticker on the door to the log wood storage room (example representation) Unauthorised persons are not allowed beyond this point! Lock the door! Keep children away! No smoking, no fire or ignition sources of any type! Follow the instructions!</p>
--	---

### 2.3.5 Type plate sticker

<p>Kraft und Wärme aus Biomasse GmbH A-8321 St. Margarethen/Raab, Industriestraße 235</p>	
Type   Fuel extractor	KWB Powerfire Typ TDS 200
SN   Year	000-0000000/0   2013
Fuel	wood chips B1 (EN 303-5) P45B (EN 14961-4)   wood pellets (EN 14961-2)
Rated thermal output (RTO)	199,0   199,0 kW
min. thermal output	59,7   59,7 kW
Fuel thermal output at RTO	211,9   212,4 kW
max. operating pressure	3,5 bar
max. operating temperature	90 °C
Water content	610,0 Ltr
Max. allowed power input	5100 W
Electrical connection	3+N 400 V AC 50Hz 16 A
Test standard   boiler class	EN 303-5   4   4
O <sub>2</sub> at rated power	14   5 mg/m <sup>3</sup> (13% O <sub>2</sub> )
Dust at rated power with cyclone	33,0   - mg/m <sup>3</sup> (13% O <sub>2</sub> )
Dust at rated power	35,0   28,0 mg/m <sup>3</sup> (13% O <sub>2</sub> )
VKF-NR	18889

**Type plate example**

You will find the type plate with the instructions attached to one of the cover sheets.

→ Attach the type plate to the boiler casing in a **visible location**.

**This sticker is absolutely required for the operating permit!**

## 3 Operating fundamentals

Please read through the entire instruction manual before operating the system. If you are unsure about anything, please contact KWB customer service or your personal KWB partner!

### 3.1 Control elements under the casing cover

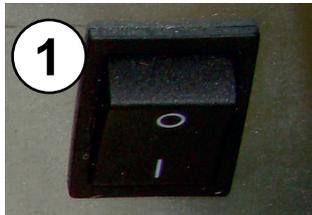


#### WARNING

**Unforeseeable consequences (personal injury and property damage) due to incorrect commissioning**

→ The initial commissioning requires comprehensive specialised knowledge: Only qualified and certified technicians are permitted commission the system!

The control elements are located under the casing cover at the outside of the control box (see section **Boiler structure** [► 42]).



1	Main switch [HS]
2	Safety temperature limiter [STB]

**Safety temperature limiter [STB]** (*Protection against overheating:*):

If this safety element has triggered, you must wait until the boiler temperature has fallen below 75°C. Unscrew its cap and unlock the safety temperature limiter by pressing, e.g., a screw driver on it.

**Main switch [HS]** (*Switch off power supply:*):

This switches the power supply of the system on or off.



#### WARNING

**Risk of suffocation due to opened combustion chamber door**

→ Ensure that the combustion chamber door of the heating system is closed tightly before putting the system into operation.

Shortly after switching on your system, the Exclusive control unit will display the "Buttons" view. The KWB Comfort 4 control is now at your disposal.

## 3.2 Exclusive control unit

### 3.2.1 Graphic interface

This section describes the operation of the KWB Comfort 4 using a Exclusive control unit. For the **Basic control unit** [► 39], please see the section Basic control unit.

Depending on the situation, KWB Comfort offers different views:

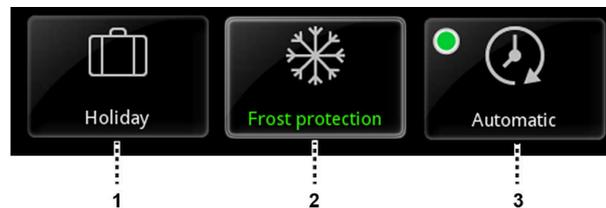
- The **buttons** to quickly call up frequently used functions;
- The **menu** for a detailed configuration, and
- The **overview** as standard screen in the living quarters.

### The "buttons" view

After the control starts up, it shows a screen with 6 shortcut buttons. You can access frequently used functions via these buttons, but you can also access the menu or switch off the boiler.

Start screen		Selection screen	
	Outside temperature		"One level up" or "back to the previous screen"
	Inside temperature		Title of the current screen
	Boiler temperature		Back to the start screen

- The Exclusive control unit [BGE] in the living quarters shows the room temperature the outside temperature and the time at the top screen edge.
- The Exclusive control unit [BGE] at the boiler shows the boiler temperature (!), the outside temperature and the time at the top screen edge.



1	Button without special status
2	Selected button or last selected button using the dial
3	The green circle shows that this function is active.

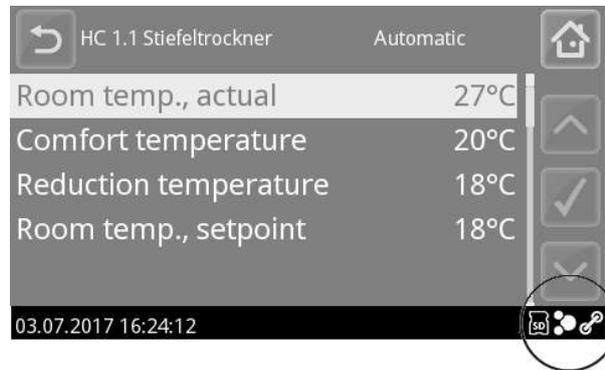
### "Menu" display

In a text-based list, you will find all functions and settings for the KWB Comfort 4. The menus are structured, meaning that the available "sub-menus" will contain related functions.

Navigation	Functions and settings

	Moves the menu bar up one line.	Function name or setting
	Access the sub-menu for a <b>function</b> . Start the value change for a <b>setting</b> .	Current setting value
	Moves the menu bar down one line.	The scroll bar indicates that the list is longer than what is shown on the screen and shows the current position within the entire list.

## Footer



	White: SD card inserted and recognised Red: Error! (Card not ready yet, error during integration, error when ejecting the card)		KWB Comfort Online (Option) White: Connection has been established Green: Data exchange is underway Red: No connection
	Shows the bus connection when using the Exclusive control unit [BGE] outside of the boiler. White: bus connection OK Red: bus connection interrupted		

### 3.2.2 Using the menu

All commands of the KWB Comfort 4 are combined at multiple levels – you will thus not be required to run through endless lists to access the desired setting.

#### NOTE

#### Protect your heating system

- ↳ False settings prevent fault-free operation with minimum emissions and low fuel usage.
- Please read the entire operating instructions carefully.
- If you have any questions, please contact the KWB customer service.

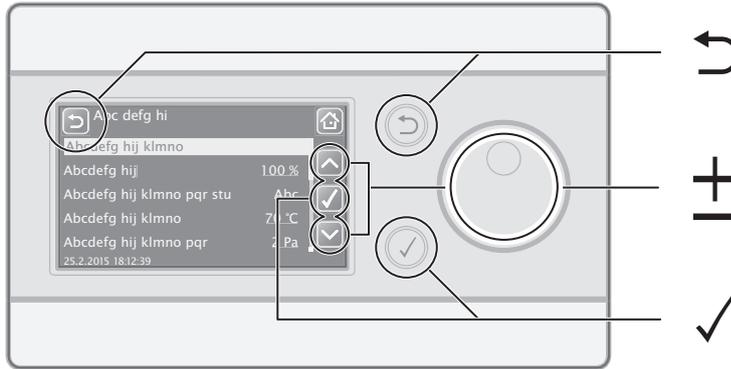
#### Shortcut button "menu"



This shortcut button will lead you to the "menu" screen, via which you will be able to access all settings in a hierarchical menu structure with sub-menus, if any.

The "dual control" of the KWB Comfort 4 gives you at any time the choice to work with the dial and the two buttons,  and , or with the touch buttons,  and , on the screen – you can also mix both options!

**Buttons of equal value**



**Menu navigation**

Navigating with buttons and dial	Touch screen navigation
→ Turn the dial to the left or right.	→ Touch one of the touch arrow buttons  and  at the right touch screen edge.
In the menu, the menu bar (highlights the currently selected menu bar) moves down or up.	
→ Turn the dial until the desired sub-menu is highlighted.	→ Touch the desired sub-menu.
→ Press the button .	→ Touch one of the touch buttons  at the right screen edge.
This will confirm the selected sub-menu and take you one level further down.	

**Change settings**

When you have navigated to the setting the value of which you would like to change, as described above, and have confirmed your selection with or then ...

Navigating with buttons and dial	Touch screen navigation
→ Turn the dial until the desired value is displayed.	→ Enter the desired value using the displayed keyboard or touch one of the arrow buttons to change the value in a targeted manner.

**Confirm your entry**

When you see the desired value displayed then ...

Navigating with buttons and dial	Touch screen navigation
→ Press the button .	→ Touch the touch button  at the right screen edge to confirm the new value.
The control will immediately start to distribute this change in the network. Several seconds can pass until the new value has reached all control units, depending on the size of the network and number of control units.	

**Cancel entry**

When you notice during the entry of a setting that the previous setting should be kept then ...

Navigating with buttons and dial	Touch screen navigation
→ Press the button .	→ Touch the touch button  in the top left corner or the touch button  in the top right corner of the screen.
The control will then continue to work with the previous value.	

**One level up**

To move up a level in the menu ...

To the top menu

Navigating with buttons and dial	Touch screen navigation
→ Press the button ↶.	→ Touch the touch button ↶ in the top left corner of the screen.
The higher level menu is displayed.	

To switch to the start menu ("Main menu") ...

Navigating with buttons and dial	Touch screen navigation
→ Press the button ↶ several times.	→ Touch the touch button  in the top right corner of the screen.
The top level menu is displayed.	

### 3.2.2.1 Changing values

You will be able to change values as follows

Changes by using buttons and dial	Changes by using the touch screen
→ Turn the dial to the left or right.	→ Touch one of the touch arrow buttons at the right touch screen edge. <b>Tip:</b> If you touch the touch arrow buttons for more than 2 seconds, the change will occur much quicker.

#### Confirming your change

Confirm by using buttons and dial	Confirm by using the touch screen
→ Press the ✓ button.	→ Touch the button ✓ at the right screen edge.

#### Cancelling the change

Confirm by using buttons and dial	Confirm by using the touch screen
→ Press the ↶ button.	→ Touch the button ↶ in the top left corner of the screen.

This will quit the change without saving the new value.

## 3.3 Frequently used Comfort 4 functions

### 3.3.1 Setting the date/time of day

The switchover to summer/winter time occurs automatically!

→ Open the display "menu" at the Exclusive control unit and navigate to the menu "date/time".

Navigating with buttons and dial	Touch screen navigation
<p>→ The dial will bring you to the next entry value. Set the desired date and confirm by pressing ✓.</p>	<p>→ On the touch screen, select the value that you wish to change.</p>
<p>→ You have completed setting the date after you have confirmed the last value with ✓.</p>	<p>→ Define the desired values using the dial and confirm by pressing <input checked="" type="checkbox"/>.</p>

You will find the full explanation in section **Date/Time [▶ 64]**.

### 3.3.2 Display the operating state

It is important that all components function properly in a heating system. The function "operating state" shows you a large number of readings and settings.

→ Select the shortcut button "display operating state".

On the next screen, select which component of your heating system you would like to check.

If you operate several heating circuits, buffer tanks or DHWCs, you will be initially shown a list of available components: Select the component that you would like to see.

**Graphic illustration of the heating system components**



Boiler	Buffer	Heating circuits
DHW		

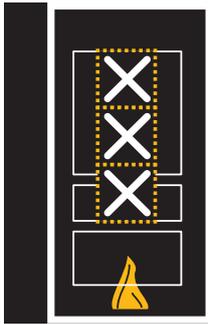
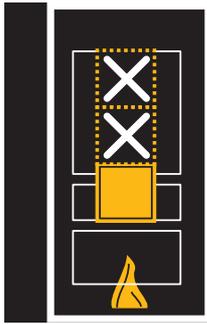
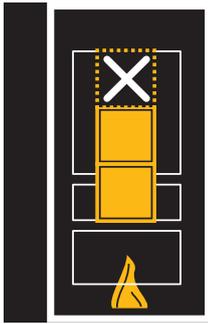
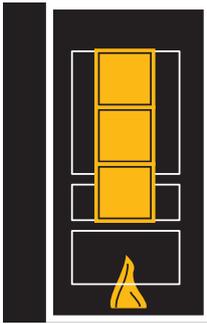
Select the touch button to receive more information on the respective component.

### 3.3.3 Query the fill amount



→ Select the shortcut button "refill" (stoke) to determine if and how much fuel you need to refill.

The control will then determine how much heat is stored in the buffer storage tank and calculate the required fuel amount accordingly.

			
→ Do NOT refill – The buffer is already fully charged!	→ Only refill to one-third. The buffer storage tank is mostly charged.	→ Refill to two-thirds. The buffer storage tank is either partially charged or relatively small.	→ Fill the combustion room. The buffer can absorb the entire heat!

You must strictly comply with these specifications! The fill room of the boiler is large enough to bring the buffer tank to the setpoint temperature. Too much fuel (in case of a small or charged buffer storage tank) leads to a situation where the boiler switches to fire maintenance at the end. This can lead to tarring in the boiler which may prevent reliable operation!

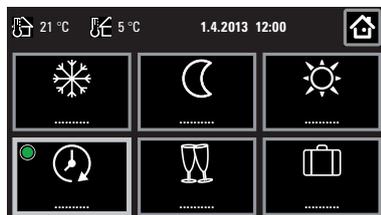
### 3.3.4 Select program



→ Select the shortcut button "select program".

→ You will see a list with the available heating circuits only if you operate several heating circuits: Select the heating circuit that you would like to change.

#### Select program



The green circle shows the currently active program.



#### Frost protection

→ Select this program to protect the heating system from frost damage.

↳ The control keeps the room temperature at temperatures above 8°C (factory setting).



#### Reduct

→ Select this program to heat to the set reduction temperature all day. (For example during a longer absence.)



#### Comfort

→ Select this program to heat your living quarters to the comfort temperature all day.



### Automatic

→ Select this program to heat during the specified times based on your personal needs: This way, it will be as warm as you want it to be, and you can reduce the energy expenditures when nobody is home.

Please note that an outside temperature switch-off which is set too low may prevent the system from switching to the comfort temperature or reduction temperature!

### Additional programs

The two following programs supplement the 4 already described programs. After their execution, the control switches back to the previously selected program.

### Party



Select `party` mode when you want to keep the room temperature at the comfort temperature for longer as an exception. This works in all KWB Comfort 4 programs.

If the party mode is active, the green circle appears in the touch button.

After the period specified in `heating up to`, the KWB Comfort 4 switches back to the previously selected program.

### Holiday



Activate the `holiday` program if the heating should maintain a specific room temperature (`temperature`) for a certain period of time. First, define the `end` and subsequently the `start` of the holiday program.

The control remains in the current program until the specified start date has been reached. Only then, the green circle appears in the touch button.

After the specified end of the holiday program, the control switches back to the previously selected program (at 00:00 midnight).

If you want to **prematurely** end the holiday program, switch the function to `Off`.

## 3.3.5 Change heating times



### Heating times

→ Select the shortcut button "Change heating times" if you want to change the behaviour of the heating system in the "automatic" program.

→ You will see a list with the available heating circuits only if you operate several heating circuits: Select the heating circuit that you would like to change.

→ If you want to change the displayed times, select the button `Change times` and decide to which time period the change should apply:

- For all working days: `Monday - Friday`
- For every day of the week: `Monday - Sunday`
- For each individual day: `Mon Tue Wed Thu Fri Sat Sun`

→ Only then you can define a maximum of 3 time periods in which the control is to heat to the comfort temperature.

Confirm the new time periods by selecting the button `transfer values`.

→ If you do not want to use a specific time period, set the values for `On` and `Off` to the same time: The KWB Comfort 4 will then detect this time period as an empty entry.

### 3.3.6 Heat DHW 1x



The shortcut button "Heat DHW 1x" tells the control to immediately and only once heat the DHWC to the setpoint temperature.

If your heating system has several DHWCs in several heating circuits, you will only be able to access this setting in section **DHWC** [► 53].

→ Select this function if you have the impression that the DHW is getting colder or if you expect that the existing quantity of hot water will not last until the next scheduled heating process.

↳ A green circle on the touch button displays this function.

Once the setpoint temperature has been reached, the control switches back to the previously active operating mode. The green circle on the touch button disappears.

#### Related functions

If you have to activate this function too frequently, either the **minimum temperature** [► 53] of the DHWC is set too low or the charging times do not correspond to your DHW use.

### 3.3.7 Regulating the room temperature

You have several possibilities to change the room temperature.

#### Changing the setpoint temperature at the Basic control unit



Turn the dial of the Basic control unit to the right to increase the temperature by up to 5°C or to the left to reduce it by up to -5°C.

#### Change the room temperature one time

→ Shortcut button "select program" >> *Select heating circuit* >> Party >> Party operation to On



Select *party* mode when you want to keep the room temperature at the comfort temperature for longer as an exception. This works in all KWB Comfort 4 programs.

If the party mode is active, the green circle appears in the touch button.

After the period specified in *heating up to*, the KWB Comfort 4 switches back to the previously selected program.

#### Generally change the room setpoint temperature

Reduce or increase the room setpoint temperature if it is **always** too warm or too cold.

→ Change to the "menu" display.

→ Correct the *room temperature* setting in menu **Heating circuits** [► 48] (*Heating circuits* >> *Select heating circuit* >> *Room temperature*).

#### Generally change heating times

If the radiators or the floor heating are not warm enough or too warm during certain times, you can change the *heating times* in the menu **Heating circuits** [► 48].

#### The control does not react to your entries?

If the control does not react to your corrections at all, check the boiler's **operating status** [► 60]: Does it heat at all or is there something that prevents the heating operations? The reason could be an outside temperature switch-off set too high.

## 3.3.8 Switch off and restart

### 3.3.8.1 Shutting down the system



#### WARNING

##### Uncontrolled combustion due to premature switch-off

- ↳ If the boiler is switched off via the main switch during heating operations, the boiler goes into an uncontrolled state!
- Wait until the operating status "ready" or "fire out" is displayed before switching off the boiler via the main switch!

#### NOTE

##### Overheating due to an uncontrolled shutdown

If the system is shut down abruptly, the boiler can no longer dissipate the heat and could overheat. This would first trigger the safety temperature limiter and subsequently the thermal discharge safety valve.



#### Temporary shutdown

- Switch the boiler off via the main switch.

#### Full shutdown (at the end of the heating season, in the event of faults)

#### NOTE

##### For our environment: Allow the system to cool down in a controlled way!

- Wait until the system has cooled down completely.
- Switch the system off completely at the main switch.
- ↳ Carefully clean the boiler.
- ↳ Carefully close the doors.

Tip: Outside of heating season, disconnect the main plug at the rear of the boiler to avoid lightning damage.

WITH frost protection	WITHOUT frost protection
→ Have somebody check whether your system is sufficiently protected against frost.	→ If you do NOT use the heating system <b>in winter</b> , then have the system emptied completely to protect it against frost.

### 3.3.8.2 Restarting after standstill periods

- Refill with log wood and paper or cardboard. Please make sure that heat consumption is ensured for the selected log-wood quantity!
- Switch the system on at the main switch.
- You may need to reset the date and time of day (in case of a respective alarm) (**Setting the date/time of day [► 32]**).
- Ignite the log wood.
- The system changes into the operating modes "Heating up" and "Heating".
- When the boiler forward flow temperature sensor reaches the setpoint, the system switches on the boiler circuit pump and supplies the consumers and/or the buffer storage tank.

# 3

## Operating fundamentals

Frequently used Comfort 4 functions

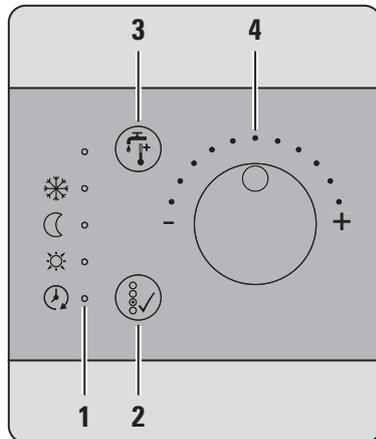
### Please also see

 [Date/Time \(► 64\)](#)

## 4 Basic control unit

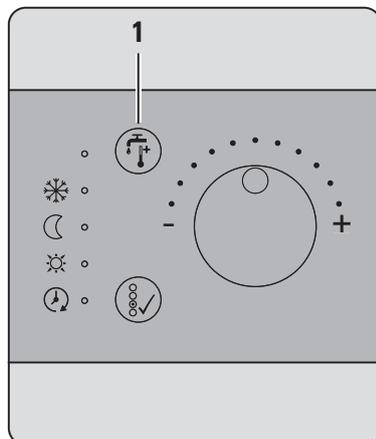
The Basic control unit operates without touch screen and graphic user interface – two buttons and a dial are all it takes to change the main functions.

### 4.1 Basic control unit operating elements



1	LED bar	3	Heat DHW 1x
2	Program selector button	4	Temperature dial

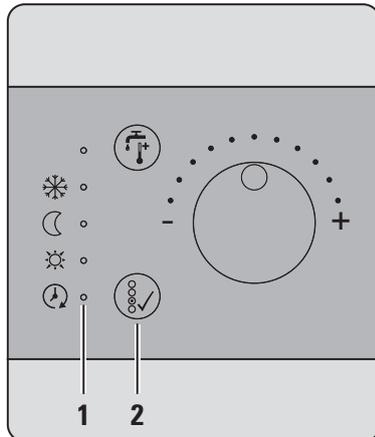
### 4.2 Heat DHW 1x



You can activate the function "Heat DHW 1x" via the Basic control unit [BGB] if the DHWC temperature is too low.

- Push the button "Heat DHW 1x" (1).  
The button will light up.
- Push the button once more to end the function at any time.  
The button light will turn off.
- ↳ Once the target temperature specified in the menu **DHWC** [► 53] has been reached, the button light will turn off.

### 4.3 Select program

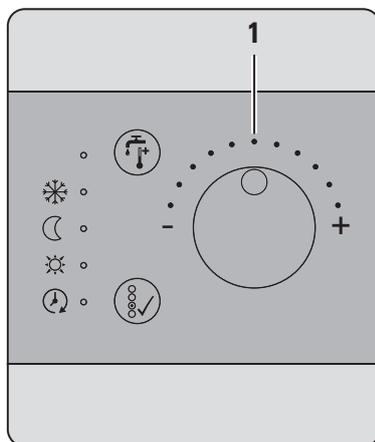


When in normal operation, the Basic control unit will indicate the current program with a green LED (1).

- The control unit switches to the next program on the list every time you push the program selector button (2): Frost protection | Reduct | Comfort | Automatic.  
When you press the button once more at the end of the list, the program selection will restart with the first program.

**NOTE:** If none of the LEDs are lit, then the program at the Exclusive control unit at the boiler has been switched off or the Basic control unit has been de-energised.

### 4.4 Selecting the room temperature



- ↳ The Basic control unit contains an integrated temperature sensor whose readings are used to control the heating system.
- ↳ You can increase or decrease the room temperature setpoint by max. 5°C using the temperature dial (1).  
In the temperature dial's neutral position (see illustration), the system heats to a room temperature setpoint specified at the Exclusive control unit at the boiler.
- Turn the temperature dial to the left to lower the room temperature. Every point on the scale corresponds to one degree Celsius.
- Turn the temperature dial to the right to increase the room temperature. Every point on the scale corresponds to one degree Celsius.

**Party mode** The Basic control unit has no option that permits activation of the party mode. If you want to maintain the comfort temperature beyond the end of the specified heating time, you need to activate the "comfort" program.

Do not forget to reset the program back to its initial position later!

## 4.5 LED meanings

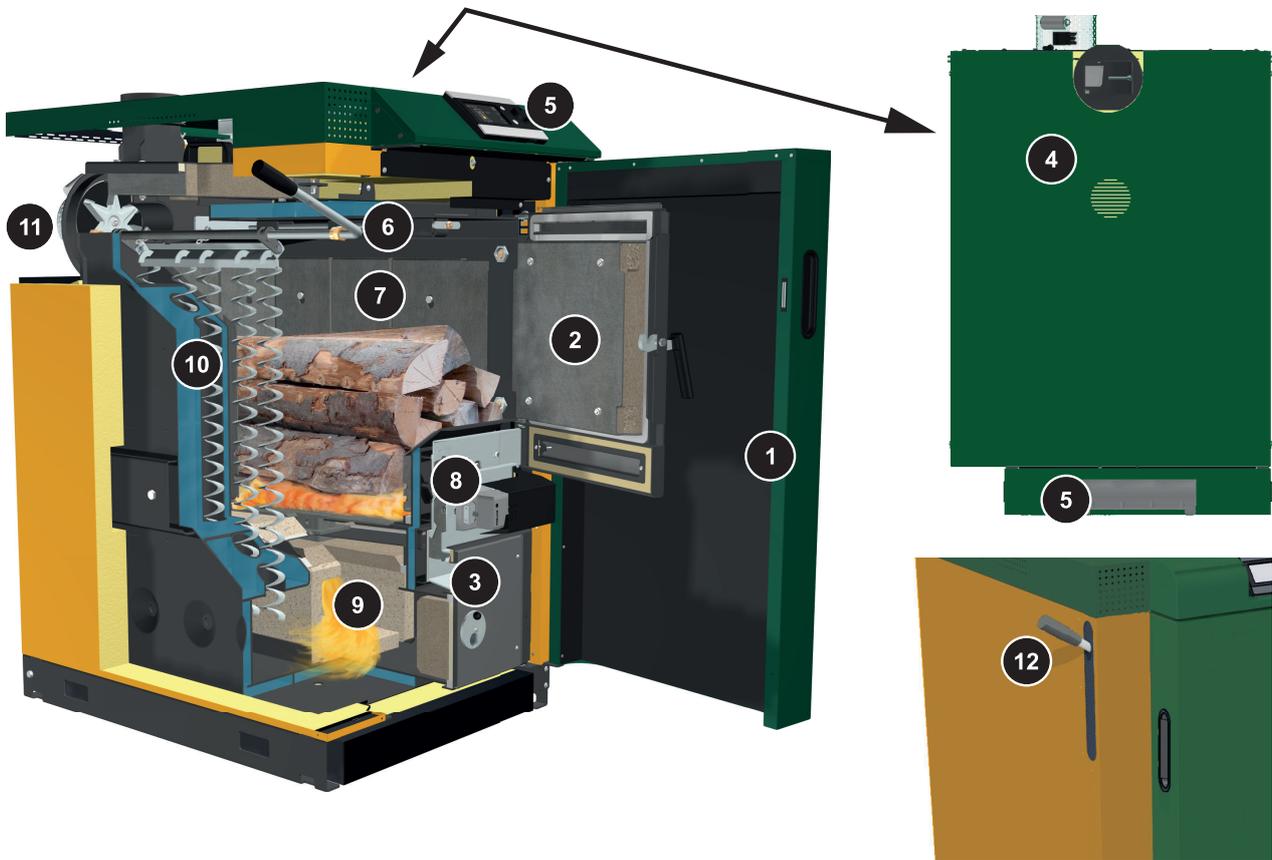
**LED flashes slowly** A slowly flashing LED (3 sec on, 1 sec off) does not display a fault, but indicates special programs: The Basic control unit [BGB] thus indicates that either the party mode, holiday program or the screed program is active.

**LED flashes** In a KWB Classicfire or KWB Combifire a somewhat faster flashing LED shows that the boiler can be refilled. In this case, the LED of the current program flashes (2 sec on, 1 sec off). This display also switches off after 4 hours.

A full list you will find in section **Meaning of the LEDs at the Basic control unit [BGB]** [► 71].

## 5 Regular boiler tasks

### 5.1 Construction of the boiler



1	Casing door	7	Fill room apron
2	Fill room door	8	Air shutter with servomotor
3	Combustion chamber door	9	Combustion chamber
4	Casing cover	10	Heat exchanger
5	Control KWB Comfort 4	11	Induced draught fan
6	Shutter, carbonisation gas duct	12	Lever for heat exchanger cleaning

Behind the casing door [1], you will find doors which you will use during refilling, ignition and ash removal.

The lever for the heat exchanger cleaning [12] moves the cleaning screws in the heat exchanger tubes up and down. This regularly performed task ensures reliable heating system operation.

## 5.2 Switching on the system



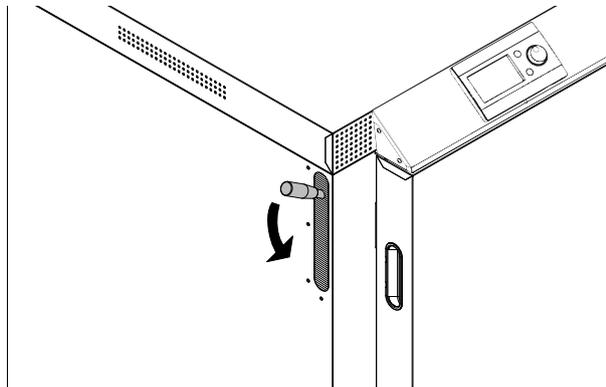
### WARNING

**Unforeseeable consequences (personal injury and property damage) due to incorrect commissioning**

→ The initial commissioning requires comprehensive specialised knowledge: Only qualified and certified technicians are permitted commission the system!

- Switch on the main switch below the casing cover.
- ↳ After the system check, the controller is ready for operation.

## 5.3 Each time before heating up – move heat exchanger cleaning lever



- Move the cleaning lever 5–10× up and down during every stoking to clean the heat exchanger tubes.

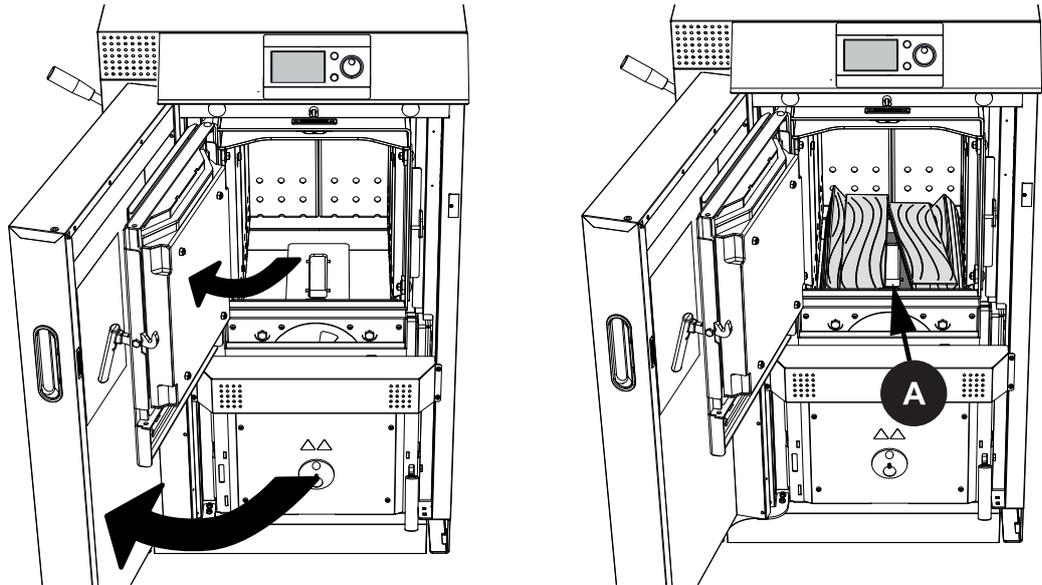
## 5.4 Stoking and igniting the boiler



### WARNING

**Unforeseeable consequences due to the wrong heat-up procedure**

- ↳ Only trained persons are permitted to operate the boiler!
- Please keep untrained persons (particularly children) away from the boiler! Always lock the boiler room.
- **Never** heat up the boiler with illegal or liquid fuels, such as petroleum spirit or similar fuels.
- Have every fault rectified immediately!



- Open the casing door.
  - Open the fill room door.
  - Check the ash level in the fill room and remove the ash, if required (see Section **Empty ash** [▶ 46]).
- Note:** The ash only needs to be removed if the middle row of holes in the casing panels is no longer visible. This ensures better protection of the fill room and heating up works better.

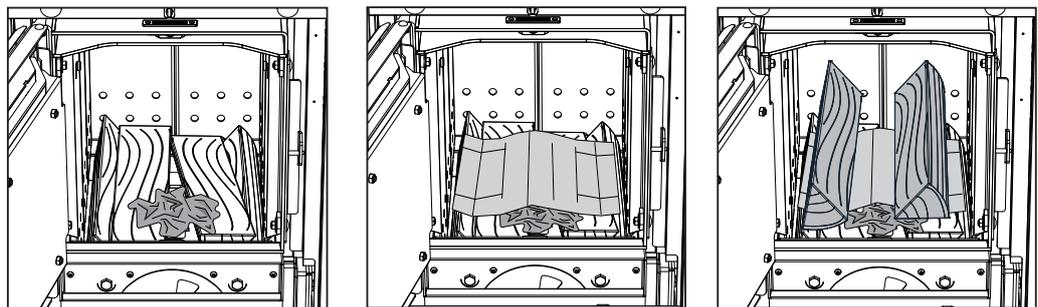
**NOTE****Fill room protection**

- KWB advises against removing the ash from the fill room before every heating-up procedure.

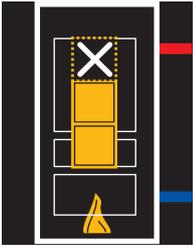


Query the fill amount

- You must follow the control specifications (see Section **Query the fill amount** [▶ 33]) regarding the maximum amount of fuel that should be put in the fill room!
- Put a layer of log wood into the fill room. Ensure that the logs are not stacked too tightly.
  - ↳ Parts of the flame slot (A) must remain free!

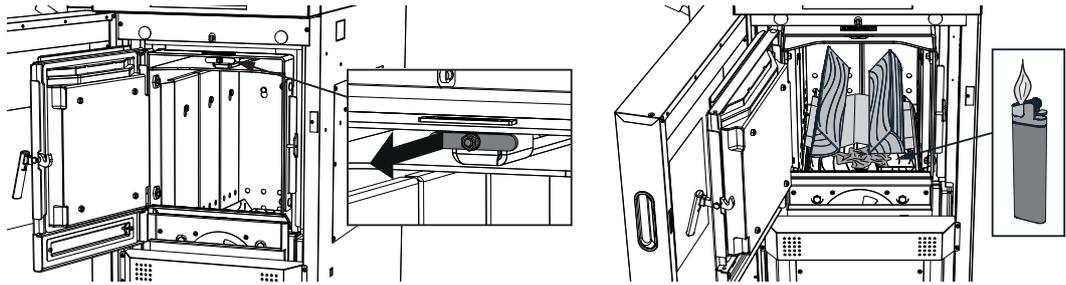


- Place crumpled up paper in the front area to the fill door.
- Put larger pieces of cardboard over the paper.



Specified filling (example)

→ Fill the fill room as prescribed by the control.



→ Close the carbonisation gas duct shutter by pulling out the lever

↳ The carbonisation gas duct is closed and thus ensures better draft during the heat up

→ Light the paper and the cardboard.

→ Close the door to the fill room and the casing door as soon as the following message is displayed: "The fuel was successfully ignited. Please close all boiler doors!" If the message is disabled, once the exhaust gas temperature has increased by 30 °C.

## 5.5 Keep the boiler operating



### WARNING

**It is life-threatening to open the door during operation!**

- Please note that carbonisation gases and sparks may be emitted when the boiler doors are opened. You must always leave the boiler doors closed during operation!
- Material damage can occur and smoke gas may develop if the combustion chamber door is opened during operation!

→ **Note:** You can find the respective description for the KWB Comfort 4 control in the section **KWB Comfort 4 functions** [▶ 48].

**Please also see**

📖 KWB Comfort 4 functions (▶ 48)

## 5.6 Stoking with log wood



### WARNING

**Burn injuries due to hot surfaces!**

Surface behind the casing door can become very hot during operation!

- Use suitable protective gloves when adding fuel.

You should only add fuel if you need the respective energy. The intervals for adding fuel should be focused exclusively on the buffer storage tank.

→ Slowly open the door to the fill room and check the fuel.

→ Refill fuel if the fuel in the boiler has burned down. Otherwise you should immediately close the doors.

**Too much fuel?**

If you put too much fuel, the boiler will have to work below its minimum capacity and will switch off the fan. In this so-called "fire maintenance" mode, the heating system's efficiency drops and the emissions increase!

## 5.7 Ash

- Regularly check the fill level of the ash container.
- If you want to avoid the large weight of a filled ash container, make sure to empty it before it is completely filled.

### 5.7.1 What is ash?

The accumulating ash contains the residues of the fuel in concentrated form.

#### Disposing of the ash

- Ask the competent municipality regarding the correct disposal of the ash!
- Comply with their instructions.

### 5.7.2 Ash quantity

**Log wood:** Log wood has an ash content of 3-4%.

### 5.7.3 Empty ash

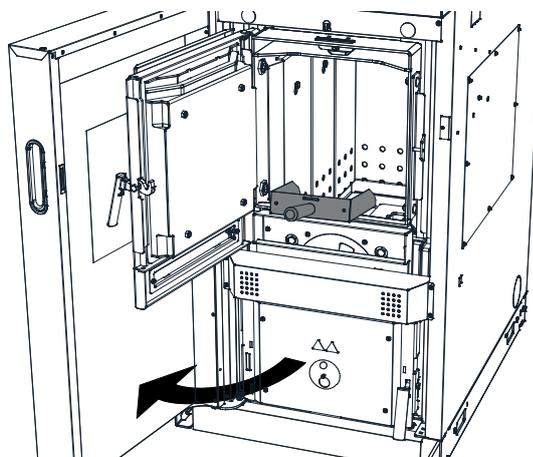


#### WARNING

Perform work according to this operating manual only! Improper work can put you in life-threatening situations due to a lack of knowledge!

- ↳ Danger of crushing and entanglement through unexpected starting of mechanisms
- ↳ Risk of fire, explosion and electric shock from open casing, combustion chamber door and maintenance cover
- ↳ Asphyxiation risk due to carbonisation gases from smouldering fuel when the combustion chamber door or service cover is open!
- Let the system cool down for approx. 30 minutes (status: `Fire Off`), before switching it off (main switch to "0").
- Pull the plug and secure the system against being switched on again.
- Only open the casing, combustion chamber door and service cover when the system is **cold** and de-energised!

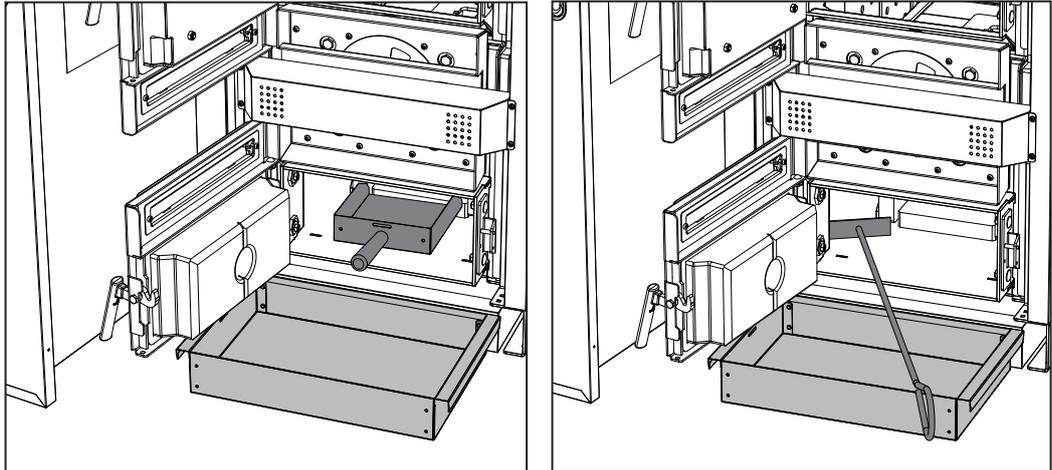
**Remove the ash at least 1x weekly.**



- Remove the ash at least 1x weekly.

↳ **Note:** The ash only needs to be removed if the middle row of holes in the casing panels is no longer visible. This ensures better protection of the combustion chamber and heating up works better.

- Open the casing door and the door to the fill room.
- Remove the ash above the combustion chamber using the ash shovel.
- Move the remaining ash with the ash scraper into the combustion chamber below.
- Open the combustion chamber door.



- Move the ash in the combustion chamber into the ash shovel using the scraper.
- Use the ash scraper to move the ash on the side of the combustion chamber into the ash trough.
- Remove the ash trough and dispose of the ash.

**WARNING**

**Risk of fire and injuries due to hot embers!**

- Only empty the ash into a heat-resistant container!
- Only empty out cold ashes!

**CAUTION**

**Risk of fire and injuries due to hot ember remnants!**

- Use fireproof containers WITH cover to collect the ash!

- Close the doors.

## 6 KWB Comfort 4 functions

Below, we describe the menus and options of the KWB Comfort 4. If you are unsure about their application, please ask your heating technology partner or KWB customer service **first** before you change any values!

### 6.1 Heating circuits

Configuring the heating circuits is an essential part of the adjustment of the entire heating system.

Every heating circuit is a separate and closed water circulation in a heating system: A pump transports the heating water ("forward flow") to the consumers (radiator, floor or wall heating ...); the water dissipates the heat at this point and flows cooled down back into the boiler ("return flow") where it will be reheated.

When you configure the heating circuits, please take into account:

- Before **every** command, you must select the heating circuit that is to be affected by the command! (Exception: There is only one heating circuit.)
- All your commands only affect this **one** heating circuit!

The control system works with two setpoint temperatures that need to be maintained at specific times:

- "Comfort temperature": room temperature for a comfortable ambient temperature
- "Reduction temperature": Reduced temperature for lower energy use  
This is often called "night lowering".

**Better to check twice whether you have selected the correct heating circuit before you execute a command or before changing any values!**

#### 6.1.1 Room temperature

If the heating control does not reach the desired room temperature, you have several options to increase or decrease the temperature:

- Change the setpoint room temperature
- Move the heating curve root point (you will find more details on the heating curve on one of the following pages!)
- Check the sensor position for the room temperature and of the sensor for the outside temperature and move their positions, if required.

##### Adjust the room temperature

→ Start by defining the values for the comfort or reduction temperature (Heating circuits >> *Select heating circuit* >> Room temperature).

For comparison, the screen also displays the currently measured temperature in the room (actual temperature). This value, however, is only displayed when an actual room sensor is connected! (Without a sensor, the display shows "not available".)

To determine whether the control is using the comfort or the reduction temperature, or the frost protection temperature due to a shutdown, select *Operating mode* >> *Heating circuits* >> *Select heating circuit* in the menu.

Both target values are valid immediately, but the implementation depends on the current operating mode.

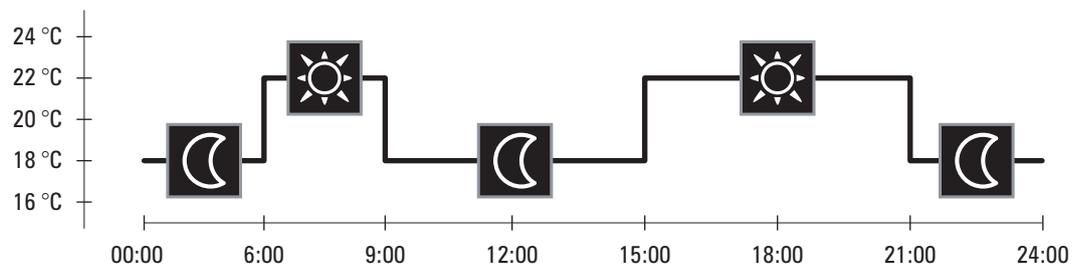
## 6.1.2 Heating program

You can generally specify the heating system's behaviour via the heating program.

- In the menu `Heating circuits >> e.g. HC 1.2 Floor >> Heating program` you can select one of 5 heating programs:  
`Automatic | Frost protection | Off | Comfort | Reduction`
- You can in addition access the two programs via the shortcut button "select program":  
`frost protection | reduct | comfort | automatic | party | holiday`

### The right program for every need

- **Frost protection:** The heating circuit switches off when the measured outside temperature exceeds the specified values. This basic setting can be defined in the Frost protection menu.
- **Reduct:** The heating circuit always remains on the reduction temperature.
- **Comfort:** The heating circuit always remains on the comfort temperature.
- **Automatic:** The heating circuit switches between comfort and reduction temperature at specified times and is switched off when certain **outside temperatures [► 50]** are reached.

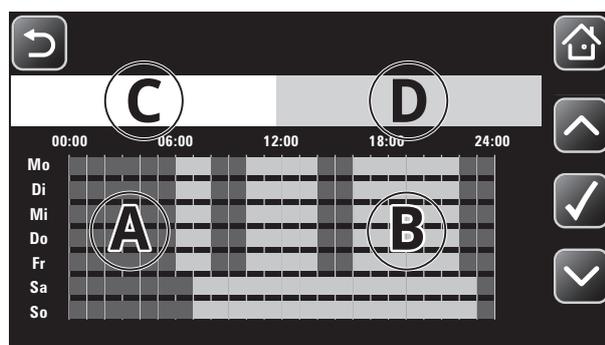


- **Off:** The heating circuit will no longer send heating requests.  
**Warning:** This heating program does NOT contain frost protection!
- **Party:** The **party program [► 50]** extends the comfort temperature mode one time.
- **Holiday:** The **holiday program [► 50]** maintains a specific temperature during a defined time period.

## 6.1.3 Heating times

The setting `heating circuits >> select heating circuit heating times` shows at what times the KWB Comfort 4 will switch to reduction temperature and comfort temperature if the "automatic" program is active.

### Overview



A	Times with reduction temperature (dark)	C	Overview
B	Times with comfort temperature (light)	D	Change times

### Heating times

→ If you want to change the displayed times, select the button `Change times` and decide to which time period the change should apply:

- For all working days: `Monday - Friday`
- For every day of the week: `Monday - Sunday`
- For each individual day: `Mon Tue Wed Thu Fri Sat Sun`

→ Only then you can define a maximum of 3 time periods in which the control is to heat to the comfort temperature.

Confirm the new time periods by selecting the button `transfer values`.

→ If you do not want to use a specific time period, set the values for `On` and `Off` to the same time: The KWB Comfort 4 will then detect this time period as an empty entry.

### 6.1.4 Party mode



Select `party mode` when you want to keep the room temperature at the comfort temperature for longer as an exception. This works in all KWB Comfort 4 programs.

If the party mode is active, the green circle appears in the touch button.

After the period specified in `heating up to`, the KWB Comfort 4 switches back to the previously selected program.

### 6.1.5 Holiday program



Activate the `holiday program` if the heating should maintain a specific room temperature (`temperature`) for a certain period of time. First, define the `end` and subsequently the `start` of the holiday program.

The control remains in the current program until the specified start date has been reached. Only then, the green circle appears in the touch button.

After the specified end of the holiday program, the control switches back to the previously selected program (at 00:00 midnight).

If you want to **prematurely** end the holiday program, switch the function to `Off`.

### 6.1.6 Settings

→ `Heating circuits` >> *Select heating circuit* >> `Settings`

#### 6.1.6.1 Outside temperature switch-off

In the menu under `Heating circuits` >> *Select heating circuit* >> `Setting`

If the setting `Switch-off active` is set to `On` AND the heating program "Automatic" is active, then the heating circuit will switch off long as the measured outside temperature exceeds the `heating limit` (`comfort/reduction operation`).

The status shown is "outside temperature-dependent deactivated."

If the outside temperature is to be averaged over a configurable time period, the parameter `Mean value calculation` must be set to `On`.

If the averaged outside temperature falls below the set limit value by  $-0.5^{\circ}\text{C}$ , the heating circuit switches to the specified heating program. If the averaged outside temperature rises above the set limit value by  $+0.5^{\circ}\text{C}$ , the heating circuit switches Off again (status: "outside temperature-dependent, deactivated").

Outside temperature averaged shows the actual averaged outside temperature, Time period, mean value shows the time period set for all heating circuits under Basic settings >> Outside temperature sensor >> Time period, mean value.

The time period for the mean value calculation can be set under Basic settings >> Outside temperature sensor >> Time period, mean value.

## 6.1.6.2 Operating values

### Specify forward flow temperatures

You can specify the two limit values for the heating circuit via the values `temperature max.` (factory setting:  $50^{\circ}\text{C}$ ) and `temperature min.` (usually:  $20^{\circ}\text{C}$ ).

#### 6.1.6.2.1 Taking the room influence into account

A precondition for this is an existing room temperature sensor!

The `room influence factor` indicates to what degree the room temperature should be taken into account in the calculation of the forward flow temperature setpoint.

↳ The factory setting is "0", i.e. the room temperature is NOT taken into account.

→ Enter a factor between 0 and 10 if the heating circuit comprises a room temperature sensor. The value 10 stands for a change of  $2.5^{\circ}\text{C}$ .

**Example:** If the actual room temperature is greater than the setpoint room temperature by  $1^{\circ}\text{C}$ , the control calculates a lower forward flow temperature for a setpoint room temperature which is  $2.5^{\circ}\text{C}$  lower at "10" room influence.

When in "frost protection" mode, the heating circuit is only really switched off if the room influence is  $>1$  and the room temperature has been reached.

#### 6.1.6.2.2 Activate ECO operation

##### Sensor

A precondition for this is an existing room temperature sensor!

You can adjust the reaction speed to temperatures via the Eco operation setting.

→ Select `Always` | `In comfort mode` | `In reduction mode` to increase reaction speed and reduce heating times:

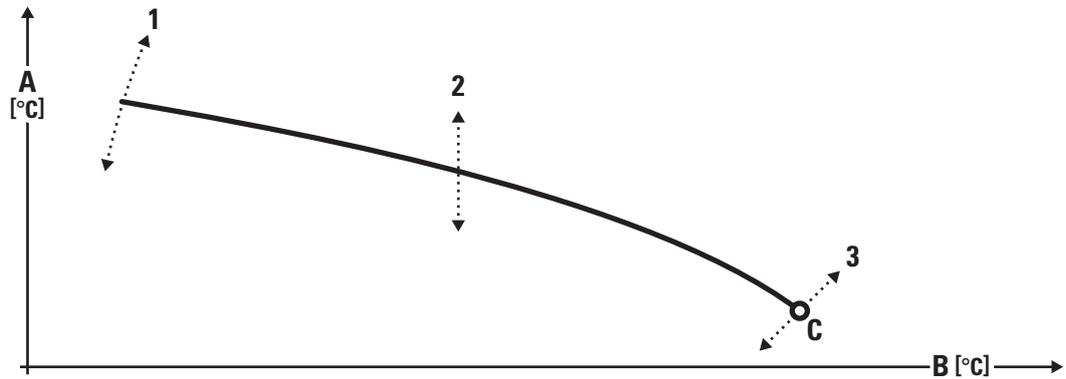
- The heating circuit pump will switch off if the actual room temperature is above the setpoint room temperature by the value of the setting `Hysteresis off`.
- When the actual room temperature is below the setpoint room temperature by the value of the setting `Hysteresis off`, the heating circuit pump will switch on again.

→ Select `Off` to ensure that the heating circuit pump runs independently of the current room temperature. This is a recommended setting for floor heating systems.

#### 6.1.6.2.3 Adjust the heating curve

The KWB Comfort 4 calculates the required forward flow temperature for the heating circuits from the measured outside temperature, the setpoint room temperature, the room influence factor, the specified heating curve slope and the specified root point offset.

Adjust the heating curve slope and the specified root point offset to your home's real conditions (size and temperature range of the radiators, building insulation, ...) to utilize the generated heat as efficiently as possible.



Heating curve schematically

A	Forward flow temperature	1	Impact of a changed heating curve slope
B	Outside temperature	2	Impact of the room setpoint value
C	Root point	3	Impact of the root point offset

### Slope

The slope of the heating curve [1] determines how strong the outside temperature influence is on the change in the forward flow temperature.

**Example:** A value of 0.5 means that an outside temperature change of  $\pm 1$  °C will on average trigger a  $\pm 0.5$  °C change in the forward flow temperature. The specified slope depends on the used heating system and the heat requirements of the rooms.

### Root point

By offsetting the root point [3] you specify the heating system's starting value. KWB Comfort 4 allows an offset by  $\pm 10$  °C.

### Discharge

Typical values for a heating curve slope

High forward flow temperatures (radiators)	Low forward flow temperatures (floor/wall heating)
1.2–1.6	approx. 0.5

In reality, it is impossible to calculate the perfect setting; it can only be approximated by making incremental adjustments. The goal is a heating curve that is as flat and low as possible where the generated heat is just barely sufficient to heat the house.

- Open the thermostat valves for the monitored reference room: This should be the coldest and least convenient room.
- Is it always too warm or too cold?  
Move the entire heating curve (root point AND slope!) down or up.  
Since buildings are very slow to react, you should change the values not more frequently than every 2 days by max. 10% or 0.2 units.
- Is it too cold in winter, but is it the right temperature during the transition time?  
Increase the slope of the heating curve to trigger a stronger forward flow temperature increase when the outside temperature drops.  
Change the slope not more frequently than every 2 days by max. 0.2 units.
- Is it too cold during the transition time, but just right in winter?  
Change the root point to trigger a stronger increase in forward flow temperature when the outside temperature increases.

## 6.1.7 Screed program

A screed program is integrated in the KWB Comfort. The screed program accelerates the drying of the screed and helps dissipate tension in the screed layer.

→ Contact your heating system company in this respect.

## 6.2 DHWC

A DHWC is the storage container for hot water. By using a number of parameters, you can specify the times during which the hot water is heated as well as the minimum and maximum temperatures.

### 6.2.1 When is the domestic hot water heated?

You can specify how the selected DHWC is generally charged (heated up) via a domestic hot water (DHW) program. You can choose between the programs *Time* | *Temp.* | *Off*.

**Note:** In the KWB EmpaCompact and KWB EmpaWell the settings in the *Buffer temperature >> DHW temperature min.* apply.

#### Program Time

→ DHWC >> *Select DHWC* >> *Program*

In the "Time" program, the control monitors whether the minimum temperature is undershot at the sensor during the specified charging times. In this case, the DHWC will be charged until the maximum temperature is reached at the sensor.

Tip: This time program is primarily suited for DHWCs that are additionally heated via solar power.

#### Charging times

You can specify the charging times for every individual day, for weekdays or jointly for all days in the menu *DHWC >> Select DHWC >> Charging times*.

Specify when each DHWC is to be heated up. Adjust the times to your individual daily routine.

#### Factory settings - Charging times for DHWC

Charging time	On	Off	On	Off
Monday	16:00	20:00	20:00	20:00
Tuesday	16:00	20:00	20:00	20:00
Wednesday	16:00	20:00	20:00	20:00
Thursday	16:00	20:00	20:00	20:00
Friday	16:00	20:00	20:00	20:00
Saturday	16:00	20:00	20:00	20:00
Sunday	16:00	20:00	20:00	20:00

If you do not want to use a specific charging time, set the values for "On" and "Off" to the same time: The control will then detect this time period as an empty entry.

When the switch-off time has been reached, any initiated charging process is terminated.

#### Program Temperature

→ DHWC >> *Select DHWC* >> *Program*

The program "Temp." has no charging times: The DHWC is **always** heated to the maximum temperature at the sensor if the temperature falls below the minimum temperature at the sensor.

Activate this program if domestic hot water is to be available **at all times**.

### Program off

→ DHWC >> *Select DHWC* >> Program

In the setting "Off", the automatic charging of the DHWC is switched off.

Select this setting, if you are not going to use the DHWC for a longer period of time.

In the program "Off" the legionella protection function is NOT performed and there is also no frost protection!

### Heat DHW 1x

If the DHW is to be heated IMMEDIATELY (regardless of the current water temperature, the active program and the saved charging times), select in the menu DHWC >> *Select DHWC* >> Heat DHW 1x.

This function is not working ...

- ... if the maximum temperature has been exceeded.
- ... if the heat source is blocked or switched off.

### Specify temperatures

In the menu DHWC >> *Select DHWC* >> Temperature, you can specify the generally used values for the Minimum temperature and maximum temperature . Additionally, the currently measured DHW temperature ("Temperature actual") is displayed. The actual domestic hot water (at the tap) depends on the potential downstream mixer valve and/or the sensor position in the storage tank.

The setting `frost temperature` defines the setpoint temperature during a holiday.



## 6.2.2 Setting the Legionella protection

You can specify the day on which the DHWC temperature is increased to 65°C (factory setting) to kill the legionella bacteria in the menu DHWC >> *Select DHWC* >> Legionella protection.

The Legionella protection starts ...

- weekly
- only once on this day
- at the latest at 20:00 hours (8:00 p.m.)
- while the DHWC is being charged at any rate

Off

The Legionella protection is switched off in the setting `Off` (factory setting).

→ Increase the specified Legionella protection temperature, if required.

## 6.2.3 Set and activate holiday program

If you want to switch the DHWC off for a certain period of time you can activate the function in the menu DHWC >> *Select DHWC* >> Holiday program.

If the function is activated, you can specify time period and temperature.

- The DHWC is switched off on the day saved as the `Start day`.

- At 00:00 hours (12:00 a.m. or midnight) of the day saved as `end day`, the control will automatically activate the previously specified DHW program.

The setting `Temperature` defines the setpoint temperature during the holiday.

## 6.2.4 Circulation pump

In the menu `DHWC >> Select DHWC >> circulation pump` you can specify the program and settings for the circulation pump.

### Program

In the setting `Program`, you can choose between `Off` | `Automatic` | `Continuous operation`.

In the `automatic` setting, the control starts the circulation pump only within the time windows specified in the menu `runtime`, when it is in `continuous operation` it will always start it.

If the `with sensor` option is active in the menu `Basic settings >> Network settings >> DHWC`, then the circulation pump will run only until the specified shutdown temperature has been reached. The pump restarts in 15-minute intervals.

The manual start of the circulation pump by pushing a button is independent of the selected program.

### Runtimes

Under `Runtime` you can define 3 time windows during which the circulation pump is started.

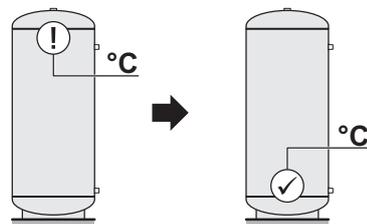
## 6.3 Buffer storage tank

A "Buffer storage tank" is a storage tank for the heat that a boiler releases.

### 6.3.1 When will the buffer storage tank be charged?

You determine via a buffer program how the selected buffer storage tank is generally charged (heated). In the menu `buffer storage tank >> Select buffer >> Buffer program`, choose between `Time` | `Time+` | `Summer` | `Temperature` | `Off`.

#### Program Time



In the program "Time", the control system monitors during the saved charging times whether the minimum temperature was reached at the upper sensor or whether the highest requested consumer temperature has been undershot. In this case, the buffer storage tank will be charged until the maximum temperature is reached at the lower sensor (S4 or S5).

Tip: This time program is primarily suited for buffer storage tanks that are additionally heated via solar power.

### Charging times

You can specify the charging times for every individual day or jointly for all days in the menu `Buffer storage tank >> Select buffer >> Charging times`.

Specify when each buffer storage tank is to be charged. Adjust the times to your individual daily routine.

**NOTE! No charging will occur outside of these charging times (except solar charging).**

**Factory settings - Charging times for buffer storage tanks**

Charging time	On	Off	On	Off
Monday	00:00	23:59	23:59	23:59
Tuesday	00:00	23:59	23:59	23:59
Wednesday	00:00	23:59	23:59	23:59
Thursday	00:00	23:59	23:59	23:59
Friday	00:00	23:59	23:59	23:59
Saturday	00:00	23:59	23:59	23:59
Sunday	00:00	23:59	23:59	23:59

If you do not want to use a charging time, set the values for "On" and "Off" to the same time: The control will then detect this time period as an empty entry.

**Program Time+**

This works like the time program. However, consumer requests (outside of charging times!) will be fulfilled, if the buffer cannot fulfil these requests.

**Program Temperature**

The program "Temperature" has no charging times.

The buffer storage tank is heated up if ...

- the buffer temperature is lower than the highest requested temperature from the heating circuits or the DHWC ... or ...
- the minimum temperature at the upper sensor ("actual temperature 1" or "actual temperature 3") was undershot.

The charging continues until the specified maximum temperature is reached on the lower sensor ("actual temperature 4 or 5").

The set minimum is always maintained even if there is no heat request from the consumers.

**Program off**

In the setting `Off`, the automatic charging of the buffer storage tank is switched off.

**Program Summer**

In the setting `Summer`, the automatic charging of the buffer storage tank is switched off.

If a consumer places a request, however, the boiler will heat up the buffer storage tank until the upper sensor temperature reaches the consumer's setpoint temperature. The buffer will not be fully charged, however, i.e. the specified lower setpoint temperatures remain disregarded.

**Setting temperatures**

You can specify the generally used values for Minimum temperature and maximum temperature in the menu `Buffer storage tank >> Select buffer >> Buffer temperature`.

**DHW temperature min.****Option**

In buffer storage tanks with integrated DHW generation (KWB Empa-Compact, KWB Empa-Well ...), this temperature determines which temperature the buffer storage tank should at least maintain at sensor 1 to ensure that sufficient hot water is available.

Charging is stopped if the min. temperature at sensor 1 is exceeded by 10 °C.

Exception: No charging will be performed in the buffer program `Off`!

**Switchover temperature (only for buffer 0)****Option**

When the set temperature is reached at sensor 2/4 (depending on the buffer type), an optional switchover valve switches to `Bottom` to charge the buffer storage tank up to sensor 5.

**Legionella protection**

In the menu `Buffer storage tank >> Select buffer >> Legionella protection`, you can specify the day on which the buffer tank temperature is increased to 65°C (factory setting) to kill the bacteria.

The Legionella protection starts ...

- weekly
- only once on this day
- at the latest at 20:00 hours (8:00 p.m.)
- during the regular charging process of the buffer storage tank

**Off**

The Legionella protection is switched off in the setting `Off` (factory setting).

→ Increase the specified Legionella protection temperature, if required.

## 6.3.2 Circulation pump

In the menu `Buffer tank >> Select buffer tank >> circulation pump` you can specify the program and settings for the circulation pump.

**Program**

In the setting `Program`, you can choose between `Off` | `Automatic` | `Continuous operation`.

In the `automatic` setting, the control starts the circulation pump only within the time windows specified in the menu `runtime`, when it is in `continuous operation` it will always start it.

If, however, the option with `sensor` is active in the menu `Basic settings >> Network settings >> Buffer tank`, then the circulation pump will run only until the specified shutdown temperature has been reached. The pump restarts in 15-minute intervals.

The manual start of the circulation pump by pushing a button is independent of the selected program.

**Runtimes**

Under `Runtime` you can define 3 time windows during which the circulation pump is started.

## 6.4 Solar

### 6.4.1 Solar program

In the Solar program menu, you can choose between `Automatic` | `Manual op.` | `Off`.

- `Automatic` (factory setting)

Select this program, if the charging of the storage tank(s) is to be carried out automatically based on the specified temperature differentials.

- `Manual mode`

The "manual mode" is only to be used by a certified technician for brief functional tests or during commissioning! During this process, both outputs (pump | valve) are activated. The current temperatures and selected parameters no longer play a role. There is a risk of scalding or serious system damage.

- Off

If the operating mode "Off" is activated, all control functions are switched off. This may lead to overheating at the solar collector or other system components. The measured temperatures will continue to be displayed to provide an overview.

## 6.4.2 Operating values

In solar diagram 3 (2-storage tank switchover), the control system first shows a list of the available storage tanks.

Storage tank 1

Storage tank 2

### 6.4.2.1 Storage tank 1 + 2

#### Differential control

There is a separate adjustable maximum storage tank temperature for solar charging per storage tank. It can be set in Menu >> Solar >> Operating values >> Storage tank 1 >> Temperatures >> Maximum temperature >> e.g. 60°C.

In Menu >> Temperatures, you can select the values "Temperature differential On" and "Temperature differential Off".

#### "Automatic" program

Charging **starts** when

- the collector minimum temperature has been exceeded and
- the switch-on differential "Temperature differential On" between collector and storage tank has been exceeded and
- the maximum storage tank temperature has not been reached yet.

Charging **stops** when

- the collector minimum temperature has been undershot or
- the maximum storage tank temperature has been reached or
- the switch-off differential "Temperature differential Off" between storage tank and collector is undershot.

#### 6.4.2.1.1 Temperatures

In this menu, you can specify the temperature settings for the respective storage tank for solar charging.

- Maximum temperature: 20–99 °C (factory setting: 60 °C)

**Recommendation:** DHWC 60 °C, Buffer storage tank 80 °C

The respective storage tank is maximally charged to this temperature.

### 6.4.2.2 Switchover logic

#### Zone switchover

In 2-storage tank systems or 2-zone systems, the system switches between the two storage zones depending on the solar yield. While the system charges the lower storage area (zone 2), the control logic checks whether the solar yield is meanwhile high enough to charge the upper storage tank area (zone 1) up to the specified maximum temperature.

#### Absolute priority

With absolute priority, the primary storage tank zone is charged until the specified temperature setpoint value (factory setting 40 °C) is exceeded in storage tank 1 | zone1. During charging, no switchover occurs into the subordinate storage tank zone.

#### Switchover logic with priority switching

When using priority switching, it is always storage tank 1 or zone 1 in the buffer storage tank that gets priority charging.

- **2-zone switchover:** the upper zone of the buffer storage tank receives priority charging
- **2-storage tank switchover:** storage tank 1 gets priority charging

#### Factory setting

- `Absolute priority`: 20–99 °C (factory setting: 40 °C)  
No switchover to storage tank 2 occurs up to this temperature.

### 6.4.2.3 Anti-blocking protection

Weekly (every Monday at 12:00 p.m. noon), both outputs (pump & switchover valve) are switched on.

### 6.4.2.4 Energy optimization

**Note:** This function is only available for heating-supporting solar systems (buffer storage tank is charged by the solar system).

If the function `Energy optimization` is activated, the buffer request from the boiler is suppressed by the boiler during solar charging. The buffer storage tank is consciously under-supplied by the boiler.

A precondition for this is that the system runs in the programs "Summer" (minimum boiler request) or "Time+". Details regarding the programs "Summer" and "Time+" can be found under

#### When will the buffer storage tank be charged? [► 55]

In the menu >> Solar >> Operating values >> Energy optimization, you can select the following parameters.

- `Energy optimization`: On | Off (factory setting: Off)
- `Shortfall`: 5–50% (factory setting: 10%)

The required forward flow temperature of the consumers (heating circuits, DHWC) leads only to a recharging of the buffer by the boiler if the temperature is undershot by xx% in the buffer.

**Example with 20% shortfall:** Consumers, such as heating circuits or DHWC, request 40 °C from the buffer storage tank. The buffer request (e.g. heating circuits) is only passed on to the boiler (source) as of a temperature of <32 °C. During solar charging, the buffer storage tank is only charged to 37 °C (instead of 45 °C).

- `Requ.delay`: 10-120 min (factory setting: 30 min)

The `shortfall` remains active after the end of the solar charging for the period of the `Requ.delay` specified here. This is to bridge interruptions in solar charging due to cloud coverage.

**To utilize solar energy as effectively as possible, the storage tanks should be ideally configured for solar charging.**

The following settings refer to the charging carried out by the boiler.

- **DHWC**

Switch DHWC to time program and e.g. 17:00 to 22:00 o'clock. (see section **When is the domestic hot water heated?** [► 53]) The entered time depends on the alignment of the solar system and also on the hot water demand.

- **Buffer storage tank**

**Program**

Set the program to "Summer" during the summer months. (See section: **When will the buffer storage tank be charged?** [► 55])

In the winter months (heating period), set the program to "Temperature" or "Time +" and temperatures to 20/60 (min/max).

- **Buffer type**

Buffer type x.2 must be selected so that sensor 4 can be used as the switch-off sensor for the boiler request

- **Stratification**

Monitor the stratification (water amount) when recharging. Activate the dynamic return flow temperature when charging the boiler directly. (See section: )

## 6.5 Boiler

### 6.5.1 Boiler temperature

In addition to the current actual temperature, it is possible to specify the setpoint temperature on this screen.

**Setpoint**

The controller has an automatic setpoint calculation feature. The value set for setpoint temperature is the boiler water temperature **minimum setpoint value**.

If the value determined from the highest requested consumer forward flow temperature is +3°C higher, this value is specified as the calculated setpoint. This way, the setpoint can glide between the set value and max. 85°C.

## 6.6 Operational state

You can only display values and states via this option, you CANNOT modify them.

### 6.6.1 Boiler

After the Status (e.g. "Fire off"), the temperatures in the boiler are displayed:

- Boiler temperature, actual and boiler temperature, setpoint
- Exhaust gas temperature, actual and Exhaust gas temperature, setpoint

Subsequently the status of the boiler pump is displayed. In addition to the return flow temperature, setpoint and return flow temperature, actual, you will also see the mixer status of the return flow boost (RFB mixer), the full load hours and whether a consumer request is pending.

### 6.6.1.1 Boiler status

Status	Description
Heating-up	The induced draught fan starts up. The heat up process was successful if the exhaust gas temperature increases accordingly.
Fire off	The boiler is in standby.
Fire maintenance	The boiler switches into the status <i>Fire maintenance</i> if the <i>boiler temperature, actual</i> is higher than the <i>boiler temperature, setpoint</i> . The heat consumption was too low or the boiler was filled with too much fuel. → Fill the fill room as prescribed by the control.
Heating	The boiler is in operation.
Fault fire out	A fault occurred in the status Fire out. → Check the alarm log. Clear the alarm.
Fault, fire maintenance	A fault occurred during the ongoing heating operation. → Check the alarm log. Clear the alarm.
Door open	The casing door is open. The induced draught fan is running. When the door is closed, the boiler usually switches to the status <i>Heat up</i> .
Overheating	The boiler is overheated. → see What to do when the system is overheated (section <b>What to do when the system is overheated [▶ 73]</b> ).
Maintenance	The system operates during the relay test (certified technician!), but this is only displayed in external log programs!

### 6.6.2 Heating circuits

If the heating system contains several heating circuits, the control first shows a list of available heating circuits.

Only then you will see details regarding the current status of the selected heating circuit.

- The selected heating program is shown in the header: Automatic | Comfort | Reduct | Frost protection | Off
- The Status line shows the current status:  
Automatic | Comfort | Reduct | Frost protection | Off | Holiday | Screed | External | Maximum heat consumption
- The additional information provides details:  
External function | Priority DHWC | Party active | Off program | Holiday active | Outside the heating period | During the heating period | Outside temperature above

frost protection limit | Frost protection active | Eco operation / Fast reduction| Outside temperature-dependent deactivated | Comfort program | Reduction program | Forward flow temperature below threshold value | Room temperature above the frost protection limit | Input "request" not set! | Overheating/Fault in secondary heating source | Boiler overheating | Boiler requests max. acceptance | Screed program | Maintaining nominal load, log wood boiler | HC control not active

The subsequent lines juxtapose the room temperature, actual (measured temperature in the living quarters) and the room temperature, setpoint (desired temperature in the living room) and shows the currently measured outside temperature.

In addition, the status for the pump, mixer, incline and room influence is displayed.

### 6.6.3 DHWC

If the heating system contains several DHWC, the control first shows a list of available heating circuits.

Only then, the header shows the current program.

The display `Status` shows the reason for charging or not charging (e.g. holiday program).

#### Temperature

The value `temperature, actual` shows the temperature measured at the sensor, while `temperature, setpoint` shows either the set maximum temperature or the set Legionella protection temperature to which the boiler is heated after the minimum temperature was undershot. The actual domestic hot water (at the tap) depends on the potential downstream mixer valve and/or the sensor position in the storage tank.

`Charging pump` shows the status of the pump (On|Off).

`Request` shows whether a heat request is pending (On|Off).

#### circulation

In this area of the menu, you can see details regarding the circulation – but only if a circulation pump is activated:

`Circulation pump` shows the pump status (On|Off).

`Push button` shows the status of the push button (On|Off).

`Temperature` displays the measured circulation temperature (only relevant if the pump is running!).

### 6.6.4 Buffer storage tank

If the heating system contains several buffer storage tanks, the control will first show a list of available buffer storage tanks.

#### Temperatures

Only then you will be shown the (max.) 5 measured temperatures. This view shows sensor "S1" (= temperature 1) in top position and "S5" (= temperature 5) in bottom position. If a sensor has not been placed, the text "missing" is displayed instead of the temperature.

#### Status

This area shows both the `temperature, setpoint` and also whether the buffer has issued a `request` and whether the `pump` is running.

In case there is a `switchover valve`, the position of the switchover valve is shown (top|bottom).

#### Circulation

In this area of the menu page you can see details regarding the circulation – but only if a circulation pump is activated:

Circulation pump shows the pump status (On|Off).

Push button shows the status of the push button (On|Off).

Temperature displays the measured circulation temperature (only relevant if the pump is running!).

## 6.6.5 Solar

The operating status of the solar system is shown in the Main menu >> Operating status >> Solar.

- Status
- Collector temperature
- Temperature storage tank 1
- Temperature storage tank 2
- Pump 1 (in %)
- Pump 2 (in %)
- Diagram
- Collector excess temp.
- Heat output (in kW)
- Heat quantity day (in kWh)
- Heat quantity total (in kWh)
- Collector forward flow temperature (in °C)
- Collector return flow temperature (in °C)
- Flow (in l/min)  
Shows the current flow.

## 6.6.6 Feeder pumps

If the heating system contains several feeder pumps, the control will first display a list of available feeder pumps.

Temperatur, setpoint displays the highest requested temperature of the group.

Request shows whether a heat request is pending at the source (On|Off).

Pump shows the status of the pump or the valve (On|Off).

Source shows the specified source which supplies the buffer storage tank or the group with heat.

## 6.6.7 Secondary heating sources

If the heating system contains several secondary heating sources, the control will first display a list of available heating sources.

### Status

Status shows the status (Off | Normal operation | Overheating | Delay) of the secondary heating source.

Boiler pump shows the status of the pump (On|Off).

Request shows whether a heat request is pending at the secondary heating source (On|Off).

### Temperature

Temperature shows the temperature measured at the secondary heating source.

## 6.7 Date/Time

In the network, the control unit at the boiler specifies the "system time": This time applies to all other control units in the same network.

The menu permits editing the `date`, `time` and `time zone`. Below, you can see the `battery status`.

### Summer/winter time

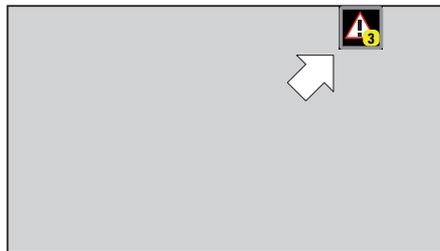
The switchover to summer/winter time occurs automatically!

### Time zones

The control proposes possible time zones, and you can select in which time zone you are living (e.g. "Western European time zone," "Central European time zone" ...).

On <http://www.timeanddate.com/worldclock> (English) and <http://www.timeanddate.de> (German), you can have the time zone determined for a specific location, a graphic representation of time zones, you will find on <http://www.zeitzonen.net/> (German).

## 6.8 Alarm system



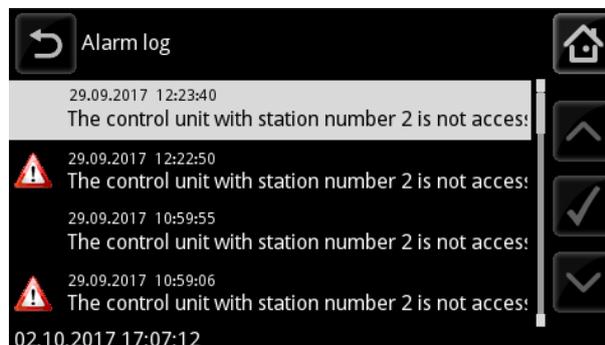
During ongoing operation, a symbol in the top right corner of the screen shows how many alarms are active.

### Show alarms

The menu `Show alarms` will bring you to a list of all active alarms: Date and time are shown for every alarm. If you would like to view alarm details, select the respective line in the list.

### Alarm log

The menu `Alarm log` shows all events related to alarms. Every event entry is displayed together with its date, time, reporting number and message text. Select the respective line in the list if you would like to view event details.



Alarm log symbol legend:



: Alarm is active.



: Alarm was acknowledged.



: Alarm has been rectified.

### Rectify all alarms

You can rectify all open commands at once via the menu `Rectify all alarms`. In a dialogue, you will be asked you whether you really want to clear (rectify) all alarms!

## 6.9 Customer service

### Support

The `Support` menu displays the KWB customer service phone number and collects all information you should have available for the KWB customer service: This includes the boiler and serial number and the exact software version.

### Control interval

The menu `control interval` is meant for the operator and shows the `number of checks performed by the operator`.

The `interval` defines after how many full load hours the alarm **02.22 Control interval expired!** [▶ 77] should be triggered. The `remaining time` automatically follows from this interval and CANNOT be changed.

When you select the command `control completed`, the control increases the number of maintenance events and sets a time stamp.

- The interval restarts every time this value is changed.

### Maintenance

The `maintenance` menu shows the `number of already carried out maintenance services` as well as the most recent maintenance. The `interval` and the mathematically derived remaining time for `next maintenance` in CANNOT be modified.

### Please also see

- 📖 02.21 Maintenance interval expired! (▶ 77)
- 📖 02.22 Control interval expired! (▶ 77)
- 📖 02.21 Maintenance interval expired! (▶ 77)

## 6.10 Expansions

### 6.10.1 Ethernet settings

You must first ensure that the Exclusive control unit [BGE] at the boiler has a network connection!

#### With DHCP

**DHCP**: Activate the DHCP service to activate the automatic assignment of IP addresses. In this case, the following details are shown after a short delay. Leave these values unchanged!

#### Without DHCP

Without DHCP, you will need to assign to the Exclusive control unit [BGE] at the boiler ...

- a valid and free IP-address.

- a subnet mask to share the IP networks.
- a gateway: This address is used to send all network requests to other networks or to the internet („Internet Gateway“).

## 6.10.2 Comfort Online

This menu defines the access to the KWB Comfort Online (option).

- ↳ The setting `remote access` in the menu `Server settings` must be activated!
- ↳ Did you enter a valid boiler serial number?
- Wait until the chain symbol in the right bottom corner is displayed. The connection to the online platform has been established.

In the menu, `server settings`, there is a setting called `remote access` (On|Off; for Comfort Online it must be On!), the server name (`ingress.comfort-online.com`) and the port (7005) for the connection.

The menu `connection status` shows the status of the connection to the KWB Comfort online server. Check the network connection to your internet modem if a connection cannot be established.

Select `registration` and wait until the system shows you a TAN (transaction number).

You will need this TAN to add your system to your Comfort Online account: When you select the menu command "add system" on your Comfort Online terminal device, the system will automatically ask for this TAN.

To de-register the system from the KWB Comfort Online server, select `de-register`. KWB Comfort Online will subsequently not be functional until you re-register the system and connect it to an account!

### Please also see

- 📖 20.08 ComfortOnline: Unknown BGE series number for this boiler series number (► 83)

## 6.10.3 SMS settings

If you want to be notified via SMS by the KWB Comfort, (provided you have a GSM modem), you will have to activate the `SMS function` in the menu `Add-ons >> SMS settings`.

Notifications of malfunctions are sent to a maximum of 2 mobile phones 10 seconds after their occurrence. Activate a max. of 2 phone numbers (On) and then enter the phone numbers.

**Important:** Enter the telephone numbers using the international format (e.g. "+43..." for Austria).

Assign a four-digit `KWB Code`, (only numbers!) to prevent unauthorised access to the system. Protect against misuse and change the code from time to time.

This code is to be sent along for every query and every control instruction. SMS messages without this code will be ignored by KWB Comfort.

The setting `SMS reminder` defines whether the system sends all messages only once to the mobile phones (Off) or whether it will repeat uncleared messages every 2 hours.

When you perform the command `send SMS templates`, the system will send 11 SMS templates with sample instructions to the first mobile phone number entered: This way, you will have all the content that you need for querying and controlling your KWB system on your mobile phone.

After sending, the status automatically switches to `Off`.

The `receiver strength` helps you determine the best possible placement for the SMS system.

## 6.10.4 Mail settings

After you have entered a valid `email address`, e.g. `max.mustermann@firma.de`, you will be able to activate the `send mail (On|Off)` function.

When one or more alarms occur, these will be sent to the specified email address with a 10 s delay. Additional alarms will be sent only after expiration of the specified `time interval` (in minutes).

A prerequisite for this function is:

- Internet connection

### Please also see

- Ethernet settings (► 65)

## 6.10.5 Licenses

### Licenses for the activation of software products

A license must be acquired so that the solar control or boiler master-and-slave circuit can be activated in the software.

A license for the software product cannot be shared by several devices at the same time.

The license authorises the licence holder to activate the following products under `https://license.kwb.net`.

- KWB solar control
- KWB boiler master-and-slave circuit
- KWB Heat management module [WMM]
- Modbus (communication protocol)

The license is valid for an unlimited time. Transferring a license to third parties is strictly prohibited!

### Important information

The license certificate is enclosed with the boiler documentation. Please keep this license certificate safe. You will need the license and order numbers indicated on this certificate to activate the listed software functions. It is recommended to install software version V19.11 or higher on the boiler control unit before activating the license.

### License activation with software version V19.11 or higher

**There are two ways to activate a license:**

1. System (boiler or autonomous heating management module) is **online**
2. System (boiler or autonomous heating management module) is **offline**

### System is online

On the control unit, navigate to the menu `>> Add-ons >> Licenses >> Online activation >> Activate licences` and enter the license and order numbers indicated on the license certificate. The license will then be automatically released.



### System is offline

1. On the control unit, navigate to the Menu >> Add-ons >> Licenses >> Offline activation >> BGE request ID. "BGE request ID" is shown. Please write it down.

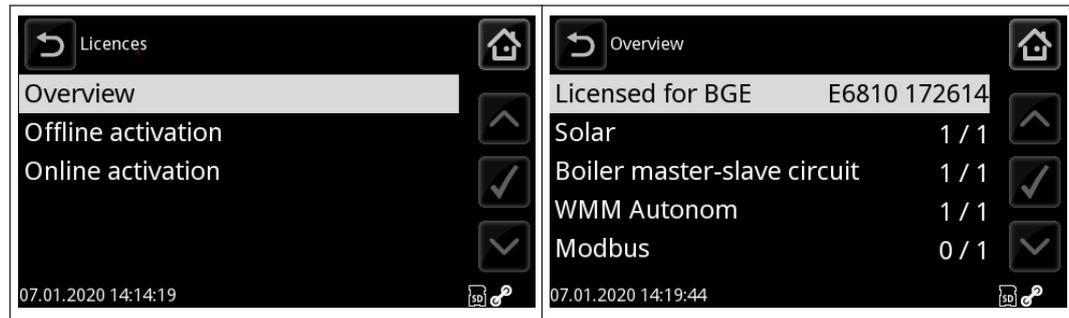


1. On your smartphone or computer, go to the internet and open the link <https://license.kwb.net>. Enter the license and order numbers indicated on your license certificate.
2. Select "license activation as of software version V19.11".
3. Enter the "BGE request ID".
4. The 16-digit activation code will be displayed as a result. Please note it down.
5. On the control unit navigate to the menu >> Add-on >> Licenses >> Off-line activation >> Activation code and enter the 16-digit activation code. This releases the license.



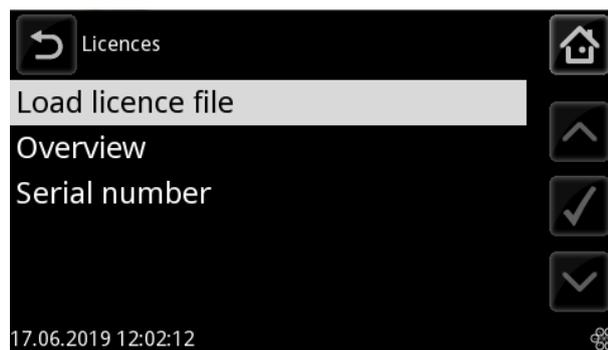
### Overview of used licenses

1. The Menu >> Add-ons >> Licenses >> Overview provides a list of activated and used licenses. In the example below, you can see that the Exclusive control unit [BGE] is licensed for Modbus, but is not being used (switched on).



### License activation with software version V19.5

1. To be able to launch the licensed software functions, you will need the serial numbers of the control unit and the Heat management module on which the software function is to be activated.
2. The required serial numbers can be found in the control unit under Menu >> Add-ons >> Licenses >> Serial number. Please use only the last 6 numbers of the serial number.
3. To activate the listed software functions, go online on a computer and enter the following internet address (URL): <https://license.kwb.net>.
4. On the screen that is displayed, enter the required data (license number, order number) and select the button "License activation before software version V19.11".
5. Enter the serial number of the control unit and/or the heating management module in the following mask.
6. Create a license file and store it on an SD card. Please do **NOT unpack** or change the license file!
7. Insert the SD card containing the license file into the control unit where the activation is to be carried out and install the license file on the control unit using the following menu path: Load Main menu (open menu) >> Add-ons >> Licenses >> License file.



**Please file the license certificate carefully away after activation. The data contained on the license will be needed to recover the license if you replace the electronics equipment at a later point in time.**

### 6.10.6 ModBus settings

Data can be exchanged between the KWB Comfort 4 control and external systems (e.g. higher-level control or visualization systems, central building control systems, etc.) using ModBus protocol and a TCP link.

A prerequisite for this function is:

- External system modBus-capability
- The customer must provide the cabling (Ethernet)

In the menu `Modbus settings`, you can see the setting for the data exchange:

`Modbus active` shows whether the data exchange via Modbus protocol has been activated. In addition, the Modbus symbol is shown in the lower right corner of the user interface.

The `level` shows which parameters are readable or writeable according to Modbus (operator | certified technician).

Under `number of connections`, the number of connections or the number of network interruptions to the server is shown.

## 6.11 Expert level

Safety-relevant settings are not accessible in standard operation. You can only access the protected menus by entering a code.

At midnight, the control will automatically switch back to the `operator` level.

### 3 safety levels

Operator	Normal level
Technician	Mostly released menus
Service	All menus are released

### Touch screen operation

- Enter your PIN code and confirm the number by pressing .
- With the delete [Löschen] button you can delete the respectively last digit and repeat your entry.

### Dial operation

- You can specify the individual digits of the PIN code by turning the dial. The digit will appear as normal.
- Press ✓ to confirm the digit at the respective position. Alternatively, you can also press on the dial. The digit will immediately afterwards be replaced by a star to hide the PIN code.
- Once you have confirmed all digits individually, you need to confirm the entire number by pressing ✓.

## 7 Reacting to problems

You can find a complete list of the alarm messages for your boiler and the possible reactions to them in section **Notifications** [► 74].

### 7.1 Meaning of the LEDs at the Basic control unit [BGB]

A Basic control unit will NOT display any messages, instead it will notify with lit or flashing LEDs.

All LEDs light up red	<b>Commissioning:</b> The Basic control unit [BGB] has not yet been assigned to a heating circuit AND there is no alarm present.	A certified technician has to assign the Basic control unit [BGB] to a heating circuit AND clear the alarm.
All LEDs light up green	<b>Initial commissioning:</b> The Basic control unit [BGB] has not yet been assigned to a heating circuit.	A certified technician has to assign the Basic control unit [BGB] to a heating circuit.
No LED is lit	No heating program has been selected.	Select a program on the Exclusive control unit [BGE] at the boiler.
One LED lights up green	Everything is ok	
An LED flashes red	During the holiday or party program, the heating system has detected a <b>fault</b> and indicates that log wood must be refilled.	You will find more details on the Exclusive control unit [BGE] at the boiler.
One LED lights up red	The heating system has detected a fault.	You will find more details on the Exclusive control unit [BGE] at the boiler.
One LED flashes green (3 s on, 1 s off)	Party mode or holiday program active	More details you will find on the Exclusive control unit [BGE] at the boiler.
One LED flashes green (2 s on, 1 s off)	reload log wood	You can refill log wood according to the specifications displayed on the Basic control unit [BGE] at the boiler.
Top LED flashes red	<b>Fault:</b> No network connection to the Exclusive control unit [BGE] at the boiler.	A certified technician needs to re-establish the network connection.

### 7.2 Calling customer service

→ Please have the boiler type specified on the type plate at hand.

The following menus are helpful when contacting KWB customer service:

- The menu **Customer service** [► 65] shows the software version in use.

- The menu **Operational state** [► 60] shows the operating states or measured values of all important components (motors, sensors ...). This allows you or customer service to find the cause of possible faults and alarms and rectify them in a targeted way.

### 7.3 Setting the date and time of day

If the system was without power and the battery of the control unit is flat, the internal clock will stop working. The control unit will display the alarm **00.07 Battery empty** [► 74].

→ Set the current date and time as described in section **Date/Time** [► 64].

According to the manufacturer, the battery must be replaced every 5 years. How to replace the control unit battery is described in section **Battery change** [► 105].

### 7.4 General fault at the power supply

Error pattern	Possible cause	Remedying the error
Nothing displayed on the display	General power failure	Switch on main switch
Control without electricity	Main switch switched off RC protection switch or surge ar- rester switched off	RC protection switch or surge ar- rester switched on

### 7.5 What to do after a power outage

Once the power is back on, the control will continue to operate in the previously selected operating mode.



#### WARNING

#### Risk of deflagration

In this situation, an orderly fuel combustion in the combustion chamber cannot be ensured. Flammable gases may develop that will ignite in an explosive manner when the door is opened!

- Keep all boiler doors closed!
- Let the boiler cool down!

→ Check after a power outage whether the safety temperature limiter (STB) has triggered at the boiler – and clear this block, if required.

### 7.6 What to do when smoke develops / exhaust smell become noticeable



#### DANGER

#### Life-threatening poisoning with exhaust gas possible

If exhaust gas smells become noticeable in the boiler room:

- Keep all boiler doors closed!
- Air out the boiler room!
- You must immediately leave the boiler room and close the fire protection door!
- You should also close all doors to the living quarters!
- Let the fuel burn out and the boiler cool down!

If smoke escapes from the boiler during operation, the induced draught fan may be faulty:

→ Notify customer service.

## 7.7 What to do when the system is overheated

 <b>WARNING</b>	<p><b>Risk of deflagration</b></p> <p>In this situation, an orderly fuel combustion in the combustion chamber cannot be ensured. Flammable gases may develop that will ignite in an explosive manner when the door is opened!</p> <ul style="list-style-type: none"> <li>→ Keep all boiler doors closed!</li> <li>→ Let the boiler cool down!</li> </ul>
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<b>NOTE</b>	<ul style="list-style-type: none"> <li>→ Do NOT switch the system off using the main switch.</li> <li>→ Do NOT disconnect the power supply!</li> </ul>
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The control opens all mixers and switches on all pumps.

- Open the thermostat valves at the radiators, if any.
- If the temperature does not go down despite all these measures, call your heating technician or the KWB customer service.

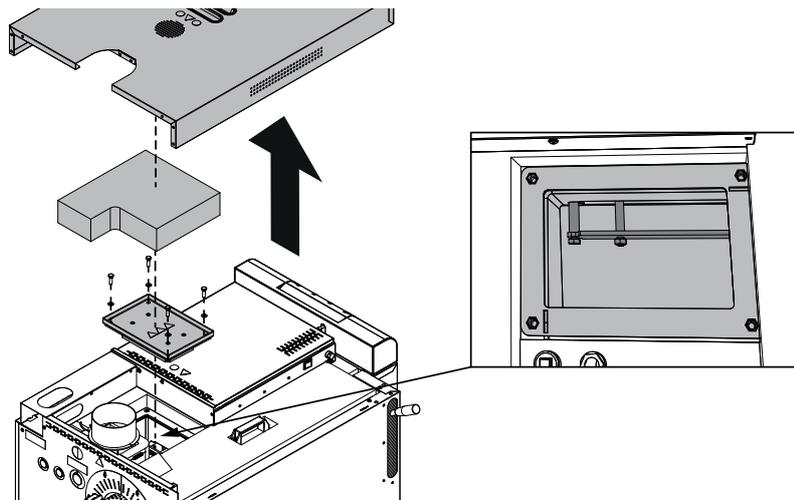
## 7.8 What to do in the event of a system fire

 <b>DANGER</b>	<p><b>In the event of a system fire: danger to life due to fire and toxic gases</b></p> <p>What to do in case of a fire:</p> <ul style="list-style-type: none"> <li>→ You must immediately leave the boiler room!</li> <li>→ Close the fire protection door!</li> <li>→ You should also close all doors to the living quarters!</li> <li>→ Call the fire department!</li> </ul>
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## 7.9 Carbonisation gas duct shutter does not move freely

Error pattern	Possible cause	Remedying the error
Carbonisation gas duct shutter does not move freely No or not enough air draft through the combustion chamber when the shutter is closed	Shutter guide is blocked The shutter cannot be closed due to soiling	Check the area below the revision opening for fouling and clean, if required

### Clean the carbonisation gas duct shutter



- Take off the casing cover.
- Remove the heat insulation below.
- Loosen the screws of the revision cover.
- Lift off the revision cover.
- Clean the carbonisation gas duct shutter and the shutter guides.
- Clean the entire area with a brush and an ash vacuum.

## 7.10 Increased exhaust gas duct cleaning efforts

Error pattern	Possible cause	Remedying the error
Increased cleaning effort required due to strongly adhesive black deposits in the exhaust gas ducts Noticeably shorter cleaning intervals	Use of fuels with a moisture content below 15%	Notify your heating system company or the KWB customer service.

## 7.11 Notifications

### KWB Comfort 4 notifications

#### 00.07 Battery empty

The batteries in the Exclusive control unit can supply the unit with electrical voltage for approximately 5 years. If the system subsequently fails, you will be asked at the next startup to store time and date again.

#### Button cell weak

The button cell has a life span of 1–7 years – depending on its storage, the switched off state of the Exclusive control unit [BGE], ...

- Change the battery as described in the "Operating Instructions" in the maintenance section.

### Button cell bracket faulty

- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

## 02.00 Safety thermostat! Boiler overheating!

The system will be switched off.

When an operating temperature of up to 100 °C is reached, the safety thermostat (more precisely: safety temperature limiter "STL") is triggered.

### Overheating during operation

- Carry out a visual inspection of the system.
- Let the boiler cool down before resetting the thermostat.
- Monitor the system for a longer period.

### Overheating after a power outage

- Let the boiler cool down before resetting the thermostat.
- Reset the thermostat: Screw off the black cap on the switch bracket on the side and press the button below it with a pen until you hear a clicking sound.
- Monitor the system for a longer period.

### The boiler is running under full load at high setpoint temperatures and the heat consumption suddenly stops.

- Check the boiler temperature sensor and cabling to the sensor (contact issue).
- Check the hydraulic system for a sudden interruption of the heat consumption (pump, safety thermostat transmission line, ...).
- Notify your heating system company or the KWB customer service.

## 02.01 The emergency stop switch was pressed!

### The emergency-stop button was pressed

- Determine why this switch (emergency-stop switch) was pressed.
- If the system is OK, press the emergency-stop switch once more. The alarm will be automatically cleared.

In all other cases:

- Notify your heating system company or the KWB customer service.



**DANGER**

**No emergency-stop switch connected – Danger!**

- Have an emergency-stop switch connected according to the building regulations that apply to you!

## 02.03 Electronic error on digital inputs!

The digital and analogue inputs are not reaching the boiler modules.

- Notify your heating system company or the KWB customer service.

### 02.04 Boiler signal module error

The Boiler signal module [KSM]) is missing or faulty

- Notify your heating system company or the KWB customer service.

### 02.06 Alarm! Internal error!

Alarm for internal use.

- Notify your heating system company or the KWB customer service.

### 02.09 The induced draught fan speed is too low

- Check the cabling of the fan.
- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### 02.12 Lambda probe is defective!

- Notify your heating system company or the KWB customer service.

### 02.16 Overheated electronics

The temperature of the electronics (board) has exceeded the limit value of 70°C.

The system will be switched off.

When the temperature drops under 70 °C (minus hysteresis) again, the alarm is cleared automatically and the system restarts.

#### The temperature at the boiler is too high!

- Check the completeness and correct installation of the boiler insulation.
- Check whether the boiler room has sufficient ventilation.  
**Warning:** Installing/operating an exhaust fan requires an air intake of respective size!
- Notify your heating system company or the KWB customer service.

### 02.17 Boiler temperature sensor is missing or faulty!

#### Defective sensor or sensor cable

- Check the sensor and cabling to the sensor (including plug connector and contacts).
- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### 02.18 Boiler temperature implausible

Temperature values that rise or fall to rapidly indicate a sensor defect. This alarm is triggered if the filtered boiler temperature rises or falls above average.

The alarm can also occur if the boiler temperature sensor is unplugged and plugged back in.

- Notify your heating system company or the KWB customer service.

## 02.19 Return flow boost malfunction!

The return flow temperature does NOT reach the set setpoint value within the specified maximum time.

→ Notify your heating system company or the KWB customer service.

## 02.20 Return-flow sensor is missing or faulty

### Defective sensor or sensor cable

→ Check the sensor and cabling to the sensor.

→ If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

## 02.21 Maintenance interval expired!

This notification is to remind you that you have to schedule the next maintenance with your heating system installer or the KWB customer service.

Only the factory customer service can change and/or reset the interval!

### Please also see

📖 Customer service (▶ 65)

## 02.22 Control interval expired!

This reminder is triggered after a freely-selectable number of full-load hours. The interval starts over again after changes to the `interval time` or the `number of maintenance procedures` in the **Customer service [▶ 65]** menu.

**Note:** This interval is deactivated in the factory setting.

## 02.25 230 V Safety chain reserve is interrupted!

An external safety device (e.g. low water pressure switch) was interrupted at plug 128.

### External safety device

An external safety device 230 V (e.g. low water pressure switch) was triggered at plug 128.

→ Check why the safety chain was interrupted (limit switch storage room door, low water pressure switch, ...).

→ Notify your heating system company or the KWB customer service, if necessary.

## 02.30 24 V safety circuit not active, input 130

The safety circuit connected with connector 130 is not active.

## 02.32 24 V safety circuit not active, input 132

The safety circuit connected to connector plug 132 is not active.

## 02.34 Induced draught fan speed is too high

The fan started running although it was not activated.

## Cabling

- Check the cabling of the fan.
- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### 02.41 Invalid boiler series number

No boiler series number was entered or the number entered was invalid!

- Notify your heating system company or the KWB customer service.

### 02.42 Boiler power module error!

The Boiler power module [KPM] is missing or faulty.

- Notify your heating system company or the KWB customer service.

### 02.45 The exhaust gas temperature sensor is missing or faulty!

#### Defective sensor or sensor cable

- Check the sensor and cabling to the sensor (including plug connector and contacts).
- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### 03.00-03.84 Sensor ... at the buffer storage tank ... is missing or faulty!

This alarm is available for each of the max. 5 sensors (1 to 5) at the 17 buffer storage tanks (0 to 16).

#### Defective sensor or sensor cable

- Check the sensor and cabling to the sensor.
- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### 04.00-04.33 DHWC temperature sensor ... is missing or faulty!

This alarm is available for each of the max. 2 sensors at the max. 17 buffer storage tanks (0 to 16).

#### Defective sensor or sensor cable

- Check the sensor and cabling to the sensor.
- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### 05.00-05.15 Outside temperature sensor at the heat management module ... is missing or faulty!

This alarm is available for each of the max. 16 Heat management modules [WMM] (0 to 15).

- Notify your heating system company or the KWB customer service.

### **06.00-06.15 BGB 2 at WMM ... is missing or faulty**

This alarm is available for each of the max. 16 Heat management modules [WMM] (0 to 15).

- Check the bus cabling.
- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### **08.01-08.14 Internal error ... DHWC ...**

An error occurred in one of the DHWCs (1 to 14) which the control should have prevented.

- Notify your heating system company or the KWB customer service.

### **09.01-09.28 Internal error ... heating circuit ...**

An error occurred in one of the heating circuits (1.1 to 14.2) that the control should have prevented.

- Notify your heating system company or the KWB customer service.

### **10.00-10.14 Internal error ... group ...**

An error occurred in one of the groups (0 to 14).

- Notify your heating system company or the KWB customer service.

### **11.00-11.14 Internal error ... buffer storage tank ...**

An error occurred in one of the buffer storage tanks (0 to 14) which the control should have prevented.

- Notify your heating system company or the KWB customer service.

### **12.00-12.15 Boiler temperature sensor at the second boiler ... is missing or faulty!**

This alarm exists for each of the max. 16 second boilers (0 to 15).

#### **Defective sensor or sensor cable**

- Check the sensor and cabling to the sensor.
- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### **13.00-13.30 Forward flow temperature sensor in the heating circuit ... is missing or faulty!**

This alarm is available for every heating circuit.

#### **Defective sensor or sensor cable**

- Check the sensor and cabling to the sensor.
- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### **15.00-15.15 WMM ... not available!**

The control has lost connection to the specified Heat management module [WMM] (0 to 15).

#### **Power supply at the external Heat management module [WMM]**

- Check whether the power supply of the Heat management module [WMM] was interrupted in adjacent buildings during installation.
- Check whether the power supply unit at the external Heat management module [WMM] was connected correctly.
- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### **16.01 The secondary air shutter is not working!**

The system will be switched off.

Feedback signal and control signal have been deviating for more than 5% for 5 minutes.

- If this fault recurs, call you heating technician or the KWB customer service.

### **16.02 Boiler leaking!**

Too much oxygen gets into the boiler.

The secondary air shutter is set to a pre-defined minimum opening.

#### **At least one of the three fill doors is not closed**

- Always close all fill doors tightly.
- Check the seals at the doors for leaks.
- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### **16.05 Important information! Wrong operating mode due to excessive fill amount! Observe fuel fill level! See operating manual!**

#### **The boiler was filled with too much fuel.**

Too much fuel (in case of small or charged buffer storage tanks) leads to a situation where the boiler switches to partial load / fire maintenance at the end. This can lead to tarring in the boiler which may prevent reliable operation!

- Fill the fill room as prescribed by the control (see also section **Query the fill amount** [▶ 33]).

### **17.00 House bus connection error**

The KWB "house bus" connects the boiler with other network components. This alarm is only displayed if there is a problem aligning two Exclusive control unit [BGE].

- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### **17.01 More than one boiler control unit [BGE] detected!**

The control found more than one Exclusive control unit [BGE] in the network that has been configured as the "BGE at the boiler".

→ Notify your heating system company or the KWB customer service.

### 17.02 Log error during parameter reconciliation!

Not all data could be transferred via the bus during parameter reconciliation.

→ Notify your heating system company or the KWB customer service.

### 17.03 Node with incompatible parameter version detected!

The control detected an Exclusive control unit [BGE] in the network whose parameters could not be exchanged with other control units.

→ Notify your heating system company or the KWB customer service.

### 17.04 Unacknowledged alarms are pending at the boiler

This message only appears on an Exclusive control unit [BGE] in the living quarters and alerts you to the fact that alarms are pending.

Use the Exclusive control unit [BGE] at the boiler to acknowledge the alarms.

→ If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### 17.05 CAN: Internal error

Have the boiler information such as boiler number and software version (to be found in the menu `Customer service >> Support`) ready and contact your heating system company or KWB customer service.

### 17.06 No connection to boiler BGE

This message only appears on a Exclusive control unit [BGE] in the living quarters and alerts you to the fact that the connection to the control unit at the boiler has been interrupted.

#### Power supply at the boiler has failed

→ Check whether the power supply at the boiler has failed.

→ Check whether the boiler has been switched off.

→ If you cannot rectify the error, call your heating technician or the KWB customer service.

### 18.00-18.15 BGB 1 at WMM ... is missing or faulty!

This alarm is available for each of the max. 16 Heat management modules [WMM] (0 to 15).

→ Notify your heating system company or the KWB customer service.

### 19.00-19.30 Analogue room temperature sensor at heating circuit ... is missing or faulty!

**Note:** "Analogue sensor" refers to a PT1000 sensor and NOT to the sensor in the mounting base of the Basic control unit [BGB] or Exclusive control unit [BGE]!

#### Defective sensor or sensor cable

→ Check the sensor and cabling to the sensor.

- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### **20.00 ComfortOnline: Connection timeout!**

No connection to the server. The connection is interrupted.

- Check the network connection from the control unit to your internet modem (router) and the connection to the internet.
- If you cannot clear the alarm, call your network technician.

### **20.01 ComfortOnline: Internal Error (Fifo error)!**

- Have the boiler information such as boiler number and software version (to be found in the menu `Customer service >> Support`) ready and contact your heating system company or KWB customer service.

### **20.02 ComfortOnline: Internal Error (Fifo buffer full)**

- Have the boiler information such as boiler number and software version (to be found in the menu `Customer service >> Support`) ready and contact your heating system company or KWB customer service.

### **20.03 ComfortOnline: Transport not enabled**

- Have the boiler information such as boiler number and software version (to be found in the menu `Customer service >> Support`) ready and contact your heating system company or KWB customer service.

### **20.04 ComfortOnline: Connection error**

No connection to the server. The connection is interrupted.

- Check the network connection from the control unit to your internet modem (router) and the connection to the internet.
- If you cannot clear the alarm, call your network technician.

### **20.05 ComfortOnline: Login error**

- Have the boiler information such as boiler number and software version (to be found in the menu `Customer service >> Support`) ready and contact your heating system company or KWB customer service.

### **20.06 ComfortOnline: Server reports 'invalid telegram format'**

- Have the boiler information such as boiler number and software version (to be found in the menu `Customer service >> Support`) ready and contact your heating system company or KWB customer service.

### **20.07 ComfortOnline: Server reports 'BGE software version not supported'**

The ComfortOnline server has detected that the installed software is not supported at the control unit. Remote access to the system is thus impossible.

- Make sure that all Exclusive control units in the network have the most recent software.
- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### 20.08 ComfortOnline: Unknown BGE series number for this boiler series number

The ComfortOnline server has detected that the control unit series number does not match the series number stored on the server.

- Notify your heating system company or the KWB customer service.

#### Please also see

- 📖 Comfort Online (▶ 66)

### 20.09 ComfortOnline: Server reports 'A system with this series number is already online'

The ComfortOnline server has detected that a boiler with this series number already exists.

- Compare the boiler number and the series status on the type plate with the one entered in the menu `Boiler >> Boiler settings >> Series number`.
- Correct the number, if necessary, and repeat the registration process.
- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### 20.10 ComfortOnline: Server reports 'BGE with this ser. no. was already used with other boiler ser. no.'

The ComfortOnline server has detected that the control unit series number has already been used with another boiler series number.

Remote access to the system is thus impossible.

- Notify your heating system company or the KWB customer service.

#### Please also see

- 📖 Comfort Online (▶ 66)

### 20.11 ComfortOnline: Server reports 'Unexpected message'

- Have the boiler information such as boiler number and software version (to be found in the menu `Customer service >> Support`) ready and contact your heating system company or KWB customer service.

### 20.12 ComfortOnline: Server reports 'Unexpected server error'

- Have the boiler information such as boiler number and software version (to be found in the menu `Customer service >> Support`) ready and contact your heating system company or KWB customer service.

### 20.13 ComfortOnline: Server reports 'Unexpected sequence counter'

- Have the boiler information such as boiler number and software version (to be found in the menu `Customer service >> Support`) ready and contact your heating system company or KWB customer service.

### 21.00 The outside temperature sensor at the KSM is missing or faulty!

The control cannot detect the outside temperature sensor installed at the Boiler signal module [KSM].

#### Sensor is connected to the Heat management module [WMM]

- Check and/or correct the correct settings of the outside sensor of the system under `Basic settings >> Network settings`.

#### Defective sensor or sensor cable

- Check the sensor and cabling to the sensor.
- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### 23.00-23.15 Circulation temperature sensor at the WMM ... is missing or faulty!

This alarm is available for each of the max. 16 DHWCs or buffer storage tanks (0 to 15).

#### Defective sensor or sensor cable

- Check the sensor and cabling to the sensor.
- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### 24.00 Error while securing the flash parameters

- Have the boiler information such as boiler number and software version (to be found in the menu `Customer service >> Support`) ready and contact your heating system company or KWB customer service.

#### 24.01 Error while loading settings

- Make sure that all control units in the network have the most recent software.
- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

#### 24.02 Error while securing the flash parameters

- Have the boiler information such as boiler number and software version (to be found in the menu `Customer service >> Support`) ready and contact your heating system company or KWB customer service.

### 24.03 Error while loading settings

- Have the boiler information such as boiler number and software version (to be found in the menu `Customer service >> Support`) ready and contact your heating system company or KWB customer service.

### 25.00 Configuration boiler bus failed.

This alarm indicates an error during the execution of the start-up assistant. This error is caused, e.g., by an incorrect bus cabling or unknown modules at the boiler bus.

- Notify your heating system company or the KWB customer service.

### 25.01 Configuration house bus failed.

This alarm indicates an error during the execution of the start-up assistant. This error is caused, e.g., by an incorrect bus cabling or duplicate Heat management module [WMM] addresses or unknown modules at the house bus.

- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### 25.02 Boiler type was not configured

The control was not able to read the boiler type. This may e.g. occur after a software update or parameter import.

- Notify your heating system company or the KWB customer service.

### 26.00–26.15 WMM ... does not support 2nd heating circuit

You tried to activate a 2nd heating circuit, but the Heat management module [WMM] (0 bis 15) does not support it!

KWB offers the Heat management module [WMM] in several versions – please note the number of available heating circuits!

- If an additional heating circuit is required, contact your KWB partner or the KWB customer service.

### 27.00-27.15 WMM ... does not support a secondary heating source

You tried to activate a second heating source, but the Heat management module [WMM] (0 bis 15) does not support it!

- Contact your KWB partner or the KWB customer service if a secondary heating source needs to be connected, if required.

### 28.00–28.30 The Exclusive control unit [BGE] with node number ... is not available!

The specified Exclusive control unit [BGE] cannot be found in the network.

#### Bus fault

- Check the bus cabling: Follow the respective instructions in the installation instructions.
- Check whether the Heat management module [WMM] connected to the Exclusive control unit [BGE] has a functioning power supply and functions properly.

- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### **29.00-29.30 Heating circuit ...: Room influence and Eco operation require a sensor for the room temperature.**

This alarm is available for every heating circuit.

The functions `room influence` (explained in section Room influence) and `eco operation` (explained in section **Taking the room influence into account [► 51]**) can only function if a room temperature sensor was assigned for the respective heating circuit.

- Activate a room temperature sensor.
- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### **30.00 GSM modem does not respond**

#### **Communication with GSM modem is interrupted.**

- Communication with the GSM modem could NOT be established, however, the system continues to run.

#### **Communication path is interrupted.**

- GSM modem is not supplied with power.
- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### **30.01 GSM modem error**

#### **Communication with GSM modem is interrupted.**

- Communication with the GSM modem could NOT be established, however, the system continues to run.

#### **Communication path is interrupted.**

- GSM modem is not supplied with power.
- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### **30.58 GSM modem error: CMS 303 operation not supported**

An unexpected error occurred.

- Clear the alarm.
- If this fault recurs, call you heating technician or the KWB customer service.

### **51.01-51.14 Solar system {1-14}: Assignment of a non-activated storage tank!**

This alarm is available for each of the max. 14 solar systems (1 to 14).

#### **Note for the assignment of non-activated storage tanks:**

A non-activated storage tank is to be assigned to the selected solar hydraulics system diagram. The alarm is automatically cleared as soon as the respective storage tank is activated.

(For buffer storage tanks, the selected buffer type must not correspond to a buffer type with solar register.)

→ If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### **52.01-52.14 Solar system {1-14}: Assignment of an already used storage tank!**

This alarm is available for each of the max. 14 solar systems (1 to 14).

**NOTE! The storage tank was already selected for another solar system (zone):**

An already used storage tank is to be assigned to the selected solar hydraulics system diagram. The alarm automatically clears as soon as the respective storage tank is once selected.

→ If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### **53.01-53.14 WMM {1-14} does not support solar**

This alarm is available for each of the max. 14 Heat management module [WMM] (1-14).

No solar control can be activated on this Heat management module since only one heating circuit is supported. The solar control is only supported at the Heat management module [WMM] with two heating circuits or the Heat management module Universal.

→ If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### **54.01-54.14 The collector temperature sensor of the solar system {1-14} is missing or faulty!**

This alarm is available for each of the max. 14 solar systems (1 to 14).

The collector temperature sensor, the sensor input or a connecting cable is missing or faulty.

→ If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### **55.01-55.14 The forward-flow temperature sensor of the solar system {1-14} is missing or faulty!**

This alarm is available for each of the max. 14 solar systems (1 to 14).

The forward-flow temperature sensor, the sensor input or a connecting cable is missing or faulty.

→ If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

### **57.01-57.14 Solar system {1-14}: Licence invalid**

This alarm is available for each of the max. 14 solar systems (1 to 14).

**Licence invalid**

A licence must be purchased so that the solar control can be released in the software. A licence for the software product may not be shared and used on several devices at the same time.

- Case 1:** → Purchase a licence and upload it to the control device, see section KWB Comfort 4 functions
- Case 2:** → The Exclusive control unit [BGE] or Heat management module [WMM] must be replaced. This also requires a new licence!
- Case 3:** → Check the uploaded licence to see if the serial number matches the serial number of the installed modules.
- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

**61.01 KFK 1 {\_1\_} is faulty**

The boiler slave boiler [KFK 1] reports a fault. This fault may refer to all boiler alarms.

- Use the control unit at the boiler to acknowledge pending alarms.
- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

**61.02 KFK 2 {\_2\_} is faulty**

The boiler slave boiler [KFK 2] reports a fault. This fault may refer to all boiler alarms.

- Use the control unit at the boiler to acknowledge pending alarms.
- If you cannot rectify the alarm despite all these measures, call your heating technician or the KWB customer service.

## 8 Maintenance

### 8.1 Reasons for on-going, professional maintenance service

The best care for your system is ensured by taking out a KWB maintenance contract. Your KWB Partner would be pleased to provide information in this regard.

#### NOTE

**Regular maintenance of your heating system offers numerous advantages such as:**

Optimal emission values and uniformly high levels of efficiency. This reduces your heating costs!

Cost savings thanks to a high level of operational reliability and maximum service life.

On-going optimisation of the heating system thanks to new technical findings.

If necessary you will receive more extensive training.

### 8.2 Standards for maintenance

[TRVB H 118]

The subsequent regulations originate from the Austrian "Technischen Richtlinie für vorbeugenden Brandschutz" [TRVB H118] (Technical Guideline for Preventative Fire Protection) – ensure that you comply with all corresponding local regulations!

#### 8.2.1 Weekly visual inspection

→ Visually inspect the complete system including the fuel storage room, weekly. Immediately remedy any deficiencies that you find!

#### 8.2.2 Monthly inspections

→ Perform the following inspections monthly and keep a log of these inspections. The respective forms can be found in section **Forms [► 92]**.

- Cleanliness of the exhaust routes (exhaust gas passes in the boiler, adapter and chimney).
- Proper operation of the control ... Are alarm messages displayed?
- Proper operation of the combustion air fan and induced draught fan ... Are alarm messages displayed?
- Proper operation of the combustion chamber ... Are alarm messages displayed?

In addition, also provide for:

- A portable fire extinguisher that is ready for use.
- A boiler room free of flammable materials.
- Fully functional fire protection closures (fire protection doors – automatically closing).
- Legible system stickers, which KWB has provided for safe and correct operation (please order new stickers if necessary).

**Please also see**

- 📄 Check sheet for operators (► 93)

## 8.2.3 Professional maintenance

### NOTE

#### Maintenance after an incident

- ↳ The TRVB requires additional maintenance after an incident.
- Make sure to perform maintenance after every repair to ensure the proper functioning of the system.

**Systems  
≤ 150 kW:**

#### Maintenance: 1 time annually (maintenance contract)

We recommend that you have a maintenance carried out annually by a certified technician based on a maintenance contract: This ensures incident-free operation, a long service life and an additional reduction of environmental impact!

#### Mandatory if there is no annual maintenance:

If you have an automatic wood burning heating system up to max. 150 kW, you are obliged to order maintenance at least every three years, which must be performed by a certified technician (factory customer service or authorised service partner).

**Systems  
≤ 300 kW:**

Systems between 150 and 400 kW must – without exception – undergo maintenance every 2 years carried out by a certified technician.

## 8.2.4 Fill water

### NOTE

#### Please comply with: ÖNORM H 5195 + VDI 2035

KWB assumes ÖNORM H 5195-1 / -2 for the initial filling and subsequent filling. You must also comply with local requirements (e.g. VDI 2035 - in part, these are stricter)!

The water quality is a significant factor for the smooth operation of the heating system. Deposits caused by limescale and rust mud can block pumps, damage boilers, reduce flow volumes, cause corrosion and lead to poor efficiency.

We assume that the heating system possesses flushing nozzles for forward flow and return flow as well as a standard-compliant heating protection program ("BWT AQA therm" or equivalent).

**Purging**

#### NOTE! Purge the system twice before commissioning!

**Ventilation**

When refilling make-up water you must first bleed the refilling hose before connecting it to prevent air from entering the system.

#### System book

The system operator is responsible for maintaining a system book (see section **Logs [► 91]**), **Forms [► 92]**). In this section, the respective steps are to be documented – from the planning to commissioning to maintenance.

### 8.2.4.1 Requirements for fill water

#### Limit values for fill-up or make-up water

	Austria	Germany	Switzerland
Total hardness	≤ 1.0 mmol/l	≤ 2.0 mmol/l	< 0.1 mmol/l
Conductivity	–	< 100 µS/cm	< 100 µS/cm

	Austria	Germany	Switzerland
pH value	6.0 – 8.5	6.5 – 8.5	6.0 – 8.5
Chloride	< 30 mg/l	< 30 mg/l	< 30 mg/l

### Additional requirements for Switzerland

The fill-up and make-up water must be demineralised (de-salted):

- As a result, the water will no longer contain any materials that might form deposits in the system.
- This way, the water is no longer electroconductive which prevents corrosion.
- Also, the process removes all neutral salts such as chlorides, sulphates and nitrates which attack corroding materials under certain conditions.

If part of the system water gets lost, e.g. due to repairs, the supplementary water must also be demineralised. It is not sufficient to soften the water. Before filling the systems, it is necessary to carry out a professional cleaning and purging of the heating system.

#### Check:

- After eight weeks, the ph-value of the water must be between 8.2 and 10.0. If the heating water comes into contact with aluminium, a ph-value between 8.0 and 8.5 should be targeted.
- Annually – the owner must log the readings

### limit values

The following limit values for fill water are intended to ensure the reliable operation of hot water heating systems over the long term: The fill water must be low-salt and alkaline and must not exceed a certain hardness level.

#### Maximum total hardness based on the specific system volume

Total heating capacity	mmol/l		mval/l	°dH		°fH	°e
	Önorm	VDI		Önorm	VDI		
Boiler performance ≤50 kW	≤3	≤3	≤6	≤16.8	≤16.8	≤30	≤21
Boiler performance >50 to ≤200 kW	≤2	≤2	≤4	≤11.2	≤11.2	≤20	≤14
Boiler output >200 to ≤600 kW	≤1	≤1.5	≤2	≤5.6	≤8.4	≤10	≤7

*mmol/l ... SI unit sum alkaline earth | mval/l ... equivalent quantity | °dH ... German hardness | °fH ... French degrees | °e ... English hardness*

### 8.2.4.2 Logs

You can find forms here:

- ÖNORM H 5195-1:2010 Appendix A and Appendix C
- VDI 2035 Appendix C and VDI 4708 sheet 1

## 8.2.5 Forms

→ Use the forms to log your checks – thank you!

### 8.2.5.1 System log

**Inspection book for automatic wood-fired systems as specified in the Austrian "Technischen Richtlinie für vorbeugenden Brandschutz" TRVB H118 (Technical Guideline for Preventative Fire Protection)**

<b>System location</b>
<b>System installer</b>
KWB – Kraft und Wärme aus Biomasse GmbH
Industriestr. 235
A-8321 St. Margarethen/Raab
<b>Furnace system</b>
Make:
Type:
Rated power:
Year of manufacture:
Serial number:

### 8.2.5.1.1 Check sheet for operators

Responsible operator												
...												
Year: ...	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Monthly inspection on ... (day)	...	...	...	...	...	...	...	...	...	...	...	...
Exhaust routes												
Control												
Warning devices												
Fan												
Grate cleaning												
Combustion chamber												
Fire extinguisher												
Flammable material in the boiler room												
Fire protection closures												
Chimney cleaning												
System pressure												
Thermal discharge safety valve												
Safety valve												
Signature												

**8.2.5.1.2 Maintenance sheet**

<b>Maintenance</b>	Performed on: ...	Specialist company, certified technician ...
Identified deficiencies:		
Comments:		
Deficiencies not rectified:		
Signature: ...		

## 8.3 Maintenance intervals for operators

Activity	Interval	Comments
Checking the seals of the boiler doors	After 100 full load hours	Only perform once!
<b>Clean heat exchanger with the lever [▶ 43]</b>	For every filling	
<b>Empty ash [▶ 46]</b>	1 × weekly	
<b>Visual inspection of the entire system [▶ 98]</b>	1 × weekly	
<b>Check the system pressure [▶ 98]</b>	1 × weekly	
<b>Checking the thermal safety valve [▶ 98]</b>	1 × weekly	
<b>Check the safety valve [▶ 98]</b>	1 × weekly	
<b>Clean the grate [▶ 98]</b>	1 × monthly	
<b>Clean the carbonisation gas duct [▶ 99]</b>	1 × per year*	
<b>Check the primary air openings [▶ 99]</b>	1 × per year*	
<b>Cleaning the exhaust gas temperature sensor [▶ 100]</b>	1 × per year*	
<b>Clean the heat exchanger [▶ 101]</b>	1 × per year*	
<b>Check/clean the induced draught fan [▶ 102]</b>	1 × per year*	
<b>Clean the exhaust gas pipe [▶ 103]</b>	1 × per year*	
<b>Check the draught limiter damper [▶ 103]</b>	1 × per year*	
Checking the seals of the boiler doors	1 × per year*	
<b>Clean all surfaces [▶ 105]</b>	1 × per year	
General inspections	<b>Check sheet for operators [▶ 93]</b>	
<b>Change battery [▶ 105]</b>	As required	

\* For fuels with low ash content, it is sufficient to clean and inspect the system once per year (or after 1000 – 1500 operating hours). For problematic fuels and fuels with a high ash content (recognizable because they lead to short emptying intervals for the ash bin), cleaning and inspections must be performed more frequently.

**NOTE**

**Due to its function, cracks may form in the combustion chamber.**

To the extent that the refractory bricks remain in their original position, this should not be considered a functional fault!

## 8.4 Before you begin

**WARNING****Uncontrolled combustion due to premature switch-off**

- ↳ If the boiler is switched off via the main switch during heating operations, the boiler goes into an uncontrolled state!
- Wait until the operating status "ready" or "fire out" is displayed before switching off the boiler via the main switch!

→ Wait until the system has completely cooled down (status "fire off").

→ Switch off the system (main switch to "0").

→ Pull the plug and secure the system against being switched on again.

**WARNING****Risk of suffocation with negative pressure in the room**

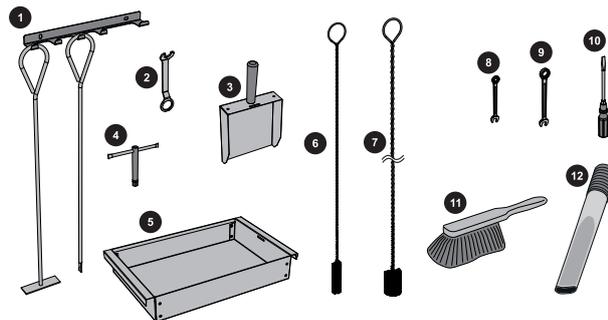
- ↳ Modern houses are so air-tight that – for example due to hood extractor systems – negative pressure could build up in the internal spaces. Opening the combustion chamber door would then draw carbonisation gases into the room!

→ Open a window before opening the combustion chamber door!

↳ This disperses pressure differences and ensures that an adequate chimney draught can extract the carbonisation gases.

→ Let the system cool down: Only open the casing, combustion chamber door and maintenance cover when the system is **cold** and de-energised!

### Equipment for cleaning work



### Supplied tools:

#### The scope of delivery includes:

1	Ash scraper and poker with mount
2	Wrench for door fitting assembly
3	Ash shovel
4	Socket wrench, wrench opening (WO) 13
5	Ash tray
6	Cleaning brush (30x20) to clean the carbonisation gas duct
7	Cleaning brush (80x60) to clean the heat exchanger

**Required tools  
(NOT supplied):**

The scope of delivery does not include:	
8	Open end or ring spanner W0 10
9	Open end or ring spanner W0 13
10	Screwdriver set (Phillips, slotted, Torx T20)
11	Small broom or cleaning brush
12	Ash vacuum

**Recommendation:** Use an ash vacuum for cleaning!

## 8.5 Maintenance steps

 <b>WARNING</b>	<p>Perform work according to this operating manual only! Improper work can put you in life-threatening situations due to a lack of knowledge!</p> <ul style="list-style-type: none"> <li>↳ Danger of crushing and entanglement through unexpected starting of mechanisms</li> <li>↳ Risk of fire, explosion and electric shock from open casing, combustion chamber door and maintenance cover</li> <li>↳ Asphyxiation risk due to carbonisation gases from smouldering fuel when the combustion chamber door or service cover is open!</li> <li>→ Let the system cool down for approx. 30 minutes (status: <i>Fire Off</i>), before switching it off (main switch to "0").</li> <li>→ Pull the plug and secure the system against being switched on again.</li> <li>→ Only open the casing, combustion chamber door and service cover when the system is <b>cold</b> and de-energised!</li> </ul>
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 <b>WARNING</b>	<p><b>Life-threatening electrical voltage</b></p> <ul style="list-style-type: none"> <li>→ The electrical installation may only be carried out by qualified specialists who have the required training and expertise!</li> <li>→ If required, shut down the system completely at the main switch.</li> <li>→ Unplug the mains plug before you start working on the system!</li> <li>↳ Comply with applicable standards and regulations!</li> </ul>
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 <b>CAUTION</b>	<p><b>Danger of burn injuries</b></p> <p>Shut down the system before you perform the following steps - the system must cool down for 12 hours!</p>
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 <b>WARNING</b>	<p><b>Burn injuries due to hot surfaces!</b></p> <p>Surface behind the casing door can become very hot during operation!</p> <ul style="list-style-type: none"> <li>↳ Ensure that the system is switched off and has cooled down before touching the surface!</li> <li>→ Use suitable protective gloves when adding fuel.</li> <li>→ Only operate the boiler at the respectively intended handholds.</li> <li>→ Insulate exhaust pipes and do not touch them during operation.</li> </ul>
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**WARNING****Serious disruption of combustion due to improper inspections and cleaning**

Wrong or failure to perform boiler inspections and cleaning can lead to serious combustion disruptions (e.g. spontaneous combustion of carbonisation gases / deflagration) and as a result to serious accidents and material damage!

For this reason, the following applies:

- Clean the boiler according to the relevant instructions. In this process, observe the instructions in the boiler operating manual!

## 8.5.1 Visual inspection of the entire system

### Instructions

Check whether all instructions are available in the document holder.

### Stickers

Check whether all warnings have been attached in the respective hazard areas. You will find the individual locations in the operating instructions, in the section **Stickers** [► 24].

## 8.5.2 Check the system pressure



- Check the system pressure at the pressure gauge.

The value must be approximately 20% above the pre-tension pressure of the expansion vessel.

**Note:** Observe positioning of the pressure gauge and rated pressure of the expansion tank according to your installer's specifications!

- If the system pressure falls below this value, add water.

### Potential problems

- When the system pressure drops frequently, the heating system is probably leaky and must be inspected!
- When the system pressure fluctuates a lot, the expansion tank must be inspected!

## 8.5.3 Checking the thermal safety valve

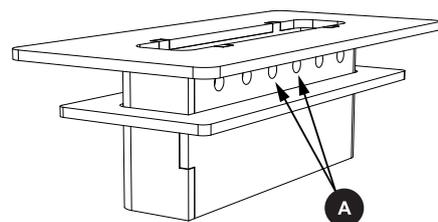
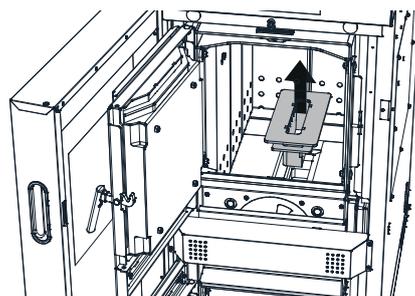
- Check whether the thermal safety discharge valve is sealed tightly: The discharge pipe must not drip! **Note:** Exception: Boiler temperature > 95 °C

- If water keeps dripping from the discharge pipe, the thermal safety discharge valve should be cleaned or replaced **by a certified technician**.

## 8.5.4 Checking the safety valve

- Check the safety valve according to the manufacturer's specifications for tightness and soiling.

## 8.5.5 Clean the grate

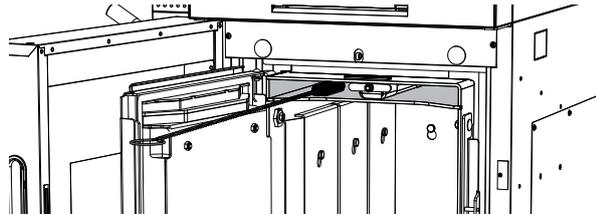


- Open the casing door and the door to the fill room.

- First, empty out the ash.
  - ↳ see section: **Empty ash [▶ 46]**.
- Remove the grate.
- Remove the ash deposits at the grate, under the grate and at the intake openings for the secondary air (A) to ensure that secondary air can enter unobstructedly.

Tip: Use an ash vacuum!

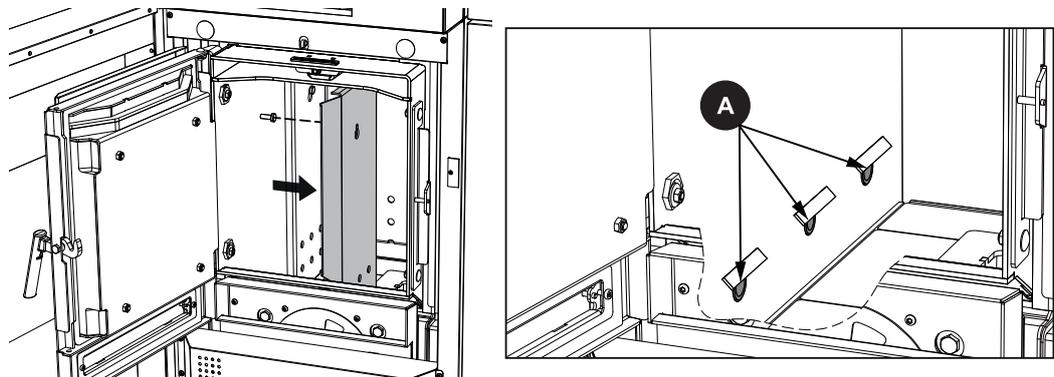
## 8.5.6 Clean the carbonisation gas duct



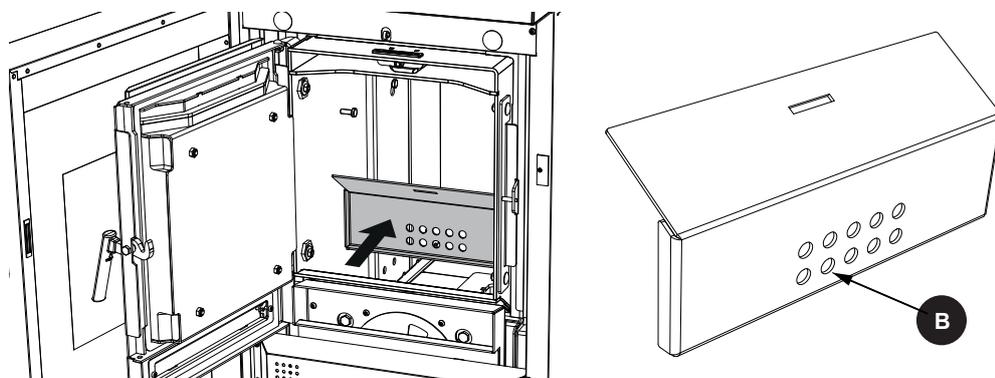
- Open the casing door and the door to the fill room.
- Clean the carbonisation gas duct above the fill room with a small brush.

## 8.5.7 Clean primary air openings

- Open the fill room door.
- Unhook the side casing panels.



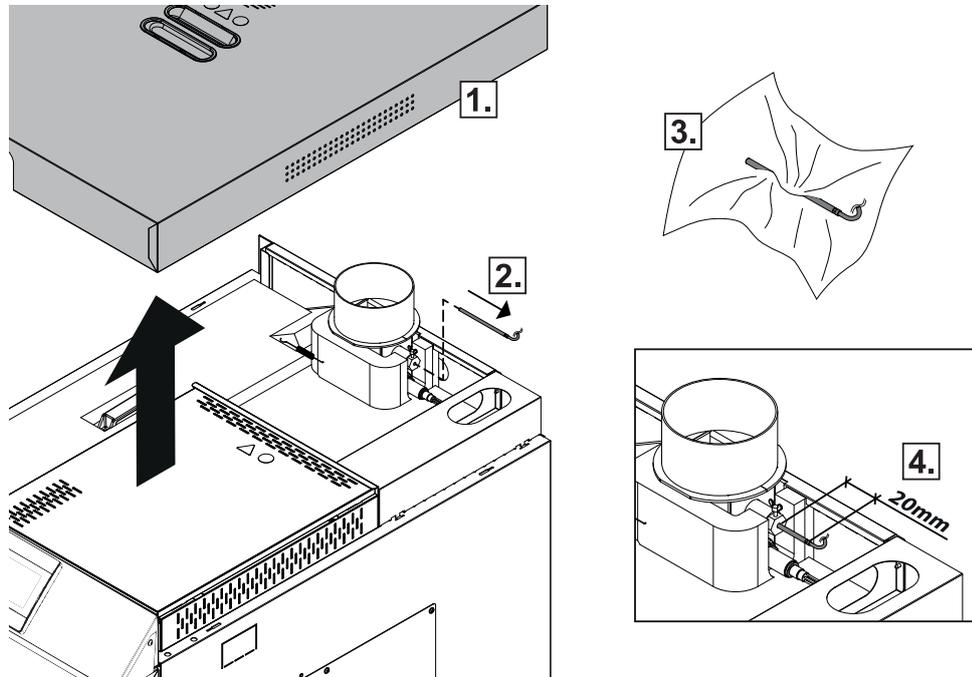
- Check the primary air openings (A) at the inside of the boiler for unobstructed air flow and clean them, if necessary.



- Unhook the air baffle.
- Clean the air intake openings in the air baffle (B).

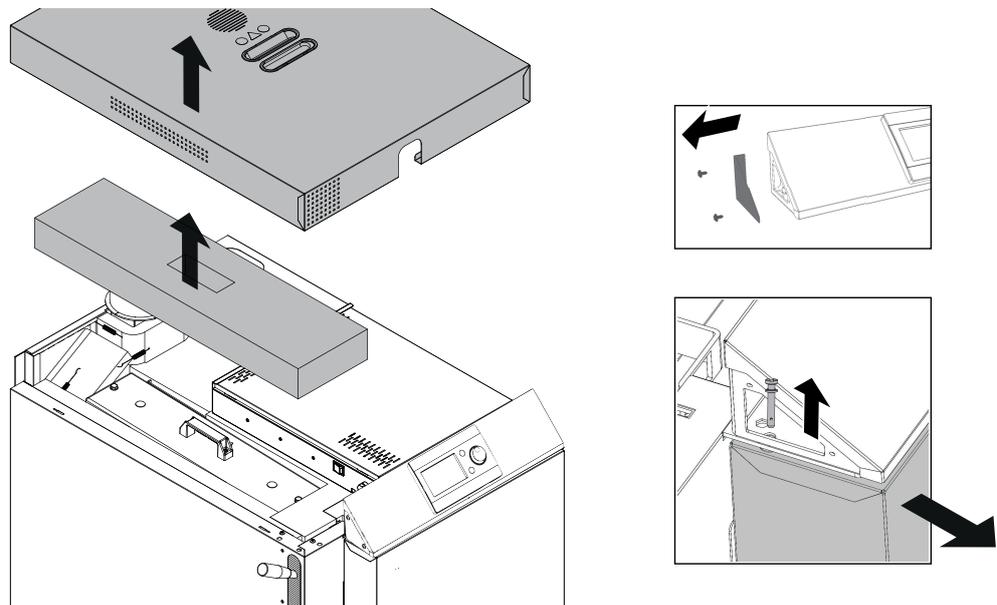
- Check the air intake openings at the inside of the boiler for unobstructed air flow and clean them, if necessary.
- Re-install the panels.

### 8.5.8 Cleaning the exhaust gas temperature sensor

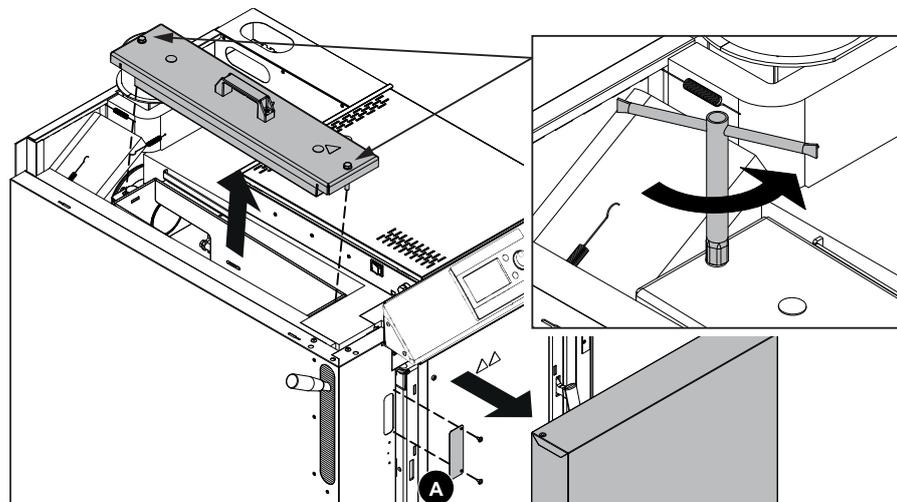


- Remove the casing cover and insulation (1).
- Loosen the fastening screw and pull the exhaust gas temperature sensor out of the exhaust gas pipe (2).
- Clean the sensor with a clean cloth (3).
- Re-install the sensor: Push the sensor into the pipe so that about 20 mm of the sensor still project from the socket and secure the sensor with the fastening screw (4).

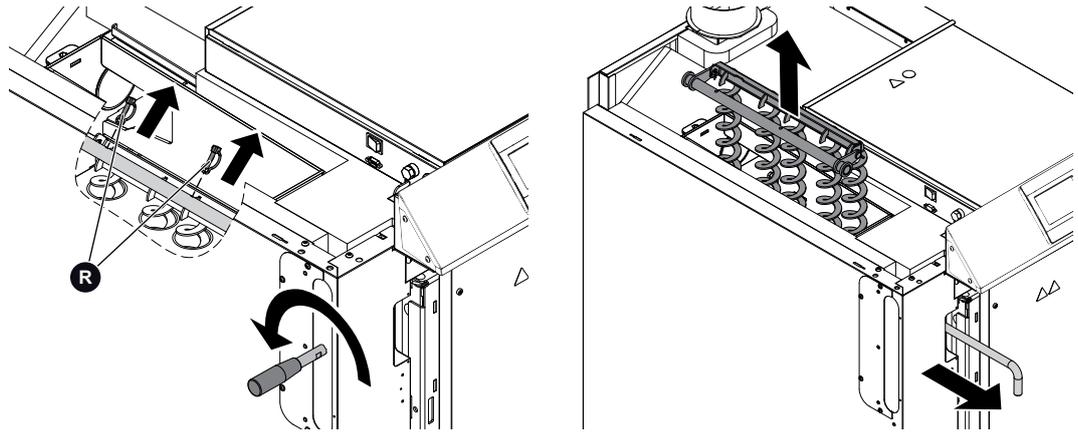
### 8.5.9 Cleaning the heat exchanger



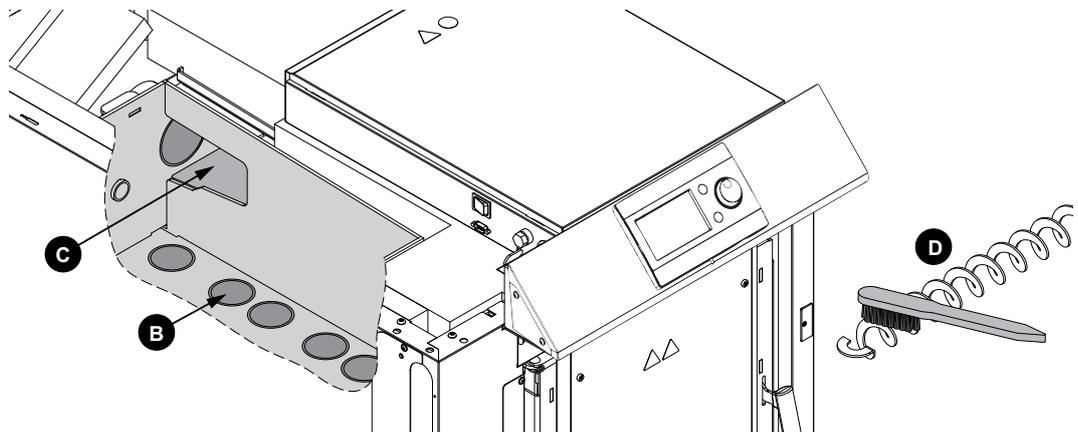
- Remove the casing cover and lateral insulation.
- Only if the casing door has a door hinge on the left side: dismantle the end cap of the control unit on the door hinge side and pull out the hinge bolt. Remove the casing door.



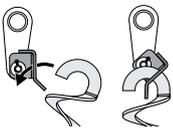
- Remove the cover (A).
- Remove the heat exchanger cover by unscrewing the screws with the supplied wrench.



- Push the lever for the heat exchanger cleaning system down and dismantle the lever.
- Remove the two tube clips (R).
- Pull the shaft out of the brass bush.
- Remove the holding tube with the cleaning screws.

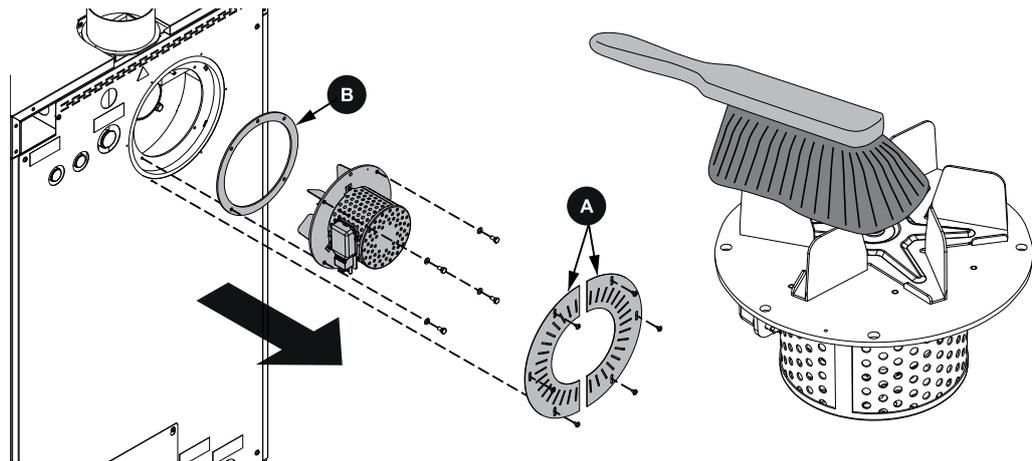


- Clean the heat exchanger tubes (B) with the supplied brush.
  - ↳ Before pulling it up, push the cleaning brush all the way down.
  - ↳ It will not be possible to turn the bristles in the tube!
- Clean the lateral passage to the exhaust gas pipe (C).  
Tip: Use an ash vacuum!
- Clean the turbulators (D) with a brush.
- Re-install the turbulators at the hook-in panel.
- Assemble the parts after cleaning in reverse order of steps.
- Use the ash scraper to move the ash on the side of the combustion chamber into the ash trough.
- Remove the ash trough and dispose of the ash.



### 8.5.10 Checking/cleaning the induced draught fan

- Check the induced draught fan for debris and clean it, if required.



- Remove the two cables ([induced draught] and #72).
- Remove the induced draught covers (A).
- Dismantle the induced draught fan.  
**Note:** The sealing (B) must not be damaged in this process!
- Check the parts for damage.
- Clean the rotor blades of the induced draught fan with a soft brush (from the inside to the outside!).  
**Note:** Do not shift the balance weights at the fan wheel!
- You should also clean the induced draught fan housing. Remove the ash (ash vacuum).
- Assemble the parts in reverse order of steps.  
**Caution!** Ensure that the induced draught fan has been re-installed fully sealed!
- Reattach the cable.

### 8.5.11 Cleaning the exhaust gas pipe

- Unplug the two cables of the induced draught fan ([induced draught] and #72). This prevents damage to the fan wheel when using the cleaning brush.
- Remove the revision cover on the connection pipe.
- Clean the connection pipe between boiler and chimney with a chimney brush.  
↳ Depending on the routing of the exhaust gas pipes and the chimney draught, annual cleaning may not be sufficient! The lower the incline of the exhaust gas pipe, the more frequently you will need to perform this maintenance step!
- Reattach the cable.

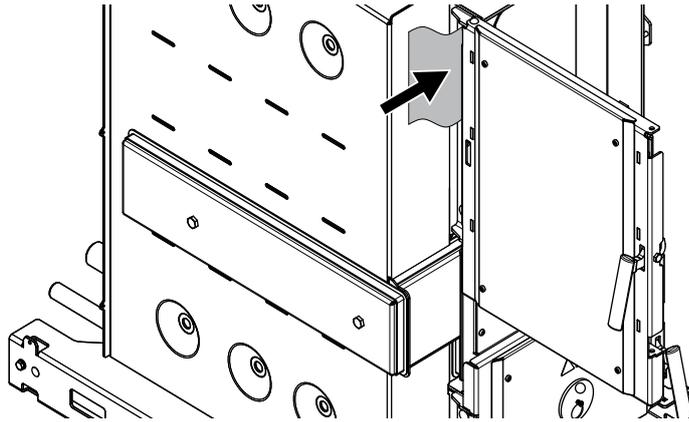
### 8.5.12 Check the draught limiter

- Test the draught limiter damper for freedom of movement.

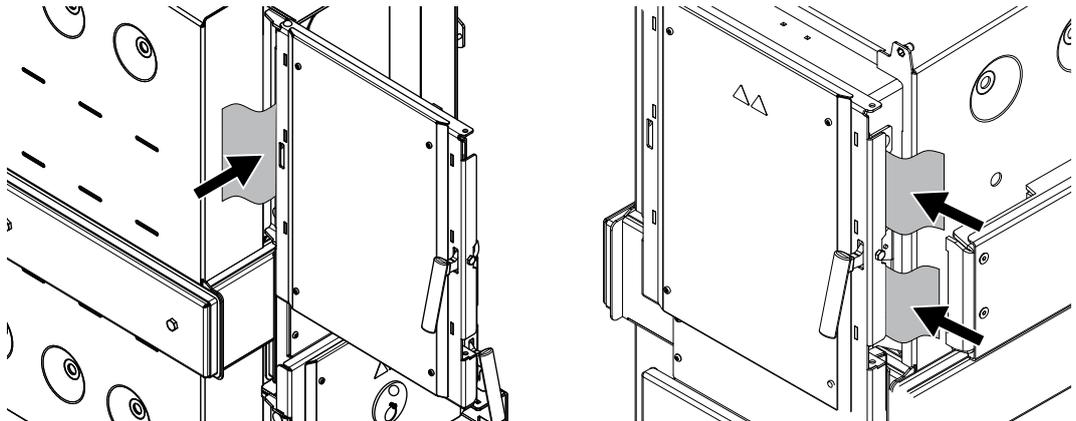
### 8.5.13 Checking the seal of the doors

**Note:** The door tightness check is shown below using the fill room door as an example. Perform the same steps when checking the tightness of the combustion chamber door!

- Push a piece of paper between door and boiler (at the side of the door hinge in the upper part of the door).



- Close the door.
- Try to pull out the sheet of paper.
  - ↳ If the sheet cannot be pulled out:  
Door is tight and correctly adjusted!
  - ↳ If the sheet can be pulled out:  
Door is not sealed tightly and must be newly adjusted!
- Increase the contact pressure at the eccentric clamp (see section "**Türen einstellen**" [▶ 104]).
- After adjusting the door, check its tightness again.

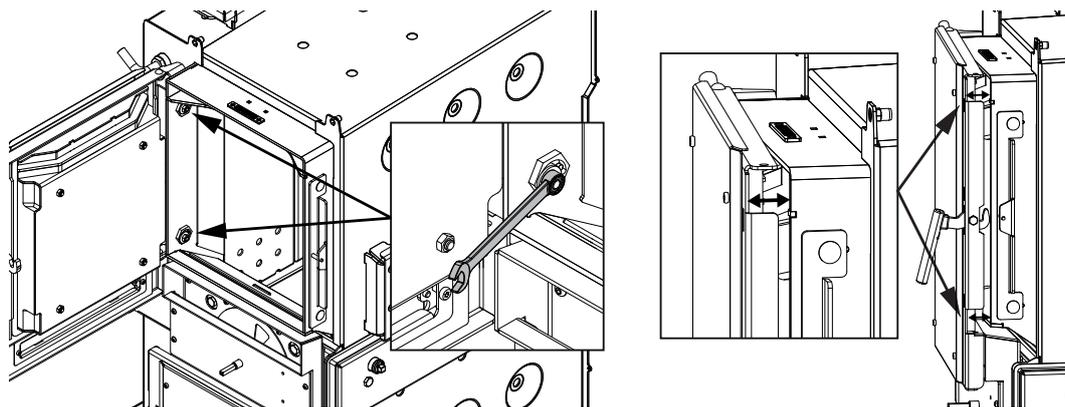


- Repeat the same approach at the door hinge side in the lower part of the door and on the door handle side.

### 8.5.14 Adjusting the doors

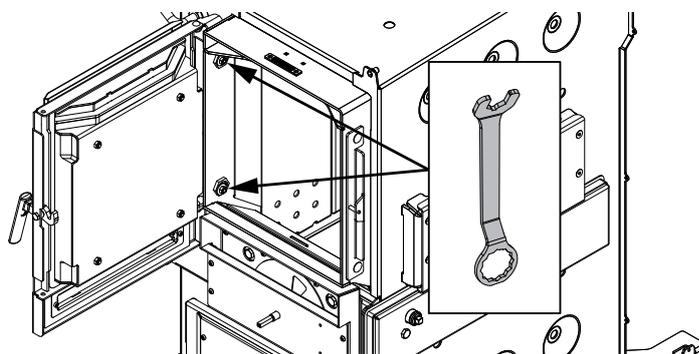
**Note:** The adjustment of the doors is explained below using the fill room door as an example. Perform the same steps when adjusting the combustion chamber door!

- Loosen the self-locking nuts M8 at the eccentric clamps at the top and bottom using a hexagonal wrench (wrench opening 13 mm).



→ Close the door.

↳ With a gap of approx. 2 – 3 cm, a noticeable resistance must be felt.



→ If the resistance is too low or too high, move the eccentric clamp backward or forward using the supplied wrench (WO 32 mm).

↳ The hinge plate is shifted as a result of the eccentric clamp moving and it is possible to adjust the contact pressure.

**Attention:** Both eccentric clamps (top and bottom) must be adjusted in the same way!

→ Close the door.

→ If it is not possible to close the door, move the eccentric clamps somewhat forward.

**Attention:** Both eccentric clamps (top and bottom) must be adjusted in the same way!

→ Re-fasten the self-locking nuts M8.

It is also possible to shift the locking plate on the door handle side using the eccentric clamp and thus adjust the contact pressure on this side.

## 8.5.15 Cleaning the surfaces

→ Remove dirt from the casing or from the control elements using a soft, moist cloth.

↳ **Note:** Use only mild cleaning agents – alcohol, cleaning solvents and similarly aggressive agents will damage the surfaces!

## 8.5.16 Battery change

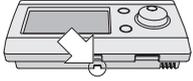
### Technical specifications

Dimensions	20 mm × 3.2 mm (ø × height)
Technology	Lithium
Size	CR 2032

Voltage	3 V
Capacity	235 mAh

### Dismantle the Exclusive control unit

#### At the boiler



- Let the boiler burn down until it reaches the status "Fire off".
- Use the main switch to switch the system off completely.
- Pull the plug and secure the system against being switched on again.
- Use a pen to push into the recess on the lower side of the control unit to release the lock as illustrated in the picture.
  - ↳ **NOTE! Please note when using the control unit that a short cable links the control unit to the mounting base!**

### Change battery

- Open the battery cover.  
It can be found at the bottom of the control unit, in the lower right corner.
- Change the battery.  
Be sure to properly discard the used battery!
- Insert the new battery as indicated (correct polarity!)



- Close the battery cover.
- Close the control unit (with an audible locking sound).

**Note:** The battery status is checked in regular intervals. For this reason, wait for a minute after replacing the battery until the status is updated and the alarm is cleared.

## 8.5.17 Completing the maintenance tasks

- Check the seals and replace them, if required.
- Make sure that all maintenance openings are sealed tightly!
- Close all doors.

## 8.6 Exhaust gas measurement

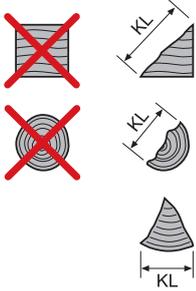


### CAUTION

Only certified technicians may perform exhaust gas measurements!

### 8.6.1 General instructions for measurement

The following general conditions must be observed:



→ Only use admissible fuel pursuant to the intended fuels (see section **Intended fuels** [► 17]).

↳ Keep an eye on the moisture content ( $w$ ) greater than 15% and lower than 25%!

→ To create the right measurement conditions and during the measurement process use wood split into smaller pieces (edge length < 10 cm).

↳ Wood logs split into smaller pieces with an edge length of < 10 cm – The term used “smaller split wood” was defined by KWB for this manual, no fuel standard or related directive exists for this.

→ The fuel must be dry, clean and uncontaminated (not painted, glued, etc.).

→ The combustion process must not be interrupted during measurement

→ Interruptions of the combustion process are:

↳ Opening the boiler doors

↳ Poking the fuel

↳ Switching off the induced draught fan (e.g. due to insufficient heat consumption)

## 8.6.2 Preparing for the measurement process

→ Clean the boiler 2 heating days (1 heating day = 1 day when the boiler to be measured is in operation) before the measurement.

→ Ensure a suitable measurement opening in the straight exhaust gas pipe: The measurement opening must have a distance of twice the exhaust pipe’s diameter from the last bend in the pipe.

↳ **Note:** The measurement results may be falsified if the measurement opening is incorrectly positioned.

→ Ensure sufficient combustion air.

→ Prepare sufficient fuel.

→ Ensure sufficient heat dissipation.

## 8.6.3 Performing the emissions measurement

### Set up the correct measurement environment and perform the measurement

→ Fill the boiler with logs split into smaller pieces (see section **General instructions for measurement** [► 106]) of about 1/4 size and ignited the wood (see section **Stoking and igniting the boiler** [► 43]).

→ **Ensure that the operating conditions are reached:**

↳ Return flow temperature at least 60 °C

↳ Boiler temperature at least 70 °C

↳ Chimney draft at a range of 8-10 Pa

→ Let the fuel burn down until a basic ember bed has formed

↳ Depending on the fuel used and the power consumption, this may take at least 1 hour

→ Check whether a basic ember bed has finished forming by opening the fill room door and evenly spreading the embers with the poker. The basic ember bed has finished forming when the top row of holes in the aprons in the fill room is visible.

→ Close the fill room door.

**Once the basic ember bed has formed (top row of holes in the fill room aprons is visible):**

- Open the fill room door and fill the boiler with the max. permissible fuel amount.
- Close the doors and wait approx. 15 minutes until the combustion process builds up.
- Carry out the measurement at the prepared measurement opening.
  - ↳ During this process, regularly check that the general conditions hold steady:
    - Boiler temperature  $> 70\text{ °C}$
    - Exhaust gas temperature around  $170\text{ °C}$

# Appendix

## Please also see

- 📄 Technical data table CF1 (▶ 111)
- 📄 Declaration of conformity CF1\_15-20\_DE (▶ 113)

## Disposal

- Comply with local waste disposal regulations! Ensure environmentally sound disposal pursuant to AWG (Austria) or country-specific provisions.
- Recyclable materials can be taken separately and in clean condition to the specified recycling points.

In principle, you can dispose of the heating system as residual or bulky waste – but we recommend separating its components for recycling purposes (in a recycling centre) in order to handle resources in a more sustainable manner.

### Plastic materials

The control unit housings, cable bushings and seals are made of plastic or rubber.

### Construction waste

This includes the insulation (mineral wool) and the refractory bricks from the combustion chamber.

### Metal

Our main material is metal which can be recycled efficiently: boiler bodies, cables ...

### Circuit boards

- Dispose of these responsibly!  
Comply with all local waste disposal regulations!

 <b>CAUTION</b>	<p><b>Hazardous waste – dispose of properly!</b></p> <p>The metals on and in the circuit boards do NOT belong in the household waste.</p> <ul style="list-style-type: none"> <li>↳ All circuit boards used by KWB comply with the "Directive 2002/95/EC for the restriction of certain hazardous substances in electrical and electronics equipment".</li> <li>→ Take the circuit boards to a proper disposal facility – this helps protect the environment!</li> <li>→ Dispose of the circuit boards at collection points for electronic waste only.</li> </ul>
--	--

### Battery

 <b>CAUTION</b>	<p><b>Environmental contamination by batteries</b></p> <ul style="list-style-type: none"> <li>↳ There is a lithium battery inside the boiler control unit.</li> <li>→ Dispose of the battery separately. When doing so, you must comply with all local regulations!</li> </ul>
--	--



The following characters below the garbage bin symbol stand for:

- Pb: Battery contains lead
- Cd: Battery contains cadmium
- Hg: Battery contains mercury

**Old batteries may not be disposed of in the household waste:** EU Directive 2006/66/EC obligates consumers to dispose of batteries/rechargeable batteries at a collection point (more information can be found at <http://www.epbaeurope.net/>). Returning batteries to communal collection points is free of charge for private households.

Alternatively, you can send used batteries from the KWB control unit back to us. When sending batteries/rechargeable batteries, you must meet a few special conditions: Please inquire ahead of time (hazardous materials) and be sure to provide sufficient postage.



<b>CF1   14.10.2019</b>	<b>Unit</b>	<b>CF1 15</b>	<b>CF1 20</b>
<b>Weights</b>			
Total weight	kg	455	465
<b>Setup</b>			
Minimum distance from wall - to the rear	mm	400	400
Minimum distance from wall - to the front	mm	800	800
Minimum distance from wall - on each side	mm	200 (500) <sup>4</sup>	200 (500) <sup>4</sup>
Minimum distance from wall - on each side	mm	200 (500) <sup>4</sup>	200 (500) <sup>4</sup>
<b>Emissions according to test report</b>		TÜV Austria	TÜV Austria
Test report no.	-	18-U-268/SD	18-U-269/SD
O <sub>2</sub> content rated power	Vol.-%	6,9	7,0
CO <sub>2</sub> content rated power	Vol.-%	13,3	13,3
<b>Noise emissions (EN 15036-1)</b>			
Normal operating noise at rated power	dB(A)	< 70	< 70
<b>Ref. 10 % O<sub>2</sub> dry (EN303-5)</b>			
CO at rated power	mg/Nm <sup>3</sup>	140	104
NO <sub>x</sub> at rated power	mg/Nm <sup>3</sup>	163	178
OGC at rated power	mg/Nm <sup>3</sup>	6	7
Dust at rated power	mg/Nm <sup>3</sup>	15	21
<b>Ref. 11 % O<sub>2</sub> dry</b>			
CO at rated power	mg/Nm <sup>3</sup>	128	94
NO <sub>x</sub> at rated power	mg/Nm <sup>3</sup>	148	162
OGC at rated power	mg/Nm <sup>3</sup>	6	6
Dust at rated power	mg/Nm <sup>3</sup>	14	19
<b>Ref. 13 % O<sub>2</sub> dry (FJ-BLT)</b>			
CO at rated power	mg/Nm <sup>3</sup>	102	75
NO <sub>x</sub> at rated power	mg/Nm <sup>3</sup>	118	129
OGC at rated power	mg/Nm <sup>3</sup>	5	5
Dust at rated power	mg/Nm <sup>3</sup>	11	15
<b>In accordance with § 15a-BVG Austria</b>			
CO at rated power	mg/MJ	69	51
NO <sub>x</sub> at rated power	mg/MJ	80	88
OGC at rated power	mg/MJ	3	3
Dust at rated power	mg/MJ	8	10

1) with partial load test

2) energy efficiency index of the integrated unit comprising solid fuel boiler and temperature control

3) according to BAFA (55 litres/kW)

4) The boiler should be placed on one side (B or D) at a distance of at least 500 mm to the wall, to ensure easy access to the device connection and for maintenance work (e.g. induced draught).

## **Declaration of Conformity**

As specified by the EC Machinery Directive 2006/42/EC, Annex II 1 A

We hereby declare that the specified system in the series version complies with all applicable provisions of the Machine Directive.

**Boilers of the model range**  
KWB Classicfire 15–20 kW  
comprising the models: CF1 15 / 20

**Furthermore, the system conforms to the following directives/applicable regulations:**  
EMC Directive 2014/30/EU; Directive 2014/35/EU; RoHS Directive 2011/65/EU

**Applied European harmonised standards:**  
EN 303-5:2012, EN 60335-1:2014-04, EN 60335-2-102:2016-11, ÖNORM EN ISO 12100:2013-10-15

KWB – Kraft und Wärme aus  
Biomasse GmbH

St. Margarethen an der Raab  
14. 08. 2018



---

Authorised representative for  
the compilation of the technical  
documents

---

Place,  
Date

---

Helmut Matschnig, Managing  
Director

# Glossary

## DHCP

The abbreviation stands for "Dynamic Host Configuration Protocol". It is used to assign IP addresses to clients.

## Forward flow

The forward flow is the heating water path from the boiler to the radiators.

## Gateway

While previously a gateway initiated a protocol conversion to connect networks with different protocols, the gateway today is more of a router to other subnets.

## Heating circuit

A heating circuit is a self-contained water circuit in a heating system. A pump moves the water that was heated to the consumers (e.g. floor heating, radiators). At the consumers, the hot water dissipates heat energy to the environment and after it has cooled down it flows back to the boiler.

## IP address

IP addresses are used to assign an address to devices in large networks. Customary notation consists of 4 numbers between 0 and 255.

## LED

LED stands for "light-emitting diode". The light-emitting diode is an electronic component that generates light using electric power.

## mAh

One Ampere hour is the electric charge that flows through a conductor in the course of an hour if the electrical current is constant at 1 Ampere.

## Night lowering

Room temperature that the heating should maintain or reach outside the daily heating times.

## Return flow

The return flow is the path of the cooled down heating water from the radiator to the boiler.

## Return flow temperature

Temperature of the heating water when entering the boiler, i.e. after cycling through the radiators, under-floor heating etc.

## Setting

A "setting" is a selectable menu line in which you can change values.

## Sub-menu

A sub-menu is a selectable menu line via which you can access other (lower) menu levels.

## Subnet mask

In connection with the IP address, the subnet mask (also called net mask, network mask) determines which IP addresses are searched in the internet network and which IP addresses can be reached in other networks via a router.

## V

Volt is the unit for electrical potential.

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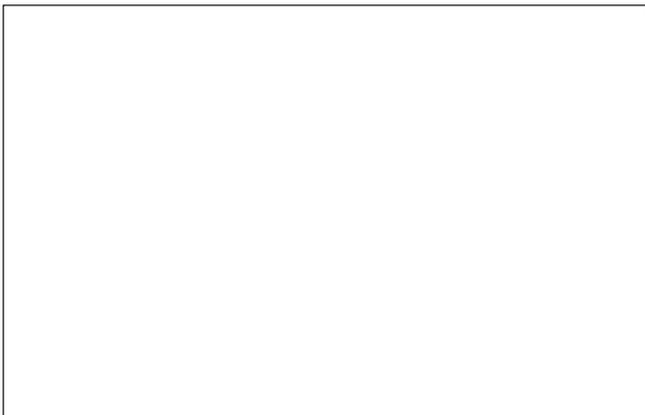
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