



OPERATION

KWB Easyfire 1 (Plus)

USP V/GS



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1 General Information

1.1 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.




If you find any errors or mistakes, please let us know at: doku@kwb.at

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

1.2 Please note

1.2.1 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:

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

1.2.2 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.

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://partnernet.kwb.net/>

1.3 Legal**Intellectual Property**

© 2020 KWB – Kraft und Wärme aus Biomasse GmbH

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 [► 27]** 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.

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:

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

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.

NOTE	Proper installation by specialists <ul style="list-style-type: none"> ➤ 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.
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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://partnernet.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.

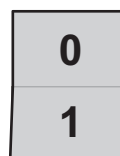
→ Order missing stickers using the respectively required article number:




27-2000224 – Languages: DE | EN | FR

27-2000225 – Languages: ES | IT | SL

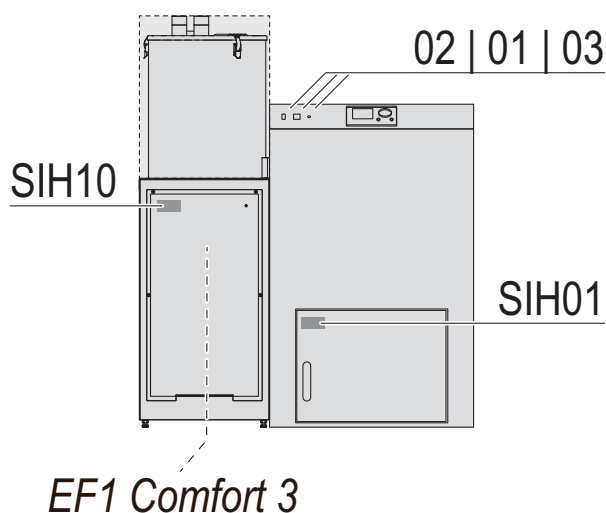
2.3.1 Stickers on the front part

→ Check the legibility of the stickers on the keys:




		
02	01	03
Switch, measuring mode	Main switch	Safety temperature limiter STL

→ Check the legibility of the stickers on the front part:



**Risk of burn-
back!**
(SIH01)

	<p>Warning - Risk of burnback!</p> <p>Warning - Flammable materials!</p> <p>Follow the instructions!</p> <p>Close all combustion chamber doors and maintenance openings before switching on the system!</p>
-------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Attach the sticker with the plug assignment of the KWB Comfort 3 on the inside of the control cabinet cover plate [A] so it is clearly visible:

**Stecker Easyfire EF1 Comfort 3
Plug, Easyfire EF1 Comfort 3
Connecteur Easyfire EF1 Comfort 3**

1	Versorgung 230 V _{AC} / Supply 230 V _{AC} / Alimentation 230 V _{CA}	
2	Motor Fördersystem / Motor, conveyor system / Moteur du système d'alimentation	
3	Wärmetauscherreinigung (Option) [S5/3]	[S5/3]
3	Heat exchanger cleaning (option) [S5/3]	[S5/3]
3	Nettoyage de l'échangeur thermique (option) [S5/3]	[S5/3]
4	Saugzuggebläse [Saugzug]	[Saugzug]
4	Induced draught fan [induced draught]	[induced draught]
4	Ventilateur d'aspiration [tirage]	[tirage]
5	Easyflex (Option) / Easyflex (Option) / Easyflex (option)	
6	STB / STL / STB	
7.1	Ansteuerung elektr. Pumpen / Activation electr. pumps / Commande des pompes électroniques	
7.2	Störung 1 / Fault 1 / Panne 1	
7.3	Leistung: Steuerausgang Easyflex (Option) / Capacity: Control output Easyflex (option) / Puissance : Sortie de commande Easyflex (option)	
7.4	Rauchsauger / Smoke extractor / Aspirateur de fumées	
8	Pumpe Brauchwasser-Speicher / DHWC pump / Pompe chauffe-eau	
9	Mischer HK 2 / Mixer HC 2 / Mélangeur CC 2	
10	Pumpe HK 2 / Pump HC 2 / Pompe CC 2	
11	Mischer HK 1 / Mixer HC 1 / Mélangeur CC 1	
12	Pumpe HK 1 / Pump HC 1 / Pompe CC 1	
13	Thermoschalter Motor Fördersystem / Thermal switch, motor conveyor system / Disjoncteur thermique moteur système d'alimentation	
14	Rücklaufmischer / Return flow mixer / Mélangeur de retour	
15	Kesselkreispumpe Klasse III / Boiler circuit pump class III / Pompe du circuit de chaudière de catégorie III	

16	Comfort 3 Versorgung / Comfort 3 supply / Alimentation Comfort 3
17	Türkontakt / Door contact / Contact de porte
19	Brandschutzklappe Endschalter / Fire shutter end switch / Interrupteur de fin de course du clapet coupe-feu
21	Extern 2 / External 2 / Externe 2
22	Extern 1 Kesselfreigabe / External 1 boiler release / Externe 1 autorisation chaudière
23	Füllstandsensor Vorratsbehälter / Storage container fill level sensor / Capteur de niveau de remplissage du réservoir
24	Taste Messbetrieb / Switch, measuring mode / Touche d'activation de la mesure
25	Bus/24 V _{CC} / Bus/24 V _{CC} / Bus/24 V _{CC}
26	Bus/24 V _{CC} Bediengerät / Bus/24 V _{CC} control device / Bus/24 V _{CC} module de commande
27	Analoges Bediengerät HK 1 / Analogue control unit HC 1 / Module de commande analogique, CC 1
28	Sensor Vorlauf-Temp. HK 1 / Sensor forward flow temp. HC 1 / Température départ capteur CC 1
29	Brauchwasserspeicher-Temp. / DHWC temp. / Temp. chauffe-eau
30	Puffer-Temp. 1 (oben) / Buffer temp. 1 (top) / Temp. ballon tampon 1 (haut)
31	Analoges Bediengerät HK 2 / Analogue control unit HC 2 / Module de commande analogique, CC 2
32	Vorlauf-Temp. HK 2 / Forward flow temp. HC 2 / Température départ CC 2
33	Rücklauf-Temp. / Return flow temp. / Temp. de retour
34	Puffer-Temp. 2 (unten) / Buffer temp. 2 (bottom) / Temp. tampon 2 (bas)
35	Außen-Temp. / Outside temp. / Temp. extérieure
36	Stoker-Temp. / Stoker temp. / Temp. dispositif d'alimentation

38	Kessel-Temp. / Boiler temp. / Temp. chaudière
39	Rauchgas-Temp. / Exhaust gas temp / Temp. fumées
41	Hauptantrieb Drehzahl / Main drive, speed / Vitesse entraînement principal
42	Saugzug Drehzahl / Induced draught, speed / Vitesse d'aspiration
43	Primärluftgebläse Drehzahl / Primary air fan, speed / Vitesse de souffleur d'air principal
44	NOT-HALT / EMERGENCY STOP / ARRÊT D'URGENCE
55	Position Umschalteneinheit / Position switch unit / Position coffret de commutation
59	Versorgung Umschalteneinheit / Supply switch unit / Alimentation coffret de commutation
60	Saugturbine / L _T Anst. Umschalteneinheit / Turbine d'aspiration / L _T cde Coffret de commutation

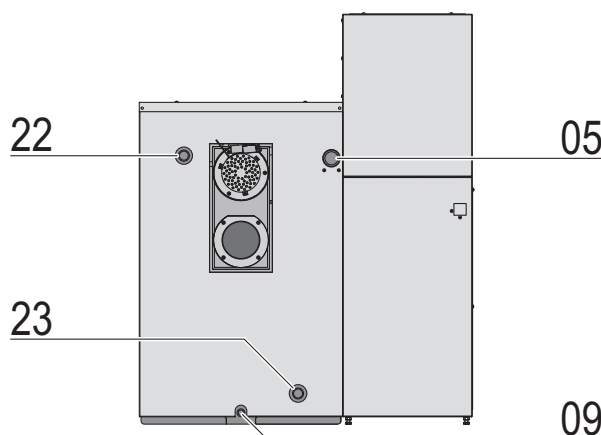
EF1 Comfort 3

Plug EF1 – KWB Comfort 3 (symbol display)

2.3.2 Stickers on the rear side

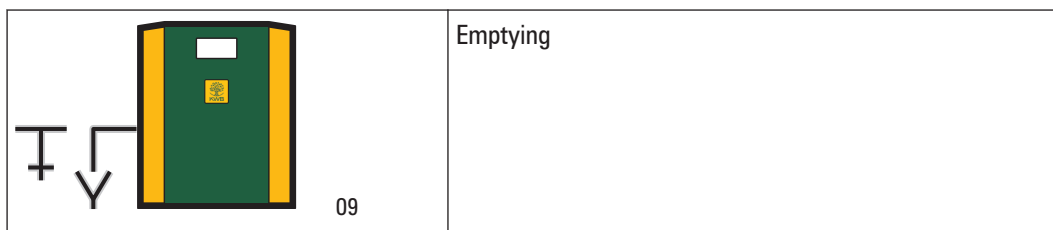
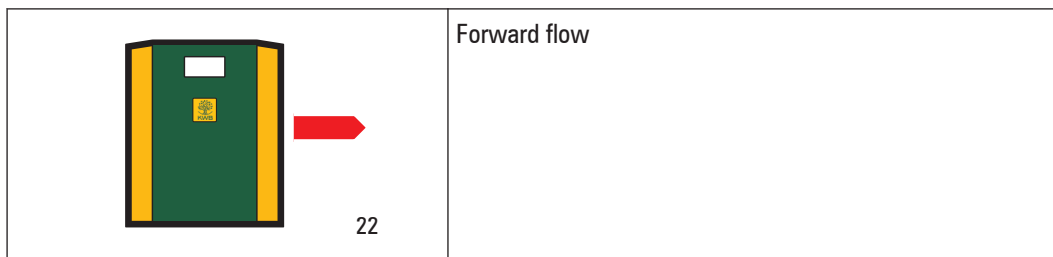
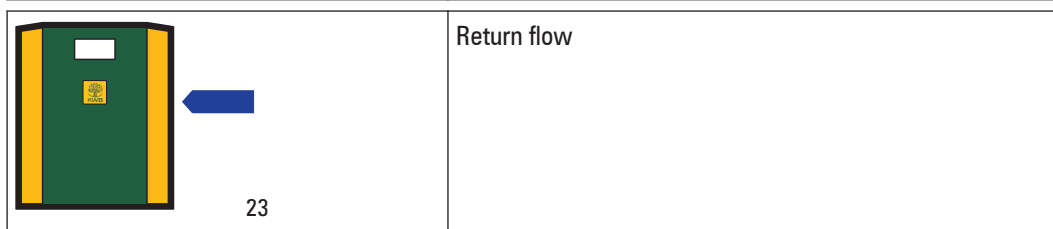
→ Check whether the following stickers are attached to the casing:

→ Attach the following stickers to the casing so they are clearly visible:



**Power supply
(05)**

<p>230 V_{AC} 13 A — C</p> <p>05</p>	<p>Power supply</p>
-----------------------------------------------------------------------	---------------------

**Emptying
(09)****Forward flow
(22)****Return flow
(23)****Type plate**

- In the factory, the type plate is attached to one of the instructions.
- Attach the type plate to the painted green casing in the upper right corner.

2.3.3 Stickers for the storage room

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

Sticker storage room pellets



Stickers on the door to the pellet storage room (example representation)

2.3.4 Stickers on the injection connector

- Please ensure that the following warning sticker is applied to the injection connector:



2.3.5 Type plate sticker

		Kraft und Wärme aus Biomasse GmbH A-8321 St. Margarethen/Raab, Industriestraße 235		
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 VAC 50Hz 16 A			
Test standard | boiler class	EN 303-5 | 4 | 4			
CO at rated power	14 | 5 mg/m³ (13% O₂)			
Dust at rated power with cyclone	33,0 | - mg/m³ (13% O₂)			
Dust at rated power	35,0 | 28,0 mg/m³ (13% O₂)			
VKF-NR	18889			

Type plate example

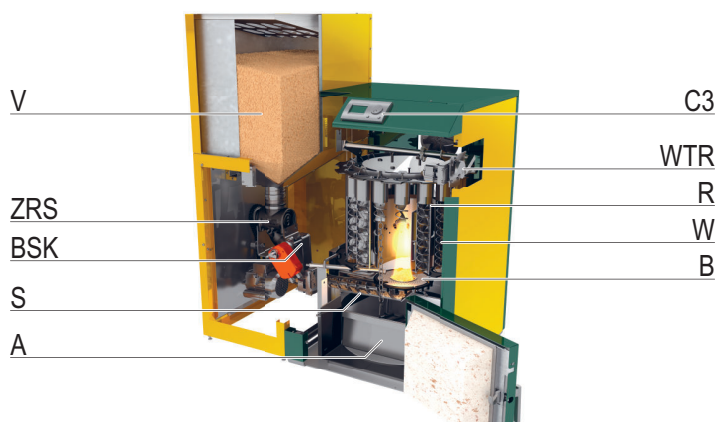
You will find the type plate with the instructions attached to one of the cover sheets.

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

This sticker is absolutely required for the operating permit!

3 Overview

3.1 System components



V	Storage container (square) or suction container (round)	C3	KWB Comfort 3 Control
ZRS	Cellular wheel sluice	WTR	Heat exchanger cleaning with lever or motor (option)
FS	Fire shutter	R	Heat exchanger pipes
S	Stoker screw	W	Turbulators
A	Ash tray	B	Burner plate

3.2 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).

Plastic chimneys are not permitted for pellet heating systems!

4 Operating fundamentals

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

4.1 Front control units



WARNING

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

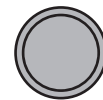
→ The initial commissioning requires comprehensive specialised knowledge: Only qualified and certified technicians are permitted commission the system!



Rocker switch
Measuring mode



Rocker switch
Main switch



Safety temperature limiter STL

Measuring mode

Using this button, the heating installer or chimney sweep can start up the burner for maintenance work or exhaust-gas measurements.

If the button is pressed the function remains active for 30 minutes. In this process all heat consumers are switched to maximum consumption. The system subsequently automatically switches back to normal mode.

Main switch

Press the main switch during maintenance or repair work or when the system is to remain switched off for a longer period of time. In the scope of our instructions, we indicate the appropriate point in time for this.

Safety temperature limiter

STL

If the system overheats, the safety temperature limiter (safety temperature limiter = STL) automatically switches off the energy supply for firing. The fire shutter locks automatically.

If this safety element has triggered, you must wait until the boiler temperature falls below 75°C. Unlock the safety temperature limiter by unscrewing its cap and pressing a screw driver on the push button below.



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.

4.2 Introduction to the KWB Comfort 3 control

4.2.1 Introduction

The header mask will appear shortly after you switch on the system using the main switch. Press the "Set" button to get to the main menu.

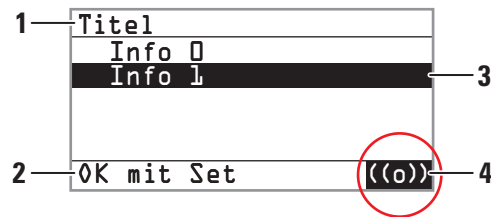


Boiler control unit or digital remote control unit

Menu structure

You can move from the Main menu to submenus and settings of your choice using the dial and the two buttons "Set" and "Esc". From here, you can read off the information or change values.

Screen structure



Basic screen structure

- The **header** (1) shows where you are located in the menu tree.
- The text of the **footer** (2) provides you with information about whether the **display area** (3) contains selection menus ("Select option") or settings ("Change with set").
- **Alarm message** (4) are displayed in the lower right corner.

4.2.2 Menu navigation

All commands of the KWB Comfort 3 are combined at multiple levels – this alleviates you from having to run through endlessly long lists in order to access the desired menu command.

Select the option using the dial

- Turn the dial on the KWB Comfort 3 to the left or right.
- ↳ The black bar moves up or down. This allows you to select an option in the current level or select a field whose value you would like to change.

"Set" takes you one level down

- Press the "Set" button.
- ↳ This will confirm the selected option and take you one level down. You will find a list of subordinate options or you can set values here.

"Esc" takes you one level higher

- Press the "Esc" button.
- ↳ This will take you back one level higher in the direction of the main menu.

4.2.3 Select mode

The options in different levels will lead you to screens in which you can set certain modes.

Example:

Main menu >> DHWC >> DHWC No. >> DHWC program

```

DHWC - 0Temperature
Time program
Temperature
OFF
Manual operation

```

Select program

Select the mode using the dial

→ Turn the dial on the KWB Comfort 3 to the left or right.

Confirm the change with "Set"

→ Press the "Set" button.

↳ This will confirm the modified mode. As a rule, the change is shown in the header.

"Esc" takes you one level higher

→ Press the "Esc" button.

↳ This will take you back one level higher in the direction of the main menu.

4.2.4 Changing values

Via the option in different levels, you will get to masks in which you can change certain values.

Use the dial to change the values

→ Turn the dial on the KWB Comfort 3 to the left or right.

↳ This will reduce or increase the value in the selected field.

Confirm the change with "Set"

→ Press the "Set" button.

↳ This will confirm the modified value.

Use "Esc" to cancel the change

→ Press the "Esc" button (if you have not pressed "Set" prior to this).

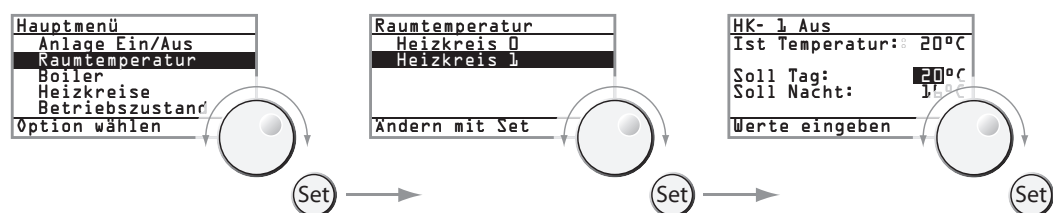
↳ This will quit the change without saving the new value. This will simultaneously take you one level higher in the direction of the main menu (depending on the menu depth).

4.2.5 Operating example

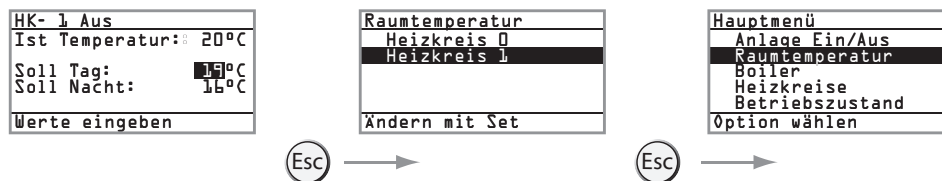
Navigation

You can navigate to a setting using the dial and the "Set" button (this example changes the desired room temperature during the heating time):

Example:



Press the "Esc" button more than once to climb one level higher in the menu tree.



Summary

The effect of the operating elements is thus dependent on the current mode (navigation or change):

Operating element	Navigation mode	Change mode
Dial	Changes active field	Changes selected value
"Set" button	Selects menu item or switches to the change mode	Confirms change
"Esc" button	Switches to higher menu level	Discards the current change or switches to the navigation mode

Paths are shown below

In the following operation instructions, you will only be shown the last screen of the desired configuration.

```
DHWC - 0Time program
Fast charging: 0.1
Change using Set!
```

Main menu >> DHWC >> DHWC No. >> Fast charging

→ Follow this path (as described the the prior example).

↳ You are now in the "fast charging" menu and are able to switch it on and off.

4.3 What are heating circuits?

Depending on the version, a house/building may have several Heating circuits to be able to separately control different areas. The circulation pump moves the water that was heated in the boiler or buffer storage tank to the consumers (e.g. floor heating, radiators, heating fan).

KWB Comfort controls several heating circuits; these circuits can be individually configured and controlled.

4.4 Regulating the domestic hot water

The DHWC ("DHWC") is responsible for the heating of the water.

Specifying the temperature of the hot water

Correct the values in the menu **"DHWC temperature" [► 35]**

Main menu >> DHWC >> DHWC No. >> DHWC temperature as desired.

Specifying the charging times for hot water

If the hot water is not hot enough at certain times, you must change the time interval during which the operating temperature of the DHWC is monitored (**"Charging time" [► 35]**) in the menu

Main menu >> DHWC >> DHWC No. >> Charging times.

Heating up the hot water immediately

If the hot water is to be heated up immediately, use **Fast charging** [► 36]: In the menu **Main menu >> DHWC >> Fast charging** change the value to **On**.

4.5 Regulating the room temperature

You can regulate the room temperature ...	
with a digital remote control unit or with a boiler control unit	with an analogue remote control unit
by specifying the room temperature	
<p>Correct the values in the menu "Room temperature" [► 31] Main menu >> Room temperature >> Heating circuit No. as desired.</p>	<p>Use the dial to increase or decrease the target room temperature by up to 5°C (depending on: room influence, fast reduction).</p>
Specifying the heating times	
<p>If the radiators or the underfloor heating are not warm enough at certain times, you need to change the time period for all days ("Monday-Sunday") or an individual day in the menu Main menu >> Heating circuits >> Heating circuit No. >> Change heating times: Change heating times [► 32].</p>	—
Activating party operation	
<p>For a one-time change of the heating time select the "Party operation [► 31]" in the menu Main menu >> Party operation >> Heating circuit No. Indicate the time up to which the selected heating circuit is to remain at the day set-point temperature. After this, the system runs normal again (as a rule, the night lowering usually follows).</p>	<p>If you set the selector switch to the operating mode "Day operation", the heating system will heat this heating circuit to the specified day set-point temperature.</p>

You will find additional information on these components in section **Operating the analogue remote control unit** [► 26].

4.6 Regulating the fuel supply

4.6.1 Specifying the filling times (suction systems)

In the menu **Main menu >> Pellets suction system** [► 44], you can change the filling times if the filling noise of the suction system is disturbing.

- The filling times must be at least 30 minutes long.
- Your entry will be automatically checked and corrected by the software, if necessary.

4.7 The system in the yearly cycle

Particularly in the transition periods, it is attractive to activate the **heating programs** [► 32]:

Main menu >> Heating circuits >> Heating circuit No. >>
Heating programs

- In the autumn, switch to "Transition", and only later to "Heating program 1" or "Heating program 2".
- In the spring, you should switch back to "Transition" and later to "Off".

4.7.1 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 one of the operating states "-Requ." | "+Requ." | "Off" is displayed, before switching off the boiler 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!

- Switch off your system via the **"System On/Off" [► 31]** option.
- Wait until the system has cooled down completely.
- Switch the system off completely at the main switch.
- ↳ The remaining ember bed will go out by itself.
- ↳ The fuel in the combustion chamber is thus burned with minimal environmental impact.

Tip: Disconnect the main plug outside of the heating season to avoid lightning damage.

4.7.2 Restarting the system after standstill periods

- Switch the system on at the main switch.
- When the battery is flat, you will need to reset the date and time of day (section **Setting the date/time of day**).
- Switch the system on using the function **System on/off [► 31]** [Comfort 3] or **Boiler On/Off [Comfort 4]**.

As soon as there is a request, the system or boiler will start operating:

- The fuel supply to the burner begins (operating state "Ready (-CS)". This procedure can take up to 30 minutes if the conveyor system is empty.
- Fuel is conveyed to the burner plate (operating state "Ignition feeding") and ignited (operating state "Ignition heating"). If the stoker screw was empty, several ignition attempts may be necessary until a fuel bed forms (operating state "Ignition heating").
- The system switches to the operating state "Operating", heats the boiler and supplies the consumers when there is a heat request.
- If the setpoint temperature is reached, the system switches to standby (operating state "Ready (+Req)").

4.8 Reacting to problems

You can find a complete list of the alarm messages for your boiler and the possible reactions to them in section **The alarm list [► 66]**.

4.8.1 Setting the date and time of day

If the system was without power and the battery of the boiler control unit is flat, the internal clock will stop working. If this occurs, the alarm message "03 The time of day must be reset!" will then appear on the boiler control unit.

More information about this is available in section **Date / Time** [► 44].

4.8.2 Calling customer service

- When 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 "Customer service" menu (section **Customer service** [► 45]) shows the software version used and the number of maintenances.
- The "Operating state" menu (section **Operational state** [► 38]) shows the operating states or measured values of all important components (motors, sensors ...).

4.8.2.1 Querying the operating states

You can display many of the measured values and states of the entire system via the "Operating state" option. This allows you (or customer service) to be able to find the cause of possible faults and alarms in a targeted way.

Access this via the `Main menu >> Operating state`; you can find additional information in section **Operational state** [► 38].

4.8.3 Activation of the emergency stop switch

In rare cases, it may become necessary to activate the emergency stop switch. **Please note:**



CAUTION

Heat dissipation and combustion continue! Controlled throttling!

→ You have pressed the emergency stop switch ("emergency stop" as per TRVB H118).

4.8.4 Smoke emissions

- Air out the boiler room!
- You must immediately leave the boiler room and close the fire protection door! You should also close the doors to the living quarters.
- Press the emergency stop switch ("emergency stop" as per TRVB H 118).
- Notify customer service.

4.9 Operating the analogue remote control unit







Analogue remote control unit (option)

If your system is equipped with a weather-sensitive heating circuit control system, you can control individual heating circuits with an analogue remote control unit depending on the room temperature.

You can use the dial on the analogue remote control unit to change the desired room temperature. At the "+" stop, the room temperature is increased by 5°C, at the "-" stop, it is lowered by 5°C (depending on: room influence, fast reduction). Please note that the "room temperature" value in the boiler control unit remains unchanged. **Room temperature [► 31]**.

The following modes can be set on the selector switch of the analogue remote control unit:

Analogue remote control unit operating modes

	Standby mode The heating circuit is switched off in this mode. However the frost protection function is active. For this, the boiler must be switched on (System on/off [► 31]).
	Night mode The heating circuit is always maintained at the set night lowering temperature.
	Automatic mode The heating circuit is operated based on the configured heating program. Heating programs [► 32]
	Day mode The heating circuit is always maintained at the set day temperature.

5 Regular tasks

5.1 Fuels

5.1.1 Intended fuels

**DANGER****Life-threatening danger due to toxic combustion gases**

- 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.

→ Only burn fuels intended for this system!

**CAUTION****Explosions through ignition aids**

→ NEVER ignite and heat the boiler with liquid fuels, such as gasoline!

Reliable fuels

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

- Wood pellets according to ISO 17225-2 with "ENplus A1" certificate.

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

With regard to the delivery, please also ensure that the retailer providing the delivery is ENplus-certified.

5.1.2 Fuel pellets

Low-quality pellets

Inferior fuels lead to increased emissions and to a sintering of the boiler. Only high-quality pellets ensure a reliable and clean operation of your system and low operating costs. Observe the corresponding certificate of your supply company.

Standardised pellets**ISO 17225**

The ISO 17225 standard replaces national regulations: The respective "ENplus" certificate simplifies the complex choices available to consumers **and** regulates the professional handling of the pellets in retail (gentle transportation, optimal filling of the pellet storage ...).

**Quality level A1**

A1 is the quality for consumers with pellet heating systems. It corresponds to strictest requirements and ensures best emission values. This quality level largely corresponds to the previous standards EN 14961-2, DIN-Plus and ÖNORM M7135. The respective wood pellets should have an ash content of under 0.5% (coniferous wood) up to 0.7% (other wood).

Source material: trunk wood, chemically untreated wood materials

Additives: $\leq 2\%$; type and quantity must be specified

Bulk density	600 kg/m ³	Moisture content	$\leq 10\%$
Diameter	6 (± 1) mm	Fine content	$\leq 1\%$
Length	3.15 – 40 mm	Mechanical resistance	$\geq 97.5\%$
Calorific value	16.5 – 19 MJ/kg	Ash content	$\leq 0.7\%$

5.1.3 Buying pellets

How should I store pellets in sacks?

They should be dry and protected!

(This should also be guaranteed by the intermediary!)

What do I need to remember when buying pellets?

We require the use of ENplus-certified pellets. This ensures that you operate a low emission heating system and also the reliable operation of the system.

How do I recognize good quality pellets?

Good pellets are easily recognizable by their shiny and smooth surface without cracks.

All pellets should have about the same length, there should be no contamination with foreign objects or mixing with other pellet types.

5.1.4 Safety in the storage area

BRENNSTOFF-LAGERRAUM
FUEL STORAGE ROOM
LIEU DE STOCKAGE DE COMBUSTIBLE

Unbefugten ist der Zutritt verboten! Die Tiere absperrern! Kinder fernhalten!
No unauthorized persons allowed beyond this point!
Caché l'entrée sans autorisation!
Accès interdit aux personnes non autorisées!
Fermer les portes à clé! Maintenir les enfants éloignés!

Verletzungsgefahr durch bewegliche Teile (z.B. Schnecken, Rührwerk, ...)
Risk of injury from moving parts (e.g. screws, stirrer, ...)
Risque de blessure par des pièces mobiles (par exemple vis sans fin, agitateur, ...)

Einlass nur mit einer zweiten Person außen!
Be einem Unfall zuerst Notruf schlagen!
Entry only with a second person outside!
In case of an accident, first call for help!
N'entrer que si une autre personne est à l'extérieur!
En cas d'accident, appeler les secours avant tout!

Rauchen, Feuer und alle anderen Zündquellen sind verboten!
No smoking and no matches or lighters of any type!
Interdiction de fumer, d'approcher avec du feu et toute autre source d'inflammation!

Eine kontinuierliche Lüftung ins Freie ist zu sichern, z.B. über belüftete Kappen oder Öffnungen!
Ensure continuous outdoor ventilation e.g. via the ventilated flaps or openings!
Assurer une aération continue à l'air libre, par exemple en ouvrant les couvercles ou les ouvertures!

Für Lager > 15 Tonnen: Nur mit einem CO-Warngerät einsteigen!
For storage > 15 tons: Only enter with a CO alarm!
Pour les lieux de stockage > 15 tonnes: N'entrer qu'avec un détecteur CO!

Die Befüllung nur unter den von KWB und dem Pellet-Lieferanten vorgelassen Bedingungen durchführen lassen!
Filling should occur only under the conditions prescribed by KWB and the pellet supply company!
Ne faites faire le remplissage que dans les conditions préconisées par KWB et le fournisseur de granulés!

Brennstoff vor Feuchtigkeit schützen!
Protect fuel from moisture!
Protéger le combustible de l'humidité!

Internationaler Notruf: 112
Internationaler Notruf: 112
N° d'assistance internationale: 112

Wir empfehlen den Betrieb mit ENplus-zertifizierten Pellets.
We recommend using ENplus-certified pellets.
Nous recommandons d'exploiter la chaudière avec des granulés certifiés ENplus.

Symbol representation

- Please ensure that a warning sticker is **permanently** and **legibly** attached at the entrance to the pellet storage room pointing out dangers and correct behaviour!
- For the sake of your own safety you must comply with the locally applicable fire protection regulations (TRVB H 118 or similar locally applicable provisions) with respect to walls, ceilings and doors and comply with all requirements for safety devices!
- The pellet storage room must be designed based on ÖNORM M 7137.

Ventilation storage room

ÖNORM M 7137 requires ventilation of fuel storage rooms to prevent hazardous carbon monoxide concentrations.

- Ask your pellet supplier to carry out the following inspections:

- Inspect the seals of the covers: Do they function properly?
- Fasten of the cover only with the respective special tools: turn to the stop (= torque approximately 10 Nm).

An even pressure on the sealing can only be ensured only if four key ribs are locked at the cover – two ribs may result in leaks due to uneven pressure!

Version A (recommended!): Injection connectors lead to the outside

- Use a sufficient number of KWB injection connectors with ventilation opening (20 cm² each).

Required conditions		Number of injection connectors
Ventilation line ≤ 2 m	Storage volume ≤ 10 t	2
Ventilation line ≤ 2 m	Storage volume > 10 t	3
Ventilation line > 2 m		3

Version B (not recommended!): The injection connectors lead to the interior of the building

- Seal the ventilation openings of the injector connection caps: No CO gases should reach the building's interior!
- Ensure air extraction to the outside via a separate ventilation opening.
- Please note that this ventilation opening must be dust-tight and pressure-resistant during filling, but that a subsequent ventilation must be possible.

5.2 Ash tray



WARNING

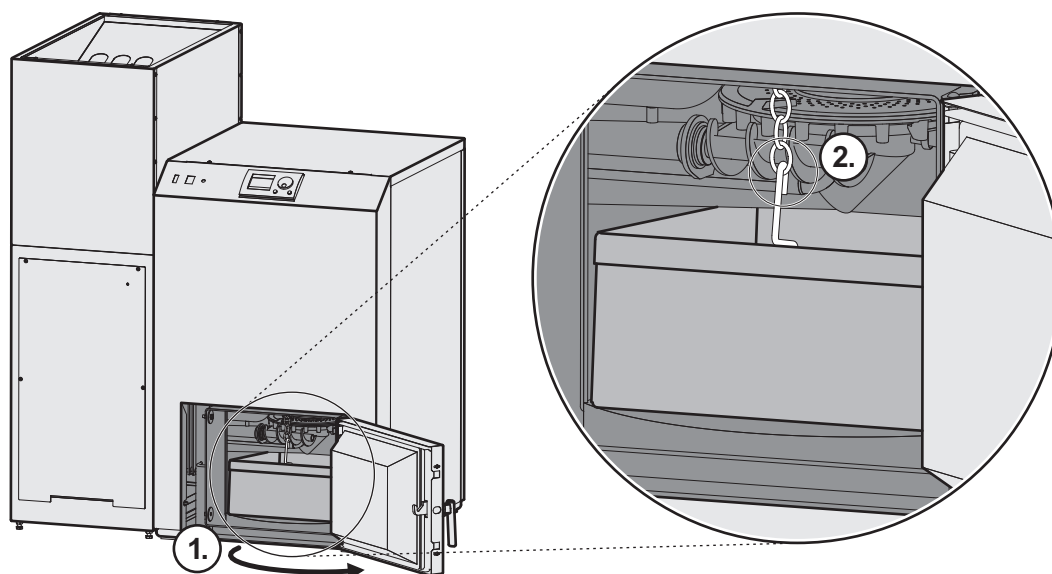
Perform work according to this operating manual only! Improper work can put you in life-threatening situations due to a lack of knowledge!

- ↳ 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!
- Shut the system down (**System on/off** [► 31] [Comfort 3] or *Kessel Ein/Aus* [Comfort 4] = controlled shutdown.
- Let the system cool down for approx. 30 minutes before switching it off (main switch to "0").
- Pull the plug and secure the system against being switched on again.
- Allow the system to cool down. Only open the casing, combustion chamber door and service cover when the system is **cold** and de-energised!

If the ash tray is full, no more ash will fit in it. After a short time this will lead to failure of the system.

- Regularly check the fill level of the ash tray.

Removing the ash tray



- Open the combustion chamber door [1]. The control detects the open door through the door contact switch and automatically switches off the system after 10 seconds (**Alarm 19 – The boiler door is open** [► 69]).
- Remove the optionally available ash compaction from its chain and pull out the ash tray including ash compaction.

Emptying the ash tray



WARNING

Risk of fire and injuries due to hot embers!

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

- Pull the optionally available ash compaction out of the ash tray before turning the ash tray over.

Replacing the ash tray

- Push the ash tray back into the combustion chamber.
- Hang the optionally available ash compaction back onto the chain.
- Close the combustion chamber door – and check whether the combustion chamber door is sealed tightly.
- The alarm clears as soon as the door contact switch sends a signal that the door is closed.

6 KWB Comfort 3 control unit commands

Below, we will describe the KWB Comfort 3 menus and options accessible to all users. If you are unsure about the application of a function, please ask your heating technology partner or KWB customer service **first** before you change any values!

6.1 System on/off

Main menu >> Plant On/Off

6.2 Room temperature

Main menu >> Room temperature >> Heating circuit No.

Input of the desired temperatures.

Actual temperature:

Displays the measured value of the heating circuit room sensor.

Comment: Is only displayed when an actual room sensor is connected!

Note: A correction of the room temperature by $\pm 5^{\circ}\text{C}$ on the analogue remote control unit changes the value displayed here in the opposite direction!

Example: If you set the control on the analogue remote control unit to $+5^{\circ}\text{C}$, the `Actual temperature` value will fall from 18°C to 13°C . As a consequence the heating system will heat more powerfully.

Set-point day temp.:

Input set-point room temperature during heating season (mostly during the day). **Heating program** [► 32].

Set-point night temp.:

Input set-point room temperature during the night lowering (outside of heating season).

6.3 Party operation

Main menu >> Party operation >> Heating circuit No.

HC- 1 OFF

Heat continuously
till: 00:00

Change using Set!

Enter the time until when the selected heating circuit is to be supplied with heat in order to reach the set-point day temperature. After this, the system runs normal again (as a rule, the night lowering usually follows).

By entering "00:00" you deactivate the function.

6.4 Heating circuits

6.4.1 Heating programs

Main menu >> Heating circuits >> Heating circuit No. >>

Heating programs

HC- 1OFF

Heating program 1
 Heating program 2
 Transition
 Frost protection
 OFF

Select program

Note: The KWB Comfort 3 will display the heating circuits "Heating circuit 0" to "Heating circuit 2" even if these are not installed. Although it is possible to select these heating circuits, the "Set" button will not take you further down. If more than 3 heating circuits are installed, the display expands automatically.

Heating program 1, heating program 2

For every connected heating circuit, select a stored heating program: During these times, which are specified via "**Change heating times [► 32]**", the heating circuit is held at the set-point day temperature; outside of these times, the system switches to the night lowering.

The heating circuit always switches off if the measured outside temperature exceeds the specified values and the "outside temperature-dependent shutdown" was activated by the specialist.

Transition

This mode corresponds to the specified heating programs 1 or 2; however, this time the system switches to "frost protection" outside of the heating times, instead of switching to the night lowering.

Frost protection

The selected heating circuit is held above the frost protection room temperature (can only be modified by certified technical personnel) (factory setting 8°C).

The heating circuit switches off if the measured outside temperature exceeds the specified values – even if the "outside temperature-dependent shutdown" was NOT activated by the certified technician.

Off

The heating circuit is switched off and makes no requests for heat.

NOTE! Frost protection is not ensured!

Manual mode

The selected heating circuit pump is manually activated: No control, no shutdown!
 The mixer must be adjusted manually if necessary.

Warning: If you specify an operating mode on the selector switch of the analogue remote control unit, this selection has priority over the setting on the boiler control unit.

6.4.2 Change heating times

Main menu >> Heating circuits >> Heating circuit No. >>
Change heating times

HC- 1Heating prog. 2

Monday-Sunday

or

Mo Tu We Th Fr Sa Su

Select weekday

Specify when the system is to heat to the target room temperature for each heating circuit. You can specify the active times for every individual day or for all days.

Empty entry

If you do not want to use one of the charging time entries, set the values for On and Off to the same time: The KWB Comfort 3 will then detect this time period as an empty entry.

6.4.2.1 Factory settings for heating times

We supply our system controllers with switching times that you can adapt to your individual daily rhythm.

6.4.2.1.1 Heating times in Heating program 1

Factory settings

Heating times	From	To	From	To	From	To
Monday	6:00	8:00	16:00	22:00	22:00	22:00
Tuesday	6:00	8:00	16:00	22:00	22:00	22:00
Wednesday	6:00	8:00	16:00	22:00	22:00	22:00
Thursday	6:00	8:00	16:00	22:00	22:00	22:00
Friday	6:00	8:00	16:00	22:00	22:00	22:00
Saturday	7:00	23:00	23:00	23:00	23:00	23:00
Sunday	7:00	23:00	23:00	23:00	23:00	23:00

6.4.2.1.2 Heating times in Heating program 2

Factory settings

Heating times	From	To	From	To	From	To
Monday	6:00	22:00	22:00	22:00	22:00	22:00
Tuesday	6:00	22:00	22:00	22:00	22:00	22:00
Wednesday	6:00	22:00	22:00	22:00	22:00	22:00
Thursday	6:00	22:00	22:00	22:00	22:00	22:00
Friday	6:00	22:00	22:00	22:00	22:00	22:00
Saturday	6:00	22:00	22:00	22:00	22:00	22:00
Sunday	6:00	22:00	22:00	22:00	22:00	22:00

6.4.2.1.3 Heating times in Heating program "Transition"

Factory settings

Heating times	From	To	From	To	From	To
Monday	6:00	8:00	18:00	20:00	20:00	20:00
Tuesday	6:00	8:00	18:00	20:00	20:00	20:00
Wednesday	6:00	8:00	18:00	20:00	20:00	20:00
Thursday	6:00	8:00	18:00	20:00	20:00	20:00
Friday	6:00	8:00	18:00	20:00	20:00	20:00
Saturday	6:00	8:00	18:00	20:00	20:00	20:00
Sunday	6:00	8:00	18:00	20:00	20:00	20:00

6.4.3 Holiday program

Main menu >> Heating circuits >> Heating circuit No. >> Holiday programs

Start

The "Frost protection" mode is activated on this day.

End

The set heating program is reactivated on this day. During holidays, the room temperature is held at approximately 8°C (factory setting).

6.5 DHWC

A "DHWC" ("DHWC") is the storage container for hot water.

6.5.1 DHWC program

Main menu >> DHWC >> DHWC No. >> DHWC program

DHWC - 0Temperature

Time program
 Temperature
 OFF
 Manual operation

Select program

The header shows the current DHWC program.

→ Select how the DHWC will essentially be "charged" (= heated up):

Time program

If the minimum temperature is undershot during the stored charging times, the content of the DHWC is heated up to the maximum temperature. If a charging process has started it will be continued even if the charging time has been exceeded.

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

Temperature

Regardless of the charging time, the DHWC is **always** heated up to the maximum temperature if the minimum temperature was undershot.

Tip: Activate this program if hot water is to be available **at any time**.

Off

The DHWC charging function is switched off. Setting for longer periods without use.

NOTE! The DHWC may, however, continue to be charged by the functions measuring mode, fast charging or overheating protection!

Manual mode

The temperature of the DHW is always kept at the maximum (while it is switched off in the temperature program after reaching the maximum temperature and the DHWC will only be charged again after undershooting the minimum temperature)!

Warning: The shutdown is NOT performed automatically! The DHWC charging pump also runs automatically in manual (DHWC) mode.

6.5.2 Charging times

Main menu >> DHWC >> DHWC No. >> Charging times

DHWC - 0 Time program

Monday-Sunday

or

Mo Tu We Th Fr Sa Su

Select weekday

↳ The time program must be active in the **DHWC program [► 34]**.

→ Specify when each DHWC is to be heated up. You can specify the charging times for each individual day or for all days together.

Empty entry

If you do not want to use one of the charging time entries, set the values for **On** and **Off** to the same time: The KWB Comfort 3 will then detect this time period as an empty entry.

6.5.2.1 Charging times in the DHWC program

Factory settings

Charging time	From	To	From	To
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

6.5.3 DHWC temperature

Main menu >> DHWC >> DHWC No. >> DHWC temperature

```
DHWC - 0 Time program
Maximum: 55°C
Actual temper.: 37°C
Minimum: 40°C
```

Change using Set!

Maximum

The DHWC is heated up to this temperature.

Actual temperature

Measured domestic hot water temperature

Minimum

The domestic hot water temperature may drop to this temperature, if it drops further, it will be heated (except outside of charging times and if the DHWC program set to "off").

6.5.4 Holiday program

Main menu >> DHWC >> DHWC No. >> Holiday program

```
DHWC - 0 Time program
```

```
Start: 1.08.2003
```

```
End: 1.09.2003
```

Change using Set!

Start:

The DHWC is deactivated on this day (at 00:00).

End:

The DHWC is switched on (at 00:00) on this day and the set DHWC program is activated.

6.5.5 Fast charging

Main menu >> DHWC >> DHWC No. >> Fast charging

```
DHWC - 0 Time program
```

```
Fast charging: OFF
```

Change using Set!

This will immediately heat up the contents of the DHWC – regardless of the current DHWC program.

Fast charging:

If set to **On**, the system immediately starts charging the DHWC. After successful heating up to maximum temperature, the status of the system automatically switches **Off** again. The heating of the DHWC then occurs depending on the set DHWC program.

6.6 Buffer

A "buffer" ("buffer tank") is an intermediate storage tank for heat which the boiler generates during short operating times in the optimal power range.

6.6.1 Buffer program

Main menu >> Buffer >> Buffer No. >> Buffer program

```
Buffer- 0 Temperature
Time program
Temperature
OFF
Manual operation
Time program+
Select program
```

The header shows the current buffer program.

Time program

During the stored charging times (**charging times [► 38]**) the buffer content is heated to the maximum temperature, if the minimum temperature (buffer temperature) was undershot.

Tip:

This program is primarily suited for buffers that are additionally heated via solar power.

Temperature

The charging is exclusively temperature-controlled:

- Buffer is heated up if
 - the buffer temperature is lower than the highest requested temperature from the heating circuits or the DHWC *or*
 - if the minimum temperature on the upper sensor ("actual temperature 1") was undershot.
- The heating continues until the set maximum is reached on the lower sensor ("Actual temperature 2").
- The minimum temperature is always maintained even if there is no heat request from the consumers.

Off

The automatic buffer charge function is switched off. However, if a consumer places a request, the boiler heats up the buffer until the upper sensor temperature ("Actual temperature 1") reaches the set-point temperature of the consumer. However, the buffer is not charged through, i.e. the lower set-point temperature ("Actual temperature 2") remains disregarded.

Manual mode

At the lower sensor ("Actual temperature 2"), the buffer storage is always kept at maximum temperature (buffer temperature).

Warning: The shutdown is NOT performed automatically!

The set buffer temperature is always maintained even if there is NO heat request from the consumers.

Time program +

Works like the time program. However, consumer requests (outside of charging times!) are fulfilled, if the buffer cannot fulfil these requests.

6.6.2 Charging times

Main menu >> Buffer >> Buffer No. >> Charging times

Buffer- 1Time program

Monday-Sunday
or
Mo Tu We Th Fr Sa Su
Select weekday

Specify when each buffer tank is to be heated up. You can specify the charging times for each individual day or for all days together.

Empty entry

If you do not want to use one of the charging time entries, set the values for On and Off to the same time: The KWB Comfort 3 will then detect this time period as an empty entry.

6.6.2.1 Times in the buffer program

Factory settings

Charging time	From	To	From	To
Monday	0:00	23:59	23:59	23:59
Tuesday	0:00	23:59	23:59	23:59
Wednesday	0:00	23:59	23:59	23:59
Thursday	0:00	23:59	23:59	23:59
Friday	0:00	23:59	23:59	23:59
Saturday	0:00	23:59	23:59	23:59
Sunday	0:00	23:59	23:59	23:59

6.7 Operational state

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

6.7.1 Boiler

Main menu >> Operational state >> Boiler

In the header, you can see the status of the following signals:

E1 for External 1,
K for measuring mode button,
M for measuring,
R for heat exchanger cleaning and
A for request.

Boiler status

The status of the boiler is shown in the first line:

6.7.2 Heating circuits

Main menu >> Operational state >> Heating circuits >> Heating circuit No.

```

HC- 1 Day          A
Actual room °:    50°C
Desired room °:   20°C
Outer temp.:      63°C
Actual FF:        59°C
Desired FF:       20°C
Operational state

```

The header **on the left** shows the current heating circuit and its operating mode (Day | Night | Frost protection | Manual mode | Off) .

Operational state	Room temperature	Heating circuit pump	Mixer	Boiler
Day	Day	On	Regulates	Heats
Night	Night	On	Regulates	Heats
Frost protection	Frost protection	On	Regulates	Heats
Manual mode	—	On	Does not regulate	Heats
Off	—	Off	Closed	Does not heat

The header **on the right** shows the current status of the heating circuit:

A: Request

○ : No heating request

All other displays indicate **why** the heating circuit has no request:

AT: outside temperature-dependent switch-off

B: boiler priority

E0: no external request

EP: screed program

FP: frost protection program

FW: frost protection selector switch

S: fast reduction

UP: holiday program

ZP: outside of the heating times of the time program

Room temp.actual:

Measured temperature at the room sensor

Is only displayed when a room sensor is connected!

Room temp.set:

Stored set room temperature

Outside temperature:

Measured temperature at the outdoor sensor

Forward flow.actual:

Measured forward flow temperature

Forward flow.set:

Stored set forward flow temperature

Gradient:

Stored gradient of the heating curve

Room influence:

Stored influence of the measured room temperature on the forward flow temperature (in per-cent)

Pump:

Status of the heating circuit pump (On|Off).

Mixer:

Status of the mixer motor (Off|Open|Closed).

Off: Mixer motor is switched off.

Open: Mixer motor opens, increases forward flow temperature.

Closed: Mixer closes, decreases the forward flow temperature.

Selector switch:

Shows the selected operating mode on the analogue control unit or the absence of the device (Frost|Auto|Day|Night|Missing). **Operating the analogue remote control unit [► 26].**

Frost	frost protection programme running.
Auto	set heating programme runs.
Day	day operation.
Night	Night operation (night lowering).
Missing	No analogue room control unit connected.

6.7.3 DHWC

Main menu >> Operational state >> DHWC >> DHWC No.

```
DHWC - 0Time program
Actual temper.: 37°C
Desired temper.: 55°C
Pump: OFF
Demand: OFF
```

Operational state

Note: The header shows the current **DHWC program [► 34].**

Actual temperature:

Measured temperature on the DHWC sensor

Target temperature:

Stored target temperature (to which the DHWC is to be heated).

DHWC pump:

Status of the DHWC pump (On|Off)

Request:

Status of the heat request (On|Off)

On: DHWC requests heat.

Off: DHWC requesting NO heat.

6.7.4 Buffer

If in

Main menu >> Operational state >> Buffer >> Buffer No.

a group can be selected for which a buffer tank is specified, the following display appears:

Buffer 1-16

```
Buffer- 1Temperature
Temperature 1: 54°C
Temperature 2: 51°C
Desired temp.: 70°C
Demand:      ON
Pump:        ON
Operational state
```

For

Main menu >> Operational state >> Buffer >> Buffer No.

select "Buffer 0"; the following display appears:

Buffer 0

```
Buffer- 0Temperature
Temperature 1: 52°C
Temperature 2: 47°C

Desired temp.: 70°C
Demand:      ON
Operational state
```

Note: The header only shows the current **Buffer program** [► 37].

Temperature 1

Displays the temperature measured at the top in the buffer tank.

Temperature 2

Displays the temperature measured at the bottom in the buffer tank.

Temperature 3

Optional display, only for buffer 0: Shows the temperature measured in the middle of the buffer storage tank.

Buffer group

Select in

Main menu >> Operational state >> Buffer >> Buffer No.

a group for which no buffer is specified; the following display appears:

(Only necessary if a supply pump is required.)

```
Group 2
Temperature 1: 67°C
Desired temp.: 60°C

Pump:      ON
Demand:    ON
Operational state
```

Temperature:

Displays the available temperature for the consumers of this group.

Temperature set-point

Displays the specified maximum temperature or the highest request at the group.

Request

Status of the heat request (On|Off)

On: Buffer storage tank requests heat.

Off: Buffer storage tank requesting NO heat.

Pump

Displays that a request is pending and heat is available: This means that the buffer charging pump or group charging pump is in operation (On|Off).

Request:

Status of the heat request of the group at the source, typically the boiler or a buffer (On|Off)

6.7.5 Fuel extractor

Main Menu >> Operational state >> Fuel extractor

6.7.6 Fuel extractor (suction system)

Main Menu >> Operational state >> Fuel extractor

Suction system: Fuel extraction

Displays the status of the conveyor system (**Fuel extractor [► 42]**).

Suction turbine

Displays the status of the suction turbine (On|Off).

On: Suction turbine is in operation

Off: Suction turbine is NOT in operation

Overfill protection

Shows the status of the sensor of the container fill level (On|Off)

On: Container is filled

Off: Container is NOT filled

Remaining hours

Time remaining to the next filling

Suction system with conveyor screw**Screw drive**

Shows the status of the sensor on the conveyor system motor (On|Off)

On: Conveyor motor is in operation

Off: Conveyor motor is NOT in operation

Temp. drive

Displays the status of the motor overheating protection (On|Off)

On: Normal operation

Off: Motor overheated

TM fuel

Displays the status of the temperature switch to the storage area monitoring (On|Off)

**Suction system
with sampling
probes:**

On: Normal operation

Off: Fire alarm in the fuel storage room or cabling problem

For suction systems with sample probes, the menu shows additional states:

Note: The header or the first line shows the status.

The digit in the upper right corner shows the current position of the switch unit:

- 0 ... Start position (neutral point)
- 1, 2 or 3 ... Suction channels
- 4, 5 or 6 ... Flushing channels

The first line shows the status of the unit (Off|Fill container|Flush).

Suction turbine

Displays the status of the suction turbine (On|Off).

Motor right

Displays that the motor is to turn to the right (On|Off).

Motor left

Displays that the motor is to turn to the left (On|Off).

Overfill protection

Shows the status of the sensor of the container fill level (On|Off).

On: Container is filled

Off: Container is NOT filled

6.7.7 Second boiler

Main menu >> Operating state >> Second boiler

Second boiler

```

Status: Overheating
Boiler temp.: 87°C
Flue-gas therm.: ON
Thermostat: OFF
Boiler pump: ON

```

Operational state**Status:**

Off: Second boiler is switched off (cold)

Normal operation: Display of temperature in the second boiler

Overheating: Second boiler is overheated; all heat consumers are switched to maximum heat consumption

Boiler temp.:

Measured water temperature of the second boiler

Flue-gas therm.:

Flue-gas thermostat of second boiler – only necessary in the case of a shared chimney

Thermostat:

Boiler thermostat of the second boiler for overheating function (optional).

Boiler pump:

Boiler pump of the second boiler

6.8 Date / Time

Main menu >> Date/Time

Date / Time

Date: 08.08.2012
Time: 13:18:03

Battery: 1.79 V

Change using Set!

Date:

→ Enter the current date in the format "DD.MM.YYYY" (2 digits for the day, 2 digits for the month and 4 digits for the year).

Time:

→ Enter the current time of day in the format "HH:MM" (2 digits for the hours, 2 digits for the minutes).

NOTE! The switchover from summer/winter time occurs automatically!

Battery:

This shows the battery capacity (for maintaining the date/time function). (This is only for control units that have a battery compartment).

6.9 Pellet suction system

Main menu >> Pellets suction system

Fill times pellets

Preferred time: No
ON 8:00 OFF 12:00
Preferred time: No
ON 16:00 OFF 20:00
Fill manually: No

Change using Set!

Specify a maximum of 2 filling times so that you are NOT disturbed by filling noises during your resting times.

- The filling times must be at least 30 minutes long.
- Your input is checked by the software and shortened if necessary.
- If the suction container is empty, the suction system will start operation even outside of filling times.

Preferred time:

Specifies whether the time window is to be used daily or not (Yes|No).

No: (factory setting) Fillings occur on the basis of need whereby blocked times are taken into account. 30 min before the beginning of the blocked time, the system checks whether this can be bridged with boiler full load: If the heating duration is not specified, the storage container is filled up until the blocked time begins.

Yes: Fillings occur **independently** of the degree of filling with priority within the current time window. Select this option if the filling in due time is not ensured due to poor trickling behaviour or increased fine content.

**Suction system
with sample
probes****Fill manually:**

Starts the manual filling (Yes|No) – for example during the filling.

For suction systems with sample probes, the menu contains additional settings:

Probe settings

```
Probes on/off
Probe 1:      ON
Probe 2:      ON
Probe 3:      ON
```

Select option

In certain situations, you would like to influence the sample probe used. In this menu, you can activate/deactivate the sample probes individually (On|Off).

6.10 Customer service

Main menu >> Customer service

Version:

Software version of your KWB Comfort 3 control

Language:

Currently activated language D – German, I – Italian, F – French, E – English, SLO – Slovenian, E – Spanish, NL – Dutch

Service number:

Phone number of the responsible KWB representative

This value can only be changed by a certified technician.

Number of maintenance procedures:

Number of maintenance procedures already carried out by customer service.

This value can only be changed by a certified technician.

6.11 Alarms

6.11.1 Displays

Main menu >> Alarms >> Displays

```
!!!Warning - Fault!!!
25 Safety thermostat!
Boiler overheating!
```

Acknowledge with Set

Shows the current alarm. Press the "Set" button to acknowledge the fault.

6.11.2 Log

Main menu >> Alarms >> Report

```

Alarm report      No. 48
Alarm No.         18
Date:            11.03.04
Time:            9:40:17
Status:   Cleared

```

Alarm No.:

KWB Comfort 3 records every occurrence, acknowledgement and rectification of alarms with date and time. The last 49 events (occurred, acknowledged, rectified) can be called up using the dial.

6.11.3 Statistics

Main menu >> Alarms >> Statistics

```

Statistics
Alarm No.         0
Number:           11
Last occurred:
on: 25.11.03
at: 12:00:00

```

KWB Comfort 3 records for every alarm how often and when the last alarm has occurred.

6.11.4 Rectifying

Main menu >> Alarms >> Clear

```

Alarm menu
Display
Report
Statistics
Clear
Alarms cleared
Select option

```

Resets all alarms. If the cause for an alarm cause persists, this alarm will be immediately displayed during the next alarm check.

This function also resets those alarms that you are NOT able to rectify by eliminating the cause.

Note: All alarms are reset by briefly switching off the system via the main switch. **If the alarm should occur again shortly thereafter, please call customer service immediately!**

6.12 Extensions

These expansions are optional. Please contact KWB if you have any questions.

6.12.1 Comfort SMS

Main menu >> Extensions >> Comfort SMS

```

Comfort SMS
SMS templates: OFF
SMS reminder:  ON
KWB code:      0000
+436640000000 OFF
+436640000000 OFF
Change using Set!

```

SMS templates

On: The system sends 11 SMS templates with sample instructions to the first mobile phone number entered: You will thus have all the content that you need for querying and control of your KWB system on your mobile phone.

Off: After sending, the menu automatically switches to **Off** (factory setting).

SMS reminder

Off: The system sends all messages to the mobile phones only once.

On: Every 2 hours the system sends all messages to the mobile phones.

Exception: The alarm "04 Maintenance interval has expired!" is NOT sent!

KWB Code

Assign a four-digit security code to prevent unauthorised access to the system. This code is to be sent along for every query and every control instruction.

SMS messages without this code are ignored by KWB Comfort SMS.

Tip: Protect against misuse and change the code from time to time.

Telephone numbers

Malfunctions are immediately sent to a maximum of 2 mobile phones after their occurrence. Specify the valid telephone numbers and activate the entry (value on the right edge to **On**).

Enter the telephone numbers using the international formatting (e.g. "+43..." for Austria).

Note: Remember to save the new values and then to switch the system on and off again via the main switch: Only then the new settings will become effective!

6.12.2 Comfort Visio

Main menu >> Add-ons>> Comfort Visio

Comfort Visio

IP address:

0. 0. 0. 0

Change using Set!

IP address

Assign a valid and available IP address to the boiler control unit (factory setting: 0.0.0.0).

Note: Remember to save the new values and then to switch the system on and off again via the main switch: Only then the new settings will become effective!

6.12.3 Comfort Online

Scope of delivery

- Network card for Comfort Online (KWB art. no. 13-2000395)
- 1 pc. ext. supply cable for boiler control unit (KBG) (KWB art. no. 13-1010773)

The customer must provide

1 pc. Cat5 cable with RJ45 socket for the connection of the control unit and router or modem; cable must be provided on site

Internet requirements

The speed of the internet connection is essential for a smooth operation. These requirements are met with a modern internet connection and good reception quality.

- ADSL, VDSL2, HSDPA, LTE with at least 200 kbit per second upload speed
- Stable and interruption-free connection

A smooth operation cannot be guaranteed in the event of slow Internet connections (e.g. ISDN) or mobile Internet access with bad reception (e.g. 2G EDGE).

Network/router requirements

Every router or modem that an Internet provider provides for private use should be able to meet the requirements listed below.

In the event of a manually configured router or firewall, the following parameters may need to be configured on site. Please contact your system administrator.

DHCP/DNS

- The KWB Comfort 3 control requires a DHCP server in the network for the automatic assignment of IP addresses.
- Similar to the IP address, the DHCP must also assign the DNS server.

Boiler requirements

With a KWB Comfort 3 control system:

Minimum software version \geq 3.99.2 – can be found in the "customer service" menu

Open menu >> Customer service

```
Customer service
Version:KWB MF2 3.99. 2
Language: E
Service number:
043 (03115) 6116 500.
No.of maintenances 0
Change using Set! (←→)
```

Network card (web interface) installation at the boiler control unit

CAUTION

Please only carry out the following steps once you have shut down the system and the boiler has cooled down!

The scope of delivery includes:

- Disconnect the cable from plug #26 and insert the provided cable (13-1010773) in between. Connect the 24 VDC connection and the GDN with plug #25.

Network card with 2 fillister head screws M 3 x 5 mm, 2 square nuts with sheet metal frame and clip-on (cage nut).

- First, install the plug connector on the board.
- Snap-in the 2 square nuts on the board.
- Install the network card (web interface) with the two supplied fillister head screws.

Establishing a network connection

- Carefully run the CAT5 cable to the outputs at the rear of the boiler control unit.
- Use the existing cable trays and make absolutely sure that the cable does not touch any hot surfaces!
- At the control unit, select Open menu >> Basic settings >> Hardware (2nd page) >> Web interface as hardware.


```

Basic settings
-----
Second boiler
Cleaning
Ash removal system
Network settings
Hardware
-----
Select option      ((•))

```

```

Hardware
-----
Add-ons
Hardware:
Webinterface
Software:
Comfort Online
-----
Change using Set!  ((•))

```

→ Confirm by pressing "Set".

→ Then, at the control unit, select Open menu >> Basic settings >> Software >> Comfort Online as software.

```

Hardware
-----
Add-ons
Hardware:
Webinterface
Software:
Comfort Online
-----
Change using Set!  ((•))

```

→ Confirm by pressing "Set".

→ In the main menu, under >> Save/Reset click on Save.

→ Switch the main switch once off and then on again.

6.12.3.1 KWB Comfort Online commissioning

→ Check the date/time (CET)

Activating Comfort Online at the heating system control unit

→ At the control unit, select Open menu >> Add-ons >> Comfort Online >> Server settings >> Remote access

→ Activate Comfort Online via the field "ON".

```

Server settings
-----
Remote access:    ON

```

```

-----
Change using Set!  ((•))

```

The registration screen is displayed within 2 minutes (connection is being established).

Check the network connection to your router if the subsequent "registration" mask is not displayed.

```

Registration
-----
Establishing connect.
      Series: 4
Boilernumber: 0084611
      register
-----
Enter values      ((•))

```

Manually add the boiler number and the series version if they are missing. The respective data can be found on the boiler type plate.

Example:

- Data on the type plate: SN 0084611/4
- Entry under registration: boiler number: 0084611
- Series status: 4
- Select the field "register" and confirm by pressing "set".
- Write the displayed 8-digit TAN down.
It must be entered on the Comfort Online platform within 30 minutes to complete the process.

Connection status 21

Online
Request: ready
Webinterface: ready
TAN Code: 60225721

Enter values ((•))

Creating a user account on the Comfort Online platform

- Start the Internet browser on your PC, tablet or smartphone.
- Go to the following web address (URL): <https://comfort-online.com>
- Click on "**NEW REGISTRATION**".

- Enter your user data and click on "**Register**".

The screenshot shows a web browser window with a yellow header bar containing a home icon, the word 'Register', and a language dropdown set to 'EN'. The main content area is titled 'Create new user' and contains the following fields and elements:

- A button labeled 'Resend confirmation email'.
- Account information** section:
 - Language: A dropdown menu showing 'EN'.
 - Email address: A text input field.
 - Password: A text input field with a note below it: '(Upper case letters, Lower case letters, Numbers)'.
 - Confirm password: A text input field.
 - First name: A text input field.
 - Last name: A text input field.
 - Country: A dropdown menu showing 'Austria'.
 - Post Code: A text input field.
 - Place: A text input field.
 - Street: A text input field.
 - Phone number: (+43...): A text input field with the value '+43660123456'.
- general terms and conditions** and **special terms and conditions** sections, each with a checkbox.
- A checkbox labeled 'Ich bin kein Roboter.' with a reCAPTCHA logo and the text 'Datenverarbeitung - Nutzungsbedingungen'.
- A large 'Register' button at the bottom.
- A 'Cancel' link at the very bottom.

Your activation code will be sent to you by email.

- Follow the link contained in the email or copy the code provided and enter it in the line "Code/Token".
- Click on "Confirm".
- Register with your email address and password.
- Enter the 8-digit TAN under "Menu >> Add system" and click on "Add system".

The screenshot shows a dialog box titled 'Systems' with a yellow header bar and a close button (X). The dialog contains the following fields and elements:

- TAN: A text input field.
- System name: A text input field.
- An 'Add system' button at the bottom.

Adding the KWB icon to the device surface



Depending on the operating system (e.g. iOS or Android), you can add the KWB icon to the device surface via the menu items "To the start screen" or "To the home screen" (smartphone, tablet, desktop).

6.13 Expert level

Main menu >> Expert level

Expert level


Code: 

Enter code

Code for enabling the otherwise hidden/blocked menus with system-critical or life-threatening settings.

6.14 Extended settings

Main menu >> extended settings (1st page)

Erweiterte Einstell.
 Reci. Überw. Zeit: 
 Einschalten: 40 %
 Reci. min: 20 %
 i.F: 0 P.Off: 0
Werte eingeben

Settable values:

Parameters	Factory setting	Adjustment range
Reci. monit. time	900 s	1-3600
Reci. alarm delay	30 min	0-9999
Switch on (switch on shaft)	40%	30-80
Reci. min	10%	10-80

Main menu >> extended settings (2nd page)

It is possible to set the values for the ignition to avoid long ignition phases with a lot of smoke being emitted.

Parameters	Factory setting	Adjustment range
Induced draught starting value	20%	10-40
Negative pressure during ignition	0.75 mbar	0.3-0.75
PA fan during ignition	40%	40-60

7 Maintaining the Easyfire 1

7.1 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.

7.2 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!

7.2.1 Weekly visual inspection

→ Visually inspect the complete system including the fuel storage room, weekly. Immediately remedy any deficiencies that you find!

7.2.2 Monthly inspections

→ Perform the following inspections monthly and keep a log of these inspections. The respective forms can be found in section **Forms** [► 56].

- 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 (► 57)

7.2.3 Professional maintenance

NOTE

Maintenance instructions

- Please always keep the Maintenance instructions (Maintenance instructions) with the system.
- This document also describes those maintenance steps that may **only be carried out by certified technicians**.

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.

7.2.4 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 [► 55]**), **Forms [► 56]**). In this section, the respective steps are to be documented – from the planning to commissioning to maintenance.

7.2.4.1 Requirements for fill water

Limit values for fill-up or make-up water

	Austria	Germany	Switzerland
Total hardness	$\leq 1.0 \text{ mmol/l}$	$\leq 2.0 \text{ mmol/l}$	$< 0.1 \text{ mmol/l}$
Conductivity	–	$< 100 \mu\text{S/cm}$	$< 100 \mu\text{S/cm}$
pH value	6.0 – 8.5	6.5 – 8.5	6.0 – 8.5
Chloride	$< 30 \text{ mg/l}$	$< 30 \text{ mg/l}$	$< 30 \text{ mg/l}$

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 $\leq 50 \text{ kW}$	≤ 3	≤ 3	≤ 6	≤ 16.8	≤ 16.8	≤ 30	≤ 21
Boiler performance $> 50 \text{ to } \leq 200 \text{ kW}$	≤ 2	≤ 2	≤ 4	≤ 11.2	≤ 11.2	≤ 20	≤ 14
Boiler output $> 200 \text{ to } \leq 600 \text{ kW}$	≤ 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*

7.2.4.2 Logs

You can find forms here:

- Maintenance instructions
- ÖNORM H 5195-1:2010 Appendix A and Appendix C
- VDI 2035 Appendix C and VDI 4708 sheet 1

7.2.5 Forms

→ Use the forms to log your checks – thank you!

7.2.5.1 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)

System location
System installer
KWB – Kraft und Wärme aus Biomasse GmbH
Industriestr. 235
A-8321 St. Margarethen/Raab
Furnace system
Make:
Type:
Rated power:
Year of manufacture:
Serial number:

7.2.5.1.1 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												
Combustion chamber												
Fire extinguisher												
Flammable material in the boiler room												
Fire protection closures												
Chimney cleaning												
System pressure												
Thermal discharge safety valve												
Safety valve												
Signature												

Note: The check list for certified technicians is part of the Maintenance instructions.

7.2.5.1.2 Maintenance sheet

Maintenance	Performed on: ...	Specialist company, certified technician ...
Identified deficiencies:		
Comments:		
Deficiencies not rectified:		
Signature: ...		

7.3 Maintenance intervals for operators

Activity	Interval	Comments
Vacuum ashes or fly ash out of the heat exchanger		Exhaust gas collecting chamber and induced draught fan [► 59]
Clean the burner plate and ignition pipe		Cleaning the burner plate and ignition pipe [► 60]
Empty ash tray	Depending on the boiler type, fuel quality and degree of heating between 3 and 24 months	Ash tray [► 29]
Visually inspect the entire system	Depending on the degree of heating every 2 to 3 months	Visual inspection of the entire system [► 59]
Clean all surfaces		Cleaning the surfaces [► 63]
Change battery		Change battery in the control unit [► 63]

7.4 Visual inspection of the entire system

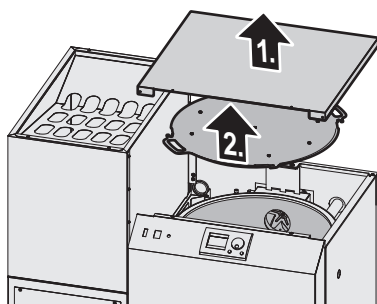
Instructions

Check whether all instructions are available in the document holder.

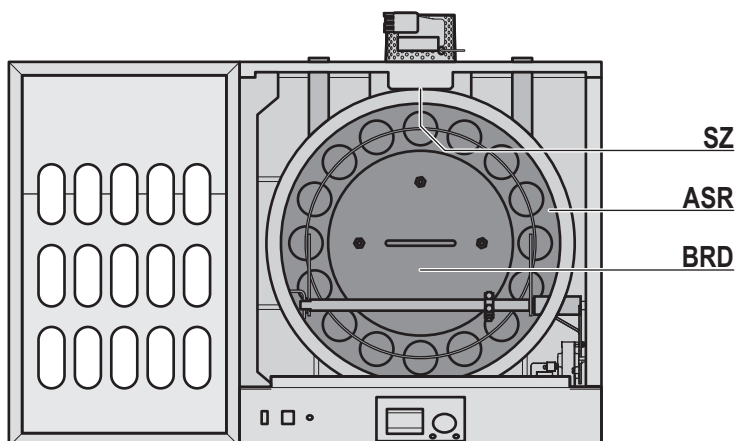
Stickers

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.

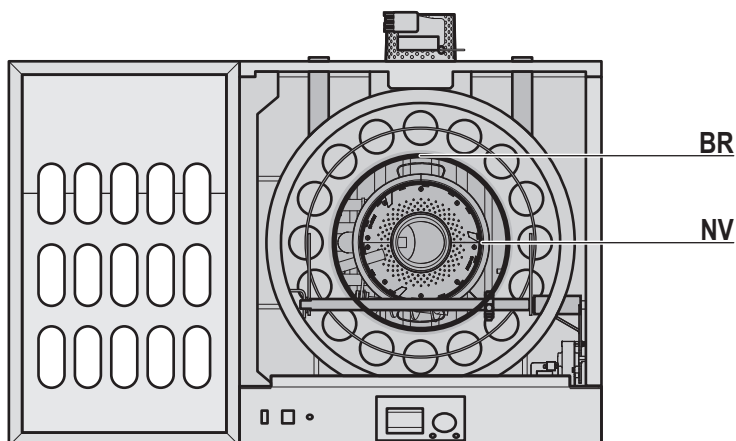
7.5 Exhaust gas collecting chamber and induced draught fan



- Unscrew the screws and remove the upper casing part.
- Unscrew the screws and lift off the heat exchanger cover.



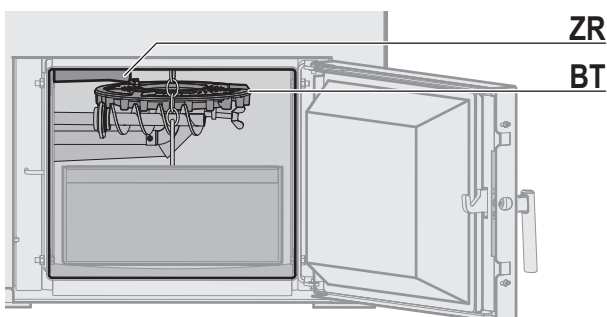
- Vacuum the fly ash out of the exhaust gas collecting space [ASR].
- Remove any possible encrustation on the impellers of the induced draught fan [SZ].
- Clean the protective sleeve of the exhaust gas sensor. It is located above the impeller.
- Lift off the cover to the combustion chamber [BRD].



- Remove the fly ash at the internal wall of the combustion chamber [BR].
- Lift out the post-combustion ring [NV] and clean it.

7.6 Cleaning the burner plate and ignition pipe

- Open the combustion chamber door.
The door contact switch ensures that the **Alarm 19 – The boiler door is open** [► 69] is displayed.



Ignition pipe

- Remove the residue around and in the ignition pipe [ZR] with a suitable ash vacuum.

Burner plate

- First, remove the ash and fuel residue from the burner plate [BT] to prevent them from falling on and blocking the supply pipes below when taking out the burner plate. (Should this happen anyway, you must carefully vacuum out all supply pipes!)
- Remove the wing screw and lift off the burner plate.
 - Remove encrustations with a wire brush.
 - Shake the burner plate until all particles in the hollow space have fallen out.
 - Use a pointy tool to push open any clogged air holes.
 - Remove the deposits on the edge of the feeder unit.
 - Vacuum off the burner plate.
- Check the secure seat of the burner plate halves: Are all 10 blind rivets screwed in tightly?

KWB Easyflex (Option)

- If available:
Check the free movement of the KWB Easyflex: The free movement between screw and revolving grate must not exceed 1.5 cm.
- Check the KWB Easyflex and ash screw for wear.

7.7 Lubricating the cleaning drive

Only for the fully automatic heat exchanger cleaning:

- Lubricate the gliding surfaces of the cleaning mechanism (cam disc, shaped tube ...) with adhesive lubricant.

7.8 Inspecting the fire shutter

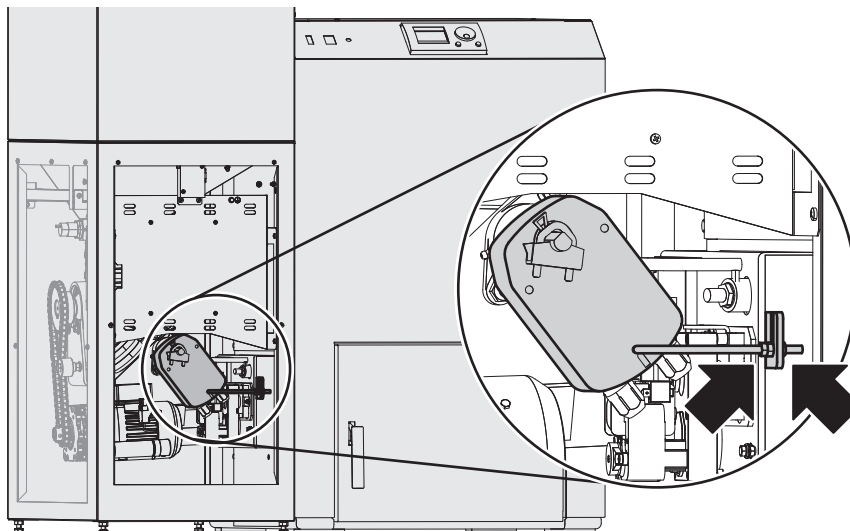
- Remove the maintenance openings at the front and the side.



CAUTION

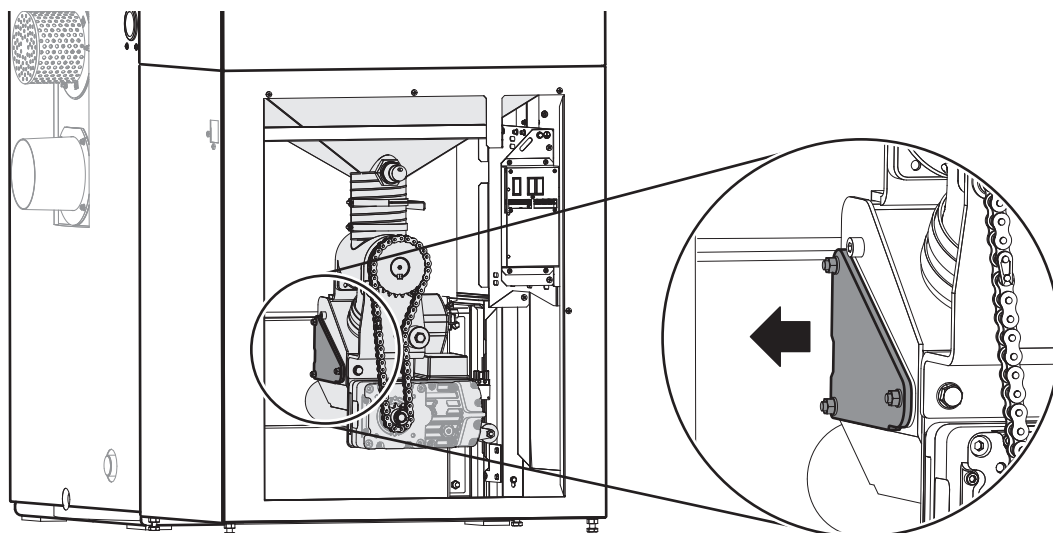
The fire shutter is an essential safety element!

- Ensure during dismantling and reinstalling that the two secured screws at the threaded rod remain unchanged. This way you ensure that the shutter motor position is correct after reinstalling.

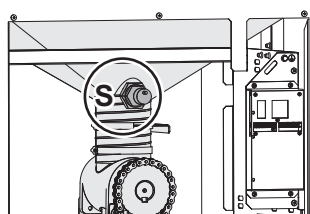


From the front

- Remember the settings of the scaling and the switch lever at the motor!
- Loosen one **individual** nut [M6] at the threaded rod and unhook the drive.



The illustration shows the KWB Easyfire 1 Type USP V.



Only for the KWB Easyfire 1 Type USP V:

→ Clean the facing surface of the sensor [S].

From the side

→ Unscrew the screws and remove the maintenance cover at the fire shutter.

→ Use your fingers to check the seal and the cleanliness of the shutter.

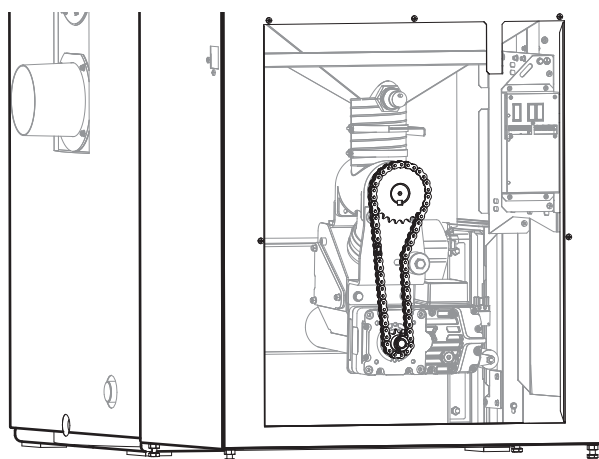
Reinstalling

→ Fasten the threaded rod of the fire shutter.

→ Make sure to restore the initial motor settings! Correct the motor position via the individual screw at the threaded rod, if needed.

→ Close the maintenance cover at the fire shutter and ensure that it is absolutely tight!

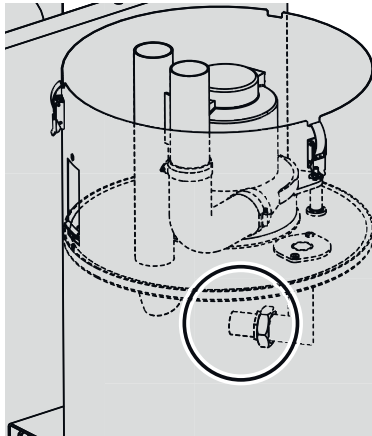
7.9 Cellular wheel sluice drive



→ Lubricate the drive chain of the cellular wheel sluice.

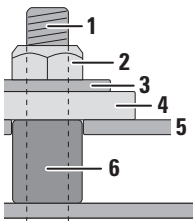
→ Close the two maintenance covers.

7.10 Clean the fill level sensor (option: suction container)



Suction container

- ↳ Dust deposits can interfere with sensor measurements!
- Remove the suction container cover.
- Unscrew the three screw connections to the turbine plate in order to be able to lever out the entire turbine.
- **Carefully** clean the facing surface of the fill level sensor using a brush.
- Check the protective grille under the turbine for permeability.
- Reinsert the turbine plate – when securing, use the spacer rubbers (6), rubber discs (4) and metal washers as shown on the side.



Alternative

- As an alternative to dismantling of the turbine, you can also directly dismantle the sensor including bracket (2 screws) and re-install in the exact same manner.
- Reinstall the cover – make sure it seals tightly!

7.11 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!

7.12 Change battery in the control unit

Technical specifications of the battery	
Dimensions	24.5 mm × 5 mm (ø × height)
Technology	Lithium
Size	CR 2450N (Renata or equivalent)
Voltage	3 V
Capacity	540 mAh

- Shut down the system (**System on/off** [► 31]) = controlled shut down.

- Switch off the system (main switch to "0").
- Pull the plug and secure the system against being switched on again.
- Carefully introduce a flat-head screwdriver (width max. 4 mm) into the slot provided for this purpose on the one narrow side of the enclosure division.
- Now carefully press the screwdriver downwards.
- Repeat this procedure on the other narrow side.
- Then press on the division joint on the side wall with a screwdriver at a point that is approximately 1 cm away from the middle on the long side. This causes the locking mechanism to release on its own because pre-tension has been applied through lifting on both of the narrow sides.
If the locking mechanism does not release with the preceding step, press the side wall of the undershell via a lever movement of the screwdriver to the outside, as shown.
- Repeat the previously described process on the other long side.
- Now pull the upper shell out of the undershell. In this process ensure that the parts do not tilt.
- Change the battery.
- Insert the battery as indicated (correct polarity!)
- Close the control unit (with an audible locking sound).

7.13 Interruption of operation

You should perform the following steps if you do NOT use the heating system for several weeks (e.g. summer break):

- Clean the combustion chamber (vacuum).
- Close all doors.

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 in winter , then have the system emptied completely to protect it against frost.

8 Troubleshooting

8.1 Reacting to alarms

If an alarm occurs it will be displayed in front of a dark background:

```
!!!Warning - Fault!!!
25 Safety thermostat!
Boiler overheating!
```

Acknowledge with Set

Example of an alarm message

- Acknowledge the alarm using the "Set" button.
- Use the dial to scroll to the next alarms.
- Also acknowledge these faults using the "Set" button.
- ↳ After the last alarm, KWB Comfort 3 switches back to the menu last displayed.

Deleting alarms

Alarm menu

```
Display
Report
Statistics
Clear
```

Alarms cleared

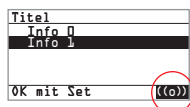
Select option

- Navigate to the menu Main menu >> Alarms >> Rectify and confirm using the "Set" button to delete all alarms.

The fault correction works with most of the alarms, naturally not with all of them!

- ↳ The control shows that at least one additional alarm is present by displaying the alarm icon in the lower right corner.
- Select the "Display" command from the alarm menu.
- The display shows which alarm this is.

If an alarm remains, please contact your KWB Top Service Partner or KWB Customer Service.



8.1.1 Displaying the alarm log

Main menu >> Alarms >> Report

```
Alarm report    No. 48
Alarm No.      18
Date:          11.03.04
Time:          9:40:17
Status:        Cleared
```

The alarm log records the occurrence, acknowledgement and elimination of the last 50 events (occurred, acknowledged, rectified) with time and date. You can scroll through the log entries using the dial.

8.1.2 Displaying the alarm statistics

Main menu >> Alarms >> Statistics

Statistics	
Alarm No.	0
Number:	11
Last occurred:	
on:	25.11.03
at:	12:00:00

The KWB Comfort 3 shows how often the individual alarms have occurred in the alarm statistics. You can scroll through the occurring alarms using the dial.

The alarm list

The following alarm list describes all alarms and contains possible repair attempts.

Alarm 00 – The control system is not completely adjusted

The system will be switched off.

If Alarm 00 occurs directly after switching on, the language selection mask will be displayed after acknowledging the alarm.

→ Notify customer service.

Alarm 01 – The memory module is faulty

It is not possible to save settings.

The system will be switched off.

→ Notify customer service.

Alarm 02 – Electronic defect on the digital inputs

The system will be switched off.

→ Notify customer service.

After rectifying the cause, the alarm is automatically cancelled.

The supply of the digital and analogue inputs on the boiler board has failed.

Possible causes:

- Short circuit or earth contact on the 24V inputs
- Wiring fault

Alarm 03 – The time must be reset

Power supply and buffer battery have failed

The batteries in the boiler control unit can supply the board with electrical voltage for approximately 1 year. If the system subsequently fails, you will be asked at the next startup to store time and date again:

Main menu >> **Date/Time [► 44]**

→ Acknowledge the alarm.

Alarm 04 – The maintenance interval has elapsed. Notify customer service.

→ Notify customer service.

The interval runs out after 1,500 full load hours.

The interval runs out after 3,000 full load hours.

By pressing the **Set** button, the alarm is suppressed until the next 100 hour jump (e.g. 1600, 1700 hrs.).

Alarm 05 – Safety thermostat! Boiler overheating!

The system will be switched off.

When an operating temperature of up to 95 °C is reached, the safety thermostat (more precisely: safety temperature limiter "STL") is triggered.

Reaction to Alarm 05

→ Perform a visual inspection of the system.

→ Let the boiler cool.

→ Reset thermostat: Screw off the black cap on the side cladding and press the head below it with a pin until you hear a clicking sound.

→ Observe the boiler for a longer period of time!

Power failure, power cut-off

→ Observe the boiler for a longer period of time!

The boiler is running under full load at high set-point temperatures and the heat dissipation suddenly stops.

→ Notify customer service.

Notify your system builder/installer/SHK:

- The pressure drops in the heating system.
- The boiler circuit pump is defective and cannot dissipate the heat.

Alarm 07 – The ignition does not function!

The system was not able to ignite the fuel on the burner plate despite several attempts.

Fuel missing or of poor quality

→ Is the burner plate filled?

→ Check the fuel supply.

Interruptions in the fuel feed

→ Check the fill level sensor and clean it, if required.

↳ see section: **Clean the fill level sensor (option: suction container)** [► 63].

Too much ash in the combustion chamber

Causes

- Ash tray is overfilled.
- Revolving grate (optional) has failed or is configured incorrectly
- Fuel is unsuitable

**WARNING****Deflagration risk when restarting**

→ Before restarting, check the combustion chamber: Remove all pellets from the burner plate!

→ Empty the ash tray.

→ Check whether the revolving grate moves smoothly (optional).

Ignition set incorrectly or defective

→ Notify customer service.

Alarm 08 – The fuel storage bunker is empty! Please refill!

The system will be switched off.

Rectify the error, **before** you acknowledge the alarm!

No fuel

→ Check the fuel supply!

Alarm 09 – Flue-gas sensor values not plausible!

The system will be switched off.

Temperature values that rise or fall to rapidly indicate a sensor defect.

→ Notify customer service.

Alarm 10 – The return flow boost does not function!

The return flow temperature does NOT reach the set-point value.

→ Notify customer service.

Return flow boost (mixer motor, valve drive) is poorly adjusted or defective

→ Notify your system integrator/installer/SHK.

Sensor is defective.

→ Notify customer service.

Alarm 12 – Fire shutter does not open!

The system will be switched off.

The fire shutter cannot open.

The shutter has a brief malfunction

→ Check the operation of the drive by switching the system off and then on via the **main switch**.

→ If the fault occurs regularly, please notify customer service.

Notify customer service:

- **The fire shutter is blocked.**
- **The end switch of the fire shutter is defective.**
- **The motor of the fire shutter is defective.**

Alarm 14 – The electronics have a temperature of 70 °C!

The temperature in the interior of the electronics (boiler board) has exceeded 70 °C.

The system will be switched off.

→ Notify customer service.

Alarm 15 – The flue-gas sensor is missing or is defective!

The system will be switched off.

Defective sensor or sensor cable

→ If the fault occurs regularly, please notify customer service.

Alarm 16 – The flue-gas sensor cable is missing or is defective!

The system will be switched off.

Defective sensor or sensor cable

→ Notify customer service.

Alarm 17 – The boiler sensor is missing or is defective!

The system will be switched off.

Defective sensor or sensor cable

→ Notify customer service.

Alarm 18 – Fire shutter does not close



WARNING

Danger of backfire

If the fire shutter cannot be tightly closed, an increased risk of burnback exists.

→ Keep the heating system and the complete conveyor system under constant watch!

The system will be switched off.

The fire shutter cannot be closed.

→ Switch off the system using the main switch and switch it on again.

→ If the fault occurs regularly, please notify customer service.

Notify customer service:

- Foreign object has jammed (in the shaft or between housing and fire shutter).
- Container is overfilled.
- End switch is defective.

Alarm 19 – The boiler door is open

The system detects via a door contact switch that the door to the combustion chamber is open.

Combustion is stopped, the heat management continues to run.

Alarm 20 – The stoker channel sensor is missing or defective!

The system will be switched off.

Defective sensor or sensor cable

Check the sensor and its cabling.

→ Notify customer service.

Alarm 21 – Configuration error! The configuration last saved is active!

→ Notify customer service.

Alarm 22 – Flue-gas temperature too high during operation

The system will be switched off.

The measured flue-gas temperature is too high

The flue-gas temperature has exceeded the set maximum value.

→ Notify customer service.

Alarm 23 – The fuel storage container is empty!

Rectify the error, **before** you acknowledge the alarm.

No fuel

There is no fuel in the container.

Alarm 24 – Error on the sample probes system

The control was NOT able to reach the switch unit or the activated probe in the specified amount of time.

→ Notify customer service.

Alarm 25 – Main drive speed too low!

Speed of the main drive was below the limit value for 3 seconds.

→ Notify customer service.

Alarm 26 – Main drive speed too high

Speed of the main drive was too high for 5 seconds.

→ Notify customer service.

Alarm 27 – Boiler temperature not plausible!

Temperature values that rise or fall too rapidly indicate a sensor defect.

→ Notify customer service.

Alarm 28 – The battery voltage is too low

This alarm is displayed when the battery voltage falls under 1.5 V. It disappears automatically if the voltage rises above 1.55 V.

This alarm is only displayed and also leads to a display of the group fault, but has no further consequences.

→ Replace the battery. **Change battery in the control unit** [► 63].

→ Set the time. **Date / Time** [► 44].

Alarm 30 – The forward flow sensor of heating circuit 0 is missing or defective!

Note: Corresponding alarm messages to the heating circuits 1 to 34 are output as Alarm 33 to 134.

Defective sensor or sensor cable

→ Check the sensor and its cabling.

→ If the fault occurs regularly, please notify customer service.

Alarm 31 – The room sensor of heating circuit 0 is missing or defective!

Note: Corresponding alarm messages to the heating circuits 1 to 34 are output as Alarm 33 to 134.

Defective sensor or sensor cable

→ Check the sensor and its cabling.

→ If the fault occurs regularly, please notify customer service.

Alarm 32 – The outdoor sensor of heating circuit 0 is missing or defective!

Note: Corresponding alarm messages to the heating circuits 1 to 34 are output as Alarm 33 to 134.

Defective sensor or sensor cable

→ Check the sensor and its cabling.

→ If the fault occurs regularly, please notify customer service.

Alarms 33 to 134

All alarms from 33 to 134 pertain to faulty cabling or defective sensors (sensors for room, outdoor or forward flow temperature) for the heating circuits 1 to 34.

Defective sensor or sensor cable

→ Check the named sensor and its cabling.

→ If the fault occurs regularly, please notify customer service.

Alarms 135 to 151 – The sensor from the DHWC x is missing or defective!

The KWB Comfort 3 can manage a maximum of 17 DHWCs: The Alarm 135 pertains to the DHWC 0, the Alarm 151 pertains to the DHWC 16. However, the system will continue to run.

Defective sensor or sensor cable

→ Notify customer service.

Alarms 152 to 185 – The sensor 1 (2) from the buffer x is missing or defective!

The KWB Comfort 3 can manage 2 sensors each in a maximum of 17 buffers: The Alarm 152 pertains to the sensor 1 in buffer 0, the Alarm 153 pertains to the sensor 2 in in buffer 0 ... and the Alarm 185 pertains to the sensor 2 in buffer 16. However, the system continues to run.

Defective sensor or sensor cable

→ Notify customer service.

Alarm 186 – Network error on the boiler module!

The system will be switched off.

Communication problem between boiler control unit and boiler board

→ Notify customer service.

Alarms 188 to 203 – Network error on the heating circuit module x!

The KWB Comfort 3 can manage a maximum of 16 heating circuit expansion modules: Alarm 188 pertains to the module 1, Alarm 203 pertains to the module 16.

The system will continue to run.

Communication problem between boiler control unit and heating circuit expansion module

→ Check the voltage supply of the heating circuit expansion module.

→ Notify customer service.

Alarms 204 to 237 – Network error on the digital remote control unit x!

The KWB Comfort 3 can manage a maximum of 34 digital remote control units: The Alarm 204 pertains to the device 1, the Alarm 237 pertains to the device 34. However, the system continues to run.

Communication problem between boiler control unit and one of the digital remote control devices.

→ Notify customer service.

Alarm 238 – Fault in the heating circuit network

The system will continue to run.

After rectifying the cause, the alarm is automatically cancelled.

→ Notify customer service.

Alarm 239 – The boiler sensor on the second boiler is missing or is defective!

Defective sensor or sensor cable

→ Check the sensor for boiler temperature on the second boiler or its cabling according to specification by the manufacturer.

→ If the fault occurs regularly, please notify customer service.

Alarm 240 – The fuel storage will soon be empty!

This alarm is triggered when the sum of all unsuccessful suction processes exceeds a certain value (only for KWB suction conveyance with sampling probes):

- With 3 suction probes: 3 unsuccessful extraction processes
- With 2 suction probes: 2 unsuccessful extraction processes
- With 1 suction probe: 1 unsuccessful extraction process

The system triggers a message, but continues to run.

Low fuel

→ Check the fill level in the storage room.

Keep an eye on bridging above the sampling probes.

Alarm 248 – The maintenance interval has elapsed.

This reminder is triggered after a freely-selectable number of full-load hours. The interval starts over again after changes to the interval time and the "Number of maintenance procedures", in the **Customer service** [► 45] menu.

The alarm triggers an SMS, but the system remains in operation.

This interval is deactivated in the factory setting.

Alarm 249 – The chimney sweep function is active

The rocker switch "Measuring mode" was activated

Follow the instructions in section Exhaust gas measurements in the Maintenance instructions.

Alarm 250 – PCB revision and system number are not compatible

The system will be switched off.

Compatibility problem between board and system

This alarm may have one of the following causes:

- Compatibility problem between board and system
 - Series production status set incorrectly (see section Serial number)
- Notify customer service.

Alarm 251 – The emergency stop switch is pressed!

The emergency-stop stop switch is pressed

Determine why this switch ("Emergency-stop switch" according to TRVB) was pressed:

- If the system is OK, press the emergency-stop switch once more.

In all other cases:

- Notify customer service.

No emergency-stop switch connected – Danger!

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

Alarm 252 – The temperature in the stoker trough is too high!

The temperature in the stoker trough has exceeded the limit value.

The system will be switched off.

Notify customer service:

- **Fire shutter does not seal.**
- **Stoker bearing is defective.**
 - The stoker bearing must be replaced immediately.
- **Stoker does not seal.**
 - The stoker leaks in the area of the emergency fire extinguisher system (corrosion?)
- **The light barrier in the combustion chamber is occupied.**
- **The temperature sensor in the stoker channel is defective.**

Alarm 253 – Speed of the PA fan is too low!

The minimum speed of the primary air fan was undershot.

- Check the cabling of the primary air fan (PA)
- If the fault occurs regularly, please notify customer service.

Alarm 254 – The speed of the induced draught fan is too low!

The speed of the induced-draught fan has dropped below the minimum.

The speed of the induced draft has been under 60 revolutions per minute since 3 minutes ago.

- Check the cabling of the induced draught fan
- If the fault occurs regularly, please notify customer service.

Alarm 255 – Error GSM module

Poor reception

- Check the reception in the heating room.

Notify customer service:

- **Communication with GSM module is interrupted.**
 - Communication with the GSM module could NOT be established, however, the system continues to run.
- **Communication path is interrupted.**
 - GSM module is not supplied with power.
- **Incorrect configuration**

9 Appendix

Please also see

- 📄 Declaration of Conformity (► 77)
- 📄 Technical data table (► 78)

9.1 The Clean Air Act 1993 and Smoke Control Areas

Under the Clean Air Act local authorities may declare the whole or part of the district of the authority to be a smoke control area. It is an offence to emit smoke from a chimney of a building, from a furnace or from any fixed boiler if located in a designated smoke control area. It is also an offence to acquire an "unauthorised fuel" for use within a smoke control area unless it is used in an "exempt" appliance ("exempted" from the controls which generally apply in the smoke control area).

In England appliances are exempted by publication on a list by the Secretary of State in accordance with changes made to sections 20 and 21 of the Clean Air Act 1993 by section 15 of the Deregulation Act 2015. Similarly in Scotland appliances are exempted by publication on a list by Scottish Ministers under section 50 of the Regulatory Reform (Scotland) Act 2014.

In Wales and Northern Ireland these are authorised by regulations made by Welsh Ministers and by the Department of the Environment respectively.

Further information on the requirements of the Clean Air Act can be found here:

<https://www.gov.uk/smoke-control-area-rules>

Your local authority is responsible for implementing the Clean Air Act 1993 including designation and supervision of smoke control areas and you can contact them for details of Clean Air Act requirements.

- The KWB Easyfire 1 USP 10, 15 and 20 have been recommended as suitable for use in smoke control areas when burning wood pellet.

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 Easyfire 1 and KWB Easyfire 1 Plus 10–20 kW

Comprising the models: USP V/GS 10 / 15 / 20

in combination with conveyor systems

Pellet Stirrer Plus with suction conveyor, KWB Pellet Big Bag with suction conveyor, conveyor screw with suction conveyor, KWB Pellet Box with suction conveyor, sampling probes with suction conveyor, 1-point sampling probes with suction conveyor, buried tank with suction conveyor

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 60335-2-102:2016-11-01,
ÖNORM EN ISO 12100:2013-10-15

KWB – Kraft und Wärme aus
Biomasse GmbH

St. Margarethen an der Raab
18. 09. 2018



Authorised representative for
the compilation of the technical
documents

Place,
Date

Helmut Matschnig, Managing
Director

USP V/GS - 15.10.2019	Unit	10	15 ***	20
Rated power	kW	10,4	15,0	20,0
Partial load	kW	3,1	4,5	5,6
Boiler efficiency at rated power	%	91,0	91,7	92,5
Boiler efficiency at partial load	%	90,7	90,4	90,1
Fuel thermal output at rated load	kW	11,4	16,5	21,1
Fuel thermal output at partial load	kW	3,4	4,9	6,2
Boiler class according to EN 303-5:2012	–	5	5	5
EU Energylabel	–	A+	A+	A+
Water side				
Water content	l	66	66	66
	inch	1	1	1
Water connection, forward/return flow (internal thread)	mm	25,4	25,4	25,4
	DN	25	25	25
	inch	1/2	1/2	1/2
Water connection for filling and/or emptying (internal thread)	mm	12,7	12,7	12,7
Thermal safety valve: no	–	ü	ü	ü
	mbar	4,2	10,0	15,8
Water-side resistance at 10 K	Pa	420	1000	1580
	mbar	1,0	2,6	4,2
Water-side resistance at 20 K	Pa	100	260	420
Boiler-entry temperature (for installation of an external return-flow boost device)	°C	50	50	50
Working temperature/operating temperature	°C	60–80	60–80	60–80
Maximum permitted temperature	°C	110	110	110
Maximum operating pressure	bar	3,5	3,5	3,5
Volume flow at spread 10 K	m³/h	0,88	1,31	1,75
Volume flow at spread 15 K	m³/h	0,58	0,88	1,17
Volume flow at spread 20 K	m³/h	0,44	0,66	0,88
Exhaust-gas side (for chimney calculation)				
Combustion chamber temperature	°C	900–1100	900–1100	900–1100
Required draft at rated power/partial load	mbar	0,07 0,05	0,07 0,05	0,07 0,05
Suction available	–	✓	✓	✓
Exhaust-gas temperature at rated power	°C	140	160	160
Exhaust-gas temp. Partial load	°C	90	100	100
Exhaust-gas mass flow at rated power	kg/s	0,006	0,009	0,012
Exhaust-gas mass flow at partial load	kg/s	0,003	0,004	0,004
Exhaust-gas volume at rated power	Nm³/h	17,0	25,5	34,0
Exhaust-gas volume at partial load	Nm³/h	8,7	10,4	12,0
Exhaust-gas connection height boiler side	mm	635	635	635
Exhaust-gas pipe diameter	mm	130	130	130
Incline of the smoke-pipe	°	≥ 3	≥ 3	≥ 3
Chimney diameter (approx. values)	mm	140	140	140
Chimney design: Moisture-resistant	–	✓	✓	✓
Fuel: Pellets of pure wood in accordance with ISO 17225-2				
Calorific value	MJ/kg	16,5	16,5	16,5
Density	kg/m³	≥ 600	≥ 600	≥ 600
Water content	% by weight	≤ 10	≤ 10	≤ 10
Ash content	% by weight	≤ 0,7	≤ 0,7	≤ 0,7
Length	mm	3,15–40	3,15–40	3,15–40
Diameter	mm	6±1	6±1	6±1
Dust proportion before loading	% by weight	≤ 1	≤ 1	≤ 1
Raw material: Pure wood, bark proportion <15 %	–	–	–	–
Ash				
Ash container volume	l	25	25	25
Ash container filled	kg	~ 25	~ 25	~ 25
Electrical system				
Connection: CEE 3-pole	–	230V, 1~ 50Hz, C13 A	230V, 1~ 50Hz, C13 A	230V, 1~ 50Hz, C13 A
Connected power USP V	W	545	545	545
Connected power USP GS	W	2347	2347	2347
Storage container type USP V				
Contents storage container for type USP V	l	200	200	200
Suction conveyor type USP GS				
Max. suction length	m	10	10	10
Max. suction length	m	4	4	4
Max. suction head	m	3,5	3,5	3,5
Contents storage container for type USP GS	l	15	15	15

USP V/GS - 15.10.2019	Unit	10	15 ***	20
Weights				
Boiler weight USP V	kg	323	323	323
Boiler weight USP GS	kg	349	349	349
Emissions according to test report				
Test report no.	–	BLT-006/06	***	BLT-013/08
O ₂ content rated power	Vol.-%	11,2	8,9	6,7
O ₂ content partial load	Vol.-%	13,4	12,5	11,5
CO ₂ content rated power	Vol.-%	9,4	11,6	13,8
CO ₂ content partial load	Vol.-%	7,3	8,2	9,1
Noise emissions				
Normal operating noise at rated power	dB(A)	< 70	< 70	< 70
Reference 10 % O₂ dry (EN 303-5)				
CO at rated power	mg/Nm ³	50	42	33
CO at partial load	mg/Nm ³	201	142	82
NOx at rated power	mg/Nm ³	166	153	139
NOx at partial load	mg/Nm ³	166	143	120
OGC at rated power	mg/Nm ³	<1	<1	<1
OGC at partial load	mg/Nm ³	<4	<3	<1
Dust at rated power	mg/Nm ³	21	24	26
Dust at partial load	mg/Nm ³	20	22	23
Reference 11 % O₂ dry				
CO at rated power	mg/Nm ³	45	38	30
CO at partial load	mg/Nm ³	183	129	75
NOx at rated power	mg/Nm ³	151	139	126
NOx at partial load	mg/Nm ³	151	130	109
OGC at rated power	mg/Nm ³	<1	<1	<1
OGC at partial load	mg/Nm ³	<4	<2	<1
Dust at rated power	mg/Nm ³	19	21	24
Dust at partial load	mg/Nm ³	18	20	21
Reference 13 % O₂ dry (FJ-BLT)				
CO at rated power	mg/Nm ³	36	30	24
CO at partial load	mg/Nm ³	146	105	60
NOx at rated power	mg/Nm ³	121	111	101
NOx at partial load	mg/Nm ³	121	104	87
OGC at rated power	mg/Nm ³	< 1	< 1	< 1
OGC at partial load	mg/Nm ³	<3	<1	< 1
Dust at rated power	mg/Nm ³	15	15	19
Dust at partial load	mg/Nm ³	15	15	17
In accordance with § 15a-BVG Austria				
CO at rated power	mg/MJ	24	20	16
CO at partial load	mg/MJ	97	68	39
NOx at rated power	mg/MJ	80	73	66
NOx at partial load	mg/MJ	80	69	58
OGC at rated power	mg/MJ	< 1	< 2	< 1
OGC at partial load	mg/MJ	<2	<2	< 1
Dust at rated power	mg/MJ	10	11	12
Dust at partial load	mg/MJ	10	11	11

*** ... Drawing inspection, values for intermediate sizes interpolated

FJ-BLT ... Franciso Josephinum Wieselburg – Biomass Logistic Technology

mg/Nm³ ... Milligram per standard cubic meter (1 Nm³ under 1,013 hectopascal at 0 °C)

Glossary

Charging

... is the charging "up" of buffer or boiler with energy (with hot water)

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.

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.

Return flow temperature

Temperature of the heating water when entering the boiler, i.e. after cycling through the radiators, under-floor heating etc.

V

Volt is the unit for electrical potential.

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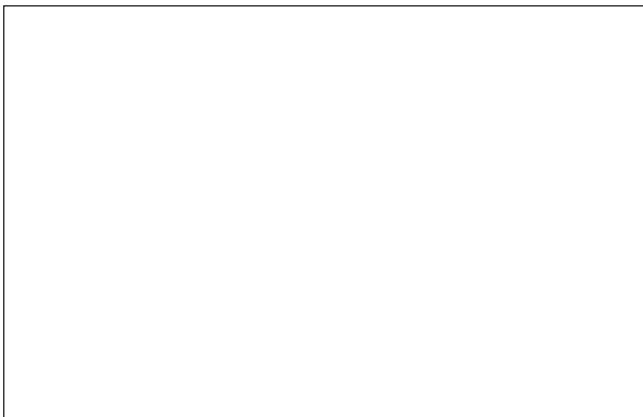
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