



INSTALLATION

KWB Easyfire

EF2



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Foreword

About this manual

This manual contains all the required information for installation by technicians. 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!

Explanation of the Formatting

Work steps

We use different symbols for the preconditions, the actual work steps and the result:

↘ Precondition

→ Work step

↳ Result

Page texts

The keywords to the left of the text column assist you in immediately detecting the content of the text paragraph.

Cross references

A reference to another section of this document can be recognized with an arrow and the page number in brackets. Example: **About this manual [► 6]**

Legal

Intellectual Property

© 2021 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, maintenance and repair of KWB systems must, without exception, be performed as described in the instructions.

KWB dust filter separate dust.

Only the fuels specified in the Operating instructions in Section Intended fuels may be used without exception.

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

Structural measures

NOTE

Establishing the constructional requirements

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

Boiler room requirements

Floor:

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

Customer-provided fire protection

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

Fire extinguisher

Lighting, electrical system

- NO storage of flammable agents in the boiler room.
- NO direct connection to rooms in which flammable gases or liquids are stored (Garage, storeroom etc).
- Place a portable fire extinguisher of the specified size (at least 6 kg fill weight EN 3) outside of the boiler room next to the boiler room door.
- Make sure that permanently installed lighting and an electrical supply line to the heating system are available.
- Place the light switch and the **labelled** emergency stop switch ("Stop Escape" as per TRVB H118) of the heating system at an easily accessible location outside of the boiler room next to the boiler room door.
- Leave sufficient reserve cable in the boiler room in case you wish to connect the boiler with other bus participants.

Ventilation

- Two air vents must be installed; one close to the ground and one close to the ceiling; the air intake opening must lead directly into the open. If other rooms must be crossed to do this, this air duct must have an envelope according to EI 90 (EN 13501)!
- The size of the non-closing opening is dependent on the rated power of the heating system: Calculate the opening with 5 cm² per kW, but no less than 400 cm².
- Fit a protective grille with a non-flammable mesh width < 5 mm on the outside of ventilation openings into the open.
- When installing the openings and air ducts, you must ensure that no outside and weather-related influences (leaves, snow, ...) impair the air flow.
- Do not use any chlorine-containing cleaning or operating agents (e.g. chlorine gas plant for swimming pools) or hydrogen halides in the boiler room.
- Keep all boiler air intake openings free of dust.
- If not specified otherwise in the applicable provisions regarding the structural equipment of the boiler room, the following standards apply for the design and dimensioning of the air ducts:

Note on standards:

ÖNORM H 5170 – Construction and fire-protection requirements

Frost protection

- Provide frost protection for all water lines and district heating pipes.

Room temperature	<ul style="list-style-type: none"> • Ensure a minimum temperature of 10°C in the boiler room as stipulated in EN 12831. Lower temperatures change the lubricating characteristics to an extent that the reliable operation of the drive aggregates would no longer be ensured. • Ensure a maximum temperature of 40 °C.
Safety	<ul style="list-style-type: none"> → Never store flammable materials in the boiler room outside of the heating system container or storage container or hopper. Avoid direct connections to rooms in which flammable gases or liquids (e.g. parking garage) are stored. → No flammable items must be placed on the boiler for drying purposes (e.g. clothing, ...). → The system must be protected against damage from and nesting of animals (rodents, ...).
Protection against rodents and other animals	
Sea level	→ Please contact the manufacturer if the boiler is to be installed at more than 2000 metres above sea level.

Fuel storage room requirements

The structural on-site requirements for the boiler room always also apply to the fuel storage room.

Calculation of storage room size

For the size of the storage room, the following rules of thumb apply for average conditions:

Rules of thumb for a single family home

Fuel		Storage space for 1 year	Consumption for 1 year
Pellets	≤ 10% water content, 6 mm diameter	Inclined floor: = 0.9 m³ x heating load in kW	= 400 kg heating load in kW
		Without inclined floor: = 0.75 m³ x heating load in kW	

Extinguishing devices

Manual extinguishing devices

[HLE]

A manual extinguishing device [HLE] must be installed in fuel storages **larger than 50 m³**:

- Frost-proof
- Connected to a pressurized water line
- Piping at least 3/4" or DN 20.
- Above the conveyor channel conduit in the fuel storage
- Label the HLE armature as "Extinguishing device fuel storage room."

Automatic extinguishing devices

[SLE]

If there is a firewall to the living quarters, an automatic extinguishing device [SLE] is required. In this case, please contact KWB.

Electrical installation



→ Electrical installations are only permitted in the fuel storage room in explosion-protected versions - recognizable by the "Ex" label (see left).

The structural on-site requirements for the boiler room always also apply to the fuel storage room.



DANGER

Dust explosion due to open electrical installation

- To avoid ignition sources, do NOT install switches, outlets or junction boxes in the fuel storage room.
- Always avoid electrical installations in the fuel storage room.
- If this is not possible, these must be designed with explosion protection.

Dust-tight, pressure-resistant

If a pumping truck is used to fill the fuel storage room with wood chips or pellets, it is necessary to seal the fuel storage such that it is dust-tight: Mount the hose couplings and pipelines supplied by KWB which must be earthed.

The pumped-in air is extracted via a second pipeline, which is also earthed. The walls, windows and doors must withstand the overpressure created during the filling process.

Ensure correct pellet storage

Protect the pellets

An optimal storage room ensures that the pellets are protected during storage.

- NEVER install the filling pipelines with 90° bends as pellets may break due to the quick change in direction.
- An ricochet protection mat across from the injection connectors slows the flight of the pellets.
- Protection against water and humidity, dust-tight
- ÖNORM M 7137, among other things, prescribes fire-resistant walls of the type EI 90: Wall thickness must be at least 12 cm (or 17 cm hollow blocks) plastered on both sides or 10 cm concrete.

Fire protection

Inject pellets

- Access road must be >3m wide and 4 m high, permissible total weight 24 t
- Conveyance height <6 m
- Filling line <30 m
- Injection connector near outer wall and easily accessible

Injection connector

The term "injection connector" comprises both injector as well as extractor nozzles.

Placement of injection connector

- Place the injection connector in the middle of the room
- Place the extraction connector in at least 50 cm distance from the injection connector.
- Place both connectors ≥50 cm from the side walls and ≥20 cm from the ceiling.
- The injection and extraction connectors must be earthed!
- Shorten the extraction connector in the storage room as much as possible. The injection connector should clearly project into the room.

Injection connector with storage room ventilation

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?
 - The cover should only be fastened with suitable special tools: Turn to the stop (=torque approximately 10 Nm).
Only four key notches ensure even pressure is exerted on the seal - if there are only two key notches, leaks may occur due to uneven pressure on the seal!

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.

1 Safety

1.1 Please note

1.1.1 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!

1.1.2 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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1.1.3 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!
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1.1.4 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://partnetnet.kwb.net/>

1.1.5 Qualification of the installation personnel



CAUTION

Assembly and installation by unqualified personnel may lead to material damage and injuries!

- The following applies for assembly and installation:
 - Comply with the directions and notes in the instructions.
 - Have the work on the system only carried out by personnel with appropriate technical skills.



Assembly, installation, commissioning and maintenance must only be carried out by qualified persons:

- Heating engineers / building services engineers
- Electrical installation engineer
- KWB Customer Service

The installation personnel must have read and understood the directions in the documentation.

1.1.6 Protective equipment of the assembly personnel

To the extent necessary or required by regulations, personal protective equipment must be used. Such obligations may also refer to the use of hazardous materials, for example, or the wearing of personal protective equipment.



During transport, installation and assembly:

- Suitable work clothes
- Protective gloves
- Safety footwear (at least protection class S1P)

1.2 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
	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 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

1.3 Stickers

NOTE

Hazard due to missing safety sticker

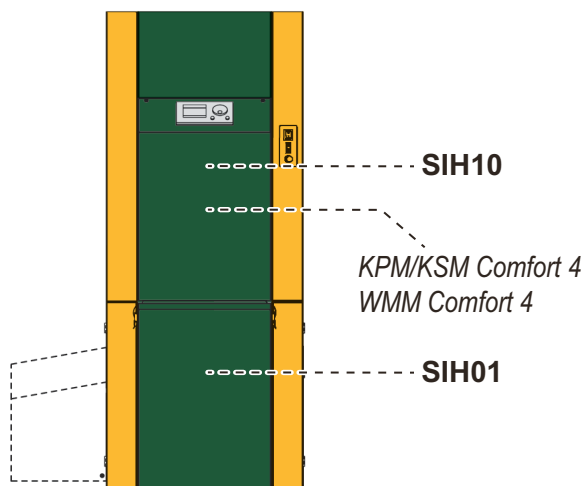
- ↳ Safety stickers save lives! They protect you against injuries and prevent damage to property and equipment!
- Ensure the correct use of the heating system: Attach ALL stickers as indicated in the instructions!
- Give the unused stickers to the operator of the heating system and instruct the operator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

→ Affix the stickers.

27-2000226 – Languages: DE | EN | FR

27-2000227 – Languages: ES | IT | SL

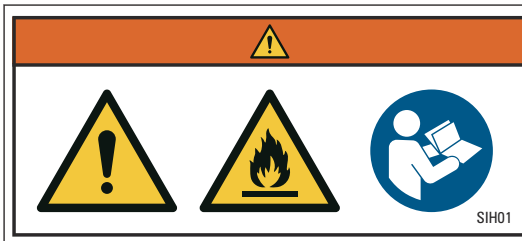
1.3.1 Stickers on the front part



→ Affix the sticker SIH10 to the control cabinet cover plate so it is clearly visible.

→ Affix the sticker SIH01 to the combustion chamber door so it is clearly visible.

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



Warning - Risk of burnback!

Warning - Flammable materials!

Follow the instructions!

Close all combustion chamber doors and maintenance openings before switching on the system!

Attach the sticker with the plug assignment of the KWB Comfort 4 on the inside of the control cabinet cover plate so it is clearly visible:

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

100	Versorgung 230/400 V _{AC} / Power supply 230/400 V _{AC} / Alimentation 230/400 V _{AC}
101	Abgehende Versorgung Zusatzplatine / Outgoing power supply additional board / Sortie alimentation carte supplémentaire
102	Saugturbine / Suction turbine / Turbine d'aspiration
104	Förder-/Trommelmotor (Pin 1-2-3) & Hauptantrieb (Pin 4-5-6) / Conveyor/drum motor (pin 1-2-3) and main drive (pin 4-5-6) / Moteur d'extraction/Moteur à tambour (broches 1-2-3) et entraînement principal (broches 4-5-6)
108	Mischer od. Ventil RLA (Pin 1-2-4-7) / Mixer or valve RFB (pin 1-2-4-7) / Vanne mélangeuse ou vanne MTR (broches 1-2-4-7)
109	Wascheinrichtung (wie 122, aber Stecker) / Washing unit (as 122, but plug) / Dispositif de lavage (comme 122, mais connecteur)
110	Drehmotor / Revolving grate (motor) / Grille rotative moteur
111	STB / STL / STB
112	Zündung Pellets / Ignition, pellets / Amorçage des granulés
113	Wärmtauscher-Reinigung (Pin 1-2-3) & Saugzug (Pin 4-5-6) / Heat exchanger cleaning (pin 1-2-3) & induced draught (pin 4-5-6) / Nettoyage de l'échangeur thermique (broches 1-2-3) et tirage (broches 4-5-6)
115	Gebläse Verbrennungsluft (Pin 1-2-3) / Fan, combustion air (pin 1-2-3) / Ventilateur air de combustion (broches 1-2-3)
120	Mischer RLA / Mixer return flow boost / Mélang. MTR
121	Kessel- od. Pufferladepumpe / Boiler or buffer charging pump / Pompe d'alimentation de chaudière ou de ballon tampon
122	Wascheinrichtung (nur bei EF2 CC4) / Washing unit (only for EF2 CC4) / Dispositif de lavage (uniquement pour EF2 CC4)
123	Zubringer- od. Ladepumpe Puffer 0 / Supply or charge pump Buffer 0 / Pompe d'alimentation ou de charge ballon tampon 0
124	Multifunktionsausgang 3 / Multi-function output 3 / Sortie multifonctions 3
125	Multifunktionsausgang 1 / Multi-function output 1 / Sortie multifonctions 1
126	Multifunktionsausgang 4 / Multi-function output 4 / Sortie multifonctions 4
127	Multifunktionsausgang 2 / Multi-function output 2 / Sortie multifonctions 2

128	Reserve Sicherheits-Eingang, z.B. Wassermangel-Sicherung / Reserve safety input, e.g. low water pressure switch / Entrée de sécurité de réserve, par ex. sécurité manque d'eau
129	Not-Halt / Emergency stop / Arrêt d'urgence
130	Schalter Aschebehälter entfernt (Pin 1-3) / Ash container switch removed (pin 1-3) / Commutateur bac à cendres retiré (broches 1-3)
131	Sensor Überfüllschutz-Deckel Förderkanal (Muss bei EF2 und CF2 gebügelt bleiben!) / Sensor, overfill protection cover conveyor channel (Must remain bridged in EF2 and CF2) / Capteur couvercle de protection de trop-plein conduite d'alimentation (doit rester shunté avec EF2 et CF2)
132	TÜB Lageraum (gebügelt oder verwendet) / TMFS storage room (bridged or used) / CTC local de stockage (shuntée ou utilisée)
133	CO-Sensor / CO sensor / Capteur CO
134	Hausbus [OUT] / House bus [OUT] / Bus domestique [OUT]
135	Kesselbus [OUT] / Boiler bus [OUT] / Bus chaudière [OUT]
136	Abgehende Busverbindung Zusatzplatine / Outgoing bus connection additional board / Sortie liaison bus carte supplémentaire
137	Kessel BGE 24 V _{AC} / Boiler BGE 24 V _{AC} / Chaudière MCE 24 V _{AC}

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

200	Lambdasonde / Lambda probe / Sonde lambda
202	Füllstand 1 (Pin 2-5-8) / Fill level 1 (pin 2-5-8) / Niveau de remplissage 1 (broches 2-5-8)
203	Temp. schutzschalter Fördersystem (Pin 2-7) od. Trommelposition (Pin 2-7) / Temp. protection switch conveyor system (pin 2-7) or drum position (pin 2-7) / Interrupteur de protection contre la surchauffe du système d'alimentation (broches 2-7) ou position du tambour (broches 2-7)
204	Taste Messbetrieb / Switch, measuring mode / Touche d'activation de la mesure
209	Hauptantrieb Drehzahl / Main drive, speed / Vitesse entraînement principal
210	Verbrennungsluft Drehzahl (Pin 1-2-3) / Combustion air speed (pin 1-2-3) / Vitesse de l'air de combustion (broches 1-2-3)
211	Saugzug Drehzahl (Pin 4-5-6) / Induced draught fan speed (pin 4-5-6) / Vitesse du tirage (broches 4-5-6)
215	Unterdruck-Messdose 0–5 V _{DC} / Negative pressure sensor 0–5 V _{DC} / Boite dynamométrique de dépressurisation 0–5 V _{DC}

217	Rücklauf-Temp. / Return flow temp. / Temp. de retour
218	Kesselvorlauf-Temp. / Boiler forward flow temp. / Temp. de départ de la chaudière
220	Flamm-Temperatur / Flame temperature / Température de la flamme
230	Freigabe Verbrennung (Ext. 1) / Release combustion (ext.1) / Activation combustion (Ext. 1)
231	Multifunktionaler Eingang (Ext. 2) z.B. Heizen auf SollTemp. 2 / Multi-function input (ext. 2) e.g. heating to setpoint 2 / Entrée multifonction (Ext. 2) par ex. le chauffage à la temp. référence 2
232	Freigabe d. Rauchsauger (gebügelt ausgeliefert) / Released by smoke extractor (delivered bridged) / Activation via l'absorbeur de fumées (livré shunté)
234	Externe Vorgabe SOLL-Kessel-Temp. od. Brennerleistung / External specification SETPOINT boiler temp. or burner output / Consigne externe temp. de CONSIGNE chaudière ou puissance du brûleur
235	Kesselpumpe PWM 1 / Boiler pump PWM 1 / MLI pompe de la chaudière 1
237	Außen-Temp. / Outside temp. / Temp. extérieure
238	Puffer-Temp. 1 / Buffer temp. 1 / Temp. ballon tampon 1
239	Puffer-Temp. 2 / Buffer temp. 2 / Temp. ballon tampon 2
240	Puffer-Temp. 3 / Buffer temp. 3 / Temp. ballon tampon 3
241	Puffer-Temp. 4 / Buffer temp. 4 / Temp. ballon tampon 4
242	Puffer-Temp. 5 / Buffer temp. 5 / Temp. ballon tampon 5
243	Versorgung 24 V _{DC} GSM-Modul / Power supply 24 V _{DC} GSM module / Alimentation 24 V _{DC} module GSM
247	Kesselbus [IN] KPM #135 / Boiler bus [IN] KPM #135 / Bus chaudière [IN] KPM #135
248	Kesselbus [OUT] / Boiler bus [OUT] / Bus chaudière [OUT]
250	RS232 GSM-Modul / RS232 GSM module / Module GSM RS232

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

KPM/KSM EF2

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

**Stecker Wärmemanagement-Modul [WMM]
Plug, heat management module [WMM]
Connecteur module de gestion thermique [WMM]**

300	Versorgung 230 V _{AC} / Supply 230 V _{AC} / Alimentation 230 V _{AC}
301	Pumpe/Ventil Zweitwärmequelle / Pump/valve for secondary heating source / Pompe/vanne seconde source de chaleur
302	Solarpumpe 2 / Umschaltventil / Solar pump 2 / switchover valve / Pompe solaire 2/vanne de commutation
303	Solarpumpe / Solar pump / Pompe solaire
304	Zirkulationspumpe / Circulation pump / Pompe de circulation
305	Brauchwasserpumpe / DHW pump / Pompe du chauffe-eau
306	Zubringer- od. Pufferladepumpe / Supply or buffer charging pump / Pompe d'alimentation ou de charge
307	Mischer HK 2 / Mixer HC 2 / Mélangeur CC 2
308	Pumpe HK 2 / Pump HC 2 / Pompe CC 2
309	Mischer HK 1 / Mixer HC 1 / Mélangeur CC 1
310	Pumpe HK 1 / Pump HC 1 / Pompe CC 1
311	Anforderung Zweitwärmequelle / Secondary heating source request / Demande seconde source de chaleur
320	Zirkulation Taster / Circulation, push button / Touche circulation
322	Freigabe HK 1 / Release HC 1 / Activation CC 1
323	Freigabe HK 2 / Release HC 2 / Activation CC 2
327	Temp. Außen / Temp. outside / Temp. extérieur

328	Temp. Brauchwasserspeicher 1 / Temp. DHWC 1 / Temp. chauffe-eau 1
329	Temp. Zirkulation / Temp. circulation / Temp. circulation
330	Temp. Puffer 1 / Temp. buffer 1 / Temp. ballon tampon 1
331	Temp. Puffer 2 / Temp. buffer 2 / Temp. ballon tampon 2
332	Temp. Puffer 3 / Temp. buffer 3 / Temp. ballon tampon 3
333	Temp. Puffer 4 / Temp. buffer 4 / Temp. ballon tampon 4
334	Temp. Puffer 5 / Temp. buffer 5 / Temp. ballon tampon 5
335	Temp. Raum HK 1 analog / Temp. room HC 1 analogue / Temp. ambiante CC 1 analogique
336	Temp. Raum HK 2 analog / Temp. room HC 2 analogue / Temp. ambiante CC 2 analogique
337	Temp. Vorlauf HK 1 / Temp. forward flow HC 1 / Temp. départ CC 1
338	Temp. Vorlauf HK 2 / Temp. forward flow HC 2 / Temp. départ CC 2
339	Temp. Kollektor / Temp. collector / Temp. capteur
340	Temp. Vorlauf Solar / Temp. forward flow solar / Temp. départ solaire
341	Temp. Brauchwasserspeicher 2 / Temp. DHWC 2 / Temp. chauffe-eau 2
342	Temp. Zweitwärmequelle / Temp. secondary heating source / Temp. seconde source de chaleur
345	Solar Durchfluss- & Temperatursensor (Vortex) / Solar flow & temperature sensor (vortex) / Capteur de température et de débit solaire (Vortex)

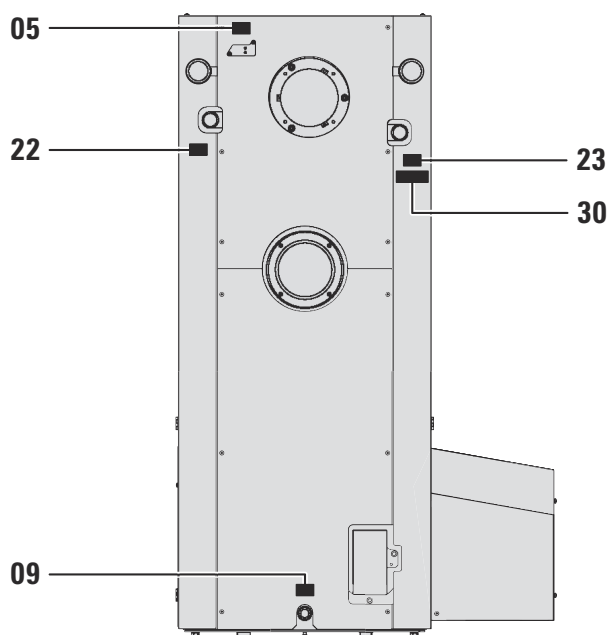
349	Solar PWM Signal Pumpe 1 / Solar PWM signal pump 1 / Signal MLI solaire pompe 1
350	Solar PWM Signal Pumpe 2 / Solar PWM signal pump 2 / Signal MLI solaire pompe 2
360	Hausbus [IN] – bleibt frei, wenn im Kessel verbaut / House bus [IN] – remains open if installed in the boiler / Bus domestique [IN] – reste libre si monté dans la chaudière
361	Hausbus [OUT] – Terminiert (120 Ω) ausgeliefert. Bei Bus-Weiterführung entfernen! / House bus [OUT] – delivered terminated (120 Ω). Remove in case of bus extension! / Bus domestique [OUT] – livré avec terminaison (120 Ω). Retirer en cas de continuation du bus !
362	Bediengerät 1 / Control unit 1 / Module de commande 1
363	Bediengerät 2 – gebügelt ausgeliefert / Control unit 2 – is delivered bridged / Module de commande 2 – livré shunté
364	Bediengerät 3 – direkt im Multifunktionsgehäuse! / Control unit 3 – directly in the multi-function enclosure! / Module de commande 3 – directement dans le boîtier multifonctions !
365	Verbindung zur LED-Reihe / Connection to the LED row / Connexion à la rangée de LED
366	Eingehende Busverbindung vom KPM (#136) / Incoming bus connection from KPM (#136) / Liaison bus entrante en provenance du KPM (#136)
367	RS232-Schnittstelle / RS232 interface / Interface RS232
368	Versorgung 24 V _{DC} / Supply 24 V _{DC} / Alimentation 24 V _{DC}

WMM EF2


Plug list WMM – KWB Comfort 4 (symbol display)

1.3.2 Stickers on the rear side

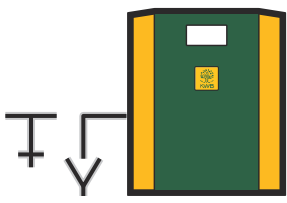
Type EF2:



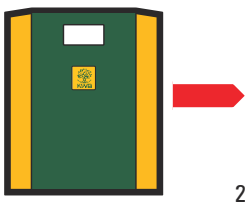
Power supply
(05)

230 V_{AC} 13 A  C 05	Power supply
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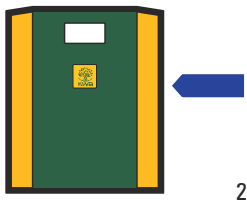
Emptying
(09)

 09	Emptying
--	----------

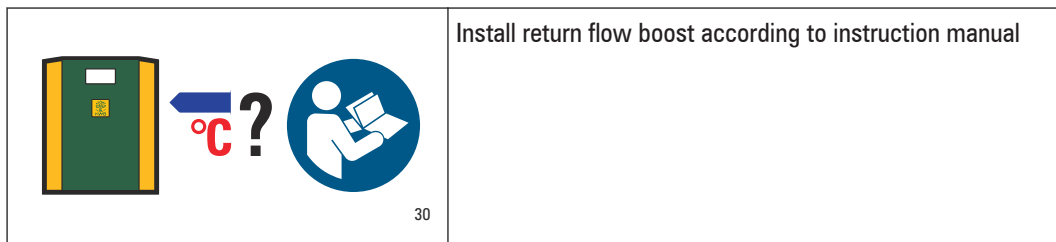
Forward flow
(22)

 22	Forward flow
--	--------------

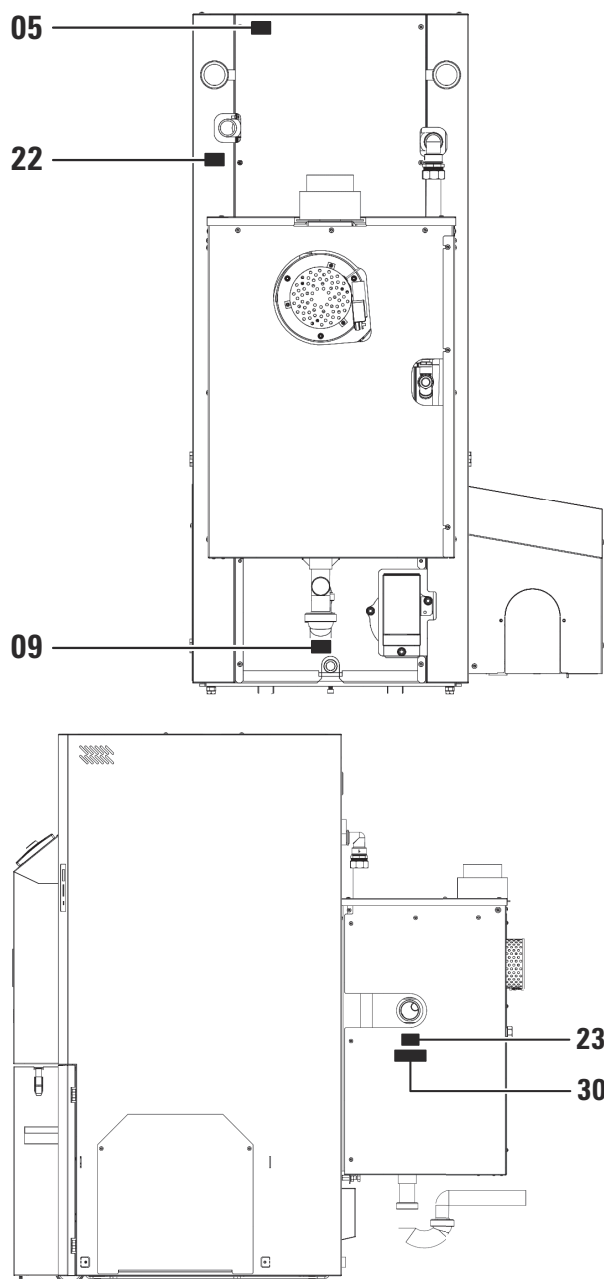
Return flow
(23)

 23	Return flow
--	-------------

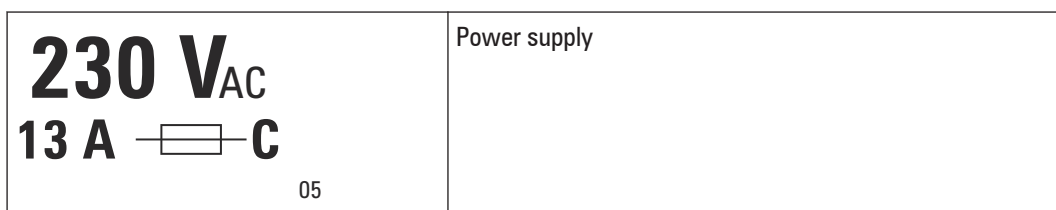
Install return
flow boost ac-
cording to in-
struction man-
ual
(30)

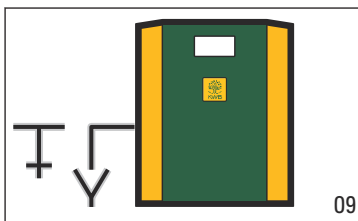


Type EF2 CC4:



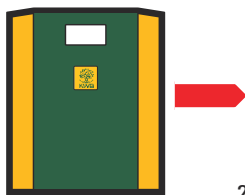
Power supply
(05)



**Emptying
(09)**

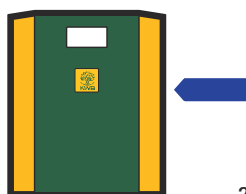
09

Emptying

**Forward flow
(22)**

22

Forward flow

**Return flow
(23)**

23

Return flow

**Install return
flow boost ac-
cording to in-
struction man-
ual
(30)**

30

Install return flow boost according to instruction manual

Type plate

- Make sure that the type plate has been attached to the casing varnished green in the upper right corner (the type plate was included in the operating instructions at the factory).
- Check in case of KWB Easyfire models for ambient air-independent operation whether the standard type according to DIN 18897-1 for ambient air-independent combustion air ducting is indicated on the type plate!

1.3.3 Stickers on the ash container

- Affix the following sticker to the top of the ash container:

**Heavy load
(36)**

36

Mind the weight of the filled ash container before moving the ash container! 40 kg

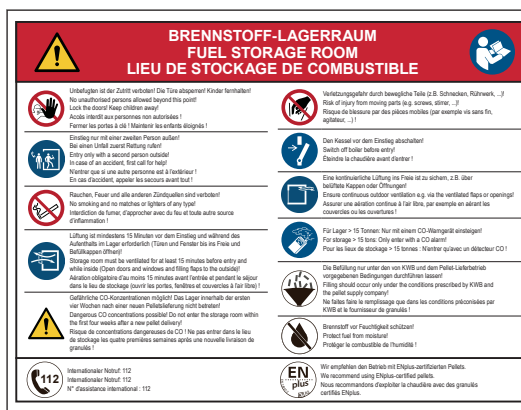
1.3.4 Stickers on the injection connector

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



1.3.5 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 Before you begin

2.1 Implementation advice - condensing boiler technology

When using a condensing boiler module, the exhaust gas in the condensing boiler heat exchanger is cooled down to below the condensation value. The humidity in the exhaust gas condenses and the so-called condensation heat is released in the form of additionally available heat.

A basic requirement for an efficient use of the condensing boiler technology is a low return flow temperature (max. 35°C). The lower the return flow temperature, the higher the efficiency.

If the heating circuits (radiators) do not fulfil these requirements, KWB recommends installing a buffer storage tank with integrated hot water heating.

When using a condensing boiler module, the following standards apply in addition to the other standards listed in these instructions:

- ÖNORM M 7551: Boiler – wood-burning boiler, manually and automatically stocked fire with up to 500 kW
- ÖNORM H 5152: Condensing boiler firing system, planning guidelines

2.1.1 Notification requirement for condensing boiler systems

The system must be reported to the regionally competent authority as a condensing boiler system with condensate introduction (e.g. in Austria: Abwasserverband (wastewater association); Germany: Untere Abwasserbehörde (local lower wastewater authority)).

2.1.2 Chimney system when using a condensing boiler system

When using a condensing boiler system, the chimney must meet the following requirements:

- Moisture-resistant
- Suitable for solid fuels
- T-400 soot fire-resistant
- Condensate-tight (use of seals or conical plugged-in, metal-seated sealing systems).
- Certificate (CE or UA label)
- Suitable condensate drain available
- In addition, KWB recommends using a pipe bend instead of a T-piece at the junction into the chimney during a chimney retrofitting (insertion of a stainless steel chimney, placement outside). The objective is to drain the condensate via the connecting line as the chimney condensate openings tend to be too small.

NOTE

You should always comply with the regionally applicable regulations

We recommend consulting with the responsible chimney sweep early, such as during the planning phase.



WARNING

Risk of suffocation due to leaks in the connecting line

After an incident (soot fire), it is strictly necessary to replace the seals in the connecting line and the chimney!

2.1.3 Connecting line when using a condensing boiler system

When using a condensing boiler system, the connecting line must meet the following requirements:

- Moisture-insensitive / condensate-tight
- Made of stainless steel
- Min. 20 Pascal overpressure-tight
- Certificate (CE or UA label)
- Cleaning opening, exhaust gas measuring opening

The connecting piece should be installed via the shortest path possible on an incline to the chimney. Horizontal lines should be strictly avoided!

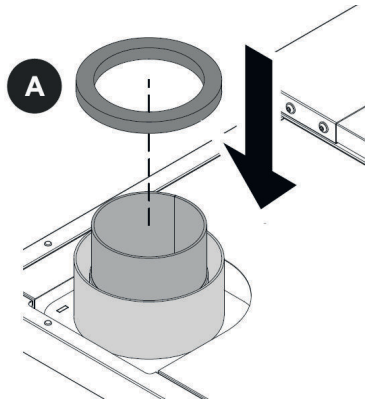
A possible backflow of the condensate into the condensing boiler heat exchanger is no problem as the condensate is drained via the siphon. A condensate trap is therefore not required.

All connections (including the boiler and chimney connections) must therefore be tightly sealed to prevent condensate from escaping!

Installing a silicone sealing in a connection line with a diameter of 100 mm (only possible in the EF2 CC4 10-22 kW):

- Slide the silicone sealing (A) onto the exhaust gas pipe and push it down until it is flush with the end of the outer pipe.

Note: The silicone sealing must NOT be installed in a connection line with a diameter of 130 mm.



2.1.4 Draft limiter when using a condensing boiler system

It is not necessary to install a draft limiter and blowback flap in boilers with a condensing boiler heat exchanger as the entire exhaust gas system must be sealed tight once it has been installed.

2.1.5 Condensate discharge when using a condensing boiler system

When using a condensing boiler system, condensate is generated which must be continuously discharged into the waste water system according to local regulations. For this reason, a wastewater connection is necessary to discharge the condensate and flushing water.

The discharge connection for the condensate must have the following features:

- Condensate-proof
- Frost-proof

- Installed to ensure a gravity-powered movement (min. 3%)

If gravity-powered movement is impossible, a suitable wastewater lifting system with a condensate-proof pump must be used.

Note: The condensate connection must not be modified or closed! The condensate discharge outlet must be regularly checked!

2.2 Bringing in the parts

- Avoid damage caused by strong vibrations and shocks:
The refractory bricks might fracture!
- Handle the packing units with care:
The casing parts are easily scratched!

2.2.1 Door width

For all boiler types an unobstructed door width of 70 × 180 cm is sufficient to be able to transport KWB Easyfire components into the respective room.

2.2.2 Weights



WARNING

Fatal crushing (pulled muscles) caused by heavy components! Inappropriate lifting/transporting can lead to fatal injury and serious damage to the equipment.

- ✎ **Only trained staff** may lift/transport heavy components!
- ✎ **Keep the component weight in mind – handle accordingly:**
 - Verify transport securing devices BEFORE lifting / transporting!
 - Keep the centre of gravity in mind - always secure components to prevent slipping and tilting!
 - Select stable bases, suitable tools and assistance from staff!
 - Lift with your back straight, NOT too heavy.
 - Use your personal protection equipment[PSA].
 - In difficult areas ensure that people and system are safe!

Components with a weight of more than 25 kg

Component	Weight [kg]				Lifting aid
	8-12 kW	15-22 kW	25-35 kW	38 40 kW	
Substructure	144				Two recessed grips at the lower front edge + rear threads for mounting tube Optional: Lifting aid to be positioned at the front edge
Heat exchanger	80	99	143	143	Both pipes for forward flow and return flow + front threads for support pipe

Component	Weight [kg]				Lifting aid
	8-12 kW	15-22 kW	25-35 kW	38 40 kW	
Burner	39				Mounting bracket
Casing	43	49	55	55	—
Condensing module	42	52	52	75	

Total weight

Type	Weight			
	8-12 kW	15-22 kW	25-35 kW	38 40 kW
EF2 S	326	352	394	394
EF2 V	341	370	416	416
EF2 GS	349	378	424	424
EF2 S CC4	368	404	446	469
EF2 V CC4	383	422	468	491
EF2 GS CC4	391	430	476	499

2.3 Tools

Supplied tools

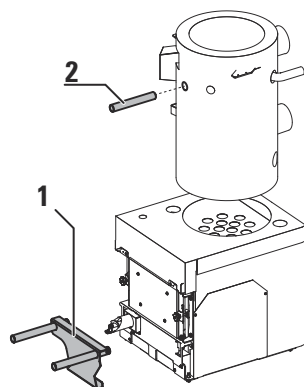
- Maintenance tool with size 13 – **stays with the boiler!**

Required tools (NOT supplied):



Maintenance tool

Lifting aids



KWB offers a lifting aid (1) and lifting pipes (2) to ensure a secure lifting of the substructure and heat exchanger.

- Lifting truck
- Tip: Assembly lever, e.g. Jenni Rollfuss (<http://www.jenni.ch>)
- Spirit level, length > 80 cm
- Cross-head screwdriver
- Slotted screwdriver
- Torx screw driver T25, recommended with a magnetic head!
- Side cutters (for the cable ties)

- Hexagon wrenches in sizes 8, 10, 13, 15 and 17 — as open-end wrench, socket wrench and screwdriver
- Pipe wrench — or open-end wrench size 50
- Silicone and silicone gun
- Cutter (knife)
- A cordless screwdriver is recommended.

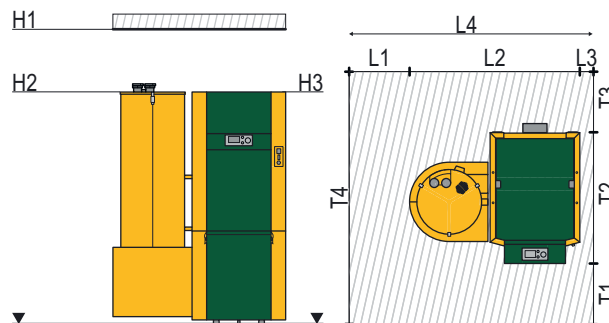
2.4 Placement

2.4.1 Dimensions, clearances

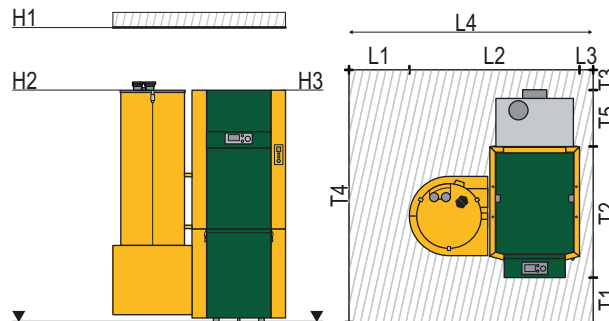
→ Refer to the following drawings for the required minimum distances and mark the boiler position in the room.

KWB Easyfire with suction conveyor system:

Type EF2 GS

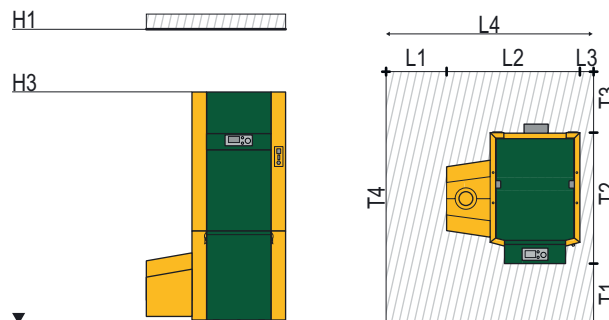


Type EF2 CC4 GS

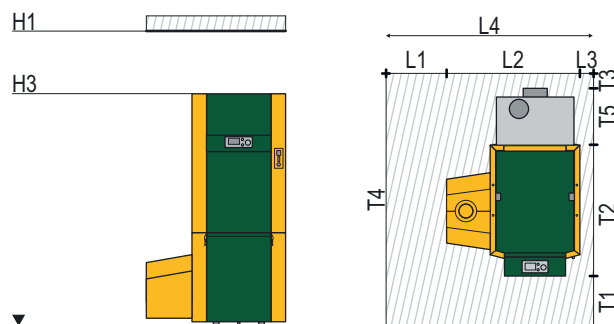


KWB Easyfire for conveyor screw system:

Type EF2 S

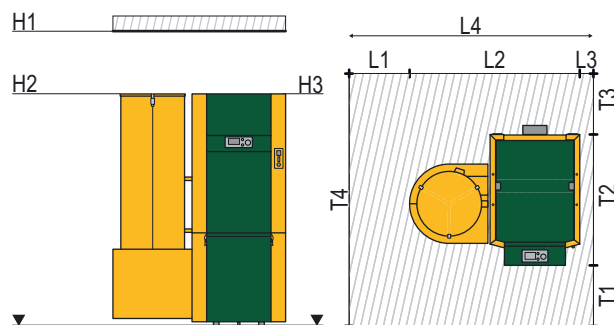


Type EF2 CC4 S

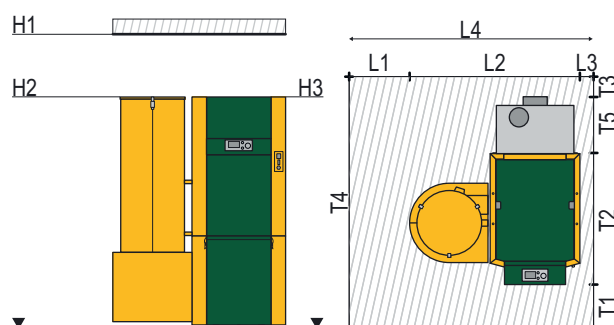


KWB Easyfire with storage container:

Type EF2 V

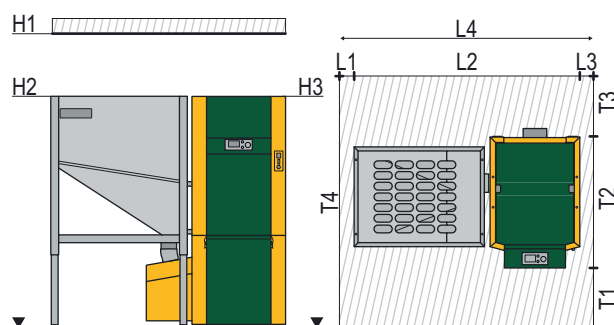


Type EF2 CC4 V

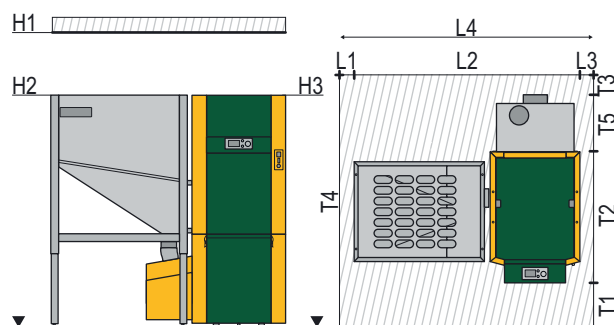


KWB Easyfire with storage container 300 litres:

Type EF2 S + 300



Type EF2 CC4 S + 300



	EF2 8-12 kW				EF2 15-22 kW				EF2 25-35 kW				EF2 38 kW			
	S	GS	V	S+300	S	GS	V	S+300	S	GS	V	S+300	S	GS	V	S+300
H1	>165	>165	>165	>165	195	>195	>195	>195	>230	>230	>230	>230	>230	>230	>230	>230
H2	-	126	146	146	-	146	146	146	-	164	146	146	-	164	146	146
H3	126	126	126	126	146	146	146	146	164	164	164	164	164	164	164	164
L1	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40
L2	88	106	106	148	88	106	106	148	88	106	106	148	88	106	106	148
L3	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
L4	>138	>156	>156	>168	>138	>156	>156	>168	>138	>156	>156	>168	>138	>156	>156	>168
T1	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40
T2	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87
T3	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40
T4	>167	>167	>167	>167	>167	>167	>167	>167	>167	>167	>167	>167	>167	>167	>167	>167

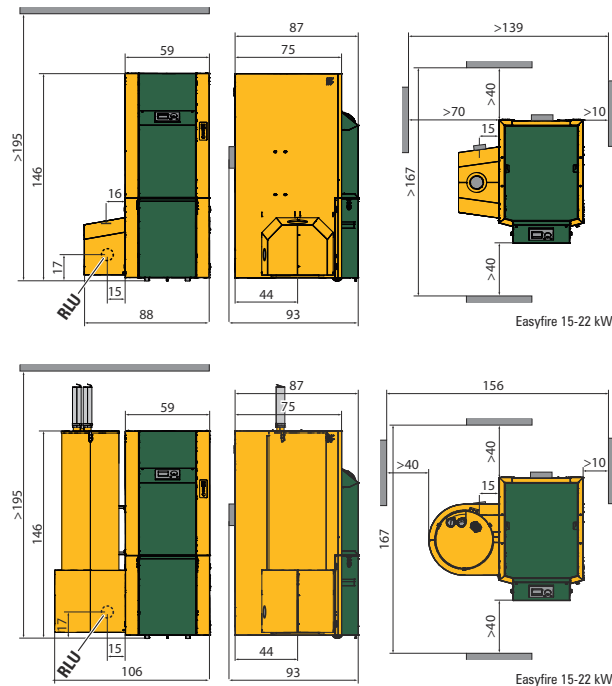
KWB Easyfire installation dimensions

	EF2 CC4 10-12 kW				EF2 CC4 15-22 kW				EF2 CC4 25-35 kW				EF2 CC4 40 kW			
	S	GS	V	S+300	S	GS	V	S+300	S	GS	V	S+300	S	GS	V	S+300
H1	>165	>165	>165	>165	>195	>195	>195	>195	>230	>230	>230	>230	>230	>230	>230	>230
H2	-	126	146	146	-	146	146	146	-	164	146	146	-	164	146	146
H3	126	126	126	126	146	146	146	146	146	164	164	164	164	164	164	164
L1	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40
L2	88	106	106	148	88	106	106	148	88	106	106	148	88	106	106	148
L3	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
L4	>138	>156	>156	>168	>138	>156	>156	>168	>138	>156	>156	>168	>138	>156	>156	>168
T1	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40
T2	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87
T3	>20	>20	>20	>20	>20	>20	>20	>20	>20	>20	>20	>20	>20	>20	>20	>20
T4	>190	>190	>190	>190	>194	>194	>194	>194	>197	>197	>197	>197	>207	>207	>207	>207
T5	43	43	43	43	48	48	48	48	53	53	53	53	58	58	58	58

KWB Easyfire with condensing boiler system installation dimensions

KWB Easyfire for ambient air-independent operation

Note: Illustrated using the KWB Easyfire EF2 S and EF2 GS 15-22 kW as examples – the connection for ambient air-independent operation ("AAI" in the diagrams) has exactly **the same position** in all models.



2.5 Packing units

The modules are delivered on a pallet.

The numbering does NOT need to be continuous – Depending on the ordered delivery size, individual packaging units might not be part of the scope of delivery.

→ You must comply with the transport and set-up information on the packaging!

Contents of the packaging units

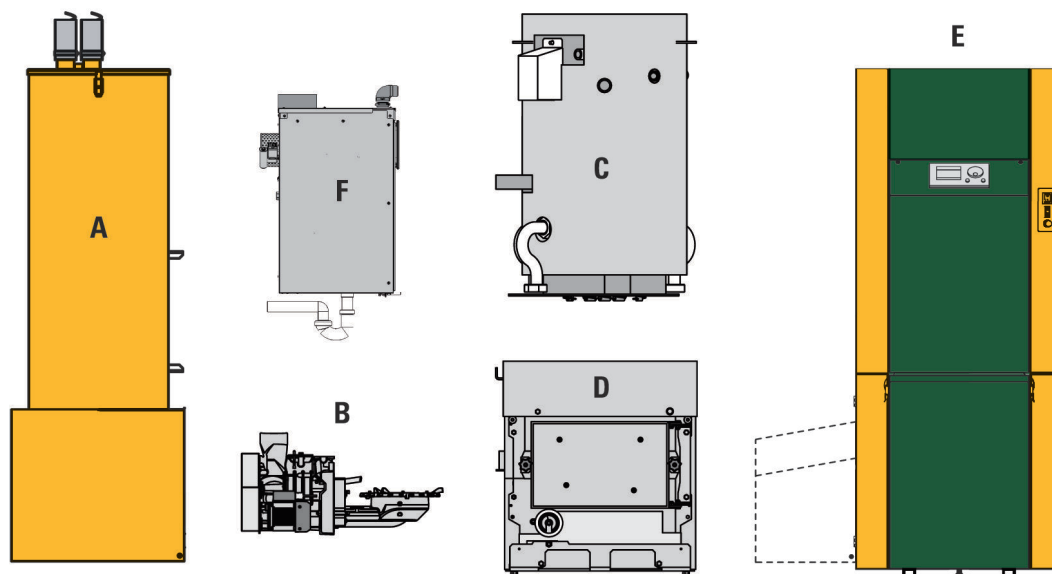
Number	Designation	Contents	Dimensions [cm]	Weight [kg]
1	Equipment Order	Instructions, type plate	–	–
2	Equipment Boiler	Spacers, 2-way valve with servomotor, sensor sets, operating unit, 3 corrugated pipe connections, transition connector for conveyor system	40×25×30	6
3	Substructure	Substructure with post-combustion ring and ash separator, including sensor cables	60×85×65	144
4	Heat exchanger	Heat exchanger with all turbulators, induced draught fan and exhaust pipe connection; including lambda probe	60×60×60-100	80/99/143
5	Burner	Burner including pre-installed cabling and ash scraper ring and secondary air connecting pieces	40×75×40	39
6	Boiler casing	List in section Cladding parts [► 38]	30×80×125-165	43/49/55
7	Control cabinet	Pre-installed control cabinet (cabling is pre-installed at the burner)	22×45×63	12
8	Ash container	Pre-installed ash container	22×45×60	9
9	Burner casing	2 casing parts for type EF2 S	30×45×35	5
10	Suction container	Option: Suction container	45×45×90-130	16/18/20
11	Suction turbine	Option: Suction turbine	40×40×50	9/12
12	Burner casing, container EF2	Option: Burner casing below suction tank	30×50×45	7
13	Storage container	Option: Storage container	45×45×110	18
14	Condensing module	Option: Condensing module	120×80×135	42/52/75

Please also see

📄 Cladding parts (► 38)

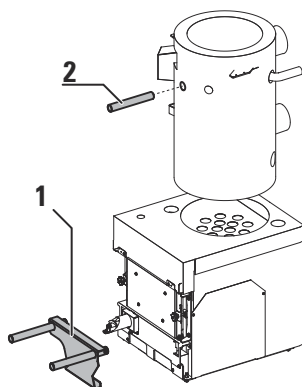
3 Mounting the boiler

3.1 System design – the modules



A	Suction tank or storage container (options)	D	Substructure
B	Burner	E	Casing
C	Heat exchanger	F	Condensing module (option)

3.2 Positioning the substructure

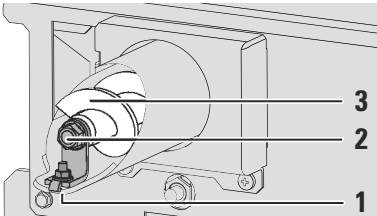
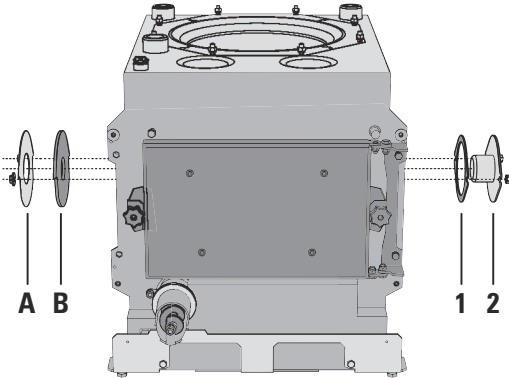


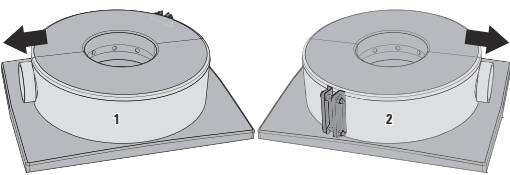
- Utilize the optionally available carrying aid (1) and carrier tube (2) when you lift the substructure (and subsequently the heat exchanger)!
- Mark the position of the substructure: The minimum clearances are specified in section **Dimensions, clearances [► 26]** – add an additional 2 cm all around for the casing which is mounted later.
- Position the substructure (packing unit 3) at the marked position.
- Align the substructure horizontally using the 4 feet.

3.3 Adjusting the substructure (left/right)

Possible burner positions

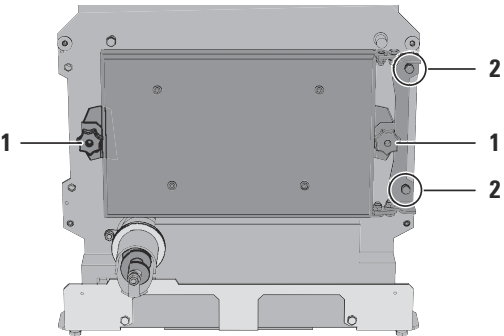
KWB Easyfire type EF2 S screw conveyor	KWB Easyfire type EF2 GS suction conveyor system	KWB Easyfire type EF2 V storage container
Installation left or right	Installation on left only	
The substructure is delivered prepared for a burner installation on the left side.		

Burner installation LEFT	Burner installation RIGHT
<p>→ The insulation is perforated on both sides to allow you to more easily expose the burner opening.</p>	<p>→ The insulation is perforated on both sides to allow you to more easily expose the burner opening.</p>
<p>→ Remove the insulation at the opening on the left side. (Tip: Can be squeezed in between casing and heat exchanger later.)</p>	<p>→ Remove the insulation at the opening on the right side. (Tip: Can be squeezed in between casing and heat exchanger later.)</p>
<p>Remove the ash screw – this prevents the installation of the burner!</p>  <p>→ Unscrew the vertical screw (1) (Torx T25) on the underside of the ash screw pipe.</p> <p>→ Remove the bearing (2).</p> <p>→ Pull the ash screw (3) out of the substructure.</p>	 <p>→ Fold the entire right insulation to the side.</p> <p>→ Remove the burner blind cover on the right side and mount it on the left side using both hammer-head screws. Check its seal tightness before you attach the installation!</p> <p>This is how you change the connections for the burner:</p> <p>→ Switch the blind flange secondary air (2) including seal (1) to the left.</p> <p>→ Switch the sealing set secondary air connection (A ... metal plates, B ... seals) to the right.</p>

Burner installation LEFT	Burner installation RIGHT
—	 <p>This is how you rotate the opening of the post-combustion ring for the secondary air connecting piece to the right by 180°:</p> <ul style="list-style-type: none"> → Remove the cover plate of the combustion chamber. → Pull the post-combustion ring out of the substructure. → Rotate the post-combustion ring by 180°, the opening must now point to the right. → Slide the post-combustion ring into the substructure again. → Mount the cover plate of the combustion chamber.
—	→ Fold the insulation back to the original position.

3.4 Adjusting the combustion chamber door (left/right)

Depending on the customer wishes or the installation situation, the combustion chamber door can be opened to the left or to the right. In the delivery state, the door is prepared for opening to the right.

Combustion chamber door fastened LEFT	Combustion chamber door fastened RIGHT
 <ul style="list-style-type: none"> → Unscrew both screws (2) on the frame. → Loosen both star grips of the boiler room door (1). → Rotate the boiler room door by 180° so that the hinges point to the left. → Roughly position the boiler room door using the star grips (1) before you fix the screws (2). 	—



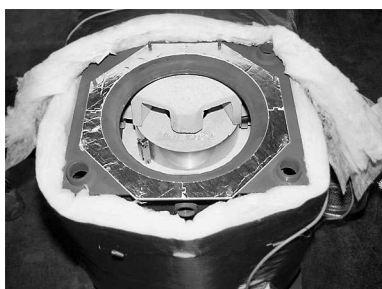
WARNING

Ensure that the boiler room door seals tightly when closed!

A leaky boiler room door prevents the system from being operated because the required underpressure cannot be built up in the combustion chamber.

3.5 Mounting the heat exchanger

Tip: Check the position of the substructure once more – it may have shifted during the previous work steps!



- At the substructure, bend the insulation mat to the side.
- Remove the 3 thread protection caps at the connections between substructure and heat exchanger.

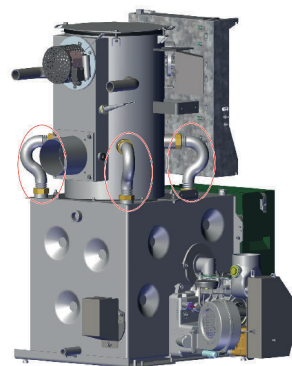
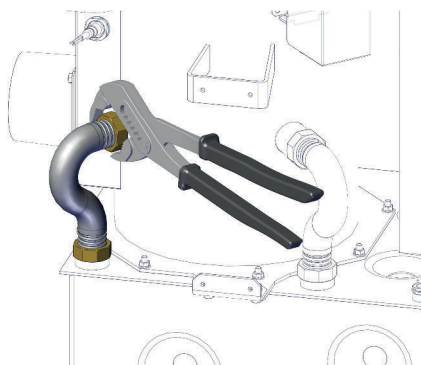
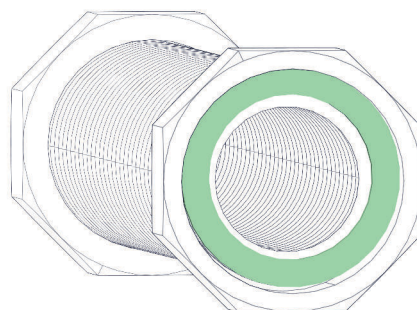
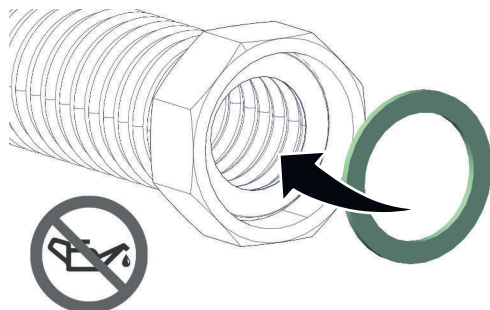
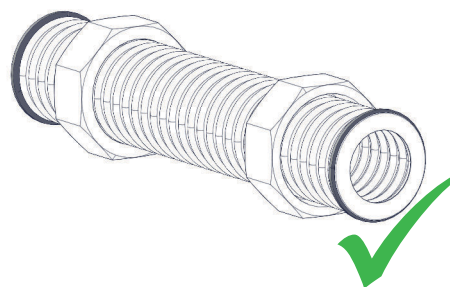
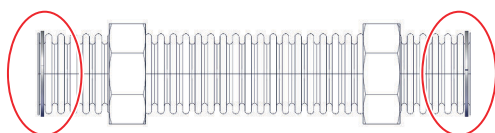
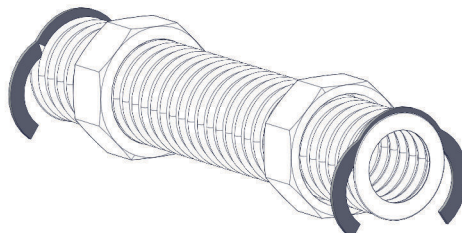
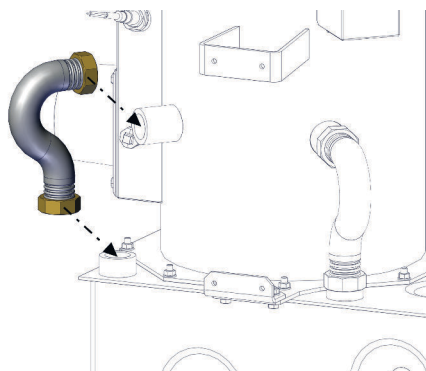


- Place the heat exchanger on the substructure.

Caution: 80/99/143 kg weight! Use a crane to protect your health!

If you lift the heat exchanger manually, use the lifting aid optionally supplied by KWB at the front or the connecting pieces for the forward and return flows at the rear for stabilisation.

- Please ensure that the seals are NOT shifted or damaged!

Installing the corrugated pipes

The connection between substructure and heat exchanger must be leak-tight!

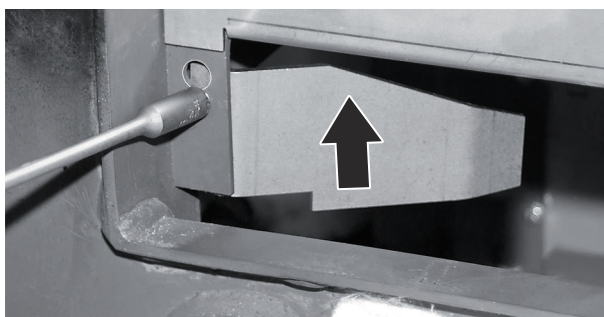
3.6 Mount the burner

The installation of the burner (packing unit 5) can only occur with the screw conveyor on the left or right. If a container is used (suction conveyor system or storage container), the burner must be mounted on the left.

3.6.1 Removing the ash wiper sheet

- ✎ If the burner is mounted on the right, then temporarily remove the ash wiper sheet in order to be able to place or take off the ash scraper ring!

→ Loosen the M5 screw.



→ Lift up the ash wiper sheet slightly –it is now easy to remove.

3.6.2 Removing the ash scraper ring



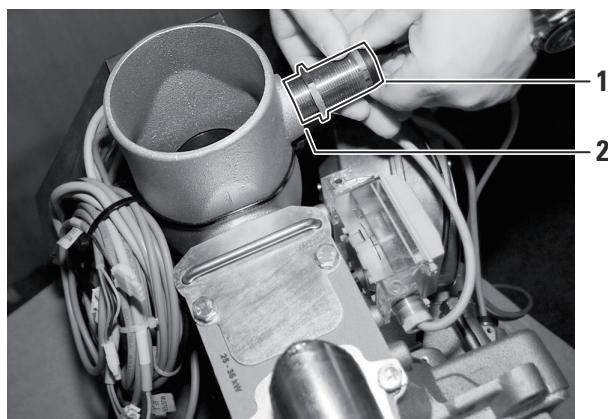
- ✎ Remove the ash scraper ring from the burner plate in order to be able to insert the burner more easily.



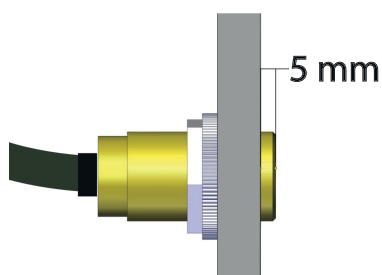
→ Turn the ash scraper ring with the marking (image) to the opening and lift up the ring at this position. Then pull the ring from the burner plate.

3.6.3 Installing the capacitive proximity switch

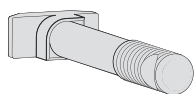
KWB Easyfire type EF2 S screw conveyor system	KWB Easyfire type EF2 GS suction conveyor system	KWB Easyfire type EF2 V storage container
Switch at the burner	Switch at the suction container	Switch at the burner



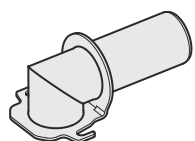
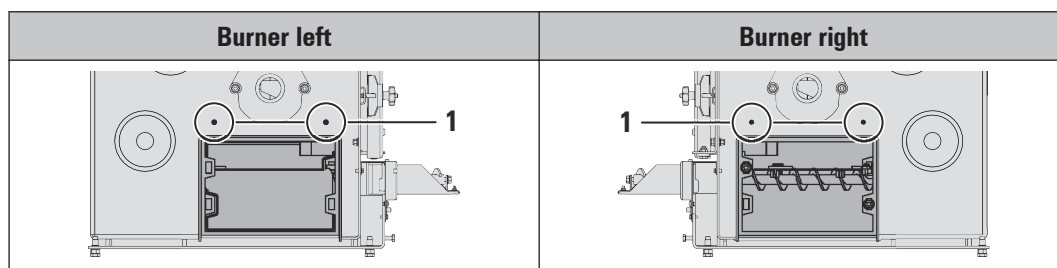
- Remove the screw plug from the opening at the burner (2).
- Install the capacitive proximity switch (1) from packaging unit 7. The switch must protrude – as shown in the graphic below – 5 mm at the internal wall!
- To fasten the switch, lock it using the nut.

**NOTE****Blockage due to pellet accumulation**

- If a step remains in front of the switch, pellets will accumulate there over time and prevent an accurate fill level measuring!
- The switch must be screwed in deep enough!

3.6.4 Installing and securing the burner

Hammer-head screw



Secondary air connector

- Lift up the prepared burner at an angle and **carefully** insert it in the substructure. Place the burner onto both pins (1) on the substructure.
- If necessary, loosen the two screws of the secondary air connector and remove the secondary air connector to facilitate the insertion of the burner into the substructure.
- Press the burner firmly to the substructure. Press the two hammer-head screws to the substructure and rotate them 90° clockwise. This secures the rear part of the screw and you can screw the burner to the substructure using the nuts.
- In the second step, insert the secondary air connector into the side opening in the substructure. First check that the seal is air-tight, then remount the secondary air connector on the burner – the screws should lie completely within the opening on the mounting base.

Tip: Even a small counter-clockwise turn will release the hammer-head screws from the anchoring in the substructure – turn them **only clockwise!**

- If you have removed the ash wiper, remount it on the substructure
- Check the secure seating of the burner on the substructure.

Preparation for ambient air-independent operation

These parts are in their own packaging:

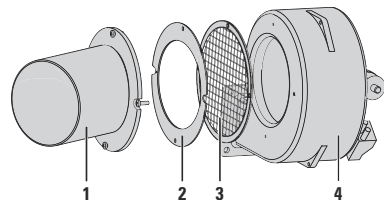
Accessory set 07-2000101

Scope of delivery

Article number	Quantity	Designation
07-1010859	1	Air connection piece for fan – external diameter 100 mm
07-1010840	1	Flange seal, air connection piece
06-1010322	1	Cover plate, air connection piece
03-1000184	2	Pan head screws M4x12
03-1000159	2	Pan head screws M5x12
13-1010238	1	Cable for the CO sensor
21-2000883	1	Multilingual instructions for commissioning EF2-AAI

In addition, a CO sensor is provided, which must be installed by an electrician in the safety loop of the heating system.

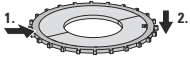
- The preparation work is not dependent on the position of the burner (screw left, screw right, vacuum system left, storage container left).
- Leave the grille unchanged on the fan (3).



1	Connection piece	4	Fan on the burner
2	Seal	5	Screws on the fan
3	Protective grille		

- Remove both screws on the fan.
- Fit the supplied seal (2) onto the fan (4).
- Fit the connection piece (1) and screw the parts together: M4×12 bolts x 2.
- Place the "Instructions for commissioning EF2-AAI" so that they are easily visible for any certified technicians who carry out the connections or commission the system. These instructions must later be filled out and sent back to KWB.

3.6.5 Putting on the ash scraper ring



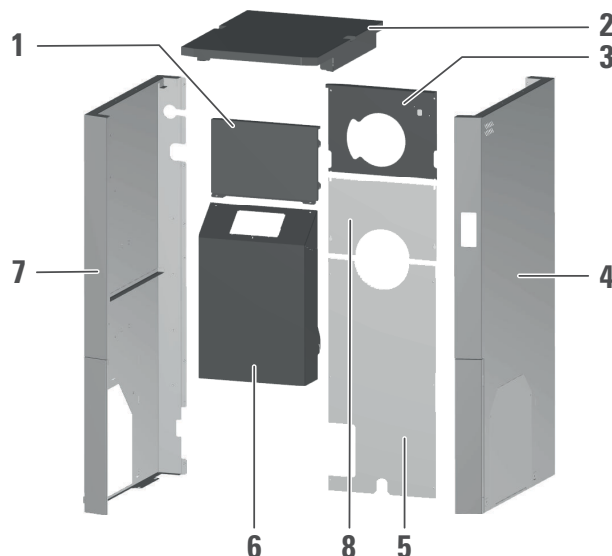
Burner left	Burner right
<p>→ Turn the ash wiper ring so that the notch faces the opening on the burner plate: If the burner is mounted on the left, the opening lies to the rear in the combustion chamber.</p>	<p>→ Turn the ash wiper ring so that the notch faces the opening on the burner plate: If the burner is mounted on the right, the opening on the burner plate is clearly visible at the front edge.</p>
<p>→ Place the ash wiper ring in the front on the burner plate and press the wiper ring to the rear in the direction of the opening.</p>	<p>→ Place the ash wiper ring in the rear on the burner plate and pull the wiper ring to the front in the direction of the opening.</p>
<p>→ Mount the front part of the ash worm: The removed worm must be inserted in the rear worm remaining in the substructure.</p> <p>→ Secure the ash worm again with the worm bearing.</p>	—
<p>→ Test the ash scraper ring for freedom of movement.</p>	
—	<p>→ Mount the ash wiper sheet.</p> <p>Attention: Always mount the ash wiper ring sheet to the left – the mounting bracket on the right-hand side must remain unused!</p>

3.7 Mounting the cladding – Part 1

Before you mount the cladding ...

- Lay the spacers (packing unit 2) under the adjustable feet: The rubber plate on the floor, the metal plate on the rubber plate.
- Adjust the position to the conveyor system.

3.7.1 Cladding parts



Casing parts overview (packing unit 6)

Arrangement of the casing parts

1	Casing top front: Different heights depending on the construction size	5	Bottom rear casing
2	Cover with insulating block	6	Front centre casing
3	Top rear casing	7	Side casing left: With 4 arrangements for the suction tank or storage container
4	Right-hand casing: With a covering of the right-hand burner opening	8	Front centre casing

3.7.2 Wiring up the burner



CAUTION

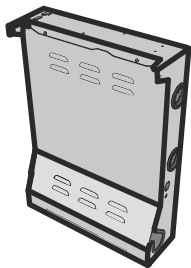
Unexpected malfunctions/defects due to incorrect cable laying

- Run the power cables separately from the signal cables!
- Use all available cable ducts!
- ↳ Doing so will prevent the cables from contacting hot surfaces.
- ↳ By doing this you will prevent electromagnetic interference from affecting the measurement data and control commands due to nearby power cables.

Burner on the right

- If you have installed the burner on the **right**: Unscrew the 2 screws of the right-hand casing cover and mount the cover on the left-hand casing.

Preparing the burner cabling



Control cabinet

- Place the control cabinet from packaging unit 7 onto the substructure.
- Check the pre-installed cables at the burner (S14, S15, S22 and S23) and route them through the lower opening to the control cabinet.

Multiple core cables S14 + S15 to S7

From	To	Purpose
S14 + S15 Connector bracket at the burner	S7 Control cabinet	Power supply main drive
		Power supply combustion air fan
		Power supply ignition pellets
		Power supply suction turbine
		Power supply conveyor system
		Earthing

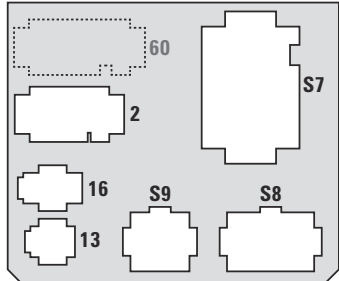
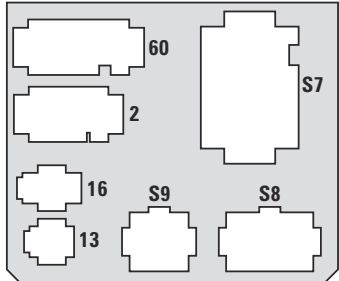
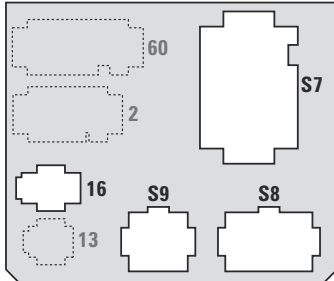
Multiple core cable S22 to S8

From	To	Purpose
S22 Connector bracket at the burner	S8 Control cabinet	Speed control main drive
		Speed control combustion air fan
		Capacitive proximity switch
		Negative pressure sensor

Multiple core cable S23 to S9

From	To	Purpose
S23 Connector bracket at the burner	S9 Control cabinet	Flame temperature sensor
		Temperature protection switch conveyor system

Assignment on the burner connector bracket

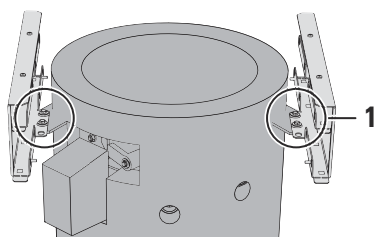
Easyfire type EF2 S screw conveyor system	Easyfire type EF2 GS suction conveyor system	Easyfire type EF2 V storage container
		
For the screw conveyor system, the connector #60 remains unused at this location.	All connectors are protected against reversed polarity and mix-up.	For the storage container, the connectors #60, #2 and #13 remain unused at this location.

3.7.3 Mounting the cable ducts

→ Mount the cable ducts using two screws (1) to the heat exchanger.

Tighten the screws **only loosely!**

Use the washer made of metal (M) and the two insulating washers made of fabric (F) as shown in the adjacent diagram!



→ Leave the front hole of the cable ducts free on both sides!

3.7.4 Pre-wiring the heat exchanger

➤ Cables S12 and S21 are fastened to the right-hand side of the heat exchanger using a cable tie. Remove the cable tie before you continue.

→ Run the cables S12 and S21 from the rear bottom right upward into the cable duct and connect the connectors with the appropriate sockets in the control cabinet.

Multiple core cable S12

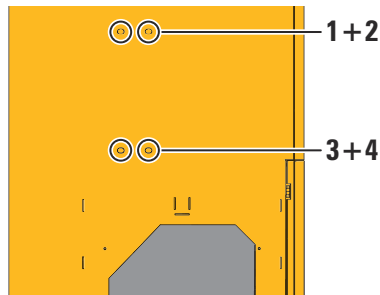
From	To	Purpose
Control cabinet	Heat exchanger	Power supply suction fan
		Power supply cleaning drive

Multiple core cable S21

From	To	Purpose
Control cabinet	Heat exchanger	Lambda probe
		Boiler temperature sensor
		Induced draught, speed

3.7.5 Mounting the side parts

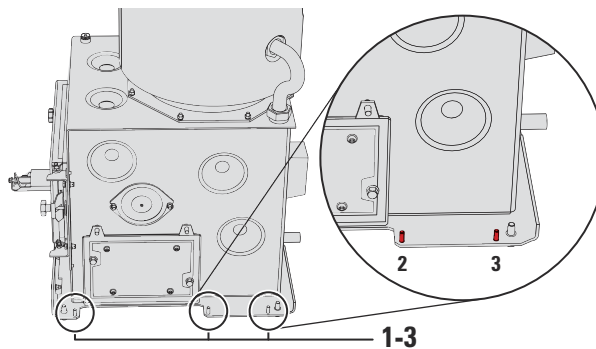
**Preparation for
suction tank**



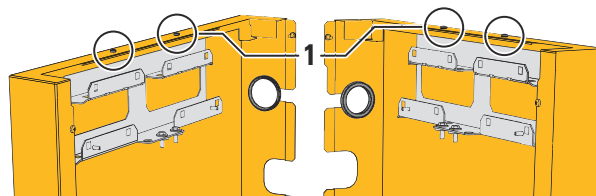
→ If you will be mounting a suction tank/storage container: In the left-hand side part you will find four prepared openings. Break out these four sheet surfaces without deforming the side part:

- First bend the sheet surfaces out of the side part using a flat screwdriver.
- Then use pliers to move the sheet surfaces back-and-forth until these break off.

Hanging in the side parts

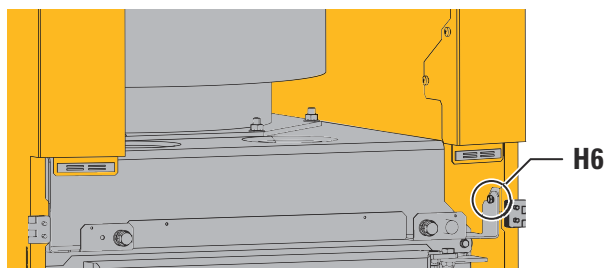


→ Place both side parts onto the pins 1-3 in each case on the substructure.



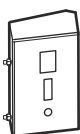
→ Lift the side parts onto the cable ducts.

→ Loosely screw the side parts at the top with two screws (1) to the cable ducts.



- Align the side cladding and then secure both side cladding parts on the front side hand-tight using M6 screws to the substructure (H6).
- Pull the side cladding parts completely forward and secure the screws.

3.7.6 Mounting the switch bracket



- Fasten the switch bracket (packing unit 6) using 2 nuts and washers to the side part on the right.

Running the power supply to the rear

- Pull the cable for the power supply to the rear.
Run the cable in the cable duct and thread the cable, including mounting plate, through the round opening in the right-hand side casing.

Connect cables S10 and S20

- Connect the two cables S10 and S20 with the correspondingly labelled sockets on the right-hand edge of the control cabinet.

Multiwire cable S10

From	To	Purpose
Control cabinet	Switch bracket	Main switch
		Safety Temperature Limiter [STB]

Cable S20

From	To	Purpose
Control cabinet	Switch bracket	Switch, measuring mode

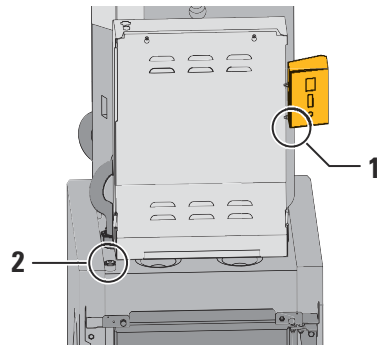
Routing and positioning the capillary tube for the safety temperature limiter



WARNING

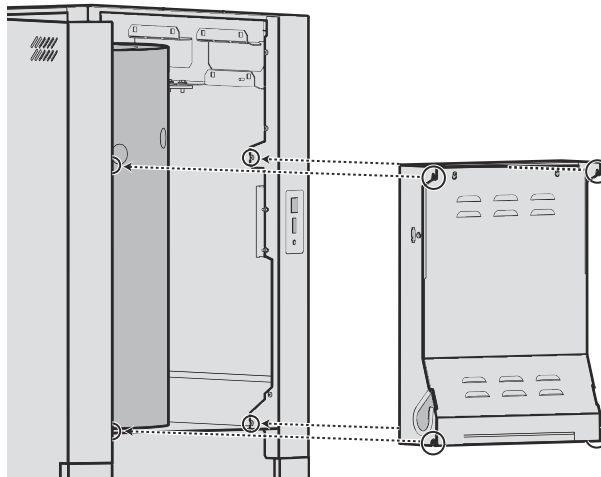
Sensitive capillary tube

- The connection line to the sensor **is a pressure line!** The metal used is soft and flexible – it can thus be easily kinked or pinched!
- Carefully bend the capillary tube and do not bend it too often!
- Carefully clamp the capillary tube: Without additional pressure and with a large bending radius!



- On the inside of the switch bracket (1) you will find the capillary tube for the safety temperature limiter (STL).
- Rout the capillary tube from the switch bracket (1) behind and past the switch cabinet to the immersion sleeve (2).
- Security capillary tube using the clamp mounted at the immersion sleeve (2).

3.7.7 Hanging in the control cabinet



- Hook the control cabinet with the pre-mounted circuit board on both sides onto the screws which are situated slightly to the rear (see drawing).



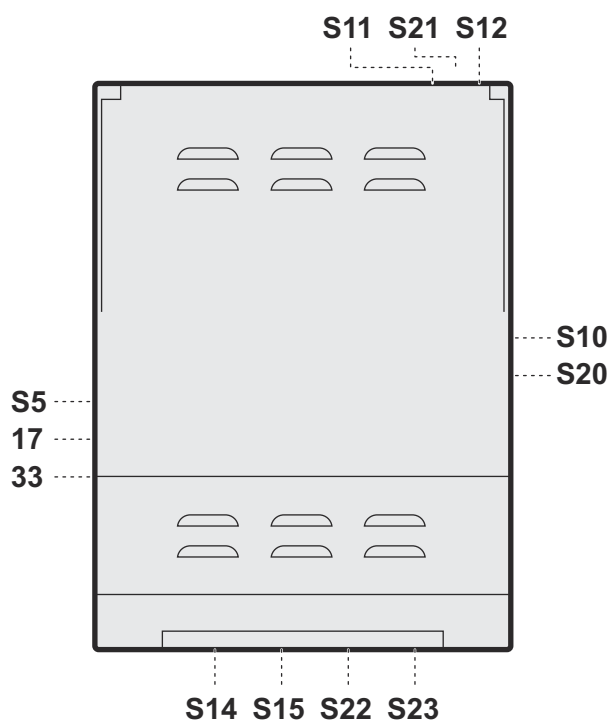
WARNING

Electric shock hazard!

- The control cabinet must only be opened by qualified electricians.
- Keep the control cabinet locked!

3.8 Completing the cabling

The plug connections on the control cabinet



- The cable S5 is secured by a cable tie on the left-hand front upper corner of the substructure. Release the cable tie before you proceed.

→ Connect the connector with the appropriate socket on the control cabinet.

Cable S5

From	To	Purpose
Control box	Substructure	Supply, revolving grate

Cable 17

From	To	Purpose
Control box	Substructure	Limit switch ash container

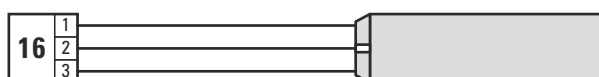
Cable 33

From	To	Purpose
Control box	Substructure	Return flow temperature sensor

Control cabinet earthing

- Connect the earthing cable at the control box with the cable duct on the left side casing:
Use the earthing pin on the front part of the cable duct.

3.8.1 Cabling for the suction tank



16	Fill-level sensor	1	24 V _{DC} ... brown cable
		2	I ... black cable
		3	GND ... blue cable

→ Connect the fill level sensor with plug #16 at the connector bracket on the stoker.
From there, the connection is run via the cable loom to plug #202 at the Boiler signal module [KSM].

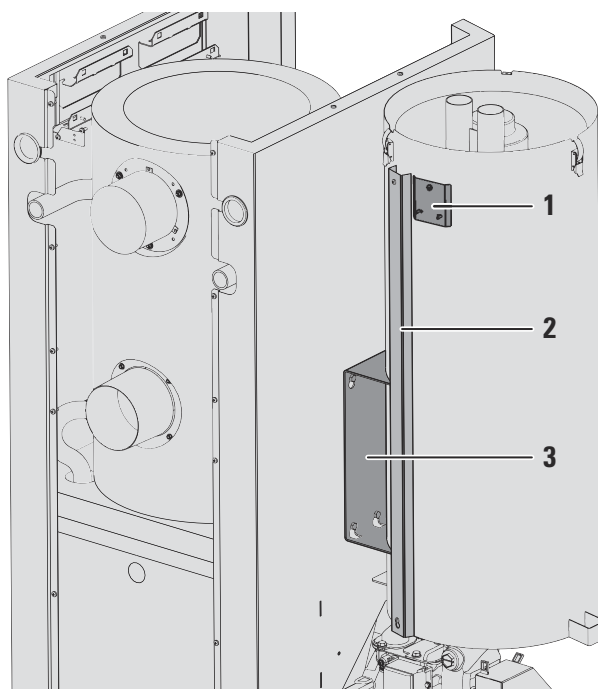
3.9 Mounting the suction tank and suction turbine

Attention: The installation of the suction container can only occur on the left casing side!

Scope of delivery (packaging unit 10)

- 1 suction tank
- 1 suction turbine
- 2 burner casing parts + 1 pluggable mounting bracket
- 1 multiwire cable

3.9.1 Mounting the suction tank to the heat exchanger

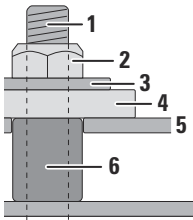


1	Mounting plate for cable connection	3	Mounting bracket on the heat exchanger
2	Covering strip for cables		

- Screw in the 4 screws (M8×20) up to approx. 5 mm into the four threads behind the left side part.
- Mount the supplied hose connecting piece to the lower end of the suction tank and put the second hose clamp over the other end.
- Hang the suction tank onto the 4 screws, put the hose connecting piece onto the burner connection.
- Secure the hose connecting piece to the burner (hose clamp).

- Secure the tank to the mounting bracket (3) of the heat exchanger.

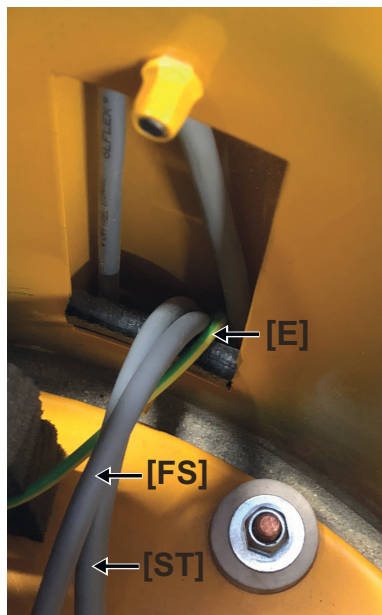
3.9.2 Installing the suction turbine



- Lift the cover and remove the insulating plate - attention: The plate partially contains slits and may tear here!
- Put on spacer rubbers (6) onto the 3 threaded bolts (1). These rubber tubes prevent the vibrations of the turbine plate from transferring to the container.
- Place the suction turbine (from packing unit 11) onto this 3 threaded bolt (1). You can mount the turbine in 120° steps – select the position that appears optimal for the additional laying of the conveyor hoses! (The rear centre positioning is standard.)
- Secure the turbine plate (5) with rubber discs (4) and the metal washers (3). Tighten the nuts (2) until the rubber discs (4) begin to expand.

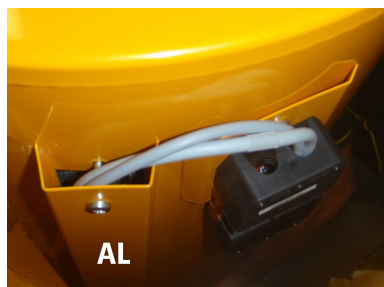
Preparing the wiring

- Remove the covering strip on the back side of the container (2 cross-head screws).
- Thread the earthing cable to the back and out (far away from the motor, at the turbine metal sheet).
- Thread all cables out of the turbine housing to the rear and then fully down.



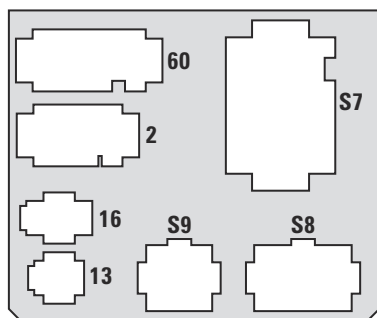
E	Earthing cable
CS	Fill level #16
ST	Suction turbine

- Install the 6-pin plug including bracket at the back of the suction container. Route all cables down in the cable duct.
- Reinstall the covering strip [AL] at the suction container.



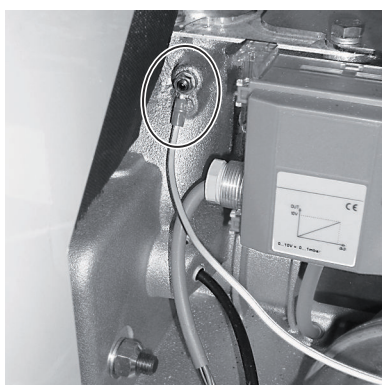
Final steps

- Reinsert the previously removed insulation – the slits for the cables must point to the rear!
Ensure that the insulating plate lies on the floor all the way around so that the cover can close!
- Only for suction systems WITHOUT sampling probes (another turbine will be used here):
Attach the insulating ring with the adhesive side facing upwards to the turbine and remove the protective film from the adhesive side.
- Pull the cover open and close it with the 3 snap locks.
- Mount the terminator (Wieland 6-pin) to the rear side of the container.
- Reinstall the covering strip (2 screws) on the rear side of the container.
- Connect the multiple core cables to the connectors on the burner connector bracket:



All connectors are protected against reversed polarity and mix-up.

- Connect the earthing cable to the position marked on the burner:



Earthing

3.10 Install the storage container (type EF2 V)

Caution: The storage container can only be mounted to the casing on the left-hand side!

Scope of delivery (packaging unit 13)

- 1 storage container

- 1 cover to cover the rear opening
- 2 burner casing parts + 1 insertable mounting bracket

Installation steps

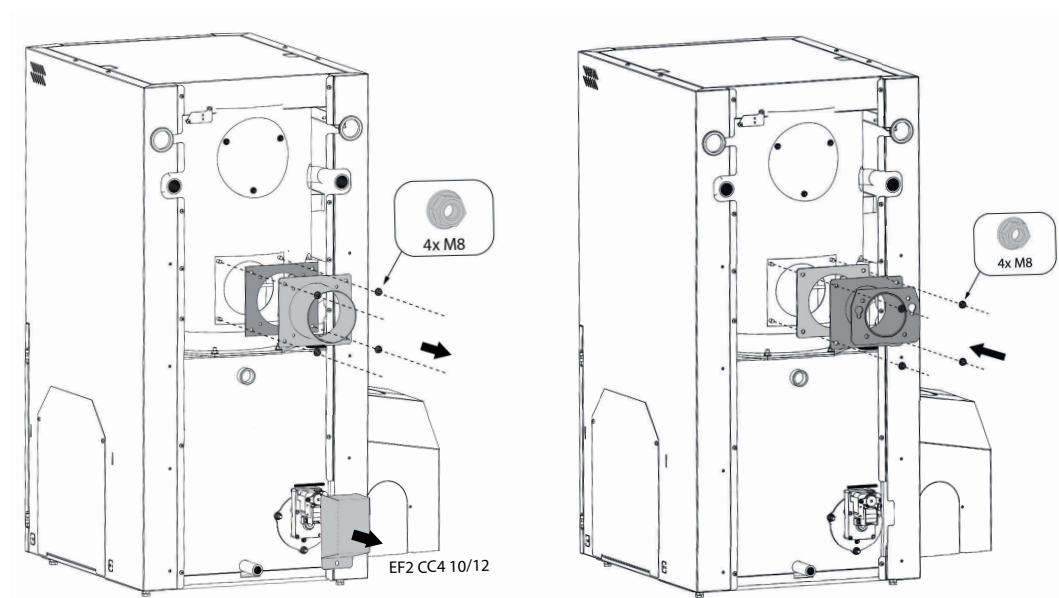
Generally, the installation steps for the storage container are the same as for the **installation of the suction container** [► 45], BUT ...

- ... the storage container does NOT have a capacitive proximity switch – instead,, as in the screw conveyor system, the capacitive proximity switch of the burner is used.
- ... there is NO cabling in or at the storage container – there is also no earthing cable.

→ Close the cable opening at the rear of the storage container with a cover.

3.11 Installing the condensing module (option)

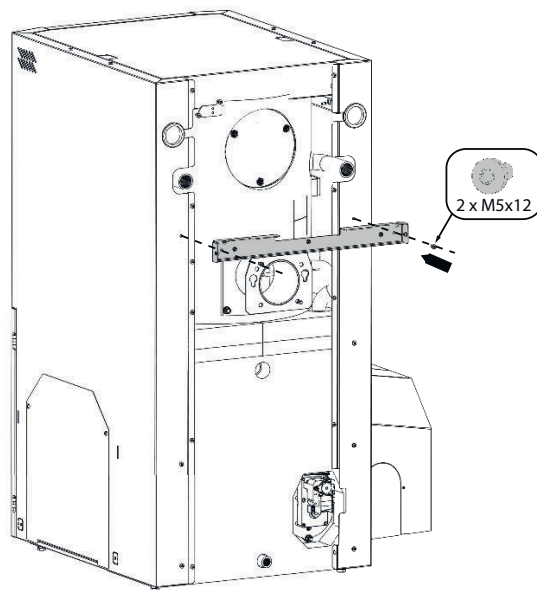
Dismantle the exhaust gas pipe connection / remove the motor cover (only for EF2 CC4 10-12 kW) and install the condensing module flange



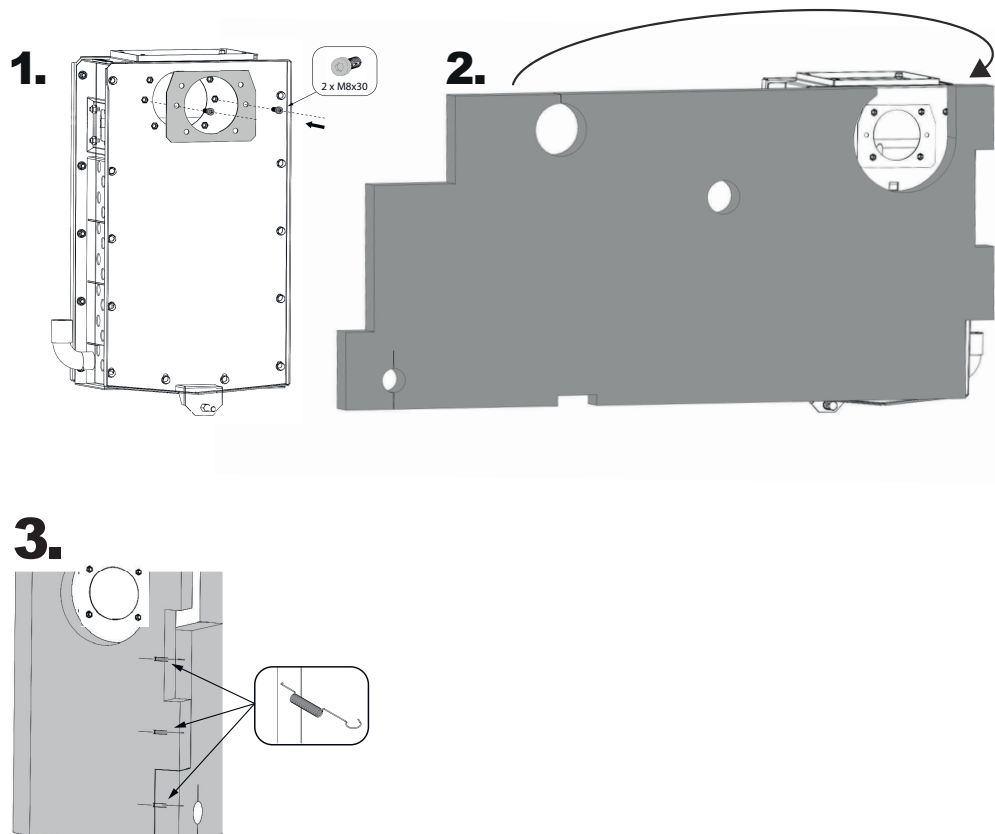
Install the rear wall bottom casing (EF2 CC4 15-40 kW)

- Fasten the lower rear wall from the condensing module packaging unit with 4 screws M5 loosely to the side parts
(except EF2 CC4 10-12 kW: The lower rear casing can be disposed of).

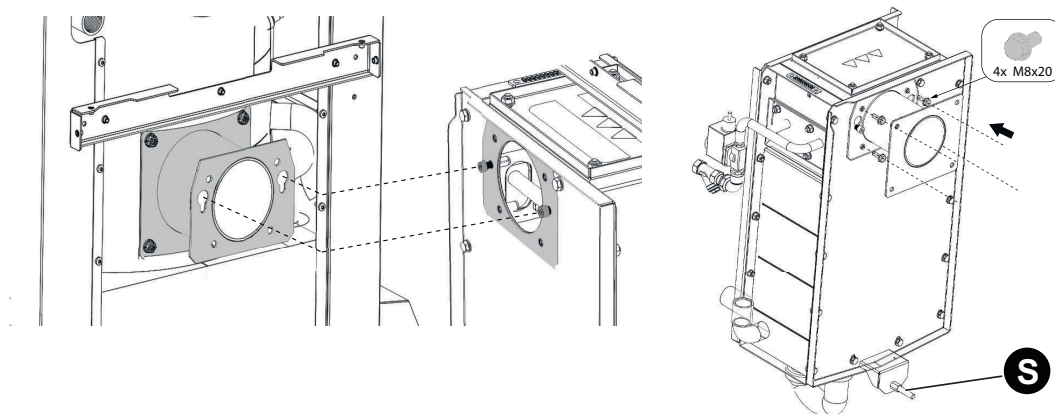
Install the reinforcement profile for the condensing module casing



Prepare the condensing module for installation at the boiler



Hook in the condensing module at the boiler and bolt it



→ Expose the hook-in screws by pushing the insulation outward.

Note: The insulation is not shown in the picture.

→ Fasten the condensing heat exchanger with 4 screws M8x20 (galvanized) to the flange.

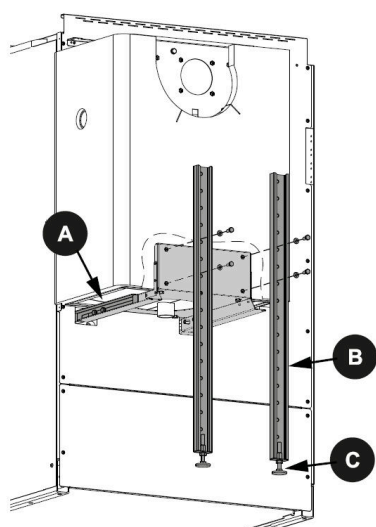
Caution: The screw that was used to hook in the device must not be fastened.

Caution: This work step requires 2 people!

(Weight condensing heat exchanger: 10-12 kW: 42 kg, 15-35 kW: 52 kg, 40 kW: 75 kg)

→ Adjust the distance to the boiler using the screw (S). The condensing module must be installed parallel to the boiler.

Installing the support bracket (only for EF2 CC4 40 kW)



→ Align the condenser heat exchanger with support (A) parallel to the boiler using a spirit level.

→ Mount the support stands (B) to the bracket and adjust the height using the adjustable feet (C).

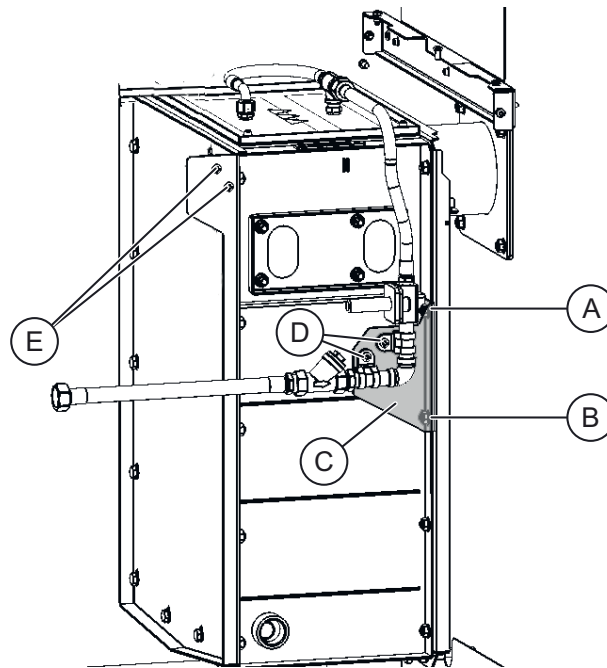
→ Check whether the condenser heat exchanger is level with (parallel to) the boiler.

Install the washing unit (only for EF2 CC4 15-35 kW)

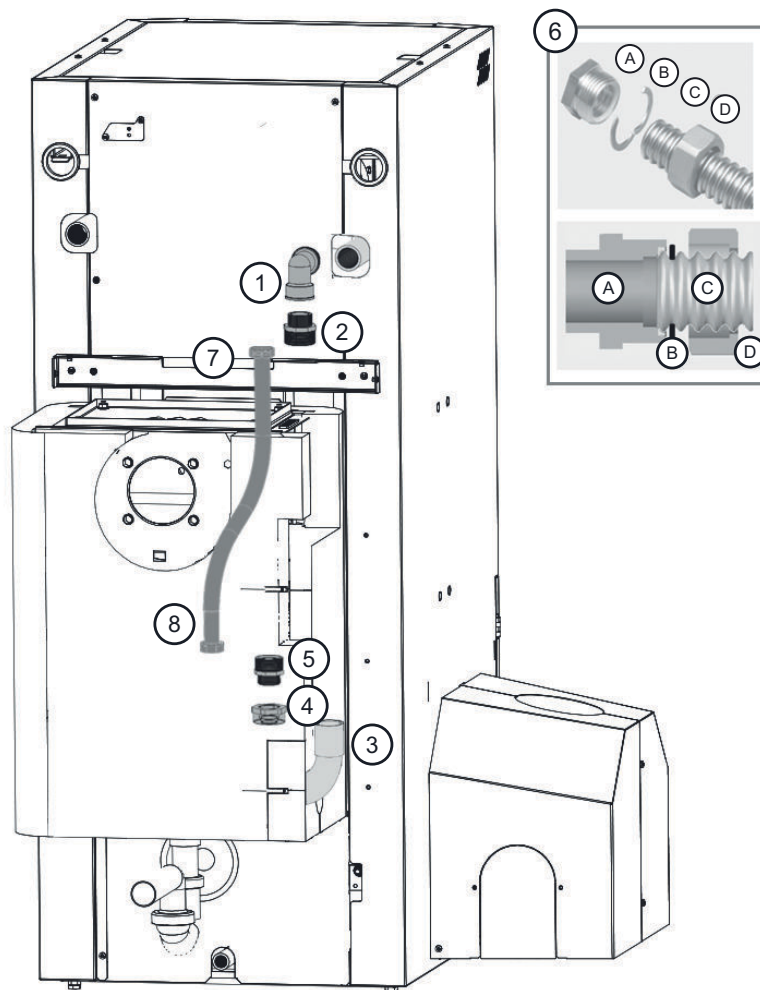
→ Remove the screws (A) and (B).

→ Mount the assembly bracket (C) using the screws (A) and (B).

→ Remove the screws (E) and use them to install the washing unit at the assembly bracket at both positions (D).



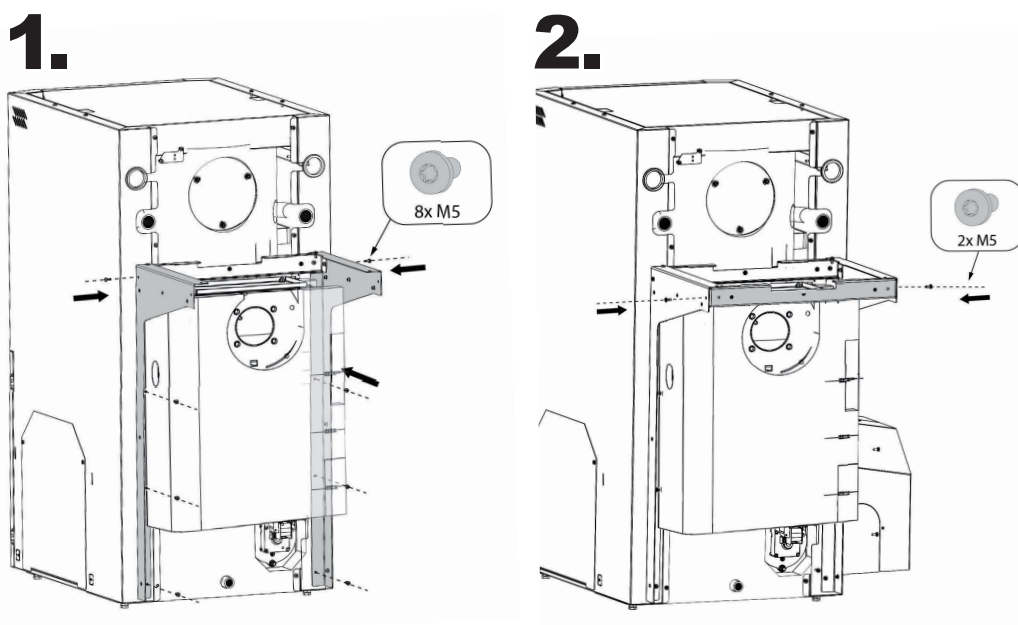
Attach the corrugated hose



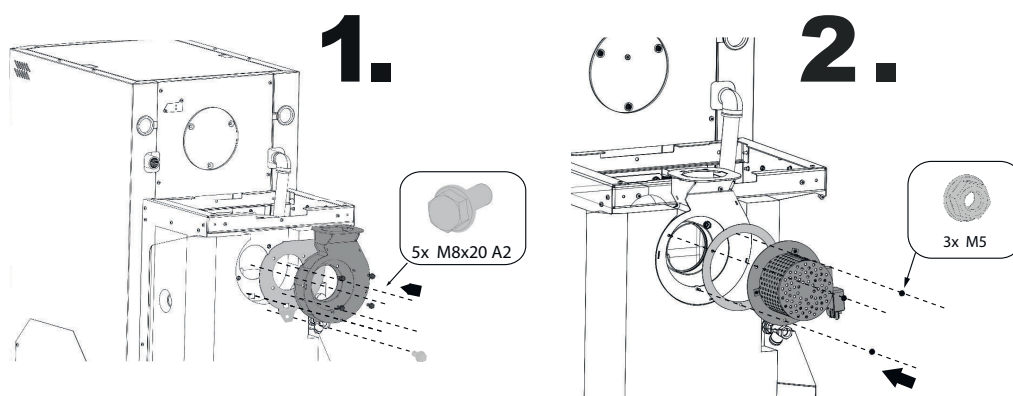
→ Remove the plastic cover at the boiler return flow and put jointing material onto the thread at the boiler return flow.

- Install the elbow (1) at the boiler return flow.
- Put jointing material onto the FixLock fitting (2) and screw it into the elbow (EF2 CC4 10-22 kW: 1", EF2 CC4 25-40 kW: 5/4").
- Only for EF2 CC4 15-40 kW: Put jointing material onto the elbow (3) and screw it onto the connecting piece at the condensing module.
- Only for EF2 CC4 15-40 kW: Put jointing material onto the reduction (4) and screw the reduction onto the connection at the condenser module or the elbow.
Note: No reduction is required for the EF2 10-12 kW.
- Seal the second FixLock fitting (5) and screw it into the reduction or the connection at the condensing module (EF2 CC4 10-12 kW: 1", EF2 CC4 15-40 kW: 6/4").
Caution: Ensure that the seal on the corrugated hose side remains in the FixLock fitting.
- Slide a union nut (D) onto the corrugated hose (C).
- Fasten the clamp of the FixLock fitting (B) at the outer corrugated ring.
- Insert the corrugated hose including clamp into the FixLock fitting at the boiler return flow and fasten the union nut (6).
- Slide the second union nut (D) onto the free end of the corrugated hose (C).
- Fasten the clamp of the FixLock fitting (B) at the outer corrugated ring.
- Insert the corrugated hose including clamp into the FixLock fitting at the boiler return flow and fasten the union nut (7).
- Slide the second union nut (D) onto the free end of the corrugated hose (C).
- Fasten the clamp of the FixLock fitting (B) at the outer corrugated ring.
- Insert the corrugated hose including clamp into the FixLock fitting at the condensing module and fasten the union nut (8).

Complete the installation of the reinforcement profile for the casing

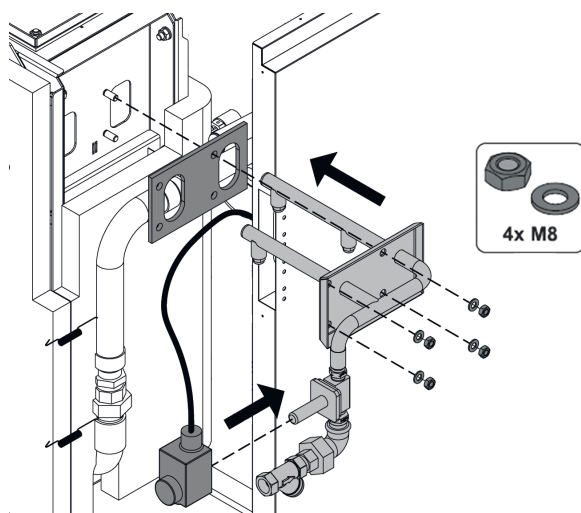


Install the induced draught fan



Note: The screws for the installation of the induced draught housing must be stainless steel screws.

Installation of the washing unit (EF2 CC4 10-12 kW / EF2 CC4 40 kW)



Install the electrical connection of the magnetic valve



WARNING

Life-threatening electrical voltage

- The electrical installation may only be carried out by qualified specialists who have the required training and expertise!
- If required, shut down the system completely at the main switch.
- Unplug the mains plug before you start working on the system!
- ↳ Comply with applicable standards and regulations!



CAUTION

Quality of the electrical installation

- ↳ The applicable directives, particularly *EN 60204-1 Electrical equipment of machines – general requirements* must be complied with when performing the installation work.
- In addition, please ensure that there is no possibility of damage to electrical system components due to heat radiation!

NOTE**Possible damage because cabling has been installed too loosely**

- Secure all cables in the cable duct with cable ties!
- ↳ You ensure electrotechnical safety with this kind of strain relief.

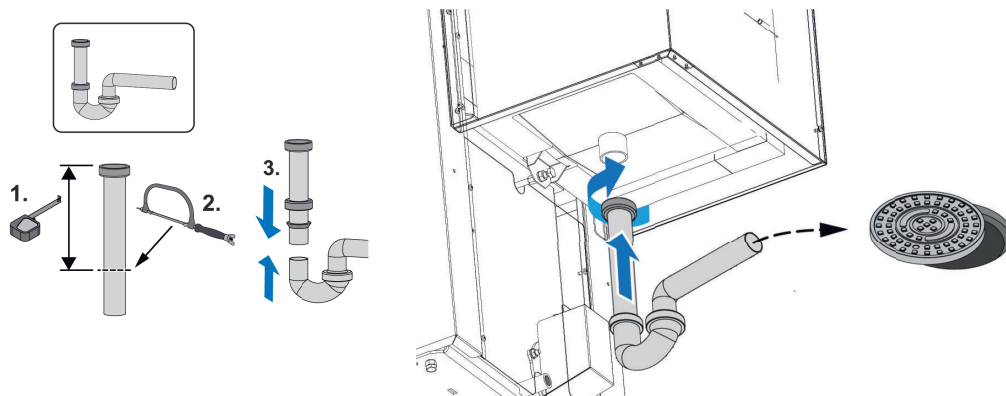
- Run the magnet valve cable via the cable duct to the control cabinet.
 - Open the control cabinet. For this, remove the screws from the front casing and remove the front casing.
 - Carefully place the front casing on a stable surface to avoid scratches and other damage!
 - Unscrew the screws from the cover and remove the cover from the control cabinet.
- Connect the cable at input "122".
- Re-install the front casing.

Install the top rear casing

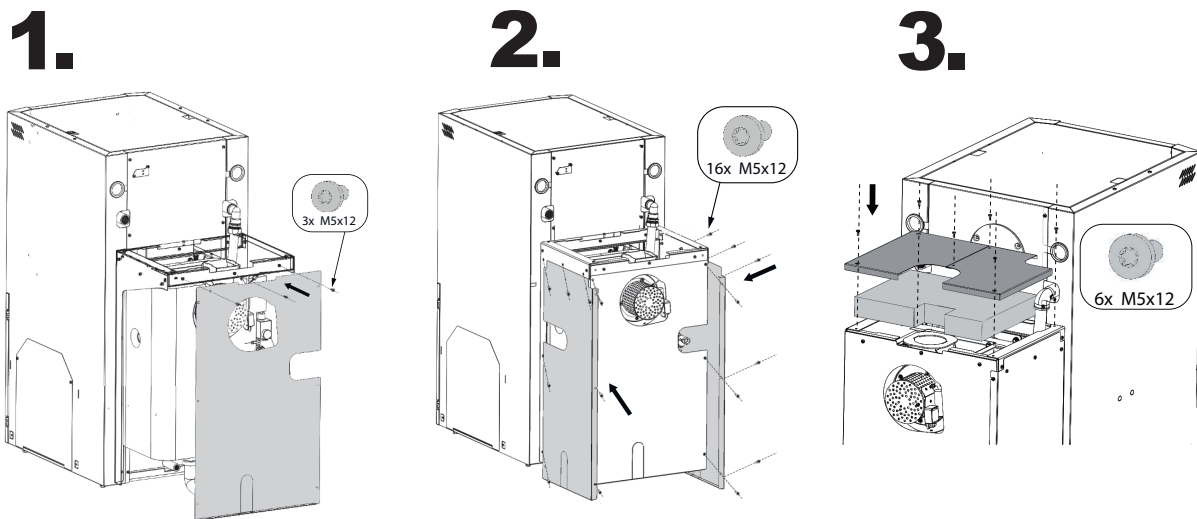
- Mount the upper rear wall from the condensing module packaging unit with 4 screws M5x12 loosely to the side parts.
- Dispose of the middle and upper rear wall with the opening for the induced draught fan.

Connect the induced draught fan

- Run the "induced draught" cable and cable "72" from the cable duct of the heat exchanger to the induced draught fan.
- Mount the two extension cables to the "induced draught" cable and "72" cable by plugging the connectors together.
- Connect the connectors at the induced draught fan.

Installing the condensate discharge**Installing the condensing module casing**

- Only for EF2 10-12 kW: Break out the casing on the side where the feed-through for the condensate drain is to be installed.

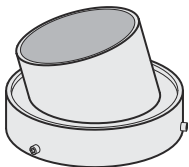


3.12 Mounting the cladding – Part 2

Casing on the rear side

- Mount the upper and middle rear wall with 6 screws (pan head screws M5x12) loosely to the side parts.
- Mount the lower rear wall with 6 screws (pan head screws M5x12) (KWB Easyfire 25-38 kW: 8 screws) loosely on the side parts.

Burner casing

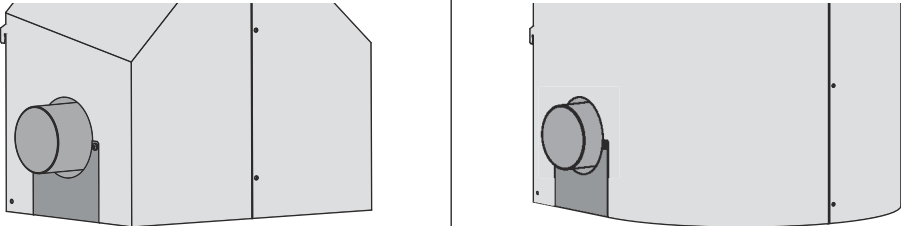


Transition connector

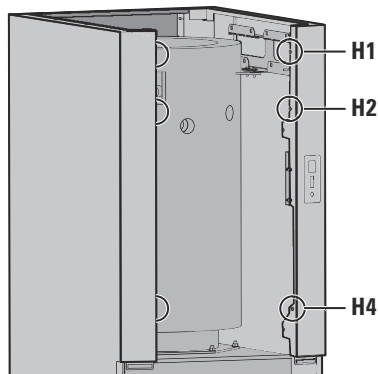
KWB Easyfire type EF2 S Conveyor screw systems (Packaging unit 9)	KWB Easyfire type EF2 GS and type EF2 V suc- tion tank or storage container (Packaging unit 12)
<ul style="list-style-type: none"> → Rotate the transition connector between the burner and conveyor system (packaging unit 2) in the direction from which the conveyor system will come. → Use the three set screws to fasten the transition connector in this position. 	
	<p>→ Push the bracket (5) into the slit on the side of the container.</p>
→ Bend the tabs (3) 90° out of the side casing.	

KWB Easyfire type EF2 S Conveyor screw systems (Packaging unit 9)	KWB Easyfire type EF2 GS and type EF2 V suc- tion tank or storage container (Packaging unit 12)
<p>→ Insert the upper tabs of the casing parts into the horizontal slit (1) and simultaneously hook in the burner casing into the slits (2). The casing must be outside of the bent-out side tabs (3).</p>	
<p>→ Fasten the burner casing to the tabs of the side part (3) using one screw each.</p>	
<p>→ Screw the two casing parts together (4).</p>	

Casing for ambient air-independent operation (optional)

KWB Easyfire type EF2 S transition from conveyor screw systems	KWB Easyfire type EF2 GS and type EF2 V suc- tion tank or storage container
<p>→ The cut out for the pipe connector is prepared in the left casing part: Break this area out of the casing part.</p>	
<p>→ Seal the burner casing as described above.</p>	
	
<p>→ Secure the cover plate (shown in a darker colour in the illustration) using the two M5 × 12 bolts supplied.</p>	

Upper front casing



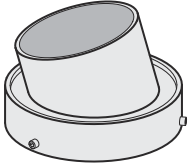
- Hook in the upper front part on both sides onto the screws H1 and H2.
- Tighten the 4 screws.

Centre front casing

- Pull the bus cable from below through the opening at the middle front casing and connect the cable to the Exclusive control unit.
A strain relief for the Cat.5 cable is only necessary AFTER commissioning!
- Fasten the Exclusive control unit on the middle casing: First, position the upper edge of the control unit and then lower the bottom edge until you hear the control unit snap in (audible click).

- Now hook in the centre front casing on both sides onto the screws H4 on the side casing and screw the centre front casing to the upper front casing using 2 screws.

3.13 Conveyor system connection



Burner connection

- Rotate the burner connection between the burner and conveyor system in the direction from which the conveyor channel will come.
- Use the three set screws to fasten the burner connection in this position.

3.13.1 Connection to burner (screw)

- Align the conveyor system and boiler such that eject point and burner connection are aligned one above another as much as possible.
- Shorten the connection hose if necessary.
- Secure the connection hose to the eject connection and the burner connection with the supplied hose clamps.

3.13.2 Connection to burner (drop hose)

- The optional positioning is when the burner connection lies exactly under the head section for the drop hose.
- Connect the head section for the drop hose as straight as possible (angle $\leq 25^\circ$) with the shortest possible path to the burner connection.
- Shorten the connection hose if necessary.
- Secure the connection hose to the eject connection and the burner connection with the supplied hose clamps.

3.13.3 Connection to the suction tank



- Connect the two hoses with the connectors at the suction container: Adhere to the marked arrows on the connectors in order to connect the suction hose [↓↓ ↓↓] and return air hose [↑↑ ↑↑] accordingly!

3.14 Final steps, checks

3.14.1 Closing the cladding

Placing on the cover – securing the cladding parts

- Place on the cover – with the insulated part above the heat exchanger – on to the cladding to test the fit. On all parts of the cladding aligned appropriately?

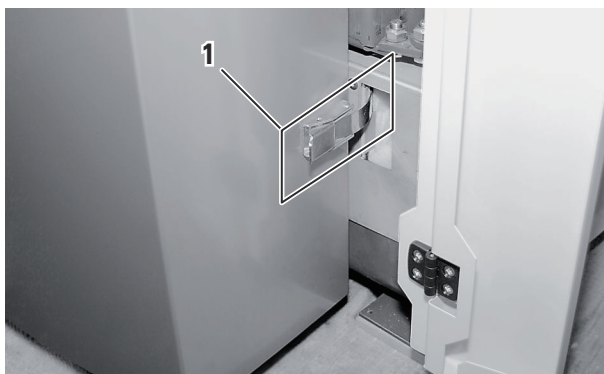
Tightening the screws

- Remove the cover again so that you can reach the underlying screws.
- Align the parts of the cladding to each other and secure all screws.
- Final steps: Now permanently place on the cover.

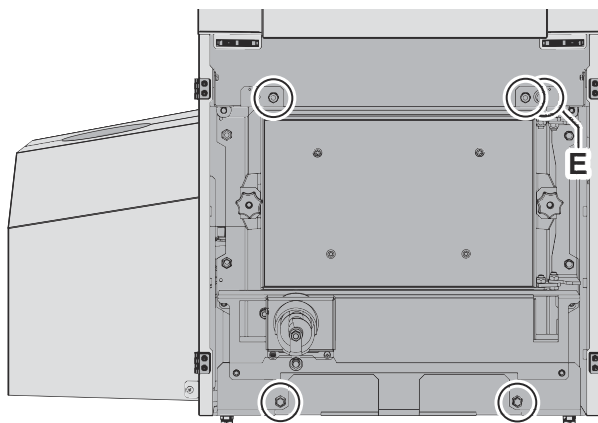
3.14.2 Ash container

Handle and wheels on the ash container are optionally available

- Turn the closing cap on the back side of the ash container to the side.



- Position the ash container on the boiler and clamp the ash container firmly on both sides (1).



- If the ash container wobbles on the boiler: Adjust the stop position of the ash container using the four adjustment screws (image above).
- If required, you can adjust the vertical alignment of the ash container using the eccentric pin (E) in the top right corner.

3.14.3 Affixing the 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.

→ Affix the stickers.

→ See section: **Stickers** [► 16]

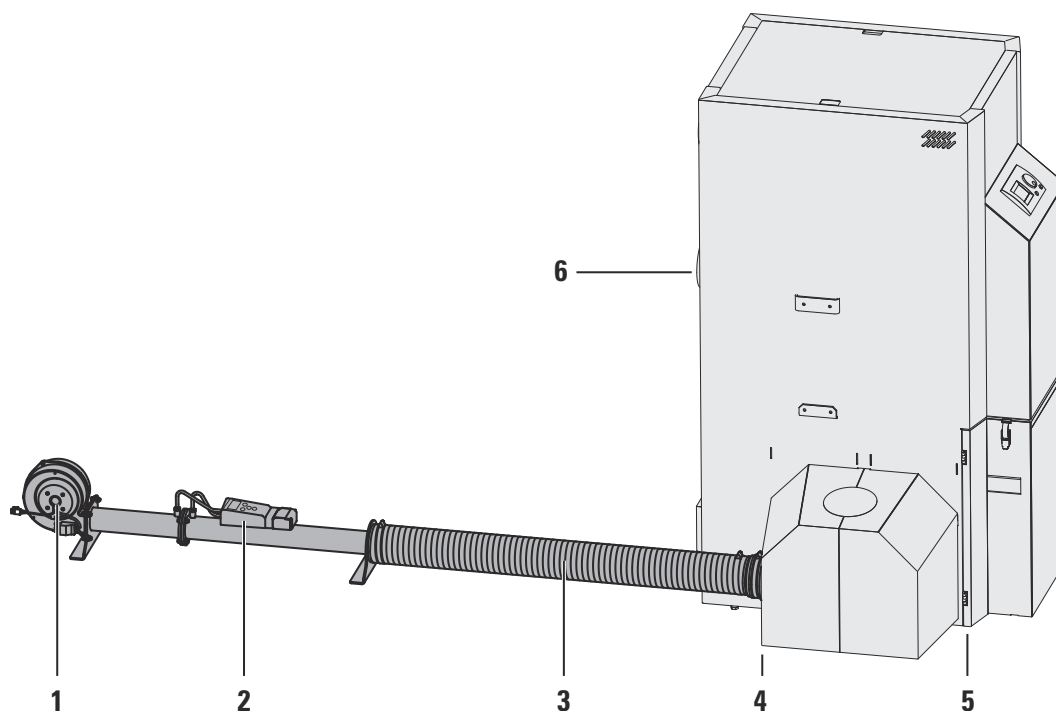
27-2000226 – Languages: DE | EN | FR

27-2000227 – Languages: ES | IT | SL

3.14.4 Option ambient air-independent operation: Boiler leak test KWB Easyfire after installation

The KWB Easyfire must be checked for leak-tightness after the installation of the assemblies and before connecting the combustion air line and the exhaust gas connection line using a suitable measurement setup. The result of the leak test must be document and provided to the operator together with the operating instructions.

The leak test must be performed by respectively qualified certified technicians: chimney sweeps, heating system technicians or the KWB customer service.



1	Fan	4	Primary air fan connector
2	Measurement device	5	KWB Easyfire type EF2 AAI
3	Flexible hose: Makes measurements possible even when there is only little space	6	Bellows

Flow of the leak-tightness check

- ↘ The boiler (5) must be assembled properly.
- Install the measurement setup (1-3) at the primary air fan connector (4) depending on available space.
- Place the bellows (6) in the smoke pipe connector of the KWB Easyfire and inflate the bellows.
- Pull the plug of the primary air fan of the boiler and plug in the fan of the measurement setup (1) at this plug.
- Remove the two hoses from the measuring device (2) and short-circuit the two connections [+] and [-] at the measurement setup using a hose.
- Unplug the hose from the negative pressure sensor of the KWB Easyfire and connect this hose with the measuring device at the [+] input.
- Set the fan phase using the relay test so that a constant test pressure of 10 Pa is indicated on the measurement device.
- Attention:** Make sure that there is no draft, e.g. caused by air-sucking devices or open doors!
- Unplug the measuring device when a test pressure of 10 Pa has been reached. Re-insert the hose at the negative pressure sensor.
- Connect the [+] and [-] connections of the measuring device with the two hoses with the respective [+] and [-] connection at the measurement setup.
- Measure the leakage rate in m³/h at 10 Pa.
Tip: On the KWB measurement setup, the flow rate in m/s must be multiplied with 0.2826 to get the leakage rate in m³/h (= "V").
- Measure the air pressure in mbar (= "p") and the room temperature in K (= "T").
- Put the leakage rate ("V") in m³/h in relation with standard conditions, where the standard pressure ("p_n") is 1,013.25 mbar and the standard temperature ("T_n") 273.15 K:

$$V_n = V \cdot \frac{p \cdot T_n}{p_n \cdot T}$$
- **The standard boiler leakage rate ("V_n") must be below 1.2 m³/h!**
- After measuring:
Remove the bellows and the measurement setup.
- **Document** the result:
Fill out the following test report, sign it and return the test report together with the signed Check list for the commissioning of balanced flue operation to the operator.

Test report

Measuring devices used	Test pressure in the combustion chamber:	Flow rate at the measuring device:	Air pressure:	Ambient temperature:
Manufacturer:				
Type:				
Serial number:				
Date of the last inspection:				

Measurements boiler
Flow rate at the measuring device ("V"):
Air pressure ("p"):
Ambient temperature ("T"):
Leakage rate measured in m ³ /h under standard conditions (maximum 1.2 m ³ /h) ("V _n "):

Certified technician
Name of the local expert:
Name of the professional:
Date, signature: . .

3.14.5 Completion of Assembly

→ Leave the construction site in a clean condition.

4 Appendix

Please also see

- 📄 Technical data table EF2 (► 64)
- 📄 Technical data table EF2 CC4 (► 66)
- 📄 Declaration of Conformity (► 68)

4.1 Dismantling and disposal

4.1.1 Dismantling

- Dismantle the boiler in reverse order of the assembly sequence. Consult KWB customer service for advice! Comply with local regulations!
- Shut down the heating system and disconnect the boiler from the mains after the system has cooled down.
- Empty the boiler.



WARNING

Fatal crushing (pulled muscles) caused by heavy components! Inappropriate lifting/transporting can lead to fatal injury and serious damage to the equipment.

- **Only trained staff** may lift/transport heavy components!
- **Keep the component weight in mind – handle accordingly:**
 - Verify transport securing devices BEFORE lifting / transporting!
 - Keep the centre of gravity in mind - always secure components to prevent slipping and tilting!
 - Select stable bases, suitable tools and assistance from staff!
 - Lift with your back straight, NOT too heavy.
 - Use your personal protection equipment[PSA].
 - In difficult areas ensure that people and system are safe!

- Remove and empty the ash container.
- Disconnect the boiler from the hydraulic system and the chimney connection.
- Remove the casing cover parts and the cabling.
- Disconnect the heat exchanger from the substructure.
- Remove the burner from the substructure.

4.1.2 Disposal

- Comply with local waste disposal regulations! Ensure environmentally sound disposal pursuant to AWG (Austria) or country-specific provisions.
- Recyclable materials can be taken separately and in clean condition to the specified recycling points.

In principle, you can dispose of the heating system as residual or bulky waste – but we recommend separating its components for recycling purposes (in a recycling centre) in order to handle resources in a more sustainable manner.

Plastic materials

The control unit housings, cable bushings and seals are made of plastic or rubber.

Construction waste

This includes the insulation (mineral wool) and the refractory bricks from the combustion chamber.

Metal

Our main material is metal which can be recycled efficiently: Substructure, burner, heat exchanger, cables ...

Circuit boards

- Dispose of these responsibly!
- Comply with all local waste disposal regulations!



CAUTION

Hazardous waste – dispose of properly!

The metals on and in the circuit boards do NOT belong in the household waste.

- ↳ All circuit boards used by KWB comply with the "Directive 2002/95/EC for the restriction of certain hazardous substances in electrical and electronics equipment".
- Take the circuit boards to a proper disposal facility – this helps protect the environment!
- Dispose of the circuit boards at collection points for electronic waste only.

Battery



CAUTION

Environmental contamination by batteries

- ↳ There is a lithium battery inside the boiler control unit.
- Dispose of the battery separately. When doing so, you must comply with all local regulations!



The following characters below the garbage bin symbol stand for:

- Pb: Battery contains lead
- Cd: Battery contains cadmium
- Hg: Battery contains mercury

Old batteries may not be disposed of in the household waste: EU Directive 2006/66/EC obligates consumers to dispose of batteries/rechargeable batteries at a collection point (more information can be found at <http://www.epbaeurope.net/>). Returning batteries to communal collection points is free of charge for private households.

Alternatively, you can send used batteries from the KWB control unit back to us. When sending batteries/rechargeable batteries, you must meet a few special conditions: Please inquire ahead of time (hazardous materials) and be sure to provide sufficient postage.

EF2 S / EF2 GS / EF2 V 18.01.2021	Unit	8	12	15	22	25	30	35	38
Rated power	kW	8,0	12,0	15,0	22,0	25,0	30,0	34,9	38
Partial load	kW	2,4	3,5	4,4	6,4	7,3	8,7	10,1	11,4
Boiler efficiency at rated power	%	92,4	94,0	94,3	95,0	95,2	95,4	95,7	95,3
Boiler efficiency at partial load	%	91,4	89,4	90,0	91,5	92,4	93,8	95,3	94,9
Fuel thermal output at rated load	kW	8,7	12,8	15,9	23,2	26,3	31,4	36,5	39,9
Fuel thermal output at partial load	kW	2,6	3,9	4,9	7,0	7,9	9,2	10,6	12,0
Boiler class according to EN 303-5:2012	–	5	5	5	5	5	5	5	5
EU Energy Label		A+	A+	A+	A+	A+	A+	A+	A+
Water side									
Water content	l	40	40	52	52	78	78	78	78
Water connection, forward/return flow (internal thread)	inch	1	1	1	1	5/4	5/4	5/4	5/4
	mm	25,4	25,4	25,4	25,4	31,8	31,8	31,8	31,8
Water connection for filling and/or emptying (internal thread)	DN	25	25	25	25	32	32	32	32
	inch	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
Thermal safety valve: no	mm	12,7	12,7	12,7	12,7	12,7	12,7	12,7	12,7
	–	x	x	x	x	x	x	x	x
Water-side resistance at 10 K	mbar	5,7	12	34	55,9	39,1	52,1	66,2	66,2
	Pa	570	1200	3400	5590	3910	5210	6620	6620
Water-side resistance at 20 K	mbar	1,7	3,5	9,5	15,4	10,8	14,1	18,1	18,1
	Pa	170	350	945	1540	1080	1410	1810	1810
Boiler-entry temperature (for installation of the KWB-supplied two-way valve with servomotor)	°C	10–70	10–70	10–70	10–70	10–70	10–70	10–70	10–70
Boiler-entry temperature (for installation of an external return-flow boost device)	°C	40–70	40–70	40–70	40–70	40–70	40–70	40–70	40–70
Working temperature/operating temperature	°C	80	80	80	80	80	80	80	80
Maximum permitted temperature	°C	110	110	110	110	110	110	110	110
Maximum operating pressure	bar	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5
Volume flow at spread 10 K	m³/h	0,69	1,03	1,29	1,89	2,15	2,58	3,01	3,01
Volume flow at spread 15 K	m³/h	0,46	0,69	0,86	1,26	1,43	1,72	2,00	2,00
Volume flow at spread 20 K	m³/h	0,34	0,52	0,64	0,95	1,07	1,29	1,50	1,50
Minimum usable buffer tank volume	l	500	500	500	800	800	800	1.000	1.000
Exhaust-gas side (for chimney calculation)									
Combustion chamber temperature	°C	900–1100	900–1100	900–1100	900–1100	900–1100	900–1100	900–1100	900–1100
Combustion chamber pressure	mbar	-0,20	-0,20	-0,20	-0,20	-0,20	-0,20	-0,20	-0,20
Required draft at rated power/partial load		0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05
	mbar	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03
Suction available	–	✓	✓	✓	✓	✓	✓	✓	✓
Exhaust-gas temperature at rated power	°C	120	120	120	120	120	120	120	120
Exhaust-gas temp. Partial load	°C	90	90	90	90	90	90	90	90
Exhaust-gas mass flow at rated power	kg/s	0,006	0,009	0,011	0,016	0,018	0,022	0,026	0,028
Exhaust-gas mass flow at partial load	kg/s	0,002	0,003	0,004	0,005	0,006	0,007	0,008	0,008
Exhaust-gas volume at rated power	Nm³/h	16,5	24,9	31,1	45,2	51,3	61,4	71,2	77,3
Exhaust-gas volume at partial load	Nm³/h	5,3	7,9	9,8	14,1	15,9	18,7	21,5	23,3
Exhaust-gas connection height boiler side	mm	750	750	860	860	1050	1050	1050	1050
Exhaust-gas pipe diameter	mm	130	130	130	130	150	150	150	150
Incline of the smoke-pipe	°	≥ 3	≥ 3	≥ 3	≥ 3	≥ 3	≥ 3	≥ 3	≥ 3
Chimney diameter (approx. values)	mm	140	140	140	140	160	160	160	160
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	16,5	16,5	16,5	16,5	16,5
Density	kg/m³	≥ 600	≥ 600	≥ 600	≥ 600	≥ 600	≥ 600	≥ 600	≥ 600
Water content	% by weight	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10
Ash content	% by weight	≤ 0,7	≤ 0,7	≤ 0,7	≤ 0,7	≤ 0,7	≤ 0,7	≤ 0,7	≤ 0,7
Length	mm	3,15–40	3,15–40	3,15–40	3,15–40	3,15–40	3,15–40	3,15–40	3,15–40
Diameter	mm	6±1	6±1	6±1	6±1	6±1	6±1	6±1	6±1
Dust proportion before loading	% by weight	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1
Raw material: Pure wood, bark proportion <15 %	–	–	–	–	–	–	–	–	–
Ash									
Ash container volume	l	28	28	28	28	28	28	28	28
Ash container filled	kg	27	27	27	27	27	27	27	27
Ash removal system	–	✓	✓	✓	✓	✓	✓	✓	✓
Electrical system									
Connection	–	230V, 1~ 50Hz, C13 A	230V, 1~ 50Hz, C13 A	230V, 1~ 50Hz, C13 A	230V, 1~ 50Hz, C13 A	230V, 1~ 50Hz, C13 A	230V, 1~ 50Hz, C13 A	230V, 1~ 50Hz, C13 A	230V, 1~ 50Hz, C13 A
Connected power EF2 V	W	559	559	559	559	577	577	577	577
Connected power EF2 S	W	609	609	609	609	627	627	627	627
Connected power EF2 GS	W	2189	2189	2189	2189	2207	2207	2207	2207
Connected power EF2 GS with sample probes	W	2444	2444	2444	2444	2462	2462	2462	2462
Storage container									
Contents storage container for type EF2 V	l	107	107	107	107	107	107	107	107
Contents storage container for type EF2 S + 300	l	300	300	300	300	300	300	300	300
Suction conveyor type EF2 GS									
Max. suction length	m	25	25	25	25	25	25	25	25
Max. suction head	m	5	5	5	5	5	5	5	5
Contents storage container for type EF2 GS	l	42	42	67	67	90	90	90	90

EF2 S / EF2 GS / EF2 V 18.01.2021	Unit	8	12	15	22	25	30	35	38
Weights									
Boiler weight EF2 V	kg	341	341	370	370	416	416	416	416
Boiler weight EF2 S	kg	326	326	352	352	394	394	394	394
Boiler weight EF2 GS	kg	349	349	378	378	424	424	424	424
Emissions according to test report									
Test report no.	–	BLT-014/12	BLT-019/10	***	BLT-020/10	***	***	BLT-021/10	***
O ₂ content rated power	Vol.-%	7,7	9,2	8,6	7,3	7,0	6,6	6,1	6,0
O ₂ content partial load	Vol.-%	12,4	9,7	9,9	10,3	10,4	10,7	10,9	10,5
CO ₂ content rated power	Vol.-%	11,2	11,4	11,9	13,2	13,4	13,9	14,4	14,3
CO ₂ content partial load	Vol.-%	8,8	10,9	10,7	10,3	10,2	9,9	9,7	10,0
Noise emissions									
Normal operating noise at rated power	dB(A)	< 70	< 70	< 70	< 70	< 70	< 70	< 70	< 70
Reference 10 % O₂ dry (EN 303-5)									
CO at rated power	mg/Nm ³	30,0	33,0	27,6	15,0	13,8	11,9	10,0	11,0
CO at partial load	mg/Nm ³	102,0	20,0	21,5	25,0	25,7	26,8	28,0	22,0
NOx at rated power	mg/Nm ³	124,0	135,0	137,7	144,0	147,5	153,2	159,0	170,0
NOx at partial load	mg/Nm ³	95,0	131,0	131,0	131,0	133,3	137,2	141,0	149,0
OGC at rated power	mg/Nm ³	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 2
OGC at partial load	mg/Nm ³	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 2
Dust at rated power	mg/Nm ³	19,0	21,0	16,8	7,0	8,4	10,7	13,0	15,0
Dust at partial load	mg/Nm ³	13,0	9,0	11,7	18,0	15,9	12,5	9,0	10,0
Reference 11 % O₂ dry									
CO at rated power	mg/Nm ³	27,3	30,0	25,1	13,6	12,6	10,8	9,1	10,0
CO at partial load	mg/Nm ³	92,7	18,2	19,5	22,7	23,4	24,4	25,5	20,0
NOx at rated power	mg/Nm ³	112,7	122,7	125,2	130,9	134,1	139,3	144,5	154,5
NOx at partial load	mg/Nm ³	86,4	119,1	119,1	119,1	121,2	124,7	128,2	135,5
OGC at rated power	mg/Nm ³	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 2
OGC at partial load	mg/Nm ³	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 2
Dust at rated power	mg/Nm ³	17,3	19,1	15,3	6,4	7,6	9,7	11,8	13,6
Dust at partial load	mg/Nm ³	11,8	8,2	10,6	16,4	14,5	11,3	8,2	9,1
Reference 13 % O₂ dry (FJ-BLT)									
CO at rated power	mg/Nm ³	22,0	24,0	20,1	11,0	10,1	8,5	7,0	8,0
CO at partial load	mg/Nm ³	74,0	15,0	15,9	18,0	18,5	19,2	20,0	16,0
NOx at rated power	mg/Nm ³	90,0	98,0	100,1	105,0	107,3	111,2	115,0	124,0
NOx at partial load	mg/Nm ³	69,0	96,0	95,7	95,0	96,8	99,9	103,0	108,0
OGC at rated power	mg/Nm ³	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 2
OGC at partial load	mg/Nm ³	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dust at rated power	mg/Nm ³	14,0	15,0	12,0	5,0	6,2	8,1	10,0	11,0
Dust at partial load	mg/Nm ³	10,0	7,0	8,8	13,0	11,4	8,7	6,0	7,0
In accordance with § 15a-BVG Austria									
CO at rated power	mg/MJ	14,0	15,0	12,6	7,0	6,3	5,2	4,0	5,0
CO at partial load	mg/MJ	48,0	9,0	9,9	12,0	12,2	12,6	13,0	11,0
NOx at rated power	mg/MJ	58,0	63,0	64,2	67,0	68,4	70,7	73,0	84,0
NOx at partial load	mg/MJ	44,0	61,0	61,0	61,0	61,9	63,5	65,0	74,0
OGC at rated power	mg/MJ	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
OGC at partial load	mg/MJ	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dust at rated power	mg/MJ	9,0	10,0	7,9	3,0	3,7	4,8	6,0	8,0
Dust at partial load	mg/MJ	6,0	4,0	5,2	8,0	7,1	5,5	4,0	5,0

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

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

mg/Nm³ ... Milligram per standard cubic meter (1 Nm³ under 1.013 hectopascal at 0 °C)

EF2 S / EF2 GS / EF2 V 18.01.2021	Unit	CC4 10	CC4 12	CC4 15	CC4 22	CC4 25	CC4 30	CC4 35	CC4 40
Rated power	kW	10,0	12,0	15,0	22,0	25,0	30,0	34,9	40
Partial load	kW	3,0	3,6	4,5	6,6	7,5	9,0	10,5	12,0
Boiler efficiency at rated power (based on the net calorific value)	%	101,6	101,8	102,1	102,8	102,7	102,6	102,5	103,1
Boiler efficiency at partial load (based on the net calorific value)	%	96,9	97,2	97,6	98,6	99,2	100,1	101,0	101,7
Boiler efficiency at rated power (based on the gross calorific value)	%	93,4	93,6	93,9	94,7	94,7	94,6	94,6	95,0
Boiler efficiency at partial load (based on the gross calorific value)	%	89,0	89,3	89,8	90,8	91,4	92,3	93,2	93,7
Fuel thermal output at rated load (based on the net calorific value)	kW	9,8	11,8	14,7	21,4	24,3	29,2	34,0	38,8
Fuel thermal output at partial load (based on the net calorific value)	kW	3,1	3,7	4,6	6,7	7,6	9,0	10,4	11,8
Boiler class according to EN 303-5:2012	–	5	5	5	5	5	5	5	5
EU Energy Label	–	A+	A+	A++	A++	A++	A++	A++	A++
Water side									
Water content	l	40	40	52	52	78	78	78	78
Water connection, forward/return flow	inch	1 / 6/4	1 / 6/4	1 / 6/4	1 / 6/4	5/4 / 6/4	5/4 / 6/4	5/4 / 6/4	5/4 / 6/4
(internal thread)	mm	25,4 / 38,1	25,4 / 38,1	25,4 / 38,1	25,4 / 38,1	31,8 / 38,1	31,8 / 38,1	31,8 / 38,1	31,8 / 38,1
	DN	25 / 40	25 / 40	25 / 40	25 / 40	32 / 40	32 / 40	32 / 40	32 / 40
Water connection for filling and/or emptying	inch	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
(internal thread)	mm	12,7	12,7	12,7	12,7	12,7	12,7	12,7	12,7
Thermal safety valve: no	–	x	x	x	x	x	x	x	x
Water-side resistance at 10 K	mbar Pa	17,3	30,5	50,3	96,4	95,9	95,2	94,4	124,7
Water-side resistance at 20 K	mbar Pa	4,89	7,7	12,0	21,9	22,6	23,8	24,95	32,4
Boiler-entry temperature (for installation of the KWB-supplied two-way valve with servomotor)	°C	10–70	10–70	10–70	10–70	10–70	10–70	10–70	10–70
Boiler-entry temperature (for installation of an external return-flow boost device)	°C	40–70	40–70	40–70	40–70	40–70	40–70	40–70	40–70
Working temperature/operating temperature	°C	80	80	80	80	80	80	80	80
Maximum permitted temperature	°C	110	110	110	110	110	110	110	110
Maximum operating pressure	bar	3	3	3	3	3	3	3	3
Volume flow at spread 10 K	m³/h	0,86	1,03	1,29	1,89	2,15	2,58	3,01	3,44
Volume flow at spread 15 K	m³/h	0,57	0,69	0,86	1,26	1,43	1,72	2,00	2,30
Volume flow at spread 20 K	m³/h	0,43	0,52	0,64	0,95	1,07	1,29	1,50	1,72
Minimum usable buffer tank volume	l	500	500	500	800	800	800	1.000	1.000
Exhaust-gas side (for chimney calculation)									
Combustion chamber temperature	°C	900–1100	900–1100	900–1100	900–1100	900–1100	900–1100	900–1100	900–1100
Combustion chamber pressure	mbar	-0,20	-0,20	-0,20	-0,20	-0,20	-0,20	-0,20	-0,20
Required draft at rated power/partial load	mbar	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01
		0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01
Suction available	–	✓	✓	✓	✓	✓	✓	✓	✓
Exhaust-gas temperature at rated power	°C	40–70	40–70	40–70	40–70	40–70	40–70	40–70	40–70
Exhaust-gas temp. Partial load	°C	40–70	40–70	40–70	40–70	40–70	40–70	40–70	40–70
Exhaust-gas mass flow at rated power	kg/s	0,007	0,009	0,011	0,016	0,018	0,022	0,026	0,031
Exhaust-gas mass flow at partial load	kg/s	0,002	0,003	0,004	0,005	0,006	0,007	0,008	0,009
Exhaust-gas volume at rated power	Nm³/h	20,8	24,9	31,1	45,2	51,3	61,4	71,2	83
Exhaust-gas volume at partial load	Nm³/h	6,6	7,9	9,8	14,1	15,9	18,7	21,5	26,2
Exhaust-gas connection height boiler side	mm	990	990	1110	1110	1241	1241	1241	1241
Exhaust-gas pipe diameter	mm	100/130	100/130	100/130	100/130	150	150	150	150
Chimney diameter (approx. values)	mm	140	140	140	140	160	160	160	160
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	16,5	16,5	16,5	16,5	16,5
Density	kg/m³	≥ 600	≥ 600	≥ 600	≥ 600	≥ 600	≥ 600	≥ 600	≥ 600
Water content	% by weight	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10
Ash content	% by weight	≤ 0,7	≤ 0,7	≤ 0,7	≤ 0,7	≤ 0,7	≤ 0,7	≤ 0,7	≤ 0,7
Length	mm	3,15–40	3,15–40	3,15–40	3,15–40	3,15–40	3,15–40	3,15–40	3,15–40
Diameter	mm	6±1	6±1	6±1	6±1	6±1	6±1	6±1	6±1
Dust proportion before loading	% by weight	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1
Raw material: Pure wood, bark proportion <15 %	–	–	–	–	–	–	–	–	–
Ash									
Ash container volume	l	28	28	28	28	28	28	28	28
Ash container filled	kg	27	27	27	27	27	27	27	27
Ash removal system	–	✓	✓	✓	✓	✓	✓	✓	✓
Electrical system									
Connection	–	230V, 1~ 50Hz, C13 A	230V, 1~ 50Hz, C13 A	230V, 1~ 50Hz, C13 A	230V, 1~ 50Hz, C13 A	230V, 1~ 50Hz, C13 A	230V, 1~ 50Hz, C13 A	230V, 1~ 50Hz, C13 A	230V, 1~ 50Hz, C13 A
Connected power EF2 V	W	559	559	559	559	577	577	577	577
Connected power EF2 S	W	609	609	609	609	627	627	627	627
Connected power EF2 GS	W	2.189	2.189	2.189	2.189	2.207	2.207	2.207	2.207
Connected power EF2 GS with sample probes	W	2.444	2.444	2.444	2.444	2.462	2.462	2.462	2.462
Storage container									
Contents storage container for type EF2 V	l	107	107	107	107	107	107	107	107
Contents storage container for type EF2 S + 300	l	300	300	300	300	300	300	300	300
Suction conveyor type EF2 GS									
Max. suction length	m	25	25	25	25	25	25	25	25
Max. suction head	m	5	5	5	5	5	5	5	5
Contents storage container for type EF2 GS	l	42	42	67	67	90	90	90	90

EF2 S / EF2 GS / EF2 V 18.01.2021	Unit	CC4 10	CC4 12	CC4 15	CC4 22	CC4 25	CC4 30	CC4 35	CC4 40
Weights									
Boiler weight EF2 V	kg	341	341	370	370	416	416	416	416
Boiler weight EF2 S	kg	326	326	352	352	394	394	394	394
Boiler weight EF2 GS	kg	349	349	378	378	424	424	424	424
Emissions according to test report									
		TÜV Austria	TÜV Austria	TÜV Austria	TÜV Austria	TÜV Austria	TÜV Austria	TÜV Austria	TÜV Austria
Test report no.	-	17-IN-AT-UW WE-EX-284/2	18-U-032/SD	18-U-033/SD	17-IN-AT-UW WE-EX-284/3	18-U-034/SD	18-U-035/SD	17-IN-AT-UW WE-EX-284/4	18-U-036/SD
O ₂ content rated power	Vol.-%	8,2	8,0	7,6	6,8	6,9	7,0	7,1	6,9
O ₂ content partial load	Vol.-%	8,8	8,8	8,9	9,0	9,0	9,1	9,1	10,2
CO ₂ content rated power	Vol.-%	12,0	12,2	12,5	13,1	13,1	13,2	13,3	13,4
CO ₂ content partial load	Vol.-%	11,3	11,3	11,2	11,1	11,1	11,2	11,3	10,1
Noise emissions									
Normal operating noise at rated power	dB(A)	< 70	< 70	< 70	< 70	< 70	< 70	< 70	< 70
Reference 10 % O₂ dry (EN 303-5)									
CO at rated power	mg/Nm ³	35	35	35	35	29	20	11	11
CO at partial load	mg/Nm ³	29	32	36	45	52	64	75	55
NOx at rated power	mg/Nm ³	164	164	164	163	166	171	176	179
NOx at partial load	mg/Nm ³	144	143	141	136	139	143	147	155
OGC at rated power	mg/Nm ³	2,6	< 3	< 2	< 2	< 2	< 2	< 2	< 2
OGC at partial load	mg/Nm ³	< 2	< 2	< 2	< 3	< 3	< 3	< 3	< 3
Dust at rated power	mg/Nm ³	19	19	18	17	16	15	13	17
Dust at partial load	mg/Nm ³	8	9	11	14	16	18	21	17
Reference 11 % O₂ dry									
CO at rated power	mg/Nm ³	32	32	32	32	27	18	10	9
CO at partial load	mg/Nm ³	27	29	33	41	47	58	68	50
NOx at rated power	mg/Nm ³	149	149	149	149	152	156	160	162
NOx at partial load	mg/Nm ³	131	130	128	123	126	130	134	141
OGC at rated power	mg/Nm ³	2,3	< 2	< 2	< 2	< 2	< 2	< 2	< 2
OGC at partial load	mg/Nm ³	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 3
Dust at rated power	mg/Nm ³	18	18	17	16	15	14	12	16
Dust at partial load	mg/Nm ³	7	8	10	13	14	17	19	15
Reference 13 % O₂ dry (TÜV-AUSTRIA)									
CO at rated power	mg/Nm ³	25	25	25	26	22	15	8	8
CO at partial load	mg/Nm ³	21	23	26	33	38	47	55	40
NOx at rated power	mg/Nm ³	120	120	120	119	121	125	128	130
NOx at partial load	mg/Nm ³	105	104	103	99	101	104	107	113
OGC at rated power	mg/Nm ³	1,9	< 2	< 2	< 2	< 2	< 2	< 2	< 2
OGC at partial load	mg/Nm ³	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 3
Dust at rated power	mg/Nm ³	14	14	14	13	12	11	10	12
Dust at partial load	mg/Nm ³	6	7	8	10	11	13	15	12
In accordance with § 15a-BVG Austria									
CO at rated power	mg/MJ	17	17	17	18	15	10	5	5
CO at partial load	mg/MJ	14	15	17	22	25	31	37	27
NOx at rated power	mg/MJ	81	81	81	81	82	85	87	88
NOx at partial load	mg/MJ	71	70	69	67	68	71	73	77
OGC at rated power	mg/MJ	1,3	< 1	< 1	< 1	< 1	< 1	< 1	< 1
OGC at partial load	mg/MJ	< 1	< 1	< 1	< 2	< 2	< 2	< 2	< 2
Dust at rated power	mg/MJ	10	10	9	8	8	7	6	8
Dust at partial load	mg/MJ	4	5	5	7	8	9	10	8
EF2 with condenser module									
Length, boiler and condenser module	mm	1.295	1.295	1.346	1.346	1.395	1.395	1.395	1.448
Length, condenser module	mm	431	431	484	484	530	530	530	585
Width, boiler and condenser module	mm	874	874	874	874	874	874	874	874
Width, condenser module	mm	532	532	532	532	532	532	532	623
Distance, condensate discharge to boiler side	mm	260	260	275	275	280	280	280	295
Connection height, return flow	mm	606	606	725	725	899	899	899	899
Connection height, condensate discharge	mm	150 - 160	150 - 160	150 - 240	150 - 240	150 - 410	150 - 410	150 - 410	150 - 310
Connection height, washing unit	mm	547,0	547,0	667,0	667,0	840,0	840,0	840,0	922,0
Condensate/nominal load hour	l	0,8 - 1	0,9 - 1,3	1 - 1,5	1,9 - 2,3	2 - 2,5	2,2 - 2,6	2,3 - 2,7	2,5 - 3
Connection, washing unit	inch	1/2"	1/2"	3/4"	3/4"	3/4"	3/4"	3/4"	1/2"
Connection, condensate discharge	DN	40mm	40mm	40mm	40mm	40mm	40mm	40mm	40mm
Weight, condenser module	kg	49	49	59	59	59	59	59	84

mg/Nm³ ... Milligram per standard cubic meter (1 Nm³ under 1.013 hectopascal at 0 °C)

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

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 8–40 kW, comprising the models
EF2 S/GS/V 8 / 12 / 15 / 22 / 25 / 30 / 33 / 35 / 38
EF2 CC4 S/GS/V 10 / 12 / 15 / 22 / 25 / 30 / 35 / 40

in combination with conveyor systems

Pellet Stirrer Plus with elbow screw or suction conveyor, KWB Pellet Big Bag with elbow screw or suction conveyor, conveyor screw with elbow screw or suction conveyor, KWB Pellet Box with suction conveyor, 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 60335-2-102:2006, ÖNORM EN ISO 12100:2013-10-15
EF2 CC4 S/GS/V: ÖNORM M 7551:2012

KWB – Kraft und Wärme aus
Biomasse GmbH

St. Margarethen an der Raab
19. 06. 2018



Authorised representative for
the compilation of the technical
documents

Place,
Date

Helmut Matschnig, Managing
Director

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