INSTALLATION

KWB Easyfire

USP

Contents

1 General Information

1.1 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.

The KWB – Kraft und Wärme aus Biomasse GmbH including their 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 back side of this document.

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

1.2 Please note

1.2.1 Grading of the safety instructions

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

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

1.2.2 General safety instructions

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

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

Comply with the safety instructions

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

Please read and follow the manual

NOTE	**Please read the instructions carefully before installation or commissioning!**
	Compliance with the instructions and proper installation or commissioning is a prerequisite for a warranty provided by KWB.
	⇢ If you are unsure about anything, please refer to the instructions or contact the KWB customer service.
	↳ You will find all instructions for our heating systems in the KWB PartnerNet: http://partnernet.kwb.net/

1.3 Legal

Intellectual Property

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.

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 resultant damage shall lie with those who operate and use the system.

2 Before you begin

2.1 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

- 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).

Fire extinguisher

- 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.

Lighting, electrical system

- Make sure permanently installed lighting and an electrical supply line to the heating system are available.
- Leave sufficient reserve cable in the boiler room in case you wish to connect the boiler with other bus participants.

Ventilation

- Two air vents must be installed; one close to the ground and one close to the ceiling; the air intake opening must lead directly into the open. If other rooms must be crossed to do this, this air duct must have an envelope according to EI 90 (EN 13501)!
- The size of the non-closing opening is dependent on the rated power of the heating system: Calculate the opening with 5 cm^2 per kW, but no less than 400 cm^2.
- Fit a protective grille with a non-flammable mesh width $<$5 mm on the outside of ventilation openings into the open.

Frost protection

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

Room temperature

- 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.

2.2 Bringing in the parts

The basic structure (heat exchanger and combustion room module, storage container) is delivered pre-assembled on a one-way pallet (120x80 cm).

This his how you move the basic structure from the palette

⇢ Open the combustion room door and remove the two screws that fasten the basic structure to the pallet.

⇢ Secure the combustion room door against opening (adhesive tape, cable binders ...) to ensure that it is not damaged during the following steps.

⇢ Screw in the setscrews under the storage container so you have less problems moving the basic structure.
The basic structure will subsequently rest in a stable position on the heat exchanger's base plate.

⇢ Mount the lifting pipe (not supplied: pipe with a 1" external thread) to the forward flow connection and lever and/or pull the basic structure to the back until only half of the basic structure remains on the pallet.

⇢ Tilt the basic structure to the back and off the pallet: The heat exchanger base plate is high enough; the casing parts will remain undamaged.

⇢ Tilt the basic structure further and pull the pallet out from underneath the basic structure.

⇢ Handle the packaging units with care: The casing parts might get scratched!

2.2.1 Door width

An unobstructed door width of 85×180 cm is sufficient for the KWB Easyfire 1.

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!

2.3 Tools

Supplied tools

NO tools are supplied.

Required tools (NOT supplied):

- Lifting truck
- Spirit level
- Screwdriver, Allen-head hex, torx
- Open-end wrench 13, 17
- Side cutters (for the cable ties)
- KWB recommends using a lifting pipe (pipe with a 1" external thread) to safely move the basic structure.
- Silicone and silicone gun

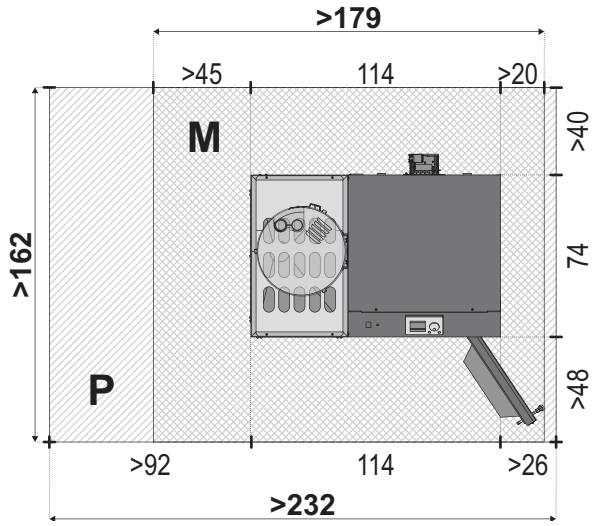
- Cutter (knife)
- A cordless screwdriver is recommended.

2.4 Placement

2.4.1 Dimensions, clearances

⇢ Refer to the following drawing for the required minimum clearances and mark the boiler position in the room.

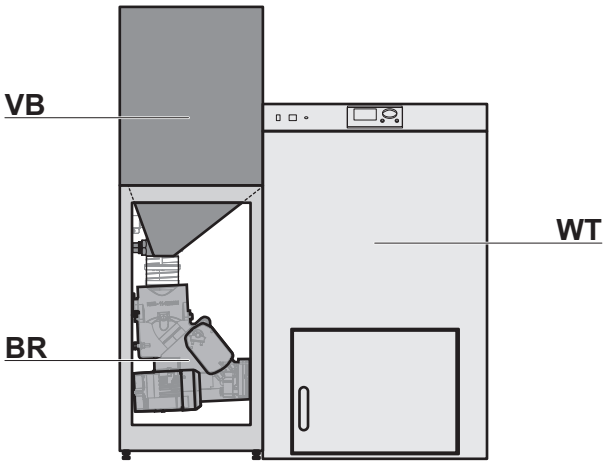
KWB Easyfire 1, Type USV V and Type USV GS



M	Minimum space requirements
P	Recommended space requirements incl. sufficient room to perform maintenance

3 Installing the boiler

3.1 Explanation of system parts

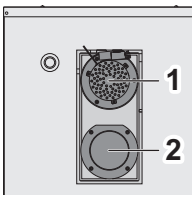


[VB]	Storage container or suction container	[WT]	Heat exchanger with combustion room and ash tray
[BR]	Burner		

3.2 Retrofitting the system

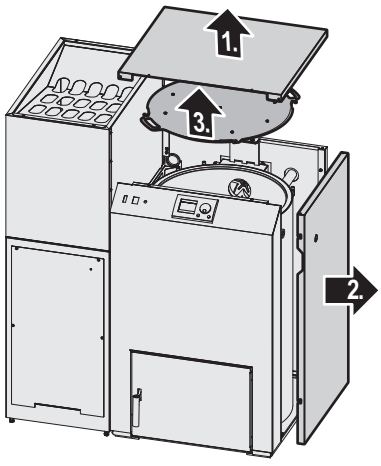
The following components are installed on-site to protect them against damage and make placement of the system easier:

- Combustion room door handle
  Open the combustion room door and remove the screw at the narrow side of the door. Position the handle in the slot in the door and fasten the door with the screw.



- Induced draught fan (1)
  Fasten the induced draught fan including seal with 3 screws at the rear of the boiler.
- Exhaust gas pipe outlet (2)
  Fasten the exhaust gas pipe outlet including seal with 4 screws at the rear of the boiler.

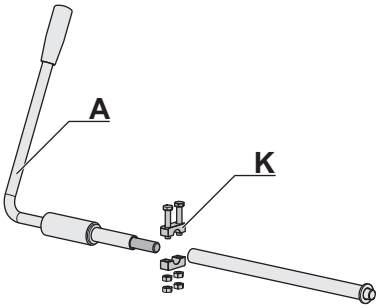
3.2.1 Heat exchanger cleaning system

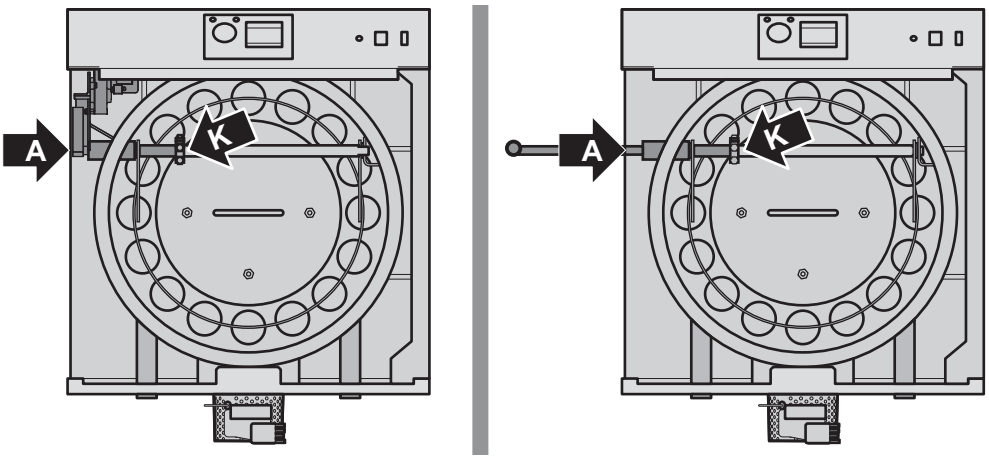


⇢ 1. Unscrew the two screws of the casing on the side and remove this casing part. (Or you tilt the side casing so far away from the boiler that you get access to the shaft of the heat exchanger cleaning.)

⇢ 2. Unscrew the screws and remove the upper casing part.

⇢ 3. Unscrew the screws and lift off the heat exchanger cover.

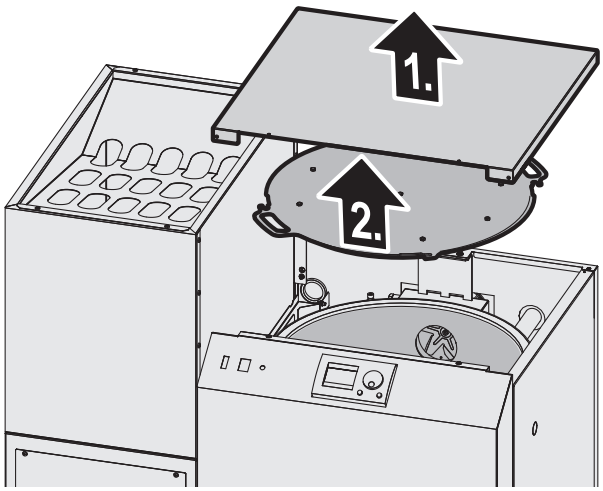
Automatic heat exchanger cleaning (by default installed in the KWB Easyfire 1 type USP GS)	Semi-automatic heat exchanger cleaning (by default installed in KWB Easyfire 1 Type USP V)
⇢ Insert the cleaning motor's shaft [A] into the shaft of the heat exchanger cleaning and connect both parts with a clamp [K]. ⇢ Fasten the cleaning motor to the mounting angle with 4x screws. ⇢ Align the cam disk in the centre of the square drive shaft section. ⇢ Connect cable #3 to the cleaning motor.	⇢ Guide the lever from the outside through this opening. ⇢ Insert the lever shaft [A] to the stop into the heat exchanger cleaning shaft and connect both parts with a clamp [K]. 



⇢ Install the heat exchanger cover and both casing parts with all screws.

3.2.2 Optional: Retrofitting to 15/20 kW

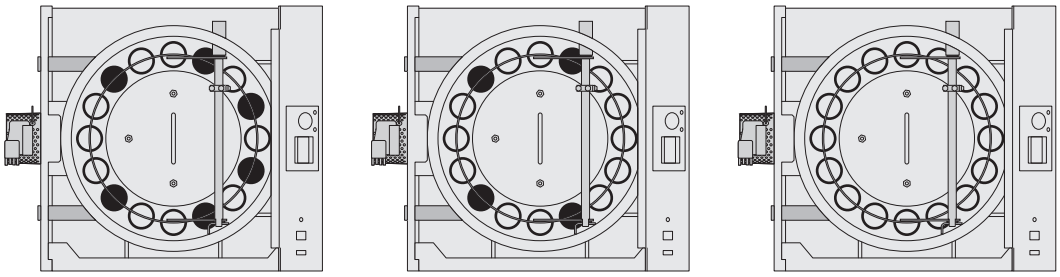
The KWB Easyfire 1 type USP V 10/15/20 kW is ALWAYS delivered as KWB Easyfire 1 with 10 kW, and, if required, must be retrofitted to the desired power rating using the supplied service package.



⇢ Unscrew the screws and lift off the casing part [1].

⇢ Unscrew the screws and lift off the cover [2].

Exposing the heat exchanger pipes



10 kW **15 kW** **20 kW**

↘ When delivered, 6 stoppers close the heat exchanger pipes.

⇢ Retrofitting to 15 kW:
Remove 2 stoppers as shown in the drawing.

⇢ Retrofitting 20 kW:
Remove all 6 stoppers.

Placing the cleaning springs

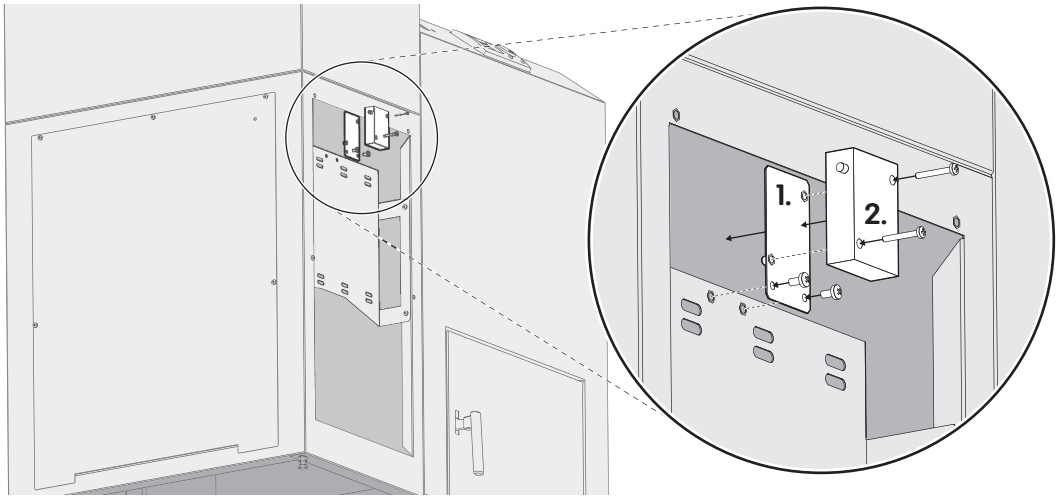
⇢ Insert the supplied cleaning springs (15 kW: 2 pieces | 20 kW: 6 pieces) from below (combustion chamber) into the exposed heat exchanger pipes and hook the springs into the ring.

⇢ Check whether every open heat exchanger pipe has, in fact, been equipped with one turbulator and one cleaning spring!

⇢ Check whether all other heat exchanger pipes are, in fact, closed with a stopper (only for 10 kW and 15 kW)!

3.2.3 Option: SMS module

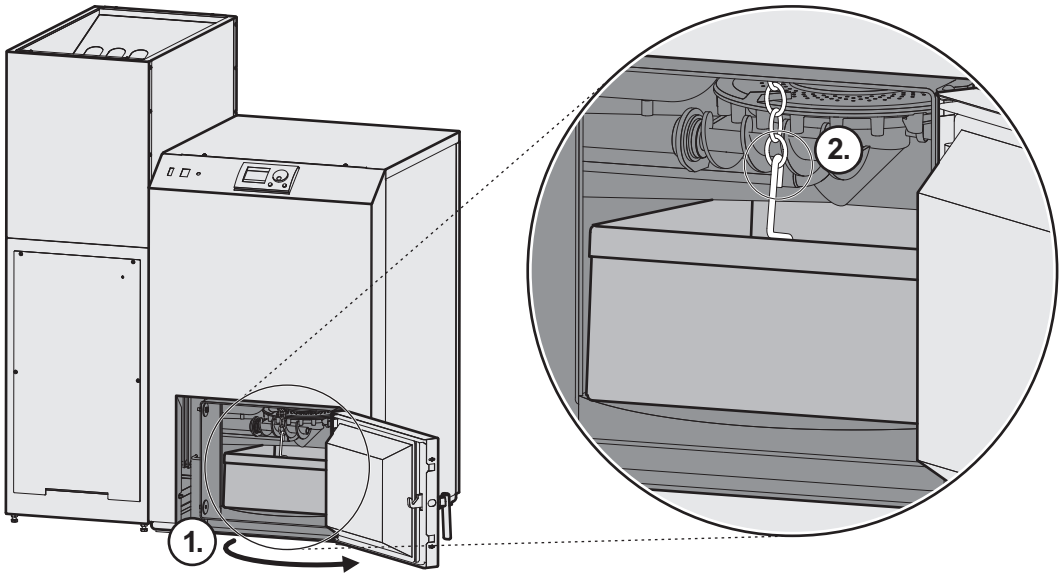
You will need to install a retaining plate to fasten the SMS module:



⇢ Fasten the SMS retaining plate (1) with 2 screws to the plate of the I/O board.

⇢ Fasten the SMS module (2) with 2 screws to the SMS retaining plate.

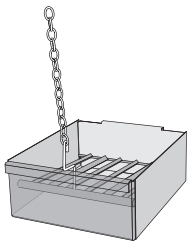
3.2.4 Option: Ash compaction



⇢ Open the combustion chamber door (1).

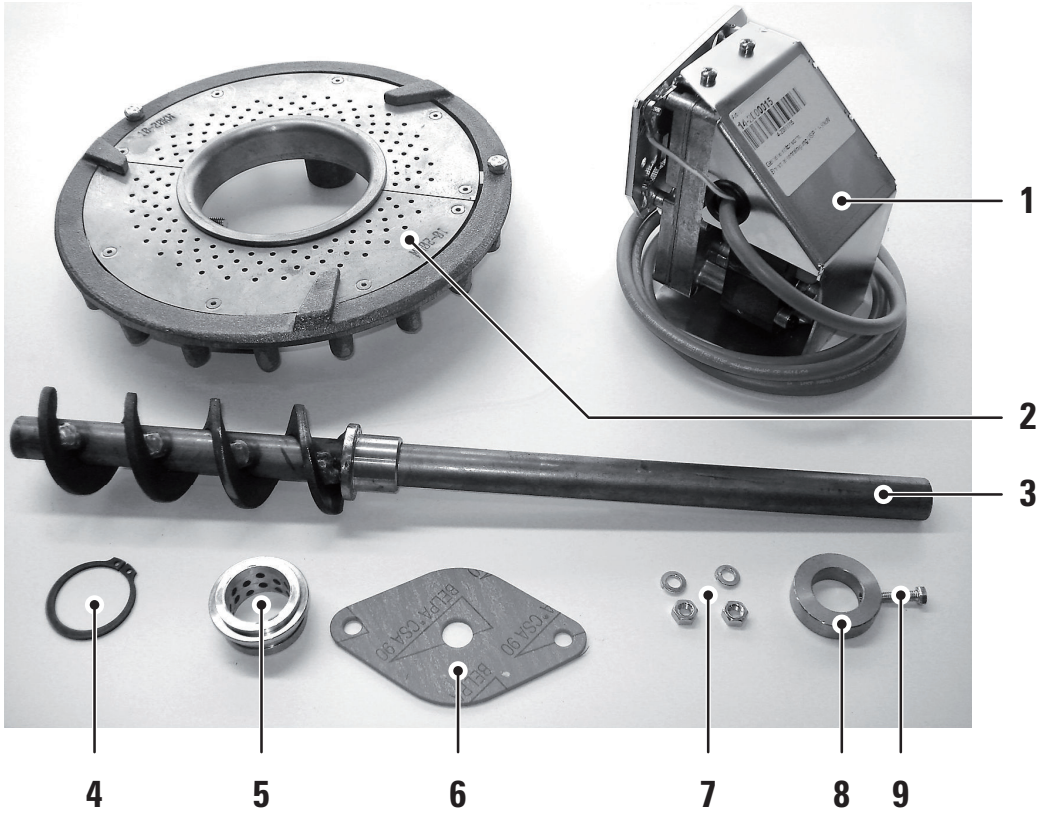
⇢ Pull out the ash tray and put the grid in the ash tray. Make sure the hook points towards the front and up.

⇢ Hook in the chain into the ring of the heat exchanger cleaning and connect the chain with the grid (2).



3.2.5 Option: Easyflex retrofitting

Scope of delivery



Overview of all delivered parts

1	**Motor** with cover, flange and cable: art. No.: 14-2000015 *Spare parts article numbers:* *Drive motor: 14-1000002* *Motor cover: 07-1001203* *Motor flange: 07-1001204* *Cable: 13-1000633*	2	**Burner cup with burner cup cleaning** 10 - 20 kW (4 rows of perforations): Art. No. 07-1010027 25 - 30 kW (5 rows of perforations): Art. No. 07-1010028
3	**Drive screw**: Art. No.: 07-1010022	4	**Locking ring**: Art. No.: 03-1000825
5	**Bearing sleeve**: Art. No.: 07-2000031	6	**Motor shaft seal**: Art. No.: 09-1000149
7	2x **nuts** M5: Art. No. 03-1000223 2x **lock washer** M5: Art. No. 03-1000811	8	**Adjusting ring**: Art. No.: 09-1000171
9	**Screw** M5x16 **to adjusting ring:** Art. No. 03-1000008		Not shown in illustration: **connector cable**

Installation steps

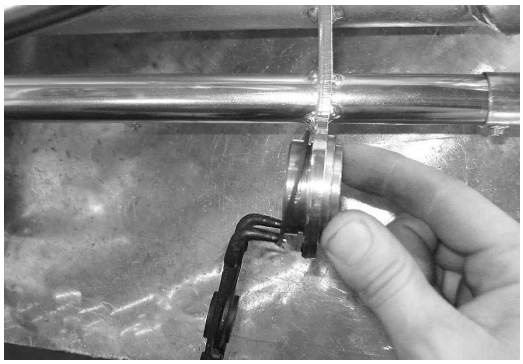
⇢ Unplug all connectors from the board.

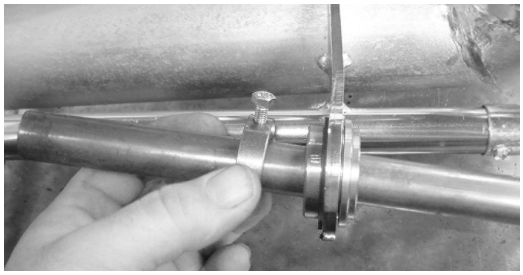
⇢ Unplug the connector of the radial fan.

Dismantling

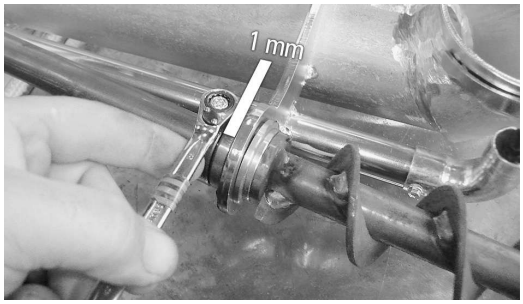
	⇢ Remove the screws and pull out the burner. (Example illustration)
	⇢ Unscrew the counter nut from the torque converter of the fire shutter – the two locked nuts must remain as they are!
	⇢ Remember the settings of the scaling and the switch lever at the motor! ⇢ Remove the two screws and pull off the fire shutter motor.
	⇢ Unscrew the two nuts and remove the blind cover.

Installation

	⇢ Push the bearing sleeve in direction of the arrow into the bracket.
	⇢ Fasten the bearing sleeve with the locking ring. Please ensure that the locking ring is fitted correctly!



⇢ Thread the drive screw into the bearing sleeve and simultaneously the adjusting ring onto the drive screw.

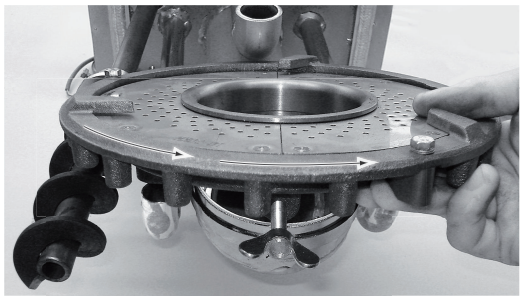


⇢ Slide the drive screw to the stop onto the drive motor axle.

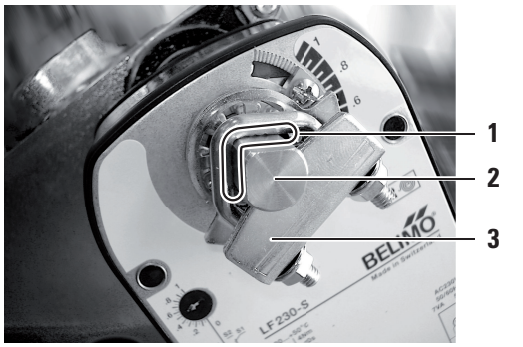
⇢ Fasten the adjusting ring to the drive screw – leaving a 1 mm gap between the adjusting ring and the bearing sleeve!

Rotation test for the ash ring

⇢ Install the burner cup including ash ring to the stoker pipe of the burner.

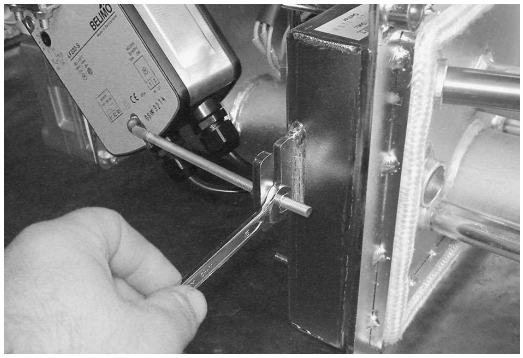
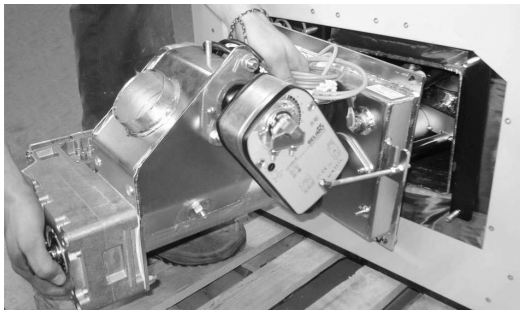


⇢ Connect the burner cup and perform a rotation test: The ash ring must turn quietly and uniformly anticlockwise!



⇢ Slide the drive motor of the fire shutter up to bearing block on the shaft (2)

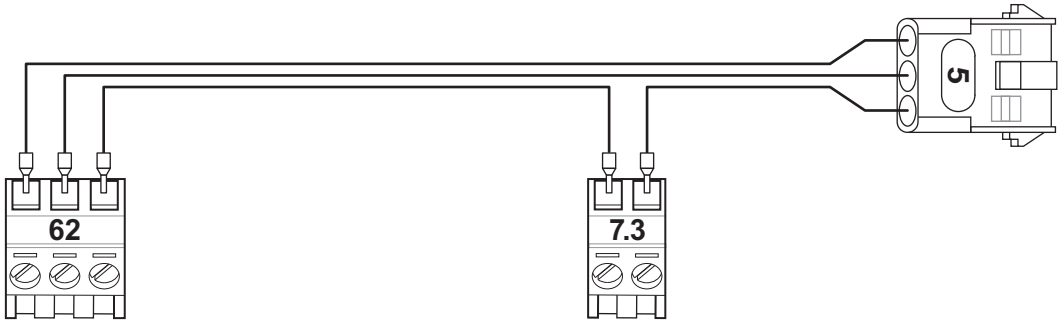
⇢ Fix the fastening clamp (3) in such a manner that the bracket lies flat against the flattened sides (1)

	⇢ Install the torque support and fasten the counter nut – the two locked nuts must remain as they are!
	⇢ Install the burner. ⇢ Ensure that the marking at the drive motor is set to "1"! ⇢ Correct the motor position via the individual screw at the threaded rod, if needed.

Electrical system

⇢ Guide the cable from the drive motor in the junction box to the control module.

⇢ Plug all connectors that were unplugged during the dismantling back in.



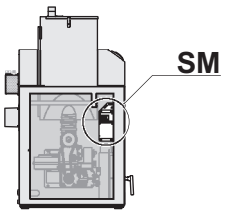
Easyfire 1: Cable connection for KWB Easyflex

⇢ Connect the cable with the revolving grate motor as shown:

- Power supply: plug 62
- Relay power output: plug 7.3

3.2.6 Option: Plug-in module 1

This option is only required for the Easyfire 1 with the suction system type USP GS, which in this case is delivered pre-assembled.

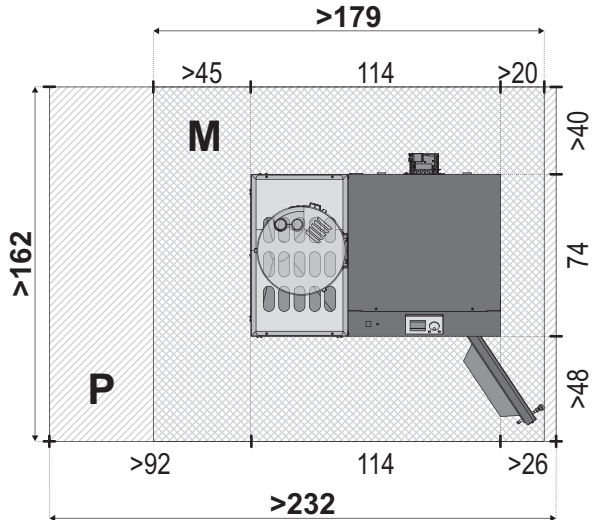


Plug-in module position [SM]

3.3 Placing the structure

Once you have installed all components as described in section **Retrofitting the system [►11]**, you can now place the boiler at its final location.

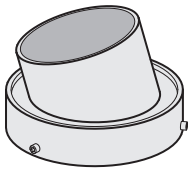
Installation clearances



M	Minimum space requirements
P	Recommended space requirements incl. sufficient room to perform maintenance

⇢ Align the structure **horizontally** using the 4 adjustable feet.

3.4 Conveyor system connection



Burner connection

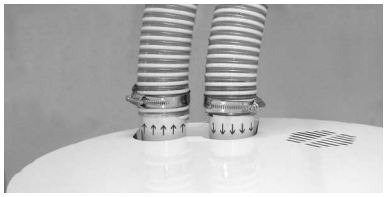
⇢ Rotate the burner connection between the burner and conveyor system in the direction from which the conveyor channel will come.

⇢ Use the three set screws to fasten the burner connection in this position.

3.4.1 Connection to the suction tank

⇢ Connect the suction container and burner using the supplied hose.

⇢ Secure the connection hose to the eject connection and the burner connection with the two supplied hose clamps.



⇢ 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!

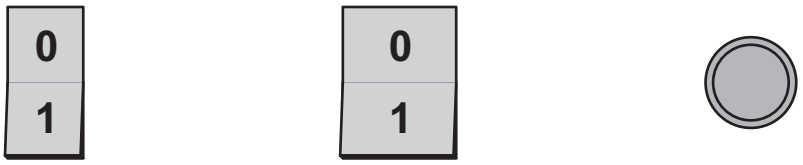
3.5 Final steps, checks

3.5.1 Stickers

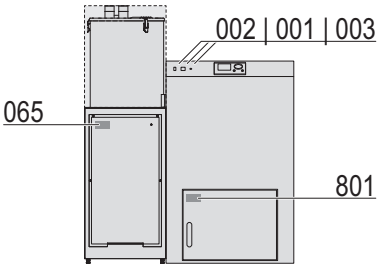
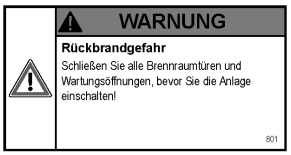
NOTE	**Hazard due to missing safety sticker**
	↘ Safety stickers save lives! They protect you against injuries and prevent damage to property and equipment!
	⇢ Ensure the correct use of the heating system: Attach ALL stickers as indicated in the instructions!
	⇢ Give the unused stickers to the operator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

3.5.1.1 Stickers on the front

⇢ Check the legibility of the stickers on the keys:

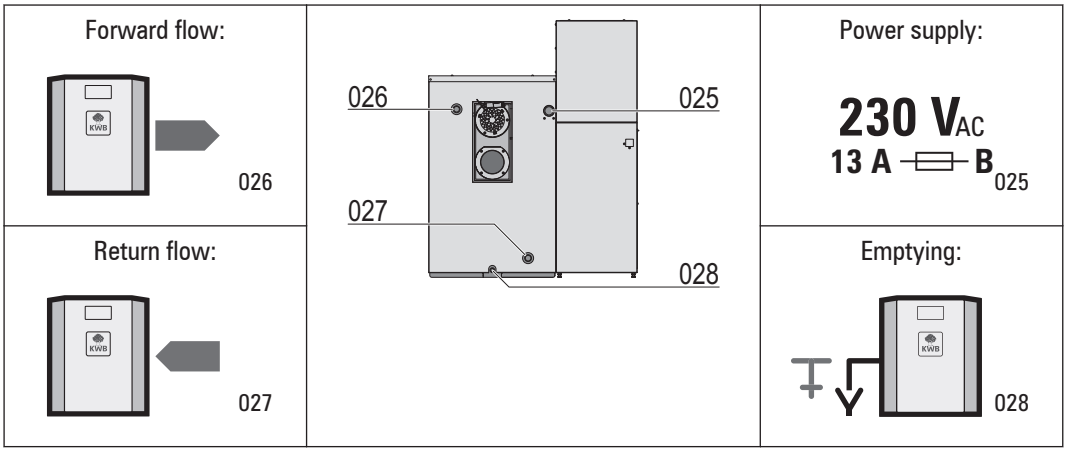


 002	 001	 003
Switch, measuring mode	Main switch	STL

Disconnect the power supply and read the instructions:		WARNING Risk of burnback:
		

3.5.1.2 Stickers on the rear side

⇢ Check whether the following stickers are attached to the casing.



Type plate

↘ In the factory, the type plate is attached to one of the instructions.

⇢ Attach the type plate to the painted green casing in the upper right corner.

3.5.1.3 Stickers for the storage room

⇢ Always ensure that the storage room warnings are attached to the door of the storage room in the language being used!

3.5.1.4 Stickers on the injection connector

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

3.5.1.5 Type plate sticker

CE

Kraft und Wärme aus Biomasse GmbH
A-8321 St. Margarethen/Raab, Industriestraße 235

Type | Fuel extractor	KWB Powerfire Typ TDS 200 |
SN | Year	000-0000000/0 | 2013
Fuel	wood chips B1 (EN 303-5) P45B (EN 14961-4) | wood pellets (EN 14961-2)
Rated thermal output (RTO)	199,0 | 199,0 kW
min. thermal output	59,7 | 59,7 kW
Fuel thermal output at RTO	211,9 | 212,4 kW
max. operating pressure	3,5 bar
max. operating temperature	90 °C
Water content	610,0 Ltr
Max. allowed power input	5100 W
Electrical connection	3+N 400 VAC 50Hz 16 A
Test standard | boiler class	EN 303-5 | 4 | 4
CO at rated power	14 | 5 mg/m³ (13% O2)
Dust at rated power with cyclone	33,0 | - mg/m³ (13% O2)
Dust at rated power	35,0 | 28,0 mg/m³ (13% O2)
VKF-NR	18889

Type plate example

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

This sticker is absolutely required for the operating permit!

3.5.2 Boiler function test

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

- ↘ The initial commissioning requires comprehensive specialised knowledge: Only qualified and certified technicians are permitted commission the system!
- ⇢ Before commissioning, read through your documents from the commissioning training!
- ⇢ Adhere to the sequence specified in it and to the specifications in the working steps.

3.5.3 Completion of Assembly

⇢ Leave the construction site in a clean condition.

4 Appendix

Please also see

CE-Konformitätserklärung (►26)
Technische Datentabelle (►27)

4.1 The Clean Air Act 1993 and Smoke Control Areas

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

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

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

Further information on the requirements of the Clean Air Act can be found here:
https://www.gov.uk/smoke-control-area-rules

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

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

4.2 Dismantling and disposal

4.2.1 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!

4.2.2 Disposal

⇢ Comply with local waste disposal regulations!

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, metal, can be efficiently recycled: substructure, burner, heat exchanger, cables ...

Circuit boards

⇢ Please ensure responsible disposal!
You must comply with 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.

KWB – Kraft und Wärme aus Biomasse GmbH
Industriestraße 235
A-8321 St. Margarethen an der Raab (Austria)

Declaration of Conformity

As specified by the EC Machinery Directive 2006/42/EC, Annex II 1 A

We hereby declare that the specified system in the series version complies with all applicable provisions of the Machine Directive.

Boilers of the model range

KWB Easyfire 1 and KWB Easyfire 1 Plus 10–20 kW
Comprising the models: USP V/GS 10 / 15 / 20

in combination with conveyor systems

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

Furthermore, the system conforms to the following directives/applicable regulations:

EMC Directive 2014/30/EU as amended

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

KWB – Kraft und Wärme aus Biomasse GmbH	St. Margarethen an der Raab 16. 2. 2016	Erwin Stubenschrott
Authorised representative for the compilation of the technical documents	Place, Date	Erwin Stubenschrott, Managing Director

USP V/GS	Unit	10	15 ***	20
Rated power	kW	10,4	15,0	20,0
Partial load	kW	3,1	4,5	5,6
Boiler efficiency at rated power	%	91,0	91,7	92,5
Boiler efficiency at partial load	%	90,7	90,4	90,1
Fuel thermal output at rated load	kW	11,4	16,5	21,1
Fuel thermal output at partial load	kW	3,4	4,9	6,2
Boiler class according to EN 303-5:2012	–	5	5	5
Water side				
Water content	l	66	66	66
Water connection, forward/return flow (internal thread)	inch mm DN	1 25,4 25	1 25,4 25	1 25,4 25
Water connection for filling and/or emptying (internal thread)	inch mm	1/2 12,7	1/2 12,7	1/2 12,7
Thermal safety valve: no	–	×	×	×
Water-side resistance at 10 K	mbar Pa	4,2 420	10,0 1000	15,8 1580
Water-side resistance at 20 K	mbar Pa	1,0 100	2,6 260	4,2 420
Boiler-entry temperature (for installation of an external return-flow boost device)	°C	50	50	50
Working temperature/operating temperature	°C	60–80	60–80	60–80
Maximum permitted temperature	°C	90	90	90
Maximum operating pressure	bar	3,5	3,5	3,5
Volume flow at spread 10 K	m³/h	0,88	1,31	1,75
Volume flow at spread 15 K	m³/h	0,58	0,88	1,17
Volume flow at spread 20 K	m³/h	0,44	0,66	0,88
Exhaust-gas side (for chimney calculation)				
Combustion chamber temperature	°C	900–1100	900–1100	900–1100
Required draft at rated power/partial load	mbar	0,07 0,05	0,07 0,05	0,07 0,05
Suction available	–	✓	✓	✓
Exhaust-gas temperature at rated power	°C	140	160	160
Exhaust-gas temp. Partial load	°C	90	100	100
Exhaust-gas mass flow at rated power	kg/s	0,006	0,009	0,012
Exhaust-gas mass flow at partial load	kg/s	0,003	0,004	0,004
Exhaust-gas volume at rated power	Nm³/h	17,0	25,5	34,0
Exhaust-gas volume at partial load	Nm³/h	8,7	10,4	12,0
Exhaust-gas connection height boiler side	mm	635	635	635
Exhaust-gas pipe diameter	mm	130	130	130
Incline of the smoke-pipe	°	≥ 3	≥ 3	≥ 3
Chimney diameter (approx. values)	mm	140	140	140
Chimney design: Moisture-resistant	–	✓	✓	✓
Fuel: Pellets of pure wood in accordance with ISO 17225-2				
Calorific value	MJ/kg	16,5	16,5	16,5
Density	kg/m³	≥ 600	≥ 600	≥ 600
Water content	% by weight	≤ 10	≤ 10	≤ 10
Ash content	% by weight	≤ 0,7	≤ 0,7	≤ 0,7
Length	mm	3,15–40	3,15–40	3,15–40
Diameter	mm	6±1	6±1	6±1
Dust proportion before loading	% by weight	≤ 1	≤ 1	≤ 1
Raw material: Pure wood, bark proportion <15 %	–	–	–	–
Ash				
Ash container volume	l	25	25	25
Ash container filled	kg	~ 25	~ 25	~ 25
Electrical system				
Connection: CEE 3-pole	–	230 V_{AC} 50 Hz, 13 A	230 V_{AC} 50 Hz, 13 A	230 V_{AC} 50 Hz, 13 A
Connected power USP V	W	545	545	545
Connected power USP GS	W	2347	2347	2347

USP V/GS	Unit	10	15 ***	20
Storage container type USP GS				
Contents storage container for type USP V	l	200	200	200
Suction conveyor type USP GS				
Max. suction length	m	10	10	10
Max. suction head	m	3,5	3,5	3,5
Contents storage container for type USP GS	l	33	33	33
Weights				
Boiler weight USP V	kg	323	323	323
Boiler weight USP GS	kg	349	349	349
Emissions according to test report				
Test report no.	–	BLT-006/06	***	BLT-013/08
O_2 content rated power	Vol.-%	11,2	8,9	6,7
O_2 content partial load	Vol.-%	13,4	12,5	11,5
CO_2 content rated power	Vol.-%	9,4	11,6	13,8
CO_2 content partial load	Vol.-%	7,3	8,2	9,1
Noise emissions				
Normal operating noise at rated power	dB(A)	< 70	< 70	< 70
Reference 10 % O_2 dry (EN 303-5)				
CO at rated power	mg/Nm³	50,0	41,5	33,0
CO at partial load	mg/Nm³	201,0	141,5	82,0
NOx at rated power	mg/Nm³	166,0	152,5	139,0
NOx at partial load	mg/Nm³	166,0	143,0	120,0
OGC at rated power	mg/Nm³	1,0	1,0	1,0
OGC at partial load	mg/Nm³	4,0	2,5	< 1
Dust at rated power	mg/Nm³	21,0	23,5	26,0
Dust at partial load	mg/Nm³	20,0	21,5	23,0
Reference 11 % O_2 dry				
CO at rated power	mg/Nm³	36,0	30,0	24,0
CO at partial load	mg/Nm³	146,0	103,0	60,0
NOx at rated power	mg/Nm³	121,0	111,0	101,0
NOx at partial load	mg/Nm³	121,0	104,0	87,0
OGC at rated power	mg/Nm³	1,0	1,0	1,0
OGC at partial load	mg/Nm³	3,0	2,0	1,0
Dust at rated power	mg/Nm³	15,0	17,0	19,0
Dust at partial load	mg/Nm³	15,0	16,0	17,0
Reference 13 % O_2 dry (FJ-BLT)				
CO at rated power	mg/Nm³	36,0	30,0	24,0
CO at partial load	mg/Nm³	146,0	105,0	60,0
NOx at rated power	mg/Nm³	121,0	111,0	101,0
NOx at partial load	mg/Nm³	121,0	104,0	87,0
OGC at rated power	mg/Nm³	< 1	< 1	< 1
OGC at partial load	mg/Nm³	3,0	1,0	< 1
Dust at rated power	mg/Nm³	15,0	15,0	19,0
Dust at partial load	mg/Nm³	15,0	15,0	17,0
In accordance with § 15a-BVG Austria				
CO at rated power	mg/MJ	24,0	20,0	16,0
CO at partial load	mg/MJ	97,0	68,0	39,0
NOx at rated power	mg/MJ	80,0	73,0	66,0
NOx at partial load	mg/MJ	80,0	69,0	58,0
OGC at rated power	mg/MJ	< 1	< 2	< 1
OGC at partial load	mg/MJ	2,0	1,5	< 1
Dust at rated power	mg/MJ	10,0	11,0	12,0
Dust at partial load	mg/MJ	10,0	10,5	11,0

13.05.2016

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

FJ-BLT … Franciso Josephinum Wieselburg – Biomass Logistic Technology

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

KWB – Kraft und Wärme aus Biomasse GmbH
Industriestraße 235
A-8321 St. Margarethen an der Raab
+43 3115 6116-0
office@kwb.at | www.kwb.at

21-2001483

Original manual | 2016.07 | Index 1 | EN