KWB

TECHNOLOGY & PLANNING 2022

CONTENTS

All technical data (efficiency levels, energy labels, technical data tables) are as of march 2022.
Due to currently ongoing type tests, values may change throughout the year.
We will be happy to send you the respectively current values, upon request.

KWB

COMPANY & **PACKAGE OFFERINGS**



PREMIUM QUALITY
"MADE IN AUSTRIA"

KWB is the Austrian quality producer of pellet, wood chip and log wood heating systems in the output range from 2.4 to 300 kW. As a pioneer in this sector, we have revolutionized heating with wood. More than 90,000 customers worldwide trust our expertise, including single- and multi-family home owners, agricultural businesses, tour operators, commercial business and utility companies.

KWB is the ideal single-source solution. Our premium products are operationally reliable, and guaranteed Made in Austria. Our assistance commences during your decision-making process and we continue to assist you, together with our trusted partner installation companies, all the way to the installation of your customized comprehensive solution. Our KWB Factory Customer Service and our distribution partners in your vicinity will also be glad to help you at any time!

PREMIUM QUALITY "MADE IN AUSTRIA"

MORE THAN 90.000 SATISFIED CUSTOMERS

NUMEROUS AWARDS FOR THE FACTORY CUSTOMERS SERVICE

MADE IN AUSTRIA!
AT HOME ALL OVER THE WORLD!

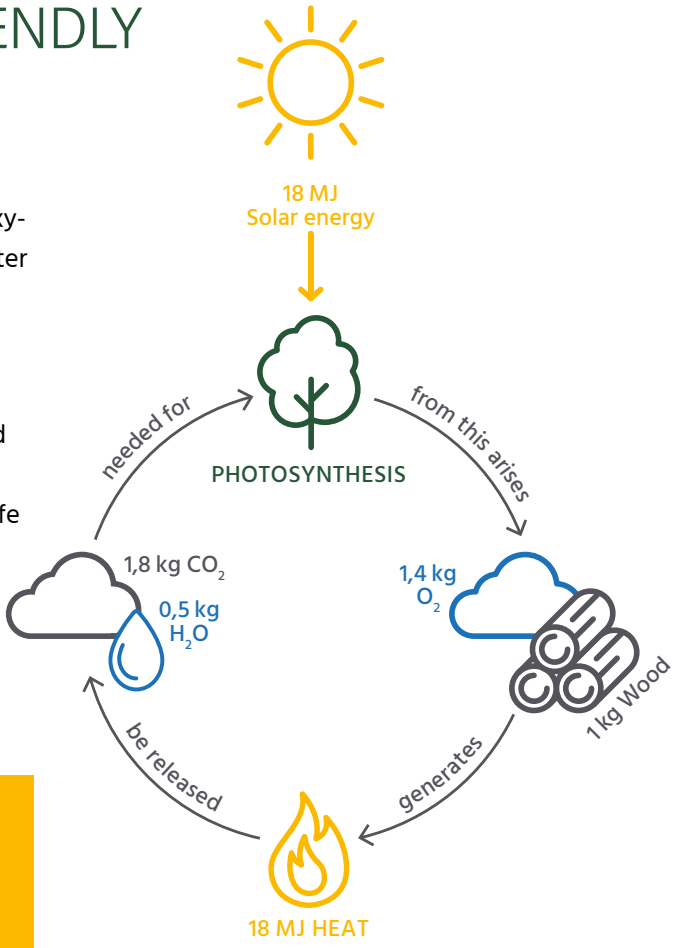
KWB stands for regional and eco-friendly heating with wood. The headquarters of the company is located in the Styrian town of St. Margarethen/ Raab (Austria) with subsidiaries in Germany, Italy and France. In 16 additional countries, from Canada to Chile and all the way to Japan, we rely on our strong distribution partners. Together we spread KWB's philosophy all over the world.

HEATING WITH WOOD

ENVIRONMENTALLY FRIENDLY AND CO_2-NEUTRAL

Forests play an important role for climate protection. They are not only the most important producers of oxygen, through photosynthesis from the air they also filter out carbon dioxide (CO_2), the greenhouse gas mainly responsible for global warming.

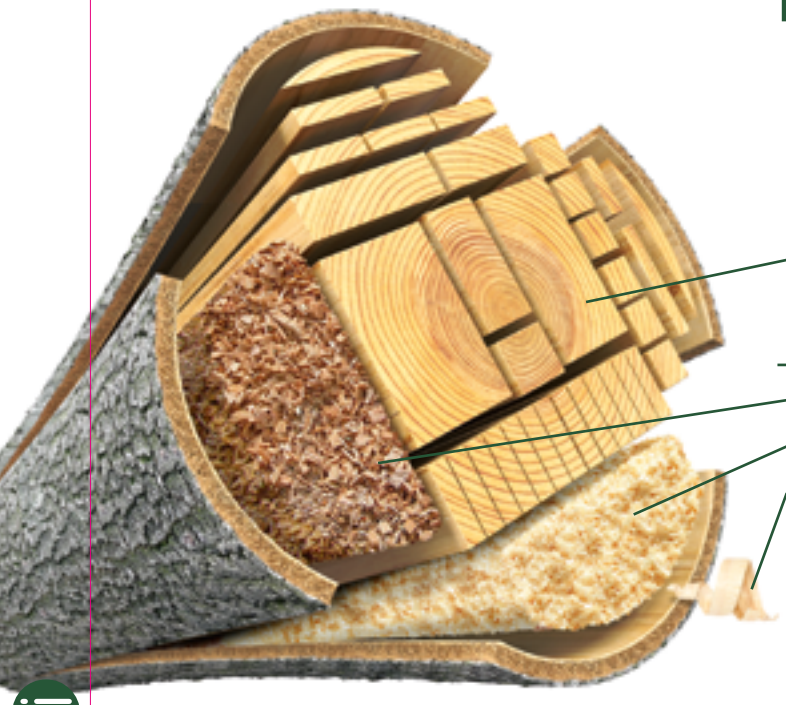
A tree does not release more CO_2, both when it decomposes and when it is burned, than it has absorbed through photosynthesis during its growth phase. The CO_2 is released to the atmosphere at the end of the life cycle of wood products through their energetic and thermal utilization depending on how they are used. The natural CO_2 cycle closes.



The specified values are calculated and rounded from the average composition of the wood.
18 MJ = 5 kWh; the minerals and ash content varies depending on the type of wood. Source: Energie aus Biomasse (Energy from Biomass), 2. edition, Springer Verlag © Deutsches Pelletinstitut GmbH, as of August 2017

Photosynthesis is the basis for plant growth. In this process, plants use chlorophyll, sun energy and water to break down CO_2 into carbon and oxygen and then store the carbon in the form of carbon chains in the biomass (wood, leaves, humus).

HIGHLY VERSATILE



100% CONIFEROUS WOOD* (WITHOUT BARK) RESULTS IN:

60% TIMBER

+ 40% SAWMILL BY-PRODUCTS

26% WOOD CHIPS

12% WOOD SHAVINGS

2% OTHERS

*More than 95% of the sawing in German sawmills is from coniferous woods.

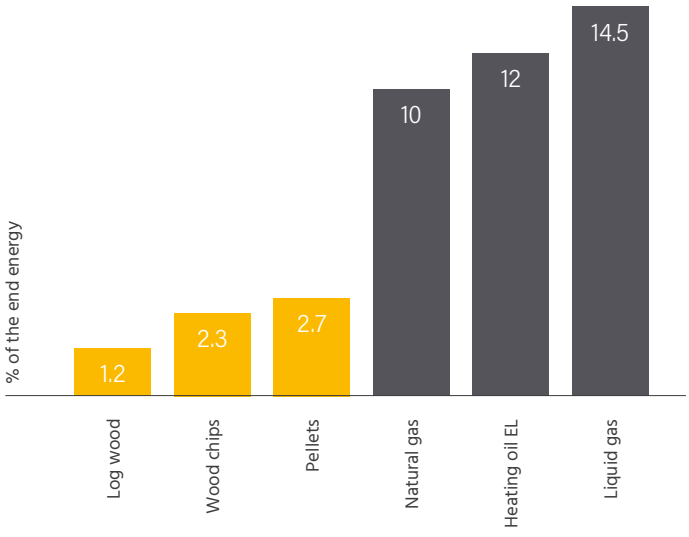
Source: Döring, P.; Mantau, U: Standorte der Holzwirtschaft – Sägeindustrie – Einschnitt und Sägenebenprodukte 2010. (Locations in the wood industry - sawmill industry - sawing and sawmill by-products 2010.) Hamburg, 2012. Conversion: DEPI. © Deutsches Pelletinstitut, using images by mipan/123RF.com and Can Stock Photo/dusan964

REGIONAL & SUSTAINABLE

Wood as a raw material grows practically right on our doorstep. There is no need to cut down trees to produce fuel. Waste wood from the forest, e.g. tree branches and damaged timber, as well as leftovers from sawmills are recycled to produce fuel. Pellets consist to 100% of saw dust. 20 years ago, sawmills had to pay for the disposal of saw dust. Today, this “waste” has become a valuable basic material. And the money goes to local sawmills and through them also reaches local foresters.

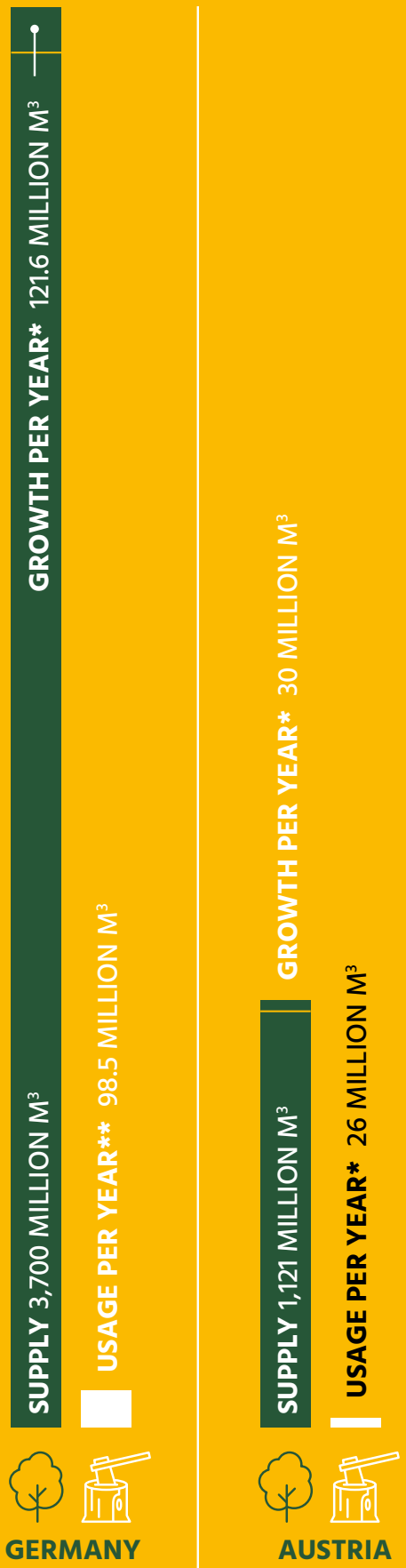
LOWEST PRIMARY ENERGY USE

The primary energy use indicates how much energy needs to be used to convert the fuel to the desired form and transport it to the consumer. The primary energy use of wood fuels is far below the primary energy use of the other commonly used fuels.



* The growth also contains the annual accumulation of dead wood of 7.8 million m³ per year.
** Corresponds to the felling incl. bark and harvest losses © Deutsches Pelletinstitut GmbH | Source: Bundeswaldinventur (Federal Forest Inventory) 3 (BWI 3) | Source Austria: Forest Inventory 2018 of the BFW

STORAGE AND USE OF DOMESTIC TIMBER



HEATING WITH WOOD: 4 GOOD REASONS

COMFORT

By opting for a modern wood-fired heating system, you will be able to enjoy the convenience of an automatic, quiet and efficient heating solution. And wood also happens to smell really nice! Nearly no cleaning expenditures and added remote control via KWB Comfort Online save time and reduce stress.

ENVIRONMENT

Heating with renewable fuels is CO_2-neutral. This means that when wood is burned, only as much CO_2 is released into the atmosphere as a tree has absorbed during its lifetime: By heating with wood, you therefore protect nature and our children and grandchildren's living environment.

COSTS

People who wish to permanently save on heating costs, opt for renewable energy. The prices for wood have been stable for years and are independent of the world market prices for oil and natural gas. Assuming a service life of 25 years for a heating system, people who heat with wood are often able to save thousands of euros.

HOME

Wood fuels are available on location and are directly sourced from there. This means that the money for the fuel also stays in the region. The decision to switch to wood as a fuel promotes the regional economy and secures jobs.

KWB PROVIDES QUALITY!

KWB – THE SOLUTION PROVIDER FOR RENEWABLE ENERGY SYSTEMS IN PREMIUM QUALITY.

When KWB was founded in 1994, our goal was to make a significant contribution to humanity's switch to renewable energy for its energy supply. Meanwhile, KWB has locations throughout Europe and internationally and keeps expanding: There are up to two market entries every year.

KWB sets standards. KWB inventor of the fully automatic cleaning for wood chip heating systems, of the modular and easily transportable system, and of a revolutionized underfeed-burner system for the pellet boiler. From low-energy single-family homes and agricultural, industrial/trade businesses to restaurant businesses and district heating networks, more than 80,000 customers globally meanwhile rely on premium quality from Austria.

QUICK & EASY INSTALLATION

KWB'S MODULAR AND EASILY TRANSPORTABLE SYSTEM

All KWB systems can be dismantled into several modules, which allows our products to be placed in almost every heating room and easily installed even in tight spaces. We call it the **KWB modular and easily transportable system.**

We will show you step by step how your KWB heating system gets into your house!

CLEAN EFFICIENCY 2.0

CLEAN, EFFICIENT COMBUSTION

- **Lowest emission values:** The emitted fine dust was reduced to under 2.5 mg.
- **High efficiency** with the innovative burner concept cleanEfficiency 2.0 technology.
- **Highest economy** thanks to maximum fuel utilization and a consistently high efficiency.
- **Perfect interaction** of design and control elements

WORLDWIDE UNIQUE BURNER TECHNOLOGY

The idea of a simple and clean heating system under the cleanEfficiency label was born 10 years ago. Since then, KWB experts have kept working on improving the heating systems even further. With intensive research, it was possible to revolutionize the combustion and to lower the emitted fine dust to under 2.5 mg. At the heart of this development is the newly engineered, innovative burner concept: The idea is thereby to move the fuel as little as possible to reduce emissions as far as possible.

Thanks to this technology, KWB heating systems do not only fulfil highest European environmental standards, the also remain below the limit values of the Ecodesign Directive of the EU with regard to emission values, efficiency and energy consumption! This means: Even fewer emissions and fine dust than ever before!

PATENTED UNDERFEED BURNER

In the KWB Easyfire wood pellet heating system, the pellet conveyor screw gently pushes the pellets from below onto the burner plate. The firebed thus remains completely stable and does not generate additional dust eddies. The pellets burn out completely in four clearly delimited combustion zones. The ash is forced out over the edge of the burner plate into the ash box by the pellets that are pushed onto the burner plate. This guarantees an extremely clean combustion.

The innovative burner concept cleanEfficiency 2.0 technology at work in our KWB Easyfire pellet heating system.

KWB **HEATING SOLUTIONS**

KWB is the solution provider for heating systems using renewable energy. KWB's core business are pellet, wood chip and log wood heating systems in the power range from 2.4 to 300 kW. Comprehensive heat storage and control technology as well as fuel storage and conveyor systems round off the product offering.

KWB CLASSICFIRE/ KWB COMBIFIRE

Log wood and pellet heating system, 18 to 38 kW

- ✓ Long intervals between refills thanks to largest fill room
- ✓ Automatic ignition for an individual heat-up time
- ✓ Thanks to the pellet module, it is easily retrofittable to a combi-boiler at any time

KWB EASYFIRE

Pellet heating system
2,4 to 38 kW

- ✓ No cleaning efforts required, emptying of ash every 1 to 2 years
- ✓ Convenient movable container for convenient emptying of ash
- ✓ Underfeed burner system for clean combustion

KWB SYSTEM COMPONENTS

Comprehensive system equipment for optimal alignment with individual requirements.

- ✓ Conveyor and storage systems
- ✓ Hot water storage systems
- ✓ Solar thermal systems
- ✓ Chimney systems
- ✓ Heat pumps

KWB MULTIFIRE/ KWB PELLETFIRE^{PLUS}

Wood chip and pellet heating system 20 to 135 kW

- ✓ Crawler burner with self-cleaning grate elements
- ✓ High-efficiency turbulators for optimal heat exchange
- ✓ Minimal power consumption – the fuel hopper

KWB POWERFIRE

Wood chip and pellet heating system 150 to 300 kW

- ✓ Compact revolving grate burner system
- ✓ Cyclone combustion chamber for minimum emissions
- ✓ 240 l convenient ash container & movable substructure

KWB EE PACKAGES

KWB EE packages are optimally configured biomass systems for using renewable energies. The article configurations for log wood, pellet and combined operations contain all required components for the buffer and hydraulics and, if required, fuel extraction and domestic hot water heating. The packages must be ordered with one article number and are delivered as one package. Additional articles can be ordered, but may be delivered at a different time. Reducing the delivery scope of the package is not possible.

KWB COMBICOMPLETE PACKAGE 1

Scope of delivery

Boiler: KWB Combifire type CF2 S (18 kW or 28 kW), extra charge for automatic ignition CF2, KWB Comfort 4 integrated heating management module with 2 heating circuits, 300-litre storage container for KWB Combifire

Buffer: 2 x buffer storage tank KWB EmpaEco 1000 l, 4 x corrugated connecting pipe 6/4" for buffer storage tanks

Hydraulics: Thermal discharge safety valve, return flow boost group DN 32 Wilo Para 25/7-50 iPWM pump fully insulated, switch or quick charge valve DN32 incl. motor, 1 x heating circuit group DN 25 Wilo Para 25-180 / 6-43 / SC pump, separator for magnetic and non-magnetic particles 5/4"

KWB COMBICOMPLETE PACKAGE 2

Scope of delivery

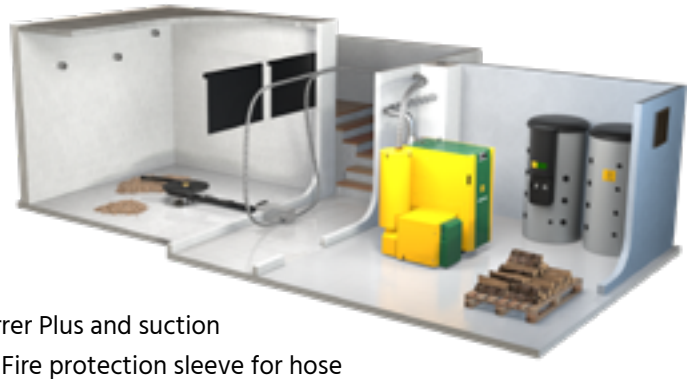
Boiler: KWB Combifire type CF2 GS (18 kW or 28 kW), extra charge for automatic ignition CF2, KWB Comfort 4 integrated heating management module with 2 heating circuits

Conveyor system: 1-point sampling probe Hose set 12.5 m

Buffer: 1 x buffer storage tank KWB Empa Eco 1000, 4 x corrugated connecting pipe 6/4" for buffer storage tanks, 1 x KWB Empawell 1000, heating circuit group DN 25

Hydraulics: Thermal discharge safety valve, return flow boost group DN 32 Wilo Para 25/7-50 iPWM pump fully insulated, switch or quick-charge valve DN 32 incl. motor, separator for magnetic and non-magnetic particles 5/4", membrane expansion tank for drinking water, protection against scalding (therm. hot water mixer)

KWB COMBICOMPLETE PACKAGE 3



Scope of delivery

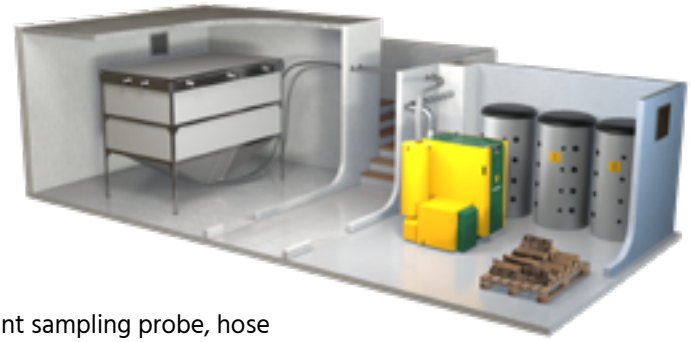
Boiler: KWB Combifire type CF2 GS (28 kW), extra charge for automatic ignition CF2, KWB Comfort 4 integrated heating management module with 2 heating circuits, integrated heat meter C4, stainless steel connection line set Ø 150

Conveyor system: Storage room package Pellet Stirrer Plus and suction conveyor, hose set 12.5 m with head section 53.5 cm, Fire protection sleeve for hose Ø 60, ricochet protection mat, 4 x support trays for suction and return air hoses

Buffer: 1 x buffer storage tank KWB EmpaEco 1.000 l, 1 x stratified storage tank KWB EmpaCompact 1.000 l, Two heating circuit groups for KWB EmpaCompact, 4 x corrugated connecting pipe 6/4" for buffer storage tanks

Hydraulics: Thermal discharge safety valve, KWB EmpaFresh 30, Circulation pump set for Empafresh 30/40, return flow boost group DN 32 Pumpe Wilo Para 25/7-50 iPWM pump fully insulated, switch or quick charge valve DN 32 incl. motor, separator for magnetic and non-magnetic particles 5/4", Expansion tank Contra Flex 400, maintenance unit for expansion tank 1", balancing valve 5/4" female thread 20 – 70 l

KWB COMBICOMPLETE PACKAGE 4



Scope of delivery

Boiler: KWB Combifire type CF2 GS (18 kW), extra charge for automatic ignition CF2, KWB Comfort 4 integrated heating management module with 2 heating circuits, integrated heat meter C4, stainless steel connection line set Ø 150

Fördersystem: KWB Pelletbox type 17/29 with 1-point sampling probe, hose set 12,5 m, 4 x support trays for suction and return air hoses

Puffer: 2 x buffer storage tank EmpaEco 800, 1 x Corrugated tube stratified storage tank EmpaWell 800 l, 8 x corrugated connecting pipe 6/4" for buffer storage tanks, circulation lance for the KWB EmpaWell, heating circuit group DN 25, protection against scalding (therm. hot water mixer)

Hydraulics: Thermal discharge safety valve, return flow boost group DN 32 Wilo Para 25/7-50 iPWM pump fully insulated, balancing valve 1" female thread 10 – 40 l, switch or quick-charge valve DN 25 incl. motor, separator for magnetic and non-magnetic particles 1", membrane expansion tank for drinking water, Expansion tank Contra Flex 400, maintenance unit for expansion tank 1"

KWB EASYCOMPLETE PACKAGE 1

Scope of delivery

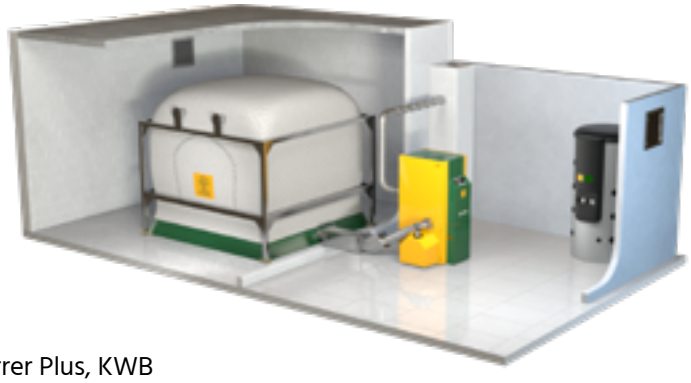
Boiler: KWB Easyfire type EF2 S (15 kW or 22 kW), extra charge for ash container with convenient design, KWB Comfort 4 integrated heating management module with 2 heating circuits, stainless steel connection line set Ø 130, KWB Basic control unit

Conveyor system: Storage room package Pellet Stirrer Plus and elbow screw, wall duct 42.5 cm

Buffer: KWB EmpaWell 800, membrane expansion tank for drinking water, protection against scalding (therm. hot water mixer)

Hydraulics: Extra charge for PWM pump for the return flow boost with buffer, KWB Easyfire connection set, 1 x heating circuit group DN 25 Wilo Para 15-130 / 6-43 / SC pump, balancing valve 1" female thread 10 – 40 l, separator for magnetic and non-magnetic particles 1"

KWB EASYFIRE 2 EE PACKAGE II



Scope of delivery

Boiler: KWB Easyfire type EF2 S (15 kW or 22 kW), extra charge for ash container with convenient design, KWB Comfort 4 integrated heating management module with 2 heating circuits, stainless steel connection line set Ø 130, KWB Basic control unit

Conveyor system: Ascending screw 1 for Pellet Stirrer Plus, KWB Pellet BigBag 2525 with a capacity of 6.5 – 6.9 t, wall duct 42.5 cm

Buffer: KWB EmpaWell 800, membrane expansion tank for drinking water, protection against scalding (therm. hot water mixer)

Hydraulics: Extra charge for PWM pump for the return flow boost with buffer, KWB Easyfire connection set, 1 x heating circuit group DN 25 Wilo Para 15-130 / 6-43 / SC pump, balancing valve 1" female thread 10 – 40 l, separator for magnetic and non-magnetic particles 1"

KWB EASYCOMPLETE PACKAGE 3

Scope of delivery

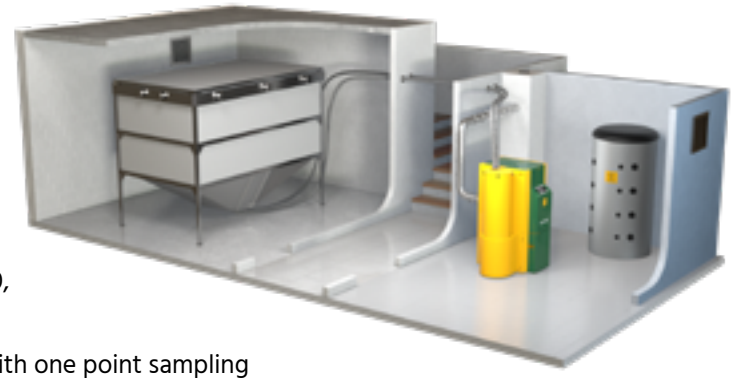
Boiler: KWB Easyfire type EF2 GS (15 kW or 22 kW), extra charge for ash container with convenient design, KWB Comfort 4 integrated heating management module with 2 heating circuits, stainless steel connection line set Ø 130, KWB Basic control unit

Conveyor system: Storage room package Pellet Stirrer Plus and suction conveyor, hose set 12.5 m with head section 73.5 cm

Buffer: KWB EmpaWell 800, membrane expansion tank for drinking water, protection against scalding (therm. hot water mixer)

Hydraulics: Extra charge for PWM pump for the return flow boost with buffer, KWB Easyfire connection set, 1 x heating circuit group DN 25 Wilo Para 15-130/6-43/SC pump, balancing valve 1" female thread 10 – 40 l, separator for magnetic and non-magnetic particles 1"

KWB EASYFIRE 2 EE PACKAGE IV



Scope of delivery

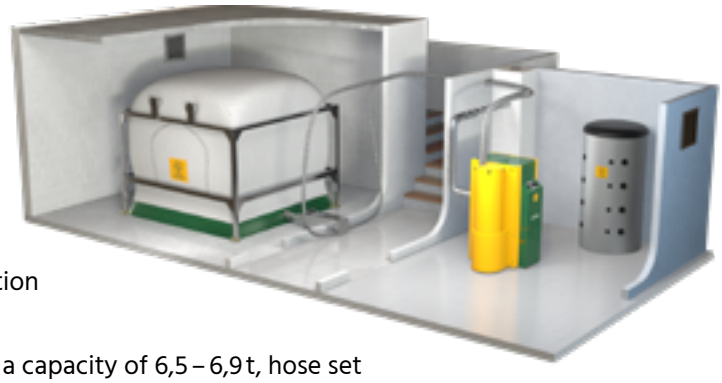
Boiler: KWB Easyfire type EF2 GS (15 kW or 22 kW), extra charge for ash container with convenient design, KWB Comfort 4 integrated heating management module with 2 heating circuits, stainless steel connection line set Ø 130, KWB Basic control unit

Conveyor system: KWB Pellet box type 17/29 with one point sampling probe, hose set 12.5 m

Buffer: KWB EmpaWell 800, membrane expansion tank for drinking water, protection against scalding (therm. hot water mixer)

Hydraulics: Extra charge for PWM pump for the return flow boost with buffer, KWB Easyfire connection set, 1 x heating circuit group DN 25 Wilo Para 15-130/6-43/SC pump, balancing valve 1" female thread 10 – 40 l, separator for magnetic and non-magnetic particles 1"

KWB EASYCOMPLETE PACKAGE 5



Scope of delivery

Kessel: KWB Easyfire type EF2 GS (15 kW), extra charge for ash container with convenient design, KWB Comfort 4 integrated heating management module with 2 heating circuits, integrated heat meter C4, stainless steel connection line set Ø 130

Conveyor system: KWB Pellet BigBag 2525 with a capacity of 6,5 – 6,9 t, hose set 12.5 m with head section 31 cm for suction conveyor Pellet BigBag

Buffer: 1 x Corrugated tube stratified storage tank KWB EmpaWell 800 l, circulation lance for the KWB EmpaWell, membrane expansion tank for drinking water, protection against scalding (therm. hot water mixer)

Hydraulics: Extra charge for PWM pump for the return flow boost with buffer, 1 x heating circuit group DN 25 Wilo Para 15-130 / 6-43 / SC pump, Wall bracket for Heating circuit group DN 25, balancing valve 1" female thread 10 – 40 l, Expansion tank Contra Flex 100, maintenance unit for expansion tank 1", separator for magnetic and non-magnetic particles 1"

KWB EASYCOMPLETE-PAKET 6

Scope of delivery

Boiler: KWB Easyfire type EF2 GS (15 kW), xtra charge for ash container with convenient design, KWB Comfort 4 integrated heating management module with 2 heating circuits, integrated heat meter C4, stainless steel connection line set Ø 130

Conveyor system: Storage room package KWB sampling probes C4

Buffer: 1 x buffer storage tank KWB EmpaCompact 800, heating circuit groups for KWB EmpaCompact,

Hydraulics: KWB EmpaFresh 30, Circulation pump set for Empafresh 30/40, Extra charge for PWM pump for the return flow boost with buffer, connection set EF2, Abalancing valve 3/4" female thread 4 – 15 l, separator for magnetic and non-magnetic particles 1", Expansion tank Contra Flex 100, maintenance unit for expansion tank 1"

KWB'S ALLROUND-CAREFREE SERVICE

We support you in the implementation of all aspects of your biomass heating system.

SALES

- ✓ Direct contact in the KWB field and internal service
- ✓ Telephone and online consultations
- ✓ Joint on-site consultation at the customer's
- ✓ Training offerings via the training calendar or personal conversations
- ✓ Product and service training
- ✓ Professional KWB subsidy management
- ✓ Virtual showroom on the website
- ✓ Online consultation appointment

PLANNING

- ✓ Preparation of plan drawings and hydraulics proposals
- ✓ System operating parameters (fuel requirements, ash production)
- ✓ Compliance with all applicable standards and legal framework conditions
- ✓ Notes on system planning
- ✓ Chimney calculation and design

IMPLEMENTATION

- ✓ Assembly of KWB components
- ✓ Support during system placement
- ✓ Commissioning
- ✓ Commissioning inspection

AFTER SALE

- ✓ Warranty extensions
- ✓ 15-year spare parts guarantee
- ✓ Maintenance agreements and full-maintenance contracts
- ✓ Online monitoring
- ✓ Heating room check and intermediate cleaning
- ✓ Storage room monitoring and pellet delivery coordination
- ✓ Ash removal and Certified ash disposal
- ✓ Operating optimization

Your KWB contact partner will be happy to inform you!

KWB EXPERT TIP

KWB storage tanks stand for **highest quality** and permit a **perfect, high-efficiency heat management.** We recommend installing an **intelligent buffer storage tank** when installing a biomass heating system, which can be considered the **energy centre** of the heating system.

QUICKLY AVAILABLE HEAT AND MORE EFFICIENCY

The use of a KWB storage system is only required if the nominal boiler load is 20% greater than the average building heating load. This will not only allow you to run your heating cleaner and more efficiently, you will also be able to have heat available quickly when needed.
Easy storage tank size solutions: 30 litres storage volume / kW nominal boiler load (example: KWB Easyfire)

BUFFER STORAGE TANK / LOAD BALANCING STORAGE TANK

✓ Saves heating costs thanks to its lower fuel consumption
✓ Is able to increase the heating system's annual efficiency coefficient and effectiveness
✓ Ensures a perfect system solution and lower emissions

EXPLANATION:

A heating system is focused on the coldest time of the year; this type of performance, however, is rarely needed and, especially in transition periods, barely utilised. This leads to frequent burner starts, which has a negative effect on fuel consumption and the entire service life of the heating system. The effect is comparable to the stop-and-go traffic on the road.

DID YOU KNOW THAT

- the buffer storage tank can manage several heat generating units (solar unit, log wood heating system, pellet heating system and wood chip heating system) to provide the most cost-effective energy?
- the domestic hot water preparation may simply occur via a fresh water module attached to the buffer storage tank? This ensures fresh and hygienic domestic hot water with lowest standby loss.
- the utilisation of a buffer storage tank ensures optimal operation particularly in case of intentionally larger sized heating systems (subsequent building enlargements, etc.)?

LEGEND DISCOUNT GROUPS

Discount group	Designation/Product
000	not discountable
002	Spare parts
004	Buffer / KWB storage tank
005	Control system
007	Solar systems
008	KWB Powerfire
012	Equipment
014	KWB Easyfire 1 type USP
015	KWB heat pump
017	KWB Classicfire 1 type CF1
018	KWB Classicfire 2 type CF2

Discount group	Designation/Product
019	KWB Easyfire 2 type EF2
020	KWB Pelletfire^{Plus} type MF2
021	Chimney / exhaust gas line
022	Storage room equipment
023	Exhaust gas cleaning
024	Conveyor systems, small
025	Conveyor systems, medium
026	Conveyor systems, large
027	KWB Combifire type CF2
028	KWB Multifire type MF2
029	Hydraulics components

KWB

LOG WOOD HEATING SYSTEMS

15 – 38 kW

KWB CLASSICFIRE TYPE CF1

LOG WOOD HEATING SYSTEM 15/20 kW

with control

- Log wood boiler with lower burnout and high-temperature refractory brick combustion chamber
- Large fill room for logs up to 55 cm (L50, D15, according to ISO 17225-5) and a moisture content of between 15% and 25% (stored in a dry place)
- Easy filling thanks to large front fill door
- Special automated heat-up with regulated heat-up air supply
- Carbonization gas removal for smoke-free stoking
- Ash-removal and cleaning towards the front
- Speed-regulated and speed-monitored induced draft fan for performance control
- Safety battery for boiler cooling in case of a power failure
- Stoking and cleaning tool set

KWB Comfort 4 control comprising:
- Exclusive control unit incl. buffer storage tank and domestic hot water management, expandable with external heating circuit control

Optional: 4th and 5th buffer temperature sensor
Optional: KWB Basic control unit or KWB Exclusive control unit

IMPORTANT! A sufficiently large buffer storage tank is absolutely required. Usable minimum buffer volume 1,000 l.

KWB CLASSICFIRE TYPE CF2

LOG WOOD HEATING SYSTEM 18 – 38 kW

with control

- Modular, 3x divided boiler body, including insulation
- Stable powder-coated system casing incl. insulation for minimal radiation and standby loss
- 185 l fill room – the largest of its class (upon request also available with 150 l fill room)
- Integrated flange for a possible upgrade to a log wood-pellet combination boiler
- Broadband lambda probe for accurate residual oxygen measuring
- Speed-regulated induced draught fan for modulating power adjustment
- Upright tubular heat exchanger
- Suitable for the burning of log wood with a max. length of 55 cm (L50, D15 according to ISO 17225-5) and moisture content of between 15% and 25% (stored in a dry place), filling transversely is possible with $^1/_3$ m wood logs (with 185 l fill room)

Optional: fully automatic heat exchanger cleaning
Optional: fully automatic ignition (1,000 W)
Optional: quick-charge valve for intelligent buffer charging for a quicker heat provision

KWB Comfort 4 control comprising:
- Exclusive control unit
- Modular control board incl. terminal board
- Including all boiler sensors and 1 outside temperature sensor
- Incl. activation of a buffer storage tank with 3 buffer temperature sensors

Optional: 4th and 5th buffer temperature sensor **Optional:** KWB Basic control unit or KWB Exclusive control unit

IMPORTANT! A sufficiently large buffer storage tank is absolutely required.
Recommended tank volume: Optimal: 16-litre buffer storage tank per litre fill room
Minimum: 10-litre buffer tank per litre fill room

KWB

TECHNOLOGY & PLANNING

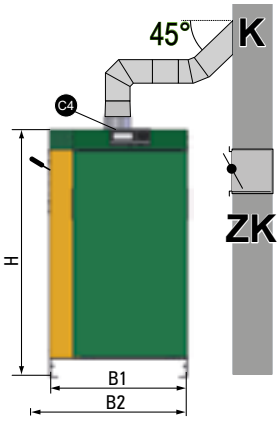
2022

KWB CLASSICFIRE 1
KWB CLASSICFIRE 2

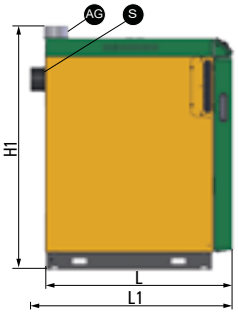
KWB CLASSICFIRE CF1

INSTALLATION AND CONNECTING DIMENSIONS

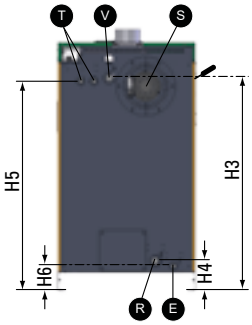
FRONT VIEW



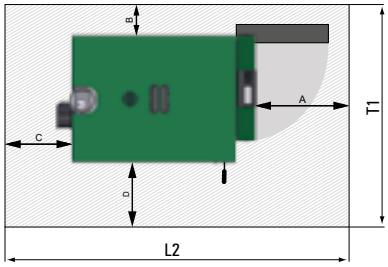
SIDE VIEW



REAR VIEW



PLAN VIEW



LEGEND

V	Boiler & storage tank forward flow	Sleeve 1"
R	Boiler & storage tank return flow	Sleeve 1"
E	Emptying	Sleeve ½"
T	Connection, safety battery	Sleeve ½"
AG	Exhaust gas connection (outside diameter)	129
S	Induced draught fan	–
C4	Operating panel KWB Comfort 4 control	–
L	Heating system length	1,000
L1	Total length incl. induced draught fan	1,080
L2	Total length incl. minimum distances	> 2,220
B	Width, boiler	685
B1	Width, boiler incl. cleaning lever	790

H	Height of the heating system	1,235
H1	Total height incl. exhaust gas nozzle	1,300
H3	Connection height, forward flow	1,055
H4	Connection height, return flow	150
H5	Connection height, safety battery	1,040
H6	Height, emptying	125
T1	Total width incl. minimum distances	> 1,385
A	Insulation door to the wall	800
B	Boiler side to the wall	200 (500*)
C	Rear side to the wall	400
D	Boiler side to the wall	200 (500*)

* The heating should be placed on one side (B or D) at a distance of at least 500 mm to the wall to ensure easy access to the heating system connection and for maintenance work.

DIMENSIONS FOR BOILER TRANSPORT AND PLACEMENT

KWB CLASSICFIRE 1	
Delivery condition	1,000 x 685 x 1,230

All dimensions in mm I Length x Width x Height I Distances stated are minimum!

KWB CLASSICFIRE CF1

TECHNICAL DATA

CF1	Unit	15	20
Rated power	kW	15,0	20,0
Boiler efficiency at rated power	%	92,6	92,3
Fuel thermal output at rated power	kW	16,2	21,7
Full load burning period: Beech	h	4,9 - 7,0	3,5 - 5,0
Spruce		3,0 - 4,2	2,1 - 3,0
Boiler class according to EN 303-5:2012	–	5	5
EU Energylabel[2]	–	A+	
Water side			
Water content	l	90	
Water connection, forward/return flow (internal	inch	1	
Water connection for filling and/or emptying	inch	1/2	
Water-side resistance at 20 K	mbar	0,5	1,5
Boiler-entry temperature	°C	60	
Working temperature/operating temperature	°C	90	
Maximum operating pressure	bar	3	
Buffer tank required	–	✓	
Minimum usable buffer tank volume[3]	l	825	1100
Recommended usable buffer tank volume	l	1000	1500
Exhaust-gas side (data for chimney design)			
Required draft at rated power/partial load	mbar	0,08	
Induced draught required	–	✓	
Exhaust-gas temperature at rated power	°C	150	170
Exhaust-gas mass flow at rated power	kg/h	36,0	46,8
Exhaust-gas mass flow at rated power	kg/s	0,010	0,013
Chimney connection height	mm	1395	
Exhaust pipe diameter (outer)	mm	129	
Chimney diameter (minimum)	mm	150	
Chimney design: moisture-resistant	–	✓	
Electrical system			
Connection	–	230V, 1~ 50Hz, C13 A	230V, 1~ 50Hz, C13 A
Unit switch and main switch: present	–	✓	
Elektrisk effekt ved nominel last	W	41	42
Energy requirement standby	W	9	
Weights			
Total weight	kg	455	465
Noise emissions (EN 15036-1)			
Normal operating noise at rated power	dB(A)	< 70	
Fuel			
Permitted fuels: log wood A2 / D15 L50 acc. to EN	–	✓	
Maximum length log-wood	cm	55,0	
Maximum water content (fresh weight)	kg/kg	≤ 25	
Fill area			
Fill area volume	l	80	
Width of fill doors	mm	350	
Height of fill doors	mm	360	

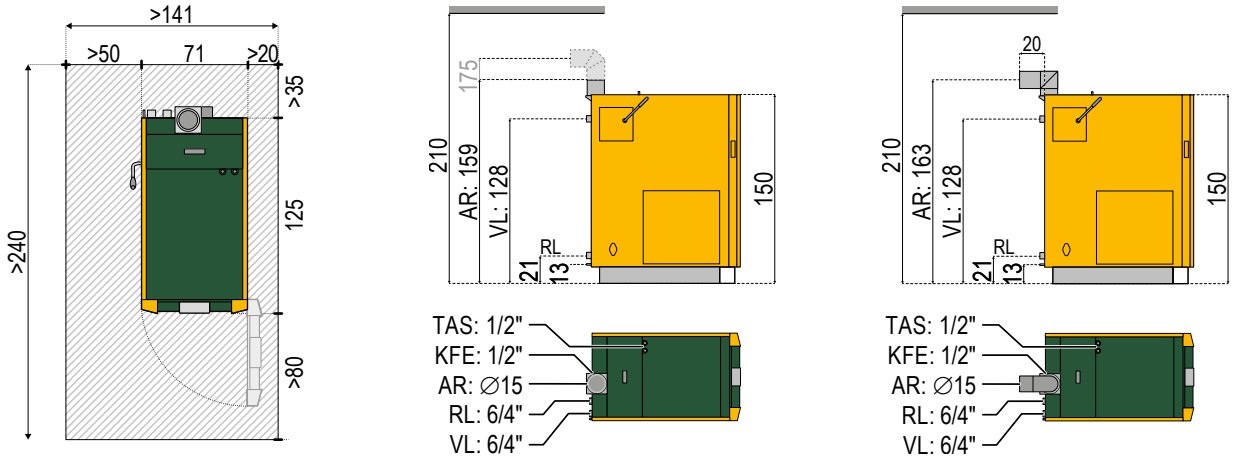
[1] with partial load test

[2] energy efficiency index of the integrated unit comprising solid

[3] according to BAFA (55 litres/kW)

KWB CLASSICFIRE CF2

INSTALLATION AND CONNECTING DIMENSIONS



LEGEND

AR	Exhaust pipe ∅ 150 mm (bend 90° optionally available)
KFE	Filling and emptying ½"
P	Space requirements for the pellet burner including clearance for maintenance
RL	Connection return flow 6⁄4"
TAS	Thermal discharge safety valve feed and discharge ½"
VL	Connection forward flow 6⁄4"

Scale 1:50 I All dimensions in cm I Width x Height I Distances stated are minimum distances!

DIMENSIONS FOR BOILER TRANSPORT AND PLACEMENT

KWB CLASSICFIRE	DELIVERY CONDITION	WITHOUT CASING, DISMANTLED	WITH CASING AND CLEANING LEVER
Unobstructed entry opening	75 / 160	75 / 100	80 / 160

Note: You will find detailed technical data on our website's product pages.

KWB CLASSICFIRE CF2

TECHNICAL DATA

CF1.5 | CF2	Unit	CF1.5/CF2 18	CF1.5/CF2 28	CF1.5/CF2 32	CF1.5/CF2 38
		Log wood/Pellet	Log wood/Pellet	Log wood/Pellet	Log wood/Pellet
Rated power	kW	18,3	28,6	31,9	38,0
Partial load	kW	-	14,3	14,2	14,2
Boiler efficiency at rated power	%	93,4	92,4	92,4	91,8
Boiler efficiency at partial load	%	-	93,0	93,0	93,0
Fuel thermal output at rated power	kW	19,6	31,0	34,5	41,4
Fuel thermal output at partial load	kW	-	15,4	15,3	15,3
Full load burn-off period CF1.5	h	10,0	6,2	5,9	5,8
Full load burn-off period CF2	h	12,2	7,6	7,3	6,6
Boiler class according to EN 303-5:2012	–		5		
EU Energylabel	–		A+		
Water side					
Water content	l		141		
Water connection, forward/return flow (internal thread)	inch		6/4		
Water connection for filling and/or emptying (internal thread)	inch		1/2		
Thermal safety valve: pressure	bar		2–4		
Water connection for thermal safety valve (internal thread)	inch		1/2		
Water-side resistance at 20 K	mbar		13,5		
Boiler-entry temperature	°C		55		
Working temperature/operating temperature	°C		80		
Maximum permitted temperature	°C		110		
Maximum operating pressure	bar		3,5		
Minimum usable buffer tank volume CF1.5	l		1500		
Minimum usable buffer tank volume CF2	l		1800		
Recommended usable buffer tank volume CF1.5	l		1800		
Recommended usable buffer tank volume CF2	l		2500		
Exhaust-gas side (data for chimney design)					
Combustion chamber temperature	°C		900–1100		
Required draft at rated power/partial load	mbar		0,08 -		
Induced draught required	–		✓		
Exhaust-gas temperature at rated power	°C		160		
Exhaust-gas temperature at partial load	°C		-		
Exhaust-gas mass flow at rated power	kg/s		0,023		
Exhaust-gas mass flow at partial load	kg/s	-	0,011	0,011	0,011
Exhaust-gas volume at rated power	Nm^3_f/h		54		
Exhaust-gas volume at partial load	Nm^3_f/h	-	27	27	27
Chimney connection height	mm		1590		
Exhaust-gas connection diameter	mm		150		
Incline of the Exhaust-gas pipe	°		≥ 3		
Chimney diameter (minimum)	mm		150		
Chimney design: moisture-resistant	–		✓		
Electrical system					
Connection	–		230V, 1~ 50Hz, C13 A		
Unit switch and main switch: present	–		✓		
Connected power boiler (minimum)	W		151		
Connected power boiler (maximum)	W		1288		
Weights					
Heat exchanger	kg		108		
Burning chamber module	kg		273		
Fill chamber module	kg		224		
Total weight (without/with pellet module)	kg		722		
Noise emissions (EN 15036-1)					
Normal operating noise at rated power	dB(A)		< 70		
Fill chamber					
Fill chamber volume CF1.5	l		160,8		
Fill chamber volume CF2	l		183,8		
Width of fill doors	mm		440		
Height of fill doors	mm		364		

NOTES

KWB

Pellet & combi 8 – 40 kW

PELLET & COMBI-HEATING SYSTEMS

8 – 40 kW

KWB EASYFIRE 1 TYPE EF1

PELLET HEATING SYSTEM 10 – 20 kW
VERSIONS: MANUAL FILLING, SUCTION CONVEYOR SYSTEM

KWB Easyfire EF1
for manual filling

A+
with control

KWB combustion system:
- Underfeed retort system with automatic ignition
- Combustion air fan
- Backfire protector (fire shutter closing automatically)

Suitable for the burning of wood pellets Ø 6 mm (or Ø 8 mm with selected conveyor systems) in accordance with ISO 17225-2 class A1.

KWB heat exchanger:
- Semi-automatic heat exchanger cleaning for KWB Easyfire 1 with storage container or fully automatic heat exchanger cleaning for KWB Easyfire 1 Plus with suction conveyor system
- Induced draught fan
- Ash tray

Storage container: Capacity: 228 litres in KWB Easyfire 1, usable volume for KWB Easyfire 1 Plus: 15 litres; fuel supply only from the left.

KWB Comfort 3 control comprising:
- Control unit incl. buffer storage tank and domestic hot water management, expandable with internal or external heating circuit control

KWB Comfort Online:
Heating systems with Comfort 3 control will additionally need a network card (art. no. 13-2000395).

KWB COMBIFIRE TYPE CF2

COMBI-HEATING FOR LOG WOOD AND PELLET 18 – 38 kW
MODELS FOR PELLET USE: MANUAL FILLING, SCREW AND SUCTION CONVEYOR SYSTEM

KWB Combifire CF2
for screw conveyor system

A+
with control

- Modular, 3x divided boiler body, including insulation
- Stable powder-coated system casing incl. insulation for minimal radiation and standby loss
- 185 l fill room – the largest of its class (upon request also available with 150 l fill room)
- Broadband lambda probe for accurate residual oxygen measuring

KWB heat exchanger:upright tubular heat exchanger with fully automatic heat exchanger cleaning, consisting of:
- Screw turbulators
- speed-regulated induced draught fan for modulating power adjustment

Suitable for the burning of log wood with a max. length of 55 cm (L50, D15 according to ISO 17225-5), moisture content of between 15% and 25% (stored in a dry place), filling transversely is possible with m wood logs (at 185 l fill room)
Optional: fully automatic ignition (1,000 W)
Optional: quick-charge valve for intelligent buffer charging for a quicker heat provision.

Pellet module for conveyor screw system connection with KWB combustions system:
- Cast underfeed burner with stainless steel burner plate and KWB EasyFlex (automatic burner plate cleaning)
- Fully automatic ignition by means of a ceramic igniter element and thermal element
- Combustion air fan
- Automatic ash removal into an ash container available in a convenient design
- Burnback protector: cellular wheel sluice with seven transport chambers.
- Storage container incl. suction turbine
- The pellet module can only be installed on the left.

Suitable for wood pellets Ø 6 mm (or Ø 8 mm with storage container) in accordance with ISO 17225-2 class A1.

KWB Comfort 4 control comprising:
- Exclusive control unit incl. buffer storage tank and domestic hot water management, expandable with internal or external heating circuit control

IMPORTANT! A sufficiently large buffer storage tank is absolutely required.
Utilisable minimum buffer storage tank volume of 1,800 l; recommended utilisable buffer storage tank volume of 2,500 l.

KWB EASYFIRE TYPE EF2

PELLET HEATING SYSTEM 8 – 38 kW VERSIONS: MANUAL FILLING, SCREW AND SUCTION CONVEYOR SYSTEM

KWB Easyfire EF2
for screw conveyor system

A+
with control

KWB combustion system:
- Cast underfeed burner with stainless steel burner plate and KWB EasyFlex (automatic burner plate cleaning)
- Fully automatic ignition by means of a ceramic igniter element and thermal element
- Combustion air fan
- Automatic ash removal into an ash container
- Burnback protector: cellular wheel sluice with seven transport chambers.
- Broadband lambda probe for accurate residual oxygen measuring

Suitable for the burning of wood pellets Ø 6 mm (or Ø 8 mm with selected conveyor systems) in accordance with ISO 17225-2 class A1.

KWB heat exchanger:
- Upright tubular heat exchanger with fully automatic heat exchanger cleaning
- Induced draught fan
- Integrated return flow temperature boost with variable volume flow (incl. two-way valve with servomotor). Alternatively, externally with a PWM pump.

Storage container (in suction operation) including suction turbine, fuel supply exclusively from the left.
Optional: ambient air-independent operation possible.

CLEAN EFFICIENCY 2.0

KWB Comfort 4 control comprising:
- Exclusive control unit
- Buffer storage tank and domestic hot water management,
- Expandable with heating circuit control internal or external

KWB EASYFIRE TYPE EF2 CC4

CONDENSING PELLET HEATING SYSTEM 10 – 40 kW VERSIONS: MANUAL FILLING, SCREW AND SUCTION CONVEYOR SYSTEM

KWB Easyfire CC4
for suction conveyor system

A++
with control

Type EF2 CC4 uses the hidden energy from the exhaust air which is emitted unused in traditional chimney solutions. This is made possible by the additional heat exchanger made from high-quality stainless steel at the rear of the heating system.

KWB combustion system:
- Cast underfeed burner with stainless steel burner plate and KWB EasyFlex (automatic burner plate cleaning)
- Fully automatic ignition by means of a ceramic igniter element and thermal element
- Combustion air fan
- Automatic ash removal into an ash container
- Burnback protector: cellular wheel sluice with seven transport chambers.
- Broadband lambda probe for accurate residual oxygen measuring

Suitable for the burning of wood pellets Ø 6 mm (or Ø 8 mm with selected conveyor systems) in accordance with ISO 17225-2 class A1.

KWB heat exchanger:
- Upright tubular heat exchanger with fully automatic heat exchanger cleaning
- Induced draught fan
- Integrated return flow temperature boost with variable volume flow (incl. two-way valve with servomotor). Alternatively, externally with a PWM pump.

CLEAN EFFICIENCY 2.0

Storage container (in suction operation) including suction turbine, fuel supply exclusively from the left.
Optional: ambient air-independent operation possible.

KWB Comfort 4 control comprising:
- Exclusive control unit
- Buffer storage tank and domestic hot water management,
- Expandable with heating circuit control internal or external

KWB'S MODULAR AND EASILY TRANSPORTABLE SYSTEM

All KWB heating systems listed on this double page can be dismantled into several modules, which allows our products to be placed in almost every heating room and easily installed even in tight spaces. The KWB Easyfire types EF2 and EF2 CC4 are delivered in individual modules.

NOTES

KWB

Pellet & combi 8 – 40 kW

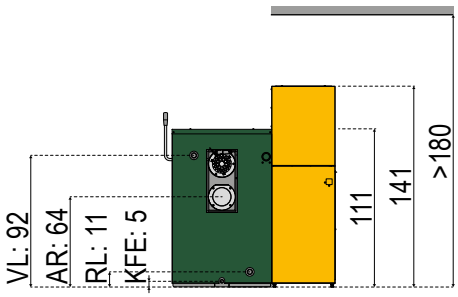
TECHNOLOGY & PLANNING 2022

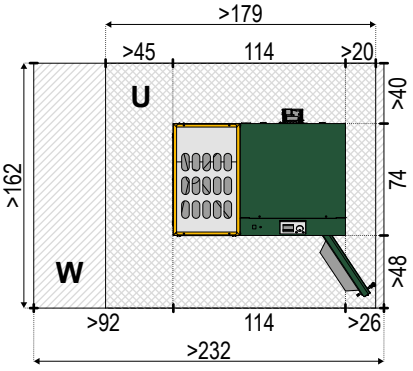
PELLET & COMBI-HEATING SYSTEMS 8 – 40 kW

KWB EASYFIRE 1

INSTALLATION AND CONNECTING DIMENSIONS

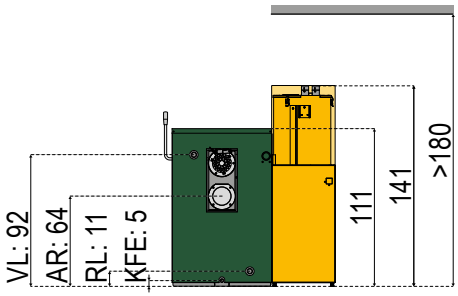
KWB EASYFIRE 1

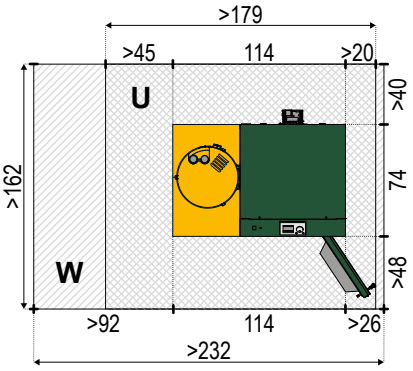




Reference values: Heating room from 2.9 m², storage room 0 m³

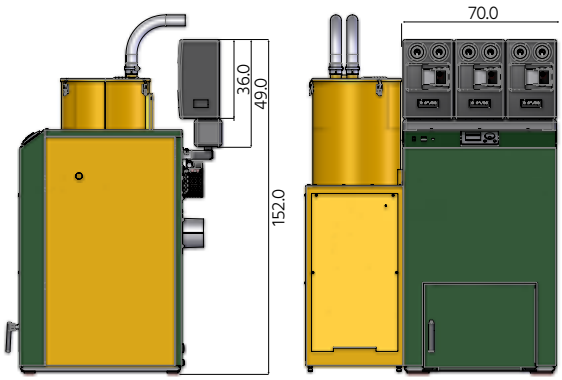
KWB EASYFIRE 1 PLUS





Reference values: Heating room size from 2.9 m²

DIMENSIONS FOR THE KWB EASYFIRE 1 HYDRAULICS PACKAGE



LEGEND

AR	Exhaust pipe ∅ 130 mm
KFE	Filling and emptying ½"
RL	Connection return flow 1"
U	Minimum space requirements
VL	Connection forward flow 1"
W	Recommended space requirements incl. sufficient room to perform maintenance

* Recommended room height: 200 cm. In the event of a room with a low ceiling (1.80 m), we provide 90° bends for the suction connections. The respective specifications must be provided when submitting the order. Scale 1:50 I All dimensions in cm I Width x Height I Distances stated are minimum distances!

DIMENSIONS FOR BOILER TRANSPORT AND PLACEMENT

KWB EASYFIRE 1	DELIVERY CONDITION	WITHOUT CASING, DISMANTLED
Unobstructed entry opening	80 / 145	75 / 75

KWB EASYFIRE 1

TECHNICAL DATA

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	16,4	21,6
Fuel thermal output at partial load	kW	3,4	5,0	6,2
Boiler class according to EN 303-5:2012	–		5	
EU Energylabel	–		A+	
Water side				
Water content	l		66	
Water connection, forward/return flow (internal thread)	inch		1	
Water connection for filling and/or emptying (internal thread)	inch		1/2	
Water-side resistance at 10 K	mbar	4,2	10	15,8
Water-side resistance at 20 K	mbar	1	2,6	4,2
Boiler-entry temperature (for installation of an external return-flow boost device)	°C		50	
Working temperature/operating temperature	°C		60–80	
Maximum permitted temperature	°C		110	
Maximum operating pressure	bar		3,5	
Exhaust-gas side (for chimney calculation)				
Combustion chamber temperature	°C		900–1100	
Required draft at rated power/partial load	mbar		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	Nm^3/h	17,0	25,5	34,0
Exhaust-gas volume at partial load	Nm^3/h	8,7	10,4	12,0
Exhaust-gas connection height boiler side	mm		635	
Exhaust-gas pipe diameter	mm		130	
Incline of the smoke-pipe	°		≥ 3	
Chimney diameter (approx. values)	mm		140	
Chimney design: Moisture-resistant	–		✓	
Electrical system				
Connection	–		230V, 1~ 50Hz, C13 A	
Connected power USP V	W		545	
Connected power USP GS	W		2347	
Ash				
Ash container volume	l		25	
Ash container filled	kg		~ 25	
Weights				
Boiler body	kg		196	
Boiler weight USP V	kg		323	
Boiler weight USP GS	kg		349	
Noise emissions				
Normal operating noise at rated power	dB(A)		< 70	
Storage container type USP V				
Contents storage container for type USP V	l		228	
Suction conveyor type USP GS				
Max. suction length	m		10	
Max. suction length	m		4	
Max. suction head	m		3,5	
Contents storage container for type USP GS	l		15	

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

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

mg/Nm^3 ... Milligram per standard cubic meter (1 Nm^3 under 1.013 hectopascal at 0 °C)

Conversion 1 mbar = 100 Pa

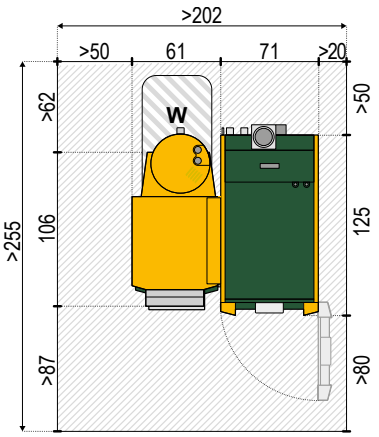
V ... Storage container with manual filling

GS ... Suction extraction of the pellets

KWB COMBIFIRE

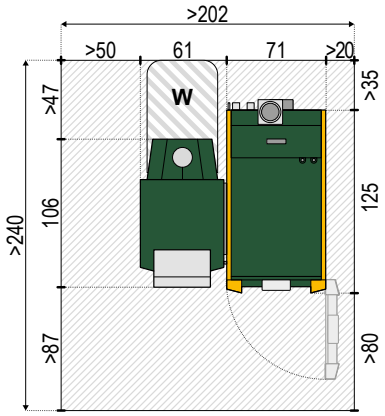
INSTALLATION AND CONNECTING DIMENSIONS

KWB COMBIFIRE WITH SUCTION CONVEYOR



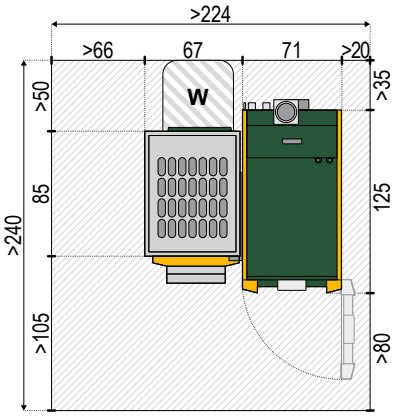
Reference value:
Heating room size approx. 5.2 m²

KWB COMBIFIRE WITH ELBOW SCREW

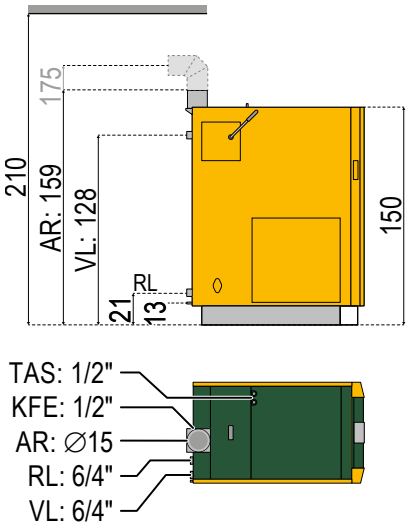


Reference value:
Heating room size approx. 4.8 m²

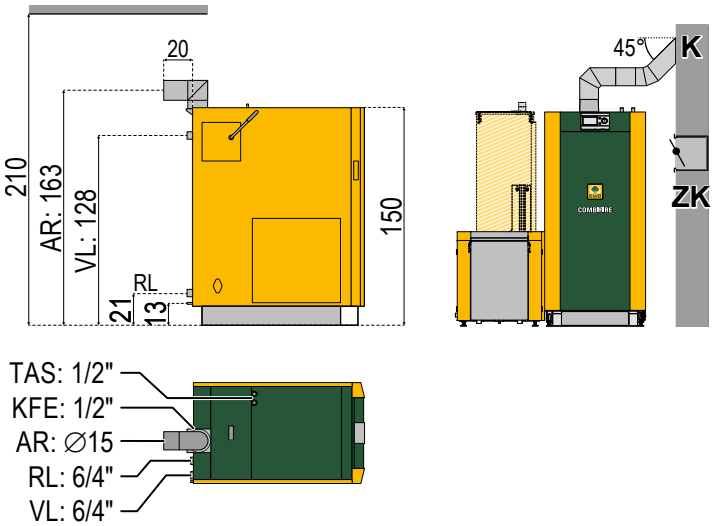
KWB COMBIFIRE WITH STORAGE CONTAINER



KWB COMBIFIRE STANDARD VERSION



KWB COMBIFIRE WITH EXHAUST PIPE CONNECTION 90° TO THE REAR



LEGEND

AR	Exhaust pipe ∅ 150 mm (bend 90° optionally available)
KFE	Filling and emptying ½"
W	Space requirements for the pellet burner including clearance for maintenance
RL	Connection return flow 6/4"

TAS	Thermal discharge safety valve feed and discharge ½"
VL	Connection forward flow 6/4"
K	Chimney
ZK	Energy-saving damper with explosion door

All dimensions in cm I Width x Height I Distances stated are minimum!

DIMENSIONS FOR BOILER TRANSPORT AND PLACEMENT

KWB COMBIFIRE	DELIVERY CONDITION	WITHOUT CASING, DISMANTLED	WITH CASING AND CLEANING LEVER
Unobstructed entry opening	75 / 160	75 / 100	80 / 160

KWB COMBIFIRE

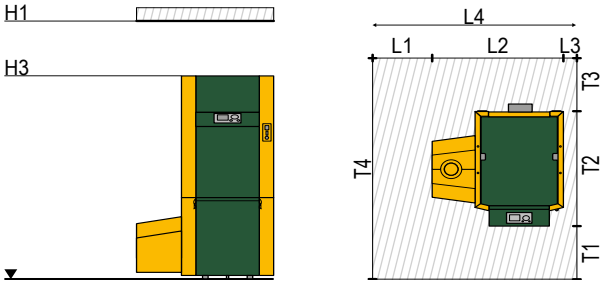
TECHNICAL DATA

CF1.5 | CF2	Unit	CF1.5/CF2 18	CF1.5/CF2 28	CF1.5/CF2 32	CF1.5/CF2 38
		Log wood/Pellet	Log wood/Pellet	Log wood/Pellet	Log wood/Pellet
Rated power	kW	18,3/22,0	28,6/30,0	31,9/30,0	38,0/35,0
Partial load	kW	14,3/6,6	14,3/9,0	14,2/9,0	14,2/10,5
Boiler efficiency at rated power	%	93,4/93,0	92,4/92,0	92,4/92,0	91,8/91,4
Boiler efficiency at partial load	%	93,0/90,9	93,0/91,0	93/91,0	93,0/91,0
Fuel thermal output at rated power	kW	19,6/23,6	31/32,6	34,5/32,6	41,4/38,3
Fuel thermal output at partial load	kW	- /7,3	15,4/9,9	15,3/10,5	15,3/11,5
Full load burn-off period CF1.5	h	10/-	6,2/-	5,9/-	5,8/-
Full load burn-off period CF2	h	12,2/-	7,6/-	7,3/-	6,6/-
Boiler class according to EN 303-5:2012	–		5,0		
EU Energylabel	–		A+		
Water side					
Water content	l		141/168		
Water connection, forward/return flow (internal thread)	inch		6/4		
Water connection for filling and/or emptying (internal thread)	inch		1/2		
Thermal safety valve: pressure	bar		2–4		
Water connection for thermal safety valve (internal thread)	inch		1/2		
Water-side resistance at 20 K	mbar		13,5		
Boiler-entry temperature	°C		55/-		
Working temperature/operating temperature	°C		80		
Maximum permitted temperature	°C		110		
Maximum operating pressure	bar		3,5		
Minimum usable buffer tank volume CF1.5	l		1500		
Minimum usable buffer tank volume CF2	l		1800		
Recommended usable buffer tank volume CF1.5	l		1800		
Recommended usable buffer tank volume CF2	l		2500		
Exhaust-gas side (data for chimney design)					
Combustion chamber temperature	°C		900–1100		
Required draft at rated power/partial load	mbar		0,08 0,05		
Induced draught required	–		✓		
Exhaust-gas temperature at rated power	°C		160/140		
Exhaust-gas temperature at partial load	°C		100/80		
Exhaust-gas mass flow at rated power	kg/s		0,023		
Exhaust-gas mass flow at partial load	kg/s		0,011		
Exhaust-gas volume at rated power	Nm^3_f/h		54		
Exhaust-gas volume at partial load	Nm^3_f/h		27		
Chimney connection height	mm		1590		
Exhaust-gas connection diameter	mm		150		
Incline of the Exhaust-gas pipe	°		≥ 3		
Chimney diameter (minimum)	mm		150		
Chimney design: moisture-resistant	–		✓		
Electrical system					
Connection	–		230V, 1~ 50Hz, C13 A		
Unit switch and main switch: present	–		✓		
Connected power boiler (minimum)	W		151/502		
Connected power boiler (maximum)	W		1288/1639		
Weights					
Heat exchanger	kg		108		
Burning chamber module	kg		273		
Fill chamber module	kg		221		
KWB pellet module	kg		130		
Total weight (without/with pellet module)	kg		719/852		
Noise emissions (EN 15036-1)					

KWB EASYFIRE 2

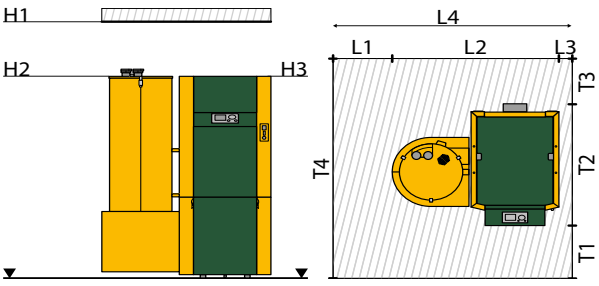
INSTALLATION AND CONNECTING DIMENSIONS

TYPE EF2 S



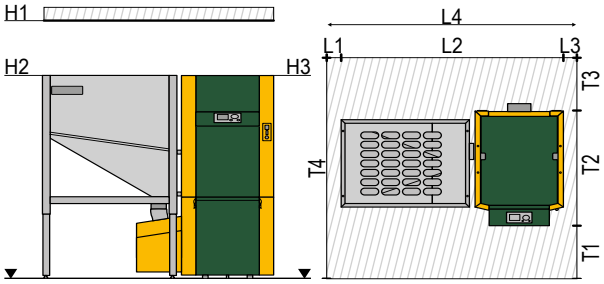
Heating room size from 2.3 m²

TYPE EF2 GS



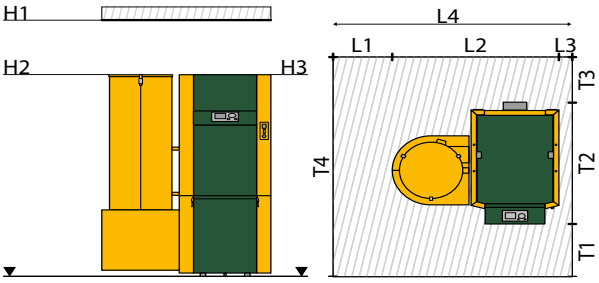
Heating room size from 2.6 m²

TYPE EF2 S+300



Heating room size from 2.8 m²

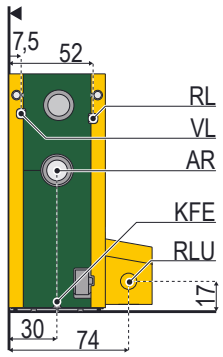
TYPE EF2 V



Heating room size from 2.6 m²

Position in drawing	EF2 8 – 12 kW				EF2 15 – 22 kW				EF2 25 – 38 kW			
	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
H2	–	126	146	146	–	146	146	146	–	164	146	146
H3	126	126	126	126	146	146	146	146	164	164	164	164
L1	40	40	40	10	40	40	40	10	40	40	40	10
L2	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
L4	>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
T2	93	93	93	93	93	93	93	93	93	93	93	93
T3	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

S KWB Easyfire type EF2 S: Screw conveyor system
GS KWB Easyfire type EF2 GS: Suction conveyor system
V KWB Easyfire type EF2 V: 107-litre storage container
S+300 KWB Easyfire type EF2 S with storage container 300 litres



	EF2 8 – 12 kW	EF2 15 – 22 kW	EF2 25 – 38 kW
VL	Female thread 1", H = 101 cm	Female thread 1", Height = 121 cm	Female thread 5/4", Height = 137 cm
RL	Ø 25, G 1", H = 100 cm	Ø 25, G 1", H = 118 cm	Ø 32, G 5/4", H = 126 cm
AR	Ø 13 cm, H = 75 cm	Ø 13 cm, H = 86 cm	Ø 15 cm, H = 105 cm
KFE	Female thread 1/2", H = 6 cm		
RLU	Connection for ambient air-independent operation (optional)		
	Connector set with distributor, H = boiler height + 14 cm		
	Connector set with heating circuit group, H = boiler height + 41 cm		
	Connector set with buffer charging group, H = boiler height + 51 cm		
	Connector set with distributor and heating circuit group, H = boiler height + 55 cm		

DIMENSIONS FOR BOILER TRANSPORT AND PLACEMENT

KWB EASYFIRE EF2	WITHOUT CASING, DISMANTLED
Unobstructed entry opening	60 x 80

All dimensions in cm I Length x Width x Height I Distances stated are minimum distances!

KWB EASYFIRE 2

TECHNICAL DATA

EF2 S / EF2 GS / EF2 V	Unité	8	12	15	22	25	30	35	38
Puissance nominale	kW	8,0	12,0	15,0	22,0	25,0	30,0	34,9	38
Charge partielle	kW	2,4	3,6	4,5	6,6	7,5	9,0	10,5	11,4
Rendement de la chaudière à puissance nominale	%	92,4	93,6	93,9	94,6	94,8	95,2	95,6	95,3
Rendement de la chaudière à charge partielle	%	91,4	90,7	91,6	93,8	93,9	94,1	94,3	94,9
Puissance thermique à puissance nominale	kW	8,7	12,8	16,0	23,3	26,4	31,5	36,5	39,9
Puissance thermique à charge partielle	kW	2,6	4,0	4,9	7,0	8,0	9,6	11,1	12,0
Classe de chaudière conformément à EN 303-5:2012	–				5				
EU Energy Label	–				A+				
Côté eau									
Contenu en eau	l	40	40	52	52	78	78	78	78
Raccordement du circuit de départ/retour (filetage interne)	pouces	1	1	1	1	5/4	5/4	5/4	5/4
Raccordement d'eau remplissage ou vidage(filetage interne)	pouces				1/2				
Régulateur thermique : non	–				×				
Résistance côté eau à 10 K	mbar	5,7	12	34	56	39	52	66	66
Résistance côté eau à 20 K	mbar	1,7	3,5	9,5	15,4	10,8	14	18	18
Température d'entrée dans la chaudière (lors du montage de la vanne à deux voies à servomoteur fournie par KWB)	°C				10–70				
Température d'entrée dans la chaudière (lors du montage d'un dispositif externe de maintien de la température de retour)	°C				40–70				
Température de fonctionnement	°C				80				
Température maximale admissible	°C				110				
Pression de service maximale	bar				3,5				
Volume utile minimum ballon tampon	l	500	500	500	800	800	800	1000	1000
Côté fumées (pour calcul de cheminée)									
Température de la chambre de combustion	°C				900–1100				
Pression de la chambre de combustion	mbar				-0,20				
Tirage requis à puissance nominale/charge partielle	mbar				0,05 0,03				
Tirage présent	–				✓				
Température des fumées – puissance nominale	°C				120,0				
Temp. des fumées charge partielle	°C				90,0				
Débit des fumées – puissance nominale	kg/s	0,006	0,009	0,011	0,016	0,018	0,022	0,026	0,028
Débit des fumées – charge partielle	kg/s	0,002	0,003	0,004	0,005	0,006	0,007	0,008	0,008
Volume des fumées – puissance nominale	Nm^3/h	16,5	24,9	31,1	45,2	51,3	61,4	71,2	77,3
Volume des fumées – charge partielle	Nm^3/h	5,3	7,9	9,8	14,1	15,9	18,7	21,5	23,3
Hauteur branchement conduit de fumées côté chaudière	mm	750	750	860	860	1050	1050	1050	1050
Diamètre du conduit de fumées	mm	130	130	130	130	150	150	150	150
Inclinaison du conduit de fumées	°				≥ 3				
Diamètre de la cheminée (valeurs indicatives)	mm	140	140	140	140	160	160	160	160
Installation électrique									
Raccordement électrique	–				230V, 1~ 50Hz, C13 A				
Puissance de raccordement EF2 V	W	559	559	559	559	577	577	577	577
Puissance de raccordement EF2 S	W	609	609	609	609	627	627	627	627
Puissance de raccordement EF2 GS	W	2189	2189	2189	2189	2207	2207	2207	2207
Puissance de raccordement EF2 GS avec sondes de prélèvement	W	2444	2444	2444	2444	2462	2462	2462	2462
Cendres									
Volume du bac à cendres	l				28				
Bac à cendres plein	kg				27				
Dispositif de décendrage	–				✓				
Poids									
Poids de la chaudière EF2 V	kg	341	341	370	370	416	416	416	416
Poids de la chaudière EF2 S	kg	326	326	352	352	394	394	394	394
Poids de la chaudière EF2 GS	kg	349	349	378	378	424	424	424	424
Emissions sonores									
Seuil réglementaire maxi à puissance nominale	dB(A)				< 70				
Réservoir de stockage									
Volume du réservoir de stockage pour le type EF2 V	l				107				
Volume du réservoir de stockage pour le type EF2 S + 300	l				300				
Aspiration type EF2 GS									
Longueur max. d'aspiration	m				25				
Hauteur max. d'aspiration	m				5				
Volume du réservoir de stockage pour le type EF2 GS	l	42	42	67	67	90	90	90	90

Conversion 1 mbar = 100 Pa

*** ... Vérification des dessins techniques, valeurs obtenues par interpolation pour les tailles intermédiaires

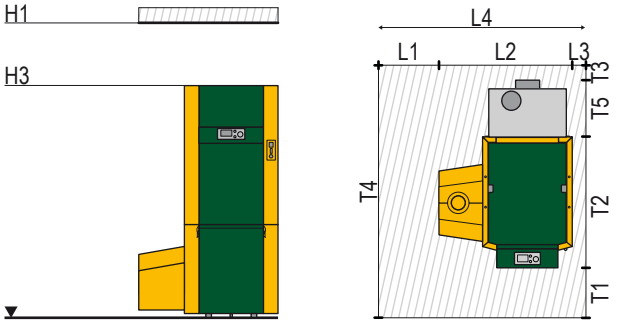
FJ-BLT ... Franciso Josephinum Wieselburg – Biomass Logistic Technology

mg/Nm^3 ... Milligrammes par mètre cube normé (1 Nm^3 sous 1,013 hectopascal à 0 °C)

KWB EASYFIRE 2 CC4

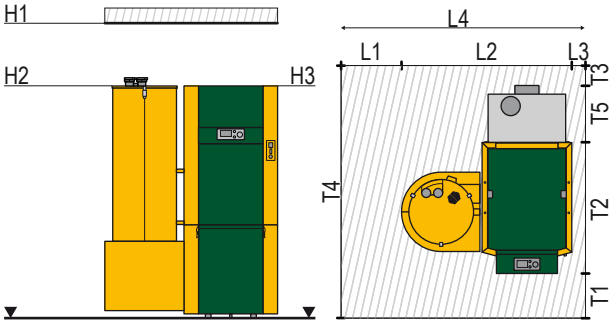
INSTALLATION AND CONNECTING DIMENSIONS

TYPE EF2 CC4 S



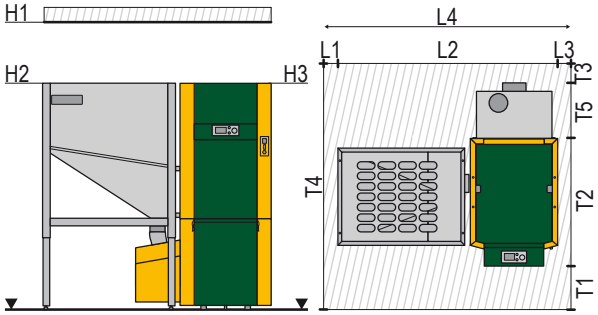
Heating room size from 2.6 m²

TYPE EF2 CC4 GS



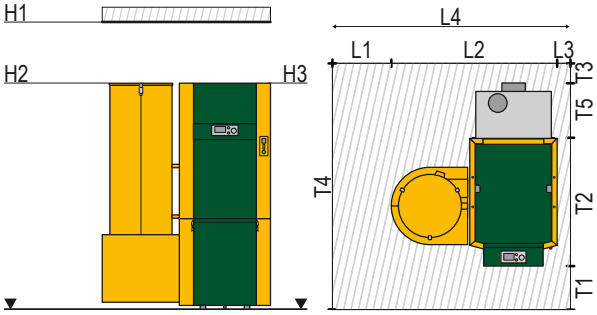
Heating room size from 3.0 m²

TYPE EF2 CC4 S+300



Heating room from 3.2 m²
No additional storage room required!

TYPE EF2 CC4 V



Heating room from 3.0 m²
No additional storage room required!

Position in drawing	EF2 CC4 10 – 12 kW				EF2 CC4 15 – 22 kW				EF2 CC4 25 – 35 kW				EF2 CC4 40 kW			
	S	GS	S+300	V	S	GS	S+300	V	S	GS	S+300	V	S	GS	S+300	V
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	>10	>40	>40	>40	>10	>40	>40	>40	>10	>40	>40	>40	>40	>40
L2	88	106	148	106	88	106	148	106	88	106	148	106	88	106	148	106
L3	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
L4	>138	>156	>168	>156	>138	>156	>168	>156	>138	>156	>168	>156	>138	>156	>168	>156
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	47	47	47	47	50	50	50	50	58	58	58	58

S = KWB Easyfire type EF2 CC4 S: Screw conveyor system
GS = KWB Easyfire type EF2 CC4 GS: Suction conveyor system
S+300 = KWB Easyfire type EF2 CC4 S with storage container 300 litres
V = KWB Easyfire type EF2 CC4 V: 107-litre storage container

DIMENSIONS FOR BOILER TRANSPORT AND PLACEMENT

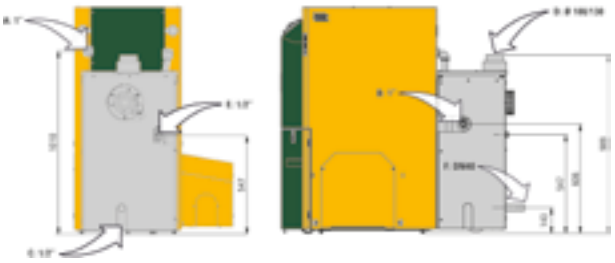
KWB EASYFIRE EF2 CC4	WITHOUT CASING, DISMANTLED
Unobstructed entry opening	60 x 80

An unobstructed door width of 70 × 180 cm is sufficient for all boiler types to be able to transport KWB Easyfire components into the respective room.
All dimensions in cm I Length x Width x Height I Distances stated are minimum distances!

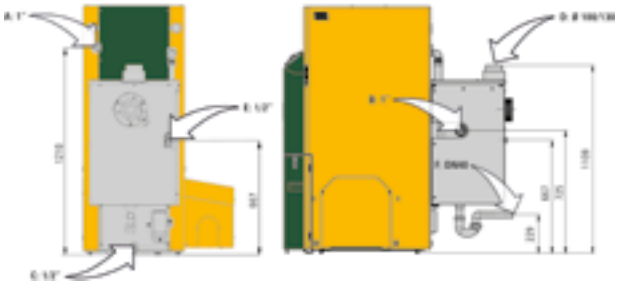
KWB EASYFIRE 2 CC4

CONNECTING DIMENSIONS

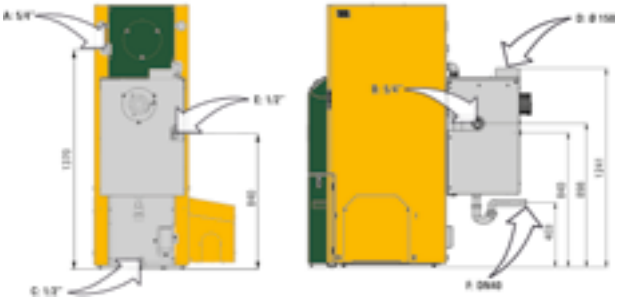
TYPE EF2 CC4 10 – 12 KW



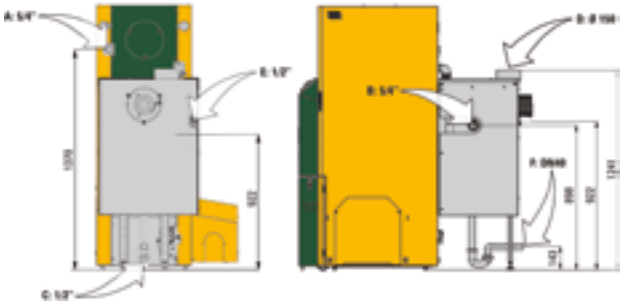
TYPE EF2 CC4 15 – 22 KW



TYPE EF2 CC4 25 – 35 KW



TYPE EF2 CC4 40 KW



LEGEND

A	Forward flow
B	Reversal
E	Washing unit
C	Boiler filling and emptying
D	Exhaust gas pipe
F	Condensate discharge

INFORMATION

If a lifting system is required for the condensate, then a wastewater lifting system will need to be installed (recommended: Wilo HiDrainlift 3).

KWB EASYFIRE 2 CC4

TECHNICAL DATA

EF2 S / EF2 GS / EF2 V	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 (internal thread)	inch mm	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
Water connection for filling and/or emptying (internal thread)	inch mm	1/2							
Thermal safety valve: no	–	×							
Water-side resistance at 10 K	mbar	17,3	30,5	50,3	96,4	95,9	95,2	94,4	124,7
Water-side resistance at 20 K	mbar	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							
Boiler-entry temperature (for installation of an external return-flow boost device)	°C	40-70							
Working temperature/operating temperature	°C	80							
Maximum permitted temperature	°C	110							
Maximum operating pressure	bar	3,0							
Minimum usable buffer tank volume	l	500	500	500	800	800	800	1000	1000
Exhaust-gas side (for chimney calculation)									
Combustion chamber temperature	°C	900–1100							
Combustion chamber pressure	mbar	-0,20							
Required draft at rated power/partial load	mbar	0,01 0,01							
Suction available	–	✓							
Exhaust-gas temperature at rated power	°C	40–70							
Exhaust-gas temp. Partial load	°C	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 partial load	Nm^3/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	1110,0	1110,0	1241,0	1241,0	1241	1241
Exhaust-gas pipe diameter	mm	100/130	100/130	100/130	100/130	150,0	150,0	150,0	150,0
Chimney diameter (approx. values)	mm	140,0	140,0	140,0	140,0	160,0	160,0	160,0	160,0
Chimney design: Moisture-resistant	–	✓							
Electrical system									
Connection	–	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
Ash									
Ash container volume	l	28							
Ash container filled	kg	27							
Ash removal system	–	✓							
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
Noise emissions									
Normal operating noise at rated power	dB(A)	< 70							
Storage container									
Contents storage container for type EF2 V	l	107							
Contents storage container for type EF2 S + 300	l	300							
Suction conveyor type EF2 GS									
Max. suction length	m	25							
Max. suction head	m	5							
Contents storage container for type EF2 GS	l	42	42	67	67	90	90	90	90

mg/Nm^3 ... Milligram per standard cubic meter

($1\ Nm^3$ under 1.013 hectopascal at 0 °C)

Conversion 1 mbar = 100 Pa

S ... Screw extraction of pellets (manual filling with external hopper is also an option)

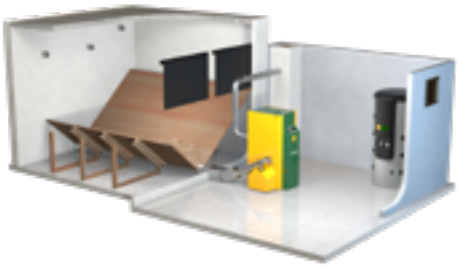
GS ... Suction extraction of the pellets

V ... Storage container with manual filling

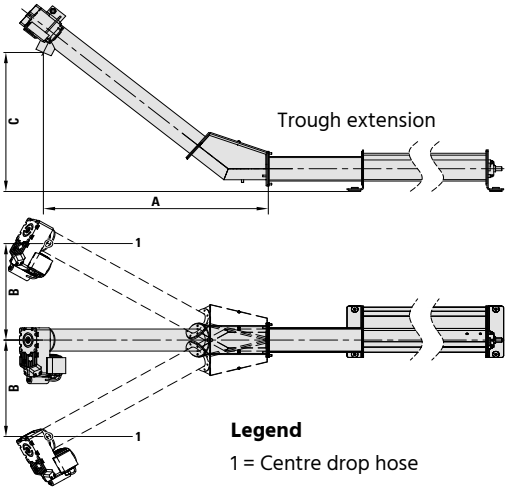
NOTES

KWB CONVEYOR SCREW WITH ELBOW SCREW

- ✓ Extremely quiet operation
- ✓ Minimal power consumption
- ✓ Maintenance-free
- ✓ Also realizable as case solution.

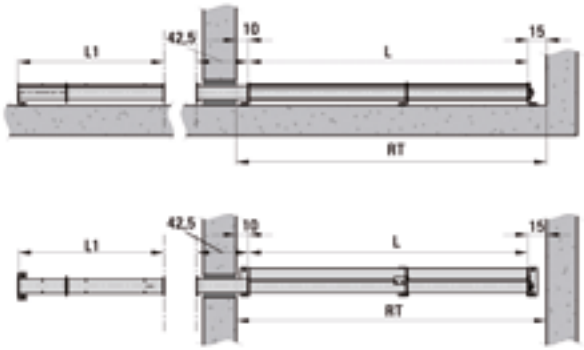


ASCENDING SCREW



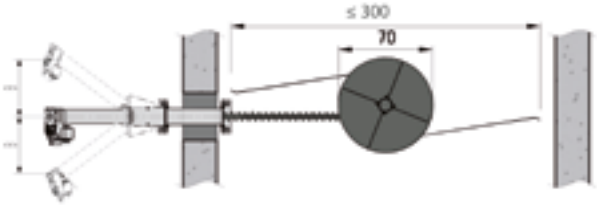
Legend
1 = Centre drop hose

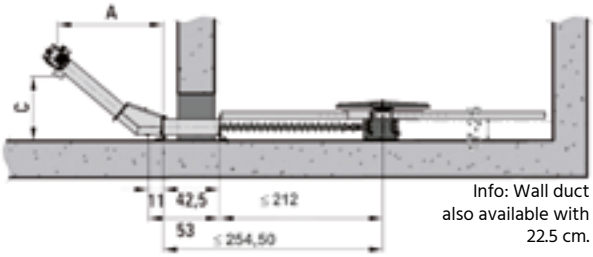
CONVEYOR SCREW



KWB PELLET STIRRER PLUS AND ELBOW SCREW

- ✓ Best possible storage room utilisation
- ✓ Extremely quiet operation
- ✓ Sloping floor is not required
- ✓ Also realizable as case solution.





Info: Wall duct also available with 22.5 cm.

ASCENDING SCREW WITH AXIS DEVIATION B DEPENDING ON STORAGE ROOM LOWERING

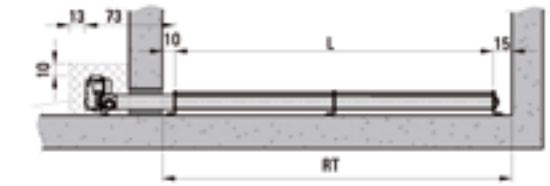
Storage room lowering	Ascending screw 1	Ascending screw 2	Ascending screw 3	Ascending screw 4
	A = 78.5 cm C = 48.7 cm	A = 91.0 cm C = 59.9 cm	A = 101.0 cm C = 67.9 cm	A = 116.0 cm C = 80.8 cm
0 cm	B = 0	B = 0 – 35 cm	B = 0 – 47 cm	B = 44 – 64 cm
5 cm	–	B = 0 – 27 cm	B = 0 – 42 cm	B = 35 – 60 cm
10 cm	–	B = 0 – 12 cm	B = 0 – 34 cm	B = 22 – 55 cm
15 cm	–	B = 0 cm	B = 0 – 24 cm	B = 0 – 50 cm
20 cm	–	–	B = 0 cm	B = 0 – 43 cm
25 cm	–	–	B = 0 cm	B = 0 – 33 cm
30 cm	–	–	–	B = 0 – 19 cm
35 cm	–	–	–	B = 0 cm

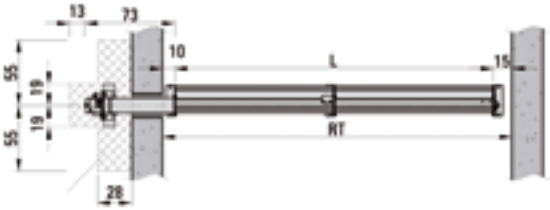
Conveyor screw L	Room depth Min. room depth
130 cm	155 cm
180 cm	205 cm
230 cm	255 cm
260 cm	285 cm
280 cm	305 cm
310 cm	335 cm
360 cm	385 cm
460 cm	485 cm
490 cm	515 cm
540 cm	565 cm

Channel extension L1
40 cm
80 cm
120 cm
160 cm
200 cm
240 cm

KWB CONVEYOR SCREW WITH SUCTION CONVEYOR

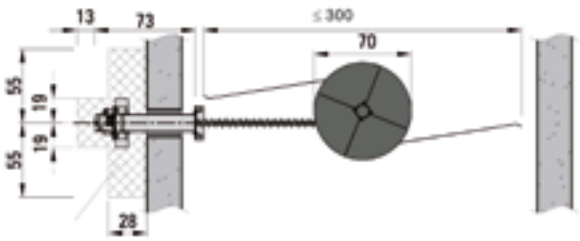
- ✓ Pellets up to 8 mm can be used
- ✓ Ideal for storage room systems which are not situated on the same level as the heating room
- ✓ Suction lengths of up to 25 metres possible (10 metres for the KWB Easyfire 1 Plus)



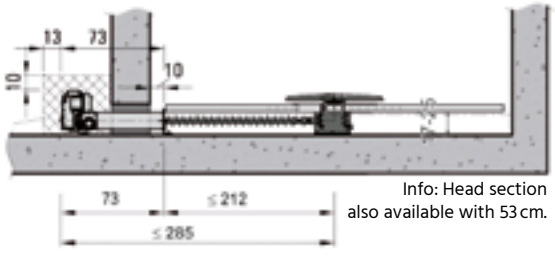


KWB PELLET STIRRER PLUS WITH SUCTION CONVEYOR

- ✓ Pellets up to 8 mm can be used
- ✓ Best possible storage room utilisation
- ✓ Suction lengths of up to 25 metres possible (10 metres for the KWB Easyfire 1 Plus)
- ✓ Sloping floor is not required



Free space



Info: Head section also available with 53 cm.

Notes

- Boiler room ventilation ≥ 400 cm² must be provided. • Take the ceiling load / static loads into account!
- Assemble the drives outside of the storage room
- Strictly comply with local fire safety regulations and other regulations!
- Maintain the legally prescribed distances to flammable materials!

FUEL POURING HEIGHTS

A maximum pouring height of 3 m is permitted in pellet operations.
Please comply with the EN ISO 20023 standard when designing the pellet storage.

KWB SAMPLING PROBE(S) WITH SUCTION CONVEYOR

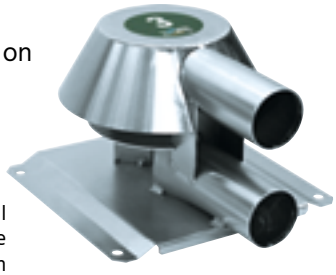
INFORMATION

Find information about hose routing on page I | 16

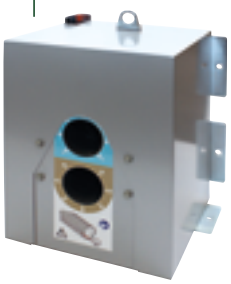
3-POINT SAMPLING PROBE

The one-point sampling probe is offered as an additional suction conveyor system model for the pellet heating systems KWB Easyfire 2 type EF2 GS and KWB Easyfire 1 Plus type EF1 GS. The switchover to pellet removal between the 3 sampling probes takes place automatically.

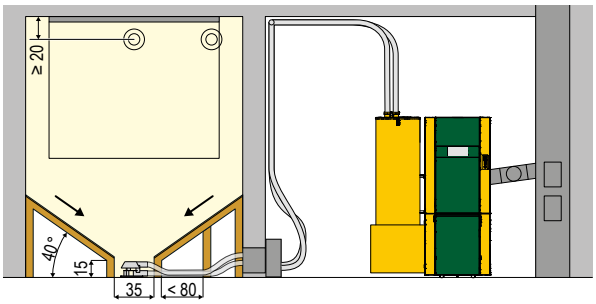
- ✓ Flexible utilisation and easily installed with very little planning expenditures
- ✓ No moving pellet suction tubes in the heating and storage room – thus low space requirements
- ✓ Reliable pellet extraction based on special probe geometry

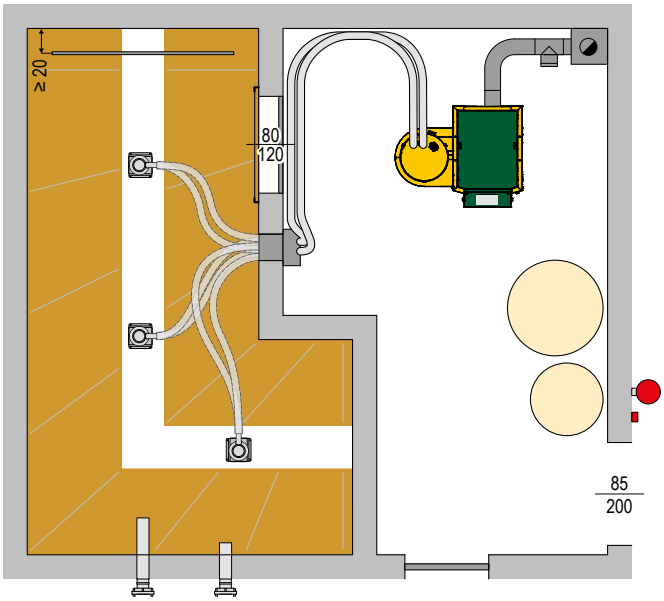


KWB sampling probes: optimal safety thanks to 1 or 3 separate removal points in the storage room



KWB switchover unit: automatic switchover when using 3 sampling probes





1-Point sampling probe also possible with the KWB weekly storage container or for installation in the storage room.
L x W x H = 100 x 100 x 110 cm, room height min. 180 cm

FUEL POURING HEIGHTS

A maximum pouring height of 3 m is permitted in pellet operations.
Please comply with the EN ISO 20023 standard when designing the pellet storage.

KWB SAMPLING PROBE(S) WITH SUCTION CONVEYOR

8-POINT SAMPLING PROBE

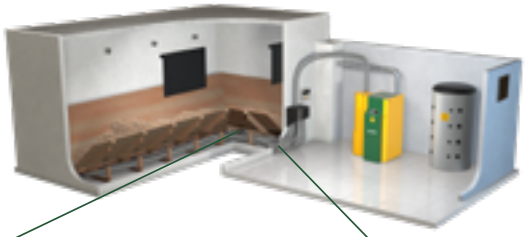
- ✓ Flexible utilisation and easily installed with very little planning expenditures
- ✓ Reliable pellet extraction based on special probe geometry

INFORMATION

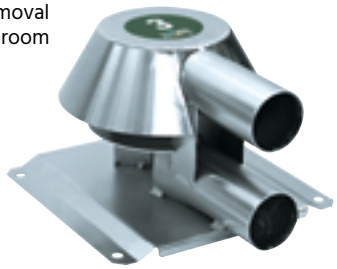
Find information about hose routing on page I | 16

COMPATIBLE WITH

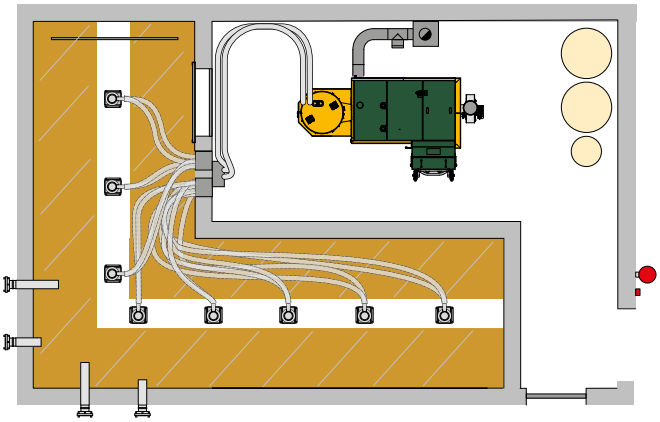
KWB Easyfire Typ EF2 und EF2 CC4

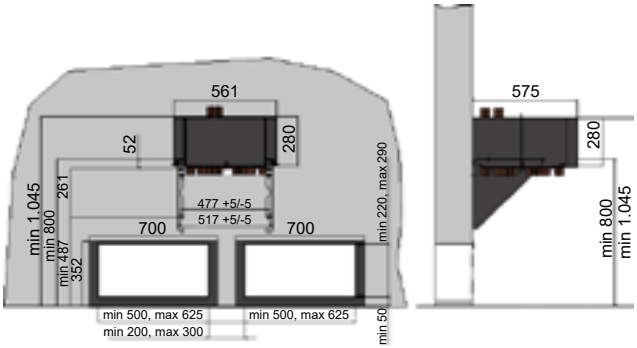


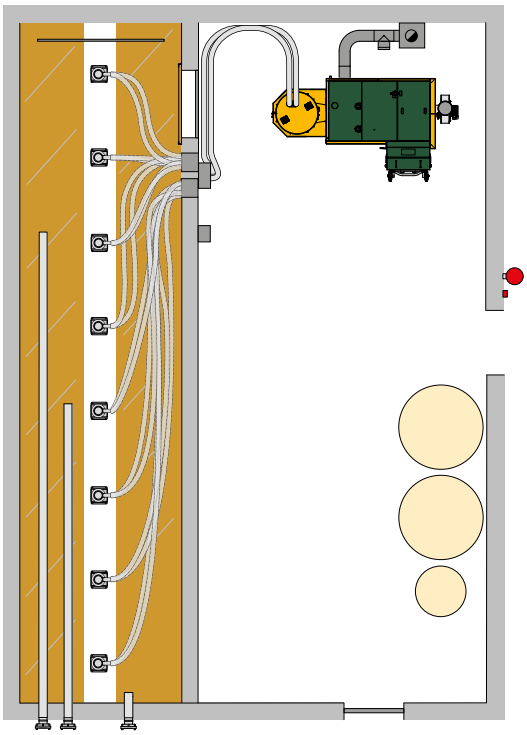
KWB sampling probes: optimal safety thanks to 8 separate removal points in the storage room



KWB switchover unit: automatic switchover with 8 sampling probes

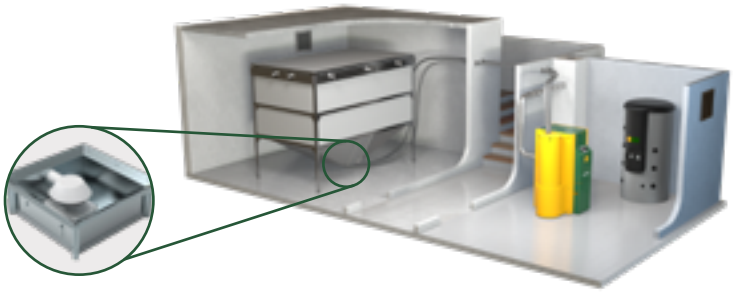




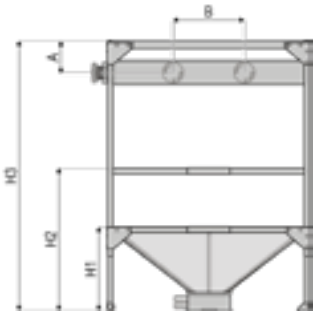


KWB PELLET BOX AND SUCTION CONVEYOR

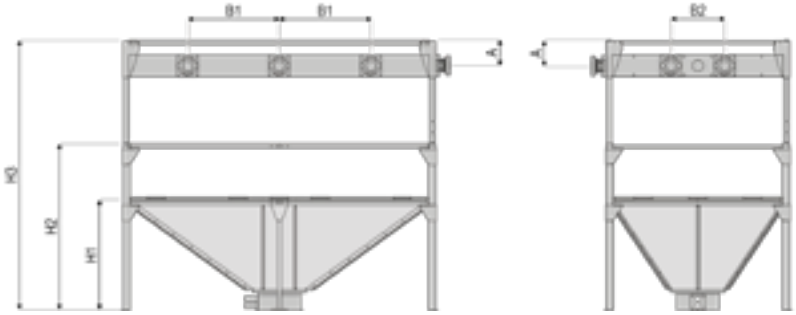
- ✓ Height adjustable 180 / 190 cm – 250 cm
- ✓ Durable steel frame
- ✓ Optimal emptying



DRAWING FOR A SQUARE OPTION

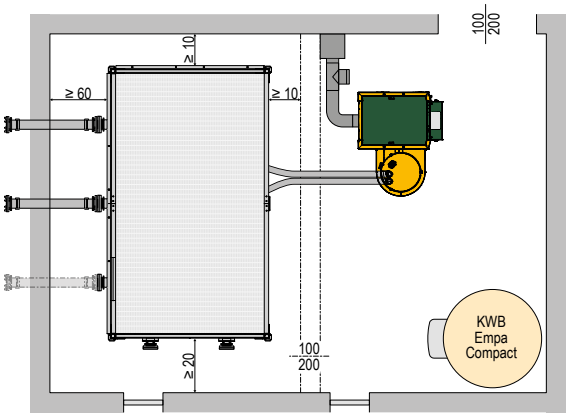


DRAWING FOR A RECTANGULAR OPTION



Type designation	Unit	Type 12	Type 17	Type 21	Type 25	Type 17/29	Type 21/29	Type 29
Volume	m^3	1.7 – 2.6	3.2 – 5.4	4.4 – 7.7	6.4 – 10.9	5.6 – 8.3	6.6 – 10.2	9.6 – 14.1
Fill quantity* (max.):	t	1.1 – 1.7	2.1 – 3.5	2.8 – 5.0	4.2 – 7.0	3.6 – 5.4	4.3 – 6.6	6.1 – 9.2
Injection connectors	Pcs.	1	1	1	1	1 or 2**	1 or 2**	1 or 2**
Suction nozzle	Pcs.	1	1	1	1	1	1	1
Width	cm	120	170	210	250	170	210	290
Length	cm	120	170	210	250	290	290	290
A	cm	23	23	23	23	23	23	23
B	cm	50	50	50	90	–	–	–
B1	cm	–	–	–	–	85	85	85
B2	cm	–	–	–	–	50	50	50
H1	cm	70	70	86	86	103	103	103
H2	cm	136	136	136	136	155	155	155
H3 – adjustable for height	cm	180 – 250	180 – 250	180 – 250	180 – 250	190 – 250	190 – 250	190 – 250

* The capacity depends on: the filling technique, pellet characteristics, available space, container size and height of the container!
** When filling on the narrow side, 2 filling nozzles will be required, if filling on the broader side, 3 filling nozzles will be required. The scope of delivery includes 3 nozzles.

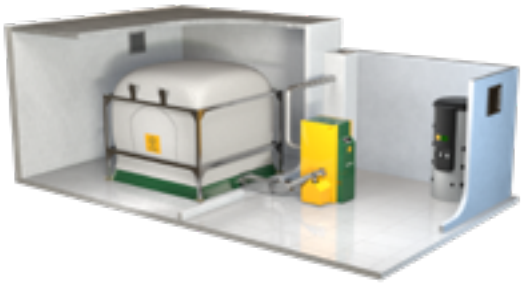


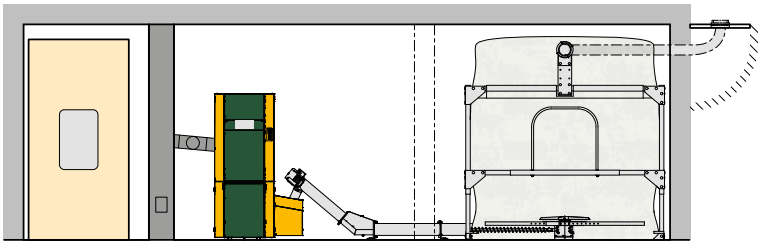
FUEL POURING HEIGHTS

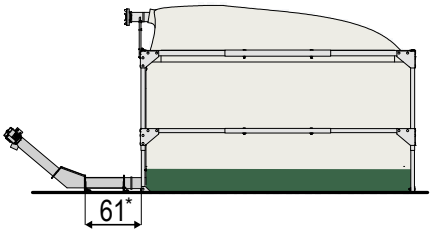
The KWB Pellet Box is height-adjustable and can be individually adjusted to the respective room height. Please comply with the EN ISO 20023 standard when designing the pellet storage.

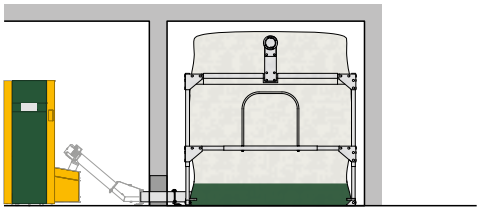
KWB PELLET BIG BAG AND ELBOW SCREW

- ✓ Very high degree of space utilisation
- ✓ No special storage room adaptation required
- ✓ Suitable for low and moist rooms
- ✓ Also realizable as case solution.









*Can also be realized with 41 cm.

KWB PELLET BIG BAG – TECHNICAL DATA

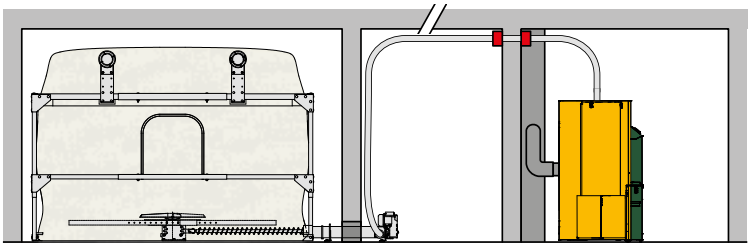
Length & Width	Size:	[m]	EF2 / CF2	EF2 / CF2		
			1515	2020	2525	3030
			1.5 x 1.5 m	2.0 x 2.0 m	2.5 x 2.5 m	3.0 x 3.0 m
Fill quantity** (max.):	Injection nozzle bottom	[t]	< 2.2 t	< 3.9 t	< 6.5 t	< 9.3 t
Fill quantity** (max.):	Injection nozzle top	[t]	< 2.3 t	< 4.1 t	< 6.9 t	< 10.5 t
Fill height ***	FH:	[cm]	162 cm or 177 cm or 192 cm			
Room height (min.)	RH:	[cm]	Fill height + ≥ 20 cm			
Fill openings	Quantity	Pcs.	1 Pc.	1 Pc.	2 Pcs.	2 Pcs.
Fill distance	FD:	[cm]	–	–	100 cm	140 cm

** The capacity depends on: the filling technique, pellet characteristics, available space, container size and height of the injection nozzles!

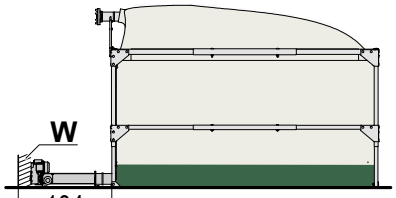
*** Fill height is dependent on the position of the injection nozzles. Depending on the locally applicable fire safety regulations, the KWB Pellet Big Bag can be set up directly in the heating room if a specified minimum distance to the heating system is maintained. If appropriately protected against weather influences the Big Bag can be set up outdoors. Local fire safety regulations must be strictly complied with. The Big Bag does not require any air extraction – the air escapes through the fabric and via a window or vent (at least 400 cm²) to the outside. Structural characteristics of the place of installation: dry, horizontal, smooth, clean, able to carry maximum load – at least 1,500 kg/m²

KWB PELLET BIG BAG AND SUCTION CONVEYOR

- Pellets up to 8 mm can be used
- Very high degree of space utilisation
- Possible to set up outdoors (if protected from the weather)
- Available in 4 different sizes

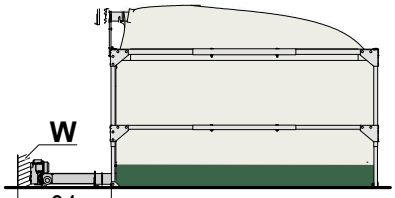


Standard variant



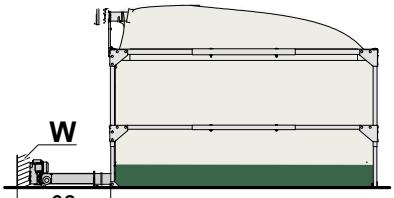
(Headpiece L = 73,5 cm)

Medium variant

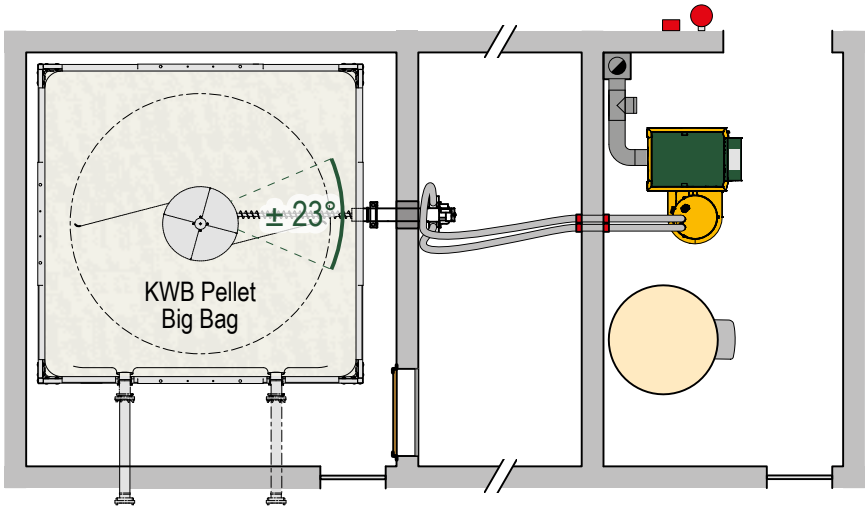


(Headpiece L = 53,5 cm)

shorter version



(Headpiece L = 31 cm)



FUEL POURING HEIGHTS

The integrated injection nozzles are height-adjustable, depending on the room height the pouring height and storage volume may vary. Please comply with the EN ISO 20023 standard when designing the pellet storage.

KWB

Pellet
45 - 135 kW

PELLET HEATING SYSTEMS

45 – 135 kW

KWB PELLETFIRE^{PLUS} TYPE MF2

PELLET HEATING SYSTEM 45 - 135 kW
VERSIONS: SCREW AND SUCTION CONVEYOR SYSTEM

KWB combustion system:
- Crawler burner with high-alloy cast and self-cleaning revolving grate components
- Fully automatic ignition by means of a ceramic igniter element
- 2 combustion air fans
- Burnback protector: cellular wheel sluice with 7 transport chambers.
- Stoker screw with stainless steel spirals incl. drive unit and automatic ash removal incl. ash compaction into an integrated grate ash container with fill level monitoring

Suitable for the burning of wood pellets ∅ 6 mm or ∅ 8 mm accordance with ISO 17225-2 category A1.

KWB heat exchanger: upright tubular heat exchanger with fully automatic heat exchanger cleaning, consisting of screw turbulators

Fuel supply: fuel supply from the left or from the right selectable when submitting the order. Can be selected for suction conveyor storage containers with suction turbine where the fuel is supplied from the right or the left.

Also optionally available as an extra-charge item:
Fuel recognition Plus, additional cooling for terminal box, external ash extraction 120 l or 240 l, increased boiler/forward flow setpoint temperature (settable to up to 95° C), exhaust gas recirculation (comes standard as of 95 kW in type MF2 R, in basic load operation > 1,500 full load hours/ required for all systems), 4th and 5th buffer sensor, full ash extraction in the comfort version

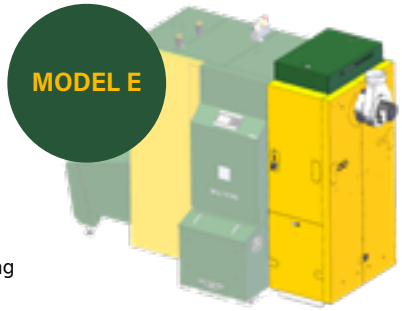
A+
with control

CLEAN EFFICIENCY 2.0

Planning advice: Environmental conditions for operation: Temperature -10 to +40 °C, Rel. humidity 5% to 95%, not condensing; sound insulation pad set for boiler feet comes standard

KWB Comfort 4 control comprising: Exclusive control unit incl. buffer storage tank and domestic hot water management, expandable with internal or external heating circuit control

KWB DUST FILTER E^{PLUS} WITH AUTOMATIC CLEANING



E^{Plus} dust filter features:
- The dust filter operates based on the electrostatic separation principle.
- The fully automatic electrode cleaning takes place mechanically in dry operating mode
- The separated filter dust is collected in a generously dimensioned ash pan (capacity 26 l) which can be conveniently and cleanly emptied from the front

Installation:
- The filter unit can be installed either by directly attaching it to the boiler without wasting space or by placing it as a stand-alone unit in an adjacent area in the heating room and installing it in the exhaust pipe between boiler and chimney.
- The E^{Plus} dust filter must be installed by default on the suction side between boiler and induced draught fan
- An installation on the pressure side downstream of the induced draught fan is only permitted in combination with the exhaust gas recirculation at the boiler if the exhaust gas pipe is installed pressure-tight (at least 10 Pa) and if sufficient chimney draught is ensured.
- The exhaust gas pipe must be as short as possible (max. 4 m length) and benefit the flow (max. 8 Pa pressure loss), and it must be insulated by the customer so that no condensation can form

Control system:
- The high voltage module regulates the ionisation with up to 30 kV to ensure maximum separation efficiency.
- The KWB Comfort control and the filter electronics work together so that the cleaning of the filter is impulse-driven and is performed at the same time as the heat exchanger cleaning. This minimizes interrupted operations and the reintroduction of the separated dust.

Degree of separation:
The particle separator achieves a separation effect of up to 90%, provided the system is run and maintained properly as per operating and maintenance instructions. Compliance with the dust limit values in Germany pursuant to the 1st BImSchV Level 2 and the Swiss Clean Air Act (LRV) assumes that
- only wood pellets in accordance with EN ISO 17225-2 categories A1 and A2 are used.
- the raw gas dust content in the boiler exhaust gas due to aerosol-capable ash portions is max. 100 mg/Nm3 at 13% O_2 (dry)

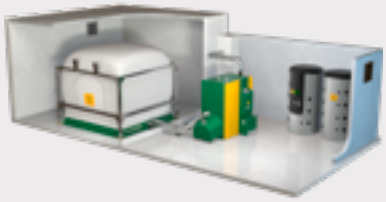
KWB'S MODULAR AND EASILY TRANSPORTABLE SYSTEM

The KWB Pelletfire^{Plus} pellet heating system can be dismantled into several modules, which allows the heating to be placed in almost every heating room and easily installed even in tight spaces.

CUSTOMISED SOLUTIONS

KWB CONVEYOR SYSTEMS

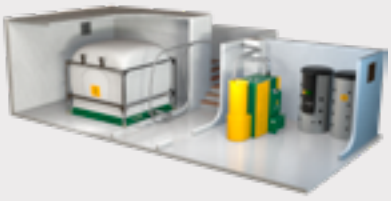
KWB PELLET STIRRER PLUS WITH ELBOW SCREW



CONVEYOR SCREW WITH ELBOW SCREW

KWB PELLET BIG BAG WITH ELBOW SCREW

KWB PELLET STIRRER PLUS WITH SUCTION CONVEYOR



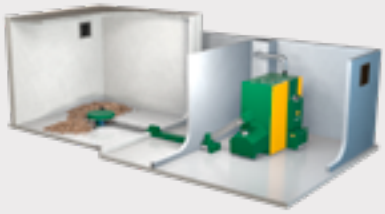
KWB PELLET BIG BAG WITH SUCTION CONVEYOR

CONVEYOR SCREW WITH SUCTION CONVEYOR

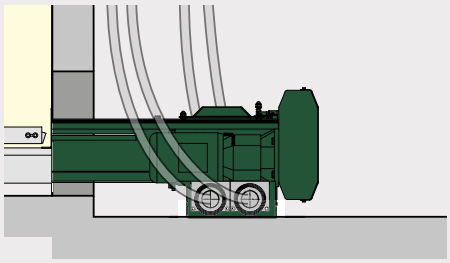
KWB SAMPLE PROBES WITH SUCTION CONVEYOR (UP TO 65 kW)

8 POINT SAMPLING PROBES WITH SUCTION CONVEYANCE

SOLUTIONS FOR LARGE HEATING ROOMS (KWB CONVEYOR SYSTEM M)



KWB STIRRER PLUS WITH ASCENDING SCREW (FOR STORAGE SPACES UP TO 30 m²)



KWB STIRRER PLUS WITH DOUBLE SUCTION CONVEYOR (FOR STORAGE SPACES UP TO 30 m²)

Symbol graphics

NOTES

KWB

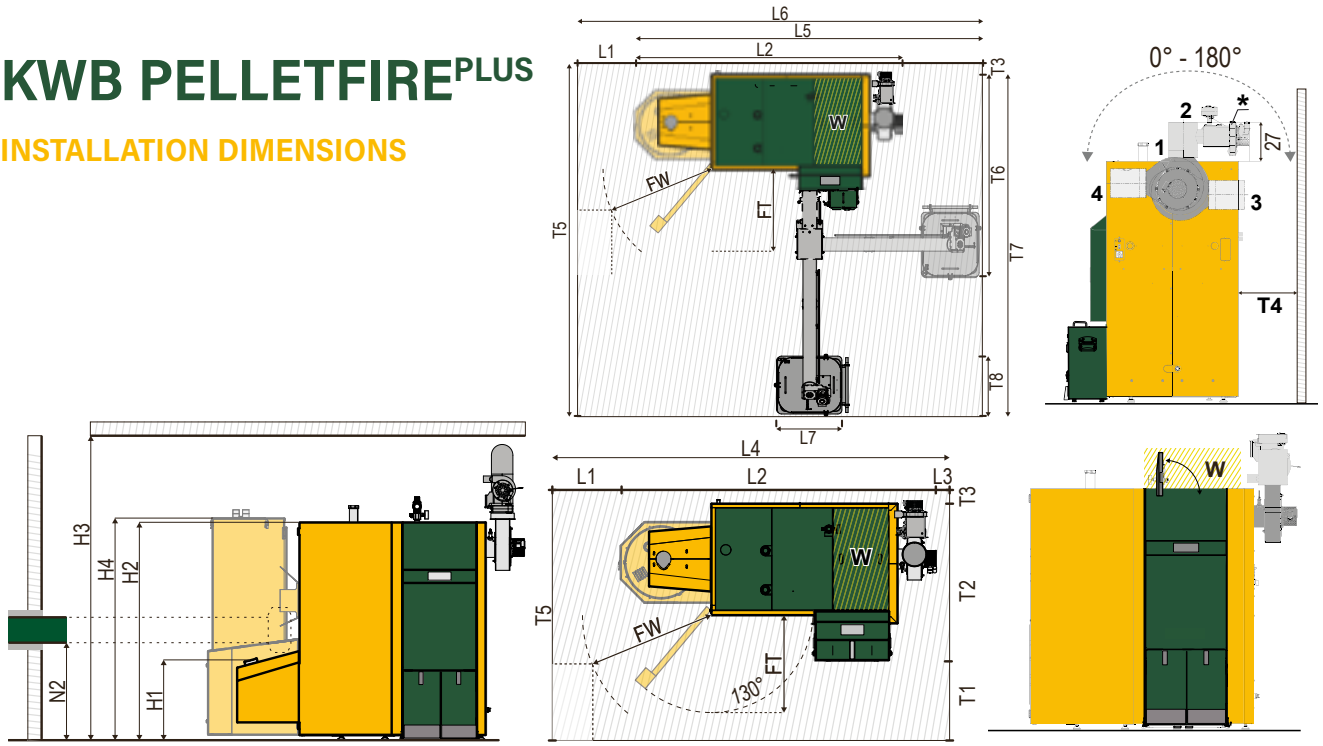
Pellet
45 – 135 kW

TECHNOLOGY & PLANNING 2022

KWB Pelletfire^{Plus} 45 – 135 kW

KWB PELLETFIRE^{PLUS}

INSTALLATION DIMENSIONS



Heating room size from 3 m² to 5 m²

[cm]		45 - 65 kW		70 - 95 kW		100 - 135 kW	
		S	GS	S	GS	Model R S	Model R GS
H1	Connection boiler-conveyor systems: upper dropping edge	62	–	62	–	62	–
H2	Height KWB Pelletfire^{Plus}	159	159	167	167	167	167
H3	Min. room height	198 (rec. 210)	198 (rec. 210)	200 (rec. 215)	200 (rec. 215)	206 (rec. 215)	206 (rec. 215)
	Min. room height - exhaust pipe is placed above heat exchanger	219 (Ø 150)	219 (Ø 150)	231 (Ø 180)	231 (Ø 180)	233 (Ø 200)	233 (Ø 200)
H4	Connection height suction tank	–	177	–	177	–	177
N2	Lower edge conveyor channel M	78	–	78	–	78	–
	Height difference heating room to storage room	73	–	73	–	73	–
L1	Free space	42	18	47	23	47	23
L2	Heating system length	200	224	221	245	233	257
L3	Free space	7	7	7	7	7	7
L4	Min. room length	> 250	> 250	> 276	> 276	> 288	> 288
L5	Heating system length with ext. ash extraction (90° placement)	285	309	306	330	318	342
L6	Min. room length for heating with external ash extraction (90° placement)	327	327	353	353	365	365
L7	Length ash bin 240 l / 120 l	65 / 56	65 / 56	65 / 56	65 / 56	65 / 56	65 / 56
T1	Free space	40	40	40	40	40	40
T2	Heating system depth	112	112	122	122	122	122
T3	Free space	11	11	11	11	11	11
T4	Installation version 1 (exhaust pipe upward without exhaust gas recirculation) Installation version 2 (exhaust pipe upward with exhaust gas recirculation) Installation version 3 (exhaust pipe towards the rear) Installation version 4 (exhaust pipe towards the front)	Without exhaust gas recirculation minimum distance to the wall 11 cm Vertically upward without minimum distance to the wall 14 cm Horizontally towards the rear with minimum distance to the wall 40 cm Horizontally towards the front					
T5	Min. room depth (heating with external ash extraction, straight placement), type MF2 60 – 80 kW	336	336	336	336	336	336
T5	Min. room depth (heating without external ash extraction, straight placement)	163	163	173	173	173	173
T6	Depth of the heating with external ash extraction (90° placement), type MF2 60 – 80 kW	190	190	190	190	190	190
T7	Depth of the heating without external ash extraction (straight placement)	325	325	325	325	325	325
T8	Depth of ash bin 240 l / 120 l	58 / 48	58 / 48	58 / 48	58 / 48	58 / 48	58 / 48
FW	Clearance for maintenance	65	65	70	70	70	70
FT	Clearance for the door	63	63	75	75	80	80
W	Maintenance area	25	25	36	36	25	25

S ... KWB Pelletfire^{Plus} type MF2 S GS ... KWB Pelletfire^{Plus} type MF2 GS

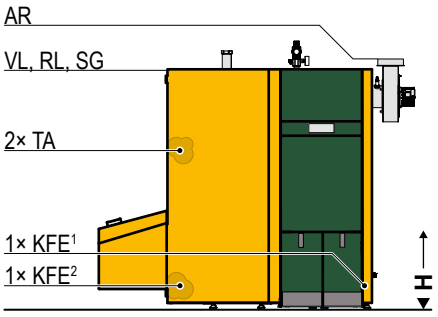
DIMENSIONS FOR BOILER TRANSPORT AND PLACEMENT

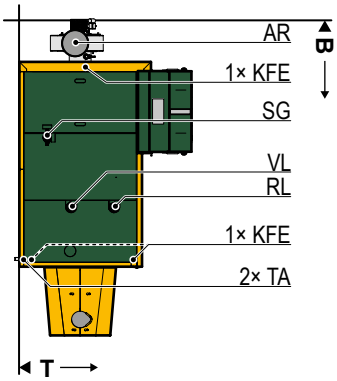
KWB PELLETFIRE^{PLUS}	DELIVERY CONDITION	DISASSEMBLED STATE COMBUSTION CHAMBER	DISASSEMBLED STATE HEAT EXCHANGER
Type MF2 S / GS 45 - 65 kW	154 x 66 x 168	96 x 66 x 120	72 x 66 x 168
Type MF2 S / GS 70 - 135 kW	185 x 80 x 180	115 x 77 x 130	86 x 80 x 180

All dimensions in cm I Length x Width x Height I Distances stated are minimum distances!

KWB PELLETFIRE PLUS

CONNECTING DIMENSIONS





Legend	Connecting dimensions MF2	45 - 65 kW	70 - 95 kW	100 - 135 kW
AR	Exhaust gas pipe	Ø 15	Ø 18	Ø 20
		B: 14	B: 17	B: 17
	Exhaust pipe upwards	H: 166	H: 175	H: 175
		T: 37	T: 39	T: 39
	Exhaust pipe upwards with bend	H: 184	H: 192	H: 192
	Exhaust pipe upwards with bend above heat exchanger	H: 196	H: 206	H: 215
	Exhaust pipe 90° rear (for fuel supply from the left)	H: 140	H: 144	H: 144
		T: 11	T: 16	T: 16
	Exhaust pipe 90° front (for fuel supply from the left)	H: 140	H: 152	H: 152
		T: 64	T: 69	T: 69
	Exhaust pipe 90° rear (for fuel supply from the right)	H: 140	H: 152	H: 152
		T: 11	T: 16	T: 16
	Exhaust pipe 90° front (for fuel supply from the right)	H: 140	H: 144	H: 144
		T: 64	T: 69	T: 69
VL	Forward flow	Ø 32, G 5/4"	Ø 50, G 2"	Ø 50, G 2"
		H: 166	H: 131	H: 143
		B: 121	B: 44	B: 44
		T: 32	T: 36	T: 36
RL	Return flow	Ø 32, G 5/4"	Ø 50, G 2"	Ø 50, G 2"
		H: 166	H: 180	H: 180
		B: 121	B: 131	B: 143
		T: 57	T: 66	T: 66
SG	Safety group	Ø R 1"	Ø R 1"	Ø R 1"
		H: 163	H: 171	H: 171
		B: 78	B: 82	B: 95
		T: 20	T: 19	T: 19
TA	Thermal safety valve - inflow	Ø R 1/2"	Ø R 1/2"	Ø R 1/2"
		H: 97	H: 116	H: 116
		B: 145	B: 166	B: 179
		T: 0	T: 0	T: 0
TA	Thermal safety valve - outflow	Ø R 1/2"	Ø R 1/2"	Ø R 1/2"
		H: 93	H: 113	H: 113
		B: 145	B: 166	B: 179
		T: 0	T: 0	T: 0
KFE¹	Connection height boiler filling and emptying	Ø Rp 3/4"	Ø Rp 3/4"	Ø Rp 3/4"
		H: 23	H:23	H: 23
		B: 23	B: 28	B: 28
		T: 37	T: 42	T: 42
KFE²	Connection height boiler filling and emptying	Ø Rp 3/4"	Ø Rp 3/4"	Ø Rp 3/4"
		H: 22	H:22	H: 22
		B: 117	B: 137	B: 150
		T: 66	T: 77	T: 77

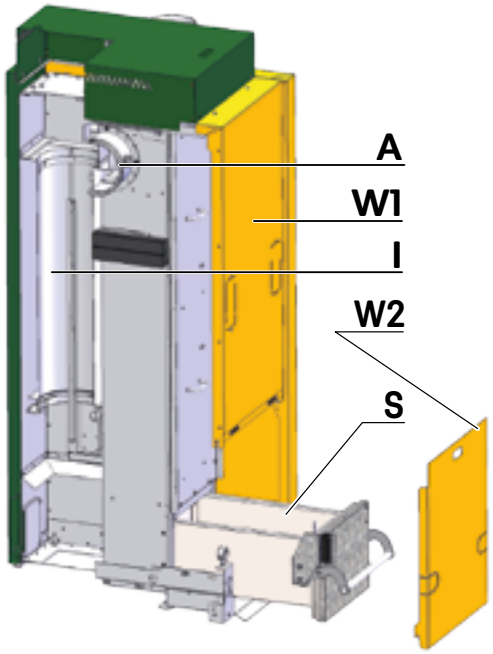
H ... Height T ... Depth B ... Width

All dimensions in cm

KWB PELLETFIRE^{PLUS}

INTEGRATED KWB DUST FILTER E^{PLUS} WITH AUTOMATIC CLEANING

These dust filters function on the principle of electrostatic particle separation and remove the fine dust (PM 2.5 to PM 10) contained in the exhaust gas with up to 90% efficiency. This way the emission of pollutants into the environment from fuels with an increased proportion of aerosol-forming elements is reduced to a minimum.



LEGEND

B	Factory-prepared installation for a bypass shutter
A	Exhaust gas connection
W1	Maintenance door
I	Ionisation door
W2	Maintenance cover
S	Dust tray

KWB DUST FILTER E^{PLUS} – TECHNICAL DATA

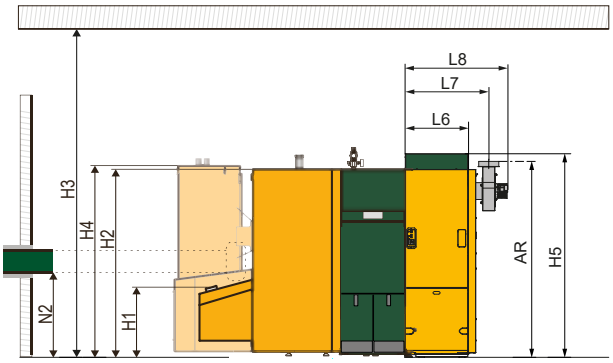
KWB dust Filter E^{Plus} with automatic cleaning	Unit	Typ 1-200 20-65 kW	Typ 1-1-200 60-95 kW	Typ 1-1-200 100-135 kW
Available	Pa		8	
Design	Bm^3/h	185	384	384
Filter connection diameter	mm	150	150	150
Exhaust gas connection diameter induced draught	mm	150	180	200
Total weight	kg	138 - 152	168 - 203	191 - 203
Power supply 3-pin 230 VAC, fuse 13 A type B	-		50 Hz	
Electrical connected load	W	115	115	115
Pressure loss	PA		5-25	
Ambient temperature	°C		≤ 40	
Acoustic power level	dB(A)		≤ 70	

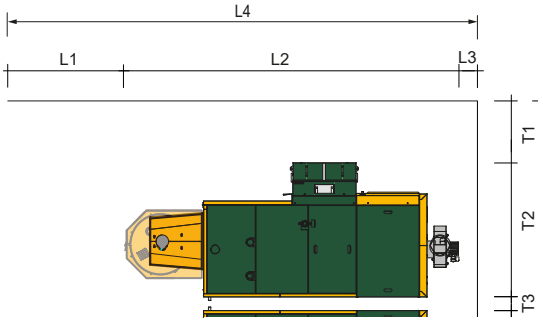
[1] Available conveyor pressure for the dimensioning of the connection lines

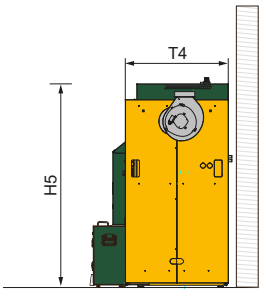
[2] The unit **"Bm^3/h"** stands for 'operating cubic metres per hour'

KWB PELLETFIRE^{PLUS}

INTEGRATED KWB DUST FILTER E^{PLUS} WITH AUTOMATIC CLEANING







[cm]		Direct attachment					
		MF2 45 – 65 kW		MF2 70 – 95 kW		MF2 100 – 135 kW	
		S	GS	S	GS	Model R S	Model R GS
H1	Connection boiler - conveyor system: upper dropping edge	62	–	62	–	62	–
H2	Height KWB Pelletfire^{Plus}	159	159	167	167	167	167
H3*	Min. room height	198 (rec. 210)	198 (rec. 210)	200 (rec. 215)	200 (rec. 215)	206 (rec. 215)	206 (rec. 215)
	Min. room height - exhaust pipe is placed above heat exchanger	219 (∅ 150)	219 (∅ 150)	231 (∅ 180)	231 (∅ 180)	233 (∅ 200)	233 (∅ 200)
H4	Connection height suction tank	–	177	–	177	–	177
H5	Height dust filter	173	173	182	182	182	182
H6	Height middle connection dust filter	–	–	–	–	–	–
N2	Lower edge conveyor channel M	78	–	78	–	78	–
L1	Free space	42	18	47	23	47	23
L2	Heating system length	245	269	275	299	287	311
L3	Free space	8	8	8	8	8	8
L4	Min. room length	> 295	> 293	> 330	> 330	> 342	> 342
L5	Exhaust gas pipe length	–	–	–	–	–	–
L6	Length dust filter with casing	53	53	63	63	75	75
L7	Length dust filter to middle of exhaust gas connection	63	63	75	75	86	86
L8	Length dust filter incl. exhaust gas connection	76	76	92	92	103	103
T1	Free space	40	40	40	40	40	40
T2	Heating system depth	124	124	135	135	135	135
T3	Free space	12	12	12	12	12	12
T4	Depth dust filter with casing	81	81	92	92	92	92
T5	Depth dust filter to middle of exhaust gas connection	–	–	–	–	–	–
T6	Depth dust filter incl. exhaust gas connection	–	–	–	–	–	–
W	Maintenance area	25	25	36	36	25	25
I	Insulation	–	–	–	–	–	–

S ... KWB Pelletfire^{Plus} type MF2 S GS ... KWB Pelletfire^{Plus} type MF2 GS * installation versions exhaust gas recirculation - see T&P heating systems

KWB PELLETFIRE^{PLUS} UP TO 75 kW WITHOUT RECIRCULATION OPERATION

TECHNICAL DATA

MF2 S / MF2 GS	Unit	45 [1]	50 [1]	55 [1]	65 [1]	70 [1]	75 [1]
Rated power	kW	45,0	49,5	55,0	65,0	69,5	75,0
Partial load	kW	13,5	14,9	16,5	19,5	20,9	22,5
Boiler efficiency at rated power	%	95,0	94,8	94,7	94,4	94,3	94,1
Boiler efficiency at partial load	%	93,7	93,7	93,9	94,2	94,3	94,5
Fuel thermal output at rated power	kW	47,4	52,2	58,1	68,9	73,7	79,7
Fuel thermal output at partial load	kW	14,4	15,8	17,6	20,7	22,1	23,8
Boiler class according to EN 303-5:2012	–	5					
EU Energylabel	–	A+					
Water side							
Water content	l	155	135	135	135	165	165
Water connection, forward/return flow (internal thread) without return-flow boost device	Inch	5/4	5/4	5/4	5/4	2	2
Water connection, forward/return flow (internal thread) with return-flow boost device	Inch	5/4	5/4	5/4	5/4	6/4	6/4
Water connection for filling and/or emptying (internal thread)	inch	3/4	3/4	3/4	3/4	3/4	3/4
Water connection for thermal safety valve (external thread)	Inch	1/2					
Thermal safety valve: pressure	bar	2–4					
Thermal safety valve: required cold water temperature	°C	< 20					
Water-side resistance at 10 K	mbar	195,4	242,1	293,7	412,0	76,7	88,3
Water-side resistance at 20 K	mbar	47,2	58,7	71,4	100,6	18,6	21,5
Boiler-entry temperature	°C	55–70					
Working temperature/operating temperature	°C	90					
Working temperature/operating temperature (optional)	°C	95					
Maximum permitted temperature	°C	110					
Max. operating pressure	bar	3,5					
Exhaust-gas side (for chimney calculation)							
Combustion chamber temperature	°C	900–1100					
Combustion chamber pressure	mbar	-0,5...-5					
Required draft at rated power	mbar	0,05					
Required draft at partial load	mbar	0,03					
Suction required: yes	–	✓					
Exhaust-gas temperature at rated power	°C	140					
Exhaust-gas temp. Partial load	°C	100					
Exhaust-gas mass flow at rated power	kg/h	109,5	120,4	133,8	158,1	169,1	182,4
Exhaust-gas mass flow at partial load	kg/h	39,6	43,6	48,4	57,2	61,2	66,0
Exhaust-gas volume at rated power	Nm^3/h	84,4	92,9	103,2	121,9	130,4	140,7
Exhaust- gas volume at partial load	Nm^3/h	30,6	33,7	37,4	44,2	47,3	51,0
Incline of the exhaust-gas pipe	°	≥ 3					
Connection height exhaust-gas pipe	mm	>1395	>1395	>1395	>1395	>1445	>1445
Exhaust-gas pipe diameter	mm	150	150	150	150	180	180
Chimney diameter (approx. values)	mm	180	180	180	180	200	200
Chimney design: Moisture-resistant	–	✓					
Electrical system							
Connection: CEE 5-pole 400 V_{AC} | 3-pole 230 V_{AC}	–	50 Hz					
Connected power MF2 S	W	829	829	829	829	887	887
Connected power MF2 ZI	W	2529	2529	2529	2529	2587	2587
Ash							
Ash container volume	l	32					
Ash container filled	kg	36					
Ash removal system	–	✓					
Weights							
Heat exchanger module, assembled	kg	300	340	340	340	360	360
Burning chamber module, assembled	kg	265	265	265	265	320	320
Boiler weight MF2 S	kg	822	862	862	862	1002	1002
Boiler weight MF2 GS	kg	877	917	917	917	1057	1057
Noise emissions (EN 15036-1)[3]							
Normal operating noise at rated power	dB(A)	< 70					
Suction conveyor type MF2 GS							
Max. suction length	m	25					
Max. suction head	m	5					
Contents storage container for type MF2 GS	l	135					

[1] Drawing inspection

[2] Typification variants

[3] Normal operating noise at rated power: Leq(A) at 1 m distance (ISO 11202:2010)

[4] Depends on the conveyor system

KWB PELLETFIRE^{PLUS} WITH RECIRCULATION OPERATION

TECHNICAL DATA

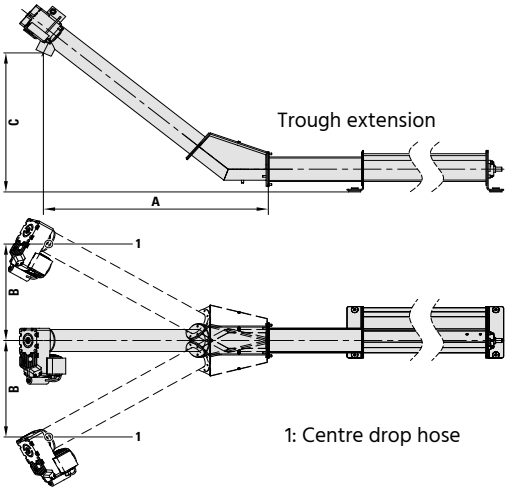
MF2 R S/GS | MF2 ER S/GS	Unit	40	45 [1]	50 [1]	55 [1]	65 [1]	70 [1]	75 [1]	95 [1]	100 [2]	108 [1]	115 [1]	135
Rated power	kW	**40**	45	49,5	55	65	69,5	75	95	99/100/101	108	115	135
Partial load	kW	**10,3**	13,5	14,9	16,5	19,5	20,9	22,5	28,5	30,0	32,4	34,5	40,5
Boiler efficiency at rated power	%	**94,3**	96,4	96,3	96,2	96,1	96,0	95,9	95,8	95,8	95,7	95,7	95,7
Boiler efficiency at partial load	%	**93,1**	94,9	94,9	95,0	95,2	95,2	95,3	95,6	95,7	95,8	95,9	96,2
Fuel thermal output at rated power	kW	**42,4**	46,7	51,4	57,2	67,6	72,4	78,2	99,2	104,4	112,9	120,2	141,1
Fuel thermal output at partial load	kW	**11,0**	14,2	15,6	17,4	20,5	21,9	23,6	29,8	31,3	33,8	36,0	42,1
Boiler class according to EN 303-5:2012	–	5						5					
EU Energylabel	–	A+						A+					
Water side													
Water content	l		155	135	135	135	165	165	165	195	195	195	195
Water connection, forward/return flow (internal thread) without return-flow boost device	Inch		5/4	5/4	5/4	5/4	2	2	2	2	2	2	2
Water connection, forward/return flow (internal thread) with return-flow boost device	Inch		5/4	5/4	5/4	5/4	6/4	6/4	6/4	2	2	2	2
Water connection for filling and/or emptying (internal thread)	Inch		3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Water connection for thermal safety valve (external thread)	Inch							1/2					
Thermal safety valve: pressure	bar							2–4					
Thermal safety valve: required cold water temperature	°C							< 20					
Water-side resistance at 10 K	mbar		195,4	242,1	293,7	412,0	76,7	88,3	142,5	158,0	174,4	209,6	286,6
Water-side resistance at 20 K	mbar		47,2	58,7	71,4	100,6	18,6	21,5	34,8	38,7	42,7	51,4	71,3
Boiler-entry temperature	°C							55–70					
Working temperature/operating temperature	°C							90					
Working temperature/operating temperature (optional)	°C							95					
Maximum permitted temperature	°C							110					
Max. operating pressure	bar							3,5					
Exhaust-gas side (for chimney calculation)													
Combustion chamber temperature	°C							900–1100					
Combustion chamber pressure	mbar							-0,5...-5					
Required draft at rated power	mbar							0,05					
Required draft at partial load	mbar							0,03					
Suction required: yes	–							✓					
Exhaust-gas temperature at rated power	°C							140					
Exhaust-gas temp. Partial load	°C							100					
Exhaust-gas mass flow at rated power	kg/h		109,5	120,4	133,8	158,1	169,1	182,4	231,1	243,2	255,4	279,7	328,4
Exhaust-gas mass flow at partial load	kg/h		39,6	43,6	48,4	57,2	61,2	66,0	83,6	88,0	92,4	101,2	118,8
Exhaust-gas volume at rated power	Nm^3/h		84,4	92,9	103,2	121,9	130,4	140,7	178,2	187,6	197,0	215,7	253,3
Exhaust- gas volume at partial load	Nm^3/h		30,6	33,7	37,4	44,2	47,3	51,0	64,6	68,0	71,4	78,2	91,8
Incline of the exhaust-gas pipe	°							≥ 3					
Connection height exhaust-gas pipe	mm		>1395	>1395	>1395	>1395	>1445	>1445	>1445	>1445	>1445	>1445	>1445
Exhaust-gas pipe diameter	mm		150	150	150	150	180	180	180	200	200	200	200
Chimney diameter (approx. values)	mm		180	180	180	180	200	200	200	220	220	220	220
Chimney design: Moisture-resistant	–							✓					
Electrical system													
Connection: CEE 5-pole 400 V_{AC} | 3-pole 230 V_{AC}	–							50 Hz 13 A					
Connected power MF2 S	W		829	829	829	829	887	887	887	887	887	887	887
Connected power MF2 ZI	W		2529	2529	2529	2529	2587	2587	2587	2587	2587	2587	2587
Connected load dust filter	W	115						115					
Ash													
Ash container volume	l							32					
Ash container filled	kg							36					
Ash removal system	–							✓					
Weights													
Heat exchanger module, assembled	kg		300	340	340	340	360	360	360	450	450	450	450
Burning chamber module, assembled	kg		265	265	265	265	320	320	320	320	320	320	320
Burner	kg		116	116	116	116	160	160	160	160	160	160	160
Stoker unit	kg							30					
Boiler weight MF2 S	kg		822	862	862	862	1002	1002	1002	1102	1102	1102	1102
Boiler weight MF2 GS	kg		877	917	917	917	1057	1057	1057	1157	1157	1157	1157
Weight dust filter (stand-alone)	kg	138-152	138 (152)	138 (152)	138 (152)	168 (203)	168 (203)	168 (203)	168 (203)	191 (203)	191 (203)	191 (203)	191 (203)
Noise emissions (EN 15036-1)[3]													
Normal operating noise at rated power	dB(A)	< 70						< 70					
Suction conveyor type MF2 GS													
Max. suction length	m							25					
Max. suction head	m							5					
Contents storage container for type MF2 GS	l							135					

[1] Drawing inspection
[2] Typification variants
[3] Normal operating noise at rated power: Leq(A) at 1 m distance (ISO 11202:2010)
[4] Depends on the conveyor system
mg/Nm^3 ... milligram per standard cubic meter (Nm^3 - standard cubic meter under 1013 hectopascal at 0 °C)

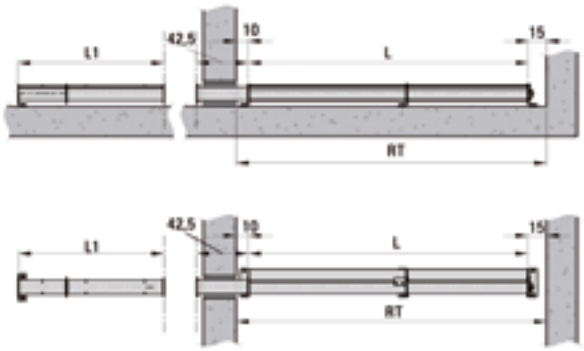
KWB CONVEYOR SCREW WITH ELBOW SCREW

- ✓ Extremely quiet operation
- ✓ Minimal power consumption
- ✓ Maintenance-free
- ✓ Also realizable as case solution.

ASCENDING SCREW

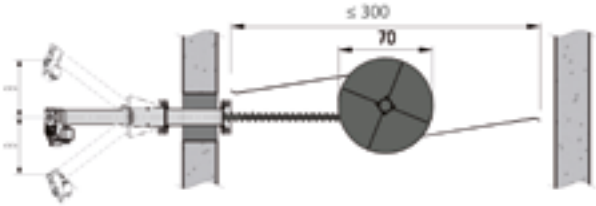


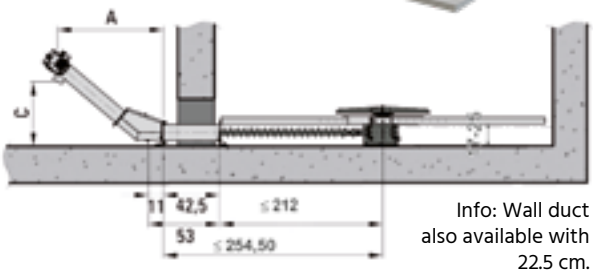
CONVEYOR SCREW



KWB PELLET STIRRER PLUS AND ELBOW SCREW

- ✓ Best possible storage room utilisation
- ✓ Extremely quiet operation
- ✓ Sloping floor is not required
- ✓ Also realizable as case solution.





Info: Wall duct also available with 22.5 cm.

ELBOW SCREW WITH AXIAL DEVIATION B DEPENDING ON THE STORAGE ROOM LOWERING

Storage room lowering	Ascending screw 3	Ascending screw 4
	A = 101.0 cm C = 67.9 cm	A = 116.0 cm C = 80.8 cm
0 cm	B = 0 - 47 cm	B = 44 - 64 cm
5 cm	B = 0 - 42 cm	B = 35 - 60 cm
10 cm	B = 0 - 34 cm	B = 22 - 55 cm
15 cm	B = 0 - 24 cm	B = 0 - 50 cm
20 cm	B = 0 cm	B = 0 - 43 cm
25 cm	B = 0 cm	B = 0 - 33 cm
30 cm	-	B = 0 - 19 cm
35 cm	-	B = 0 cm

Conveyor screw L	Room depth Min. room depth
130 cm	155 cm
180 cm	205 cm
230 cm	255 cm
260 cm	285 cm
280 cm	305 cm
310 cm	335 cm
360 cm	385 cm
460 cm	485 cm
490 cm	515 cm
540 cm	565 cm

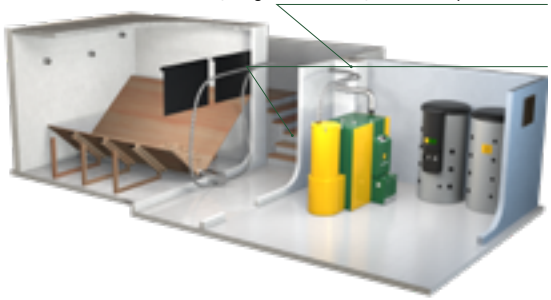
Channel extension L1
40 cm
80 cm
120 cm
160 cm
200 cm
240 cm

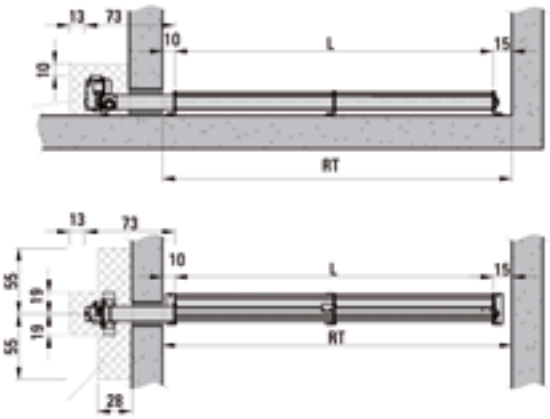
All dimensions in cm

KWB CONVEYOR SCREW WITH SUCTION CONVEYOR

- ✓ Extremely quiet operation
- ✓ Minimal power consumption
- ✓ Maintenance-free
- ✓ Suction lengths of up to 25 meters possible

Planning advice for KWB Pelletfire^{Plus}:
As of a capacity of 65 kW or during basic operation, a reinforced pellet conveying hose with a bend radius R 500 (Longlife execution) should be planned for.

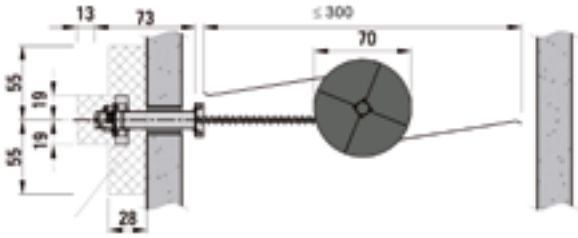




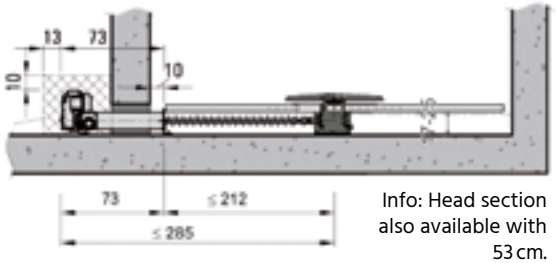
Info: Head section
also available with 53 cm.

KWB PELLET STIRRER PLUS WITH SUCTION CONVEYOR

- ✓ Pellets up to 8 mm can be used
- ✓ Best possible storage room utilisation
- ✓ Suction lengths of up to 25 meters possible
- ✓ Sloping floor is not required



Free space



Info: Head section
also available with
53 cm.

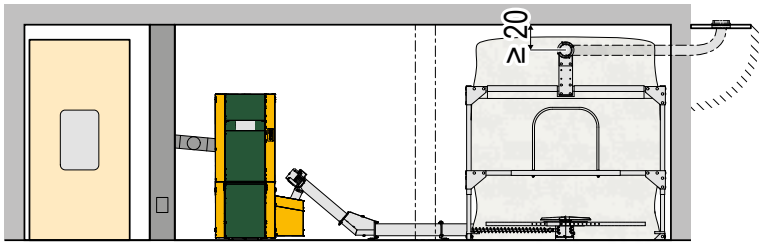
FUEL POURING HEIGHTS

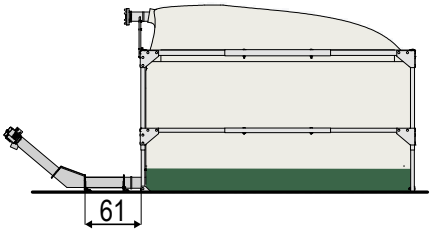
A maximum pouring height of 3 m is permitted in pellet operations.
Please comply with the EN ISO 20023 standard when designing the pellet storage.

All dimensions in cm

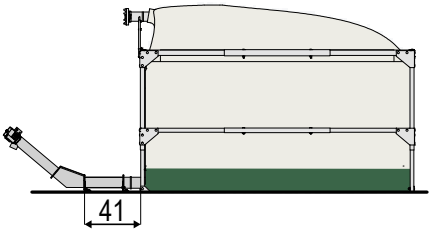
KWB PELLET BIG BAG AND ELBOW SCREW

- ✓ Very high degree of space utilisation
- ✓ No special storage room adaptation required
- ✓ Suitable for low rooms
- ✓ Also realizable as case solution.





Standard version
(wall duct 42.5 cm)



Shorter version
(wall duct 22.5 cm)

KWB PELLET BIG BAG – TECHNICAL DATA

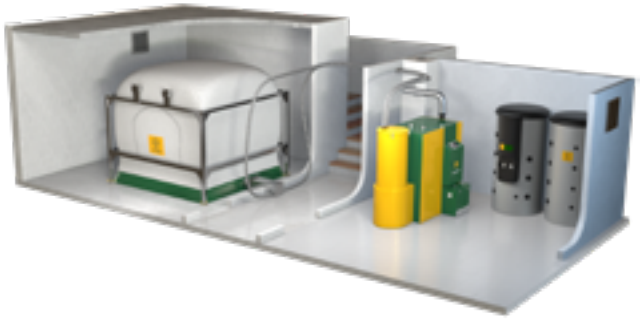
Length & Width	Size:	[m]	KWB Pelletfire^{Plus}		
			2020	2525	3030
			2.0 x 2.0 m	2.5 x 2.5 m	3.0 x 3.0 m
Fill quantity* (max.):	Injection nozzle bottom	[t]	< 3.9 t	< 6.5 t	< 9.3 t
Fill quantity* (max.):	Injection nozzle top	[t]	< 4.1 t	< 6.9 t	< 10.5 t
Fill height **	FH:	[cm]	162 cm or 177 cm or 192 cm		
Room height (min.)	RH:	[cm]	Fill height + ≥ 20 cm		
Fill openings	Quantity	Pcs.	1 pc.	2 pcs.	2 pcs.
Fill distance	FD:	[cm]	–	100 cm	140 cm

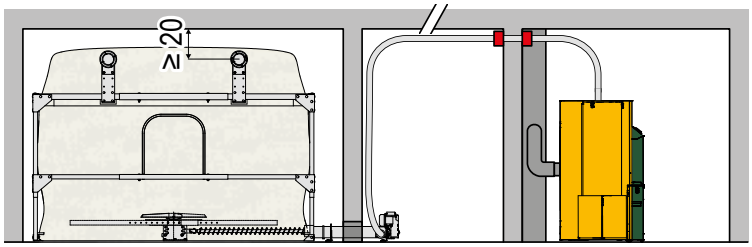
***** The capacity depends on: Filling technique, pellet characteristics, available space, container size, and height of the injection connector!

****** Fill height is dependent on the position of the injection nozzles. Depending on the locally applicable fire safety regulations, the KWB Pellet Big Bag can be set up directly in the heating room if a specified minimum distance to the heating system is maintained. If appropriately protected against weather influences the Big Bag can be set up outdoors. Local fire safety regulations must be strictly complied with. The Big Bag does not require any air extraction – the air escapes through the fabric and via a window or vent (at least 400 cm^2) to the outside. Structural characteristics of the place of installation: dry, horizontal, smooth, clean, able to carry maximum load – at least 1,500 kg/m^2

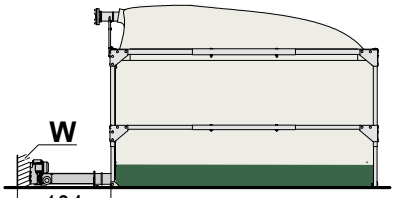
KWB PELLET BIG BAG AND SUCTION CONVEYOR

- Pellets up to 8 mm can be used
- Very high degree of space utilisation
- Possible to set up outdoors (if protected from the weather)
- Available in 3 different sizes



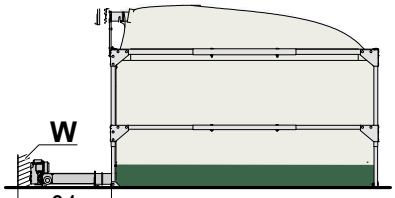


Standard variant



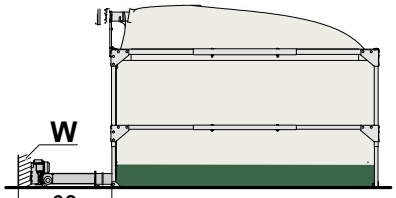
(Headpiece L = 73,5 cm)

Medium variant

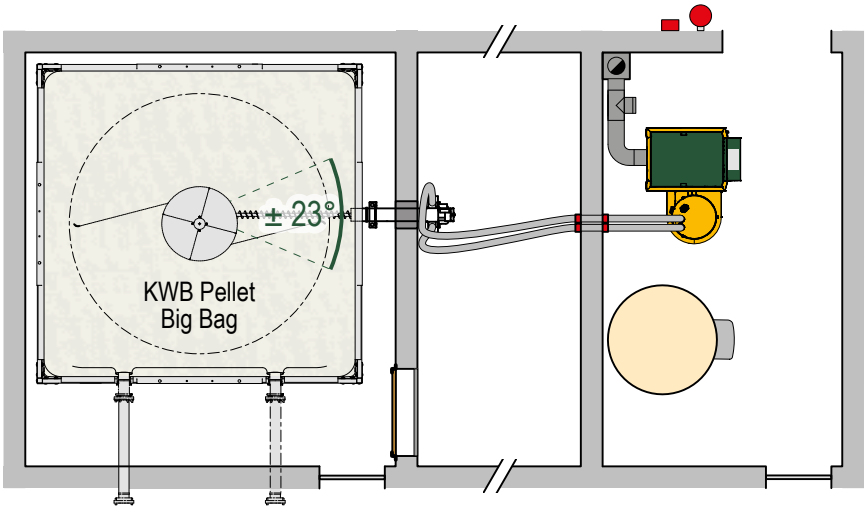


(Headpiece L = 53,5 cm)

shorter version



(Headpiece L = 31 cm)



FUEL POURING HEIGHTS

The integrated injection nozzles are height-adjustable, depending on the room height the pouring height and storage volume may vary. Please comply with the EN ISO 20023 standard when designing the pellet storage.

KWB SAMPLING PROBE(S) WITH SUCTION CONVEYOR

COMPATIBLE WITH

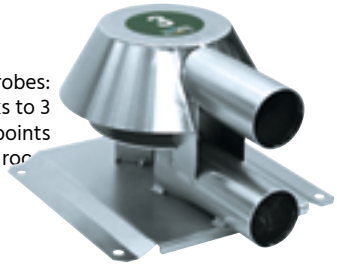
KWB Pelletfire^{Plus} type MF2 GS* 45 – 65 kW

3-POINT SAMPLING PROBE

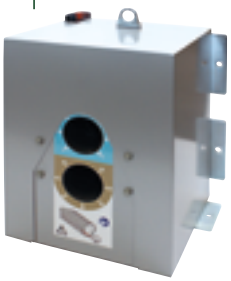
- ✓ Flexible utilisation and easily installed with very low planning expenditures
- ✓ No moving pellet suction tubes in the heating and storage room – thus low space requirements
- ✓ Reliable pellet extraction based on special probe geometry

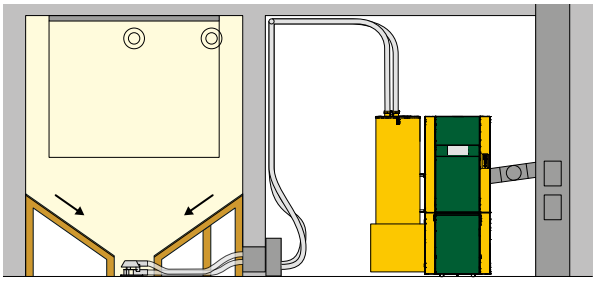
Planning advice for KWB Pelletfire^{Plus}: As of a capacity of 65 kW or during basic operation, a reinforced pellet conveying hose with a bend radius R 500 (Longlife execution) should be planned for.

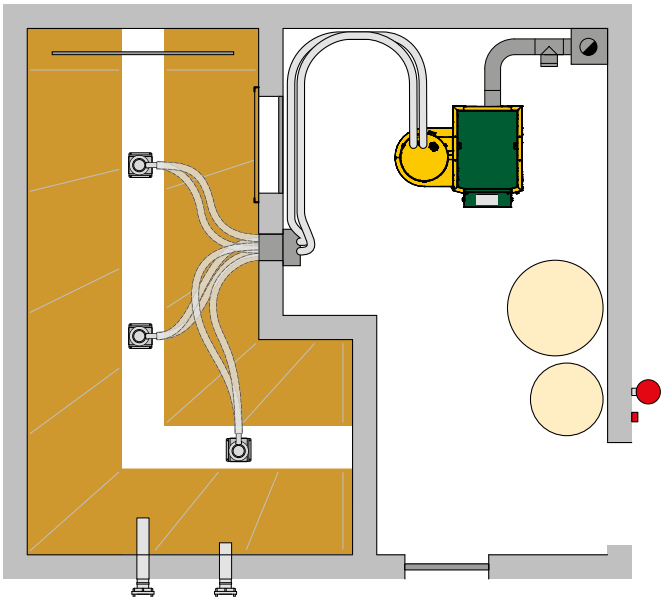
KWB sampling probes: optimal safety thanks to 3 separate removal points in the storage roo



KWB switchover unit: automatic switchover when using 3 sampling probes







FUEL POURING HEIGHTS

When using sampling probes, a fuel pouring height of up to 3 m is permitted. A sloping floor is urgently recommended. Please comply with the EN ISO 20023 standard when designing the pellet storage.

KWB SAMPLING PROBE(S) WITH SUCTION CONVEYOR

8-POINT SAMPLING PROBE

COMPATIBLE WITH

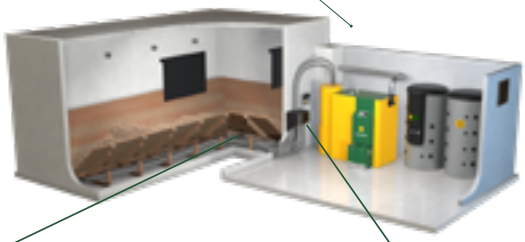
KWB Pelletfire^{Plus} type MF2 GS* 45 – 135 kW

- ✓ Flexible utilisation and easily installed with very little planning expenditures
- ✓ Reliable pellet extraction based on special probe geometry

INFORMATION

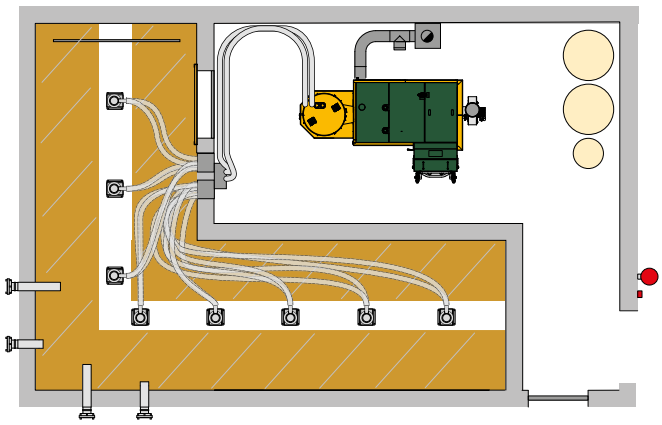
Find information about hose routing on page I | 16

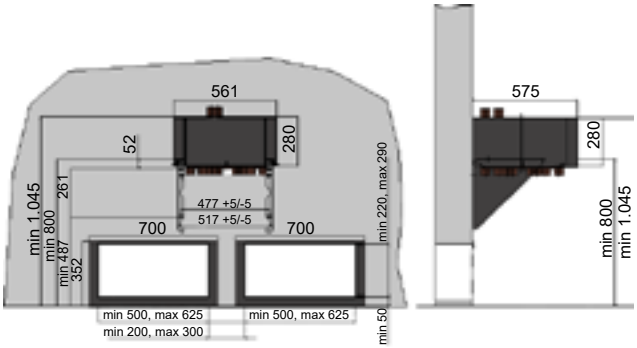
Planning information for KWB PelletfirePlus: From an output of 65 kW or with base load operation, the reinforcedPellet transport hose with bend radius R 500(Longlife version) to be provided.

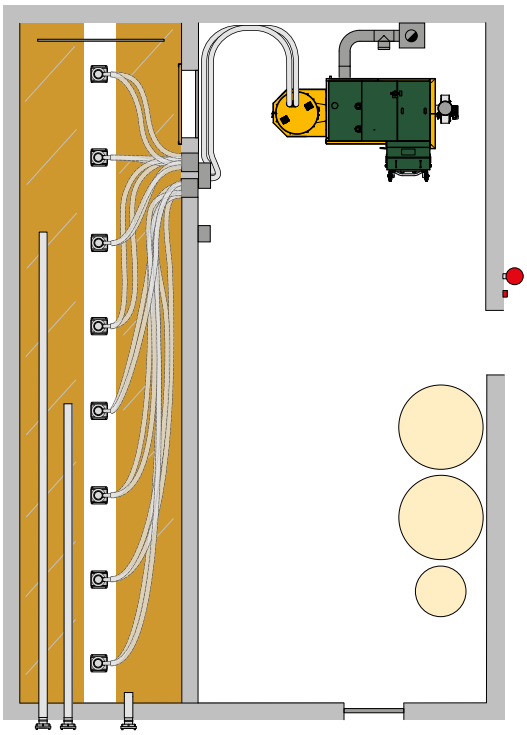


KWB sampling probes: optimal safety thanks to 8 separate removal points in the storage room

KWB switchover unit: automatic switchover with 8 sampling probes





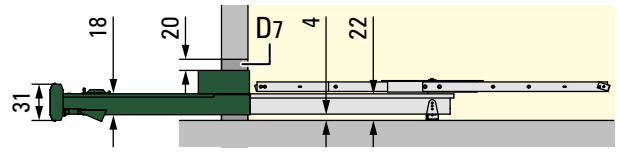


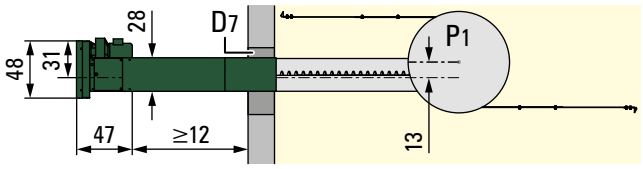
CONVEYOR SYSTEM M – FOR LARGE STORAGES

FLOOR-LEVEL STIRRER

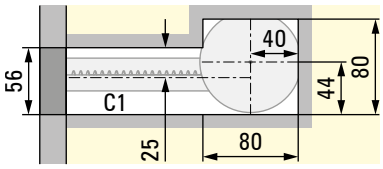
The floor-level stirrer is available in two different designs depending on requirements: As a spring-blade rotary stirrer (stirrer diameter: from 2.5 to 4.0 m) and as articulated rotary-blade stirrer (from 4.0 to 5.5 m stirrer diameter).

STANDARD CHANNEL

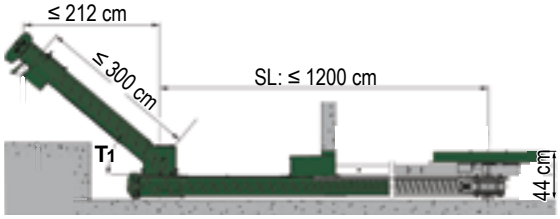


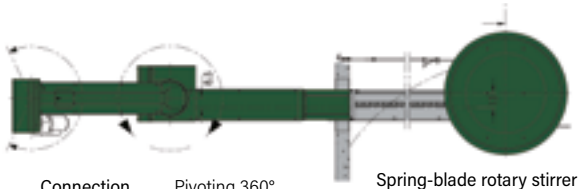


Cutouts for the floor
(if the conveyor is installed in the floor.)



ASCENDING SCREW WITH UPWARD TRANSFER



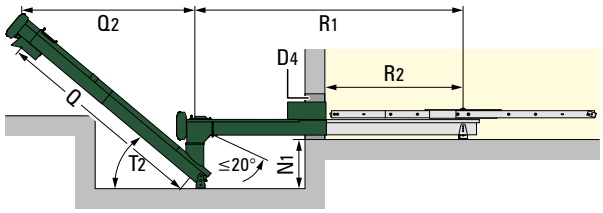


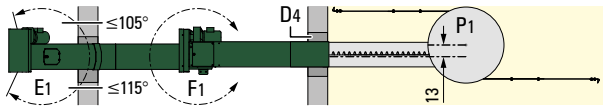
Connection KWB Pelletfire^{Plus} max. angle 220°

Pivoting 360°

Spring-blade rotary stirrer – Ø 85
Articulated rotary blade stirrer – Ø 110

ASCENDING SCREW WITH DOWNWARD TRANSFER





LEGEND

D4	Wall duct 60 x 60 cm: Seal after installation; the channel must be acoustically decoupled (Ø 2 cm acoustic insulation)
N1	Height difference: 0°–25°: ≥ 45 cm 26° – 35°: ≥ 50 cm 36° – 45°: ≥ 60 cm
SL	Screw length conveyor channel maximally 12 m (install horizontally!)
T1	Angle when pellets are used 35°–45°
T2	Angle when pellets are used: 0°–40° (45° with channel insert)
P1	Diameter of the stirrer cover plate: Spring-blade rotary stirrer: Ø 85 cm, articulated rotary blade stirrer: Ø 110 cm. Diameter of the stirrer: Spring-blade rotary stirrer: Ø 2.5 m, 3.0 m, 3.5 m, 4.0 m (4.5 m only for pellets), articulated-blade rotary stirrer: Ø 4.0 m, 4.5 m, 5.0 m, 5.5 m
E1	Swing range ascending screw; max. angle to the KWB Pelletfire^{Plus} 220°
F1	Free rotation
Q	Screw length (from connection point: head section drop shaft to the fire shutter): Up to 15°: ≤ 12 m; 15° – 40°(45° with channel insert): ≤ 6 m
Q2	45°: ≤ 4.39 m, 15°: ≤ 11.60 m
R1	Screw length: Up to 15°: ≤ 12 m; 15° – 20°: ≤ 6 m
R2	Screw length open

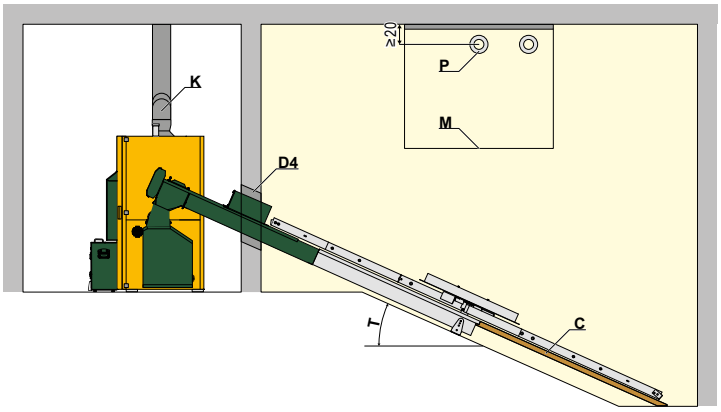
All dimensions in cm l Width x Height

CONVEYOR SYSTEM M – FOR LARGE STORAGES

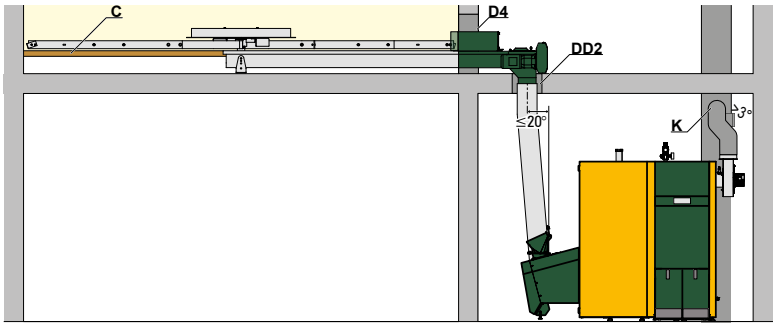
Available for:

- ✓ Spring blade stirrer
- ✓ Articulated rotary blade stirrer
- ✓ Conveyor screw M

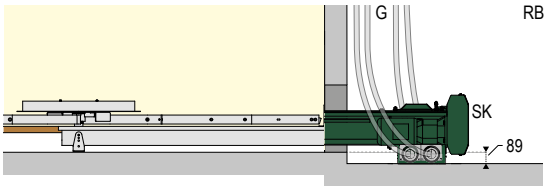
WITH STANDARD CHANNEL



WITH DROP HOSE



WITH SUCTION CONVEYOR



LEGEND

C	False floor optional – it is possible to install the conveyor channel in a recess in the floor. (Rear ventilation recommended)
D4	Wall duct 60 × 60 cm; seal after installation; the channel must be acoustically decoupled (at least 2 cm acoustic insulation)
DD2	Ceiling duct 30 x 30 cm, seal after installation; the channel must be acoustically decoupled (> 2 cm acoustic insulation)
G	Hose routing • Max. total conveyor length: 25 m • Maximum conveyor height without step: 3 m • Maximum conveyor height with step: 5 m – must install step at the latest at a height difference of 3 m • Arrange hoses horizontally for at least 1 m per step • All conveyor hose bend radii at least 40 cm
M	Ricochet protection mat

P	Ventilated filling nozzles (injection & suction nozzles) Place the injection connector in the middle of the room and the suction nozzle ≥ 50 cm to the side of the injection connector in the direction of the storage room door. The suction nozzle should always be cut as short as possible inside, almost flush with the wall (it must still be possible to mount the earthing clamp!). Both nozzles should be attached ≥ 50 cm from the side walls and ≥ 20 cm from the ceiling.
RB	Planning advice for KWB Pelletfire[Plus]: As of a capacity of 65 kW or during basic operation, a reinforced pellet conveying hose with a bend radius R 500 (Longlife execution) should be planned for.
SK	Suction head

FUEL POURING HEIGHTS

For the use of the spring-blade rotary stirrer or articulated rotary blade stirrer: the maximum pouring height for pellet operation is 3 m. Greater pouring heights must be clarified based on specific site conditions. Please comply with the EN ISO 20023 standard when designing the pellet storage.

* Planning advice for KWB Pelletfire[Plus]: As of a capacity of 65 kW, the use of steel pipe bends should be planned for all direction changes in the pellet conveying hoses (except for the return air hose).

All dimensions in cm I Width x Height

NOTES

KWB

Wood chip & pellet 20 – 150 kW

WOOD CHIP & PELLET HEATING SYSTEMS

20 – 150 kW

KWB MULTIFIRE TYPE MF2

WOOD CHIP AND PELLET HEATING SYSTEM 20 – 120 KW

KWB combustion system:
- Crawler burner with high-alloy cast and self-cleaning revolving grate components
- Fully automatic ignition by means of a ceramic igniter element
- 2 combustion air fans
- Backfire protector (standard: cellular wheel sluice P16S; type MF2 D)
- Stoker screw with stainless steel spirals incl. drive unit and automatic ash removal incl. ash compaction into an integrated grate ash container with fill level monitoring

Suitable for the burning of wood chip material according to quality categories A1, A2 and B1 up to grain sizes P16S and P31S in accordance with ISO 17225-4 (rating-based use) as well as for wood pellets ∅ 6 mm or ∅ 8 mm quality category A1 pursuant ISO 17225-2, category A1. When using wood chips of quality categories A2 and B1 pursuant to ISO 17225-4, additional technical measures may be required in order to comply with statutory dust emission limit values depending on the aerosol-forming ash content.*

A+

with control

CLEAN EFFICIENCY 2.0

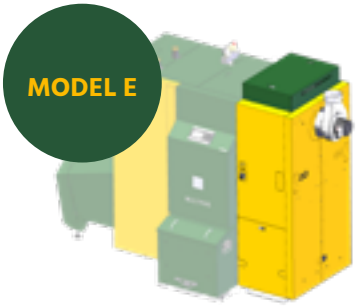
KWB heat exchanger: upright tubular heat exchanger with fully automatic heat exchanger cleaning, consisting of screw turbulators

Also optionally available as an extra-charge item:
Fuel recognition Plus, additional cooling for terminal box, full ash removal in a convenient design, external ash extraction 120 l or 240 l, increased boiler/forward setpoint temperature (settable to 95° C), 4th and 5th buffer sensor, one-chamber cellular wheel sluice as of 60 kW for wood chips up to grain sizes P31S in acc. with ISO 17225-4, hopper with 175 l fill volume (type MF2 ZI), exhaust gasrecirculation for highest system protection thanks to optimal combustion temperature control required for the combustion of technically dried fuels (moisture content less than 15%) and for basic load operation. Mandatory for KWB Multifire type MF2 as of 80 kW in pellet operation (warranty-relevant).

Planning advice: Environmental conditions for operation: Temperature -10 to +40 °C, Rel. humidity 5% to 95%, not condensing.

KWB Comfort 4 control comprising: Exclusive control unit incl. buffer storage tank and domestic hot water management, expandable with internal or external heating circuit control

KWB DUST FILTER E^{PLUS} WITH AUTOMATIC CLEANING



E^{Plus} dust filter features:
- The dust filter operates based on the electrostatic separation principle
- The fully automatic electrode cleaning takes place mechanically in dry operating mode
- The separated filter dust is collected in a generously dimensioned ash pan (capacity 26 l) which can be conveniently and cleanly operated from the front

Installation:
- The filter unit can be installed either by directly attaching it to the boiler without wasting space or by placing it as a stand-alone unit in an adjacent area in the heating room and installing it in the exhaust pipe between boiler and chimney.
- The E^{Plus} dust filter must be installed by default on the suction side between boiler and induced draught fan
- An installation on the pressure side downstream of the induced draught fan is only permitted in combination with the exhaust gas recirculation at the boiler if the exhaust gas pipe is installed pressure-tight (at least 10 Pa) and if sufficient chimney draught is ensured.
- The exhaust gas pipe must be as short as possible (max. 4 m length) and benefit the flow (max. 8 Pa pressure loss), and it must be insulated by the customer so that no condensation can form

Control system:
- The high voltage module regulates the ionisation with up to 30 kV to ensure maximum separation efficiency.
- The KWB Comfort control and the filter electronics work together so that the cleaning of the filter is impulse-driven and is performed at the same time as the heat exchanger cleaning. This minimizes interrupted operations and the reintroduction of the separated dust.

Degree of separation:
The particle separator achieves a separation effect of up to 90%, provided the system is run and maintained properly as per operating and maintenance instructions. Compliance with dust limit values in Germany pursuant to the 1st BImSchV Level 2 and the Swiss Clean Air Act (LRV) assumes that
- only wood chips are used in accordance with EN ISO 17225-4 of fuel categories A1, A2 and B1, P16S, P31S with a moisture content of max. 35% (M35) or wood pellets in accordance with EN ISO 17225-2 categories A1 and A2.
- the raw gas dust content in the boiler exhaust gas due to aerosol-capable ash portions is max. 100 mg/Nm^3 at 13% O^2 (dry).

KWB'S MODULAR AND EASILY TRANSPORTABLE SYSTEM

The KWB Multifire wood chip & pellet heating system can be dismantled into several modules, which allows it to be placed in almost every heating room and easily installed even in tight spaces.

* The statutory dust emission limit values for Germany pursuant to the 1st BImSchV Level 2, and the national dust emission values of the Swiss LRV are met when using wood chips of quality category A1 pursuant to EN ISO 17225-4 without additional technical measures.

KWB POWERFIRE TYPE TDS

WOOD CHIP AND PELLET HEATING SYSTEM 150 KW

CLEAN EFFICIENCY 2.0

KWB heat exchanger:
- Self-cleaning revolving grate system (fuel transport occurs via the rotation of the grate)
- Stoker screw with stainless steel spirals incl. drive unit (equipped with a spiral progressively increasing in size to prevent congestion)
- Backfire protector (gas-tight and automatically closing fire shutter) and thermally acting backfire safeguard (emergency fire extinguisher)
- Primary combustion air supply via speed-regulated fans below the revolving ring grate via a special air-distribution system which allows for a progressive, staged air supply including a control for the combustion speed at the grate.
- Suitable for the combustion of wood chips categories P16S and P31S with a moisture content of up to 45% in accordance with ISO 17225-4 as well as wood pellets of quality categories A1 and A2 in accordance with ISO 17225-2.

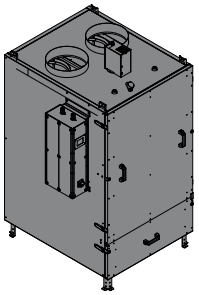
KWB ash removal system: specially developed grate cleaning system and dropping of the ash onto an extraction screw situated under the grate, which extracts the ash and takes it to the attached 66 l ash container or, optionally, to an 120 l / 240 l ash bin.
- Vertically standing cyclone combustion chamber as post-combustion unit
- Secondary air supply occurs through speed-regulated fans via specially developed and optimised secondary air nozzles.
- KWB heat exchanger: upright tubular heat exchanger with fully automatic heat exchanger cleaning, consisting of screw turbulators
- The underbody in the area of the burner system is cooled with water, the cover of the heat exchanger is cooled with water in the KWB Powerfire type TDS 150 as a result of which the radiation loss is reduced considerably. Thanks to the all-around insulation the radiation loss is further minimised.

KWB Comfort 3 control comprising: Control unit incl. buffer storage tank and domestic hot water management, expandable with external heating circuit control (on a C4 basis)

Connection of the KWB Powerfire to a Comfort 4 heating management network:
The KWB Powerfire is linked to the Comfort 4 heating management module autonomous through a Modbus connection. The Comfort 4 heating management module controls the entire heat distribution and storage and requests the Powerfire boiler in a performance-modulating manner. The Comfort 3 control of the boiler controls the entire combustion, return flow temperature boost and the boiler circuit pump.

Optionally available as an extra-charge item:
Grate ash extraction in 120 l or 240 l, exhaust gas recirculation (mandatory for fuels with a moisture content < 20%), cellular wheel sluices with long-pieced fuel, external E-Filter, forward flow temperature 95 °.

KWB DUST FILTER E^{PLUS} WITH AUTOMATIC CLEANING



If required, an external dust filter can be implemented. It is suitable for wood-chip and pellet heating systems and designed for the required boiler type (for wood chips with up to 35 % moisture content). It is based on an electrostatic filter principle with separation efficiencies of up to 90 %. Boiler and filter control communicate within the meaning of an operationally safe, fully automatic cleaning. The cleaning and ash tray emptying occurs from the front.
Optionally available: Double shutter bypass, automatic ash removal from the filter

WOOD CHIP OPERATION FOR KWB MULTIFIRE AND KWB PELLETFIRE

Wood chips of quality category A1 according to EN ISO 17225-4
The statutory dust emission limit values for Germany pursuant to the 1st BImSchV Level 2, and the national dust emission values of the Swiss LRV are met without additional technical measures.

Wood chips of quality categories A2 and B1 according to EN ISO 17225-4
In order to comply with the 1st BImSchV Level 2 in Germany and to meet Swiss cantonal requirements and depending on the aerosol-forming ash content, additional technical measures may be necessary in order to comply with statutory dust emission limit values. In such a case, it will be necessary to coordinate with KWB.

KWB'S MODULAR AND EASILY TRANSPORTABLE SYSTEM

The KWB Powerfire wood chip & pellet heating system can be dismantled into several modules, which allows it to be placed in the heating room and also to be easily installed even in tight spaces.

NOTES

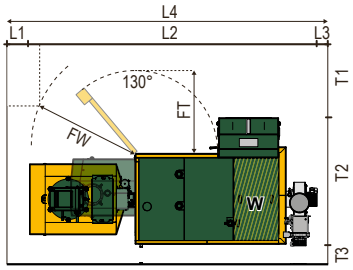
Wood chip
& pellet
20 – 150 kW

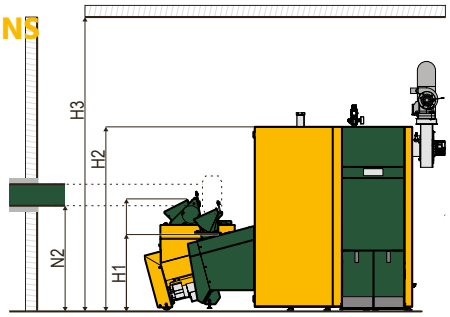
TECHNOLOGY & PLANNING 2022

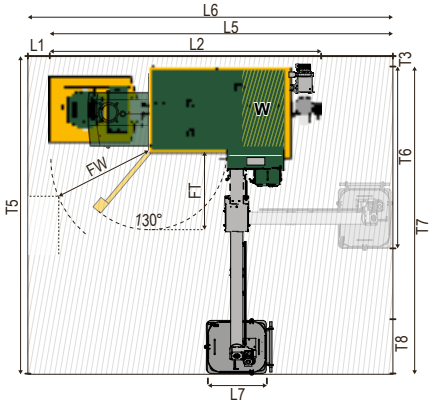
KWB Multifire 20 – 120 kW, KWB Powerfire 150 kW

KWB MULTIFIRE

INSTALLATION DIMENSIONS







Reference value: Heating room sized between 4 m² and 6 m²

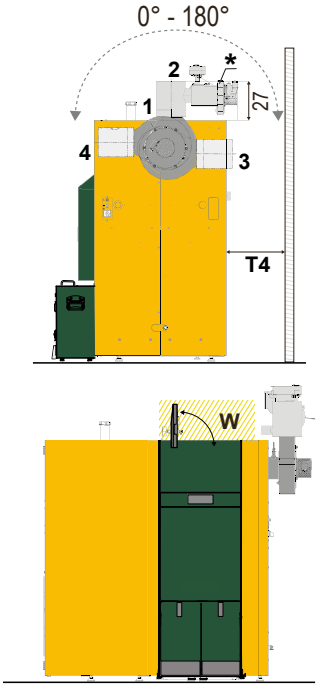
[cm]		MF2 20 – 50 kW		MF2 60 – 80 kW		MF2 100 – 120 kW	
		D	ZI	D	ZI	D	ZI
H1	Connection boiler - conveyor system: upper dropping edge cellular wheel sluice P16S	92	–	92	–	92	–
	Connection boiler - conveyor system: upper dropping edge cellular wheel sluice P31S	–	–	103	–	103	–
	Connection boiler - conveyor system: upper dropping edge fire shutter ZI	–	102	–	102	–	102
	Connection boiler - conveyor system: upper dropping edge cellular wheel sluice ZI	–	134	–	134	–	134
H2	Height KWB Multifire	159	159	167	167	167	167
H3	Min. room height	198 (rec. 210)	198 (rec. 210)	200 (rec. 215)	200 (rec. 215)	206 (rec. 215)	206 (rec. 215)
	Min. room height – exhaust pipe is placed above heat exchanger	219 (Ø 150)	219 (Ø 150)	231 (Ø 180)	231 (Ø 180)	233 (Ø 200)	233 (Ø 200)
	Minimum room height-exhaust recirculation with installation version (1) vertically upwards	225 (Ø 150)	225 (Ø 150)	234 (Ø 180)	234 (Ø 180)	235 (Ø 200)	235 (Ø 200)
N2	Lower edge conveyor channel M P16S / P31S	88 / 98	97 / –	88 / 98	97 / –	88 / 98	97 / –
L1	Free space P16S / P31S	30 / –	22 / –	34 / 25	21	34 / 25	21
L2	Heating system length P16S / P31S	212 / –	252 / –	234 / 243	273 / –	246 / 255	286 / –
L3	Free space	7	7	7	7	7	7
L4	Min. room length P16S / P31S	> 254	> 284	> 276 / > 275	> 306	> 288 / > 287	> 318
L5	Heating system length with ext. ash extraction (90° placement)	297	337	319 / 328	332	331 / 340	371
L6	Min. room length for heating with external ash extraction (90° placement)	327	359	353 / 353	353	365 / 365	392
L7	Length ash bin 240 l / 120 l	65 / 56	65 / 56	65 / 56	65 / 56	65 / 56	65 / 56
T1	Free space	40	40	40	40	40	40
T2	Heating system depth	112	112	122	122	122	122
T3	Free space	11	11	11	11	11	11
T4	Installation version 1 (exhaust pipe upward without exhaust gas recirculation) Installation version 2 (exhaust pipe upward with exhaust gas recirculation) Installation version 3 (exhaust pipe towards the rear) Installation version 4 (exhaust pipe towards the front)	Without exhaust gas recirculation minimum distance to the wall 11 cm Vertically upward without minimum distance to the wall 14 cm Horizontally towards the rear with minimum distance to the wall 40 cm Horizontally towards the front					
T5	Min. room depth (heating with external ash extraction, straight placement), type MF2 60 – 80 kW	336	336	336	336	336	336
T5	Min. room depth (heating without external ash extraction, straight placement)	163	163	173	173	173	173
T6	Depth of the heating with external ash extraction (90° placement), type MF2 60 – 80 kW	190	190	190	190	190	190
T7	Depth of the heating without external ash extraction (straight placement)	325	325	325	325	325	325
T8	Depth of ash bin 240 l / 120 l	58 / 48	58 / 48	58 / 48	58 / 48	58 / 48	58 / 48
FW	Clearance for maintenance	65	65	70	70	70	70
FT	Clearance for the door	63	63	76	76	76	76
W	Maintenance area	25	25	36	36	25	25

D ... KWB Multifire type MF2 D ZI ... KWB Multifire type MF2 ZI

DIMENSIONS FOR BOILER TRANSPORT AND PLACEMENT

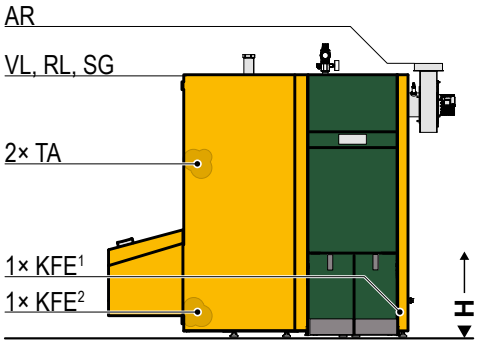
KWB MULTIFIRE	DELIVERY CONDITION	DISASSEMBLED STATE COMBUSTION CHAMBER	DISASSEMBLED STATE HEAT EXCHANGER
TYPE MF2 D / ZI 20 - 50 KW	154 x 66 x 168	96 x 66 x 120	72 x 66 x 168
TYPE MF2 D / ZI 60 - 120 KW	185 x 80 x 180	115 x 77 x 130	86 x 80 x 180

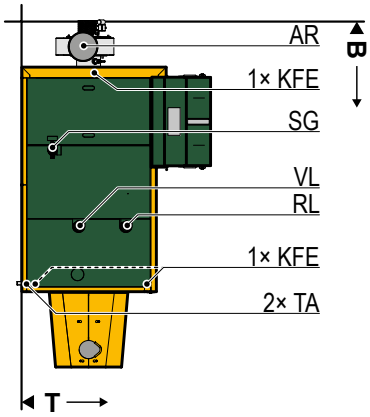
All dimensions in cm I Length x Width x Height I Distances stated are minimum distances!



KWB MULTIFIRE

CONNECTING DIMENSIONS





Legend on the left side.

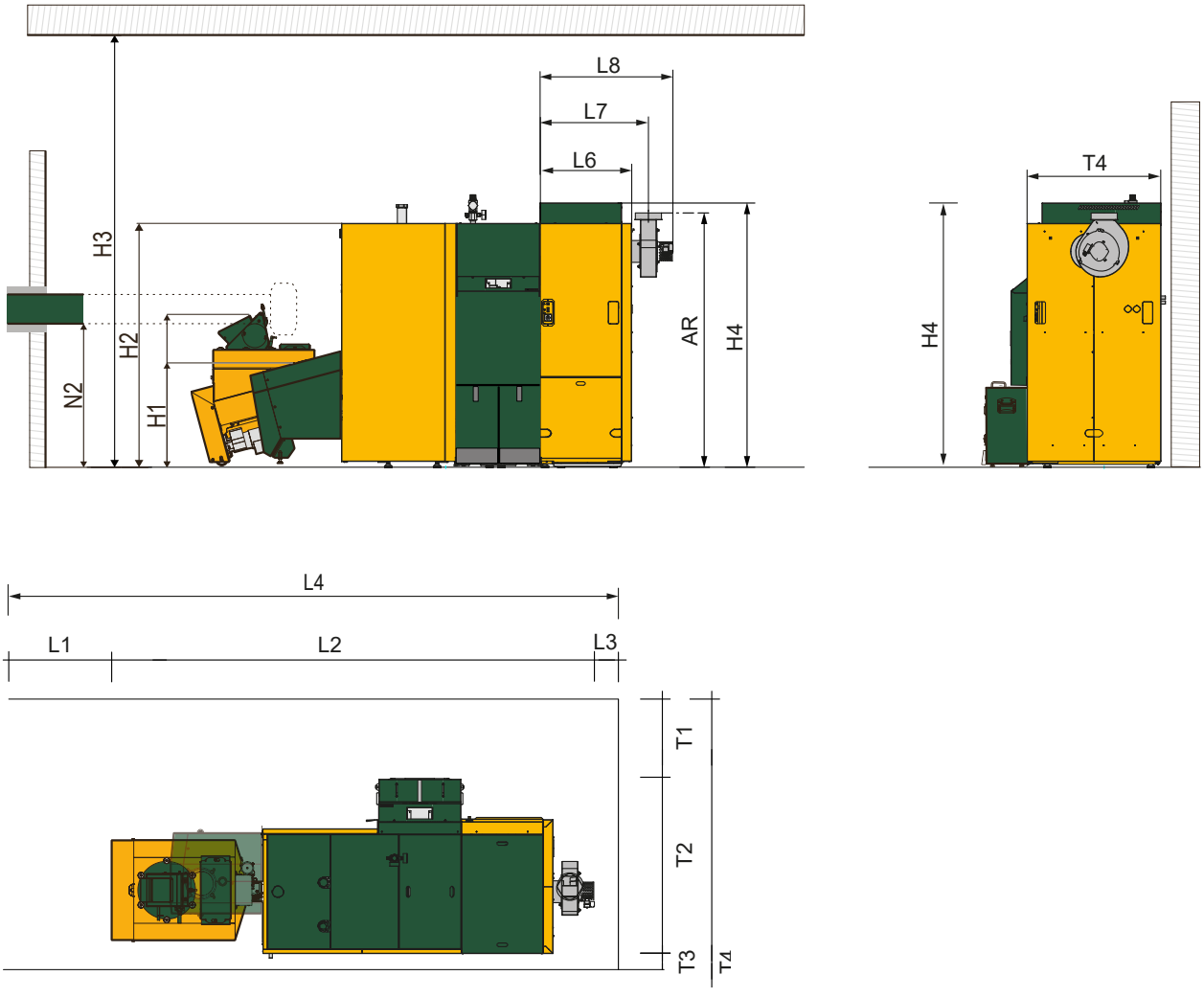
[cm]	Connecting dimensions MF2	20 – 50 kW	60 – 80 kW	100 – 120 kW
AR	Exhaust gas pipe	Ø 15 B: 14	Ø 18 B: 17	Ø 20 B: 17
	Exhaust pipe upwards	H: 166 T: 37	H: 175 T: 39	H: 175 T: 39
	Exhaust pipe upwards with bend	H: 184	H: 192	H: 192
	Exhaust pipe upwards with bend above heat exchanger	H: 196	H: 206	H: 215
	Exhaust pipe 90° rear (for fuel supply from the left)	H: 140 T: 11	H: 144 T: 16	H: 144 T: 16
	Exhaust pipe 90° front (for fuel supply from the left)	H: 140 T: 64	H: 152 T: 69	H: 152 T: 69
	Exhaust pipe 90° rear (for fuel supply from the right)	H: 140 T: 11	H: 152 T: 16	H: 152 T: 16
	Exhaust pipe 90° front (for fuel supply from the right)	H: 140 T: 64	H: 144 T: 69	H: 144 T: 69
VL	Forward flow	Ø 32, G 5/4" H: 166 B: 121 T: 32	Ø 50, G 2" H: 180 B: 131 T: 36	Ø 50, G 2" H: 180 B: 143 T: 36
RL	Return flow	Ø 32, G 5/4" H: 166 B: 121 T: 57	Ø 50, G 2" H: 180 B: 131 T: 66	Ø 50, G 2" H: 180 B: 143 T: 66
SG	Safety group	Ø R 1" H: 163 B: 78 T: 20	Ø R 1" H: 171 B: 82 T: 19	Ø R 1" H: 171 B: 95 T: 19
TA	Thermal safety valve – inlet	Ø R 1/2" H: 97 B: 145 T: 0	Ø R 1/2" H: 116 B: 166 T: 0	Ø R 1/2" H: 116 B: 179 T: 0
TA	Thermal safety valve – outlet	Ø R 1/2" H: 93 B: 145 T: 0	Ø R 1/2" H: 113 B: 166 T: 0	Ø R 1/2" H: 113 B: 179 T: 0
KFE1	Connection height boiler filling and emptying	Ø Rp 3/4" H: 23 B: 23 T: 37	Ø Rp 3/4" H:23 B: 28 T: 42	Ø Rp 3/4" H: 23 B: 28 T: 42
KFE2	Connection height boiler filling and emptying	Ø Rp 3/4" H: 22 B: 117 T: 66	Ø Rp 3/4" H:22 B: 137 T: 77	Ø Rp 3/4" H: 22 B: 150 T: 77

H ... Height T ... Depth B ... Width

All dimensions in cm

KWB MULTIFIRE

INTEGRATED KWB DUST FILTER E^{PLUS} WITH AUTOMATIC CLEANING



KWB MULTIFIRE

INTEGRATED KWB DUST FILTER E^{PLUS} WITH AUTOMATIC CLEANING

		Direct attachment					
		MF2 20 – 50kW		MF2 60 – 80 kW		MF2 100 – 120 kW	
[cm]		D	ZI	D	ZI	D	ZI
H1	Connection boiler-conveyor system: upper dropping edge cellular wheel sluice P16S	92	–	92	–	92	–
	Connection boiler-conveyor system: upper dropping edge cellular wheel sluice P31S	–	–	103	–	103	–
	Connection boiler-conveyor system: upper dropping edge - fire shutter ZI	–	102	–	102	–	102
	Connection boiler-conveyor system: upper dropping edge, cellular wheel sluice ZI	–	134	–	134	–	134
H2	Height KWB Multifire	159	159	167	167	167	167
H3*	Min. room height	198 (rec. 210)	198 (rec. 210)	200 (rec. 215)	200 (rec. 215)	206 (rec. 215)	206 (rec. 215)
	Min. room height – exhaust pipe is placed above heat exchanger	219 (∅ 150)	219 (∅ 150)	231 (∅ 180)	231 (∅ 180)	233 (∅ 200)	233 (∅ 200)
	Minimum room height-exhaust recirculation with installation version (1) vertically upwards	225 (∅ 150)	225 (∅ 150)	234 (∅ 180)	234 (∅ 180)	235 (∅ 200)	235 (∅ 200)
H4	Height dust filter	173	173	182	182	182	182
N2	Lower edge conveyor channel M P16S / P31S	88 / 98	97 / –	88 / 98	97 / –	88 / 98	97 / –
L1	Free space P16S / P31S	30 / –	22 / –	34 / 25	21	34 / 25	21
L2	Heating system length P16S / P31S	258 / –	298 / –	290 / 299	328 / –	301 / 310	340 / –
L3	Free space	7	7	7	7	7	7
L4	Min. room length P16S / P31S	> 295	> 327	> 331	> 356	> 342	> 368
L6	Length dust filter with casing	53	53	63	63	75	75
L7	Length dust filter to middle of exhaust gas connection	63	63	75	75	86	86
L8	Length dust filter incl. exhaust gas connection	76	76	92	92	103	103
T1	Free space	40	40	40	40	40	40
T2	Heating system depth	124	124	135	135	135	135
T3	Free space	7	7	7	7	7	7
T4	Depth dust filter with casing	81	81	92	92	92	92
AR	Exhaust gas pipe	∅ 15, B: 72	∅ 15, B: 72	∅ 18, B: 85	∅ 18, B: 85	∅ 20, B: 85	∅ 20, B: 85
	Exhaust pipe upwards	H: 166, T: 37	H: 166, T: 37	H: 175, T: 39	H: 175, T: 39	H: 175, T: 39	H: 175, T: 39
	Exhaust pipe upwards with bend	H: 184	H: 184	H: 192	H: 192	H: 192	H: 192
	Exhaust pipe upwards with bend above heat exchanger	H: 196	H: 196	H: 206	H: 206	H: 215	H: 215
	Exhaust pipe 90° rear (for fuel supply from the left)	H: 140, T: 11	H: 140, T: 11	H: 144, T: 16	H: 144, T: 16	H: 144, T: 16	H: 144, T: 16
	Exhaust pipe 90° front (for fuel supply from the left)	H: 140, T: 64	H: 140, T: 64	H: 152, T: 69	H: 152, T: 69	H: 152, T: 69	H: 152, T: 69
	Exhaust pipe 90° rear (for fuel supply from the right)	H: 140, T: 11	H: 140, T: 11	H: 152, T: 16	H: 152, T: 16	H: 152, T: 16	H: 152, T: 16
	Exhaust pipe 90° front (for fuel supply from the right)	H: 140, T: 64	H: 140, T: 64	H: 144, T: 69	H: 144, T: 69	H: 144, T: 69	H: 144, T: 69

D ... KWB Multifire type MF2 D ZI ... KWB Multifire type MF2 ZI * Installation versions exhaust gas recirculation - see T&P heating systems
All dimensions in cm

KWB MULTIFIRE – WOOD CHIP OPERATION

TECHNICAL DATA

MF2 D/ZI | MF2 E D/ZI	Unit	20	30 [1]	30 [2]	40	45 [1]	50 [1]	60 [1]	65 [1]	70 [1]	80	100 [2]	108 [1]	120
Rated power	kW	20	30	33	40	45	50	60	65	70	80	99/100/101	108	120
Partial load	kW	6,0	9,0	9,8	12,0	13,5	14,9	18,0	19,5	20,9	24,0	30,0	32,4	36,0
Boiler efficiency at rated power	%	94,8	95,1	95,2	95,4	95,3	95,3	95,2	95,1	95,0	94,9	95,3	95,5	95,7
Boiler efficiency at partial load	%	92,4	93,5	93,8	94,6	94,6	94,5	94,5	94,4	94,4	94,3	95,0	95,2	95,6
Fuel thermal output at rated power	kW	21,1	31,5	34,1	41,9	47,2	51,9	63,0	68,3	73,2	84,3	104,9	113,1	125,4
Fuel thermal output at partial load	kW	6,5	9,6	10,4	12,7	14,3	15,7	19,0	20,7	22,1	25,5	31,6	34,0	37,7
Boiler class according to EN 303-5:2012	–							5						
EU Energy label	–							A+						
Water side														
Water content	l	155	155	155	135	135	135	165	165	165	165	195	195	195
Water connection, forward/return flow (internal thread) without return-flow boost device	Inch	5/4	5/4	5/4	5/4	5/4	5/4	2	2	2	2	2	2	2
Water connection, forward/return flow (internal thread) with return-flow boost device	Inch	5/4	5/4	5/4	5/4	5/4	5/4	6/4	6/4	6/4	6/4	2	2	2
Water connection for filling and/or emptying (internal thread)	inch							3/4						
Water connection for thermal safety valve (external thread)	Inch							1/2						
Thermal safety valve: pressure	bar							2–4						
Thermal safety valve: required cold water temperature	°C							20						
Water-side resistance at 10 K	mbar	37,0	37,0	85,4	153,8	200,2	242,1	56,1	67,2	77,2	100,6	158,0	172,8	228,7
Water-side resistance at 20 K	mbar	8,5	8,5	20,2	37,0	47,2	58,7	13,5	16,3	18,7	24,5	38,7	42,3	56,1
Boiler-entry temperature	°C							55–70						
Working temperature/operating temperature	°C							90						
Working temperature/operating temperature (	°C	95	95	95	95	95	95	95	95	95	95	95	95	95
Maximum permitted temperature	°C							110						
Max. operating pressure	bar							3,5						
Exhaust-gas side (for chimney calculation)														
Combustion chamber temperature	°C							900–1100						
Combustion chamber pressure	mbar							-0,5...-5						
Required draft at rated power	mbar							0,05						
Required draft at partial load	mbar							0						
Suction required: yes	–							✓						
Exhaust-gas temperature at rated power	°C							140						
Exhaust-gas temp. Partial load	°C							100						
Exhaust-gas mass flow at rated power	kg/h	51,3	51,3	77,0	102,6	115,5	128,3	154,0	166,8	178,3	205,3	256,6	295,1	307,9
Exhaust-gas mass flow at partial load	kg/h	18,5	18,5	27,8	37,0	41,7	46,3	55,5	60,2	64,3	74,1	92,6	106,5	111,1
Exhaust-gas volume at rated power	Nm^3/h	40,1	40,1	60,1	80,2	90,2	100,2	120,2	130,3	139,3	160,3	200,4	230,5	240,5
Exhaust- gas volume at partial load	Nm^3/h	14,5	14,5	21,7	28,9	32,5	36,1	43,4	47,0	50,2	57,8	72,3	83,1	86,7
Incline of the exhaust-gas pipe	°							≥ 3						
Connection height exhaust-gas pipe	mm	>1395	>1395	>1395	>1395	>1395	>1395	>1445	>1445	>1445	>1445	>1445	>1445	>1445
Exhaust-gas pipe diameter	mm	150	150	150	150	150	150	180	180	180	180	200	200	200
Chimney diameter (approx. values)	mm	180	180	180	180	180	180	200	200	200	200	220	220	220
Chimney design: Moisture-resistant	–							✓						
Electrical system														
Connection: CEE 5-pole 400 V_{AC}	–							50 Hz 13 A						
Connected power MF2 D: P16S/P31S	W	1769 -	1769 -	1769 -	1769 -	1769 -	1769 -	1827 2207	1827 2207	1827 2207	1827 2207	1827 2207	1827 2207	1827 2207
Connected power MF2 ZI	W	1655	1655	1655	1655	1655	1655	1713	1713	1713	1713	1713	1713	1713
Connected load dust filter	W							115						
Ash														
Ash container volume	l							32						
Ash container filled	kg							36						
Ash removal system	–							✓						
Convenient ash container (optional)	l							240						
Weights														
Heat exchanger module, assembled	kg	300	300	300	340	340	340	360	360	360	360	450	450	450
Burning chamber module, assembled	kg	265	265	265	265	265	265	320	320	320	320	320	320	320
Boiler weight MF2 D (P16S/P31S)	kg	920 -	920 -	920 -	980 -	980 -	980 -	1100 1129	1100 1129	1100 1129	1100 1129	1200 1229	1200 1229	1200 1229
Boiler weight MF2 ZI	kg	890	890	890	930	930	930	1070	1070	1070	1070	1170	1170	1170
Weight dust filter (stand-alone)	kg	138 (152)	138 (152)	138 (152)	138 (152)	138 (152)	138 (152)	168 (203)	168 (203)	168 (203)	168 (203)	191 (203)	191 (203)	191 (203)
Noise emissions (EN 15036-1)[3]														
Normal operating noise at rated power	dB(A)							< 70						
Brennstoff: Holzhackgut nach ISO 17225-4														
Maximum water content	–							M40						

[1] Drawing inspection

[2] Typification variants

[3] Normal operating noise at rated power: Leq(A) at 1 m distance (ISO 11202:2010)

mg/Nm^3 ... milligram per standard cubic meter (Nm^3 - standard cubic meter under 1013 hectopascal at 0 °C)

KWB MULTIFIRE – PELLET OPERATION

With exhaust gas recirculation

TECHNICAL DATA

The exhaust gas recirculation is used for highest system protection thanks to optimal combustion temperature control and is mandatory for the combustion of technically dried fuels (moisture content less than 15%), and for basic operation.
Mandatory for KWB Multifire type MF2 as of 80 kW in pellet operation (warranty-relevant).

MF2 R D/ZI | MF2 ER D/ZI	Unit	40	45 [1]	50 [1]	60 [1]	65 [1]	70 [1]	80	100 [2]	108 [1]	120
Rated power	kW	40,0	45,0	49,5	60,0	65,0	69,5	80,0	99/100/101	108,0	120,0
Partial load	kW	12,0	13,5	14,9	18,0	19,5	20,9	24,0	30,0	32,4	36,0
Boiler efficiency at rated power (pellets)	%	96,5	96,4	96,3	96,1	96,1	96,0	95,8	95,8	95,7	95,7
Boiler efficiency at partial load (pellets)	%	94,8	94,9	94,9	95,1	95,2	95,2	95,4	95,7	95,8	96,0
Fuel thermal output at rated power (pellets)	kW	41,5	46,7	51,4	62,4	67,6	72,4	83,5	104,4	112,9	125,4
Fuel thermal output at partial load (pellets)	kW	12,7	14,2	15,6	18,9	20,5	21,9	25,2	31,3	33,8	37,5
Boiler class according to EN 303-5:2012	–					5,0					
EU Energy label	–					A+					
Water side											
Water content	l	135	135	135	165	165	165	165	195	195	38
Water connection, forward/return flow (internal thread) without return-flow boost device	Inch mm DN	5/4	5/4	5/4	2	2	2	2	2	2	5
Water connection, forward/return flow (internal thread) with return-flow boost device	Inch mm DN	5/4	5/4	5/4	6/4	6/4	6/4	6/4	2	2	0
Water connection for filling and/or emptying (internal thread)	inch mm					3/4					
Water connection for thermal safety valve (external thread)	Inch					1/2					
Thermal safety valve: pressure	bar					2–4					
Thermal safety valve: required cold water temperature	°C					20,0					
Water-side resistance at 10 K	mbar	153,8	200,2	242,8	56,1	67,2	77,2	100,6	158,0	172,8	37,5
Water-side resistance at 20 K	mbar	37,0	48,4	58,7	13,5	16,3	18,7	24,5	38,7	42,3	37,5
Boiler-entry temperature	°C					55–70					
Working temperature/operating temperature	°C					90					
Working temperature/operating temperature (optional)	°C					95					
Maximum permitted temperature	°C					110					
Max. operating pressure	bar					3,5					
Exhaust-gas side (for chimney calculation)											
Combustion chamber temperature	°C					900–1100					
Combustion chamber pressure	mbar					-0,5..-5					
Required draft at rated power	mbar					0,05					
Required draft at partial load	mbar					0,03					
Suction required: yes	–					✓					
Exhaust-gas temperature at rated power	°C					140					
Exhaust-gas temp. Partial load	°C					100					
Exhaust-gas mass flow at rated power	kg/h	102,6	115,5	128,3	154,0	166,8	178,3	205,3	256,6	295,1	37,5
Exhaust-gas mass flow at partial load	kg/h	37,0	41,7	46,3	55,5	60,2	64,3	74,1	92,6	106,5	37,5
Exhaust-gas volume at rated power	Nm^3/h	80,2	90,2	100,2	120,2	130,3	139,3	160,3	200,4	230,5	37,5
Exhaust- gas volume at partial load	Nm^3/h	28,9	32,5	36,1	43,4	47,0	50,2	57,8	72,3	83,1	37,5
Incline of the exhaust-gas pipe	°					≥ 3					
Connection height exhaust-gas pipe	mm	>1395	>1395	>1395	>1445	>1445	>1445	>1445	>1445	>1445	38
Exhaust-gas pipe diameter	mm	150	150	150	180	180	180	180	200	200	38
Chimney diameter (approx. values)	mm	180	180	180	200	200	200	200	220	220	38
Chimney design: Moisture-resistant	–					✓					
Electrical system											
Connection: CEE 5-pole 400 V_{AC}	–					50 Hz 13 A					
Connected power MF2 D: P16S	W	1769	1769	1769	1827	1827	1827	1827	1827	1827	38
Connected power MF2 ZI	W	1655	1655	1655	1713	1713	1713	1713	1713	1713	38
Connected load dust filter	W					115					
Ash											
Ash container volume	l					32					
Ash container filled	kg					36					
Ash removal system	–					✓					
Weights											
Heat exchanger module, assembled	kg	340	340	340	360	360	360	360	450	450	38
Burning chamber module, assembled	kg	265	265	265	320	320	320	320	320	320	38
Boiler weight MF2 D (P16B/P45A)	kg	980 -	980 -	980 -	1100 1129	1100 1129	1100 1129	1100 1129	1200 1229	1200 1229	38
Boiler weight MF2 ZI	kg	930	930	930	1070	1070	1070	1070	1170	1170	38
Weight dust filter (stand-alone)	kg	138 (152)	138 (152)	138 (152)	168 (203)	168 (203)	168 (203)	168 (203)	191 (203)	191 (203)	38
Noise emissions (EN 15036-1)[3]											
Normal operating noise at rated power	dB(A)					< 70					

[1] Drawing inspection

[2] Typification variants

[3] Normal operating noise at rated power: Leq(A) at 1 m distance (ISO 11202:2010)
mg/Nm^3 .. milligram per standard cubic meter (Nm^3 - standard cubic meter under 1013 hectopascal at 0 °C)

KWB MULTIFIRE – PELLET OPERATION

TECHNICAL DATA

Without exhaust gas recirculation

MF2 D / MF2 ZI	Unit	20	30 [1]	30 [2]	40	45 [1]	50 [1]	60 [1]	65 [1]	70 [1]	80	100 [2]	108 [1]	120
Rated power	kW	20,0	30,0	32,5	40,0	45,0	49,5	60,0	65,0	69,5	80,0	99 101	108,0	120,0
Partial load	kW	6,0	9,0	9,8	12,0	13,5	15,0	18,0	19,5	20,9	24,0	30,0	32,4	36,0
Boiler efficiency at rated power (pellets)	%	93,6	94,4	94,5	95,1	95,0	94,8	94,6	94,4	94,3	94,0	94,0	94,1	94,1
Boiler efficiency at partial load (pellets)	%	90,4	91,9	92,3	93,4	93,6	93,7	94,0	94,2	94,3	94,6	94,4	94,3	94,0
Fuel thermal output at rated power (pellets)	kW	21,4	31,8	34,4	42,1	47,4	52,2	63,4	68,9	73,7	85,1	106,3	114,8	127,5
Fuel thermal output at partial load (pellets)	kW	6,6	9,8	10,6	12,8	14,4	16,0	19,1	20,7	22,1	25,4	31,8	34,4	38,3
Boiler class according to EN 303-5:2012	–							5						
EU Energy label								A+						
Water side														
Water content	l	155	155	155	135	135	135	165	165	165	165	195	195	195
Water connection, forward/return flow (internal thread) without return-flow boost device	InchmmDN	5/4	5/4	5/4	5/4	5/4	5/4	2	2	2	2	2	2	2
Water connection, forward/return flow (internal thread) with return-flow boost device	InchmmDN	5/4	5/4	5/4	5/4	5/4	5/4	6/4	6/4	6/4	6/4	2	2	2
Water connection for filling and/or emptying (internal thread)	inchmm							3/4						
Water connection for thermal safety valve (external thread)	Inch							1/2						
Thermal safety valve: pressure	bar							2–6						
Thermal safety valve: required cold water temperature	°C							20						
Water-side resistance at 10 K	mbarPa	37,0	37,0	85,4	153,8	200,2	242,1	56,1	67,2	77,2	100,6	158,0	172,8	228,4
Water-side resistance at 20 K	mbarPa	8,5	8,5	20,2	37,0	48,4	58,7	13,6	16,3	18,7	24,5	38,7	42,3	51,1
Boiler-entry temperature	°C							55–70						
Working temperature/operating temperature	°C							90						
Maximum permitted temperature	°C							110						
Max. operating pressure	bar							3,5						
Exhaust-gas side (for chimney calculation)														
Combustion chamber temperature	°C							900–1100						
Combustion chamber pressure	mbarPa							-0,5...-5						
Required draft at rated power	mbarPa							0,05						
Required draft at partial load	mbarPa							0,03						
Suction required: yes	–							✓						
Exhaust-gas temperature at rated power	°C							140						
Exhaust-gas temp. Partial load	°C							100						
Exhaust-gas mass flow at rated power	kg/h	51,3	51,3	77,0	102,6	115,5	128,3	154,0	166,8	178,3	205,3	256,6	295,1	307,9
Exhaust-gas mass flow at partial load	kg/h	18,5	18,5	27,8	37,0	41,7	46,3	55,5	60,2	64,3	74,1	92,6	106,5	111,1
Exhaust-gas volume at rated power	Nm^3/h	40,1	40,1	60,1	80,2	90,2	100,2	120,2	130,3	139,3	160,3	200,4	230,5	240,5
Exhaust- gas volume at partial load	Nm^3/h	14,5	14,5	21,7	28,9	32,5	36,1	43,4	47,0	50,2	57,8	72,3	83,1	86,7
Incline of the exhaust-gas pipe	°							≥ 3						
Connection height exhaust-gas pipe	mm	>1395	>1395	>1395	>1395	>1395	>1395	>1445	>1445	>1445	>1445	>1445	>1445	>1445
Exhaust-gas pipe diameter	mm	150	150	150	150	150	150	180	180	180	180	200	200	200
Chimney diameter (approx. values)	mm	180	180	180	180	180	180	200	200	200	200	220	220	220
Chimney design: Moisture-resistant	–							✓						
Electrical system														
Connection: CEE 5-pole 400 VAC	–							50 Hz 13 A						
Connected power MF2 D: P16S	W	1769	1769	1769	1769	1769	1769	1827	1827	1827	1827	1827	1827	1827
Connected power MF2 ZI	W	1655	1655	1655	1655	1655	1655	1713	1713	1713	1713	1713	1713	1713
Ash														
Ash container volume	l							32						
Ash container filled	kg							36						
Ash removal system	–							✓						
Weights														
Water jacket	kg	300	300	300	340	340	340	360	360	360	360	450	450	450
Boiler body	kg	265	265	265	265	265	265	320	320	320	320	320	320	320
Boiler weight MF2 D (P16B/P45A)	kg	920 -	920 -	920 -	980 -	980 -	980 -	1100 1129	1100 1129	1100 1129	1100 1129	1200 1229	1200 1229	1200 1229
Boiler weight MF2 ZI	kg	890	890	890	930	930	930	1070	1070	1070	1070	1170	1170	1170
Noise emissions (EN 15036-1)														
Normal operating noise at rated power								< 70						

1 ... Drawing inspection
2 ... Typification variants
mg/Nm^3 ... milligram per standard cubic meter (Nm^3 - standard cubic meter under 1013 hectopascal at 0 °C)

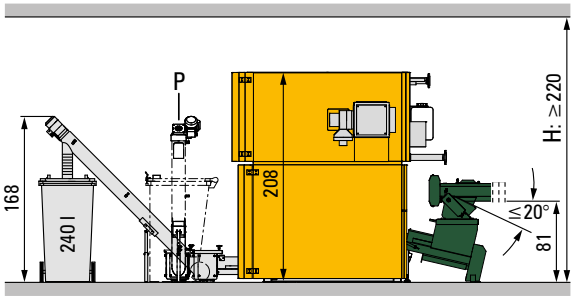
NOTES

KWB POWERFIRE 150 kW

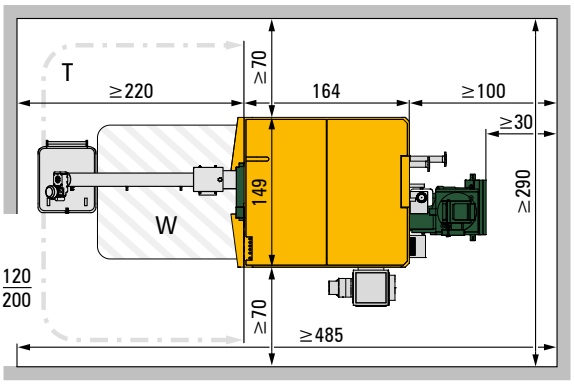
INSTALLATION DIMENSIONS

A minimum unobstructed door width of 1.2 m must be provided to be able to transport the system into the room. The unobstructed door height should be 2 m. For a prompt and smooth installation, it is necessary to notify KWB of the unobstructed door widths in the planning stage. Due to the weight of the ash container, we recommend a lifting device in the event of stair access to the heating room.

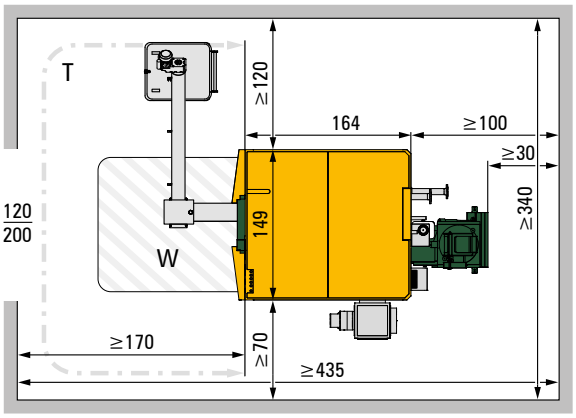
VIEW FROM THE RIGHT



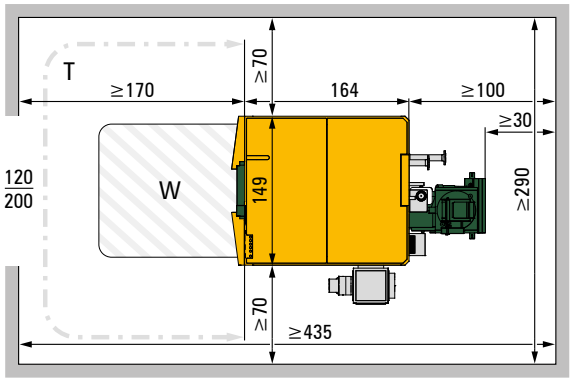
EXTERNAL ASH CONTAINER IN FRONT (A1)



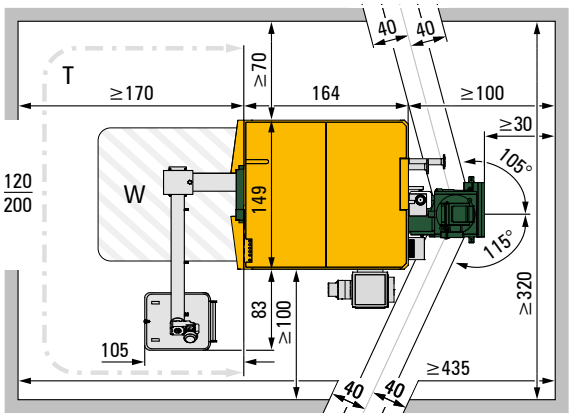
EXTERNAL ASH CONTAINER ON THE LEFT (A3)



INTERNAL ASH CONTAINER (A2)



EXTERNAL ASH CONTAINER ON THE RIGHT (A4) (with swing range of the conveyor system and wall duct)



LEGEND

H	Room height: For room heights below 280 cm, the customer must provide suitable lifting tools (electrical forklift, wheel front loader, etc.).
P	Alternative position
T	Door area: Valid for all models. The door must be in the drawn-in area – deviations require consultation with KWB! If the door is not directly in front of the system, the space requirement in front of the system increases to at least ≥ 220 cm.
W	Maintenance area

Minimum room dimensions of the built-in ash container variants (cm)

	Ash-container position				
	front	internal	left	right	any
Version:	A1	A2	A3	A4	
Room width (B)	290	290	340	320	370
Room length (L)	485	435	435	435	485
Room height (H)	220	220	220	220	220

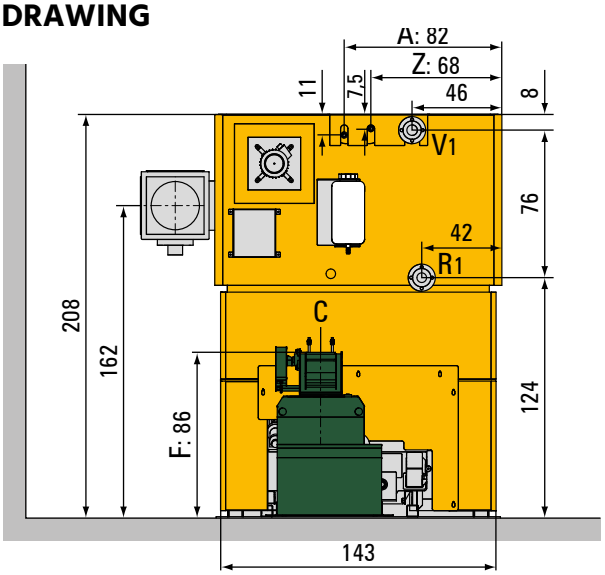
REI90 according to ÖNORM EN 13501; EI_2 30-C according to ÖNORM EN 13501, E30 according to ÖNORM EN 13501
All distances stated are minimum dimensions and apply only to the installation variants shown! With regard to space requirements, please also note the exhaust gas pipe routing and chimney position – the space requirements for reducers and elbows may influence the minimum distances! It must be possible to dismantle the entire casing at any time.

All dimensions in cm

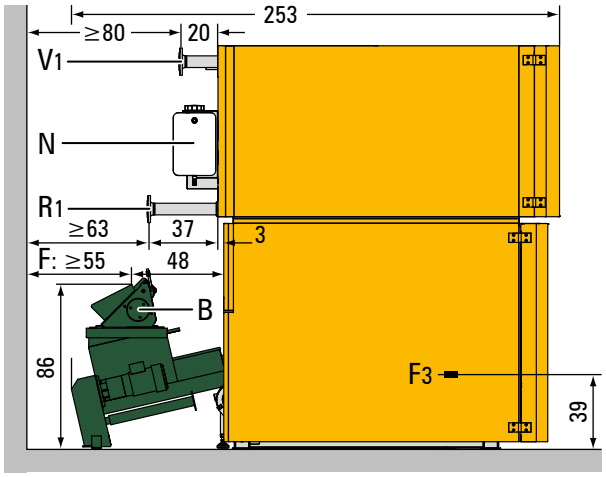
KWB POWERFIRE 150 kW

CONNECTING DIMENSIONS

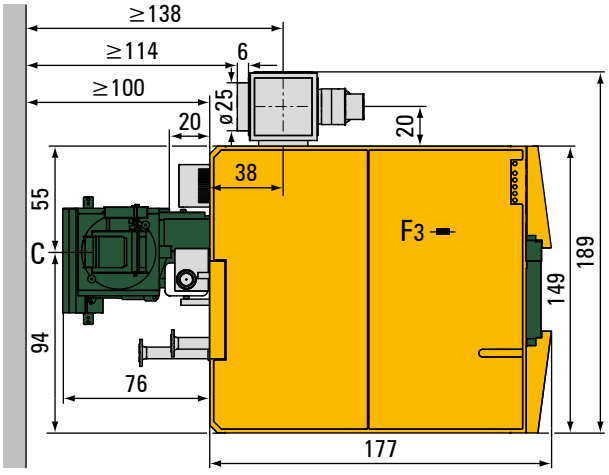
DRAWING



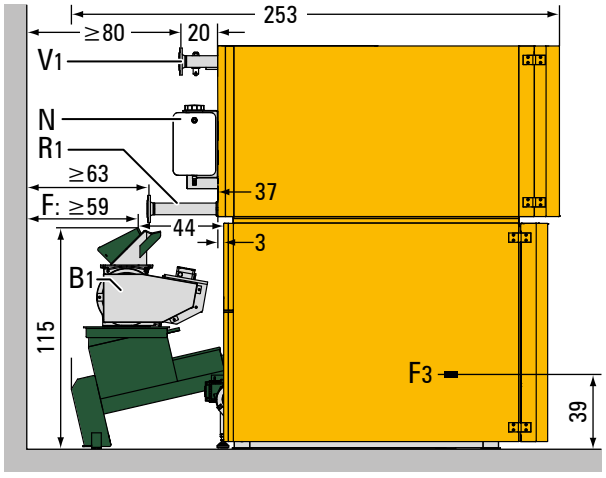
SIDE VIEW WITH FIRE SHUTTER



PLAN VIEW



VERSION WITH CELLULAR WHEEL SLUICE



LEGEND

A	Outlet for thermal safety valve ¾" (female thread)
B	Fire shutter
B1	Cellular wheel sluice (alternative to the fire shutter)
C	Conveyor system axle
EF	E-Filter
F	Conveyor system connection

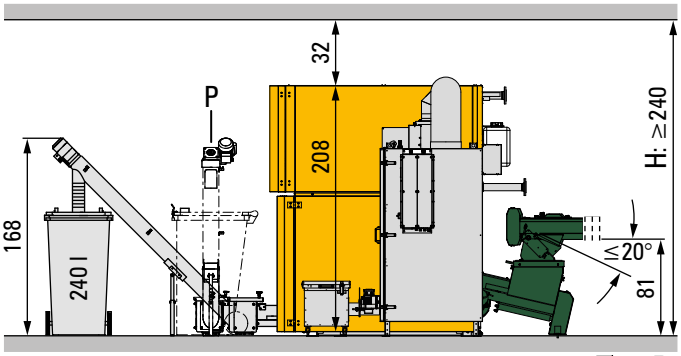
F3	Boiler filling and emptying ¾" (female thread) – Burner housing area (in front under the combustion chamber door)
N	Emergency fire-extinguishing equipment
R1	Return flow DN 50, PN 6
V1	Forward flow DN 50, PN 6
Z	Inlet for thermal safety valve ¾" (female thread)

All illustrations are shown without the external ash removal system. All distances stated are minimum dimensions and apply only to the installation variants shown! With regard to space requirements, please also note the exhaust gas pipe routing and chimney position – the space requirements for reducers and elbows may influence the minimum distances! It must be possible to dismantle the entire casing at any time.

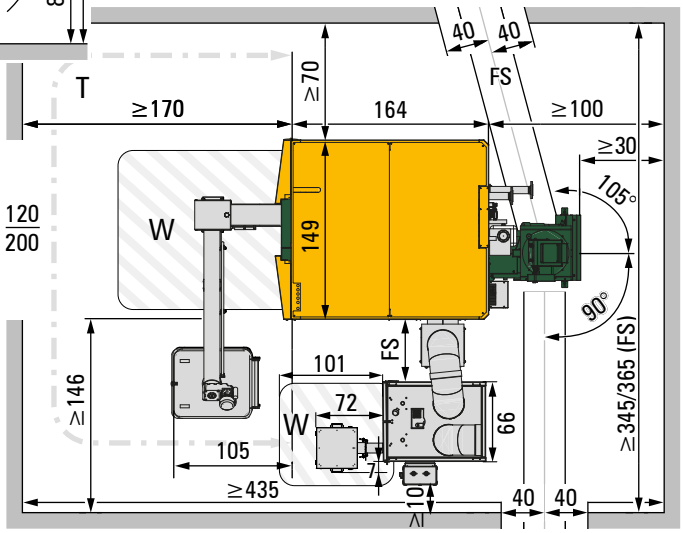
All dimensions in cm

KWB POWERFIRE 150 kW WITH DUST FILTER E^{PLUS}

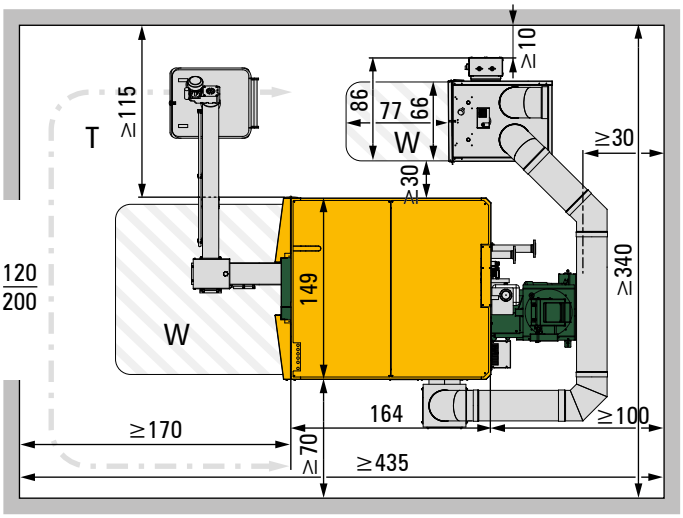
INSTALLATION DIMENSIONS WITH DUST FILTER E^{PLUS}



STANDARD MODEL WITH DUST FILTER E^{PLUS} ON THE RIGHT



STANDARD MODEL WITH DUST FILTER E^{PLUS} ON THE LEFT



LEGEND

CS	It is recommended to always place the conveyor system on the E-Filter side to keep open the access to the maintenance areas. In this case, the recommended distance between E-Filter and boiler is ≥ 40 cm instead of ≥ 60 cm.
H	If a bypass attachment is planned, the min. room height increases by ≥ 40 cm.

P	Alternative position
T	Door area: Valid for all models. The door must be in the drawn-in area – deviations require consultation with KWB! If the door is not directly in front of the system, the space requirement in front of the system increases to at least ≥ 225 cm.
W	Maintenance area

* If the conveyor system is installed diagonally, the planning must include an additional clearance of ≥20 cm to the rear wall! You must also take the gear unit and motor positions into account.

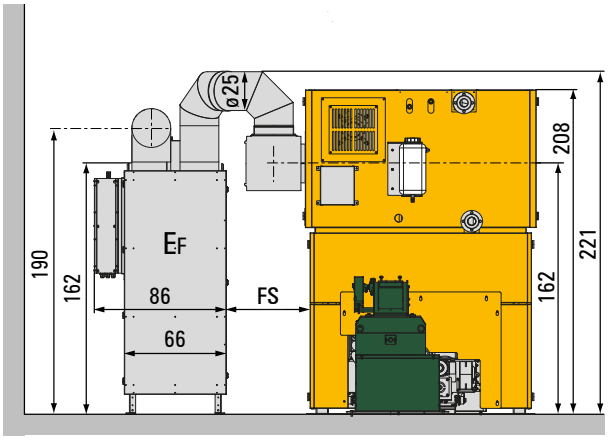
REI90 according to ÖNORM EN 13501, EI2 30-C according to ÖNORM EN 13501, E30 according to ÖNORM EN 13501

All distances stated are minimum dimensions and apply only to the installation variants shown! With regard to space requirements, please also note the exhaust gas pipe routing and chimney position – the space requirements for reducers and elbows may influence the minimum distances! It must be possible to dismantle the entire casing at any time. The minimal room dimensions for the ash containers as displayed in the illustration. Individual planning is possible after consultation with KWB.

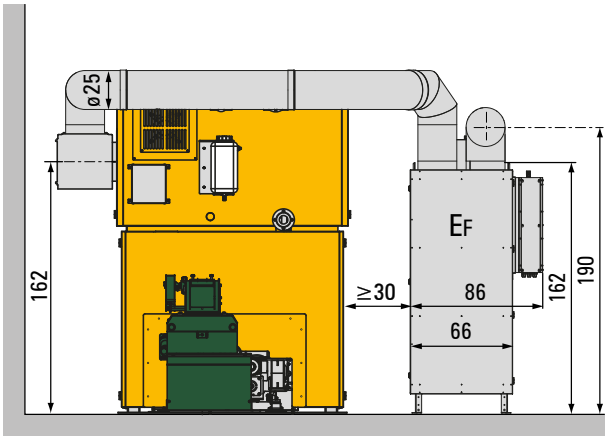
KWB POWERFIRE 150 kW WITH DUST FILTER EPLUS

CONNECTING DIMENSIONS WITH DUST FILTER E^{PLUS}

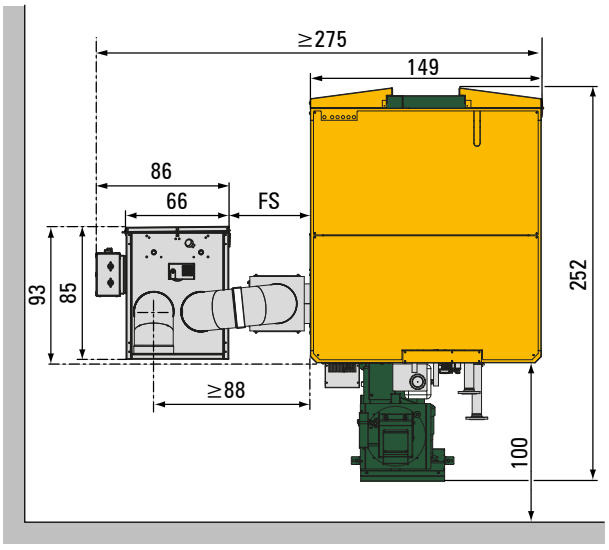
STANDARD MODEL WITH DUST FILTER E^{PLUS} ON THE RIGHT



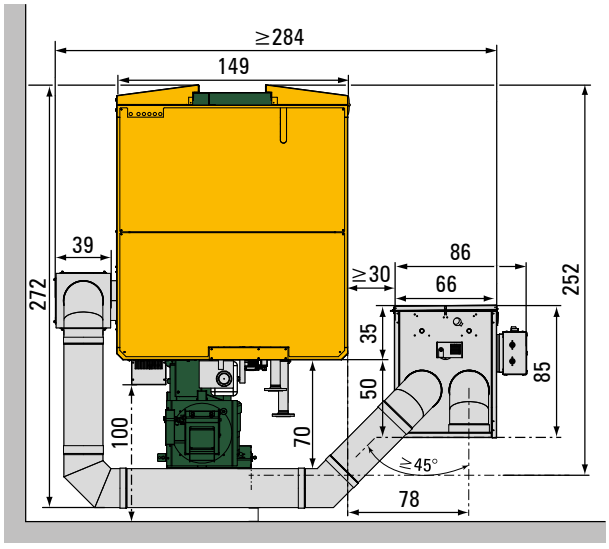
STANDARD MODEL WITH DUST FILTER E^{PLUS} ON THE LEFT



STANDARD MODEL WITH DUST FILTER E^{PLUS} ON THE RIGHT



STANDARD MODEL WITH DUST FILTER E^{PLUS} ON THE LEFT



All dimensions in cm

KWB POWERFIRE 150 kW

TECHNICAL DATA

TDS	Unit	TDS 150	
		Pellet	Wood chips
Rated power	kW	150	150
Partial load	kW	45,0	45,0
Boiler efficiency at rated power	%	93,2	92,5
Boiler efficiency at partial load	%	92,1	92,4
Fuel thermal output at rated power	kW	161	162
Fuel thermal output at partial load	kW	49	49
Boiler class according to EN 303-5:2012 + KWB dust filter	–	5	5
Water side			
Water content	l	295	295
Water connection diameter flow/return (flange)	–	DN 50 PN 6	DN 50 PN 6
Water connection for thermal safety valve	Inch	3/4	3/4
Thermal safety valve: temperature [1]	°C	10	10
Thermal safety valve: pressure [1]	bar	2	2
Boiler filling and emptying at the burner (internal thread)	Inch	3/4	3/4
Boiler emptying at the flame pipe (internal thread)	Inch	–	–
Boiler emptying at the heat exchanger (internal thread)	Inch	–	–
Water-side resistance at 20 K [2]	mbar	28	28
Water-side resistance at 10 K [2]	mbar	112	112
Boiler inlet temperature ≤w30	°C	55–70	55–70
Boiler inlet temperature >w30	°C	–	65–70
Working temperature/operating temperature	°C	90	90
Maximum permitted temperature	°C	110	110
Maximum operating pressure	bar	3,5	3,5
Flue-gas side (data for chimney design)			
Combustion chamber temperature	°C	900–1200	900–1000
Combustion chamber pressure	mbar	-0,2.. -0,3	-0,2.. -0,3
Delivery pressure at rated power / partial load	mbar	0,10 0,06	0,10 0,06
Induced draught required	–	✓	✓
Exhaust-gas temperature at rated power / partial load	°C	160 80	160 80
Exhaust-gas connection height (boiler side)	mm	1.615	1.615
Exhaust-gas connection height: variant up	mm	–	–
Exhaust-gas connection height: variant right (pipe centre, 0–90° pivoting) [7]	mm	–	–
Exhaust-gas connection diameter	mm	250	250
Incline of the exhaust-gas pipe	°	≥ 3	≥ 3
Recommended chimney diameter	mm	300	300
Chimney design: moisture-resistant	–	✓	✓
Maximum water content	–	M10	M30/M45
Exhaust-gas mass flow at rated power [3]	kg/s	0	0,137 0,157
Exhaust-gas mass flow at partial load [3]	kg/s	0,031	0,038 0,044
Exhaust-gas volume at rated power [3]	Nm^3_f/h	300	388 455
Exhaust-gas volume at partial load [3]	Nm^3_f/h	87	130 180
Electrical system			
Connection: 5-pin	–	400 VAC 50 Hz 16 A	400 VAC 50 Hz 16 A
Unit switch and main switch: present	–	✓	✓
Connected power boiler	W	3010	3010
Connected power total incl. fuel extractor	W	4510	4510
Auxiliary power consumption in trial operation at rated power [5]	W_{el}/MW	1,24	1,92
Auxiliary power consumption in trial operation at partial load [5]	W_{el}/MW	2,51	4,43
Auxiliary power consumption at rated power [5]	W	182	270
Auxiliary power consumption at partial load [5]	W	110	190
Standby power	W	20	20

»

KWB POWERFIRE 150 kW

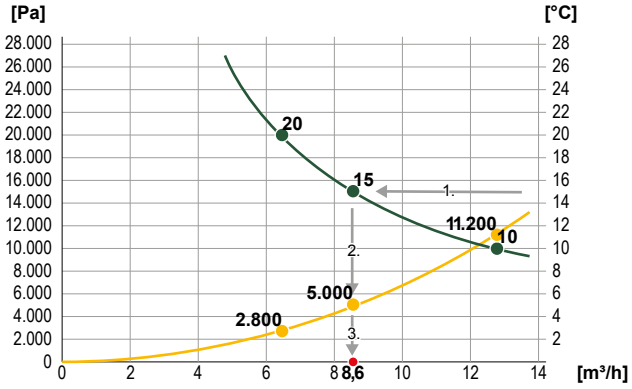
TECHNICAL DATA

TDS	Unit	TDS 150	
		Pellet	Wood chips
Ash			
Ash-container volume – fly-ash	l	23	23
Ash-container volume – grate-ash	l	66	66
Ash container, grate ash, full	kg	75	75
Ash-container volume, comfort version (optional)	l	–	–
Ash-removal system	–	✓	✓
		120	120
		~140	~140
Ash-container volume (optional)	l	240	240
Weight of ash container, full	kg	~265	~265
Weights			
Heat exchanger incl. cleaning grille	kg	725	725
Burner housing incl. chamotte	kg	796	796
Flame pipe incl. chamotte	kg	–	–
Stoker trough	kg	113	113
Total weight (empty)	kg	1634	1634
Assembly case	kg	174	174
Weight of transport packaging (in each case)	kg	25	25
Noise emissions [6]			
Normal operating noise at rated power	dB(A)	60	60
Operating peaks at rated power	dB(A)	68	68
Test report			
Test report no.	–	14-UW/Wels-EX-321/1	

[1] In acc. with EN 303-5; higher temperatur respectively lower minimum admission pressure available on request
[2] The water-side restistance is specified and determined in each case on the boiler interface (flange RF/FF)
[3] with reference to damp flue gas
[4] Wood chips: Provision of the rated power to M30, above there is a reduction in power dissipation.
[5] Measured values for the additional power requirement are understood to include KWB stirrer extractors incl. stanc [5] I valori di misura relativi al (NOT with sliding floor).
[6] The noise measurements were executed in normal operation with wood chips.
Leq(A) at 1 m distance (ISO 11202:2010)
[7] Values only for standard-boiler-configuration. NOT for cellular wheel sluice, cyclone or E-Filter (own dimensioned drawings)
[8] without KWB dust filter boiler class 4
mg/Nm³ ... Milligram per standard cubic meter (Nm³... under 1013 hectopascal at 0 °C)

WATER-SIDE RESISTANCE

The return flow boost groups for KWB Powerfire 150 can be found on page K|10.



LEGEND

1.	Read from right to left to the intersection of the spread
2.	Read downward to the intersection of the resistance
3.	Read downward to the volume flow
•	HW-side resistance
—	HW-side resistance
•	HW-side spread
—	HW-side spread

RECOMMENDED PARAMETERS FOR BOILER CIRCUIT PUMPS, CONTROL VALVES OR RETURN FLOW MIXERS

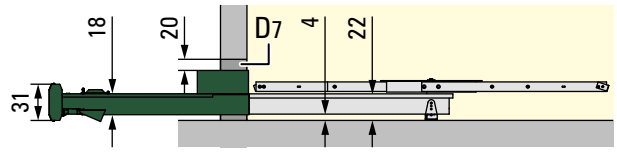
BOILER PUMPS - PARAMETERS		CONTROL VALVE OR RETURN FLOW MIXER
BOILER PERFORMANCE [KW]	MIN. Ø FORWARD, RETURN FLOW	KVS [M3/H]
150	DN50	44

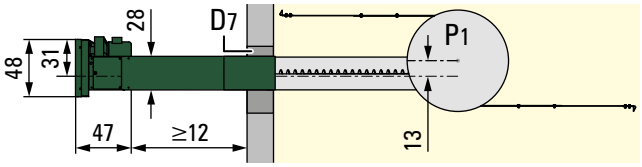
CONVEYOR SYSTEM M

FLOOR-LEVEL STIRRER

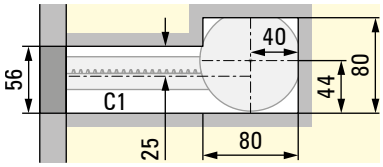
The floor-level stirrer is available in two different designs depending on requirements: As a spring-blade rotary stirrer (stirrer diameter: from 2.5 to 4.0 m) and as articulated rotary-blade stirrer (from 4.0 to 5.5 m stirrer diameter).

STANDARD CHANNEL

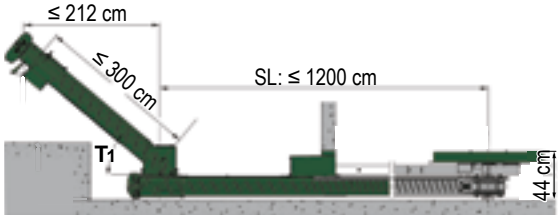


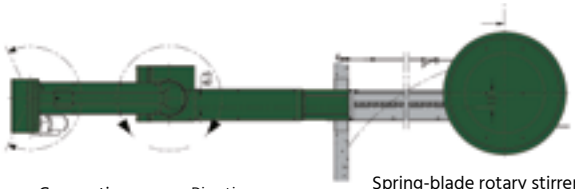


Cutouts for the floor
(if the conveyor is installed in the floor.)



ASCENDING SCREW WITH UPWARD TRANSFER



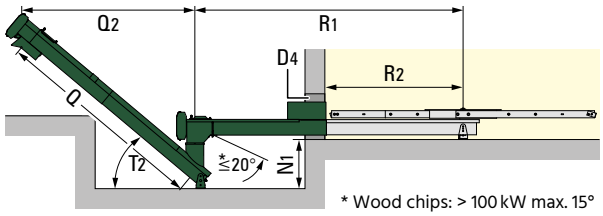


Connection KWB Multifire max. angle 220°

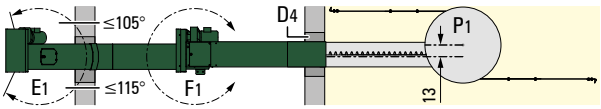
Pivoting 360°

Spring-blade rotary stirrer – Ø 85
Articulated rotary blade stirrer – Ø 110

ASCENDING SCREW WITH DOWNWARD TRANSFER



* Wood chips: > 100 kW max. 15°



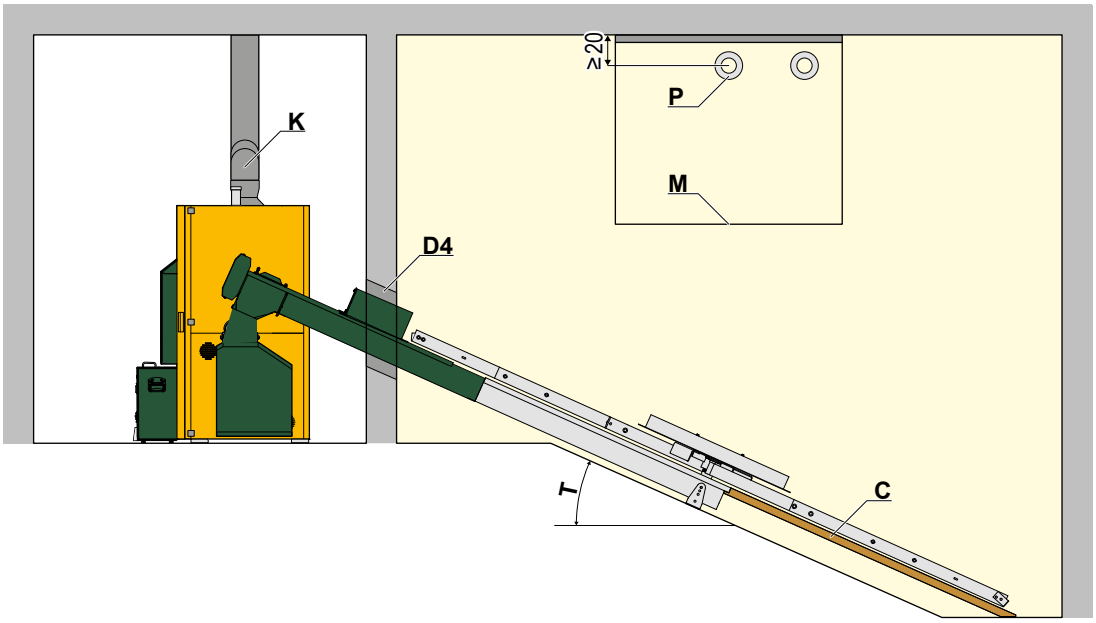
LEGEND

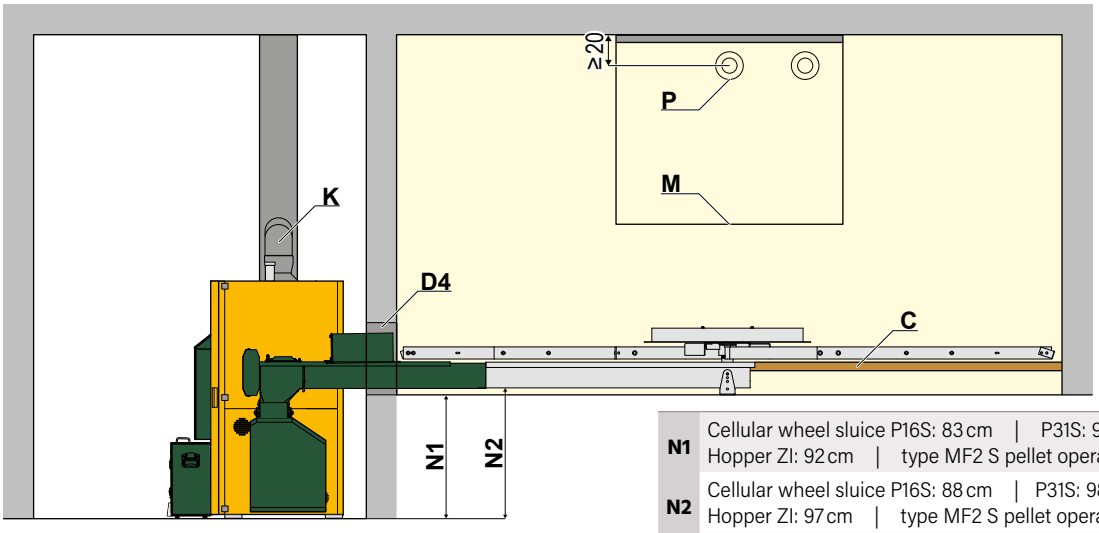
D4	Wall duct 60 x 60 cm: Seal after installation; the channel must be acoustically decoupled (Ø 2 cm acoustic insulation)
N1	Height difference: 0°–25°: ≥ 45 cm, 26° – 35°: ≥ 50 cm 36° – 45°: ≥ 60 cm
SL	Screw length conveyor channel maximally 12 m (install horizontally!)
T1	Angle when wood chips are used and channel length <2 m: 35°–45° Angle when wood chips are used and channel length 2–3 m: 35°-40° Angle when pellets are used and channel length <2 m: 35°–40° (45 ° with channel insert) Angle when pellets are used: 2–3 m: to 35° (45 ° with channel insert)
T2	Angle when wood chips are used: 0°--45° Angle when pellets are used: 0°–40° (45 ° with channel insert)
P1	Diameter of the stirrer cover plate: Spring-blade rotary stirrer: Ø 85 cm, articulated rotary blade stirrer: Ø 110 cm. Diameter of the stirrer: Spring-blade rotary stirrer: Ø 2.5 m, 3.0 m, 3.5 m, 4.0 m (4.5 m only for pellets), articulated rotary blade stirrer: Ø 4.0 m, 4.5 m, 5.0 m, 5.5 m
E1	Swing range ascending screw; max. angle to the KWB Multifire 220°
F1	Free rotation
Q	Screw length (from connection point head section drop shaft to the fire shutter): Up to 15°: ≤ 12 m; 15° – 40°: ≤ 6 m (pellets 45 ° with channel insert)
Q2	45°: ≤ 4.39 m, 15°: ≤ 11.60 m
R1	Screw length: Up to 15°: ≤ 12 m; 15° – 20°: ≤ 6 m
R2	Screw length open

All dimensions in cm l Width x Height

STORAGE ROOM ADJACENT TO HEATING ROOM

STIRRER WITH CONVEYOR CHANNEL AND DIRECT CONNECTION





LEGEND

C	False floor optional – it is possible to install the conveyor channel in a recess in the floor. (Rear ventilation recommended)
D4	Wall duct 60 × 60 cm; seal after installation; the channel must be acoustically decoupled (at least 2 cm acoustic insulation)
K	Keep access to the chimney free: >60 cm; exhaust pipe and chimney design according to "Technical data" table; energy-saving damper: installation with blowback flap
M	Ricochet protection mat

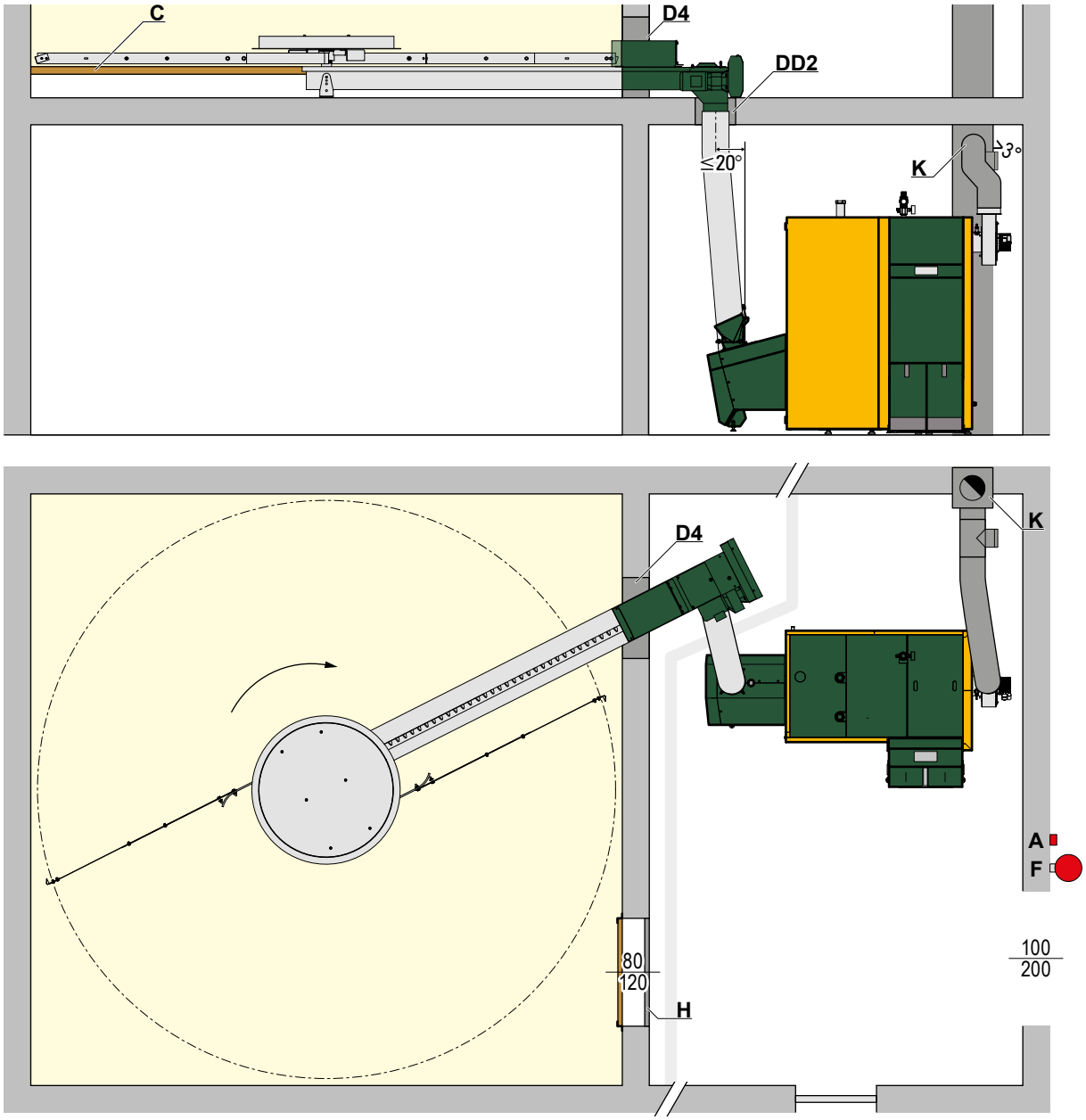
N1	Cellular wheel sluice P16S: 83 cm | P31S: 93 cm Hopper ZI: 92 cm | type MF2 S pellet operation: 73 cm
N2	Cellular wheel sluice P16S: 88 cm | P31S: 98 cm Hopper ZI: 97 cm | type MF2 S pellet operation: 78 cm
T	Wood chip operation: from > 100 kW max. 15 ° up to ≤ 100 kW max. 20 ° Pellet operation: up to ≤ 135 kW max. 20 °
P	Ventilated filling nozzles (injection & suction nozzles) Place the injection connector in the middle of the room and the suction nozzle ≥ 50 cm to the side of the injection connector in the direction of the storage room door. The suction nozzle should always be cut as short as possible inside, almost flush with the wall (it must still be possible to mount the earthing clamp!). Both nozzles should be attached ≥ 50 cm from the side walls and ≥ 20 cm from the ceiling.

FUEL POURING HEIGHTS

For the use of the spring-blade rotary stirrer or articulated rotary blade stirrer applies: the maximum pouring height for pellet operation is 8 m; for wood chip operation, the maximum pouring height is 1.5 x the stirrer diameter. Greater pouring heights must be clarified based on specific site conditions. Please comply with the EN ISO 20023 standard when designing the pellet storage.

All dimensions in cm I Width x Height

STORAGE ROOM ABOVE HEATING ROOM



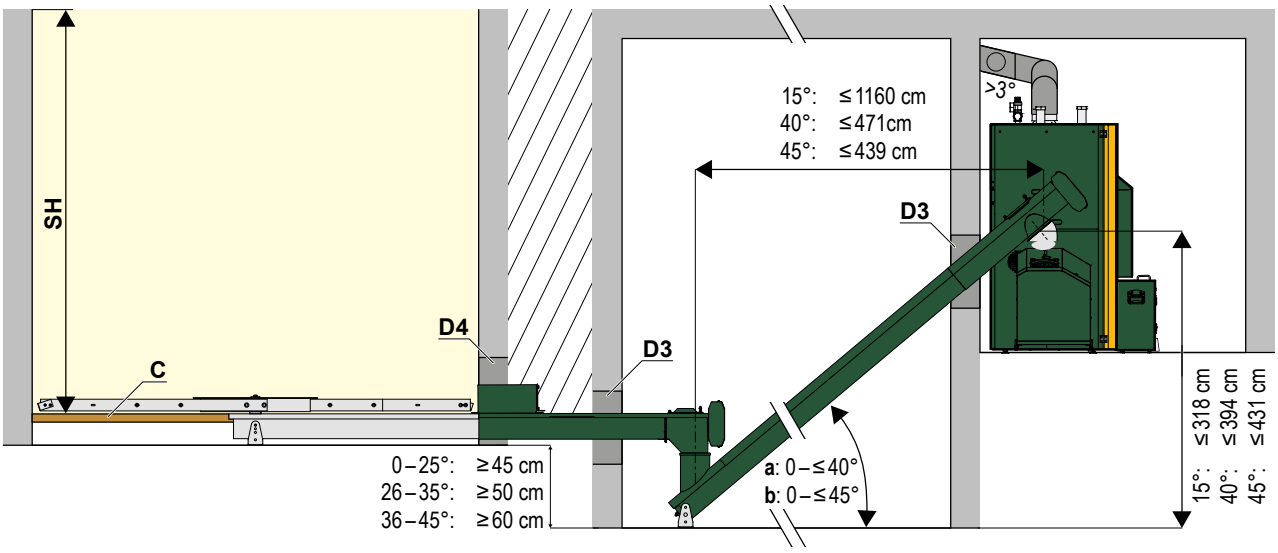
LEGEND

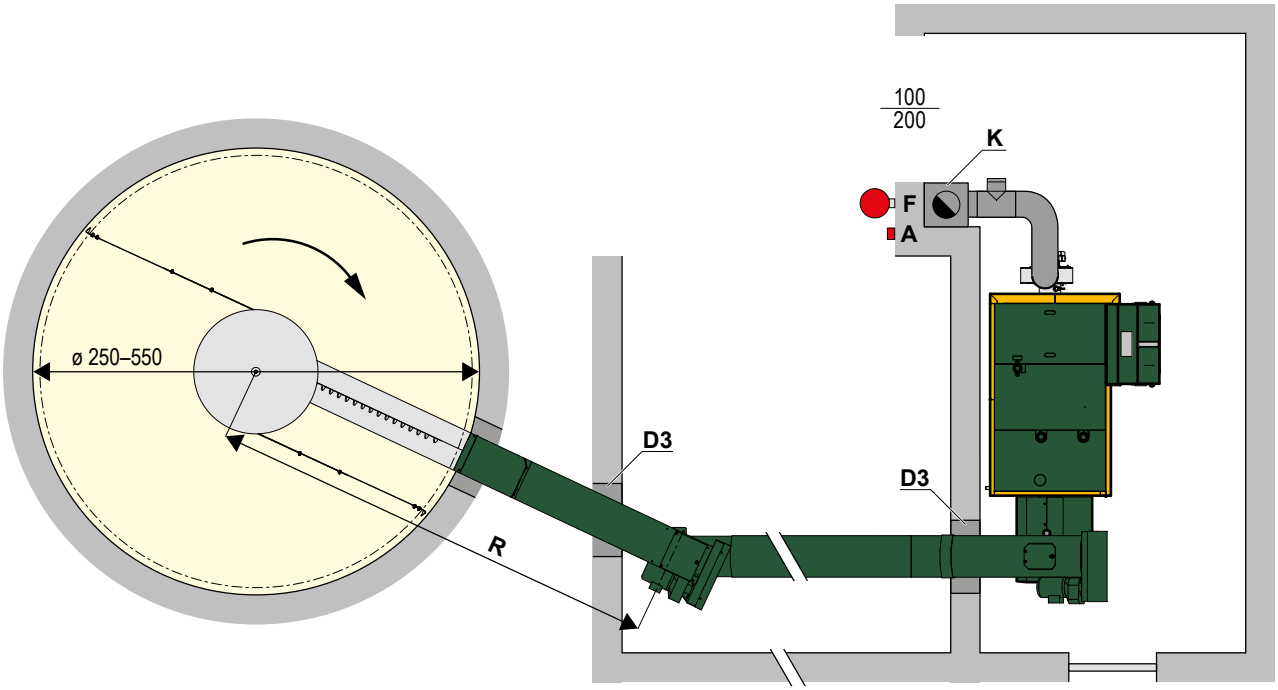
A	Emergency-stop switch: Boiler NOT de-energised, but combustion stopped – heat dissipation continues!
C	False floor optional – it is possible to install the conveyor channel in a recess in the floor. (Rear ventilation and acoustic decoupling are recommended)
D4	Wall duct 60 × 60 cm; seal after installation; the channel must be acoustically decoupled (> 2 cm acoustic insulation)
F	Fire extinguisher

H	Hatch: Protective door boards for pressure relief
K	Chimney: Exhaust pipe and chimney design according to "Technical data" table, energy-saving damper: Installation with blowback flap
DD2	Ceiling duct 30 × 30 cm, seal after installation; the channel must be acoustically decoupled (> 2 cm acoustic insulation)

All dimensions in cm l Width x Height

STORAGE ROOM AT A DISTANCE FROM THE HEATING ROOM





LEGEND

A	Emergency-stop switch: Boiler NOT de-energised, but combustion stopped – heat dissipation continues!
C	False floor optional – it is possible to install the conveyor channel in a recess in the floor. (Rear ventilation and acoustic decoupling are recommended)
D3	Wall duct 50 × 50 cm; seal after installation; the channel must be acoustically decoupled (at least 2 cm acoustic insulation)
D4	Wall duct 60 x 60 cm; seal after installation, channel must be acoustically decoupled
F	Fire extinguisher

K	Chimney: Exhaust gas pipe and chimney design according to "Technical data" table, energy-saving damper: Installation with blowback flap
N1	Dumping height upon request (depends on storage room width and length, and fuel)
R	Screw length ≤1,200 cm
SH	dumping height
a	Wood chip
b	Pellets

All dimensions in cm I Width x Height

NOTES

KWB

WOOD CHIP & PELLET HEATING SYSTEMS

240 / 300 kW

KWB POWERFIRE TYPE TDS

WOOD CHIP AND PELLET HEATING SYSTEM 240 / 300 kW

CLEAN EFFICIENCY 2.0

KWB heat exchanger:

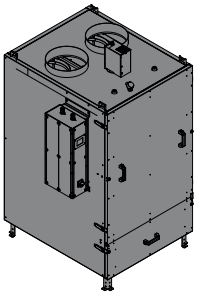
- Self-cleaning revolving grate system (fuel transport occurs via the rotation of the grate)
- Stoker screw with stainless steel spirals incl. drive unit (equipped with a spiral progressively increasing in size to prevent congestion)
- Backfire protector (gas-tight and automatically closing fire shutter) and thermally acting backfire safeguard (emergency fire extinguisher)
- Primary combustion air supply via speed-regulated fans below the revolving ring grate via a special air-distribution system which allows for a progressive, staged air supply including a control for the combustion speed at the grate.
- Suitable for the combustion of wood chips categories P16S and P31S with a moisture content of up to 45% in accordance with ISO 17225-4 as well as wood pellets of quality categories A1 and A2 in accordance with ISO 17225-2.
  KWB ash removal system: specially developed grate cleaning system and dropping of the ash onto an extraction screw situated under the grate, which extracts the ash and takes it to the integrated 66 l ash container or, optionally, to an 120 l / 240 l ash bin.
- Vertically standing cyclone combustion chamber as post-combustion unit
- Secondary air supply occurs through speed-regulated fans via specially developed and optimised secondary air nozzles.
- KWB heat exchanger: upright tubular heat exchanger with fully automatic heat exchanger cleaning, consisting of screw turbulators
- The underbody in the area of the burner system is cooled with water, the cover of the heat exchanger is insulated in the KWB Powerfire as a result of which the radiation loss is reduced considerably. Thanks to the all-around insulation the radiation loss is further minimised.

KWB Comfort 3 control comprising: Control unit incl. buffer storage tank and domestic hot water management, expandable with external heating circuit control (on a C4 basis)

Connection of the KWB Powerfire to a Comfort 4 heating management network:
The KWB Powerfire is linked to the Comfort 4 heating management module autonomous through a Modbus connection. The Comfort 4 heating management module controls the entire heat distribution and storage and requests the Powerfire boiler in a performance-modulating manner. The Comfort 3 control of the boiler controls the entire combustion, return flow temperature boost and the boiler circuit pump.

Optionally available as an extra-charge item:
Grate ash extraction in 120 l or 240 l ash bin, exhaust gas recirculation (mandatory for fuels with a moisture content < 20%), cellular wheel sluices with long-pieced fuel, external E-Filter, heat exchanger ash removal in a convenient design, forward flow temperature 95°

KWB DUST FILTER E^{PLUS} WITH AUTOMATIC CLEANING



If required, an external dust filter can be implemented. It is suitable for wood-chip and pellet heating systems and designed for the required boiler type (for wood chips with up to 35% moisture content). It is based on an electrostatic filter principle with separation efficiencies of up to 90%. Boiler and filter control communicate within the meaning of an operationally safe, fully automatic cleaning. The cleaning and ash tray emptying occurs from the front.
Optionally available: Double shutter bypass, automatic ash removal from the filter

WOOD CHIP OPERATION FOR KWB POWERFIRE

Wood chips of quality category A1 according to EN ISO 17225-4
The statutory dust emission limit values for Germany pursuant to the 1st BImSchV Level 2, and the national dust emission values of the Swiss LRV are met without additional technical measures.

Wood chips of quality categories A2 and B1 according to EN ISO 17225-4
In order to comply with the 1st BImSchV Level 2 in Germany and to meet Swiss cantonal requirements and depending on the aerosol-forming ash content, additional technical measures may be necessary in order to comply with statutory dust emission limit values. In such a case, it will be necessary to coordinate with KWB.

KWB'S MODULAR AND EASILY TRANSPORTABLE SYSTEM

The KWB Powerfire wood chip & pellet heating system can be dismantled into several modules, which allows it to be placed in the heating room and also to be easily installed even in tight spaces.

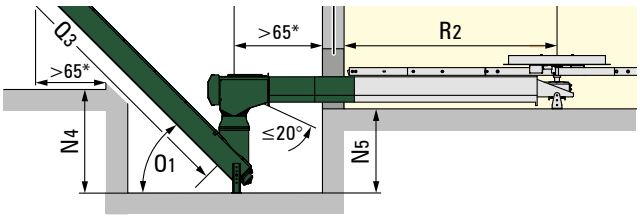
CONVEYOR SYSTEM L

FLOOR-LEVEL STIRRER

CAN BE REALIZED FOR

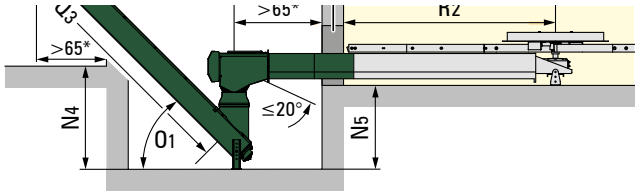
wood chip and pellet operation

DRAWING

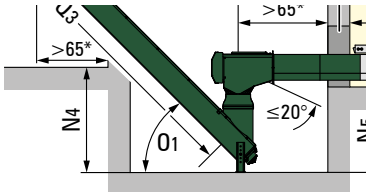


Plan the depression very carefully and ensure precise execution during construction! Deviating natural dimensions and planning errors can cause massive problems and additional costs when installing the fuel extractor!

PLAN VIEW

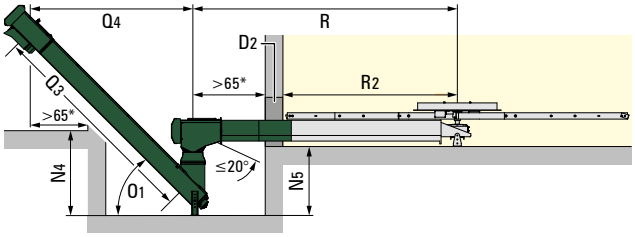


Cutouts for the floor
(if the conveyor is installed in the floor.)

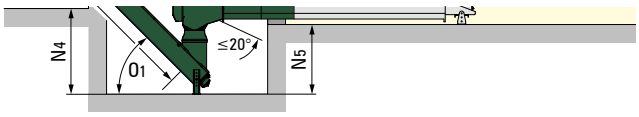


ASCENDING SCREW WITH DOWNWARD TRANSFER FOR 240 / 300 kW

DRAWING



PLAN VIEW



* Plan an additional ≥ 25 cm distance to the rear wall if the fuel extractor will be installed diagonally (NOT flush with the system)! You should also include a sufficient number of openings and free spaces in the walls and ceilings – otherwise it will not be possible to move the system into the room, to install and maintain it!

LEGEND

C1	It must be possible to dismantle the sloping or false floor for up to 30 cm around the channel!
D2	Wall duct 100 x 80 cm: Seal after installation and acoustically decouple channel
E1	Pivot range (connection to the fire shutter)
F1	Free rotation
N3	Trough depth: ≥ 93 cm
N4	0°: ≤ 82 cm, 40°: ≤ 720 cm
N5	Trough depth: 87 cm (depending on the incline)
O1	Incline: 0° – ≤ 40°
P1	Diameter of the stirrer cover plate: Spring-blade rotary stirrer: ∅ 85 cm, articulated rotary blade stirrer: Ø 110 cm. Diameter of the stirrer: Spring-blade rotary stirrer: Ø 2.5 m, 3.0 m, 3.5 m, 4.0 m (4.5 m only for pellets), articulated rotary blade stirrer: Ø 4.0 m, 4.5 m, 5.0 m, 5.5 m

Q3	Screw length (from the connection point: head section drop shaft to fire shutter): 0°-20°: 0–8 m (0.75 kW motor) 20°–40°: 0-5 m (0.75 kW motor) 0°-20°: 8-12 m (1.5 kW motor) 20°–40°: 5– ≤ 12 m (1.5 kW motor) Limitation: You must use the same motor for the conveyor screw and ascending screw! Use 1.5 kW motor protection control (Art. no. 13-1000655) for the 1.5 kW motor!
Q4	≤ 949 cm (for screw length 12 m, 40°)
R	Screw length: 0–6 m (0.75 kW motor) 6– ≤ 10 m (1.5 kW motor)
R2	Screw length open

FUEL POURING HEIGHTS

For the use of the spring-blade rotary stirrer or articulated rotary blade stirrer, the maximum pouring height for pellet operation is 3 m. The pouring height for wood chip operation is a stirrer diameter of 1.5. Greater pouring heights only upon request! Please comply with the EN ISO 20023 standard when designing the pellet storage.

All dimensions in cm

CONVEYOR SYSTEM M

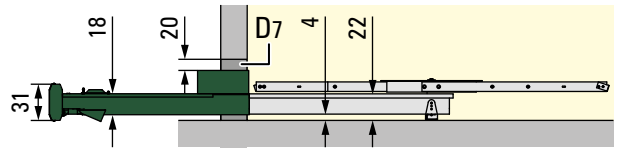
CAN ONLY BE REALIZED FOR

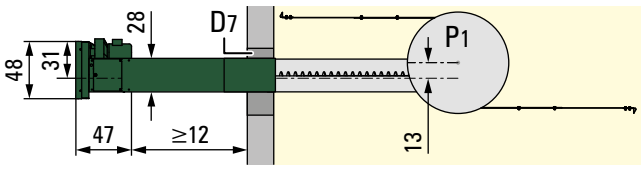
Pellet operation

FLOOR-LEVEL STIRRER

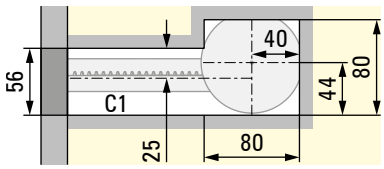
The floor-level stirrer is available in two different designs depending on requirements: As a spring-blade rotary stirrer (stirrer diameter: from 2.5 to 4.0 m) and as articulated rotary-blade stirrer (from 4.0 to 5.5 m stirrer diameter).

STANDARD CHANNEL



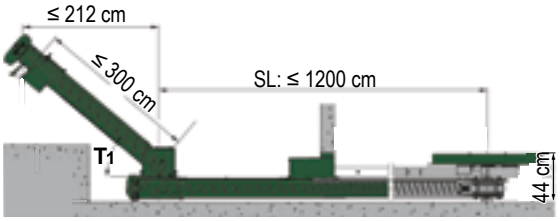


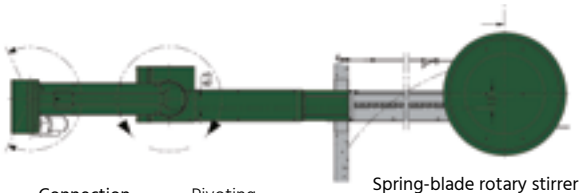
Cutouts for the floor
(if the conveyor is installed in the floor.)



ASCENDING SCREW WITH UPWARD TRANSFER

wood chips: up to 100 kW boiler output possible; pellets: up to 300 kW boiler output possible



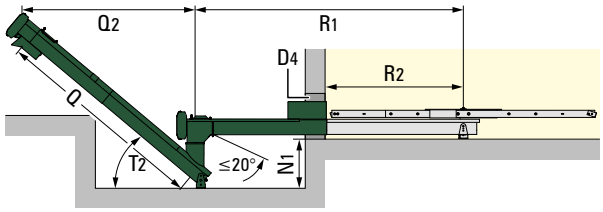


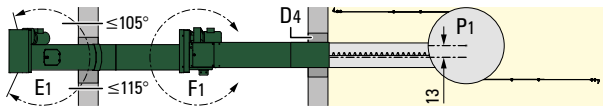
Connection max. angle 220°

Pivoting 360°

Spring-blade rotary stirrer – Ø 85
Articulated rotary blade stirrer – Ø 110

ASCENDING SCREW WITH DOWNWARD TRANSFER





LEGEND

D4	Wall duct 60 x 60 cm: Seal after installation; the channel must be acoustically decoupled (Ø 2 cm acoustic insulation)
N1	Height difference: 0°–25°: ≥ 45 cm, 26° – 35°: ≥ 50 cm, 36° – 45°: ≥ 60 cm
SL	Screw length conveyor channel maximally 12 m (install horizontally!)
T1	Angle when pellets are used 35°–45°
T2	Angle when pellets are used: 0°–40° (45 ° with channel insert)
P1	Diameter of the stirrer cover plate: Spring-blade rotary stirrer: Ø 85 cm, articulated rotary blade stirrer: Ø 110 cm. Diameter of the stirrer: Spring-blade rotary stirrer: Ø 2.5 m, 3.0 m, 3.5 m, 4.0 m (4.5 m only for pellets), articulated rotary blade stirrer: Ø 4.0 m, 4.5 m, 5.0 m, 5.5 m

E1	Swing range ascending screw; max. angle to the KWB Multifire 220°
F1	Free rotation
Q	Screw length (from connection point head section drop shaft to the fire shutter): Up to 15°: ≤ 12 m; 15° – 40°: (45 ° with channel insert): ≤ 6 m
Q2	45°: ≤ 4.39 m, 15°: ≤ 11.60 m
R1	Screw length: Up to 15°: ≤ 12 m; 15° – 25°: ≤ 6 m
R2	Screw length open

All dimensions in cm I Width x Height

KWB

TECHNOLOGY & PLANNING 2022

KWB Powerfire 240 / 300 kW

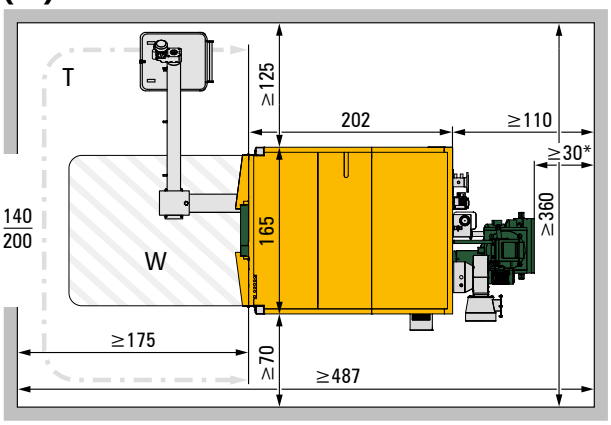
Wood chip & pellet 240 / 300 kW

KWB POWERFIRE 240 / 300 KW

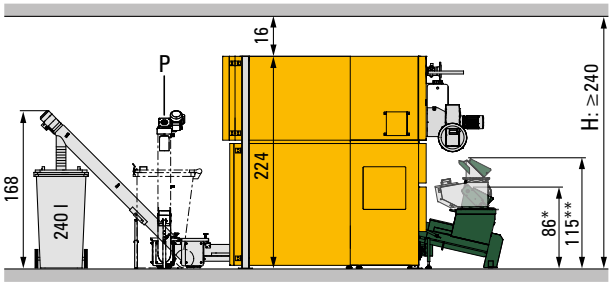
INSTALLATION DIMENSIONS

A minimum unobstructed door width of 1.40 m must be provided to be able to move the system into the room. The unobstructed door height must be 2 m. The unobstructed dimensions for the system to fit in case of a ceiling duct are 1.40 x 2.2 m. For a prompt and smooth installation, it is necessary to notify KWB of the unobstructed door widths in the planning stage. Due to the weight of the ash container, we recommend a lifting device for stair access to the boiler room.

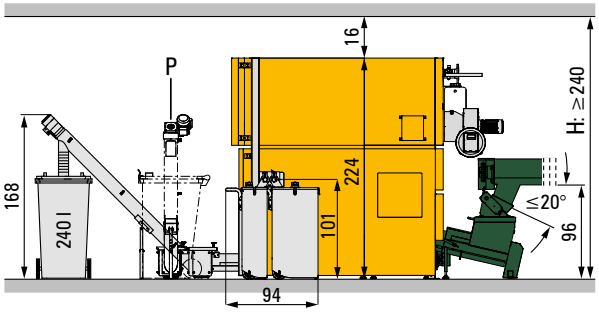
EXTERNAL ASH CONTAINER 240 L ON THE LEFT (A1)



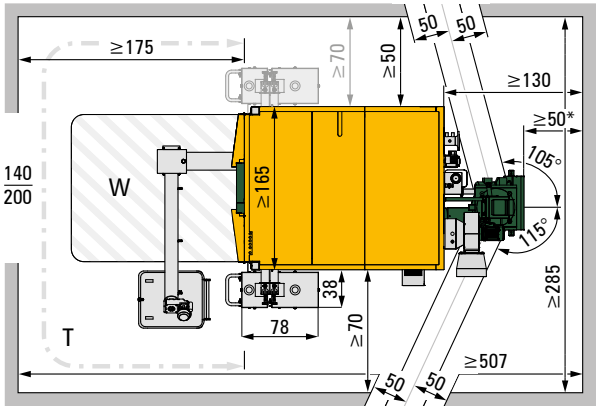
EXTERNAL ASH CONTAINER 240 L ON THE LEFT (A2)



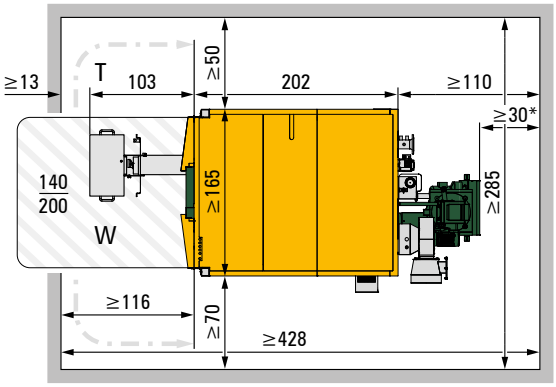
EXTERNAL ASH CONTAINER 240 L ON THE RIGHT AND HEAT EXCHANGER ASH REMOVAL IN A CONVENIENT DESIGN (A3)



Wall duct for swing range of the conveyor system



EXTERNAL, SMALL ASH CONTAINER 66 L FRONT (A4)



LEGEND

H	Room height: For room heights below 280 cm, the customer must provide suitable lifting tools (electrical forklift, wheel front loader, etc.).
P	Alternative position
T	Door area: Valid for all models. The door must be in the drawn-in area – deviations require consultation with KWB! If the door is not directly in front of the system, the space requirement in front of the system increases to at least ≥ 225 cm.
W	Maintenance area

MINIMUM ROOM DIMENSIONS

Minimum room dimensions of the built-in ash container variants (cm)

	Ash-container position				
	left	**front**	**right**	**front (66 l)**	**any**
Version:	A1	A2	A3	A4	
Room width (B)	360	285	285	285	370
Room length (L)	487	537	507	428	560
Room height (H)	240	240	240	240	240

* If the conveyor system is installed inclined (swing range: -105° to +115°), additional clearance of ≥20 cm to the rear wall must be planned! You must also take the gear unit and motor positions into account.

REI90 according to ÖNORM EN 13501, EI2 30-C according to ÖNORM EN 13501, E30 according to ÖNORM EN 13501

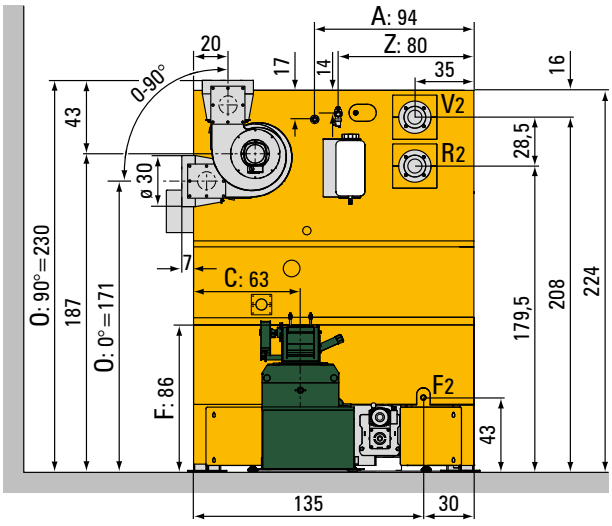
All distances stated are minimum dimensions and apply only to the installation variants shown! With regard to space requirements, please also note the exhaust gas pipe routing and chimney position – the space requirements for reducers and elbows may influence the minimum distances! It must be possible to dismantle the entire casing at any time.

All dimensions in cm

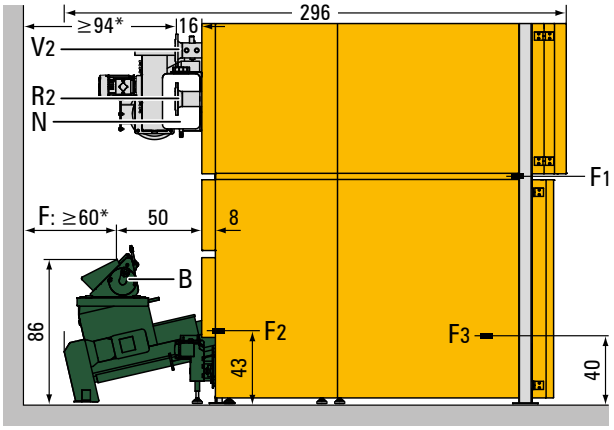
KWB POWERFIRE 240 / 300 kW

CONNECTING DIMENSIONS

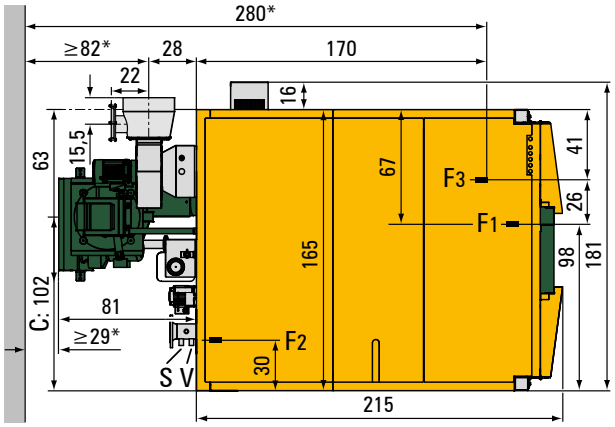
DRAWING

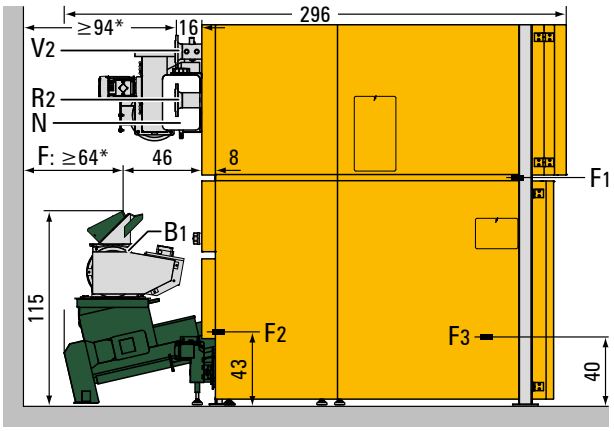


SIDE VIEW



PLAN VIEW





LEGEND

A	Outlet for thermal safety valve ¾" (female thread)
B	Fire shutter
B1	Cellular wheel sluice (alternative to the fire shutter)
C	Conveyor system axle
EF	E-Filter
F	Conveyor system connection
F1	Boiler emptying point ¾" (female thread) - area of heat exchanger (front over the burner chamber door)
F2	Boiler emptying point ¾" (female thread) – flame pipe area

F3	Boiler filling and emptying point ¾" (female thread) – area of the burner housing (in front under the combustion chamber door)
N	Emergency fire-extinguishing equipment
O	Exhaust gas pipe
R2	Return flow DN 80, PN 6
S	Sensor for safety boiler temperature limit
V	Forward flow temperature sensor
V2	Forward flow DN 80, PN 6
Z	Inlet for thermal safety valve ¾" (female thread)

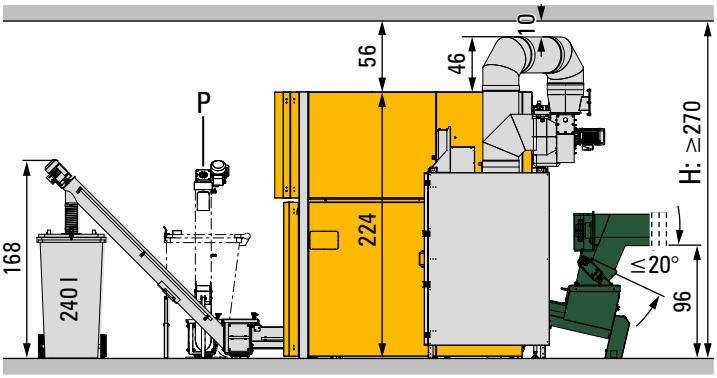
* Conveyor system connection: Distance is valid if the conveyor system is installed horizontally and vertically with 0°. If the conveyor system is at an angle (-105° to +115° or -105° to +90° with E-Filter) and/or inclined (≤25°), the distance to the brickwork behind the installation must be increased by ≥20 cm.

All illustrations are shown without the external ash removal system. All distances stated are minimum dimensions and apply only to the installation variants shown! With regard to space requirements, please also note the exhaust gas pipe routing and chimney position – the space requirements for reducers and elbows may influence the minimum distances! It must be possible to dismantle the entire casing at any time.

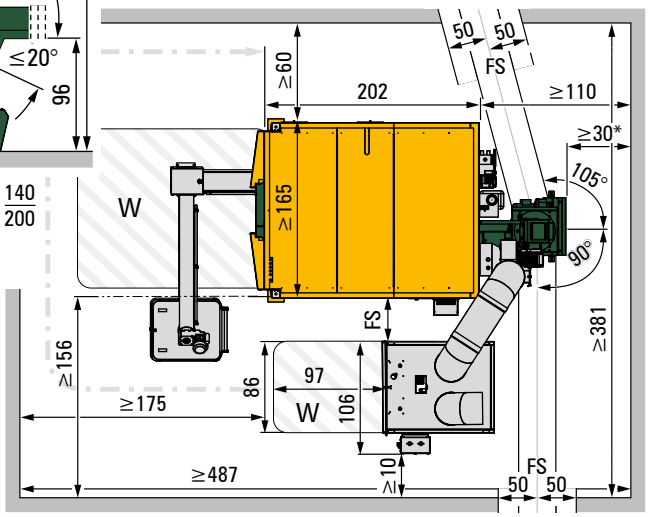
All dimensions in cm

KWB POWERFIRE 240 / 300 KW WITH KWB DUST FILTER E^{PLUS}

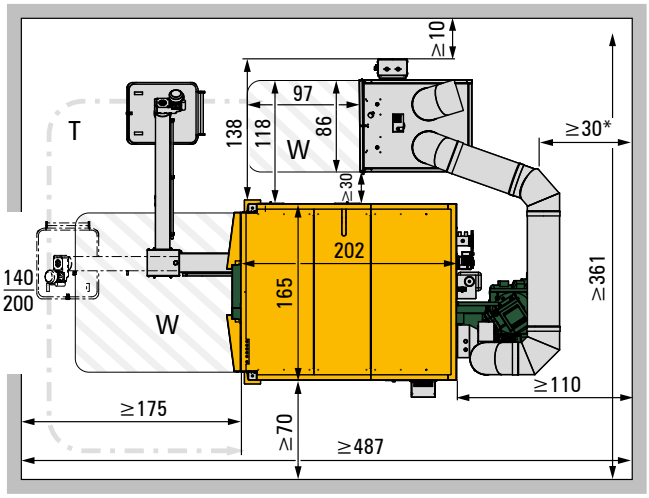
INSTALLATION DIMENSIONS



STANDARD MODEL WITH KWB DUST FILTER E^{PLUS} ON THE RIGHT



STANDARD MODEL WITH KWB DUST FILTER E^{PLUS} ON THE LEFT



LEGEND

CS	It is recommended to always place the conveyor system on the E-Filter side to keep open the access to the maintenance areas. In this case, the recommended distance between E-Filter and boiler is ≥ 40 cm instead of ≥ 60 cm.
H	If a bypass attachment is planned, the min. room height increases by ≥ 40 cm.

P	Alternative position
T	Door area: Valid for all models. The door must be in the drawn-in area – deviations require consultation with KWB! If the door is not directly in front of the system, the space requirement in front of the system increases to at least ≥225 cm.
W	Maintenance area

* If the conveyor system is installed diagonally, the planning must include an additional clearance of ≥20 cm to the rear wall! You must also take the gear unit and motor positions into account.

REI90 according to ÖNORM EN 13501, EI2 30-C according to ÖNORM EN 13501, E30 according to ÖNORM EN 13501

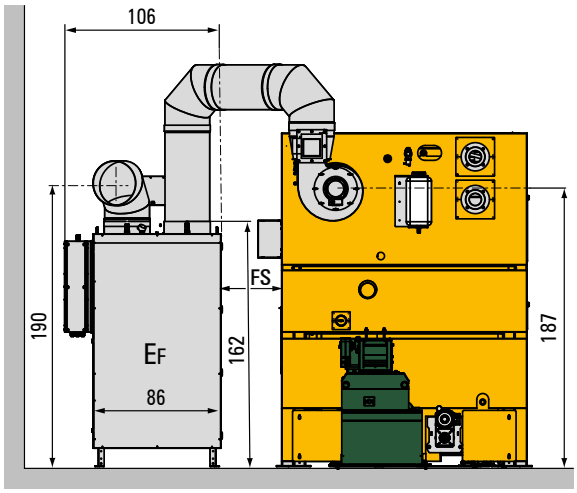
All distances stated are minimum dimensions and apply only to the installation variants shown! With regard to space requirements, please also note the exhaust gas pipe routing and chimney position – the space requirements for reducers and elbows may influence the minimum distances! It must be possible to dismantle the entire casing at any time. The minimal room dimensions for the ash containers as displayed in the illustration. Individual planning is possible after consultation with KWB.

All dimensions in cm

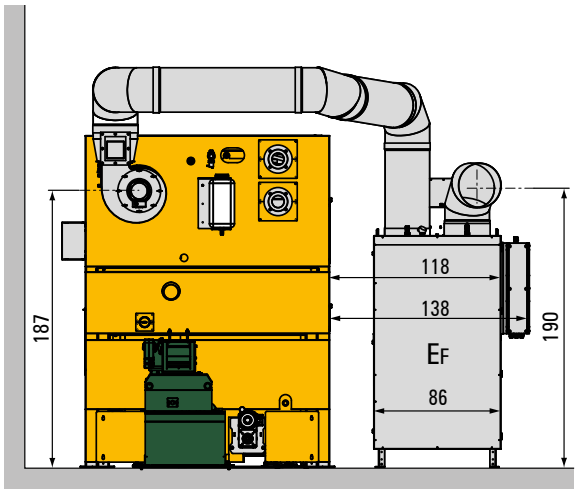
KWB POWERFIRE 240 / 300 KW WITH DUST FILTER E^{PLUS}

CONNECTING DIMENSIONS WITH DUST FILTER E^{PLUS}

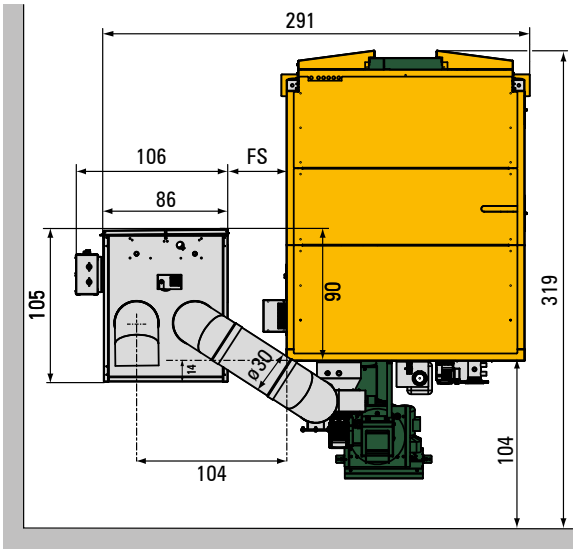
STANDARD MODEL WITH KWB DUST FILTER E^{PLUS} ON THE RIGHT



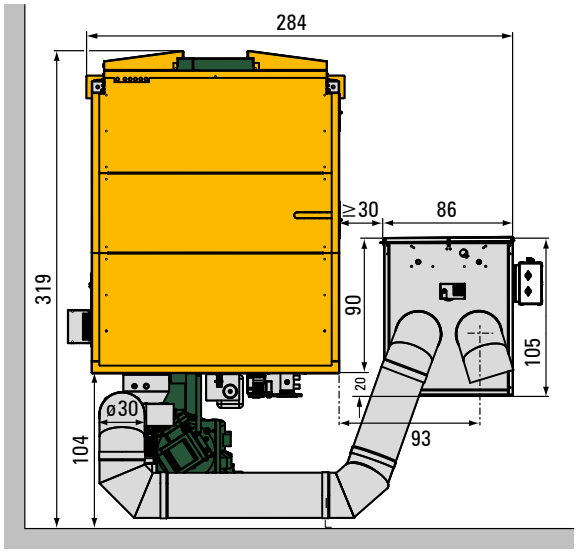
STANDARD MODEL WITH KWB DUST FILTER E^{PLUS} ON THE LEFT



STANDARD MODEL WITH KWB DUST FILTER E^{PLUS} ON THE RIGHT



STANDARD MODEL WITH KWB DUST FILTER E^{PLUS} ON THE LEFT



All dimensions in cm

KWB POWERFIRE 240 / 300 kW

TECHNICAL DATA

TDS	Unit	TDS 240		TDS 300	
		Pellets	Wood Chips	Pellets	Wood Chips
Rated power	kW	245	245	300	300
Partial load	kW	73,5	73,5	73,5	73,5
Boiler efficiency at rated power	%	93,8	92,7	94,4	92,9
Boiler efficiency at partial load	%	93,4	91,8	93,4	91,8
Fuel thermal output at rated power	kW	261	264	318	323
Fuel thermal output at partial load	kW	79	80	79	80
Boiler class according to EN 303-5:2012 + KWB dust filter	–	5	5 (4)[8]	5	5 (4)[8]
Water side					
Water content	l	610	610	610	610
Water connection diameter flow/return (flange)	–	DN 80 PN 6	DN 80 PN 6	DN 80 PN 6	DN 80 PN 6
Water connection for thermal safety valve	Inch	3/4	3/4	3/4	3/4
Thermal safety valve: temperature [1]	°C	10	10	10	10
Thermal safety valve: pressure [1]	bar	2	2	2	2
Boiler filling and emptying at the burner (internal thread)	Inch	3/4	3/4	3/4	3/4
Boiler emptying at the flame pipe (internal thread)	Inch	3/4	3/4	3/4	3/4
Boiler emptying at the heat exchanger (internal thread)	Inch	3/4	3/4	3/4	3/4
Water-side resistance at 20 K [2]	mbar	22	22	32	32
Water-side resistance at 10 K [2]	mbar	88	88	129	129
Boiler inlet temperature ≤w30	°C	55–70	55–70	55–70	55–70
Boiler inlet temperature >w30	°C	–	65–70	–	65–70
Working temperature/operating temperature	°C	90	90	90	90
Maximum permitted temperature	°C	110	110	110	110
Maximum operating pressure	bar	4	4	4	4
Flue-gas side (data for chimney design)					
Combustion chamber temperature	°C	900–1200	900–1000	900–1200	900–1000
Combustion chamber pressure	mbar	-0,2.. -0,3	-0,2.. -0,3	-0,2.. -0,3	-0,2.. -0,3
Delivery pressure at rated power / partial load	mbar	0,10 0,06	0,10 0,06	0,10 0,06	0,10 0,06
Induced draught required	–	✓	✓	✓	✓
Exhaust-gas temperature at rated power / partial load	°C	160 80	160 80	160 80	160 80
Exhaust-gas connection height (boiler side)	mm	–	–	–	–
Exhaust-gas connection height: variant up	mm	1.970	1.970	1.970	1.970
Exhaust-gas connection height: variant right (pipe centre, 0–90° pivoting) [7]	mm	1380	1380	1380	1380
Exhaust-gas connection diameter	mm	300	300	300	300
Incline of the exhaust-gas pipe	°	≥ 3	≥ 3	≥ 3	≥ 3
Recommended chimney diameter	mm	350	350	350	350
Chimney design: moisture-resistant	–	✓	✓	✓	✓
Maximum water content	–	M10	M30/M45	M10	M30/M45
Exhaust-gas mass flow at rated power [3]	kg/s	0	0,176 0,192	0	0,215 0,234
Exhaust-gas mass flow at partial load [3]	kg/s	0,048	0,055 0,060	0,048	0,055 0,060
Exhaust-gas volume at rated power [3]	Nm^3_f/h	446	499 555	538	607 674
Exhaust-gas volume at partial load [3]	Nm^3_f/h	133	155 173	133	155 173
Electrical system					
Connection: 5-pin	–	400 VAC 50 Hz 16 A	400 VAC 50 Hz 16 A	400 VAC 50 Hz 16 A	400 VAC 50 Hz 16 A
Unit switch and main switch: present	–	✓	✓	✓	✓
Connected power boiler	W	3600	3600	3600	3600
Connected power total incl. fuel extractor	W	5100	5100	5100	5100
Auxiliary power consumption in trial operation at rated power [5]	W_{el}/MW	1,68	2,16	1,44	1,93
Auxiliary power consumption in trial operation at partial load [5]	W_{el}/MW	4,10	5,39	4,10	5,39
Auxiliary power consumption at rated power [5]	W	394	516	405	537
Auxiliary power consumption at partial load [5]	W	295	388	295	388
Standby power	W	29	29	29	29

TDS	Unit	TDS 240		TDS 300	
		Pellets	Wood Chips	Pellets	Wood Chips
Ash					
Ash-container volume – fly-ash	l	20+44	20+44	20+44	20+44
Ash-container volume – grate-ash	l	66	66	66	66
Ash container, grate ash, full	kg	75	75	75	75
Ash-container volume, comfort version (optional)	l	66+125	66+125	66+125	66+125
Ash-removal system	–	✓	✓	✓	✓
Ash-container volume (optional)	l	240	240	240	240
Weight of ash container, full	kg	~265	~265	~265	~265
Weights					
Heat exchanger incl. cleaning grille	kg	900	900	900	900
Burner housing incl. chamotte	kg	866	866	866	866
Flame pipe incl. chamotte	kg	965	965	965	965
Stoker trough	kg	137	137	137	137
Total weight (empty)	kg	2868	2868	2868	2868
Assembly case	kg	288	288	288	288
Weight of transport packaging (in each case)	kg	25	25	25	25
Noise emissions [6]					
Normal operating noise at rated power	dB(A)	63	63	63	63
Operating peaks at rated power	dB(A)	65	65	65	65
Test report					
Test report no.	–	14-UW/Wels-EX-321/5		14-UW/Wels-EX-321/6	

[1] In acc. with EN 303-5; higher temperatur respectively lower minimum admission pressure available on request

[2] The water-side restistance is specified and determined in each case on the boiler interface (flange RF/FF)

[3] with reference to damp flue gas

[4] Wood chips: Provision of the rated power to M30, above there is a reduction in power dissipation.

[5] Measured values for the additional power requirement are understood to include KWB stirrer extractors incl. standard trough (NOT with sliding floor).

[6] The noise measurements were executed in normal operation with wood chips. Leq(A) at 1 m distance (ISO 11202:2010)

[7] Values only for standard-boiler-configuration. NOT for cellular wheel sluice, cyclone or E-Filter (own dimensioned drawings)

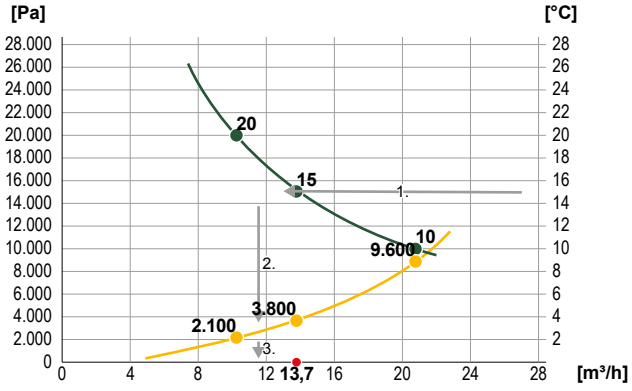
[8] without KWB dust filter boiler class 4

mg/Nm³ ... Milligram per standard cubic meter (Nm³... under 1013 hectopascal at 0 °C)

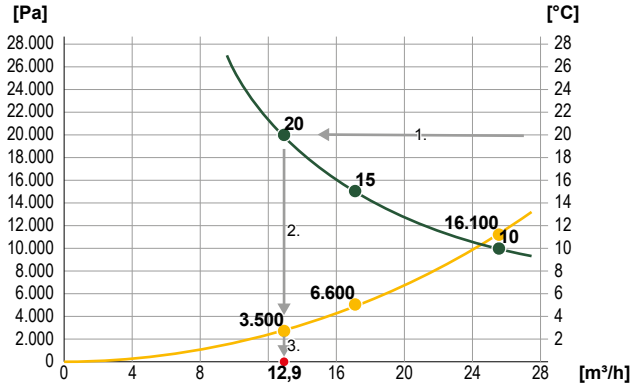
WATER-SIDE RESISTANCE

The return flow boost groups for KWB Powerfire 150 can be found on page K|10.

TDS 240



TDS 300



LEGEND

1.	Read from right to left to the intersection of the spread
2.	Read downward to the intersection of the resistance
3.	Read downward to the volume flow

•	HW-side resistance
—	HW-side resistance
•	HW-side spread
—	HW-side spread

RECOMMENDED PARAMETERS FOR BOILER CIRCUIT PUMPS, CONTROL VALVES OR RETURN FLOW MIXERS

BOILER PUMPS - PARAMETERS		CONTROL VALVE OR RETURN FLOW MIXER
BOILER PERFORMANCE [KW]	MIN. Ø FORWARD, RETURN FLOW	KVS [M3/H]
240	DN80	63
300	DN80	63

NOTES

KWB CONTROL SYSTEM

Control

KWB COMFORT 4

CONTROL SYSTEM

The KWB control platform C4 offers a user-friendly control of the KWB biomass boilers with a dial and a touch display. Various components can be integrated both internally and externally.

Standard configuration of a KWB biomass heating system with C4 control system
- Buffer storage tank and domestic hot water management,
- Network interface for connection to the Comfort Online
- ModBus interface

Options integrated in the boiler
- Heating management module for 2 heating circuits. This permits the additional implementation of a:
  - Second boiler activation
  - Solar system integration (solar system license required for activation)

External options for wall mounting
- KWB Comfort 4 heating management module for 2 heating circuits. This permits the additional implementation of a:
  - Second boiler activation
  - Solar system integration
- KWB Comfort 4 heating management module Exclusive including integrated control unit for 2 heating circuits. This permits the additional implementation of a:
  - Second boiler activation
  - Solar system integration
  - Boiler master-and-slave circuit for up to 8 KWB biomass heating systems plus external heat generator
  - Autonomous control (master control in the heat network, Autonomous license required for activation)

Additional equipment:

• Analogous remote control • Digital remote control • Safety box • Data cable • Switch • WLAN amplifier and distributor • SMS module • M-Bus module • PowerLan adapter

The KWB Basic control unit

The KWB Basic control unit is equipped with an integrated room temperature sensor, a dial and a program key with two-colour LED displays. A hoat water quick charge is possible at the push of a button. An additional highlight is the flexible colour design of the cover which can be customized to match your living room colours.

KWB Exclusive control unit

In addition to the tried and tested dial, the KWB Exclusive control unit is equipped with a 4.3 inch colour touch screen and permits dual operation options. Software updates can be easily installed using the SD card. It is also possible to connect the KWB heating systems to a local area network (LAN) and the internet via the Ethernet interface.

The boiler types KWB Easyfire 1 and KWB Powerfire have C3 control platforms. Use of the services is possible after retrofitting (at a surcharge).

KWB COMFORT ONLINE

ONLINE PLATFORM

The online platform KWB Comfort Online enables a simple and comfortable remote control of the KWB heating system. The Comfort Online platform lets you monitor and control the heating system via smartphone, tablet or laptop/PC from anywhere in the world. For this, you only need to register on www.comfort-online.com and must have an internet connection to the heating system (LAN cable with RJ45 plug).

Options for remote monitoring and control

- Comfort Online: Every C4 control unit has a network interface
- KWB function package Basic: Free-of-charge use of the Comfort Online platform per boiler, notifications via email
- KWB Connect: Forwarding of boiler notifications via an additional email and/or SMS
- KWB function package Professional: Paid portal for the control of several boilers
- KWB function package Expert: Paid portal for the control of several boilers with additional user administration
- KWB Data: Paid booking of data packages for the recording of data for each boiler

COMPATIBLE WITH
KWB Easyfire 1 with Comfort 3 (as of year of manufacture 2015)
KWB Easyfire type EF2 with Comfort 3 and Comfort 4
KWB Classicfire type CF1 with Comfort 4
KWB Classicfire type CF2 with Comfort 4
KWB Combifire type CF2 with Comfort 4
KWB Pelletfire^{Plus} type MF2 with Comfort 3 and Comfort 4
KWB Multifire type MF2 with Comfort 3 and Comfort 4
KWB Powerfire type TDS with Comfort 3 (as of year of manufacture 2008*)
KWB Multifire type USV with Comfort 3 (as of year manufacture 2008*)

* The control unit must be replaced in boilers with manufacturing year older than 2008.

The prices and article texts for the KWB licenses can be found on page G | 6.

KWB COMFORT C4 CONTROL SYSTEM

GENERAL CONTROL EQUIPMENT

The standard for all boiler control systems is the KWB Comfort 4 control platform. Its predecessor, KWB Comfort 3, is still actively used with the boiler type KWB Powerfire. By installing a network card (at a surcharge), the Comfort 4 standard can also be used with this boiler type. For multi-boiler systems on a Comfort 3 basis, this is additionally achieved via the KWB Exclusive heating management module. Your KWB contact partner will be happy to provide you with more details.

KWB COMFORT C3 CONTROL SYSTEM

GENERAL CONTROL EQUIPMENT

As the predecessor of the KWB Comfort 4, the KWB Comfort 3 version is still actively used with the boiler type KWB Easyfire 1. The expansion of the control scope to these boiler types will be implemented still using the C3 technology. By installing a network card (at a surcharge), KWB Easyfire 1 can also be integrated in Comfort Online. Your KWB contact partner will be happy to provide you with more details.

PERFORMANCE DECLARATION OF THE KWB FUNCTION AND DATA PACKAGES

FUNCTION PACKAGES KWB COMFORT ONLINE

KWB function package "Basic" (package validity: unlimited)
- Multilingual
- Integrated online shop to expand functionalities
- Access to max. 1 heating system per user account, safety thanks to an SMS-based TAN system
- Status display for the connection between heating system and Comfort Online and the status display of the heating system
- Performance of control commands and change of operating parameters
- Diagram view per parameter for the past hour
- Display of current alarms and display of alarm history (only for Comfort 4)
- Email notifications in case of alarms
- Creation of a temporary support access option limited to 24 hours
- Creation and management of max. 3 data package access options for additional registered users

KWB function package "Connect" (package validity: unlimited)
- Alarm forwarding to up to 3 additional email addresses and as SMS to 1 additional mobile phone number

KWB function package "Professional" (package validity: unlimited)
- Contains all functions of the "Basic" function package
- Access to an unlimited number of heating systems and also to heating systems as support provider
- Clearly laid-out homepage for all heating systems if there is more than one heating system
- Selection of the authorisation levels user and expert level of the KWB control by entering a code
- Unlimited creation and management of access options for additional registered users
- Detailed change log of all heating system-related activities in Comfort Online

KWB function package "Expert" (package validity: unlimited)
- Contains all functions of the "Basic" and "Professional" function packages
- Selection of the authorisation level Service of the KWB control by entering a code
- Group administration, the user may combine max. 5 additional registered users in groups.

DATA PACKAGES KWB COMFORT ONLINE

The function packages "Professional" or "Expert" are required for the use of a data package.
Goal: Illustration of recorded operating data in diagrams
- A data package can only be used for one heating system, respectively
- The data recording and its display starts with the purchase of the data package and ends with the expiration of the package validity period
- Data package validity periods: 1 month, 3 months, 12 months, 24 months
- Data storage during the validity period of the package
  - For the respective previous week, data will be available at the smallest possible sampling rate
  - Mean values of 15-minute intervals are shown for data that are older than one week
- Maximally 1 subsequent package with the same validity period can be purchased before expiration of a data package
- The recorded data remain stored during the data package validity period, after expiration of the data package validity, they are deleted and will be irretrievably lost.

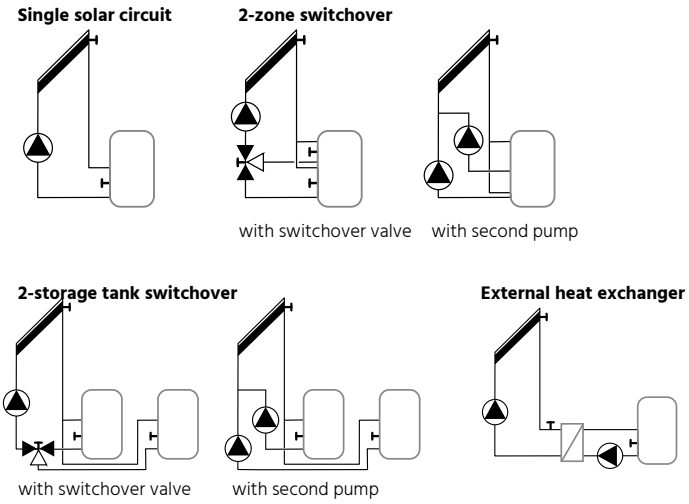
KWB COMFORT 4 SOLAR

COMPATIBLE WITH
KWB Comfort 4

The KWB Comfort 4 Solar requires a KWB heating management module with 2 heating circuits – it can be installed in the boiler (art. no. 13-2000387) or in the designer casing on the wall (art. no. 13-2000282 or 13-2000283). The solar control can here be used in addition to the functions available in the heating management module (control of 2 heating circuits, 1 DHWC, 1 buffer tank, 1 circulation pump, 1 secondary heating source). The KWB Comfort 4 Solar encompasses the most commonly used solar circuits which include:

- Single solar circuit (with buffer storage tank or DHWC)
- 2-zone switchover (with buffer storage tank)
- 2-storage tank switchover (with buffer storage tank or DHWC)
- External heat exchanger (with buffer storage tank or DHWC)

The KWB Comfort 4 Solar enables maximum use of the solar output and avoids unnecessary boiler starts thanks to its intelligent energy optimization mode.



BOILER MASTER-AND-SLAVE CIRCUIT

COMPATIBLE WITH
KWB Comfort 3
KWB Comfort 4

The KWB boiler master-and-slave circuits are used for systems with several boilers in order to control the order of utilization of the boilers to meet the heat requirements in a heat distribution system.

It is possible to operate a boiler cascade comprising between 2 and up to 8 boilers and additionally a peak-load boiler. The cascade may contain both boilers with Comfort 4 control as well as Comfort 3 control – also in mixed installations. Precondition is a central buffer storage tank with 5 temperature sensors.

The following circuit options are possible:

- Set master boiler: No switching of the master boiler occurs, the slave boilers are activated as needed.
- Switching the master boiler: The master boiler is switched depending on the operating hours
- Switching of the master boiler depending on the outside temperature

Boilers with Comfort 4 control and Powerfire boilers (with Comfort 3) are requested in a modulating manner via Modbus connection. Other boiler types with Comfort 3 and external boilers are requested via a switch contact. An additional heating management module is required if more than 2 boilers are integrated via a request contact. A KWB Comfort 4 Exclusive heating management module (art. no. 13-2000283). Additionally, a C3 network card (13-2000395) is required per KWB Powerfire.

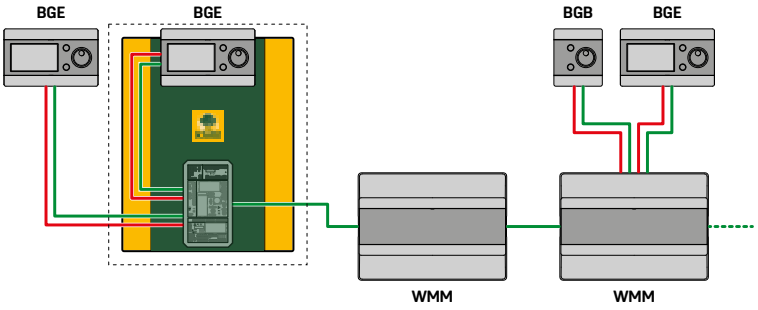
* Boilers of any heating system manufacturers

BUS SYSTEM

KWB COMFORT 4

The bus system connects the individual modules of the KWB Comfort 4 control platform and permits the construction of a large and flexibly expandable heating network.

- Maximum network reach: 800 m
- For bus networks up to max. 100 m: Bus cable CAT.5e, S/FTP; 4×2×AWG24, (for underground installation: CAT.5e, 4×2×0.5 mm^2)
- For bus networks beyond 100 m: Bus cable LAP Unitronic 2170345
- Laying in a separate conduit (not together with 230 / 400 V_{AC})!
- The arrangement/cabling of the bus devices can be in a line or ring shape; no star circuit (branch connections) possible.
- A max. of 2 control units can be connected per heating circuit module.
  - Either 2 Basic control units or 2 Exclusive control units or 1 Basic control unit and 1 Exclusive control unit



LEGEND

	KWB bus system
	Voltage supply 24 V_{DC}
BGB	Basic control unit
BGE	Exclusive control unit
WMM	Heating management module

COMPATIBLE WITH
KWB Comfort 3
KWB Comfort 4

KWB COMFORT SMS

Use your own mobile phone to query the actual operating statuses and actively control your heating system (e.g., holiday program, party operation).

KWB Comfort SMS is available for boilers with the KWB Comfort 4 and KWB Comfort 3 controls. In addition to switching the heating system on and off, the operator can query current operating modes or make adjustments to the heating circuits, DHWC, buffer tanks, etc. In addition, alarm messages are sent to the mobile phone. The sender receives confirmation of executed commands by text message (SMS). Creation of commands and queries is simplified by the use of SMS templates that can be transmitted by the control to the respective mobile phone. KWB Comfort SMS is available in German, English, Italian, French, Spanish, Dutch and Slovenian.

COMPATIBLE WITH
KWB Comfort 3
KWB Comfort 4

KWB COMFORT INTERCOM

KWB Comfort InterCom is a ModBus interface for data exchange between the Comfort 3 / Comfort 4 control and external systems, such as higher-level control or visualization systems, central building control systems, etc.

- The data is exchanged using the ModBus protocol via TCP connection. The KWB Comfort control system is able to read out many boiler operating status parameters as well as individual alarms. In addition, several parameters can be modified by the external system in the KWB Comfort control system

System prerequisites:

- External system ModBus-capable
- The customer must provide the cabling (Ethernet)
- for KWB Comfort 3: KWB network card
- for KWB Comfort 4: ModBus connection included

KWB Comfort SMS is compatible with the control version KWB Comfort 3/KWB Comfort 4. The SIM card is NOT part of KWB's scope of delivery – it must be supplied by the customer! Requests: Mobile phone reception by the desired network operator should be available; 230 VAC outlet required at the boiler.

ELECTRICAL CONNECTIONS FOR C4

KWB COMFORT 4

The entire system-internal wiring is done in the factory or is set up plug-ready by the installation personnel. On site, a licensed electrical installation company should only have to carry out the mains connection and the system-external cabling, and, in the case of a network, the bus cabling of the heating management modules and the remote control units. The connection to the mains supply is carried out via the boiler's main switch and must be installed in accordance with regulations according to EN 60204-1 (Electrical installation of machinery – general requirements). Fuse 13 A, cable min. 1.5 mm^2. In the event of an ambient air-independent operation, an outlet must be made available in the building for the CO detector. Required connections to be provided by the customer:

- Mains connection for Easyfire 2, Classicfire 2, Classicfire 1, Combifire
  - Single-phase connection 230 VAC, supply 3-pin (L/N/PE), surge arrester 13A, type B at the house distribution board
  - Overvoltage arrester (type 2) and fault-current circuit breaker at the house distribution board
- Mains connection for Multifire 2 and Pelletfire^{Plus}:
  - • When using a pellet conveyor system for small storage rooms (Pelletfire^{Plus}):
    - Single-phase connection 230 V_{AC}, supply 3-pin (L/N/PE), surge arrester 13 A
      - Overvoltage arrester type B at the house distribution board recommended.
  - When using a wood chip and pellet conveyor system for large-sized storage rooms (Pelletfire^{Plus} or Multifire 2) and when using a KWB conveyor system module:
    - CEE socket, supply 5-pin (L1/L2/L3/N/PE), with fault-current circuit breaker and overvoltage arrester at the house distribution board recommended as lightning protection, 400 V_{AC} line protection switch 13 A, overvoltage arrester type B.

Danger switch "emergency stop" (emergency stop according to TRVB H 118) (230 VAC, cable cross-section at least 1.5 mm^2)

OUTPUTS:

Floating contacts with max. 10 A switched current, 230 VAC

- Fault output
  - Sum fault warning contact (e.g. for remote warning through telephone dialling)
  - Fault 1: NC contact to indicate faults
- Multi-function output 1: (the following options are also possible as alternatives):
  - Fault 2: NO contact to indicate faults
  - Automatic boiler: To request an automatic secondary boiler
  - Request conveyor system (Easyfire/Combifire)
- Multi-function output 2: (the following options are exclusively available for the Easyfire, Multifire and Pelletfire^{Plus} and can be selected as alternatives, respectively): NO contact, configurable for
  - burner operating display
  - Boiler master-and-slave circuit to request a second boiler
  - Request conveyor system
- Smoke extractor (Easyfire/Combifire/Multifire/Pelletfire^{Plus})
  - NO contact for activating an external smoke extractor

INPUTS:

24 VDC supply to connect floating contacts

- External 1: To release the boiler
- External 2: Multi-function input (not for Classicfire 2)
  - Heating to setpoint 2: To request the boiler with the second boiler temperature setpoint temperature or as a request contact for external third-party controls (request duration should be at least 30 minutes).
  - For holiday remote control (does not work simultaneously with external boiler request)
- External 3: For release of the boiler when using a smoke extractor (Easyfire/Combifire)
- Emergency stop: Connection of the emergency stop switch (emergency stop) in accordance with applicable TRVB H 118 provisions

ELECTRICAL CONNECTIONS FOR C3

KWB COMFORT 3

The entire system-internal wiring is done in the factory or is set up plug-ready by the installation personnel.

On site, a licensed electrical installation company will only need to carry out the mains connection and the system-external cabling, and, in the case of a network, the bus cabling of the heating circuit expansion modules and the digital room control units (in accordance with regulations via the main switch of the boiler according to EN 60204-1, fuse 13 A, cable min. 1.5 mm^2).

Required connections to be provided by the customer:

- Mains connection:
  - Single-phase connection 230 V_{AC}, supply 3-pin (L/N/PE), for pellet conveyor systems for small storage rooms (Easyfire 1/Easyfire 1 Plus). • Line fuse 13 A, type C overvoltage arrester at the distribution board of the house recommended as lightning protection
  - For the KWB Powerfire: CEE socket 400 VAC 5-pin (L1/L2/L3/N/PE) 16 A with fault current protection switch all-current sensitive (type B) and overvoltage arrester type "2" at the distribution board of the house, magnetic field detection relay at the emergency-power supply. Potential equalisation is recommended.
- Danger switch "emergency stop" (230 VAC, cable cross section at least 1.5 mm^2)
- If using KWB Comfort SMS: 230 VAC socket

OUTPUTS

Floating contacts with max. 2 A switched current, 230 VAC

FAULT OUTPUT

- Fault 1: NC contact to indicate faults
- Fault 2: Release of the boiler circuit pump or, if no boiler circuit pump is available, the display is used as NO contact to indicate faults

Power output (the following options are also possible as alternatives): NO, configurable for

- Burner operation display
- Boiler master-and-slave circuit to request a second boiler
- Request fuel extractor for joint stirrer drive (Powerfire)
- Request of KWB EasyFlex (Easyfire 1/Easyfire 1 Plus)

SMOKE EXTRACTOR

- NO contact for activating an external smoke extractor, the boiler is enabled by the external control (external 1 floating contact)

INPUTS

24 V_{DC} supply to connect floating contacts

EXTERNAL 1:

- To switch on the boiler; if this input is not used, it must be short-circuited.

EXTERNAL 2: MULTIFUNCTION INPUT

- Heat to setpoint 2
- For holiday remote control (does not work simultaneously with external boiler request)

CASCADE SOLUTIONS

CASCADE SYSTEMS

KWB MULTI-BOILER SYSTEMS WITH BENEFITS THAT YOU WON'T FIND ANYWHERE ELSE

The heat supply based on climate-neutral fuels, such as wood chips or pellets, is increasingly implemented through multi-boiler systems. These cascade solutions have certain advantages for the operator:

- They are fail-safe in case of an incident.
- They permit safe planning of maintenance work.
- Exhaust gas lines can potentially be combined.
- Material-protecting distribution of the overall heat supply to the individual boilers by the KWB boiler master-and-slave circuit.
- Infinitely variable modulation in broad performance ranges with activation of an external boiler for peak load operation, if required.
- Advantages regarding space requirements and placement of the system in existing heating and storage rooms.
- High flexibility during the planning of newly to be built heating and storage rooms.
- Network interface to the online connection of the system via PC or mobile phone/tablet.
- The KWB boiler master-and-slave circuit can control up to 8 KWB biomass heating systems in one system in a modulating manner. Theoretically, this allows an output of up to 2.4 MW. In addition, an external heat generator, e.g. for covering peak loads, can be activated.
- Heating circuits in the heat network can be networked via bus cables and controlled using external heating management modules.

A GOOD HEATING SYSTEM ONLY DELIVERS AS MUCH PERFORMANCE AS REQUIRED

KWB multi-boiler systems function in a modulating manner, are fail-safe and efficient.

Perfectly modulated

Perfect modulating and buffer management for efficient and material-saving operations.

Up to 8 KWB boilers plus one external boiler.

KWB's modular and easily transportable system

Careful transportation of individual boiler components into the basement.

- Low weight of individual components
- Small dimensions
- Door width for Easyfire 70 cm
- Door width for Pelletfire 80 cm

Compact design

- Flexible use of the planned heating room space
- Various planning options
- Optimal room utilization during renovation
- Container versions F90/T30 are also possible

PROPOSED CONFIGURATION

COMBINATION OPTIONS

All KWB pellet heating system from 8 to 300 kW are suitable for the cascade solution in screw operation.

For this, it is possible to implement the various fuel extraction options in pellet or wood chip operations:
- Each boiler has its own fuel extraction
- A large storage for every 2 boilers

All KWB pellet heating systems from 8 to 135 kW are suitable for the cascade solution in suction operation.

For this, it is possible to implement the various fuel extraction options in pellet operations:
- Each boiler has its own fuel extraction
- A large storage for every 2 boilers with joint / separate fuel extraction
- Several boilers with several storages, rooms or fabric tanks, implementation with a suction switch unit

All combinations can, as a rule, be integrated into the planning of existing buildings or buildings that are to be newly built. Alternatively, an implementation with a reinforced concrete container is always possible.

BOILER MASTER-AND-SLAVE CIRCUIT

COMPATIBLE WITH
KWB Comfort 3
KWB Comfort 4

The KWB boiler master-and-slave circuits are used for systems with several boilers in order to control the order of utilization of the boilers to meet the heat requirements in a heat distribution system.

It is possible to operate a boiler cascade comprising between 2 and up to 8 boilers and additionally a peak-load boiler. The cascade may contain both boilers with Comfort 4 control as well as Comfort 3 control – also in mixed installations. Precondition is a central buffer storage tank with 5 temperature sensors.

Boilers with Comfort 4 control and Powerfire boilers (with Comfort 3) are requested in a modulating manner via Modbus connection. External boilers are requested via a switch contact.

* Boilers of any heating system manufacturers

KWB AFTER-SALES SERVICES

IN CASCADE OPERATIONS

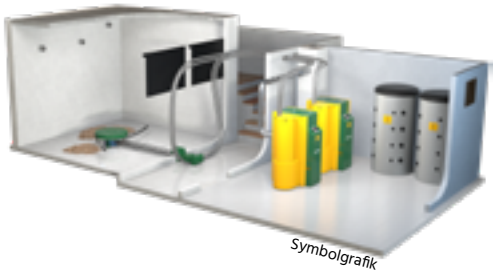
- ✓ Full maintenance contracts with a term of 10 years
- ✓ Online monitoring – system care provided by KWB
- ✓ Ash removal and heating room inspection
- ✓ Certified ash disposal
- ✓ Storage room monitoring
- ✓ System optimisation

OVERVIEW OF PRICES FOR CASCADE SYSTEMS

The prices listed below are pure list price aggregations, only referring to boiler and control system. These configurations cannot be ordered as a package and must be individually configured together with the respective fuel extraction.

KWB EASYFIRE PELLET HEATING SYSTEM

Scope of delivery: Boiler prepared for connection to the selected fuel extraction, incl. wheelable ash box, return flow boost with PWM pump, balancing valve, KWB Comfort 4 control system with Comfort Online interface, boiler master-and-slave control with safety box, control of buffer and DHW management and 2 heating circuits.


Symbolgrafik

Additional cascade solutions with up to 8 KWB boilers in pellet operation + external boiler upon request.

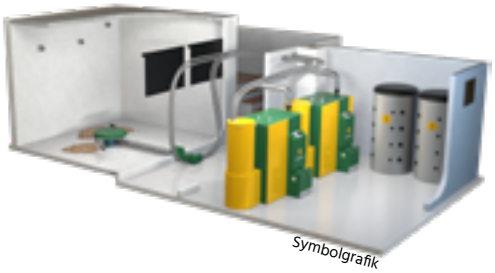
OPTION: PARTIALLY AUTOMATED CASCADE – LOG WOOD/PELLETS

Scope of delivery: 2 pellet boiler units and 1 log wood unit, pellet boiler prepared for connection to the suction-fuel extraction, incl. wheelable ash box, respectively, return flow boost, balancing valve, KWB Comfort 4 control system with Comfort Online interface, boiler master-and-slave control with safety box and required licenses, control of buffer and DHW management and 2 heating circuits.

OVERVIEW OF PRICES FOR CASCADE SYSTEMS

PELLET HEATING SYSTEM KWB PELLETFIRE^{PLUS}

Scope of delivery: Pellet boiler KWB Pelletfire^{Plus}, incl. internal return flow boost, heat exchanger cleaning Silent, fuel recognition Plus, exhaust gas recirculation, brushless suction turbine in suction operations, KWB Comfort 4 control system with Comfort Online interface, boiler master-and-slave control with safety box, control of buffer and DHW management and 2 heating circuits.


Symbolgrafik

KWB POWERFIRE PELLET HEATING SYSTEM

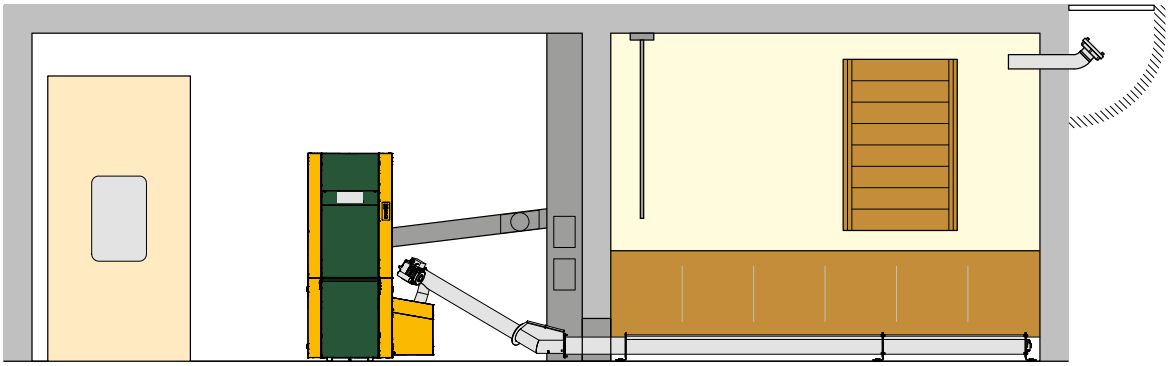
Scope of delivery: Pellet boiler KWB Powerfire, incl. exhaust gas recirculation, ash extraction into a 240 l ash bin, KWB Comfort 3 control with network card for connection to the Comfort Online platform, heating management module Autonomous, boiler master-and-slave control with safety box and required licenses, control of buffer and DHW management and 2 heating circuits.

Additional cascade solutions for output up to 2.4 MW upon request.
Can control up to 8 KWB boilers plus one external boiler.
Your KWB contact partner will be happy to provide you with more details.

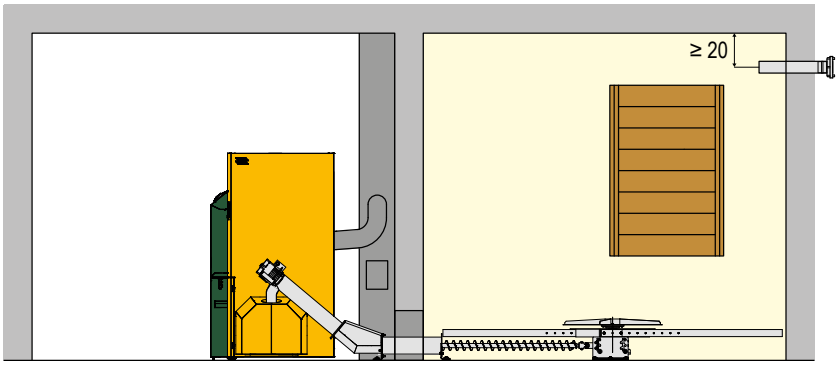
CASCADE SOLUTION IN SCREW OPERATION

For this option, a separate fuel extraction will need to be configured for each boiler.

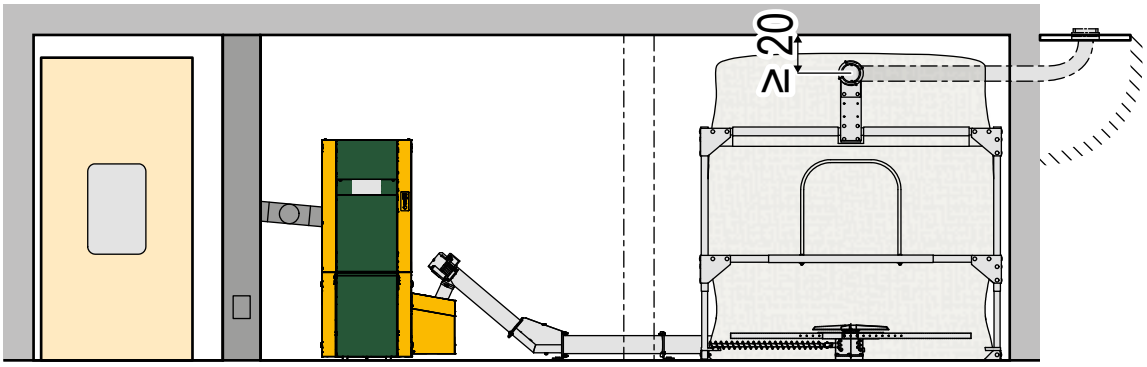
PELLET SCREW WITH SLOPING FLOOR



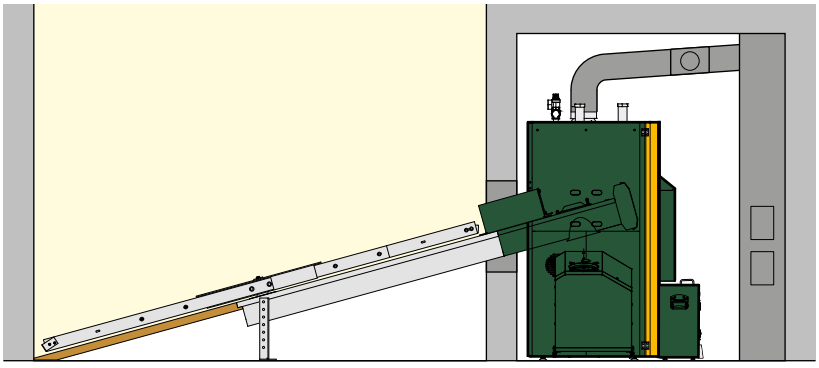
KWB PELLET STIRRER PLUS



KWB PELLET BIG BAG AND ELBOW SCREW



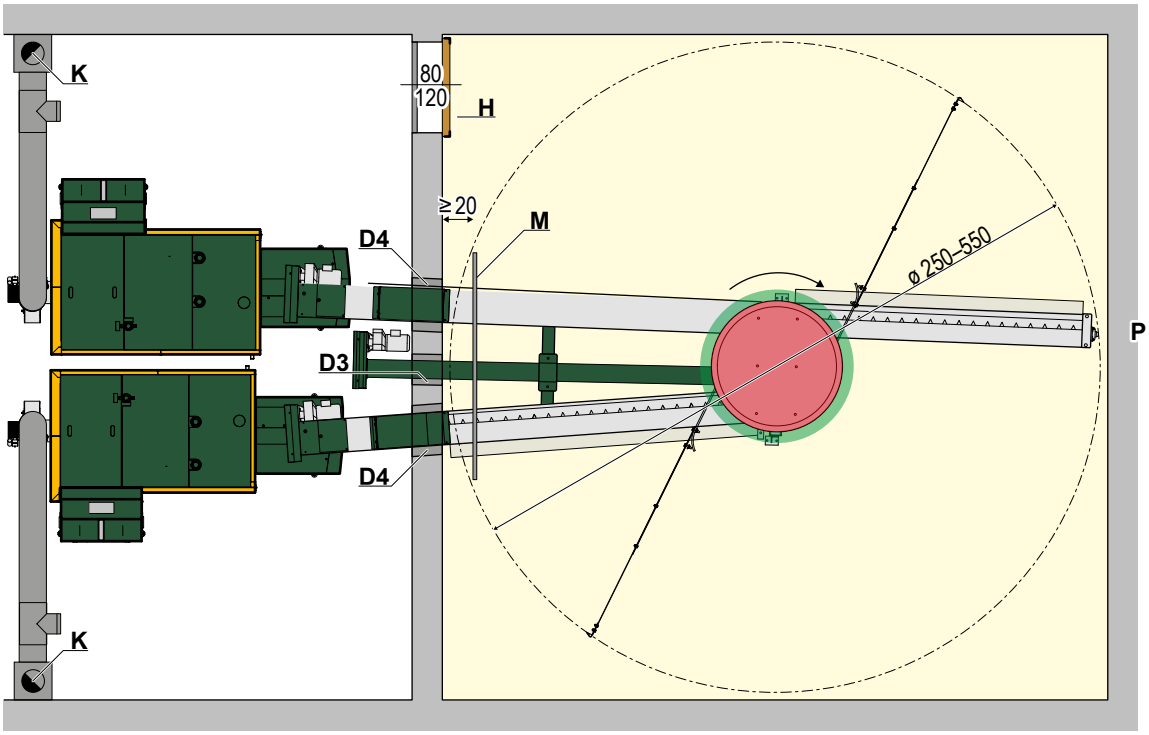
STIRRER WITH CONVEYOR CHANNEL AND DIRECT CONNECTION



All dimensions in cm l Width x Height

STIRRER WITH Y-SHAPED CONVEYOR CHANNEL AND DIRECT CONNECTION

Parallel screw operations for two boilers and one fuel extraction.



Planning advice: The Y-shaped conveyor channel has a short screw channel and a long screw channel where half of the channel is closed. The opening of the long channel must reach to under the stirrer disc, but remain in the green ring area (ring width 140 mm). It must not reach into the blocking zone (red area, diameter 820 mm).

LEGEND

D3	Wall duct 50 × 50 cm; seal after installation; the channel must be acoustically decoupled (at least 2 cm acoustic insulation)
D4	Wall duct 60 × 60 cm; seal after installation; the channel must be acoustically decoupled (at least 2 cm acoustic insulation)
H	Hatch: Protective door boards for pressure relief
K	• Keep access to the chimney free: at least 60 cm • Exhaust pipe and chimney model according to "Technical data" table • Install energy-saving damper with blowback flap

M	Ricochet protection mat
P	Ventilated filling nozzles (injection & suction nozzles) Place the injection connector in the middle of the room and the suction nozzle ≥ 50 cm to the side of the injection connector in the direction of the storage room door. The suction nozzle should always be cut as short as possible inside, almost flush with the wall (it must still be possible to mount the earthing clamp!). Both nozzles should be attached ≥ 50 cm from the side walls and ≥ 20 cm from the ceiling.

Notes	• Provide ventilation of the heating room sized ≥ 400 cm². • Take the ceiling load / static loads into account! • Mount the drives outside of the storage room • Strictly comply with local fire safety regulations and structural regulations! • Maintain the legally prescribed distances to flammable materials!

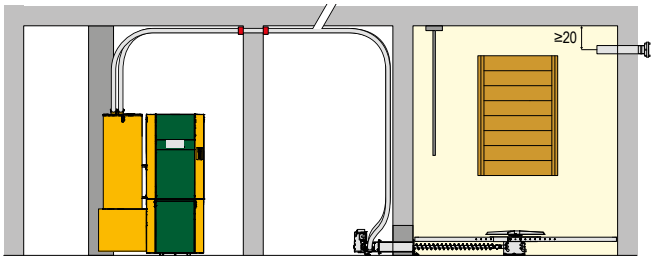
You can find more details and prices in Module D "Pellet heating systems 45 – 135 kW" starting on page D | 6!

All dimensions in cm I Width x Height

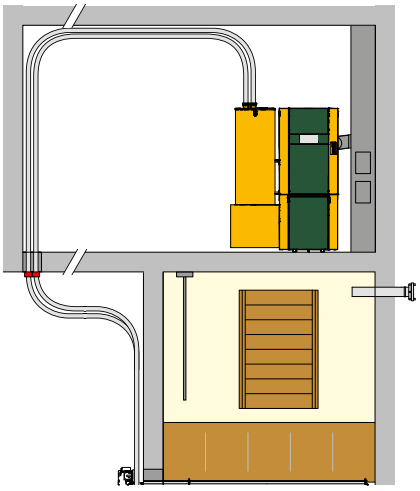
CASCADE SOLUTION WITH SUCTION OPERATION

For this option, a separate fuel extraction will need to be configured for each boiler.

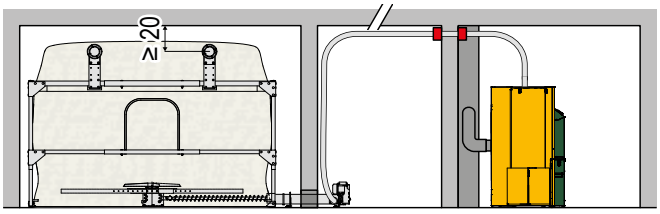
KWB PELLET STIRRER PLUS WITH SUCTION CONVEYOR



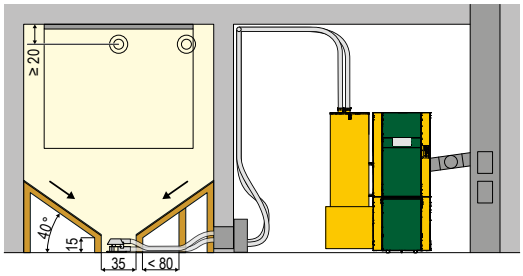
CONVEYOR SCREW WITH SUCTION CONVEYOR



KWB PELLET BIG BAG WITH SUCTION CONVEYOR

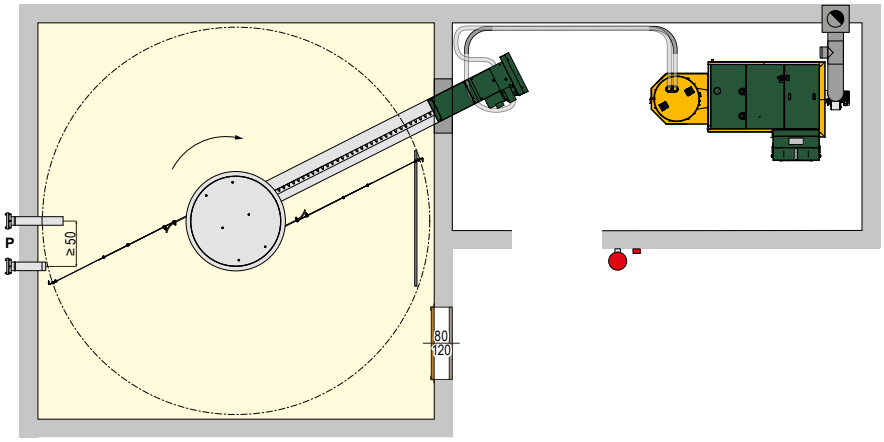


KWB SAMPLING PROBES WITH SUCTION CONVEYOR (ONLY TO 65 kW)



STIRRER M WITH SUCTION CONVEYOR

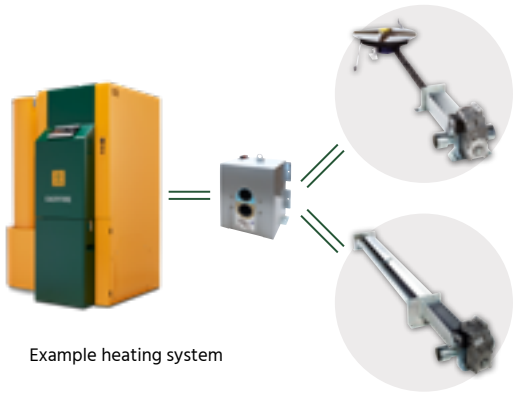
In this version, it is possible to configure the fuel extraction for up to 2 boilers.



SWITCHING IN THE SUCTION AREA

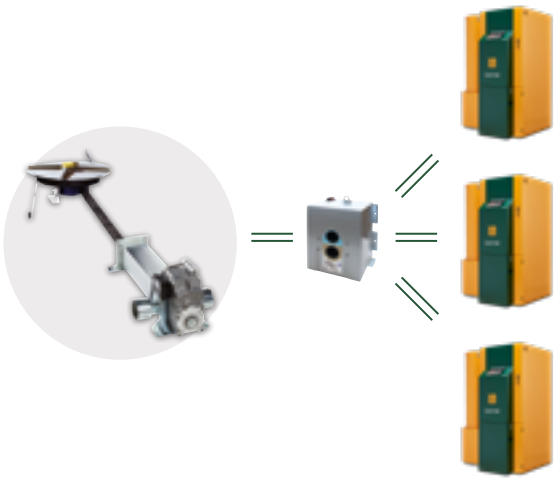
In this version, several boilers in pellet operation can be configured with several fuel extractions.

When using a KWB switch unit, one boiler can use up to 3 pellet storages with suction operations.



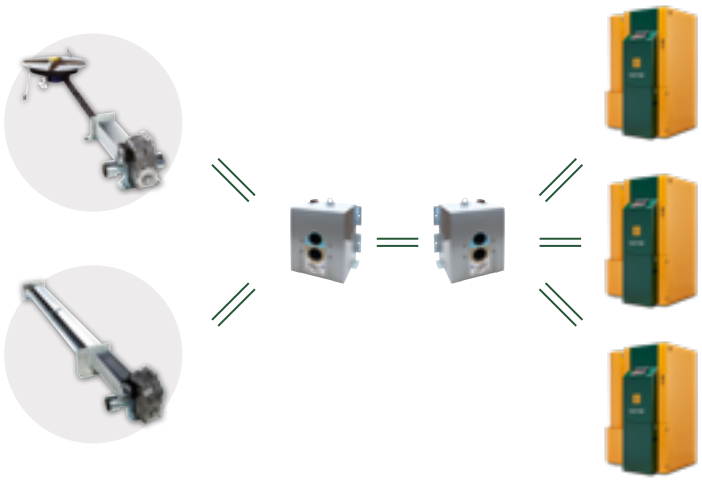
Example heating system

When using a KWB switch unit, up to 3 boilers with suction operations can use one pellet storage.



Example heating systems

When using a KWB switch unit, up to 3 boilers can use up to 3 pellet storages with suction operations.



Example heating systems

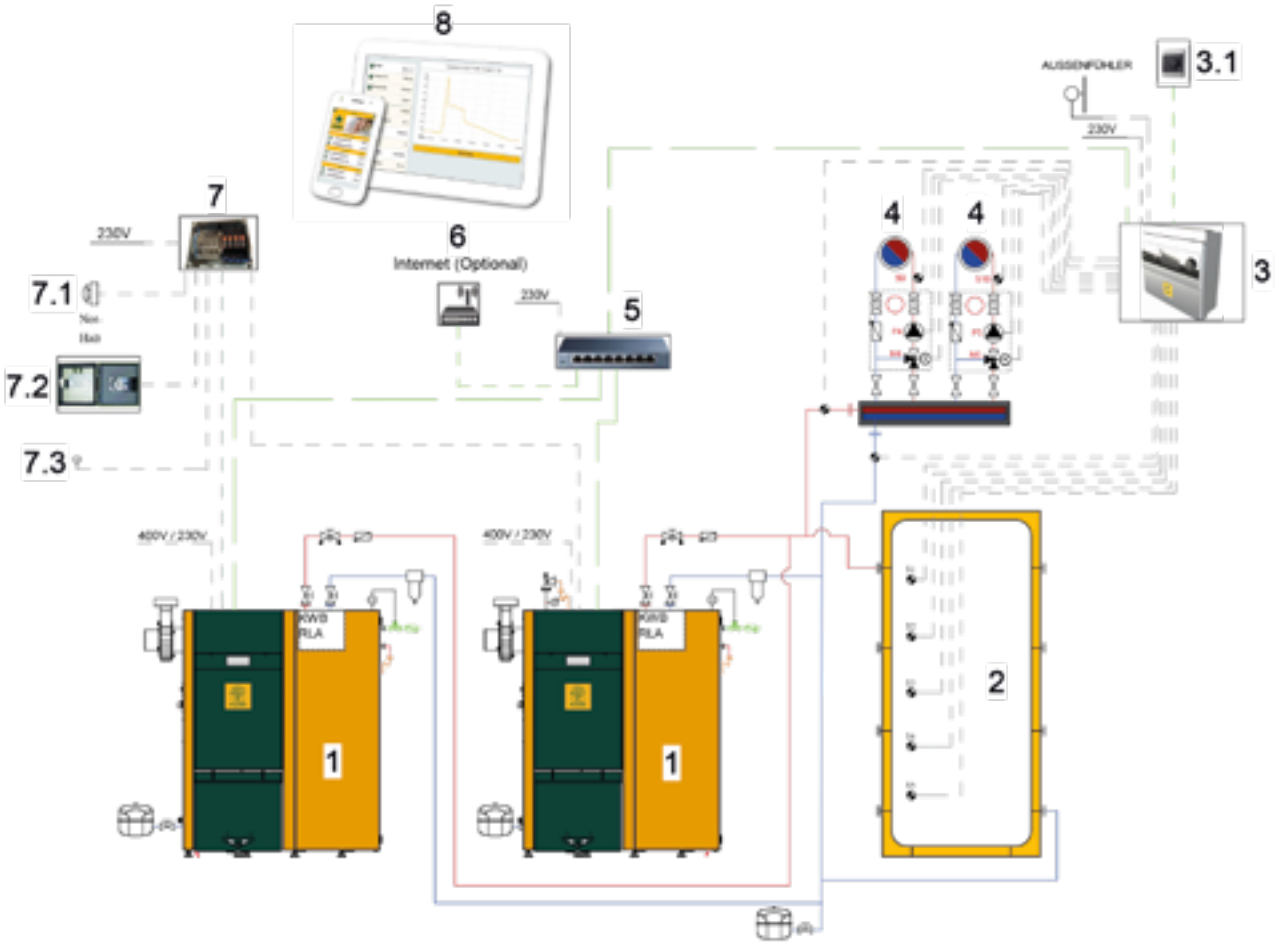
ARTICLE	ART. NO.	PRICE EXCL. VAT
Switch unit without sampling probes	12-2000284	€ 1.228,00
Switching between 1 pellet conveyor system & 2 boilers Control module for activation (switch unit must be ordered separately)	13-2000469	€ 1.437,00
Switching between 1 pellet conveyor system & 3 boilers Control module for activation (switch unit must be ordered separately)	13-2000470	€ 1.628,00
Switching between 2 pellet conveyor systems & 1 boiler Control module for activation (switch unit must be ordered separately)	13-2000467	€ 1.464,00
Switching between 3 pellet conveyor systems & 1 boiler Control module for activation (switch unit must be ordered separately)	13-2000468	€ 1.514,00
Switching between 2-3 pellet conveyor systems and 2-3 boilers Control module for activation (the 2 switch units must be ordered separately)	13-2000523	€ 1.930,00
Fire protection kit for KWB switch unit **Caution:** The fire protection kit is absolutely required when the KWB switch unit is mounted on a wall that delimits a fire section.	12-2000122	€ 121,00

Prices valid as of 1/4/2022, prices excl. VAT, © KWB GmbH

All dimensions in cm I Width x Height

HYDRAULICS

In the hydraulics schematics below, a cascade with 2 KWB biomass boilers ensures the heat supply. The cascade is equipped with a KWB boiler master-and-slave circuit, which also controls 2 heating circuits and the buffer management using the Autonomous function. Via the KWB Comfort Online, the network can also be mapped in the internet for free-of-charge online monitoring. A safety box monitors the important functions in the heating room. The ModBus function in the control opens the path for a cooperation with an external central building control system.



LEGEND

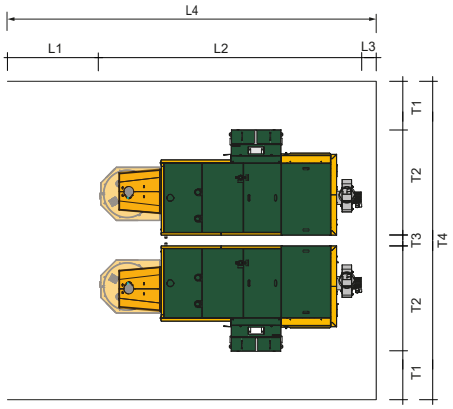
green	Bus cabling
red	Forward flow
blue	Return flow
dashed	Cabling provided on site
S1 – S5	Buffer tank temperature sensors
1	Biomass boiler
2	Buffer storage tank
3	KWB heating management module Autonomous with boiler master-and-slave circuit and ModBus activation (licenses required)

3.1	Basic or Exclusive control units in living quarters, optionally per heating circuit
4	Controlled heat distribution
5	Ethernet switch
6	Internet (KWB equipment)
7	Safety box
7.1	Emergency stop
7.2	House connection box
7.3	Low water pressure switch
8	KWB Comfort Online, customer portal for online system monitoring

COMPACT INSTALLATION DIMENSIONS

KWB PELLETFIRE^{PLUS} AND KWB MULTIFIRE

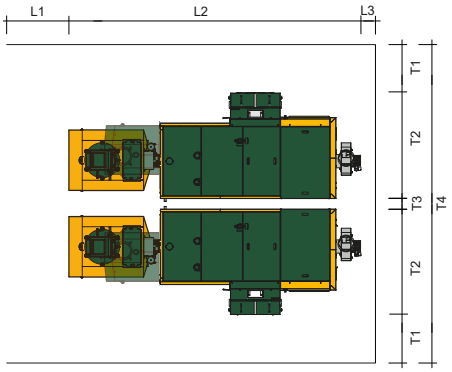
KWB PELLETFIRE^{PLUS}



	KWB PELLETFIRE^{PLUS}	45 – 65 kW		70 – 95 kW		100 – 135 kW	
		S	GS	S	GS	Model R S	Model R GS
L1	Free space	42	18	47	23	47	23
L2	Heating system length without filter	200	224	221	245	233	257
	Heating system length with filter	245	269	275	299	287	311
L3	Free space	7	7	7	7	7	7
L4	Minimum room length without filter	> 250	> 250	> 276	> 276	> 288	> 288
	Minimum room length with filter	> 295	> 295	> 330	> 330	> 342	> 342
T1	Free space	40	40	40	40	40	40
T2	Heating system depth	124	124	135	135	135	135
T3	Free space	14	14	14	14	14	14
T4	Total depth	342	342	364	364	364	364

S ... KWB Pelletfire^{Plus} type MF2 S GS ... KWB Pelletfire^{Plus} type MF2 GS

KWB MULTIFIRE



	KWB MULTIFIRE	20 – 50 kW		60 – 80 kW		100 – 120 kW	
		D	ZI	D	ZI	D	ZI
L1	Free space	42	18	47	23	47	23
L2	Heating system length without filter (P16S / P31S)	> 212 / –	> 252 / –	> 234 / > 243	> 247 / –	> 246 / > 255	> 286 / –
	Heating system length with filter (P16S / P31S)	258 / –	298 / –	290 / 299	328 / –	301 / 310	340 / –
L3	Free space	7	7	7	7	7	7
L4	Min. room length without filter (P16S / P31S)	> 254 / –	> 284 / –	> 276 / > 275	> 306 / –	> 288 / > 287	> 318 / –
	Min. room length with filter (P16S / P31S)	> 295	> 327	> 331	> 356	> 342	> 368
T1	Free space	40	40	40	40	40	40
T2	Heating system depth	124	124	135	135	135	135
T3	Free space	14	14	14	14	14	14
T4	Total depth	342	342	364	364	364	364

D ... KWB Multifire type MF2 D ZI ... KWB Multifire type MF2 ZI

STORAGE & HEATING ROOM EQUIPMENT

GENERAL REMARKS CONCERNING THE HEATING ROOM AND FUEL STORAGE

REQUIRED STRUCTURAL CONDITIONS

Please always comply with applicable local statutory submission, construction and execution regulations! These are the prerequisites for the KWB warranty and guarantee services, and for your insurance protection. KWB does not accept any liability, nor does it offer any warranties or guarantee for any type of building measures. Proper execution of building measures is the sole responsibility of the system owner. Inquire about time limits and procedures for handling subsidy applications in a timely manner. Comply with the dimension specifications in the installation examples and technical data. For complex projects, KWB therefore urgently recommends setting up an onsite appointment with the competent KWB area manager. Without any claim to an exhaustive treatment of the issue at hand and without suspension of any conditions imposed by the authorities, we recommend the following:

HEATING ROOM

Concrete flooring, plain or tiled; height-adjustable system feet can be used to compensate minor irregularities. All materials for floors, walls, ceilings must be fire resistant in REI90*; storage room door (EI2-30-C*) must be executed as an automatically closing fire door that opens to the outside, connection door to the fuel storage room must be executed as an automatically closing fire door (EI2-30-C*). Heating room window non-opening E30*; non-closing intake air opening 5 cm^2 per kW rated power of heating system, but no less than 400 cm^2. For boiler capacities > 60 kW, two intake air openings must be installed: one close to the ground and one close to the ceiling; the intake air openings must lead directly into the open. If it crosses other rooms, the air duct must feature an REI90* envelope; a protective grille with a mesh width Ø 5 mm must be fitted on the outside of ventilation openings to the outside. There must be permanently installed lighting and electrical supply to the heating system; the light and the labelled emergency-stop switch of the heating system must be in an easily accessible location outside the heating room in the vicinity of the heating room door. A portable fire extinguisher (6 kg filling weight, EN3 standard) must be installed outside the heating room near the heating room door. The heating room as well as water lines and district heating pipes must be frost-resistant. There must be no storage of flammable materials in the heating room outside the boiler system, storage container or hopper; no direct connection to rooms where flammable gases or liquids (garage) are stored. See the installation examples and tables for boiler dimensions for the minimum clear door widths. You must comply with the local installation regulations.

CHIMNEY

The chimney design should be resistant to moisture. This means that there will be no moisture penetration or damage to the brickwork even though the temperature level in the exhaust-gas path is permanently below the exhaust gas dew point. The approximate values for the chimney diameter are stated in the specifications. These apply based on the average structural conditions, meaning: effective chimney height 8 – 10 m, 1.5 m exhaust pipe length, 2 segment bends at 90° each, 1 contraction, 1 Tee connection at 90°. You must adhere to the specifications in the cross-section diagrams provided by the chimney manufacturer. If conditions differ or are less favourable in terms of space, it will be necessary to carry out a chimney calculation. Upon request, KWB will provide the chimney calculation. This is a chargeable service. It is advisable to involve your locally competent chimney sweep during the planning phase as she/he is the one who will have to issue the acceptance certificate for the exhaust gas system.

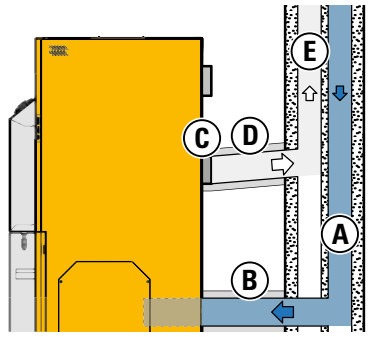
EXHAUST PIPE CONNECTION AT THE CHIMNEY

We recommend that a draft limiter and a blowback flap be built into the exhaust pipe, or chimney side wall, and be arranged in such a manner as to exclude any danger to persons. The exhaust pipe should be kept as short as possible. It should ascend at least slightly towards the chimney. The exhaust pipe should be thermally insulated and feature easily accessible cleaning openings. The chimney connection should be 20 mm larger than the exhaust pipe diameter. This way, it will be possible to integrate a suitable acoustic transmission decoupler between the exhaust pipe and the chimney. The KWB system is by default equipped with a negative pressure-controlled induced draught fan.

AMBIENT AIR-INDEPENDENT OPERATION (EF2)

Depending on the structural situation and if the combustion airline and the connection line to the chimney|air-exhaust gas system are sealed and the material is suitable, the KWB Easyfire corresponds to the types FC43x*1 and FC53x*2 according to the approval principles for the inspection and assessment of ambient air-independent fireplaces for solid fuels of the Deutsches Institut für Bautechnik (DIBt).

A) Combustion air supply - air-exhaust gas system (LAS system)
B) Combustion air line
C) Connection of connection line – KWB Easyfire
D) Connection line
E) Exhaust pipe



The purchase and use of ambient air-independent fireplaces must be discussed with the responsible chimney sweep to ensure that the overall system (joint operation of fireplace, exhaust gas system and room-air technical system) satisfies the technical safety and functional requirements. The respectively applicable local rules and regulations must be adhered to. These specifications serve as a guideline and do not replace chimney calculation.

Combustion air line

Flexible aluminium pipe Ø100 mm, leakage rate < 0.1 m^3/h; max. length: 15 m; Length reduction per 90° bend: 1 m; Length reduction per 45° bend: 0.5 m; sealed tight, thermally insulated with no less than 30 mm (in Germany thermal insulation must be in accordance with German Energy Savings Regulation, EnEV). The airline must be formed such that no condensate builds up (heat insulation, routing to the pellet heating system pointing slightly upward).

If the line leads outdoors, it should be provided with suitable wind protection. A protective grille (mesh width >1 cm) must be attached to the entry cross-section of the air duct. For the combustion air duct from the outdoors to fireplaces, the construction guideline for fire protection requirements of ventilation systems applies. Ventilation lines and their casing and insulation must be made of non-flammable materials (EI90*). If the combustion line is run through other rooms, the line must feature an I90* sheathing. When connecting the combustion airline to an air-exhaust gas system (LAS), the technical documents of the respective LAS manufacturer must be complied with.

Connection line (exhaust gas)

Maximum length: 2 m; max. 2 bends 90 °; thermally insulated with at least 30 mm; CE according to DIN EN 1856-2; with KWB Easyfire type EF2 inspected systems: Schiedel Prima Plus system (certificate number 0036 CPD 9195 017/2006), Raab EW Alkon system (certificate number 0432 BPR 219914).

Connection line to the KWB Easyfire

- Schiedel Prima Plus system: Order the connector part from Schiedel (sealing material: ICS seal ring silicone Ø 150 mm, KRS sealing putty-ES to 300 °C)
- Raab EW Alkon system: Ordering the exhaust pipe union from KWB.
- With ambient air-independent operation, it is important that the exhaust pipe connection is installed pressure-tight.

Air-exhaust gas system (LAS)

Pressure-tight, construction guideline-approved for connection of ambient air-independent solid fuel fireplaces, not sensitive to humidity; air-exhaust gas systems with annular gap and non-insulated exhaust gas pipe cool the exhaust gas off too much and are therefore unsuitable. A chimney calculation incl. combustion air supply via the LAS system must be carried out by respectively qualified professionals! There must be no short-circuit between the exhaust gases and the supply air.

Draft limiter, blowback flap

For ambient air-independent operation, the draft limiter and blowback flap must be omitted if there is a ventilation/air conditioning system in the air network of the pellet heating system. In Austria, a draft limiter must be installed for energy conservation purposes – therefore, the omission of the draft limiter must be discussed with the chimney sweep!

FUEL STORAGE ROOM

The structural requirements for the heating room also apply to the fuel storage room. A rear-ventilated false floor must be installed at the same level as the top edge of the conveyor system if using wood chip fuel P31S in accordance with ISO 17225-4. If using wood chip fuel size P16S, then a rear-ventilated false floor is not mandatory in accordance with ISO 17225-4. The wall duct for the screw channel »

* in accordance with ÖNORM EN 13501

*1 Fireplace with combustion air blower for connection to an air-exhaust gas system. The combustion airline from the air shaft and the connector to the chimney are a component of the fireplace.

*2 Fireplace with combustion air fan for connection to a chimney. The combustion airline from outdoors and the connector to the chimney are a component of the fireplace.

between storage room and heating room must be sealed such that it is fireproof (e.g. with rock wool). If a pumping car is used to fill the fuel storage room with pellets, it is necessary to mount hose couplings and pipelines (to be earthed). These are available from KWB. If this filling method is chosen, dust-proof sealing of the fuel storage room is required! The escaping air is extracted through a second earthed pipeline and hose coupling. Suction removal of the transport air is the responsibility of the fuel supplier. Filling nozzles that do not lead to the outside, but into the building must be sealed off (REI90*). The walls, windows and doors must withstand the overpressure created during the filling process. In the event of bulk fuel storage, no electrical installations are permissible in the fuel storage room since they pose an ignition hazard. KWB biomass heating systems are supplied with all the necessary fire-protection equipment included. Depending on the local installation situation and the fire safety specifications required for your region, and on the type of fuel and storage volume, a manually triggered fire extinguisher and/or a built-in automatic fire extinguisher may have to be connected to a pressurised water line. The fire extinguisher with manual release featuring a frost-proof connection (from the heating room) is to be fitted at least with 3/4" or as DN 20 directly above the conduit of the conveyor system channel leading into the fuel storage room in the form of empty piping. The shut-off device that is to be installed in the boiler room must be marked with the following sign: "Fire extinguisher - fuel storage room".

The Austrian TRVB H 118 (from December 2016) requires the following for Austria:

- A fire extinguisher with manual release must be installed for systems up to and including a capacity of 500 kW if 50–200 m^3 of wood chips are stored. If such a fuel-storage room is built next to fire-resistant structural components without openings, a REI90* enclosure/sheathing is not necessary.
- In the case of wood chip storage rooms in utility outbuildings with a fire wall facing living quarters, an REI90* enclosure/sheathing of the fuel-storage room is not necessary if the fire section is smaller than 800 m^2. Fuel must be stored separately from other goods (e.g. by means of wooden planking).
- A manual-release extinguisher should be installed when storing up to (and including) 200 m^3 of other wood materials (with dust portion) in systems up to and including 500 kW.
- For systems with a capacity greater than 500 kW or storage volumes greater than 200 m^3 a manual-release extinguisher is mandatory.

  If you have any questions, please contact your KWB factory representative. Above-ground fuel stores must have access to the outside by means of a door of at least 1.80 m^2 cross section, and be planked on the inside to prevent the fuel from trickling outside should the door be opened by mistake. The planking should be removable from outside. An inspection opening (REI90*) must be installed above the conveyor system channel. Please refer to the installation examples. In case of large storage facilities special legal regulations apply that were defined during the application for the building permit.

GUIDELINES AND RECOMMENDATIONS FOR BUILDING A PELLET STORAGE

In times of energy transition and the increased replacement of fossil fuel-based heating systems with pellet heating systems, convenience and operational reliability are decisive factors. Smooth heating operations and the resulting customer satisfaction depend on many factors, including the fuel, the injection process all the way to the pellet storage construction with filling line and fuel extraction system. For this reason, the aspects of safety, quality and ventilation have become increasingly important with regard to the pellet storage in the last few years. Various specifications with regard to accessibility, protection against fire and explosion and storage ventilation must be fulfilled in this process.

The Europe-wide applicable DIN EN ISO 20023 standard "Safe handling and storage of wood pellets in residential and other small-scale applications" (up to 100 tons storage capacity) provides related recommendations (published in early 2019). The statements contained in the standard are very well summarized in the information brochure published by the German Energy Wood and Pellet Association (Deutscher Energieholz- und Pellet-Verband - DEPV) "Storage of Wood Pellets". The brochure is aimed at heating system installers, planners, engineers and architects.

GUIDELINES AND RECOMMENDATIONS ON HANDLING WOOD PELLETS

FOCUS AREAS OF THE EU STANDARD DIN EN ISO 20023

Focus area: Storage accessibility

Pellet storages must be accessible safely and via short paths. The injection path should be no more than 30 m. The injection and extraction nozzle should be no higher than 2 m. If this is not possible, safe means of ascend and descend must be provided. The pellet supplier should be able to safety and compression-free connect the injection hose, if required with 45° bends.

Focus area: Storage construction

The static requirements for the storage space must be complied with since it must be able to withstand the weight pressure and pressure spikes during filling, which may occur, e.g., during a chamber switch in the supply vehicle. Newly constructed storage space walls should be firmly connected with the ground and ceiling. In addition to affixing safety stickers on the storage space entrance door, care should be taken that the injection nozzles, ricochet protection mats and sloping floors, if any, are correctly positioned. Care should also be taken that the fuel extraction is properly acoustically decoupled.

Focus area: Storage ventilation

The requirements regarding the pellet storage ventilation are critical for health protection. According to DIN EN ISO 20023 the air intake and extraction lines should be designed so that a natural ventilation is ensured. Ventilated injection and extraction nozzles may also be taken into account for that. The standard also sets forth requirements regarding the placement of air-permeable fabric silos and provides options for storage room ventilation via adjacent heating rooms. In extreme cases, a machine-based ventilation via a fan can be installed, which, however, may only be operated in compliance with strict specifications. In summary, before building a pellet storage, the ventilation concept should include all those parameters that should also serve as the basis for the system handover to the operator.

The installer's duty to advise

The installer's duty to advise has now become more important. The standard prescribes the preparation of a handover certificate, which – combined with the heating installer's implicit verbal duty to advise – should be signed by both the installer and the customer during the handover of a commissioned heating system with pellet storage. This applies irrespective of who built the pellet storage. As part of the handover, the heating installer should inspect the storage and advise regarding safety measures (ventilation, avoidance of ignition sources) and operating aspects for the pellet storage. The handover certificate must provide a summary of the entire facility and its parameters and will aid during faults and complaints.

Preparing a ventilation concept – let's go!

The DEPI storage room configurator can be used to create an individual ventilation concept based on DIN EN ISO 20023. In addition to the number, length and situation of the injection nozzles and the correct installation of the ricochet protection mats, it defines the structural requirements for storage room walls and sloping floors and the dimensions of the additional ventilation openings. The concept furthermore is used as the basis for a correctly completed handover certificate. We will be happy to help you in this respect.

Brochure "Lagerung von Holzpellets" (Storage of Wood Pellets), DEPI

Pellet storage handover certificate

Storage room configurator, DEPI

GENERAL INFORMATION ABOUT THE PELLET STORAGE CONSTRUCTIONS

For pellets, the permissible pouring height is 3 m. Greater pouring heights must be clarified based on specific site conditions.

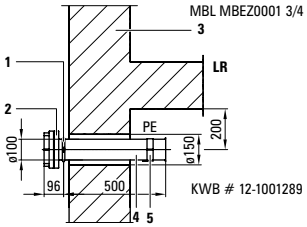
Heating load of the building [kW]	Consumption per year [t/a]	Stirrer without sloping floor (assumed fill height 2.5 m)		Fuel extraction with sloping floor (assumed fill height 2.5 m)	
		Storage room volume [m³]:	Storage room space [m²]:	Storage room volume incl. empty space [m³]:	Storage room space [m²]:
8	2.8	6.0	2.4	7.2	2.5
10	3.5	7.5	3.0	9.0	3.6
12	4.2	9.0	3.6	11	4.3
15	5.3	11	4.4	14	5.4
20	7.0	15	6.0	18	7.2
22	7.7	17	6.8	20	7.9
25	8.8	19	7.6	23	9.0
30	10.5	23	9.2	27	11
35	12.3	26	11	32	13
45	15.8	34	14	41	16
55	19.3	41	17	50	20
65	22.8	49	20	59	23
75	26.3	56	23	68	27
95	33.3	71	29	86	34
115	40.3	86	35	104	41
135	54	101	41	122	49

Calculation basis for the table: The calculation is based on an annual consumption of 1,500 full load hours per year

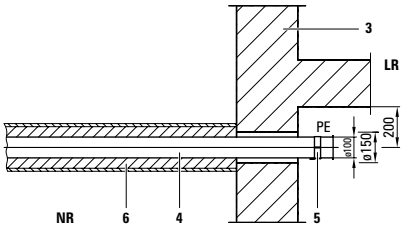
• Required storage room volume when using a stirrer system: 0.75 m³ per kW heating load • Required storage room volume when using a sloping floor: 0.9 m³ per kW heating load • Maximum pouring height: 3 m • Pellet bulk density: 650 kg/m³ • Annual consumption: 350 kg per kW heating load

INSTALLATION OPTIONS FOR THE PELLET INJECTION NOZZLE

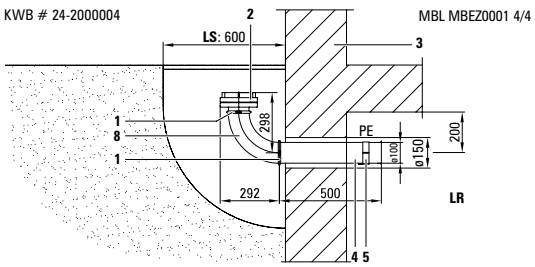
STANDARD MODEL



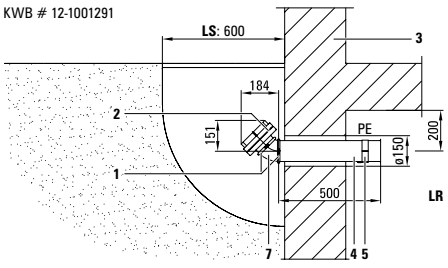
IF THERE IS A DUCT THROUGH OTHER ROOMS



OPTION FOR LIGHT SHAFT 90°



OPTION FOR LIGHT SHAFT 45°



LEGEND

1	Tension ring: connect conductive!
2	Hose coupling system Storz "A" NW 110 with blind coupling. In the heating room or garage, the coupling must be installed with a removable REI90 cover!
3	Masonry
4	Steel pipe
5	Earth clip: Remove paint and ensure conductive connection!
6	Fireproof sheathing EI 90, e.g.: 50 mm rock wool + 15 mm fire safety plate
7	Pipe bend 45°
8	Pipe bend 90°
PE	Potential Earth
LS	Light shaft
LR	Fuel storage room
NR	Adjacent room

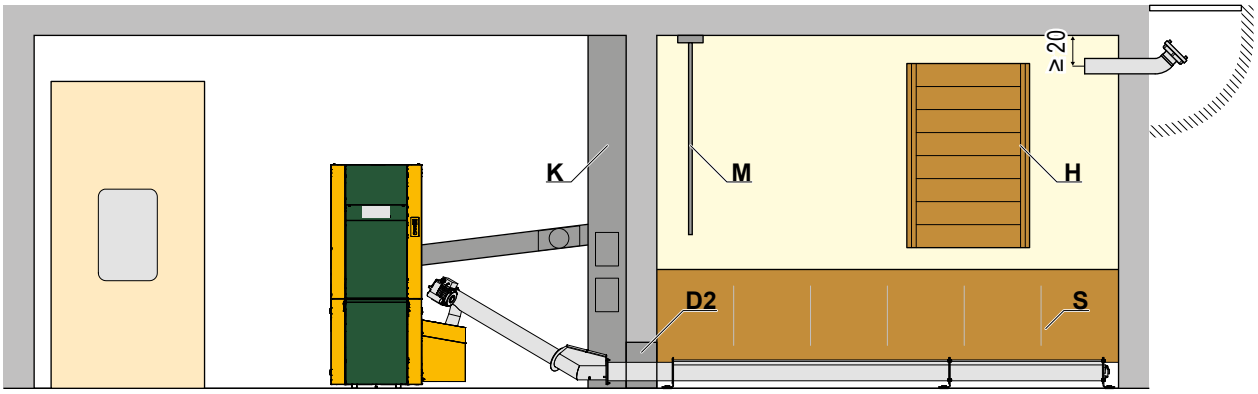
All dimensions in cm I Width x Height

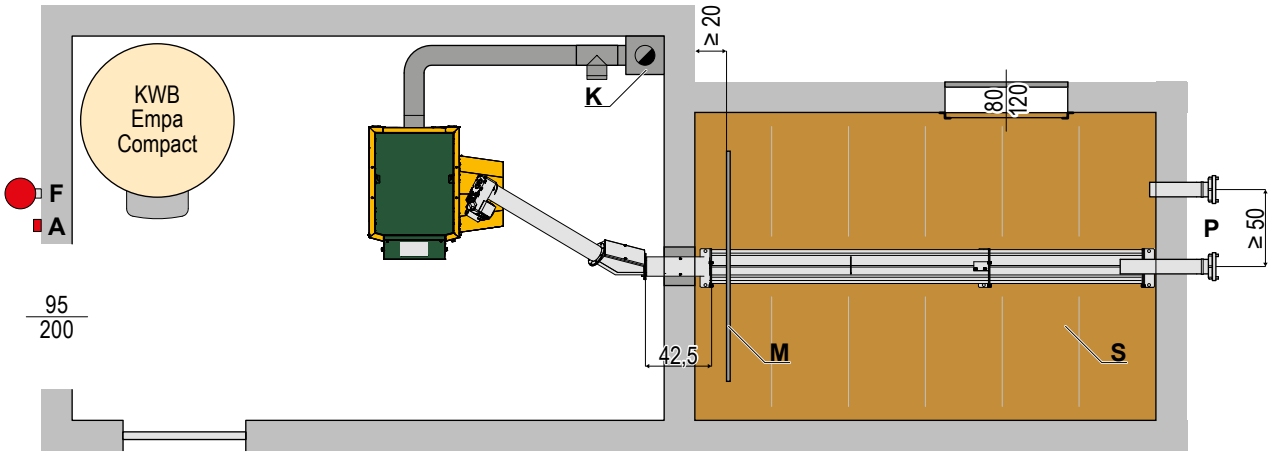
PRACTICAL EXAMPLES PELLET STORAGE

STORAGE ROOM ADJACENT TO BOILER ROOM

COMPATIBLE WITH
KWB Combifire type CF2 18 – 38 kW
KWB Easyfire type EF2 2.4 – 38 kW
KWB Easyfire type EF2 CC4 2.9 – 40 kW
KWB Pelletfire^{Plus} type MF2 S 45 – 135 kW

PELLET SCREW WITH SLOPING FLOOR





Max. filling height: 300 cm

LEGEND

A	Emergency-stop switch: Boiler NOT de-energised, but combustion stopped – heat dissipation continues!
D2	Wall duct 35x35 cm: seal after installation, channel must be acoustically decoupled
F	Fire extinguisher
H	Protective door boards for pressure relief
K	• Keep access to the chimney free: at least 60 cm • Exhaust pipe and chimney model according to "Technical data" table • Install energy saving damper with explosion flap (except for EF2 with ambient-air-independent operation)
M	Ricochet protection mat
P	Ventilated filling nozzles (injection & suction nozzles) Place the injection connector in the middle of the room and the suction nozzle ≥ 50 cm to the side of the injection connector in the direction of the storage room door. The suction nozzle should always be cut as short as possible inside, almost flush with the wall (it must still be possible to mount the earthing clamp!). Both nozzles should be attached at a distance of ≥ 50 cm from the side walls and ≥ 20 cm from the ceiling.
S	Sloping floor with an incline of at least 40 ° and a smooth surface (e.g. with Betoplan or plywood boards)

Notes

- Provide ventilation for the heating room sized ≥ 400 cm². • Assemble the drives outside the storage room.
- Take the ceiling load / static loads into account! • Local fire safety regulations and other requirements must be strictly complied with!
- Maintain the legally prescribed distances to flammable materials!
- The pellet heating systems KWB Easyfire type EF2 S and KWB Pelletfire^{Plus} type MF2 S are available both as a right-sided as well as a left-sided model.
  The log wood and pellet heating system KWB Combifire type CF2 S is only available as a left-sided model.

For a compliant pellet storage room design, KWB recommends implementing the requirement of the European DIN EN ISO 20023 standard.

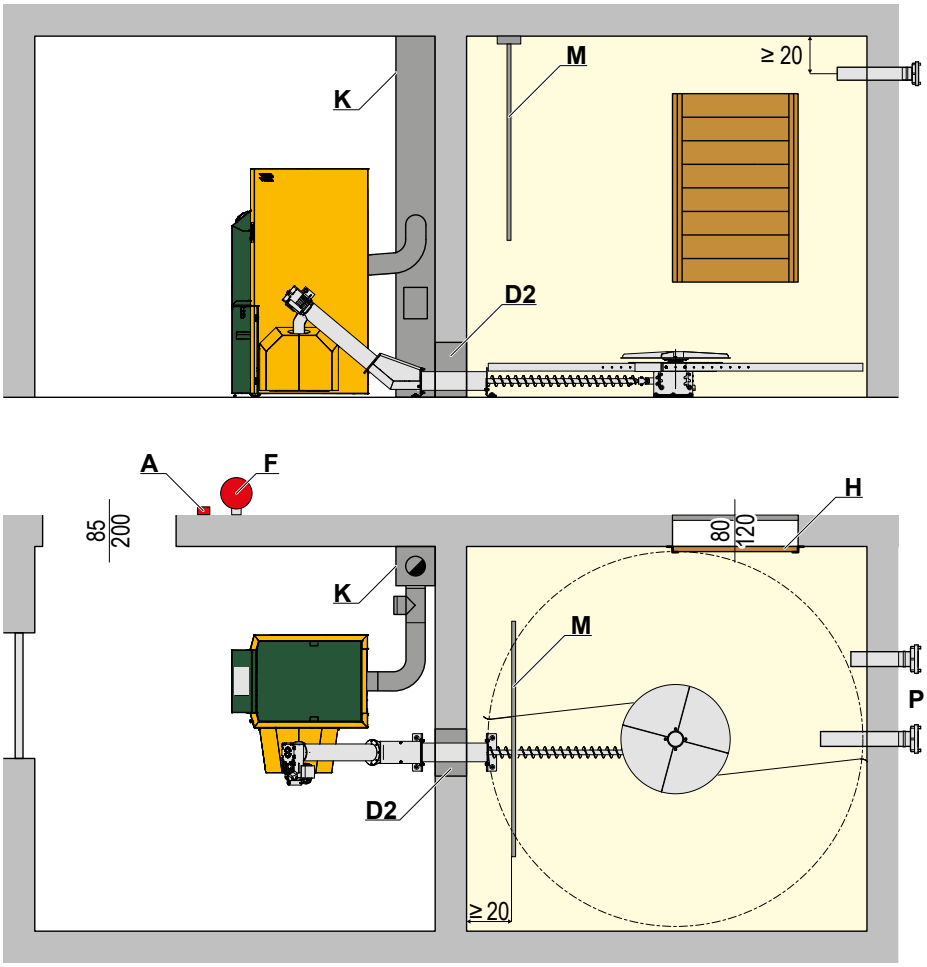
All dimensions in cm I Width x Height

PRACTICAL EXAMPLES PELLET STORAGE

STORAGE ROOM ADJACENT TO BOILER ROOM

COMPATIBLE WITH
KWB Combifire type CF2 18 – 38 kW
KWB Easyfire type EF2 2.4 – 38 kW
KWB Easyfire type EF2 CC4 2.9 – 40 kW
KWB Pelletfire^{Plus} type MF2 S 45 – 135 kW

KWB PELLET STIRRER PLUS



Max. filling height: 300 cm

LEGEND

A	Emergency-stop switch: Boiler NOT de-energised, but combustion stopped – heat dissipation continues!
D2	Wall duct 35 x 35 cm: seal after installation, channel must be acoustically decoupled
F	Fire extinguisher
H	Protective door boards for pressure relief
K	• Keep access to the chimney free: at least 60 cm • Exhaust pipe and chimney model according to "Technical data" table • Install energy-saving damper with explosion flap (except for type EF2 with ambient air-independent operation)

M	Ricochet protection mat
P	Ventilated filling nozzles (injection & suction nozzles) Place the injection connector in the middle of the room and the suction nozzle ≥ 50 cm to the side of the injection connector in the direction of the storage room door. The suction nozzle should always be cut as short as possible inside, almost flush with the wall (it must still be possible to mount the earthing clamp!). Both nozzles should be attached at a distance of ≥ 50 cm from the side walls and ≥ 20 cm from the ceiling.

Notes

- Provide ventilation for the heating room sized ≥ 400 cm².
- Assemble the drives outside the storage room.
- Take the ceiling load / static loads into account!
- Local fire safety regulations and other requirements must be strictly complied with!
- Maintain the legally prescribed distances to flammable materials!
- The pellet heating system KWB Easyfire with elbow screw (type EF2 S) is available both as a right-sided as well as a left-sided model.

For a compliant pellet storage room design, KWB recommends implementing the requirement of the European DIN EN ISO 20023 standard.

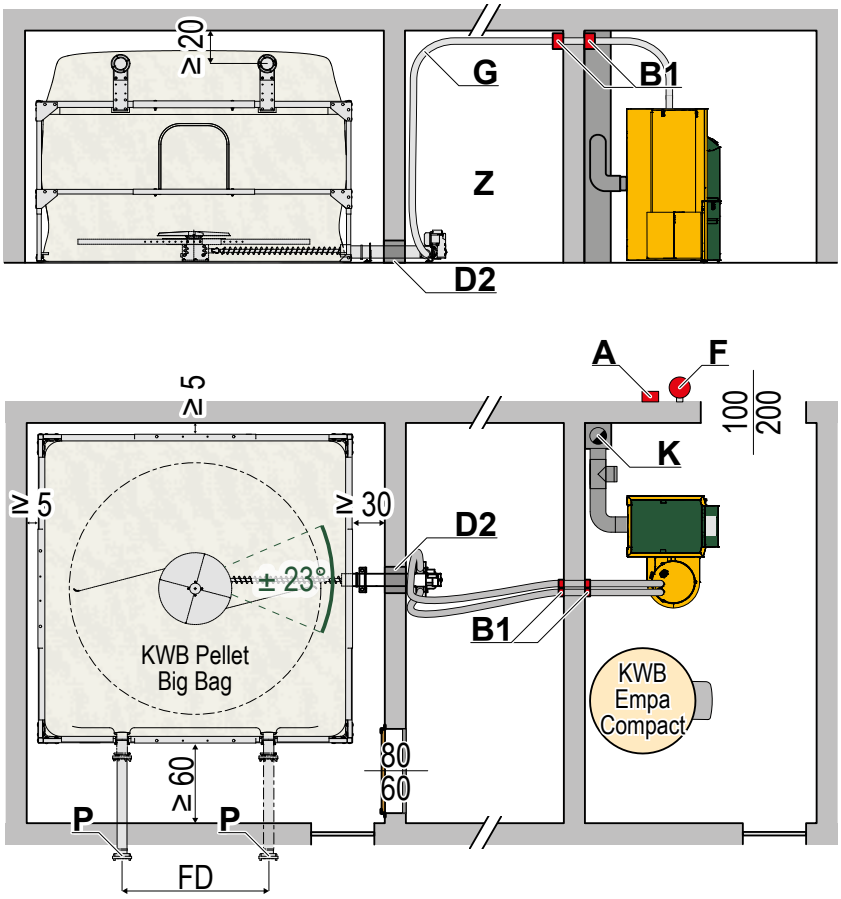
All dimensions in cm l Width x Height

PRACTICAL EXAMPLES FABRIC PELLET TANK

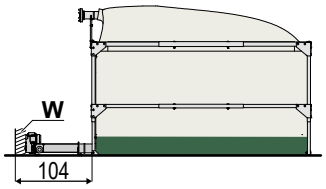
KWB PELLET BIG BAG

COMPATIBLE WITH
KWB Combifire type CF2 GS 18 – 38 kW
KWB Easyfire type EF2 GS 2.4 – 38 kW
KWB Easyfire type EF2 CC4 GS 2.9 – 40 kW
KWB Easyfire 1 Plus type USP GS 10 – 20 kW
KWB Pelletfire^{Plus} type MF2 GS 45 – 135 kW

KWB PELLET BIG BAG AND SUCTION CONVEYOR

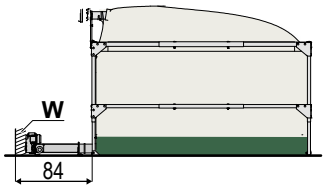


Standard variant



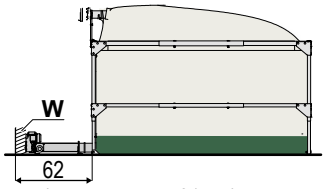
(Headpiece L = 73,5 cm)

Medium variant



(Headpiece L = 53,5 cm)

shorter version



(Headpiece L = 31 cm)

Max. filling height: 212 cm

LEGEND

A	Emergency-stop switch: Boiler NOT de-energised, but combustion stopped – heat dissipation continues!
B1	Fire protection sleeve conveyor hoses Ø 6 cm, drill hole Ø 7 cm, respectively, - seal after installation
D2	Wall duct 35 x 35 cm: seal after installation, channel must be acoustically decoupled
F	Fire extinguisher
G	Hose routing • Max. total conveyor length: 25 m • Maximum conveyor height without step: 3 m • Maximum conveyor height with step: 5 m – with at least 3 m height difference, install step • Put hoses horizontally for at least 1 m per step • All conveying hose bend radii at least 40 cm

K	• Keep access to the chimney free: at least 60 cm • Exhaust pipe and chimney model according to "Technical data" table • Install energy-saving damper with explosion flap (except for type EF2 with ambient air-independent operation)
P	Pellet injection connector: 1 or 2 injection connectors (depending on size of the KWB Pellet Big Bag) – suction is not required
W	Clearance for maintenance
Z	Gap

Notes
• Provide ventilation for the heating room sized ≥ 400 cm². • Assemble the drives outside the storage room. • Take the ceiling load / static loads into account! • Local fire safety regulations and other requirements must be strictly complied with! • Maintain the legally prescribed distances to flammable materials! • The pellet heating systems KWB Easyfire and KWB Combifire with suction conveyor are only available as left-sided models. The pellet heating system KWB PelletfirePlus is available both as a right-sided as well as a left-sided model.

For a compliant pellet storage room design, KWB recommends implementing the requirement of the European DIN EN ISO 20023 standard.

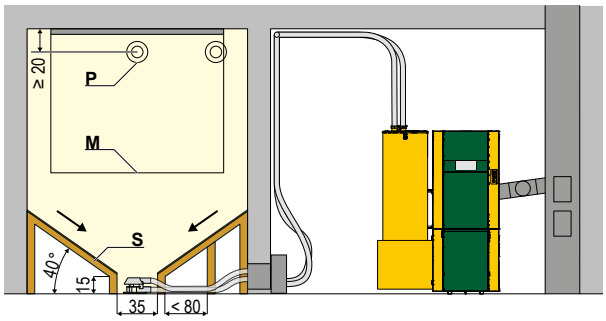
All dimensions in cm I Width x Height

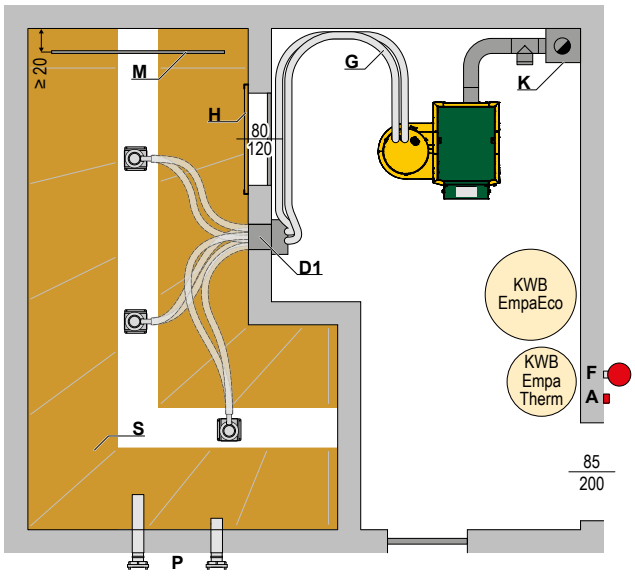
PRACTICAL EXAMPLES PELLET STORAGE

STORAGE ROOM NEXT, ABOVE OR BELOW THE HEATING ROOM

COMPATIBLE WITH
KWB Combifire type CF2 GS 18 – 38 kW
KWB Easyfire type EF2 GS 2.4 – 38 kW
KWB Easyfire type EF2 CC4 GS 2.9 – 40 kW
KWB Easyfire 1 type USP GS 10 – 20 kW
KWB Pelletfire^{Plus} type MF2 GS 45 – 65 kW

KWB SAMPLING PROBES WITH SUCTION CONVEYOR (ONLY TO 65 kW)





Max. filling height: 300 cm

LEGEND

A	Emergency-stop switch: Boiler NOT de-energised, but combustion stopped – heat dissipation continues!
D1	Wall duct ∅ 25 cm, central axis: upper edge of floor + 14 cm, distance to other construction parts ≥ 35 cm from the central axis. The wall duct must be free of hollow spaces and should have a smooth and clean finish.
F	Fire extinguisher
G	Hose routing for the Easyfire type EF2 GS / Combifire type CF2 GS / Pelletfire^{Plus} type MF2 GS • Max. conveyance length of sample probes: 25 m • Max. delivery height without step 3 m • Maximum conveyor height with step: 5 m – must install step at the latest at a height difference of 3 m Hose routing for the Easyfire 1 Plus type USP GS • Max. suction length (length of run between the suction container and switch unit or wall): 10 m • Max. suction length in the storage room (wall to sample probe): 4 m • Max. total conveyance height: 3.5 m • Installing a step at the respective height difference is NOT possible for the Easyfire 1 Plus!

G	General tips on hose routing • Arrange hoses horizontally for at least 1 m per step • All conveying hose bend radii at least 40 cm
H	Protective door boards for pressure relief
K	• Keep access to the chimney free: at least 60 cm • Exhaust pipe and chimney model according to "Technical data" table • Install energy-saving damper with explosion flap (except for type EF2 with ambient air-independent operation)
M	Ricochet protection mat
P	Ventilated filling nozzles (injection & suction nozzles) Place the injection connector in the middle of the room and the suction nozzle ≥ 50 cm to the side of the injection connector in the direction of the storage room door. The suction nozzle should always be cut as short as possible inside, almost flush with the wall (it must still be possible to mount the earthing clamp!). Both nozzles should be attached at a distance of ≥ 50 cm from the side walls and ≥ 20 cm from the ceiling.
S	Sloping floor with an incline of at least 40° and a smooth surface (e.g. with Betoplan or plywood boards)

Notes

- Provide ventilation for the heating room sized ≥ 400 cm².
- Assemble the drives outside the storage room.
- Take the ceiling load / static loads into account!
- Local fire safety regulations and other requirements must be strictly complied with!
- Maintain the legally prescribed distances to flammable materials!
- The pellet heating systems KWB Easyfire, KWB Easyfire 1 Plus and KWB Combifire with suction conveyor are only available as left-sided models.
  The pellet heating system KWB Pelletfire^{Plus} is available both as a right-sided as well as a left-sided model.

For a compliant pellet storage room design, KWB recommends implementing the requirement of the European DIN EN ISO 20023 standard.

All dimensions in cm l Width x Height

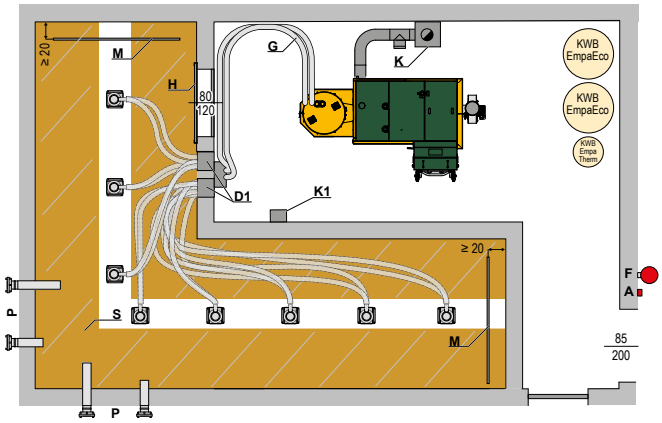
PRACTICAL EXAMPLES PELLET STORAGE

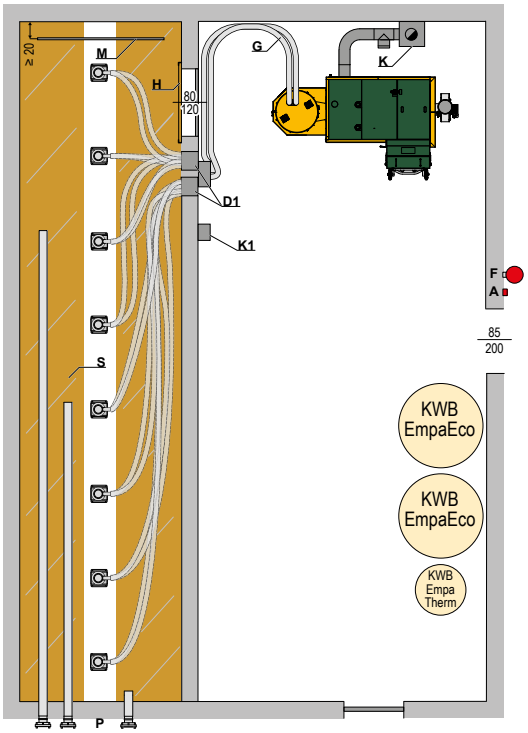
COMPATIBLE WITH

KWB Easyfire type EF2 GS 2,4 – 38 kW
KWB Easyfire type EF2 CC4 GS 2,9 – 40 kW
KWB Pelletfire^{Plus} type MF2 GS 45 – 135 kW

STORAGE ROOM NEXT, ABOVE OR BELOW THE HEATING ROOM

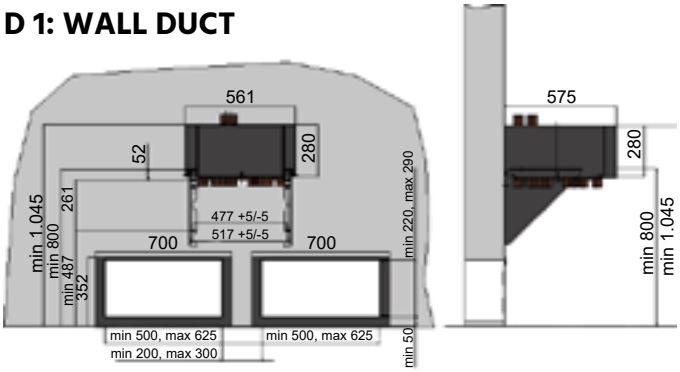
EXAMPLES KWB SWITCHOVER UNIT 8 SAMPLING PROBES WITH SUCTION CONVEYOR





Max fill height: 300 cm

D 1: WALL DUCT



LEGEND

A	Emergency-stop switch: Boiler NOT de-energised, but combustion stopped – heat dissipation continues!
F	Fire extinguisher
G	Hose routing for the Easyfire type EF2 GS / Combifire type CF2 GS / Pelletfire^{Plus} type MF2 GS • Max. conveyance length of sample probes: 25 m • Max. delivery height without step 3 m • Maximum conveyor height with step: 5 m – must install step at the latest at a height difference of 3 m
G	General tips on hose routing • Arrange hoses horizontally for at least 1 m per step • All conveying hose bend radii at least 40 cm
H	Protective door boards for pressure relief
K	• Keep access to the chimney free: at least 60 cm • Exhaust pipe and chimney model according to "Technical data" table • Install energy-saving damper with explosion flap (except for type EF2 with ambient air-independent operation)
K1	KWB extension module (Comfort 4)
M	Ricochet protection mat
P	Ventilated filling nozzles (injection & suction nozzles) Place the injection connector in the middle of the room and the suction nozzle ≥ 50 cm to the side of the injection connector in the direction of the storage room door. The suction nozzle should always be cut as short as possible inside, almost flush with the wall (it must still be possible to mount the earthing clamp!). Both nozzles should be attached at a distance of ≥ 50 cm from the side walls and ≥ 20 cm from the ceiling.
S	Sloping floor with an incline of at least 40 ° and a smooth surface (e.g. with Betoplan or plywood boards)

Notes

- Provide ventilation for the heating room sized ≥ 400 cm^2.
- Assemble the drives outside the storage room.
- Take the ceiling load / static loads into account!
- Local fire safety regulations and other requirements must be strictly complied with!
- Maintain the legally prescribed distances to flammable materials!
- The pellet heating systems KWB Easyfire, KWB Easyfire 1 Plus and KWB Combifire with suction conveyor are only available as left-sided models.
  The pellet heating system KWB Pelletfire^{Plus} is available both as a right-sided as well as a left-sided model.

For a compliant pellet storage room design, KWB recommends implementing the requirement of the European DIN EN ISO 20023 standard.

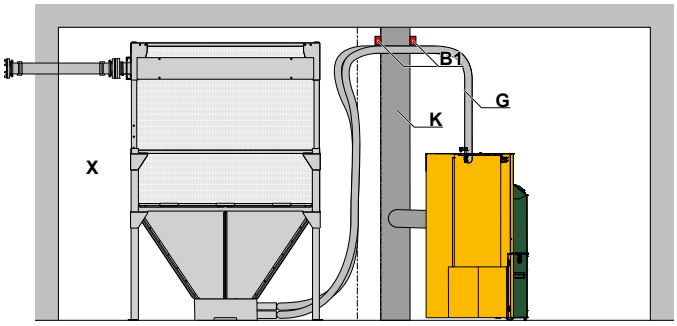
All dimensions in cm I Width x Height

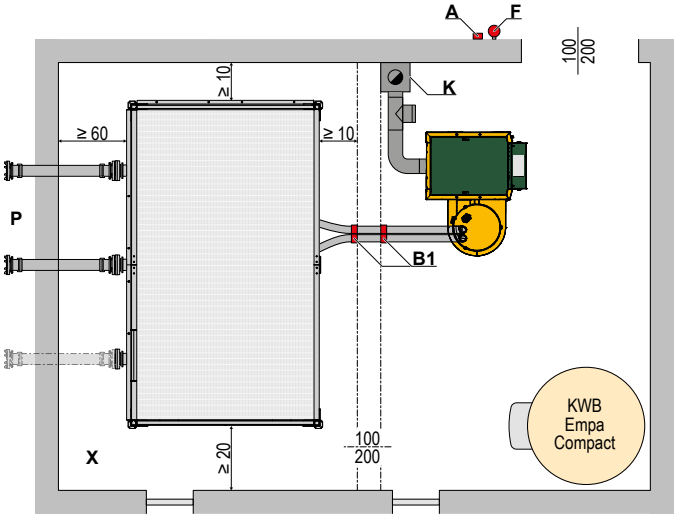
PRACTICAL EXAMPLES PELLET STORAGE

COMPATIBLE WITH
KWB Combifire type CF2 GS 18 – 38 kW
KWB Easyfire type EF2 GS 2.4 – 38 kW
KWB Easyfire type EF2 CC4 GS 2.9 – 40 kW
KWB Easyfire 1 Plus type USP GS 10 – 20 kW

PLACEMENT ADJACENT TO, ABOVE/BELOW THE HEATING ROOM OR OUTSIDE PROTECTED FROM THE WEATHER

KWB PELLET BOX





Max. filling height: 250 cm

LEGEND

A	Emergency-stop switch: Boiler NOT de-energised, but combustion stopped – heat dissipation continues!
B1	Fire protection sleeve suction hoses ∅ 6 cm, drill hole ∅ 7 cm, respectively - seal after installation
F	Fire extinguisher
G	Hose routing • Max. total conveyor length: 25 m • Maximum conveyor height without step: 3 m • Maximum conveyor height with step: 5 m – with at least 3 m height difference, install step • Arrange hoses horizontally for at least 1 m per step • All conveying hose bend radii at least 40 cm
K	• Keep access to the chimney free: at least 60 cm • Exhaust pipe and chimney model according to "Technical data" table • Install energy-saving damper with blowback flap (except for type EF2 with ambient air-independent operation, see page 128)
P	Filling nozzles (injection & suction nozzles): 2 or 3 filling nozzles (depending on the size of the KWB Pellet Box)
X	Fabric tank installation room: • Provide for ventilation of the fabric tank storage room sized ≥ 400 cm² • No pointy or sharp elements may be stored in the room where the fabric tanks is placed! • The fabric must not come into contact with moist walls. • UV light must be strictly avoided in the fabric tank storage room (e.g. glue UV-foil to the windows). • As the pellet dust forms residues over the years, KWB recommends cleaning the fabric tank every 3-5 years.

Notes

- Provide ventilation for the heating room sized ≥ 400 cm².
- Take the ceiling load / static loads into account!
- Local fire safety regulations and other requirements must be strictly complied with!
- Maintain the legally prescribed distances to flammable materials!
- The pellet heating systems KWB Easyfire and KWB Combifire with suction conveyor are only available as left-sided models. The pellet heating system KWB Pelletfire^{Plus} is available both as a right-sided as well as a left-sided model.

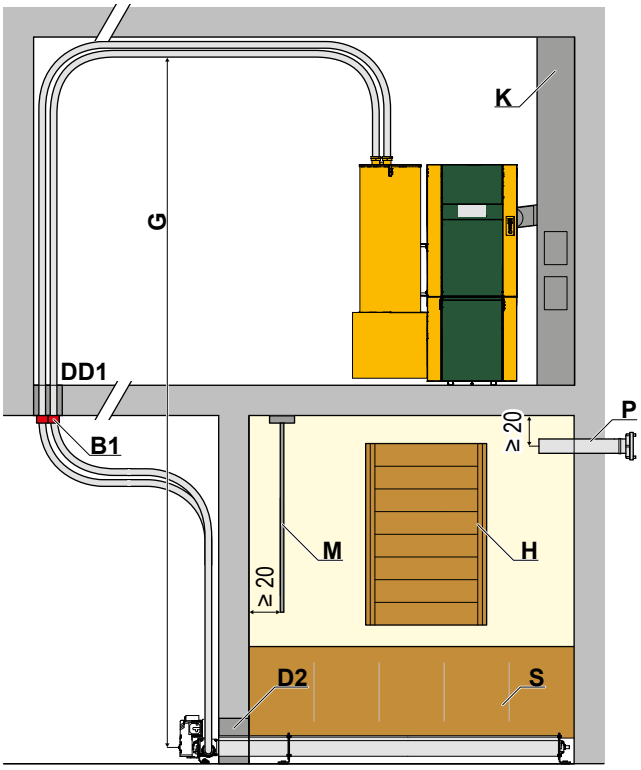
For a compliant pellet storage room design, KWB recommends implementing the requirement of the European DIN EN ISO 20023 standard.

All dimensions in cm l Width x Height

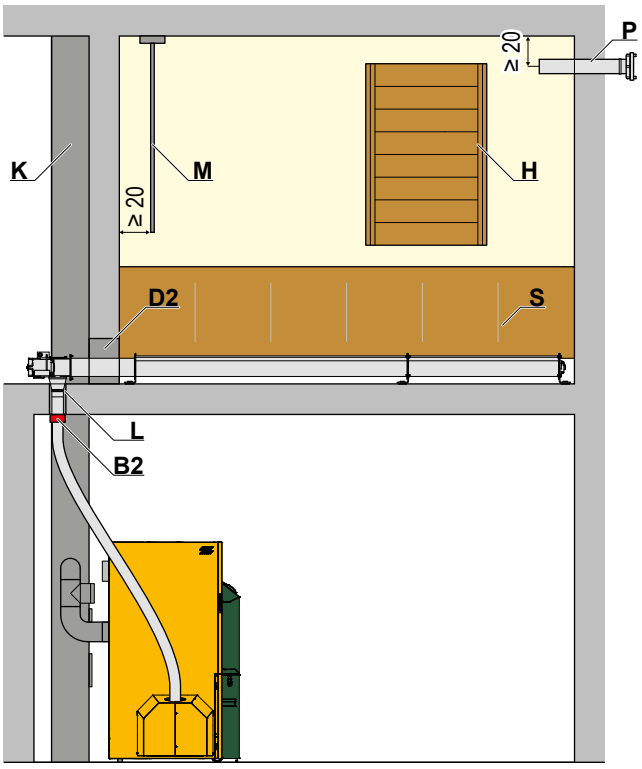
PRACTICAL EXAMPLES OF SPECIAL SOLUTIONS PELLET OPERATION

COMPATIBLE WITH
KWB Combifire type CF2 GS 18 – 38 kW
KWB Easyfire type EF2 GS 2.4 – 38 kW
KWB Easyfire type EF2 CC4 GS 2.9 – 40 kW
KWB Pelletfire^{Plus} type MF2 GS* 45 – 135 kW

CONVEYOR SCREW WITH SUCTION CONVEYOR



CONVEYOR SCREW WITH DROP HOSE MODEL



Max. filling height: 300 cm

LEGEND

B1	Fire protection sleeve suction hoses ∅ 6 cm, drill hole ∅ 7 cm, respectively – seal after installation; the channel must be acoustically decoupled
B2	Fire safety sleeve drop hose ∅ 7.5 cm
D2	Wall duct 35 x 35 cm: seal after installation, channel must be acoustically decoupled
CS	Conveyor screw
G	Hose routing • Max. total conveyor length: 25 m • Maximum conveyor height without step: 3 m • Maximum conveyor height with step: 5 m – with at least 3 m height difference, install step • Arrange hoses horizontally for at least 1 m per step • All conveying hose bend radii at least 40 cm
H	Protective door boards for pressure relief
K	• Keep access to the chimney free: at least 60 cm • Exhaust pipe and chimney model according to "Technical data" table • Install energy-saving damper with blowback flap
DD1	Ceiling duct ∅ 10 cm: seal after installation, channel must be acoustically decoupled
M	Ricochet protection mat
P	Ventilated filling nozzles (injection & suction nozzles) Place the injection connector in the middle of the room and the suction nozzle ≥ 50 cm to the side of the injection connector in the direction of the storage room door. The suction nozzle should always be cut as short as possible inside, almost flush with the wall (it must still be possible to mount the earthing clamp!). Both nozzles should be attached at a distance of ≥ 50 cm from the side walls and ≥ 20 cm from the ceiling.
S	Sloping floor with an incline of at least 40 ° and a smooth surface (e.g. with Betoplan or plywood boards)

Notes
• Provide ventilation for the heating room sized ≥ 400 cm². • Assemble the drives outside the storage room. • Take the ceiling load / static loads into account! • Local fire safety regulations and other requirements must be strictly complied with! • Maintain the legally prescribed distances to flammable materials! • The pellet heating systems KWB Easyfire and KWB Combifire with suction conveyor are only available as left-sided models. The pellet heating system KWB Pelletfire^{Plus} is available both as a right-sided as well as a left-sided model.

* Planning advice for KWB Pelletfire^{Plus}: As of a capacity of 65 kW, the use of steel pipe bends should be planned for all direction changes in the pellet conveying hoses (except for the return air hose).

For a compliant pellet storage room design, KWB recommends implementing the requirement of the European DIN EN ISO 20023 standard.

All dimensions in cm I Width x Height

PRACTICAL EXAMPLES FOR SPECIAL SOLUTIONS IN PELLET OPERATIONS

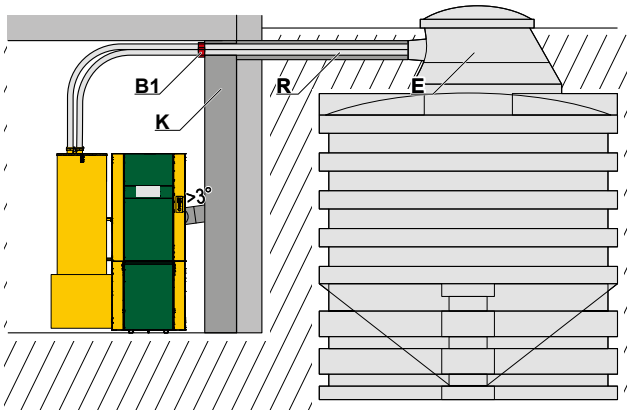
COMPATIBLE WITH

- **KWB Combifire type CF2 GS** 18 – 38 kW
- **KWB Easyfire type EF2 GS** 2.4 – 38 kW
- **KWB Easyfire type EF2 CC4 GS** 2.9 – 40 kW
- **KWB Easyfire 1 Plus type USP GS** 10 – 20 kW
- **KWB Pelletfire^{Plus} type MF2 GS** 45 – 135 kW

SUCTION CONVEYOR FOR BURIED TANK

The buried tank itself, as well as extraction from the buried tank, is not included in the KWB product line. KWB recommends the Geotank system by Geoplast:

Kunststofftechnik GmbH
A-2604 Theresienfeld, Bahnstraße 45
www.pelletstank.com



LEGEND

B1	Fire protection sleeve suction hoses ∅ 6 cm, drill hole ∅ 7 cm, respectively - seal after installation
R	A protective conduit (∅ 15 or 20 cm) for the underground installation of the suction hoses must be provided and laid by the customer. The protective conduit and wall duct must be sealed tight to the outside.

K	• Keep access to the chimney free: at least 60 cm • Exhaust pipe and chimney model according to "Technical data" table • Install energy-saving damper with explosion flap (except for type EF2 with ambient air-independent operation)
E	Buried tank

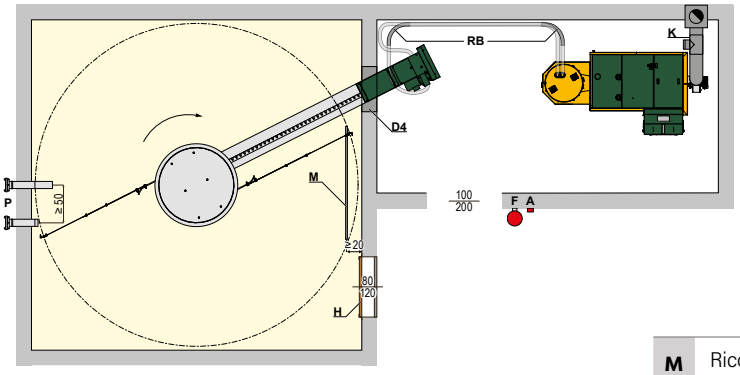
Notes

- Provide ventilation for the heating room sized ≥ 400 cm². • Take the ceiling load / static loads into account!
- Assemble the drives outside of the storage room
- Local fire safety regulations and other requirements must be strictly complied with!
- Maintain the legally prescribed distances to flammable materials!
- The pellet heating systems KWB Easyfire with suction conveyor are only available as left-sided models. The pellet heating system KWB PelletfirePlus is available both as a right-sided as well as a left-sided model.

SUCTION SYSTEM FOR LARGE STORAGES

COMPATIBLE WITH

- **KWB Pelletfire^{Plus} type MF2 GS*** 45 – 135 kW



Max. filling height: 300 cm

LEGEND

C	False floor optional – it is possible to install the conveyor channel in a recess in the floor. (Rear ventilation recommended)
D4	Wall duct 60 × 60 cm; seal after installation; the channel must be acoustically decoupled (at least 2 cm acoustic insulation)
G	Hose routing • Max. total conveyor length: 25 m • Maximum conveyor height without step: 3 m • Maximum conveyor height with step: 5 m – with at least 3 m height difference, install step • Arrange hoses horizontally for at least 1 m per step • All conveying hose bend radii at least 40 cm

M	Ricochet protection mat
P	Ventilated filling nozzles (injection & suction nozzles) Place the injection connector in the middle of the room and the suction nozzle ≥ 50 cm to the side of the injection connector in the direction of the storage room door. The suction nozzle should always be cut as short as possible inside, almost flush with the wall (it must still be possible to mount the earthing clamp!). Both nozzles should be attached at a distance of ≥ 50 cm from the side walls and ≥ 20 cm from the ceiling.
RB	Planning advice for KWB Pelletfire^{Plus}: As of a capacity of 65 kW or during basic operation, a reinforced pellet conveying hose with a bend radius R 500 (Longlife execution) should be planned for.
SK	Suction head

* Planning advice for KWB Pelletfire^{Plus}: As of a capacity of 65 kW, the use of steel pipe bends should be planned for all direction changes in the pellet conveying hoses (except for the return air hose).

For a compliant pellet storage room design, KWB recommends implementing the requirement of the European DIN EN ISO 20023 standard.

All dimensions in cm I Width x Height

GUIDELINES AND RECOMMENDATIONS FOR BUILDING A WOOD CHIP STORAGE

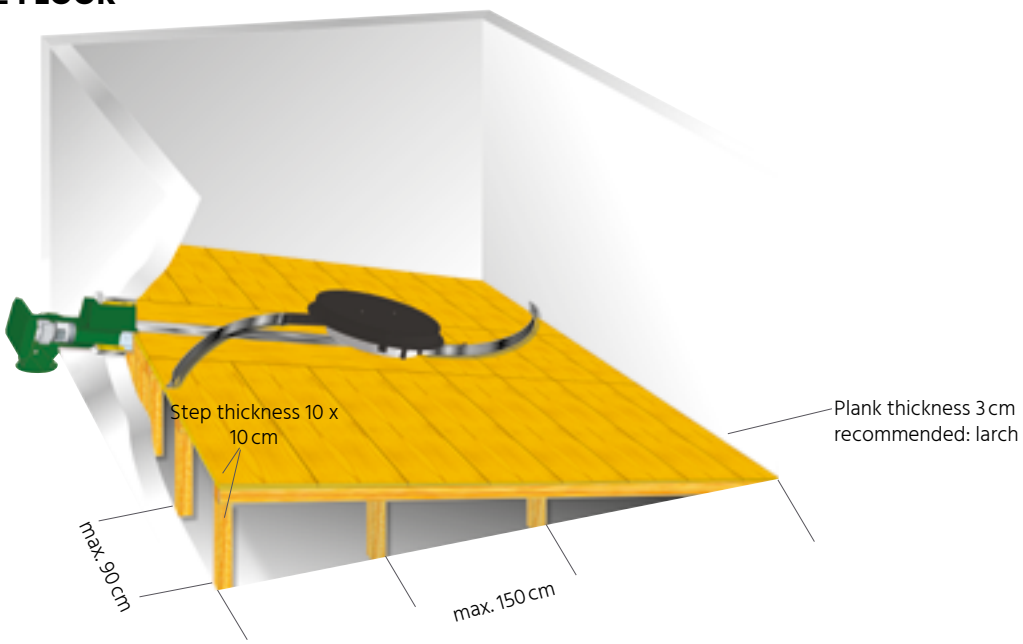
WOOD CHIP STORAGE ROOM

Please observe the rule that the fill height may be no more than 1.5 times the storage room diameter. In the event of higher fill heights, the wood chips start creating bridges which leads to failures in the fuel conveyance!

Heating load of the building [kW]	Annual consumption [m³]	Required storage room volume [m³]:
20	50	74
30	75	111
40	100	148
45	113	167
50	125	185
60	150	222
65	163	241
70	175	259
80	200	296
100	250	370
108	270	400
120	300	444

Calculation basis for the table:
- Wood chips with 25% moisture content and size P16S according to EN 14961-4
- Consumption: 2.5 m³ wood chips per kW heating load
- Storage room volume: 3.7 m³ per kW heating load
- 1,500 full load hours per year

EXAMPLE FALSE FLOOR



LEGEND

A	Emergency-stop switch: Boiler NOT de-energised, but combustion stopped – heat dissipation continues!
D4	Wall duct 60 × 60 cm; seal after installation; the channel must be acoustically decoupled (at least 2 cm acoustic insulation)
F	Fire extinguisher
H	Hatch: Protective door boards for pressure relief
K	Chimney: Exhaust gas pipe and chimney design according to "Technical data" table, energy-saving damper: Installation with blowback flap

All dimensions in cm I Width x Height

PRACTICAL EXAMPLES FOR THE WOOD CHIP STORAGE

Thanks to KWB's flexible and diverse conveyor systems, a solution can be found for almost every structural situation.

HEATING IN AN ADJACENT BUILDING

KWB Multifire with stirrer system and conveyor screw: direct storage room filling

HEATING SYSTEM IN THE BASEMENT WITH DIRECT FILLING

KWB Multifire with double heating system with stirrer system and 2 conveyor screws: direct storage room filling

HEATING IN A SEPARATE HEATING HOUSE

KWB Multifire with double heating system with stirrer system and 2 conveyor screws: direct storage room filling

HEATING SYSTEM IN THE BASEMENT WITH FILLING SCREW

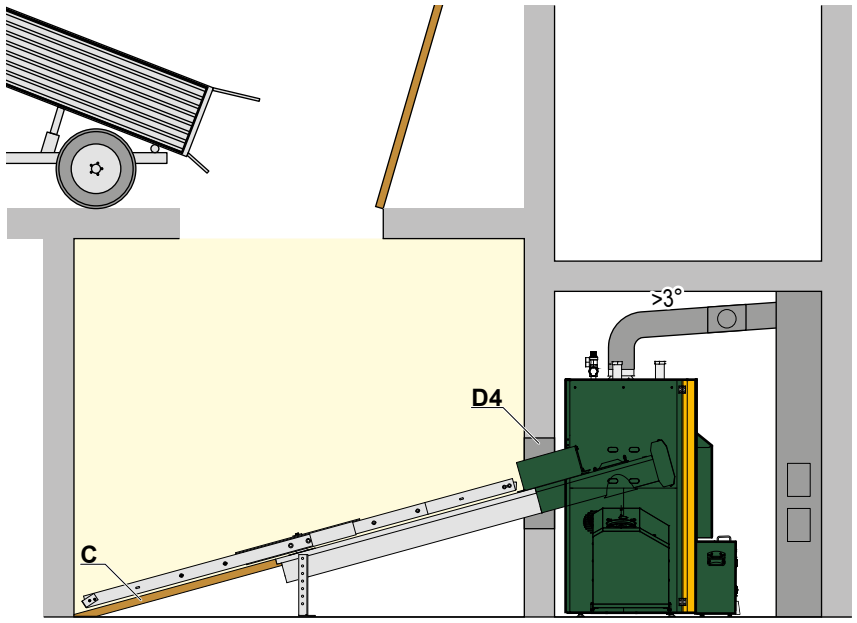
KWB Multifire with stirrer system and conveyor screw: Storage room filling with filling screw

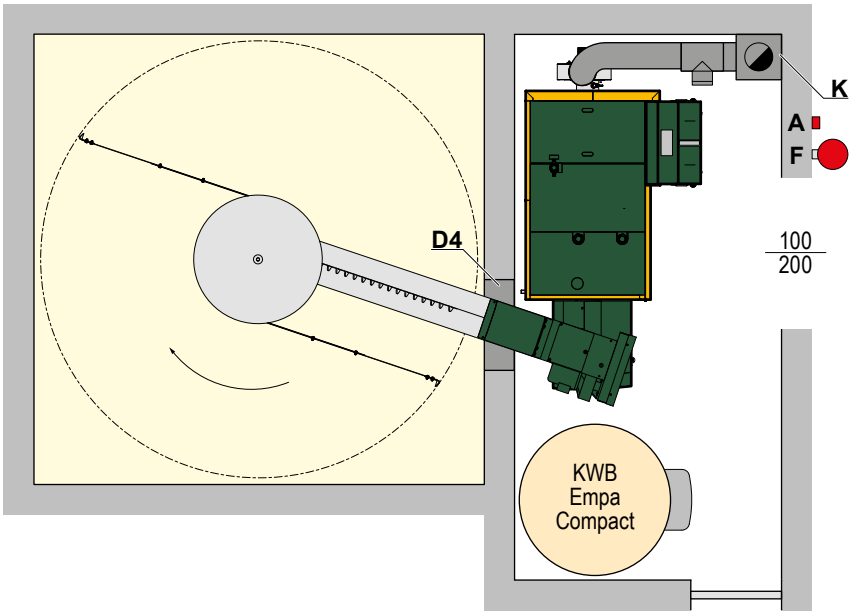
All dimensions in cm l Width x Height

WOOD CHIP STORAGE ADJACENT TO HEATING ROOM

COMPATIBLE WITH
KWB Pelletfire^{Plus} type MF2 S 45 – 135 kW
KWB Multifire type MF2 D/ZI 20 – 120 kW
KWB Powerfire type TDS 150 kW
KWB Powerfire type TDS 200 – 300 kW only for pellet operation

STIRRER WITH CONVEYOR CHANNEL AND DIRECT CONNECTION





Max. filling height: Stirrer diameter x 1.5;
A maximum pouring height of 3 m is permitted in pellet operations.

LEGEND

A	Emergency-stop switch: Boiler NOT de-energised, but combustion stopped – heat dissipation continues!
C	False floor optional – it is possible to install the conveyor channel in a recess in the floor (we recommend rear ventilation and acoustic decoupling)
D4	Wall duct 60 x 60 cm; seal after installation; the channel must be acoustically decoupled (at least 2 cm acoustic insulation)
F	Fire extinguisher
K	Chimney: Exhaust gas pipe and chimney design according to "Technical data" table, energy-saving damper: Installation with blowback flap

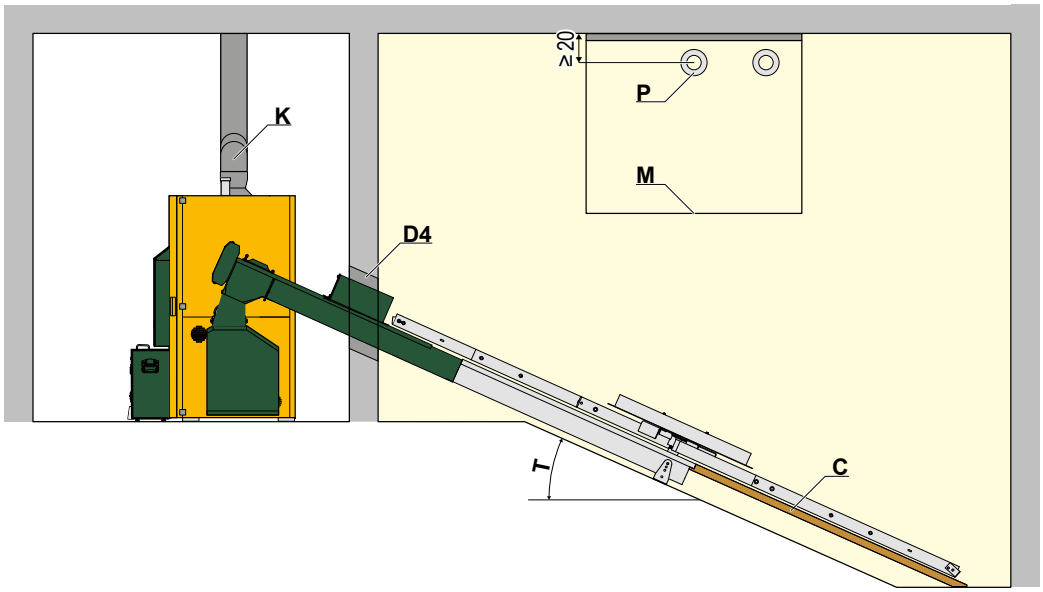
For a compliant pellet storage room design, KWB recommends implementing the requirement of the European DIN EN ISO 20023 standard.

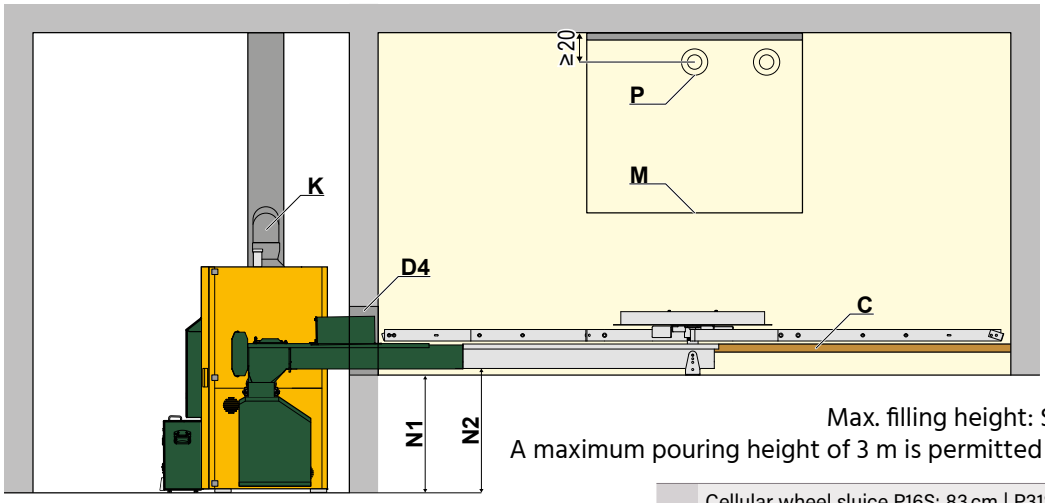
All dimensions in cm I Width x Height

WOOD CHIP STORAGE ADJACENT TO HEATING ROOM

COMPATIBLE WITH
KWB Pelletfire^{Plus} type MF2 S 45 – 135 kW
KWB Multifire type MF2 D/ZI 20 – 120 kW
KWB Powerfire type TDS 150 kW
KWB Powerfire type TDS 200 – 300 kW only for pellet operation

STIRRER WITH CONVEYOR CHANNEL AND DIRECT CONNECTION





Max. filling height: Stirrer diameter x 1.5;
A maximum pouring height of 3 m is permitted in pellet operations.

LEGEND

C	False floor optional – it is possible to install the conveyor channel in a recess in the floor. (Rear ventilation recommended)
D4	Wall duct 60 × 60 cm; seal after installation; the channel must be acoustically decoupled (at least 2 cm acoustic insulation)
K	Keep access to the chimney free: >60 cm; exhaust pipe and chimney design according to "Technical data" table; energy-saving damper: installation with blowback flap
M	Ricochet protection mat

N1	Cellular wheel sluice P16S: 83 cm | P31S: 93 cm Hopper ZI: 92 cm | type MF2 S pellet operation: 73 cm
N2	Cellular wheel sluice P16S: 88 cm | P31S: 98 cm Hopper ZI: 97 cm | type MF2 S pellet operation: 78 cm
T	Wood chip operation: from > 100 kW max. 15 ° up to ≤ 100 kW max. 20 ° Pellet operation: up to ≤ 135 kW max. 20 °
P	Ventilated filling nozzles (injection & suction nozzles) Place the injection connector in the middle of the room and the suction nozzle ≥ 50 cm to the side of the injection connector in the direction of the storage room door. The suction nozzle should always be cut as short as possible inside, almost flush with the wall (it must still be possible to mount the earthing clamp!). Both nozzles should be attached at a distance of ≥ 50 cm from the side walls and ≥ 20 cm from the ceiling.

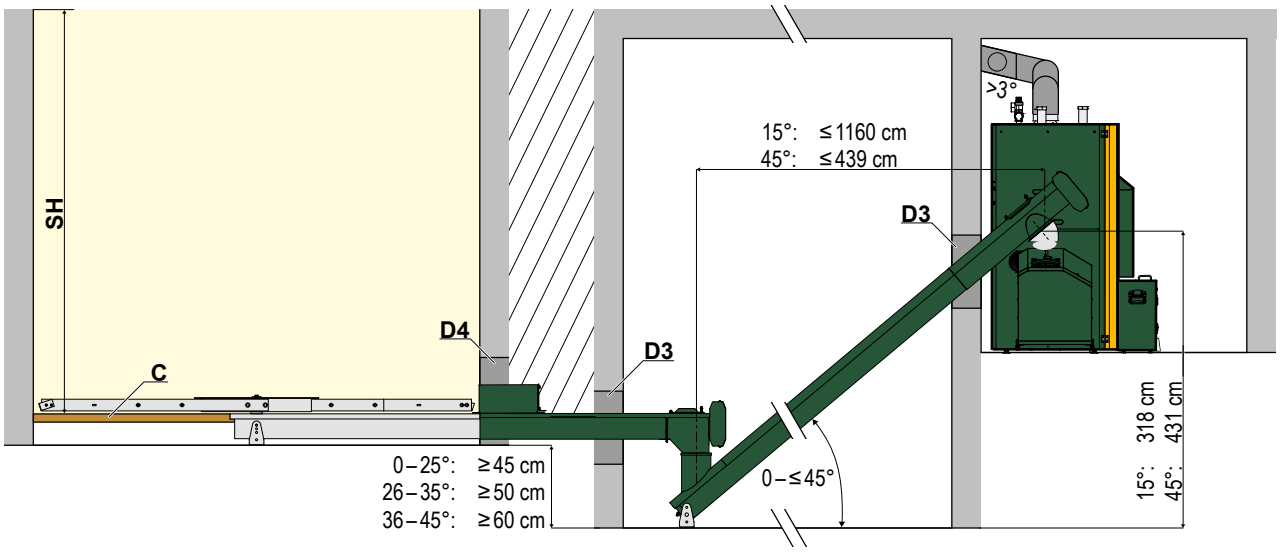
Notes
• Provide ventilation for the heating room sized ≥ 400 cm². • Take the ceiling load / static loads into account! • Assemble drives outside the storage room • Local fire safety regulations and other requirements must be strictly complied with! • Maintain the legally prescribed distances to flammable materials!

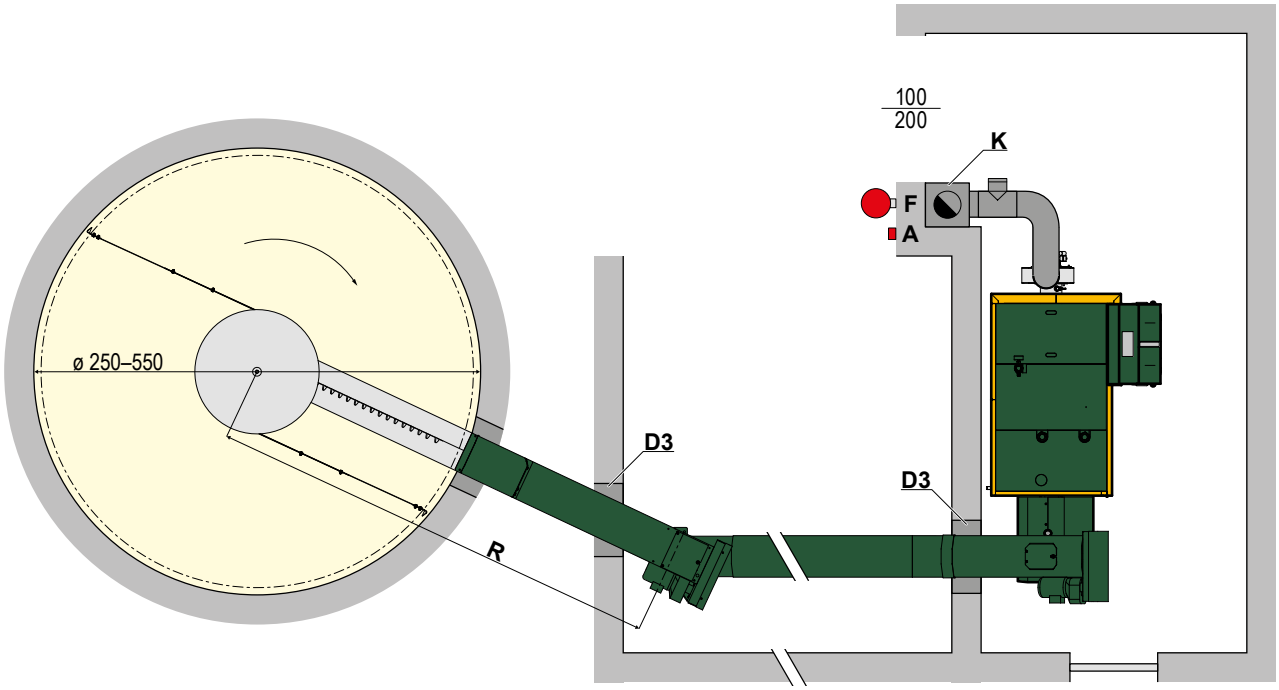
For a compliant pellet storage room design, KWB recommends implementing the requirement of the European DIN EN ISO 20023 standard.

All dimensions in cm l Width x Height

WOOD CHIP STORAGE AT A DISTANCE FROM THE HEATING ROOM

COMPATIBLE WITH
KWB Pelletfire^{Plus} type MF2 S 45 – 135 kW
KWB Multifire type MF2 D/ZI 20 – 120 kW
KWB Powerfire type TDS 150 kW
KWB Powerfire type TDS 200 – 300 kW only for pellet operation





Max. filling height: Stirrer diameter x 1.5;
A maximum pouring height of 3 m is permitted in pellet operations.

LEGEND

A	Emergency-stop switch: Boiler NOT de-energised, but combustion stopped – heat dissipation continues!
C	False floor optional – it is possible to install the conveyor channel in a recess in the floor. (Rear ventilation and acoustic decoupling are recommended)
D3	Wall duct 50 x 50 cm; seal after installation; the channel must be acoustically decoupled (at least 2 cm acoustic insulation)
D4	Wall duct 60 x 60 cm; seal after installation, channel must be acoustically decoupled

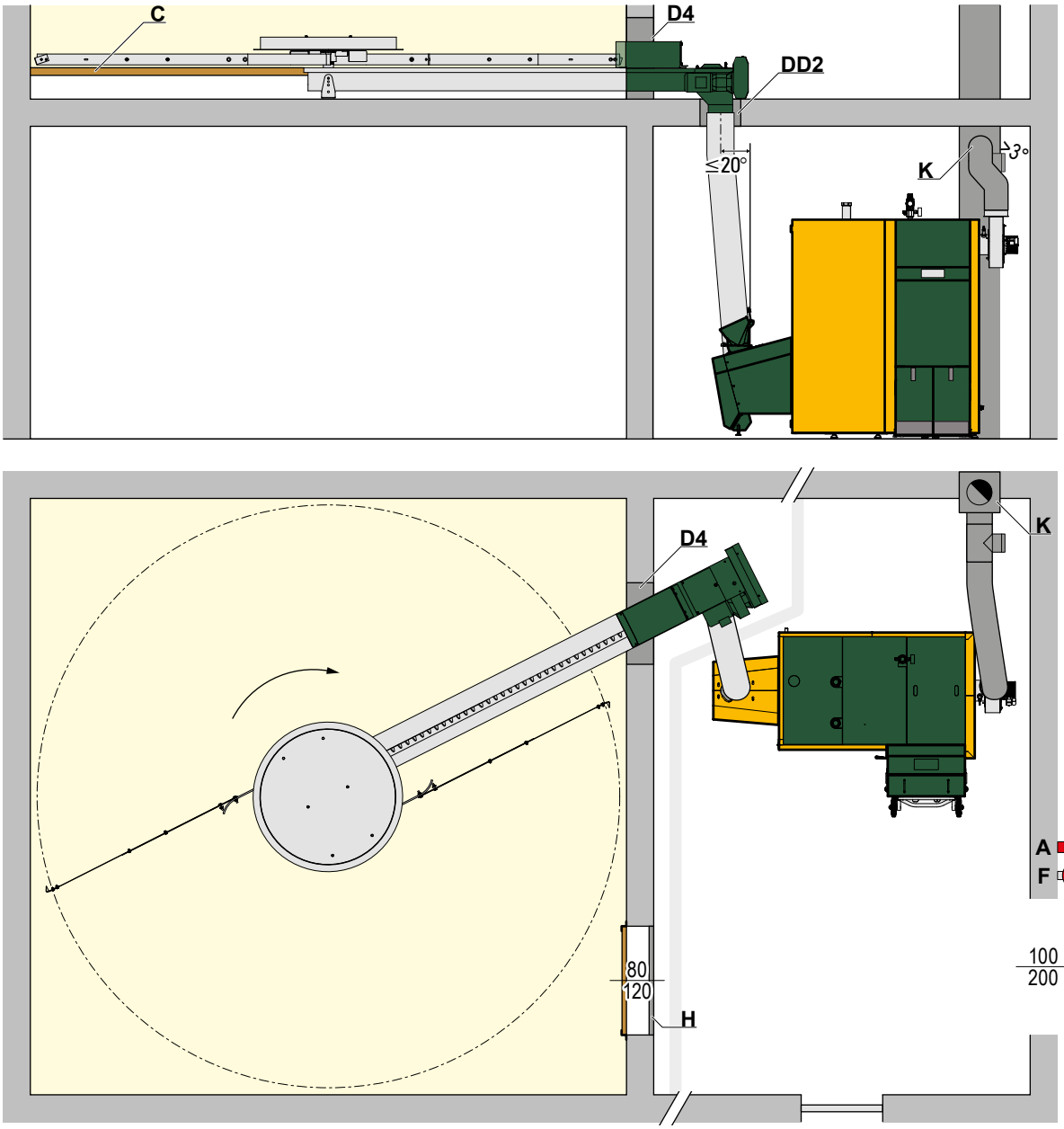
F	Fire extinguisher
K	Chimney: Exhaust gas pipe and chimney design according to "Technical data" table, energy-saving damper: Installation with blowback flap
N1	Pouring height upon request (depends on storage room width and length, and fuel)
R	Screw length ≤1,200 cm
SH	Pouring height

For a compliant pellet storage room design, KWB recommends implementing the requirement of the European DIN EN ISO 20023 standard.

All dimensions in cm I Width x Height

WOOD CHIP STORAGE ABOVE THE HEATING ROOM

COMPATIBLE WITH
KWB Pelletfire^{Plus} type MF2 S 45 – 135 kW
KWB Multifire type MF2 D/ZI 20 – 120 kW
KWB Powerfire type TDS 150 kW
KWB Powerfire type TDS 200 – 300 kW only for pellet operation



Max. filling height: Stirrer diameter x 1.5;
A maximum pouring height of 3 m is permitted in pellet operations.

LEGEND

A	Emergency-stop switch: Boiler NOT de-energised, but combustion stopped – heat dissipation continues!
C	False floor optional – it is possible to install the conveyor channel in a recess in the floor. (Rear ventilation and acoustic decoupling are recommended)
D4	Wall duct 60 × 60 cm; seal after installation; the channel must be acoustically decoupled (> 2 cm acoustic insulation)
F	Fire extinguisher

H	Hatch: Protective door boards for pressure relief
K	Chimney: Exhaust pipe and chimney design according to "Technical data" table, energy-saving damper: Installation with blowback flap
DD2	Ceiling duct 30 × 30 cm, seal after installation; the channel must be acoustically decoupled (> 2 cm acoustic insulation)

For a compliant pellet storage room design, KWB recommends implementing the requirement of the European DIN EN ISO 20023 standard.

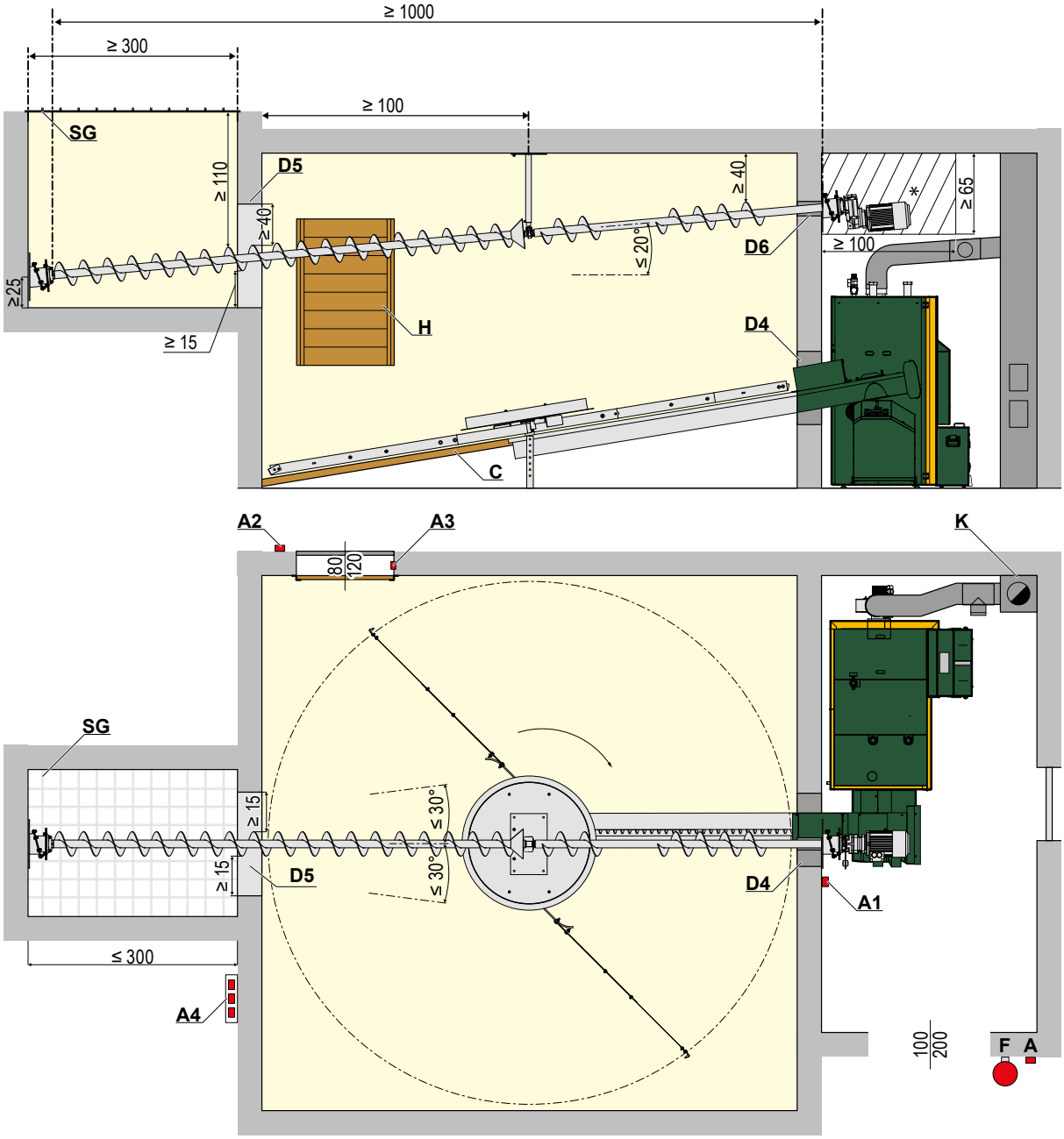
All dimensions in cm l Width x Height

STIRRER WITH WOOD CHIP FILLING SCREW

COMPATIBLE WITH

KWB Multifire type MF2 D/ZI 20 – 120 kW

KWB Powerfire type TDS 150 kW



Max. filling height: Stirrer diameter x 1.5;
A maximum pouring height of 3 m is permitted in pellet operations.

LEGEND

A	Emergency-stop switch: Boiler NOT de-energised, but combustion stopped – heat dissipation continues!
A1	Emergency off switch or switches: For the motor
A2	Emergency off switch or switch with key: For the door to the burner chamber storage room
A3	Door contact end switch: On the door frame to the burner chamber storage room
A4	Emergency off switch + On switch + Off switch: At the operator station at the filling shaft
C	False floor optional – it is possible to install the conveyor channel in a recess in the floor. (Rear ventilation and acoustic decoupling are recommended)
D4	Wall duct 60 × 60 cm; seal after installation; the channel must be acoustically decoupled (at least 2 cm acoustic insulation)
D5	Wall duct 80 x 80 cm
D6	Wall duct Ø10 cm; seal after installation; the channel must be acoustically decoupled (at least 2 cm acoustic insulation)
F	Fire extinguisher
H	Hatch: Protective door boards for pressure relief
K	Chimney: Exhaust pipe and chimney design according to "Technical data" table, energy-saving damper: Installation with blowback flap
SG	Tightly bolted protective grille Mesh width 20 cm

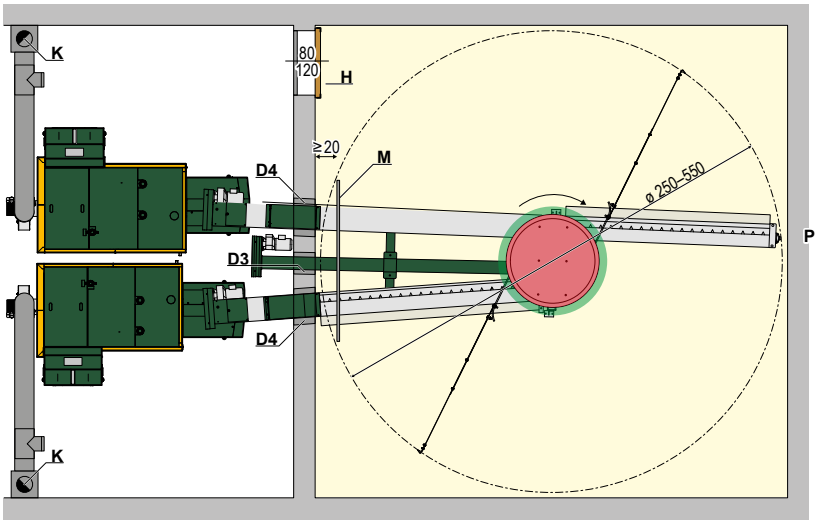
For a compliant pellet storage room design, KWB recommends implementing the requirement of the European DIN EN ISO 20023 standard.

All dimensions in cm I Width x Height

CONVEYOR SYSTEMS FOR DOUBLE BOILER SYSTEMS

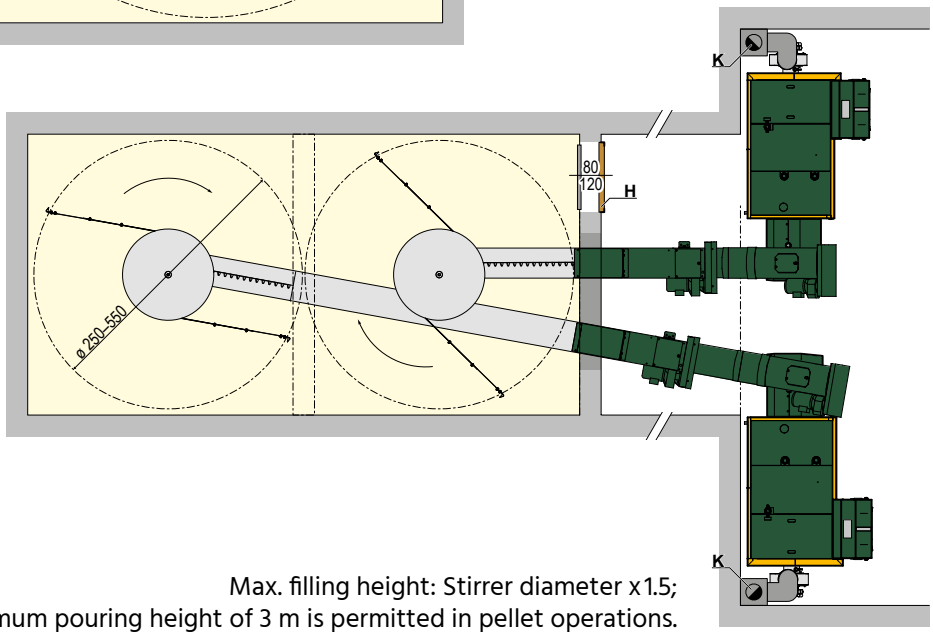
COMPATIBLE WITH
KWB Pelletfire^{Plus} type MF2 S 45 – 135 kW
KWB Multifire type MF2 D/ZI 20 – 120 kW
KWB Powerfire type TDS 150 kW
KWB Powerfire type TDS 200 – 300 kW only for pellet operation

STIRRER WITH V-SHAPED AND Y-SHAPED CONVEYOR CHANNEL AND DIRECT CONNECTION



Planning advice: The Y-shaped conveyor channel has a short screw channel and a long screw channel where half of the channel is closed. The opening of the long channel must reach to under the stirrer disc, but remain in the green ring area (ring width 140 mm). It must not reach into the blocking zone (red area, diameter 820 mm).

DUAL BOILER SYSTEM WITH STIRRERS ARRANGED ONE BEHIND THE OTHER



Max. filling height: Stirrer diameter x 1.5;
A maximum pouring height of 3 m is permitted in pellet operations.

LEGEND

D3	Wall duct 50 × 50 cm; seal after installation; the channel must be acoustically decoupled (at least 2 cm acoustic insulation)
D4	Wall duct 60 × 60 cm; seal after installation; the channel must be acoustically decoupled (at least 2 cm acoustic insulation)
H	Hatch: Protective door boards for pressure relief
K	• Keep access to the chimney free: at least 60 cm • Exhaust pipe and chimney model according to "Technical data" table • Install energy-saving damper with blowback flap

M	Ricochet protection mat
P	Ventilated filling nozzles (injection & suction nozzles) Place the injection connector in the middle of the room and the suction nozzle ≥ 50 cm to the side of the injection connector in the direction of the storage room door. The suction nozzle should always be cut as short as possible inside, almost flush with the wall (it must still be possible to mount the earthing clamp!). Both nozzles should be attached at a distance of ≥ 50 cm from the side walls and ≥ 20 cm from the ceiling.

Notes

- Provide ventilation for the heating room sized ≥ 400 cm².
- Take the ceiling load / static loads into account!
- Mount the drives outside of the storage room
- Local fire safety regulations and other requirements must be strictly complied with!
- Maintain the legally prescribed distances to flammable materials!

For a compliant pellet storage room design, KWB recommends implementing the requirement of the European DIN EN ISO 20023 standard.

All dimensions in cm l Width x Height

KWB

SOLAR SYSTEMS

All advantages at a glance

✓ Can be mounted standing upright and lying flat thanks to flexible fastening sets

✓ Different mounting systems for one generous application range

THE POWER
OF THE SUN

KWB PREMIUM COLLECTOR

The sun is a reliable supplier of free energy and makes life on earth possible. When it is cloudless in Central Europe, one square meter of the earth's surface receives 1,000 kWh radiant power.

LOWER COSTS EFFICIENTLY

With our solar thermal systems, up to 60% of the hot water demand can be covered with our solar thermal systems. If supported by the heating systems, it is even up to 20% of the entire hot water demand. A KWB solar heating system therefore increases the overall efficiency of the heating system.

The sun sends its users no bill. For this reason the solar thermal system is a particularly economical heating component.

REDUCE CO_2 THROUGH CLEAN HEAT

Global climate warming increases with increasing greenhouse gas emissions. Systems using the radiation energy of the sun for hot water preparation or heating support fully avoid emitting the greenhouse gas carbon dioxide.

Solar thermal energy is the cleanest way to generate heat and, as a consequence, represents an active contribution to climate protection.

KWB SOLAR SYSTEMS

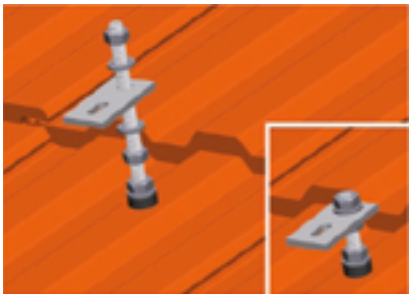
The collectors are available upright standing (N) or flatlaying (L).
Note: If there are more than four flatlaying collectors (L) in a series, an expansion bend is required that must be able to accommodate up to 30 mm length expansion.

MOUNTING SETS

FOR SOLAR COLLECTORS

Different sets make fastening the KWB solar modules **flexible** and **simpler**. When **pantiling**, the use of **roof bars** is required. On **flat roofs** and all **other roof types**, **hanger screws** are utilized.

Roof bar installation (DB 0°)



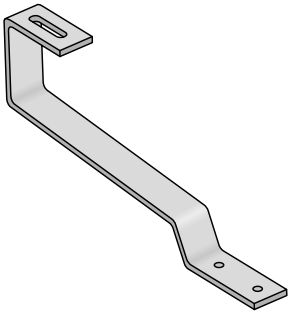
Hanger screw installation (SS 0°)

Elevation on a flat roof/the ground (SS 45°)

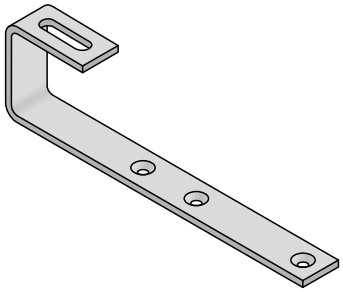
MOUNTING SETS

FOR SLATE ROOFS OR TILE ROOFS

In addition to the already known and proven **attachment options** with the standard roof bars and hanger screw, there are now also optimised roof bars available **specifically for plain-tile and slate roofs**. Except for the roof bars, the contents of the mounting packages for the individual solar packages are identical to the already known DB0° sets.



Roof bar detail for the plain-tile roof



Roof hook for the slate roof

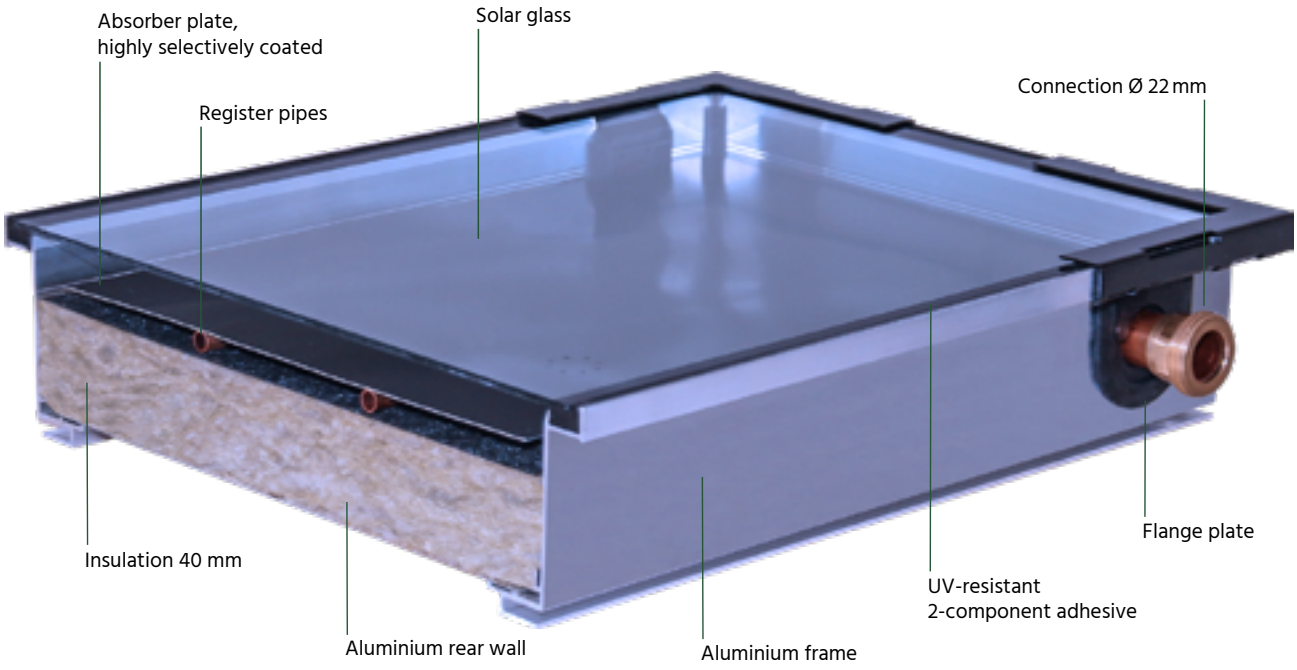
TECHNICAL DATA

KWB SOLAR COLLECTOR

TECHNOLOGY

The frame collector of the KWB brand is built in a cutting-edge robot-based manufacturing process. The absorber is produced using state-of-the-art ultrasound and laser welding technologies. A sophisticated adhesive technology ensures the collector's absolutely leak tightness.

011-7S1917 F or 011-7S1939 F

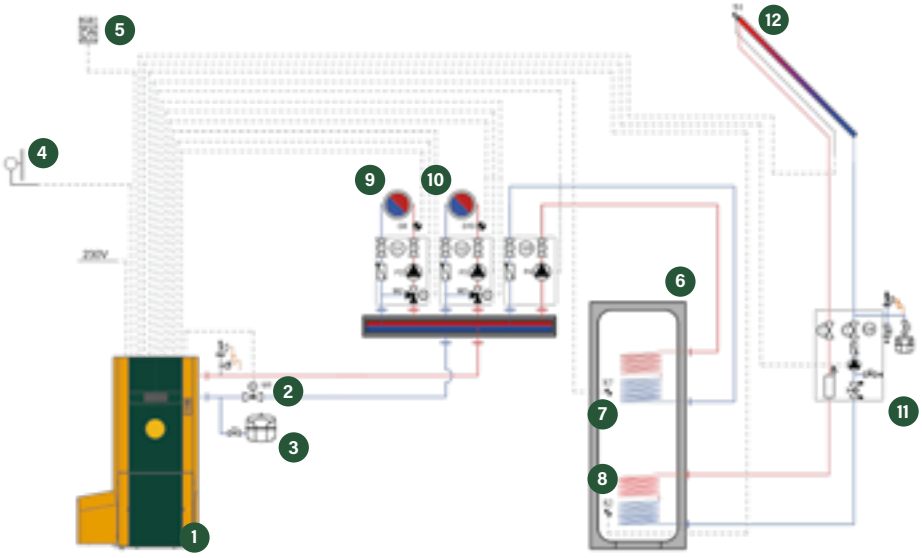


TECHNICAL DATA - COLLECTOR

KWB FLEXISUN	UNIT	KWB FLEXISUN FK 8250 N	KWB FLEXISUN FK 8250 L
Collector type	–	Roof-mounted collector	Roof-mounted collector
Absorber	–	Aluminium absorber	Aluminium absorber
Gross area	m^2	2.51	2.51
Aperture area	m^2	2.40	2.39
Absorber area	m^2	2.31	2.31
Optical efficiency	–	0.780	0.759
Linear heat transfer coefficient	$\frac{W}{m^2/C}$	3.12	3.48
Quadratic heat transfer coefficient	$\frac{W}{m^2/C}$	0.019	0.016
Incidence angle correction factor	–	0.94	0.95
Glass cover (hardened safety glass)	mm	3.2	3.2
Enclosure	–	Aluminium frame	Aluminium frame
L×W×H	mm	2,150 x 1,170 x 84	2,150 x 1,170 x 84
Empty weight	kg	39.5	39.5
Contents	l	1.7	1.7
Heat insulation (mineral wool covered with black glass fibre fleece)	mm	40	40
Max. standstill temperature	°C	234	234
Max. operating pressure	bar	10	10
Setup angle	°	15 – 75	15 – 75

EXAMPLE SYSTEMS & CONTROL

IMPLEMENTATION RECOMMENDATION: KWB EASYFIRE WITH KWB EASYSUN AND KWB EMPATHERM

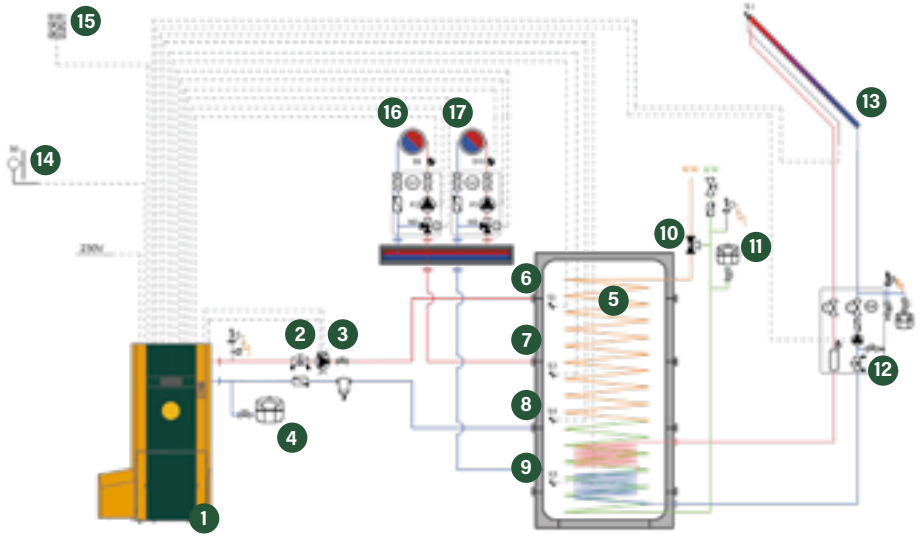


LEGEND

1	KWB Easyfire
2	2-way valve with servomotor
3	Membrane expansion tank
4	Outdoor temperature sensor
5	Basic remote control
6	KWB EmpaTherm Solar DHWC
7	DHWC temperature sensor
8	DHWC temperature sensor solar
9	Heating circuit 1
10	Heating circuit 2
11	Solar pump group
12	Collector

A system for hot water heating using solar energy. Such a system can be used on rooftops with an incline between 15° and 60°. The southern exposure should not deviate by more than -50° south-east or +50° south-west. The recommended collector space per person in the household is 1.5 – 2 m². A storage tank volume of 60 – 90 l/m² should be included in the planning.

IMPLEMENTATION RECOMMENDATION: KWB EASYFIRE WITH KWB MULTISUN AND KWB EMPAWELL



LEGEND

1	KWB Easyfire
2	Balancing valve
3	Charging pump buffer tank PWM
4	Membrane expansion tank
5	KWB EmpaWell corrugated tube stratified storage tank
6	Buffer tank temperature sensor 1
7	Buffer tank temperature sensor 3
8	Buffer tank temperature sensor 4
9	Buffer tank temperature sensor 5
10	DHW mixer
11	DHW expansion tank
12	Solar pump group
13	Collector
14	Outdoor temperature sensor
15	Basic remote control
16	Heating circuit 1
17	Heating circuit 2

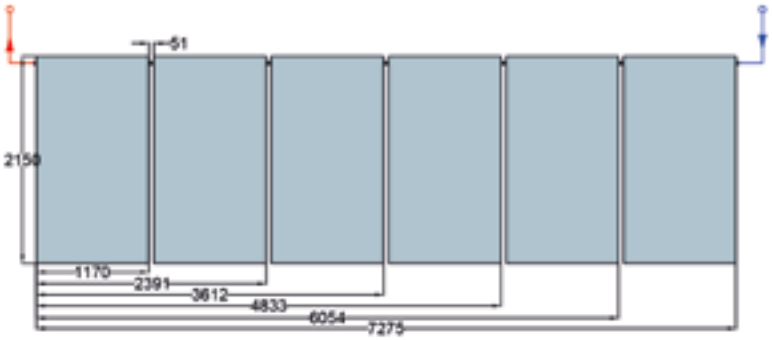
Systems for solar energy-based hot water heating and heating support. Such a system can be used on rooftops with an incline between 15° and 60°. The southern exposure should not deviate by more than -50° south-east or +50° south-west. A KWB MultiSun system of this type with five collectors meets the requirements of the Renewable Energy Heat Act (EEWärmeG) for single- or multi-family houses with up to 277 m² usable space.

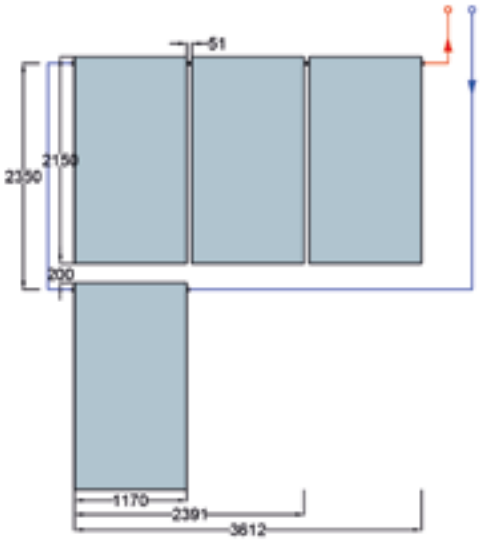
COMPACT
SPACE REQUIREMENTS

COLLECTOR INTERCONNECTION

A possible proposal for interconnecting collectors is shown in the drawing below. In practice this may look different due to the actual structural situation. If a collector field consists of more than 6 collectors (vertical arrangement) or 4 collectors (horizontal arrangement) in a series, you must take measures to compensate for the heat expansion triggered by temperature fluctuations (expansion bends or flexible piping) or the field must have several parallel connections.

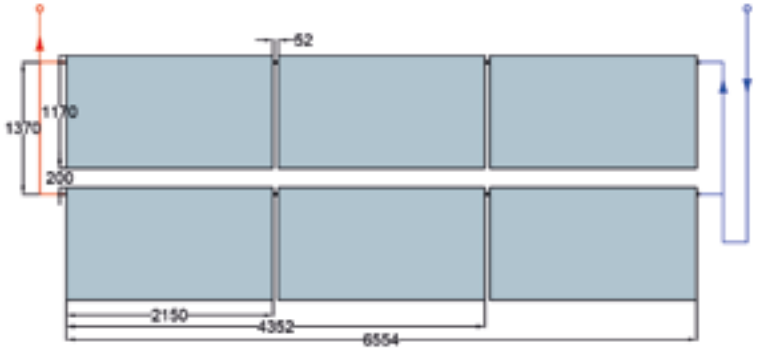
UPRIGHT STANDING COLLECTORS (N)



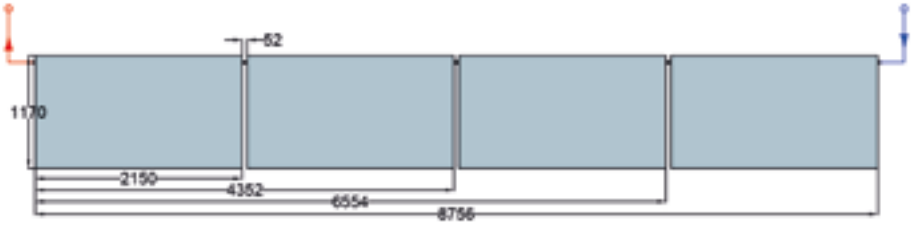


The KWB collector packages EasySun, MultiSun or the supplemental collector FlexiSun type N (upright) are suitable for this assembly. The required fastening sets must match and also be of type N.

FLATLAYING COLLECTORS (L)



The KWB collector packages EasySun, MultiSun or the supplemental collector FlexiSun type L (flatlaying) are suitable for this assembly. The required fastening sets must match and also be of type L.



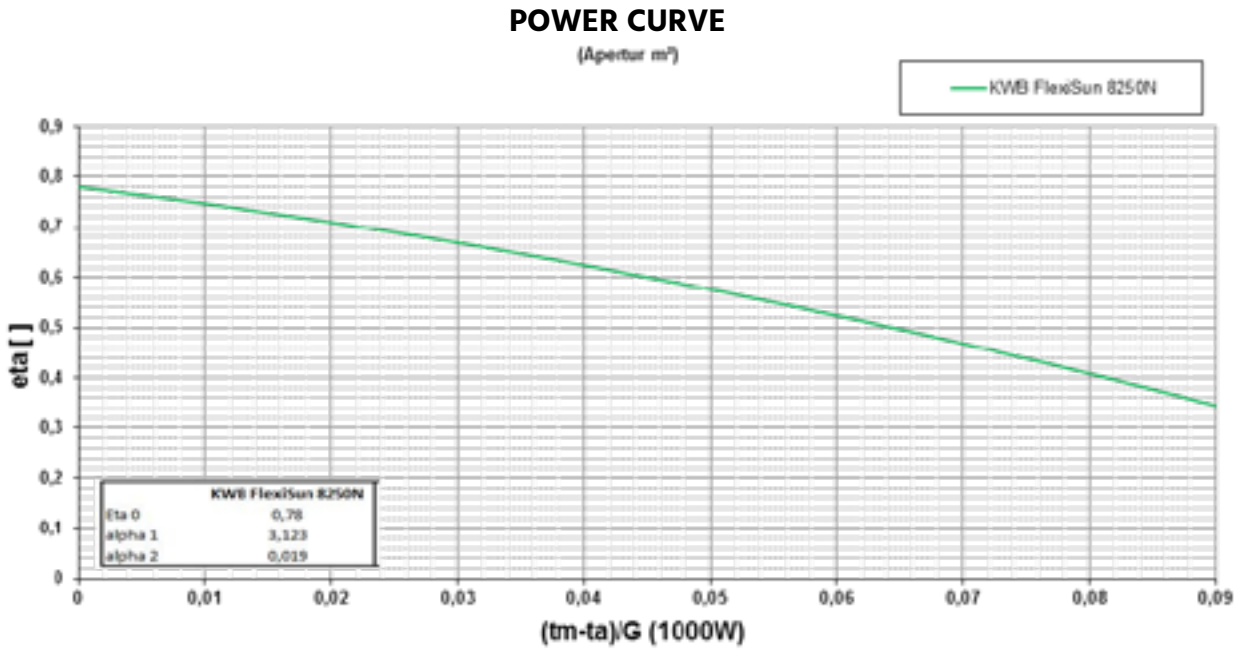
Collector type N (upright) not suitable for flatlaying installation.
Collector type L (flatlaying) not suitable for upright installation.

DESIGN PARAMETERS

KWB SOLAR PACKAGE	AREA [M²]	DESIGN AID	PIPE DIMENSION COPPER/CORRUGATED PIPE	STORAGE TANK SELECTION
EasySun 2	5.02	1-4 people	15x1 (18x1) / 16	EmpaTherm Solar 300
EasySun 3	7.53	2-6 people	15x1 (18x1) / 16	EmpaTherm Solar 300/500
MultiSun 4	10.04		18x1 (22x1) / 20	EmpaCompact 800/1000 EmpaWell Solar 800/1000
MultiSun 5	12.55		18x1 (22x1) / 20	EmpaCompact 800/1000 EmpaWell Solar 1000/1500
MultiSun 6	15.06		18x1 (22x1) / 20	EmpaCompact 1000/1500 EmpaWell Solar 1000/1500

Note:
The specified pipe dimension is required for a max. buffer-collector line length of 20 m. Calculations are required for longer lines. The pipe dimension values are minimum values; the values in parentheses are recommended values. The exact layout can only be determined using a simulation and calculations.

PERFORMANCE CHART



NOTES

KWB

HYDRAULICS EQUIPMENT

REQUIRED HYDRAULIC STRUCTURAL CONDITIONS

BOILER PLACEMENT

To be performed exclusively by qualified, trained personnel of KWB or KWB competence partners. Respectively licensed heating and electrical installers must connect the heating system to the chimney, water and electrical systems; this must be verified for numerous reasons, e.g. in order to be eligible for subsidies.

HYDRAULICS

For pellets, it is necessary to have a return flow inlet temperature of at least 50 °C (TDS: 55 °C); otherwise, there is an increased risk of corrosion, which also has the effect of voiding the warranty. The boiler control can activate a mixer controller for a return flow boost. KWB provides suitable fittings to increase the return flow temperature. The heating system must generally feature a pressure-less distribution system (switch, distributor, load-balancing tank, buffer ...) and a safety group that complies with the relevant regulations (e.g. according to ÖNORM EN 12828 or EN 303). A safety group is also required by regulation. Attention: The return-flow temperature boost of the KWB Easyfire type EF2 is already integrated – the required 2-way valve with servo motor is included in the scope of delivery and must be connected by a licensed installer of heating and electrical systems. Instead of the 2-way valve, it is also possible to implement a return flow boost using the PWM pump which is available from KWB.

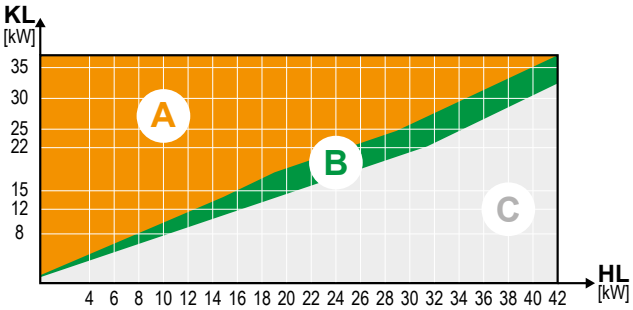
KWB also recommends the installation of an intelligent buffer tank storage when installing a biomass heating system, which can be considered the energy centre of the heating system. This saves heating costs due to lower fuel consumption, increases the annual efficiency coefficient as well as the profitability of the heating system and ensures perfect system solutions and lower emissions. The reason for this is that the heating system is focused on the coldest time of the year, this type of performance, however, is rarely needed and, especially in transition periods, barely utilised. This leads to frequent burner starts, which has a negative effect on fuel consumption and the entire service life of the heating system. A buffer or a load balancing tank is absolutely mandatory in the event of:

- Oversizing: When the rated boiler performance exceeds the heat requirement of the entire building by 50%, you will need a buffer tank (this is often the case when buildings are subsequently enlarged or in low-energy houses). In the event of such dimensioning, a large portion of the operating time the boiler will run under the boiler's smallest modulation degree.
- Very small heating loads in summer / during transition periods, e.g. when only one or two heating units are used during transition periods in summer in a heating network without block charge, ...
- If parts of the heat dissipation system are frequently switched off or in the event of a high passive solar contribution
- In case of large demand for hot water, e.g. hotels, showers in sports facilities, large multi-family houses
- In case of demand peaks for hot water in the morning, e.g. in production facilities, schools
- Integration of a solar power heating system or a log wood boiler
- Multi-boiler systems (boiler master-and-slave circuits)

There are two options to prevent safety devices protecting against overheating from tripping when all heat consumers are switched off: either through a phased consumer switch-off or by ensuring sufficient afterrun in the consumer circuits with sufficient load.

The use of a KWB Easyfire type EF2 requires a buffer

storage tank of sufficient size, if the average building heating load is more than 20% less than the rated boiler performance. The average building heating load is calculated based on the standard building heating load minus the maximum load. The following graphic representation may assist with your planning.



KL: Boiler output
HL: Heating load of the building
A: Buffer tank required
B: No buffer tank required
C: Next larger boiler possible

Always use a buffer storage tank if using a KWB Classicfire and KWB Combifire! Please see additional specifications in the table on page L|6.

Your installer can advise you with regard to the water connection!

Components of acoustically-insulated water connections must be impermeable to oxygen; otherwise there is an increased risk of corrosion, which also has the effect of voiding the guarantee and warranty.

If plastic pipes for floor heating systems or district heating pipes are connected, it is necessary to integrate a limiting thermostat for the boiler circuit pump to provide additional protection against excessive temperatures.

Thermal discharge safety valve

The thermal discharge safety valve is used to protect against the boiler overheating and opens at a temperature of 95° C. The boilers of the series Classicfire, Combifire, PelletfirePlus, Multifire and Powerfire require a thermal discharge safety valve. It can be ordered separately from KWB.

Solar system / domestic hot water heat pump integration

A solar system makes a biomass heating system even more efficient. In summer and in the transition period, it heats up domestic hot water and heating water, depending on the design. This saves on fuel and preserves the biomass boiler.

The utilization of a domestic hot water pump is also interesting, particularly in combination with a log wood boiler. As a result, refilling wood is not necessary in summer. The heat pump thereby uses the boiler room air or also outside air if desired.

INFORMATION

With respect to the condition of the boiler water, VDI 2035 or ÖNORM H 5195 T1 and T2 must be strictly complied with, otherwise there is a risk of corrosion, which may void the warranty and guarantee services. Regarding corrosion, it is necessary to keep an eye on the water conductivity aside from strictly avoiding oxygen entering into the system.

To prevent deposits caused by limescale and rust mud, we recommend the installation of a mud strainer in the return flow and a microbubble trap in the forward flow.

DESIGN PARAMETERS

DIMENSIONING OF THE DIAPHRAGM-TYPE EXPANSION TANKS

In the table below, you will find the optimum sizes of the diaphragm-type expansion tanks in relation to the respective boiler output.

Note: Safety valve 3.0 bar to 90° C forward flow temperature (to maintain suction pressure).

TYPE	Static height: ≤ 5 meters System pressure at 10°C / 1.0 bar Adjustable pre-pressure: 0.7 bar			Static height: ≤ 10 meters System pressure at 10°C / 1.5 bar Adjustable pre-pressure: 1.2 bar		
	Without buffer	With buffer (KWB recommendation)	Buffer (KWB recommendation)	Without buffer	With buffer (KWB recommendation)	Buffer (KWB recommendation)
KWB Classicfire 1 type CF1 15 / 20 kW	X	MAG 150 l	1,000 l	X	MAG 150 l	1,000 l
KWB Classicfire 2 type CF2 18 – 38 kW	X	MAG 400 l	3,000 l	X	MAG 400 l	3,000 l
KWB Combifire 2 type CF2 18 – 38 kW	X	MAG 400 l	3,000 l	X	MAG 400 l	3,000 l
KWB Easyfire 1 type EF1 10 – 20 kW	MAG 35 l	MAG 80 l	500 l	MAG 35 l	MAG 80 l	500 l
KWB Easyfire 2 type EF2 8 – 15 kW	MAG 35 l	MAG 80 l	500 l	MAG 35 l	MAG 80 l	500 l
KWB Easyfire 2 type EF2 22 kW	MAG 80 l	MAG 80 l	500 l	MAG 80 l	MAG 80 l	500 l
KWB Easyfire 2 type EF2 25 – 38 kW	MAG 80 l	MAG 100 l	800 l	MAG 80 l	MAG 100 l	800 l
KWB Easyfire 2 CC4 type EF2 10 – 15 kW	MAG 35 l	MAG 80 l	500 l	MAG 35 l	MAG 80 l	500 l
KWB Easyfire 2 CC4 type EF2 22 kW	MAG 80 l	MAG 80 l	500 l	MAG 80 l	MAG 80 l	500 l
KWB Easyfire 2 CC4 type EF2 25 – 40 kW	MAG 80 l	MAG 100 l	800 l	MAG 80 l	MAG 100 l	800 l
KWB Pelletfire^{Plus} type MF2 45 – 75 kW	MAG 80 l	MAG 150 l	1,000 l	MAG 80 l	MAG 150 l	1,000 l
KWB Pelletfire^{Plus} type MF2 95 – 100 kW	MAG 100 l	MAG 200 l	1,500 l	MAG 100 l	MAG 200 l	1,500 l
KWB Multifire type MF2 20 – 70 kW	MAG 80 l	MAG 150 l	1,000 l	MAG 80 l	MAG 150 l	1,000 l
KWB Multifire type MF2 80 – 100 kW	MAG 100 l	MAG 200 l	1,500 l	MAG 100 l	MAG 200 l	1,500 l

INFORMATION

KWB stratified and buffer storage tanks may be placed in a row directly next to each other!

BUFFER TANK DIMENSIONING

TYPE	RECOMMENDED TANK VOLUME
KWB Easyfire 2 type EF2 (pellet heating system) KWB Multifire type MF2 (wood chip and pellet heating system) KWB Pelletfire^{Plus} type MF2 (pellet heating system) KWB Powerfire TDS (wood chip and pellet heating system)	Optimal: buffer tank volume = 1.5 litres * kW * 400 / K Minimum: buffer tank volume = 1.0 litres * kW * 400 / K
KWB Classicfire & KWB Combifire type CF2 (log wood and pellet heating system)	Optimal: 16-litre buffer storage tank per litre fill room Minimum: 10-litre buffer tank per litre fill room

kW = rated power of the boiler in [kW] K ... temperature difference between buffer tank charging start/end (t_{Max} - t_{Min}) in Kelvin [K]

National deviation Switzerland: Automatic wood-fired boilers up to 500 kW nominal heat output: buffer volume min. 25 l/kW (except: pellet boilers for up to 70 kW); subsidy policy Germany: Pellet and wood chip 30 l/kW buffer volume, wood chip 55 l/kW buffer volume

DHWC DIMENSIONING

HOUSEHOLD SIZE	RECOMMENDED KWB HOT WATER STORAGE SYSTEM
3 – 4 persons	KWB EmpaTherm (Solar) 300 litres
5 – 6 persons	KWB EmpaTherm (Solar) 500 litres

PARAMETERS FOR RETURN FLOW BOOST

FOR BOILER CIRCUIT PUMP AND RETURN FLOW TEMPERATURE BOOST KWB COMBI-FIRE, KWB CLASSICFIRE CF1, CF2 AND CF1.5

		Minimum required volume flow V – recommended return flow temperature boost set from the KWB product line[1]					
Spread ΔT across the boiler		10		15		20	
Boiler output [kW]	kW boost operation[2]	V [m³/h]	Article number	V [m³/h]	Article number	V [m³/h]	Article number
KWB Classicfire type CF1 Recommended return flow temperature boost: RFB group / Kvs 6.3							
15	up to 25	2.15	24-2001436	1.43	24-2001436	1.10	24-2001436
20							
KWB Classicfire type CF1.5 and CF2, KWB Combifire type CF2 Recommended return flow temperature boost: RFB group / Kvs 12							
18 / 22	up to 38	3.26	24-2001424	2.17	24-2001424	1.63	24-2001424
28 / 30							
32							
38							

[1] The recommendation applies to standard situations - heat generator in the heating room
[2] During boost operation, a peak output of 25 kW or 38 kW is reached. Accordingly, the return flow boost must be adjusted to the peak output of 25 kW or 38 kW.

FOR BOILER CIRCUIT PUMP AND RETURN FLOW TEMPERATURE BOOST KWB EASYFIRE 1

	Minimum required volume flow V – recommended return flow temperature boost set from the KWB product line[1]								
Spread ΔT across the boiler	10			15			20		
Recommended return flow temperature boost		Valve / Kvs 9	Charge valve unit with pump		Valve / Kvs 9	Charge valve unit with pump		Valve / Kvs 9	Charge valve unit with pump
Boiler output [kW]	V [m³/h]	Article number	Article number	V [m³/h]	Article number	Article number	V [m³/h]	Article number	Article number
10	0.86	24-2001093	24-2001135	0.57	24-2001093	24-2001135	0.43	24-2001093	24-2001135
15	1.29	24-2001093	24-2001135	0.86	24-2001093	24-2001135	0.64	24-2001093	24-2001135
20	1.72	24-2001093	24-2001135	1.15	24-2001093	24-2001135	0.86	24-2001093	24-2001135

[1] Our recommendation applies to standard conditions – heat generator in the heating room

VOLUME FLOW KWB EASYFIRE EF2/EF2 CC4

Spread ΔT across the boiler	10 K	15 K	20 K	25 K	30 K
Boiler output [kW]	V [m³/h]	V [m³/h]	V [m³/h]	V [m³/h]	V [m³/h]
8	0.69	0.46	0.34	0.28	0.23
10 (only type EF2 CC4)	0.86	0.57	0.43	0.34	0.29
12	1.03	0.69	0.52	0.41	0.34
15	1.29	0.86	0.64	0.52	0.43
22	1.89	1.26	0.95	0.76	0.63
25	2.15	1.43	1.07	0.86	0.72
30	2.58	1.72	1.29	1.03	0.86
35	3.01	2.00	1.50	1.20	1.00
38	3.26	2.17	1.63	1.30	1.09
40 (only type EF2 CC4)	3.34	2.29	1.72	1.37	1.15

PARAMETERS FOR RETURN FLOW BOOST

PRE-ASSEMBLED RETURN FLOW TEMPERATURE BOOST KWB PELLETFIRE^{PLUS}

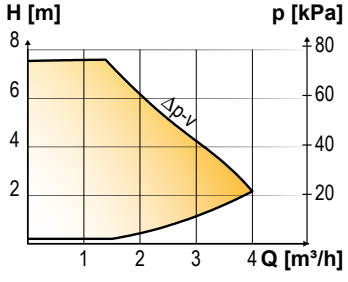
	Volume flow V – usable conveyance height [m WS = meter water column]											
Spread ΔT across the boiler	10				15				20			
Boiler output [kW]	V [m³/h]	usable conveyance height [m WS]	Article number	Kvs [m³/h]	V [m³/h]	usable conveyance height [m WS]	Article number	Kvs [m³/h]	V [m³/h]	usable conveyance height [m WS]	Article number	Kvs [m³/h]
45	3.87	–	–	16	2.58	4.0	24-2000969	16	1.93	5.6	24-2000969	16
50	4.30	–	–	16	2.87	3.1	24-2000969	16	2.15	4.7	24-2000969	16
55	4.73	–	–	16	3.15	2.1	24-2000969	16	2.36	4.2	24-2000969	16
65	5.59	–	–	16	3.73	0.6	24-2000969	16	2.79	3.2	24-2000969	16
70	6.02	1.7	24-2000970	16	4.01	5.3	24-2000970	16	3.01	6.7	24-2000970	16
75	6.45	0.9	24-2000970	16	4.30	4.4	24-2000970	16	3.22	6.2	24-2000970	16
95	8.17	3.5	24-2000972	16	5.45	9.0	24-2000972	16	4.08	9.9	24-2000972	16
100	8.60	4.6	24-2000971	16	5.73	10.0	24-2000971	16	4.30	10.4	24-2000971	16
108	9.29	3.0	24-2000971	32	6.19	8.6	24-2000971	32	4.64	10.4	24-2000971	32
115	9.89	2.4	24-2000971	32	6.59	7.6	24-2000971	32	4.94	10.1	24-2000971	32
125	11.61	–	–	32	7.74	6.6	24-2000971	32	5.80	6.6	24-2000971	32
135	11.61	–	–	32	7.74	6.6	24-2000971	32	5.80	6.6	24-2000971	32

PARAMETERS FOR BOILER CIRCUIT PUMP AND RETURN FLOW TEMPERATURE BOOST

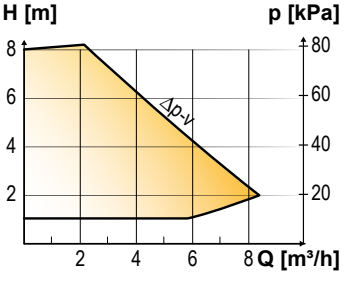
	Minimum required volume flow V - recommended return flow temperature boost set from the KWB product line											
Spread ΔT across the boiler	10				15				20			
		Recommended return flow temperature boost				Recommended return flow temperature boost				Recommended return flow temperature boost		
Boiler output [kW]	V [m³/h]	Article number	Kvs [m³/h]	Pressure loss across the completely open valve [mbar]	V [m³/h]	Article number	Kvs [m³/h]	Pressure loss across the completely open valve [mbar]	V [m³/h]	Article number	Kvs [m³/h]	Pressure loss across the completely open valve [mbar]
45	3.87	24-2000344	18	46	2.58	24-2000343	12	46	1.93	24-2000343	12	26
50	4.30	24-2000345	24	32	2.86	24-2000343	12	32	2.15	24-2000343	12	32
55	4.73	24-2000345	24	39	3.15	24-2000344	18	31	2.36	24-2000343	12	39
65	5.58	24-2000345	24	54	3.72	24-2000344	18	43	2.79	24-2000343	12	54
70	6.01	24-2000345	24	63	4.01	24-2000345	24	28	3.01	24-2000344	18	28
75	6.44	24-2000264	40	26	4.30	24-2000345	24	32	3.22	24-2000344	18	32
95	8.16	24-2000264	40	42	5.44	24-2000345	24	51	4.08	24-2000345	24	29
100	8.59	24-2000264	40	46	5.73	24-2000345	24	57	4.30	24-2000345	24	32
108	9.28	24-2000264	40	54	6.19	24-2000264	40	24	4.64	24-2000345	24	37
115	9.88	–	–	–	6.59	24-2000264	40	27	4.94	24-2000345	24	42
135	11.60	–	–	–	7.73	24-2000264	40	37	5.80	24-2000264	40	21

CHARACTERISTIC VALUES FOR BOILER CIRCUIT PUMPS

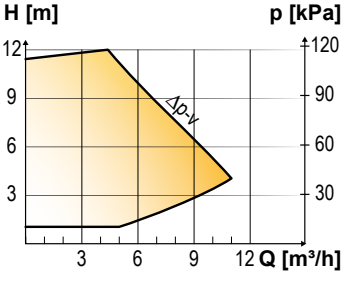
Pump Wilo Para 25/8



Pump Wilo Stratos Para 30/1-8



Pump Wilo Stratos Para 30/1-12



PARAMETERS FOR RETURN FLOW BOOST

FOR PRE-ASSEMBLED RETURN FLOW TEMPERATURE BOOST KWB MULTIFIRE

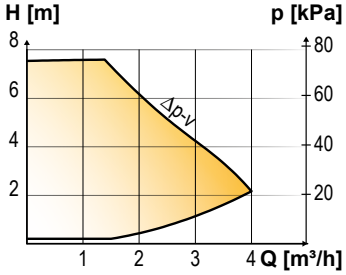
	Volume flow V – usable conveyance height [m WS = meter water column]											
Spread ΔT across the boiler	10				15				20			
Boiler output [kW]	V [m³/h]	usable conveyance height [m WS]	Article number	Kvs [m³/h]	V [m³/h]	usable conveyance height [m WS]	Article number	Kvs [m³/h]	V [m³/h]	usable conveyance height [m WS]	Article number	Kvs [m³/h]
20	1.72	5.8	24-2000968	10	1.15	7.2	24-2000968	10	0.86	7.3	24-2000968	10
30	2.58	3.6	24-2000968	10	1.72	5.9	24-2000968	10	1.29	7.1	24-2000968	10
40	3.44	1.5	24-2000969	16	2.29	4.7	24-2000969	16	1.72	6.0	24-2000969	16
45	3.87	–	–	16	2.58	4.0	24-2000969	16	1.93	5.6	24-2000969	16
50	4.30	–	–	16	2.87	3.1	24-2000969	16	2.15	4.7	24-2000969	16
60	5.16	3.2	24-2000970	16	3.44	5.8	24-2000970	16	2.58	7.3	24-2000970	16
65	5.59	2.5	24-2000970	16	3.73	5.5	24-2000970	16	2.79	7.0	24-2000970	16
70	6.02	1.9	24-2000970	16	4.01	5.3	24-2000970	16	3.01	6.8	24-2000970	16
80	6.88	0.5	24-2000970	16	4.59	4.3	24-2000970	16	3.44	5.8	24-2000970	16
100	8.60	4.6	24-2000971	32	5.73	10.0	24-2000971	32	4.30	10.4	24-2000971	32
108	9.29	3.0	24-2000971	32	6.19	8.6	24-2000971	32	4.64	10.4	24-2000971	32
120	10.32	1.0	24-2000971	32	6.88	7.6	24-2000971	32	5.16	10.1	24-2000971	32

PARAMETERS FOR BOILER CIRCUIT PUMP AND RETURN FLOW TEMPERATURE BOOST

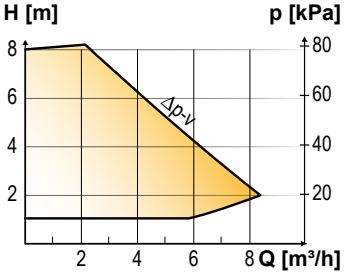
	Minimum required volume flow V – recommended return flow temperature boost set from the KWB product line											
Spread ΔT across the boiler	10				15				20			
		Recommended return flow temperature boost				Recommended return flow temperature boost				Recommended return flow temperature boost		
Boiler output [kW]	V [m³/h]	Article number	Kvs [m³/h]	Pressure loss across the completely open valve [mbar]	V [m³/h]	Article number	Kvs [m³/h]	Pressure loss across the completely open valve [mbar]	V [m³/h]	Article number	Kvs [m³/h]	Pressure loss across the completely open valve [mbar]
20	1.72	24-2000343	12	21	1.15	–	–	–	0.86	–	–	–
30	2.58	24-2000343	12	46	1.72	24-2000343	12	21	1.29	–	–	–
40	3.44	24-2000344	18	36	2.29	24-2000343	12	36	1.72	24-2000343	12	21
45	3.87	24-2000344	18	46	2.58	24-2000343	12	46	1.93	24-2000343	12	26
50	4.30	24-2000345	24	32	2.86	24-2000343	12	57	2.15	24-2000343	12	32
60	5.16	24-2000345	24	46	3.44	24-2000344	18	36	2.58	24-2000343	12	46
65	5.58	24-2000345	24	54	3.72	24-2000344	18	43	2.79	24-2000343	12	54
70	6.01	24-2000345	24	63	4.01	24-2000345	24	28	3.01	24-2000344	18	28
80	6.87	24-2000264	40	30	4.58	24-2000345	24	36	3.44	24-2000344	18	36
100	8.59	24-2000264	40	46	5.73	24-2000345	24	57	4.30	24-2000345	24	32
108	9.28	24-2000264	40	54	6.19	24-2000264	40	24	4.64	24-2000345	24	37
120	10.31	–	–	–	6.87	24-2000264	40	30	5.16	24-2000345	24	46

CHARACTERISTIC VALUES FOR BOILER CIRCUIT PUMPS

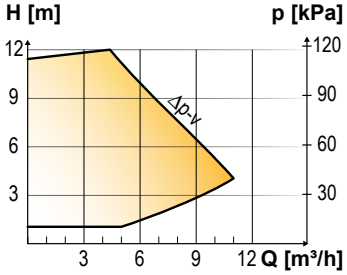
Pump Wilo Para 25/8



Pump Wilo Stratos Para 30/1-8



Pump Wilo Stratos Para 30/1-12

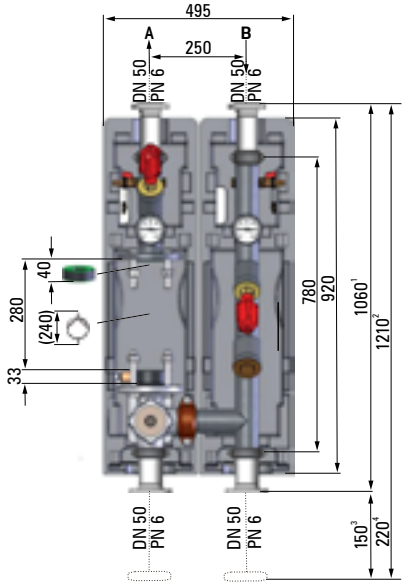


PARAMETERS FOR RETURN FLOW BOOST

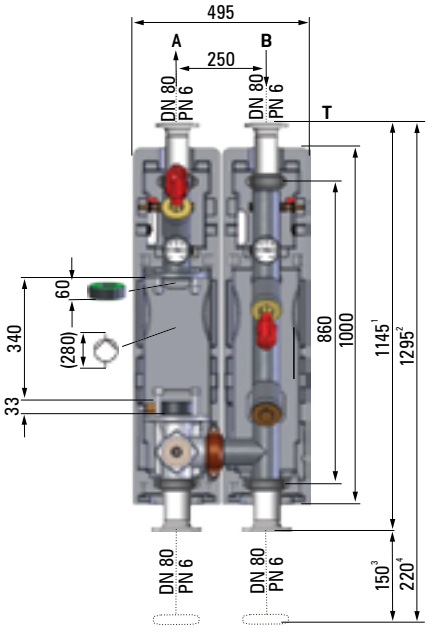
RETURN FLOW TEMPERATURE BOOST SETS KWB POWERFIRE

Spread ΔT across the boiler	Volume flow V – usable conveyance height [m WS = meter water column]											
	10				15				20			
Boiler output [kW]	V [m³/h]	usable conveyance height [m WS]	Article number	Kvs [m³/h]	V [m³/h]	usable conveyance height [m WS]	Article number	Kvs [m³/h]	V [m³/h]	usable conveyance height [m WS]	Article number	Kvs [m³/h]
150	12,90	2,6	24-2002507	40	8,60	3,8	24-2002506	40	6,45	6,0	24-2002506	40
240	20,64	9,3	24-2002509	63	13,76	5,8	24-2002508	63	10,32	7,6	24-2002508	63
300	25,80	4,2	24-2002509	63	17,20	3,4	24-2002508	63	12,90	6,4	24-2002508	63

KWB Powerfire 150 kW



KWB Powerfire 240 / 300 kW



LEGEND

A	return (cold water)
B	flow (hot water)

DIMENSIONS

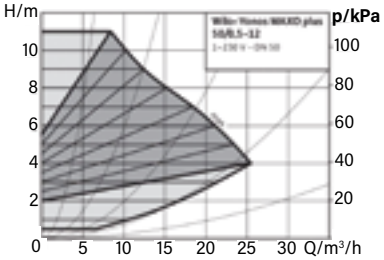
TDS 150	495 x 366 x 920
TDS 240 / 300	495 x 419 x 1.000

[1] tolerance installation length: -0/+3 mm per clamp coupling, and axial deviation up to 2°
[2] with wall bracket
[3] wall bracket
[4] wall distance

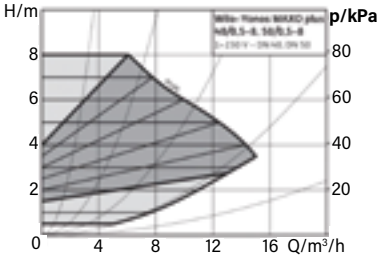
All dimensions in mm
Length x Width x Height

CHARACTERISTIC VALUES FOR BOILER CIRCUIT PUMPS KWB POWERFIRE 150 kW

Wilo-Yonos MAXO plus 10 K pump

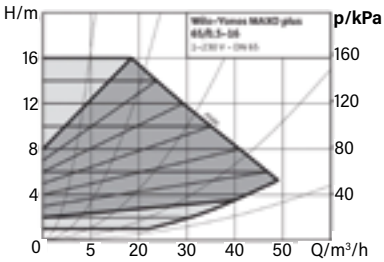


Wilo-Yonos MAXO plus 15 – 20 K pump

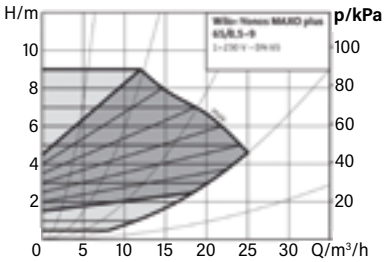


KENNLINIEN FÜR KESSELKREISPUMPEN KWB POWERFIRE 240 / 300 kW

Wilo-Yonos MAXO plus 10 K pump



Wilo-Yonos MAXO plus 15 – 20 K pump



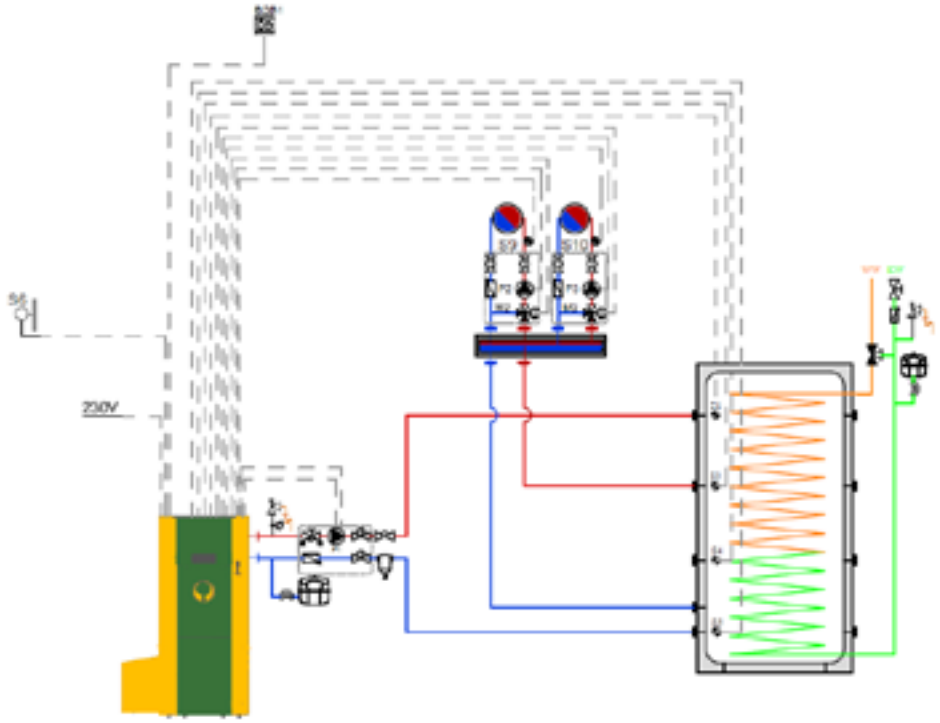
SAMPLE HYDRAULIC SYSTEMS

INFORMATION

Your KWB contact partner will be happy to provide you with additional hydraulic diagrams

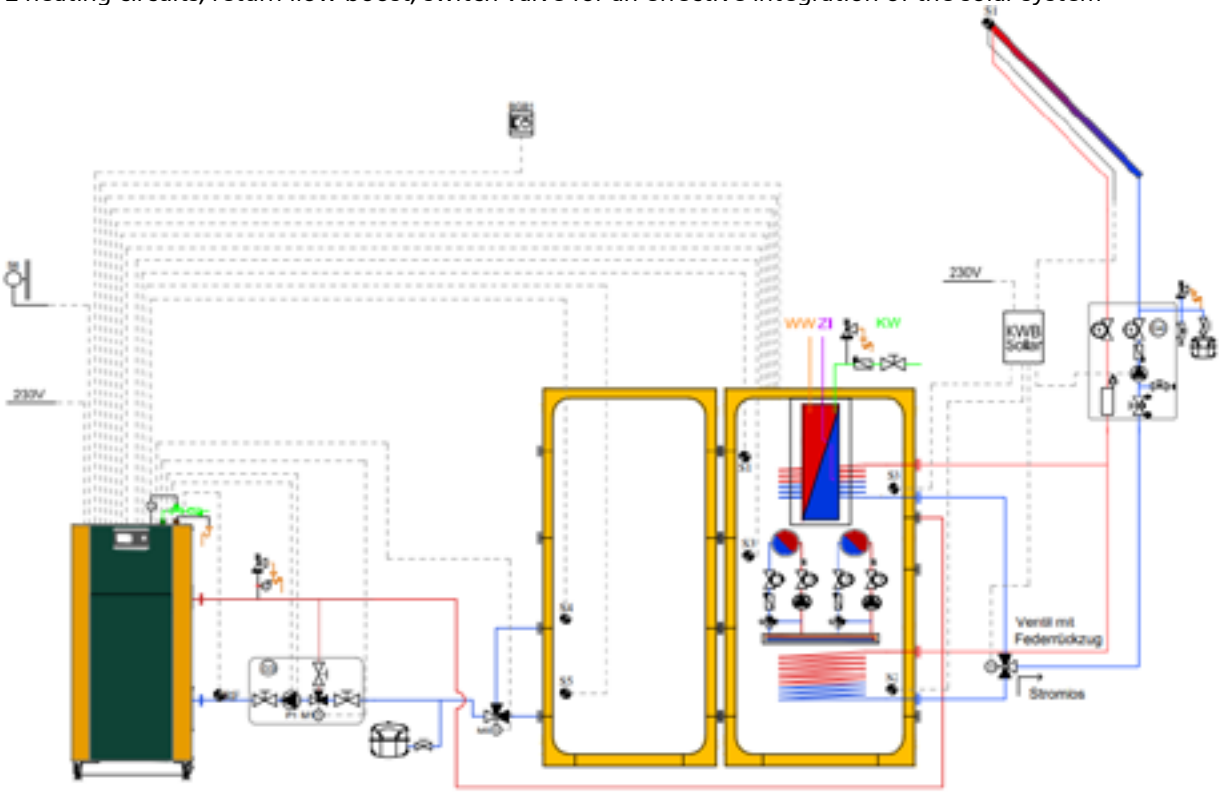
KWB EASYFIRE WITH EMPAWELL BUFFER STORAGE TANK

With 2 heating circuits and PWM pump for return flow boost and buffer filling



KWB COMBIFIRE WIT SOLAR AND EMPACOMPACT

With 2 heating circuits, return flow boost, switch valve for an effective integration of the solar system



NOTES

KWB

STORAGE SYSTEMS

KWB STORAGE TECHNOLOGY

EFFICIENT AND ECONOMIC HEATING OPERATIONS

KWB storage tanks stand for highest quality and permit a perfect and highly efficient heat management. We recommend installing an intelligent buffer storage tank that represents the energy centre of the heating system when installing a biomass heating system.

KWB EMPATHERM DHWC

The storage tank has a large output capacity and can thus quickly supply large quantities of domestic hot water. The KWB EmpaTherm is a quality product with a particularly long service life. Thanks to its high-quality enamelling (a type of glass coating on the inside of the storage tank), the EmpaTherm does not develop limescale. It is resistant against hard water, water conductivity and the pH value of the water.

KWB EmpaTherm advantages:

- ✓ Quickly meets large hot water demand
- ✓ Insensitive to fluctuating water quality
- ✓ Cleaning flange for easy maintenance

EMPAFRESH FRESH WATER MODULE

With power levels 30 l/min and 40 l/min; wall-mounted or combinable with KWB EmpaCompact. With power level 80 l/min; wall-mounted and as cascade up to 160 l/min.

HOT WATER HEAT PUMP KWB EMPAAIR

The plug-in ready domestic hot water heat pump KWB EmpaAir efficiently and comfortably provides hot water for up to 1 to 3-family houses. Hygienic drinking water generation is always ensured since it supplies high hot water temperatures of 65 °C with its efficient heat pump operation.

KWB EmpaAir advantages:

- ✓ Quick installation thanks to plug-in ready interior placement
- ✓ Hygienic hot water thanks to high storage tank temperatures
- ✓ Optimized photovoltaics own consumption thanks to an integrated solar interface
- ✓ Optionally available with additional heating register
- ✓ Available with air circulation or fresh air operation

BUFFER STORAGE TANK KWB EMPAECO

The buffer storage tank is the energy centre in the heating room. It absorbs excessive heat and dispenses it when needed. With a sufficiently large capacity, it ensures a long and optimized service life for the biomass heating system.

KWB EmpaEco advantages:

- ✓ Perfect entry model
- ✓ Particularly efficient thanks to optimized insulation
- ✓ Optionally available with solar register as EmpaEco Solar
- ✓ Optionally available with strata charging system

KWB EMPACOMPACT STRATIFIED STORAGE TANK

The KWB EmpaCompact is a true energy centre and ensures a tidy heating basement. It can be quickly installed and contains a large part of the heating room installation on a footprint of just 1m^2. The stratified storage tank increases the efficiency of your entire heating system, among other things, because the storage tank is insulated with high-quality fibre fleece and thus has very low radiation losses.

KWB EmpaCompact advantages:

- ✓ Energy centre on 1m^2
- ✓ Attached fresh water station (in two output capacities and optional circulation available) for hot water preparation
- ✓ Connection option for 2 heating circuits and solar group
- ✓ Several strata charging devices
- ✓ Optionally available with integrated solar register
- ✓ Optionally with an integrated strata charging system for 2 electric heating rods at 2 different heights for the use of excess solar energy

KWB EMPAWELL CORRUGATED TUBE STRATIFIED STORAGE TANK

With the KWB EmpaWell combination storage tank, you will always immediately have hot water available. The EmpaWell is equipped with a strata charging device. As a result the fresh water which flows through the buffer storage tank-integrated heat exchanger does not touch the heating water. The two are separated by a corrugated stainless steel pipe. The supply of the fresh water occurs without a pump and therefore without added energy costs.

KWB EmpaWell advantages:

- ✓ Ideal combination model
- ✓ High heat transfer and excellent insulation
- ✓ Optionally available with solar register as EmpaEco Solar

NOTES

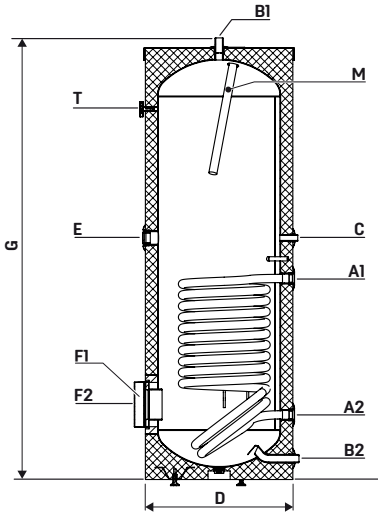
TECHNOLOGY & PLANNING 2022

KWB storage tank systems

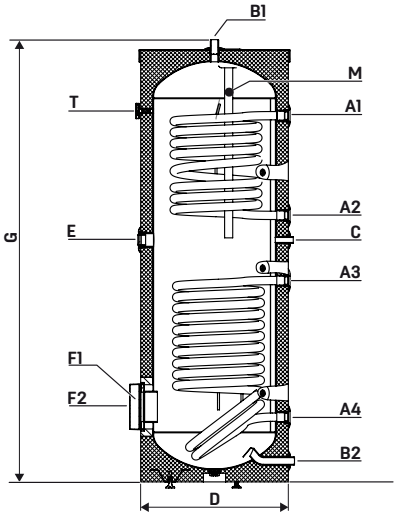
KWB EMPATHERM

DHWC

KWB EMPATHERM



KWB EMPATHERM SOLAR



			EmpaTherm			EmpaTherm Solar	
EmpaTherm	**Position**	**Unit**	**200**	**300**	**500**	**300**	**500**
Nominal capacity	–	liter	200	300	500	300	500
Weight incl. insulation	–	kg	88	115	160	131	172
Permissible operating pressure	–	bar			10		
Permissible operating pressure register	–	bar			10		
Permissible operating temperature storage tank	–	°C			95		
Register area at the top	–	m^2	–	–	–	1,00	1,00
Register content at the top	–	liter	–	–	–	5,9	6,2
Register area at the bottom	–	m^2	0,91	1,40	2,00	1,40	2,00
Register content ant the bottom	–	liter	5,0	8,9	12,6	8,9	12,6
					✓		
Thermometer	T	–			✓		
Connections							
Heating system forward flow 1" internal thread	A1	mm	638	818	966	1488	1465
Heating system return flow 1" internal thread	A2	mm	263	263	221	1083	1150
Solar system forward flow 1" internal thread	A3	mm	–	–	–	818	930
Solar system return flow 1" internal thread	A4	mm	–	–	–	263	370
Circulation (3/4" outer thread for type 200/300,	C	mm	803	983	1265	983	1040
Inflow cold water 1" outer thread	B2	mm	85	85	55	85	85
Outflow warm water 1" outer thread	B1	mm	1340	1797	1856	1797	1838
Electric heating system 6/4" internal thread	E	mm	803	983	1041	983	1095
Flange diameter	–	–	180	180	180	180	180
Flange medium height	–	mm	305	305	370	305	370
Energy							
Energy efficiency class according to	–	–			B		
Heat loss	–	W	57	67	79	67	79
Heat loss [W] according to EN 12897 (measured)	–	kWh/24h	1,37	1,61	1,90	1,61	1,90
Performance number DIN 4708 for register at th	–	–	–	–	–	1,8	3,7
Performance number DIN 4708 for register at th	–	–	4,0	9,2	17,7	7,5	15,0

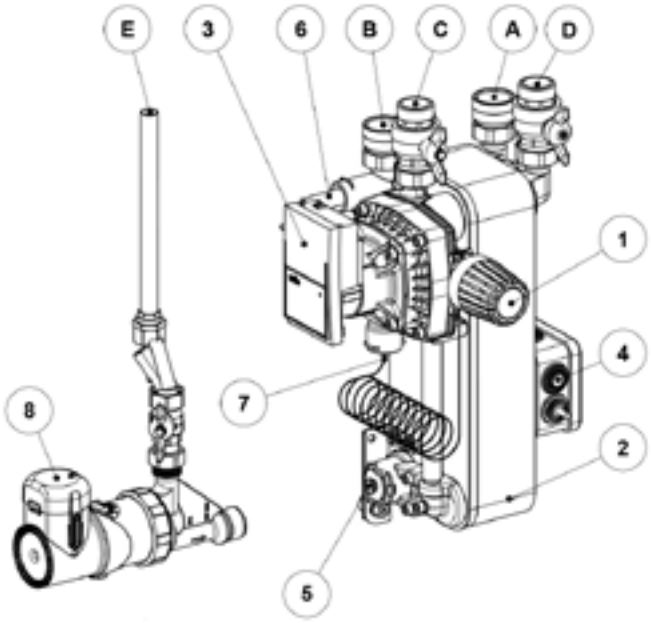
DIMENSIONS FOR TRANSPORT AND PLACEMENT

DIMENSIONS	EMPATHERM 200 / 300 / 500	EMPATHERM SOLAR 300 / 500
Diameter with insulation	610 / 610 / 760	610 / 760
Unobstructed door width for placement in designated space (with insulation)	615 / 615 / 765	615 / 765
Total height (with insulation)	1,340 / 1,797 / 1,838	1,797 / 1,838
Tilting dimensions without insulation	1,440 / 1,860 / 1,965	1,860 / 1,965

All dimensions in mm

KWB EMPAFRESH 30

FRESH WATER MODULE

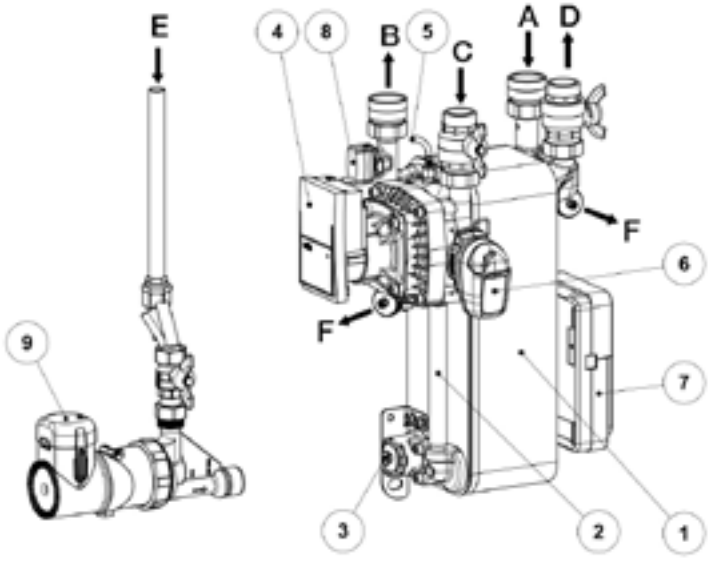


LEGEND

1	Temperature selecting head
2	Plate heat exchanger
3	Primary pump Yonos PARA HU 25/7.0 PWM 1W
4	Power box
5	Push-in connection for circulation unit
6	Flow switch
7	Helical sensor
8	Optional circulation unit with pump and electronic return flow thermostat (for pulsed or timed operating mode)
A	Cold water 1" female
B	Hot water 1" female
C	Buffer forward flow 1" male
D	Buffer return flow 1" male
E	Circulation ½" female

KWB EMPAFRESH 40

FRESH WATER MODULE



LEGEND

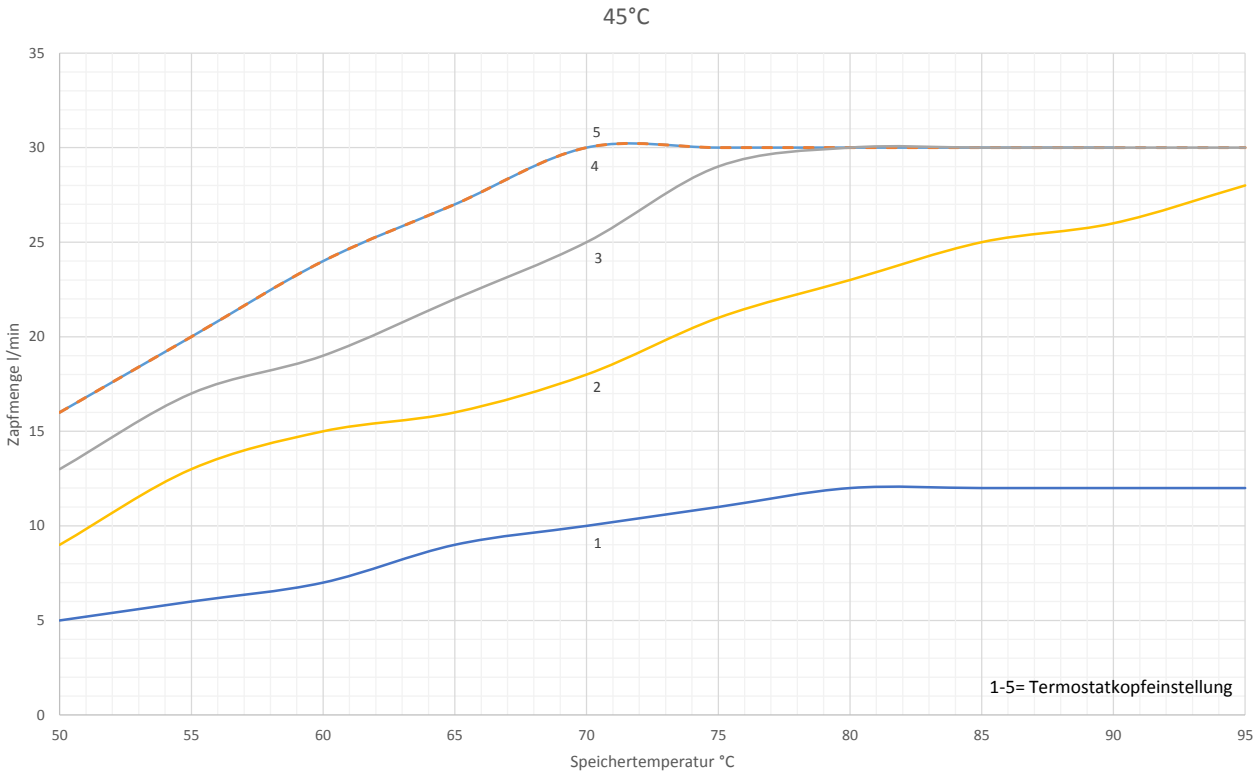
1	Plate heat exchanger
2	Bypass pipe for admixture from the middle zone
3	Push-in connection for circulation unit
4	Primary pump Yonos PARA HU 25/7.0 PWM 1W
5	PT1000 temperature sensor
6	Super flow valve
7	FRESH Control
8	Flow sensor
9	Optional circulation unit with pump and electronic return flow thermostat (for pulsed or timed operating mode)
A	Cold water 1" female
B	Hot water 1" female
C	Buffer forward flow 1" male
D	Buffer return flow 1" male
E	Circulation ½" female
F	Flush connection

All dimensions in mm

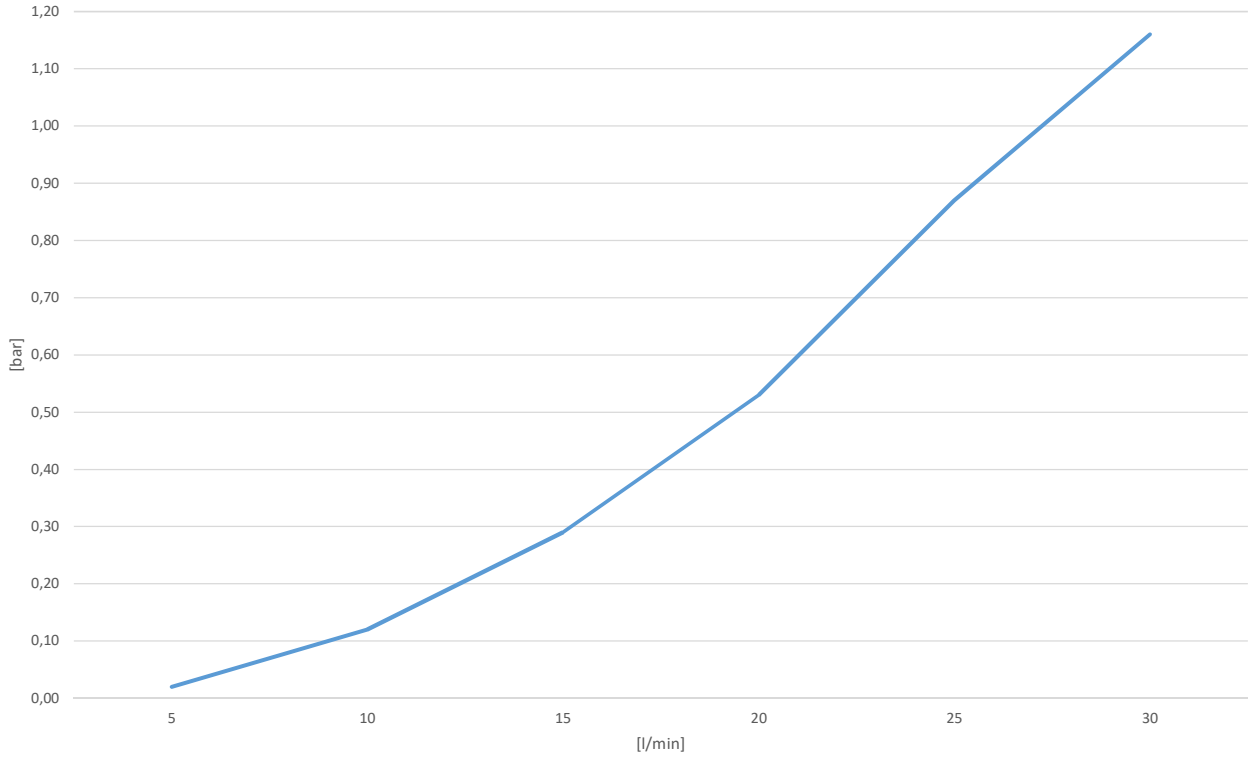
EMPAFRESH CALCULATION DIAGRAMS

KWB EMPAFRESH 30

WATER



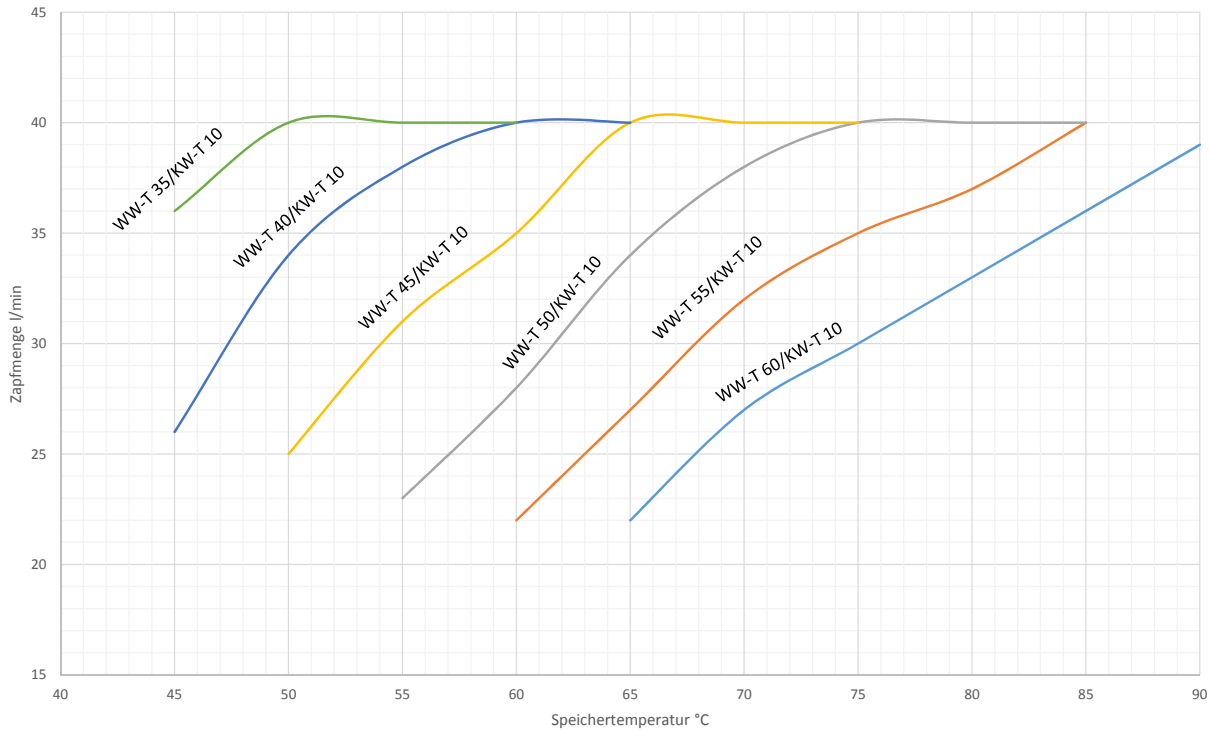
PRESSURE LOSS



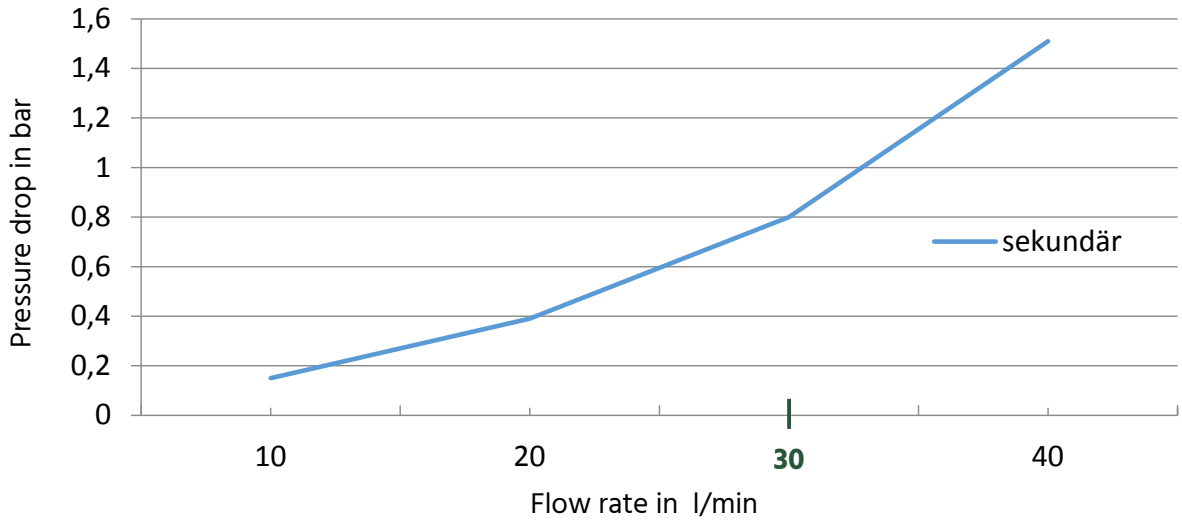
EMPAFRESH CALCULATION DIAGRAMS

KWB EMPAFRESH 40

WATER



PRESSURE LOSS

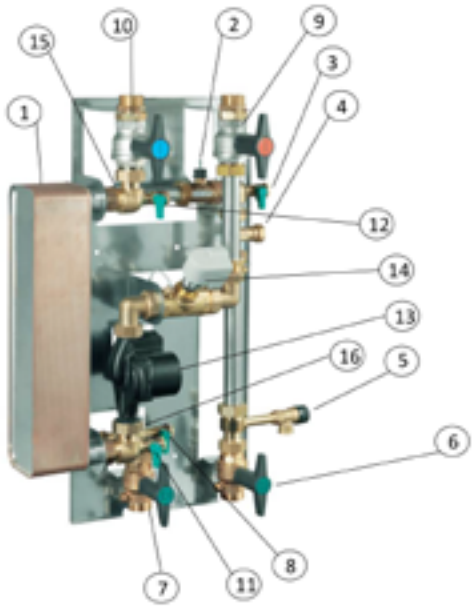


TECHNICAL DATA EMPAFRESH

KWB EmpaFresh	Unit	30	40	40 Acciaio inossidabile
Tapping capacit	l/min	30	4 - 40	4 - 40
plate heat exchange	plates	29	41	41
Width × Height × Depth	mm		400 x 800 x 302	
Cover	-		✓	
Weight	kg	17	20	20
Connections				
Cold water (A)	Inch		G 1	
Hot water (B)	Inch		G 1	
Buffer forward flow (C)	Inch		G 1	
Buffer return flow (D)	Inch		G 1	
Circulation (E)	Inch		G 1/2	
Flush connection (F)	-		-	
minimum operating temperature	°C		2	
maximum operating temperature	°C		95	
maximum operating pressure				
DHW	bar		10	
Heating system	bar		3	
Charging pump PARA HU 25/7-50/iPWM	✓		✓	
Charging pump	-		230 V / 50 Hz	
Speed	rmp		800 – 4650	
Power consumption	W		3 – 45	
nominal current	A		0,028 – 0,44	
circulation pump	✓		✓	
circulaiton pump	-		230 V / 50 Hz	
Power consumption	W		27,3	
Effective rated current (RMS)	A		0,2	
Super flow valve	-	–	✓	✓
Power supply	-	–	12V DC	12V DC
Power consumption	W	–	0,6	0,6
nominal current	A	–	0,5	0,5
Limit values for substances in water				
PH value (taking the SI index into account)	-	7 – 9	7 – 9	6 – 10
Saturation index SI (Delta ph value)	-	-0,2 < 0 < +0,2	-0,2 < 0 < +0,2	-
Total hardness	°dH	6 – 15	6 – 15	6 – 15
Conductivity	µS/cm	10 – 500	10 – 500	-
Filterable substances	mg/l	< 30	< 30	< 30
Free chlorine	mg/l	< 0,5	< 0,5	< 0,5
Hydrogen sulfide (H2S)	mg/l	< 0,05	< 0,05	-
Ammoia (NH3/NH4+)	mg/l	< 2	< 2	-
sulphate	mg/l	< 100	< 100	< 300
Hydrogen carbonate	mg/l	< 300	< 300	-
Hydrogen carbonate / sulphate	mg/l	> 1,0	> 1,0	-
sulfide	mg/l	< 1	< 1	< 5
nitrate	mg/l	< 100	< 100	-
nitrite	mg/l	< 0,1	< 0,1	-
Irone, dissolved	mg/l	< 0,2	< 0,2	-
manganese	mg/l	< 0,1	< 0,1	-
Free aggressive carbonic acid	mg/l	< 20	< 20	-

KWB EMPAFRESH X 80

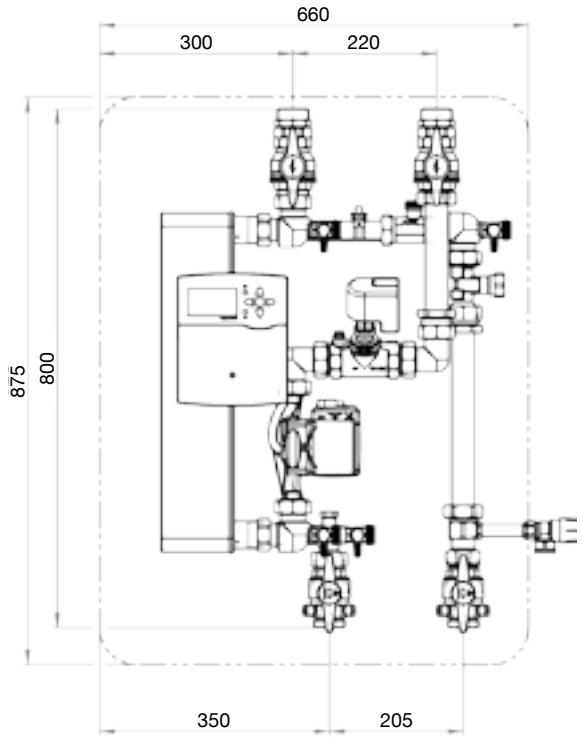
FRESH WATER MODULE

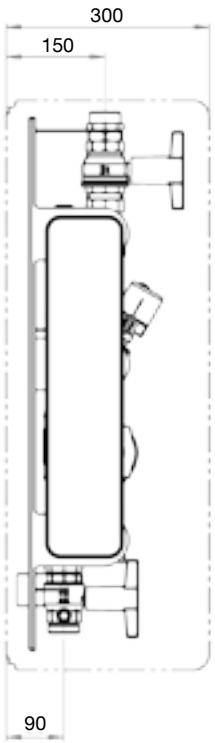


LEGEND

1	Plate heat exchanger
2	Volume flow sensor drinking water circuit
3	Flush, fill, emptying connection with ball valve (cold drinking water)
4	Connection circulation line
5	Safety valve drinking water circuit (10 bar)
6	Shut-off ball valve, cold drinking water
7	Shut-off ball valve, hot drinking water
8	Flush, fill, emptying connection with ball valve (hot drinking water)
9	Shut-off ball valve forward flow storage circuit
10	Shut-off ball valve return flow storage circuit
11	Flush, fill, emptying connection with ball valve (storage circuit forward flow)
12	Flush, fill, emptying connection with ball valve (storage circuit return flow)
13	Circulating pump, storage circuit
14	Throttle valve, with temperature sensor storage circuit
15	Temperature sensor (cold drinking water/circulation)
16	Temperature sensor (hot drinking water)

DIMENSIONS FOR INSTALLATION





All dimensions in mm

TECHNICAL DATA EMPAFRESH X 80

KWB EmpaFresh	Unit	X80 Stainless steel
Plate heat exchanger	Plates	46
Width x Height x Depth	mm	660 x 875 x 300
Nominal width	-	DN 32
Weight	kg	42,0
Max. operating pressure, domestic hot water	bar	10
Max. operating pressure, heating	bar	3
Max. operating temperature	°C	95
Ambient temperature	°C	2-35
Max. power consumption station (control)	W	960
Electrical connection	-	230 V / 50 Hz
Connections		
Primary circuit & secondary circuit (male thread, flat sealing)	Inch	Thread 1 1/2 male
Circulation (male thread, flat sealing)	Inch	Thread 1 male
KFE flushing and filling ball valves (male thread for hose screw connection)	Inch	Thread 3/4 male
Storage tank circuit		
Medium heating water	✓	✓
kv value	-	6.9
Charging pump Grundfos UPML 25-105 PWM	✓	✓
Power consumption during operation (charging pump)	W	3-140
Drinking water circuit		
Medium drinking water	✓	✓
Output capacity (at Δ T = 20K)	l/min	1-80
kv value	-	6.6
Safety valve	bar	10
General temperature range	°C	20-75
Pre-configured in the control	°C	20-60
Circulation pump Wilo Yonos PARA Z 15/7.0 RKC 130	✓	✓
Materials		
Fittings brass / dezincification-resistant brass / red brass	✓	✓
EPDM seal	✓	✓
EPP insulation	✓	✓
Pipes, stainless steel 1.4404	✓	✓
Heat exchanger, stainless steel 1.4401 / brazing solder, copper / Sealix fully sealed	✓	✓

Water quality requirements

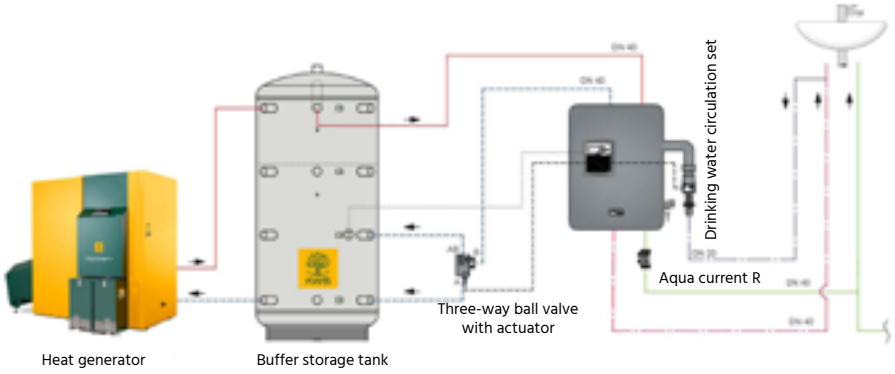
Contents	Concentration (mg/l or ppm)	Stainless steel heat exchanger soldered with: Copper, fully sealed*
Chloride (Cl^-) at 60 °C	< 100	+
	100 - 150	+
	> 150	0
Hydrogen carbonate (HCO_3^-)	< 70	+
	70 - 300	+
	> 300	+
Sulphate (SO_4^{2-})	< 70	+
	> 70	+
HCO_3^- / SO_4^{2-}	< 1.0	+
	> 1.0	+
Electrical conductivity at 20°C	< 50 µS/cm	+
	50 - 500 µS/cm	+
	> 500 µS/cm	+
pH Generally a low pH value (under 6) increases the corrosion risk and a high pH value (above 7.5) reduces the corrosion risk.	< 6.0	+
	6.0 - 7.5	+
	7.5 - 9.0	+
	9.0 - 9.5	+
	>9.5	0
Free chlorine (Cl_2)	< 1	+
	> 1	0
Ammonium (NH_4^+)	< 2	+
	2 - 20	+
	> 20	-
Hydrogen sulphide (H_2S)	< 0.05	+
	> 0.05	0
Free (aggressive) carbon dioxide (CO_2)	< 5	+
	5 - 20	+
	> 20	+
Nitrate (NO_3^-)	< 100	+
	> 100	+

* ... + Good resistance under normal conditions 0 corrosion may occur - Use not recommended

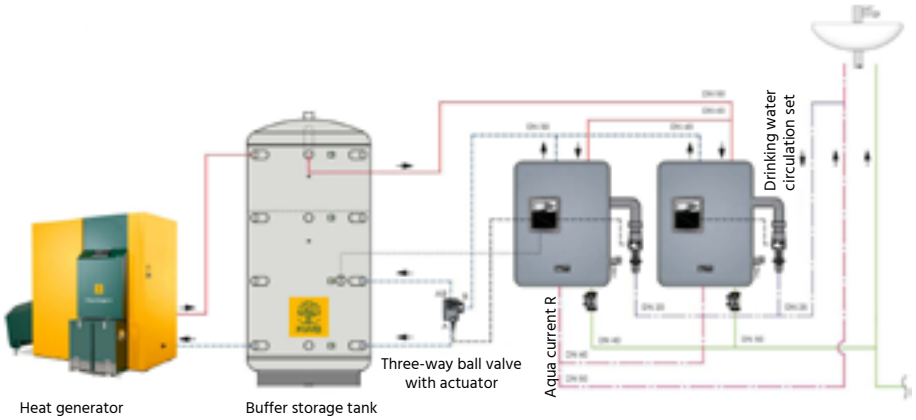
All dimensions in mm

SYSTEM DIAGRAM EMPAFRESH X 80

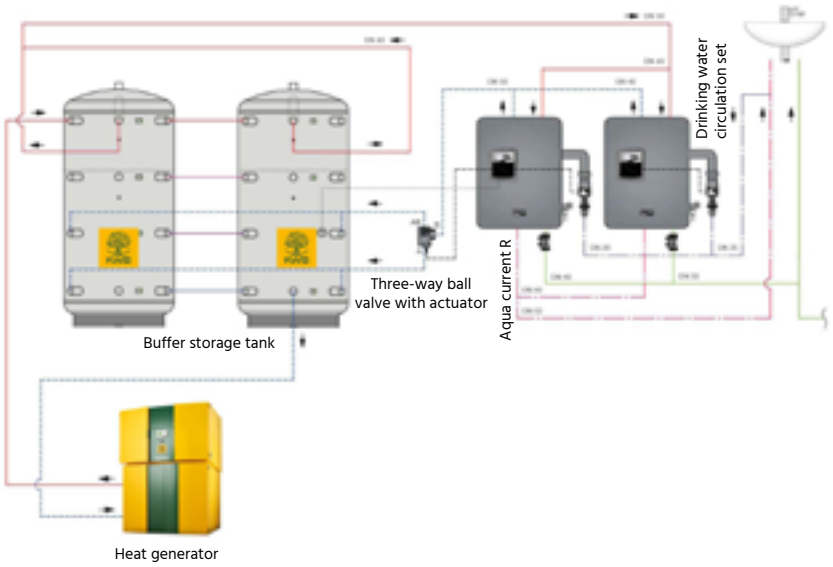
ONE BUFFER STORAGE TANK AND ONE FRESH WATER STATION



CASCADE WITH ONE BUFFER STORAGE TANK AND TWO FRESH WATER STATIONS



CASCADE WITH TWO BUFFER STORAGE TANKS AND TWO FRESH WATER STATIONS



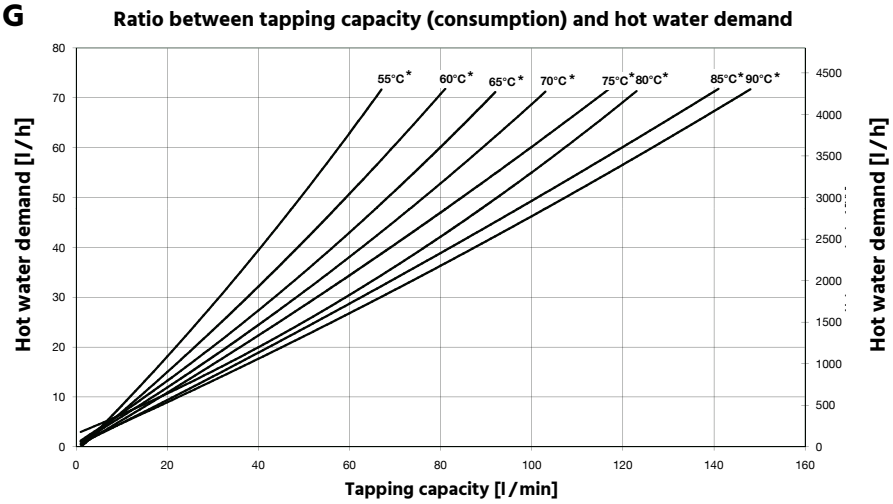
LEGEND

Heating forward flow	
Heating return flow	
Cold drinking water	
Hot drinking water	
	Drinking water circulation
	Flow direction
	Temperature sensor
	Relay output

EMPAFRESH CALCULATION DIAGRAMS

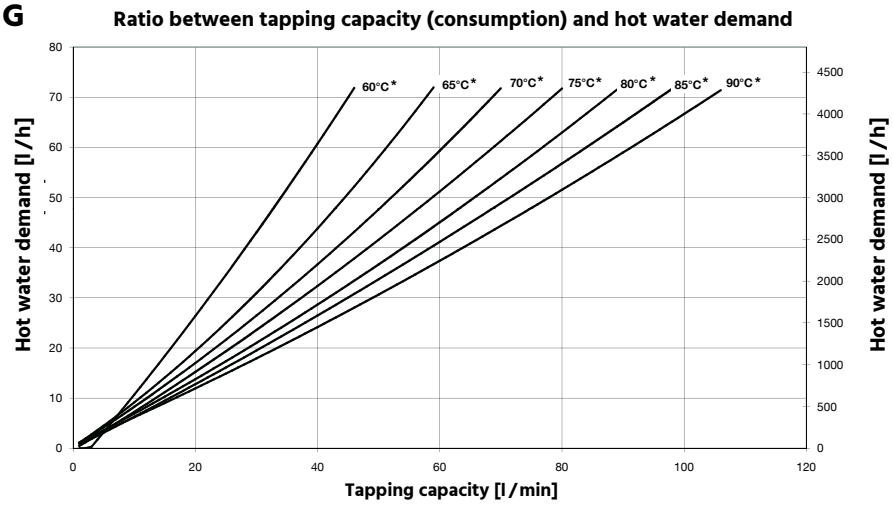
KWB EMPAFRESH X 80

DRINKING WATER HEATING 10 °C TO 45 °C



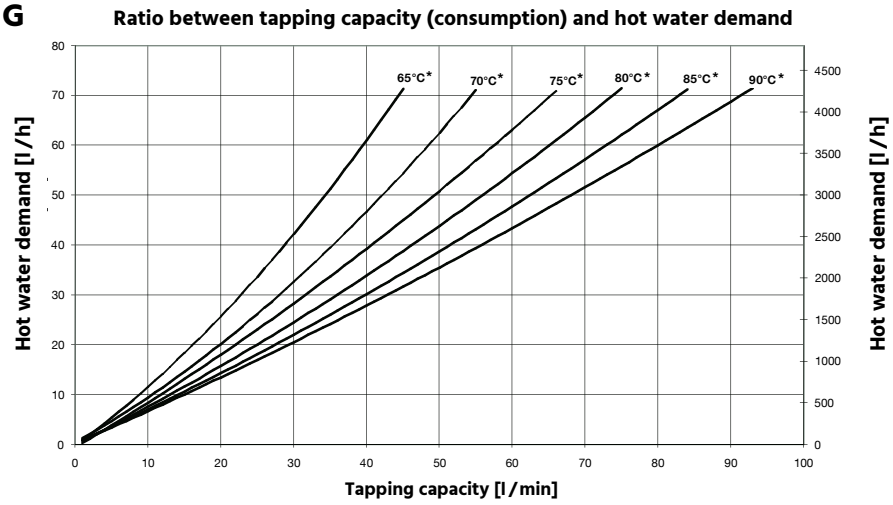
*Buffer storage tank temperature

DRINKING WATER HEATING 10 °C TO 55 °C



*Buffer storage tank temperature

DRINKING WATER HEATING 10 °C TO 60 °C

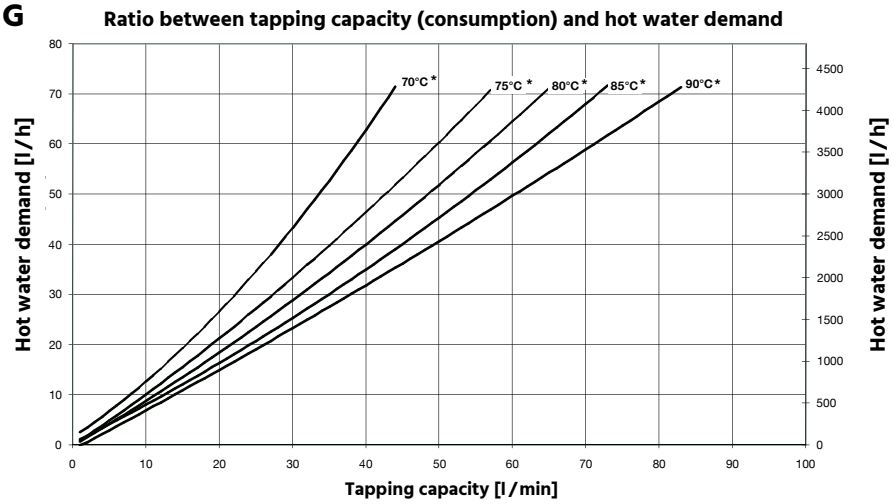


*Buffer storage tank temperature

EMPAFRESH CALCULATION DIAGRAMS

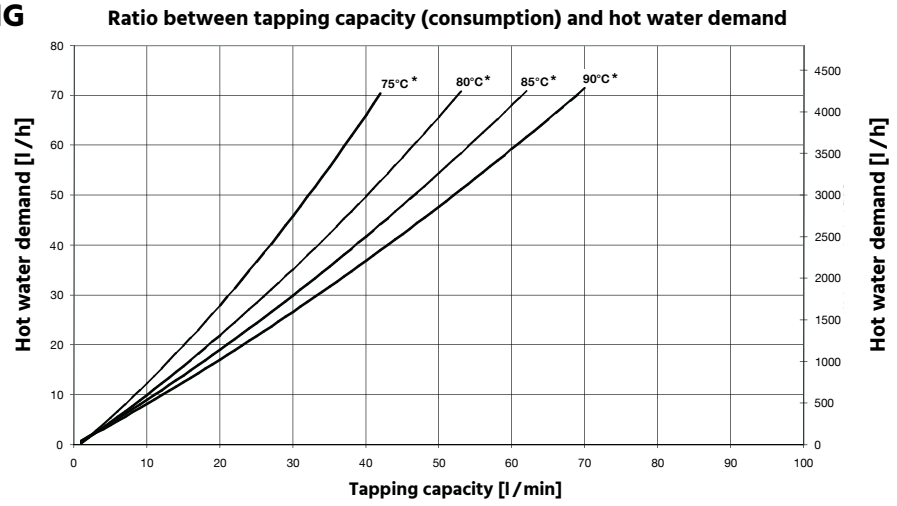
KWB EMPAFRESH X 80

DRINKING WATER HEATING 10 °C TO 65 °C



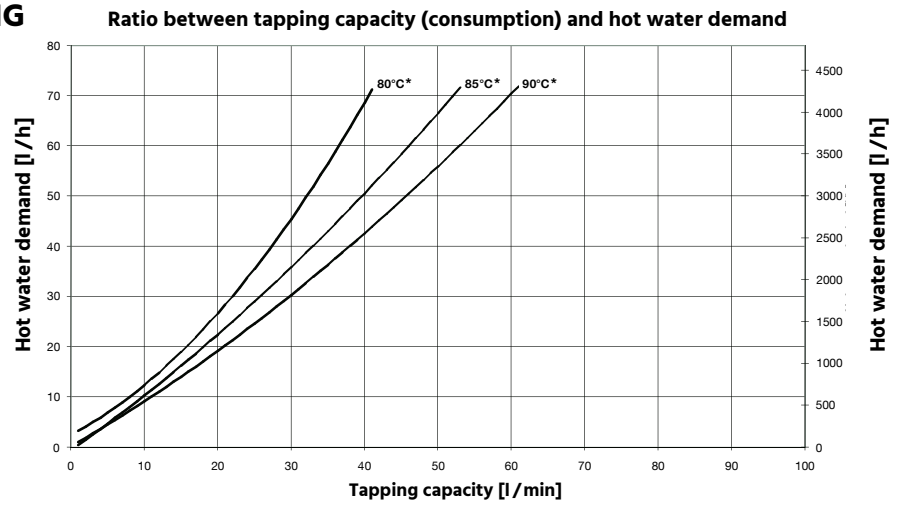
*Buffer storage tank temperature

DRINKING WATER HEATING 10 °C TO 70 °C



*Buffer storage tank temperature

DRINKING WATER HEATING 10 °C TO 75 °C



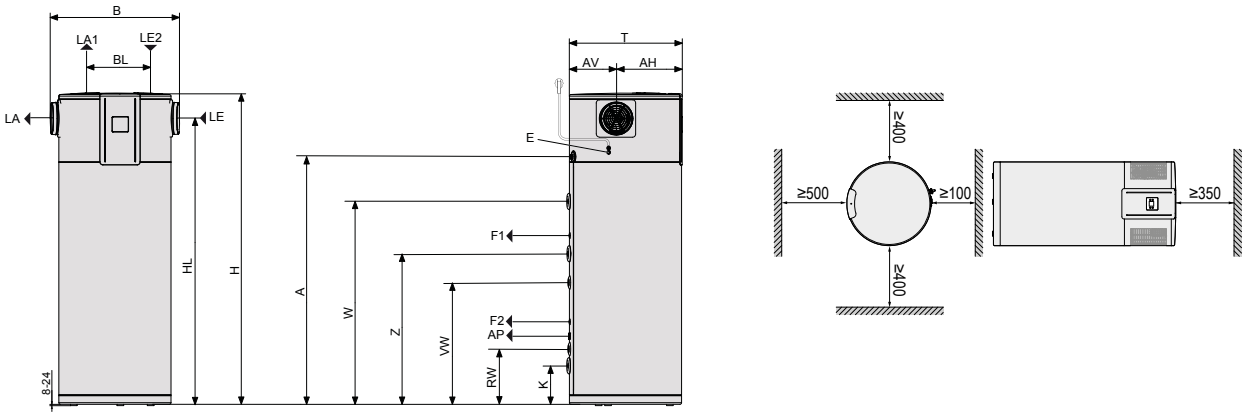
*Buffer storage tank temperature

KWB EMPAAIR DOMESTIC HOT WATER HEAT PUMP

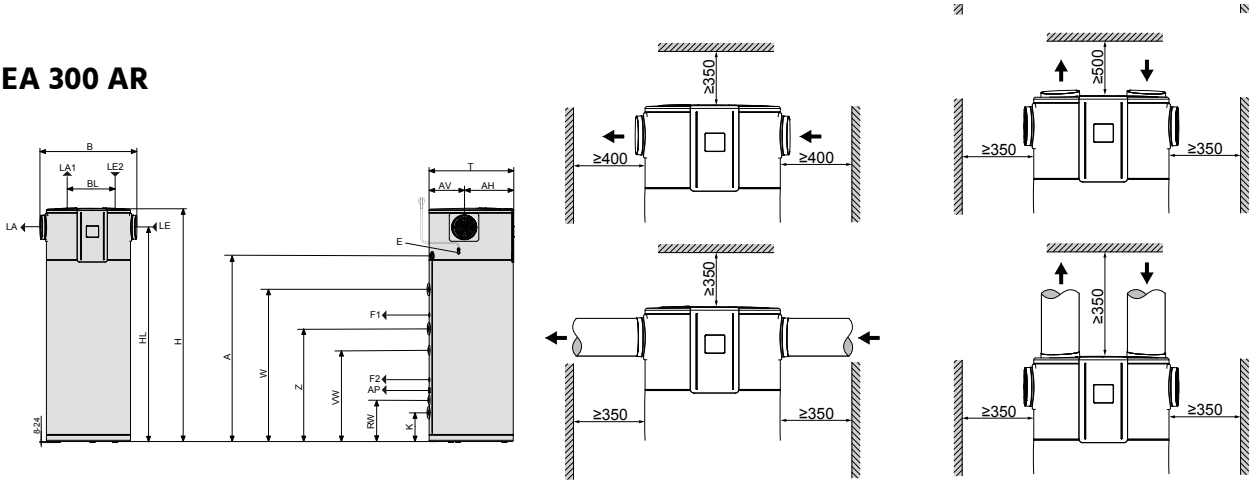
INSTALLATION AND CONNECTING DIMENSIONS

The minimum volume in which the KWB EmpaAir is installed must be 13m³.

EA 220 AND EA 300 R



EA 300 AR



LEGEND

		EA 220	EA 300 R	EA 300 AR
B	Total width	690	690	770
LA	Air outlet DN200 (DN160 with supplied reducer)			200 / 160
LE	Air inlet DN200 (DN160 with supplied reducer)			160
LA1	Air outlet optional DN160			160
LE2	Air inlet optional DN160			
HL	Height middle air inlet/air outlet			1750
H	Total height	1545	1913	1905
A	Condensate discharge, male thread G 3/4"	1160	1520	1525
W	Hot water discharge, male thread G 1"	880	1250	1290
Z	Circulation, male thread G 1/2"	700	930	968
VW	Heat generator forward flow female thread G1"	–	–	730
RW	Heat generator return flow female thread G1"	–	–	325
K	Cold water inflow male thread G1 "	240	240	220
T	Depth			695
AV	Distance front to middle air inlet/air outlet			290
AH	Distance rear to middle air inlet/air outlet			405
E	Routing electrical lines			
F1	Sensor heat generator optional ∅ 9.6 mm			
F2	Sensor heat generator ∅ 9.6 mm			
AP	Cover production opening			

All dimensions in mm

KWB EMPAAIR DOMESTIC HOT WATER HEAT PUMP

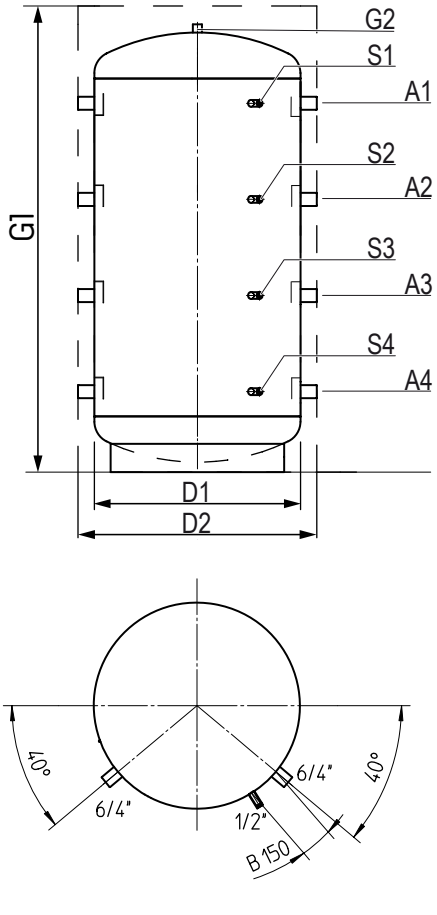
TECHNICAL DATA

KWB EmpaAir 220/300	Unit	EA 220	EA 300 R	EA 300 AR
Nominal capacity	l	220	291	291
Surface, heat exchanger	m^2	–	1,30	1,30
Application restrictions				
Hot water temperature max.	°C	65	65	65
Hot water temperature with emergency/additional heating max.	°C	65	65	65
Permissible hot water temperature in the storage tank max.	°C	–	70	70
Utilization limit heat source min. / max.	°C	+6/+42	+6/+42	-8/+42
Min. clearance in front of air connections / air duct at the installation location	mm	400	400	≤350/400
Min. clearance above air connections / air duct at installation location	mm	350	350	≤350/500
Installation location basic area min.	m^2	6	6	6
Installation location volume min.	m^3	13	13	13
Max. permissible operating overpressure cold/hot water	MPa	0,8	0,8	0,8
Performance specifications pursuant to EN 16147				
Nominal hot water temperature (EN 16147)	°C	55	55	55
Nominal load profile (EN16147)	–	L	XL	XL
Supply hot water temperature (EN 16147 / A15)	°C	52,7	52,5	–
Supply hot water temperature (EN 16147 / A14)	°C	–	–	54,3
Supply hot water temperature (EN 16147 / A7)	°C	54	52,6	54,3
Maximum useable hot water quantity 40 °C (EN 16147 / A15)	l	277	387	–
Maximum useable hot water quantity 40 °C (EN 16147 / A14)	l	–	–	399
Maximum useable hot water quantity 40 °C (EN 16147 / A7)	l	254	381	394
Heating time (EN 16147 / A15)	h	6,65	9,6	–
Heating time (EN 16147 / A14)	h	–	–	9,56
Heating time (EN 16147 / A7)	h	8,78	12,43	12,24
Power consumption, standby period (EN 16147 / A15)	kW	0,027	0,032	–
Power consumption, standby period (EN 16147 / A14)	kW	–	–	0,029
Power consumption, standby period (EN 16147 / A7)	kW	0,035	0,044	0,027
Coefficient of performance COP (EN 16147 / A15)	–	3,2	3,3	–
Coefficient of performance COP (EN 16147 / A14)	–	–	–	3,6
Coefficient of performance COP (EN 16147 / A7)	–	2,68	2,75	2,99
Heat output				
Medium heat output (EN 16147 / A15)	kW	1,6	1,6	–
Medium heat output (EN 16147 / A14)	kW	–	–	1,7
Medium heat output (EN 16147 / A7)	kW	1,3	1,3	1,3
Power consumption				
Medium power consumption heat pump (EN 16147 / A15)	kW	0,5	0,5	–
Power consumption emergency/additional heating	kW	1,5	1,5	-
Power consumption heat pump + emergency/additional heating max.	kW	2,15	2,15	2,15
Energetic data				
Energy efficiency class hot water preparation (load profile), internal air/outdoor air	–	A+ (L) / -	A+ (XL) / -	A+ (XL) / A+ (XL)
Electrical data				
Mains connection	–	1/N/PE ~ 220/230V 50Hz	1/N/PE ~ 220/230V 50Hz	1/N/PE ~ 220/230V 50Hz
Operating current max.	A	8,54	8,54	8,54
Starting current max.	A	23,44	23,44	23,44
Fusing	A	C16	C16	C16
Acoustic information				
Acoustic power level without air duct (EN 12102)	dB(A)	60	60	60
Acoustic power level with air duct (EN 12102)	dB(A)	-	-	52
Acoustic power level outside (outdoor air)	dB(A)	-	-	48
Medium acoustic power level in 1m distance free field without air duct	dB(A)	45	45	45
Medium acoustic power level in 1m distance free field with 4 m air duct	dB(A)	-	-	37
Versions				
Degree of protection of enclosure (IP)	–	IP24	IP24	IP24
Refrigerant	–	R134a	R134a	R134a
Refrigerant fill weight	kg	0,85	0,85	0,85
Power supply cable length approx.	mm	2000	2000	2000
Dimensions				
Weights, empty	mm	120	156	156
Height	mm	1501	1905	1905
Diameter	mm	690	690	690
Tilt dimensions	mm	1652	2026	2026
Tilting dimensions with packaging	mm	1895	2230	2244
Packaging unit dimensions height/width/depth	mm	1740/740/740	2100/740/740	2100/790/790
Connections				
Condensate connection	–	G 3/4	G 3/4	G 3/4 A
circulation connection	–		G 1/2 A	
Water connection	–		G 1 A	
Connection, heat exchanger	–	–	G 1	G 1
Values				
Type of anode: Impressed current anode	–		✓	
Air throughput	m^3/h	550	550	350
Max. air duct length at 160/200 mm (incl. 3x 90° bends)	m	–	–	20/40
Available external compression	Pa	–	–	120

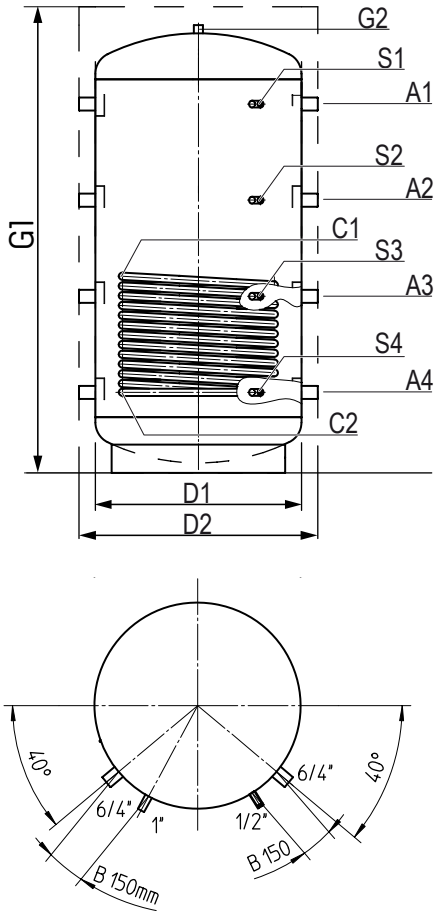
KWB EMPAECO

BUFFER STORAGE TANK

KWB EMPAECO



KWB EMPAECO SOLAR



DIMENSIONS FOR TRANSPORT AND PLACEMENT

DIMENSIONS	EMPAECO 500	EMPAECO 800	EMPAECO 1,000	EMPAECO 1,500
Diameter with insulation	650 / 850	790 / 990	790/990	1,000 / 1,200
Unobstructed door width for placement in designated space (without insulation)	655	795	795	1,005
Total height (with insulation)	1,725	1,785	2,135	2,235
Tilting dimensions without insulation	1,670	1,750	2,090	2,270

DIMENSIONS	EMPAECO 2,000	EMPAECO 3,000	EMPAECO 4,000	EMPAECO 5,000
Diameter with insulation	1,100 / 1,300	1,250 / 1,450	1,400 / 1,600	1,600 / 1,800
Unobstructed door width for placement in designated space (without insulation)	1,105	1,255	1,405	1,605
Total height (with insulation)	2,465	2,681	2,754	2,855
Tilting dimensions without insulation	2,460	2,650	2,740	2,893

DIMENSIONS	EMPAECO SOLAR 800	EMPAECO SOLAR 1,000	EMPAECO SOLAR 1,500
Diameter with insulation	790 / 990	790 / 990	1,000 / 1,200
Unobstructed door width for placement in designated space (without insulation)	795	795	1,005
Total height (with insulation)	1.785	2,135	2,235
Tilting dimensions without insulation	1.750	2,090	2,270

KWB EMPAECO

TECHNICAL DATA LABEL C

EmpaEco	Position	Unit	500	800	1000	1500	2000	3000
Nominal capacity	–	liter	491	746	916	1.531	2.061	3.000
Weight incl. insulation	–	kg	87	109	130	205	251	367
Permissible operating pressure storage tank	–	bar	4	4	4	4	4	4
Permissible operating pressure solar register	–	bar	–	–	–	–	–	–
Permissible operating temperature storage tank	–	°C	95	95	95	95	95	95
Permissible operating temperature solar register	–	°C	–	–	–	–	–	–
Register area Solar	–	m²	–	–	–	–	–	–
Register content Solar	–	liter	–	–	–	–	–	–
Connections								
Height of the 8 heating system connections	A1	mm	1.390	1.430	1.710	1.760	2.020	2.205
6/4" internal thread: EmpaEco	A2	mm	1.010	1.030	1.250	1.350	1.490	1.600
500/800/1000/1500/2000	A3	mm	620	630	745	825	900	985
2" internal thread: EmpaEco 3000/4000/5000	A4	mm	220	260	310	380	320	375
Solar forward flow for KWB EmpaEco Solar • 1" internal thread: KWB EmpaEco Solar 1,000	C1	mm	–	–	–	–	–	–
Solar return flow for KWB EmpaEco Solar • 1" internal thread: EmpaEco Solar 1,000	C2	mm	–	–	–	–	–	–
Evacuation connection • 6/4" internal thread: EmpaEco 500/800/1000/1500/2000 • 2" internal thread: EmpaEco 3000/4000/5000	G2	mm	1.640	1.700	2.050	2.150	2.380	2.596
Sensor sleeves with clamp springs	S1	mm	1.390	1.430	1.710	1.760	2.020	2.205
	S2	mm	1.010	1.030	1.250	1.350	1.490	1.600
	S3	mm	620	630	745	825	900	985
	S4	mm	220	260	310	380	320	375
Energy								
Energy efficiency class according to Commission	–	–	C	C	C	C	C	–
Heat loss [W] according to EN 12897 (measured)	–	W	85	108	126	153	180	230

EmpaEco	Position	Unit	4000	5000	800 Solar	1000Solar	1500Solar
Nominal capacity	–	liter	4.000	5.000	746	916	1.531
Weight incl. insulation	–	kg	435	508	133	149	256
Permissible operating pressure storage tank	–	bar	4	4	4	4	4
Permissible operating pressure solar register	–	bar	–	–	10	10	10
Permissible operating temperature storage tank	–	°C	95	95	95	95	95
Permissible operating temperature solar register	–	°C	–	–	110	110	110
Register area Solar	–	m²	–	–	2,4	3,0	3,6
Register content Solar	–	liter	–	–	15	19	22
Connections							
Height of the 8 heating system connections	A1	mm	2.255	2.285	1.430	1.710	1.760
6/4" internal thread: EmpaEco	A2	mm	1.639	1.680	1.030	1.250	1.350
500/800/1000/1500/2000	A3	mm	1.022	1.065	630	745	825
2" internal thread: EmpaEco 3000/4000/5000	A4	mm	405	455	260	310	380
Solar forward flow for KWB EmpaEco Solar • 1" internal thread: KWB EmpaEco Solar 1,000	C1	mm	–	–	845	1.030	1.175
Solar return flow for KWB EmpaEco Solar • 1" internal thread: EmpaEco Solar 1,000	C2	mm	–	–	260	310	380
Evacuation connection • 6/4" internal thread: EmpaEco 500/800/1000/1500/2000 • 2" internal thread: EmpaEco 3000/4000/5000	G2	mm	2.669	2.770	1.700	2.050	2.150
Sensor sleeves with clamp springs	S1	mm	2.255	2.285	1.430	1.710	1.760
	S2	mm	1.639	1.680	1.030	1.250	1.350
	S3	mm	1.022	1.065	630	745	825
	S4	mm	405	455	260	310	380
Energy							
Energy efficiency class according to Commission	–	–	–	–	C	C	C
Heat loss [W] according to EN 12897 (measured)	–	W	272	306	108	126	153

All dimensions in mm

KWB EMPAECO

TECHNICAL DATA LABEL B

EmpaEco (Energy efficiency class B)	Position	Unit	500	800	1000	800 Solar	1000Solar
Nominal capacity	–	liter	491	746	916	746	916
Weight incl. insulation	–	kg	111	142	154	173	196
Permissible operating pressure storage tank	–	bar	4	4	4	4	4
Permissible operating pressure solar register	–	bar		–		10	10
Permissible operating temperature storage tank	–	°C			95		
Permissible operating temperature solar register	–	°C		–		110	110
Register area Solar	–	m^2		–		2,4	3
Register content Solar	–	liter		–		15	19
Connections							
Height of the 8 heating system connections 6/4" internal thread	A1	mm	1390	1430	1710	1430	1710
	A2	mm	1010	1030	1250	1030	1250
	A3	mm	620	630	745	630	745
	A4	mm	220	260	310	260	310
	C1	mm		–		845	1030
Solar return flow for KWB EmpaEco Solar 1" internal thread	C2	mm		–		260	310
Evacuation connection 6/4" internal thread	G2	mm	1640	1700	2050	1700	2050
	S1	mm	1390	1430	1710	1430	1710
	S2	mm	1010	1030	1250	1030	1250
	S3	mm	620	630	745	630	745
	S4	mm	220	260	310	260	310
Energy							
Energy efficiency class according to Commission Delegated Regulation (EU) 812/2013	–	–			B		
Heat loss [W] according to EN 12897 (measured)	–	W	83	95	103	95	103

DIMENSIONS FOR TRANSPORT AND PLACEMENT

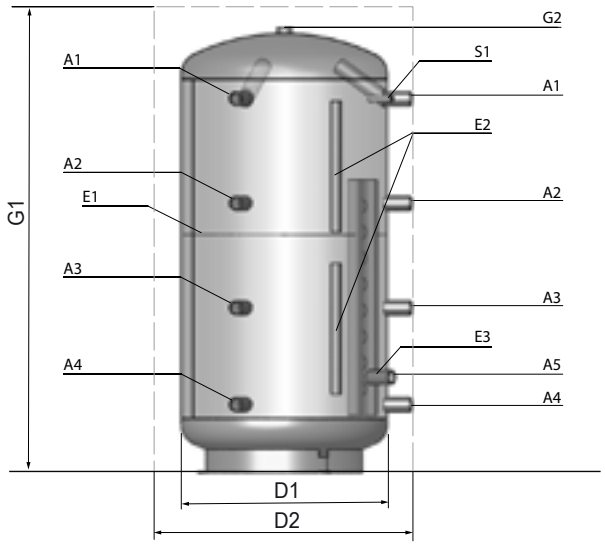
DIMENSIONS FOR EMPAECO LABEL B	EMPAECO 500	EMPAECO 800	EMPAECO 1.000
Diameter with insulation	650 / 930	790 / 1,070	790/1,070
Unobstructed door width for placement in designated space (without insulation)	655	795	795
Total height (with insulation)	1,725	1,785	2,135
Tilting dimensions without insulation	1,670	1,750	2,090

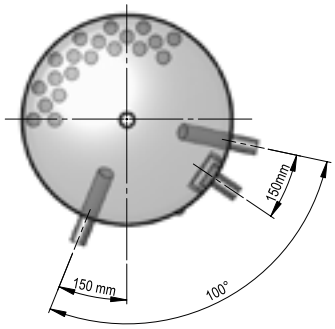
DIMENSIONS FOR EMPAECO LABEL B	EMPAECO SOLAR 800	EMPAECO SOLAR 1.000
Diameter with insulation	790 / 1,070	790 / 1,070
Unobstructed door width for placement in designated space (without insulation)	795	795
Total height (with insulation)	1,785	2,135
Tilting dimensions without insulation	1,750	2,090

All dimensions in mm

KWB EMPAECO

BUFFER STORAGE TANK WITH STRATA CHARGING SYSTEM





EmpaEco with strata charging device	Position	Unit	500	800	1000	1500
Nominal capacity	–	liter	491	746	916	1531
Weight incl. insulation	–	kg	87	105	122	210
Permissible operating pressure storage tank	–	bar	4	4	4	4
Permissible operating pressure solar register	–	bar			–	
Permissible operating temperature storage tanl	–	°C			95	
strata plate	E1	–			✓	
Sensor channel	E2	–			✓	
Thermal return flow stratification device	E3	–			✓	
Connections						
Height of the 8 heating system connections	A1	mm	1390	1430	1710	1760
	A2	mm	1010	1030	1250	1350
6/4" internal thread: EmpaEco 500 | 800 |	A3	mm	620	630	745	825
1.000 | 1.500	A4	mm	220	260	310	380
	A5	mm	320	365	415	480
Evacuation connection 6/4" internal thread: EmpaEco 500 | 800 | 1.000	G2	mm	1640	1700	2050	2150
Sensor sleeves with clamp springs	S1	mm	1390	1430	1710	1760
Dimensions						
Diameter without / with insulation	D1 / D2	mm	650 / 850	790 / 990	790 / 990	1000 / 1200
Width without insulation for placement in	–	mm	655	795	795	1005
Thickness of insulation coat	–	mm			100	
Thickness of insulation cover	–	mm			85	
Total height with insulation	G1	mm	1725	1785	2135	2235
Tilt dimension	–	mm	1670	1750	2090	2270
Energy						
Energy efficiency class according to	–	–			C	
Heat loss [W] according to EN 12897 (measured	–	W	85	108	126	153

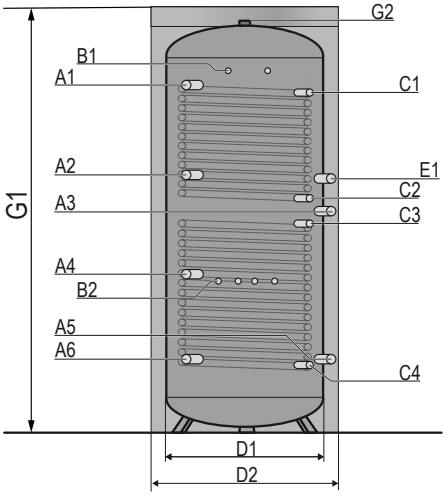
DIMENSIONS FOR TRANSPORT AND PLACEMENT

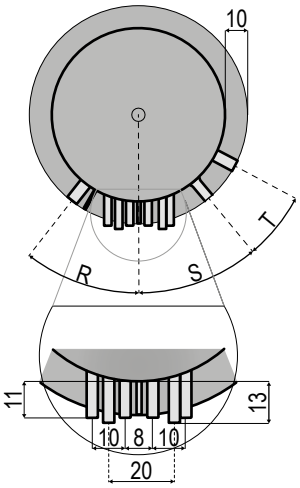
DIMENSIONS FOR THE EMPAECO WITH STRATA CHARGING DEVICE	EMPAECO 500	EMPAECO 800	EMPAECO 1,000	EMPAECO 1,500
Diameter with insulation	650 / 850	790 / 990	790 / 990	1,000 / 1,200
Unobstructed door width for placement in designated space (without insulation)	655	795	795	1,005
Total height (with insulation)	1,725	1,785	2,135	2,235
Tilting dimensions without insulation	1,670	1,750	2,090	2,270

All dimensions in mm

KWB EMPACOMPACT

STRATIFIED STORAGE TANK





EMPACOMPACT PV

EmpaCompact	Position	Unit	500	800	1000	1500	800 Basic	1000 Basic	800 PV	1000 PV
Nominal capacity	–	liter	500	746	916	1.500	746	916	746	916
Weight without insulation	–	kg	101	149	182	277	95	105	108	118
Permissible operating pressure buffer storage tank	–	bar	4	4	4	4	4	4	4	4
Permissible operating pressure solar register	–	bar	10	10	10	10	–	–	–	–
Permissible operating temperature buffer storage tank	–	°C	95	95	95	95	95	95	95	95
Permissible operating temperature solar register	–	°C	110	110	110	110	–	–	–	–
Register area at the top	–	m^2	–	1,46	2,20	2,20	–	–	–	–
Register content at the top	–	liter	–	9,6	14,4	14,4	–	–	–	–
Register area at the bottom	–	m^2	1,8	2,4	3,0	3,6	–	–	–	–
Register content at the bottom	–	liter	11,8	15,6	19,8	23,5	–	–	–	–
Connections										
6 heating system connections 6/4" internal thread	A1	mm	1.390	1.430	1.710	1.760	1.430	1.710	1.430	1.710
	A2	mm	1.010	1.030	1.250	1.360	1.030	1.250	1.030	1.250
	A3	mm	800	870	1.065	1.170	870	1.065	–	–
	A4	mm	620	630	745	825	630	745	630	745
	A5	mm	220	260	310	380	260	310	260	310
	A6	mm	220	260	310	380	260	310	260	310
Heating system connection 6/4" internal thread with strata charging device	E1	mm	950	1.030	1.250	1.350	1.030	1.250	1.030	1.250
Fresh water module forward & return flow 1" external thread	B1	mm	1.370	1.455	1.750	1.780	1.455	1.750	1.455	1.750
Heating circuit forward & return flow 1" external thread	B2	mm	340	425	720	750	425	720	415	710
Connection solar register on top forward flow 1"	C1	mm	–	1.360	1.670	1.710	–	–	–	–
Connection solar register on top return flow 1"	C2	mm	–	1.000	1.130	1.215	–	–	–	–
Connection solar register on the bottom forward flow 1"	C3	mm	760	865	1.000	1.125	–	–	–	–
Connection solar register on the bottom return flow 1"	C4	mm	220	280	280	315	–	–	–	–
Exhaust: 6/4" internatl thread	G2	mm	1.643	1.694	2.044	2.142	1.694	2.044	1.694	2.044
Electric heating system 6/4" internal thread	A3	mm	800	870	1.065	1.170	870	1.065	–	–
Electric heating system 6/4" internal thread, photovoltaic top (PV1)	–	mm	–	–	–	–	–	–	870	1.250
Electric heating system 6/4" internal thread, photovoltaic bottom (PV2)	–	mm	–	–	–	–	–	–	270	310
Angle	R	°	48	38	38	38	38	38	38	38
Angle	S	°	45	40	40	45	40	40	40	40
Angle	T	°	27	22	22	17	22	22	22	22
Angle sum		°	120	100	100	100	100	100	100	100
Energy										
Energy efficiency class according to Commission Delegated	–	–	C	C	C	C	C	C	C	C
Heat loss for EN 12897 (measured)	–	W	85	108	126	153	108	126	108	126

DIMENSIONS FOR TRANSPORT AND PLACEMENT

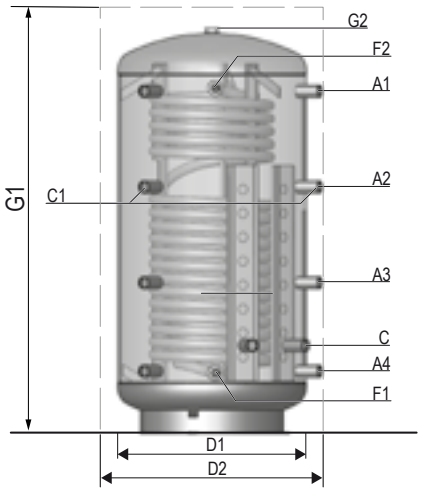
DIMENSIONS	EMPACOMPACT 500	EMPACOMPACT 800	EMPACOMPACT 1,000	EMPACOMPACT 1,500
Diameter with insulation	650 / 850	790 / 990	790 / 990	1,000 / 1,200
Unobstructed door width for placement in designated space (without insulation)	655	795	795	1,005
Total height (with insulation)	1,725	1,785	2,135	2,235
Tilting dimensions without insulation	1,670	1,750	2,090	2,270

All dimensions in mm

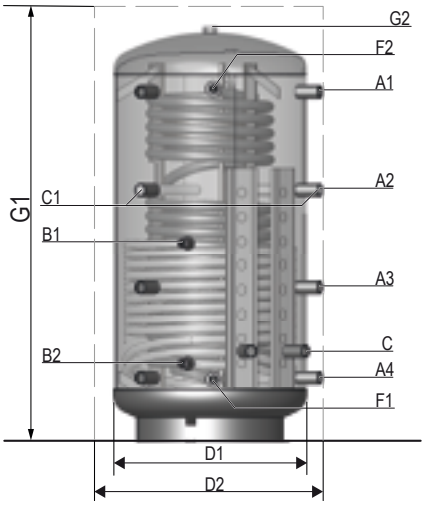
KWB EMPAWELL

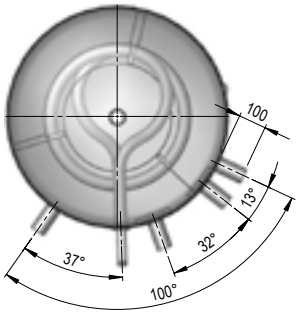
CORRUGATED TUBE STRATIFIED STORAGE TANK

KWB EMPAWELL

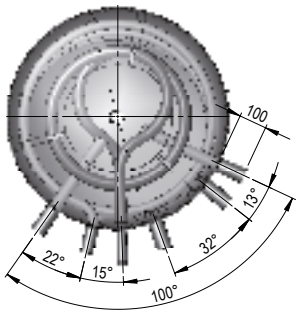


KWB EMPAWELL SOLAR





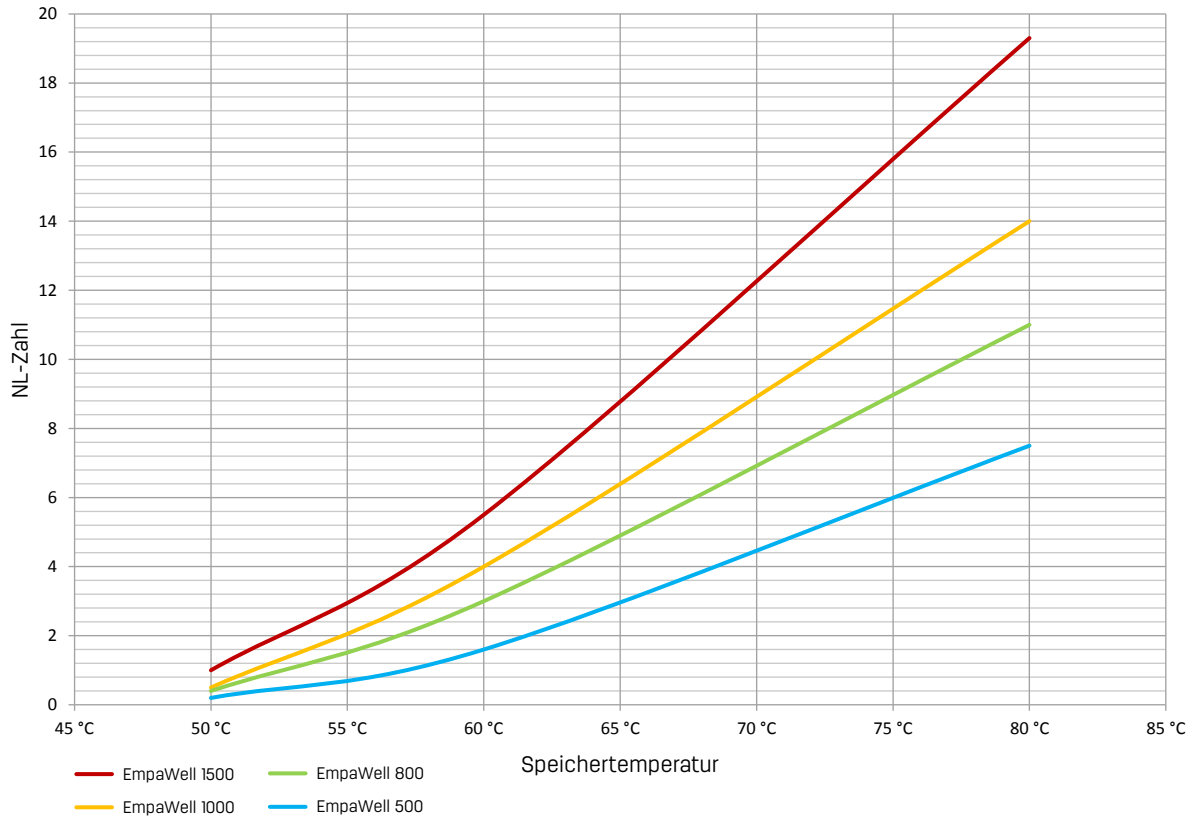
KWB EmpaWell



KWB EmpaWell Solar

The legends to the respective diagrams can be found on the next side.

DIMENSIONING: N_L FIGURES FOR THE KWB STORAGE TANK



All dimensions in mm

KWB EMPAWELL

TECHNICAL DATA LABEL C

TECHNICAL NOTES

Filling: It is absolutely mandatory to first fill or pressurise the corrugated tube and then the buffer storage tank (heating water area).

Emptying: When emptying the system, the first step is to depressurise the buffer storage tank (heating water area) and the corrugated tube in the second step. A violation of the filling or emptying sequence may destroy the corrugated tube. According to DIN 1988-2, systems with metal piping require the installation of a drinking water filter.

According to DIN 1988 and also recommended by us, a drinking water filter should also be installed **plastic tubes** to prevent dirt entering the drinking water system.

Circulation: When using a circulation line, we recommend installing a circulation lance.

EmpaWell	Position	Unit	500	800	1000	1500	500 Solar	800 Solar	1000 Solar	1500 Solar
Nominal capacity	–	liter	491	746	916	1531	491	746	916	1531
Weight incl. insulation	–	kg	94	125	143	239	119	157	185	291
Permissible stratified storage tank operating pressure	–	bar	4	4	4	4	4	4	4	4
Permissible corrugated tube operating pressure	–	bar	6	6	6	6	6	6	6	6
Permissible solar register operating pressure	–	bar	-	-	-	-	10	10	10	10
Permissible operating temperature storage tank	–	°C	95	95	95	95	95	95	95	95
Permissible operating temperature drinking water	–	°C	95	95	95	95	95	95	95	95
Permissible operating temperature solar register	–	°C	-	-	-	-	110	110	110	110
Surface corrugated tube	–	m^2	5,0	6,5	7,5	7,5	5,0	6,5	7,5	7,5
Content corrugated tube	–	liter	25	33	39	39	25	33	39	39
Register surface solar	–	m^2	-	-	-	-	1,8	2,5	3,1	3,5
Register content solar	–	liter	-	-	-	-	25	33	39	39
Connections										
8 heating system connections 6/4" internal thread	A1	mm	1390	1430	1710	1760	1390	1430	1710	1760
	A2	mm	1010	1030	1250	1350	1010	1030	1250	1350
	A3	mm	620	630	745	825	620	630	745	825
	A4	mm	220	260	310	380	220	260	310	380
Evacuation connection 6/4" internal thread	G2	mm	1640	1700	2050	2150	1640	1700	2050	2150
Heating circuit return flow with strata charging device: 6/4" external thread Thermal strata charging device heating return flow 2 x for 800/1,000l 1 x for 500l/1.500l	C	mm	335	253	310	380	335	253	310	380
Cold water 1" external thread, stainless steel	F1	mm	220	253	253	306	220	253	253	370
Hot water 1" external thread, stainless steel	F2	mm	1425	1443	1743	1826	1425	1443	1743	1826
Solar system forward flow 1" internal thread	B1	mm	-	-	-	-	740	813	948	910
Solar heating system return flow 1" internal thread	B2	mm	-	-	-	-	290	318	318	370
Sleeve for screw-in heating system 6/4" internal thread	C1	mm	1010	1030	1250	1350	1010	1030	1250	1350
Installation length for screw-in heating	–	mm	700	840	840	1050	700	840	840	1050
Energy										
Energy efficiency class according to Commission	–	–	C	C	C	C	C	C	C	C
Heat loss according to EN 12897 (measured)	–	W	88	111	129	156	88	111	129	156

DIMENSIONS FOR TRANSPORT AND PLACEMENT

DIMENSIONS FOR EMPAWELL LABEL C	EMPAWELL 500 / SOLAR	EMPAWELL 800 / SOLAR
Diameter with insulation	650 / 850	790 / 990
Unobstructed door width for placement in designated space (without insulation)	655	795
Total height (with insulation)	1,725	1,785
Tilting dimensions without insulation	1,670	1,750

DIMENSIONS FOR EMPAWELL LABEL C	EMPAWELL 1,000 / SOLAR	EMPAWELL 1,500 / SOLAR
Diameter with insulation	790 / 990	1,000 / 1,200
Unobstructed door width for placement in designated space (without insulation)	795	1,005
Total height (with insulation)	2,135	2,235
Tilting dimensions without insulation	2,090	2,270

All dimensions in mm

KWB EMPAWELL

TECHNICAL DATA LABEL B

EmpaWell (Energy efficiency class B)	Position	Unit	500	800	1000	500 Solar	800 Solar	1000 Solar
Nominal capacity	–	liter	491	746	916	491	746	916
Weight incl. insulation	–	kg	130	178	198	155	197	227
Permissible stratified storage tank operating pressure	–	bar	4	4	4	4	4	4
Permissible corrugated tube operating pressure	–	bar	6	6	6	6	6	6
Permissible solar register operating pressure	–	bar	-	-	-	10	10	10
Permissible operating temperature storage tank	–	°C	95	95	95	95	95	95
Permissible operating temperature drinking water	–	°C	95	95	95	95	95	95
Permissible operating temperature solar register	–	°C	-	-	-	110	110	110
Surface corrugated tube	–	m^2	5	7	8	5	7	8
Content corrugated tube	–	liter	25	33	39	25	33	39
Register surface solar	–	m^2	-	-	-	2	3	3
Register content solar	–	liter	-	-	-	25	33	39
Connections								
8 heating system connections 6/4" internal thread	A1	mm	1390	1430	1710	1390	1430	1710
	A2	mm	1010	1030	1250	1010	1030	1250
	A3	mm	620	630	745	620	630	745
	A4	mm	220	260	310	220	260	310
Evacuation connection 6/4" internal thread	G2	mm	1640	1700	2050	1640	1700	2050
Heating circuit return flow with strata charging device: 6/4" external thread Thermal strata charging device heating return flow 2 x for 800/1,000l 1 x for 500l/1.500l	C	mm	335	253	310	335	253	310
Cold water 1" external thread, stainless steel	F1	mm	220	253	253	220	253	253
Hot water 1" external thread, stainless steel	F2	mm	1425	1443	1743	1425	1443	1743
Solar system forward flow 1" internal thread	B1	mm	-	-	-	740	813	948
Solar heating system return flow 1" internal thread	B2	mm	-	-	-	290	318	318
Sleeve for screw-in heating system 6/4" internal thread	C1	mm	1010	1030	1250	1010	1030	1250
Installation length for screw-in heating	–	mm	700	840	840	700	840	840
Angle	R	°	20	20	20	20	20	20
Angle	S	°	30	30	30	30	30	30
Angle	T	°	30	30	30	30	30	30
Angle	U	°	20	20	20	20	20	20
Energy								
Energy efficiency class according to Commission Delegated	–	–	B	B	B	B	B	B
Heat loss according to EN 12897 (measured)	–	W	83	95	103	83	95	103

DIMENSIONS FOR TRANSPORT AND PLACEMENT

DIMENSIONS FOR EMPAWELL LABEL B	EMPAWELL 500 / SOLAR	EMPAWELL 800 / SOLAR	EMPAWELL 1,000 / SOLAR
Diameter with insulation	650 / 930	790 / 1,070	790 / 1,070
Unobstructed door width for placement in designated space (without insulation)	655	795	795
Total height (with insulation)	1,725	1,785	2,135
Tilting dimensions without insulation	1,670	1,750	2,090

All dimensions in mm

NOTES

FILTER SYSTEMS

OPERATING VOLUME FLOW DIMENSIONING

WHICH FILTER FOR WHICH BOILER

KWB EASYFIRE WIT DUST FILTER E

Type EF2 S/GS/V	Normal separation requirements
EF2 8 kW	Type 130
EF2 12 kW	Type 130
EF2 15 kW	Type 130
EF2 22 kW	Type 130
EF2 25 kW	Type 150
EF2 30 kW	Type 150
EF2 35 kW	Type 150

KWB CLASSICFIRE WITH DUST FILTER E

type CF2	Normal separation requirements
CF2 18 kW	Type 150
CF2 28 kW	Type 150
CF2 32 kW	Type 150
CF2 38 kW	Type 150

KWB PELLETFIRE^{PLUS} WITH DUST FILTER E OR E^{PLUS}

Type MF2 S/GS	Pellets (M8) Bm³/h	Normal separation requirements	High separation requirements
PF+ 45 kW	128	Type 150	Type 1-200
PF+ 49.5 kW	141	Type 150	Type 1-200
PF+ 55 kW	156	Type 150	Type 1-200
PF+ 65 kW	185	Type 150	Type 1-200
PF+ 70 kW	198	Type 180	Type 1-1-200
PF+ 75 kW	213	Type 180	Type 1-1-200
PF+ 95 kW	270	Type 180	Type 1-1-200
PF+ 99 kW	281	Type 200	Type 1-1-200
PF+ 101 kW	287	Type 200	Type 1-1-200
PF+ 108 kW	307	Type 200	Type 1-1-200
PF+ 115 kW	327	Type 200	Type 1-1-200
PF+ 125 kW	384	Type 200	Type 1-1-200
PF+ 135 kW	384	Type 200	Type 1-1-200

KWB MULTIFIRE WITH DUST FILTER E^{PLUS}

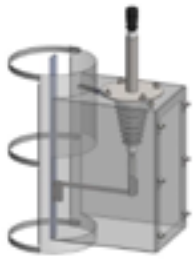
Type MF2 D/ZI	Pellets (M8) Bm³/h	Wood chips (M30) Bm³/h	Normal separation requirements
MF2 20 kW	57	62	Type 1-200
MF2 30 kW	85	93	Type 1-200
MF2 32.5 kW	92	101	Type 1-200
MF2 40 kW	114	125	Type 1-200
MF2 45 kW	128	140	Type 1-200
MF2 49.5 kW /50 kW	141	154	Type 1-200
MF2 60 kW	171	187	Type 1-1-200
MF2 65 kW	185	202	Type 1-1-200
MF2 70 kW	198	216	Type 1-1-200
MF2 80 kW	227	249	Type 1-1-200
MF2 99 kW	281	308	Type 1-1-200
MF2 101 kW	287	314	Type 1-1-200
MF2 108 kW	307	336	Type 1-1-200
MF2 120 kW	341	374	Type 1-1-200

KWB POWERFIRE WITH DUST FILTER E^{PLUS}

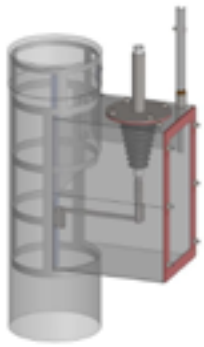
type TDS	Pellets (M8) Bm³/h	Wood chips (M30) Bm³/h	Normal separation requirements
TDS 150 kW	421	476	Type 2-2-200
TDS 240 kW	717	811	Type 2-2-300
TDS 300 kW	878	994	Type 2-2-300

KWB DUST FILTER E

ELECTROSTATIC DUST FILTER



Tightening strap installation



With semi-automatic cleaning

Dust filter E features:

- The dust filter E operates based on the electrostatic separation principle
- The electrode cleaning occurs manually or semi-automatically, ideally during ash container emptying or the chimney sweep appointment, but at the latest when the dust-holding capacity has been exhausted

Installation: The filter unit is installed in the heating room in a straight section of the exhaust gas pipe between boiler and chimney (type 130, 150, 180 with tightening strap, type 200 with basic pipe)

- Preferred installation position of 90 ° (vertical) for minimized maintenance requirements
- Installation position of 45 ° to < 90 ° results in increased maintenance requirements
- Installation position of 0 ° to < 45 ° results in high maintenance requirements (0 ° or horizontal is only recommended for the version with semi-automatic cleaning with ash bin)
- The filter size must at least correspond to the connection diameter (oversizing increases the dust-retaining capacity and reduces the need for maintenance)
- Version without ash bin:
  The pipe piece below the inlet must be designed as ash screen
  Cleaning openings should be installed upstream/downstream of or below the filter unit to ensure easy removal of the filter dust that was deposited there
- The exhaust gas line must be installed so it is as short as possible and benefits the flow, sealed against overpressure (min. 10 Pa) and must be well insulated incl. filter to prevent condensation from forming

Control system:

- The dust filter E has its own control electronics, comprising a control and high voltage module, which regulates the ionisation with up to 30 kV to always ensure maximum separation efficiency.
- To make wall mounting possible, the control has been equipped with a 2.5 m connecting cable to the filter unit

Degree of separation:

The particle separator achieves a separation effect of up to 80%, provided the system is run and maintained properly as per operating and maintenance instructions.

KWB DUST FILTER E – TECHNICAL DATA

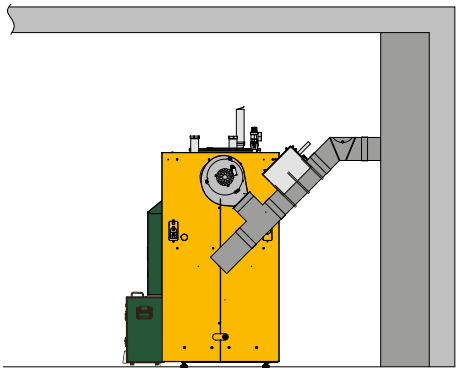
KWB dust Filter E	Unit	Typ 130	Typ 150	Typ 180	Typ 200[3]
Available conveyance pressure[1]	Pa		8		
Design volume flow[2]	Bm^3/h	100	120	185	215
Filter connection diameter	mm	130	150	180	200
Total weight	kg	6	6	6	8
Power supply 3-pin 230 VAC, fuse 13 A type B	-		50 Hz		
Electrical connected load	W	30	30	30	30
Pressure loss	PA	0 - 5	0 - 5	0 - 5	0 - 5
Ambient temperature	°C		≤ 40		
Acoustic power level	dB(A)		≤ 70		
Construction length/separation pipe	mm	340	340	390	570
Filter connection with reduction					
diameter 150 mm	mm	-	-	-	855
diameter 180 mm		-	-	-	835

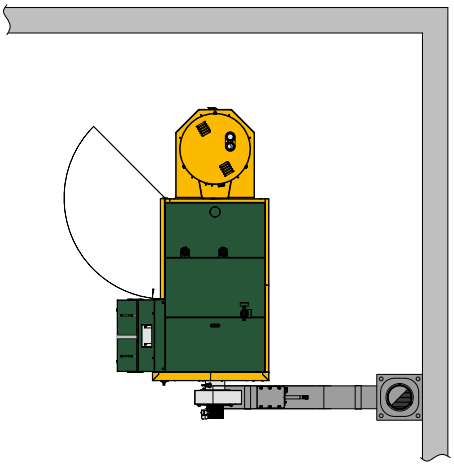
[1] Available conveyor pressure for the dimensioning of the connection
[2] The unit **"Bm^3/h"** stands for 'operating cubic metres per hour'
[4] for vertical installation
[5] for horizontal installation

INSTALLATION EXAMPLES KWB DUST FILTER E

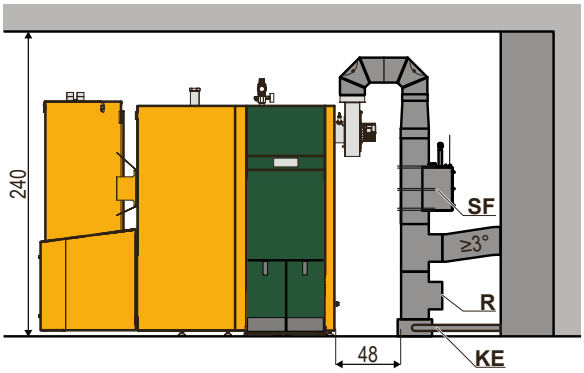
DUST FILTER WITHOUT AUTOMATIC CLEANING

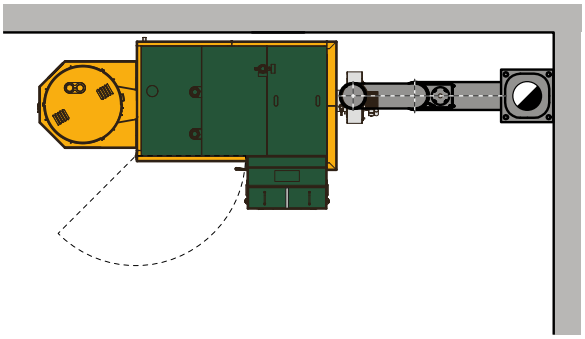
KWB Pelletfire^{Plus} or KWB Easyfire with dust filter, installation 45 °, without automatic cleaning



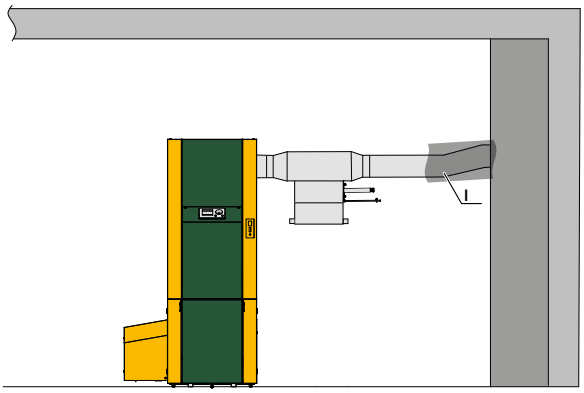


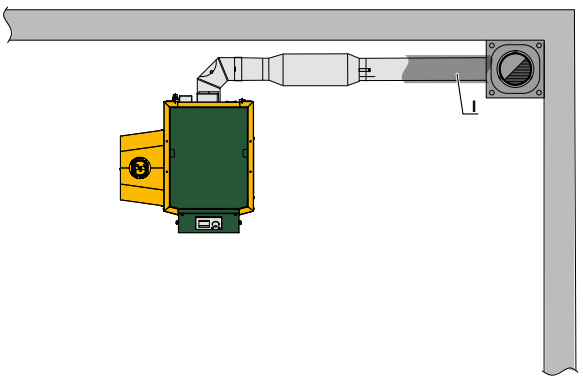
KWB Pelletfire^{Plus} with dust filter, with semi-automatic cleaning, vertical installation





KWB Easyfire with dust filter, with semi-automatic cleaning, horizontal installation





LEGEND

KE	Chimney emptying
SF	The dust filter box must be tilted by at least 3 ° off its horizontal

W	Clearance for maintenance
R	Cleaning cover
I	Insulation

KWB DUST FILTER E^{PLUS} WITH AUTOMATIC CLEANING

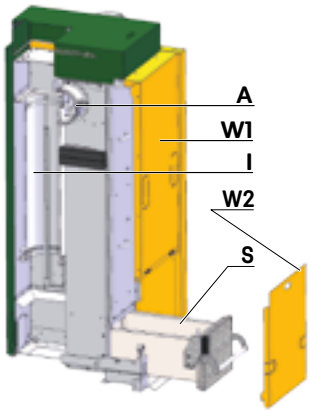
TECHNICAL DATA

COMPATIBLE WITH

KWB Pelletfire^{Plus} type MF2 45 – 135 kW

KWB Multifire type MF2 20 – 120 kW

These dust filters function on the principle of electrostatic particle separation and remove the fine dust (PM 2.5 to PM 10) contained in the exhaust gas with up to 90% efficiency. This way the emission of pollutants into the environment from fuels with an increased proportion of aerosol-forming elements is reduced to a minimum.



LEGEND

A	Exhaust gas connection
W1	Maintenance door
I	Ionisation door
W2	Maintenance cover
S	Dust tray

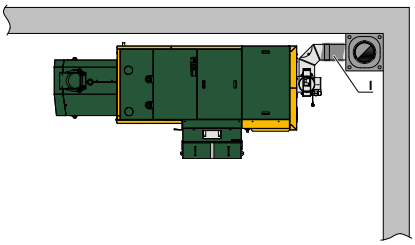
KWB DUST FILTER E^{PLUS} – TECHNICAL DATA

KWB dust Filter E^{Plus} with automatic cleaning	Unit	Typ 1-200 20-65 kW	Typ 1-1-200 60-95 kW	Typ 1-1-200 100-135 kW
Available	Pa		8	
Design	Bm^3/h	185	384	384
Filter connection diameter	mm	150	150	150
Exhaust gas connection diameter induced draught	mm	150	180	200
Total weight	kg	138 - 152	168 - 203	191 - 203
Power supply 3-pin 230 VAC, fuse 13 A type B	-		50 Hz	
Electrical connected load	W	115	115	115
Pressure loss	PA		5-25	
Ambient temperature	°C		≤ 40	
Acoustic power level	dB(A)		≤ 70	

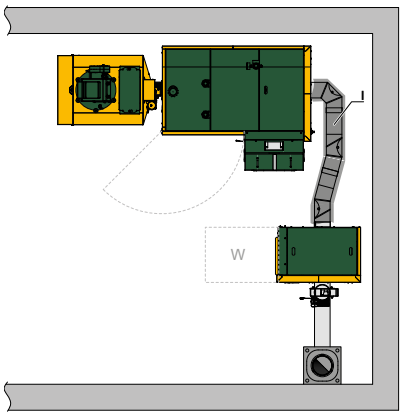
[1] Available conveyor pressure for the dimensioning of the connection lines

[2] The unit **"Bm^3/h"** stands for 'operating cubic metres per hour'

KWB Multifire with dust filter, direct attachment, with automatic cleaning



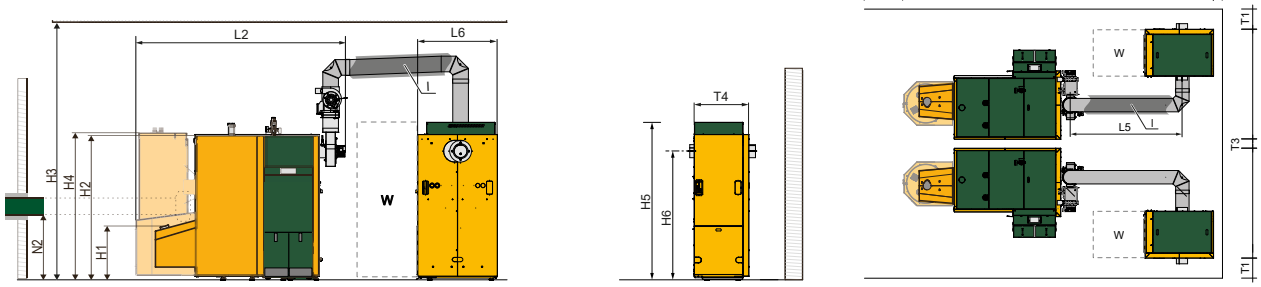
KWB Multifire with dust filter, stand-alone with operation on the suction side, with automatic cleaning



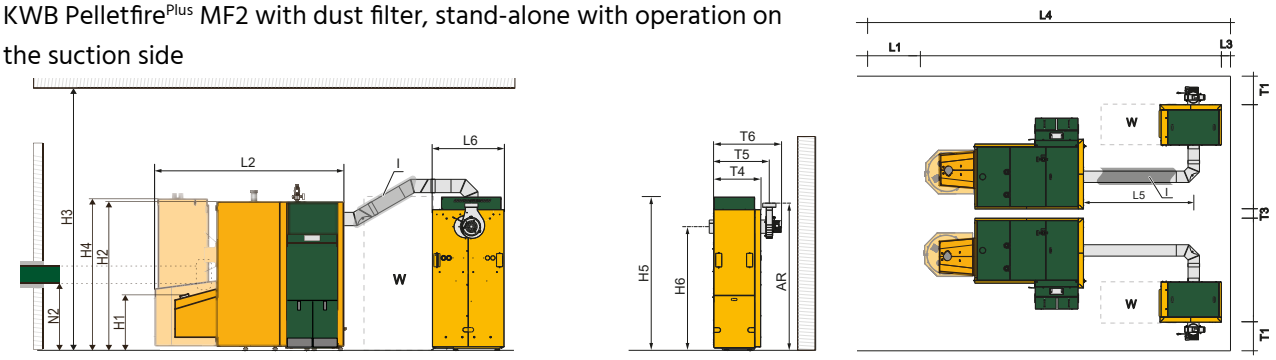
DUST FILTER E^{PLUS}

INSTALLATION DIMENSIONS WITH KWB PELLETFIRE^{PLUS}

KWB Pelletfire^{Plus} MF2 with dust filter, stand-alone with operation on the pressure side and exhaust gas recirculation



KWB Pelletfire^{Plus} MF2 with dust filter, stand-alone with operation on the suction side



LEGEND

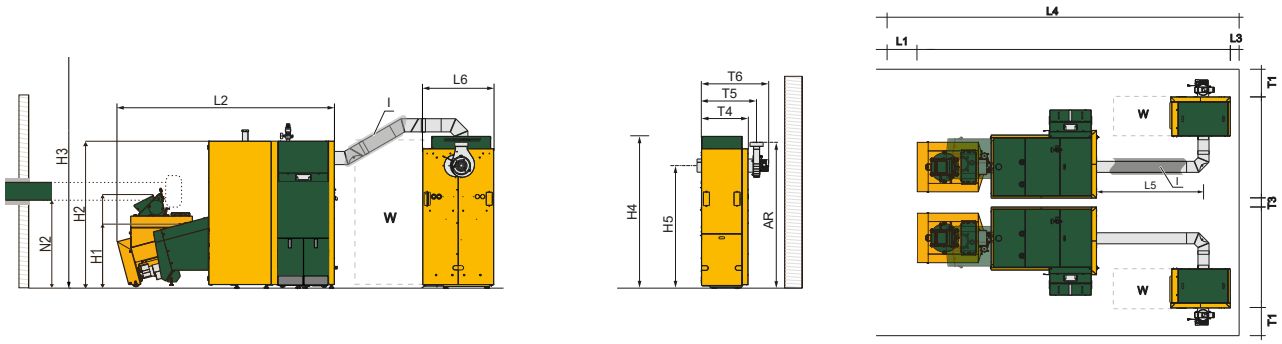
[cm]		Direct attachment						Stand-alone	
		MF2 45 – 65 kW		MF2 70 – 95 kW		MF2 100 – 135 kW		MF2 45 – 65 kW	MF2 70 – 135 kW
		S	GS	S	GS	Model R S	Model R GS		
H1	Connection boiler – conveyor system: upper dropping edge	62	–	62	–	62	–	–	–
H2	Height KWB Pelletfire^{Plus}	159	159	167	167	167	167	–	–
H3	Min. room height	198 (rec. 210)	198 (rec. 210)	200 (rec. 215)	200 (rec. 215)	206 (rec. 215)	206 (rec. 215)	–	–
	Min. room height – exhaust pipe is placed above heat exchanger	219 (Ø 150)	219 (Ø 150)	231 (Ø 180)	231 (Ø 180)	233 (Ø 200)	233 (Ø 200)	–	–
H4	Connection height suction tank	–	177	–	17 177 7	–	17 177 7	–	–
H5	Height dust filter	173	173	182	182	182	182	173	182
H6	Height middle connection dust filter	–	–	–	–	–	–	140	148
N2	Lower edge conveyor channel M	78	–	78	–	78	–	–	–
L1	Free space	42	18	47	23	47	23	–	–
L2	Heating system length	245	269	275	299	287	311	–	–
L3	Free space	8	8	8	8	8	8	–	–
L4	Min. room length	> 295	> 293	> 330	> 330	> 342	> 342	–	–
L5	Exhaust gas pipe length	–	–	–	–	–	–	< 400 cm pipe length	
L6	Length dust filter with casing	53	53	63	63	75	75	82	92
L7	Length dust filter to middle of exhaust gas connection	63	63	75	75	86	86	–	–
L8	Length dust filter incl. exhaust gas connection	76	76	92	92	103	103	–	–
T1	Free space	40	40	40	40	40	40	–	–
T2	Heating system depth	124	124	135	135	135	135	–	–
T3	Free space	12	12	12	12	12	12	12	12
T4	Depth dust filter with casing	81	81	92	92	92	92	53	63
T5	Depth dust filter to middle of exhaust gas connection	–	–	–	–	–	–	63	75
T6	Depth dust filter incl. exhaust gas connection	–	–	–	–	–	–	76	91
W	Maintenance area	25	25	36	36	25	25	–	–
I	Insulation	–	–	–	–	–	–	–	–

S ... KWB Pelletfire^{Plus} type MF2 S GS ... KWB Pelletfire^{Plus} type MF2 GS

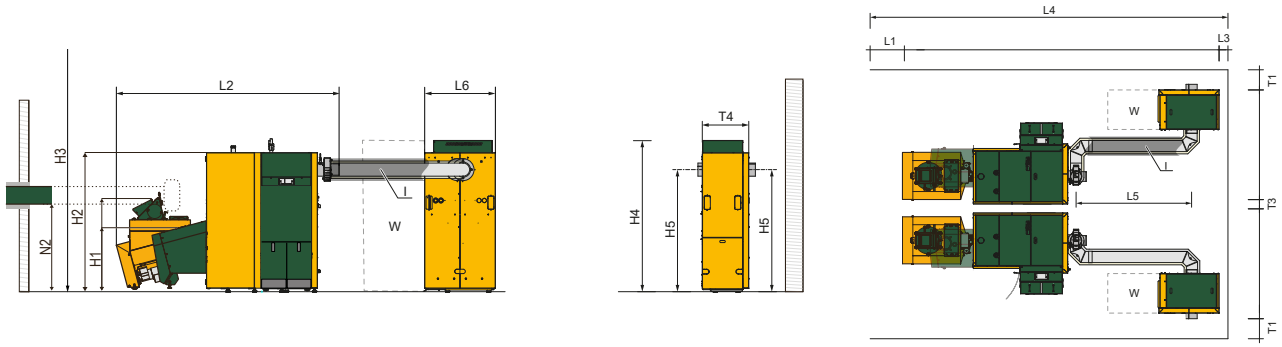
DUST FILTER E^{PLUS} WITH AUTOMATIC CLEANING

INSTALLATION DIMENSIONS WITH KWB MULTIFIRE

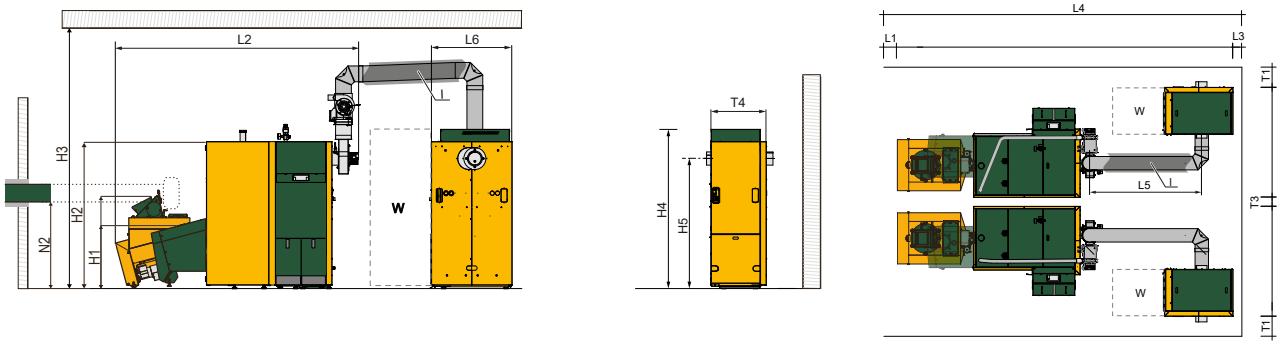
KWB Multifire with dust filter, stand-alone with operation on the suction side



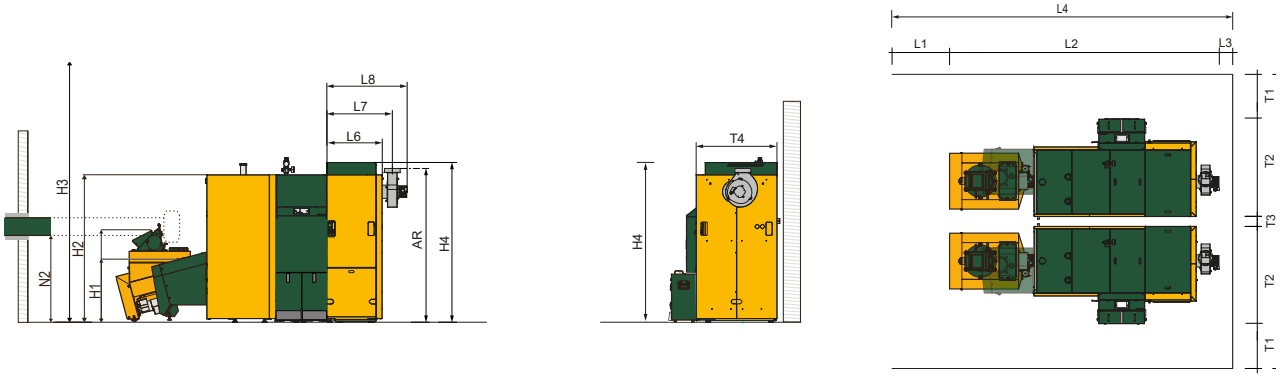
KWB Multifire with E-Filter, stand-alone with operation on the pressure side



KWB Multifire MF2 with dust filter, stand-alone with operation on the pressure side and exhaust gas recirculation



KWB Multifire MF2 with dust filter, direct attachment



Legend on the next page »

DUST FILTER E^{PLUS}

INSTALLATION DIMENSIONS WITH KWB MULTIFIRE

LEGEND

		Direct attachment						Stand-alone	
		MF2 20 – 50 kW		MF2 60 – 80 kW		MF2 100 – 120 kW		20 – 65 kW	60 – 120 kW
[cm]		D	ZI	D	ZI	D	ZI		
H1	Connection boiler-conveyor system: upper dropping edge cellular wheel sluice P16S	92	–	92	–	92	–	–	–
	Connection boiler-conveyor system: upper dropping edge cellular wheel sluice P31S	–	–	103	–	103	–	–	–
	Connection boiler-conveyor system: upper dropping edge - fire shutter ZI	–	102	–	102	–	102	–	–
	Connection boiler-conveyor system: upper dropping edge, cellular wheel sluice ZI	–	134	–	134	–	134	–	–
H2	Height KWB Multifire	159	159	167	167	167	167	–	–
H3*	Min. room height	198 (rec. 210)	198 (rec. 210)	200 (rec. 215)	200 (rec. 215)	206 (rec. 215)	206 (rec. 215)	–	–
	Min. room height – exhaust pipe is placed above heat exchanger	219 (Ø150)	219 (Ø150)	231 (Ø180)	231 (Ø180)	233 (Ø200)	233 (Ø200)	–	–
	Minimum room height-exhaust recirculation with installation version (1) vertically upwards	225 (Ø150)	225 (Ø150)	234 (Ø180)	234 (Ø180)	235 (Ø200)	235 (Ø200)	–	–
H4	Height dust filter	173	173	182	182	182	182	173	182
H5	Height middle connection dust filter	–	–	–	–	–	–	140	148
N2	Lower edge conveyor channel M P16S / P31S	88 / 98	97 / –	88 / 98	97 / –	88 / 98	97 / –	–	–
L1	Free space P16S / P31S	30 / –	22 / –	34 / 25	21	34 / 25	21	–	–
L2	Heating system length P16S / P31S	258 / –	298 / –	290 / 299	328 / –	301 / 310	340 / –	–	–
L3	Free space	7	7	7	7	7	7	–	–
L4	Min. room length P16S / P31S	> 295	> 327	> 331	> 356	> 342	> 368	–	–
L5	Exhaust gas pipe length	–	–	–	–	–	–	< 400 cm pipe length	
L6	Length dust filter with casing	53	53	63	63	75	75	82	92
L7	Length dust filter to middle of exhaust gas connection	63	63	75	75	86	86	–	–
L8	Length dust filter incl. exhaust gas connection	76	76	92	92	103	103	–	–
T1	Free space	40	40	40	40	40	40	–	–
T2	Heating system depth	124	124	135	135	135	135	–	–
T3	Free space	7	7	7	7	7	7	7	7
T4	Depth dust filter with casing	81	81	92	92	92	92	53	63
T5	Depth dust filter to middle of exhaust gas connection	–	–	–	–	–	–	63	75
T6	Depth dust filter incl. exhaust gas connection	–	–	–	–	–	–	76	91
AR	Exhaust pipe	Ø 15, B: 72	Ø 15, B: 72	Ø 18, B: 85	Ø 18, B: 85	Ø 20, B: 85	Ø 20, B: 85	–	–
	Exhaust pipe upwards	H: 166, T: 37	H: 166, T: 37	H: 175, T: 39	H: 175, T: 39	H: 175, T: 39	H: 175, T: 39	–	–
	Exhaust pipe upwards with bend	H: 184	H: 184	H: 192	H: 192	H: 192	H: 192	–	–
	Exhaust pipe upwards with bend via heat exchanger	H: 196	H: 196	H: 206	H: 206	H: 215	H: 215	–	–
	Exhaust pipe 90° rear (for fuel supply from the left)	H: 140, T: 11	H: 140, T: 11	H: 144, T: 16	H: 144, T: 16	H: 144, T: 16	H: 144, T: 16	–	–
	Exhaust pipe 90° front (for fuel supply from the left)	H: 140, T: 64	H: 140, T: 64	H: 152, T: 69	H: 152, T: 69	H: 152, T: 69	H: 152, T: 69	–	–
	Exhaust pipe 90° rear (for fuel supply from the right)	H: 140, T: 11	H: 140, T: 11	H: 152, T: 16	H: 152, T: 16	H: 152, T: 16	H: 152, T: 16	–	–
	Exhaust pipe 90° front (for fuel supply from the right)	H: 140, T: 64	H: 140, T: 64	H: 144, T: 69	H: 144, T: 69	H: 144, T: 69	H: 144, T: 69	–	–
W	Maintenance area	25	25	36	36	25	25	–	–
I	Insulation	–	–	–	–	–	–	–	–

D ... KWB Multifire type MF2 D ZI ... KWB Multifire type MF2 ZI * Installation versions exhaust gas recirculation - see T&P heating systems

All dimensions in cm

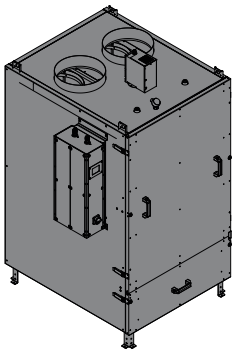
KWB DUST FILTER E^{PLUS} WITH AUTOMATIC CLEANING

TECHNICAL DATA

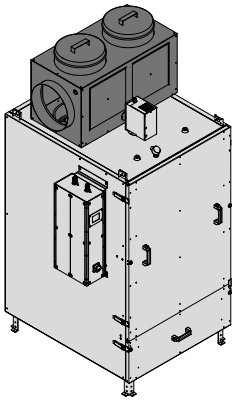
COMPATIBLE WITH
KWB Powerfire type TDS 150 kW
KWB Powerfire type TDS 240 / 300 kW

These dust filters function on the principle of electrostatic particle separation and remove the fine dust (PM 2.5 to PM 10) contained in the exhaust gas with up to 90% efficiency. This way the emission of pollutants into the environment from fuels with an increased proportion of aerosol-forming elements is reduced to a minimum.

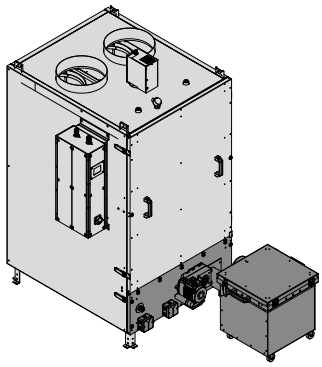
Dust filter E^{Plus}



Dust filter E^{Plus} with bypass solution



Dust filter EPlus with automatic ash removal



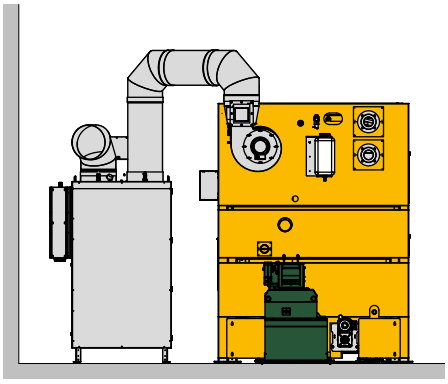
KWB STAUBFILTER E^{PLUS} – TECHNISCHE DATEN

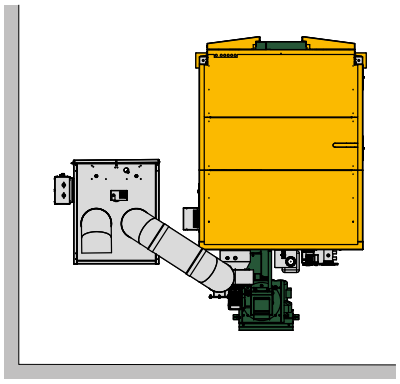
KWB dust Filter E^{Plus} with automatic cleaning	Unit	Typ 2-2-200 150 kW	Typ 2-2-300 240-300 kW
Available	Pa	8	
Design	Bm^3/h	450	600 - 900
Filter connection diameter	mm	254	304
Exhaust gas connection diameter induced draught	mm	250	300
Total weight incl. Control	kg	175	220
Weigth Bypass damper	kg	35	45
Weigth autom. ash removal system	kg	60	70
Ash container volume	l	64	64
Power supply 3-pin 230 VAC, fuse 13 A type B	-	50 Hz	
Electrical connected load (max. with ash extraction)	W	100 (1.475)	100 (1.475)
Pressure loss	PA	5-25	
Ambient temperature	°C	≤ 40	
Acoustic power level	dB(A)	≤ 70	

[1] Available conveyor pressure for the dimensioning of the connection lines

[2] The unit **"Bm^3/h"** stands for 'operating cubic metres per hour'

KWB Powerfire with dust filter

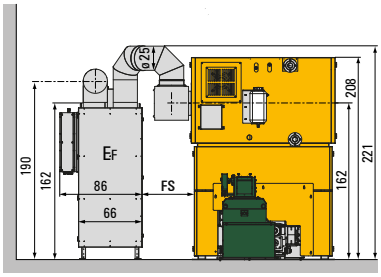




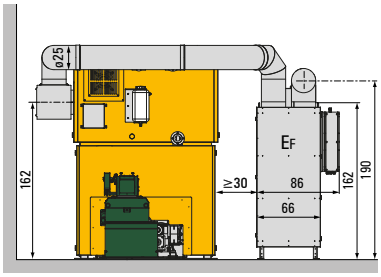
CONNECTING DIMENSIONS WITH KWB DUST FILTER E^{PLUS}

KWB POWERFIRE 150 kW WITH KWB DUST FILTER E^{PLUS}

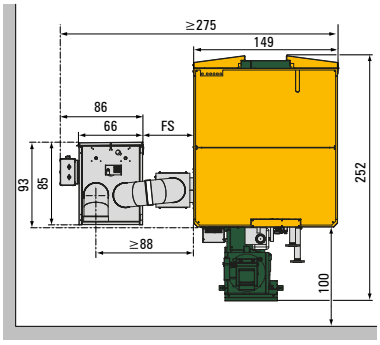
STANDARD MODEL WITH E-FILTER ON THE RIGHT



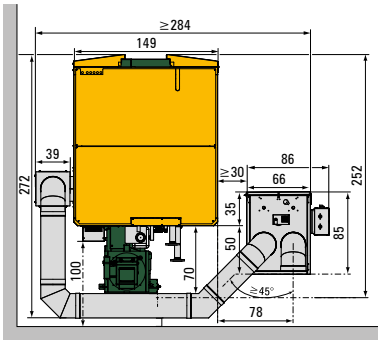
STANDARD MODEL WITH E-FILTER ON THE LEFT



STANDARD MODEL WITH E-FILTER ON THE RIGHT



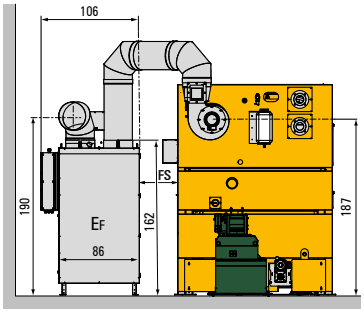
STANDARD MODEL WITH E-FILTER ON THE LEFT



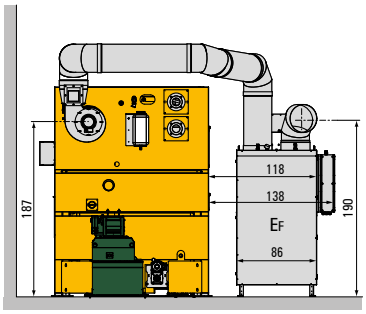
CONNECTING DIMENSIONS WITH KWB DUST FILTER E^{PLUS}

KWB POWERFIRE 240 / 300 kW WITH KWB DUST FILTER E^{PLUS}

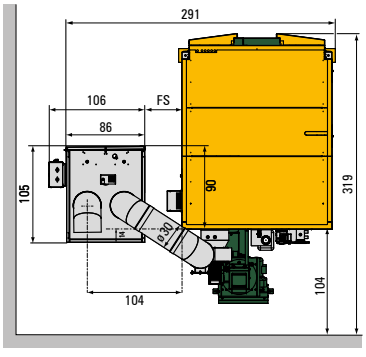
STANDARD MODEL WITH E-FILTER ON THE RIGHT



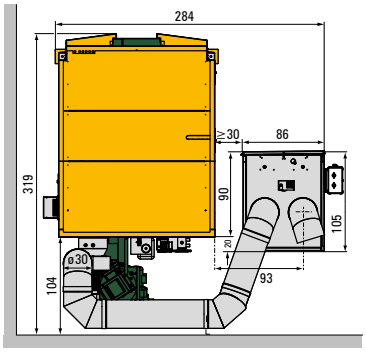
STANDARD MODEL WITH E-FILTER ON THE LEFT



STANDARD MODEL WITH E-FILTER ON THE RIGHT



STANDARD MODEL WITH E-FILTER ON THE LEFT



KWB

HEATING & STORAGE CONTAINERS

Container

KWB HEATING AND STORAGE CONTAINERS

TECHNICAL INFORMATION

PRODUCT AND PERFORMANCE DESCRIPTION

Design: The technology container is made of reinforced concrete. The container walls and ceiling are produced as one unit and connected to the separately produced, formwork-smooth floor. Length differences of 2 cm are possible depending on the production site.
Concrete quality: Reinforced concrete C 30/37, according to EN standard 13978-1:2005
Floor: Self-supporting, frost-resistant floor with smooth formwork surface. Floor loading adjusted depending on requirements.
Walls: Interior walls and ceiling with wipe-resistant, speckled dispersion coating
Exterior plaster: Water-repellent, concrete-protecting dispersion fine spray plaster on all visible surfaces with 2-3 mm, granulation in white.
Roof: Flat roof with drainage slope towards the back and all-round, horizontal fascia. Roof load as a rule 150 kg/m^2.
Transport and placement: Every construction part is equipped with crane anchors. Access roads must be able to support a wheel pressure of approximately 5 t.
Foundations: Strip or ring foundations must be prepared at the building site according to our specifications or plans. **Wall reinforcements:** The wall thickness is max.13.5 cm, depending on structural, fire protection or noise insulation requirements. Backfill of earth is available upon request. Underground spaces must be sealed by us or the client in accordance with DIN 18195 (protective coating, dimpled sheet, etc.).
Doors: Steel plate fire protection doors
Electrical installation: Full flush-mounted cabling. The connection must be done by a specialised company, which was commissioned by the client, according to VDE guidelines.

DELIVERY TIMES

Delivery times of containers upon request. KWB is not liable for delivery date delays outside of our control, e.g. due to force majeure (e.g. weather events such as heavy rains, storm, etc.) and in the event of traffic-related transport delays or technical issues at our supplier's companies. We also do not accept liability in the event of delays due to required official approval processes (e.g. transport approvals for heavy-duty traffic).

KWB HEATING AND STORAGE CONTAINERS

TECHNICAL INFORMATION

KWB Heating Container advantages:

- Turnkey delivery-ready for the installation of technology and hydraulics
- KWB installation of boiler and fuel extraction can be additionally ordered
- Final container installation can be additionally ordered
- Thanks to fire protection classification directly implementable in existing buildings (T30/F90 with certificate)
- Statics calculation upon request
- Backfill of earth and transfer available upon request
- Plastered inside and outside; standard colours grey inside, white outside
- Walkable roof with integrated drain and surrounding fascia
- Doors, windows and all wall openings configurable
- Easy retrofitting of components on site in reinforced concrete walls

Services to be provided on site by the customer:

- Truck-mounted crane
- Foundation-laying (specifications regarding foundation and weight available after order has been placed; before order upon request)

Performance by heating engineer/engineering company

- Chimney construction
- Filling
- Hydraulics based on KWB proposal
- Connection to supply lines
- Electrical wiring based on KWB specifications

Liability, delivery time and client-side services:

Delivery times of containers upon request. KWB is not liable for delivery date delays outside of our control, e.g. due to force majeure (e.g. weather events such as heavy rains, storm, etc.) and in the event of traffic-related transport delays or technical issues at our supplier's companies. We also do not accept liability in the event of delays due to required official approval processes (e.g. transport approvals for heavy-duty traffic). Container delivery condition as described, empty and prepared for the boiler installation on site. The foundation must be prepared according to manufacturer's specifications and a truck-mounted crane must be provided by the customer.

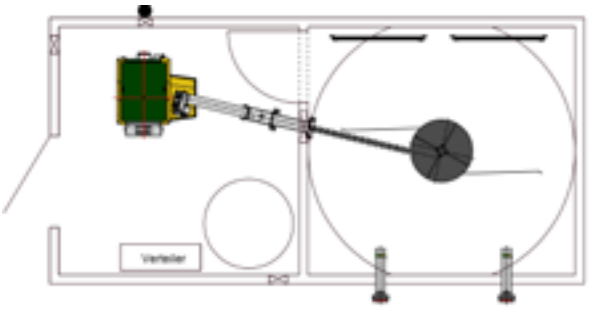
Upon request:

- Container placement next to each other
- Container physically separate from each other
- Only heating containers, storage provided on site
- Only storage containers, heating room provided on site
- Excess lengths up to 9 m
- Ceiling height up to 3.20 m
- Oversize up to a width of 3.48 m
- Mixed-use containers with peak load boiler (heat generator in heating network)
- Large systems up to 600 kW with additional technology container (2 x KWB Powerfire or 3 x Pelletfire^{Plus} or 4 x Pelletfire^{Plus})
- Wood-chip solutions with vertical conveyance, slip-slide control, tipping opening (roller shutter), bunker filling screw, feeder, roof opening.
- Pedestals with ladder/stairs to the upper storage container
- Systems with earth backfill
- Chimney calculation

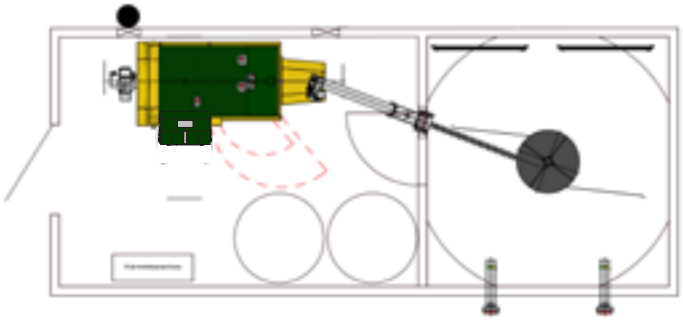
KWB HEATING CONTAINER WITH INTEGRATED STORAGE

TECHNICAL DATA

EXAMPLE KWB HEATING CONTAINER EASYCON



EXAMPLE KWB HEATING CONTAINER PELLETCON UP TO 70 KW



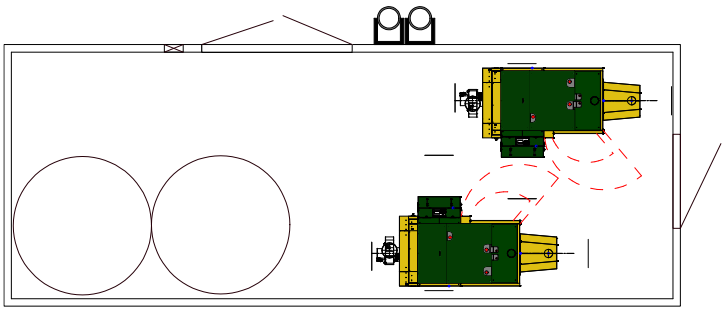
	KWB heating container EasyCon	KWB heating container PelletCon up to 70 kW	KWB heating container PelletCon up to 75 – 135 kW
Suitable for boiler type	KWB Easyfire 2 (8 – 35 kW)	KWB Pelletfire^{Plus} (45 – 70 kW)	KWB Pelletfire^{Plus} (75 – 135 kW) & KWB Multifire (20 – 120 kW)
Pellet storage capacity	approx. 11 t	approx. 11 t	approx. 11 t (20 m³ for wood chips) additional storage container possible
External dimensions	l: 6 m, w: 2.98 m, h: 2.82 m	l: 7 m, w: 2.98 m, h: 2.82 m	l: 8 m, w: 2.98 m, h: 3.20 m
Wall thickness	10 cm	10 cm	12 cm
Internal height	2.41 – 2.46 m	2.41 – 2.46 m	2.81 – 2.86 m
Material	Reinforced concrete	Reinforced concrete	Reinforced concrete
Wall and floor reinforcement	Yes	Yes	Yes
Storage partition wall	Yes	Yes	Yes
Roof coating	Yes	Yes	Yes
Rain drainage	Yes	Yes	Yes
Heating room ventilation incl. aluminium weather-protection grating	Yes	Yes	Yes
Earthing device	Yes	Yes	Yes
Fire protection class - container	F 90	F 90	F 90
Fire protection class - doors	T 30	T 30	T 30
Entrance door heating room	Width 1.25 m	Width 1.25 m	Width 1.25 m
Storage room door with storage partition wall	0.8 x 0.8 m	0.8 x 0.8 m	0.8 x 0.8 m
Wall openings for ... (*)	• Supply lines • Chimney • Heating room ventilation • Injection nozzles • Connection for screw	• Supply lines • Chimney • Heating room ventilation • Injection nozzles • Connection for screw	• Supply lines • Chimney • Heating room ventilation • Injection nozzles • Connection for screw
2 pcs. outlets 230 V*	Yes	Yes	Yes
1 outlet 400 V*	No	Yes	Yes
Light with switch*	Yes	Yes	Yes
Space for buffer storage tank	1 x 1,500 l	2 x 1,000 l	3 x 1,000 l

* Flush-mounted

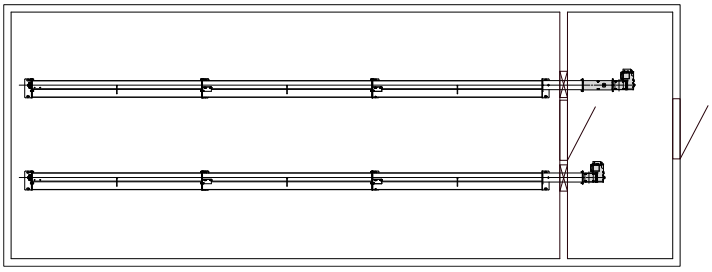
KWB DOUBLE-DECKER HEATING CONTAINER

TECHNICAL DATA

EXAMPLE DOUBLE DECKER HEATING CONTAINER WITH 2 KWB PELLETFIRE^{PLUS} PELLET HEATING SYSTEMS



Heating container bottom



Heating container top

	KWB double-decker heating container PelletCon 2	
Suitable for boiler type	Pelletfire^{Plus} between 2x45 kW to 2x135 kW	
Pellet storage capacity	approx. 24 t	
External dimensions	l: 8.00 m, w: 2.98 m, h: 3.20 m	
Total height	6.40 m	
Wall thickness	12 cm	
Internal height	2.81 – 2.86 m	
Material	Reinforced concrete	
Fire protection class - container	F 90	
Fire protection class - doors	T 30	
	Heating container	**Storage container**
Wall and floor reinforcement	Yes	Yes
Roof coating	–	Yes
Rain drainage	–	Yes
Earthing device	Yes	–
Entrance door - container	Width 1.25 m + 1.0 m (2 separate doors)	Width 1.0 m (outer door)
Wooden wallboard to partition the storage	–	Yes
Storage room door with wooden wallboard	–	0.8 x 0.8 m
Opening in wooden wallboard for screw connection	–	Yes
Wall openings in reinforced concrete for ... (*)	▪ Supply lines ▪ Chimney ▪ Heating room ventilation with aluminium weather protection grating ▪ Ceiling opening for pellet drop solution to the boilers	▪ Injection nozzles ▪ Additional ventilation with aluminium weather protection grating ▪ Floor opening for pellet drop solution to the boilers
Outlets*	2 x 230 V and 2 x 400 V	–
Light with switch*	Yes	–
Space for buffer storage tank	2 x 2,000 l	–

* Flush-mounted

NOTES

KEYWORD INDEX

INDEX OF ABBREVIATIONS

DESIGNATION	EXPLANATION
Explanation of abbreviations in the boiler types	
CF1	Log wood heating system KWB Classicfire 1
CF2	Log wood heating system Classicfire 2 / Combi-heating system for log wood and pellets Combifire
EF1 (USP)	Pellet heating system Easyfire 1
EF2	Pellet heating system Easyfire 2
MF2	Wood chip and pellet heating system Multifire 2 / pellet heating system Pelletfire^{Plus}
TDS	Wood chip and pellet heating system Powerfire
V	Storage container with manual filling
S	Screw extraction of pellets (manual filling with external hopper is also an option)
GS	Suction extraction of the pellets
CC4	Use of condensing boiler
D	Direct screw extraction of the fuel (wood chips or pellets)
ZI	Direct screw extraction of the fuel via a hopper (wood chips or pellets)
E	Electric filter used
R	Recirculation operation
ER	Use of electric filter and (optional) recirculation operation

DESIGNATION	EXPLANATION
KWB storage systems	
KWB EmpaEco	Buffer storage tank
KWB EmpaWell	Corrugated tube stratified storage tank
KWB EmpaCompact	Stratified storage tank
KWB EmpaTherm	DHWC
KWB EmpaAir	DHW heat pump
KWB EmpaFresh	Fresh water station
KWB solar systems	
EasySun	Solar system for domestic hot water heating
MultiSun	Solar system for heating support
KWB control system	
C4	Comfort 4, current control platform
C3	Comfort 3, predecessor version
KWB Comfort Online	Online portal for the system monitoring
KWB conveyor systems	
Small (S)	Conveyor systems for pellet operations
Medium (M)	Conveyor systems for wood chip and wood pellet heating operations
Large (L)	Conveyor systems for wood chip operating systems
KWB heating and storage room container	
Easycon	Heating container with integrated storage for up to 40 kW in pellet operations
Pelletcon	Heating container with integrated storage container for up to 270 kW in pellet operations

Techn. Price List 04_2022 EN
Indice 0 | 01/04/2022

Subject to changes as well as type and printing errors.

CONTACT US

SCOTLAND	**+44 1330 826 504**	**info@originalheating.com**
NORTH ENGLAND	**+44 1524 784 323**	**care@sustaburn.co.uk**
CENTRAL ENGLAND & WALES	**+44 1162 604 050**	**info@ashwellbiomass.com**
SOUTH ENGLAND	**+44 1271 372 888**	**info@optimumheating.co.uk**
IRELAND AND NORTHERN IRELAND	**+44 2871 353 108**	**info@originalheating.com**
NORWAY	**+47 69 22 70 60**	**post@hr-maskin.no**
SWEDEN	**+46 498 201 750**	**info@gotfire.se**
FINLAND	**+358 9 50991**	**info.technics.fi@algol.fi**
ESTLAND	**+372 50 96 234**	**mati@heatpower.ee**
JAPAN	**+81 3 4405 8088**	**info@wbenergy.co.jp**

KWB GmbH, Industriestrasse 235, 8321 St. Margarethen/Raab, Austria | **WWW.KWB.NET**