

# Installation Guide

KSO 33

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*made in germany.*

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# 1 BASIC INSTRUCTIONS



Please follow all instructions provided with the product. We do not accept any warranty claim or liability for damage resulting from failure to observe these installation instructions! Improper installation can cause injury and material damage!

Please note, that other installation and assembly instructions are included in other packaging units!

When these instructions are followed and all works are done properly, this will ensure a safe, energy-saving and environmentally friendly operation of the stove. Pictures shown are not to be considered as complete presentations of any kind.

Subject to technical and assortment changes.

Report any shipping damages to the supplier immediately.

Keep these instructions.

## Standards and regulations

Apart from the applicable European standards and regulations, all national or local regulations, general rules and application notes must be observed. All applicable regulations of construction law in your country and the legal requirements must be observed. Observe the regulations for stove operation valid in your country.

## Installation

Installation must be carried out by an authorized stove-fitter, because safety and efficiency depend on proper installation.

The floor in the room of installation must have a suitable structure and sufficient dimensions to ensure proper functioning of the fireplace. The defined minimal distances must be observed during fireplace installation (see technical data).

Ensure permanent supply of combustion air. When the fireplace is used with a separate combustion air supply connection, special attention must be paid to flow resistance. The fireplace is equipped with a nozzle for direct connection with combustion air supply duct.

The smoke pipe connecting piece and the chimney must be suitable for the fireplace.

Cleaning possibilities for the fireplace, the smoke pipe connecting piece and the chimney must be foreseen.

All connections and openings for cleaning must ensure permanent tightness.



The total weight of the stove system can be far above 1000 kg (approx. 2200 lbs), depending on the external cladding materials. Please observe the detailed technical data.

Please consider the massive weight of the complete stove system! If the weight exceeds the allowable floor load, suitable means for load distribution must be used.



If additional parts are installed on the fireplace which are not approved for this appliance by Ulrich Brunner GmbH (for example, an external control unit), it is a customized product that meets customer requirements. The resulting fireplace insert is not type-tested; the declaration of performance of this fireplace insert will be no longer valid.

The CE mark must be removed from the heating insert!

The responsibility for installation (according to TROL) and operation lies exclusively with the specialist craftsman!

When third-party fireplace cladding materials are used, follow the technical data of the manufacturer of these materials.

The user must be informed by the stove builder about the function and operation of the stove system and the installed safety equipment. Hand over the corresponding instructions.

We recommend to perform a **Product registration**. ([www.produktregistrierung.brunner.de](http://www.produktregistrierung.brunner.de))

## 2 EQUIPOTENTIAL BONDING AND LIGHTNING PROTECTION



ATTENTION - lightning protection, earthing, equipotential bonding.

When connecting fireplaces with / without power connection to metallic exhaust systems (stainless steel exhaust systems, metal chimneys, refurbished chimneys, ...), the national regulations and existing association guidelines must be observed. The requirements and the design of lightning protection systems, surge protection as well as earthing and equipotential bonding for exhaust systems are regulated.

Equipotential bonding and surge protection ("internal lightning protection") have been mandatory in new buildings since 2016. Equipotential bonding is therefore required by law for metallic exhaust systems. Metallic chimneys must always be integrated into the building's earthing system. If there is also a lightning protection system ("external lightning protection"), the exhaust system must be integrated into the lightning protection system.

The measures provided in individual cases must be carried out by qualified electricians and / or lightning protection specialists.

Overvoltage protection measures for electrical and information technology systems are not dealt with in the standards mentioned and must be created individually on site via the fine protection / terminal device protection.

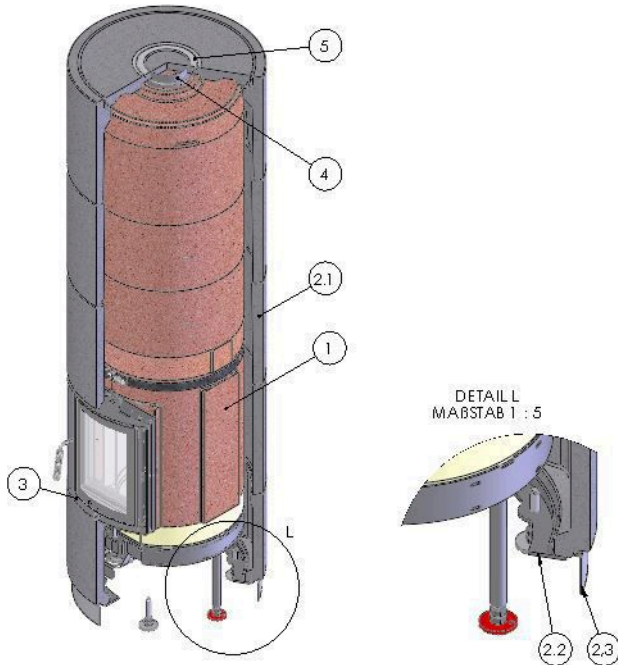


The legally provided equipotential bonding is not covered by the connection of the fireplace with / without a power connection to the protective conductor!



In case of damage to current-carrying components caused by non-professional measures for lightning protection, earthing and equipotential bonding, there is no entitlement to guarantee and warranty.

### 3 OVERVIEW- KSO CONSTRUCTION WITH CLADDING



Pos.	Designation	Description
1	KSO	Base frame with combustion chamber, top mount accumulator and front
2.1	Trim moldings	construction kit round or square; in different materials
2.2	Base ring	Execution depending on cladding
2.3	Footplate	Execution depending on base ring
3	Mounting frame	optional cover or mounting frame, shape depending on cladding
4	Flue outlet	optional vertical or horizontal connection
5	Cover for flue outlet	optional for vertical or horizontal flue outlet connection

## 4 GENERAL NOTES ON ASSEMBLY AND COMMISSIONING

The KSO (**K**leinspeicherofen) stove kit allows for setting up a small accumulation stove with a clearly defined and approved firebox.

The KSO can be arranged with different cladding materials. Please note, that the information given in technical data depends on the choice of cladding materials. The combustion chamber and the top-mount heat accumulator are always round in shape, regardless of the form of external casing.

This manual describes the assembly of the base frame, the combustion chamber and the top-mount accumulator, and the stove front with stove door as well. The instructions for assembly of the stove casing and the door frame or mounting frame are included in the corresponding packaging units.

For stove casing assembly you will need a pedestal ring that comes with the casing, however, it must be already mounted **before** the base frame is positioned on it. Different pedestal rings are used for different cladding materials (thermal concrete, tiles, clay,...), which are distinguished by different external diameter and height setting.

The combustion chamber and the top-mount heat accumulator are designed as double shell structures. The inner shell is in direct contact with fire and/or hot combustion gases. This layer is assembled dry without additional assembly materials. The tightness of the external shell is essential for the accumulation stove function. Therefore, all components of the external casing must be tightened with the attached high-temperature sealant, in addition to the pre-assembled sealing ropes. It must be applied on all external joints, even on the adjoining faces of stove front and smoke outlet.

During assembly, all contact faces of components must be kept clean and free from dust to ensure accurate fit and tightness.

After assembly of base frame and combustion chamber we recommend to start with the casing assembly, and in the area of top-mount accumulator, set first the accumulator parts layer by layer, while setting the corresponding casing ring at the same time.

Cleaning of top-mount accumulator is possible only from the top - after removal of "external top cover" and "internal top cover" parts. Therefore, the corresponding casing parts (top cover), and with vertical smoke outlet - the smoke pipe connecting piece, must be removable.

The individual parts are reinforced with steel needles. These can protrude on edges and breaking points!



Risk of injury!

Wear protective gloves during assembly of KSO!

Please observe the warning label on the high-temperature sealant!

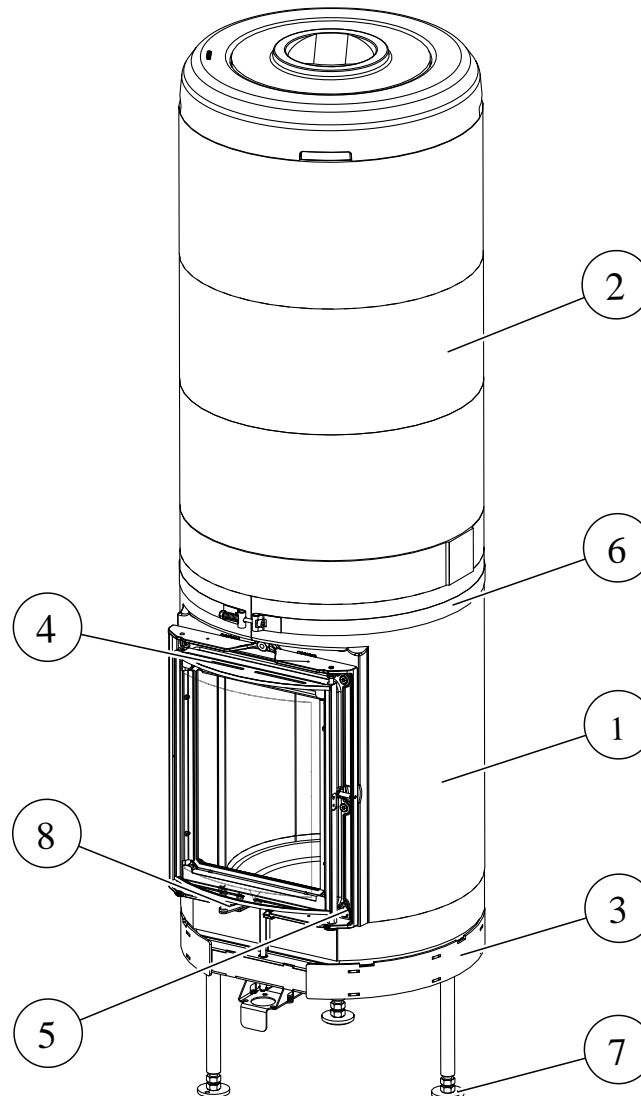
## 5 TOOLS REQUIRED FOR THE ASSEMBLY OF KSO STOVE

<b>Number</b>	<b>Tools</b>	<b>Necessary for:</b>
1	Electric screwdriver with Phillips bit	Removal of outer packaging
1	Meter stick or tape measure	
1	Spirit level, at least 500mm long	Levelling of base unit and pedestal
1	Knife	
1	Cartridge press for 310ml cartridges	High-temperature sealant application
2	Wrench for SW 13 screws and nuts	Door, clamping strap and smoke pipe nozzle assembly
2	Wrench for SW 22 screws and nuts	Height adjustment of base unit and pedestal
1	Allen wrench for SW 2.5 screws	Securing of trapezoid threaded nut while mounting the door
1	Torque wrench (up to 10Nm) with SW5 Allen key	Mounting of cast iron front on combustion chamber
1	Torx TX 25	Fixing the door frame or mounting frame and the inner front protective covers left and right.
1	Iron saw blade	Preparation of outbreaks at door frame or mounting frame
1	Half-round file	Removal of sharp edges on masking covers after breaking out the pre-punched holes.
1	Phillips screwdriver with long shaft	Mounting of masking ring
1	Aluminium adhesive tape	Fixing of cover blinds on top-mount accumulator

### - for installation of control system parts

<b>Number</b>	<b>Tools</b>	<b>Necessary for:</b>
1	Drilling machine	Drilling hole for thermocouple
1	d8 masonry drill	Drilling hole for thermocouple
1	Wrench for SW16 screws and nuts	Door contact height adjustment
1	Wrench for SW 17 screws and nuts	Installation of thermocouple
1	SW3 Allen wrench	Door contact switch installation
1	Wrench for SW20 screws and nuts	Fixing the connecting cables in cable glands

## 6 DELIVERY CONTENTS OF SMALL ACCUMULATION STOVE KSO33



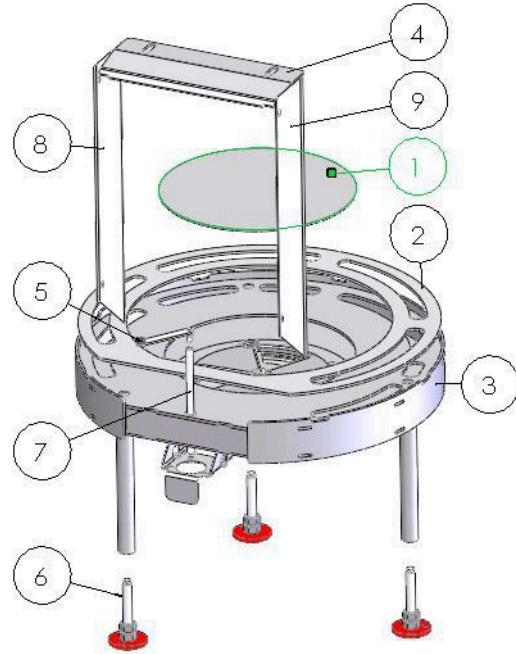
Pos.	Number	KSO33q	KSO33r	Designation	Packaging unit
1	1	G022001	G022001	Combustion chamber assembly	2
2	1	G022182	G022182	Top-mount accumulator assembly d450	1
3	1	G022056	G022056	Comb. chamber base frame assembly	3
4	1	G022108	G022080	Stove front assembly with door	3
5	1	G020478	G020478	Pack of screws combustion chamber	3
6	1	G022124	G022124	Clamping strap	3
7	1			Kit of red adjustable feet	3
8	1	G022186	G022186	Air adjusting lever	3



## 7 DESCRIPTION OF PARTS

### Base frame KSO 33 manual operation - G022056-01

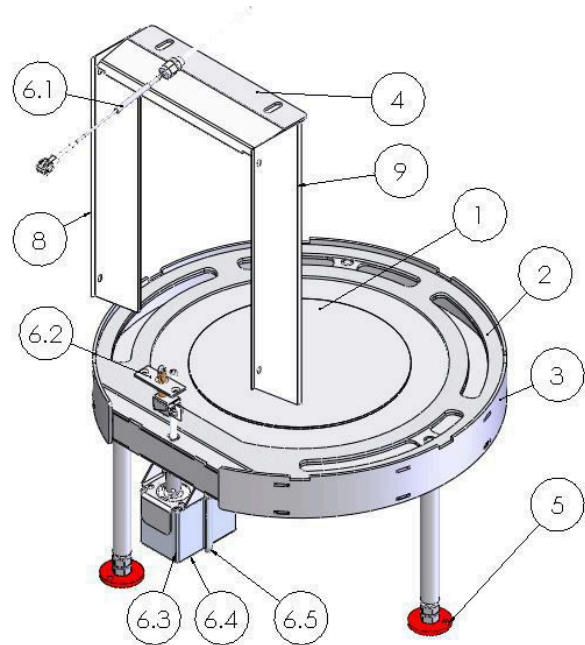
Pos.	Art.No.	Designation
1	G020250	Bottom revision cover
2	G022057	Fibrous material bottom plate
3	G022061	Bottom frame Ø 540
4	G022092	Upper air distribution
5	G022186	Air adjusting lever
6	N002085	Adjustable feet with hexagon nuts
7	G020357	Air adjuster
8	G022164	Protective cover, left side
9	G022165	Protective cover, right side



The adjustable feet for base frame are painted in red, to make it easier to find them during adjusting works.

**Base frame KSO 33 EAS - G022056-02**

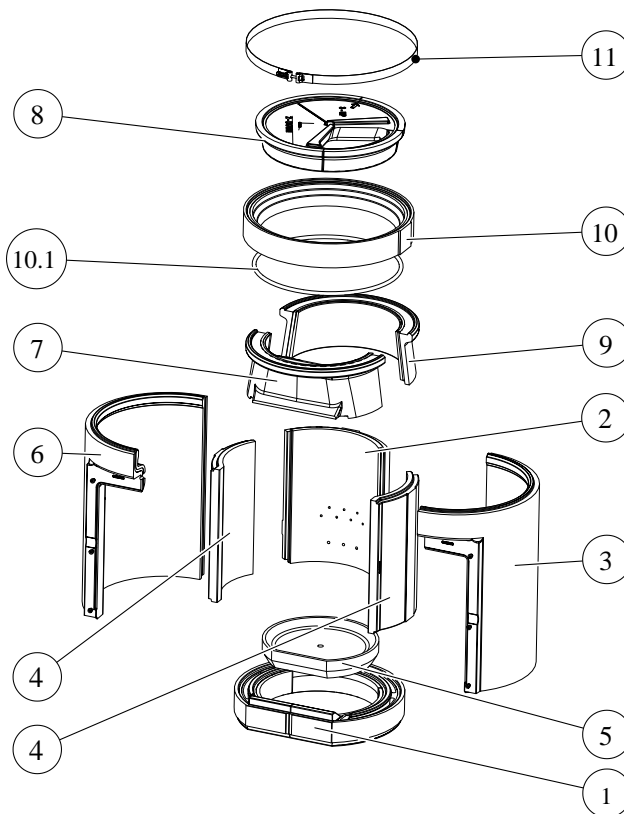
Pos	Art.-No.	Designation
1	G020250	Revisionsdeckel Boden
2	G022057	Fibrous material bottom plate
3	G022061	Bottom frame d 540
4	G022092	Upper air distribution
5	N002085	Adjustable feet with hexagon nuts
6	G020288	Control components (only part of wiring shown)
6.1	in G020288	Thermocouple
6.2	in G020288	Door contact switch
6.3	in G020288	Gear motor
6.4	in G020288	Case cover
6.5	in G020288	Screws for motor
8	G022164	Protective cover, left side
9	G022165	Protective cover, right side



The adjustable feet for base frame are painted in red, to make it easier to find them during adjusting works.

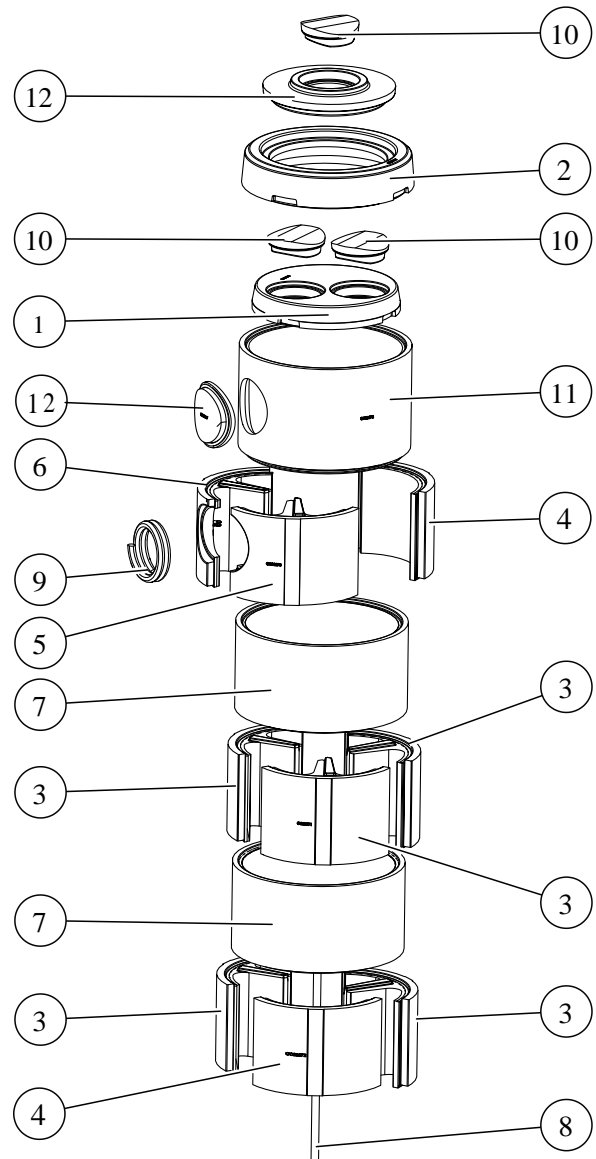
**Combustion chamber KSO 33 - G022001**

Pos	Art.No.:	Designation
1	G022022	Combustion chamber base ring
2	G022006	Back plate
3	G022002	External shell right side
4	G022015	Internal shell
5	G022008	Bottom plate
6	G022004	External shell
7	G022013	Internal ring front part
8	G022019	irebox top cover
9	G022016	Internal ring rear part
10	G022009	External ring
10-1	G022012	Combustion chamber seal Ø12 mm
11	G022124	Steel clamping strap



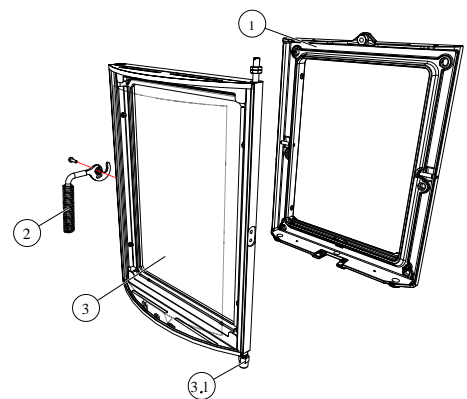
**Top-mount accumulator KSO 33 - G022182**

Item	Art. No.	Designation
1	G022185	Internal top cover part
2	G022184	External top cover part
3	G022051	Segment part with web
4	G022049	Segment part
5	G022095	Segment part 1 with smoke pipe connection
6	G022097	Segment part 2 with smoke pipe connection
7	G022042	External ring KSO 33
8	G020315	Top-mount accumulator with seal Ø 20 mm, l=738 mm
9	G020318	Smoke pipe connection with seal Ø 20 mm, l=1000 mm
10	G020366	Top-mount accumulator blind cover
11	G022045	External ring with connection
12	G020369	Blind cover external ring for top-mount accumulator (in 11)



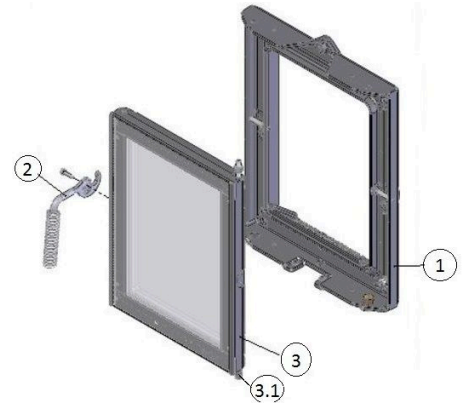
**Stove front KSO 33r (with round cladding) - G022080**

Pos	Art.-No. Right side door G022080-01	Art.-No. Left side door G022080-02	Designation
1	G022082-01	G022082-02	Stove front 44x33
2	02056	02056	Door handle M16
3	G022067-01	G022067-02	Door 44x33 R330
3.1	D009347	D009349	Trapez. threaded sleeve



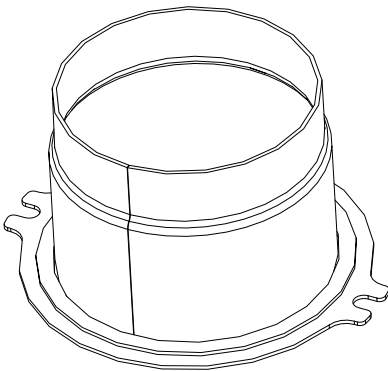
**Stove front KSO33q (with square cladding) - G022108**

Pos	Art.-No. Right side door G022108-01	Art.-No. Left side door G024029-02	Designation
1	G022082-01	G022082-02	Stove front 44x33
2	02056	02065	Door handle M16
3	01.17	01.17	Double door flat
3.1	D009347	D009.349	Trapez. threaded sleeve

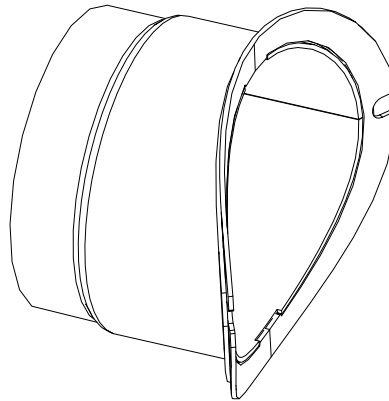


**Accessories for smoke pipe connection**

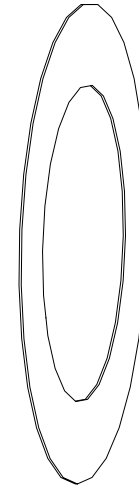
Item	Art. No.	Designation	
1	G020405	Smoke pipe connection d130 vertical	Accessories
2	G022158	Smoke pipe connection d130 horizontal	Accessories
3	G020418	Collar for smoke outlet d130	Accessories
4	G020416	Collar for smoke outlet d130 R300	Accessories



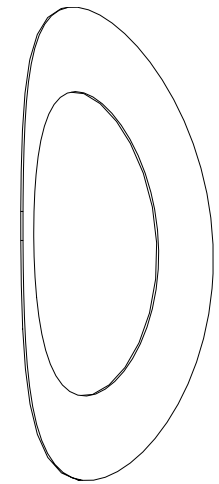
*Illustration 1: Smoke pipe connection d130 vertical*



*Illustration 2: Smoke pipe connection d130 horizontal*



*Illustration 3: Collar for vertical smoke outlet*



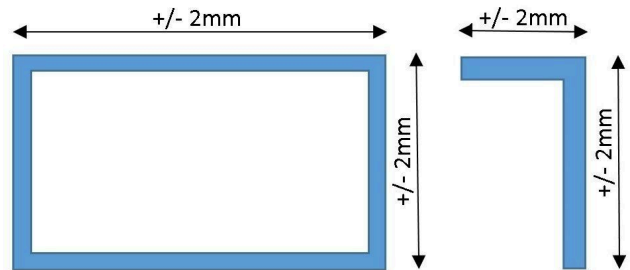
*Illustration 4: Collar for horizontal smoke outlet*

## 8 TOLERANCES OF THERMAL CONCRETE PARTS

The following tolerances are valid for all parts of our system fireplace/stove casings. Except where otherwise indicated, all data refer to the nominal dimensions, as found in dimensional drawings.

### Length Tolerances

For each part, the indicated tolerances apply.



### Height Tolerances

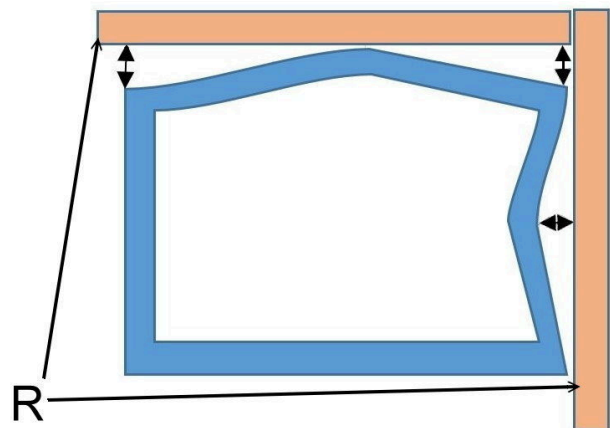
For each part, the indicated tolerances apply.



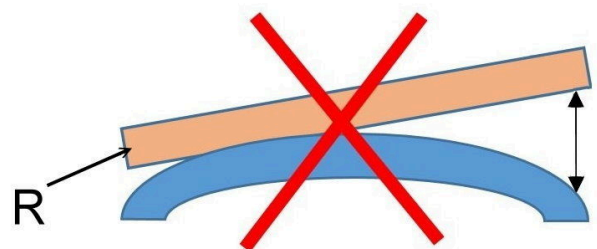
### Tolerances of Flatness

For parts with nominal dimensions up to 950 mm, a tolerance of +/- 2.5 mm applies. Above this dimension, a tolerance of +/- 3 mm applies.

These tolerances apply also for the base support and top cover parts. The leveling board (R) must be placed in parallel to the basic body!



*Illustration 5: Leveling boards placed correctly*

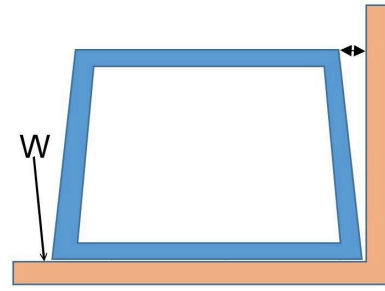


*Illustration 6: Incorrectly placed leveling board*

### Tolerances of Angle

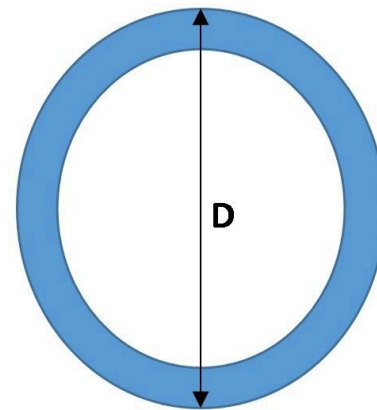
In order to determine the deviations of angles, place the square measuring tool along the long edge!

For nominal dimensions up to 600 mm, a tolerance of 0.28%, i.e. 1.7 mm applies. For nominal dimensions up to 900 mm, a tolerance of 0.30%, i.e. 2.4 mm applies.



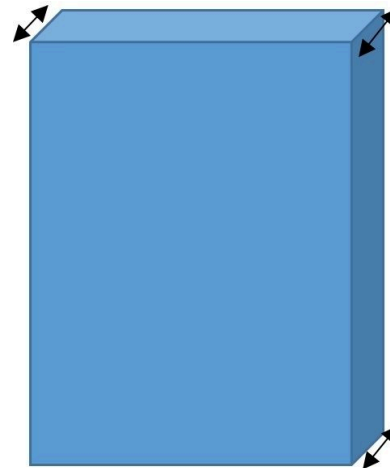
### Roundness

Up to a nominal diameter of 650 mm, a tolerance of 0.25%, i.e. 1.62 mm applies. For diameters above this value, a tolerance of 0.28%, i.e. 2.38 mm applies.



### Wall thicknesses

For wall thicknesses, a tolerance of 3.5% applies.



The overall appearance with color shade differences being present or not can be assessed in general only after a longer period of time (several weeks in some cases). The uniformity of color should be assessed from a typical viewing distance.

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## 9 REQUIREMENTS FOR LOCATION

Possible locations for a wood-burning stove or fireplace are only such rooms, where no danger can occur, if only the instructions for use are being followed and the system is properly used. The state, structure and intended use of the room must be considered, when choosing the location.

Please consider the massive weight of the system. If the floor is not strong enough to bear such load, it has to be distributed by suitable means.

A heating device **may not be located** in the following rooms:

1. Where sufficient volume of combustion air is not guaranteed.
2. Where flammable materials or explosives are stored, manufactured or processed.
3. Which are commonly accessible. Stairways in residential buildings with access from only two flats are not considered as commonly accessible rooms.
4. Where exhaust fans of ventilation or air heating systems are running, unless safe operation of the fireplace is ensured. This is ensured, when:
  - The systems are causing only circulation of air within the room.
  - The systems are equipped with safety devices, which automatically and securely prevent negative pressure in this room.
  - If simultaneous operation of fireplace and ventilation systems is prevented by safety devices.
  - If the total negative pressure level caused by the stream of combustion air of the fireplace and the airflow volume of the ventilation systems in this room and other rooms included in one ventilation system does not exceed 0.04 mbar. This must be ensured even if easily accessible controls of the ventilation system are being manipulated or removed.
  - If exhaust gas flow is being monitored by special safety devices.
  - If the construction type or dimensioning of the systems are excluding the possibility of dangerous negative pressure.

***Please consult the location of your fireplace, chimney connection and combustion air supply with your local chimney sweep.***



## 10 COMBUSTION AIR

### Sufficient combustion air supply

A fireplace may be installed only in rooms, where sufficient combustion air supply is guaranteed. Normal operation requires sufficient air supply using a separate **combustion air connection** for the fireplace.

Sufficient combustion air supply is present, when by natural means or using technical equipment a combustion air volume of 12,5 m<sup>3</sup> per 1 kg fuel throughput can stream into a room with wood-burning fireplace over a period of 1 hour at calculated negative pressure below 0,04 mbar (4 Pa) against outside air pressure. This is equivalent to a speculative heating power (PLF) of 8 kW per 1 kg fuel throughput.

When other fireplaces are in operation in the same room or different rooms included in one room combination, these fireplaces require at least 1.6 m<sup>3</sup> of combustion air per hour for each kW of their total rated heating power. When a room combination contains only a small volume of air and the building is relatively airtight, a separate combustion air supply from outdoors is required.

Combustion air supply is ensured in rooms with at least one window or one door which can be opened to outside of the building, or when these rooms are directly connected or interconnected with other rooms of such type. Rooms considered as directly connected or interconnected, can be only parts of one apartment or one facility of other kind. Particular attention to combustion air supply is to be paid, when exhaust fans and other heat generators in the same room combination are operated, or when multiple heating devices are connected to one single chimney.

Ventilation systems in this room combination cannot create negative pressure, which could affect the functioning of the fireplace. Exhaust ventilation systems operating in the same room or room combination together with fireplaces, can cause many problems.

### Combustion air ducts

If external combustion air supply is necessary, it must be connected directly to the air supply connecting piece of the fireplace, to prevent possible air drafts.

The combustion air duct must have sufficient cross-section. It must be laid using the shortest way and without unnecessary bends, to reduce flow resistance. Combustion air duct dimensioning must be according to EN13884; flow resistance has to be estimated by calculation and must be taken into account!

Components of combustion air duct must be made of non-flammable, dimensionally stable and abrasion resistant materials (DIN 4102 A1 or Class A1(B2) according to DIN EN 13501-1); they must ensure tightness and be accessible for inspection and cleaning.

Thermal insulation is necessary from the fire-protection point of view, if air temperatures >85°C are possible.

Temperatures below dew point can cause water condensation, therefore appropriate insulation must be used.

For buildings with more than two storeys and when crossing fire protection walls, the construction of these ducts must prevent fire and smoke from penetrating other fire protection zones (their components must have a fire resistance rating of >90 minutes (F90)). See also national building law.

If the external air supply duct has a separate flap for closing, the position of this flap must be recognizable. It must be ensured, that the external air supply flap is open until the fire is burning. Air suction grilles or flaps cannot narrow the free cross section.

Remember about noise protection!

# 11 CHIMNEY, CONNECTING PIECE AND DAMPER FLAP

## Chimney

Chimney and connecting piece design must be in accordance with DIN 18160.1 or DIN EN 15287-1; dimensions must be calculated according to DIN EN 13384.

Connection of multiple fireplaces to the same chimney is possible, if there is proof that the chimney is suitable for this even if the design of these fireplaces is different (calculation of flow and thermal balance, and approval from chimney sweep are necessary). However, it is not possible for fireplaces for use with open doors. Please note, that a separate chimney connection is required in this case.

A soot fire resistant chimney of T400 type is necessary for safe operation.

## Connecting piece

The smoke pipe (connecting piece) for chimney connection must be a suitable pipe according to DIN EN 1856-2 with CE marking.

The connecting piece must be connected directly to the chimney.

When the connecting piece is led through components from flammable building materials, e.g. through protected walls, the connecting piece must be wrapped with insulation material of indicated thickness, and around this thermal insulation, mineral non-flammable building materials must be used in a circumference of 20 cm (approx. 8 inches). The connecting piece in the area of active back ventilation must be also wrapped with a suitable insulation material to a thickness of at least 3 cm (approx. 1.2 inch).

Provide a suitable opening for measurements and revision in the chimney entrance area.

All smoke pipe joints must be sealed tight!

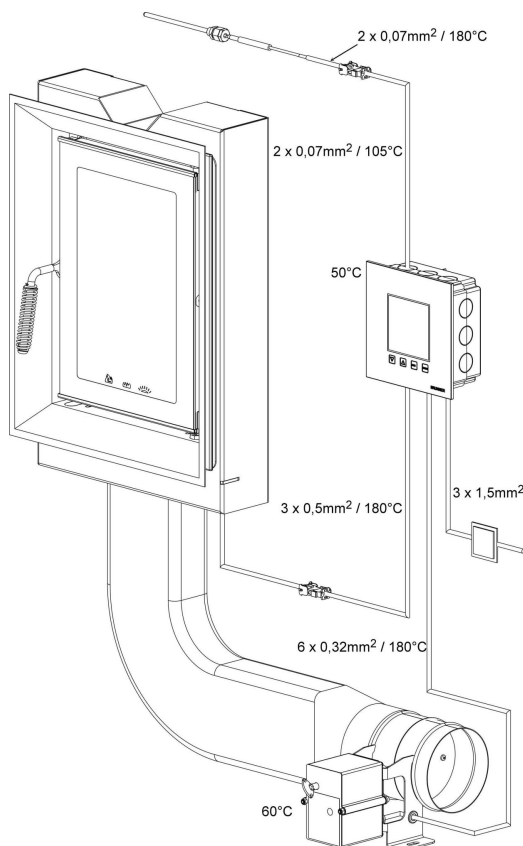
## Damper flap

It is recommended to install a flue limiting device in the smoke pipe connecting piece.

The flap must be easy to operate and the position of the flap must be recognizable from outside by looking at the handle. The flap must retain its desired position and cannot close by it self.

The damper flap must have openings, which are not less than 3 % of the cross-sectional area, but at least 20 cm<sup>2</sup> wide.

## 12 INSTALLATION NOTES FOR EAS



The indicated temperatures are maximal permissible temperatures of components!

When selecting place of installation, keep in mind the max. permitted temperature for the component. Components cannot be installed in closed spaces; proper ventilation must ensure sufficient heat discharge.

The indicated wiring dimensions are minimal dimensions!

*Illustration 7: Schematic layout of EAS*

The installation of electronic components must be carefully prepared and performed. Please note the following:

- The flush-mounting box for electronics must be fitted in level and clean, to ensure easy, tension-free installation of electronics.
- Prevent any physical contact with electronic components - possible electrostatic discharge can damage them.
- Humidity can affect electronic components. Therefore, it is very important to ensure clean and dry installation of electronics.
- If possible, avoid installation of electronic components in exterior walls to prevent risk of corrosion at temperatures below dew point.
- Do not install the control unit within the heated tiled stove shell.
- The selected type of installation must ensure that temperatures will not exceed +40# (104°F) and the unit will be not exposed to direct heat radiation.

To avoid risk of damage, all cable conduits leading from electronics into the heating chamber must enter at the bottom of the stove casing. Cable conduits cannot end in upper parts of the heating chamber due to excessive temperature.

All electronic components must be accessible after installation for revision and replacement.

## 13 ASSEMBLY

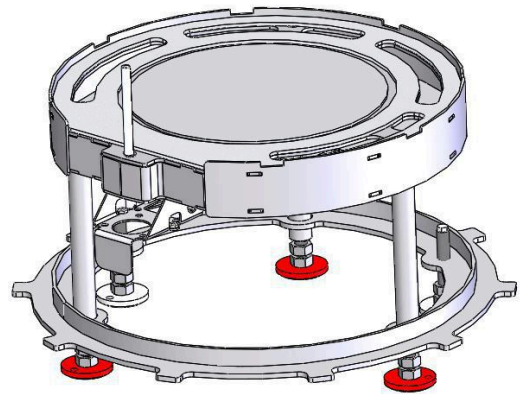
### 13.1 BASIC UNIT ASSEMBLY - MOUNTING BASE RING

The combustion chamber with top-mount accumulator is built on the base frame. The outer panel is placed on the base ring (included with the panel).

The base frame and base ring must be joined together. To do so, insert the base frame into the holes in the base ring and then mount the red-painted leveling feet (accessory pack) in the base frame feet.

The base ring can not be retrofitted!

The floor under the fireplace must be made of non-combustible building materials and be sufficiently stable !.



*Illustration 8: Mounting of the basic unit and the base ring*

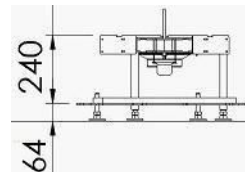
#### Height adjustment base unit and base ring

Place base frame with base ring on a flat surface.

Use the adjustable feet to adjust the base ring circumferentially to a height of 64 mm (floor to support surface trim).

Use the red leveling feet to set the base unit to the height dimension of 240 mm (surface facing up to the upper edge of the base unit). Both components can be readjusted in terms of height and inclination, even when the paneling is mounted

Both components can be readjusted in terms of height and inclination, even when the cladding is mounted.



*Illustration 9: Height adjustment of base unit and base ring*

#### Positioning of the base frame

The cladding of the KSO must not be mounted directly on a creage (eg building walls or ceilings). The necessary minimum distances must be observed (see "Technical data").

The positioning of the base frame in the installation room determines:

- The distance to the mounting wall
- The position of the firing door

The base frame has seven markings at the top (recesses 26x6mm on the surrounding web) allowing easy positioning of the front parallel to the wall and at 45 ° to the wall enable.

### Firing door- parallel to the mounting wall

Place a spirit level parallel to the mounting wall in opposite recesses of the base unit (parallel to the front) and to the edges of the recess facing the wall

Now measure the wall distance. The calculated dimension plus 13mm is the actual distance from the wall to the center of the combustion chamber. In the example:  $400 + 13 = 413$  mm from wall to middle combustion chamber.

With an outer diameter of the cladding of 660 mm results in a wall distance of 83 mm. If the distance to the wall - measured at the left and right end of the spirit level - is the same, the front is parallel to the mounting wall.

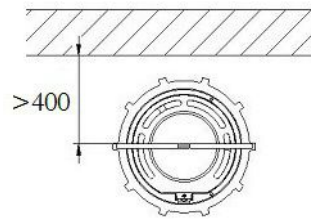


Illustration 10: Front- parallel to the mounting wall

### Firing door 45 ° in corner:

Place the spirit level parallel to the mounting wall in the recesses turned 45 ° opposite the front and measure the distance to the wall as described above. Repeat the measurement after moving the spirit level by 90 ° to the second mounting wall.

In the example:  $400 + 13 = 413$  mm from wall to middle combustion chamber. With an outer diameter of the cladding of 660 mm results in a wall distance of 83 mm.

If the distance between the walls - measured at the left and right end of the spirit level - is the same, the front is 45 ° to the mounting wall.

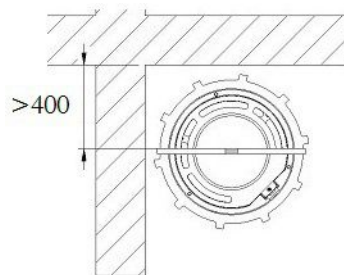


Illustration 11: Front- 45° to the mounting wall

After positioning, check the horizontal alignment and height adjustment of the base unit and base ring again and correct if necessary. After final adjustment, fix the position by tightening the upper nut on the adjustable feet against the feet / base ring.

## 13.2 ASSEMBLY OF COMBUSTION CHAMBER

The combustion chamber is made of two shells - the inner shell consists of fire-resistant concrete and the outer shell of heat accumulating material.

The **combustion air** is supplied at the bottom of base frame and enters through slots on the upper side of base frame into the round gap between the inner and outer shell. During assembly, make sure that all air intake openings are without any obstacles!

The inner shell is set dry without any additional materials. The parts are movable due to sealing ropes in their grooves, which allows for thermal expansion.

The **tightness** of the external shell is essential for the accumulation stove function. Therefore, all components of the external shell must be tightened with the high-temperature sealant (in delivery contents), in addition to the existing sealing ropes. After the components are set, all external joints have to be filled with this sealant, even on the contact surfaces of the stove front. Stove casing must be sealed before the external stove cladding is laid!

During all works, make sure that the sealing ropes between stove casing parts fit tight and get not damaged during assembly. The contact faces of components must be kept free from dust.

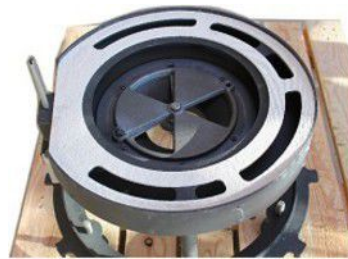
### Completion of base frame

**Working steps:**

1. Check the smooth movement of the air adjusting lever
2. Put the 'fibrous material bottom plate' in place
3. Put the 'bottom revision cover' in place

**Note**

- The air adjusting lever part is included in the attached accessory kit
- Air intake openings must be free



*Illustration 12: Fibrous bottom plate placed on base frame*

### Setting the base ring and bottom plate

**Working step**

1. Put the 'combustion chamber base ring' in centric position on the base frame seal
2. Put the 'bottom plate' in place

**Note**

- Align the base ring in the middle on the air adjusting lever; the air intake openings for the base unit must be free from obstacles.
- The bottom plate is laid loose. This allows for access to the air adjusting mechanism inside the base frame.



*Illustration 13: Base ring and bottom plate in place*

### Setting the combustion chamber walls

**Working step**

**Note**

Set the inner shell and rear wall parts

Put the parts in place and align to each other. Make sure that the width of joints is small as possible. The inner shell parts are aligned on both sides to the base frame edge.



*Illustration 14: Right side inner shell part*



*Illustration 15: Inner shell and rear wall parts*



*Illustration 16: Completed combustion chamber wall*

### Completion of inner shell

#### Working step

Put the 'rear inner ring' in place

#### Note

The inner ring embraces the rear wall and inner shell parts and holds these parts in position.



*Illustration 17: Rear intermediate part laid and aligned*



- Put the 'front inner ring' in place      The inner ring embraces the inner shell parts and holds these parts in position. Make sure that the width of joints is small as possible.
- Put the 'external shell, left side' in place      The external shell is attached at the bottom on the base ring.



*Illustration 18: Front inner ring and external shell, left side in place*

### Completion of combustion chamber external shell

#### Working step

Put the 'external shell, right side' in place

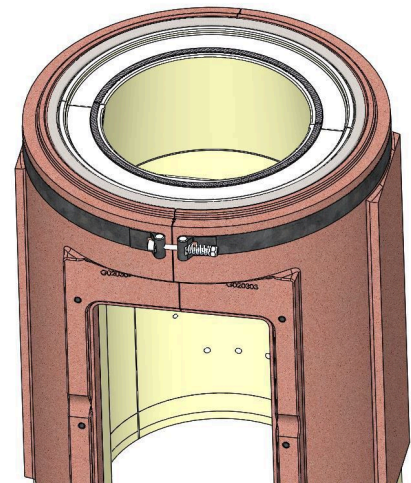
#### Note

The even surface of the external shell parts together with the base ring edge provides the attachment surface for the stove front. Align the parts to receive a flat surface, make sure that the width of joints is small as possible.



*Illustration 19: External shell parts assembled and aligned*

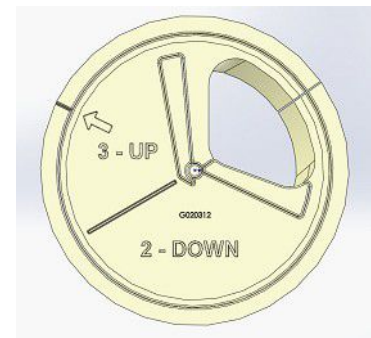
- Attach the clamping strap  
Unscrew the nut as far as possible and slip the clamping strap over the external shell. Align and tighten the clamping strap. The gap between the inner and outer shell should have the same width on the entire perimeter.
  
- Put the sealing rope in  
Put the sealing rope (10-1) Ø 12 mm into the round gap between the outer and inner rings.
  
- Set the external ring  
The outer ring extends over the external shell parts and holds these parts in place. Underneath the outer ring there is a round d12mm sealing rope. This sealing rope ensures tightness of combustion air space between the inner and outer shell, and separates this space from the top-mount accumulator. Check the appropriate position of this sealing rope!



*Illustration 20: Clamping strap attached and sealing in place*

**Positioning of combustion chamber top cover**

The top-mount accumulator consists of the first riser and downward flue duct and a second riser duct, and is placed into the combustion chamber top cover. The flue ducts are arranged clockwise, i.e. the first riser duct sits over the flue gas outlet of the combustion chamber top cover, then follows the downward flue duct (2 - down) and then the 2. riser duct (3 - up). Hence, the position of the first riser duct determines the position of the smoke pipe for connection on side. The middle of the smoke outlet is marked with a line on the external ring of the combustion chamber top cover, indicated by the visible arrow.



**Smoke pipe connection on side**

Put the combustion chamber top cover into the external ring. Turn the arrow into the desired direction of the smoke pipe connection.

**Smoke pipe connection at the top**

The smoke outlet sits in the middle, therefore, the alignment of combustion chamber top cover is not important. We recommend to turn the flue gas outlet to the front, because the greatest heat intensity is in the area of the first riser duct.

**Working step**

Put the combustion chamber top cover in place.

**Note**

Align and check tightness.

### 13.3 ASSEMBLY OF THE STOVE FRONT

The stove front is delivered together with the stove door. The stove front assembly will be easier (accessibility of screws), when the door is removed and installed again after the stove front is assembled and the cladding materials are set.

#### Removal of stove door

##### Working step

1. Release upper door hinge

##### Note

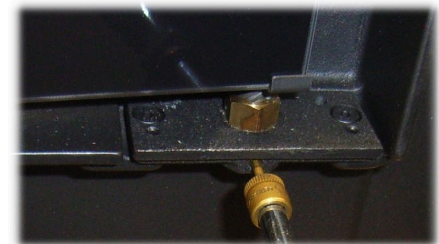
Release both nuts (SW13) by turning down to the frame of door. This allows for lifting (and turning) the door.



*Illustration 21: Door hinge release*

2. Release the turning lock of the trapezoid threaded sleeve

The threaded sleeve is secured with a threaded pin (SW2.5), which is accessible at the front. Turn the threaded pin out for approx. 3mm.



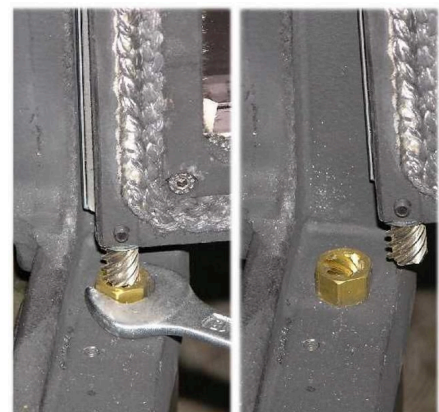
*Illustration 22: Turning lock release*

3. Release the door at the bottom

Open the door. By turning the threaded sleeve with a spanner, you can lift the door until it will be released at the bottom.

4. Remove the door

Remove the door from the threaded sleeve at the bottom and lower the door slowly. The upper hinge bolt will be released.



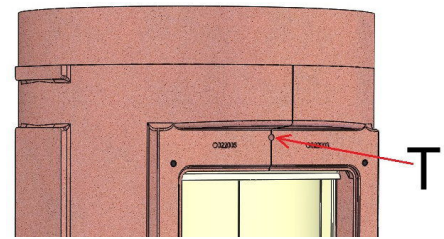
*Illustration 23: Lifting the door up*

#### Attaching the cast iron front

##### Working step

##### Note

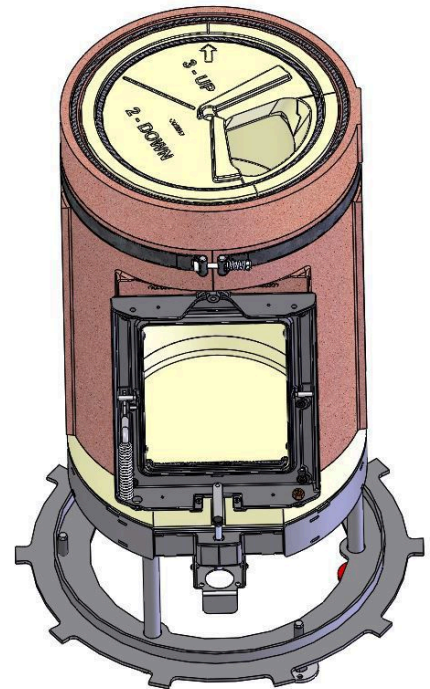
1. Only for stoves with manual operation  
 For stoves with manual operation, the hole (T) for thermocouple installation above the stove door must be sealed with the attached sealant.



2. Check the mounting surface for combustion chamber  
 The mounting surface must be plane and even - align the parts when necessary. Remove the screws from the combustion chamber external shell. These screws will be not needed any more.

3. Prepare screws  
 In the attached screw kit, there are 6 pieces of M8x35 screws. For assembly, use a torque wrench with a SW5 Allen key

4. Attach the front  
 At the front there is a 14mm hole on the lower transverse web - the air adjuster of the main unit must protrude through this hole. After attaching the front to the mounting face, the air adjuster must be free and easy to move. The position of combustion chamber on the main unit can be still changed.



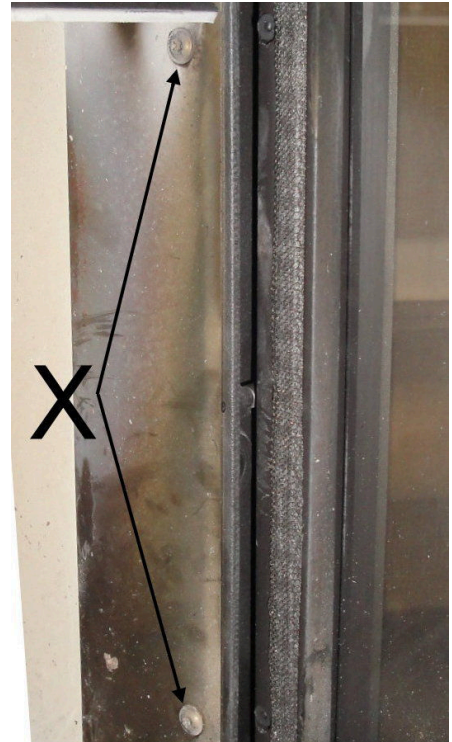
*Illustration 24: Combustion chamber with installed front*

5. Affix the front with screws  
 Mount the screws and tighten crosswise. Allowable torque: 6Nm.



6. Mounting of protective panels

Remove two screws (X) M5x8 (TORX25) from each side of the front internal part. Put the protective panel on the front internal part and affix it with screws. Tighten the upper screw fully. The lower screw should be only slightly tightened (to allow for thermal expansion of sheet metal).



*Illustration 25: Mounting of protective panels*

7. Seal off the combustion chamber

All joints of the external shell components, between the external shell and base ring, as well as between the external shell and front must be filled with high-temperature sealant.

**Mounting and adjustment of air distribution**

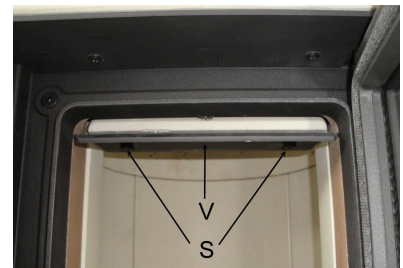
The position of air distribution determines the volume of air supplied to the combustion chamber, and therefore, it has an important influence on combustion. Thus it is necessary to perform appropriate adjustment.

**Working step**

- 1. Install air distribution

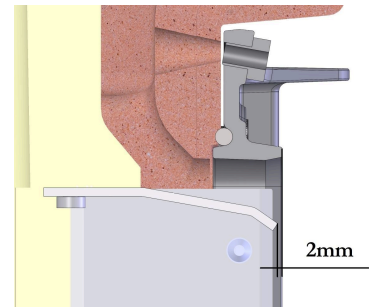
**Note**

The air distribution (V) is attached with two screws M8x25 (S) from the screw kit to the combustion chamber parts. Beforehand, remove both screws which are already mounted at delivery - these screws will be no longer needed.



2. Adjust the air distribution

The air distribution can be moved towards combustion chamber. The desired setting is a distance of 7 mm to the internal glass pane. This will be reached, when the frontal edge of air adjuster stays 2 mm behind the front edge of cast iron front. The distance to the front should be the same over the entire width of stove front.



**Stove door installation**

Note for stove casing with one-piece base ring:

Before the stove door is installed, the base ring of stove casing should be mounted. The protruding door handle can be an obstacle during base ring placement.

**Working step**

**Note**

1. Put in the upper door hinge

Place the door hinge bolt onto the hole in stove front frame and lift the door up a little.

2. Set the lower door hinge

Place the threaded bolt onto the threaded sleeve

3. Door height adjustment

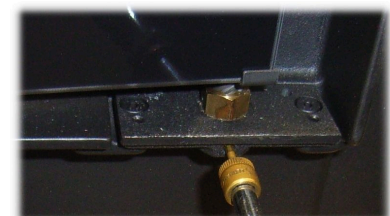
When the threaded sleeve is turned with a hexagon spanner, the trapezoid threaded bolt engages into the threaded sleeve, and the door lowers. Close the door carefully and check the height position. The door sealing rope must fit evenly on the entire circumference of the stove front sealing web, the door lock must engage smoothly.

4. Secure the threaded sleeve

Turn in the threaded pin - this will secure the threaded sleeve against turning.



*Illustration 26: Set the hinge bolt onto the threaded sleeve and adjust in height by turning the threaded sleeve*



*Illustration 27: Securing of threaded sleeve*

5. Set the door opening angle limit - adjust the upper door hinge

Turn up the two nuts on the upper hinge bolt. Open the door to the desired opening angle. Turn the nuts to the upper transverse web of the front. Secure the nuts against each other.

Check the adjustment.



*Illustration 28: Right: Nuts after mounting the door - Left: Door hinge after adjustment*

The air adjusting lever is installed after the door frame or mounting frame is installed in place.

## 13.4 ASSEMBLY OF TOP-MOUNT ACCUMULATOR

The top-mount accumulator has a double-shell design, like the combustion chamber.

The inner shell consists of segment parts, which are set dry without any additional materials, and create a triple duct reheating system. The segment parts of the first level are set on top of the combustion chamber cover. The parts are movable due to sealing ropes in their grooves, which allows for thermal expansion.

The external shell is built from rings. The tightness of the external shell is essential for the accumulation stove function. Therefore, all components of the external shell must be tightened with the high-temperature sealant (in delivery contents), in addition to the existing sealing ropes. After the components are set, all external joints have to be filled with this sealant. The stove casing must be sealed before the external stove cladding is laid!

The accumulator ducts can be cleaned from above. For this operation, the top cover parts must be removed.

During all works, make sure that the sealing ropes between stove casing parts fit tight and get not damaged during assembly. The contact faces of components must be kept free from dust.

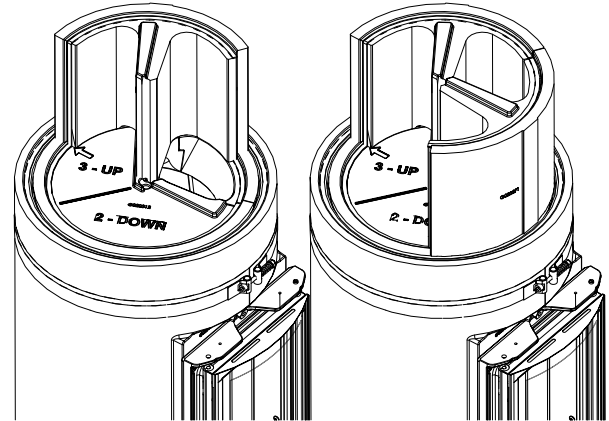
When the smoke outlet connection will be on side, check the orientation of combustion chamber cover before the first segment part is laid.

**Assembly of accumulator first level**

**Working step**

**Note**

- 1. Set the first segment part with web
- 2. Set the second segment part with web

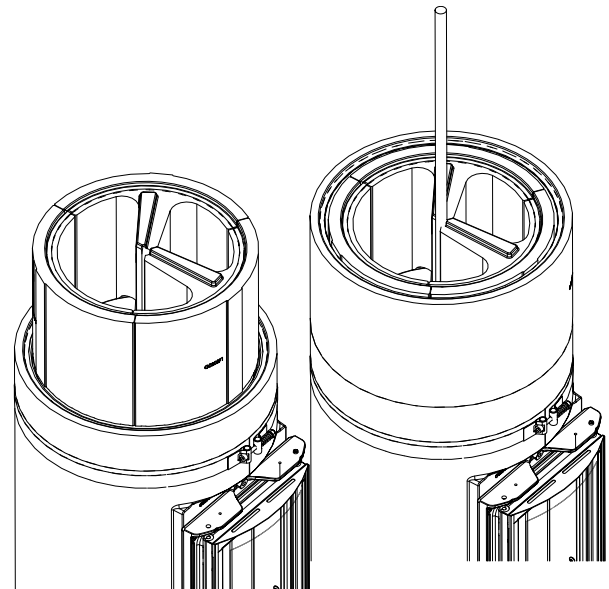


*Illustration 29: First segment part laid and oriented*      *Illustration 30: Second segment part laid*

- 3. Set the third segment part without web
- the available space provides the connection of the downward flue duct into the second riser duct

- 4. Set the external ring
- The external ring engages into the external ring of combustion chamber

- 5. Put the sealing rope in
- Starting from the depression on the combustion chamber cover, put the sealing rope between the webs and put it up
- The sealing rope can be found in the attached accessory kit

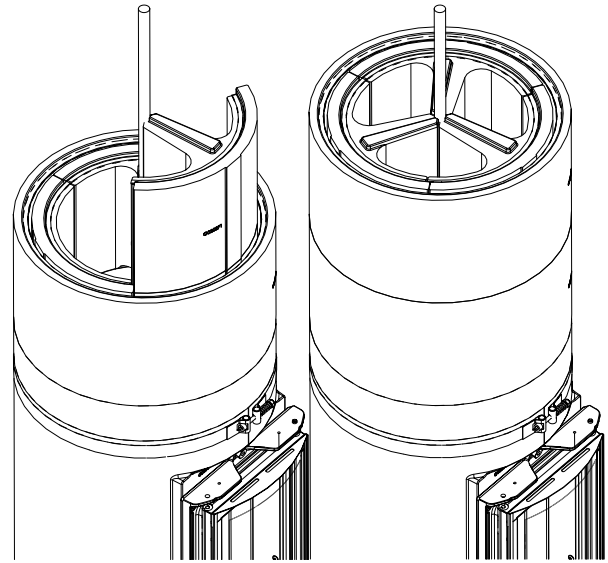


*Illustration 31: Segment part without web is laid*      *Illustration 32: External ring and sealing rope assembled*



**Assembly of accumulator second level**

Working step	Note
1. Set the first segment part with web	mind the first level segment position
2. Set the second segment part with web	put against the first segment part
3. Put the sealing rope in	Put the sealing rope from Level 1 into the groove between parts 1 and 2
4. Set the third segment part with web	Make the circle complete - align the parts and check the sealing rope position



*Illustration 33: First segment part of the 2. Level*

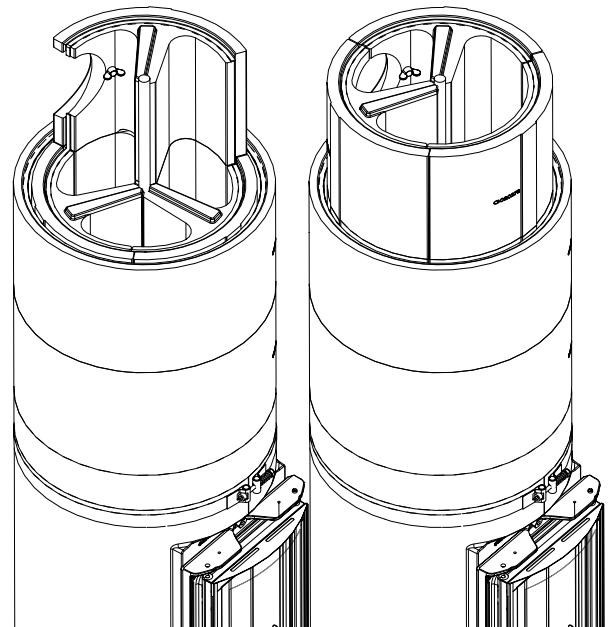
*Illustration 34: 2. Level completed*

5. Set the external ring

The top-mount accumulator can be made with more than three levels. The required ‘top-mount accumulator supplementing kit’ is assembled the same way as Level 2.

**Assembly of accumulator top level with cover for vertical smoke outlet connection**

Working step	Note
1. Set the segment part 1 with smoke pipe connection	mind the position of second riser duct
2. Set the segment part 2 with smoke pipe connection	mind the position of second riser duct
3. Set the segment part without web	The available space provides the passage from the 1. riser into the downward flue duct
4. Put the sealing rope in	Put the sealing rope between the webs and affix it

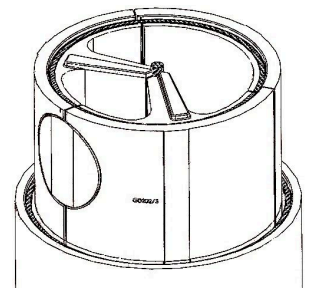


*Illustration 35: Segment part with smoke outlet connection on second riser duct*

*Illustration 36: Passage from the first riser to the downward flue duct*

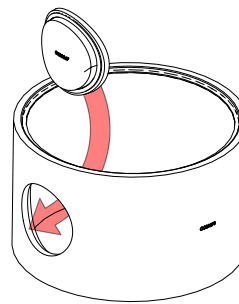
5. Set the top-mount accumulator blind cover

Close the smoke pipe connection with the blind cover. Tighten around the gap with the high-temperature sealant. Affix in position with aluminium adhesive tape



6. Fit the blind cover into the external ring

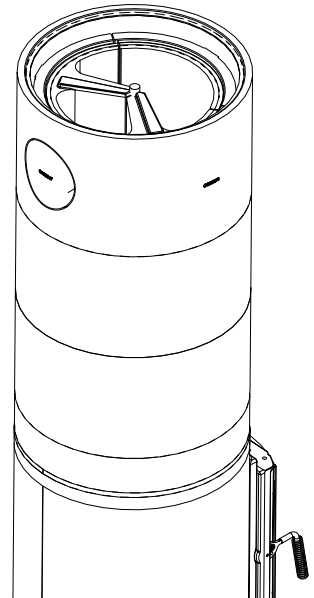
Put the blind cover into the external ring from inside and affix from inside with aluminium adhesive tape.



*Illustration 37: Blind cover into the external ring*

7. Set the external ring

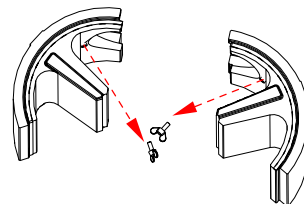
After the external ring is laid, seal the blind cover with high-temperature sealant.



*Illustration 38: External ring with blind cover after assembly*

8. Remove the butterfly nuts from the segment parts

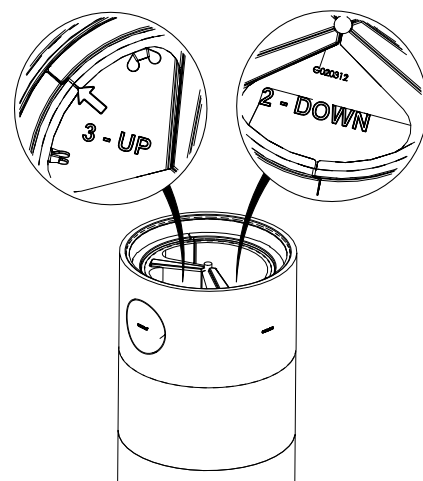
The butterfly nuts are used for smoke outlet mounting on the top cover part



*Illustration 39: Butterfly nut*

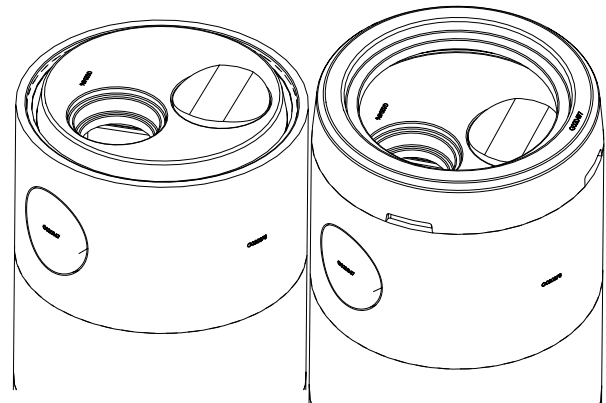
9. Set the internal top cover part

The breakthroughs are located above the downward flue duct and the second riser duct. The recess in the top cover part provides the necessary gas slot



10. Put the blind cover in  
in

The blind cover is placed on-to the downward flue duct (DOWN). The blind cover provides access for cleaning purposes.



*Illustration 40: Put the blind cover in*

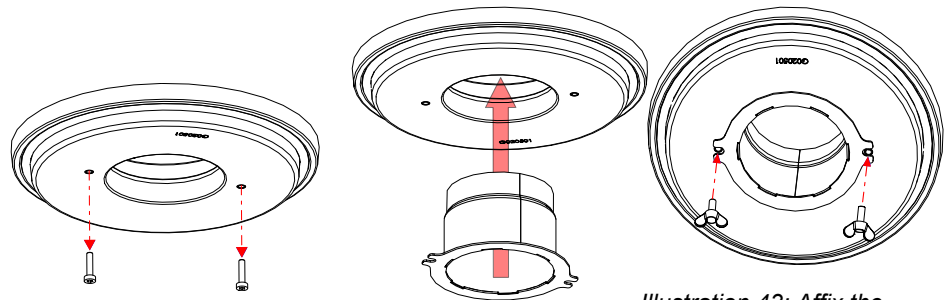
*Illustration 41: Setting of external top cover part*

11. Set the external top cover part

Mind the smooth fit of the circumferential sealing

12. Attach the smoke outlet to the top cover part

Put the smoke outlet from inside through the top cover opening and affix with butterfly screws

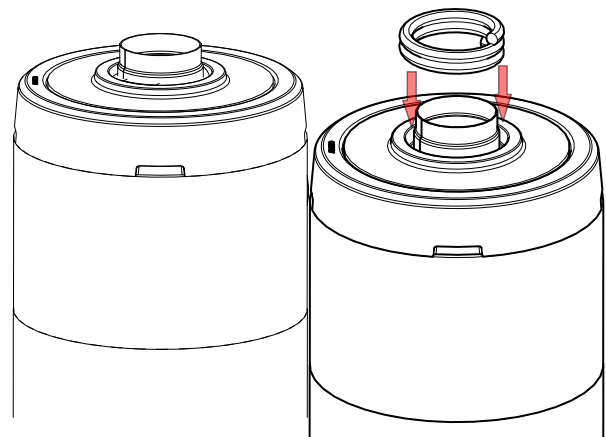


*Illustration 42: Put in the smoke outlet*

*Illustration 43: Affix the smoke outlet*

13. Set the intermediate ring cover

Put in the sealing rope (d20mm) Put the top-mount accumulator sealing rope into the gap around the smoke outlet and press firmly



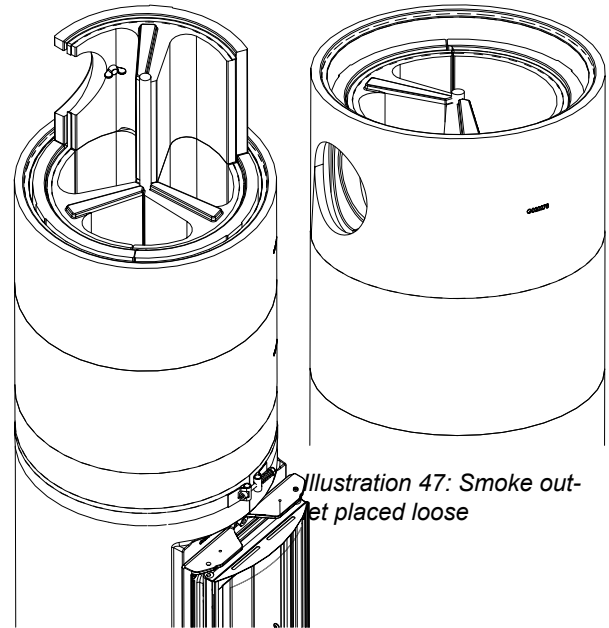
*Illustration 44: Set the intermediate ring*

*Illustration 45: Put the sealing rope in*

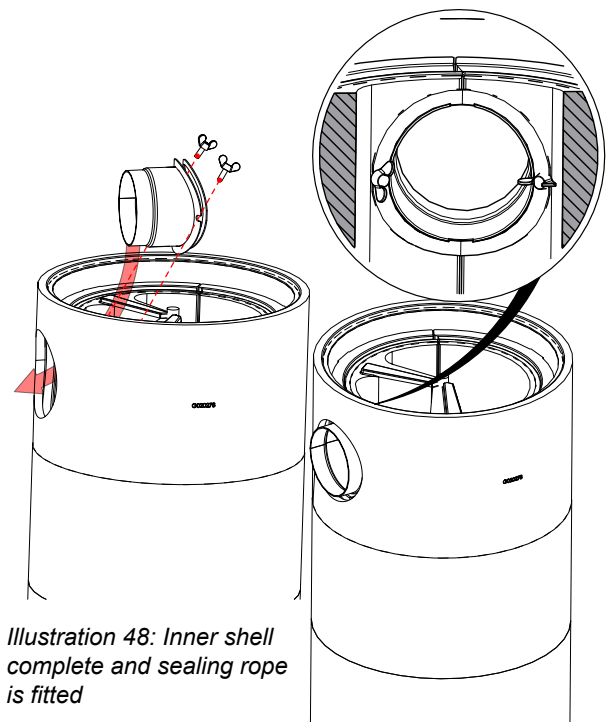
Fill the external joints of the top-mount accumulator with the high-temperature sealant, however, do not apply on the intermediate ring cover, because it must be available for removal during cleaning.

**Assembly of accumulator top level with cover for smoke outlet connection on side**

Working step	Note
1. Set the segment part 1 with smoke pipe connection	mind the position of second riser duct
2. Set the segment part 2 with smoke pipe connection	mind the position of second riser duct
3. Set the segment part without web	The available space provides the passage from the 1. riser into the downward flue duct
4. Remove the butterfly nuts	
5. Put the smoke outlet in	Put the smoke outlet loose in place and push it inwards. As soon as the external ring is set, the outlet is placed in position and affixed with screws
6. Set the external ring	
7. Smoke outlet mounting	Push the smoke outlet outside and affix on the segment part with M8 butterfly screws
8. Put the sealing rope in	Put the sealing rope between the webs and affix it



*Illustration 46: Segment part with smoke outlet connection on second riser duct*

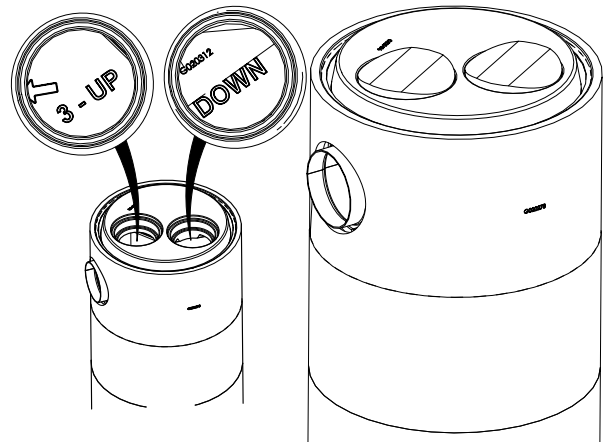


*Illustration 48: Inner shell complete and sealing rope is fitted*

*Illustration 49: External ring is laid and the smoke outlet affixed*

9. Set the internal top cover part

The breakthroughs are located above the downward flue duct and the second riser duct. The recess in the top cover part provides the necessary gas slot

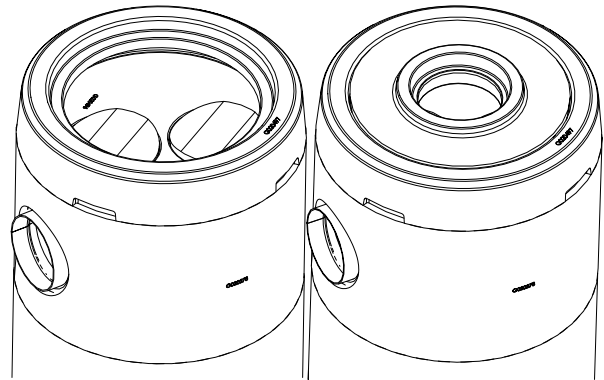


*Illustration 50: Put the blind cover in*

10. Push in the top-mount accumulator blind cover

Place the blind cover with sealing rope loose onto the internal top cover part

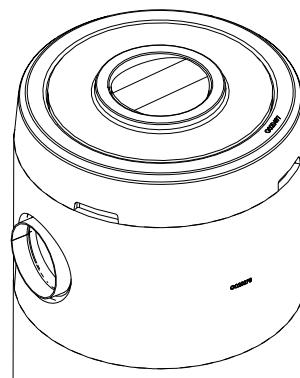
11. Put the top cover part and intermediate ring in place



*Illustration 51: External top*

*Illustration 52: Set the intermediate ring cover*

12. Push in the top-mount accumulator blind cover



*Illustration 53: Push in the top-mount accumulator blind cover*

Fill the external joints of the top-mount accumulator with the high-temperature sealant, however, do not apply on the intermediate ring cover, because it must be available for removal during cleaning.

## 13.5 ASSEMBLY OF EAS COMPONENTS

### Electronic combustion control EAS - additional parts on KSO

Component	Assembly	Assembled by
Gear motor	on base frame	assembled by Brunner
Thermocouple	Installed above stove door	after stove front assembly
Door contact switch	Installed below stove door	after stove front assembly
Bus wiring, thermocouple wiring and door contact switch wiring	Connection from the EAS to the pedestal area under base frame	after assembly of EAS components and preparation of pedestal sheet metal cover

#### Door contact switch installation

The door contact switch is installed in the middle of the front at the lower transverse web. The necessary screws are fitted on the left and right side of the opening. Because the door was removed for stove front assembly and readjusted in height after assembly, it can be necessary to adjust the position of the door contact switch.

The connection with EAS is made with a special door contact switch wiring, which is coupled with the switch via plug-in connector.

#### Working step

1. Measure the distance from the lower edge of door to the transverse web of front
2. Check/adjust the height of door contact

#### Note

The door must be already adjusted in height.

The protrusion of door contact switch (from the top of roller to the cast iron insertion plate) must be approx. 3mm greater than the height of lower edge of door above the transverse web of stove front.

For adjustment, loosen the nut "K" (SW16), turn the cast iron plate until the desired height is reached, and secure the adjustment by tightening the nut "K".

The switch must be in the shown position, to allow the actuating roller for rotation while the door is closed.

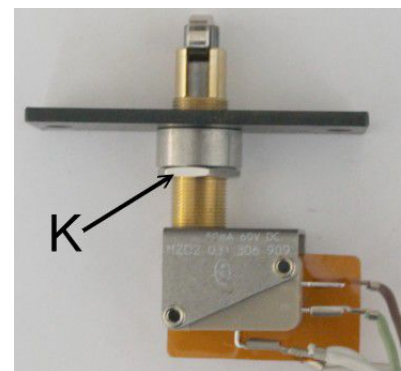


Illustration 54: Door contact switch

3. Remove the countersunk screws

Remove both countersunk screws from the stove front transverse web at the bottom. Open the door.



*Illustration 55: Placing the door contact switch on the stove front transverse web*

4. Install the door contact

Pull down the connector and wiring through the opening in the stove front transverse web and install the door contact switch. Mind the switch position (closer to the front).

5. Checking the switch function

Close the door carefully and check the switch function. The door must move easily across the switch and a clear 'clicking sound' must be heard.

6. Connection door contact - EAS

The piece of wire from the door contact is connected to the specified door contact wiring at the stove bottom.

For future exchange of the door contact switch it is helpful to have enough of 'spare wiring length', allowing for connector access when the door contact switch is removed.

### Thermocouple installation

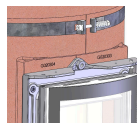
The thermocouple is placed in the middle above the stove door. The necessary opening in combustion chamber must be made (drill size d8). A special M12 screw with d8 hole is provided as drilling aid, determining the position and drilling angle.

#### Working step

#### Note

1. Drilling through the combustion chamber

Use the M12 screw with d8 hole as a drilling template, drilling through the inner shell of combustion chamber



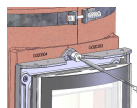
*Illustration 56: Drilling aid in front*

2. Remove the M12-d8 screw

Drilling aid is no longer needed

3. Turn the thermocouple in

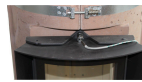
Insert the thermocouple carefully and turn it in



*Illustration 57: Thermocouple turned in*

4. Lay the wiring at the side of the front

The thermocouple can be bent once.



The wiring route must be free from obstacles, to allow for exchange of thermocouple after external cladding is assembled.

*Illustration 58: Route of thermocouple wiring*

5. Connection with EAS

At the bottom of the stove, the thermocouple wiring is connected with the thermocouple connector.

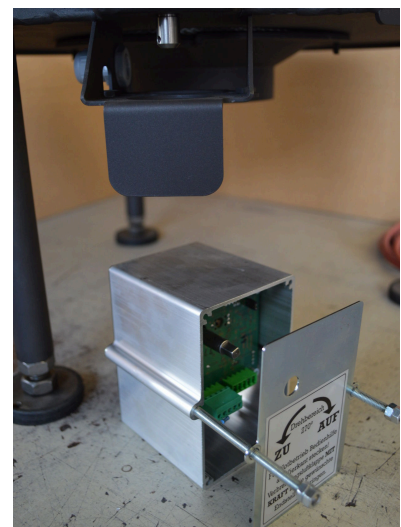
**Connection of gear motor to EAS board**

**Working step**

**Note**

Unscrew the motor box

After loosening the two M5x90 screws, the aluminium motor housing and the housing cover can be detached and removed at the bottom.

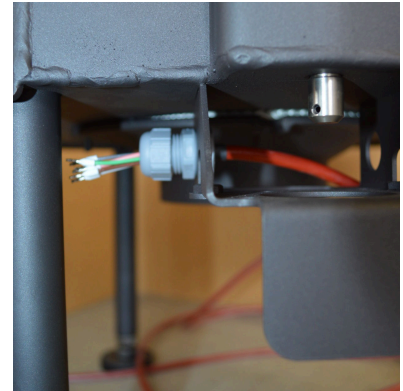


*Illustration 59: Components of motor box*



Pull the bus wiring through the cable gland on the motor supporting bracket

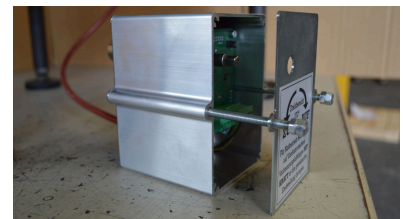
Undo the cap nut of the cable gland and push the wiring from inside through the cable gland.



*Illustration 60: Bus wiring in cable gland*

Connect the bus wiring to K1

Push the bus wiring through the rectangular opening on the back of the aluminium housing for the gear motor, and connect it to the free connector



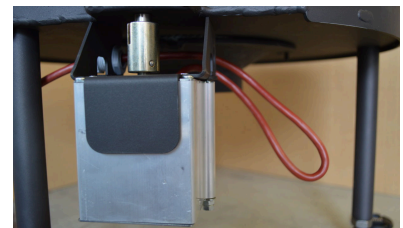
*Illustration 61: Connected bus wiring*

Install the motor box

Put the screws, the housing cover and aluminium box together and affix with screws to the motor supporting bracket.

Affix the bus wiring with the cable gland


Pull the bus wiring through the cable gland while leaving a spare length of approx. 40cm (approx. 16 inches) and tighten the cap nut of the cable gland.



*Illustration 62: Drive installed - with spare cable length for motor exchange*

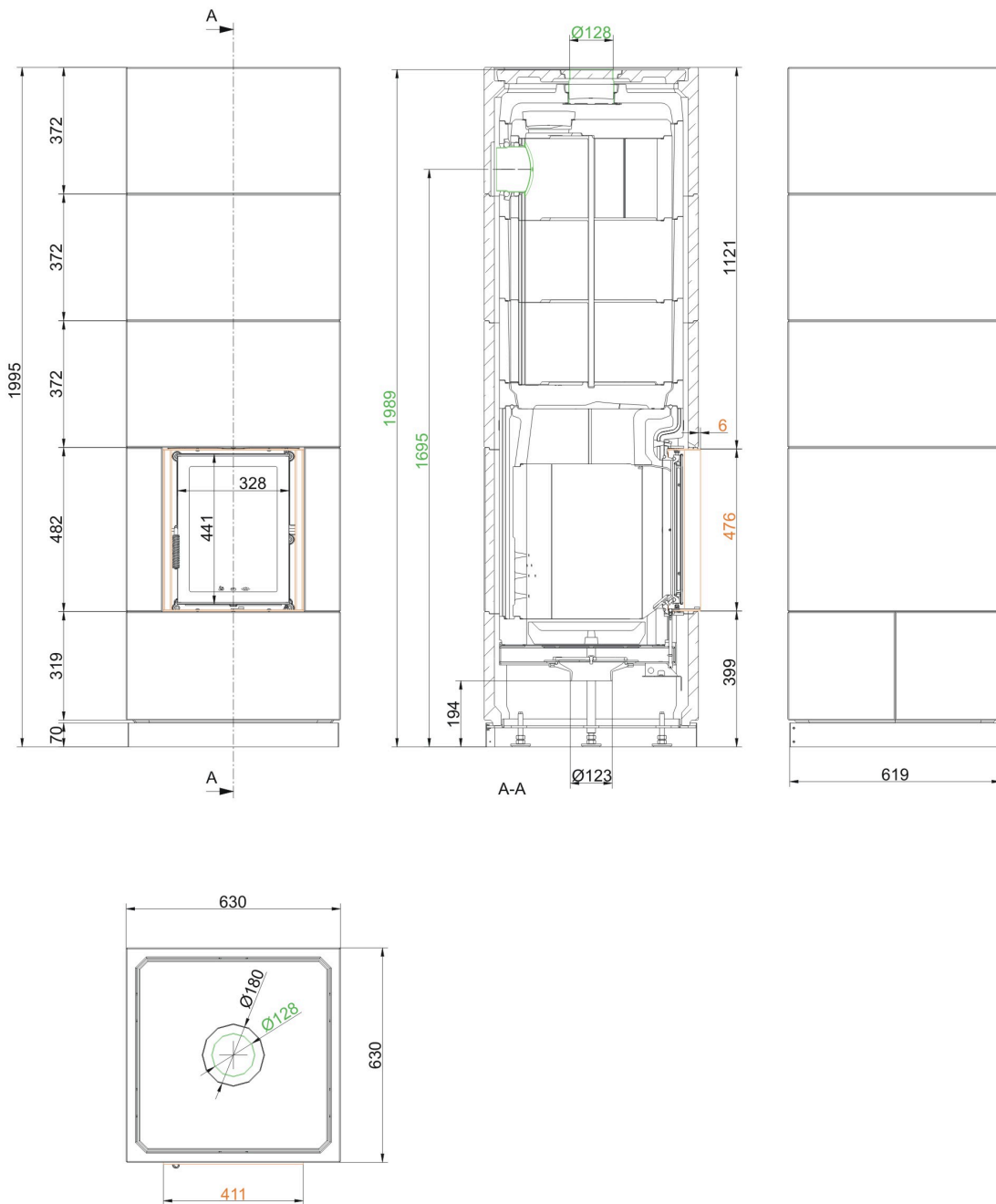
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## Putting cables through the sheet metal pedestal

Working step	Note	
1. Make holes in sheet metal pedestal	Pre-cut outbreaks are provided in the area, where the sheet metal pedestal is joined. Punch out the pre-cut outbreaks and deburr the holes.	<i>Illustration 63: Cables led through the sheet metal pedestal</i>
2. Put the rubber grommets inside	The rubber grommets are attached in accessory kit	
3. Pull the cables out	Leave a spare length underneath the pedestal. It is helpful during exchange of components, when the plug-in connector is accessible without removing the sheet metal pedestal.	



# Dimension sheets - KSO 33 q



... thermal concrete with mounting frame

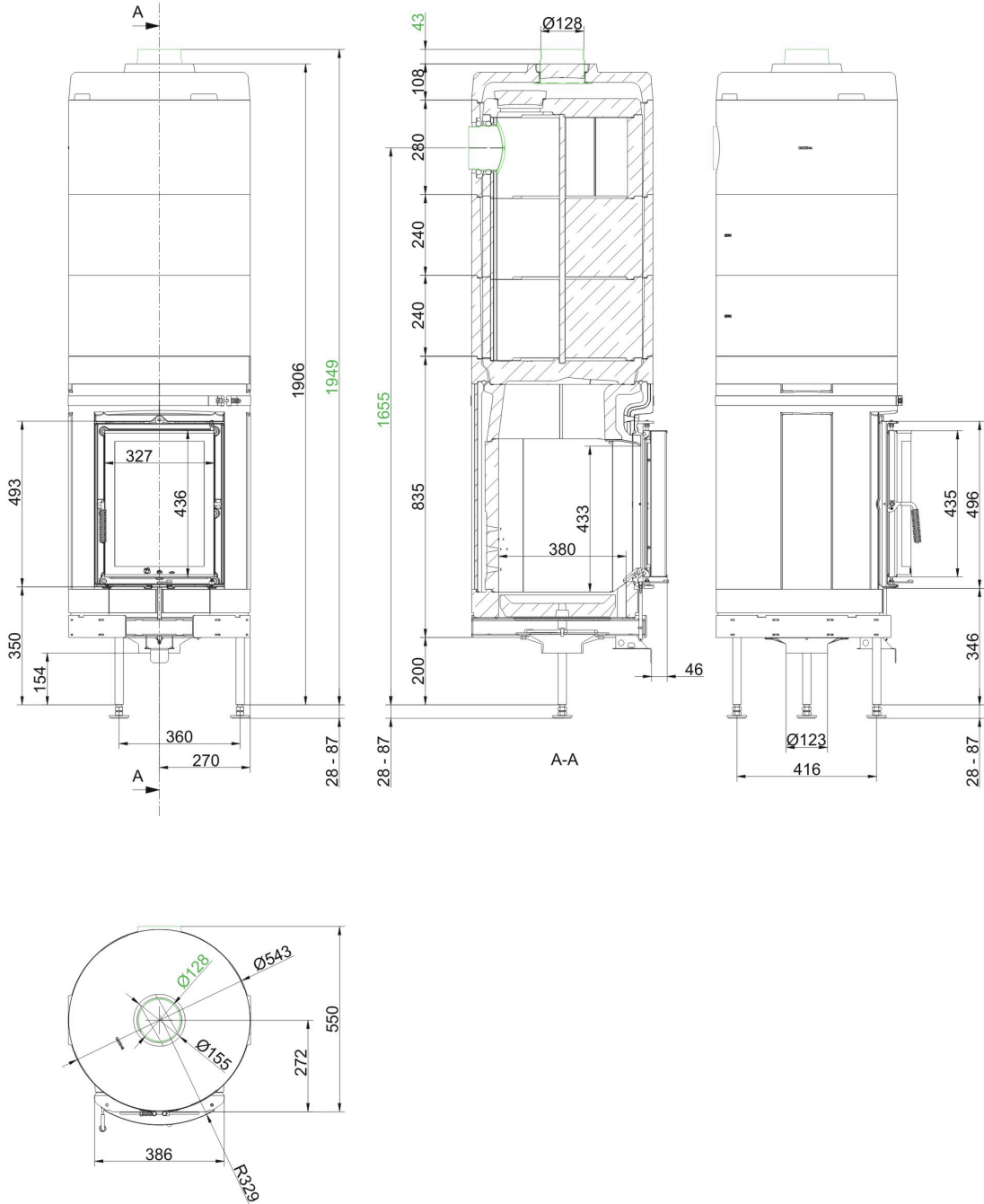
We suggest for CAD planning Palette CAD. Permanent updated drawings: [www.brunner.de](http://www.brunner.de)  
 Frames/ flue gas outlet connection/ combustion air supply connection/ front variants/ support bearing are marked in color.

## Planning and installation - KSO 33 q

Tested according to		EN 15250
<b>Data for functional demonstration</b>		
Rated heat power	kW	1.7
Fire wood volume	kg/h	3.5
Combustion duration	h	2.2
Time of heat release <sup>1)</sup>	h	16.9
Combustion performance	kW	13.9
Flue gas mass flow	g/s	13.5
Flue gas temperature	°C	161
Outlet temperature	°C	215
Max. exhaust gas temperature (NWL/safety test)	°C	210 / 280
Necessary supply pressure <sup>2)</sup>	Pa	12
Total fuel load	kg	7.5
Load of wood 1st/2nd combustion cycle	kg	4 / 3,5
Combustion air consumption	m <sup>3</sup> /h	38
Flue gas pipe connection Ø	mm	130
Combustion air connection Ø	mm	125
Time until reaching max. surface temperature	h	4.6
Time to cool to 50% of max.surface temperature	h	11.4
<b>Cladding components</b>		
Foot print (W x D)	mm	630 x 630
Overall height	mm	1989
<b>Minimal distances <sup>3)</sup></b>		
to mounting wall	cm	5
to combustible mounting wall	cm	10
to mounting floor	cm	0
from top of fireplace to the ceiling	cm	40
From top of horizontal connecting piece to the ceiling	cm	20
<b>Weight</b>		
Combustion chamber / accumulator	kg	479
Cladding	kg	246
<b>Meets requirement/limit values for:</b>		
Allows multiple fireplaces on one chimney		yes
Germany/ Austria		1.BImSchV (Stufe 2) / 15a BVG (2015)

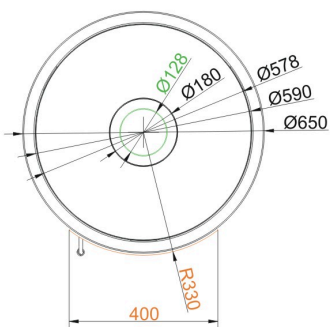
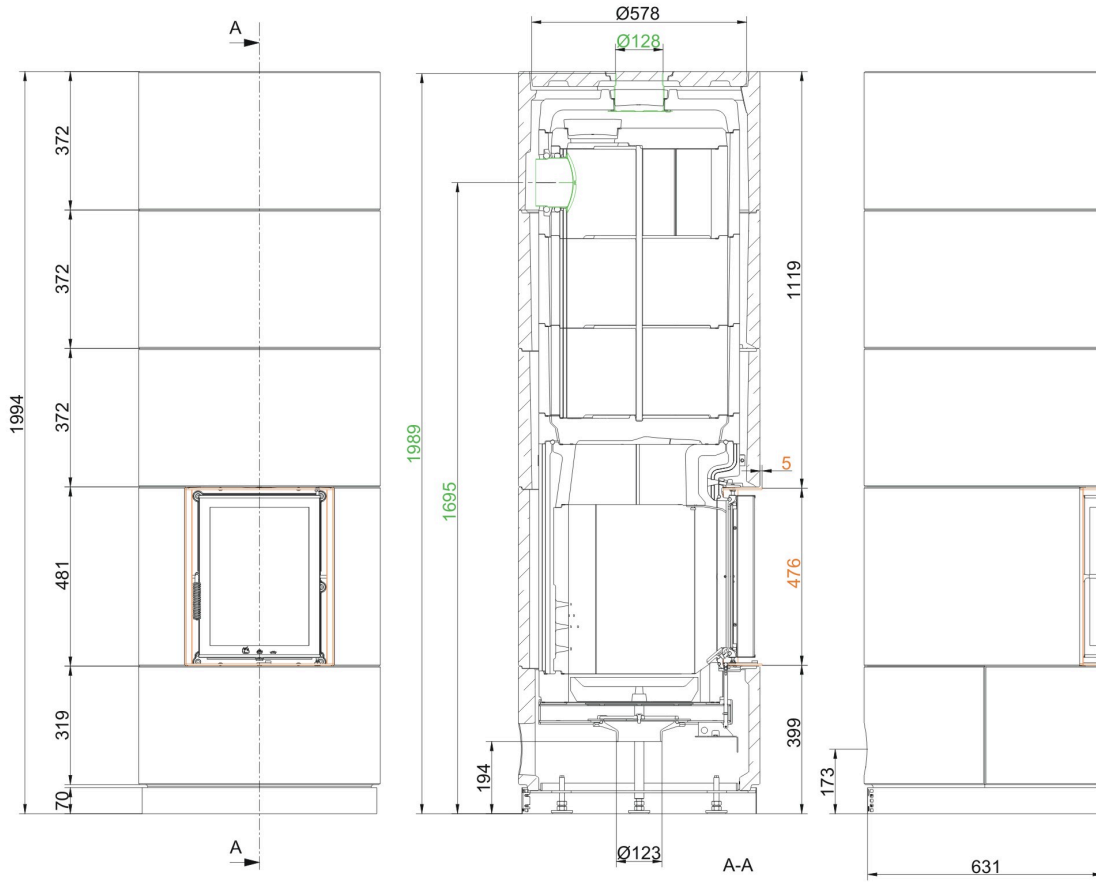
- 1) Time from firing star to reaching 25% of the maximum surface temperature against the room temperature
- 2) Damper flap recommended
- 3) Values determined with thermal concrete cladding

# Dimension sheets - KSO 33 r



....base unit

# Dimension sheets - KSO 33 r



... thermal concrete with mounting frame

We suggest for CAD planning Palette CAD. Permanent updated drawings: [www.brunner.de](http://www.brunner.de)  
 Frames/ flue gas outlet connection/ combustion air supply connection/ front variants/ support bearing are marked in color.

## Planning and installation - KSO 33 r

Tested according to		EN 15250
<b>Data for functional demonstration</b>		
Rated heat power	kW	1.7
Fire wood volume	kg/h	3.5
Combustion duration	h	2.2
Time of heat release <sup>1)</sup>	h	16.9
Combustion performance	kW	13.9
Flue gas mass flow	g/s	13.5
Flue gas temperature	°C	161
Outlet temperature	°C	215
Max. exhaust gas temperature (NWL/safety test)	°C	210 / 280
Necessary supply pressure <sup>2)</sup>	Pa	12
Total fuel load	kg	7.5
Load of wood 1st/2nd combustion cycle	kg	4 / 3,5
Combustion air consumption	m <sup>3</sup> /h	38
Combustion air connection Ø	mm	125
Time until reaching max. surface temperature	h	4.6
Time to cool to 50% of max. surface temperature	h	11.4
<b>Cladding components</b>		
Foot print (W x D)	mm	Ø 650
Overall height	mm	1994
<b>Minimal distances <sup>3)</sup></b>		
to mounting wall	cm	5
to combustible mounting wall	cm	10
to mounting floor	cm	0
from top of fireplace to the ceiling	cm	40
From top of horizontal connecting piece to the ceiling	cm	20
<b>Weight</b>		
Fireplace / combustion chamber	kg	479
Cladding	kg	203
<b>Meets requirement/limit values for:</b>		
Allows multiple fireplaces on one chimney		yes
Germany/ Austria		1.BImSchV (Stufe 2) / 15a BVG (2015)

1) Time from firing star to reaching 25% of the maximum surface temperature against the room temperature

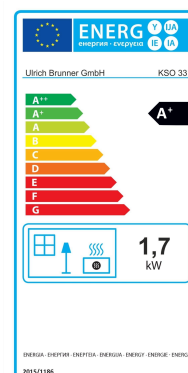
2) Damper flap recommended

3) Values determined with thermal concrete cladding



**Product data sheet according to (EU) 2015/1186:**

Supplier's name or trademark	Ulrich Brunner GmbH
Model identifier:	KSO-33
Energy efficiency class:	A+
Direct heat output:	1,7 kW
Indirect heat output:	N.A. kW
Energy efficiency index:	108
Fuel energy efficiency (at nominal heat output):	83,0 %
Fuel energy efficiency (at minimum load):	N.A. %
Special precautions: see supplied product documentation	



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