Installation manual

HKD 5.1

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1 BASIC INFORMATIONS

All instructions delivered with products must be observed. 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!

The installation may only be carried out by a registered specialist.

Fireplaces equipped with a water boiler must be pressure-tested after hydraulic connection to the heating system. Masonry work may follow only after this pressure test. Ulrich Brunner GmbH does not cover any costs incurred by necessary dismantling of masonry for rework at water boiler installation or replacement of the boiler.

The floor space of the room must have a suitable structure and sufficient dimensions to ensure proper functioning of the fireplace.

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

Dimensioning of downstream heat accumulator must be according to valid stove-setting rules.

During installation of the fireplace, all dimensions and minimal clearances of the fireplace casing must be held as specified by the manufacturer.

Fireplaces that meet the requirements of DIN EN 13240 or DIN EN 13229 and that can only be operated as intended with closed combustion chamber door or that have a self-closing firebox door are suitable for multiple occupancy.

All binding national or EU standards and local regulations for the installation of fireplaces must be observed.

All valid stove fitting rules and regulations of local construction law must be observed and followed.

Please follow the relevant regulations of your country.

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 representations of any kind.

Subject to technical and assortment changes.

Please notify your supplier of any damage which might have occurred during transport.

Please keep these instructions.

2 SAFETY PRECAUTIONS

Fireplaces may be set up only in rooms or areas with no risk of danger due to their location, structure or intended use.

Working on the stove	Installation, commissioning, servicing and maintenance works on the product may be carried out only by an authorized stove-fitter. Safety and efficiency of the system depend on this!
Working with electronics	Switch off the emergency switch or circuit breaker, and secure them against switching on again.



Fireplaces with external air supply are not independent from room air supply and must be considered and designed as roomsealed fireplaces. In connection with a ventilation or extraction system, we recommend the use of a negative pressure safety device USA.



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!

Installation must be carried out by an authorized stove-fitter, because safety and efficiency of the system depend mostly on proper installation of the product. All valid stove fitting rules and regulations of building law must be observed and followed. Make sure to instruct the owner or user about the functions and controls of the system and possibly installed safety devices.

Fireplaces must be built to ensure safe operation and fire safety in order to eliminate possible risks and unacceptable loads. They have to be ready for use over an adequate period of time.

Make sure to instruct the owner or user about the functions and controls of the system and possibly installed safety devices.

Remember to use only genuine replacement parts.

Stoves with water boilers are ready for use only with a fully functional boiler section.

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3 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.

4 DELIVERY CONTENTS

The fireplace is delivered assembled with doors and glazing on a pallet.

The door frame and small installation parts are delivered in a cardboard box.

The chamotte inner linings are delivered as a separate packaging unit and must be fitted inside the fireplace on site.

Check the delivery for damage or missing parts. Report complaints immediately to your supplier.

5 PRODUCT DESCRIPTION

The fireplace has been approved according to EN 13229 and can be combined with a metallic radiator or ceramic accumulator for greater efficiency and heating power. It can be fitted with the optional electronic stove control system (EAS/EOS) at delivery or after the fireplace installation has been completed.

Combustion air can be supplied from outside by connecting to a separate air duct.

Avoid risk of overheating! If the fireplace temperature is often too high, this can cause discolorations, especially in the case of stainless steel frames. Such defects do not constitute a reason for a claim.

Combustion air is supplied through a provided connecting piece. The volume of air supplied for combustion can be controlled by using a combustion air regulator.

The HKD series are designed for closed installation without any vents (hypocaust principle). Design of a hypocaust must ensure uninterrupted transfer and even distribution of heat inside the casing, preventing all parts of the heating chamber from overheating. Dimensioning of heat projecting walls of the casing must by adjusted to performance data of the heating device. Thickness of insulation for building walls surrounding the fireplace stated in technical data has been determined during continuous operation with open air vents (safety test according to EN 13229 - heat transfer coefficient of the tested wall at 0,7 W/m2K), and must be amended accordingly for different conditions (for example, by providing air ventilation for walls).

When installing electric or electronic parts (controllers, sensors, cables...) or water-conducting parts, please consider the max. permitted surrounding temperatures for these components.

You can optionally equip or retrofit the fireplace with the (EOS/EAS) electronic control device.

The heating insert provides the possibility that the side hinged door can be converted at any time from right side to left side even in already installed state. For this you will need a conversion kit. The necessary steps are explained in the conversion kit enclosed instructions. Without this conversion kit you can not change the door hinge!

	with metallic radiator	**with ceramic accumulator**	**with boiler module(*1)**
Designation	EN 13229 W	EN 13229 WA	EN 13229 WA
Max. load of firewood	HKD 5.1: 6 kg	HKD 5.1: 6 kg	HKD 5.1: 6 kg
DIN Plus	yes	yes	yes
Multiple devices on single flue(*2)	yes	yes	no

(*1) a damper flap must be installed

(*2) only for variants with selfclosing firing door

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6 SETTING UP THE STOVE INSERT

1 Put the cast iron stove insert on a flat, stable floor with a ground clearance of >15cm and make sure it is in perpendicular position. A suitable support frame is available among the accessories. Make sure that the maximum load-bearing capacity of the floor is not exceeded. If necessary, provide means for load distribution.
2 Remove the cast iron top of the stove insert.
3 Insert the main combustion chamber parts, as described in the attached instructions for the assembly of inner linings.
4 Insert the after-burning chamber parts, as described in the attached instructions for the after-burning chamber.
5 Put the cast iron top in place and attach it with screws. Make sure to check the correct position of seals. When the stove insert is placed on a third-party support frame, make sure that the combustion air supply nozzle is not obstructed. During planning and execution of works, follow the special rules for stove setting and convection heating craftsmanship.

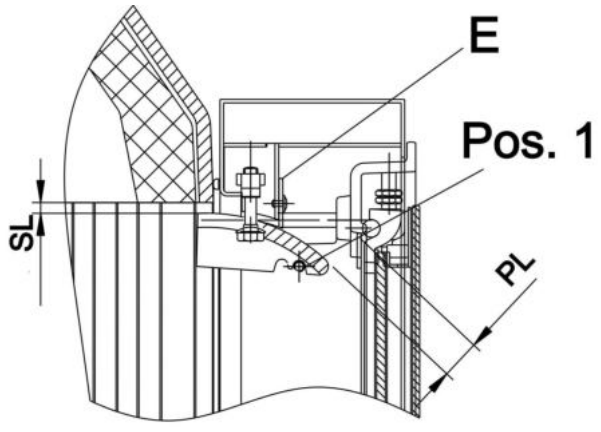
Note: When a change from right-side to left-side door is desired, the suitable retrofit kit must be ordered first. The retrofit kit is not included in delivery contents!

The fireplace must be in level to ensure proper functioning of the self-closing door. Check the proper functioning!

7 PRIMARY AND SECONDARY AIR ADJUSTMENTS

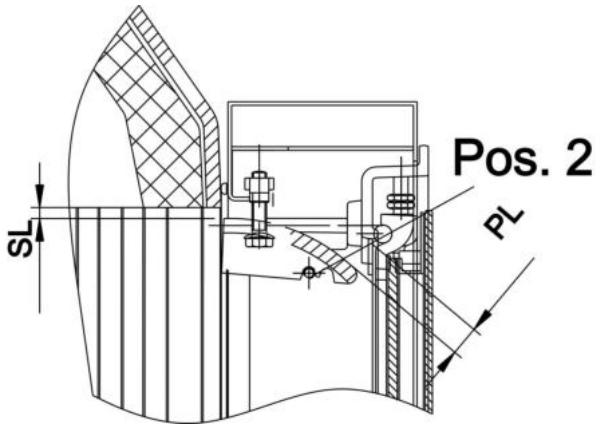
After completing the stove insert installation, remove the wooden wedges from the primary and secondary air inlets and adjust the air inlets for primary air (PL) and secondary air (SL).

HKD 4.1 / HKD 5.1 EOR



E = adjusting plate
SL = 6 mm - 8 mm
PL ≈ 22 mm

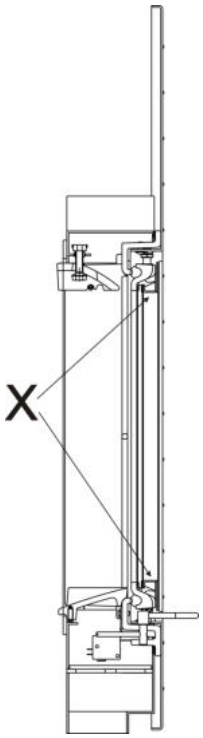
HKD 4.1 / HDK 5.1 manual / EOS



SL = 6 mm - 8 mm
PL ≈ 16 mm

8 MOUNTING OF DOOR FRAME

The door frames are mounted after all stove assembly works are finished. Wear cotton gloves to avoid any spoils on the door frame surface. Attach the door frame on the inner front of the HKD with the four included screws in the indicated positions (X).



Due to frequent temperature changes close to the frame, the screws might get loose.

Please check the screws of the door frame on a regular basis and tighten them if necessary.

The door frame must not be embedded in plaster. Leave some space for thermal expansion.

9 ADJUSTING THE COMBUSTION DOOR

Variants with self-closing firing door Variants with self-closing firing door

The door adjustment is done in factory and must not be changed. If you want to remove the door, please observe the following. The lower turning point of the door is furnished with a lifting hinge. The door has a threaded bolt, which is screwed into a brass nut mounted on the frontal frame. You can change the height of the door by turning the hexagon brass nut. To remove the door, the nut must be turned until the threaded bolt is removed from the nut. Then lift the door up shortly and lower it slightly to the front.



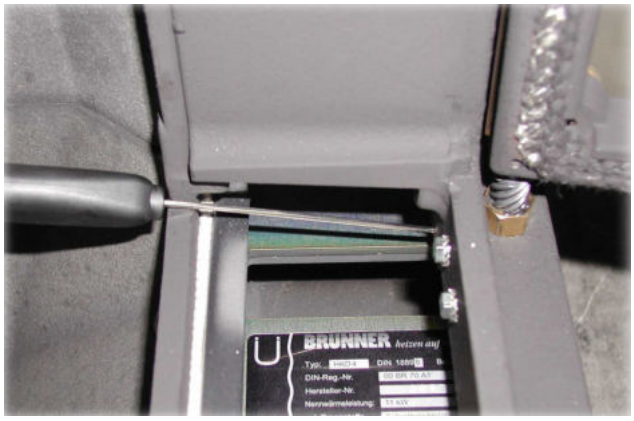
Im. 1: Turning the brass nut

The brass nut is secured with a threaded pin against turning. The hexagon nut may be turned only after the threaded pin is turned loose.

The threaded pin is accessible after removal of air leading plate from the inside (see picture “Position of threaded pin”). After the adjustments are done, the brass nut must be secured again with the threaded pin.

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If the door is set to high, the thread is loose in the open door position, and the door may fall out. Always check after adjustments, if the mounting is safe in the opened position.



Im. 2: Position of threaded pin

With the EAS/EOS version, lowering the threaded bolt when closing the door triggers the door contact. Raising the door can result in the door contact no longer being switched.

It is essential to check the function of the door contact switch. Risk of deflagration!

Variants with non-self-closing firing door

To change the height setting of the firing door on variants with a non-self-closing firing door, it is necessary to unhinge the firing door.

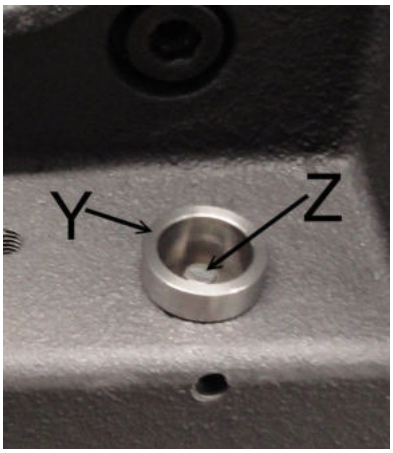
To be able to remove the combustion door, it is necessary to dismantle the panel. To do this, loosen the four screws of the panel fastening and pull off the panel. See also the assembly instructions for the stove or the assembly instructions for the panel.

To be able to unhinge the fireplace door, the upper door stop must first be loosened. To do this, unscrew the two countered screws completely, as shown in the picture 'Loosening the door stop'.

The furnace door can now be lifted out.



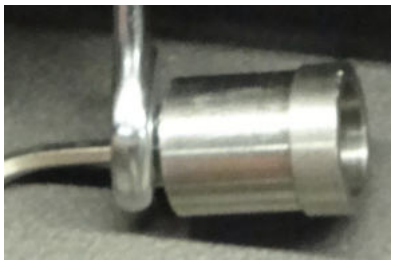
Im. 3: Loosening the door stop



Im. 4: Hinge sleeve



Im. 5: Hinge sleeve with lock nut



Im. 6: Locking

Now lift out the hinge sleeve (Y). Adjust the height of the firing door using the grub screw (Z) on the hinge sleeve and lock.

Replace the firing door and check its function.

Unscrew the two screws on the upper hinge and lock them again.

Variant with non self closing door

In order to change the height setting of the stove door in the case of variants with a non-self-closing door, it is necessary to unhinge the door.

In order to be able to remove the door, it is necessary to dismantle the frame. To do this, loosen the four screws on the frame fastening and pull off the frame. See also the assembly instructions for the fireplace stove or the assembly instructions for the frame.

Please remember:

Combustion air is supplied to the air duct through the air supply nozzle. The cross-section of the combustion air supply connection cannot be reduced by the external cladding of the stove. Please ensure enough surrounding space!

The necessary air supply for the fireplace operation must be ensured. This is important especially in case of very tight windows or presence of air conditioning systems. External air supply to the combustion air nozzle must be provided if necessary.

When a variant with electronic stove control (EOS_R) is used, make sure that there is enough space within the external cladding under the fireplace door to enable installation of the door contact switch wiring.

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10 COMBUSTION AIR HOSE CONNECTION

A flexible hose is used as a connecting piece between the stove nozzle and the external air supply duct or EOS_R actuator, which is adapted to the shape of nozzle on one side, and on the other side it has a round shape. Secure the flexible hose in place with the attached hose clamps.

11 INSTALLATION OF COMBUSTION AIR CONTROL ELEMENT FOR MANUALLY OPERATED STOVES

CAUTION: The following instructions for the installation of combustion air control element are applicable only for stoves with manual operation! For stoves with EOS/EOR, the sliding plate is secured with a screw against accidental position change.

During transport, the combustion air control element is mounted onto the sliding plate of the combustion air supply as a protection against damage (see arrow on the picture in the middle of page).

To install the combustion air control element for the manual stove operation, lift off the warning plate (see arrow on the upper picture) and remove the adjusting lever (see arrow on the picture in the middle of page) from the sliding plate.

Now attach the control element as shown in the lower picture and put the warning plate in place again.

Check function!







12 STORAGE MASS

You can build the HKD either with a metallic reheater (for example GNF10) or a ceramic storage mass.

When constructing the ceramic storage mass, observe the relevant technical rules of the trade and the building regulations. Connect the metallic reheating surface with the HKD with a fixed pipe connection.

Connect the metallic reheater with the HKD insert with a fixed pipe connection. Observe the required distances to the floor and walls (see section - Fire and heat insulation of adjacent building components).

13 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.

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14 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^3 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^3 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

Stoves and fireplaces with BRUNNER heating inserts are classified by law as indoor air-dependent fireplaces.

The combustion air can be supplied from outside via a sufficiently dimensioned pipework. This for BRUNNER heating inserts are fitted with a combustion air connection piece. To avoid draughts in the room, the outside air connection should be routed to this combustion air connection piece. The outside air connection can also be established via a suitable chimney with integrated combustion air duct. Corresponding products have a separate combustion air shaft or an air duct between the casing brick and flue gas pipe

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 und 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!

15 CHIMNEY AND SMOKE PIPE CONNECTION

Chimney and smoke pipe connection 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, when it can be proven that the chimney is suitable, 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 designed for open door use. Remember to use a separate chimney connection in this case.

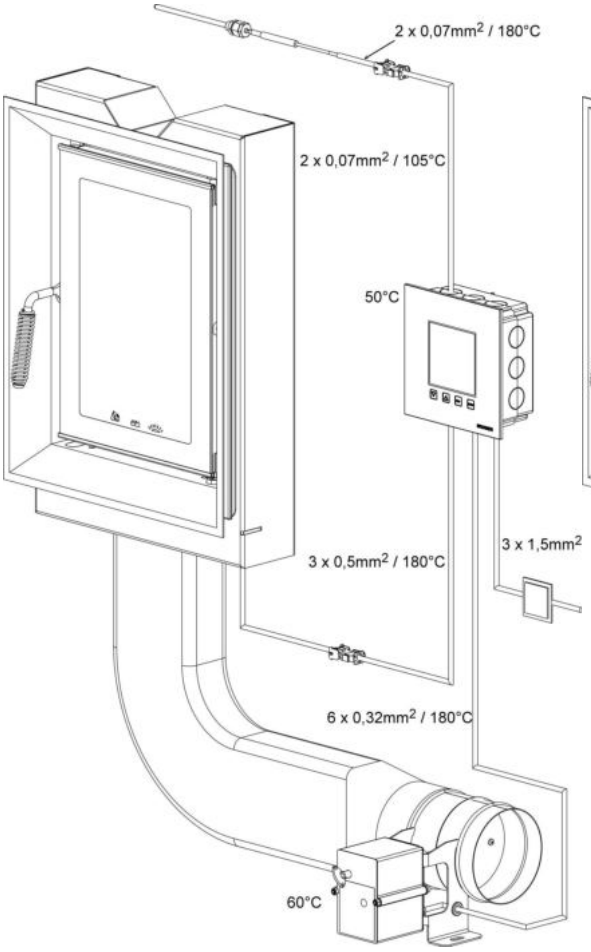
If the connecting pipe between additional reheating devices (radiators, storage mass) and chimney is a steel flue gas pipe, it must be suitable for this application, it must conform to DIN EN 1856-2 standard and have a CE mark. The connecting pipe must be connected directly to the chimney.

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

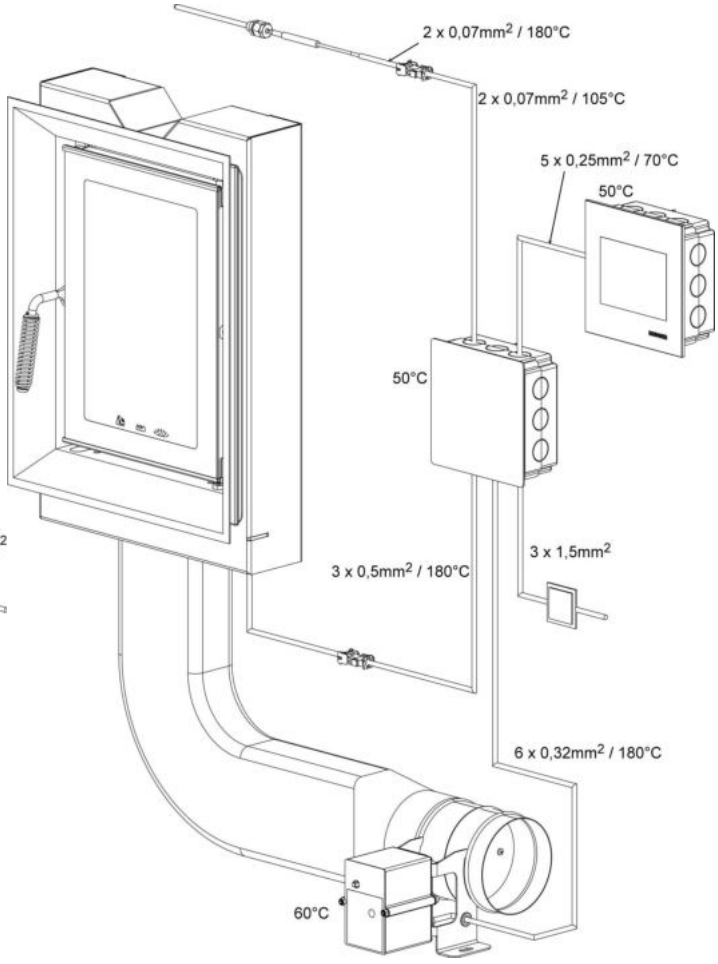
All smoke pipe connections must be sealed tightly! Remember to provide access for cleaning!

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16 MOUNTING INSTRUCTIONS FOR EAS / EOS VARIANTS



Im. 7: Schematic layout of EAS



Im. 8: Schematic layout of EOS

The indicated temperatures are maximal permissible temperatures of components!
The indicated cable dimensions are minimal dimensions!

Installation of electronic components must be prepared and performed carefully. Please pay attention to the following points:

• The flush-mounting box 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.

• The control unit must not be installed in hot parts of the tiled stove casing.

• The selected type of installation must ensure that temperatures do not exceed +40# (140°F) and the unit is not exposed to direct heat radiation.

For units with external air supply, the motorized combustion air flap assembly cannot be installed in such way that the motor is located under the flap. Condensate could penetrate the motor and destroy it.

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.

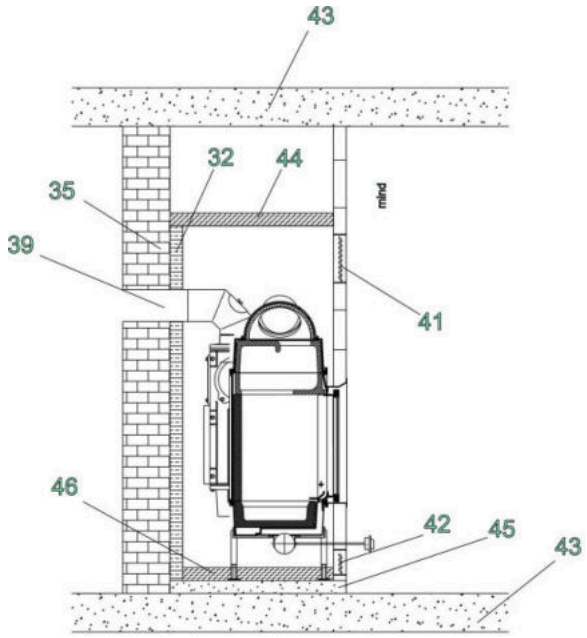
All electronic components must be accessible after installation for revision and replacement. When selecting place of installation, keep in mind the max. permitted temperature for the component. Components cannot be installed in closed spaces; proper ventilation must ensure sufficient heat discharge.

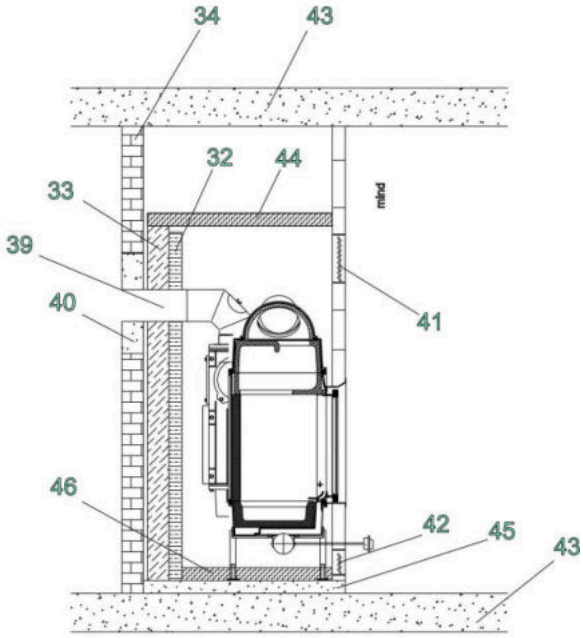
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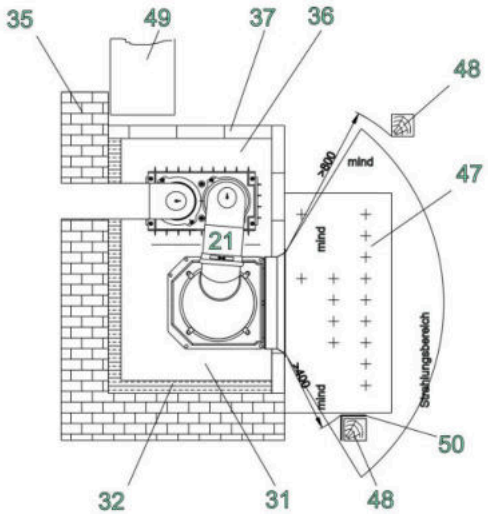
17 OVERVIEW OF FIRE SAFETY AND HEAT INSULATION GUIDELINES

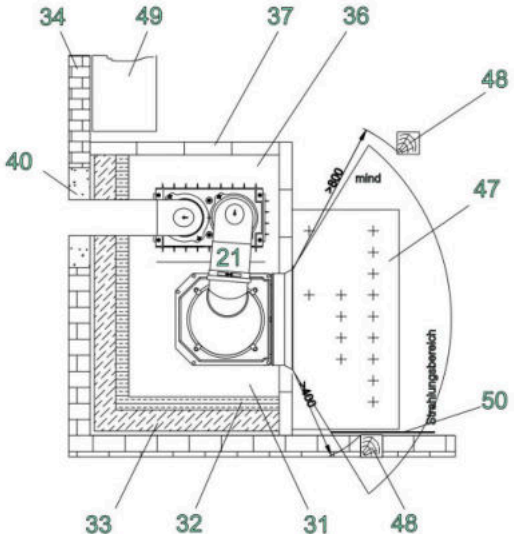
(shown on the example of an HKD stove)

Installation in front of or next to an adjacent wall: Installation in front of or next to a flammable wall

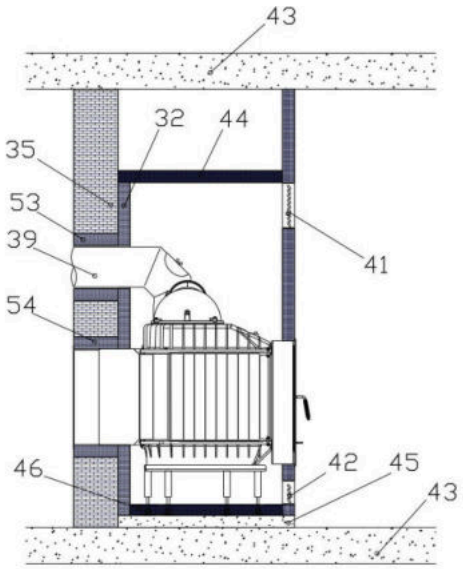


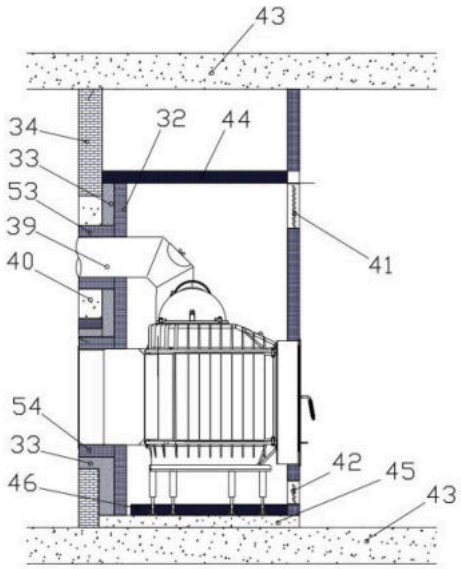


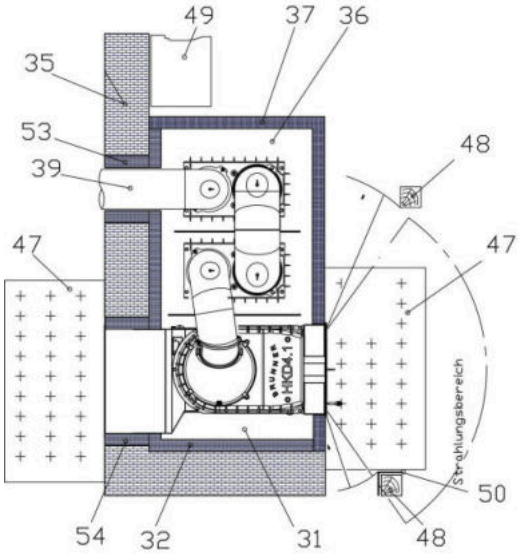


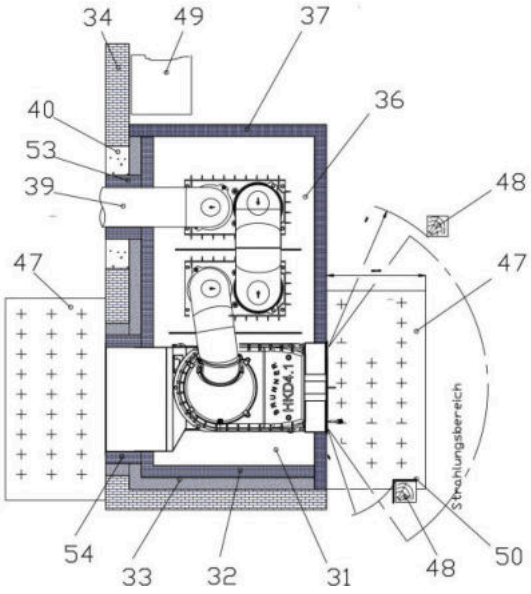


Installation in front of or next to a protected wall: Installation in front of or next to a flammable wall









Number reference:

21	Heating gas pipe
31	Convection space, distance between fireplace surface and external cladding / thermal insulation
32	Thermal insulation; see “Approved insulation materials”
33	Brick lining, at least 10 cm, mineral building materials, such as bricks according to DIN 105 or sand-lime bricks according to DIN 106
34	Protected wall: these are walls from flammable materials or containing flammable materials, main walls from re-inforced concrete, as well as all walls with built-in furniture or wooden panels behind them (heat accumulation).
35	Adjacent walls: walls from mineral building materials, such as aerated concrete, bricks, sand-lime bricks, without flammable objects behind them.

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36	Convection space, distance between reheating surface and thermal insulation
37	Active (heat-transferring) trim made of non-flammable materials (A1 class according to DIN EN 13501-1), such as ceramic stove tiles, fireclay bricks or plates.
39	Smoke pipe connecting piece
40	Fire protection on smoke pipe entrance
41	Warm air grating/opening
42	Circulating air grating/opening
43	Room ceiling
44	Thermal insulation for protection of room ceiling
45	Concrete slab, at least 6 cm thick, with sufficient reinforcement for weight distribution.
46	Thermal insulation for protection of floor
47	Non-flammable floor covering
48	Structure made of flammable materials
49	Furniture or flammable objects on adjacent wall
50	Air cooled heat protection
51	Distance between floor insulation and air intake
52	Decorative beam over fireplace door
53	Thermal insulation of the smoke pipe connecting piece
54	Heat radiation surface

18 BUILDING PROTECTION

All building areas and (adjacent) walls which are in contact with the heating chamber must be protected against overheating. Fire protection and static considerations must be taken into account. From a static point of view, the admissible temperatures must be lower than specified by fire protection requirements.

Adjacent walls cannot be exposed to temperatures above 85°C (fire protection requirement). The same is valid for built-in furniture. Required insulation measures depend on the type and design of the surface. The load bearing capacity of the mounting surface must be checked; appropriate means for load distribution must be taken if necessary.

Heat insulation

Heat insulation layers (32/44/46/54) must be laid smoothly and overlapping. The surface must be clean and resistant to abrasion. Their planned position must be permanently stable and durable. Insulation layers from abrasive materials must have an appropriate covering (for example, using steel panels). Only approved insulation materials must be used (see “Approved insulation materials”). The insulation thicknesses specified in Technical Data for flammable materials or other materials including flammable components are valid only for components with a heat transfer coefficient (U value) ≥ 0,4W/m²K. For U value < 0,4W/m²K, additional measures for thermal insulation must be taken (see DIN 18896:2013-12).

Protection of building walls

There are two types of building walls: “protected walls” and (other) “adjacent walls”. For protected walls, a thermal insulation layer (32) and a brick lining (33) must be used. The brick lining must reach up to the insulation of ceiling or to the height of external casing, and must extend at least **20 cm (7.87 in)** above the smoke pipe connecting piece (39).

- walls to be protected are walls from flammable materials or containing flammable materials, and all walls with flammable objects behind them (e.g. built-in furniture, wooden panels).

- other walls (35), these are: walls from mineral building materials, such as aerated concrete, bricks, sand-lime bricks, with thickness of more than **10 cm (3.94 in)**. For these walls, the insulation layer (32) is enough; a brick lining (33) is not necessary.

Protection of ceiling above the fireplace

If the stove casing reaches up to the ceiling (43), it must be protected by a sufficient insulation layer (44), if only the ceiling is made from flammable materials or includes supporting elements of the building structure.

Floor protection

Floors without sufficient load distribution must be provided with a reinforced concrete slab (45) of at least 6 cm (2.36 in) thickness. The mounting surface must be protected against excessive temperatures by sufficient insulation layer (46).

Firewood storage

The surface temperature of the walls surrounding a recessed firewood storage must not exceed **85 °C**. This must be ensured by appropriate construction or insulation of walls.

Warm air vents/gratings

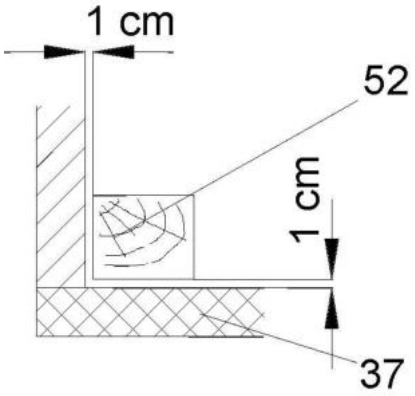
Warm air vents (41) must be situated at least 50 cm (19.69 in) below ceiling level and 30 cm (11.81 in) away from lateral built-in furniture, flammable materials or supporting concrete walls. Air gratings or vents must be located possibly high, to prevent heat accumulation within the external fireplace casing. Air gratings or vents must allow for easy cleaning. The required unobstructed area of air gratings depends on the type of reheating device. The air gratings or air vents must be arranged to avoid clogging up.

Active air cooling

Active air cooling is a permanently open, non-closing shaft, gap or empty space, where part of the heat projected by the fireplace is dissipated by convection to protect the building or flammable components in adjacent walls or mounting surface.

Decorative beam over fireplace door

Decorative beams (52) are allowed with **1 cm** clearance between the beam and the wall of the fireplace casing (37), only outside the heat radiation range. The clearance must not allow for heat accumulation between the beam and the fireplace wall. Decorative beams cannot be parts of the building structure.



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Floor before fireplace door

Floors from flammable materials must be protected by a cover (47) from non-flammable materials or replaced by non-flammable materials with the following dimensions:
- in front of the fireplace = at least **50 cm (19.69 in)**
- on both sides of the fireplace = at least **30 cm (11.81 in)**

above the fireplace door opening

Within heat radiation range of the fireplace

Structures from flammable building materials or including flammable components (48), as well as built-in furniture (49) must be separated from the combustion chamber opening in front, to the sides and above the fireplace by at least **80 cm** air clearance. When the combustion chamber door is designed without a “window with integrated heat protection”, the radiation area is maintained with a minimum distance of 55 cm. If these parts are protected by a heat protecting screen cooled by air on both sides, a distance of 40 cm must be kept.

Outside the heat radiation range

Structures from flammable materials (48) or with flammable components, as well as built-in furniture (49) must have at least **5 cm** air clearance to the outside walls of the fireplace. In this clearance, the room air must be able to circulate without any obstacles. Heat accumulation must be avoided. Structures covering only small areas of the fireplace casing walls, like flooring, adjoining wall coverings and insulation layers on ceiling and building walls, can be led right up to the fireplace casing.

Electric lines

Mounting surface must be free from typical electrical wiring, unless it is protected by special measures against permanent influence of temperatures >30°C (86°F). Special wiring with higher heat resistance is permitted (see TROL).

19 CONNECTIONS AND ASSEMBLY

Heating flue / smoke pipe connecting piece

Heating gas pipe (21) between heating device and downstream heat radiator or storage mass, as well as the smoke pipe connecting piece (39) connected to chimney must be made of heat-resistant steel with CE mark. The connecting pipe must be connected directly to the chimney. When the connecting piece is leading through structures made of flammable materials, like protected walls (34), then the connecting piece must be insulated to specified thickness, and additionally, the surrounding area of about 20 cm around this insulated piece must be protected by mineral, non-flammable building material (40). The connecting piece must be also insulated in the area of active back ventilation with suitable insulation material to at least 3 cm thickness.

In the chimney entrance area it is necessary to provide an opening for measurements and revision.

All smoke pipe connections must be sealed tightly!

Outside air duct / combustion air pipe

If external combustion air supply is necessary, it must be connected directly to the air connecting piece of the heating device, to prevent possible 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 und be accessible for inspection and cleaning. Thermal insulation is necessary from the fire-protection point of view, if air temperatures above 85°C (185°F) 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 structure of these venting lines must prevent fire and smoke from penetrating other fire protection zones (see regional building law).

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

Convection space

The stove/fireplace insert must be surrounded by convection space (31/36). When the room air is streaming through the convection space, the heat being set free during combustion is led away into the room. The convection space must be insulated against all surfaces, which are not parts of heat projecting walls of the fireplace. Insulation thickness: see technical data. The convection space is the distance between the fireplace insert and heat insulation and/or outside walls of the fireplace.

Convection air routing / Heating chamber / Mounting surface

The fireplace, i.e. the heating insert and the additional reheating device (if present) with the heating gas pipe and connecting piece, is enclosed by an external casing or trim, which has to be assembled on site. The external casing consists of walls, bottom plate and top cover, which together form the so called heating chamber. Appropriate external casing materials -> see TROL.

Building surfaces can form parts of the external casing (mounting surfaces = e.g. floor area, ceiling area; adjacent wall = part of building wall which is in direct contact with the fireplace casing).

The heating chamber must be insulated from all mounting surfaces and adjacent walls (inactive casing surfaces). The necessary insulation thickness depends on the material of mounting surface and the mounting conditions (see “Building protection”).

The distances between the stove components and the external casing create a convection space (31/36). Stream of air in this convection space helps to transfer some of the heat which is produced during combustion through the openings in external casing (circulating air/warm air) to the room of installation.

Convection casing

The convection casing (optional accessory) encloses the significant part of the heating insert and helps to transfer the most of hot air which is produced during combustion. Connections on the top of convection casing allow for transfer of this hot air by using dedicated air ducts. The convection casing does not include the hot air share produced by heating gas pipe, reheating systems and smoke pipe connecting piece.

Convection air ducts/shafts

All convection air ducts/shafts must be made of abrasion resistant, dimensionally stable and non-flammable materials; they must be tight and accessible for inspection and cleaning. Ducts and duct sections within the fireplace must be executed according to TROL specifications. Appropriate insulation must be provided where necessary. Construction law requirements regarding fire protection must be observed.

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External casing / Active trim

The external casing (37) of the stove/fireplace insert is used to project heat into the room and must be made of non-flammable A1 class building materials according to DIN EN 13501-1. The casing must be stable for a lifetime of the fireplace. Vertical and inclined surfaces of the stove casing, made of mineral building materials, must not exceed **120°C** (surface temperature). Surfaces of the casing, where objects of any kind may be placed for decoration or where wood is held (wood stack), as well as casing walls made of other materials, cannot exceed **85°C** (surface temperature). Use thermal insulation, if necessary. The casing cannot be affixed at any point to the fireplace itself. Its construction must be self-supporting. Between the stove/fireplace insert and the external casing, as well as between the supporting frame and the casing, an expansion strap and/or sealing tape must be used to compensate the different expansions caused by high temperature.

Convection air supply

Hot air convection system: Fireplace with openings and/or warm air gratings in external casing

- Without convection casing
  Room air (circulating air) enters at the bottom of fireplace into the heating chamber (42), it gets warm and returns to the room as convection air through the openings (41) provided in the upper part of the fireplace external casing. The necessary free cross section of the circulation air opening (42) and supply air opening (41) depends on the type of the additional reheating surface and mode of operation (see “Technical data”). Necessary insulation thickness for adjacent wall -> see Building protection.
- With convection casing
  Room air (circulating air) enters at the bottom of fireplace into the heating chamber (42). The hot air produced inside the convection casing must be returned through dedicated openings. The hot air can be transferred by ducts or shafts, which are connected at the convection casing outlets.
  The remaining heat produced by reheating systems, heating gas pipe, and smoke pipe connecting piece must be returned to the room through the openings (41) in the upper part of the external casing. The necessary free cross section of the circulation air opening (42) and warm air opening (41) depends on the type of the additional reheating surface and mode of operation (see “Technical data”). With convection casing, the adjacent wall insulation can be different than specified (see Assembly Instructions for convection casing).
- Fireplace without openings and/or warm air gratings in external casing (hypocaust principle)
  Convection air is circulating inside a closed fireplace casing. Heat is projected through “active” walls of the fireplace. Thermal load is higher as when heat is returned into the room through warm air openings. This higher load must be taken into account by using appropriate additional thermal insulation (see “Technical data” or e.g. active air cooling). The dimensions and design of active trim must be adapted to the heating power of the heating device.

20 APPROVED INSULATION MATERIALS

Thermal insulation materials used must fulfil the following requirements according to AGI-Q 132 standard:

Material:	Group 12, 13	Rock wool or slag wool
Delivered as:	Group 06, 07, 08	slabs, stitched mats or shells
Thermal conductivity:	Group 01 - 21	
Upper temperature limit:	Group 70 - 76	equivalent to 700 °C - 760 °C
Nominal density kg/m³:	Group 08 - 18	equivalent to 80 kg/m³ - 180 kg/m³

Thermal insulation materials used must be at least equivalent to class A1 building materials according to DIN 4102, Part 1. The temperature limit for use must exceed 700°C and the density must be greater than 80 kg/m³ for these materials. The insulation material rating (heat index) must be known. In addition, insulation materials inside convection space must be abrasion-resistant and covered with non-reflecting material. Instead of brick lining and insulation materials according to AGI-Q 132, any other insulation materials approved for the given purpose by DIBt (Deutsches Institut für Bautechnik) might be used. For necessary insulation thicknesses please refer to the manufacturer's specifications.

Insulation material rating for mineral wool according to AGI Worksheet Q 132:

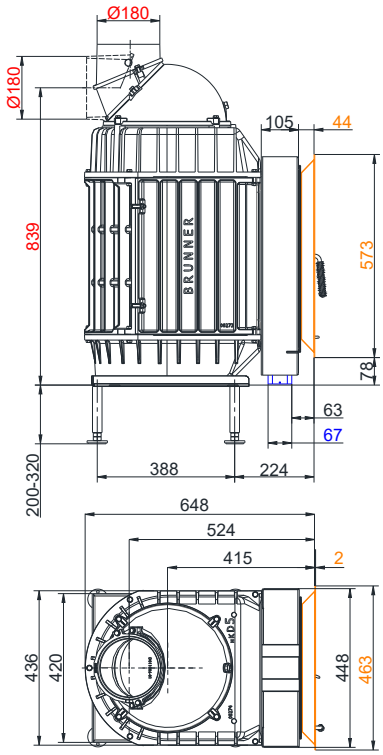
Insulation materials		**Delivered as**		**Thermal conductivity**		**Upper temperature limit**		**Nominal density**	
Gr.	Type	Gr.	Form	Gr.	Delivered as	Gr.	°C	Gr.	kg/m³
11	Glass wool	04	Felts	01	Mats, stitched, Limit 1	10	100	02	20
12	Rock wool	05	Lamella mats		Mats, stitched, Limit 2	12	120	03	30
13	Slag wool		Mats, stitched	02	Shells, Limit 1	14	140	04	40
		06	Slabs		Shells, Limit 2	16	160	05	50
			Shells	10	Slabs, Limit 1	.	.	06	60
		07	Segments	11	Slabs, Limit 2	.	.	.	.
		08	Braids	20	*)	72	720	.	.
		09	Panels	21		74	740	18	180
		10		99		76	760	99	**)
		11							

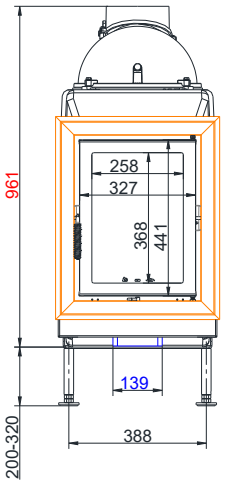
*) 99 is valid only for delivery forms in column 2, which have no declared limits.

**) 99 is valid only for shells.

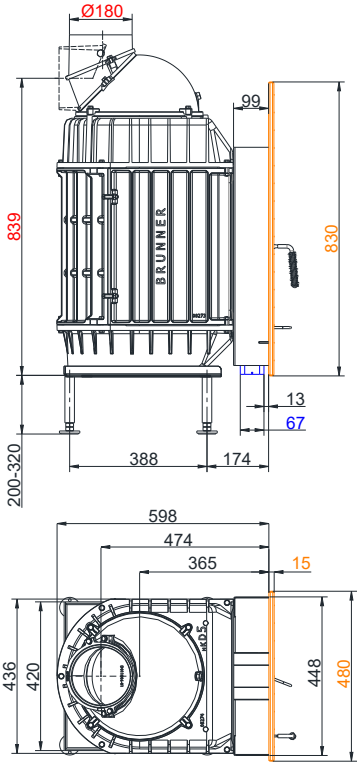
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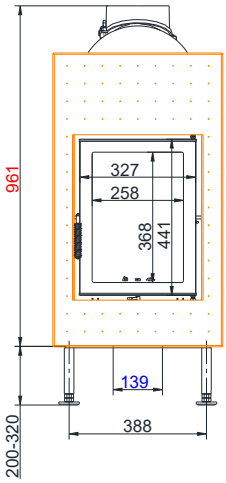
Dimension sheets - HKD 5.1





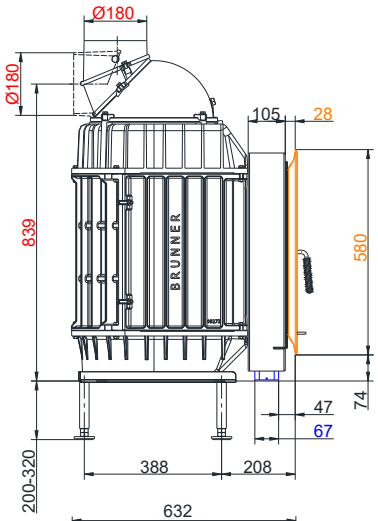
… with steel door frame

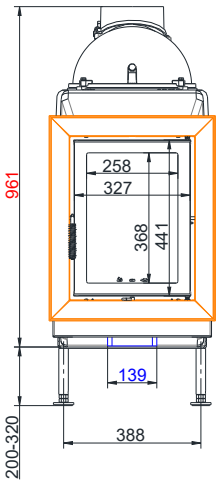


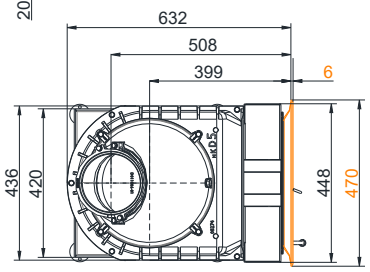


… with steel front plate

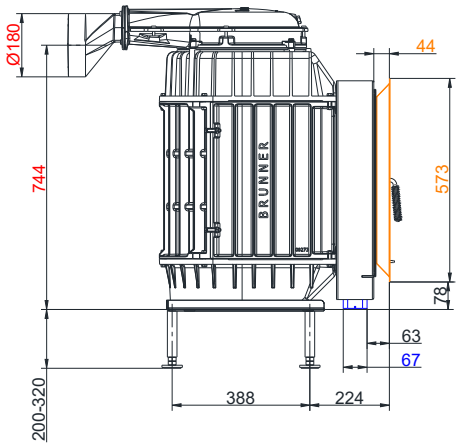
Dimension sheets - HKD 5.1

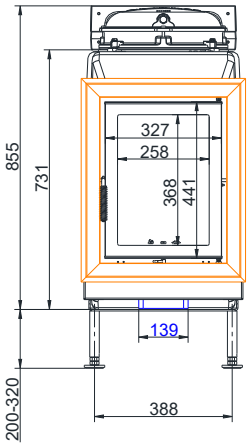


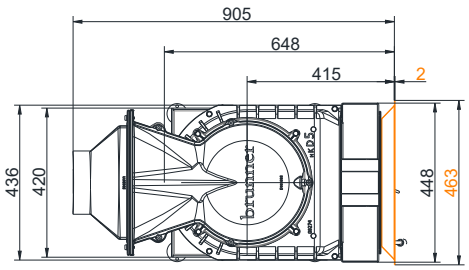




… with cast iron frame

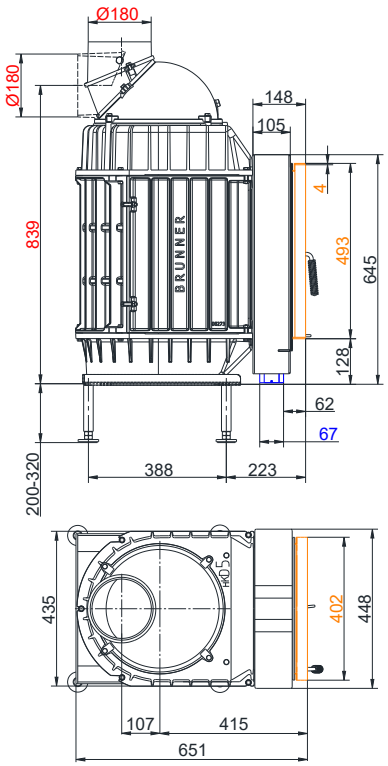


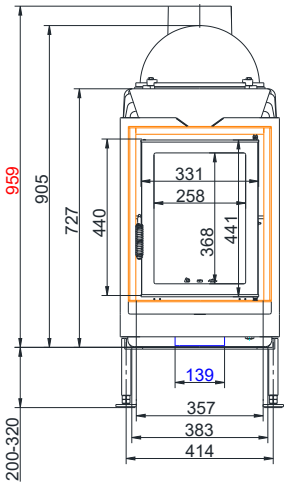




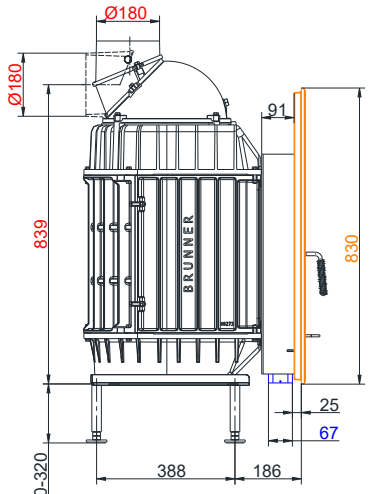
… with steel door frame

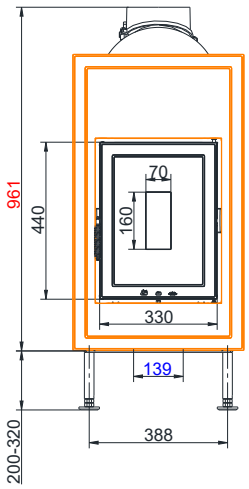
Dimension sheets - HKD 5.1

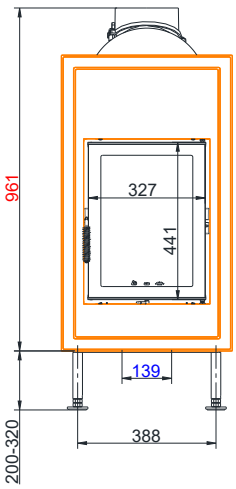




… with mounting frame

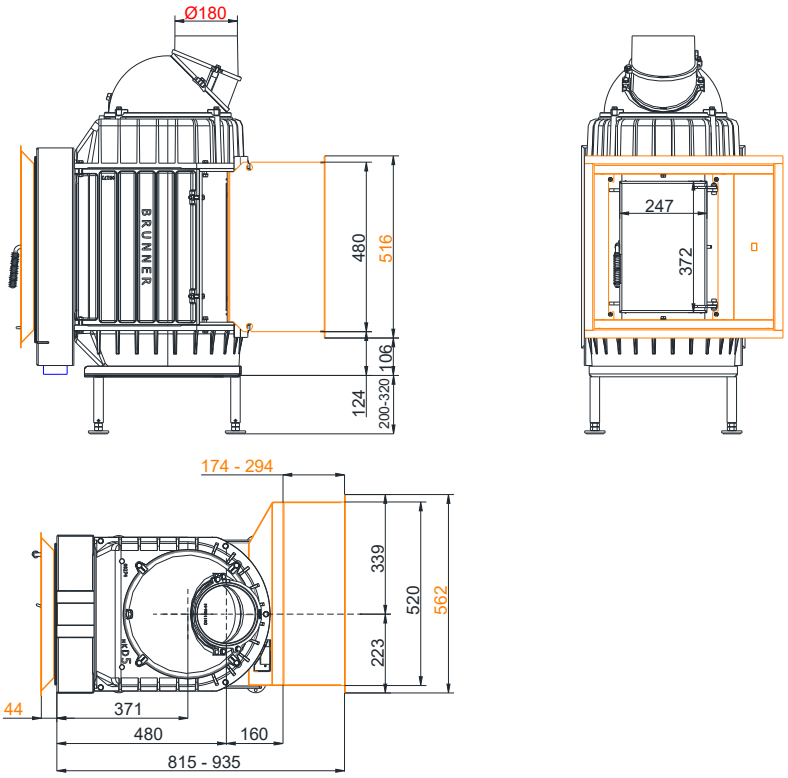




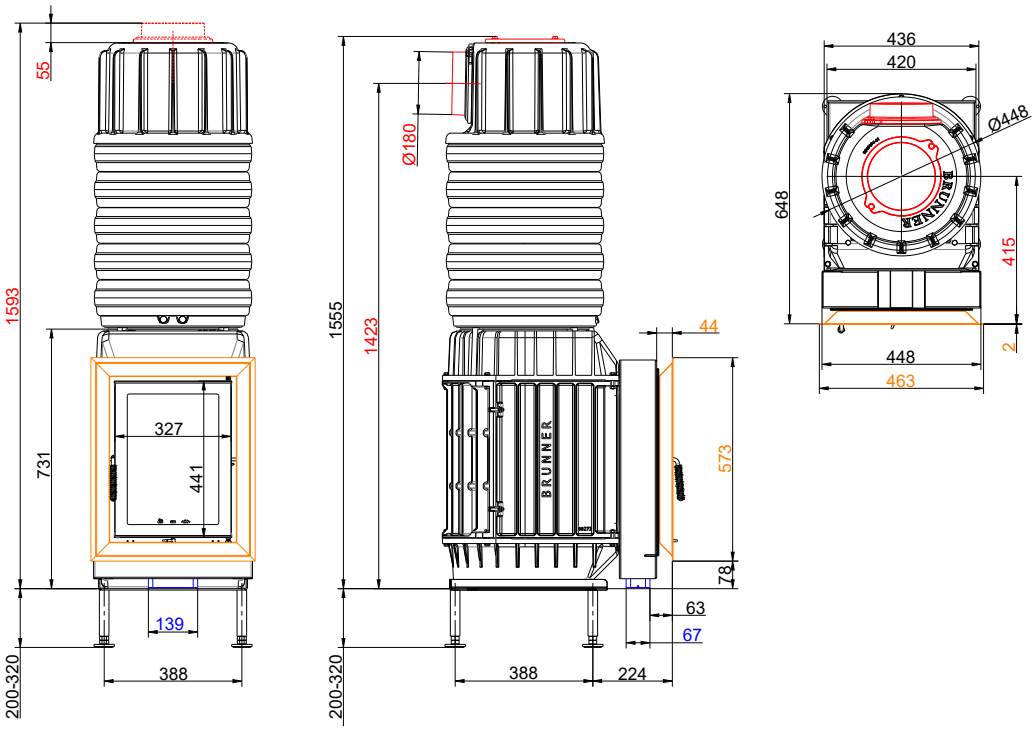


… with cast iron front plate

Dimension sheets - HKD 5.1

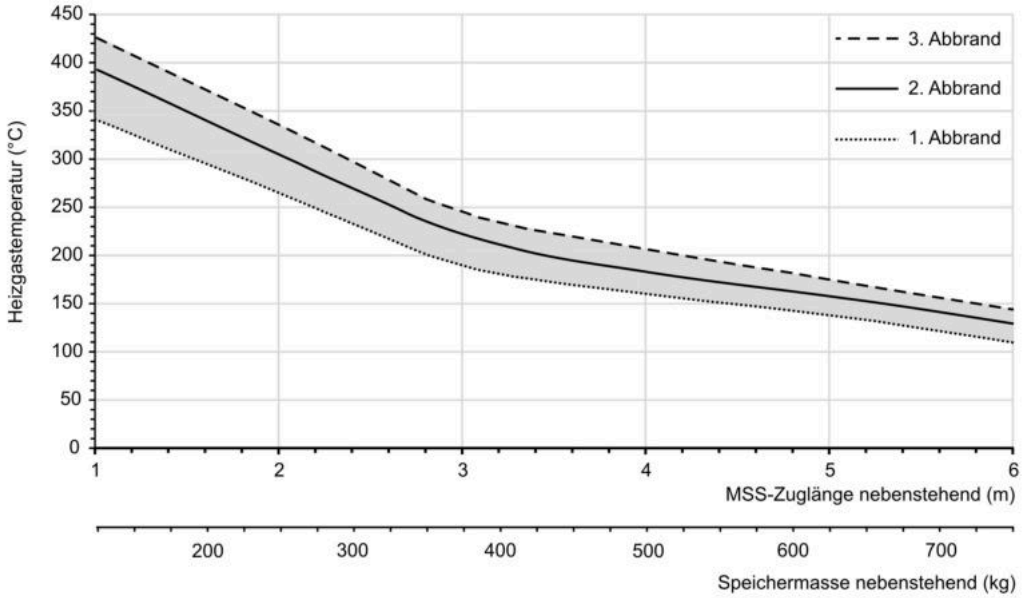


… with additional fire door



… with MAS

Dimension sheets - HKD 5.1



Design characteristics for adjacent storage mass

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

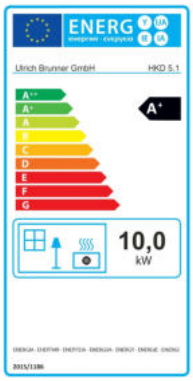
Planning and installation - HKD 5.1

Tested according to		EN 13229 W	EN 13229 WA
Values measured at		Rated power [1]	Storage operation [2]
Suitable for all construction types according to rules		OK	OK
Data for functional demonstration			
Rated heat power	kW	10	-
Fire wood volume	kg/h	2.7	6
Combustion performance	kW	12	20
Flue gas mass flow	g/s	12	17
Outlet temperature (before reheating surface)	°C	470	580
Flue gas temperature after:			
1 x adjoining cast iron radiator (GNF 8/10)	°C	160	220
5 x accumulation rings incl. MAS casted cover [3]	°C	210	-
4,5 m ceramic accumulator [4]	°C	-	180
3,1 m accumulation stones (MSS) [4]	°C	-	215
Necessary supply pressure	Pa	13	15
Combustion air consumption	m³/h	35	50
Combustion air connection Ø	mm	125	125
Heating gas temperature (before the hood/dome variant)			
insert flue outlet nozzle	°C	470	580
Heat distribution			
Insert / reheating surface	%	45 / 45	45 / 45
Glass pane (single / double)	%	- / 10	- / 10
Cross-section of gratings [5]			
exhaust warm air	cm²	600 / 250 / 550	600 / 250 / 550
Recirculation air	cm²	600 / 250 / 550	600 / 250 / 550
Minimal distances of the fireplace			
to cladding, insulation layer	cm	8	8
to mounting floor	cm	15	15
Thermal insulation without / with air gratings [6]			
Mounting wall	cm	18 / 14	18 / 14
Floor	cm	0	0
Ceiling	cm	22 / 17	22 / 17
Isolation around the additional door		6	6
Brick lining for combustible wall	cm	10	10
Weight			
Fireplace / combustion chamber	kg	118 / 80	
Meets requirement/limit values for:			
Germany/ Austria / Switzerland / Norway		1.BImSchV (Stufe 2) / 15a BVG (2015) / LRV / -	

1) Indications to “Rated power” determined with metallic reheating surface
2) Indications to “Storage operation” for the manual execution of the reheating surface (guide values).
3) Damper flap recommended
4) Approximate value. Determination according to design characteristics for adjacent storage mass or proof of function provided by calculation
5) for fireplace inserts / flue gas pipe / metallic reheating surface
6) Values determined with air cross-sections evaluated by testing; stove cladding is heat emitting.

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

Supplier's name or trademark	Ulrich Brunner GmbH
Model identifier:	HKD 5.1
Energy efficiency class:	A+
Direct heat output:	10,0 kW
Indirect heat output:	N.A. kW
Energy efficiency index:	109
Fuel energy efficiency (at nominal heat output):	82,0 %
Fuel energy efficiency (at minimum load):	N.A. %
Special precautions: see supplied product documentation	



Ulrich Brunner GmbH
Zellhuber Ring 17-18
D-84307 Eggenfelden
Tel.: +49 (0) 8721/771-0 / Fax: +49 (0) 8721/771-100
Email: info@brunner.de

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