Installation manual
Wood chip boiler
Eco-HK 130-230

HARGASSNER
HEIZTECHNIK DER ZUKUNFT

Follow and store this manual

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Contents

1 General

This installation manual is part of the operation manual for the system.

D A N G E R

Risk of death, injuries, damage from improper operation

- Observe safety instructions attached to the system and in the manual
- The activities described may only be carried out by trained assembly personnel of Hargassner

D A N G E R

Risk of death, injuries, damage due to incorrect design of the boiler room and fuel storage room

Boiler room

- Design according to local fire protection regulations
- Ensure fire-safe, level and firm floor condition
- Provide air inlet openings according to local regulations
- Ensure weatherproof and frost-proof design
- Observe load-bearing capacity of the foundation (weight of the boiler)

Fuel storage room

- Ensure the room is structurally sound (weight of the quantity of fuel stored)
- Ensure weatherproof and frost-proof design
- Ensure dust-tightness
- Ensure easy access and easy refill of the fuel storage room
- Install safety devices in accordance with local regulations
- Attach safety instructions near the access

2 Transport

2.1 Transport weight

The system is delivered on pallets in individually packaged units.

Designation	Weight	
	Eco-HK 130-170	Eco-HK 200-230
Pallet with boiler depending on version	Approx. 1200 kg	Approx. 1300 kg
Pallet with fuel extraction system	Max. of 300 kg depending on version	

Unloading, inspection and damage report

❒ Unload system
❒ Remove packaging
❒ Dispose of packaging in accordance with the Waste Disposal Act
☞ Recycling materials can be recycled in a separated and cleaned state
❒ Check the system for transport damage
❒ Check that the delivery is complete
⇨ See "Scope of delivery overview" on page 10.
↳ Record any incompleteness of the delivery immediately in writing and send a report to Hargassner Ges mbH
↳ Record any transport damage immediately in writing, take photographs and send a report to Hargassner Ges mbH
☞ If the transport company is at fault, then the complaint must also be noted on the shipping documents

2.2 Place of installation

⇨ See "Designs of the boiler room" on page 23.

Conditions

- Sufficient light
- Ensure fireproof, level and solid floor and ceiling construction
- Free of disturbing electrical installations and pipes

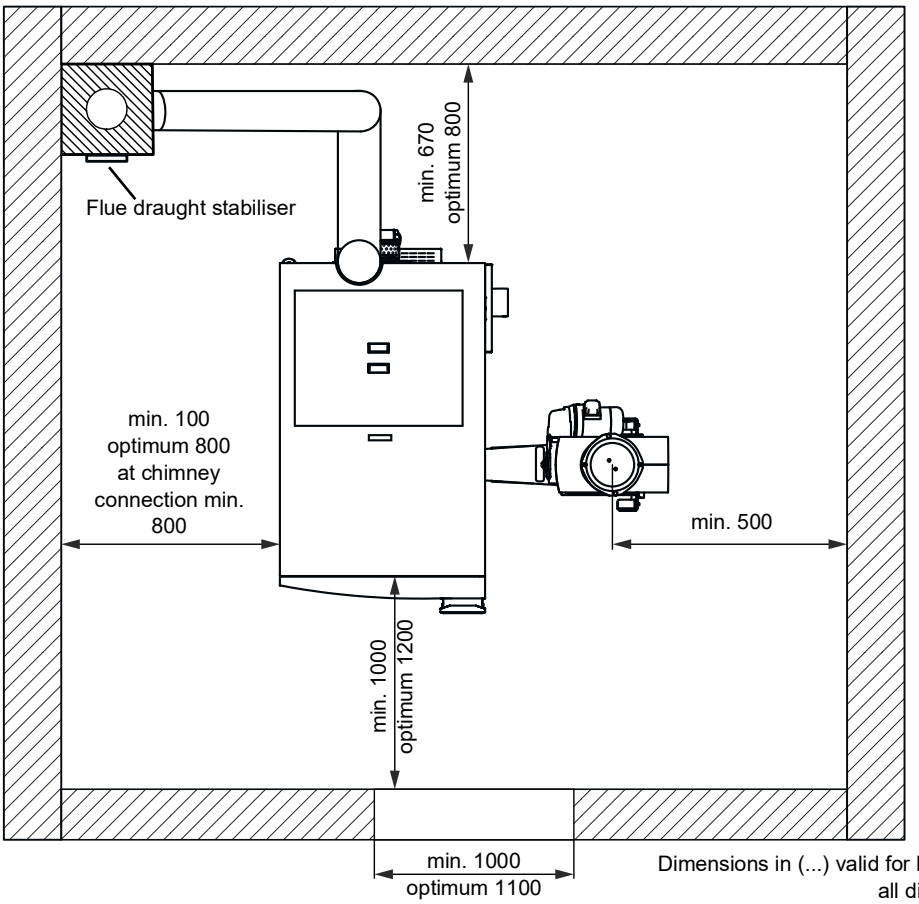
2.3 Space requirements of the system, operating area

- See data sheet or individual customer drawing
- Observe minimum distances and space requirements
- Drawing of the installation dimensions

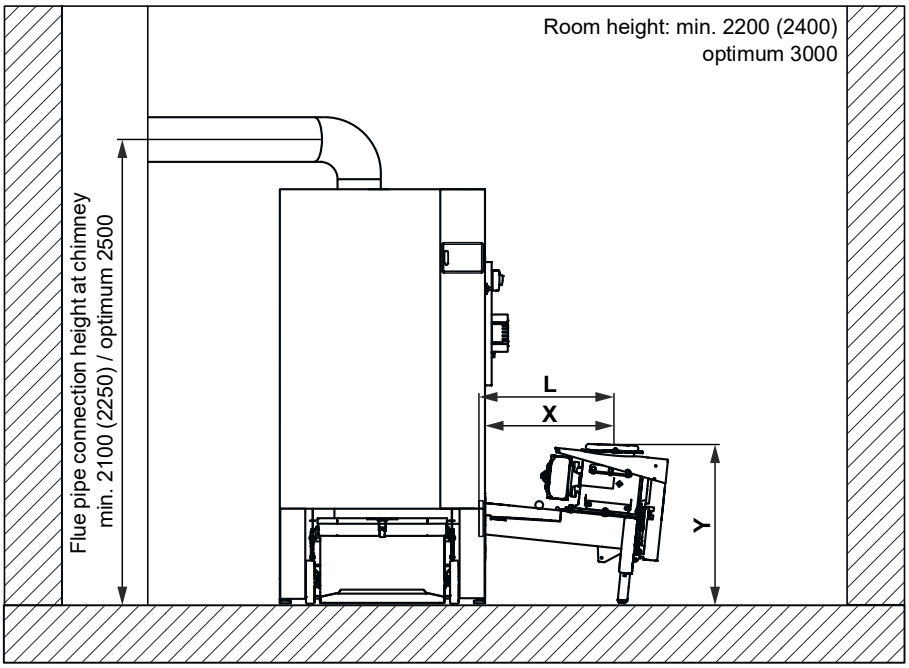
Designation	Eco-HK 130-170	Eco-HK 200-230
Room height	min. 220 cm	min. 240 cm

3 Installation dimensions

3.1 Space requirements



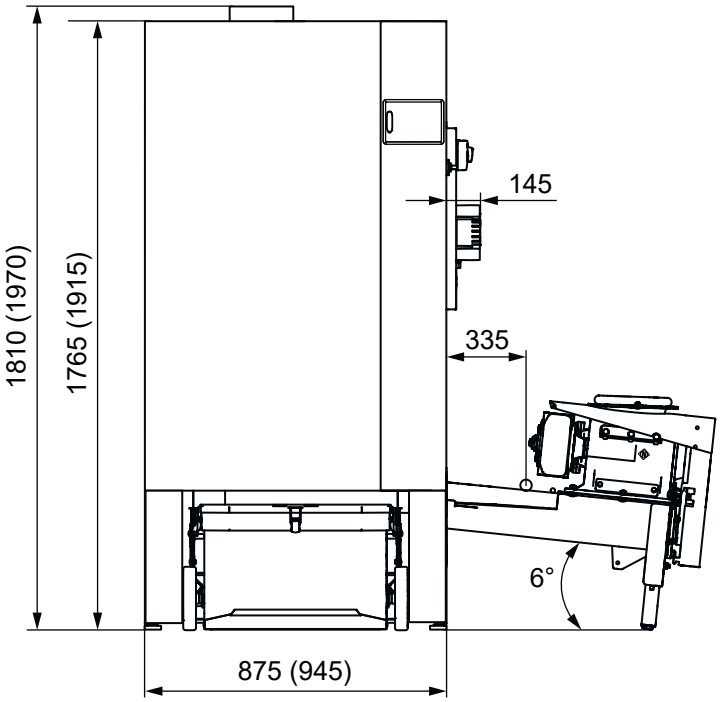
Dimensions in (...) valid for **Eco-HK 200-230**
all dimensions in mm



	Stoker unit length L			
	600 mm	**1000 mm**	**1500 mm**	**2000 mm**
Stoker depth X	585 mm	985 mm	1480 mm	1980 mm
Stoker height Y	730 mm	690 mm	635 mm	585 mm

3.2 Dimensioning

Dimensions in (...) valid for Eco-HK 200-230
all dimensions in mm



Boiler type

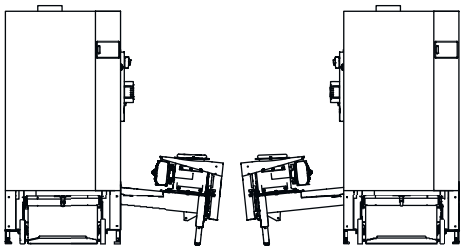
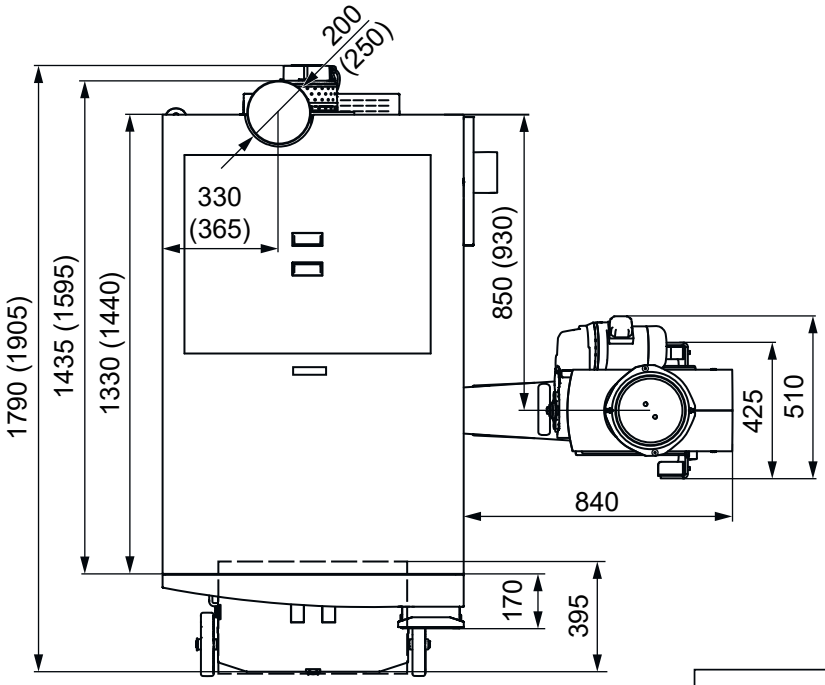
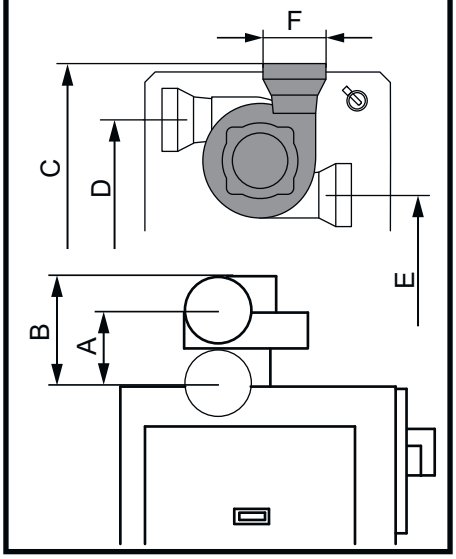


Image of Eco-HK 130-230 with standard stoker unit L = 600 mm



Option: Rotatable exhaust fan



	A	B	C	D	E	F
Eco 130-170	225	325	1790	1535	1360	Ø200
Eco 200-230	300	425	1950	1685	1510	Ø250

Position D is not possible with a left boiler because the flue pipe would cover the flow.

Position E is not possible with a right boiler because the flue pipe would cover the return.

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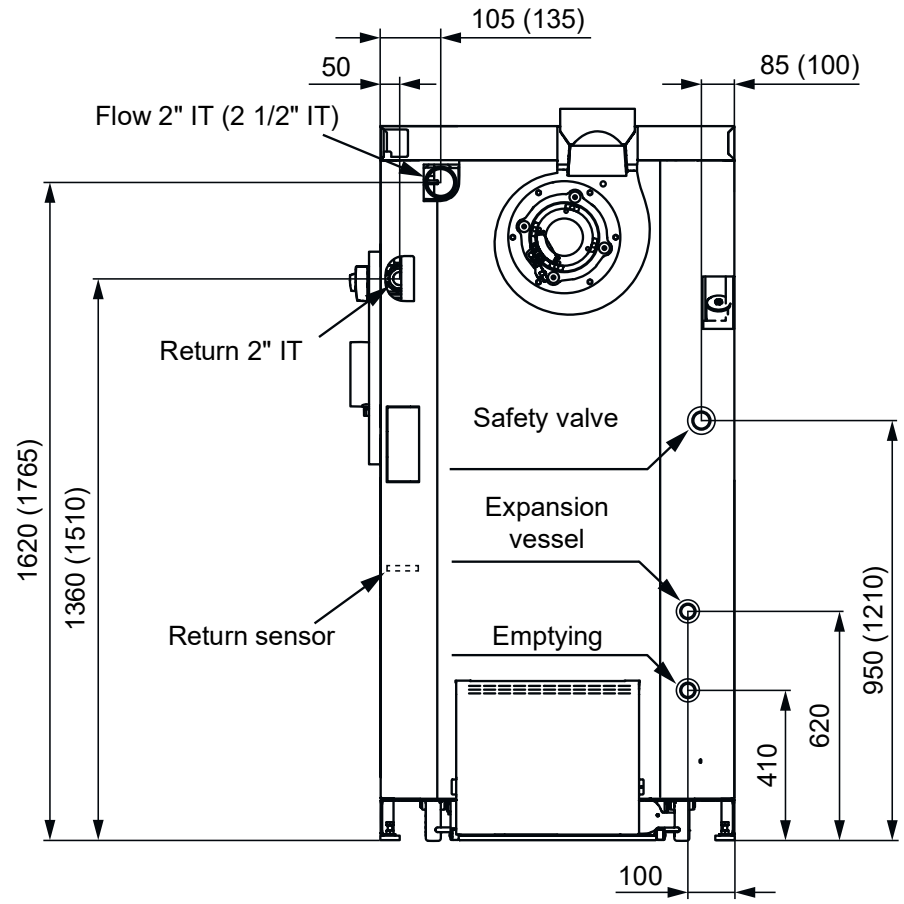
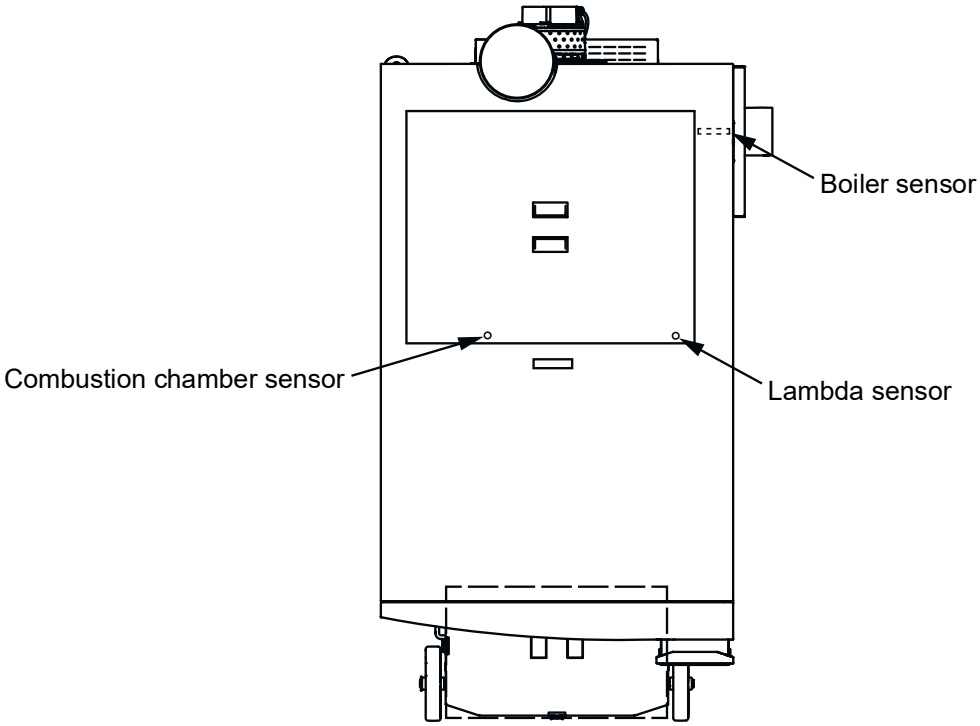
3.3 Connections





3.4 Technical data for Eco-HK 130-170

Designation	Unit	Eco-HK 130	Eco-HK 150	Eco-HK 170
Nominal heat output for wood chips/pellets	kW	39 - 130	44.7 - 149	49 - 166
Fuel heat output for wood chips/pellets	kW	137.3 / 139	157.3 / 158.8	175.7 / 176.2
Boiler class (according to ÖNORM EN 303-5:2012)		5		
Fuel and fuel class (according to EN ISO 17225)		Wood chips (A1-B1)/wood pellets (A1)		
Boiler height	mm	1765		
Boiler width	mm	875		
Boiler depth	mm	1790		
Transport dimensions (HxWxD)	mm	1810 / 875 / 1435		
FL connection height	mm	1620		
RL connection height	mm	1360		
Emptying	inches	3/4 IT		
Flow	inches	2 IT		
Return	inches	2 IT		
Expansion vessel connection	inches	3/4 IT		
Safety valve connection	inches	1 IT		
Permissible operating pressure	bar	3		
max. operating temperature	°C	95		
Water content	litres	253		
Weight	kg	1190		
Req. delivery pressure	Pa	5		
Flue draft max. limit	Pa	10		
Flue pipe diameter FPD	mm	200		
Flue gas temperature	°C	150		
CO_2	%	14		
Flue gas mass flow rate	kg/sec	0.0754	0.0865	0.0965
Water-side resistance dT 10°	mbar	160.0	184.6	209.21
Water-side resistance dT 20°	mbar	42.7	49.0	55.5
Power consumption	W	186	224	266
Electric supply		400V AC, 50 Hz, 13 A		
Noise emissions (normal operation)*	dBA	57		

*Emission of airborne noise from the wood chip boiler in the boiler room; no significance for noise emissions at the chimney outlet or in the surrounding area

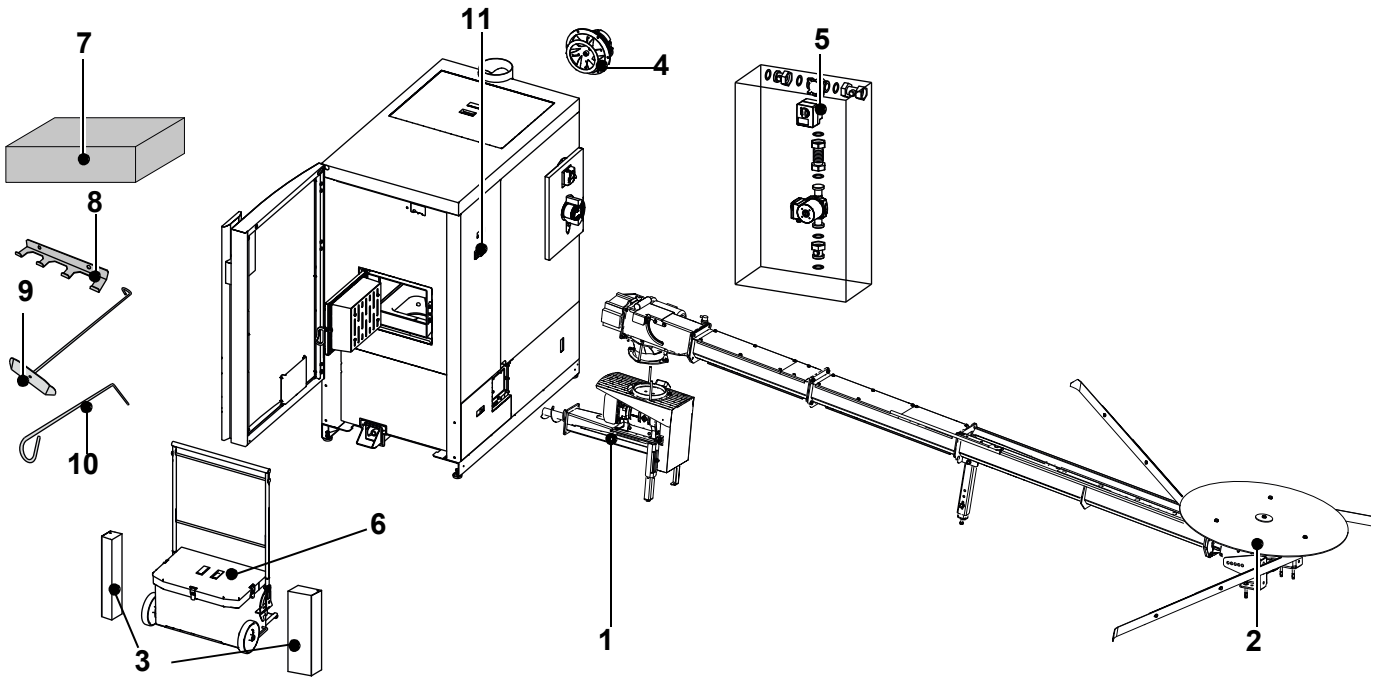
3.5 Technical data for Eco-HK 200-230

Designation	Unit	Eco-HK 200	Eco-HK 220	Eco-HK 230
Nominal heat output for wood chips/pellets	kW	59 - 199	59 - 216	67.8 - 226
Fuel heat output for wood chips/pellets	kW	210.8 / 210.1	229.1 / 228.3	239.9 / 238.9
Boiler class (according to ÖNORM EN 303-5:2012)		5		
Fuel and fuel class (according to EN ISO 17225)		Wood chips (A1-B1)/wood pellets (A1)		
Boiler height	mm	1915		
Boiler width	mm	945		
Boiler depth	mm	1905		
Transport dimensions (HxWxD)	mm	1970 / 945 / 1595		
FL connection height	mm	1765		
RL connection height	mm	1510		
Emptying	inches	3/4 IT		
Flow	inches	2 1/2 IT		
Return	inches	2 IT		
Expansion vessel connection	inches	3/4 IT		
Safety valve connection	inches	1 IT		
Permissible operating pressure	bar	3		
max. operating temperature	°C	95		
Water content	litres	360		
Weight	kg	1320		
Req. delivery pressure	Pa	5		
Flue draft max. limit	Pa	10		
Flue pipe diameter FPD	mm	250		
Flue gas temperature	°C	160		
CO_2	%	14		
Flue gas mass flow rate	kg/sec	0.1158	0.1259	0.1317
Water-side resistance dT 10°	mbar	227	250	263
Water-side resistance dT 20°	mbar	63	69	72
Power consumption	W	324	330	334
Electric supply		400V AC, 50 Hz, 13 A		
Noise emissions (normal operation)*	dBA	56		

*Emission of airborne noise from the wood chip boiler in the boiler room; no significance for noise emissions at the chimney outlet or in the surrounding area

4 Scope of delivery overview

The add-on parts are packaged individually and can be found inside the system or on the pallets.



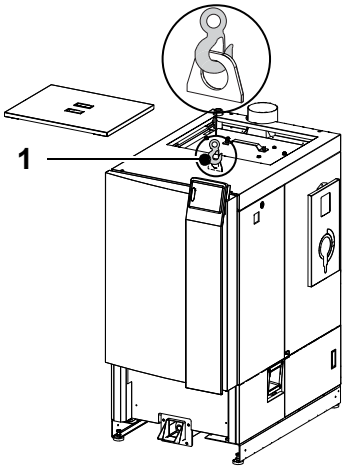
Item	Description	Function
1	Stoker unit	Carries the fuel into the combustion chamber ⇨ See "Installing the stoker unit" on page 15.
2	Fuel extraction system	Carries the fuel from the storage room to the stoker unit
3	Door panel	Lower part of the cover door ⇨ See "Installing the trim panel" on page 14.
4	Exhaust fan motor	Transports the flue gas from the system into the chimney ⇨ See "Installing the exhaust fan motor" on page 14.
5	Back-end protection unit (optional)	Maintains a stable return temperature (packed loose in cardboard) ⇨ See "Back-end protection unit" on page 30.
6	Ash box	For collecting the ash from the combustion process ⇨ See "Ash box" on page 17.
7	Sensor package	Flow sensor, return sensor, safety temperature breaker (STB), thermostat, flue gas sensor, lambda sensor, etc., according to sensor diagram
8	Cleaning tool set holder	Wall holder for the cleaning tool set
9	Ash slider	For cleaning the system
10	Poker	For removing combustion residues in the combustion chamber
11	Main power switch	On/Off switch for providing electrical power to the system ⇨ See "Installing the main power switch" on page 34.

5 Unloading the system

D A N G E R

Risk of death, injuries, damage due to falling or toppling loads

- The system may only be set up by trained staff
- Only use tested lifting gear that has a sufficient load-bearing capacity and is in perfect condition
- Do not exceed the maximum permissible load (load-bearing capacity) of the forklift or lift truck (note the type plate)
- Never hang the system or system parts on bearing bolts, spindles, shaft ends or moving parts
- Make sure that nobody stands under suspended loads
- At first, only lift the system minimally from the ground
  - ☞ Check that the load attaching points are chosen correctly and are secure
  - ☞ The load may only be transported over longer distances once it has been picked up correctly
- Pay attention to the centre of gravity
  - ☞ The load pick-up point is not above the centre of gravity
  - ☞ Secure against tipping
- When lifting the system during transport with a forklift/lift truck, only lift it far enough off the ground for it to be transported safely
- Set up the system on a horizontal, even surface



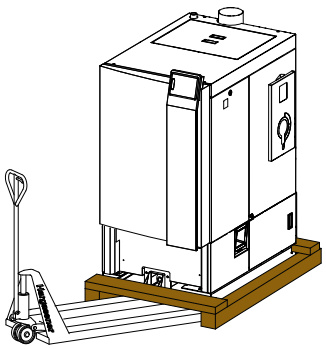
❒ Remove the cover lid from the system

❒ Hook the lifting gear (hook) into the transport lug **(1)**

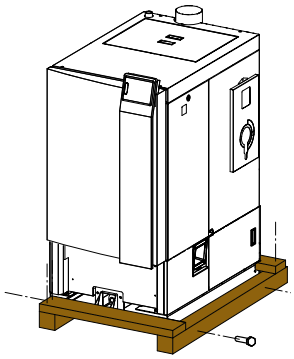
- ☞ Be aware of the risk of tipping during lifting
- ☞ The load pick-up point is not above the centre of gravity

6 Setup

	N O T E
	For safe transport during installation, do not remove the transport timbers from the system.



❒ Transport the system using a lift truck or forklift



❒ Position the system in the place provided for this purpose

❒ Remove the transport timbers from the system

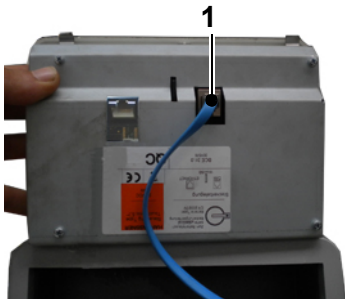
	N O T E
	Tight space conditions when positioning the boiler (e.g.: narrow doors, stairwell) ❒ Remove the cover door

6.1 Removing the cover door

6.1.1 Remove the control unit (BCE)

❒ Slide the control unit upwards until it disengages from the bottom of the cover

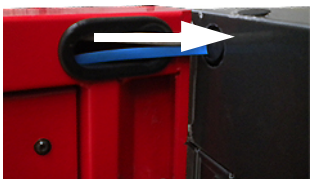
❒ Tip the control unit out and pull it downwards out of the cover



❒ Disconnect the BUS connection **(1)** from the back of the control unit

❒ Pull the blue ribbon cable out of the cover door

❒ Put the control unit safely aside



6.1.2 Detaching the cover door

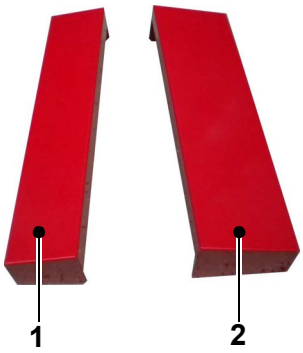
❒ Pull the bottom hinge pin first and then the top hinge pin **(2)** up and out of the hinge

☞ Secure the door against tipping

❒ Remove the cover door and put it safely aside

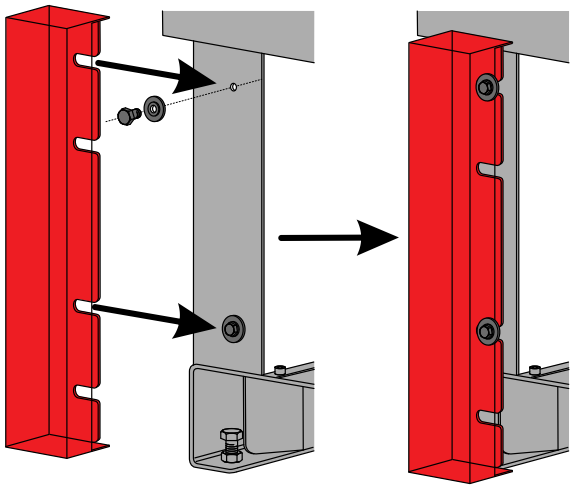
❒ After having positioned the system, install the cover door in reverse order
- ❒ Hang up the door
- ❒ Pull in the BUS cable
- ❒ Install the control unit

7 Installing the trim panel



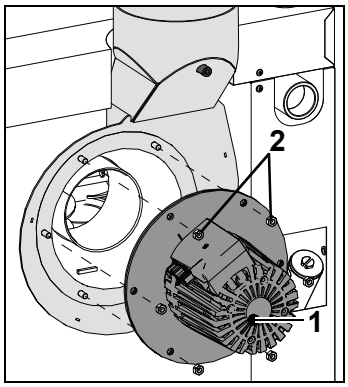
Door trim panels for 60-litre ash box

❒ Position the trim panels **(1** and **2)** flush with the cover door
- Left system: Narrow trim panel **(1)** on left, wide trim panel **(2)** on right
- Right system: Wide trim panel **(2)** on left, narrow trim panel **(1)** on right



❒ Put the trim panels on from the side
❒ Use M6x16 screws and plastic washers to fix them in place

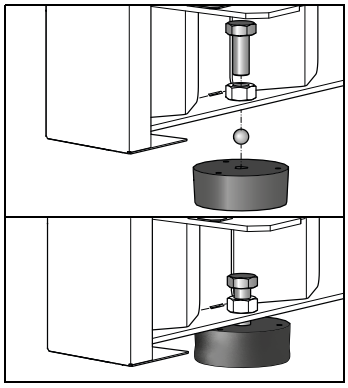
8 Installing the exhaust fan motor



❒ Secure the exhaust fan motor **(1)** to the exhaust fan housing
❒ Secure the motor with M8 copper nuts **(2)**

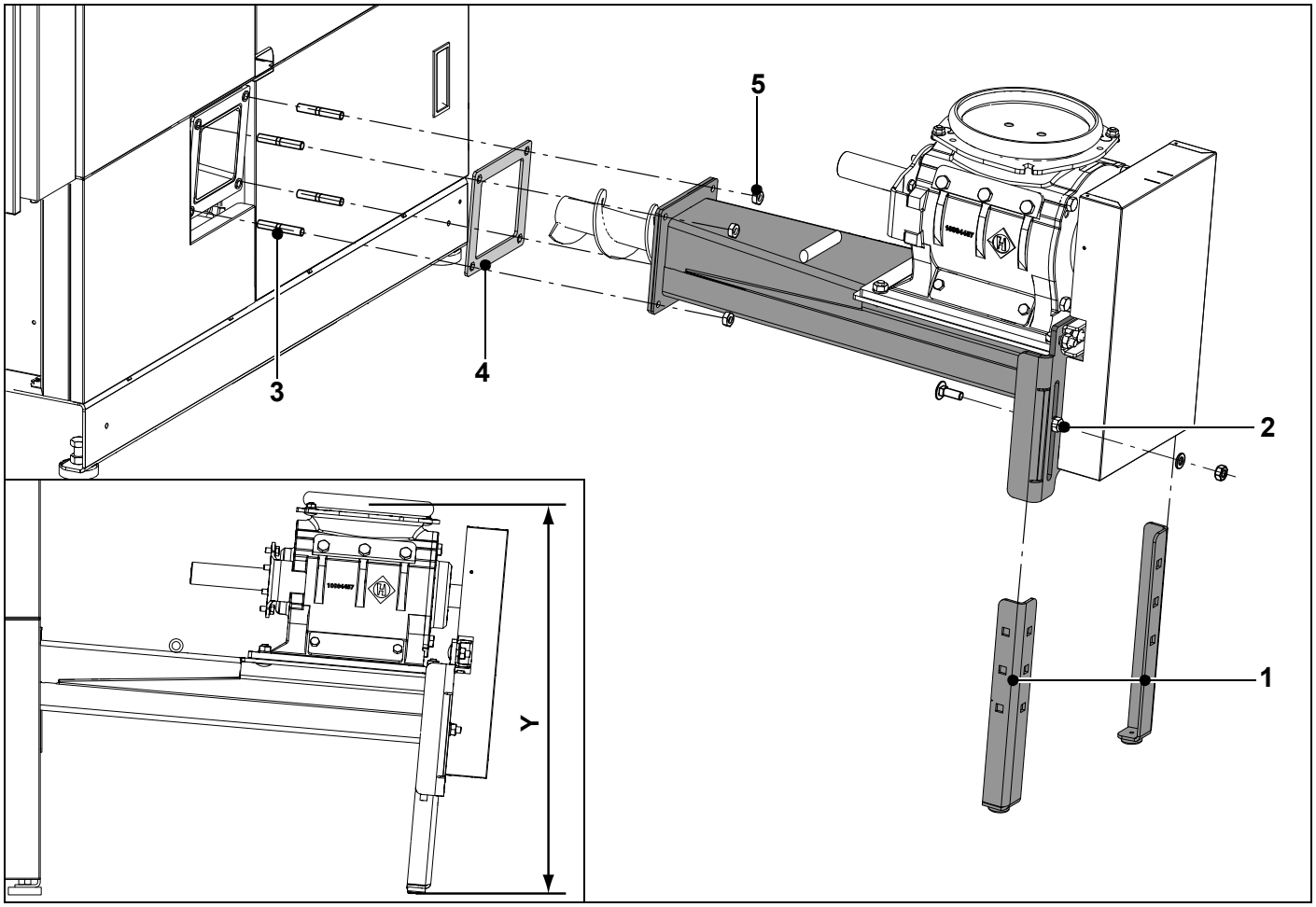
☞ Do not damage the seals on the motor and housing

9 Fitting the levelling feet



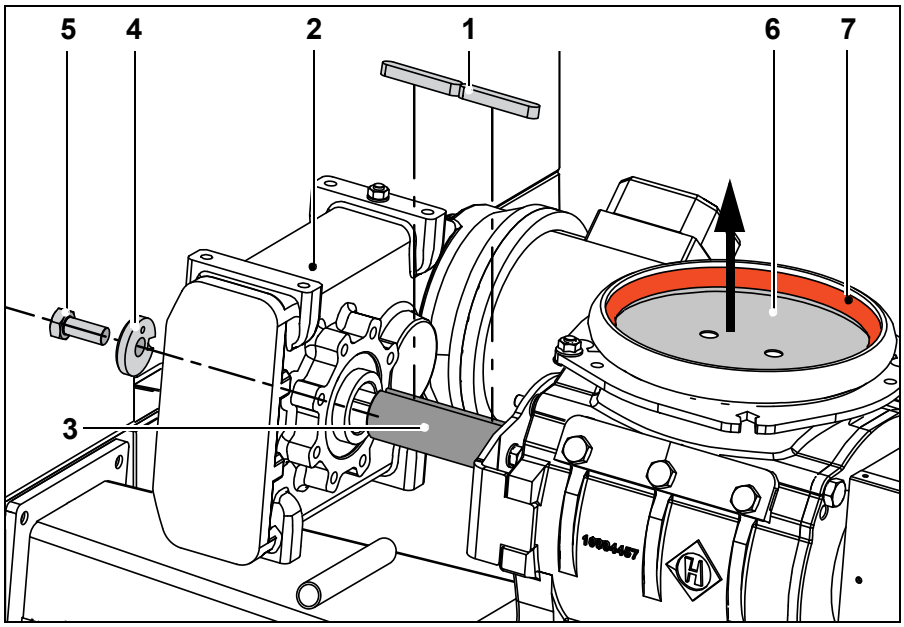
Once the system is in its final position, it needs to be levelled using the levelling feet.
❒ Screw the M12x40 screws from the top into the boiler body
❒ Push the levelling feet onto their respective screws from below
☞ There must be a ball bearing inside each levelling foot
❒ Lower the system
❒ Align the system horizontally using the screws
☞ The levelling feet may bulge due to the weight put on them

10 Installing the stoker unit

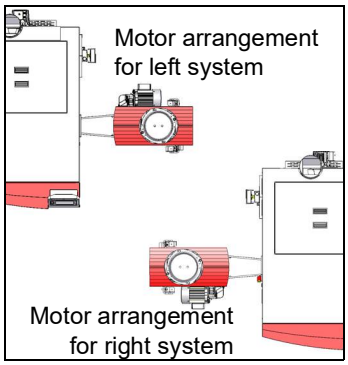


- ❒ Push in the two levelling feet **(1)** and fix them using a M10x30 mushroom head bolt and M10 collar nut **(2)**
- ☞ Set the height to **Y** depending on the length of the stoker unit (according to the customer plan/installation dimensions)
- ❒ Screw the **short** thread sides (thread length of 10 mm) of eight M10x30 stud screws (total length of 37 mm) **(3)** into the boiler flange
- ❒ Insert the seal **(4)**
- ❒ Secure the stoker unit to the boiler flange using M10 nuts **(5)**

10.1 Installing the gear motor of the stoker unit

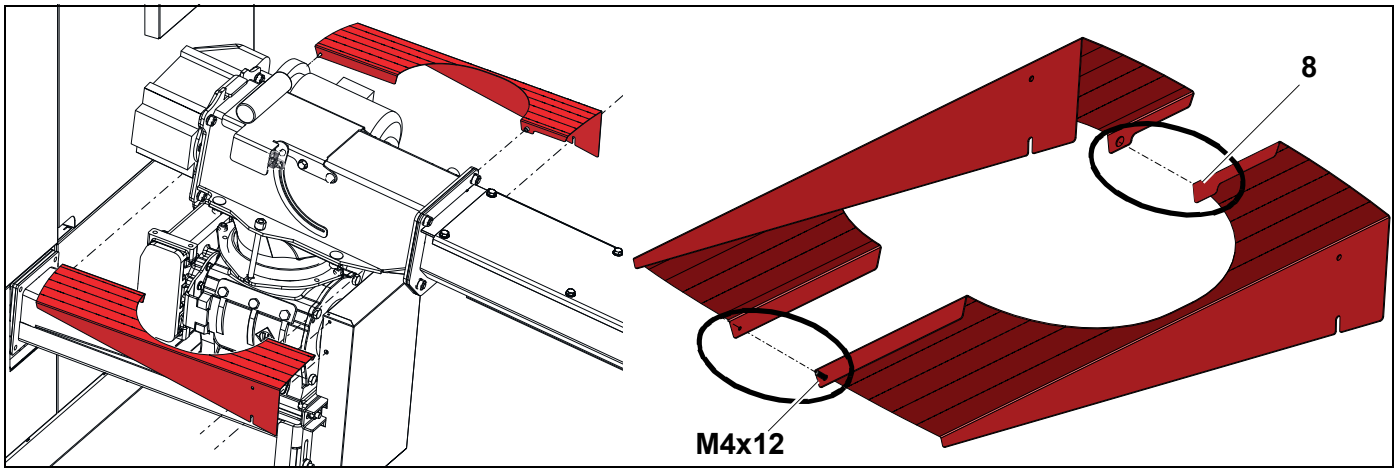


Power
0.45 kW



- ❒ Place two 10x8x60 feather keys **(1)** on the rotor shaft **(3)** of the rotary valve
- ❒ Insert the gear motor **(2)** onto the rotor shaft
- ☞ Do not mount the motor onto the wrong side of the rotary valve
- ❒ Fix the gear motor onto the shaft using a large washer **(4)** and an M12x30 hexagon screw **(5)**
- ❒ Remove the ring seal **(7)** from the ball socket
- ❒ Remove the transport protection **(6)** from the rotary valve
- ❒ Reinsert the ring seal again

10.2 Fitting the rotary valve cover



- ❒ Loosen two fastening screws from the drive's protection plate
- ❒ Position the covers using the guide pin **(8)**
- ❒ Screw the covers using the tapping screw **(M4x12)**
- ❒ Fit the cover to the protection plate using two fastening screws
- ❒ Tighten the two fastening screws on the protection plate again

11 Ash box

11.1 Installing the ash box flange

1. Open the cover door

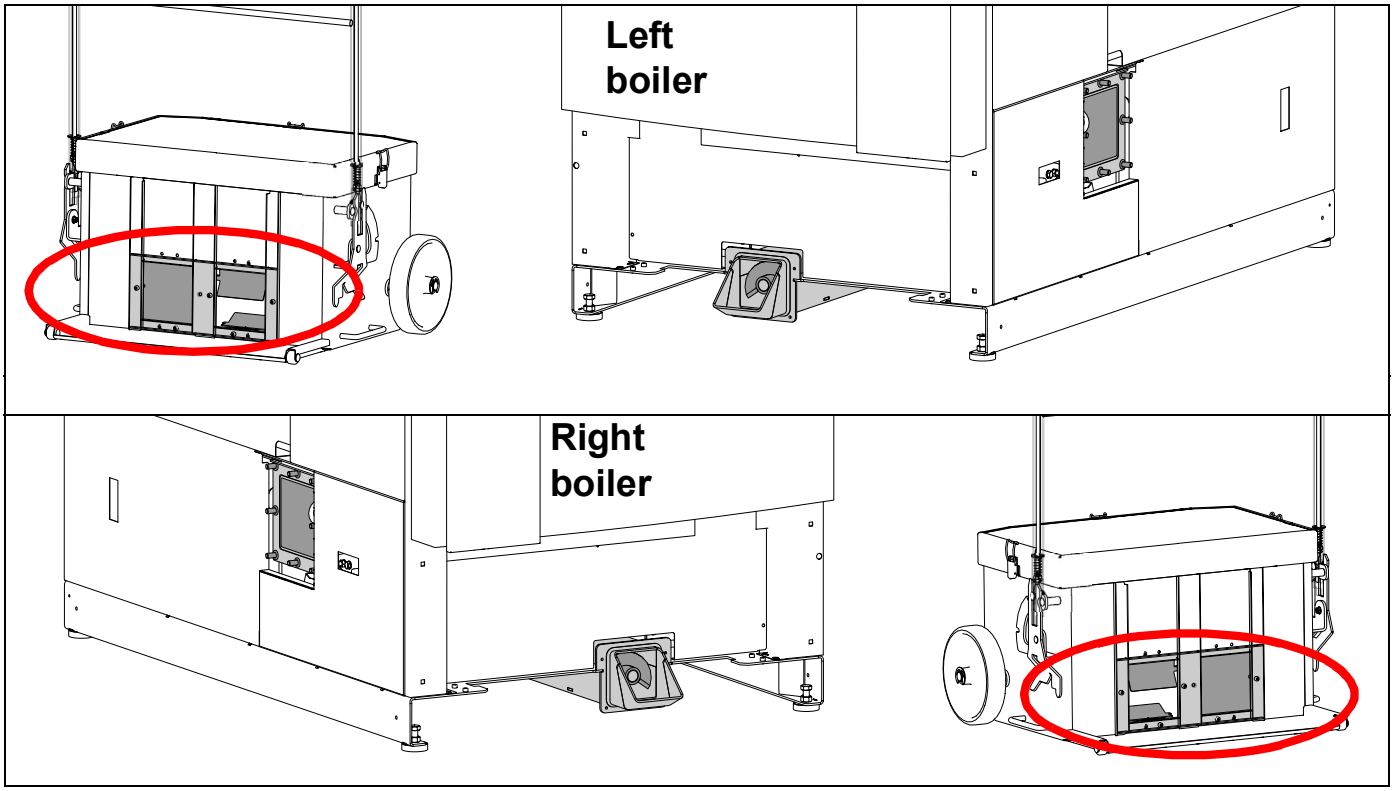
2. Correctly position the flange on the boiler

3. Secure the flange using 4 M6x16 hexagon socket screws (in the Eco-HK screw package)

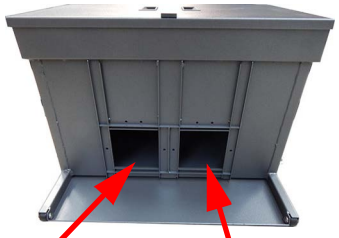
11.2 Installing the ash box (75 litres)

11.2.1 Ash channel cover

The ash box is delivered in the same way for left and right boilers. The ash channel cover must be installed in the correct manner for the specific version (left or right).



Left boiler



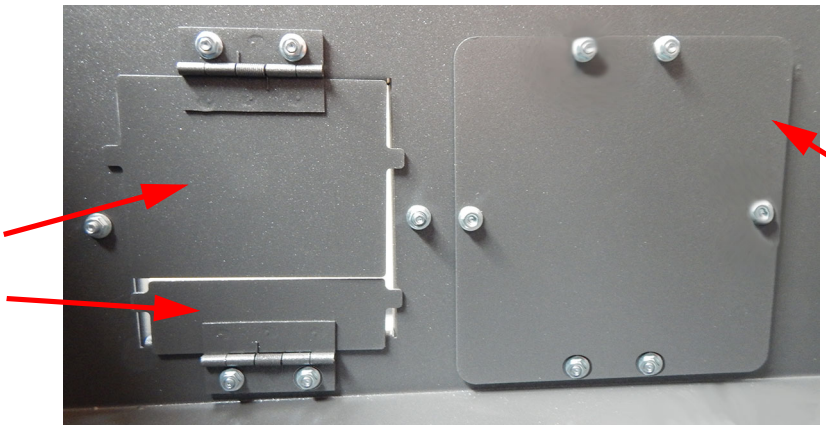
The following installation steps explain how to install the covers for a "left boiler" (installation for a "right boiler" is mirror-inverted).

❒ Each cover (flaps and complete cover) is installed using six M5x10 screws and M5 collar nuts

☞ Screws on the outside, nuts on the inside

☞ **Small** flap at the **bottom**, **large** flap at the **top**

Ash box inside



11.2.2 Transport handle position

❒ In order to change the position of the transport handle, pull the unlocking rod upwards

11.2.3 Adjusting the ash box wheels

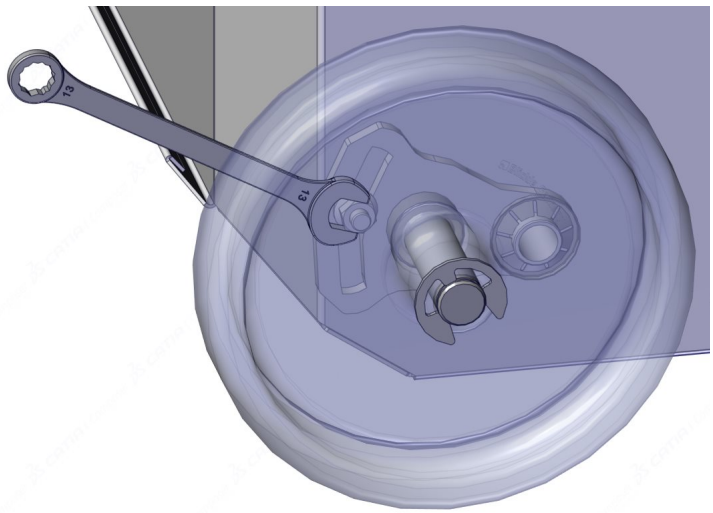
❒ Position the ash box on the boiler and lock in place

☞ Both sides must snap into place

❒ Remove the ash box lid

❒ Align the ash box using a spirit level

❒ Loosen the M8 nut



❒ Press the wheel against the floor and tighten the nut

❒ Repeat this process on the other side

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12 Design of the fuel storage room

D A N G E R

Fire hazard

Igniting the fuel on electrical equipment or open flame

- No motors in the storage room
- No other ignition sources (light) in the storage room
- No electrical equipment (switches) in the storage room
- No welding work in dusty environments

W A R N I N G

Risk of injury from moving parts

Being drawn in by moving augers, squeezing on the spring blades

- Switch off the system using the main power switch on the control unit prior to entering the area
- Avoid accessing the transport auger and other moving parts
- Do not linger in the vicinity of the spring blades
- Keep children and unauthorised individuals away

A T T E N T I O N

Risk of injury from improper storage of fuels

- Take care when storing fuel or combustible materials within the system's installation area
- Keep areas that are necessary for operation, ash removal or maintenance free of fuels

Design your fuel storage room in accordance with local regulations (e.g.: ÖNORM M 7137 or VDI 3464).

- No electrical devices in the storage room; all lines to be installed concealed
- Consider noise protection for wall openings
- Protection against moisture, water and dust
- Ventilation of the storage room according to legal requirements

12.1 Ventilation of the fuel storage room

- Ensure the exchange of air between the storage room and ambient air
- Preferably lead ventilation into the open air
  - ☞ Prevent rainwater entering through ventilation openings
- Design ventilation openings according to local legal requirements
  - ☞ Various cross-sections depending on the size and design of the storage room

N O T E

Fans in the fuel storage room or adjacent rooms must not cause any negative pressure around the boiler room.

12.2 Sticker for the storage room

- ❒ Explain the contents of the sticker to the operator in detail
- ❒ Apply the sticker in the access area to the fuel storage room (storage room door, etc.) so that it is clearly visible and is read again before filling the storage room
- ❒ Apply the sticker to a flat, well-adhering surface

13 Facilities on site

13.1 Country-specific regulations

A T T E N T I O N

Observe country-specific safety regulations

The regulations and safety regulations for operating combustion systems and the storage of fuels vary from country to country

- Check country-specific regulations prior to commissioning the combustion system
  - ☞ Fire protection
  - ☞ Operating combustion systems
  - ☞ Storage of fuels
  - ☞ Designs of the boiler room and fuel storage room
  - ☞ Requirements from chimney sweep

13.2 Qualification of installation staff

W A R N I N G

Risk of death, injuries, damage due to improper installation

- Work on the electrics, hydraulics, components of the flue gas system, structural measures and fire protection must only be carried out by authorised staff
- The boiler operator is obliged to have the flue gas system and fire protection checked by licensed authorised bodies

In addition to the operation manual and the binding accident prevention regulations applicable in the country of use and at the place of use, the recognised technical rules for safe and professional work must also be observed.

13.3 Designs of the boiler room

- Design boiler rooms in accordance with local regulations
- Ensure fireproof, level and solid floor and ceiling construction
- Weatherproof and frost-proof (ambient temperatures of up to +40°C)
- Free of disturbing electrical installations and pipes

☞ A boiler room is required for combustion systems starting from a nominal heating output of 50 kW

13.3.1 Austrian regulations

- Country-specific boiler room regulation
- Ö-Norm M7510 (inspection of heating systems of solid fuels)
- TRVB 118 H (wood chip storage)
- TRVB 124 F (first and extended extinguishing help)
- TRVB 105 H (fireplaces for solid fuels)
- Ö-Norm H5170 (heating systems - requirements for building and safety technology as well as fire and environmental protection)
  - Walls and ceilings REI 90 (F90)
  - Doors $EI_2$30-C (F30)
    - ☞ Width: ≥ 0.8 m; height: ≥ 2 m
  - Protect storage room against water ingress

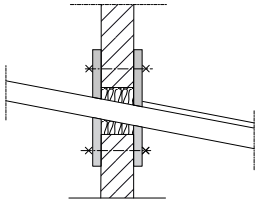
13.3.2 German regulations

- FeuVO (fire regulation of federal states)

13.3.3 Swiss regulations

- VKF (Association of Cantonal Fire Insurances); important points from the VKF **fire protection guidelines** 2017 version
- Doors with EI 30 fire resistance and rooms with EI fire resistance 60
- Walls behind combustion systems must be made of incombustible material and need to be at least 0.12 m thick
- Highly flammable materials such as wood insulation wool, straw, paper or similar materials must not be stored in the boiler room

13.3.4 Fire resistance of the wall breakthrough



Ensure fire resistance of the wall breakthrough EI 90 (F90)

❒ Cover with steel sheets (thickness of at least 1.5 mm)

❒ Cover with fire-resistant plates (thickness of at least 8 mm)

☞ Use at least ten screws for fixing the cover and position them around the circumference

❒ Ensure that there is a gap between the fuel extraction system's trough and the wall

☞ This also prevents sound transmission

❒ Filling: fill with rock wool EI 90 (F90)

13.4 Ventilation of the boiler room

Air supply and exhaust openings must be installed in the boiler room for the combustion process.

	N O T E
☞	**Please refer to the local regulations for the size of the air supply and exhaust openings** Hargassner minimum dimensioning: Provide at least an air supply opening of 5 cm² per kW boiler nominal heating output, but at least a total cross-section of 200 cm². It must be ensured that no impairment is caused by air currents or atmospheric influences. If there are cover grilles or similar installed, the cross-section area must be maintained.

13.5 Reducing noise emissions

The following measures can be taken to reduce noise emissions:

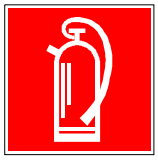
❒ Sound-insulating doors to the boiler room and the fuel storage room

❒ Limit the air supply openings to a minimum

❒ Footfall sound insulation in the floors of the rooms above

❒ Noise insulation on the chimney

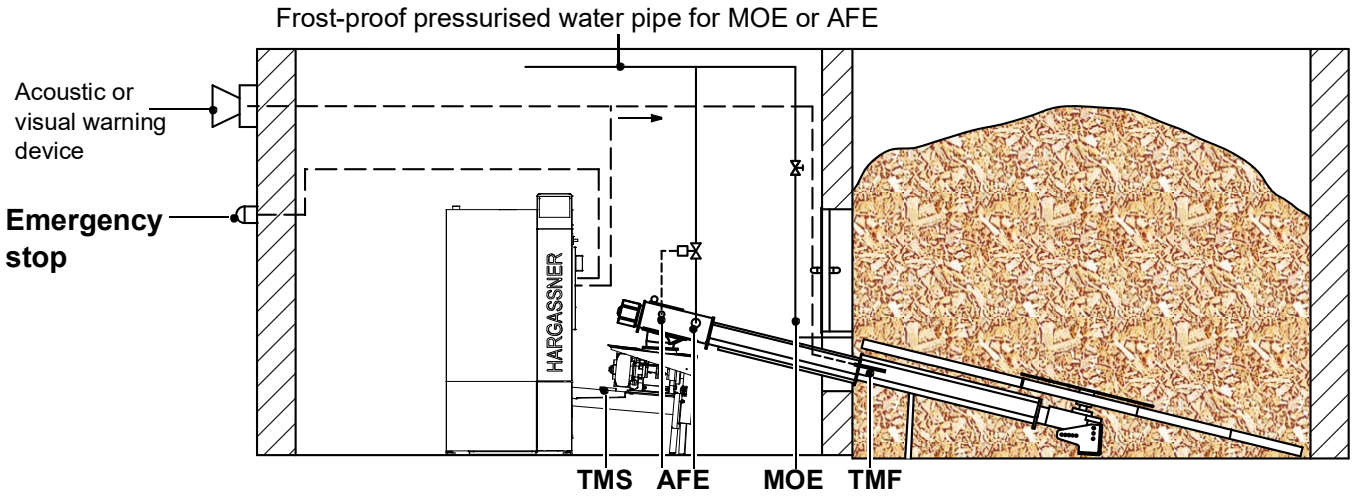
13.6 Fire extinguisher



Install an inspected (every 2 years) fire extinguisher in an easily accessible place outside of the boiler room right next to the boiler room door:

Boiler room size	Amount of extinguishing powder	Certification
< 20 m²	6 kg	EN3
20 - 50 m²	12 kg	EN3

13.7 Safety equipment on site



Designation	Description
Main heating switch (emergency stop)	Main heating switch for switching off the system at all poles Install outside the boiler room and in accordance with national regulations. Only for switching off the heating system in the event of a fire.
TMF	Temperature monitor in the fuel storage room An acoustic or visual warning signal will be emitted if a temperature of 70°C is exceeded in the storage room.
MOE	Manual operated extinguishing device in the fuel storage room. MOE = pressurised water pipe (min. 3/4") with a stop valve in the boiler room. The pipe ends about 15 cm above the open fuel extraction auger
AFE	Automatic fire-extinguishing device Regulation only applicable in Switzerland. At a temperature of 50°C, measured at the fuel extraction system head, the valve of the extinguishing device opens and floods the fuel extraction system.
TMS	Temperature monitor stoker auger TMS = At a temperature of 60°C, measured on top of the stoker auger, an error message appears on the control unit
Fire extinguisher	Install the fire extinguisher in front of the boiler room in an easily accessible place and in accordance with local laws.

N O T E

Installation of MOE and TMF

Install the MOE and TMFR **before filling the storage room**.

- ☞ Ensure accessibility to the storage room
- ☞ To commission the boiler, only fill the storage room to the extent that fuel can be transported in the auger

13.7.1 Austrian regulations

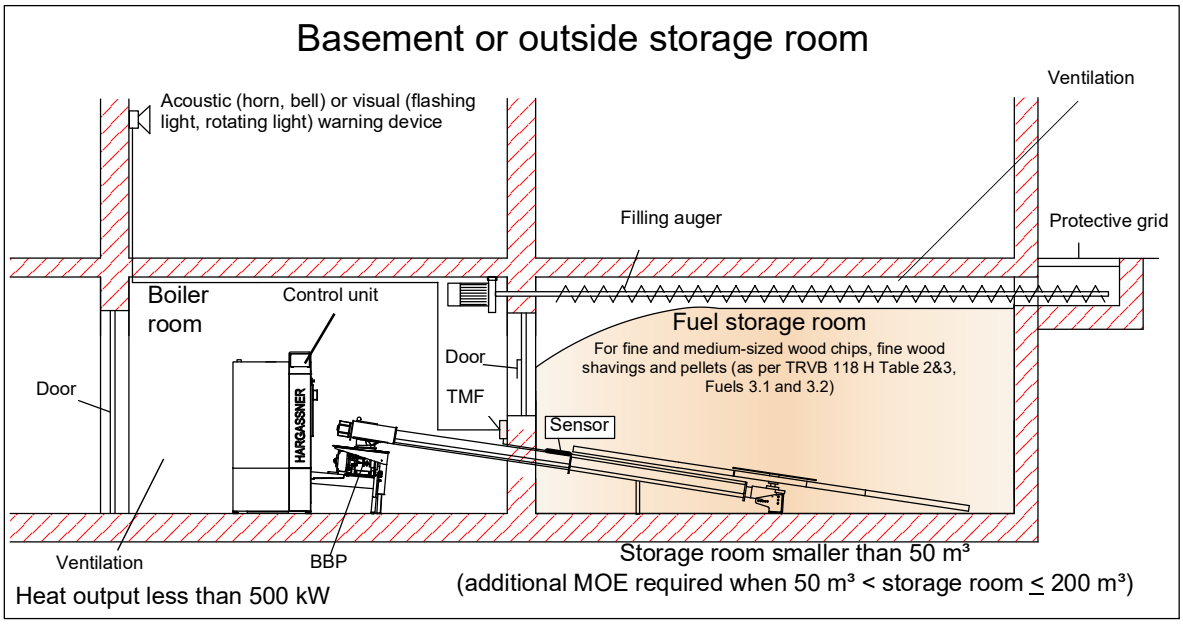
TRVB 118 H

The certified burn-back protection **(BBP)** is integrated in the system by a rotary valve.

The temperature monitoring in the fuel storage room **(TMF)** is mandatory and therefore required in each case.

Depending on the construction of the fuel storage room, several combinations are possible when using the manually operated extinguishing device **(MOE)**.

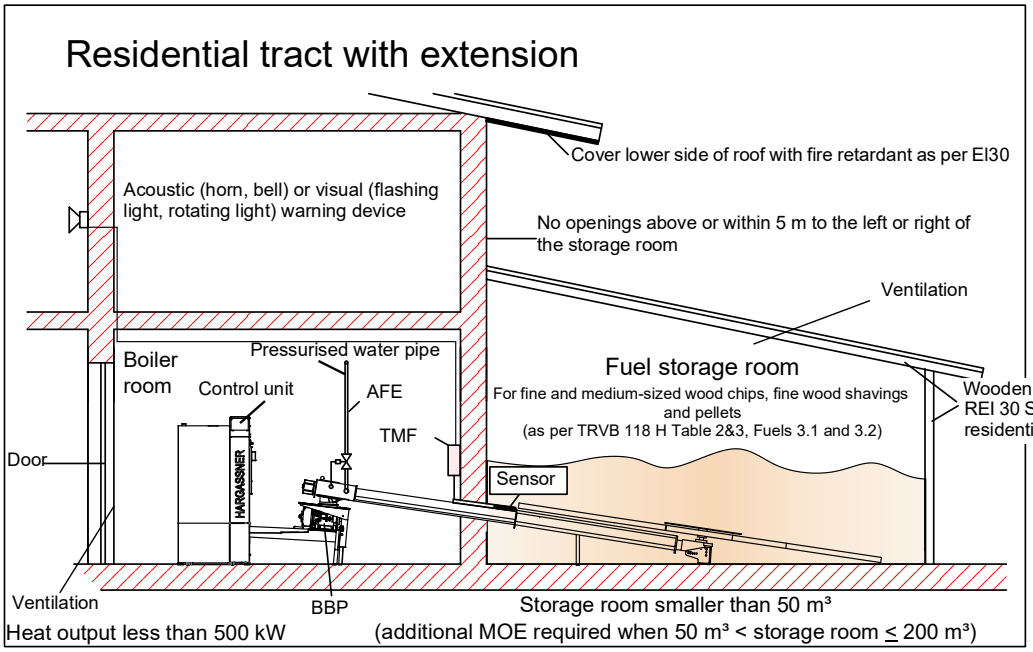
Closed fuel storage room



- ☞ REI 90 (F90) for outside walls, floor and ceiling
- ☞ REI 90 (F90) for intermediate walls between boiler room and fuel storage room
- ☞ EI 30 (T30) for the doors to the boiler room and the door to the fuel storage room
- ☞ When the exhaust air from the boiler room is routed outside, a fire damper with EI 30-S must be installed. It must close automatically in the event of a fire and when the fan is switched off.
- ☞ The storage room must be integrated if the building is equipped with a fire alarm system

Size of the closed storage room	Additionally required safety device
≤ 50 m³	**No additional measures**
> 50 m³	**MOE**
> 200 m³	**MOE (+ AFE for Switzerland)**

Extension of the fuel storage room to a residential building

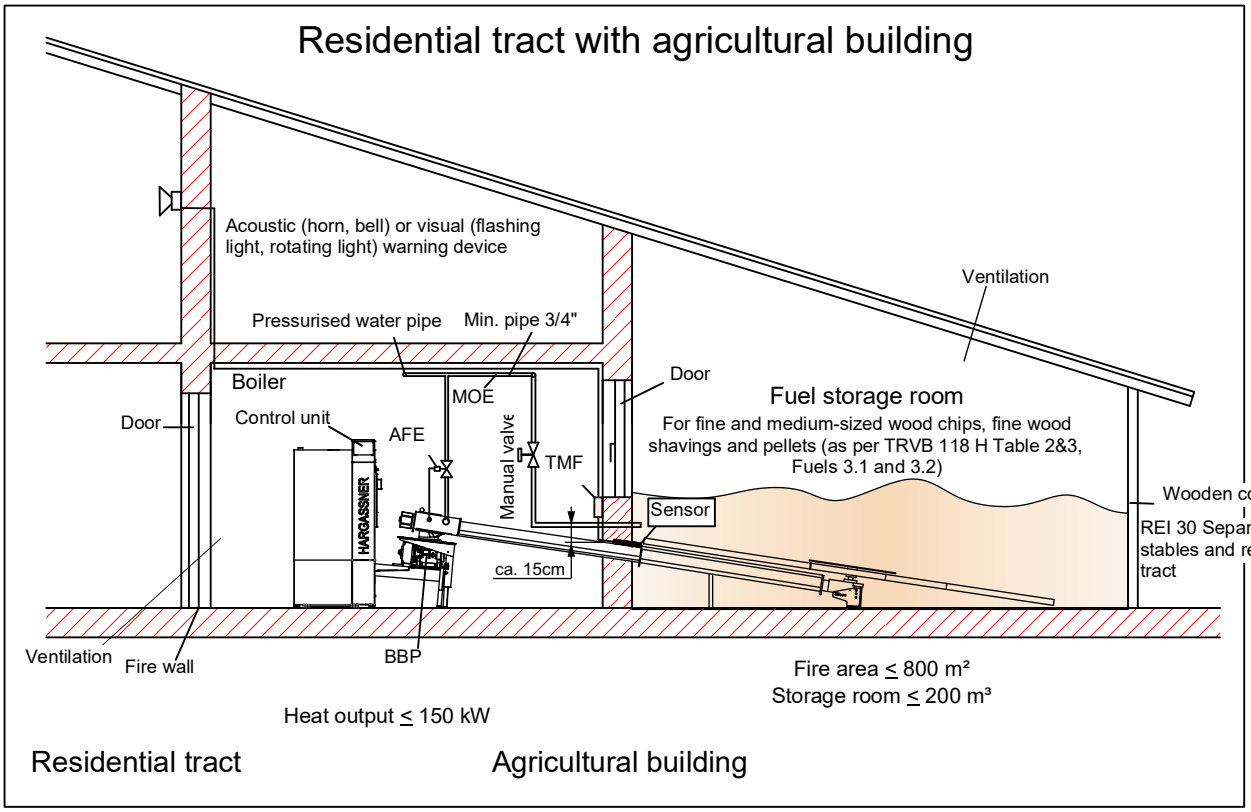


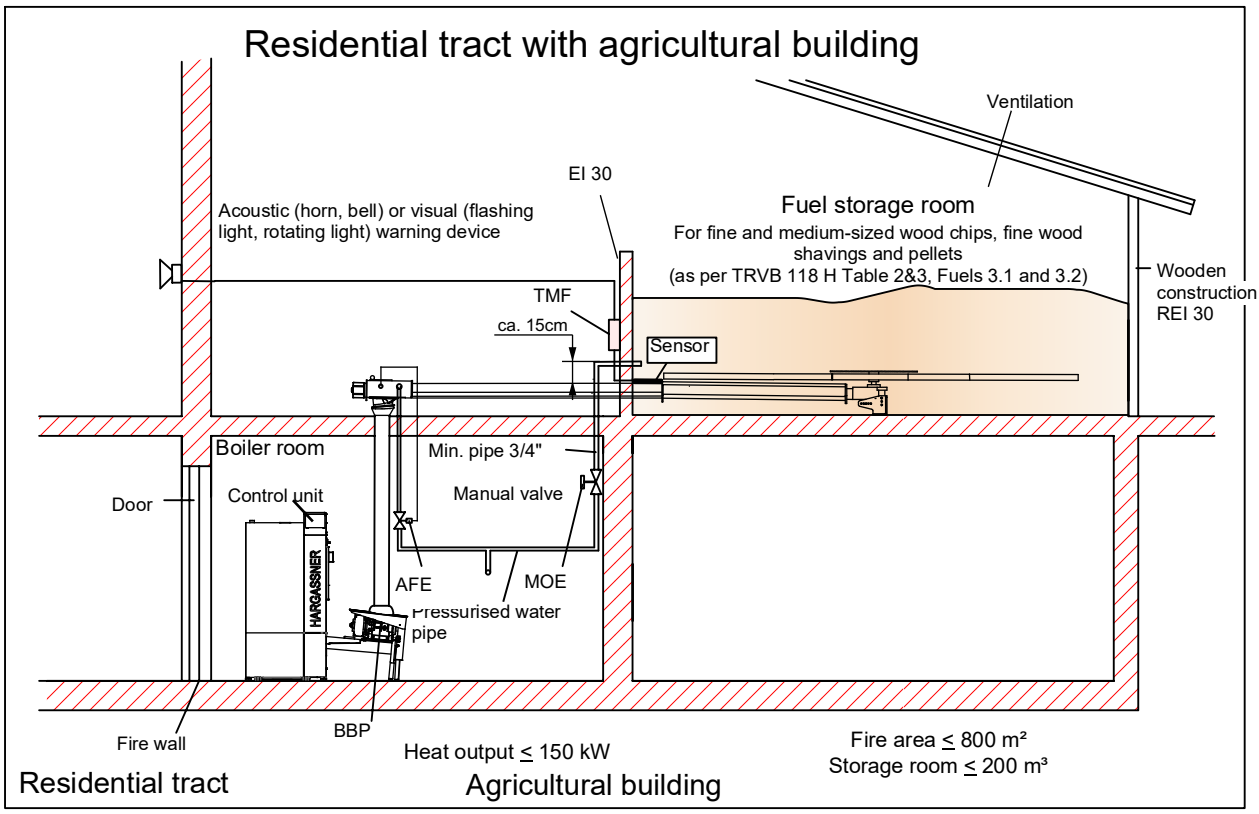
Size of the closed storage room	Additionally required safety device
≤ 50 m³	**(AFE for Switzerland)**
> 50 m³ - 200 m³	**MOE (+ AFE for Switzerland)**

Agricultural building

If the fuel storage room is in an **agricultural building** (on a farm)

- MOE (independent of the fuel storage room size)
- + AFE (in Switzerland)





HARGASSNER Heating technology for *Biomass* A 4952 Weng OÖ Tel.: +43/7723/5274-0 Fax: +43/7723/5274-5 office@hargassner.at

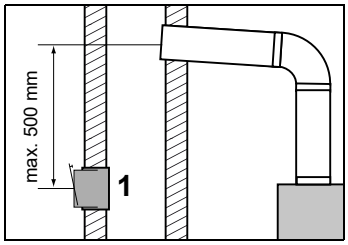
13.8 Chimney connection, flue pipe

Description	Unit	Eco-HK 130	Eco-HK 150	Eco-HK 170	Eco-HK 200	Eco-HK 220	Eco-HK 230
Nominal heating output	kW	130	149	166	199	216	226
Flue gas temperature	°C	150	150	150	160	160	160
CO_2	%	14					
Mass flow rate	kg/sec	0.0754	0.0865	0.0965	0.1158	0.1259	0.1317
Req. delivery pressure	Pa	2					
Max. flue draught	Pa	10					
Diameter of flue pipe connection	mm	200			250		

The flue gas system must be designed in accordance with local regulations or ÖNORM EN 13384-1.

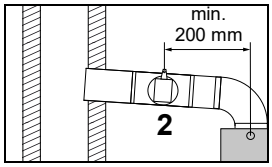
- ❒ The flue pipe is rising towards the chimney and should be as short as possible
- ❒ Install appropriate openings for cleaning
- ❒ Insulate the flue pipe
  - ☞ Protection from hot surface on the flue pipe (risk of burns)
  - ☞ Protection from flammable parts and materials (e.g. electrical wiring)
  - ☞ For reducing condensation
  - ☞ Insulation (foil-laminated rock wool) 30 mm, optimum > 50 mm
  - ☞ Tape joints
- ❒ No flammable materials within 20 cm of an insulated flue pipe

13.8.1 Flue draught stabiliser



A flue draught stabiliser with an explosion protection flap **(1)** must be installed in the chimney beneath the flue connection.

- ❒ Set the flue draught stabiliser to 10 Pa using the gas meter
- ❒ Install the flue pipe rising towards the flue
- ☞ Maximum distance to the flue pipe connection to the chimney 500 mm
- ☞ A flue draught stabiliser installed in the chimney is beneficial in overpressure situations and when the flue draught is poor



If installation in the chimney is not possible, a flue draught stabiliser with an explosion protection flap **(2)** must be installed in the pipe connecting to the flue.

- ☞ Minimum distance to the flue gas sensor 200 mm

For flue draughts of < 30 Pa, the flue draught stabiliser can be shut off.

14 Hydraulic installations

- ❒ Install the hydraulics according to the enclosed hydraulic schematic
  - ☞ Design criteria according to EN 12828
  - ☞ Piping and seals must be able to withstand a maximum temperature of 110°C
- ❒ Note the connection designations on the boiler
- ❒ Use an accumulator tank with sufficient volume
  - ☞ A domestic hot water mixer is mandatory for an accumulator tank with integrated domestic hot water coil
- ❒ Connect all safety devices
  - MOE, AFE, thermal safety circuit
- ❒ Check the opening direction of the mixer
- ❒ Install the control valves according to the hydraulic schematic
- ❒ Install the sensors according to the hydraulic schematic
  - ☞ See the enclosed "Sensor installation" information
- ❒ The chemical and physical properties of heating water must comply with country-specific standards (EN 12828, ÖNORM H 5195-1, VDI 2035, SWKI BT 102-01 and/or SIA 384)
- ❒ The electrical conductivity of the heating water should be between 20 and 200 µS
- ❒ When filling the heating system with heating water, do not allow air to enter the heating system – vent the filling tube before connecting it
- ❒ Only use approved heating filling devices for filling with heating water

14.1 Back-end protection unit

A T T E N T I O N

Corrosion due to condensation in the boiler

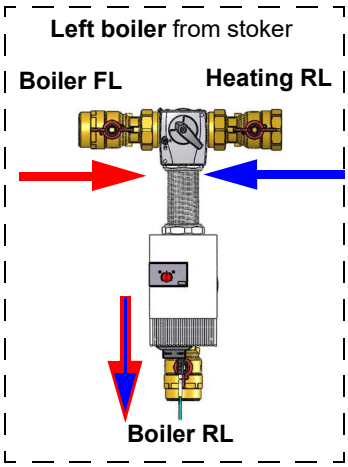
Damage to the system due to aggressive condensate

- Back-end protection must be installed properly and according to the hydraulic schematic

Condensation is produced if the system drops below the dew point. This combines with combustion residues to form an aggressive condensate and leads to corrosion in the boiler.

- ☞ As long as the temperature of the heating water return to the system is below the minimum return temperature for the boiler, the system's flow heating water is added
  - ☞ Regulation to constant return temperature
  - ☞ An admixture is almost always used

14.1.1 Hargassner back-end protection



The accompanying images show the back-end protection of a **left** and a **right** boiler.

Note the following:

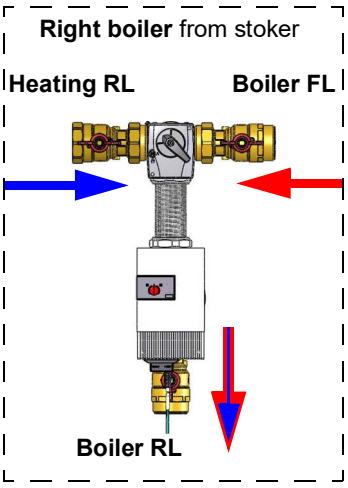
☞ Install back-end protection on the side of the boiler

☞ Be aware of the mixer direction

The mixer is **Closed** when the boiler circuit is closed or the mixer is **Open** when the boiler circuit is open. During operation, the return temperature increases when the mixer **Closes** and decreases when the mixer **Opens**!

❒ Install a venting device

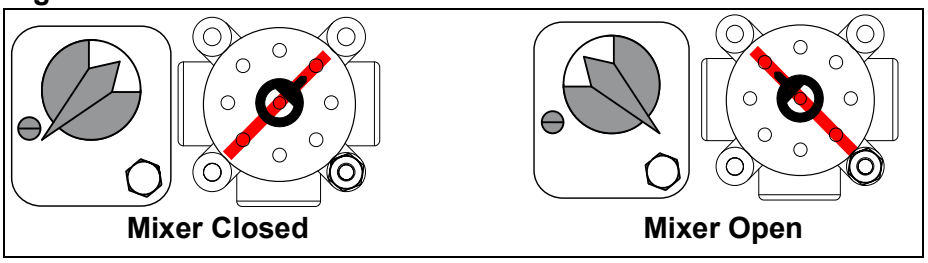
❒ Vent the pumps



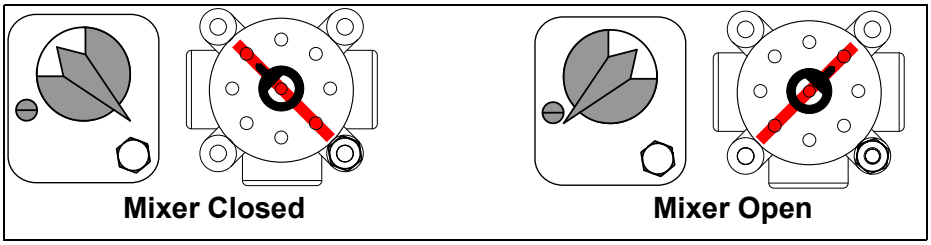
14.1.2 Position of the cock plug

Position of the cock plug

Right boiler from stoker



Left boiler from stoker



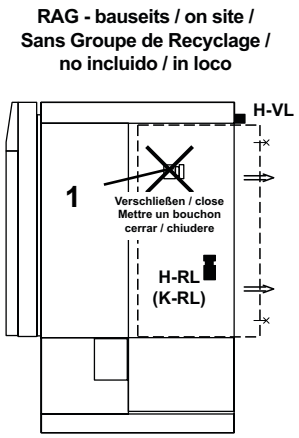
☞ The mixer is **Closed** when the boiler circuit is closed

↳ Maximum back-end protection, no energy for heating

☞ The mixer is **Open** when the boiler circuit is open

↳ Minimal back-end protection, maximum energy for heating. During the heat-up phase, the mixer moves to the **Closed** position to reach the return temperature as quickly as possible. Once the return temperature has been reached, the system control will open the mixer valve to maintain a constant return temperature

14.1.3 Back-end protection on site



The adjacent image shows the on-site back-end protection connections of a **left** boiler.

↳ The image is mirrored for the right boiler

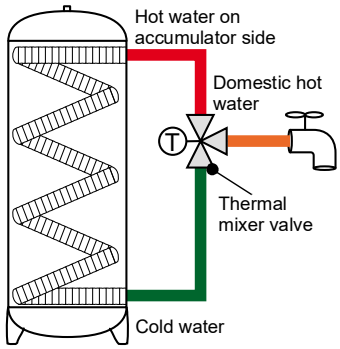
Note the following:

- ❒ Remove the side boiler cover
- ❒ Close unused connection **(1)**
- ☞ Be aware of the mixer direction

❒ Install a venting device

❒ Vent the pump

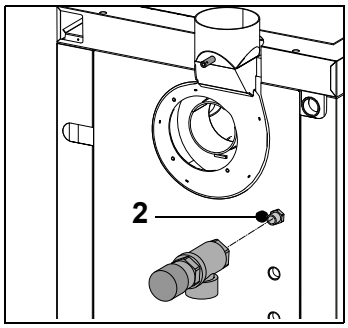
14.2 Domestic hot water mixer



Hot water heating using an accumulator tank with an integrated domestic hot water coil or integrated hot water tank

↳ To protect against scalding, a thermal mixer valve must be installed

14.3 Safety valve

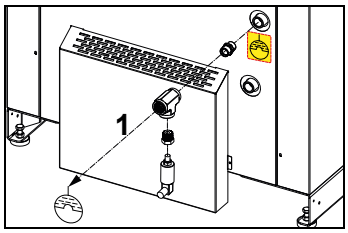


❒ Connect the safety valve to the back of the boiler **(2)**

❒ Check for leaks

	N O T E
☞	**Connect drain to overpressure valve** To ensure proper drainage after the overpressure valve is triggered, a hose or tube must be installed between the overpressure valve and the drain. The drain with drain funnel must be free to inspect in order to detect any leaks (dripping) of the valve.

15 Safety components



- System pressure limiter (system pressure sensor) **(1)** optional

16 Electrical installations

A detailed electrical manual is enclosed to help with the electrical installation.

- Wiring diagram
- Electrical diagram of the sensors, motors, pumps, mixers, proximity switches
- Information regarding connecting the main power switch in front of the boiler room door
- Information regarding extending cables

Work on electrical equipment on the system may only be carried out

- By authorised specialists
- According to the electrical standards (as per VDE or ÖVE)

W A R N I N G

Fire hazard

During the electrical installation process, be aware of the position of the exhaust fan/flue pipe

- The insulation of cables and cable shafts is flammable
- Distance of electrical wires to bare flue pipe at least 40 cm

Ensure minimum distance of electrical wires routed outside of the boiler to the hot flue pipe and the exhaust fan (main power supply, sensors, pumps/mixer control).

- Power supply to the control unit
- Protection of the power supply with back-up fuse according to electrical diagram
  ☞ Note the instructions in the wiring diagram
- Main heating switch (emergency stop) in front of the boiler room door
  ☞ Complete disconnection of the electrical power supply to the control unit
- Connection of all necessary safety equipment
  ☞ TMS (temperature monitor stoker auger)
  ☞ TMF (temperature monitoring in fuel storage room)
  ☞ Install a horn or warning light so that it can be noticed easily and reliably
  ☞ All sensors for safe operation of the system (according to wiring diagram)
- Connections of heat circuits (pumps, mixers, sensors)
- Install outside temperature sensor
  ☞ Do not install in direct sunlight

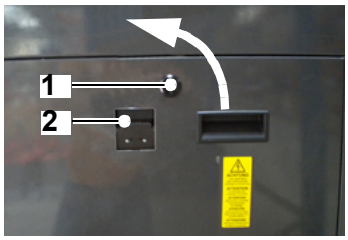
16.1 Fault lamp

Install a fault lamp to display errors.

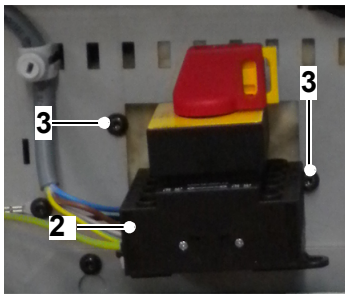
⇨ Wiring diagrams of the boards in the control cabinet

- Acoustic (horn) or visual warning device (rotating light)

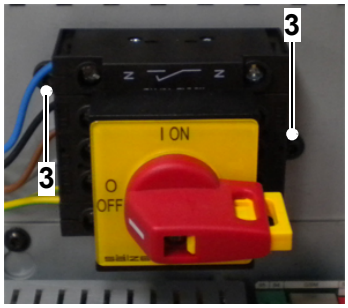
16.2 Installing the main power switch



❒ Open the turn-type lock **(1)** using the plastic key (on the combustion chamber door handle)
❒ Open and remove the cover from the control box

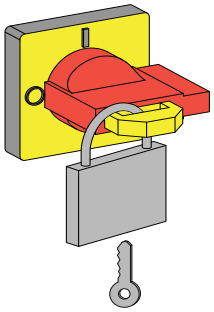


❒ Loosen 2x tapping screws **(3)** from the board base plate



❒ Remove the main power switch **(2)** and position it correctly
  ☞ Position **On** must be at top
❒ Fix the main power switch at the two fastening points on the board base plate
  ☞ 2x tapping screws **(3)**
❒ Refit the cover on the control box
❒ Lock again using the turn-type lock

❒ Turn the main power switch **(2)** to position **0**
❒ Lock the main power switch with a padlock for maintenance and repair work
❒ During installation, keep the machine locked to prevent any unexpected movements
  ☞ Keep the key in a safe place



16.3 Cable installation

❒ Connect the cables and sensors according to the enclosed electrical manual

17 Sensor installation

17.1 Outdoor sensor

Position:

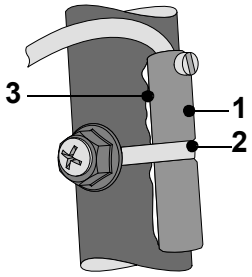
- Coldest side of building away from the sun (North; North-East)
- Installation height min. 2 m
- On insulated external walls
- Check for external heat sources (falsification of measured values)
  - ☞ Chimney, warm air from air ducts, windows and doors
- Cable outlet from sensor on bottom
  - ☞ Prevent moisture ingress
- Electrical installation with 2-pole cable
  - ☞ See the wiring diagram for the minimum cross section

17.2 Flow, accumulator and external heat sensors

According to the hydraulic scheme

- Temperature sensors (except the flue gas sensor) designed as a PT 1000 immersion sensor with a pre-connected sensor cable
  - ☞ Do not damage or bend the sensor cable
  - ☞ When extending the cable, bear the minimum cross section in mind

17.2.1 Flow sensor for heat circuits



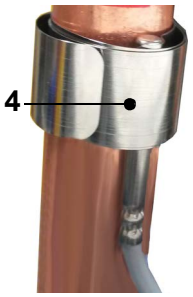
Position

- Approx. 50 cm after the circulating pump
- Metallic bare pipe surface

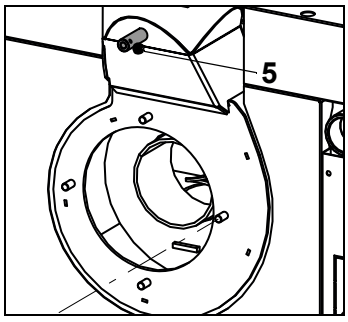
❒ Secure with enclosed installation material

- Brass housing **(1)** and tightening strap **(2)** or
- clamp **(4)**

❒ Before installing the sensor, apply heat conducting paste **(3)** to the point of contact to ensure better heat transfer



17.2.2 Flue gas sensor



Designed as a thermocouple (type K) with a pre-connected sensor cable.

- ☞ Do not damage or bend the sensor cable
- ☞ When extending the cable, bear the minimum cross section in mind

❒ Insert the sensor tip into the opening **(5)** on the exhaust fan and secure with the spring

17.2.3 Boiler, HWT, accumulator and external heat sensors

- ❒ Install the sensor using the immersion sleeve
- ❒ Position the accumulator- and HWT sensor

A T T E N T I O N

Correct sensor positions

- Correctly position the sensors in order to control the HWT and accumulator loading processes

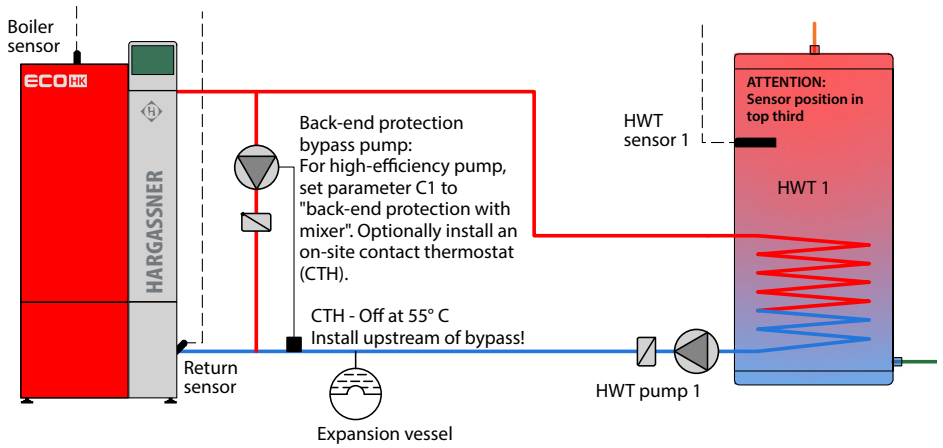
Sensor resistance values

Boiler, HWT, accumulator, flow, return, outside and external heat sensors	
in °C	in Ohm
-20	922
-10	960
0	1000
10	1039
15	1058
20	1077
25	1097
30	1116
35	1136
40	1155
45	1174
50	1193
55	1213
60	1232
65	1252
70	1270
75	1290
80	1309
85	1328
90	1347
95	1366
100	1385

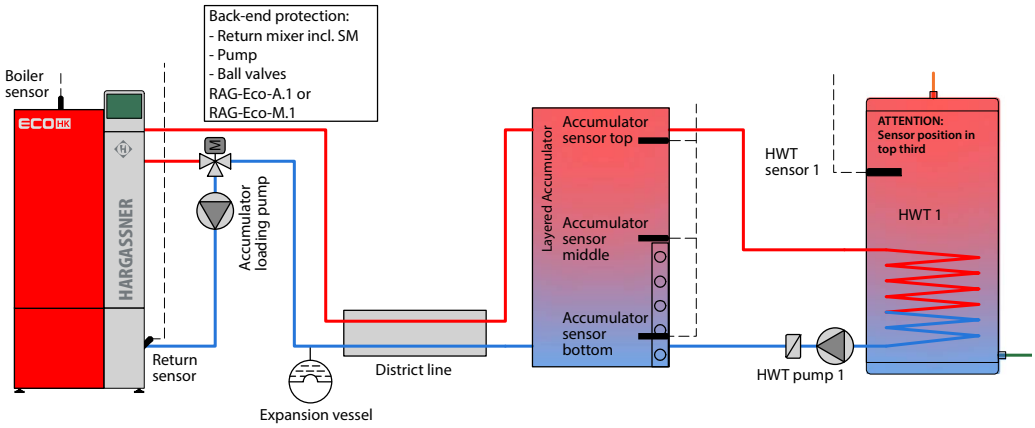
Room temperature sensor (FR25 remote control)
AUTOMATIC switch position (clock) and central position of the remote adjuster (independent of room temperature)

3340 - 3650 Ω

External HWT



Accumulator and external HWT



18 FR25 / FR35 / FR40 remote control

☞ For professional installation and operation of the remote control, see the installation and operating instructions of the respective remote control

Caution: In the installer settings, the corresponding remote control must be parameterised to the assigned heat circuit.

❒ Install the remote control at an easily accessible position

Place of installation

- No direct sunlight, draught, radiators, chimney, etc.
  - ☞ Measurement of the actual room temperature
- In the most appropriate room (e.g. living room or dining room)
  - ☞ No stove (e.g. a tiled stove) may be heated in this room
  - ☞ Set the radiator thermostat to a temperature higher than the room temperature on the control unit
    - ↳ Influences the room sensor
    - ↳ Heat circuit flow is adjusted, causing other rooms to become too cold or too warm

18.1 FR25 remote control (analogue)

Can be used for heat circuits connected to the HKM or HKR
(not for heat circuits of heat circuit board A).

Remote control with room sensor

❒ Connect terminal 1 and 2 (for FR25)

Remote control without room sensor

❒ Connect terminal 1 and 3 (for FR25)

Fault lamp

The FR25 remote control has a red LED, which can be connected to the boiler. This LED lights up on the control unit when a warning or an error is displayed.

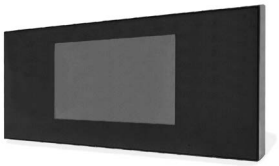
❒ Connect terminal 4 (+) and 5 (-) (for FR25)

18.2 FR35 remote control (digital)

Can be used for all heat circuits (HKM, HKR and HC A).
BUS cable 2x2x0.5 mm², shielded and pair-twisted (e.g. LiYCY)

☞ For cable lengths from 100 m, a cross-section of 0.75 mm²

18.3 FR40 remote control (digital)



Can be used for all heat circuits (HKM, HKR and HC A)
BUS cable 2x2x0.5 mm², shielded and pair-twisted (e.g. LiYCY)

☞ For cable lengths from 100 m, a cross-section of 0.75 mm²

19 Extension module, board or controller

19.1 Extension module 0, 1, 2

Up to three extension modules may be connected to extend heat and HWT circuits. The connection to the boiler board is formed by a BUS cable (on the CAN BUS plug).

❒ Set the address selection switch on the extension module (default: **0**)

- **0** for HKM 0 = heat circuit 1+2 and HWT circuit 1
- **1** for HKM 1 = heat circuit 3+4 and HWT circuit 2
- **2** for HKM 2 = heat circuit 5+6 and HWT circuit 3

19.2 Additional board I/O 36 (HC AB/F, 5-sensor accumulator or differential controller)

The additional board I/O 36 is for extending the HWT and heat circuits on the boiler. The connection to the boiler board is formed by a BUS cable.

❒ Default address switch of the additional board

- **A** for HC A = heat circuit A and HWT circuit A
- **B** for HC B = heat circuit B and HWT circuit B
- **F** for HKF = controlled district line
- **C** for AS board = 5-sensor accumulator
- **D** for D control board = differential controller

19.3 Heat circuit controller HKR

Up to 16 HKRs can be connected to extend the heat and HWT circuits, as well as accumulator tanks and external heat boilers. The connection to the boiler board is formed by a BUS cable (on the CAN BUS plug).

❒ Set the address selection switch on the HKR (default: 1)

- **0** for HKR 0
- **1** for HKR 1, etc.

20 Permits and reporting requirements

Caution: Have the installation or conversion of a heating system approved by the relevant regulatory authority.

- Report any installation or conversion to the supervising office
  - ☞ Austria: Responsible building authority
  - ☞ Germany: Chimney sweep or building authority
  - ☞ Other countries: Observe the regulations of the local authorities

21 Commissioning the system

D A N G E R

Unauthorised commissioning

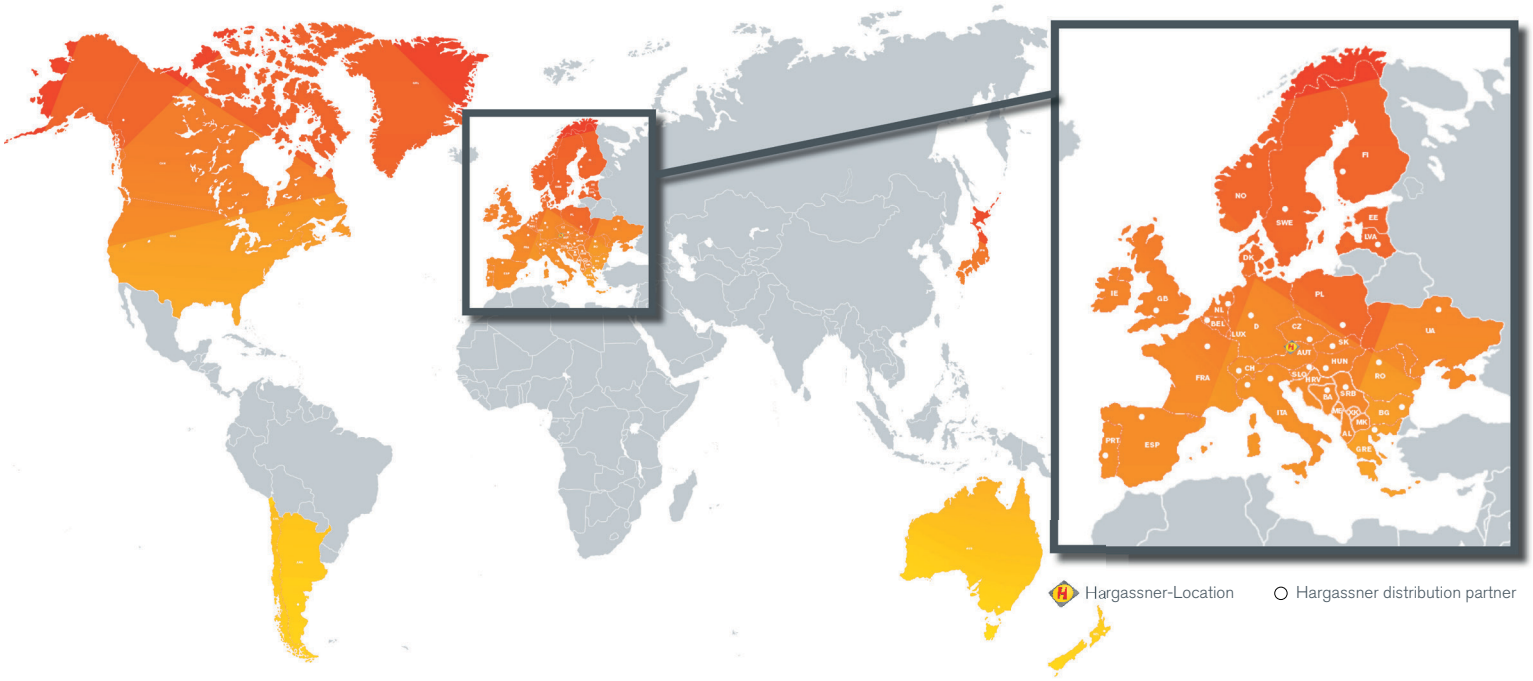
The boiler may only be commissioned by staff authorised by Hargassner

- Prevent unauthorised commissioning
- Do not perform any work on the system
- Only operate the system independently after a commissioning report has been signed

notes

HARGASSNER

Your expert for **PELLET | WOOD LOG | WOOD CHIP** HEATING



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