

Installation manual Wood chip boiler Eco-HK 250-330

HARGASSNER
HEIZTECHNIK DER ZUKUNFT



Follow and store this manual

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EN - V06 02/2023 - 11058086

Contents

1 General	3
2 Transport	4
3 Installation dimensions	5
4 Scope of delivery overview	9
5 Unloading the system	10
6 Setup	11
7 Installing the trim panel	13
8 Installing the exhaust fan motor	13
9 Fitting the levelling feet	13
10 Installing the stoker unit	14
11 Ash box	16
12 Design of the fuel storage room	20
13 Facilities on site	23
14 Hydraulic installations	30
15 Safety components	33
16 Electrical installations	34
17 Sensor installation	36
18 FR25 / FR35 / FR40 remote control	38
19 Extension module, board or controller	39
20 Permits and reporting requirements	39
21 Commissioning the boiler	39

1 General

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



DANGER

Danger to life

Non-observance of the safety instructions may lead to death, injuries and damage

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



DANGER

Danger to life

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

Boiler room

- Execution according to the local fire protection regulations.
- Ensure fire-safe, level and firm floor condition.
- Ensure there is a sufficient supply of combustion air that meets local regulations.
- Ensure weatherproof and frost-proof design.
- Observe the load-bearing capacity of the foundations. Weight of the system.

Fuel storage room

- Observe static requirements. Weight of the quantity of fuel stored.
- It must be weatherproof and frost-proof.
- 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 boiler is delivered on pallets in individually packaged units.

Designation	Weight
	Eco-HK 250-330
Pallet with boiler depending on version	Approx. 2150 kg
Pallet with fuel extraction system	Max. of 300 kg depending on version

Unloading, inspection and damage report

- Unload boiler
- 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 boiler for transport damage
- Check that the delivery is complete
- ⇒ See "[Scope of delivery overview](#)" on page 9.
- ↪ 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

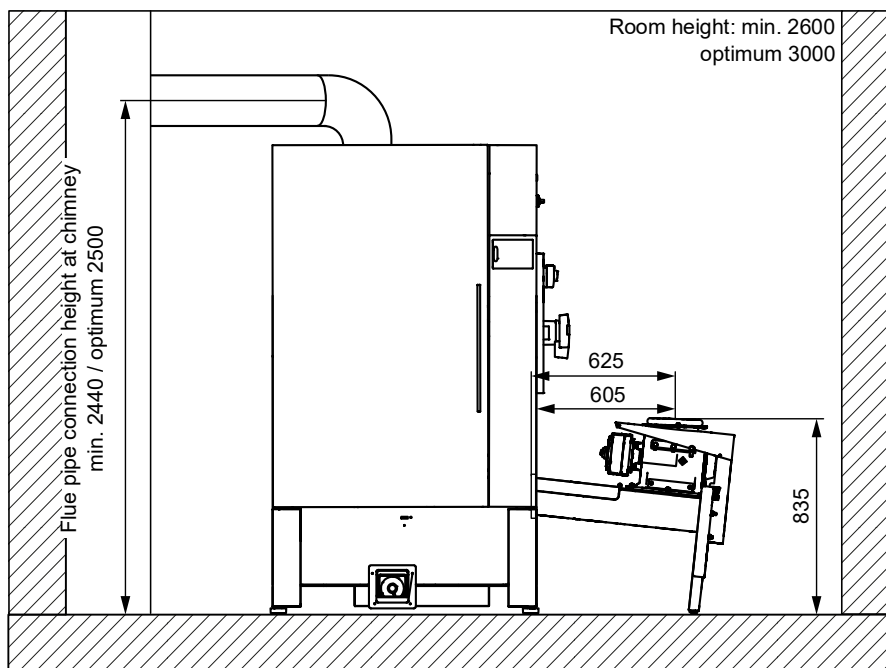
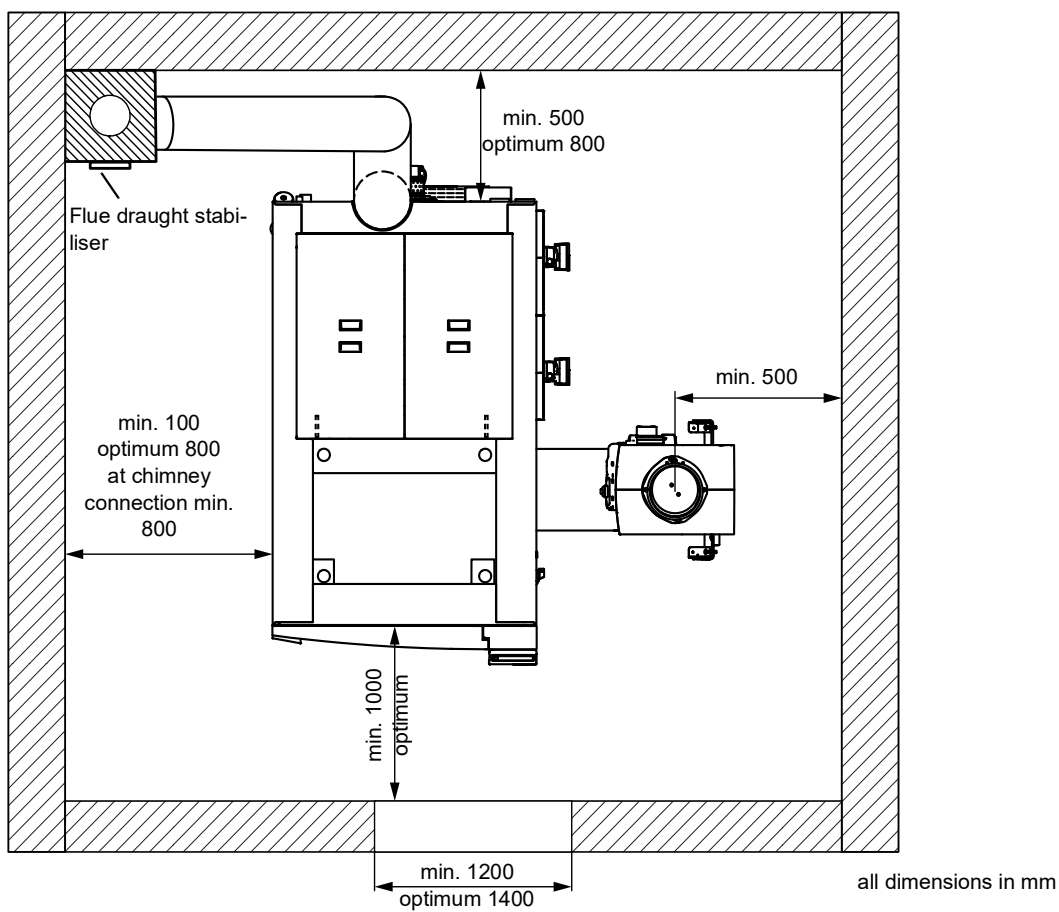
2.3 Space requirements of the boiler, operating area

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

Designation	Eco-HK 250-330
Room height	min. 260 cm

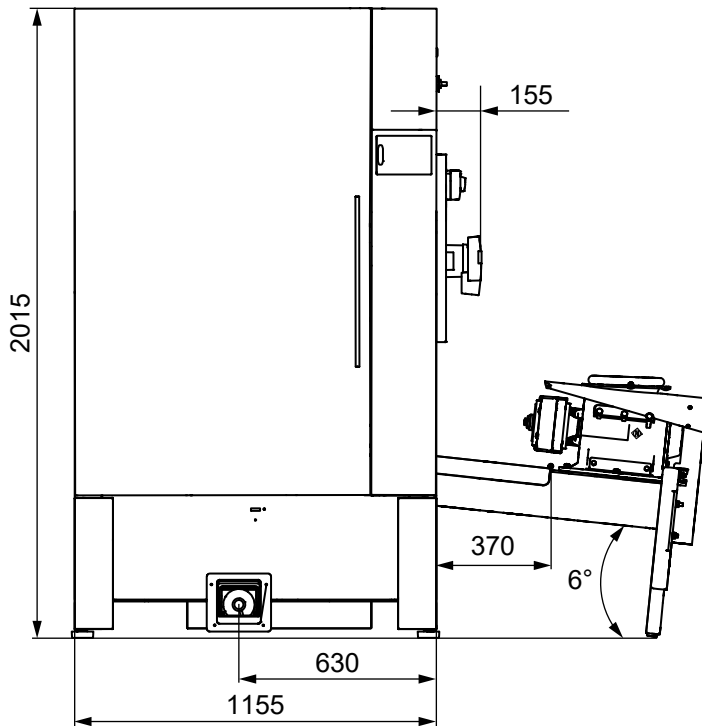
3 Installation dimensions

3.1 Space requirements

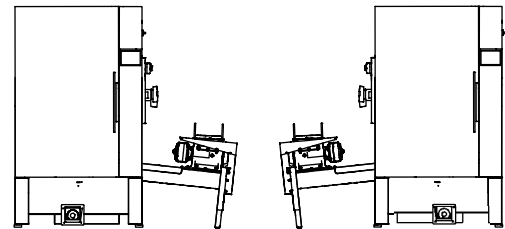


3.2 Dimensioning

all dimensions in mm

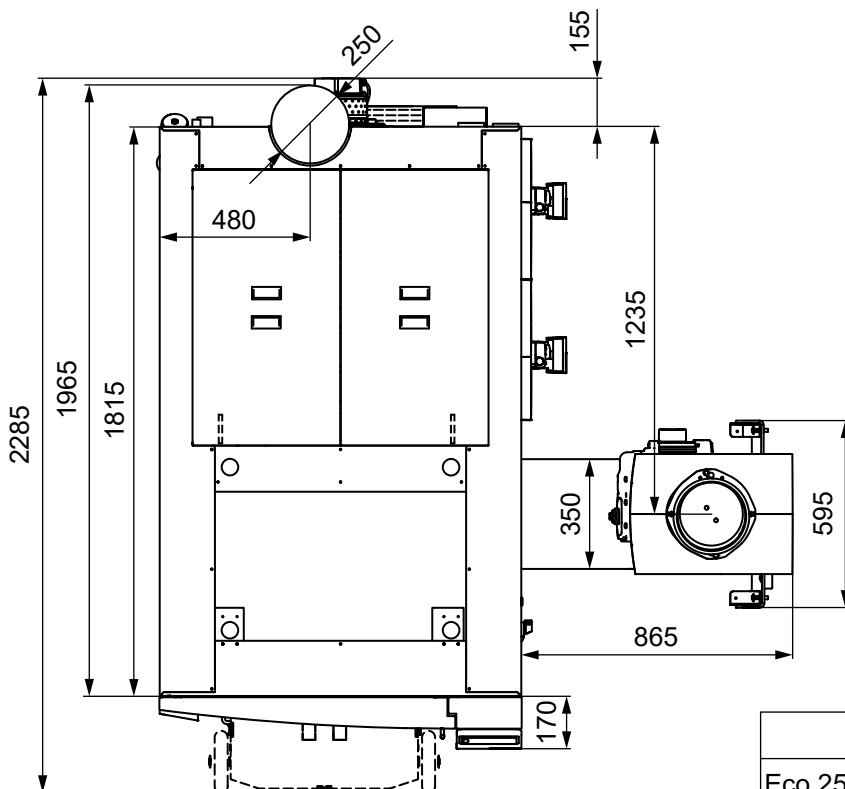


Boiler type

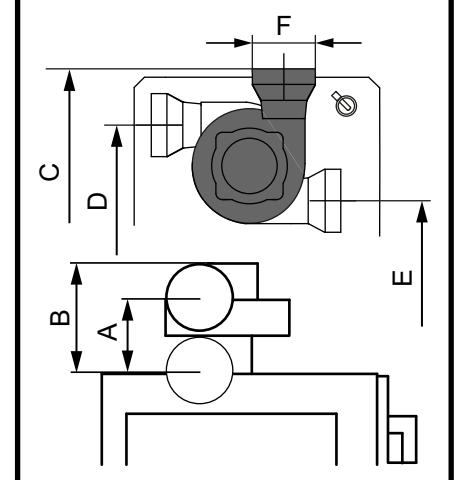


Left

right



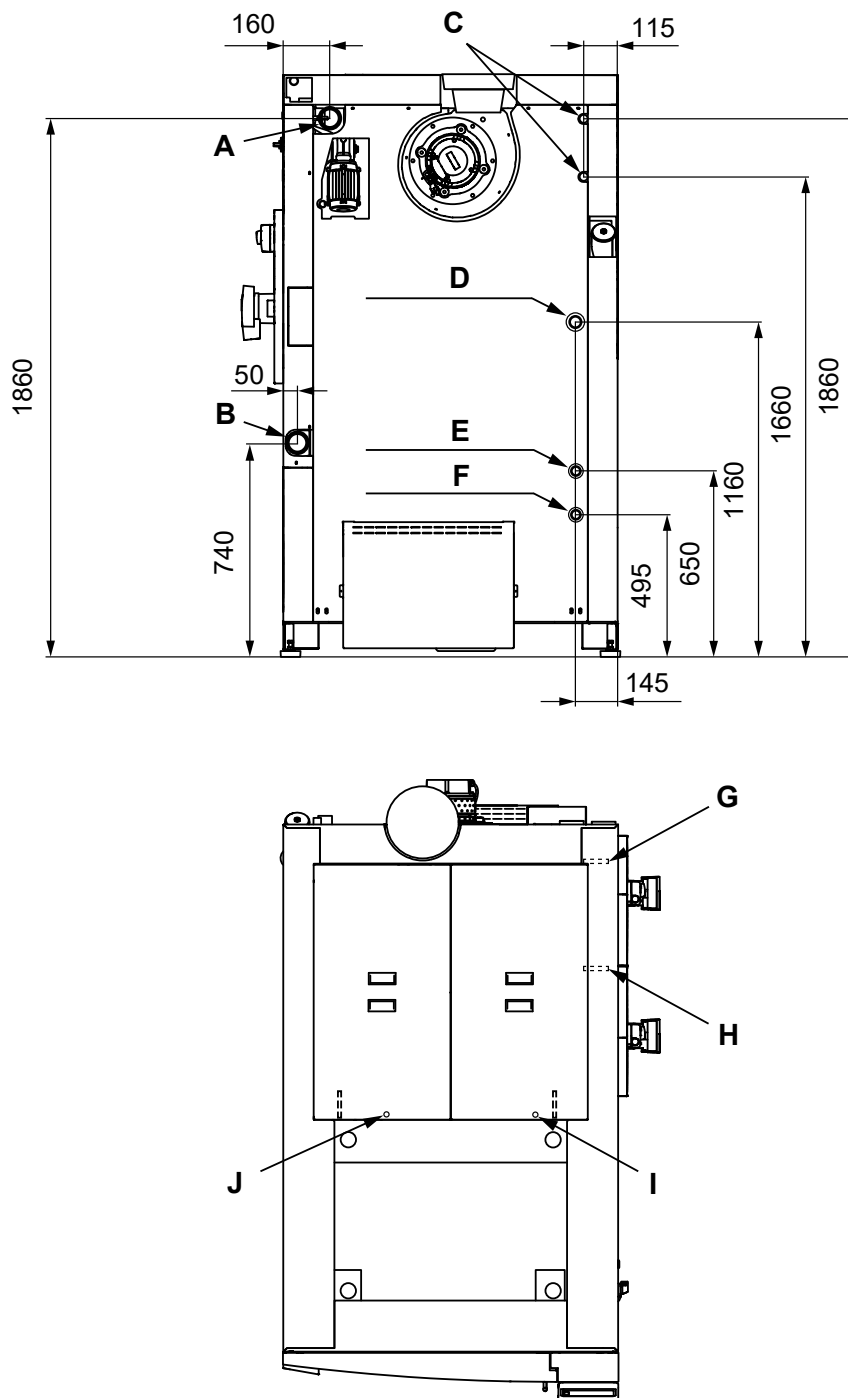
Option: Rotatable exhaust fan



	A	B	C	D	E	F
Eco 250-330	315	520	2010	1805	1625	Ø250

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

3.3 Connections



Item	Description	Item	Description
A	Flow	F	Emptying
B	Return	G	Boiler sensor
C	Thermal safety circuit TSC	H	Return sensor
D	Safety valve	I	Lambda sensor
E	Expansion tank	J	Combustion chamber sensor

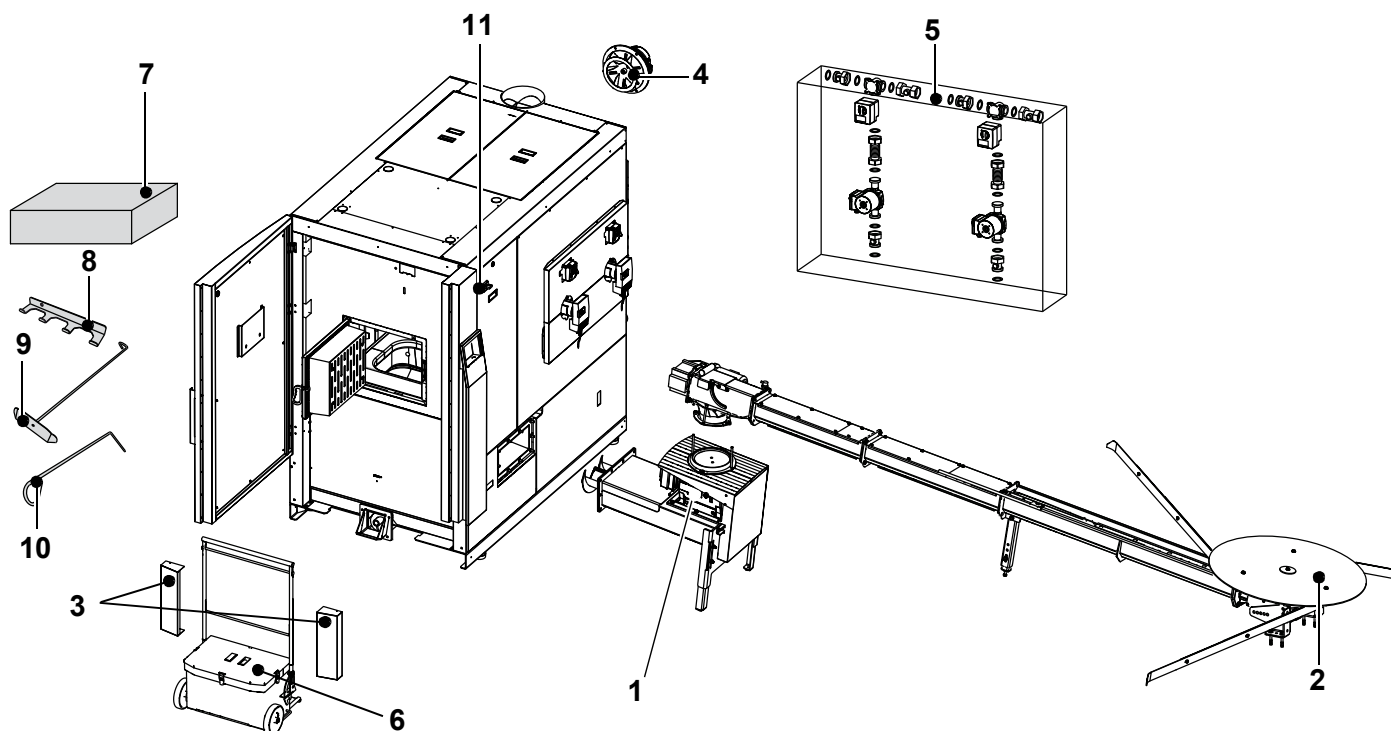
3.4 Technical Data

Designation	Unit	Eco-HK 250	Eco-HK 300	Eco-HK 330
Nominal heat output for wood chips/pellets	kW	75 - 249	90 - 299	99 - 330
Fuel heat output for wood chips/pellets	kW	265 / 264	319 / 317	353 / 350
Boiler class (according to EN 303-5:2012)		5		
Fuel and fuel class (according to EN ISO 17225)		Wood chips (A1-B1)/wood pellets (A1)		
Boiler height	mm	2015		
Boiler width	mm	1155		
Boiler depth	mm	2285		
Transport dimensions (HxWxD)	mm	2015 x 1155 x 1965		
FL/RL connection height	mm	1860 / 740		
Height of cold water connection - TSC	mm	1860		
Height of drain - TSC	mm	1660		
Emptying	inches	3/4 IT		
Flow/return	inches	2 1/2 IT		
Expansion vessel connection	inches	3/4 IT		
Safety valve connection	inches	1 1/4 IT		
Thermal safety circuit sensor	inches	1/2 IT		
Thermal safety circuit (TSC)	inches	3/4 ET		
Permissible operating pressure	bar	3		
Max. operating temperature	°C	95		
Water content	litres	570		
Weight	kg	2150		
Req. delivery pressure	Pa	5		
Flue draft max. limit	Pa	10		
Flue pipe diameter	mm	250		
Flue gas temperature	°C	140	150	150
CO ₂	%	14		
Flue gas mass flow rate	kg/sec	0.1454	0.1752	0.1937
Water-side resistance dT 10°	mbar	228	296	356
Water-side resistance dT 20°	mbar	57	74	89
Power consumption	W	342	360	371
Electric supply		400V AC, 50 Hz, 13 A		
Noise emissions (normal operation)*	dBA	55		

*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 boiler or on the pallets.



Item	Description	Function
1	Stoker unit	Carries the fuel into the combustion chamber ⇒ See "Installing the stoker unit" on page 14.
2	Fuel extraction system	Carries the fuel from the storage room to the stoker unit
3	Trim panel	Lower part of the cover door ⇒ See "Installing the trim panel" on page 13.
4	Exhaust fan motor	Transports the flue gas from the boiler into the flue ⇒ See "Installing the exhaust fan motor" on page 13.
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 16.
7	Sensor package	Flow sensor, return sensor, safety temperature breaker (STB), thermostat, flue gas sensor, lambda sensor, etc., according to sensor diagram
8	Flue tool set holder	Wall holder for the flue tool set
9	Ash slider	For cleaning the boiler
10	Poker	For removing combustion residues in the combustion chamber
11	Main power switch	On/Off switch for providing electrical power to the boiler ⇒ See "Installing the main power switch" on page 35.

5 Unloading the system

DANGER



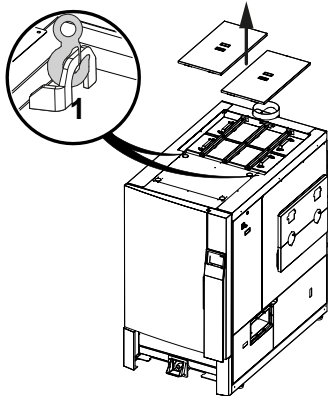
Danger to life and risk of material damage

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

- The system may only be set up by qualified and 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 crane, forklift or lift truck. See the type plate.
- Never use bearing bolts, spindles, shaft ends or moving parts as attachment points to hoist the system or system parts.
- Make sure that nobody stands under suspended loads.
- First lift the system only minimally from the ground and only after the load has been completely picked up can the system be transported over longer distances.
- Check that the load attachment points are chosen correctly and are secure. Secure against tipping.
- Suspend the machine centrally to prevent the machine from tipping to one side.
- Arrange the ropes so that no components are damaged when the machine is lifted and the ropes do not slip.
- Avoid shocks and vibrations.
- Set up the system on a horizontal, even surface

Transport with a fork lift

- Adjust the forks to the maximum distance and secure.
- Slowly lift the machine and transport it horizontally.
- Avoid shocks and vibrations.



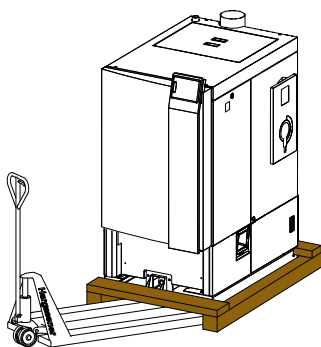
- Remove the cover lid from the system
- Hook the lifting gear (hook) into the transport lugs **(1)**
- Be aware of the risk of tipping during lifting
 - The load pick-up point is not above the centre of gravity

6 Setup

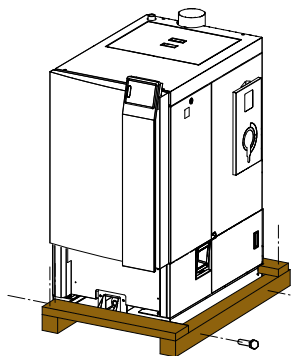


NOTE

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



NOTE

If space is tight during installation, remove the cover door.

6.1 Removing the cover door

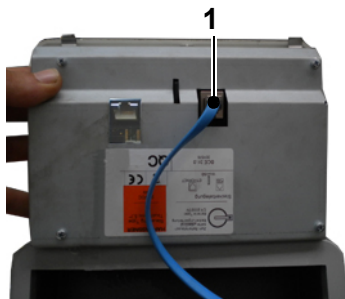
6.1.1 Remove the control unit (BCE)



- 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

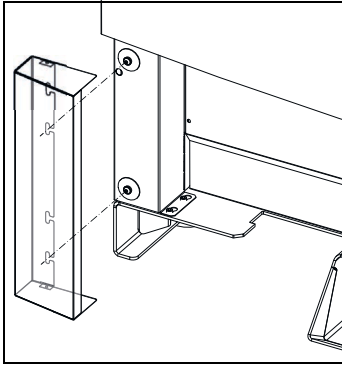
- After having positioned the system, install the cover door in reverse order

- Hang up the door

- Pull in the BUS cable

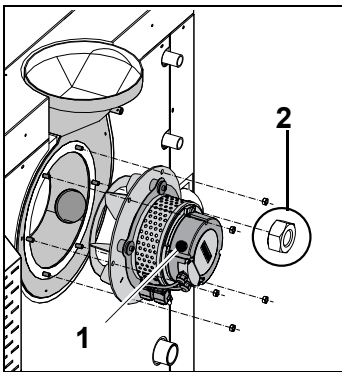
- Install the control unit

7 Installing the trim panel



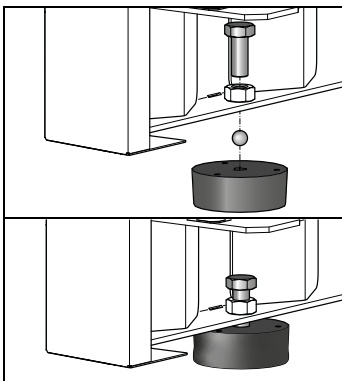
- ❑ Fit the trim panels on the left and right of the system

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

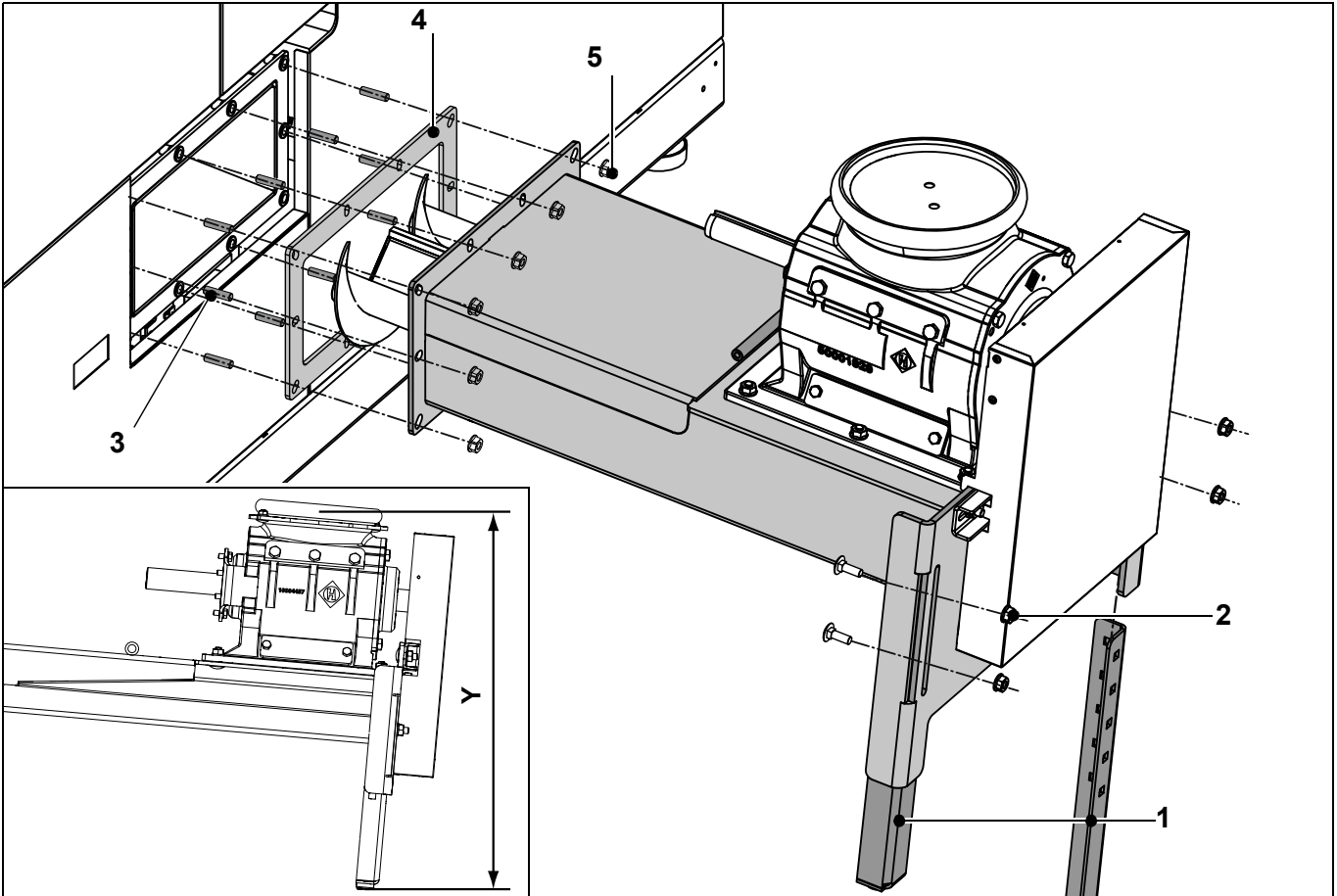
9 Fitting the levelling feet



Once the system is in its final position, it needs to be levelled using the levelling feet.

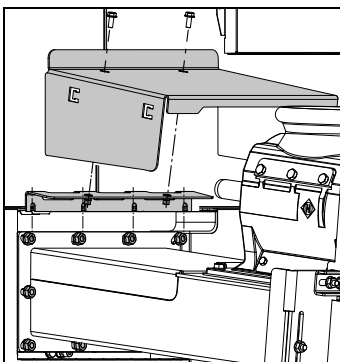
- ❑ Screw the M12x40 screws from the top into the boiler body
- ❑ Push the levelling feet onto their respective screws from below
 - ☞ There must be a ball bearing inside each levelling foot
- ❑ Lower the system
- ❑ Align the system horizontally using the screws
 - ☞ The levelling feet may bulge due to the weight put on them

10 Installing the stoker unit



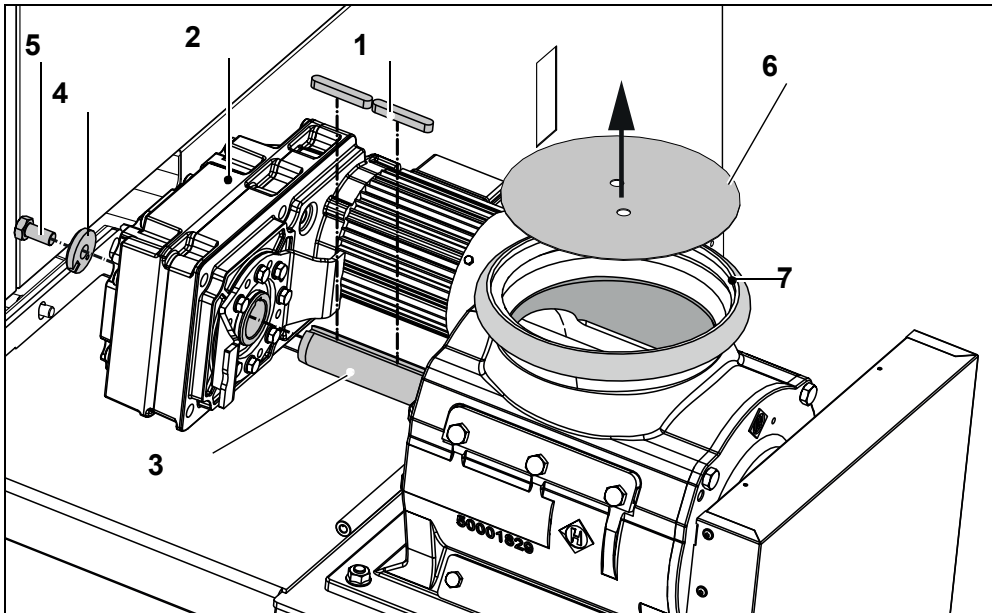
- Push in the two levelling feet **(1)** and fix them using a M10x30 mushroom head bolt and M10 nut **(2)**
- Set the height to **Y** depending on the length of the stoker unit (according to the customer plan/installation dimensions)
- Screw the **short** thread sides (thread length of 12 mm) of ten M10x35 stud screws (total length of 47 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 step guard

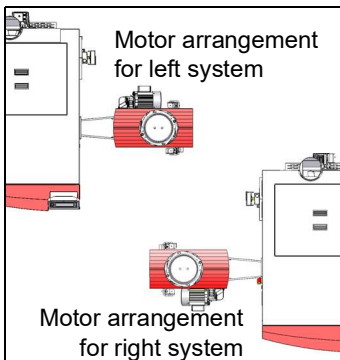


- Screw on the fastening for the step guard using the stud screws and the stoker unit
- Fit the step guard to the fastening using two M10x20 flange screws

10.2 Installing the gear motor of the stoker unit

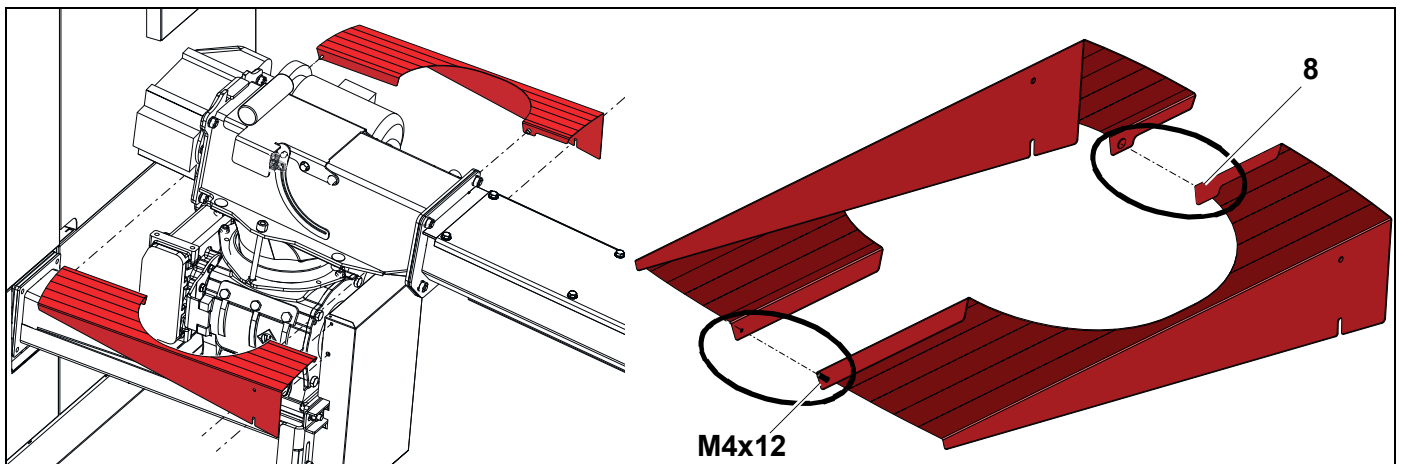


Power
0.45 kW



- 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

10.3 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



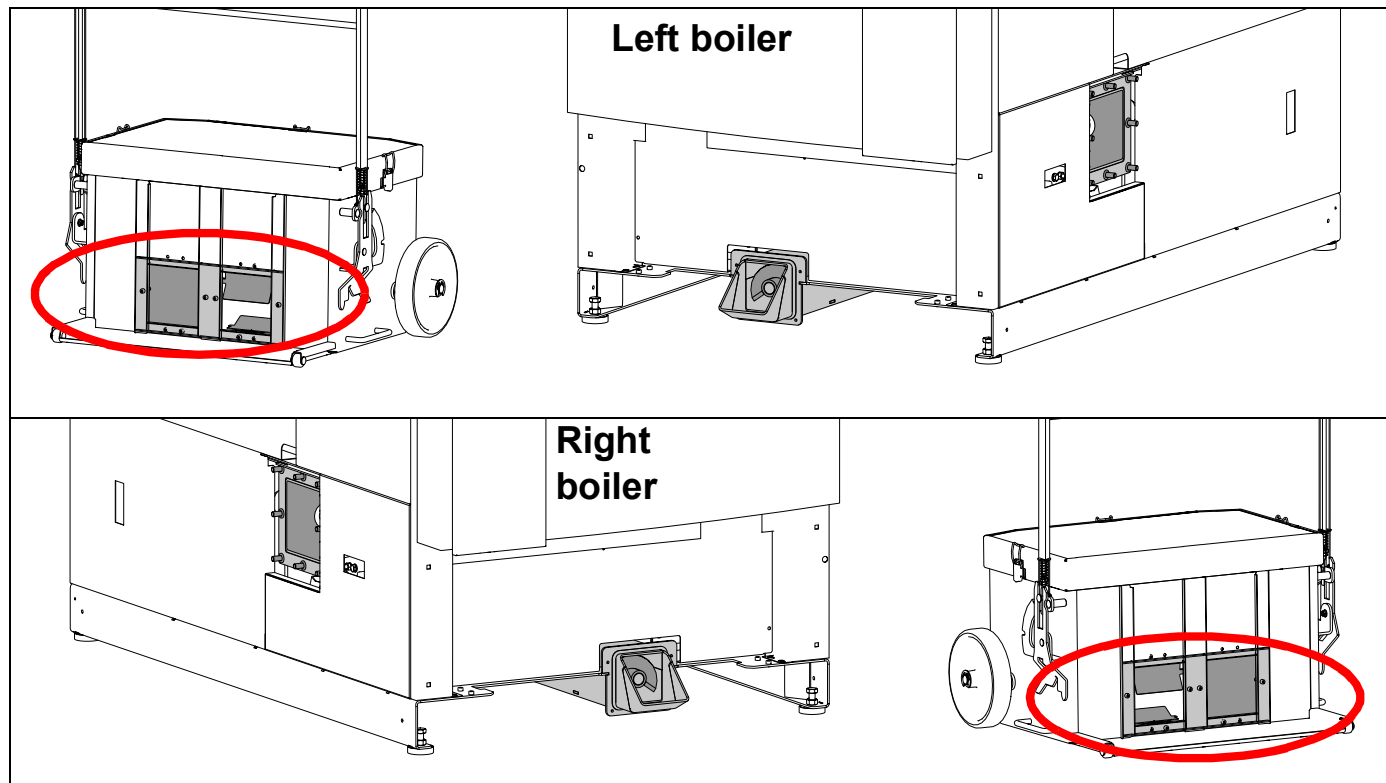
3. Secure the flange using 4 M6x16 hexagon socket screws (in the Eco-HK screw package)



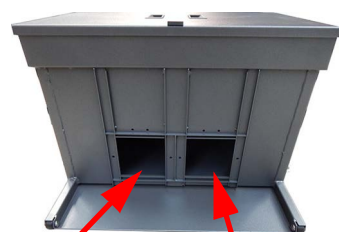
11.2 Installing the ash box (75 litres)

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



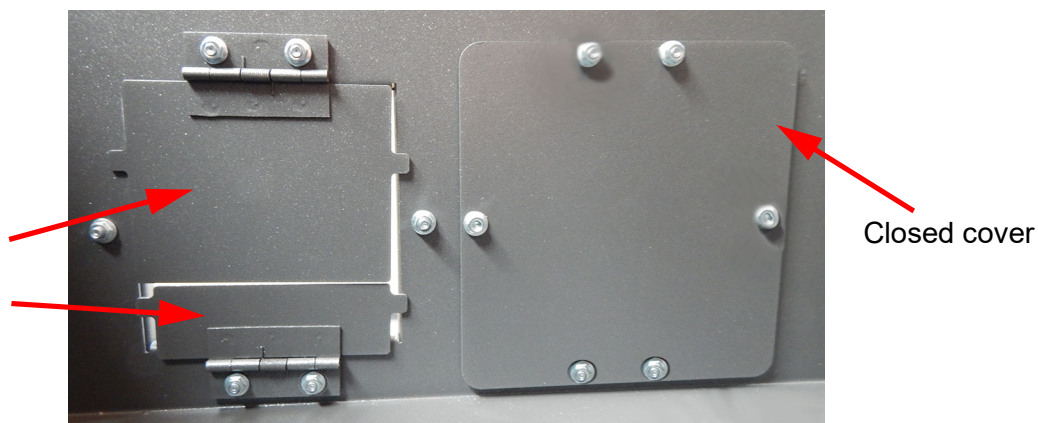
closed Flaps

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**

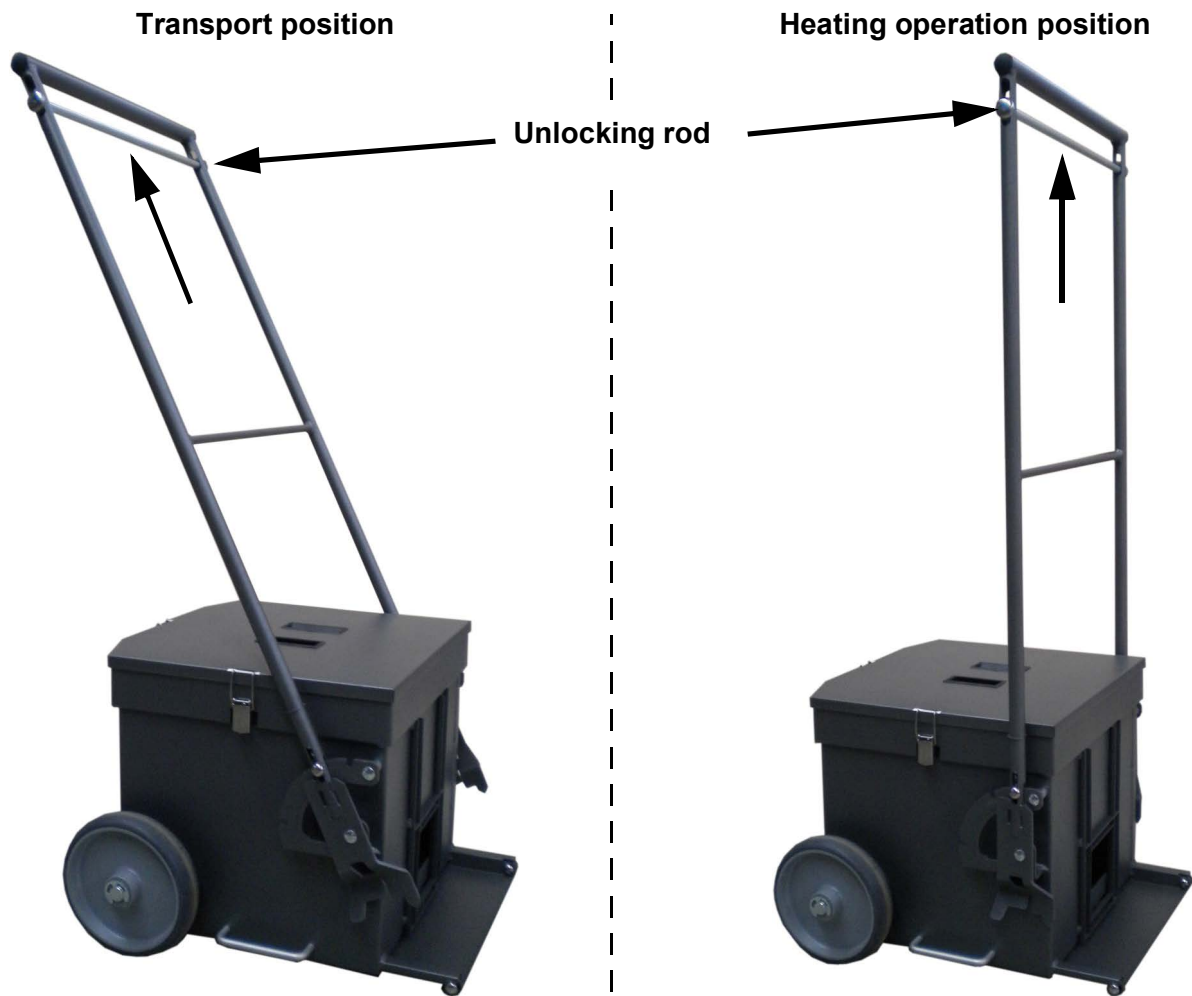
Ash box inside

Flaps
Top: large flap
Bottom: small flap

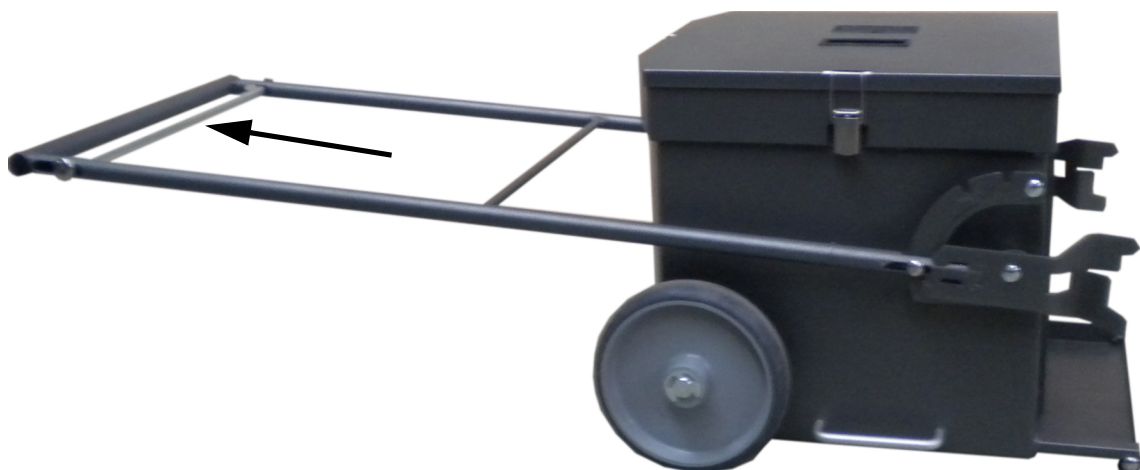


11.2.2 Transport handle position

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



Emptying position



11.2.3 Adjusting the ash box wheels



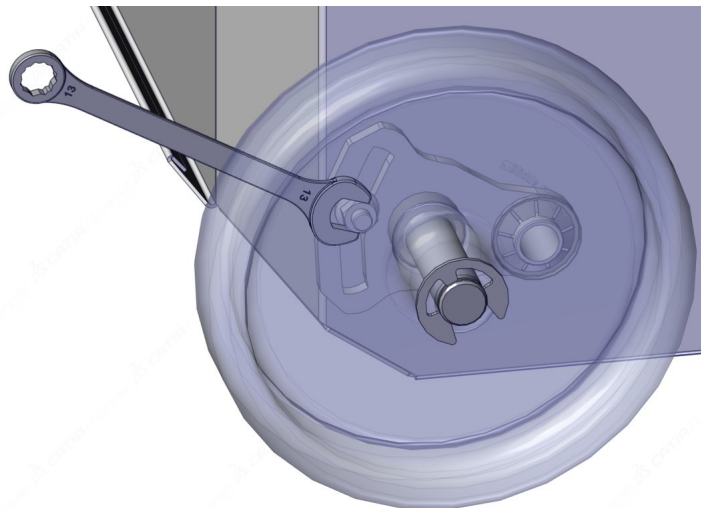
- Position the ash box on the boiler and lock in place
 - ☞ Both sides must snap into place



- 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

12 Design of the fuel storage room

	D A N G E R
	<p>Risk of fire, explosion and deflagration</p> <p>Burns due to the explosive combustion of dust</p> <ul style="list-style-type: none">• 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 works in a dusty environment.

	W A R N I N G
	<p>Risk of injury</p> <p>Risk of injuries or crushing due to moving parts</p> <ul style="list-style-type: none">• Switch off the system using the main power switch on the control unit prior to entering the system.• 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
	<p>Risk of injury</p> <p>Risk of injuries due to improper storage of fuels</p> <ul style="list-style-type: none">• 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.


	N O T E
	Secure the fuel storage room against unauthorised access.

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 Safety in the fuel storage room


Observe the instructions on the fuel storage room sticker.

FUEL STORAGE ROOM WOODCHIP SAFETY	
HARGASSNER  <small>HEIZTECHNIK DER ZUKUNFT</small>	
DANGER	
	Automatic starting fuel transport system. Unauthorized access to the fuel storage room is prohibited. Secure the fuel storage room against unauthorised access. Keep children away! Switch off the boiler using the main power switch on the control unit prior to entering the room!
	Avoid access to the fuel transport auger and other moving parts!
	Do not rest in the area of the agitator!
	Have a second person outside the storage room to supervise!
 	Do not have a naked flame and do not smoke in the vicinity of the fuel storage room!
ERROR	
	Make sure you have the boiler switched on before and while filling the storage room with fuel! This allows the spring arms to retract under the cover plate.
	Attention: Please observe the operating instructions when filling with pellets. Protect fuel against moisture

- 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

	NOTE
	Observe country-specific safety regulations. The regulations and safety provisions for operating combustion systems and storing fuels vary from country to country.

Observe the following country-specific official regulations before commissioning:

- 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

	WARNING
	Risk of injury and/or material damage Risk of death, injuries, damage due to improper installation <ul style="list-style-type: none">• Work on the electrics, hydraulics, components of the flue gas system and structural measures may only be carried out by qualified and trained staff.

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 EI₂30-C (F30)
 - ☞ Width: ≥ 0.8 m; height: ≥ 2 m
 - Protect storage room against water ingress

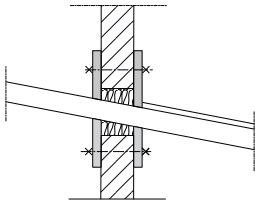
13.3.2 German regulations

- 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 60 fire resistance
- 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.

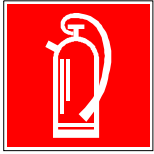
NOTE	
	<p>Please refer to the local regulations for the size of the air supply and exhaust openings.</p> <p>Hargassner minimum dimensioning: Provide at least an air supply opening of 5 cm² per kW boiler nominal heating output, but at least a total cross-section of 200 cm².</p> <p>It must be ensured that 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.</p>

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 flue

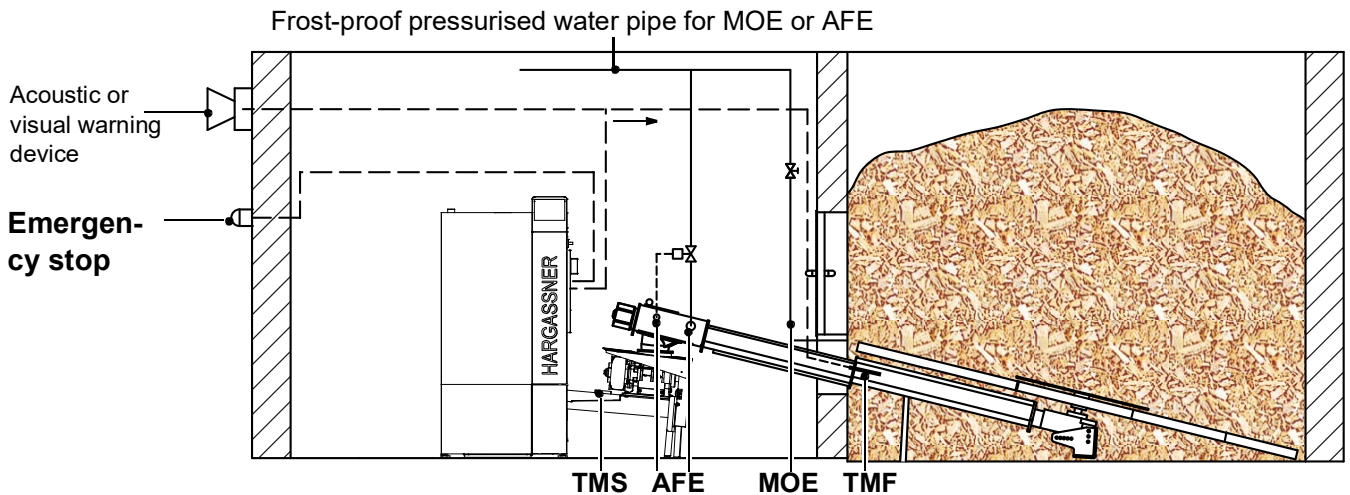
13.6 Fire extinguisher



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 m ²	6 kg	EN3
20 - 50 m ²	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 monitoring 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.

NOTE	
	Install the MOE and TMFR before filling the storage room. Keep access to the storage room free and, for commissioning, only fill the storage room to the extent that fuel can be transported in the auger.

13.7.1 Austrian regulations

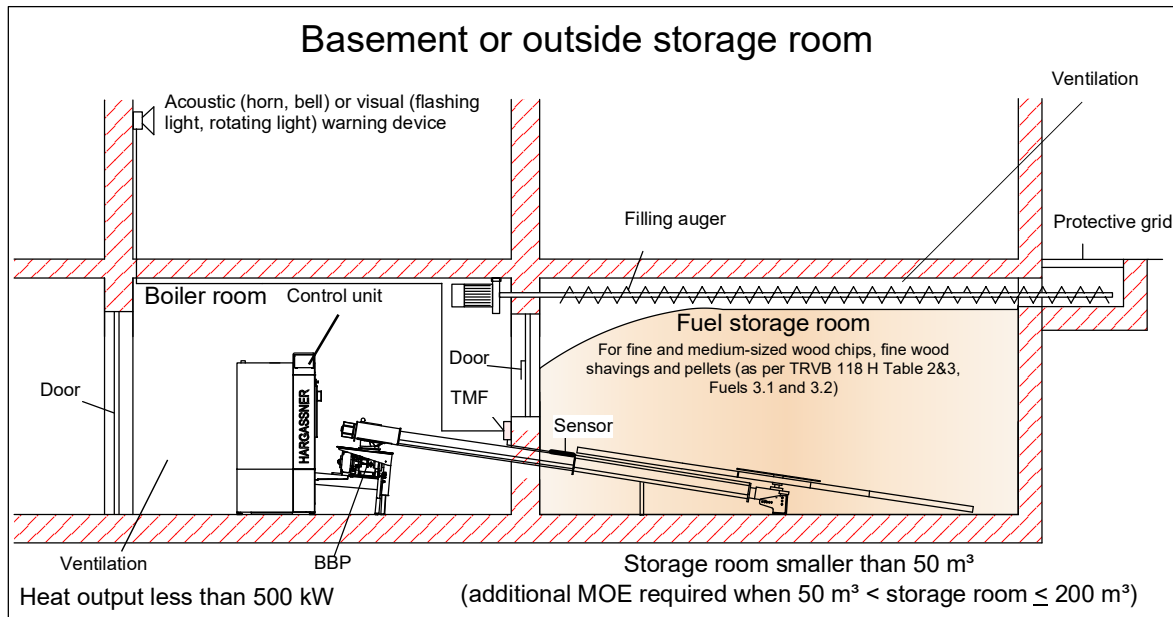
TRVB 118 H

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**).

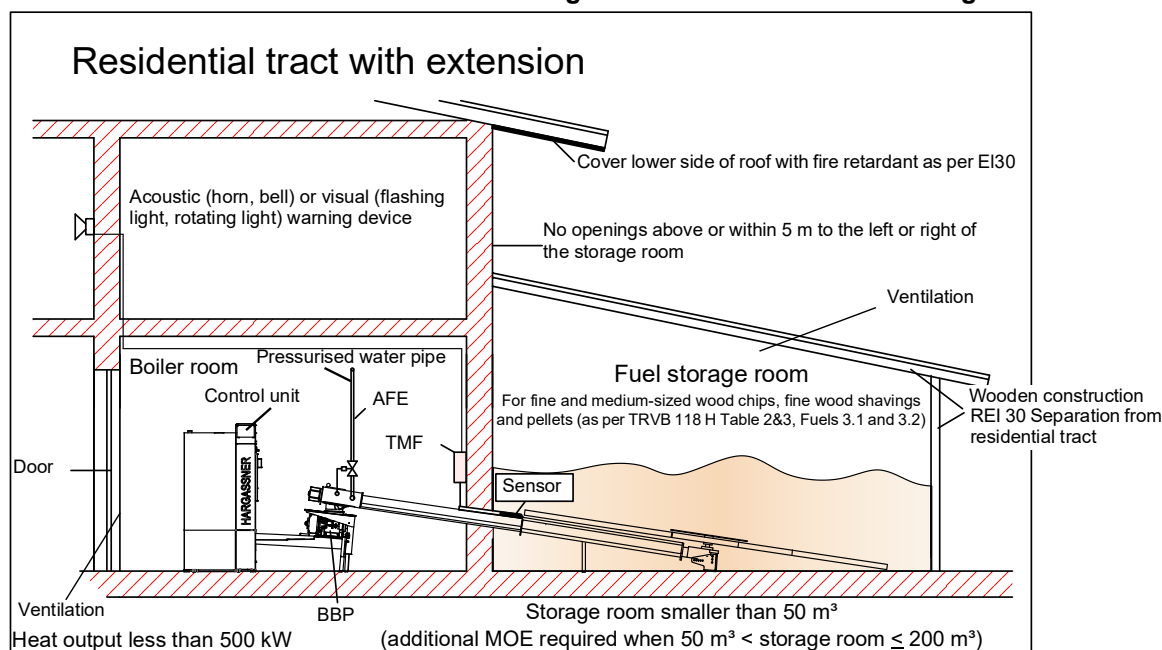
Closed fuel storage room



- ☞ 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 m ³	No additional measures
> 50 m ³	MOE
> 200 m ³	MOE (+ AFE for Switzerland)

Extension of the fuel storage room to a residential building

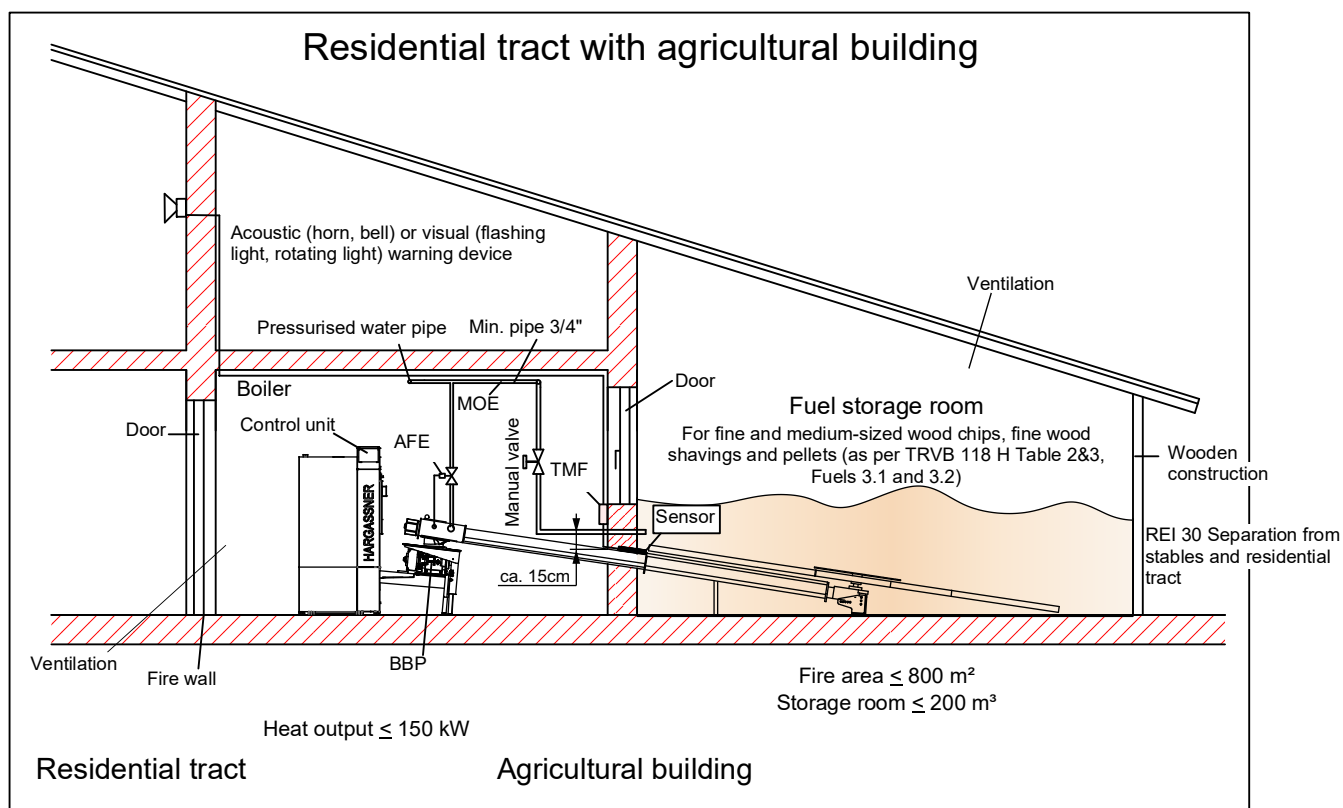


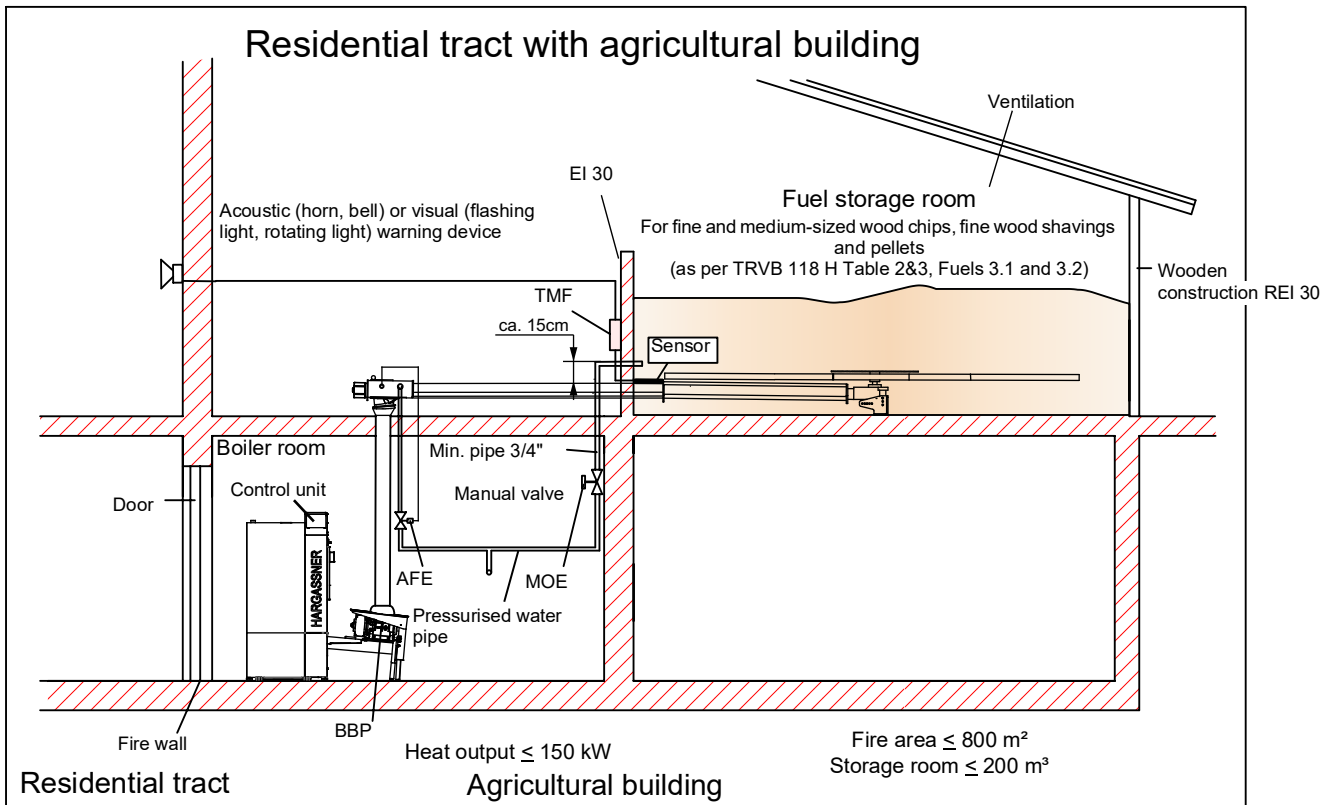
Size of the closed storage room	Additionally required safety device
$\leq 50 \text{ m}^3$	(AFE for Switzerland)
$> 50 \text{ m}^3 - 200 \text{ m}^3$	MOE (+ AFE for Switzerland)

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)





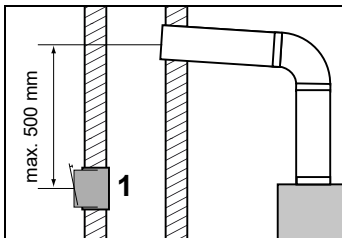
13.8 Flue connection, flue pipe

	Unit	Eco-HK 250	Eco-HK 300	Eco-HK 330
Nominal heating output	kW	249	299	330
Flue gas temperature	°C	140	150	150
CO ₂	%	14		
Flue gas mass flow rate	kg/sec	0.1454	0.1752	0.1937
Available delivery pressure of fan	Pa	5		
Max. flue draught stabiliser	Pa	10		
Flue pipe diameter	mm	250		

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

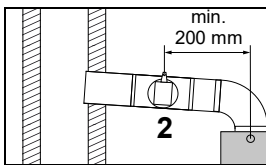
- The flue pipe is rising towards the flue and should be as short as possible
- Install appropriate openings for cleaning
- Insulate the flue pipe
 - ☞ Protection from hot surface on the flue pipe (risk of burns)
 - ☞ Protection from flammable parts and materials (e.g. electrical wiring)
 - ☞ For reducing 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 flue beneath the junction of 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 junction in the flue 500 mm
 - ☞ A flue draught stabiliser installed in the flue is beneficial in overpressure situations and when the flue draught is poor



If installation in the flue 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

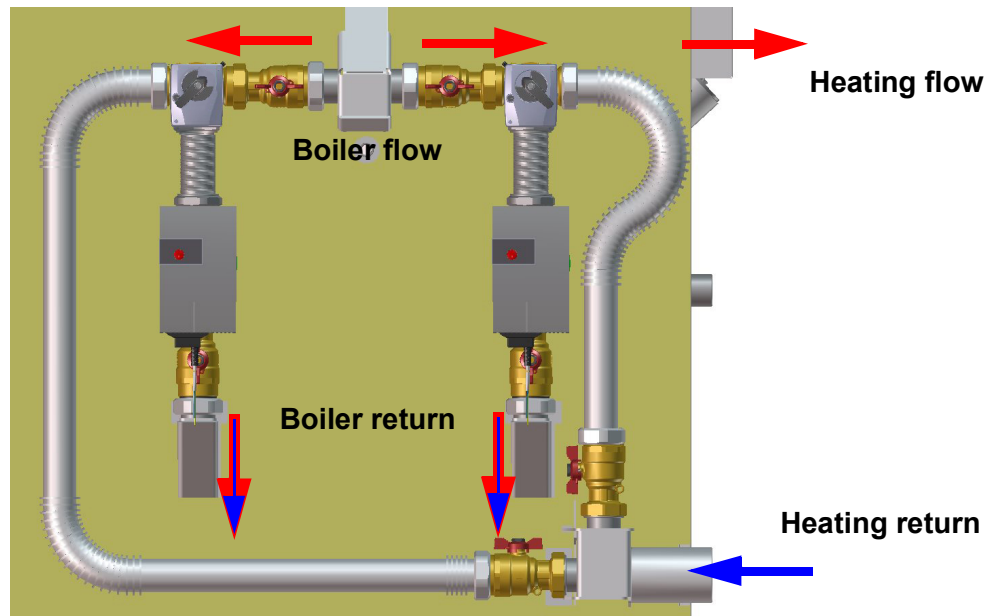
14.1 Back-end protection unit

	A T T E N T I O N
	<p>Material damage</p> <p>Damage to the system due to aggressive condensate</p> <ul style="list-style-type: none">• Install back-end protection 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 system, 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 image shows back-end protection of a **left** boiler.

Note the following:

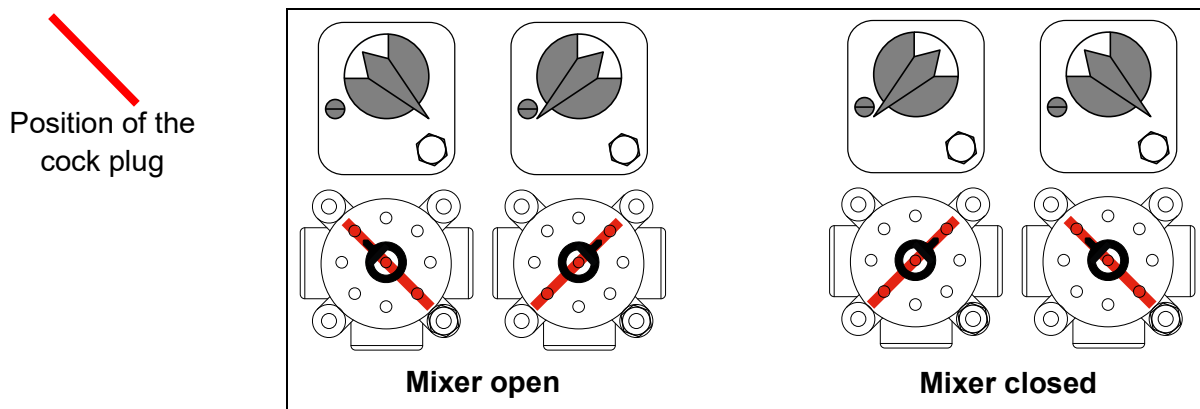
- ☞ Install the back-end protection on the side of the boiler
- ☞ Be aware of the mixer direction

The mixer is **closed** when the system circuit is closed or the mixer is **open** when the system 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

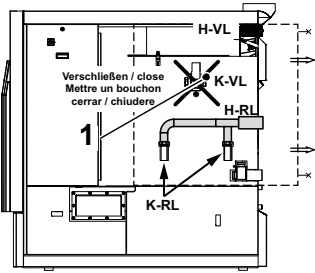
14.1.2 Position of the cock plug



- ☞ The mixer is **closed** when the system circuit is closed
 - ☞ Maximum back-end protection, no energy for heating
- ☞ The mixer is **open** when the system 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

RAG - bauseits / on site /
Sans Groupe de Recyclage /
no incluido / in loco



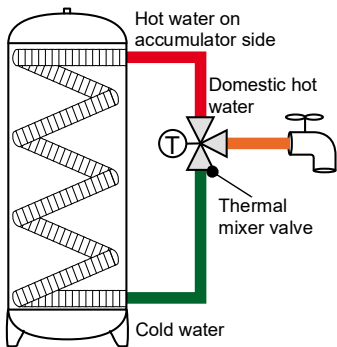
The adjacent image shows the on-site back-end protection connections of a **left** boiler.

↪ 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

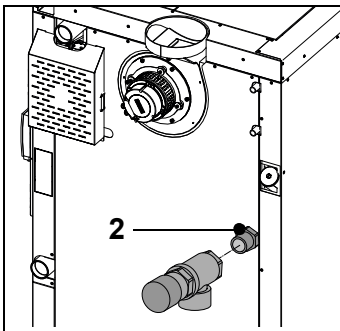
14.2 Domestic hot water mixer



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



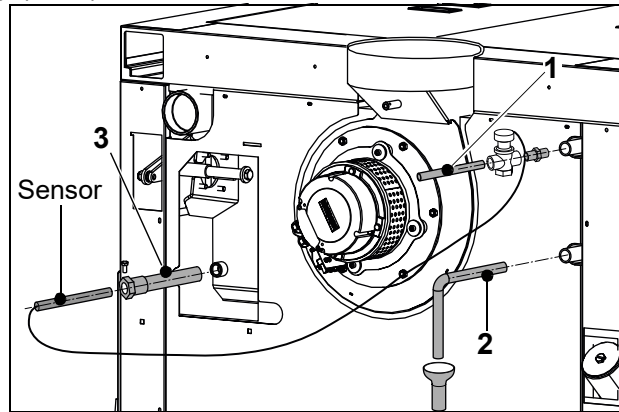
- Connect the safety valve to the back of the boiler **(2)**
- Check for leaks

NOTE	
	<p>To ensure safe drainage after the overpressure valve has been triggered, a hose or pipe must be connected that leads into the drain. The drain with drain funnel must be free to inspect in order to detect any leaks (dripping) of the valve.</p>

14.4 Thermal safety circuit

To prevent the system from overheating.

- ❑ Install certified thermal safety circuit according to EN14597
 - ☞ Minimum connection pressure 2 bar
 - ☞ Immersion sleeve minimum length 152 mm
- ☞ In some domestic installations, the water supply for the thermal safety circuit depends on an uninterrupted power supply. In this case, an uninterruptible power supply (UPS) must be installed



Operation: The cold water supply of the boiler opens when the boiler overheats (>95°C), flows through the boiler and cools it down again.

- ☞ Do not use the integrated safety heat exchanger of the thermal safety circuit for hot water processing

The drain with drain funnel must be free to inspect in order to detect any leaks (dripping) of the valve.

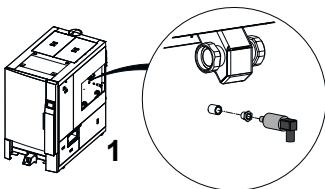
The drain must be free. Blockages must be removed immediately.

It must be impossible to shut off the water supply in order to prevent the supply line from being shut off accidentally.

Before installing the valve, the piping must be thoroughly rinsed to prevent valve contamination

Item	Description
1	Water supply with safety valve and sensor
2	Return line to the duct
3	Immersion sleeve with safety screw

15 Safety components



- System pressure limiter (system pressure sensor) (1) optional
 - ☞ Connection must be closed if no pressure sensor is installed
- Certain safety components must be installed as per EN 12828 from an output of more than 300 kW.
- Maximum pressure limiter (optional)
 - Minimum pressure limiter or low-water safety device (optional)
 - Expansion trap (optional)
 - ☞ An expansion trap is not necessary if an additional temperature limiter and an additional maximum pressure limiter are installed
- ❑ Install all electrical safety components close to the boiler
 - ⇒ **Electrical supply, see electrical manual**


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 boiler 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	
	<p>Fire hazard</p> <p>Risk of burns and damage from flammable material</p> <ul style="list-style-type: none">• During the electrical installation process, be aware of the position of the flue pipe.• The insulation of cables and cable shafts is flammable.• The distance from electrical wires to the bare flue pipe must be 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).

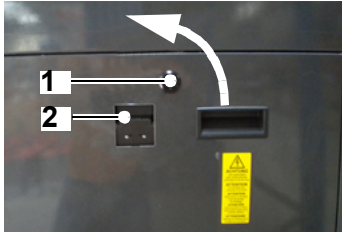
- Power supply to the control unit
- Protection of the power supply with back-up fuse according to electrical diagram
 - ☞ Note the instructions in the wiring diagram
- Main heating switch (emergency stop) in front of the boiler room door
 - ☞ Complete disconnection of the electrical power supply to 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 boiler (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

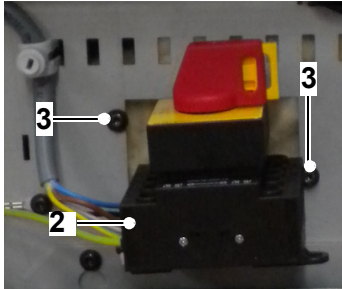
Install a fault lamp to display errors.

- ⇒ **Wiring diagrams of the boards in the control cabinet**
- Acoustic (horn) or visual warning device (rotating light)

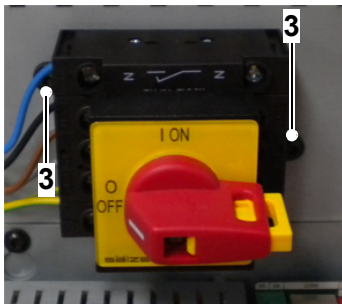
16.2 Installing the main power switch



- 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

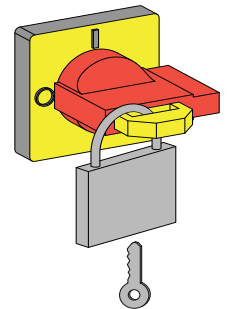


- Loosen 2x tapping screws (3) from the board base plate



- 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)
 - ☞ Flue, 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

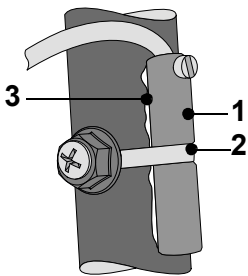
17.2 Flow, accumulator and external heat sensors



According to the hydraulic schematic

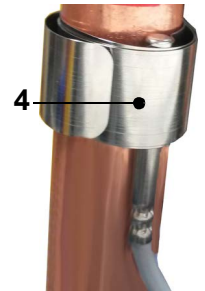
- Temperature sensors (except the flue gas sensor) designed as a PT 1000 immersion sensor with a pre-connected sensor cable
 - ☞ Do not damage or bend the sensor cable
 - ☞ When extending the cable, bear the minimum cross section in mind

17.2.1 Flow sensor for heat circuits

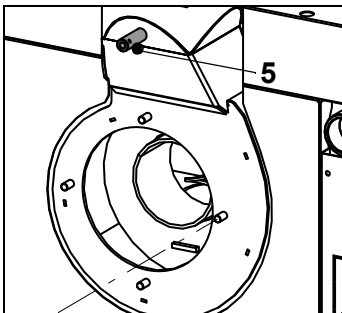


Position

- 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

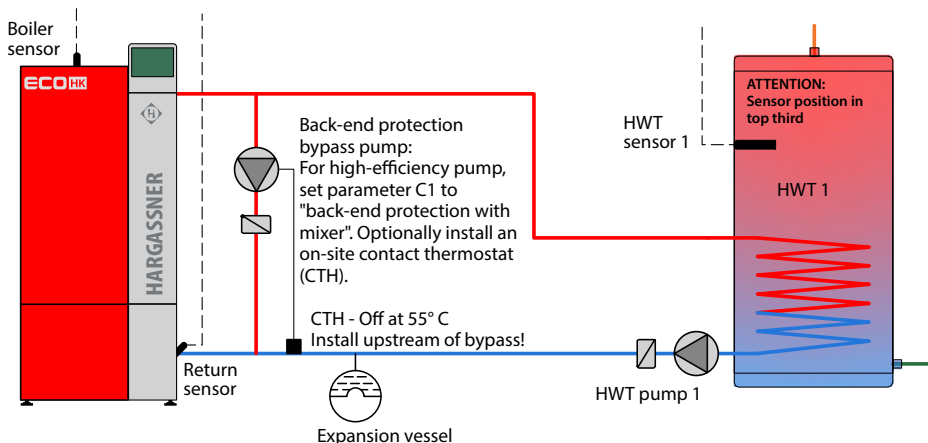
- Install the sensor using the immersion sleeve
- Position the accumulator- and HWT sensor

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

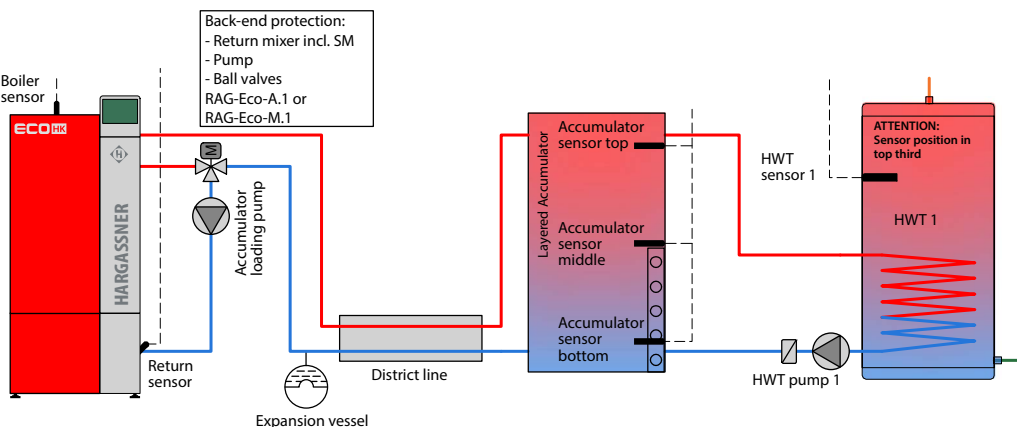
External HWT

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	



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, flue, 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)

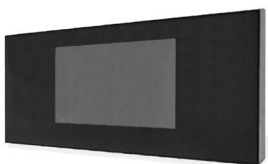


Can be used for all heat circuits (HKM, HKR and HC A).

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 heat circuit controllers 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

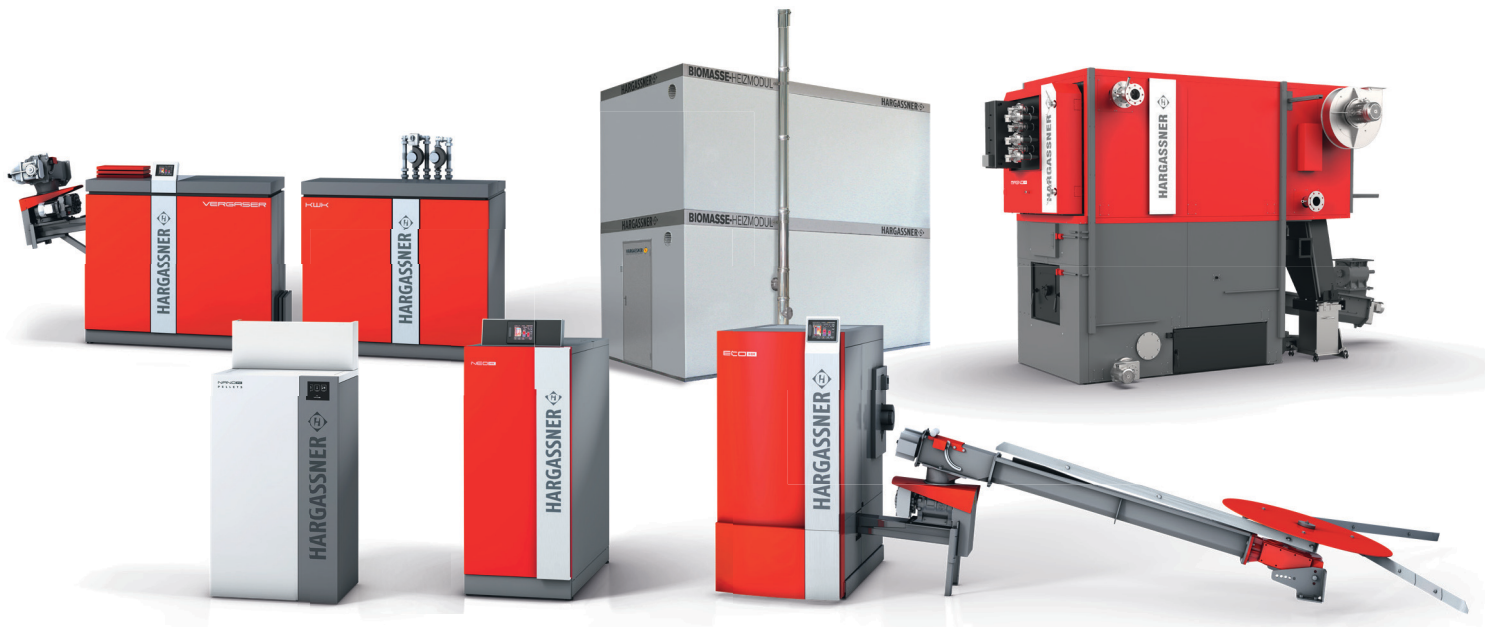
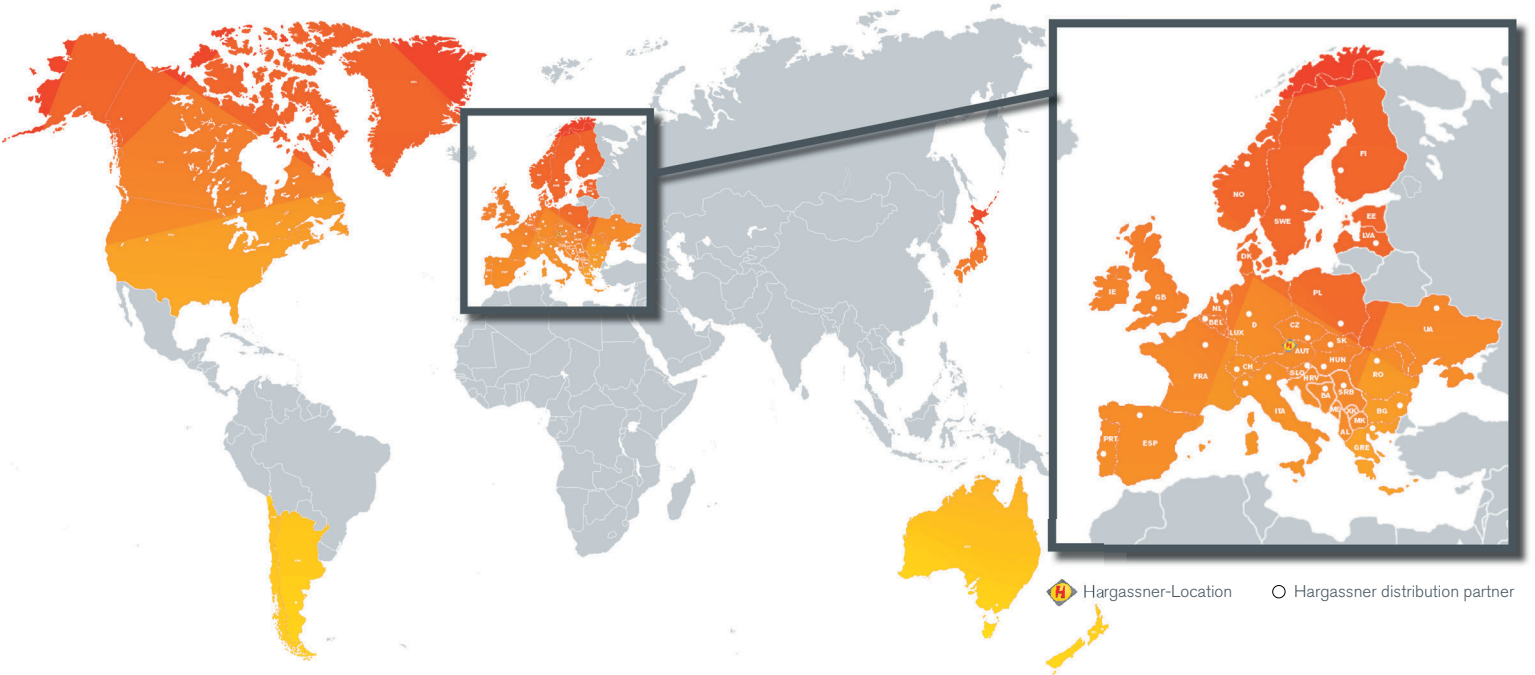
Caution: Have the installation or conversion of a heating system approved by the relevant regulatory authority.

- 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 boiler

	D A N G E R
	<p>Risk of injury and/or material damage</p> <p>Injuries or damage to the system due to unauthorised commissioning</p> <ul style="list-style-type: none">• Make sure that commissioning or start-up is performed by Hargassner GmbH or specially trained staff.• Prevent unauthorised commissioning.• Do not perform any work on the system.• Only operate the system independently after a commissioning report has been signed.

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