fröling

Installation instructions

Wood chip boiler T4e 200-350

Translation of original German version of installation instructions for technicians.

Read and follow all instructions and safety instructions.
All errors and omissions excepted.

CE

M2250322_en | Edition 02/11/2022

1 General

Thank you for choosing a quality product from Froling. The product features a state-of-the-art design and conforms to all currently applicable standards and testing guidelines.

Please read and observe the documentation provided and always keep it close to the system for reference. Observing the requirements and safety information in the documentation makes a significant contribution to safe, appropriate, environmentally friendly and economical operation of the system.

The constant further development of our products means that there may be minor differences from the pictures and content. If you discover any errors, please let us know: doku@froeling.com.

Subject to technical change.

Issuing a delivery certificate

The EC Declaration of Conformity is only valid in conjunction with a delivery certificate, which has been filled in correctly and signed as part of the commissioning process. The original document remains at the installation site. Commissioning installers or heating engineers are requested to return a copy of the delivery certificate together with the guarantee card to Froling. On commissioning by FROLING Customer Service the validity of the delivery certificate will be noted on the customer service record.

1.1 About this manual

These installation instructions contain information for the following boiler sizes T4e / T4e ESP:

200, 250, 300, 350;

2 Safety

2.1 Hazard levels of warnings

This documentation uses warnings with the following hazard levels to indicate direct hazards and important safety instructions:

⚠ DANGER

The dangerous situation is imminent and if measures are not observed it will lead to serious injury or death. You must follow the instructions!

⚠ WARNING

The dangerous situation may occur and if measures are not observed it will lead to serious injury or death. Work with extreme care.

⚠ CAUTION

The dangerous situation may occur and if measures are not observed it will lead to minor injuries.

NOTICE

The dangerous situation may occur and if measures are not observed it will lead to damage to property or pollution.

2.2 Qualification of assembly staff

⚠ CAUTION

Assembly and installation by unqualified persons:

Risk of personal injury and damage to property

During assembly and installation:

❒ Observe the instructions and information in the manuals

❒ Only allow appropriately qualified personnel to work on the system

Assembly, installation, initial startup and servicing must always be carried out by qualified personnel:

- Heating technician / building technician
- Electrical installation technician
- Froling customer services

The assembly staff must have read and understood the instructions in the documentation.

2.3 Personal protective equipment for assembly staff

You must ensure that staff have the protective equipment specified by accident prevention regulations!

- During transport, erection and installation:
  - wear suitable work wear
  - wear protective gloves
  - wear safety shoes (min. protection class S1P)

3 Design Information

3.1 Overview of standards

Perform installation and commissioning of the system in accordance with the local fire and building regulations. Unless contrary to other national regulations, the latest versions of the following standards and guidelines apply:

3.1.1 General standards for heating systems

EN 303-5	Boilers for solid fuels, manually and automatically fed combustion systems, nominal heat output up to 500 kW
EN 12828	Heating systems in buildings - design of water-based heating systems
EN 13384-1	Chimneys - Thermal and fluid dynamic calculation methods Part 1: Chimneys serving one appliance
ÖNORM H 5151	Planning of central hot water heating systems with or without hot water preparation
ÖNORM M 7510-1	Guidelines for checking central heating systems Part 1: General requirements and one-off inspections
ÖNORM M 7510-4	Guidelines for checking central heating systems Part 4: Simple check for heating plants for solid fuels

3.1.2 Standards for structural and safety devices

ÖNORM H 5170	Heating installation - Requirements for construction and safety engineering, as well as fire prevention and environmental protection
TRVB H 118	Technical directives for fire protection/prevention (Austria)

3.1.3 Standards for heating water

ÖNORM H 5195-1	Prevention of damage by corrosion and scale formation in closed warm water heating systems at operating temperatures up to 100°C (Austria).
VDI 2035	Prevention of damage hot water heating systems (Germany)
SWKI BT 102-01	Water quality for heating, steam, cooling and air conditioning systems (Switzerland)
UNI 8065	Technical standard regulating hot water preparation. DM 26.06.2015 (Ministerial Decree specifying the minimum requirements) Follow the instructions of this standard and any related updates. (Italy)

3.1.4 Regulations and standards for permitted fuels

1. BImSchV	First Order of the German Federal Government for the implementation of the Federal Law on Emission Protection (Ordinance on Small and Medium Combustion Plants) in the version published on 26 January 2010, BGBl. JG 2010 Part I No. 4.
EN ISO 17225-2	Solid bio-fuel - Fuel specifications and classes Part 2: Wood pellets for use in industrial and domestic systems
EN ISO 17225-4	Solid bio-fuel - Fuel specifications and classes Part 4: Wood chips for non-industrial use

3.2 Installation and approval

The boiler should be operated in a closed heating system. The following standards govern the installation:

Note on standards

EN 12828 - Heating Systems in Buildings

IMPORTANT: Every heating system must be officially approved.

The appropriate supervisory authority (inspection agency) must always be informed when installing or modifying a heating system, and authorisation must be obtained from the building authorities:

Austria: report to the construction authorities of the community or magistrate

Germany: report new installations to an approved chimney sweep / the building authorities.

3.3 Installation site

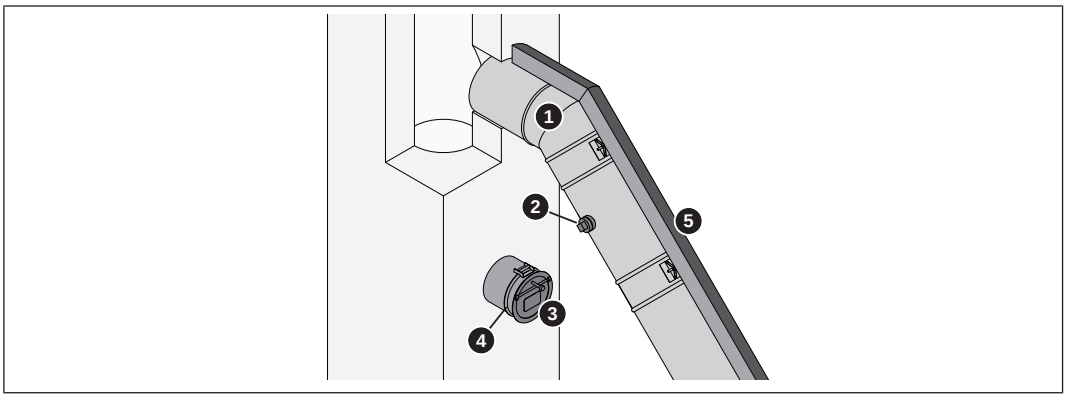
Requirements for the load bearing substrate:

- Flat, clean and dry
- Non-combustible and with sufficient load-bearing capacity

Conditions at the installation site:

- Frost-free
- Sufficiently well lit
- Free of explosive atmospheres such as flammable substances, hydrogen halides, cleaning agents and consumables
- Installation at altitude higher than 2000 metres above sea level only after consultation with the manufacturer
- The system must be protected against gnawing and nesting by animals (such as rodents)
- No flammable materials in proximity to the system

3.4 Chimney connection/chimney system



1	Connection line to the chimney
2	Measuring port
3	Draught limiter
4	Explosion flap (for automatic boilers)
5	Thermal insulation

NOTICE! The chimney must be authorised by a smoke trap sweeper or chimney sweep.

The entire flue gas system (chimney and connection) must be laid out as per ÖNORM / DIN EN 13384-1 or ÖNORM M 7515 / DIN 4705-1.

The flue gas temperatures (for clean systems) and additional flue gas values can be found in the table in the technical data.

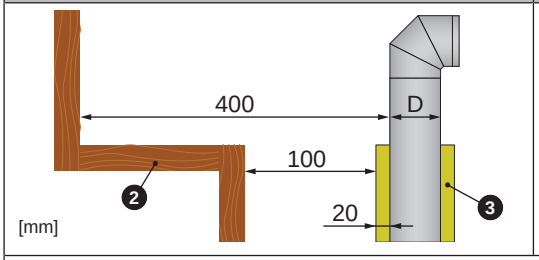
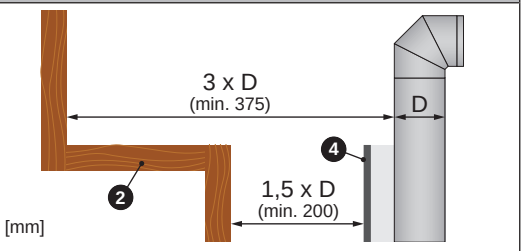
Local regulations and other statutory regulations are also applicable.

EN 303-5 specifies that the entire flue gas system must be designed to prevent, wherever possible, damage caused by seepage, insufficient feed pressure and condensation. Please note within the permissible operating range of the boiler flue gas temperatures lower than 160K above room temperature may occur.

3.4.1 Connection line to the chimney

Requirements for the connection line:

- this should be as short as possible and follow an upward incline to the chimney (30 - 45° recommended)
- thermally insulated

MFeuV[1] (Germany)	EN 15287-1 and EN 15287-2
	

1. Observe the fire regulations of the respective federal state
2. Component made of flammable material
3. Nonflammable insulating material
4. Radiation shield with rear ventilation

Minimum distance from flammable substances as per MFeuV[1] (Germany):

- 400 mm excluding thermal insulation
- 100 mm if at least 20 mm thermal insulation is installed

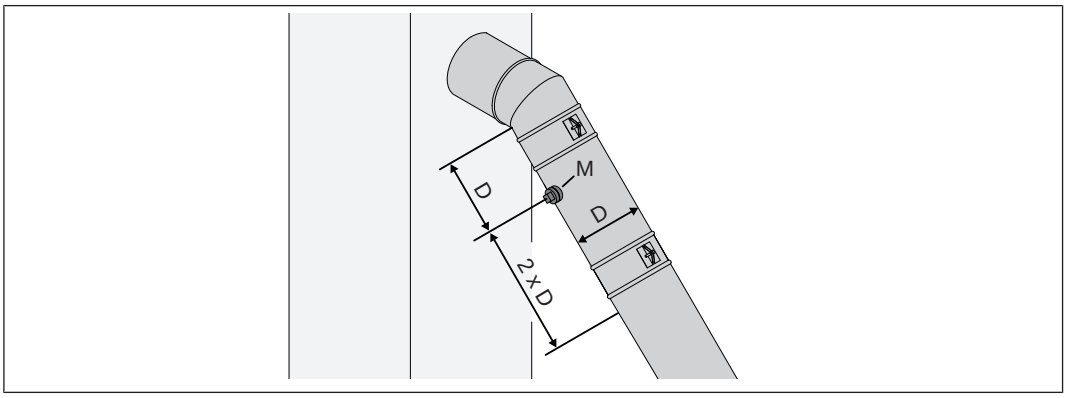
Minimum distance from flammable materials as per EN 15287-1 and EN 15287-2:

- 3 x nominal diameter of connection line, but at least 375 mm (NM)
- 1.5 x nominal diameter of connection line for radiation shield with rear ventilation, but at least 200 mm (NM)

NOTICE! The minimum distances must be observed in accordance with the standards and guidelines applicable in the region

3.4.2 Measuring port

For emissions measurement on the system, a suitable measuring port must be installed in the connection line between the boiler and chimney system.



Upstream of the measuring port (M) there should be a straight run-in section with a length about twice the diameter (D) of the connection line. Downstream of the measuring port (M) there should be a straight run-out section with a length about the diameter (D) of the connection line. The measuring port must remain closed whenever the system is in operation.

The diameter of the measuring probe used by Froling customer service is 14 mm. To avoid measuring errors due to the ingress of false air, the diameter of the measuring port must not exceed 21 mm.

3.4.3 Draught limiter

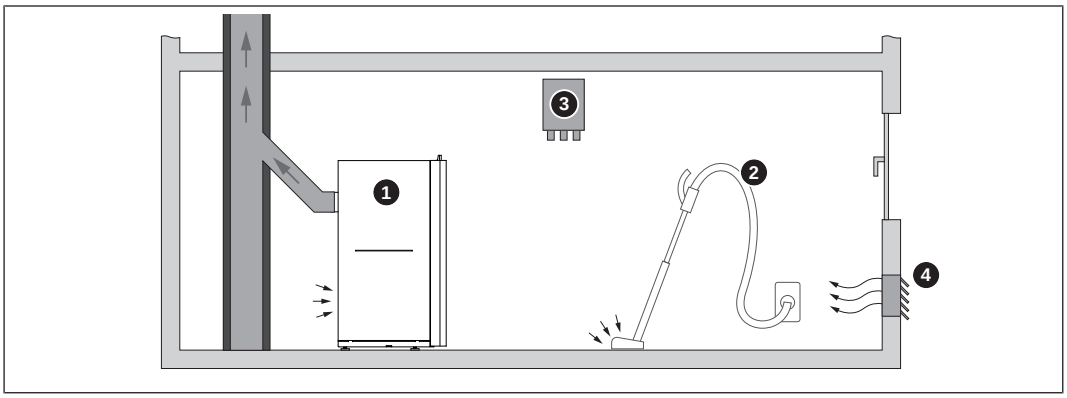
We generally recommend the installation of a draught limiter. A draught limiter must be installed if the maximum permissible feed pressure as given in the boiler data for planning the flue gas system is exceeded.

NOTICE! Install the draught limiter directly under the mouth of the flue line, as the pressure is constantly low at this point.

3.4.4 Explosion flap

TRVB H 118 (only Austria) stipulates that an explosion flap must be installed in the connection line to the chimney, directly next to the boiler. It should be situated in such a way that is poses no risk to persons!

3.5 Combustion air



1	Boiler in room air-dependent operation
2	Air extraction system (such as centralised dust extraction system, room ventilation)
3	Under-pressure monitoring system
4	Combustion air supply from outside

3.5.1 Combustion air supply at the installation room

The system is operated in open flue mode, i.e. the combustion air required to operate the boiler is drawn from the installation room.

Requirements:

- Opening to the atmosphere
  - Weather conditions must not affect the air flow in any way (e.g. snow and foliage)
  - Cross-section area free of obstructions such as cover gratings and slats
- Air supply lines
  - For air supply lines longer than 2 metres and where mechanical means are used to feed combustion air, the flow rate must be calculated (maximum flow rate = 1 m/s)

Note on standards

ÖNORM H 5170 - Construction and fire protection requirements

TRVB H118 - Technical directives on fire protection/prevention

3.5.2 Simultaneous operation with other air-drawing systems

Where the boiler is operated in room air-dependent mode with simultaneous operation of other air-drawing systems (such as room ventilation), safety devices are necessary:

- Air pressure monitor
- Flue gas thermostat
- Window-tilting drive system, window-tilting switch

NOTICE! Clarify the safety devices with appropriate flue sweep / chimney sweep

Recommendation for room ventilation:

Use “intrinsically-safe” room ventilation systems with F classification

As a basic rule:

- Room under-pressure max. 8 Pa
- Air-drawing systems must not exceed the room under-pressure value
  - If the room under-pressure value is exceeded, safety equipment (under-pressure monitoring system) is necessary

In Germany, the following additional requirement must be observed:

A gauge that monitors the negative pressure gauge (e.g. air pressure sensor P4) and is approved by the DIBt (German Technical Authority in the Construction Sector) must be used. This monitor tracks the maximum negative pressure of 4 Pa at the installation site.

In addition, at least one of the following three requirements must be met:
(Source: Section 4 MFeuV 2007 / 2010)

- Dimension the cross-section of the combustion air opening so that when the boiler is in operation the maximum under-pressure is not exceeded (simultaneous operation)
- Use safety equipment that prevents simultaneous operation (alternate operation)
- Monitor the flue gas outlet using safety devices (such as a flue gas thermostat)

Simultaneous operation

An approved safety system (such as an air pressure monitor) ensures that during simultaneous operation of the boiler and the air-drawing appliance the pressure conditions are maintained. In the event of a fault, the safety system will switch off one of the air-drawing systems.

Alternating operation

An approved safety system (such as a flue gas thermostat) ensures (e.g. by switching off the power supply) that the boiler cannot be operated simultaneously with the air-drawing appliance.

3.6 Domestic hot water

Unless contrary to other national regulations, the latest versions of the following standards and guidelines apply:

Austria:	ÖNORM H 5195	Switzerland:	SWKI BT 102-01
Germany:	VDI 2035	Italy:	UNI 8065

Observe the standards and also follow the recommendations below:

- ❒ Aim for a pH value of between 8.2 and 10.0. If the central heating water comes into contact with aluminium, the pH value must be between 8.2 and 9.0
- ❒ Use prepared water which complies with the standards cited above for filling and make-up water
- ❒ Avoid leaks and use a closed heating system to maintain water quality during operation
- ❒ When filling with make-up water, always bleed the filling hose before connecting, in order to prevent air from entering the system
- ❒ The heating water must be clear and free from substances that lead to sediments.
- ❒ With regard to corrosion protection, the use of fully demineralised filling and make-up water with an electrical conductivity of up to 100 µS/cm is recommended in accordance with EN 14868

Advantages of low-salt or fully demineralised water:

- Complies with the applicable standards
- Less of a drop in output due to reduced limescale build-up
- Less corrosion due to fewer aggressive substances
- Long-term cost savings thanks to improved energy efficiency

Filling and make-up water as well as heating water in accordance with VDI 2035:

Total heat output in kW	Total earth alkalis in mol/m³ (total hardness in °dH)		
	Specific system volume in l/kW heat output[1)]		
	≤ 20	20 to ≤40	> 40
≤ 50 specific water content heat generator ≥ 0.3 l/kW[2)]	none	≤ 3.0 (16.8)	< 0.05 (0.3)
≤ 50 specific water content heat generator < 0.3 l/kW[2)] (e.g. circulation water heater) and systems with electric heating elements	≤ 3.0 (16.8)	≤ 1.5 (8.4)	
> 50 to ≤ 200	≤ 2.0 (11.2)	≤ 1.0 (5.6)	
> 200 to ≤ 600	≤ 1.5 (8.4)	< 0.05 (0.3)	
> 600	< 0.05 (0.3)		

1. For calculating the specific system volume, the smallest individual heating capacity is to be used for systems with several heat generators.
2. In systems with several heat generators with different specific water contents, the smallest specific water content is decisive in each case.

Additional requirements for Switzerland

The filling and make-up water must be demineralised (fully purified)

- The water must not contain any ingredients that could settle and accumulate in the system
- This makes the water non-electroconductive, which prevents corrosion
- It also removes all the neutral salts such as chloride, sulphate and nitrate which can weaken corrosive materials in certain conditions

If some of the system water is lost, e.g. during repairs, the make-up water must also be demineralised. It is not enough to soften the water. The heating system must be professionally cleaned and rinsed before filling the units.

Inspection:

- After eight weeks, the pH value of the water must be between 8.2 and 10.0. If the central heating water comes into contact with aluminium, the pH value must be between 8.0 and 8.5
- Yearly. Values must be recorded by the owner

3.7 Pressure maintenance systems

Pressure maintenance systems in hot-water heating systems keep the required pressure within predefined limits and balance out volume variations caused by changes in the hot-water temperature. Two main systems are used:

Compressor-controlled pressure maintenance

In compressor-controlled pressure maintenance units, a variable air cushion in the expansion tank is responsible for volume compensation and pressure maintenance. If the pressure is too low, the compressor pumps air into the tank. If the pressure is too high, air is released by means of a solenoid valve. The systems are built solely with closed-diaphragm expansion tanks to prevent the damaging introduction of oxygen into the heating water.

Pump-controlled pressure maintenance

A pump-controlled pressure maintenance unit essentially consists of a pressure-maintenance pump, relief valve and an unpressurised receiving tank. The valve releases hot water into the receiving tank if the pressure is too high. If the pressure drops below a preset value, the pump draws water from the receiving tank and feeds it back into the heating system. Pump-controlled pressure maintenance systems with **open expansion tanks** (e.g. without a diaphragm) introduce ambient oxygen via the surface of the water, exposing the connected system components to the risk of corrosion. These systems offer no oxygen removal for the purposes of corrosion control as required by VDI 2035 and **in the interests of corrosion protection should not be used**.

3.8 Storage tank

NOTICE

In principle it is not necessary to use a storage tank for the system to run smoothly. However we recommend that you use the system with a storage tank, as this ensures a continuous supply of fuel in the ideal output range of the boiler.

For the correct dimensions of the storage tank and the line insulation (in accordance with ÖNORM M 7510 or guideline UZ37) please consult your installer or Fröling.

Additional requirements for Switzerland in accordance with LRV Appendix 3, section 523

Automatic boilers with a rated thermal output ≤ 500 kW must be equipped with a heat accumulator of a volume of at least 25 litres per kW rated thermal output.

3.9 Return temperature control

As long as the hot water return is below the minimum return temperature, part of the hot water flow is added. This function is assumed by the function which increases the temperature inside the boiler.

3.10 Boiler ventilation

❒ Fit the automatic ventilating valve at the highest point on the boiler or at the ventilation connection (if present).

↳ This ensures that air in the boiler is constantly expelled, thus preventing malfunctions caused by air in the boiler

❒ Check that the boiler ventilation is working properly

↳ After installation and periodically according to manufacturer's instructions

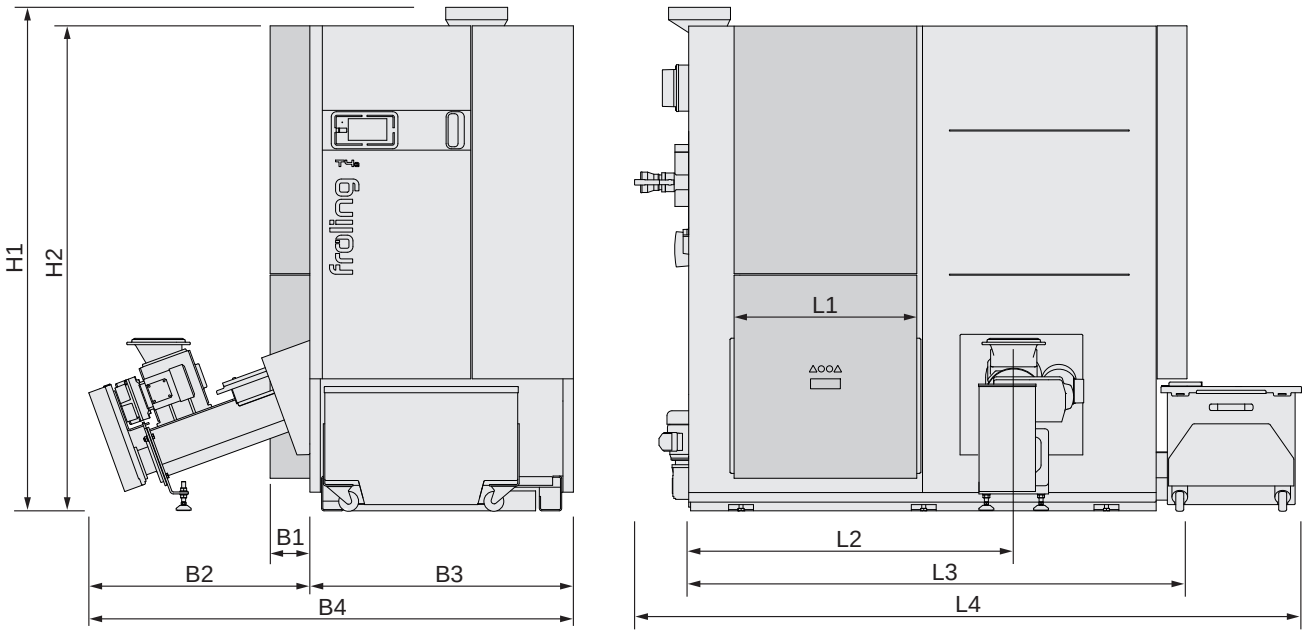
Tip: ❒ Fit a vertical pipe as a calming section in front of the automatic ventilating valve in such a way that the ventilating valve is positioned above the water level in the boiler

Recommendation: ❒ Fit a microbubble separator in the pipes to the boiler

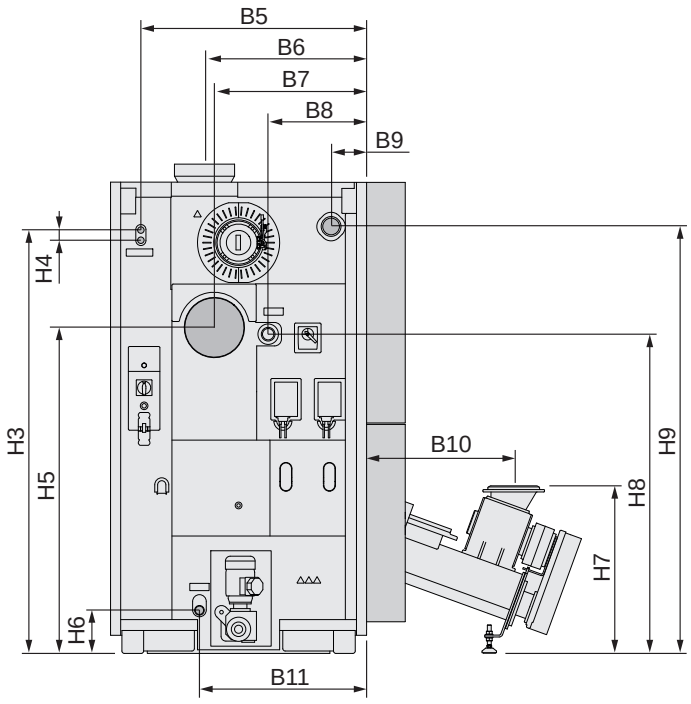
↳ Follow the manufacturer's instructions!

4 Technical information

4.1 Dimensions T4e 200-250



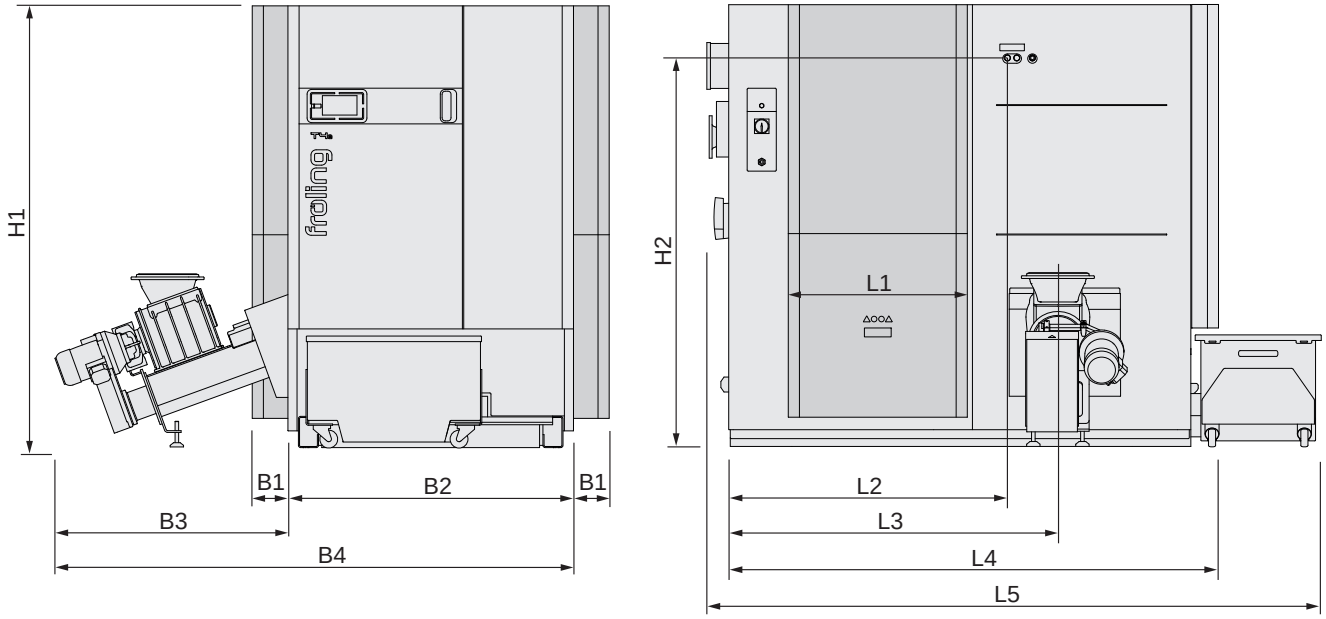
Dimension	Description		200 - 250
L1	Length of particle separator (optional)	mm	735
L2	Distance between stoker and back of the boiler		1310
L3	Length of boiler		2005
L4	Total length		2680
B1	Width of particle separator (optional)		160
B2	Width of stoker unit		890
B3	Width, boiler		1060
B4	Total width, including stoker unit		1950
H1	Total height incl. flue gas nozzle		2025
H2	Height, boiler		1950



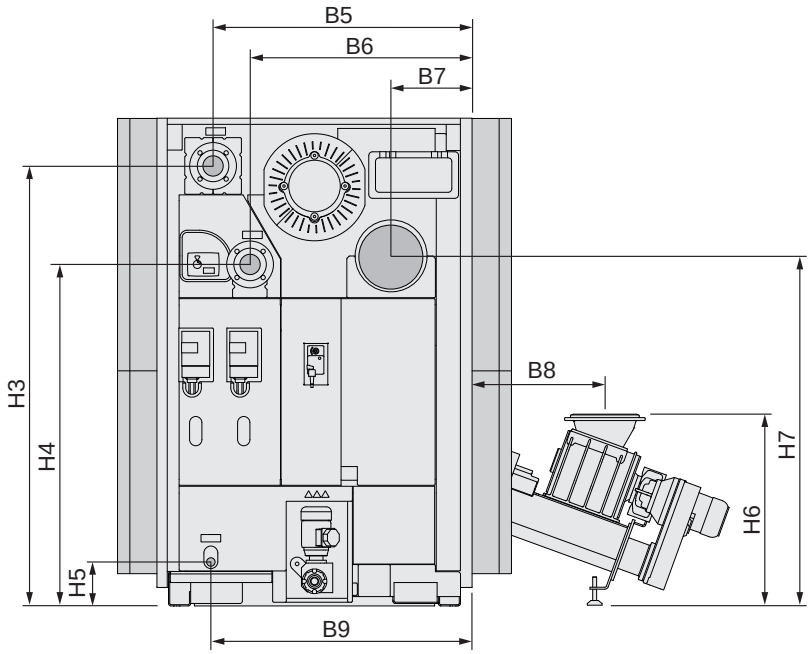
Dimension	Description		200 - 250
W5	Distance between safety heat exchanger connection and side of boiler	mm	935
B6	Distance between flue gas pipe connection and side of boiler		670
W7	Distance of rear flue gas pipe connection from the rear of the boiler[1)]		630
W8	Distance between return connection and side of boiler		410
W9	Distance between flow connection and side of boiler		150
B10	Distance between stoker connection and back of the boiler		610
B11	Distance between drainage connection and side of boiler		690
H3	Height, safety heat exchanger connection		1755
H4	Distance between safety heat exchanger connections		40
H5	Height of rear flue gas pipe connection[1)]		1350
H6	Height, drainage connection		180
H7	Height of stoker connection		690
H8	Height, return connection		1240
H9	Height, flow connection		1770

1. Optional for T4e 200-250

4.2 Dimensions T4e 300-350

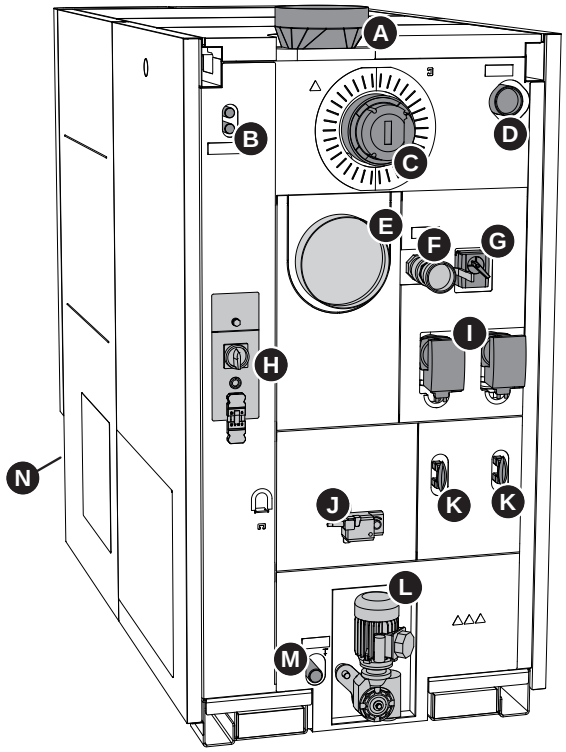


Dimension	Description		300 - 350
L1	Length of particle separator (optional)	mm	805
L2	Distance between safety heat exchanger connection and side of boiler		1250
L3	Distance between stoker and back of the boiler		1475
L4	Length of boiler		2195
L5	Total length		2785
W1	Width of particle separator (optional)		160
W2	Width, boiler		1280
B3	Width of stoker unit		1045
B4	Total width, including stoker unit		2325
H1	Overall height		1980
H2	Height, safety heat exchanger connection		1740

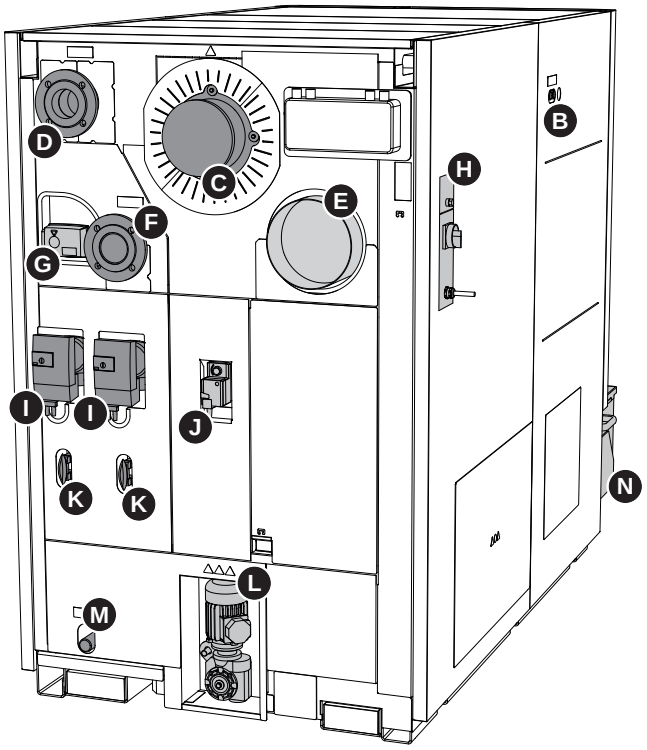


Dimension	Description		300 - 350
W5	Distance between flow connection and side of boiler	mm	1050
B6	Distance between return connection and side of boiler		900
W7	Distance between flue gas pipe connection and side of boiler		330
W8	Distance between stoker connection and back of the boiler		540
W9	Distance between drainage connection and side of boiler		1060
H3	Height, flow connection		1790
H4	Height, return connection		1390
H5	Height, drainage connection		180
H6	Height of stoker connection		775
H7	Height, flue pipe connection		1420

4.3 Components and connections



T4e 200 - 250



T4e 300 - 350

Item	Description	200 - 250	300 - 350
A	Top flue gas pipe connection	249 mm	-
W	Safety heat exchanger	1/2“	
C	Induced draught fan	-	
D	Boiler flow	2 1/2“	DN 80 / PN 6
E	Rear flue gas pipe connection	249 mm (optional)	249 mm
F	Boiler return	2 1/2“	DN 80 / PN 6
G	Mixing valve for the return temperature control	-	
H	Main switch and safety temperature limiter STL	-	
I	Pump for the return temperature control	-	
J	Primary air actuator for flue gas recirculation	-	
K	Line regulating valve (optional)	-	
L	Drive for ash removal	-	
M	Drainage	1“	
N	Ash container	160 Litres	

4.4 Technical specifications

4.4.1 T4e 200 - 250

Description		T4e 200 - 250		
		200	230	250
Nominal heat output	kW	199	230	250
Electrical connection		400 V / 50 Hz / C16A		
Weight of boiler (including stoker, without water)	kg	2500		
Boiler capacity (water)	l	438		
Available feed height of pump [1] (with ΔT = 20K)	mbar	446	340	273
Max. permitted operating temperature	°C	90		
Permitted operating pressure	bar	4		
Boiler class as per EN 303-5: 2012		5		
Airborne sound level	dB(A)	< 70		
Permitted fuel as per EN ISO 17225 [2]		Part 2: Wood pellets class A1 / D06 Part 4: Wood chips class A1+A2 / P16S-P31S		
Test book number		PB 135	PB 203	PB 136

1. Pump output less water resistance in the boiler
2. Detailed information on the fuel can be found in the operating instructions in the section entitled “Permitted fuels”

Regulation (EU) 2015/1187 – ηs in [%]	
Heating space annual rate of use ηs	≥ 78

Additional data for regulation (EU) 2015/1189

Description		T4e 200 - 250		
		200	230	250
Heating up mode		automatic		
Condensing boiler		No		
Solid fuel boiler for combined heat and power		No		
Combined heating system		No		
Storage tank volume		➲ "Storage tank" [▶ 16]		
Characteristics when operated exclusively with the preferred fuel				
Useful heat delivered at rated heat output (P_n)	kW	199	230	250
Useful heat delivered at 30% of rated heat output (P_p)		59.7	69.0	75
Fuel efficiency at rated heat output (η_n)	%	85.2	84.8	84.4
Fuel efficiency at 30% of rated heat output (η_p)		84.6	84.5	84.6
Auxiliary current consumption at rated heat output (el_{max})	kW	0.135	0.183	0.214
Auxiliary current consumption at 30% of rated heat output (η_p)		0.062	0.062	0.062
Auxiliary current consumption in standby mode (P_{SB})		0.013	0.013	0.013

Regulation (EU) 2015/1189 – emissions in [mg/m³][1)]	
Annual space heating emissions of dust (PM)	≤ 30
Annual space heating emissions of gaseous organic compounds (GOC)	≤ 20
Annual space heating emissions of carbon monoxide (CO)	≤ 380
Annual space heating emissions of nitrogen oxides (NO_x)	≤ 200

1. The emissions of dust, gaseous organic compounds, carbon monoxide and nitrogen oxides are stated in a standardised form based on dry flue gas with a oxygen content of 10 % and under standard conditions at 0°C and 1013 millibar

4.4.2 T4e 200 - 250 ESP

Description		T4e 200 - 250 ESP		
		200	230	250
Nominal heat output	kW	199	230	250
Electrical connection		400 V / 50 Hz / C16A		
Weight of boiler (including stoker, without water)	kg	2500		
Boiler capacity (water)	l	438		
Available feed height of pump [1)] (with ΔT = 20K)	mbar	446	340	273
Max. permitted operating temperature	°C	90		
Permitted operating pressure	bar	4		
Boiler class as per EN 303-5: 2012		5		
Airborne sound level	dB(A)	< 70		
Permitted fuel as per EN ISO 17225 [2)]		Part 2: Wood pellets class A1 / D06 Part 4: Wood chips class A1+A2 / P16S-P31S		
Test book number		PB 142	PB 206	PB 143

1. Pump output less water resistance in the boiler
2. Detailed information on the fuel can be found in the operating instructions in the section entitled “Permitted fuels”

Regulation (EU) 2015/1187 – ηs in [%]	
Heating space annual rate of use ηs	≥ 78

Additional data for regulation (EU) 2015/1189

Description		T4e 200 – 250 ESP		
		200	230	250
Heating up mode		automatic		
Condensing boiler		No		
Solid fuel boiler for combined heat and power		No		
Combined heating system		No		
Storage tank volume		➲ "Storage tank" [▸ 16]		
Characteristics when operated exclusively with the preferred fuel				
Useful heat delivered at rated heat output (P_n)	kW	199	230	250
Useful heat delivered at 30% of rated heat output (P_p)		59.7	69.0	75.0
Fuel efficiency at rated heat output (η_n)	%	83.8	83.9	83.9
Fuel efficiency at 30% of rated heat output (η_p)		83.7	83.7	83.7

Description		T4e 200 – 250 ESP		
		200	230	250
Auxiliary current consumption at rated heat output (el_{max})	kW	0.218	0.251	0.272
Auxiliary current consumption at 30% of rated heat output (η_p)		0.092	0.092	0.092
Auxiliary current consumption in standby mode (P_{SB})		0.029	0.029	0.029

Regulation (EU) 2015/1189 – emissions in [mg/m³][1)]	
Annual space heating emissions of dust (PM)	≤ 30
Annual space heating emissions of gaseous organic compounds (GOC)	≤ 20
Annual space heating emissions of carbon monoxide (CO)	≤ 380
Annual space heating emissions of nitrogen oxides (NO_x)	≤ 200

1. The emissions of dust, gaseous organic compounds, carbon monoxide and nitrogen oxides are stated in a standardised form based on dry flue gas with a oxygen content of 10 % and under standard conditions at 0°C and 1013 millibar

4.4.3 T4e 300 - 350

Description		T4e 300 - 350	
		300	350
Nominal output	kW	300	350
Electrical connection		400 V / 50 Hz / C25A	
Weight of boiler (including stoker, without water)	kg	3175	
Boiler capacity (water)	l	783	
Available feed height of pump [1] (with ΔT = 20K)	mbar	543	344
Max. permitted operating temperature	°C	90	
Permitted operating pressure	bar	4	
Boiler class as per EN 303-5: 2012		5	
Airborne sound level	dB(A)	< 70	
Permitted fuel as per EN ISO 17225 [2]		Part 2: Wood pellets class A1 / D06 Part 4: Wood chips class A1+A2 / P16S-P31S	
Test book number		PB 204	PB 205

1. Pump output less water resistance in the boiler
2. Detailed information on the fuel can be found in the operating instructions in the section entitled “Permitted fuels”

Regulation (EU) 2015/1187 – ηs in [%]	
Heating space annual rate of use ηs	≥ 78

Additional data for regulation (EU) 2015/1189

Description		T4e 300 - 350	
		300	350
Heating up mode		automatic	
Condensing boiler		No	
Solid fuel boiler for combined heat and power		No	
Combined heating system		No	
Storage tank volume		➲ "Storage tank" [▶ 16]	
Characteristics when operated exclusively with the preferred fuel			
Useful heat delivered at rated heat output (P_n)	kW	300	344
Useful heat delivered at 30% of rated heat output (P_p)		90.0	103.2
Fuel efficiency at rated heat output (η_n)	%	84.7	85.0
Fuel efficiency at 30% of rated heat output (η_p)		84.9	85.1
Auxiliary current consumption at rated heat output (el_{max})	kW	0.310	0.395
Auxiliary current consumption at 30% of rated heat output (η_p)		0.100	0.133
Auxiliary current consumption in standby mode (P_{SB})		0.013	0.013

Regulation (EU) 2015/1189 – emissions in [mg/m³][1)]	
Annual space heating emissions of dust (PM)	≤ 30

Regulation (EU) 2015/1189 – emissions in [mg/m³][1)]	
Annual space heating emissions of gaseous organic compounds (GOC)	≤ 20
Annual space heating emissions of carbon monoxide (CO)	≤ 380
Annual space heating emissions of nitrogen oxides (NO_x)	≤ 200

1. The emissions of dust, gaseous organic compounds, carbon monoxide and nitrogen oxides are stated in a standardised form based on dry flue gas with a oxygen content of 10 % and under standard conditions at 0°C and 1013 millibar

4.4.4 T4e 300 - 350 ESP

Description		T4e 300 – 350 ESP	
		300	350
Nominal output	kW	300	350
Electrical connection		400 V / 50 Hz / C25A	
Weight of boiler (including stoker, without water)	kg	3175	
Boiler capacity (water)	l	783	
Available feed height of pump [1)] (with ΔT = 20K)	mbar	543	344
Max. permitted operating temperature	°C	90	
Permitted operating pressure	bar	4	
Boiler class as per EN 303-5: 2012		5	
Airborne sound level	dB(A)	< 70	
Permitted fuel as per EN ISO 17225 [2)]		Part 2: Wood pellets class A1 / D06 Part 4: Wood chips class A1+A2 / P16S-P31S	
Test book number		PB 215	PB 216

1. Pump output less water resistance in the boiler
2. Detailed information on the fuel can be found in the operating instructions in the section entitled “Permitted fuels”

Regulation (EU) 2015/1187 – ηs in [%]	
Heating space annual rate of use ηs	≥ 78

Additional data for regulation (EU) 2015/1189

Description		T4e 300 – 350 ESP	
		300	350
Heating up mode		automatic	
Condensing boiler		No	
Solid fuel boiler for combined heat and power		No	
Combined heating system		No	
Storage tank volume		➲ "Storage tank" [▶ 16]	
Characteristics when operated exclusively with the preferred fuel			
Useful heat delivered at rated heat output (P_n)	kW	300	350
Useful heat delivered at 30% of rated heat output (P_p)		90.0	105
Fuel efficiency at rated heat output (η_n)	%	84.3	84.6
Fuel efficiency at 30% of rated heat output (η_p)		84.0	84.3
Auxiliary current consumption at rated heat output (el_{max})	kW	0.420	0.567

Description		T4e 300 – 350 ESP	
		300	350
Auxiliary current consumption at 30% of rated heat output (η_p)		0.131	0.170
Auxiliary current consumption in standby mode (P_{SB})		0.028	0.026

Regulation (EU) 2015/1189 – emissions in [mg/m³][1)]	
Annual space heating emissions of dust (PM)	≤ 30
Annual space heating emissions of gaseous organic compounds (GOC)	≤ 20
Annual space heating emissions of carbon monoxide (CO)	≤ 380
Annual space heating emissions of nitrogen oxides (NO_x)	≤ 200

1. The emissions of dust, gaseous organic compounds, carbon monoxide and nitrogen oxides are stated in a standardised form based on dry flue gas with a oxygen content of 10 % and under standard conditions at 0°C and 1013 millibar

4.4.5 Boiler data for planning the flue gas system

Description		T4e / T4e ESP		
		200	230	250
Flue gas temperature at nominal load	°C	130	135	140
Flue gas temperature at partial load		85	85	85
CO_2- volume concentration at nominal load / partial load	%	13.3 / 12.3	13.3 / 12.3	13.3 / 12.3
O_2-Volume concentration at nominal load/partial load		7.0 / 8.0	7.0 / 8.0	7.0 / 8.0
Flue gas mass flow at nominal load	kg/h	491	566	594
	kg/s	0.136	0.157	0.165
Flue gas mass flow at partial load	kg/h	154	181	186
	kg/s	0.043	0.050	0.052
Required feed pressure at nominal load	Pa	5		
	mbar	0.05		
Required feed pressure at partial load	Pa	2		
	mbar	0.02		
Maximum permissible feed pressure	Pa	30		
	mbar	0.3		
Flue pipe diameter	mm	249		

Description		T4e / T4e ESP	
		300	350
Flue gas temperature at nominal load	°C	130	135
Flue gas temperature at partial load		85	85
CO_2- volume concentration at nominal load / partial load	%	12.8 / 11.8	13.3 / 12.3
O_2 Volume concentration at nominal load/partial load		7.5 / 8.5	7.0 / 8.0
Flue gas mass flow at nominal load	kg/h	754	854
	kg/s	0.209	0.237

Description		T4e / T4e ESP	
		300	350
Flue gas mass flow at partial load	kg/h	236	276
	kg/s	0.065	0.077
Required feed pressure at nominal load	Pa	5	
	mbar	0.05	
Required feed pressure at partial load	Pa	2	
	mbar	0.02	
Maximum permissible feed pressure	Pa	30	
	mbar	0.3	
Flue pipe diameter	mm	249	

4.4.6 Data for planning a backup power supply

The system can be operated with an emergency generator. The following information must be observed during planning.

For T4e 200-250:

Description		Value
Continuous output (three phase)	VA	6375
Nominal voltage	VAC	400 ± 6%
Frequency	Hz	50 ± 2%

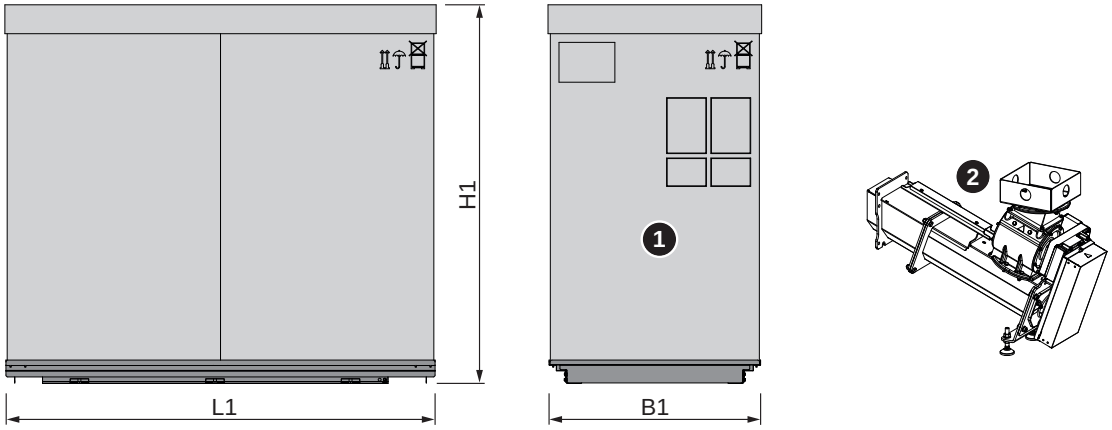
For T4e 300-350:

Description		Value
Continuous output (three phase)	VA	9960
Nominal voltage	VAC	400 ± 6%
Frequency	Hz	50 ± 2%

5 Transport and storage

5.1 Delivery configuration

The boiler and associated components are delivered on a pallet.



Item	Description	Unit	T4e	
			200-250	300-350
L1	Length	mm	2340	2450
B1	Width		1160	1370
H1	Height		2055	2005
Weight of the components:				
1	Boiler	kg	2280	2785
2	Stoker unit		135	175

5.2 Temporary storage

If the system is to be assembled at a later stage:

❒ Store components at a protected location, which is dry and free from dust

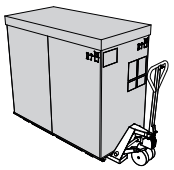
↳ Damp conditions and frost can damage components, particularly electric ones!

5.3 Positioning

NOTICE

Damage to components if handled incorrectly

- ❒ Follow the transport instructions on the packaging
- ❒ Transport components with care to avoid damage
- ❒ Protect the packaging against damp conditions
- ❒ Pay attention to the pallet's centre of gravity when lifting

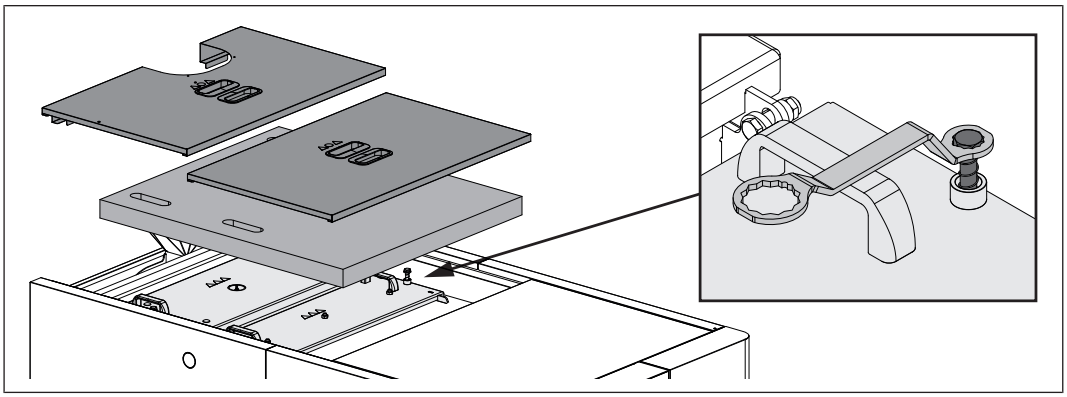


- ❒ Position a forklift or similar lifting device at the boiler base and bring in the components
  - ↳ **T4e 200-250:** Min. fork length 1,500 mm, min. load capacity 2,500 kg
  - ↳ **T4e 300-350:** Min. fork length 1,500 mm, min. load capacity 3,000 kg

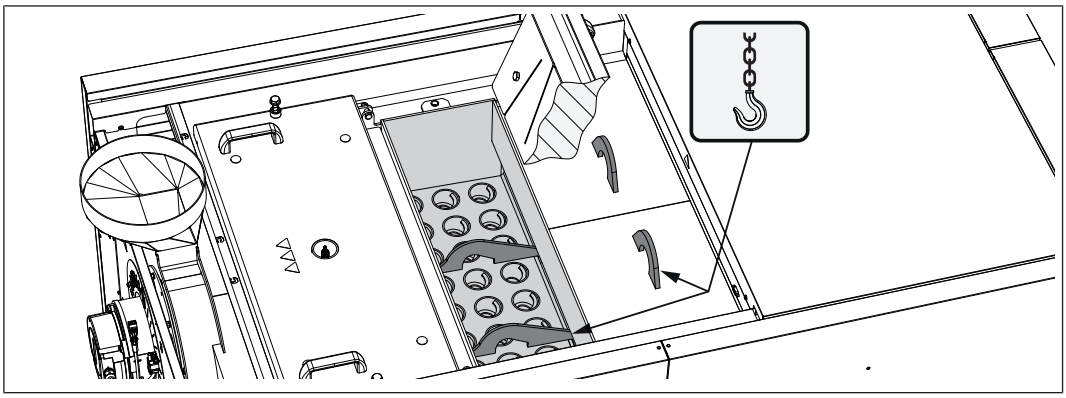
If you need to dismantle the boiler to bring it in:

- ❒ Remove cardboard and transport frame
  ➲ "Remove cardboard and transport frame" [▸ 34]
- ❒ Dismantle the components of the boiler until it can be brought in
  ➲ "Dismantling for location where positioning is difficult" [▸ 31]

Positioning using a crane:



- ❒ Remove the insulating cover and thermal insulation
  - ↳ T4e 200-250: two insulated covers
  - ↳ T4e 300-350: three insulated covers
- ❒ Loosen the screw connection on the front heat exchanger cover and open the cover
  - ↳ Use the spanner provided



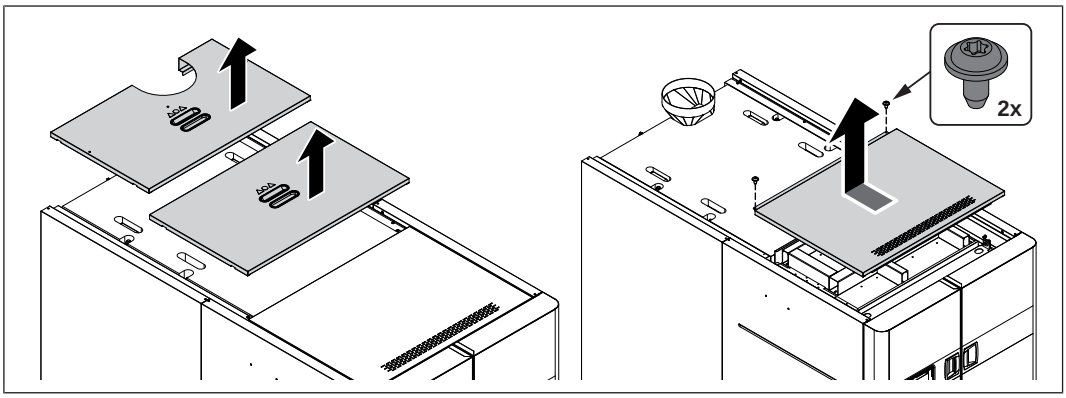
❒ Hang the crane hook on the two eye bolts in the flue gas collection chamber and on the heat exchanger and bring in the boiler

↳ It is only possible to transport the boiler straight in by using all four eye bolts

5.4 Dismantling for location where positioning is difficult

If there is not enough room to bring in the pre-assembled boiler, certain components can be dismantled.

NOTICE! Only take those steps absolutely necessary to bring in the boiler.

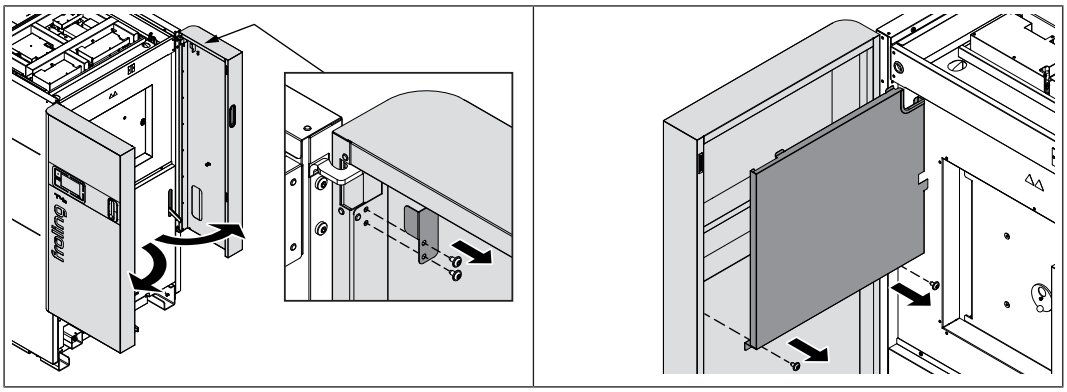


❒ Remove the insulated cover above the heat exchanger

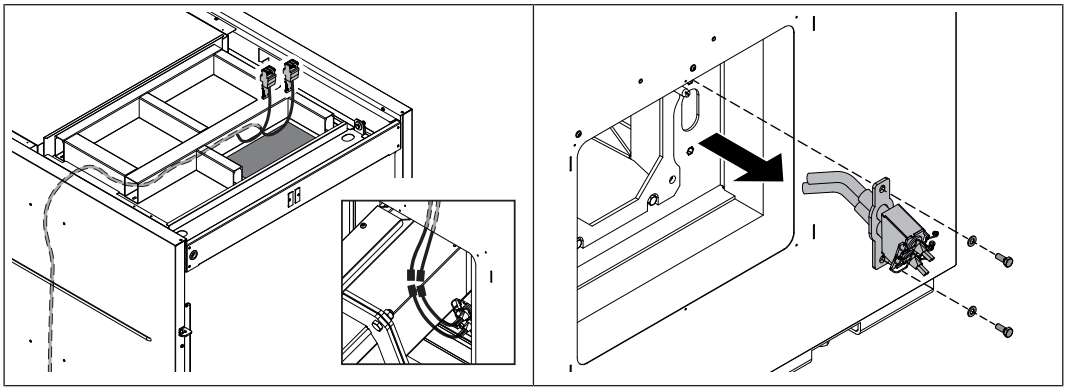
↳ T4e 200-250: two insulated covers

↳ T4e 300-350: three insulated covers

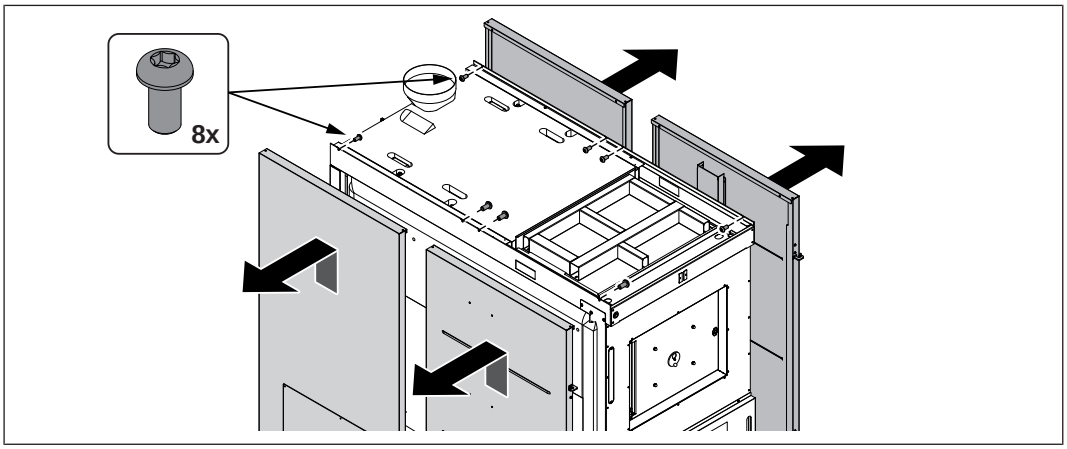
❒ Undo both screws and remove controller cover



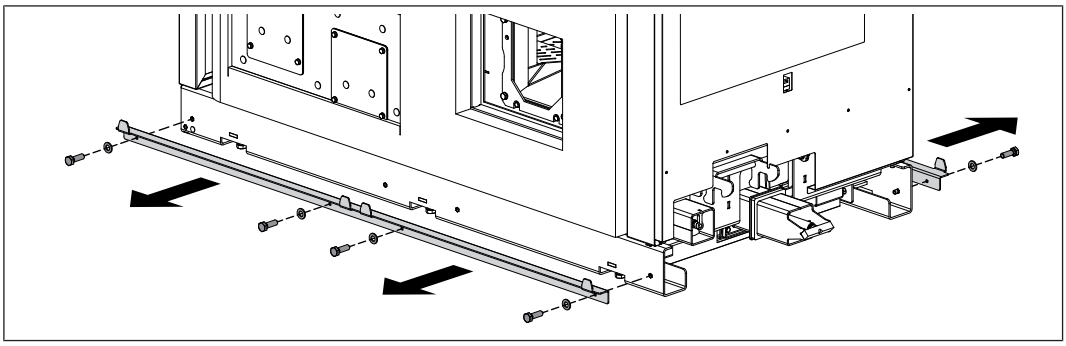
❒ Open the insulated doors
❒ Remove the small cover plate on the hinge of the right insulated door
❒ Remove the control cover on the left insulated door
❒ Unplug both connectors on the control
❒ Remove both insulated doors



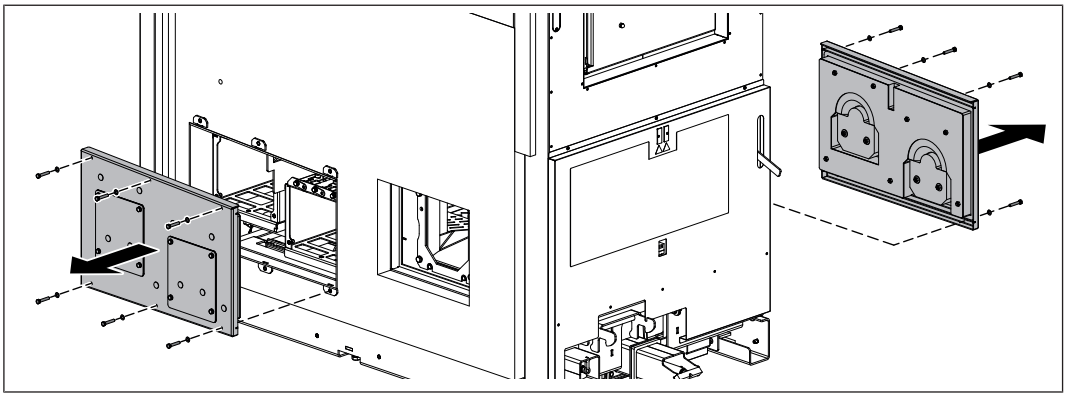
❒ Unplug the connector for the ignition and the stoker drive from the wood chip module
❒ Pull the cable out of the cable duct in the controller box
↳ Cables can remain in the cable duct on the side panel
❒ Remove the ignition unit including glow igniter beside stoker



❒ Undo the screws and remove the side panels

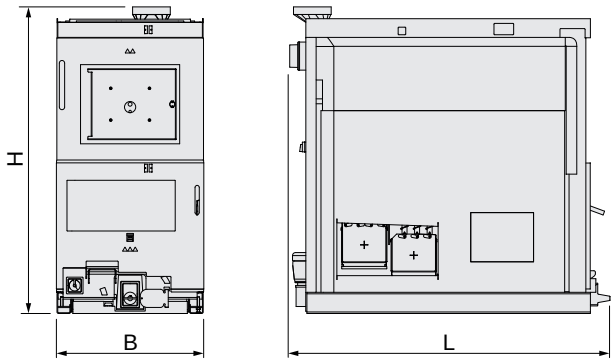


❒ Undo the screws and remove both of the lower frames



❒ Remove maintenance covers from both sides of the boiler

Positioning dimensions after dismantling:



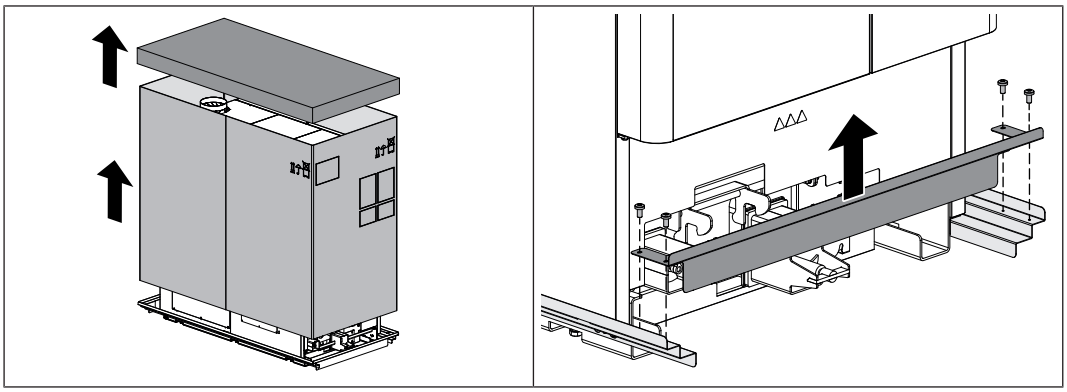
Item	Unit	200-250	300-350
L	mm	2210	2340
W		980	1195
H		2030	1980

NOTICE! Assemble all components in reverse order.

Connect the glow igniter plug on the wood chip module to the "ELECTRICAL IGNITION" position and the stoker drive to the "STOKER SCREW" position.

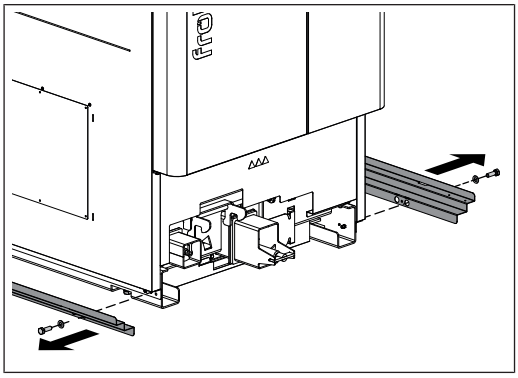
5.5 Positioning at the installation site

5.5.1 Remove cardboard and transport frame



❒ Remove strapping and lift off the cardboard

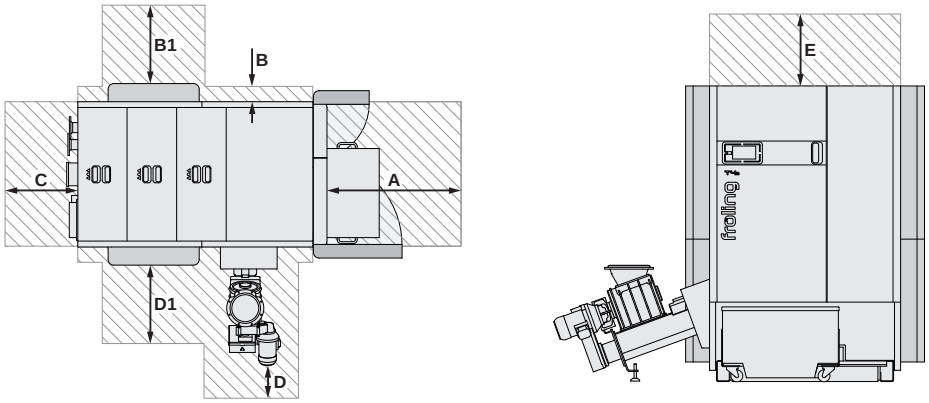
❒ Remove transport frame from front and back



❒ Remove the sides of the transport frame from the boiler base

5.5.2 Operating and maintenance areas of the equipment

- The system should generally be set up so that it is accessible from all sides to allow quick and easy maintenance!
- Regional regulations regarding necessary maintenance areas for inspecting the chimney should be observed in addition to the specified distances!
- Observe the applicable standards and regulations when setting up the system!
- Comply with additional standards for noise protection!
  (ÖNORM H 5190 - Noise protection measures)

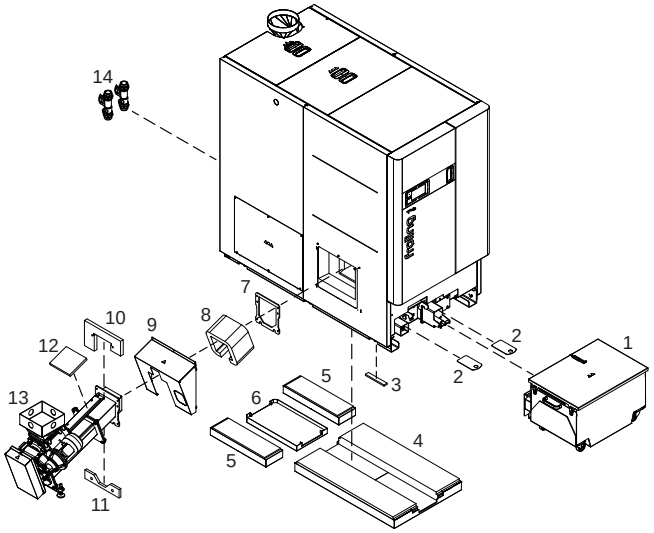


	T4e 200-250	T4e 300-350
A	900 mm	
W	150 mm	
W1	700 mm[1)]	
C	500 mm	
D	300 mm	
D1	700 mm[1)]	
E	500 mm[2)]	

1. When using electrostatic particle separator ESP (optional)
2. Maintenance area to expand the WOS springs upwards

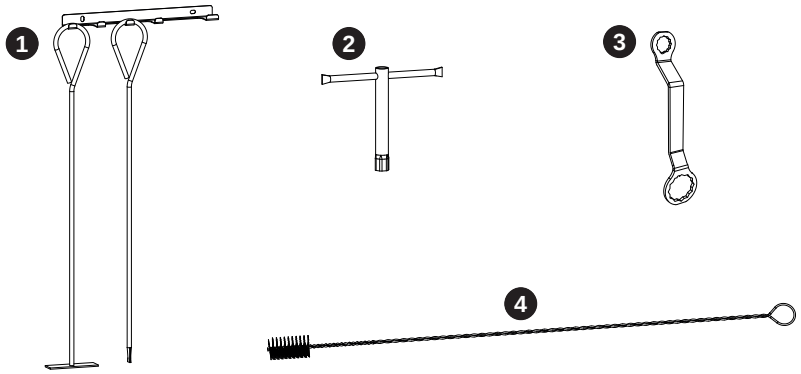
6 Assembly

6.1 Assembly overview



1	Ash container	**8**	Stoker duct thermal insulation
2	Spacer plates (2 pieces) for adjusting the height of the ash container	**9**	Stoker duct cover
3	Boiler documents (8 items)	**10**	Top insulating panel
4	Front floor insulation	**11**	Bottom insulating panel
5	Side back floor insulation	**12**	Stoker duct insulating panel
6	Centre back floor insulation	**13**	Stoker unit
7	Stoker unit seal	**14**	Line regulating valve (optional)

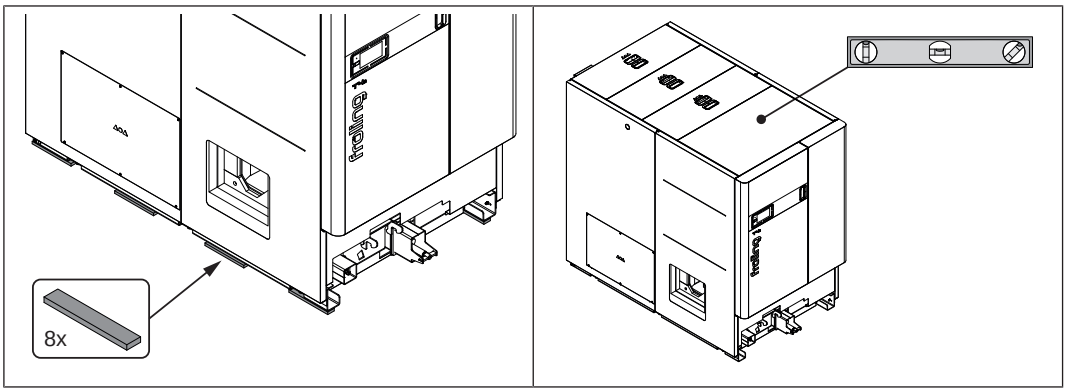
6.2 Accessories supplied



1	Furnace tool with bracket	**3**	Key for door mountings and WOS cover
2	Socket wrench AF 13	**4**	Cleaning brush 24 x 50 x 1200

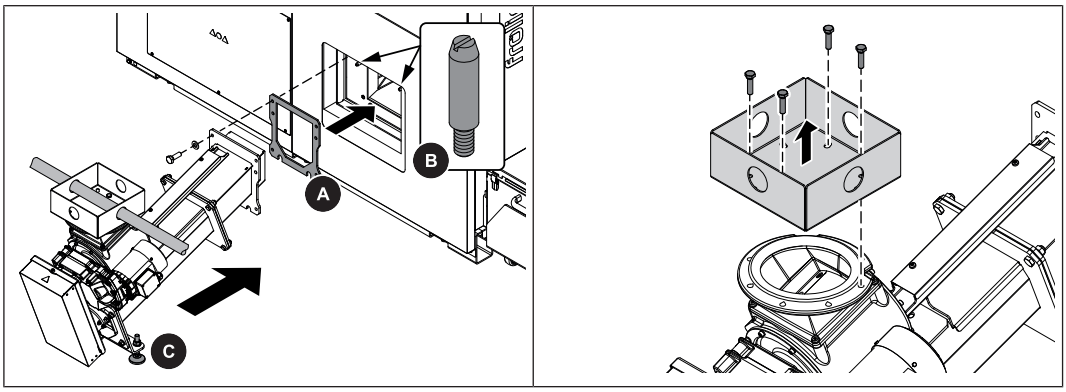
6.3 Installing the boiler

6.3.1 Levelling the boiler

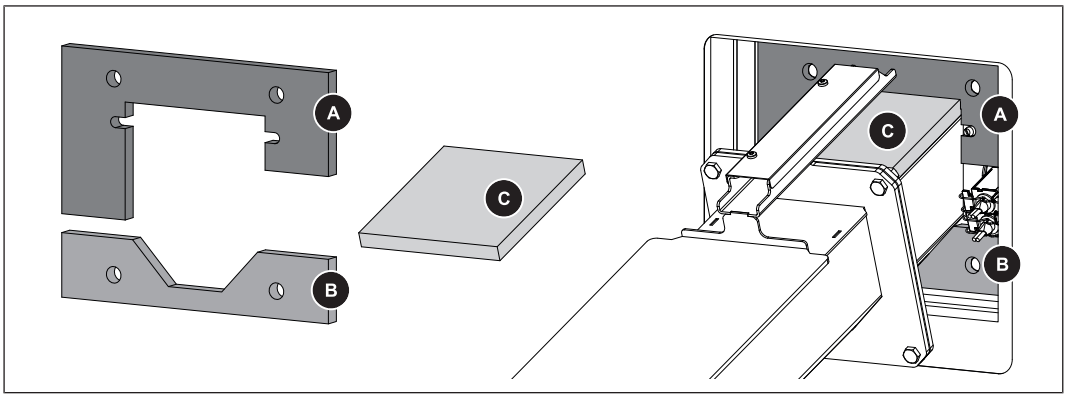


- ❒ Lift the boiler using an appropriate lifting device
- ❒ Position a Sylomer pad under the boiler base
  - ↳ Sylomer pads prevent the transmission of noise to the ground
- ❒ Carefully release the lifting device and check that the boiler is level
- ❒ If necessary, level the boiler using load-bearing pads

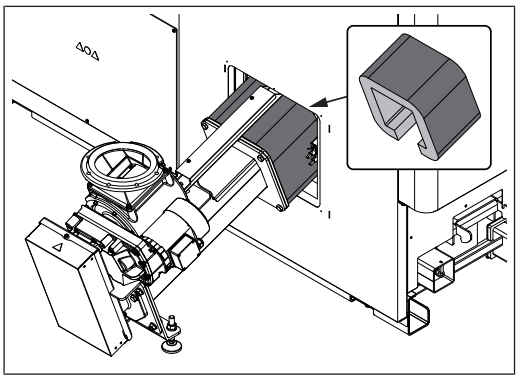
6.3.2 Installing the stoker unit



- ❒ Remove the pre-installed screws on the boiler connection flange
- ❒ Insert the appropriate pipe (e.g. 1” pipe) into the bracket of the stoker unit and transport the stoker unit to the boiler
- ❒ Position seal (A) on the connection flange
- ❒ Move the stoker unit towards the boiler and insert into the connection flange at the two lock bolts (B)
- ❒ Adjust the height using the adjustable base (C) as required
- ❒ Secure the stoker unit to the connection flange using the previously removed screws
- ❒ Remove the bracket. It is no longer needed
- ❒ Assemble the entire discharge system



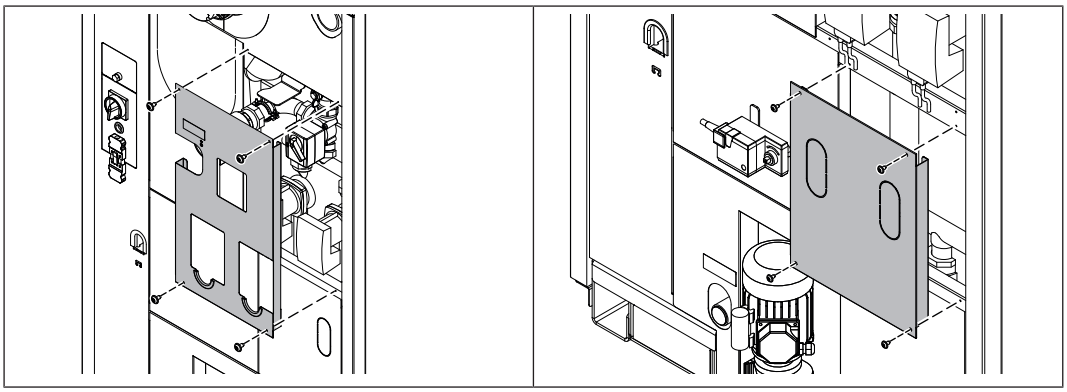
❒ Position insulating panels (A-C) on the connection flange as shown



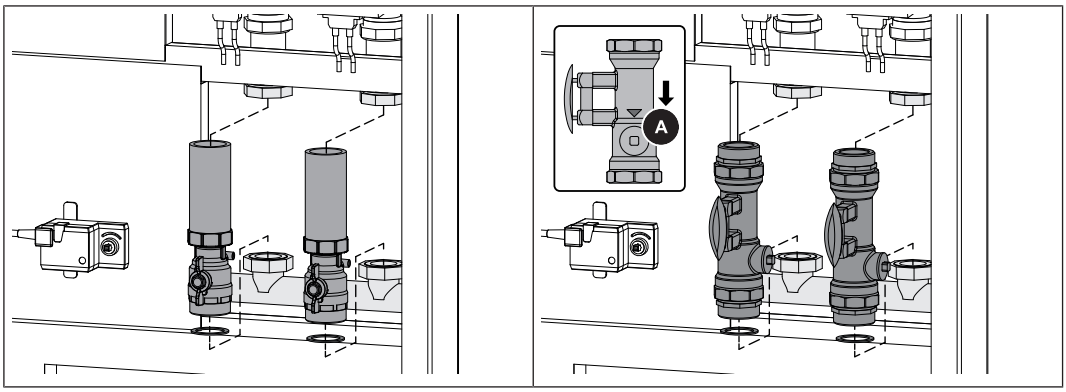
❒ Insulate stoker duct with thermal insulation

6.3.3 Installing line regulating valve (T4e 200-250)

Depending on the delivery condition of the boiler, the line regulating valves may already be installed. This eliminates the following assembly steps.

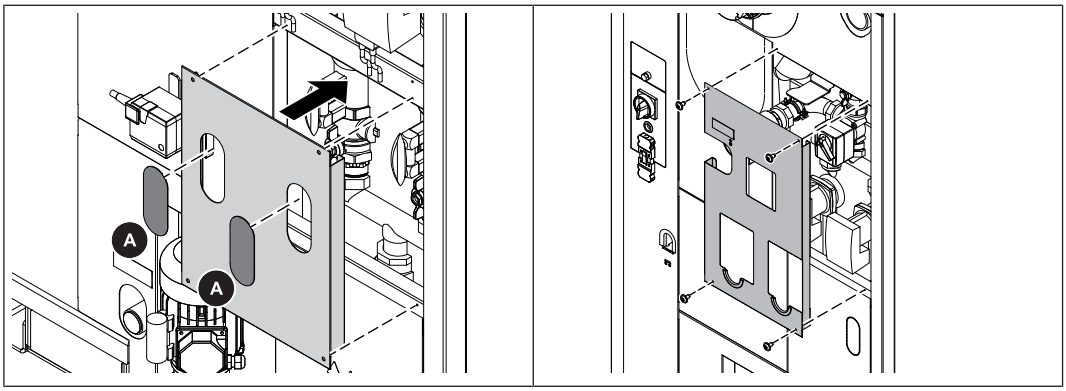


❒ Remove the rear cover plate on the return as well as the cover plate underneath



❒ Remove both pipe sections and ball valves, seal line regulating valve instead

↳ IMPORTANT: Pay attention to direction of flow. The arrow (A) must point downward.



❒ Remove the perforations (A) on the lower cover plate

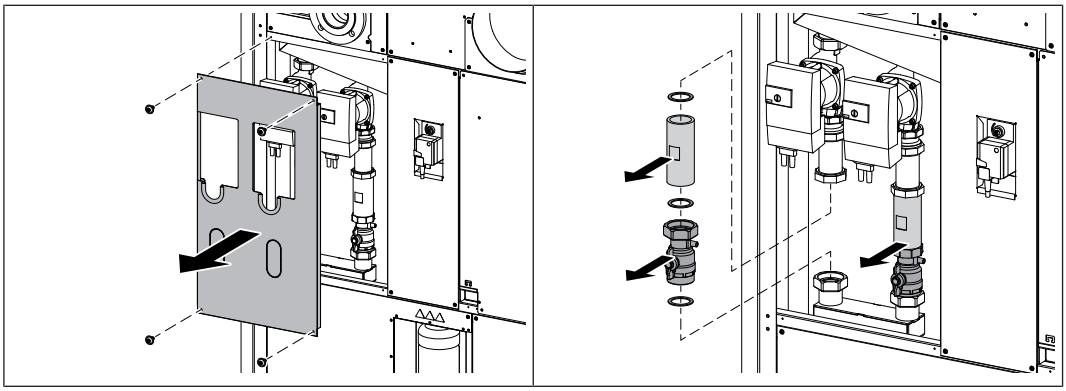
↳ Remove the burrs with a half-round file

❒ Install the lower cover plate on the line regulating valves

❒ Install rear cover plate on the return

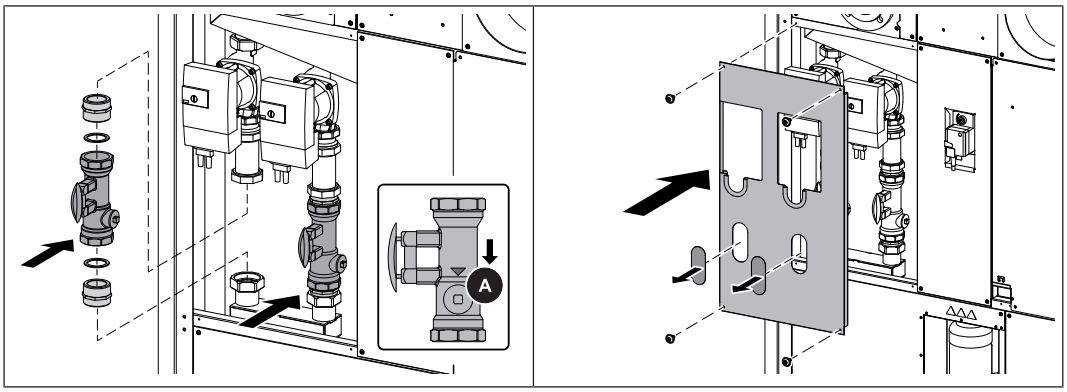
6.3.4 Installing line regulating valve (T4e 300-350)

Depending on the delivery condition of the boiler, the line regulating valves may already be installed. This eliminates the following assembly steps.



❒ Removing the back panel below the boiler's return flow line

❒ Removing both pipe sections and ball valves



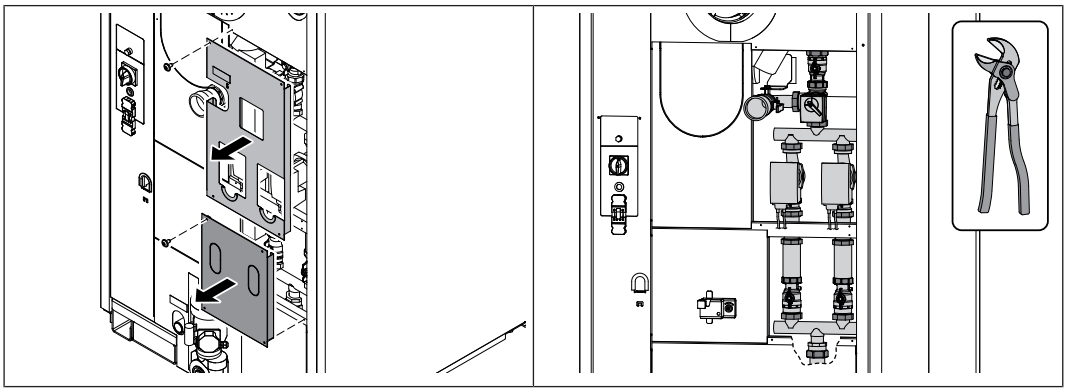
❒ Use a threaded connector to seal the line regulating valve

↳ Pay attention to direction of flow (A)!

❒ Remove the punch out perforations on the back panel and install the back panel

↳ Remove the burrs using a half-round file

6.3.5 Control the return temperature control (T4e 200-250)



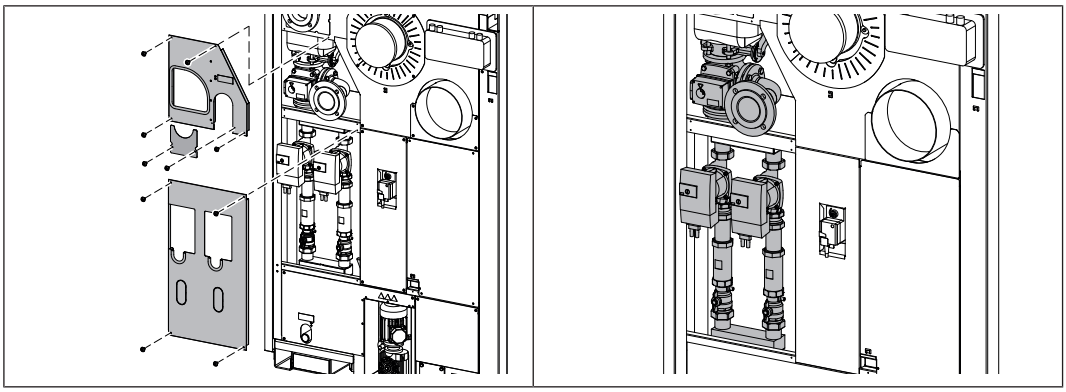
❒ Remove the rear cover plate on the return as well as the cover plate underneath

❒ Tighten all of the screw connections on the return temperature control using a pipe wrench

↳ Screw connections may have loosened during transport.

↳ **IMPORTANT:** Before and after filling the system with heated water, check the seal of the screw connections on the return temperature control

6.3.6 Control the return temperature control (T4e 300-350)



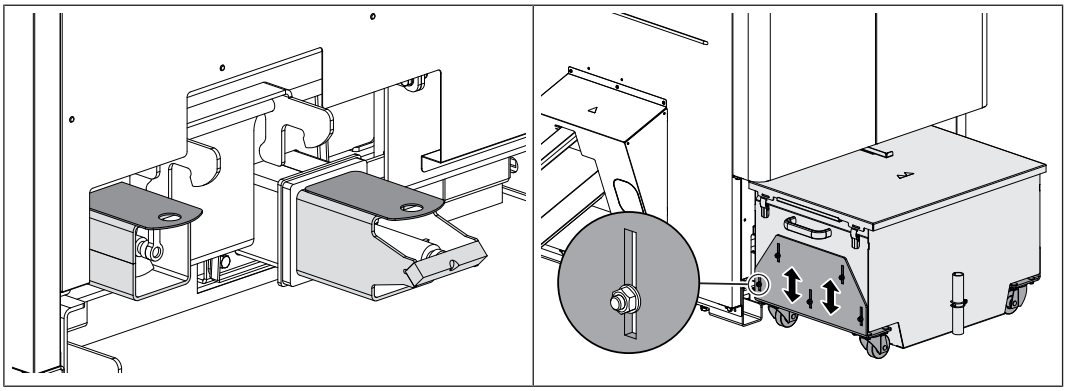
❒ Remove the back panels

❒ Check all of the connections on the return temperature control and tighten if necessary

↳ Connections may have loosened during transport.

❒ IMPORTANT: Before and after filling the system with heated water, check the seal of the screw connections on the return temperature control

6.3.7 Align the ash container



❒ Place the enclosed spacer plate on both ash channels

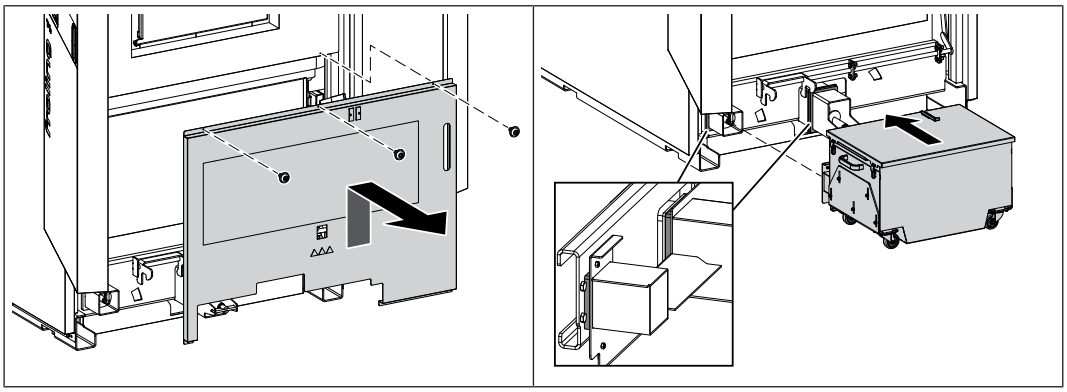
❒ Slide the ash container onto the boiler and attach using clamping lever

❒ Loosen the screw connection and adjust castors to the ground

❒ Horizontally align the ash container and attach the screw connection

❒ Remove the ash container and spacer plate

Check the seals' pressure

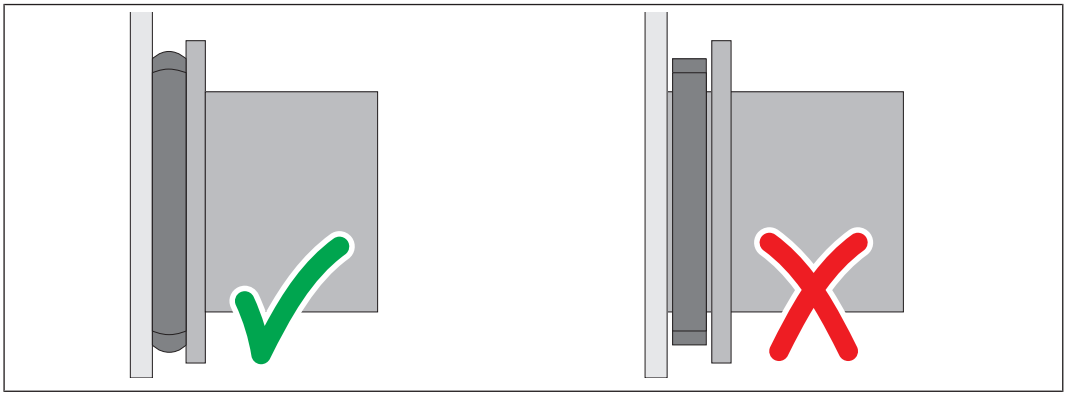


❒ Open the insulated door and remove the ash box

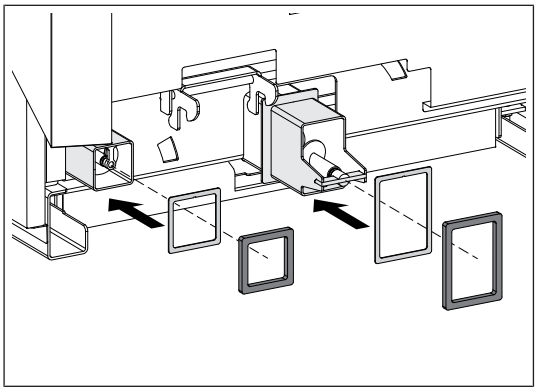
❒ Remove the front cover plate

❒ Slide the ash container onto the boiler and attach using clamping lever

❒ Check the seals for pressure



- Seal is visibly pressed on:
  - Adjustment OK
- Seal is found to be loose on the duct
  - Add spacer plate

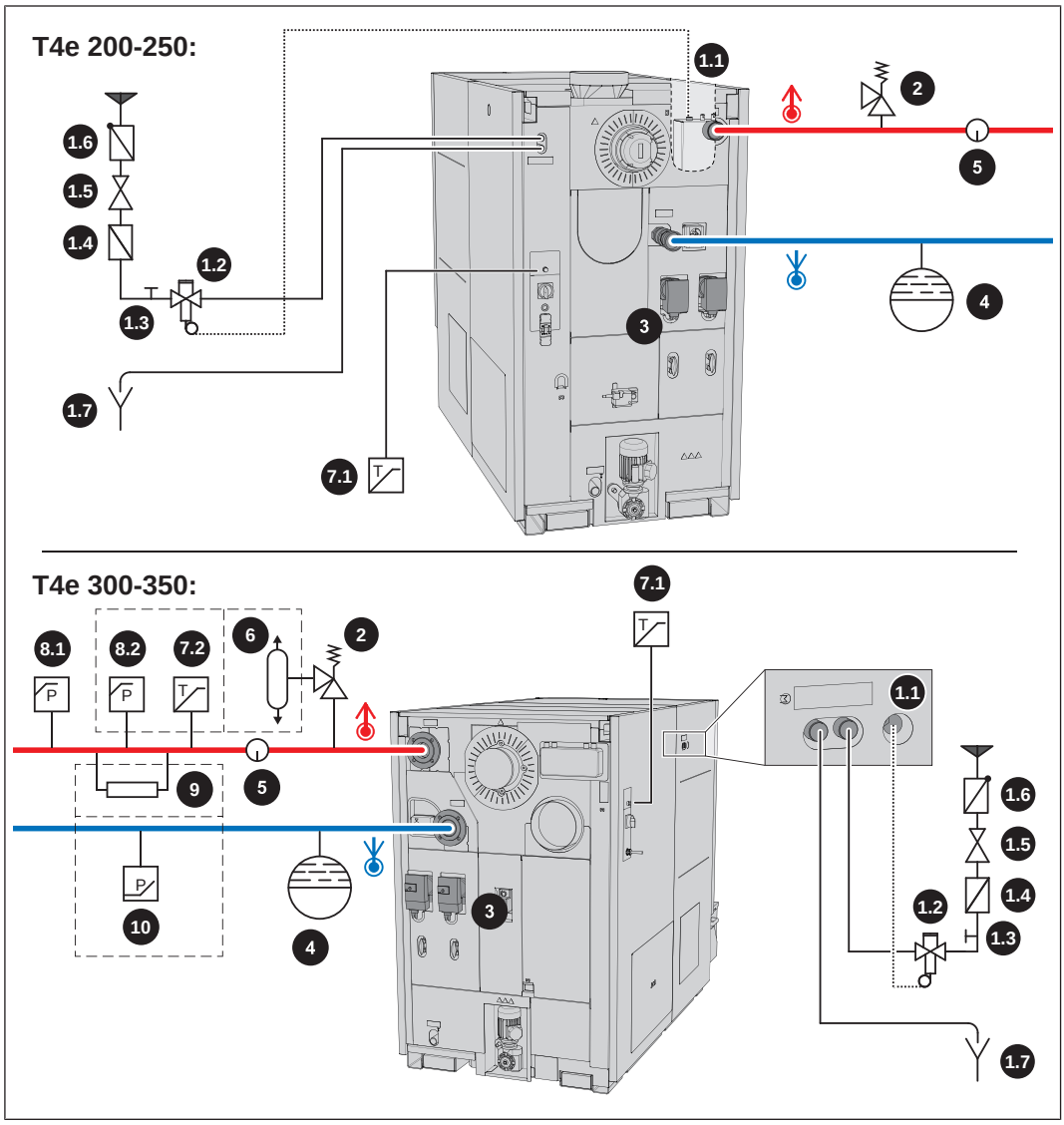


❒ Pull off the seal on the affected duct

❒ Slide spacer plate and seal back onto the duct

❒ Slide the ash container onto the boiler and check the pressure again

6.4 Hydraulic connection



1 Thermal discharge valve

- The thermal discharge safety device must be connected in accordance with ÖNORM/ DIN EN 303-5 and as shown in the diagram above
- The discharge safety sensor must be connected to a pressurised cold water mains supply (temperature ≤ 15°C) in such a way that it cannot be shut off
- A pressure reducing valve (1.5) is required for a cold water pressure of ≥ 6 bar Minimum cold water pressure = 2 bar

1.1 Sensor of thermal discharge safety device
1.2 Thermal discharge valve (opens at approx. 95°C)
1.3 Cleaning valve (T-piece)
1.4 Dirt trap
1.5 Pressure reducing valve
1.6 Backflow preventer to prevent stagnation water from entering the drinking water network
1.7 Free outlet without counter pressure with observable flow path (e.g. discharge funnel)

2 Safety valve

- Requirements for safety valves as specified by DIN EN ISO 4126-1

	▪ Minimum diameter for the inlet to the safety valve as specified by EN 12828: DN15 (≤ 50 kW), DN20 (> 50 to ≤ 100 kW), DN25 (> 100 to ≤ 200 kW), DN32 (> 200 to ≤ 300 kW), DN40 (> 300 to ≤ 600 kW), DN50 (> 600 to ≤ 900 kW) ▪ Maximum pressure setting in terms of the permissible operating pressure of the boiler, see the section “Technical Data” ▪ The safety valve must be installed in an accessible place on the boiler or in direct proximity in the flow pipe in such a way that it cannot be shut off ▪ Unhindered and safe escape of the steam or water that is released must be ensured
3	**Return temperature control**
4	**Diaphragm expansion tank** ▪ The diaphragm pressurised expansion tank must conform to EN 13831 and hold at least the maximum expansion volume of the heated water in the system, including a water seal ▪ Its size must comply with the design information in EN 12828 - Appendix D ▪ Ideally it should be installed in the return line. Follow the manufacturer’s installation instructions
5	**We recommend installing some sort of monitoring device (such as a thermometer)**
6	**Expansion trap** ▪ Its dimensions must comply with the design information in EN 12828 - Appendix E ▪ Installation in blow-out line immediately next to the safety valve ▪ At the bottom of the expansion trap, water must be discharged into an unobstructed outlet without counterpressure where the flow path can be observed (e.g., discharge funnel) ▪ At the top of the expansion trap, steam must be discharged safely into the atmosphere **NOTICE! The expansion trap can be omitted when an additional high-limit thermostat (7.2) and an additional maximum pressure limiter (8.2) are integrated into the installation**
7.1	**High-limit thermostat** ▪ Integrated into the boiler at the factory
7.2	**Additional high-limit thermostat** **NOTICE! Omitted if an expansion trap (6) is integrated in the installation**
8.1	**Maximum pressure limiter** ▪ The system is switched off when the maximum pressure in the boiler flow connection is exceeded. As soon as the system has dropped to the specified working pressure, the system is unlocked by activating the reset button manually.
8.2	**Additional maximum pressure limiter** ▪ The system is switched off when the maximum pressure in the boiler flow connection is exceeded. As soon as the system has dropped to the specified working pressure, the system is unlocked by activating the reset button manually. **NOTICE! Omitted if an expansion trap (6) is integrated in the installation**
9	**Water shortage safety device** ▪ When the water level in the boiler is too low, the system is switched off; thus, overheating of the boiler is prevented **NOTICE! Omitted if a minimum pressure limiter (10) is used in the installation**
10	**Minimum pressure limiter** ▪ The system is switched off when the minimum pressure in the boiler’s return flow connection drops below its preset value. As soon as the system has reached the specified working pressure, the system is unlocked by activating the reset button manually. **NOTICE! Omitted if a water shortage safety device (9) is integrated in the installation**

6.5 Electrical connection

⚠ DANGER

When working on electrical components:

Risk of electrocution!

When work is carried out on electrical components:

- ❒ Always have work carried out by a qualified electrician
- ❒ Observe the applicable standards and regulations
  - ↳ Work must not be carried out on electrical components by unauthorised persons

⚠ CAUTION

If cables come into contact with hot surfaces:

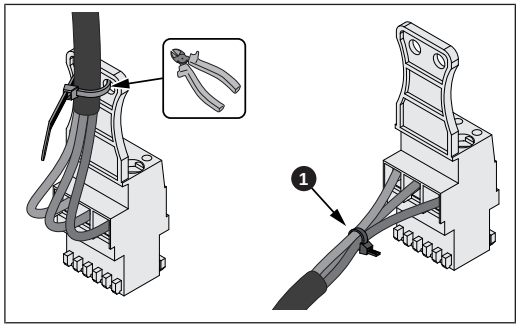
Possible fire hazard of the system and electric shock!

The following applies to assembly work:

- ❒ Keep cables away from boiler components that become hot during operation (e.g. stoker duct, inspection cover, flue gas pipe, ash removal, etc.)
- ❒ Lay cables in the cable ducts provided and use cable ties to secure against slipping

Prepare the plug

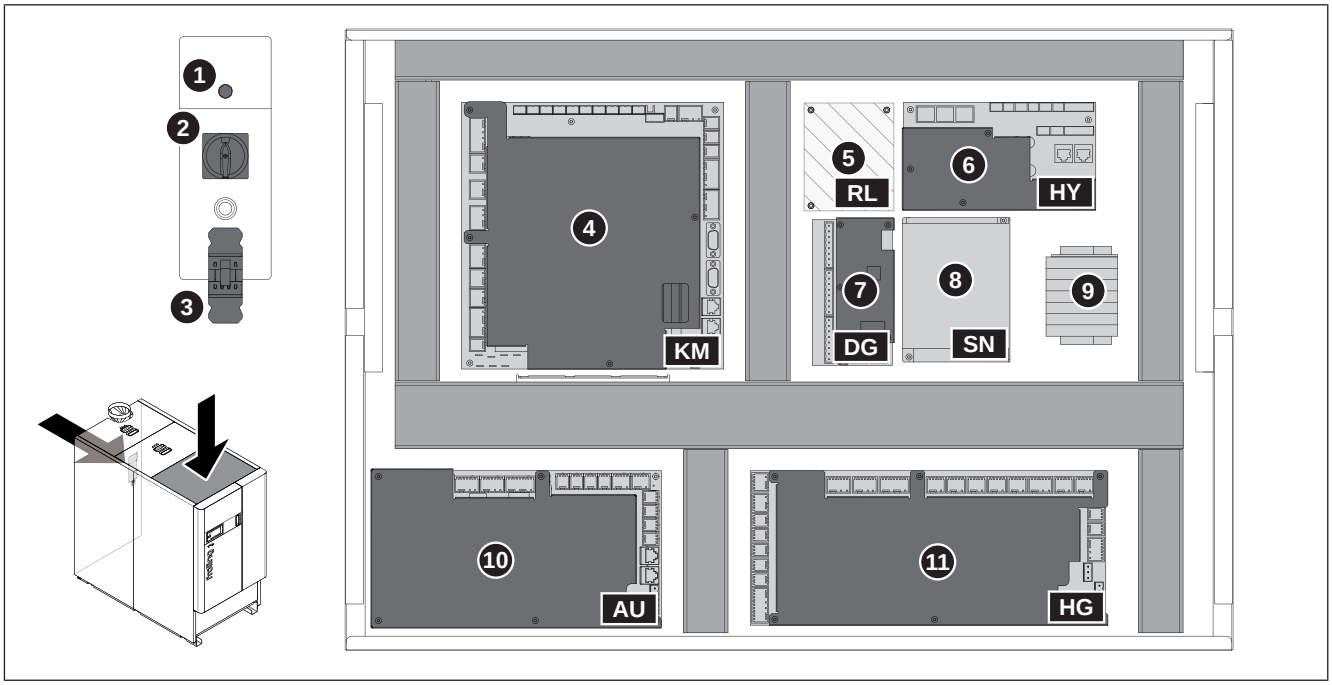
some components come ready to connect with the cable fixed to the tag connector with cable tie.



- ❒ Remove the cable ties from the tag connector
- ❒ Bind the individual cores together with cable ties (A)

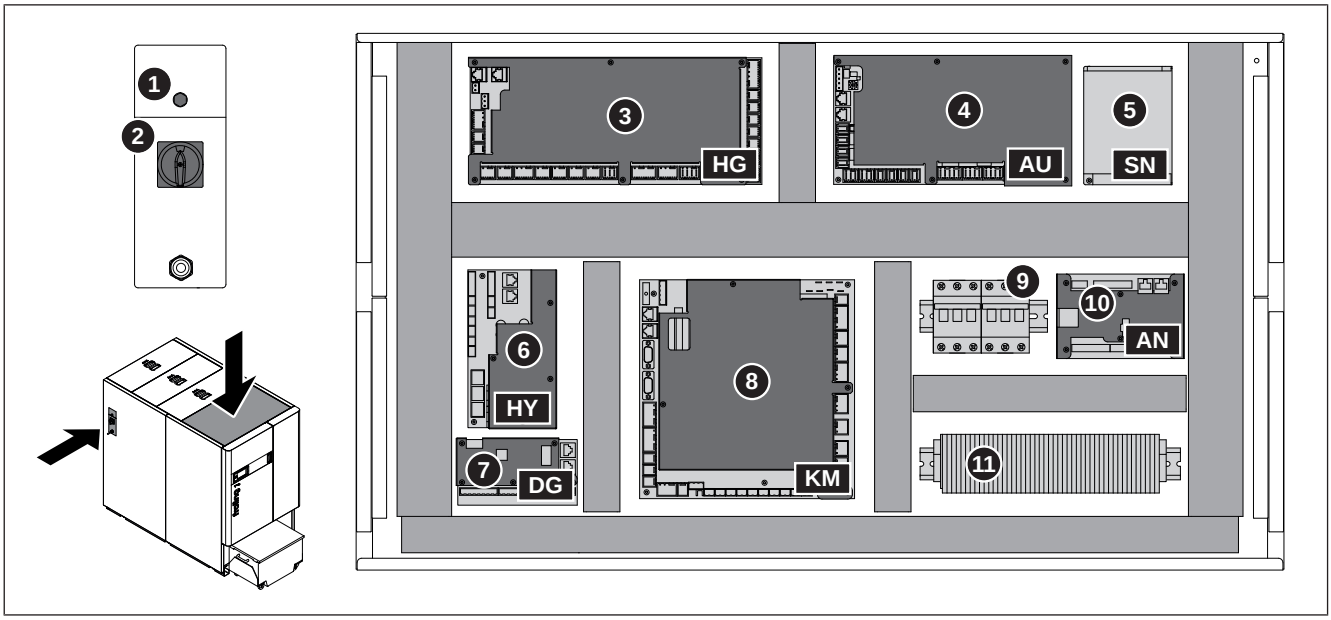
6.5.1 Board overview

T4e 200-250



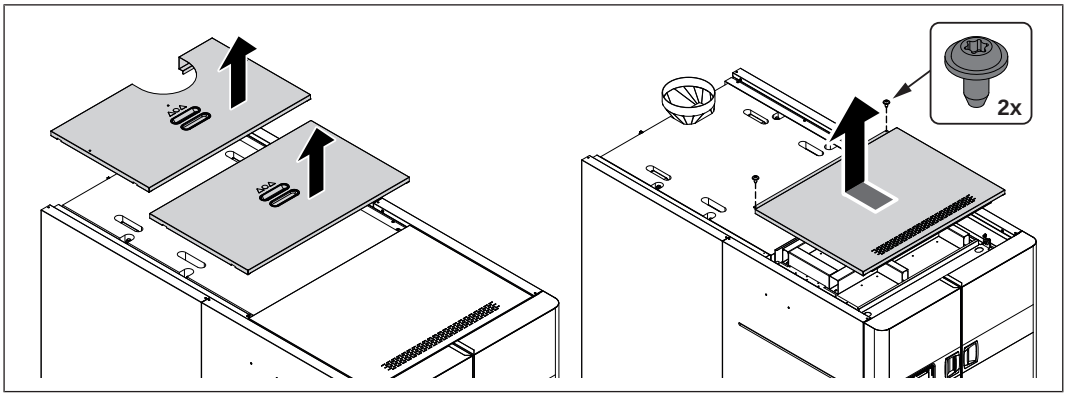
Item	Description	Item	Description
1	High-limit thermostat (STL)	**7**	Digital module
2	Main switch	**8**	Plug power pack
3	Mains connection plug	**9**	Terminal blocks
4	Core module	**10**	Feed system module
5	Return mixer module (not used)	**11**	Wood chip module
6	Hydraulic module		

T4e 300-350

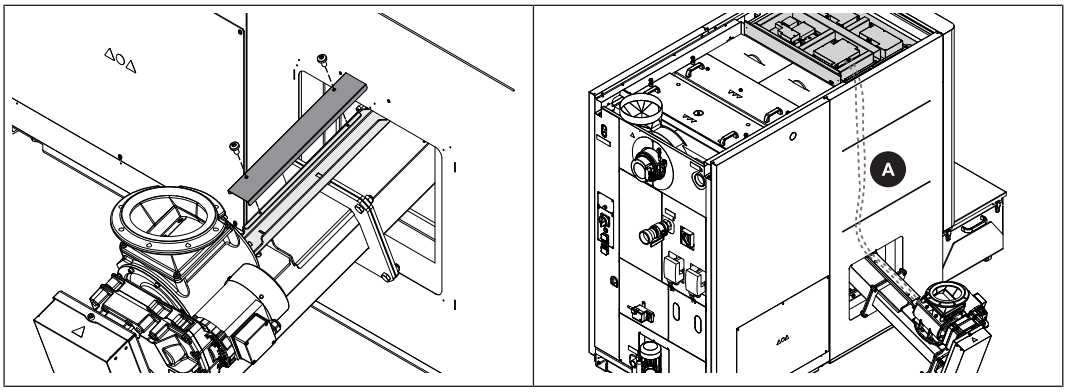


Item	Description	Item	Description
1	High-limit thermostat (STL)	**7**	Digital module
2	Main switch	**8**	Core module
3	Wood chip module	**9**	Line protective circuit breaker, 3-pole
4	Feed system module	**10**	Analogue module
5	Plug power pack	**11**	Terminal blocks
6	Hydraulic module		

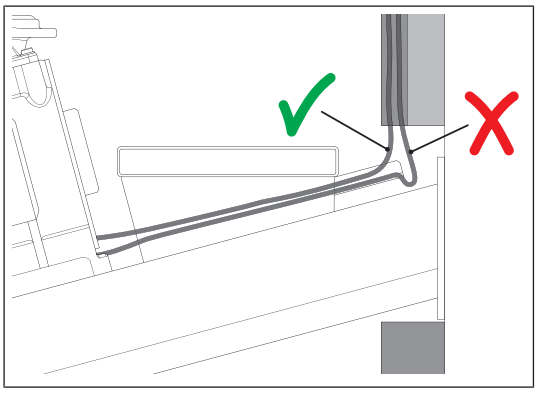
6.5.2 Laying cables



❒ Remove the insulating cover and thermal insulation
❒ Remove the retaining screw and contact washer from the controller cover
❒ Slide the controller cover back and lift off



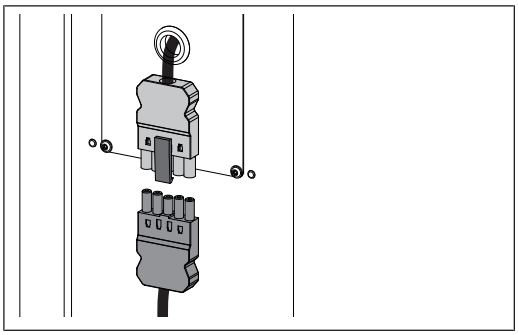
❒ Remove the cover from the stoker cable duct
❒ Wire all the components via cable duct (A) in the side panel to the controller box
  ↳ Drive for feed screw / discharge system
  ↳ Limit switch on gravity shaft cover (not pre-wired)
❒ Plug the following components into the cable that is already in place
  ↳ Stoker drive
  ↳ Glow igniters



❒ Ensure that the cables do not touch the hot boiler components

6.5.3 Mains connection

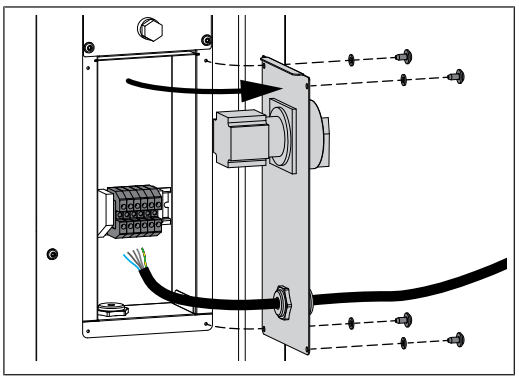
T4e 200-250:



At the back of the boiler:

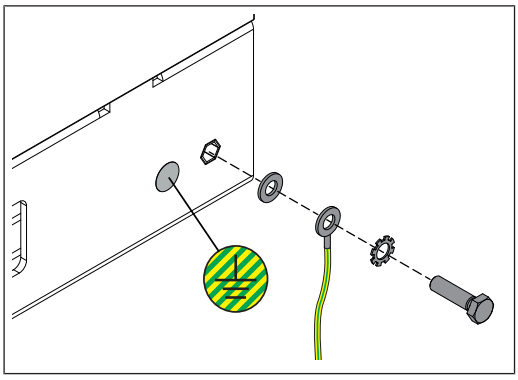
- ❒ Release the locking mechanism and pull the mains plug down and out
- ❒ Open the plug and connect the mains connection cable
  - ↳ Flexible sheathed cable must be used for the wiring; this must be of the correct size to comply with applicable regional standards and regulations.
  - ↳ The power supply line (mains connection) must be fitted with a C16 A fuse by the customer.

T4e 300-350:



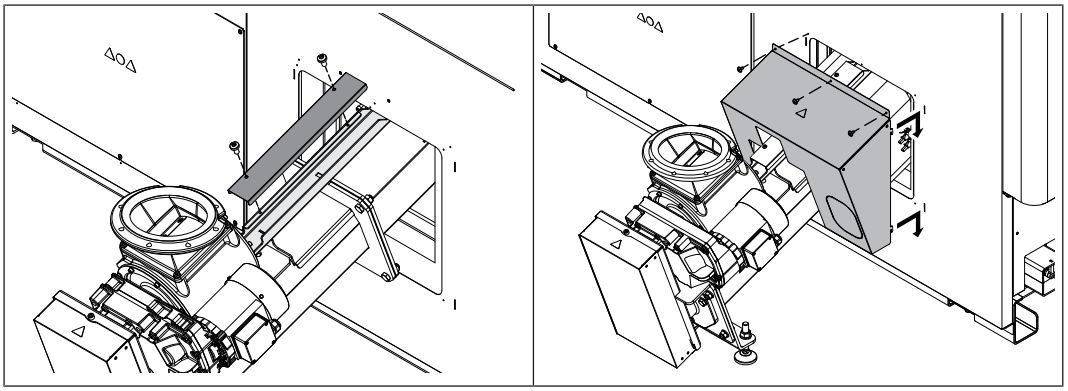
- ❒ Remove the cover plate along with the main switch from the back of the boiler
- ❒ Run the mains connection cable through the cable gland in the cover plate and connect it to the terminal blocks
  - ↳ Flexible sheathed cable must be used for the wiring; this must be of the correct size to comply with applicable regional standards and regulations.
  - ↳ The power supply line (mains connection) must be fitted with a C25A fuse by the customer.

6.5.4 Potential equalisation



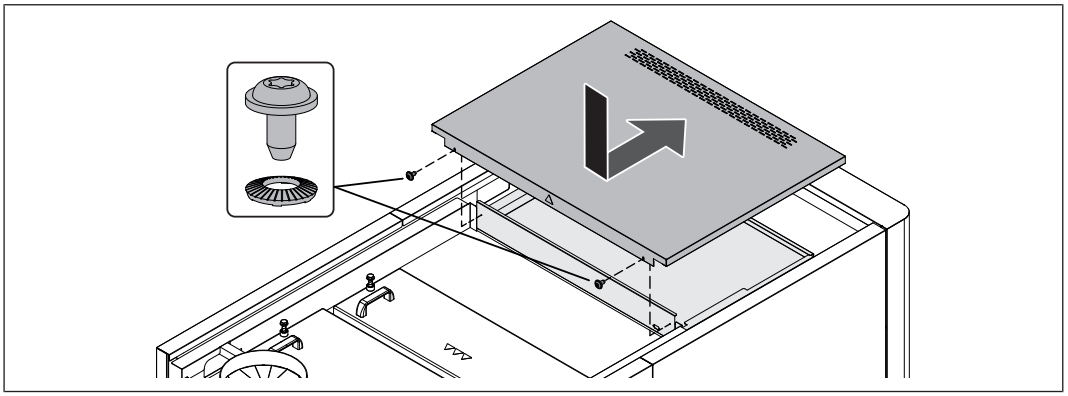
❒ The potential equalisation on the boiler base must comply with current directives, regulations and standards.

6.6 Final installation steps



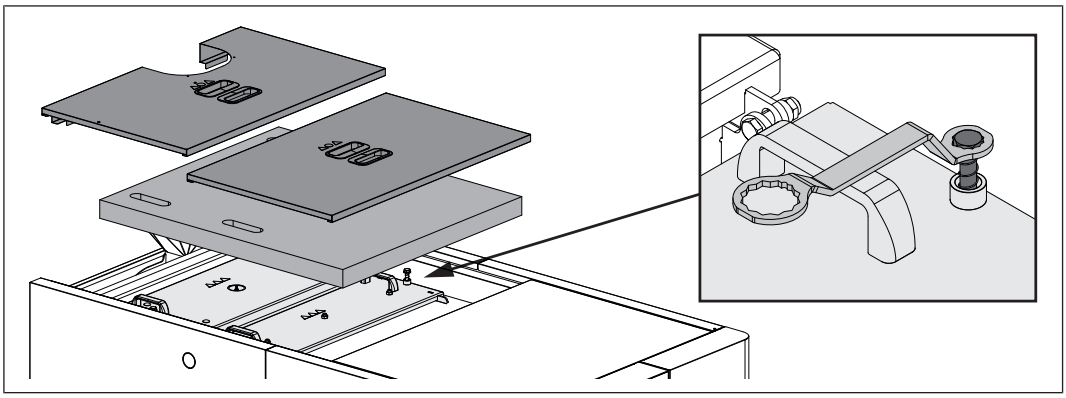
❒ Install the cover on the stoker's cable duct

❒ Fit the cover above the stoker duct and attach with screws



❒ Place the controller cover on the controller box and slide forward

❒ Attach the controller cover with retaining screw and contact washers

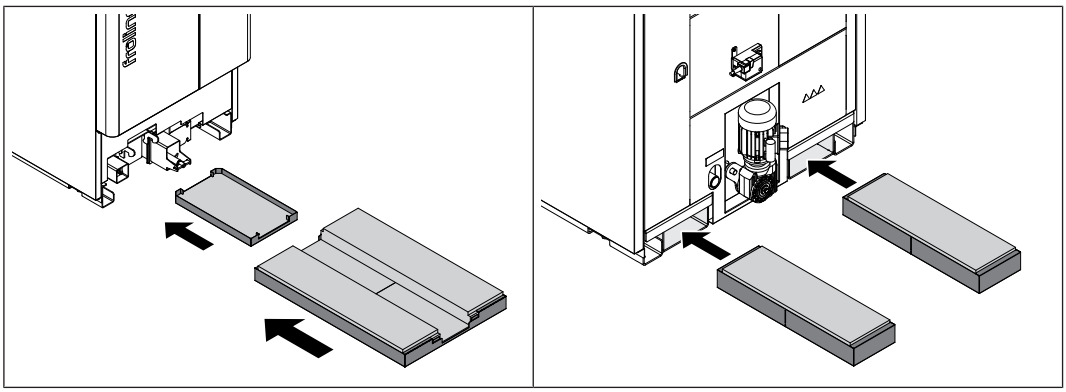


❒ Put on the heat exchanger cover and attach using star-shaped screws

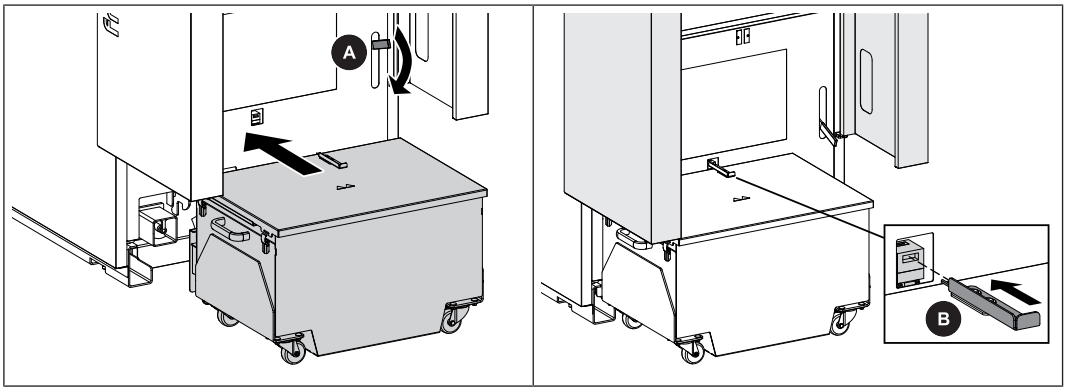
❒ Put on the insulating cover and thermal insulation

↳ T4e 200-250: two insulated covers

↳ T4e 300-350: three insulated covers



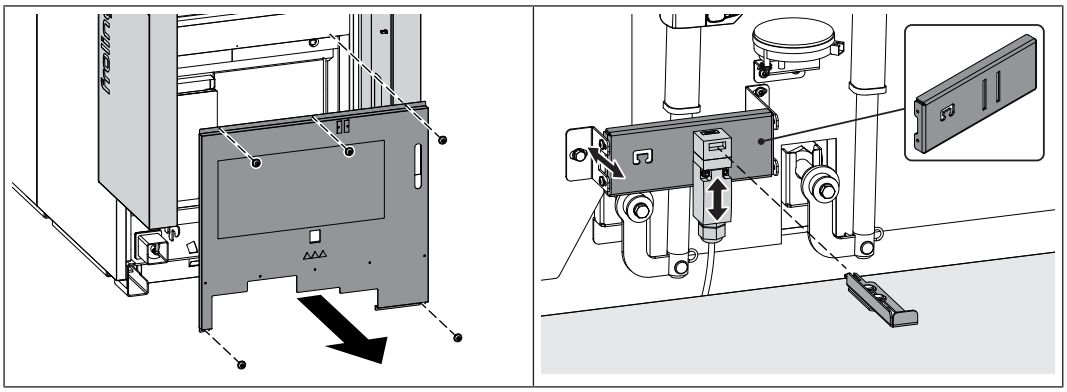
❒ Slide the floor insulation underneath the boiler from the front and back as shown



❒ Slide the ash container onto the ash duct and secure with the locking lever (A)

❒ Slide the key plate (B) into the safety limit switch and close both insulated doors

The safety limit switch can be adapted to the ash container as necessary:



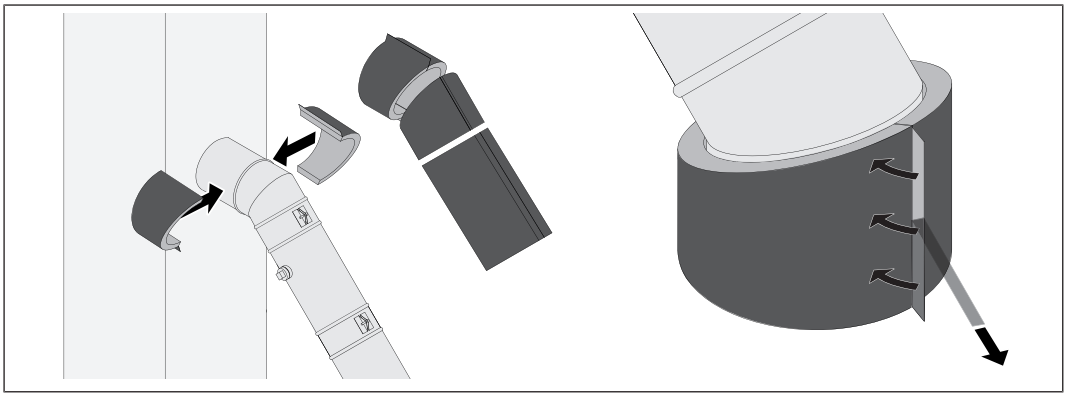
❒ Open the insulated door and remove the cover plate behind

❒ Slide the ash container onto the ash duct and secure with the locking lever

❒ Adapt the height and distance of the safety limit switch to the key plate on the ash container

6.6.1 Insulate the connection line

When using the optionally available thermal insulation supplied by Fröling GesmbH, perform the following steps:



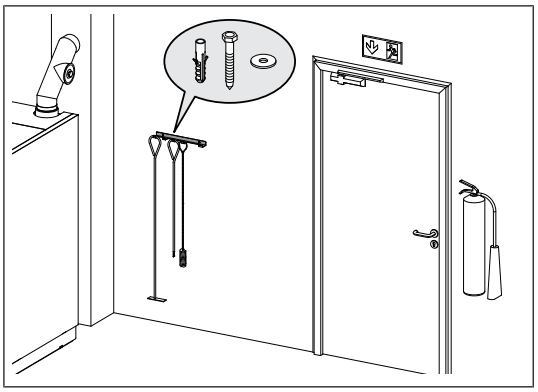
❒ Cut the half shells of thermal insulation to length and lay them on the connection line

❒ Create an opening for access to the measuring port

❒ Apply protective foil at the projecting lugs

❒ Glue the half shells to each other

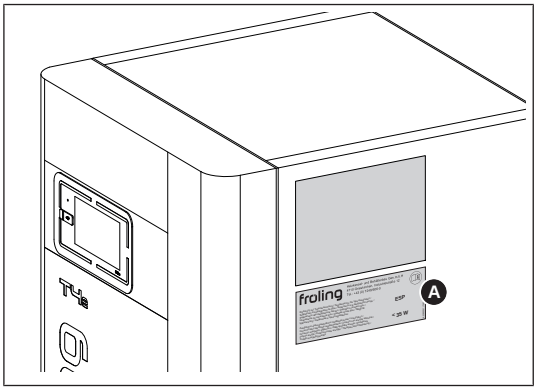
6.6.2 Install the brackets for accessories



❒ Using appropriate fasteners, attach the brackets to the wall on the boiler

❒ Attach the accessories to the brackets

6.6.3 Stick on an additional identification plate (applicable to T4e ESP)



❒ Stick the additional identification plate (A) visibly on the side panel of the boiler

7 Start-up

7.1 Before commissioning / configuring the boiler

The boiler must be configured to the heating system during initial start-up!

NOTICE

Optimum efficiency and efficient, low-emission operation can only be guaranteed if the system is set up by trained professionals and the standard factory settings are observed.

Take the following precautions:

❒ Initial startup should be carried out with an authorised installer or with Froling customer services

NOTICE

Foreign bodies in the heating system impair its operational safety and can result in damage to property.

As a result:

❒ The whole system should be rinsed out before initial start-up in accordance with EN 14336.

❒ Recommendation: Make sure the hose diameter of the flush nozzles in the flow and return complies with ÖNORM H 5195 and is the same as the hose diameter in the heating system, however not more than DN 50.

❒ Turn on the main switch

❒ Set the boiler controller to the system type.

❒ Load the boiler default values.

NOTICE! For the keypad layout and instructions for modifying the parameters, see the instruction manual for the boiler controller.

❒ Check the system pressure of the heating system.

❒ Check that the heating system is fully ventilated

❒ Check all quick vent valves of the entire heating system for leaks

❒ Check that all water connections are tightly sealed

↳ Pay particular attention to those connections from which plugs were removed during assembly.

❒ Check the entire return temperature control for leaks and correct function

❒ Check that all necessary safety devices are in place

❒ Check that there is sufficient ventilation in the boiler room.

❒ Check the seal of the boiler.

↳ All doors and inspection openings must be tightly sealed.

❒ Check all blanking plugs (e.g. drainage) for tightness

❒ Check that the drives and servo motors are working and turning in the right direction

❒ Check safety switch of ash box is working correctly

NOTICE! Check the digital and analogue inputs and outputs - See the instruction manual for the boiler controller.

8 Decommissioning

8.1 Mothballing

The following measures should be taken if the boiler is to remain out of service for several weeks (e.g. during the summer):

❒ Clean the boiler thoroughly and close the doors fully

If the boiler is to remain out of service during the winter:

❒ Have the system completely drained by a qualified technician

↳ Protection against frost

8.2 Disassembly

To disassemble the system, follow the steps for assembly in reverse order.

8.3 Disposal

❒ Ensure that they are disposed of in an environmentally friendly way in accordance with waste management regulations in the country (e.g. AWG in Austria)

❒ You can separate and clean recyclable materials and send them to a recycling centre.

❒ The combustion chamber must be disposed of as builders' waste.

Manufacturer's address

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