fröling

Installation instructions

Firewood boiler S3v Turbo

S Tronic Plus / S3200 (Lambda)

Translation of original German version of installation instructions for technicians!

Read and follow all instructions and safety instructions!
Errors and omissions excepted!

CE

M1720926_en | Edition 11/03/2026

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 S3v Turbo boiler sizes:

20, 22, 30, 32[1)], 40, 45;

1) S3v Turbo 32 available only in Italy

1.2 Operating principle

The Fröling S3v Turbo is a wood boiler for the non-condensing combustion of firewood. The fuel loading chamber is filled with fuel via the fuel loading door located behind the heat insulated door on the front of the boiler. The combustion grate, through which the combustion gases are sucked into the combustion chamber by the induced draught fan, is located below the fuel loading chamber. When the induced draught fan is used, the combustion air around the pre-heating chamber door is sucked in and channelled to the fuel via regulating flaps on the side air boxes (primary and secondary air). The boiler water and flue gas temperature are regulated by the induced draught fan. The primary air is used to adjust the boiler to the fuel and set the required output and the secondary air serves to adjust combustion performance. Primary and secondary air settings can be adjusted by hand or using a Lambda probe and servo-motor. The flue gas travels through the heat exchanger to the flue gas outlet. In order to optimise heat transfer and for cleaning purposes, the heat exchanger pipes are fitted with a manual Efficiency Optimisation System (WOS), which can be operated using a lever on the outside of the boiler. The ash deposits at the bottom of the combustion chamber and below the heat exchanger pipes can be removed via the combustion chamber door on the front of the boiler.

1.3 Disposal of packaging materials

All packaging materials should be disposed of in accordance with the relevant regulations. In addition, check the regulations for correct disposal applicable in your local area.

Data under the identification system of Directive 97/129/EC:

Identification code / Material		Disposal information
	Corrugated cardboard	Paper collection
	Wood	Check the regulations for correct disposal applicable in your local area
	Low Density Polyethylene (LDPE)	Plastics collection
	Expanded polystyrene	Plastics collection

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.

IMPORTANT

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

If assembly and installation are performed by unqualified persons:

Risk of personal injury and damage to property!

During assembly and installation:

❒ Observe the instructions and information in the manuals

❒ Allow only appropriately qualified personnel to work on the system

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

- Heating technicians/building technicians
- Electrical installation technicians
- 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

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 17225-3	Solid bio-fuel - Fuel specifications and classes Part 3: Wood briquettes for non-industrial use
EN ISO 17225-5	Solid bio-fuel - Fuel specifications and classes Part 5: Firewood 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:

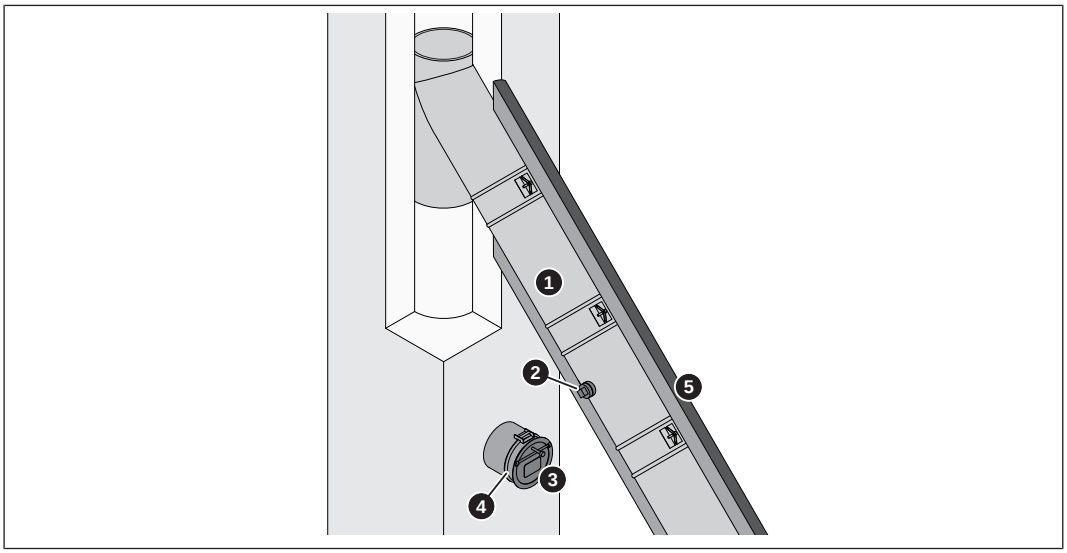
- Flat, clean and dry
- Non-combustible and with sufficient load-bearing capacity

Conditions at the installation site:

- Protecting the system against frost
- Sufficiently well lit
- Free of explosive atmospheres such as flammable substances, hydrogen halides, cleaning agents and consumables
- Use at altitudes 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
- Observe national and regional regulations regarding the installation of smoke detectors and carbon monoxide detectors

IMPORTANT! Depending on the geographical location, increased cleaning effort in neighbouring areas (terrace, wellness area, etc.) may be necessary due to emissions from the system. In addition, the yield of facilities using solar energy may be affected. To counteract the reduced performance of such equipment, we recommend cleaning on a recurrent basis or using downstream/integrated components for flue gas treatment (e.g. cyclone separators).

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

IMPORTANT! 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.

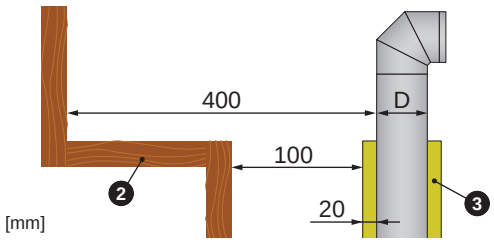
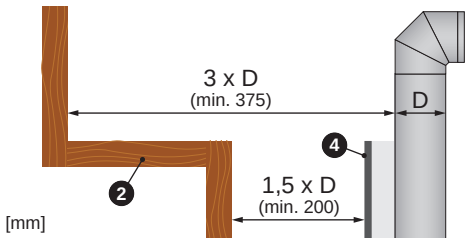
Local regulations and other statutory regulations are also applicable.

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)

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

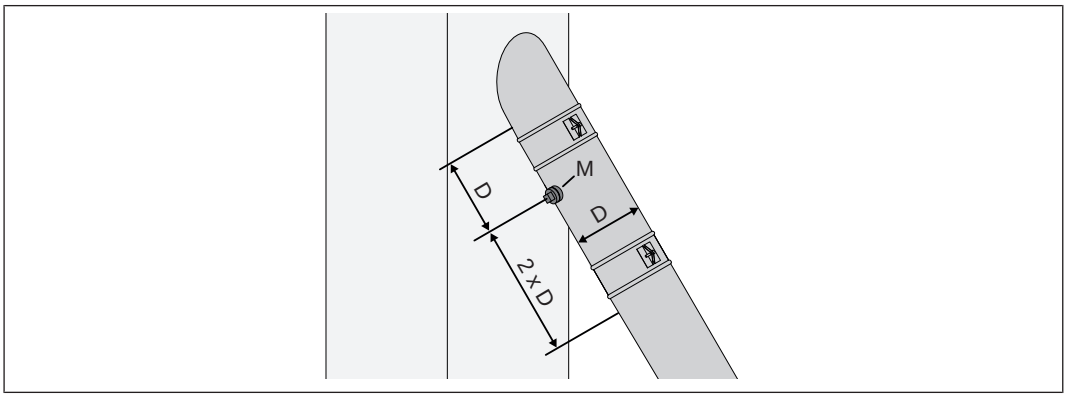
3.4.2 Draught limiter

We generally recommend installation of a draught limiter. If the values for the maximum permissible feed pressure stated in the section “Data for designing the flue gas system” are exceeded, a draught limiter must be installed.

Install the draught limiter directly under the discharge of the flue duct into the chimney, as at this point there is constant under-pressure which largely prevents the escape of dust from the draught limiter. If installation within the chimney is not practical, the draught limiter must be installed in the connection line to the chimney.

3.4.3 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.

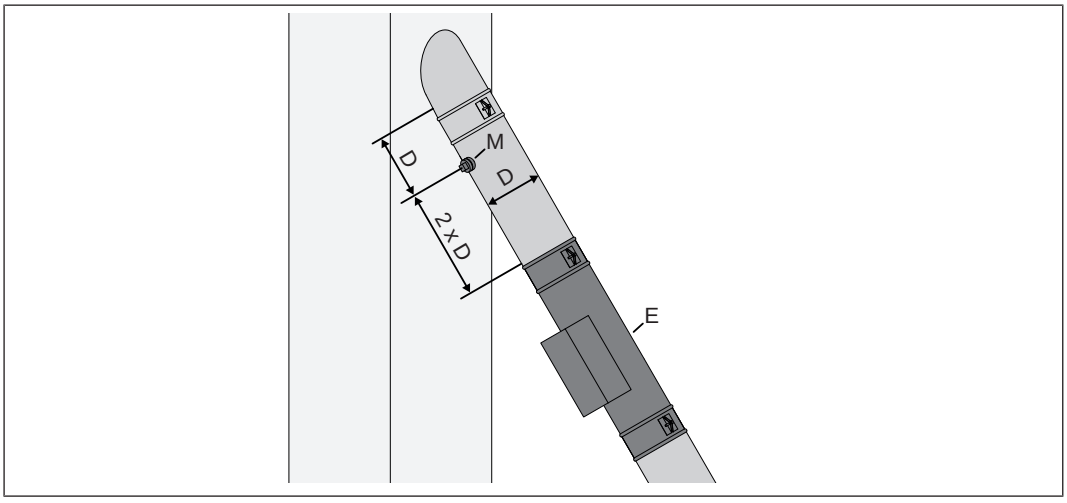


Upstream of the measuring port (M) there should be a straight run-in section with a length about twice the diameter (D) of the connection line. Downstream of the measuring port (M) there should be a straight run-out section with a length about the diameter (D) of the connection line. The measuring port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

3.4.4 Electrostatic particle separator

For reduction in the emissions an electrostatic particle separator may optionally be installed in the flue gas line.



For planning and installation, comply with the following points:

- Position the measuring port (M) downstream of the electrostatic particle separator (E) as specified in the instructions
  ➲ "Measuring port" [▸ 12]
- Locate the electrostatic particle separator in accordance with the planning for the flue gas system
- Install the electrostatic particle separator in accordance with the manufacturer's instructions supplied

3.5 Combustion air

3.5.1 General requirement

For safe operation, the boiler requires around 1.5 - 3.0 m³ of combustion air per kW nominal heat output and operating hour. The air supply can be provided by free ventilation (e.g. windows, air shaft), mechanical ventilation from outside or, if necessary, from the group of rooms.

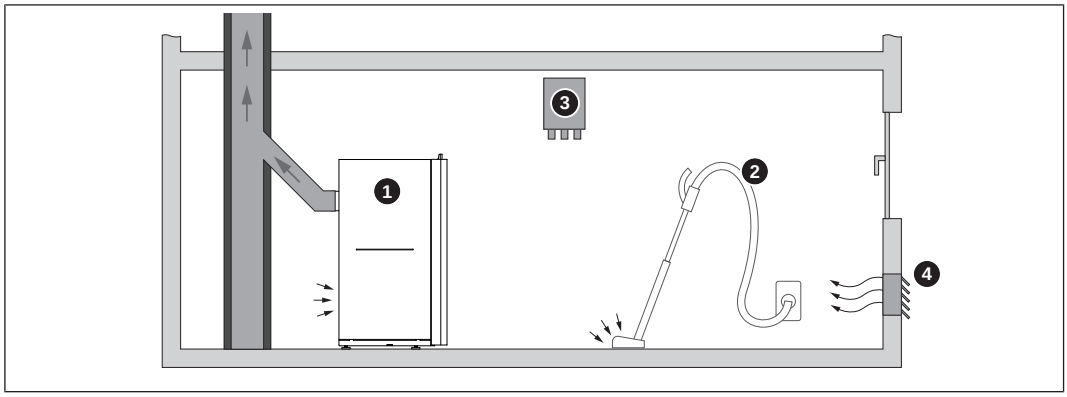
The boiler is operated depending on the room air, whereby the combustion air is taken from the installation site.

A suitable air supply must ensure that no impermissible under-pressure greater than 4 Pa is created at the installation site. The use of safety devices (under-pressure monitoring system) may be necessary, particularly if the boiler is operated concurrently with air-suction systems (such as an extractor fan).

Local **IMPORTANT! Safety equipment and conditions for the operation of the boiler (room air-dependent / room air-independent) must be clarified with the local authority (authority, chimney sweep, ...).**

3.5.2 Room air-independent operation

The combustion air is taken from the installation site. Accordingly an unpressurised flow of the required air quantity must be ensured.



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

The minimum cross-sectional area of the ventilation opening from outside depends on the rated heat output of the boiler.

Austria	400 cm² net minimum cross-sectional area plus 4 cm² for every kW of rated heat output above 100 kW
Germany	150 cm² net minimum cross-sectional area plus an additional 2 cm² for every further kW of rated heat output above 50 kW

IMPORTANT! For the required minimum cross-sectional area of the ventilation opening, see the installation instructions for the boiler, chapter “Data on the design of the ventilation opening”.

The combustion air can also be taken from other rooms if it can be proven that sufficient combustion air can flow in whilst all mechanical and natural ventilation systems are in operation. The installation site must have a minimum volume in accordance with the applicable regional standards.

Note on standards

Austria:	OIB Guideline 3 - Hygiene, health and environmental protection
Germany:	Model Firing Ordinance (MFeuV)

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:

- ❒ 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 top-up water, always vent the filling hose before connecting it, in order to prevent air being drawn into the system
- ❒ Check that the heating water is clear and free of substances that can be deposited as sediments
- ❒ Check that the pH value is 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, as specified in VDI 2035
- ❒ The use of fully demineralised filling and top-up water with an electrical conductivity not exceeding 100 µS/cm is recommended by EN 14868
- ❒ After the first 6-8 weeks, check the heating water to ensure that the specified values are being adhered to
- ❒ Unless specified otherwise by regional standards and regulations, perform an annual check on the heating water

Filling and make-up water as well as heating water to VDI 2035 Sheet 1:2021-03:

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
- Annually: values must be recorded by the owner

Advantages of heating water treated in accordance with the 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

Frost protection

When operating the system with frost-protected heat transfer media, the following instructions and ÖNORM H 5195-2 must be observed:

- Antifreeze dosage according to the manufacturer's data sheet
  IMPORTANT: If the medium contains too much or too little antifreeze it becomes highly corrosive
- Adding antifreeze reduces the specific heat capacity of the medium; therefore design components (pumps, pipework, etc.) accordingly
- Add frost protection only to heat transfer medium in those areas that may be affected by frost (TIP: system separation)
- Check the antifreeze dosage regularly according to the manufacturer's instructions
- Dispose of frost-protected heat transfer medium at the end of its shelf life and refill the system

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 Return lift

If the hot water return temperature is below the minimum return temperature, some of the hot water outfeed will be mixed in.

IMPORTANT

Risk of dropping below dew point/condensation formation if operated without return temperature control.

Condensation water forms an aggressive condensate when combined with combustion residue, leading to damage to the boiler.

Take the following precautions:

❒ Regulations stipulate the use of a return temperature control.

↳ The minimum return temperature is 60 °C. We recommend fitting some kind of control device (e.g. thermometer).

3.9 Storage tank

Observe the regional regulations for using a storage tank!

Certain subsidy guidelines prescribe compulsory requirements for the installation of storage tanks. Up-to-date information about individual subsidy guidelines can be found at www.froeling.com.

Channelling the heat generated by the Firewood boiler to a storage tank can bring major advantages, such as

- better utilisation of fuel
- more user-friendly operation in terms of reloading intervals
- maximum independence from instantaneous heating requirements
- minimal dirt in boiler and flue gas system

As the minimum continuous heat output of the boiler is 30% greater than the rated heat output, we as the boiler manufacturer are obliged under EN 303-5:2021, Section 4.4.6 to advise that the Firewood boiler S3v Turbo must always be connected to a storage tank with adequate storage capacity.

The storage tank capacity can be calculated according to EN 303-5:2021 using the following formula:

$$V_{Sp} = 15 T_B \times P_N (1 - 0.3 \times P_H / P_{min})$$

V_{Sp}	Storage tank volume in litres
P_N	Rated output of the boiler in kW
T_B	Combustion period of the boiler in [1]
P_H	Heating load of the building in kW
P_{min}	Minimum output of the boiler in kW[2]

1. Sample combustion times for various fuels are provided in the technical data
2. The boiler's minimum output is the lowest value of the output range in the technical data. If there is no minimum heat output specified, use the nominal heat output ($P_{min} = P_N$)

For the correct dimensions of the storage tank and the line insulation (for instance to ÖNORM M 7510 or guideline UZ37) please consult your installer or Froling.

Recommended storage tank capacity:

	Unit	S3v Turbo 20-30	S3v Turbo 32-45
Recommended storage tank capacity[1]	[l]	2000	2500

1. Values for calculating the capacity can be found in the technical data or the technical data with partial load inspection (if available)

Certain countries have recommended storage capacities; these are listed below. The specified values apply when the nominal heat output of the boiler corresponds to the heating requirements of the building and a maximum of 50% of the nominal heat output can be dissipated to the building being heated under partial load conditions.

The exact design of the storage tank capacity is in accordance with the locally applicable guidelines and regulations:

Germany The first BImSchV (Ordinance on small and medium-sized heating plants of 26 January 2010, BGBl. I P. 38) stipulates a minimum water heat storage tank volume of 55 litres per kilowatt of rated heat output; a water heat storage tank with a volume of 12 litres per litre of fuel loading chamber is recommended.

Switzerland In accordance with the Swiss Federal Ordinance on Air Pollution Control (LRV 2018), Appendix 3, Paragraph 523 “Special requirements for boilers”, hand-fed boilers up to 500 kW rated heat output must be fitted with a minimum heat storage tank volume of 12 litres per litre of fuel loading chamber. The volume must not be less than 55 litres per kW rated heat output.

Hot water tank in accordance with Commission Regulation (EU) 2015/ 1189 (Ecodesign Requirements)

The boiler should be operated with a hot water tank. The storage capacity = 45 x P_r x (1-2.7/P_r) or 300 litres, whichever is greater, where the rated heat output of P_r is given in kW. The resulting storage capacity is less than the above-mentioned recommended storage tank capacity.

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!

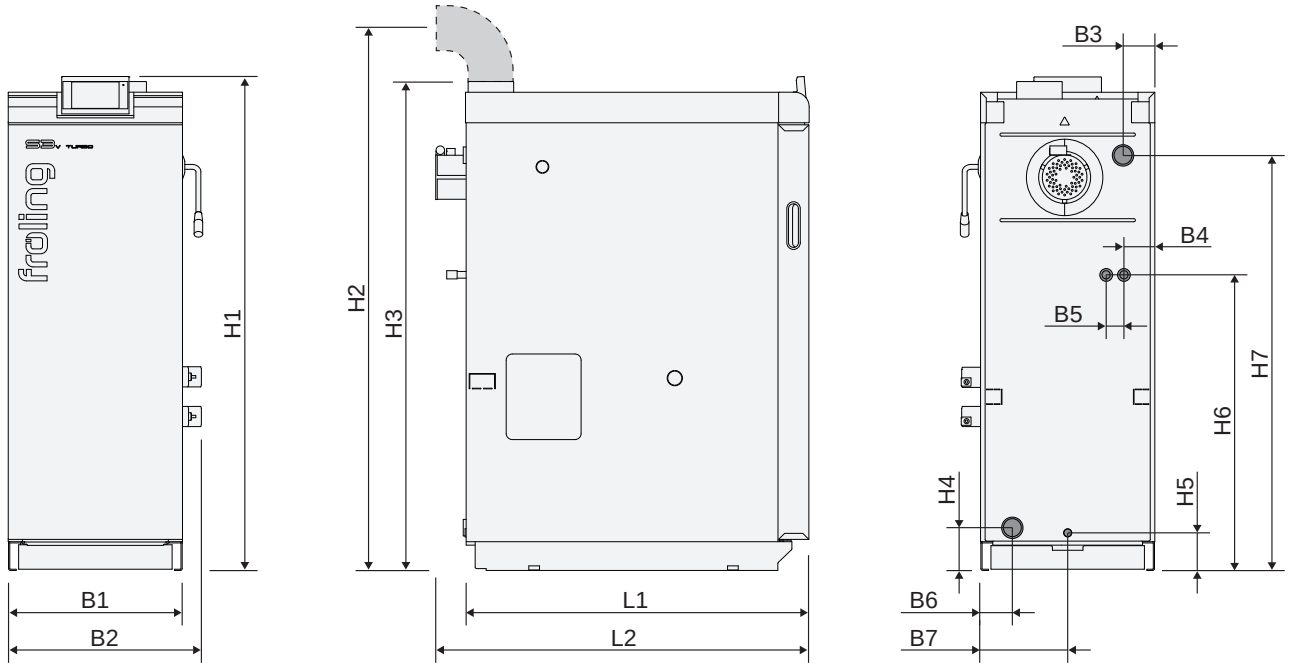
3.11 Installation material

When connecting the system hydraulically, ensure that the materials used (piping, seals, etc.) can withstand the maximum temperatures both during operation and in the event of a malfunction (max. 110 °C in accordance with EN 303-5).

When connecting to pipe systems with lower temperature resistance (e.g. plastic pipes for underfloor heating or district heating pipes), suitable components (e.g. contact thermostat) must be used on site to protect the materials.

4 Technology

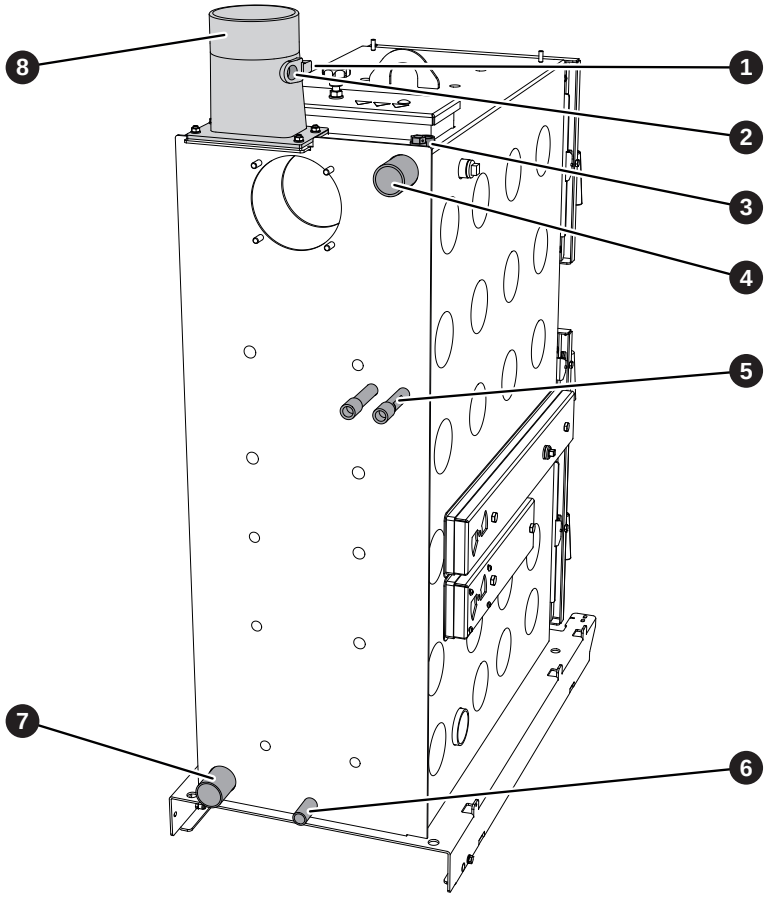
4.1 S3v Turbo dimensions



Size	Designation		20-30	32-45
L1	Length of boiler	mm	1125	1215
L2	Total length incl. induced draught fan		1300	1390
B1	Width, boiler		570	670
B2	Total width incl. servo-motors		635	735
B3	Distance between flow connection and side of boiler		105	105
B4	Distance between safety heat exchanger and side of boiler		100	115
W5	Distance between safety heat exchanger connections		60	80
B6	Distance between return connection and side of boiler		105	105
W7	Distance between drainage connection and side of boiler		285	335
H1	Height, boiler		1,565	1,565
H2	Height, flue gas pipe connection[1)]		1715	1715
H3	Total height incl. flue gas union		1610	1610
H4	Height, return connection		140	140
H5	Height, drainage connection		120	120
H6	Height, safety heat exchanger connection		970	970
H7	Height, flow connection		1360	1360

1. When using the optional flue pipe union for low chimney connections

4.2 Components and connections



Item	Description	S3v Turbo
1	Position for flue gas temperature sensor	6 mm
2	Position for Lambda probe	-
3	Position for boiler sensor, STL capillary and thermal discharge safety device sensor (on site)	-
4	Boiler flow connection	6/4” IT
5	Safety heat exchanger connection	1/2” IT
6	Drainage connection	1/2” IT
7	Boiler return connection	6/4” IT
8	Flue gas pipe connection (external diameter)	149 mm

4.3 Technical specifications

4.3.1 S3v Turbo 20–30 with S Tronic Plus

Designation		S3v Turbo	
		20	30
Rated heat output	kW	22	30
Boiler efficiency (NCV)	%	92.5	92.4
Electrical connection		230V / 50Hz / fused C16A	
Weight of boiler incl. insulation and controller	kg	640	
Total boiler capacity (water)	l	115	
Water pressure drop at nominal load (ΔT = 10 / 20 K)	mbar	21.32 / 14.65	21.32 / 14.65
Flow rate at nominal load (ΔT = 10 / 15 / 20 K)	m³/h	1.89 / 1.26 / 0.95	2.58 / 1.72 / 1.29
Minimum boiler return temperature	°C	60	
Maximum permitted operating temperature		90	
Minimum boiler temperature setting		70	
Permitted operating pressure	bar	3	
Airborne sound level	dB(A)	< 70	
Fuel loading door dimensions (width / height)	mm	380 / 360	
Fuel loading chamber capacity	l	145	
Boiler class according to EN 303-5:2023		5	
Boiler category		Category 1	
Permitted fuel as per EN 17225[1)]		Part 5: Firewood class A2 / D15 L50	
Combustion time[2)] - beech	h	5.9 – 8.4	4.3 – 6.2
Combustion time[2)] - spruce		4.2 – 5.9	3.1 – 4.3
Test book number		PB 117	PB 118

1. Detailed information on the fuel can be found in the operating instructions in the section entitled “Permitted fuels”
2. Values specified for combustion time are guideline values at nominal load and will vary depending on the water content (15-25%) and fill level (80-100%)

Product data in accordance with the regulations (EU) 2015/1187 and 2015/1189

Model identifier		S3v Turbo	
		20	30
Heating up mode		manual	manual
Condensing boiler		No	No
Solid fuel boiler for combined heat and power		No	No
Combined heating system		No	No
Storage tank volume		➲ "Storage tank" [▸ 18]	
Preferred fuel		Firewood, moisture content[1] ≤ 25 %	
Useful heat delivered at rated heat output (P_n)	kW	22	30
Fuel efficiency at rated heat output (η_n)	%	84.2	84.0
Auxiliary current consumption at rated heat output (el_{max})	kW	0.050	0.051
Auxiliary current consumption in standby mode (P_{SB})	kW	0.006	0.006
Energy efficiency class of the boiler		A+	A+
Energy efficiency index (EEI) of the boiler		119	119
Temperature controller used		S Tronic Plus	
Class of the temperature controller		II	II
Contribution of the temperature controller to the energy efficiency index of a combined system	%	2	2
Energy efficiency index (EEI) of the combined boiler and controller[2]		121	121
Energy efficiency class of the combined boiler and controller[2]		A+	A+
Heating space annual rate of use ηs	%	81	81
Annual space heating emissions of dust (PM)[3]	mg/m³	45	45
Annual space heating emissions of gaseous organic compounds (GOC)[3]	mg/m³	30	30
Annual space heating emissions of carbon monoxide (CO)[3]	mg/m³	530	530
Annual space heating emissions of nitrogen oxides (NOx)[3]	mg/m³	200	200

1. "Moisture content" means the ratio of the mass of water in the fuel to the total mass of the fuel when used in solid fuel boilers.
2. The information on the energy efficiency index EEI of the combined boiler and controller and the energy efficiency class of the combined boiler and controller applies only if the Froling control components supplied as standard with the respective boiler are used.
3. Specified emission values refer to dry flue gas with an oxygen content of 10 % and under standard conditions at 0°C and 1013 millibars.

4.3.2 S3v Turbo 40-45 with S Tronic Plus

Designation		S3v Turbo	
		40	45
Rated heat output	kW	40	45
Boiler efficiency (NCV)	%	92.2	92.2
Electrical connection		230V / 50Hz / fused C16A	
Weight of boiler incl. insulation and controller	kg	745	
Total boiler capacity (water)	l	175	
Water pressure drop at nominal load (ΔT = 10 / 20 K)	mbar	4.28 / 1.92	4.81 / 2.42
Flow rate at nominal load (ΔT = 10 / 15 / 20 K)	m³/h	3.44 / 2.29 / 1.72	3.87 / 2.58 / 1.93
Minimum boiler return temperature	°C	60	
Maximum permitted operating temperature		90	
Minimum boiler temperature setting		70	
Permitted operating pressure	bar	3	
Airborne sound level	dB(A)	< 70	
Fuel loading door dimensions (width / height)	mm	380 / 360	
Fuel loading chamber capacity	l	190	
Boiler class according to EN 303-5:2023		5	
Boiler category		Category 1	
Permitted fuel as per EN 17225[1)]		Part 5: Firewood class A2 / D15 L50	
Combustion time[2)] - beech	h	4.3 – 6.0	3.8 – 5.4
Combustion time[2)] - spruce		3.0 – 4.3	2.7 – 3.8
Test book number		PB 119	PB 120

1. Detailed information on the fuel can be found in the operating instructions in the section entitled “Permitted fuels”
2. Values specified for combustion time are guideline values at nominal load and will vary depending on the water content (15-25%) and fill level (80-100%)

Product data in accordance with the regulations (EU) 2015/1187 and 2015/1189

Model identifier		S3v Turbo	
		40	45
Heating up mode		manual	manual
Condensing boiler		No	No
Solid fuel boiler for combined heat and power		No	No
Combined heating system		No	No
Storage tank volume		➲ "Storage tank" [▸ 18]	
Preferred fuel		Firewood, moisture content[1] ≤ 25 %	
Useful heat delivered at rated heat output (P_n)	kW	40	45
Fuel efficiency at rated heat output (η_n)	%	83.7	83.7
Auxiliary current consumption at rated heat output (el_{max})	kW	0.053	0.053
Auxiliary current consumption in standby mode (P_{SB})	kW	0.006	0.006
Energy efficiency class of the boiler		A+	A+
Energy efficiency index (EEI) of the boiler		118	118
Temperature controller used		S Tronic Plus	
Class of the temperature controller		II	II
Contribution of the temperature controller to the energy efficiency index of a combined system	%	2	2
Energy efficiency index (EEI) of the combined boiler and controller[2]		120	120
Energy efficiency class of the combined boiler and controller[2]		A+	A+
Heating space annual rate of use ηs	%	80	80
Annual space heating emissions of dust (PM)[3]	mg/m³	45	45
Annual space heating emissions of gaseous organic compounds (GOC)[3]	mg/m³	30	30
Annual space heating emissions of carbon monoxide (CO)[3]	mg/m³	530	530
Annual space heating emissions of nitrogen oxides (NOx)[3]	mg/m³	200	200

1. "Moisture content" means the ratio of the mass of water in the fuel to the total mass of the fuel when used in solid fuel boilers.
2. The information on the energy efficiency index EEI of the combined boiler and controller and the energy efficiency class of the combined boiler and controller applies only if the Froling control components supplied as standard with the respective boiler are used.
3. Specified emission values refer to dry flue gas with an oxygen content of 10 % and under standard conditions at 0°C and 1013 millibars.

4.3.3 S3v Turbo 22–30 with S3200 (Lambda)

Designation		S3v Turbo	
		22	30
Rated heat output	kW	22	30
Boiler efficiency (NCV)	%	93.2	93.4
Electrical connection		230V / 50Hz / fused C16A	
Weight of boiler incl. insulation and controller	kg	640	
Total boiler capacity (water)	l	115	
Water pressure drop at nominal load (ΔT = 10 / 20 K)	mbar	21.32 / 14.65	21.32 / 14.65
Flow rate at nominal load (ΔT = 20 K)	m³/h	0.95	1.29
Minimum boiler return temperature	°C	60	
Maximum permitted operating temperature		90	
Minimum boiler temperature setting		70	
Permitted operating pressure	bar	3	
Airborne sound level	dB(A)	< 70	
Fuel loading door dimensions (width / height)	mm	380 / 360	
Fuel loading chamber capacity	l	145	
Boiler class according to EN 303-5:2023		5	
Boiler category		Category 1	
Permitted fuel as per EN 17225[1)]		Part 5: Firewood class A2 / D15 L50	
Combustion time[2)] - beech	h	5.9 – 8.4	4.3 – 6.2
Combustion time[2)] - spruce		4.2 – 5.9	3.1 – 4.3
Test book number		PB 259	PB 118

1. Detailed information on the fuel can be found in the operating instructions in the section entitled “Permitted fuels”
2. Values specified for combustion time are guideline values at nominal load and will vary depending on the water content (15-25%) and fill level (80-100%)

Product data in accordance with the regulations (EU) 2015/1187 and 2015/1189

Model identifier		S3v Turbo	
		22	30
Heating up mode		manual	manual
Condensing boiler		No	No
Solid fuel boiler for combined heat and power		No	No
Combined heating system		No	No
Storage tank volume		➲ "Storage tank" [▸ 18]	
Preferred fuel		Firewood, moisture content[1] ≤ 25 %	
Useful heat delivered at rated heat output (P_n)	kW	22	30
Fuel efficiency at rated heat output (η_n)	%	85.9	86.2
Auxiliary current consumption at rated heat output (el_{max})	kW	0.047	0.047
Auxiliary current consumption in standby mode (P_{SB})	kW	0.006	0.006
Energy efficiency class of the boiler		A+	A+
Energy efficiency index (EEI) of the boiler		121	121
Temperature controller used		S3200	
Class of the temperature controller		II	II
Contribution of the temperature controller to the energy efficiency index of a combined system	%	2	2
Energy efficiency index (EEI) of the combined boiler and controller[2]		123	123
Energy efficiency class of the combined boiler and controller[2]		A+	A+
Heating space annual rate of use ηs	%	82	82
Annual space heating emissions of dust (PM)[3]	mg/m³	45	45
Annual space heating emissions of gaseous organic compounds (GOC)[3]	mg/m³	30	30
Annual space heating emissions of carbon monoxide (CO)[3]	mg/m³	530	530
Annual space heating emissions of nitrogen oxides (NOx)[3]	mg/m³	200	200

1. "Moisture content" means the ratio of the mass of water in the fuel to the total mass of the fuel when used in solid fuel boilers.
2. The information on the energy efficiency index EEI of the combined boiler and controller and the energy efficiency class of the combined boiler and controller applies only if the Froling control components supplied as standard with the respective boiler are used.
3. Specified emission values refer to dry flue gas with an oxygen content of 10 % and under standard conditions at 0°C and 1013 millibars.

4.3.4 S3v Turbo 32-45 with S3200 (Lambda)

Designation		S3v Turbo		
		32[1)]	40	45
Rated heat output	kW	32	40	45
Boiler efficiency (NCV)	%	93.5	93.7	93.7
Electrical connection		230V / 50Hz / fused C16A		
Weight of boiler incl. insulation and controller	kg	745		
Total boiler capacity (water)	l	175		
Water pressure drop at nominal load (ΔT = 10 / 20 K)	mbar	4.28 / 1.92	4.28 / 1.92	4.81 / 2.42
Flow rate at nominal load (ΔT = 20 K)	m³/h	1.38	1.72	1.93
Minimum boiler return temperature	°C	60		
Maximum permitted operating temperature		90		
Minimum boiler temperature setting		70		
Permitted operating pressure	bar	3		
Airborne sound level	dB(A)	< 70		
Fuel loading door dimensions (width / height)	mm	380 / 360		
Fuel loading chamber capacity	l	190		
Boiler class according to EN 303-5:2023		5		
Boiler category		Category 1		
Permitted fuel as per EN 17225[2)]		Part 5: Firewood class A2 / D15 L50		
Combustion time [3)] - beech	h	5.4 – 7.5	4.3 – 6.0	3.8 – 5.4
Combustion time[3)] - spruce		3.8 – 5.4	3.0 – 4.3	2.7 – 3.8
Test book number		PB 298	PB 119	PB 120

1. The S3v Turbo 32 is available only in Italy
2. Detailed information on the fuel can be found in the operating instructions in the section entitled “Permitted fuels”
3. Values specified for combustion time are guideline values at nominal load and will vary depending on the water content (15-25%) and fill level (80-100%)

Product data in accordance with the regulations (EU) 2015/1187 and 2015/1189

Model identifier		S3v Turbo		
		32	40	45
Heating up mode		manual	manual	manual
Condensing boiler		No	No	No
Solid fuel boiler for combined heat and power		No	No	No
Combined heating system		No	No	No
Storage tank volume		➲ "Storage tank" [▸ 18]		
Preferred fuel		Firewood, moisture content[1] ≤ 25 %		
Useful heat delivered at rated heat output (P_n)	kW	32	40	45
Fuel efficiency at rated heat output (η_n)	%	86.2	86.7	86.7
Auxiliary current consumption at rated heat output (el_{max})	kW	0.048	0.048	0.048
Auxiliary current consumption in standby mode (P_{SB})	kW	0.006	0.006	0.006
Energy efficiency class of the boiler		A+	A+	A+
Energy efficiency index (EEI) of the boiler		121	122	122
Temperature controller used		S3200		
Class of the temperature controller		II	II	II
Contribution of the temperature controller to the energy efficiency index of a combined system	%	2	2	2
Energy efficiency index (EEI) of the combined boiler and controller[2]		123	124	124
Energy efficiency class of the combined boiler and controller[2]		A+	A+	A+
Heating space annual rate of use ηs	%	82	83	83
Annual space heating emissions of dust (PM)[3]	mg/m³	45	45	45
Annual space heating emissions of gaseous organic compounds (GOC)[3]	mg/m³	30	30	30
Annual space heating emissions of carbon monoxide (CO)[3]	mg/m³	530	530	530
Annual space heating emissions of nitrogen oxides (NOx)[3]	mg/m³	200	200	200

1. "Moisture content" means the ratio of the mass of water in the fuel to the total mass of the fuel when used in solid fuel boilers.
2. The information on the energy efficiency index EEI of the combined boiler and controller and the energy efficiency class of the combined boiler and controller applies only if the Froling control components supplied as standard with the respective boiler are used.
3. Specified emission values refer to dry flue gas with an oxygen content of 10 % and under standard conditions at 0°C and 1013 millibars.

4.3.5 Boiler data for planning the flue gas system

Designation		S3v Turbo				
		20/22	30	32[1)]	40	45
Flue gas temperature at rated heat output T_{WN} / at the lowest output T_{Wmin}	°C	150 / -	170 / -	140 / -	150 / -	170 / -
Volumetric concentration of CO_2 in the dry flue gas $\sigma(CO_2)$ at rated heat output	%	12.3				
Flue gas mass flow at rated heat output $\dot{m}_N$ / at the lowest output $\dot{m}_{min}$	kg/h	57.6 / -	79.2 / -	79.5 / -	104.4 / -	118.8 / -
	kg/s	0.016 / -	0.022 / -	0.022 / -	0.029 / -	0.033 / -
Feed pressure P_{WN} required at the rated heat output / P_{Wmin} required at the lowest output	Pa	5 / -				
Maximum permissible feed pressure P_{Wmax}	Pa	30				
Maximum permissible feed pressure $P_{Wmax}$with an electronic separator (internal and external)	Pa	15				
Feed pressure P_{WO} (blower fan delivery pressure) available at the appliance	Pa	-				
Flue spigot diameter D	mm	149				
Data to be used when for operation independently of the room air						
Supply air connection diameter	mm	-				
Maximum permissible pressure drop P_{Bmax} in the supply air line	Pa	-				
Combustion air volume at rated heat output	m³/h	-		-		

1. The S3v Turbo 32 is available only in Italy

4.3.6 Data on the design of the ventilation opening

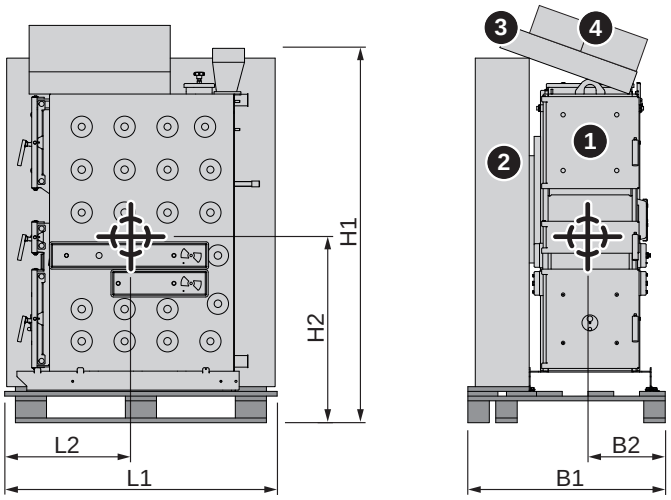
Designation		S3v Turbo				
		20/22	30	32	40	45
Design data for room air-dependent operation						
Minimum ventilation opening as per OIB Guideline 3 (Austria)	cm²	400				
Minimum ventilation opening as per MFeuV (Germany)		150				
Data to be used when operation independently of the room air						
Maximum permissible under-pressure at the installation site	Pa	-				

4.3.7 Data for planning a backup power supply

Description		Value
Continuous output (single phase)	VA	3680
Nominal voltage	VAC	230 ± 6%
Frequency	Hz	50 ± 2%

5 Transport and storage

5.1 Delivery configuration



Item	Designation	Unit	S3v Turbo	
			20-30	32-45
L1	Length	mm	1270	1340
B1	Width		920	1080
H1	Height		1745	1745
-	Weight	kg	665	765
Centre of gravity				
L2	Length	mm	600	630
B2	Width		400	460
H2	Height		870	840
Components				
1	S3v Turbo boiler			
2	Insulation			
3	Controller			
4	Accessories package			

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

IMPORTANT

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

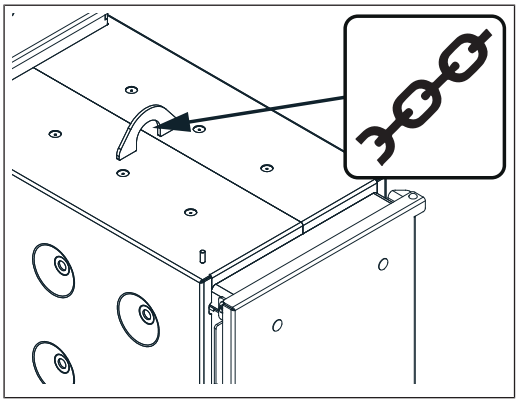
❒ Position a fork-lift or similar lifting device at the pallet and bring in the components

If the boiler cannot be brought in on the pallet:

❒ remove the cardboard and take the boiler off the pallet

➲ "Remove boiler from pallet" [▸ 33]

Positioning using a crane



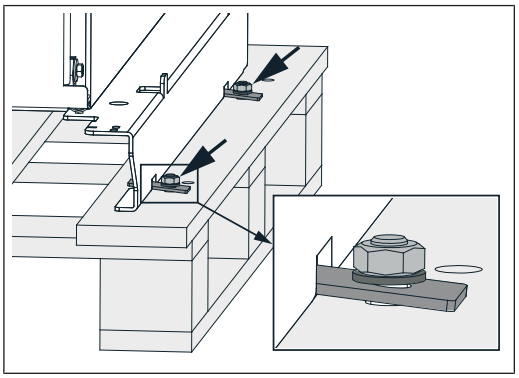
❒ Attach the crane hook to the attachment point correctly and position the boiler

5.4 Positioning at the installation site

5.4.1 Remove boiler from pallet

❒ Remove the cardboard with the controller from the boiler and put in a safe place

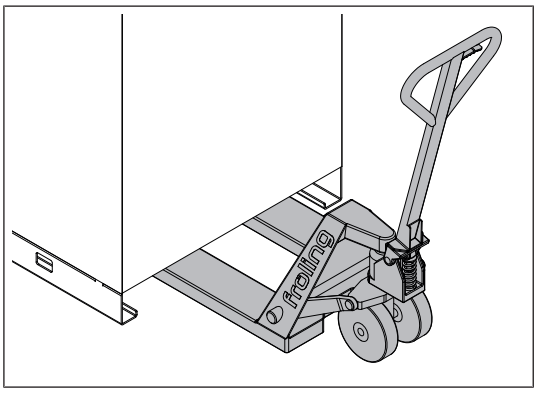
❒ Lift the cardboard box with the insulation from the pallet



❒ Remove the transport locks on both sides

❒ Lift boiler from pallet

TIP: use Froling's KHV 1400 boiler lifting system to help remove the pallet!



❒ Position a fork-lift or similar lifting device with a suitable load-bearing capacity at the base frame

❒ Lift it and transport it to the intended position

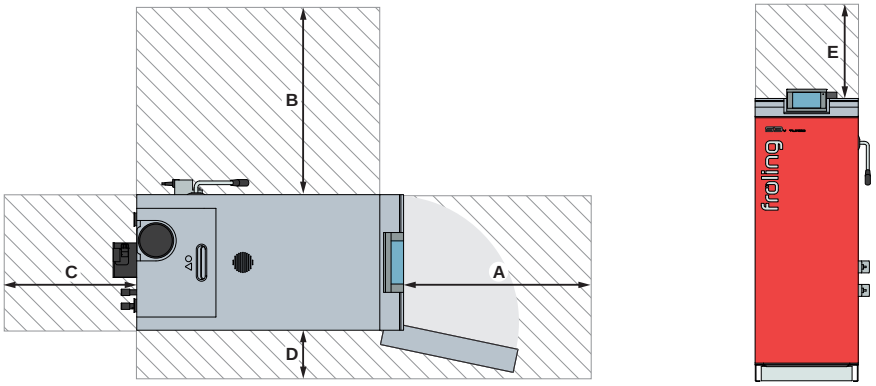
↳ Observe the operating and maintenance areas of the equipment in the process!

TIP: To make it easier to fit the cladding, position the boiler in free space in the installation room and only move it to its final position just before connecting it hydraulically.

5.4.2 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)

IMPORTANT! The heat-exchanger lever and manual controller / servo-motor for air control can be installed on the left or right!



	S3v Turbo
A	800 mm
B	800 mm / 200 mm[1)]
C	500 mm
D	200 mm / 800 mm[1)]
E	500 mm[2)]

1. A maintenance area of at least 800 mm is required alongside the heat-exchanger lever (B or D) to ensure easy access for connecting the appliance and for maintenance work (e.g. induced draught)
2. Maintenance area to remove the WOS springs upwards

6 Assembly

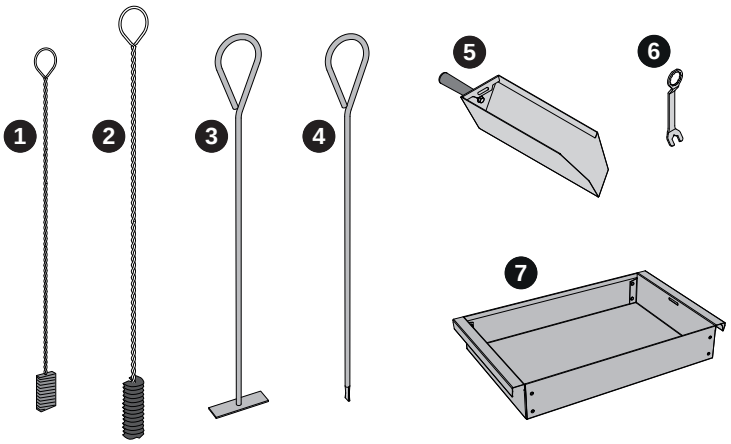
6.1 Required tools and equipment

The following tools and resources are required for assembly:

- ❒ Spanner or box wrench set (widths across flats 8 - 32 mm)
- ❒ Set of Allen keys
- ❒ Flat head and cross-head screwdrivers
- ❒ Hammer
- ❒ Diagonal cutting pliers
- ❒ Half-round file
- ❒ Power drill or cordless screwdriver with Torx bit insert
- ❒ Stepladder

6.2 Accessories supplied

The following accessories are included in the delivery and are necessary exclusively for operation of the boiler.

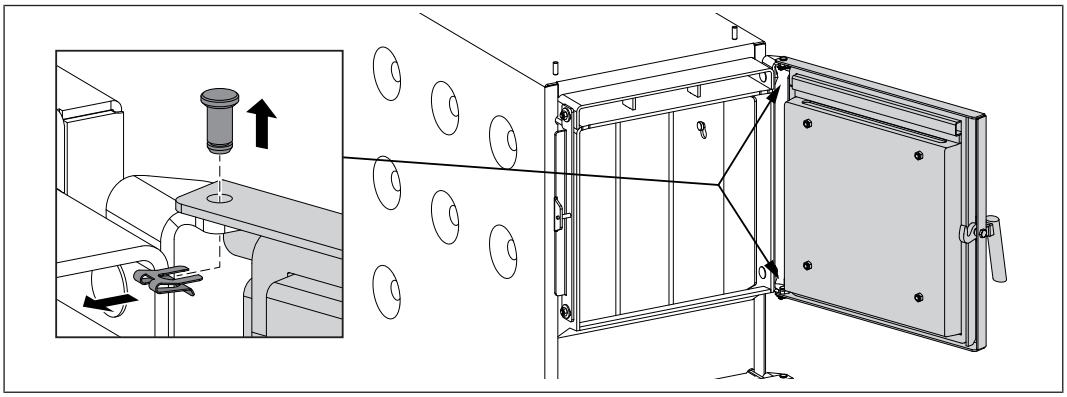


1	Cleaning brush 30 x 20 x 900	**5**	Ash shovel
2	Cleaning brush Ø 54 x 1350	**6**	Spanner for door mountings
3	Flat scraper	**7**	Ash drawer
4	Stoking rod		

6.3 Before Installation

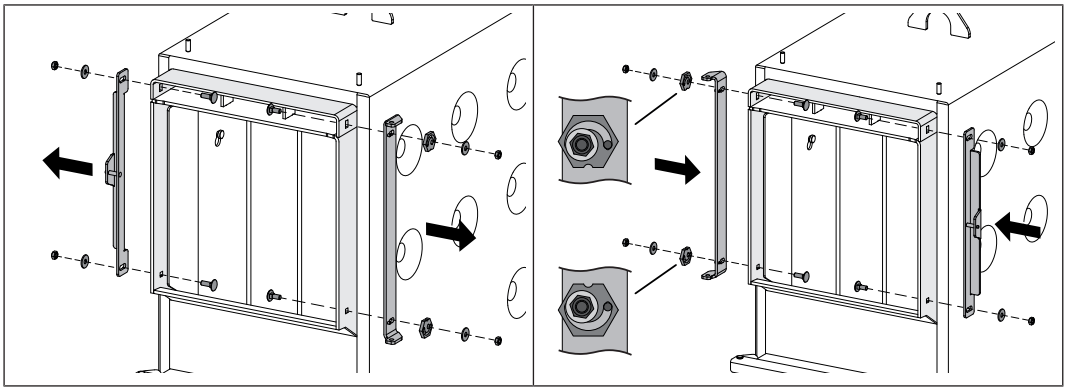
6.3.1 Changing door stops (as needed)

The following steps are illustrated based on changing the fuel loading door from right-hand mounting to left-hand mounting. Perform these steps in the same way for the door of the pre-heating and combustion chamber.



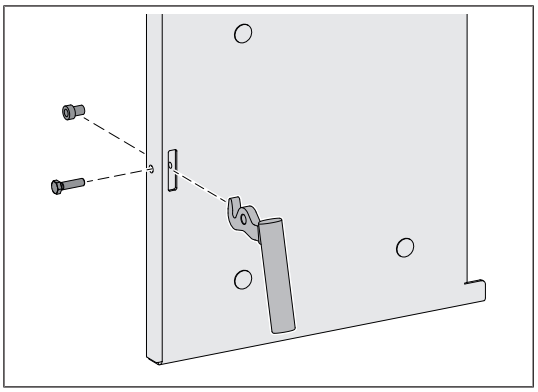
❒ Open the fuel loading door

❒ Remove the shaft retainers, pull out the hinge pins and take off the fuel loading door



❒ Remove the hinge and locking plate and reinstall them on the opposite side

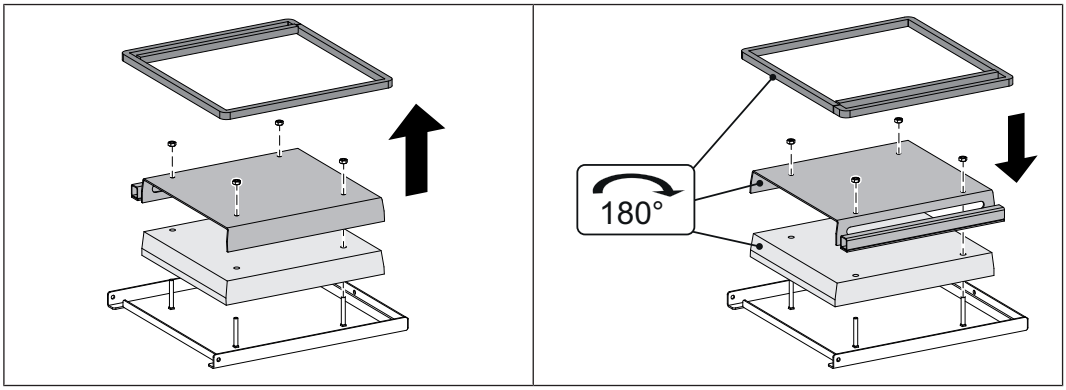
↳ Position the locking cam on the hinge as shown



❒ Undo the hexagon screw on the fuel loading door and remove the door handle and flange sleeve

❒ Turn the door handle through 180°, insert the flange bushing and attach the door handle using a hexagon head screw

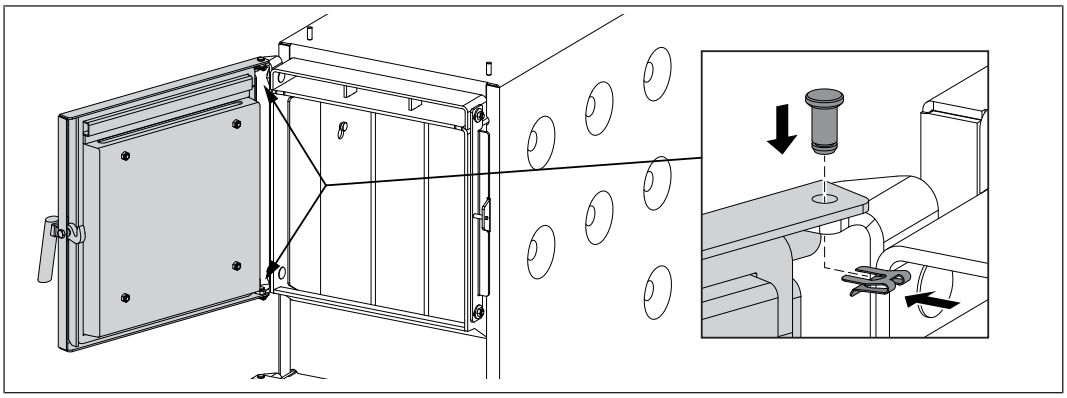
For the fuel loading door



❒ Cautiously remove the seal, protective plate and insulating panel

❒ Turn the components through 180° and reinstall them on the door plate

❒ When doing so, use contact adhesive to fix the seal in place



❒ Position the fuel loading door on the hinge and secure it with the top and bottom hinge pins

❒ Slide the shaft retainers on to the hinge pins

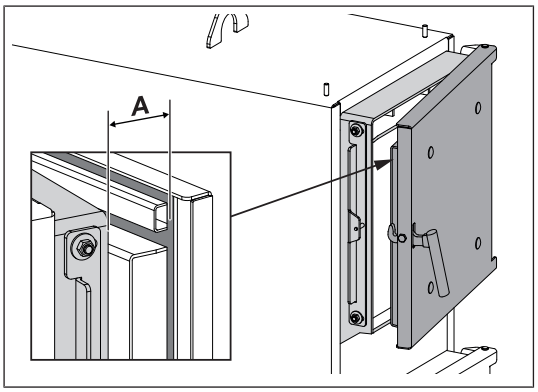
IMPORTANT! After changing over the door stops, check the seal and adjust it as necessary.

➲ "Checking the seal on the doors" [▸ 38]

➲ "Adjusting the doors" [▸ 39]

6.3.2 Checking the seal on the doors

The following steps are illustrated based on the fuel loading door. Perform these steps in the same way for the door of the pre-heating and combustion chamber.

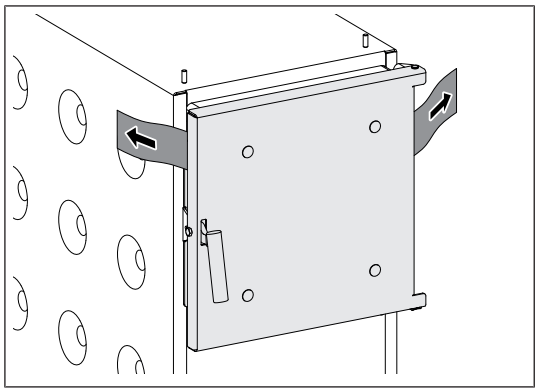


❒ Close the door

↳ Slight resistance noticeable at a door gap (A) of 2-3 cm:
It is acceptable to make an adjustment at the hinge side

↳ No perceptible resistance:
Move the hinge backwards
➲ "Adjusting the doors" [▸ 39]

↳ If a resistance is felt when there is a gap of 3 cm:
Move the hinge plate forwards
➲ "Adjusting the doors" [▸ 39]



❒ Open the door

❒ Place a sheet of paper on both sides of the door and close the door

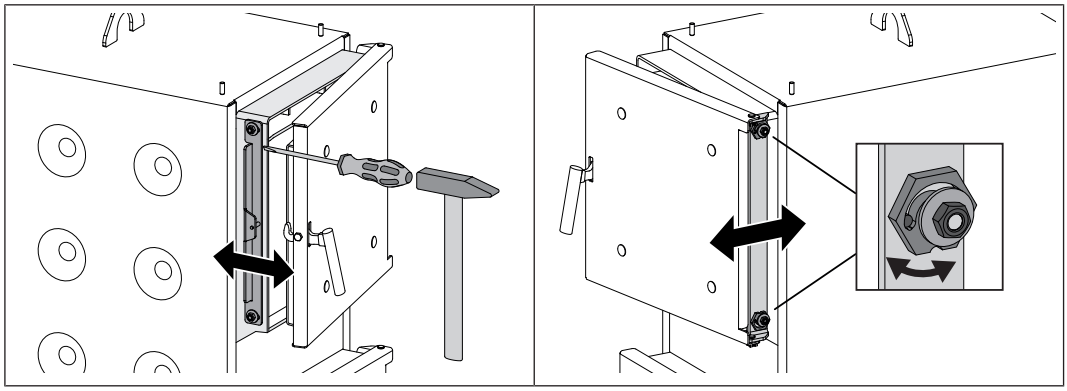
❒ Try to pull out the sheet of paper

↳ If the paper cannot be pulled out:
the door is tightly sealed

↳ If the paper can be pulled out:
the door is not sealed properly – move the hinge or the locking plate backwards slightly
➲ "Adjusting the doors" [▸ 39]

6.3.3 Adjusting the doors

The following steps are illustrated based on the fuel loading door. Perform these steps in the same way for the door of the pre-heating and combustion chamber.



❒ Loosen the nuts on the locking plate

❒ Use a suitable tool, to move the locking plate forwards or backwards

❒ Tighten the nuts on the locking plate

❒ Loosen the nuts on the door hinge

❒ Use a hexagonal wrench (width across flats 32 mm) to move the locking cam (B) forwards or backwards

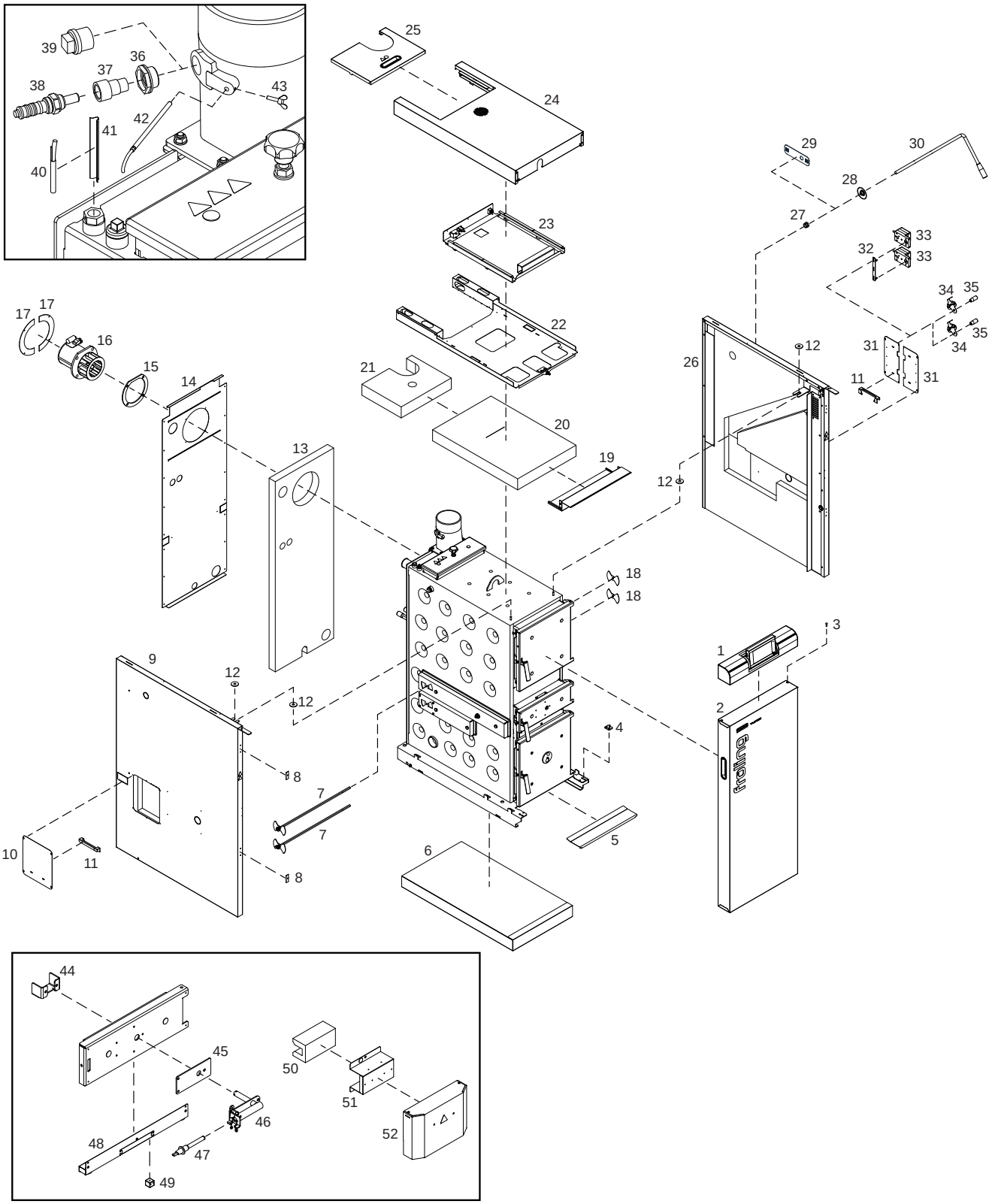
❒ Tighten the nuts on the hinge

IMPORTANT: Align the locking plate and hinge identically at the top and bottom

❒ Once the doors have been adjusted, check them again for leaks, ➲ "Checking the seal on the doors" [▸ 38]

6.4 Fitting the S3v Turbo

6.4.1 Assembly overview

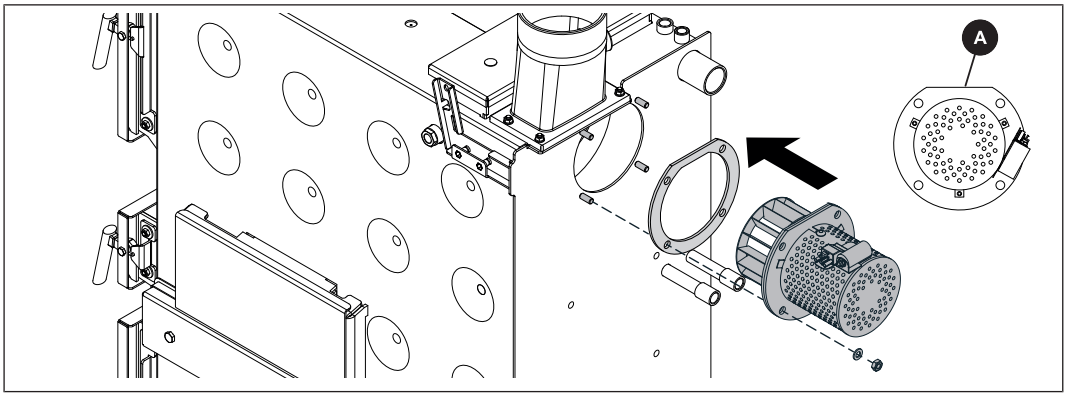


Item	Qty.	Designation	Item	Qty.	Designation
1	1	Control	**23**	1	Controller box
2	1	Insulated door	**24**	1	Controller cover
3	1	Door bearing	**25**	1	Insulating cover, back
4	1	Door mount	**26**	1	Side panel, right
5	1	Bottom cover plate	**27**	1	Grey cast iron bushing
6	1	Floor insulation	**28**	1	Plastic cover
7	2	Pneumatic rods with air flap	**29**	1	Cover plate (for S3v Turbo 40-45)
8	2	Counter plate for magnetic latches	**30**	1	Heat-exchanger lever
9	1	Side panel, left	**31**	2	Servo-motor cover plate
10	1	Cover plate	**32**	1	Torque support (for S-Tronic Lambda)
11	2	Bracket	**33**	2	Servo-motor (for S-Tronic Lambda)
12	4	Washer	**34**	2	Manual controller (for S-Tronic Plus)
13	1	Rear thermal insulation	**35**	2	Handle for manual controller (for S-Tronic Plus)
14	1	Back panel	**36**	1	Bushing (for S-Tronic Lambda)
15	1	Silicone seal	**37**	1	Adapter (for S-Tronic Lambda)
16	1	Induced draught fan	**38**	1	Lambda probe (for S-Tronic Lambda)
17	2	Cover plate for ID fan	**39**	1	Blanking plug (for S-Tronic Plus)
18	2	Air flap	**40**	1	Boiler sensor
19	1	Spacer plate	**41**	1	Pressure spring
20	1	Top thermal insulation	**42**	1	Flue gas temperature sensor
21	1	Rear thermal insulation	**43**	1	Wing screw
22	1	Control plate			

Automatic ignition for S3v Turbo with S3200 (Lambda) (optional)

Item	Qty.	Designation	Item	Qty.	Designation
44	1	Basket plate	**49**	1	Terminal block
45	1	Seal	**50**	1	Insulation
46	1	Igniter tube	**51**	1	Securing plate
47	1	Glow igniters	**52**	1	Cover plate
48	1	Cable duct			

6.4.2 Fit the induced draught fan



❒ Install induced draught fan and silicone seal on the back of the boiler

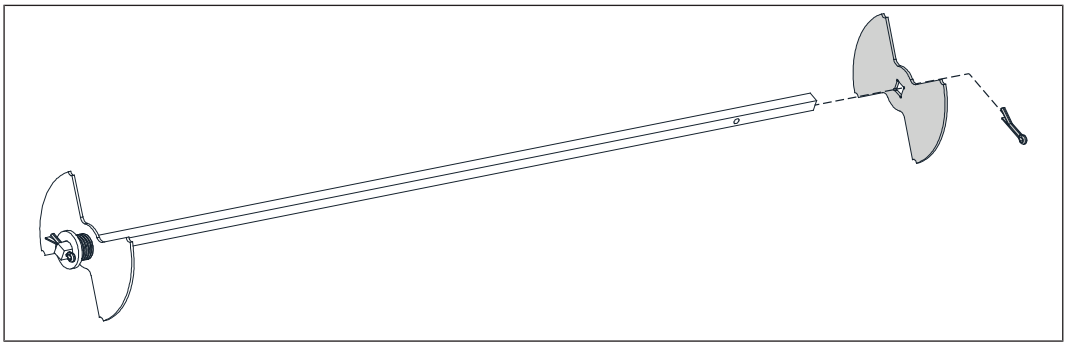
↳ Straight edge (A) up

↳ Caution: do not overstress the flange!

6.4.3 Installing the pneumatic rods for the primary and secondary air

The air control actuators can be mounted on either the left or right side of the boiler.
Delivery configuration: Right actuators

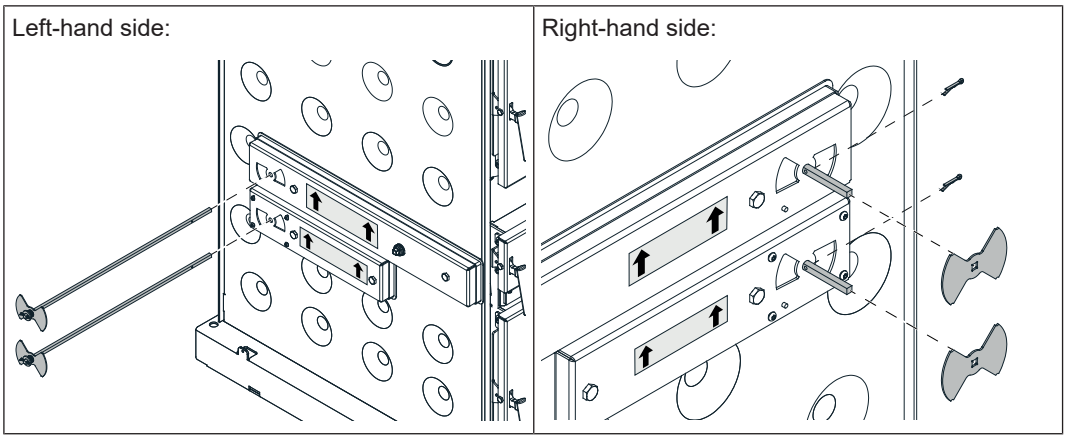
IMPORTANT! If the actuators are to be mounted on the left, the air ducts must be changed on both sides!



❒ Remove the split pin on both pneumatic rods opposite the spring and pull one of the air flaps off of each

↳ The pneumatic rods are packed along with the insulation

Right actuators

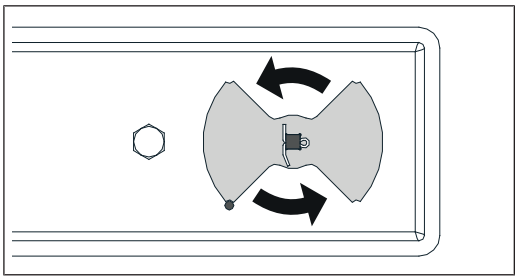


❒ Insert both pneumatic rods into the left-hand side of the boiler

↳ The air flaps with springs lie flat on the left-hand air ducts!

❒ Insert the air flaps on the pneumatic rods on the right-hand side and secure them with split pins

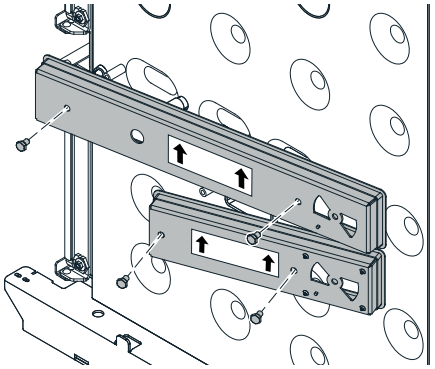
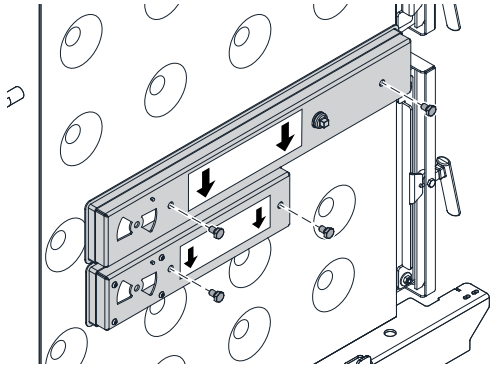
↳ IMPORTANT: the air flaps must be in the same position as those on the opposite side!



❒ Turn both pneumatic rods anti-clockwise as far as the stop

↳ Check the pneumatic rods can move freely

Left actuators

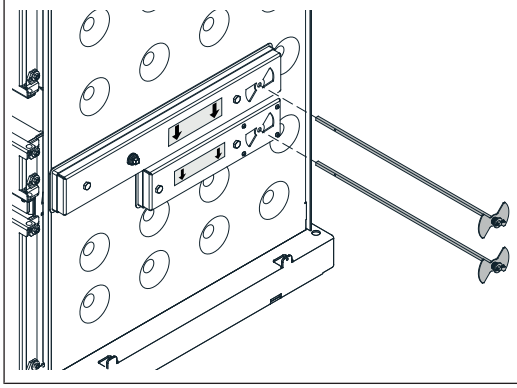
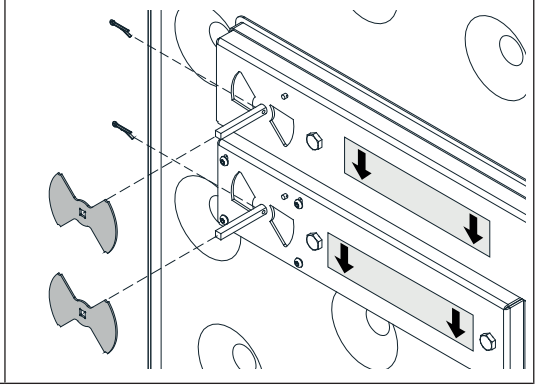
Disassembly on right-hand side:	Assembly on left-hand side:
	

❒ Remove both air ducts on the left and right-hand sides

❒ Fit the air ducts back onto the other side

↳ The arrow on the air duct sticker should now point downwards!

↳ Only partially tighten the screws!

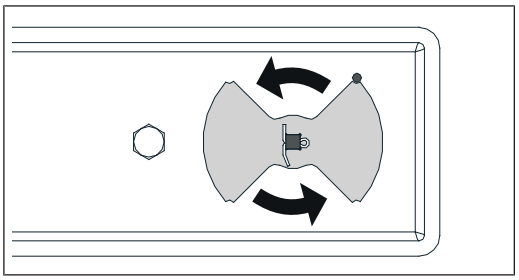
Right-hand side:	Left-hand side:
	

❒ Insert both pneumatic rods into the right-hand side of the boiler

↳ The air flaps with springs lie flat on the right-hand air ducts!

❒ Insert the air flaps on the pneumatic rods on the left-hand side and secure them with split pins

↳ IMPORTANT: the air flaps must be in the same position as those on the opposite side!

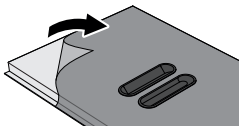


❒ Turn both pneumatic rods anti-clockwise as far as the stop

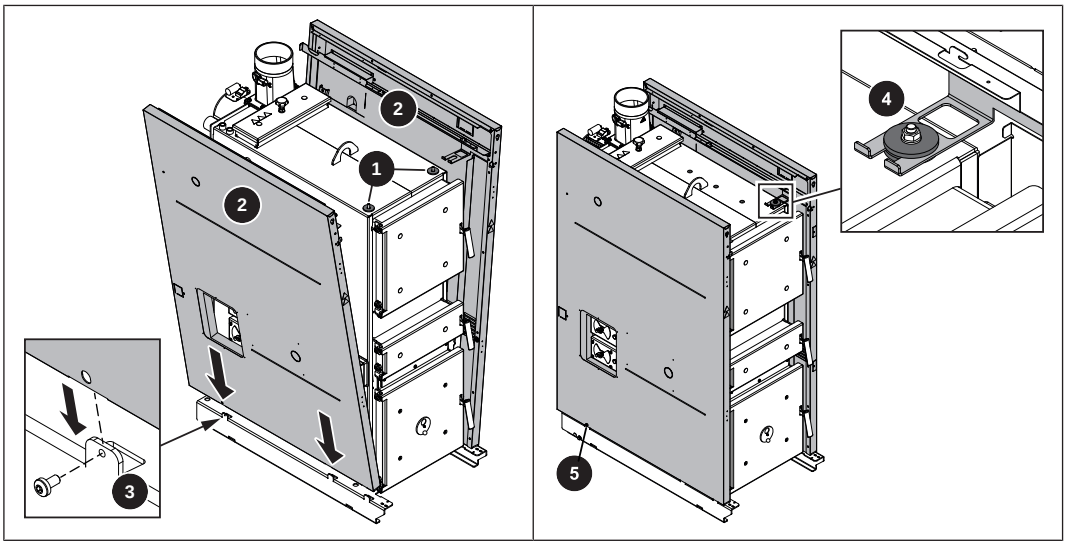
↳ Check the pneumatic rods can move freely

❒ Tighten the screws on the air flaps

6.4.4 Installing the insulation



IMPORTANT: The individual parts of the boiler insulation covered with a protective film. The protective film must be removed before proceeding with the installation!



❒ Place one large spacer washer (1) on each of the threaded bolts to the right and the left above on the boiler

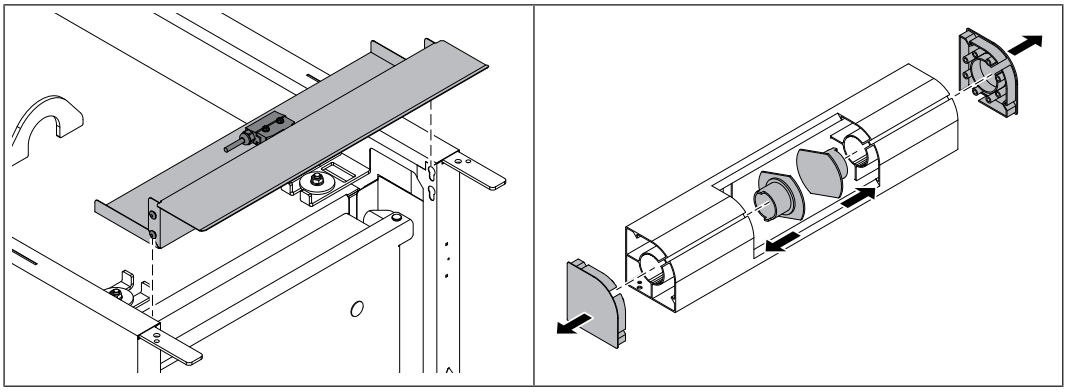
❒ Insert the side panels (2) into the base of the boiler at the lug (3) and push onto the boiler

↳ The holes in the side panel must line up with the holes in the flap (3)

❒ Position the brackets on the side panels (2) onto the threaded bolts and secure lightly with a large and a small spacer washer and nut (4)

❒ Secure the side panels (2) on the right and left at the flap on the boiler base with thread forming screws (5)

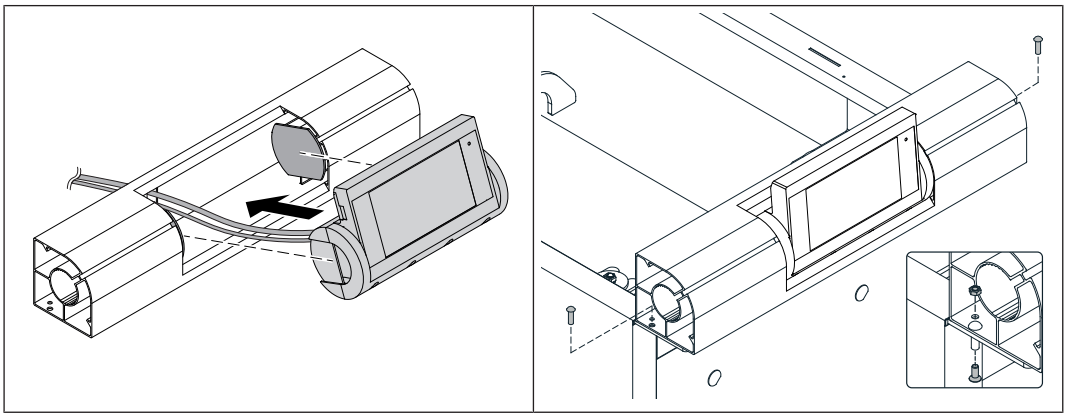
6.4.5 Installing the control



❒ Hang the upper spacer plate with the door contact switch mounted on rivets between insulating side panels

❒ Remove the end caps from the operating bar

❒ Insert bearing elements into the operating bar



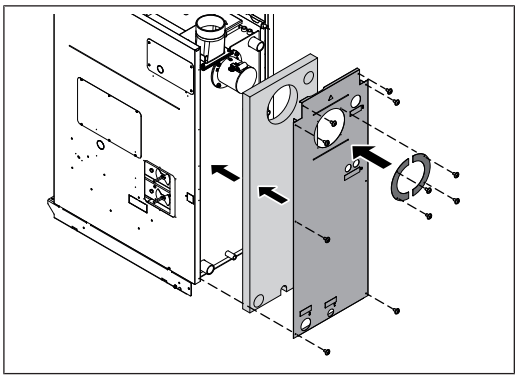
❒ Insert the control piece into the bearing elements

↳ Feed the cable through the rear cut-out

❒ Attach the operating bar to the brackets and fix it in place
- 2x countersunk head screws M5 x 10

❒ Push through hinge pins for the insulated door into the side of the door stop from above

6.4.6 Installing the back panel

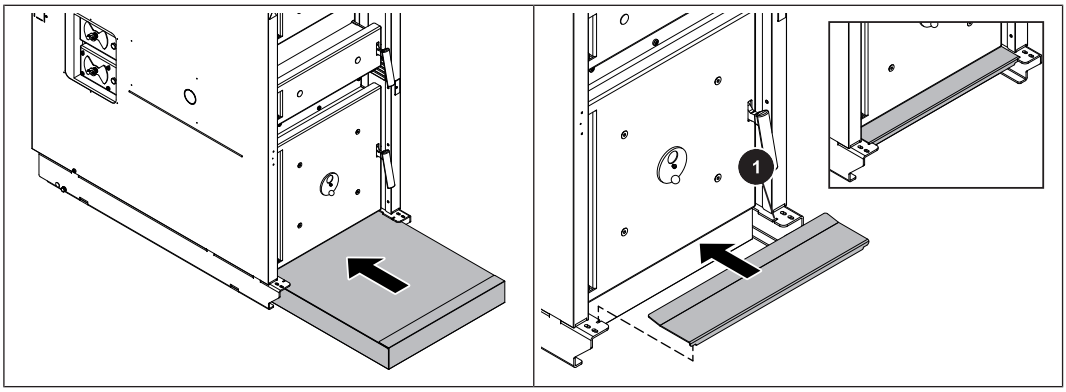


❒ Position the rear thermal insulation on the rear side of the boiler

❒ Attach the back panel to the side panel

❒ Install the ID fan cover plate on the back panel

6.4.7 Installing the floor insulation



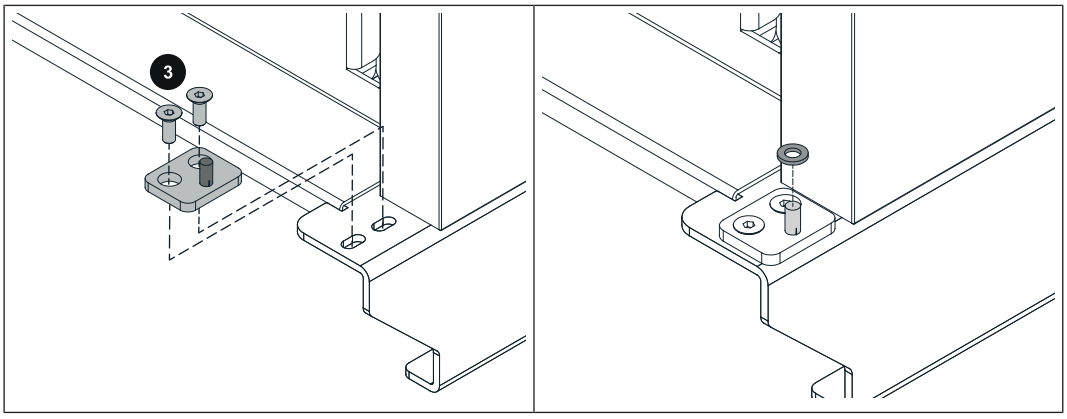
❒ Push in the floor insulation

❒ Insert the cover plate under the combustion chamber door

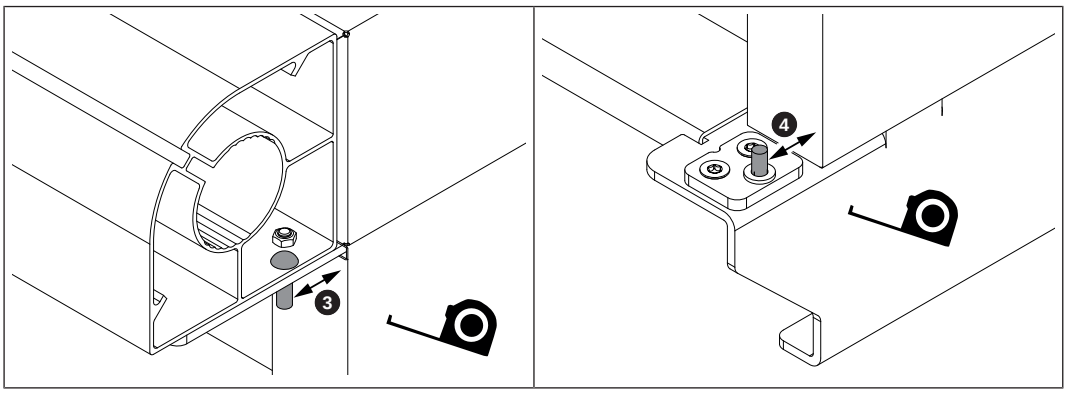
↳ Hook the angled lugs left and right into the opening (1) on the boiler base

6.4.8 Installing the insulated door

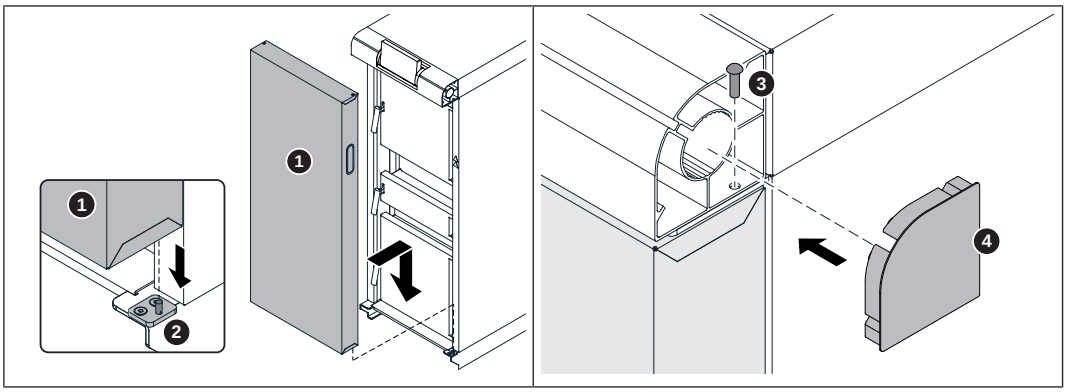
The illustrations show the assembly for the door stop on the right. If the insulated door is attached on the left, complete the following procedures with the sides reversed accordingly.



- ❒ Place the lower door bracket on a flat surface and drive in a half-length taper grooved pin (1)
- ❒ Mount the lower door bracket on to the boiler base with the half-length taper grooved pin facing outwards
  - ↳ Only partially tighten the M6x12 socket-head screws (2)
- ❒ Place the spacer washer on the taper grooved pin

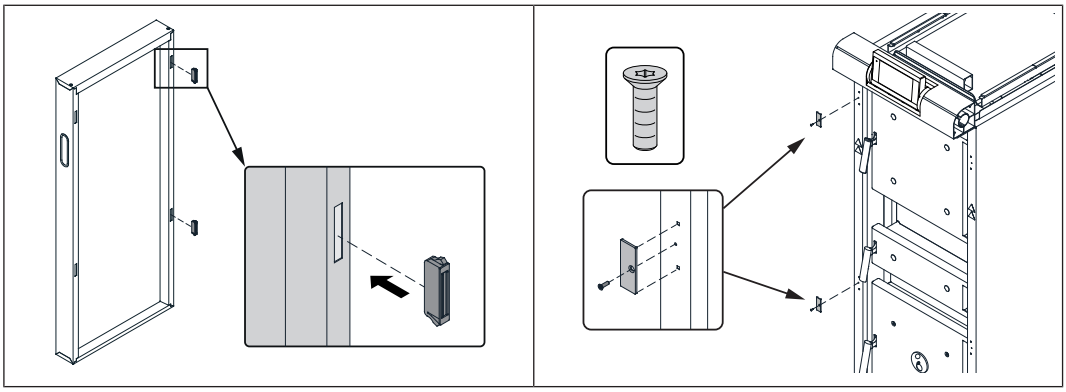


- ❒ Measure the distance from the insulating side panel to the hinge pins (3) on the upper bracket
- ❒ Measure the distance from the insulating side panel to the taper grooved pin (4) on the lower door bracket
  - ↳ The two distances must be equal!
- ❒ If necessary, correct the position of the lower door bracket and secure in place using a socket-head screw



❒ Hang the insulated door (1) at the bottom on to the half-length taper grooved pin (2) and secure at the top with the hinge pins (3)

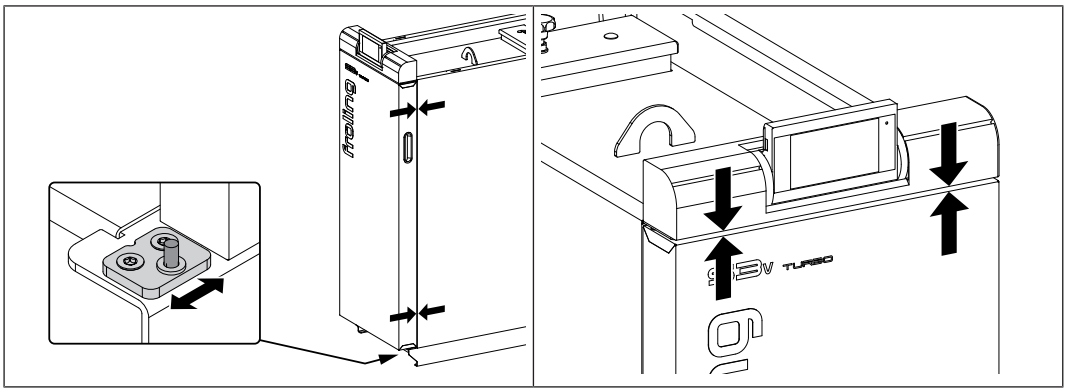
❒ Attach the caps on the ends of the control (4) on each side



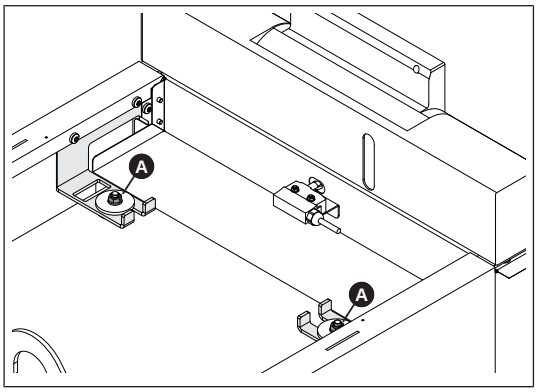
Opposite side to the door stop:

❒ Position magnetic latches on the inside of the insulated door at the top and bottom

❒ Mount counter plates for the magnetic latches on to the insulating side panel

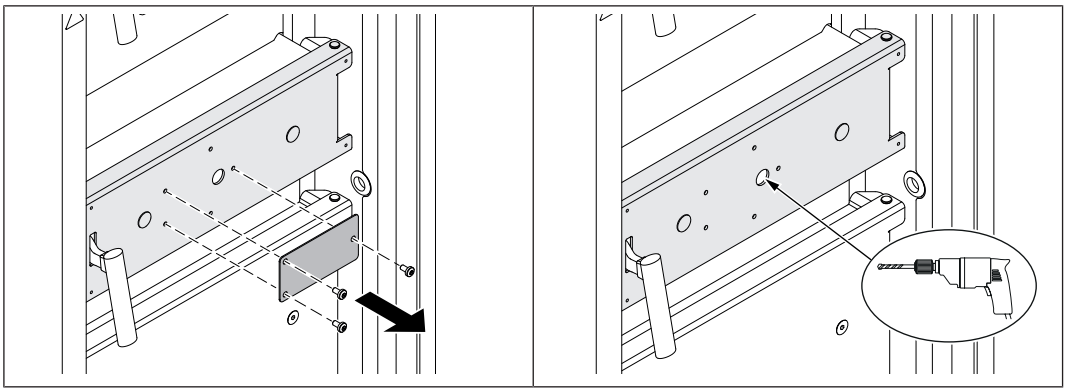


❒ Measure the gap between the insulated door and the side panel at the top and bottom
  ↳ The two distances must both be the same
  ↳ If necessary, adjust the lower door bearing
❒ Measure the gap between the insulated door and the control panel on the left and right
  ↳ The two distances must both be the same
  ↳ If necessary adjust the side panels at the brackets



❒ When the positioning is correct, tighten the screws (A) on the brackets

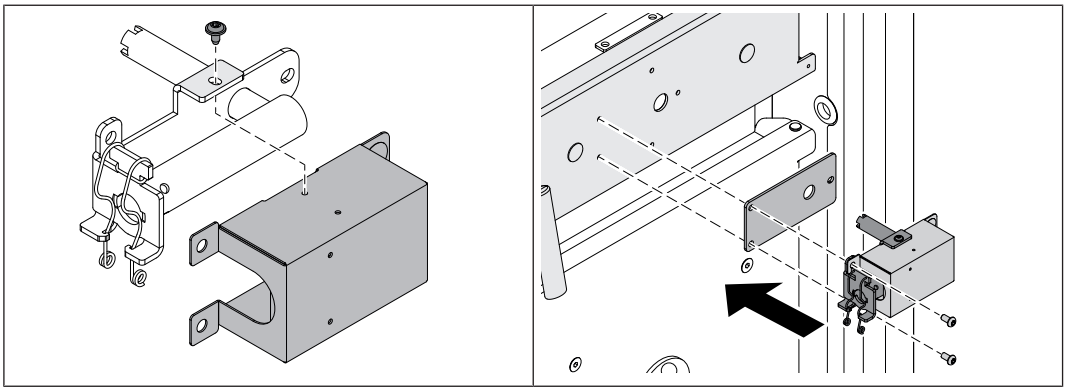
6.4.9 Installing the automatic ignition



❒ Open the insulated door

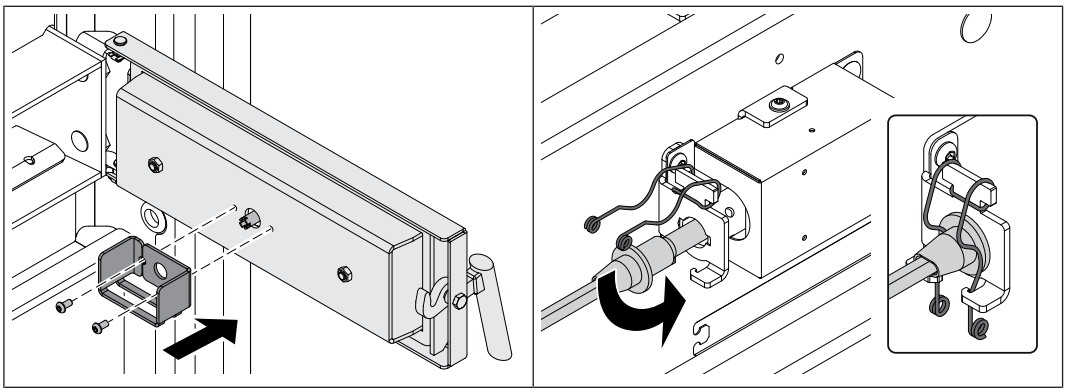
❒ Remove the cover plate on the pre-heating chamber door
- 3x M6 x 12 lens-head screws

❒ Drill a hole through the insulating panel and chase out along the contour of the panel



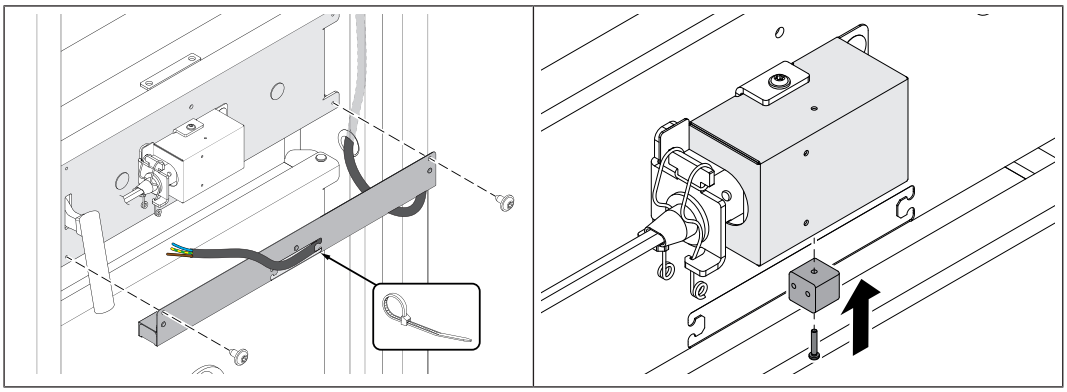
❒ Fitting the cover on the igniter tube
- 1x M4 x 10 lens-head screw

❒ Fitting the igniter tube and seal on the pre-heating chamber door
- 2x M6 x 12 lens-head screws



❒ Mount the basket plate on the inside of the pre-heating chamber door
- 2x M6 x 12 lens-head screws

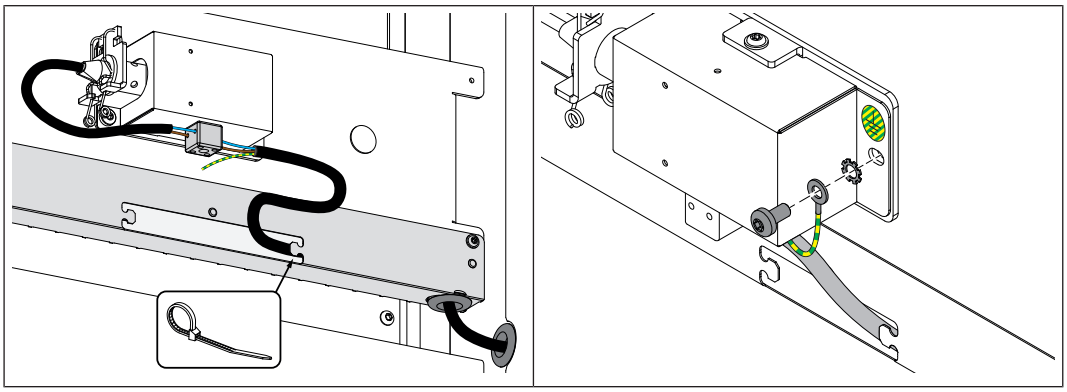
❒ Push the glow ignition into the igniter tube and secure it with the clamp spring as shown



❒ Route the supplied supply cable via the side panel on the door stop side upwards to the controller box

❒ Route the supply cable out through the front opening on the cable duct and install the cable duct on the pre-heating chamber door
- 2x M4 x 10 lens-head screws

❒ Fit the terminal block to the underside of the cover

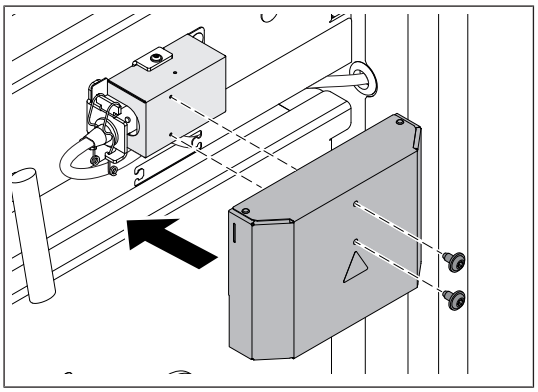


❒ Connect the glow ignition cable to the terminal block

❒ Secure the supply cable to the front of the cable duct with cable ties

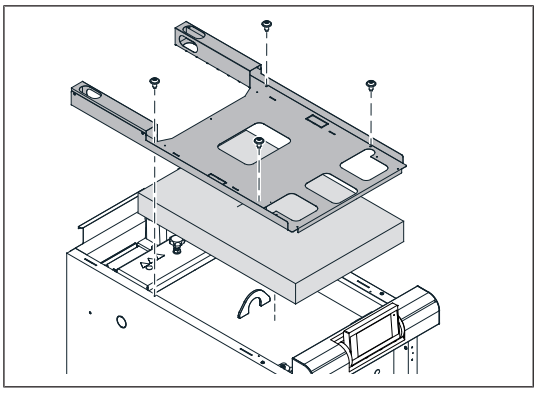
❒ Connect the supply cable to the terminal block

❒ Attach the earthing wire to the cover with a cable lug
- 1x M6 x 12 lens-head screw



❒ Fitting the cladding to the cover
- 2x M4 x 10 lens-head screws

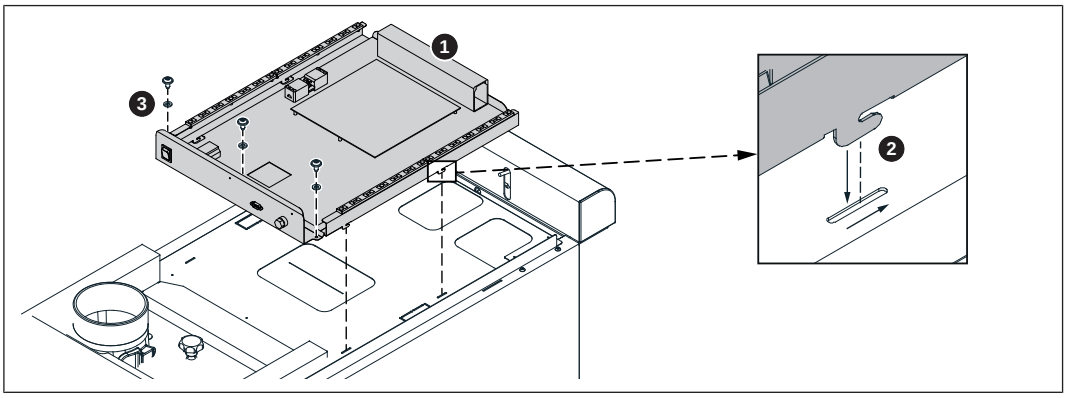
6.4.10 Attaching the controller



❒ Put the top heat insulation mat on

↳ The heat insulation mat must lie against the front sheet.

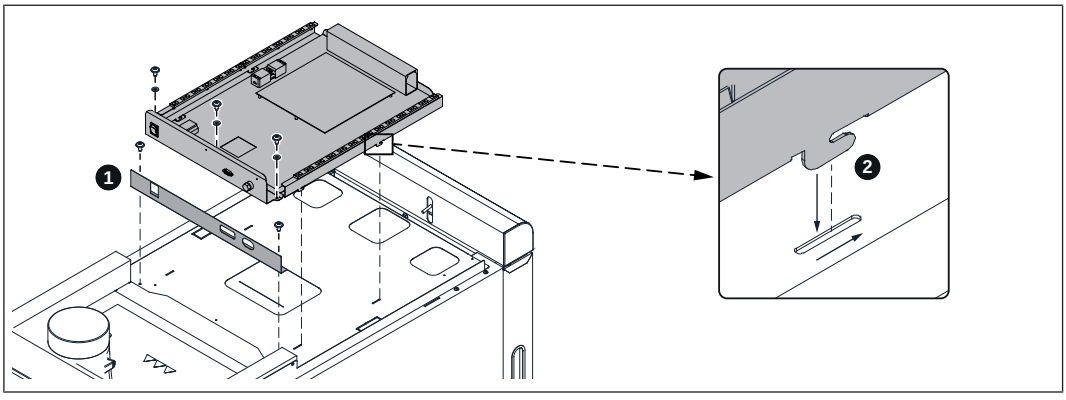
❒ Fitting the control panel



❒ Insert the controller box (1) with lugs (2) into the opening on the control plate and slide forwards

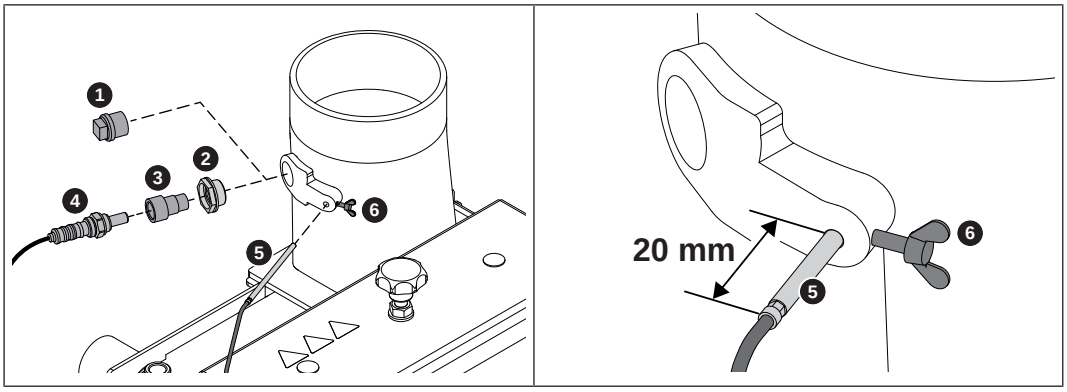
❒ Use three self-tapping screws incl. contact washers (3) to install the controller box (1)

S3v Turbo 32-45:



❒ Install the cover plate (1) on the back of the controller cover plate

6.4.11 Fitting the Lambda probe, boiler sensor, flue gas temperature sensor and STL



For version with S-Tronic:

❒ Screw the blanking plug (1) into the flue gas union

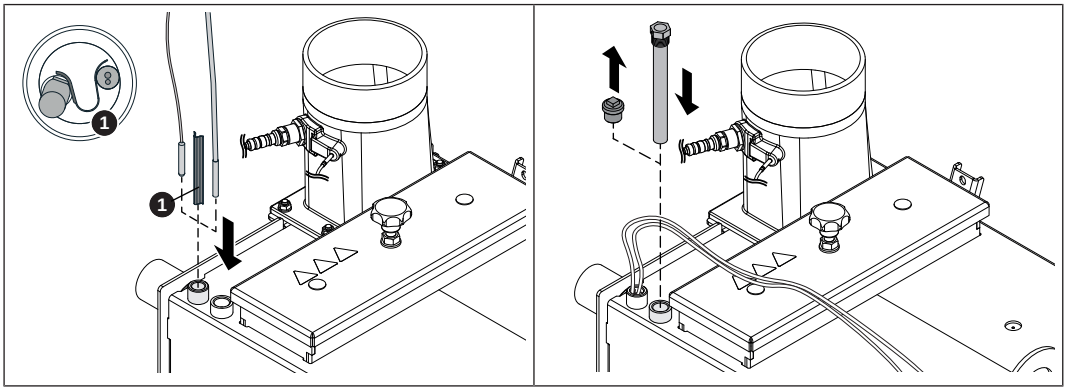
For version with S3200 (Lambda):

❒ Screw the bushing (2) into the flue gas union and gently tighten it

❒ Screw the adapter (3) and Lambda probe (4) in and gently tighten it using a socket-head key (22 mm)

❒ Plug in the extension cable for the Lambda probe

❒ Push the flue gas temperature sensor (5) in so that it protrudes approx. 20 mm from the housing and secure the position with the wing screw (6)



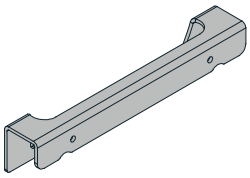
❒ Push the boiler sensor and the STL capillary with the compression spring (1) into the immersion sleeve of the boiler flow

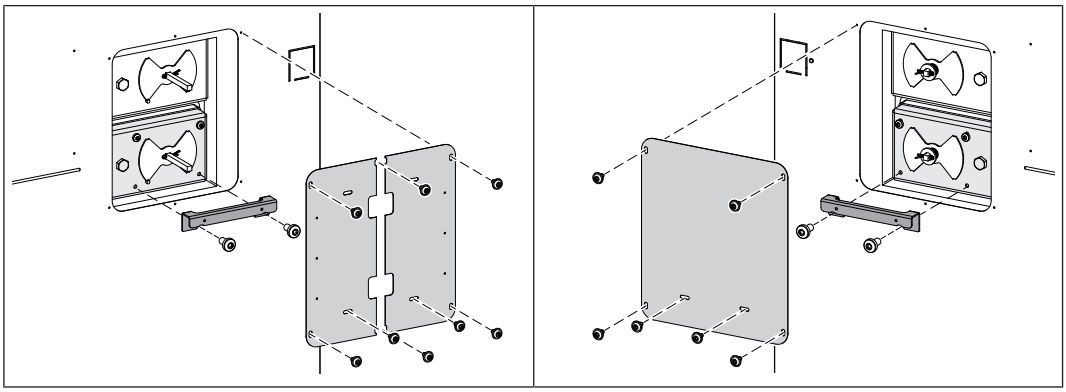
❒ Remove the pre-installed blanking plug from the sleeve next to the immersion sleeve and then seal the supplied immersion sleeve at the thermal discharge valve

↳ Thermal discharge valve not included!

6.4.12 Mount manual controller or servo-motors

IMPORTANT! The illustrations show a boiler with manual controller or servo-motors on the right





On the side of the manual controllers or servo-motors:

❒ Undo both the bottom screws on the bottom air duct and fit the bracket

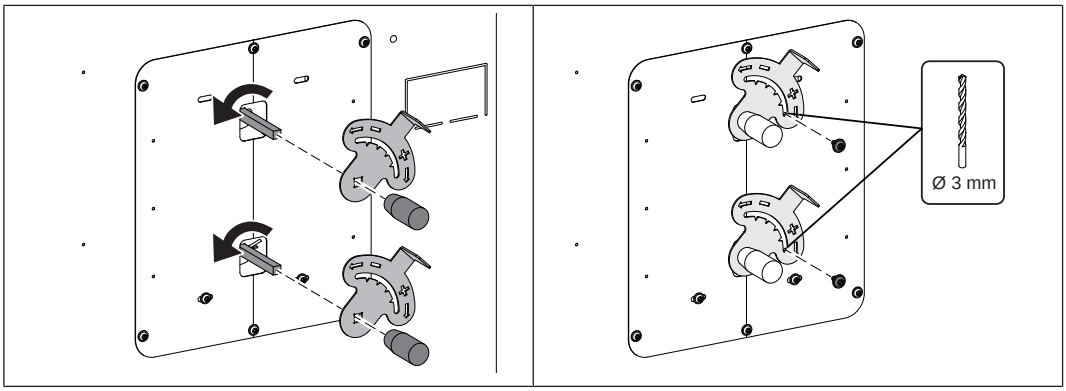
❒ Fit cover plates over the side panel and bracket

At the other end:

❒ Undo both the bottom screws on the bottom air duct and fit the bracket

❒ Fit a cover plate over the side panel and bracket

Install the manual controller (S-Tronic Plus)



❒ Turn the square shafts of the air flaps by a left-hand turn (anti-clockwise) to the stop

❒ Slide the manual controller and handles on to the square shafts as shown

❒ Drill a hole (Ø 3 mm) at the right-hand end of the scale and fix the manual controller in place with a screw

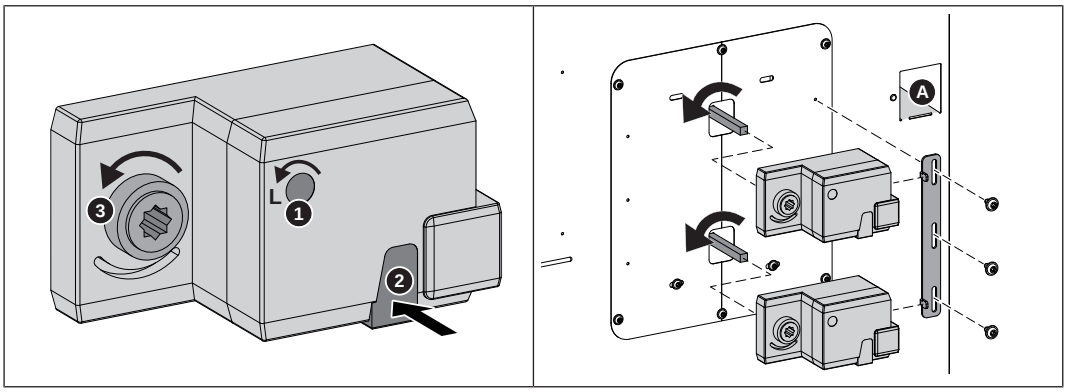
❒ Check whether the air flaps can be opened by a right-hand turn (clockwise)

↳ The manual controllers are adjusted during initial start-up

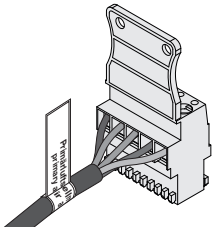
↳ Primary air (PA) = upper manual controller

↳ Secondary air (SL) = lower manual controller

Installing the servo-motors (S-Tronic Lambda)



- ❒ Set the direction of rotation of the servo-motor (1) to anti-clockwise (L)
- ❒ Press the unlock key (2) and turn the drive for the shaft to the air duct (3) in the anti-clockwise direction as far as the stop
- ❒ Turn the square shafts of the air flaps by a left-hand turn (anti-clockwise) to the stop
- ❒ Attach the servo-motors to the square shafts and secure them together with the torque supports
- ❒ Push in the pre-punched opening in the insulation to admit the cable duct

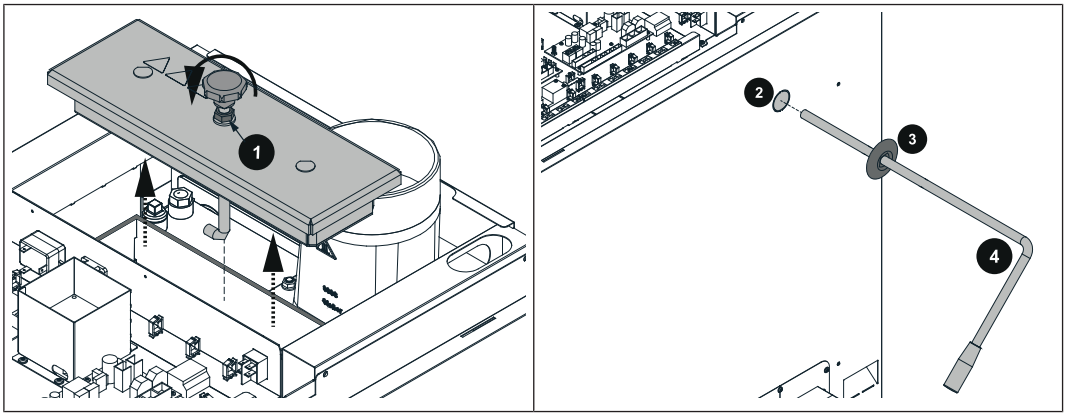


- ❒ Apply a sticker to the servo-motor cable, close to the plug
  - ↳ Primary air: top servo-motor
  - ↳ Secondary air: bottom servo-motor
- ❒ Run the cables for the two servo-motors through the cable duct upwards to the boiler controller

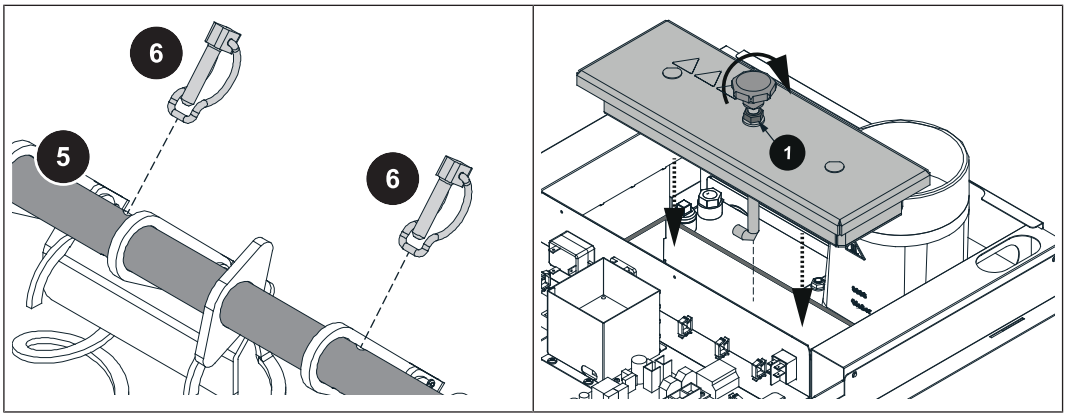
6.4.13 Installing the WOS system

The heat-exchanger lever can be mounted either on the left or right side of the boiler.

S3v Turbo 20-30

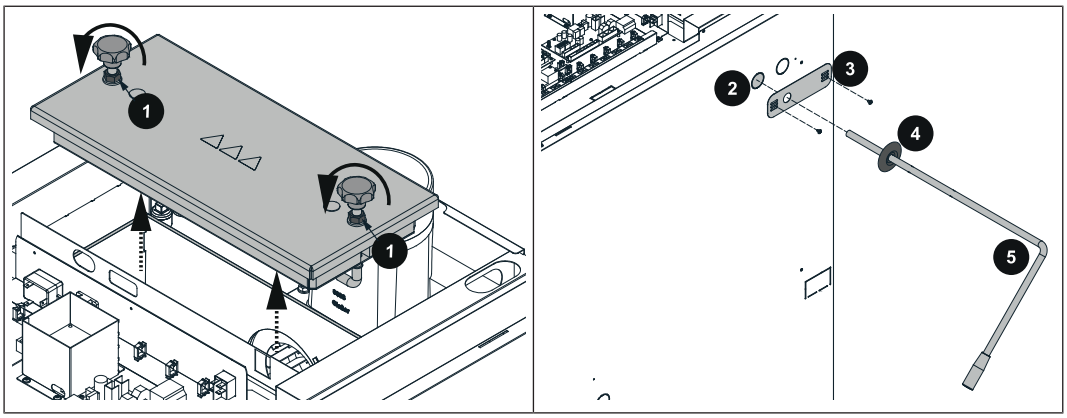


- ❒ Loosen the lock nut (1) on the knob
- ❒ Turn the knob anti-clockwise and remove the heat exchanger cover
- ❒ Remove the pre-punched blanking (2) on the insulating side panel
  - ↳ File rough edges using a half-round file and remove burrs
- ❒ Push the plastic cover (3) on to the heat-exchanger lever (4)
- ❒ Push the heat-exchanger lever (4) through the stay tube from the outside

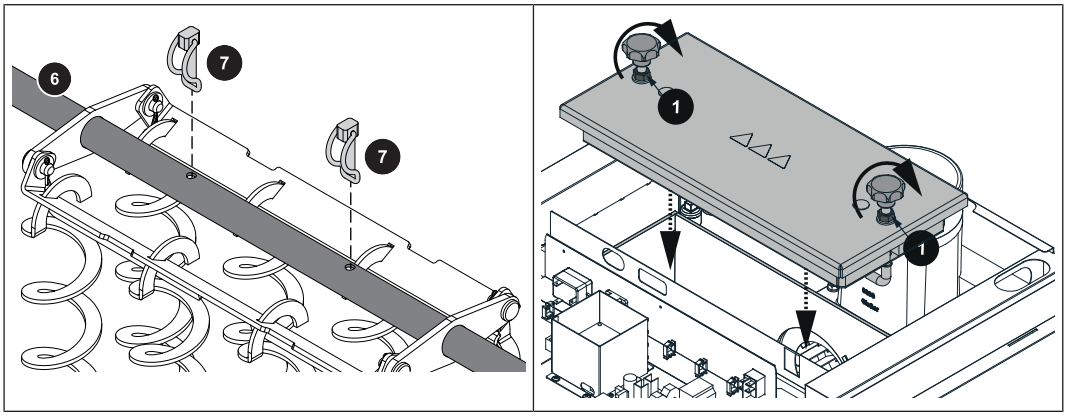


- ❒ Fix the heat-exchanger lever (4) to the stay tube (5) using two pipe locking pins (6)
- ❒ Place the heat exchanger cover on top
- ❒ Turn the knob on the heat exchanger cover clockwise
- ❒ Tighten the knob against accidental opening using the lock nut (1)

S3v Turbo 32-45

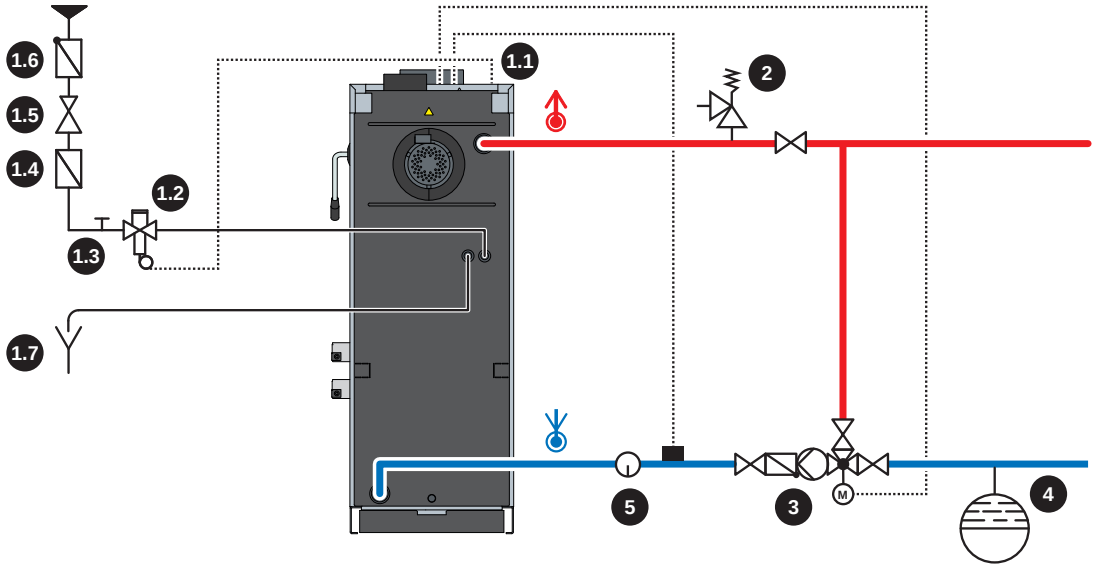


- ❒ Loosen the lock nut (1) on the knob
- ❒ Turn the knob anti-clockwise and remove the heat exchanger cover
- ❒ Remove the front pre-punched blank from the insulating side panel (2)
  - ↳ File rough edges using a half-round file and remove burrs
- ❒ Install the cover plate (3)
- ❒ Push the plastic cover (4) on to the heat-exchanger lever (5)
- ❒ Push the heat-exchanger lever (5) through the stay tube from the outside



- ❒ Fix the heat-exchanger lever (5) to the stay tube (6) using two pipe locking pins (7)
- ❒ Place the heat exchanger cover on top
- ❒ Turn the knob on the heat exchanger cover clockwise
- ❒ Tighten the knob against accidental opening using the lock nut (1)

6.5 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
- If the cold water pressure is ≥ 6 bar, a pressure reducing valve (1.5) is required
  Minimum cold water pressure = 2 bar

1.1 Sensor for the thermal discharge valve
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 of water in the drinking water network
1.7 Free outlet without back 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)

6.6 Power connection and wiring

⚠ DANGER

When working on electrical components:

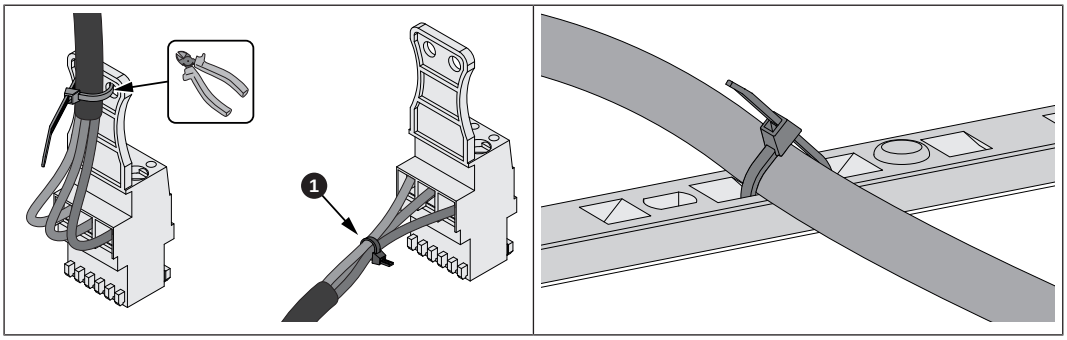
Risk of electrocution!

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

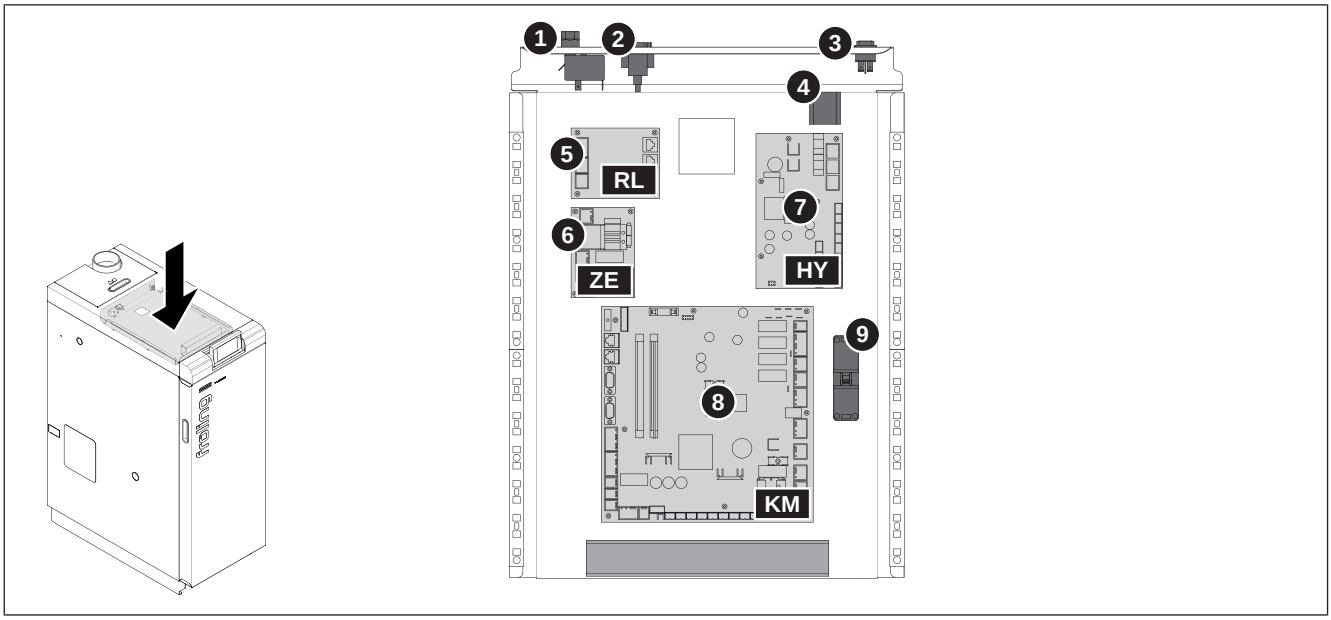
Prepare the plug

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 (1)
- ❒ Attach cables and cable ties to the strain reliefs on the boiler

6.6.1 Board overview



Item	Description	Item	Description
1	High-limit thermostat STL	**6**	Ignition expansion (optional)
2	Service interface	**7**	Hydraulic module (optional)
3	Main switch	**8**	Core module
4	Device connection terminal	**9**	Mains connection plug
5	Return mixer module (optional)		

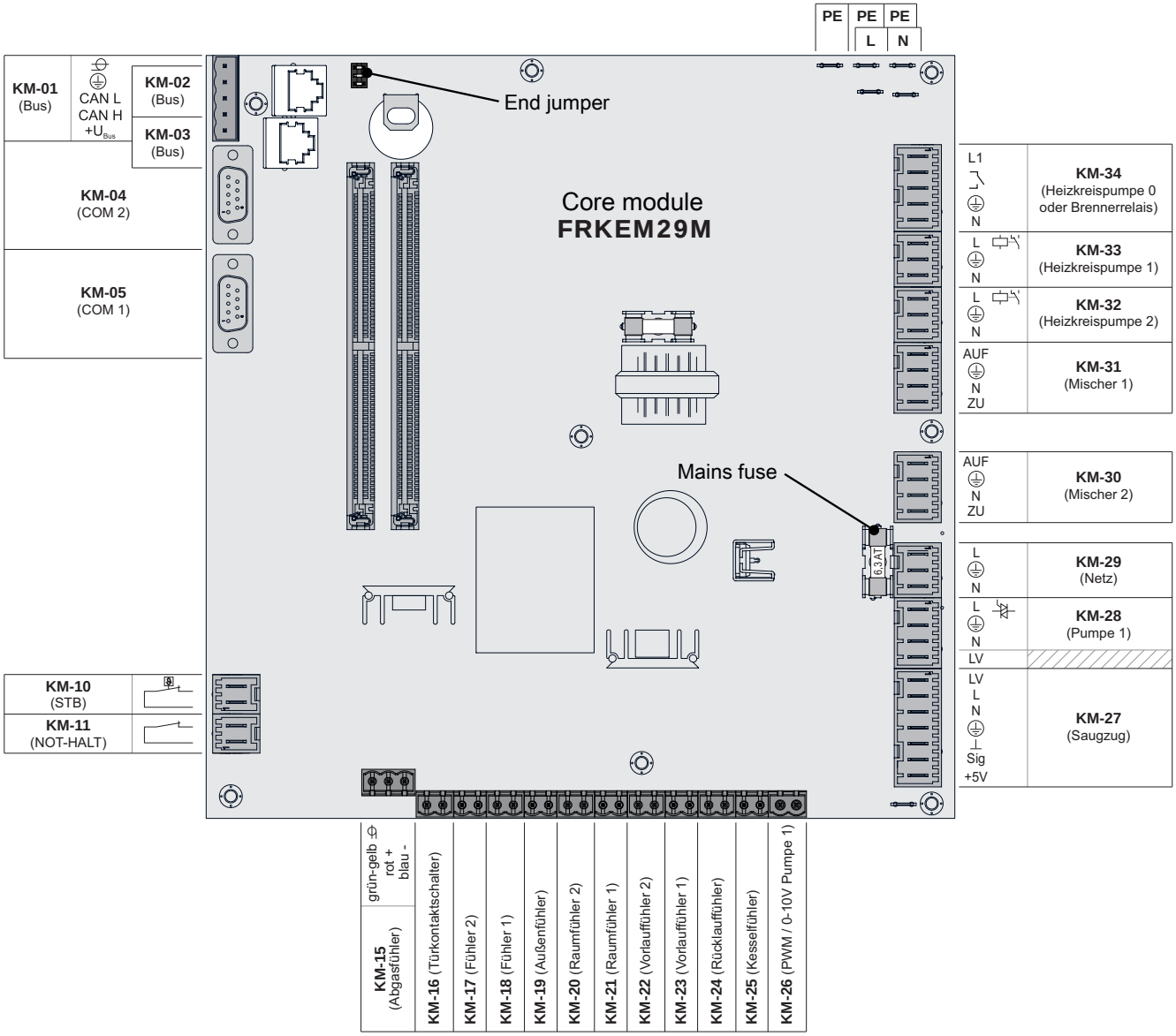
6.6.2 Connect the firewood boiler components

❒ Run the cables of the following components to the boiler controller and connect them to the boards in the controller box

↳ Tuck any extra cable into the cable duct

Core module

S Tronic Plus core module

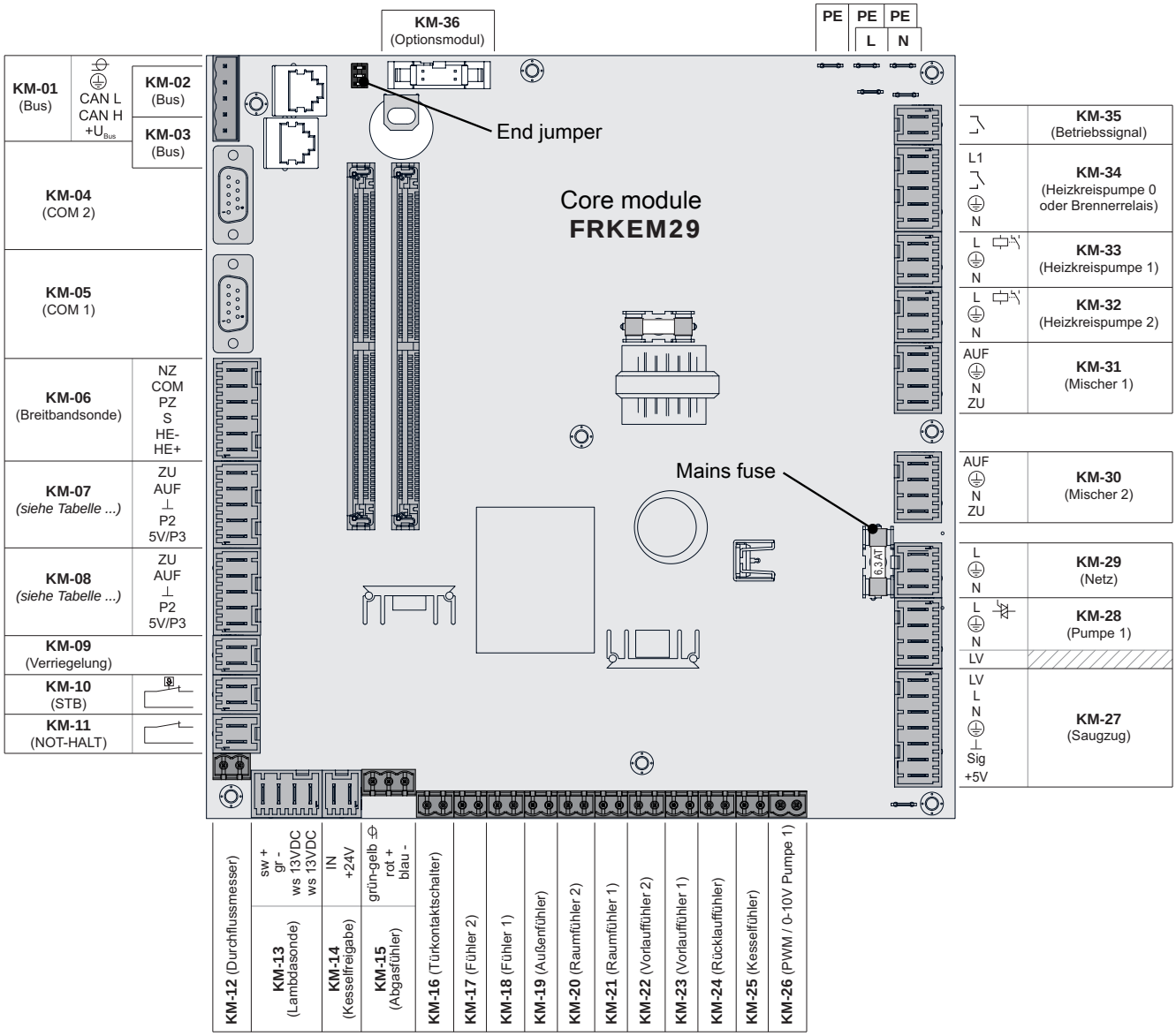


Connection / Name		Note
KM-01	BUS	Connection with cable – LIYCY paired 2x2x0.5; Connecting the bus cable Caution! CAN L and CAN H must not be connected to $+U_{BUS}$!
KM-02	BUS	Patch cable CAT 5 RJ45 SFTP 1:1 Assignment: pellet module connection
KM-03		
KM-04	COM 2	Null modem cable 9-pin SUB-D;

Connection / Name		Note
		Connection is used e.g. as MODBUS interface
KM-05	COM 1	Null modem cable 9-pin SUB-D; Service interface for software update and connection to visualisation software
KM-10	High-limit thermostat	Connection cable[1)] 2 x 0.75 mm²
KM-11	EMERGENCY STOP	Caution! Do not connect the emergency stop/ shutdown switch to the boiler power supply line. The switch must be a N/C switch and it must be linked to the 24V safety chain of the STL at this terminal.
KM-15	Flue gas temperature sensor	Only use connection cable of the component
KM-16	Door switch	Connection cable[1)] 2 x 0.75 mm²
KM-17	Sensor 2	Connection cable[1)] 2 x 0.75 mm²
KM-18	Sensor 1	Connection cable[1)] 2 x 0.75 mm², sensor 1 in the STL casing
KM-19	Outside temperature sensor	Connection cable[1)] 2 x 0.75 mm², shielded from 25 m cable length
KM-20	Room temperature sensor heating circuit 2	
KM-21	Room temperature sensor heating circuit 1	
KM-22	Flow temperature sensor heating circuit 2	
KM-23	Flow temperature sensor heating circuit 1	
KM-24	Return feed sensor	Connection cable[1)] 2 x 0.75 mm²
KM-25	Boiler sensor	
KM-26	PWM / 0-10V pump 1	
KM-27	Induced draught fan	Connection cable[1)] 3 x 1.5 mm² for power supply, Connection cable[1)] 3 x 0.75 mm² for analysis of actual speed
KM-28	Pump 1	Connection cable[1)] 3 x 1.5 mm², max. 1.5A / 280W / 230V
KM-29	Mains connection	Connection cable[1)] 3 x 1.5 mm², fuse provided by customer: C16A
KM-30	Mixing valve heating circuit 2	Connection cable[1)] 4 x0.75 mm², max. 0.15A / 230V
KM-31	Mixing valve heating circuit 1	
KM-32	Heating circuit pump 2	Connection cable[1)] 3 x 1.5 mm², max. 2.5A
KM-33	Heating circuit pump 1	
KM-34	Heating circuit pump 0 or burner relay	Connection cable[1)] 3 x 1.5 mm², max. 2A Heating circuit pump 0 / burner relay

1. YMM to ÖVE-K41-5 or H05VV-F to DIN VDE 0881-5

S3200 core module (Lambda)



Connection / Name		Note
KM-01	BUS	Connection with cable – LIYCY paired 2x2x0.5; Connecting the bus cable Caution! CAN L and CAN H must not be connected to $+U_{BUS}$!
KM-02	BUS	Patch cable CAT 5 RJ45 SFTP 1:1 Assignment: pellet module connection
KM-03		
KM-04	COM 2	Null modem cable 9-pin SUB-D; Connection is used e.g. as MODBUS interface
KM-05	COM 1	Null modem cable 9-pin SUB-D; Service interface for software updates and connection to visualisation software
KM-06	Broadband probe	Connection cable[1)] 5 x 0.75 mm² Connection of a Bosch (item number 69001A) or NTK (item number 69003) broadband Lambda probe
KM-07	Secondary air	Connection cable[1)] 5 x 0.75 mm²;

Connection / Name		Note
KM-08	Primary air	Connection cable[1] 5 x 0.75 mm²
KM-09	Lock	Connection cable[1] 2 x 0.75 mm²
KM-10	High-limit thermostat	
KM-11	EMERGENCY STOP	Caution! Do not connect the emergency stop/ shutdown switch to the boiler power supply line. The switch must be a N/C switch and it must be linked to the 24V safety chain of the STL at this terminal!
KM-12	Flowmeter	Connection cable[1] 2 x 0.75 mm²
KM-13	Lambda probe	Connection cable[1] 4 x 0.75 mm² Connection of a Bosch switching-type sensor (type LSM11) or NTK switching-type sensor (type OZA685, item number: 69400)
KM-14	Boiler release	Connection cable[1] 2 x 0.75 mm² Caution! The connection must be a floating connection! Boiler enable contact
KM-15	Flue gas temperature sensor	Only use connection cable of the component
KM-16	Door switch	Connection cable[1] 2 x 0.75 mm²
KM-17	Sensor 2	Connection cable[1] 2 x 0.75 mm²
KM-18	Sensor 1	Connection cable[1] 2 x 0.75 mm², sensor 1 in the STL casing
KM-19	Outside temperature sensor	Connection cable[1] 2 x 0.75 mm², shielded from 25 m cable length
KM-20	Room temperature sensor heating circuit 2	
KM-21	Room temperature sensor heating circuit 1	
KM-22	Flow temperature sensor heating circuit 2	
KM-23	Flow temperature sensor heating circuit 1	
KM-24	Return feed sensor	Connection cable[1] 2 x 0.75 mm²
KM-25	Boiler sensor	
KM-26	PWM / 0-10V pump 1	
KM-27	Induced draught fan	Connection cable[1] 3 x 1.5 mm² for power supply, Connection cable[1] 3 x 0.75 mm² for analysis of actual speed
KM-28	Pump 1	Connection cable[1] 3 x 1.5 mm², max. 1.5A / 280W / 230V
KM-29	Mains connection	Connection cable[1] 3 x 1.5 mm², fuse provided by customer: C16A Mains connection
KM-30	Mixing valve heating circuit 2	Connection cable[1] 4 x0.75 mm², max. 0.15A / 230V
KM-31	Mixing valve heating circuit 1	
KM-32	Heating circuit pump 2	Connection cable[1] 3 x 1.5 mm², max. 2.5A
KM-33	Heating circuit pump 1	
KM-34	Heating circuit pump 0 or burner relay	Connection cable[1] 3 x 1.5 mm², max. 2A Heating circuit pump 0 / burner relay

Connection / Name		Note
KM-35	Operating signal	Connection cable[1] 2 x 0.75 mm² Operating signal
KM-36	Optional module	Ignition expansion connection
1. YMM as per ÖVE-K41-5 or H05VV-F as per DIN VDE 0881-5		

Hydraulic module

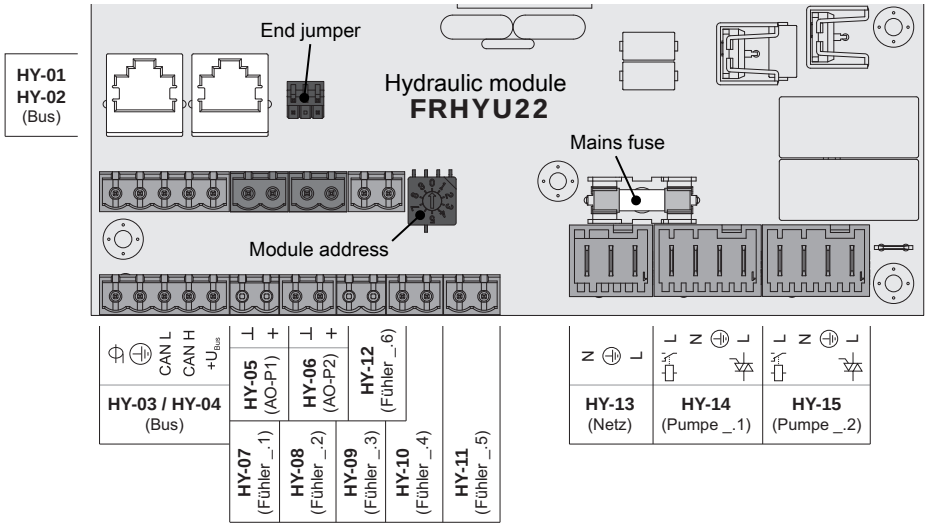
The hydraulic module makes the connections of sensors and pumps available for the hydraulic components of the system (buffer tank, DHW tank etc.).

The S3v Turbo with S Tronic Plus **does not** include a hydraulic module. The expansion can include up to eight hydraulic modules (addresses 0 to 7).

For the S3v Turbo with S3200 (Lambda), a hydraulic module is included as standard (address 0). A further seven modules (addresses 1 to 7) can be retrofitted.

You must ensure that the module address is assigned correctly! Setting the module address

Hydraulic module starting with version FRHYU22



Connection / Name		Note
HY-01	BUS	Patch cable CAT 5 RJ45 SFTP 1:1 configuration;
HY-02	BUS	
HY-03	BUS	Connection with cable – LIYCY paired 2x2x0.5;
HY-04	BUS	Connecting the bus cable Caution! CAN L and CAN H must not be connected to $+U_{BUS}$!
HY-05	AO-P1	Connection cable[1] 2 x 0.75 mm²
HY-06	AO-P2	Connection of control signal for relevant pump
HY-07 : HY-12	Sensor _.1 : Sensor _.6	Connection cable[1] 2 x 0.75 mm², shielded from 25 m cable length Sensor inputs on the board. The correct sensor designation is determined by the set module address (0-7). Example: Module address “2” = sensor 2.1 to sensor 2.6
HY-13	Mains	Connection cable[1] 3 x 1.5 mm², fuse 10A
HY-14	Pump _.1	Connection cable[1] 3 x 1.5 mm², max. 1.5A / 230V / 280W

Connection / Name		Note
HY-15	Pump _.2	Pump outlets from the board. The correct pump designation is determined by the set module address (0-7). Example: Module address “2” = pump 2.1 and pump 2.2 Depending on the type of pump, the phase (L) is either connected to the relay output or triac output. Connecting a circulating pump to the hydraulic module
1. YMM to ÖVE-K41-5 or H05VV-F to DIN VDE 0881-5		

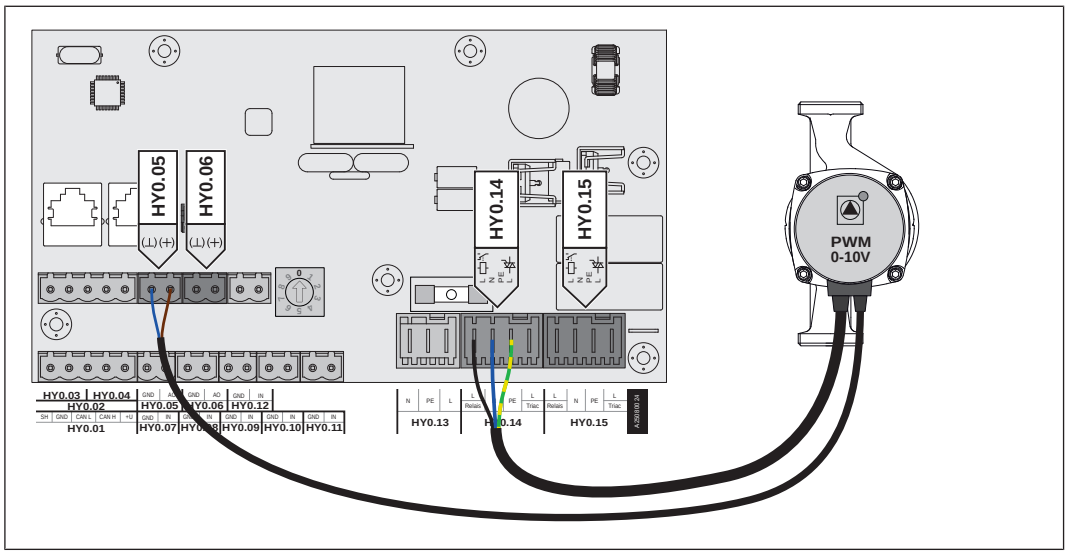
Fuses

F1	6.3 AT	HY-14, HY-15

Connecting a circulating pump to the hydraulic module

High efficiency pump with control line (PWM / 0-10V)

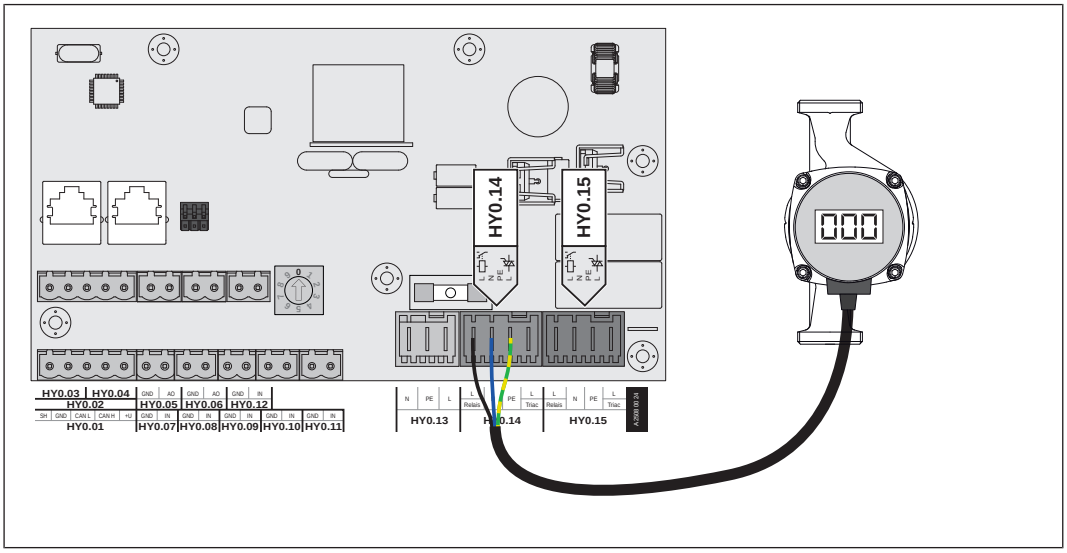
On high efficiency pumps with an additional wired control line, the speed control is implemented via the additional connection for the PDM or 0-10V signal.



- ❒ Connect the power supply for the high efficiency pump to output "HY0.14" or “HY0.15” and use the relay output for phase (L)
- ❒ Connect the PWM cable of the high efficiency pump to the corresponding port “HY0.05” or “HY0.06”
  - ↳ Make sure that the cables are configured correctly (polarity) in accordance with the connection diagram of the pump!
- ❒ Set control of the pump in the relevant menu to “Field pump / PWM” or “Field pump / 0-10V”

High efficiency pump without control signal

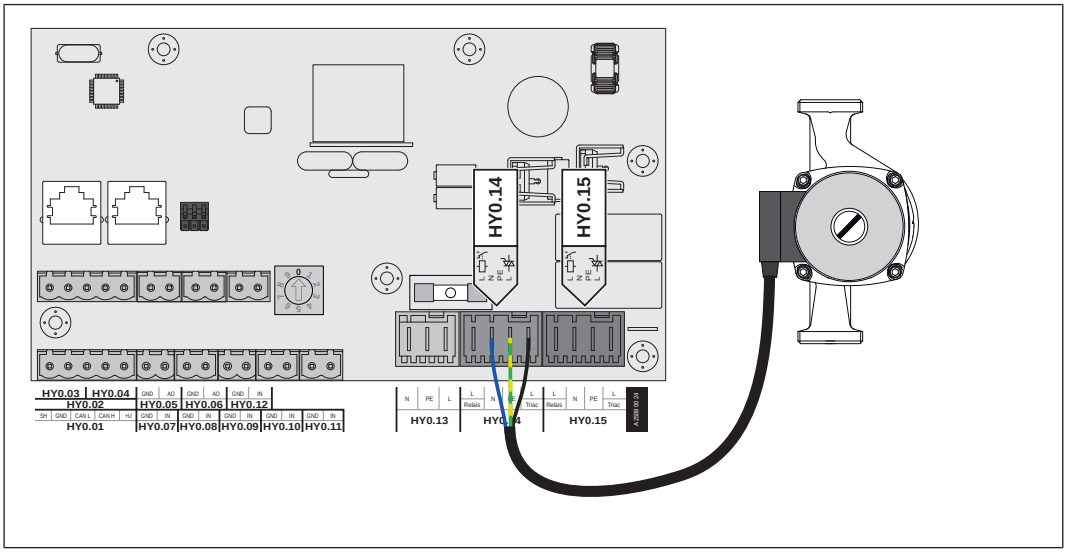
When this type of pump is used, the speed is not controllable! The use of a line regulating valve (e.g.: Setter balancing valve) is recommended!



- ❒ Connect the power supply for the high efficiency pump to output "HY0.14" or “HY0.15” and use the relay output for phase (L)
- ❒ In the relevant menu, set the pump to “HE pump without control signal”

AC pump without control signal (pulse package control)

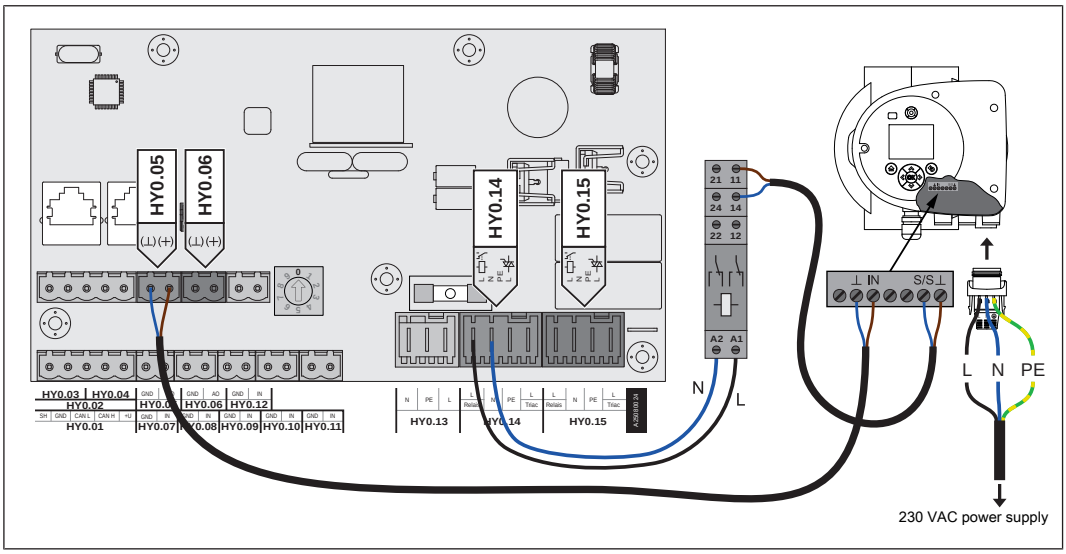
On older pumps without a control signal that are not highly efficient, the speed control is implemented via a pulse package control. Please note that the minimum speed may need to be adjusted on some pumps (default setting: 30%).



- ❒ Connect the power supply for the pump to output “HY0.14“ “HY0.15“ and use the triac output for phase (L)
- ❒ In the relevant menu, set the pump to “Pump without control signal”

High efficiency pump with control signal and release contact

When using a high efficiency pump that requires a release contact in addition to the control signal (e.g. Grundfos Magna 3), the pump outlet of the hydraulic module is used to switch the release.



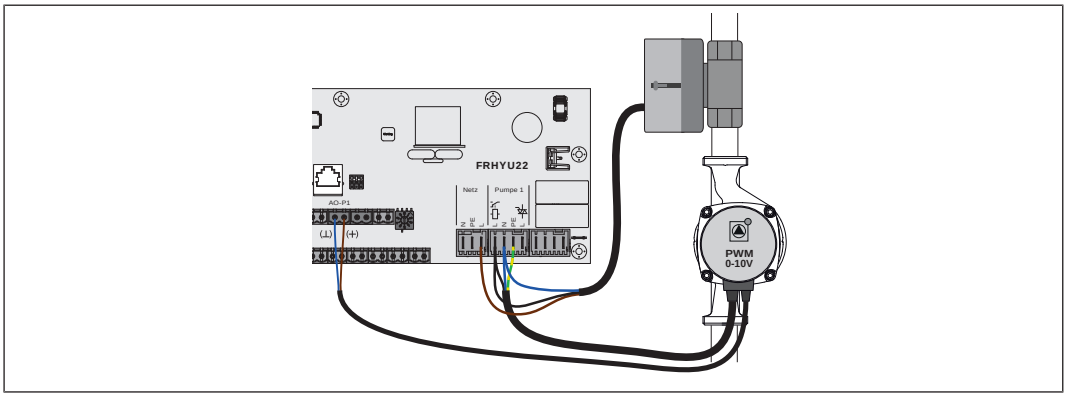
- ❒ Connect the relay of the pump to output “HY0.14“ or “HY0.15” and use the relay output for phase (L)
- ❒ Install and connect a two-pole cable (2 x 0.75 mm^2) from the “HY0.05” or “HY0.06” connection to the pump and connect the “+” terminal to the “IN” terminal of the pump
- ❒ Install and connect two-pole cable (2 x 0.75 mm^2) from NOC on the relay to the pump using terminal “S/S” as the release contact
- ❒ Connect power supply at pump connector
- ❒ In the relevant menu, set the pump to “Field pump PWM + valve” or “Field pump 0-10V + valve”

Connecting a circulating pump with valve to the hydraulic module

WARNING! As of module version FRHYU22, one relay output is available at each of the pump outlets in addition to the triac output. Observe the following connection diagrams to correctly implement the wiring of the circulating pump!

High efficiency pump with control line (PWM / 0-10V)

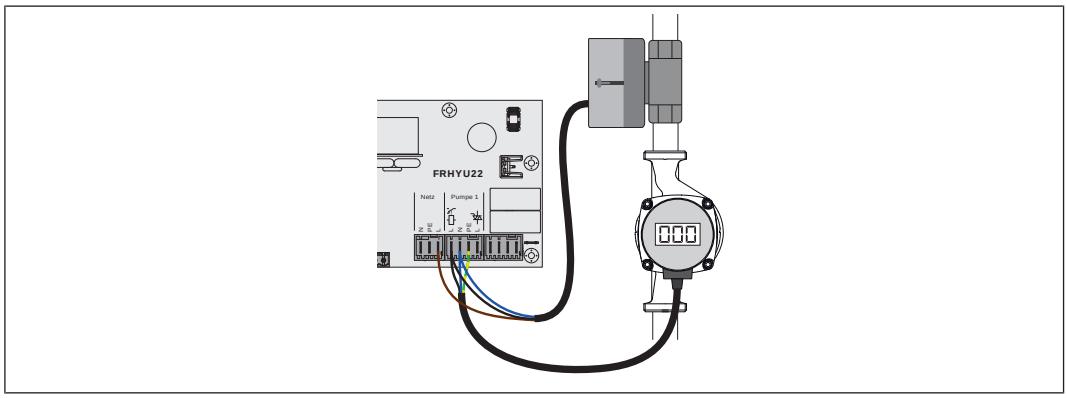
On high efficiency pumps with an additional wired control line, the speed control is implemented via the additional connection for the PDM or 0-10V signal.



- ❒ Connect the power supply for the high efficiency pump to output “Pump 1” or “Pump 2” and use the relay output for phase (L)
- ❒ Connect the phase (L) for switching over and the neutral conductor (N) of the valve to the output “Pump 1” or “Pump 2” using the relay output for the phase (L)
- ❒ Connect the phase (L) for continuous supply of the valve (switches the valve back to the initial position) to the power supply at terminal “L”
- ❒ Connect the PWM cable of the high efficiency pump to the corresponding port “AO-P1” or “AO-P2”
  - ↳ Make sure that the cables are configured correctly (polarity) in accordance with the connection diagram of the pump!
- ❒ In the relevant menu, set the activation of the pump to “Field pump PDM + valve” or to “Field pump 0-10V + valve”

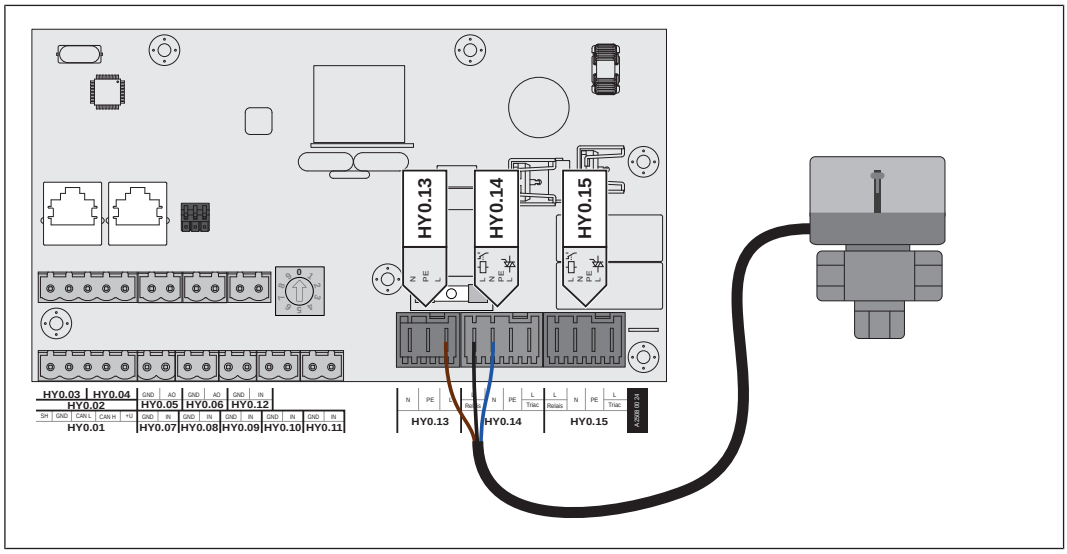
High efficiency pump without control signal

When this type of pump is used, the speed is not controllable! The use of a line regulating valve (e.g.: Setter balancing valve) is recommended!



- ❒ Connect the power supply for the high efficiency pump to output "Pump 1" or “Pump 2” and use the relay output for phase (L)
- ❒ Using the RC element, connect the phase (L) for switching over and the neutral conductor (N) of the valve to the output “Pump 1” or “Pump 2”
- ❒ Connect the phase (L) for continuous supply of the valve (switches the valve back to the initial position) to the power supply at terminal “L”
- ❒ In the relevant menu, set the pump to “HE pump without control signal”

Connecting an isolating valve to the hydraulic module



- ❒ Phase (L) for switching the valve and connecting neutral conductor (N) to output “HY0.14” or “HY0.15” using the relay output for phase (L)
- ❒ Connect the phase (L) for continuous supply (switches the valve back to the initial position) to the “HY0.13” power supply at terminal “L”

Connecting the automatic ignition

⚠ DANGER

When working on electrical components:

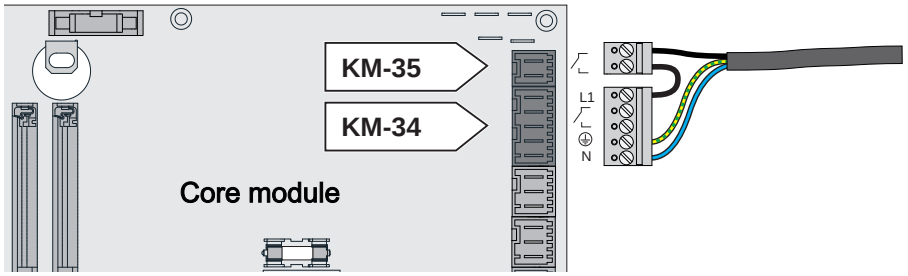
Risk of electrocution!

When work is carried out on electrical components:

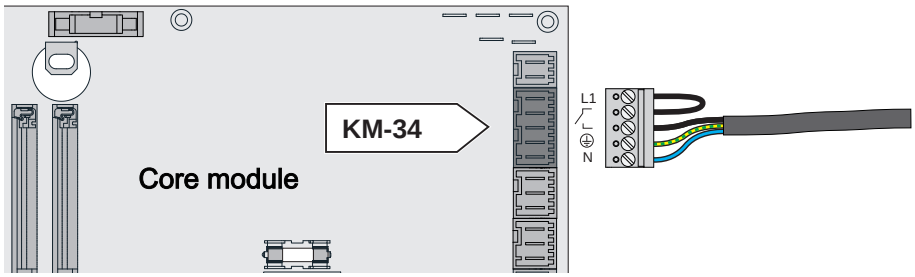
- ❒ Always have work carried out by a qualified electrician
- ❒ Observe the applicable standards and regulations
  - ↳ Work must not be carried out on electrical components by unauthorised persons

In the “Ignition” menu, set the “Ignition output” parameter to the desired output value.

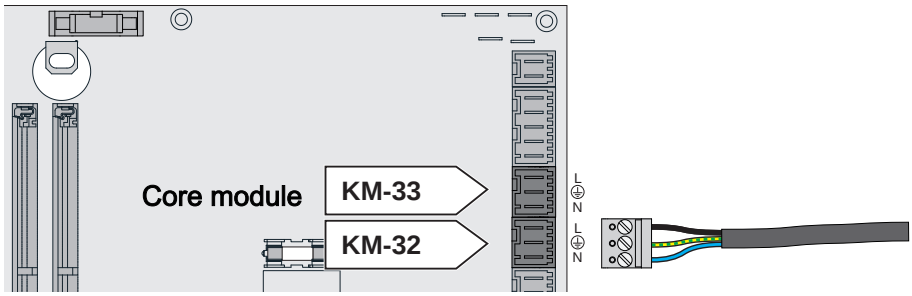
“Standby relay” at the core module



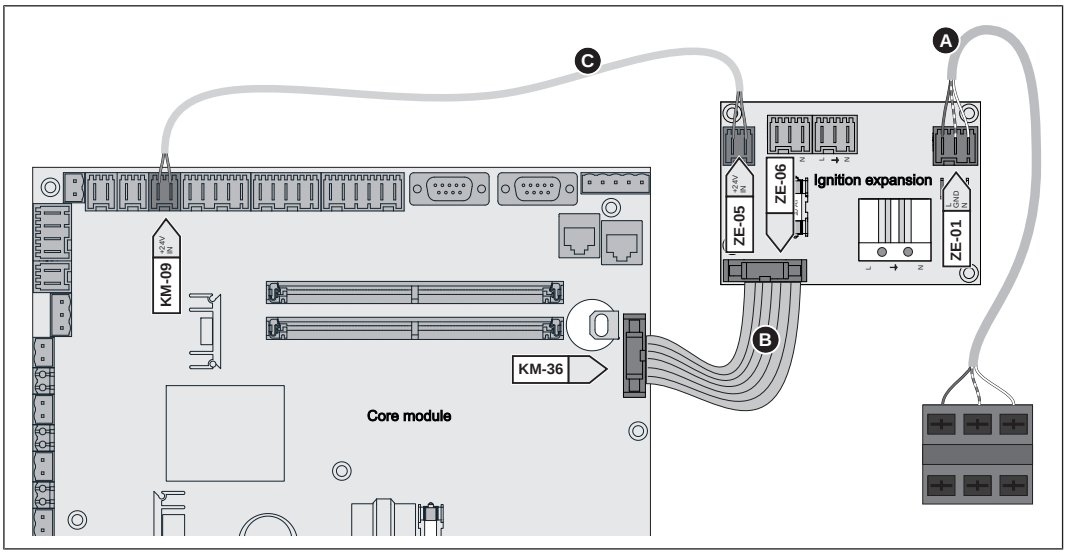
“HCP 0” connection on the core module



“HCP 1” or “HCP 2” connection at the core module



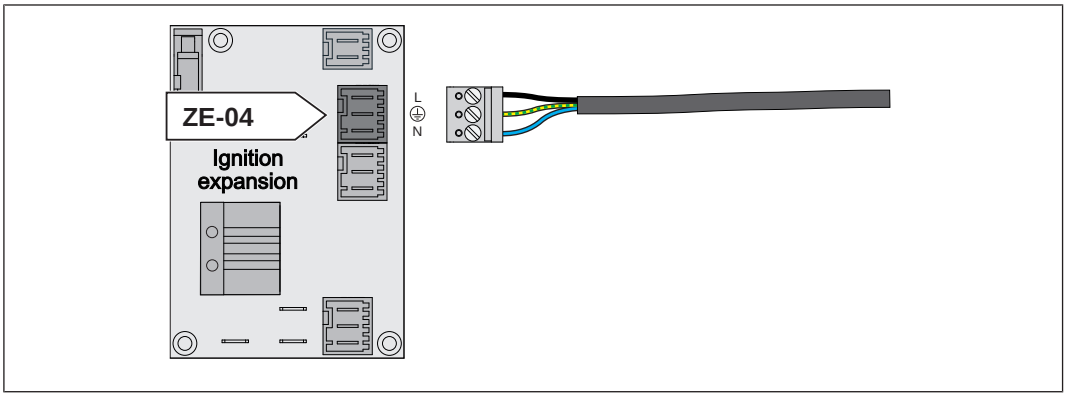
Connecting the igniter extension



❒ Plug the supply cable (A) supplied to the "ZE-01" connector and establish a connection to the terminal block

❒ Connect the ribbon cable (B) supplied to the "KM-36" connector on the core module

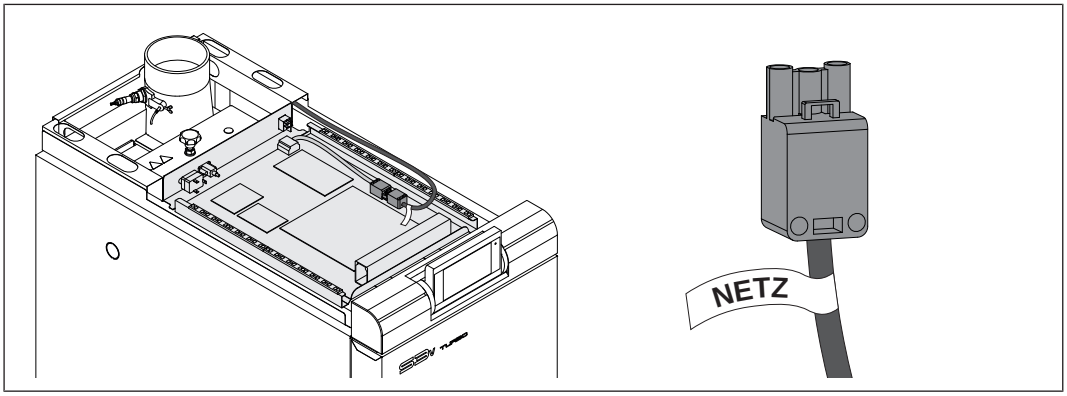
❒ Connect the connection cable (C - purple) to the "KM-09" connector on the core module



❒ Connect the automatic ignition plug to the "ZE-04" connector on the ignition extension

Mains connection

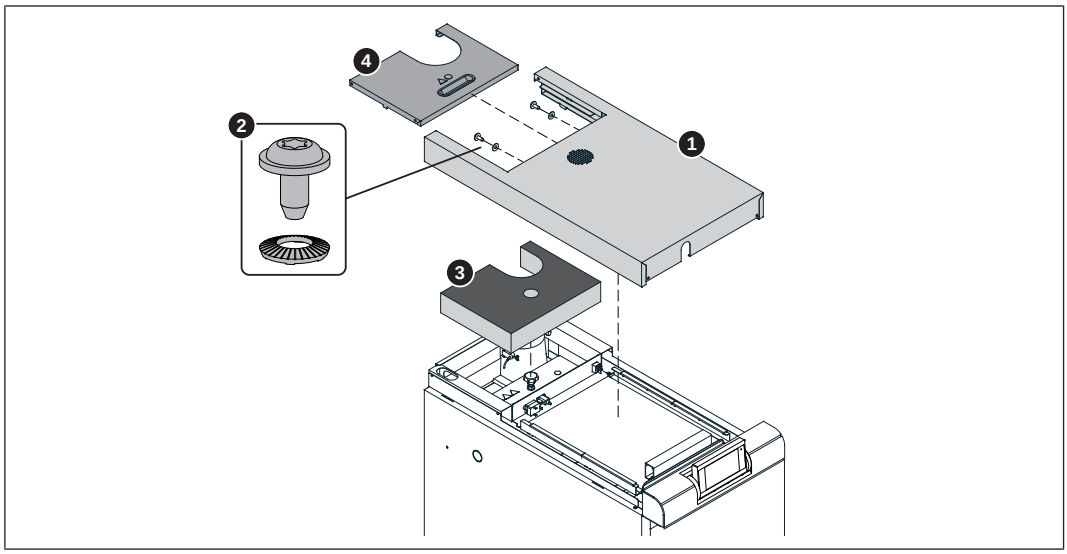
Once the individual components have been wired:



❒ Provide a power supply at the mains connection

- ↳ The power supply line (mains connection) must be fitted by the customer with a fuse rating max. C16A!
- ↳ Observe the circuit diagrams in the boiler controller operating instructions.
- ↳ Flexible sheathed cable must be used for the wiring; this must be of the correct size to comply with applicable regional standards and regulations.

6.7 Concluding work



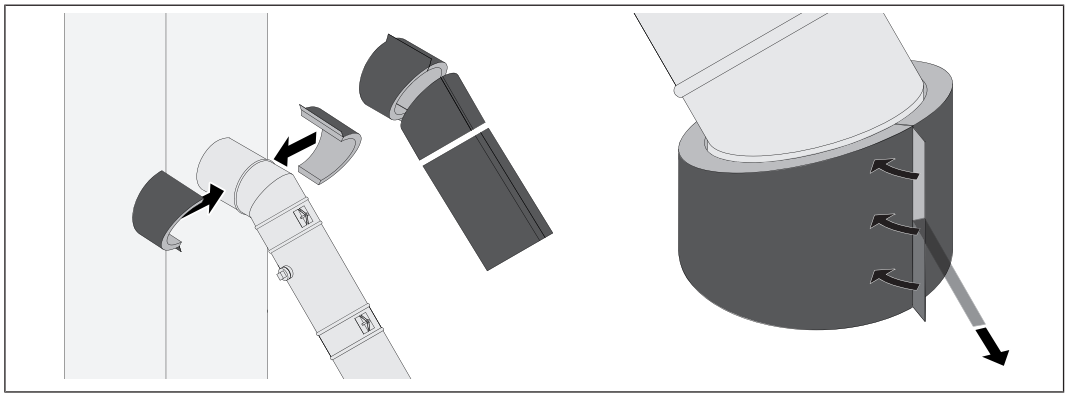
❒ Place the controller cover (1) on top of the device and fix in place using screws and contact washers (2)

❒ Place the thermal insulation (3) on the device

❒ Install the back insulating cover (4)

6.7.1 Insulate the connection line

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



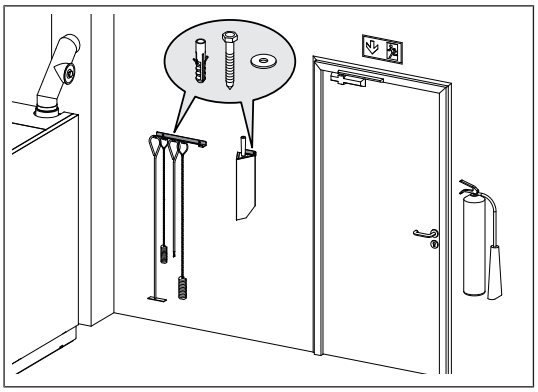
❒ Cut the half shells of thermal insulation to length and lay them on the connection line

❒ Create an opening for access to the measuring port

❒ Apply protective foil at the projecting lugs

❒ Glue the half shells to each other

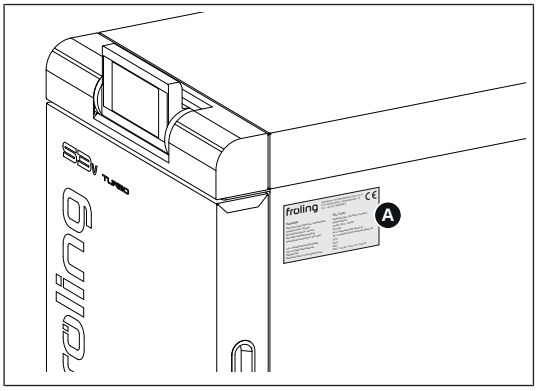
6.7.2 Install the brackets for accessories



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

❒ Attach the accessories to the brackets

6.7.3 Affixing the identification plate



❒ Affix the supplied identification plate (A) to the boiler where it can easily be seen

7 Start-up

7.1 Before commissioning / configuring the boiler

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

IMPORTANT

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

IMPORTANT

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.

❒ Switch on the main switch and configure the boiler controller to the type of system

❒ 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 screw connections at water-bearing joints are tightly sealed

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

❒ Check the entire hydraulic pipework for leaks

❒ Check that all necessary safety devices are in place

❒ Check that there is sufficient ventilation in the boiler room

❒ Check the leaktightness of the boiler

↳ All doors and inspection openings must be tightly sealed!

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

❒ Check that the door contact switch is working efficiently.

IMPORTANT! Check the digital and analogue inputs and outputs!

7.2 Initial startup

7.2.1 Permitted fuels

Firewood

Firewood up to max. 55 cm long.

Water content

Water content (M) greater than 15% (equivalent to wood moisture U > 17%)

Water content (M) less than 25% (equivalent to wood moisture U < 33%)

Note on standards

EU:	Fuel acc. to EN ISO 17225 - Part 5: Firewood class A2 / D15 L50
Germany also:	Fuel class 4 (§3 of the First Federal Emissions Protection Ordinance (BimSchV) in the last amended version)

Tips for storing wood

- Use wind-exposed areas where possible for storage (e.g. store at edge of forest instead of in forest)
- Walls of buildings facing the sun are ideal
- Create a dry underlay, where possible with air access (line with round timber, pallets, etc.)
- stack split wood and store in such a way that it is protected from the elements
- If possible, stock fuel for the day in a warm place (e.g. in boiler room) (pre-heats the fuel!)

Storage time dependent upon water content

	Wood type	Water content	
		15 – 25%	less than 15 %
Storage in heated and ventilated room (approx. 20°C)	Soft wood (e.g. spruce)	approx. 6 months	from 1 year
	Hardwood (e.g. beech)	1 – 1.5 years	from 2 years
Outdoor storage (protected from elements, exposed to wind)	Soft wood (e.g. spruce)	2 summers	from 2 years
	Hardwood (e.g. beech)	3 summers	from 3 years

Freshly cut wood has an approximate water content of 50 to 60% depending on when it was harvested. As the above table shows, the water content of the firewood decreases the longer the wood is stored depending on how dry and warm the storage location is. The ideal water content of firewood is between 15 and 25%.

If the water content falls below 15 %, the fuel is only permitted to a limited extent and the combustion control must be adapted to the fuel.

Extra cleaning of flue gas paths

7.2.2 Fuels permitted under certain conditions

Wood briquettes

Wood briquettes for non-industrial use with a diameter of 5-10 cm and 5-50 cm long.

Note on standards

EU:	Fuel as per EN ISO 17225 - Part 3: wood briquettes class B / D100 L500 Form 1 - 3
Additional for Germany:	Fuel class 5a (§3 of the First Federal Emissions Protection Ordinance (BImSchV) - applicable version)

Notes on use

- When burning wood briquettes use the settings for extremely dry fuel
- Wood briquettes must be heated up with firewood as per EN ISO 17225-5 (at least two layers of firewood under the wood briquettes)
- The fuel loading chamber must not be filled more than 3/4 full, as the wood briquettes expand during combustion
- Even when using the settings for dry fuel, burning wood briquettes can cause combustion problems. In such cases, repairs must be carried out by qualified staff. Please contact Froling customer services or your installer.

7.2.3 Non-permitted fuels

The use of fuels other than those defined in the "Permitted fuels" section, and particularly the burning of refuse, is not permitted

IMPORTANT

In the event that non-permitted fuels are used:

Burning non-permitted fuels increases the amount of cleaning required and leads to a build-up of aggressive deposits and condensation which can damage the boiler. Consequently this invalidates the warranty! Using non-standard fuels can also lead to serious faults in combustion!

For this reason, when operating the boiler:

❒ Use only the permitted fuels

7.2.4 Heating up for the first time

⚠ CAUTION

If the boiler heats up too quickly on initial start-up:

If the output during the heating-up process is too great, the combustion chamber may be damaged as a result of drying out too rapidly!

For this reason the following applies the first time you heat up the boiler:

❒ Start the firewood boiler for the first time in accordance with the heating instructions

IMPORTANT! Fissures are normal and do not indicate a fault

Once the material in the boiler has burnt through, the boiler can be used in accordance with the operating instructions ("Operating the system" section).

IMPORTANT

If condensation escapes during the initial heat-up phase, this does not indicate a fault.

❒ Tip: If this occurs, clean up using a cleaning rag.

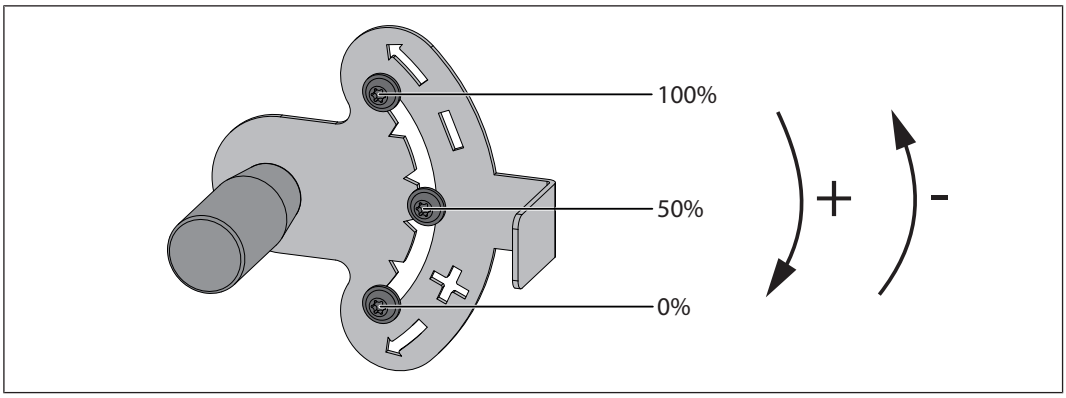
Initial start-up with two servo-motors

❒ Open the insulated door and the fuel loading door

❒ Fill the fuel loading chamber in accordance with the operating instructions for initial start-up and heat up

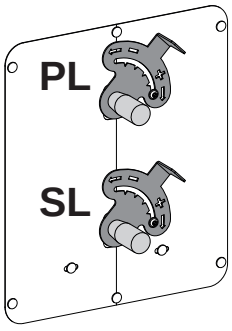
IMPORTANT! No other settings are required for boilers with two servo-motors.

Initial start-up using manual controller



❒ Set the manual controller for the air flap as shown in the table below

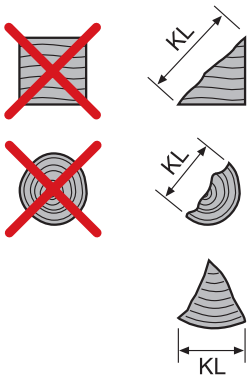
IMPORTANT! The information below only applies to split wood and not for round timber, square timber etc.



Softwood				Hardwood			
Long split wood		Short split wood		Long split wood		Short split wood	
w > 20%	w < 20%	w > 20%	w < 20%	w > 20%	w < 20%	w > 20%	w < 20%
PL[1] 75-100%	PL[1] 75-100%	PL[1] 75-100%	PL[1] 50%	PL[1] 75-100%	PL[1] 75-100%	PL[1] 75%	PL[1] 50%
SL[2] 25-50%	SL[2] 50-75%	SL[2] 50-75%	SL[2] 50-75%	SL[2] 50%	SL[2] 50-75%	SL[2] 75-100%	SL[2] 75-100%

1. PA = Primary air
2. SA = Secondary air

If you use wood briquettes for initial start-up (only permitted under certain conditions!), you can use roughly the same settings as for short split hardwood.



The table shows the setting values for the manual controller of the air flap, which ensures a smooth start-up. The setting values for the manual controller may need to be changed during emissions measurements. For this reason, these values should not be used as standard values for operating the boiler!

The terms used, i.e. “long split wood” (edge length EL > 10 cm) and “short split wood” (edge length EL < 10 cm), have been defined in these instructions by Froling; there is no fuel standard or similar guidelines.

❒ Open the insulated door and the fuel loading door

❒ Fill the fuel loading chamber for initial start-up and heat up

IMPORTANT! See boiler operating instructions

Tip: Line the first 20 cm of the fuel loading chamber with short split wood (edge length EL < 10 cm). This reduces the time taken for a bed of embers to form.

IMPORTANT! The smaller the wood is cut, the faster a bed of embers forms

Once the bed of embers has fully formed, the combustion air can be readjusted if necessary after measuring the O_2 content:

Setting the primary air (boiler with one or two manual controllers)

The nominal output of the boiler is set via the primary air and adjusted to the fuel used.

Combustion air	Effect	Setting
More primary air	Higher flue gas temperature, more output	Turn the manual controller clockwise (“Plus” direction)
Less primary air	Lower flue gas temperature, less output	Rotate manual controller anticlockwise ("Minus" direction)

❒ Correct the air flap for primary air (upper air flap) to achieve the required flue gas temperature

❒ Once the manual controller has been correctly set, secure it in that position

Setting the secondary air (boiler with two manual controllers)

The secondary air sets the O_2 content of the flue gas and thus the quality of combustion.

Combustion air	Effect	Setting
More secondary air	Greater O_2 content	Turn the manual controller clockwise ("Plus" direction)
Less secondary air	Lower O_2 content	Rotate manual controller anticlockwise ("Minus" direction)

❒ Correct the air flap for secondary air (lower air flap) to reach the required O_2 content

IMPORTANT! The manual controller should be set so that the O2 content is between 7 and 9%.

❒ Once the manual controller has been correctly set, secure it in that position

After starting up for the first time and once the combustion air has been set, the boiler is optimally set to the fuel used.

For further use of the boiler, please note the following:

❒ Use fuels that are consistent in size, type and water content

❒ If a very different type of fuel is used, get a qualified technician to check the air flap setting and adjust if necessary

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.

9 Appendix

9.1 Pressure equipment regulation

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

Akkreditierung Austria 0917 ISO/IEC 17065

TÜV SÜD Landesgesellschaft Österreich

EU-Baumusterprüfbescheinigung
Certificate

EU-Baumusterprüfung (Modul B 3.2 Entwurfsmuster) nach Richtlinie 2014/68/EU
EU-Type-examination (Module B 3.2 design type) according to directive 2014/68/EU

Zertifikat-Nr.: **0531-PED-VE-3136**
Certificate-No.:

Zeichen des Auftraggebers:	Auftragsdatum:	Inspektions bericht-Nr.
Reference of Applicant:	***Date of Application:***	***Inspection report Nr.:***
4000302077	**11.07.2023**	**VE 725226353-2-JKo**

Hersteller: **Fa. Fröling Heizkessel-u. Behälterbau Ges.m.b.H.**
Manufacturer:

In/ ***of*** **Industriestraße 12**
A- 4710 Grieskirchen

Hiermit wird bestätigt, dass das hier genannte EG-Baumuster die Anforderungen der Richtlinie 2014/68/EU erfüllt.

We herewith certify that the type mentioned meets the requirements of the Directive 2014/68/EU.

Geprüft nach: **Richtlinie 2014/68/EU, Artikel 4(2)**
Tested in accordance with:

Beschreibung des Produktes: **Scheitholzkessel S3v Turbo 20 + 20F, 30 + 30F, 40 + 40F, 45 + 45F, Scheitholzkessel S3v Turbo Lambda 18 + 18F, 20 + 20F, 30 + 30F, 40 + 40F, 45 + 45F**
Description of product:

Bedienungsanleitung B1130623_de I Ausgabe 02.06.2023, Montageanleitung M1720723_de I Ausgabe 02.06.2023

Gültig bis: **24.08.2033**
Valid to:

TÜV SÜD Landesgesellschaft Österreich GmbH

Wien/*Vienna*, 17.10.2023

Notifizierte Stelle, Kennnummer 0531
Notified Body, identification number 0531
(Dipl.-Ing. (FH) Josef Kogler)

Bitte beachten Sie die Hinweise auf der zweiten Seite.
Please note the remarks on the second page.

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TÜV®

01.Dgr.252 Zertifikat B 16.06. 2023 Rev.0

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