

Installation Manual

Pellet heating with vacuum
suction system, type

PELLEMATIC®
PES 10 – 32

FA_V2.03

Pelletronic TOUCH

ENGLISH





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Subject to modifications

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1 Dear Customer

ÖkoFEN is Europe's leading specialist in pellet heating.

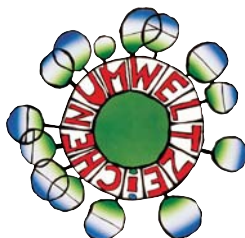
Proficiency, innovation and quality combined. This is the tradition on which ÖkoFEN shapes the future. We are very pleased that you too have decided to purchase a product from ÖkoFEN.

- This manual is intended to help you operate the product safely, properly and economically.
- Please read this manual right through and take note of the safety warnings.
- Keep all documentation supplied with this unit in a safe place for future reference.
Please pass on the documentation to the new user if you decide to part with the unit at a later date.
- Please contact your authorised dealer if you have any questions.



ÖkoFEN attaches great importance to the development of new products. Our R&D Department repeatedly challenges the effectiveness of tried-and-tested systems and works continuously on improvements. In this way, we secure our technological advantage. We have already received many national and international awards for our products.

All our products comply with European standards in respect of quality, efficiency and emissions.



2 Use only for the purpose intended

The pellet heating system is designed to heat water for central or other indirect heating systems and hot water supply for buildings. It is not permissible to use the pellet heating system for any other purpose. Reasonable foreseeable inadvertent uses for the heating system are not known.

EG – KONFORMITÄTSERKLÄRUNG

Im Sinne der EG-Maschinenrichtlinie 2006/42/EG, Anhang II A

Der Hersteller erklärt, dass die/der in dieser Dokumentation beschriebene neu Maschinenteil/ Maschinenkomponente aufgrund ihrer Konzipierung und Bauart, sowie in der von uns in Verkehr gebrachten Ausführung mit den Bestimmungen der Maschinen - Sicherheitsverordnung – MSV2010, BGBl. Nr.282/2008 und damit der durch sie umgesetzten EG-Maschinenrichtlinie 89/392/EWG, zuletzt geändert durch 2006/42/EG in der geltenden Fassung übereinstimmt.

Hersteller / Firma

Ökofen Forschungs- und Entwicklungsgesellschaft. m.b.H.
Gewerbepark 1
A-4133 Niederkappel

Bezeichnung:

PELLEMATIC PE(S) 08, 10, 12, 15, 20, 25, 32, 36, 48 und 56 kW

PELLEMATIC PE(S)K 10, 12, 15, 20, 25 und 32 kW

Bei der Auslegung und dem Bau der Maschine wurden folgende Bestimmungen, Normen und Richtlinien berücksichtigt:

Einschlägige Bestimmungen:

2006/42EG	Maschinenrichtlinie in der geltenden Fassung
2006/95EG	Niederspannungsrichtlinie
2004/108/EG	EMV- Richtlinie elektromagnetische Verträglichkeit

Angewandte europäische/ nationale Normen und Richtlinien:

EN 292-1 und EN292-2	Sicherheit von Maschinen
EN 303-5	Heizkessel für feste Brennstoffe
EN 50081-1 und EN 50082-1	elektromagnetische Verträglichkeit
ISO 9001,	
ÖNORM M7550, B8130 und B8131	
sowie die technischen Richtlinien TRVB H 118	vorbeugender Brandschutz

Niederkappel, am 12.09.2013



Ing. Herbert Ortner
 Geschäftsführer

3 Types of safety warning sign

The warning signs use the following symbols and texts.

Types of safety warning sign

1. Risk of injury
2. Consequences of risk
3. Avoiding risk



1. Risk of injury:

Danger - indicates a situation that could lead to death or life-threatening injury.



Warning - indicates a situation that could lead life-threatening or serious injury.



Caution - indicates a situation that could lead to injury.



Note - indicates a situation that could lead to property damage.



2. Consequences of risk

Effects and consequences resulting from incorrect operation.

3. Avoiding risk

Observing safety instructions ensures that the heating system is operated safely

4 Prerequisites for installing a pellet boiler

You must fulfill the following conditions before operating a fully automatic pellet boiler.

4.1 Guidelines and standards for installing a pellet boiler

Overview of standards and guidelines applying to the installation of a pellet boiler.

Check whether you need to obtain planning permission or approval from the authorities for installing a new heating system or changing your existing system. Legislation in your country must be observed.

Flue gas system	EN 13384-1	Legislation in your country must be observed.
Building and fire prevention regulations		Legislation in your country must be observed.
Type of installation	FC 42x	Fireplace with a flue gas fan for connection to an air exhaust system. The combustion air line from air shaft and the connecting piece to the chimney are part of the fireplace.
	FC 52x	Fireplace with a flue gas for connection to a chimney. The combustion air line from outside and the connecting piece to the chimney are part of the fireplace.
Sound insulation	DIN 4109	Please note the building-unique demands on sound insulation.

4.2 Central heating room

The pellet boiler is installed in the central heating room.

1. Safety instructions for the heating room

DANGER

Risk of fire
 Do not store flammable materials or liquids in the vicinity of the pellet boiler.
 Do not permit unauthorised persons to enter the central heating room - children are to be kept out.
 Always close the boiler door.

2. Air supply and ventilation of central heating room

The central heating room must be fitted with air supply and ventilation openings (at least 200cm²). Legislation in your country must be observed.

3. Combustion air supply

The pellet boiler needs a supply of combustion air. The supply of combustion air can:

- a. take place using the air supply and ventilation openings in the central heating room.
- b. **or** through a special air supply line directly from outside, where the diameter of the air supply line must be at least 100 mm for type PE 08 - PE(S) 32. Ambient air independent operation of PES 36-56 types is also available.

Never operate the pellet boiler if the air intake openings are partially or completely closed.

Contaminated combustion air can cause damage to the pellet boiler. Never store or use cleaning detergents containing chlorine, nitrobenzene or halogen in the room where the heating system is installed, if combustion air is drawn directly from the room.

Do not hang out washing in the central heating room.

Prevent dust from collecting at the combustion air intake to the pellet boiler.

4. Damage due to frost and humid air

The central heating room must be frost-proof to ensure trouble-free operation of the heating system. The temperature of the central heating room must not fall below -3°C and must not exceed $+30^{\circ}\text{C}$. The air humidity in the central heating room must not exceed 70%.

5. Danger for animals

Make sure that household pets and other small animals cannot enter the central heating room. Fit mesh over any openings.

6. Flooding

If there is a risk of flooding, switch off the pellet boiler in good time and disconnect from the power supply before water enters the central heating room. You must have all components that come into contact with water replaced, before you start up the pellet boiler again.

4.3 Flue gas system

The flue gas system consists of a chimney and a flue gas tube. The flue gas tube connects the pellet heating system to the chimney. The chimney leads the flue gas from the pellet heating system out into the open.

1. Design of the chimney

The dimensions and design of the chimney is very important. The chimney must be able to ensure sufficient draft to safely draw away the flue gas regardless of the status of the boiler. Low flue gas temperatures can cause sooting and moisture damage on chimneys that are not insulated. For this reason **moisture-resistant chimneys** (stainless steel or ceramic) should be used. Chimneys made of plastic are not permitted. An existing chimney that is not damp-resistant needs to be renovated before use.

Boiler size		PE 8	PE(S) 12	PE(S) 15	PE(S) 20	PE(S) 25	PE(S) 32	PES 36	PES 48	PES 56
Flue gas tube diameter (at boiler)	mm	130	130	130	130	150	150	180	180	180
Chimney diameter	as per chimney calculation, EN 13384-1									
Chimney design	damp-resistant									

2. Flue gas temperature

Boiler type	PE 8, 12	PE(S) 15, 20, 25, 32, 36, 48, 56	PE Plus
Flue gas temperature rating	120 – 140°C	160°C	30 – 40°C
Flue gas temperature partial load	80 – 100°C	100°C	30 – 40°C

The dewpoint of flue gas with wood pellets (max. 10% water content) is approx. 50°C .

3. Chimney draft

The diameter of the chimney must be selected based on a chimney calculation according to EN 13384-1. The suction effect of the chimney draft must extend as far as the chimney connection. The maximum flow rate that can be drawn through the chimney limits the maximum performance of the pellet boiler. The boiler performance must be reduced if the chimney does not possess the necessary cross-section. This may only be performed by authorised personnel.

4. Cleaning

Clean the flue gas tube and chimney regularly.

NOTICE

Oxidation of chimney

Do not use metal brushes to clean chimneys made of stainless steel.

Legislation in your country must be observed.

4.4 Safety systems

The following safety measures are the prerequisite for safe operation of your system.

Emergency stop switch

Every heating system must be able to be switched off with an Emergency Stop switch. The Emergency Stop switch must be inside the central heating room.



Safety valve

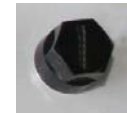
The hydraulic system must be equipped with a safety valve. This valve opens when the pressure inside the heating system increases to max. 3 bar. The safety valve must:

- be installed at the highest point of the boiler,
- must not be locked,
- and must be within 1 metre of the boiler.



Safety temperature sensor

The pellet boiler is equipped with a safety temperature sensor. This is located on the pellet boiler. If the boiler temperature exceeds 95°C then the heating system switches off.



Expansion tank

All heating systems must be equipped with a pressurised expansion tank. The plumber or heating system installer must dimension the expansion tanks according to the dimensions of the hydraulic system.



NOTICE

Starting up

Starting up for the first time has to be performed only by an authorized service technician.

4.5 Operation of a pellet boiler with an existing boiler

There are different regulations in the different European countries. Please mind the prescription of your country.


5 Warnings and safety instructions


Observing safety instructions ensures that the heating system is operated safely.


5.1 Basic safety instructions

- Never get yourself into danger; give own safety the utmost priority.
- Keep children away from the central heating room and storage room.
- Observe all safety warnings on the boiler and in this user manual.
- Observe all instructions relating to maintenance, servicing and cleaning.
- The pellet heating system may only be installed and started up for the first time by an authorised plumber. Professional installation and start up is the prerequisite for safe and economical operation.
- Never make any changes to the heating system or flue gas system.
- Never close or remove safety valves.

5.2 Warning signs

	DANGER
Risk of poisoning Make sure that the pellet boiler is supplied with sufficient combustion air. The openings in the combustion air inlet must never be partially or completely closed. Ventilation systems, central vacuum cleaning systems, extractor fans, air conditioning systems, flue gas blowers, dryers or similar equipment must never be allowed to draw air from the central heating room and cause a drop in pressure. The boiler must be connected tight to the chimney using a flue gas tube. Clean the chimney and the flue gas tube at regular intervals. The central heating room and pellet storage room must be sufficiently supplied with air and ventilated. Before entering the storage room it must be ventilated with sufficient air and the heating system switched off.	

	DANGER
Risk of electric shock Switch off the system before performing work on the boiler.	

	DANGER
Risk of explosion Never burn petrol, diesel, engine oil or other explosive materials. Never use liquids or chemicals to ignite the pellets. Switch off the heating system before filling the storage room.	



DANGER

Risk of fire

Do not store any flammable materials in the central heating room. Do not hang out any washing in the central heating room.
Always close the boiler door.



WARNING

Risk of burns

Do not touch the flue spigot or the flue gas tube.
Do not reach into the ash chamber.
Use gloves to empty the ash box.
Do not clean the boiler until it has been allowed to cool down.



CAUTION

Risk of cut injuries due to sharp edges.

Use gloves for performing all work on the boiler.

NOTICE

Damage to property

Heat the pellet heating system using pellets that comply with EN 14961-2 class A1 and A2 only.

NOTICE

Damage to property

Do not use the heating system if it, or any of its components, come into contact with water.
If water damage occurs, have the heating system checked by a service technician and have any damaged parts replaced.

5.3 What to do in an emergency



DANGER

Risk to life

Never get yourself into danger; give own safety the utmost priority.

What to do in the event of a fire

- Switch off the heating system.
- Call the fire brigade
- Use approved fire extinguishers (fire protection class ABC).

What to do if you smell smoke

- Switch off the heating system.
- Close the doors leading to living areas.
- Ventilate the central heating room.

6 Product description

The description of the product is intended to provide an overview of the components that make up an ÖkoFEN pellet heating system, the parts of the pellet boiler and advice on where you can find more information.

The ÖkoFEN concept features different sizes of design and type for each component. These are compatible and designed to match.

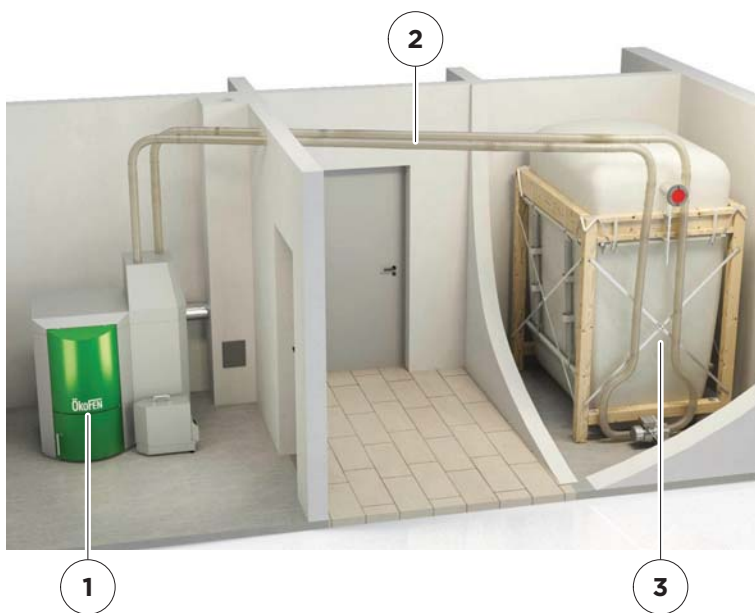
The ÖkoFEN pellet heating system consists of 3 components

1	Pellematic pellet boiler
2	Conveyor system
3	Storage system - storage room or fabric tank

Pellet boiler with storage room



Pellet boiler with fabric tank



6.1 The Pellematic

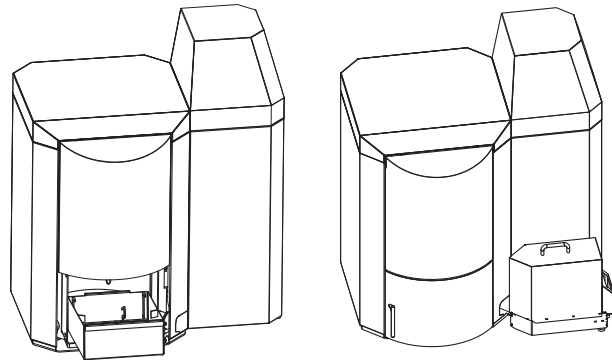
The Pellematic is equipped with an automatic cleaning system, an ash box with ash compression system and an integrated return water temperature control. The installed programmable logic controller system enables fully automatic operation and highest efficiency. ÖkoFEN also offers an optional automatic de-ashing system for the highest level of cleanliness and comfort.

Pellematic types and power ratings

ÖkoFEN offers the Pellematic with the following power ratings:

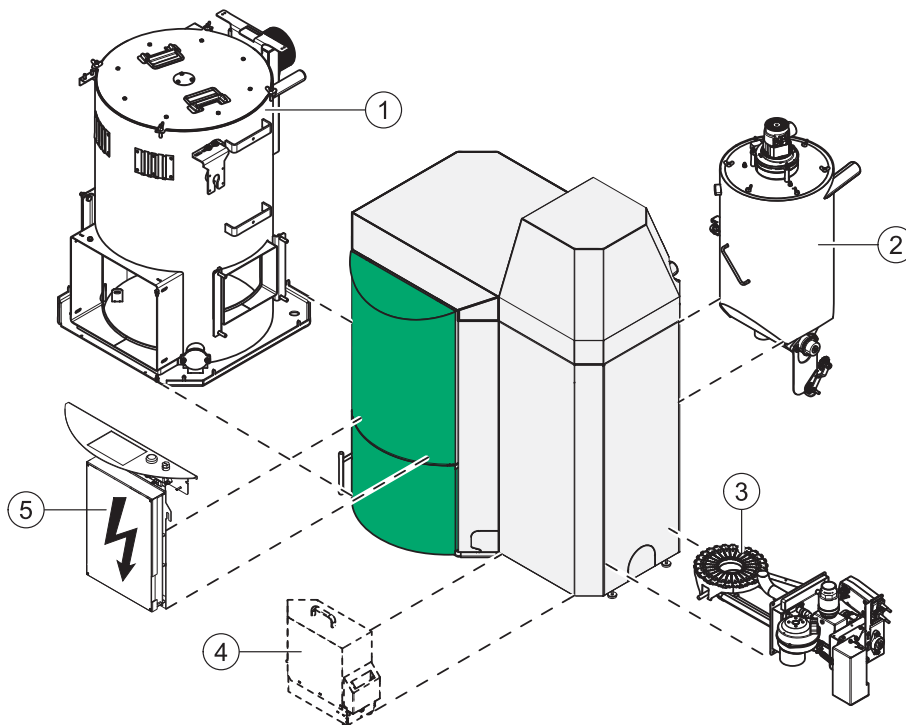
Suction-feed systems: 12, 15, 20, 25, 32, 36, 48 and 56 kW

All power rating types are available with an integrated ash box or with an external ash box with automatic de-ashing system.

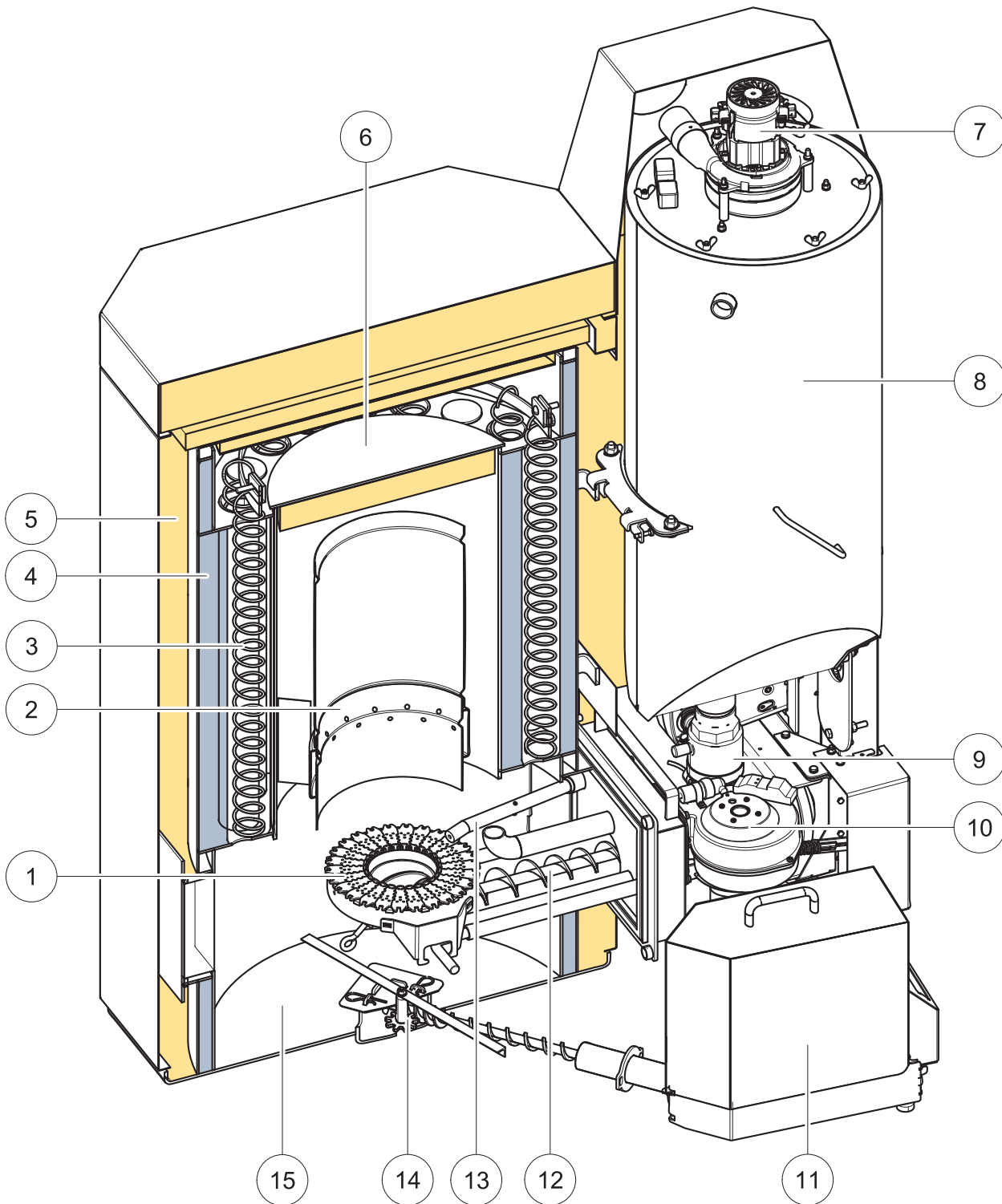


Refer to the data plate for the power rating of your Pellematic. The data plate is located on the rear side of the Pellematic. Here you will find the type designation, manufacturer's serial number and year of build.

Key components of the Pellematic



1	Boiler (heat exchanger)
2	Hopper
3	Burner
4	External ash box (optional)
5	Boiler controller



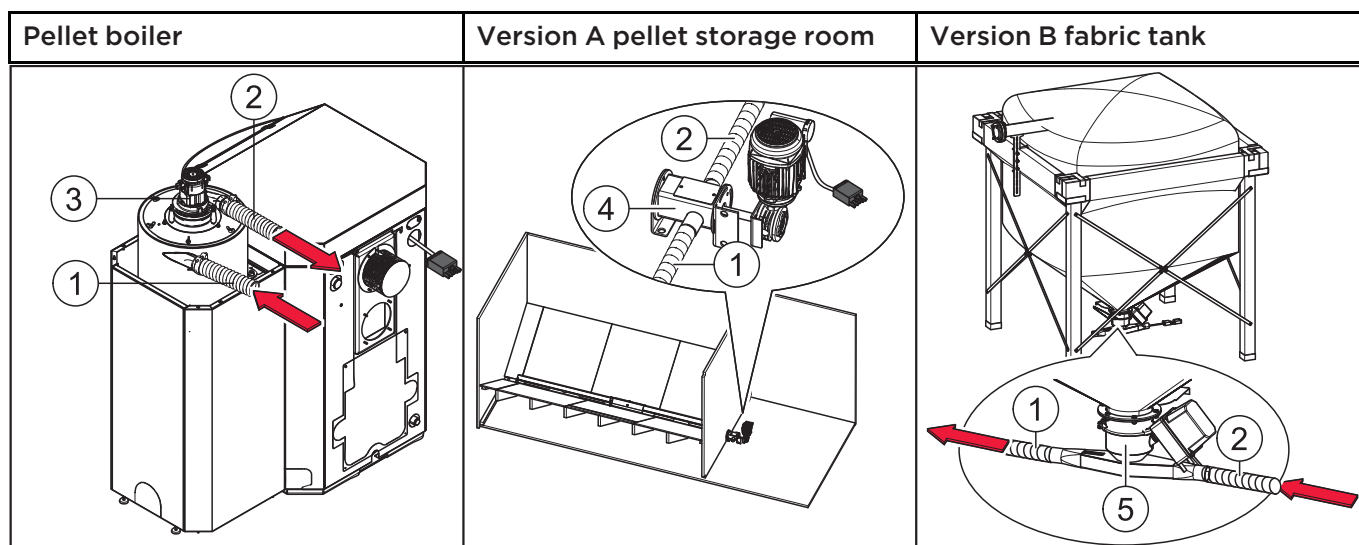
1	Multi segmented brazier	9	Anti-blowback system
2	Flame tube	10	Burner fan
3	Heat exchanger	11	External ash box (optional)
4	Boiler water	12	Burner auger
5	Boiler insulation	13	Electronic ignition
6	Combustion chamber cover	14	De-ashing system (optional)
7	Suction fan	15	Ash chamber
8	Hopper		

6.2 Pellet suction system

The pellet suction system consists of the pellet line, air line and a suction fan. The suction fan in the hopper conveys pellets in the pellet line from the storage room or fabric tank to the hopper.

Key components of pellet suction system

1	Pellet line	Line from the storage room auger or fabric tank to the hopper.
2	Air line	Line from the suction fan to the storage room auger or fabric tank.
3	Suction fan	Located above the hopper behind the Pellet boiler burner housing.
4	T-piece	Located at front end of the storage room auger, outside the storage room.
5	Suction flap	Located underneath the fabric tank.



6.2.1 Assembly of the vacuum system

The pellet and air hose are flexible spiral hoses made out of plastic. A copper braid avoids the static loading of the spiral hose.

To avoid damage to the spiral hose, you must observe the following assembly guidelines:

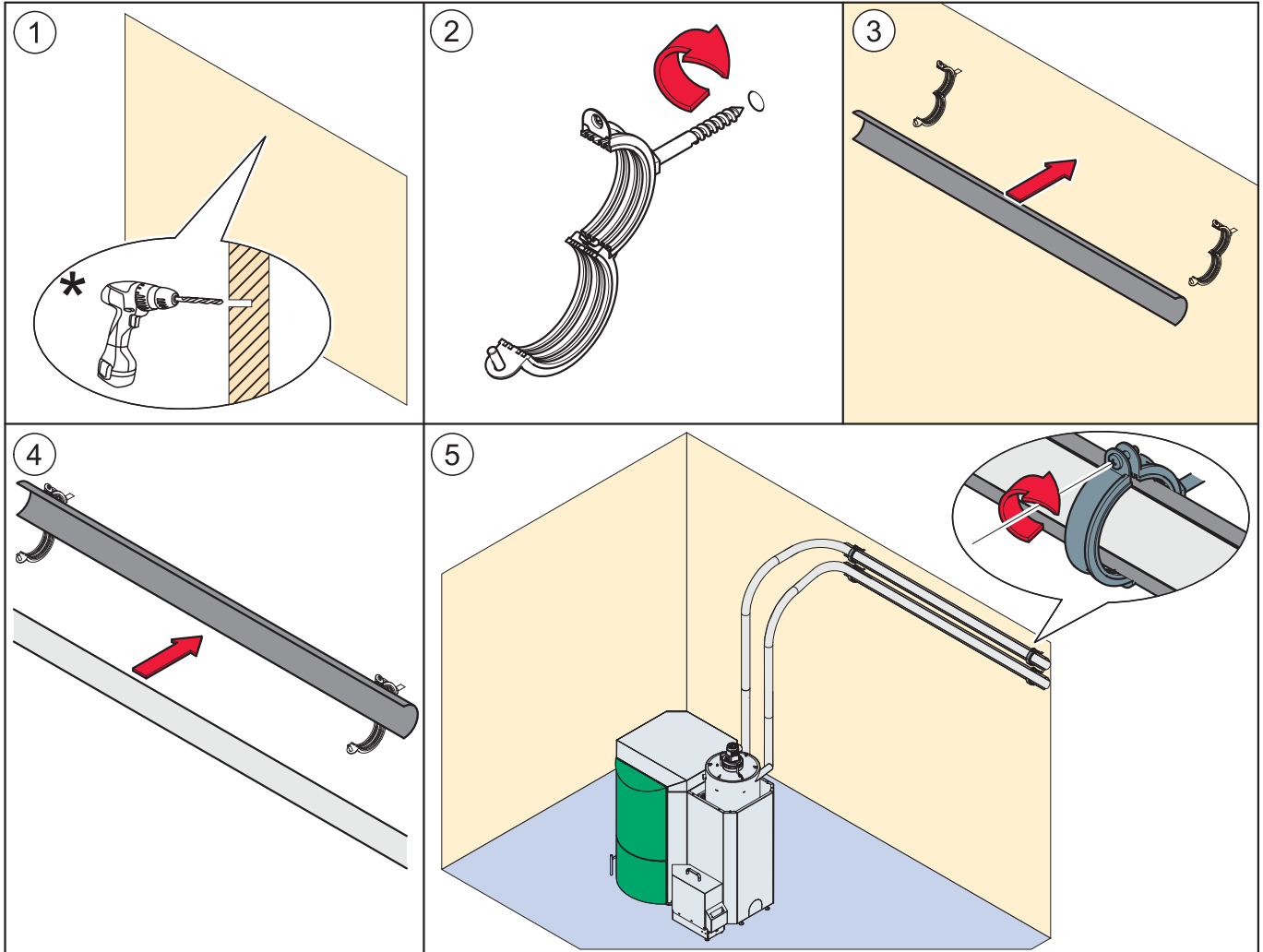
- Bending radius** The hose should be led as briefly as possible and with as few curves as possible. Bending radius may never be smaller than **30cm**.
- Upward gradients** Max difference in height = **6m**
Note: A difference in height of up to 3m can be overcome at one time. Larger differences in height must be interrupted with a minimum 1m long crossbar.
- Impact protection** The spiral hose can be mounted up to 4 meters exactly straight. Small bends particularly in front of curves reduce the abrasion of the spiral hose.
- Installation in the soil and openings** When laying directly in the ground and through openings the spiral tube must be conducted in a drain pipe with at least 100mm diameter. This pipe must be sealed and may not make any larger arch than 15°.
- Tightness** In order to keep problem-free sucking of the pellets, an absolute tightness in the system must be respected. All connection points must be provided with a hose clip.
- Potential-equalization** The hoses are provided with a copper braid, which keeps the hose antistatic. In order to ensure the function of the anti-statics, those copper braids must be attached at each end to the grounding connection.
- Fire protection** At each wall break-through must be installed a fire protection seal in the pellet- and the air hose.

Crossing Please make sure that you cross the hoses as few as possible.

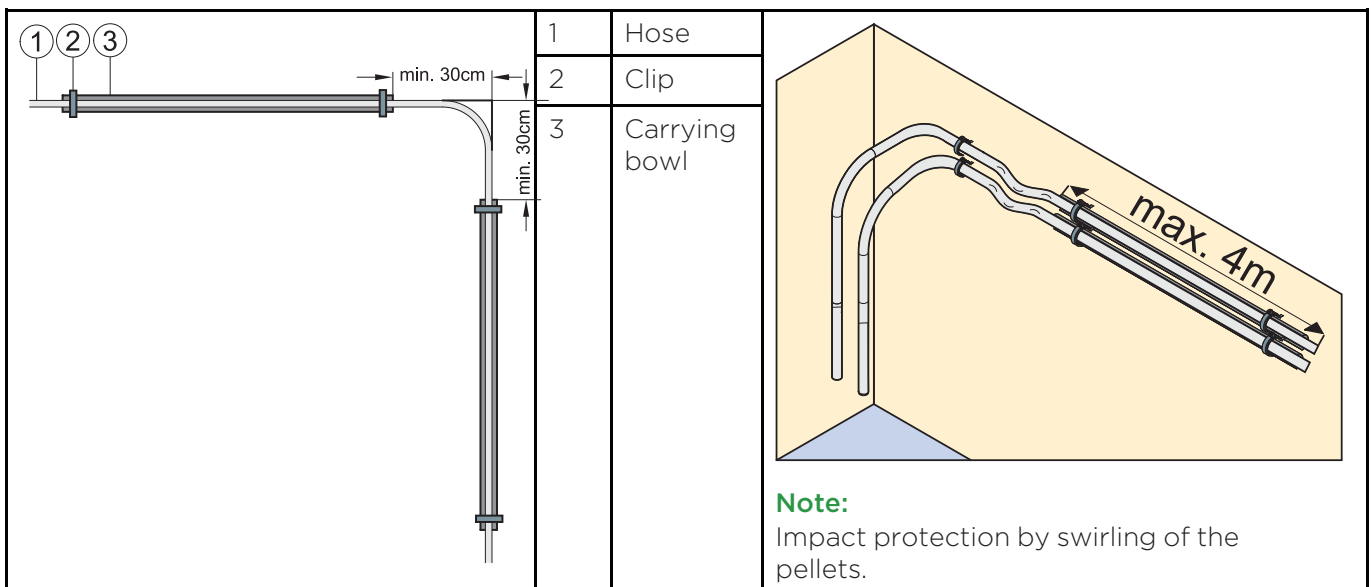
Length of the spiral hose The maximum length for pellets hose and air hose are each 20m.

Assembly

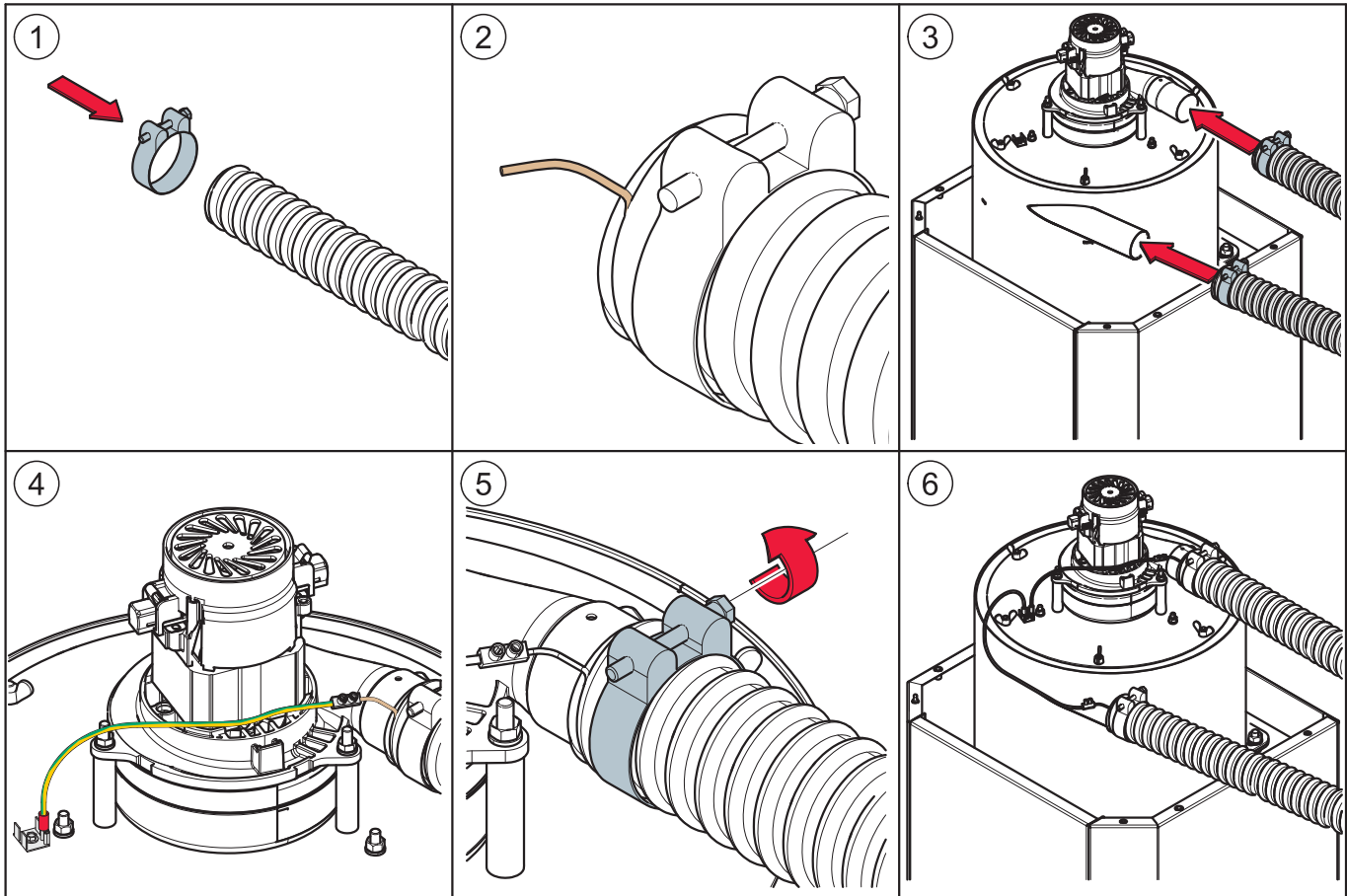
Use securing clips and carrying bowls.



*Pay attention to the defined distances!



Connection of the pellet and air hose to the suction turbine



6.3 Storage systems

There are two methods for storing pellets: in a storage room with an auger feed system (version A) or in a FleXILO fabric tank (version B). FleXILO fabric tanks can be located inside the central heating room, storage room or protected from wet and sun outside.

NOTICE

Damage to property and loss of warranty

The combination of an ÖkoFEN pellet boiler with a storage and conveyor system from another manufacturer is not permissible.

6.3.1 Pellet storage room

The auger extraction system is part of the ÖkoFEN pellet heating system. The sloping base is to be provided by the customer. Information and important notes on setting up storage rooms can be found in the ÖkoFEN planning documents and on www.oekofen.com. Information on installing the auger extraction system is included in the auger system installation manual. Refer to the instructions on how to make a sloping base.

6.3.2 Flexilo fabric tank

The whole fabric tank system is included in the scope of supply. ÖkoFEN offers various sizes and types. The fabric tank supplied may vary from the example shown above.

Please refer to the installation instructions supplied for the fabric tank. Note also the instructions on setting up and filling.

7 Bringing the pellet boiler into the central heating room

This section describes the prerequisites as well as the working sequence required.

1. Transport
2. Notes on bringing the unit into the building
3. Casing parts
4. Dismantling the casing parts

7.1 Transport

ÖkoFEN supplies the pellet boiler on a pallet. The pellet boiler is ready to be connected.

The control unit for the boiler controller and the operating device is integrated into the control panel.

The ash box and the optional external ash box with de-ashing system and the flue tube connections are supplied in separate packages. These need to be installed on-site.

If it is not possible to bring the boiler into the building at ground level, then remove the casing, the burner, the hopper and the boiler controller. This will reduce the weight of the unit and make it easier to carry.

NOTICE

Contamination and corrosion

Make sure that the pellet boiler is located under a roof if it needs to be stored outside before it is transported/ brought into the building.

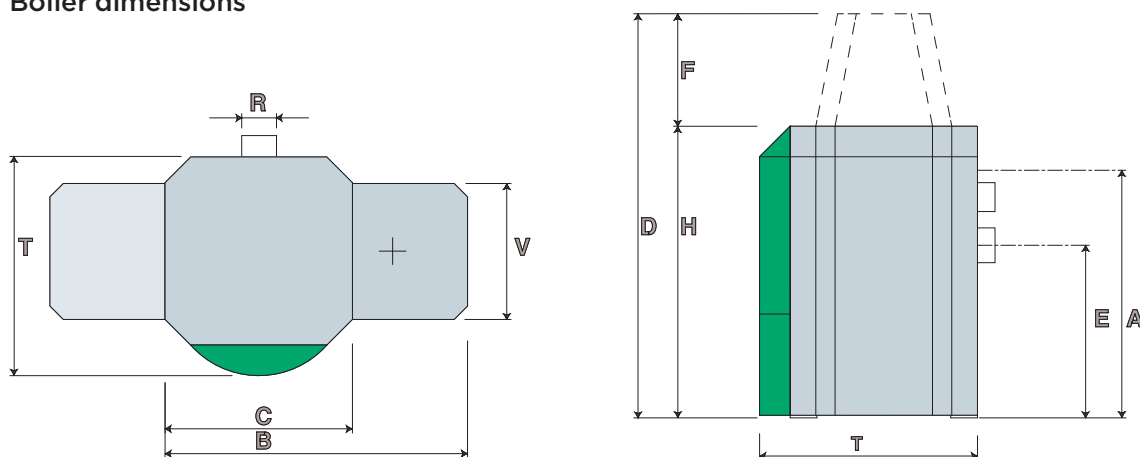
7.2 Notes on bringing the unit into the building

Before bringing the unit into the building, check the dimensions of all doors to ensure that the boiler has sufficient clearance and can be set up properly.

Minimum door width – max. unit dimension

PE	8 kW	700 mm
PE, PES, PESK	12, 15, 20 kW	750 mm
PE, PES, PESK	25, 32 kW	800 mm
PES	36, 48, 56 kW	900 mm

Boiler dimensions



Boiler size		PE 08	PE(S) 12	PE(S) 15	PE(S) 20	PE(S) 25	PE(S) 32	PES 36	PES 48	PES 56
B – overall width of pellet boiler	mm	1013	1130	1130	1130	1186	1186	1297	1297	1297
C – width of boiler casing	mm	645	700	700	700	756	756	862	862	862
H – height of boiler casing	mm	1066	1090	1090	1090	1290	1290	1553	1553	1553
D – height of pellet suction system	mm	—	1392	1392	1392	1592	1592	1855	1855	1855
F – height of suction system filling unit	mm	—	302	302	302	302	302	302	302	302
T – depth of boiler casing	mm	691	814	814	814	870	870	990	990	990
V – depth of burner casing	mm	430	508	508	508	508	508	508	508	508
E – height of flue gas tube connection	mm	606	645	645	645	844	844	1040	1040	1040
A – height of inlet/return	mm	896	905	905	905	1110	1110	1320	1320	1320
R – diameter of flue gas tube	mm	130	130	130	130	150	150	180	180	180

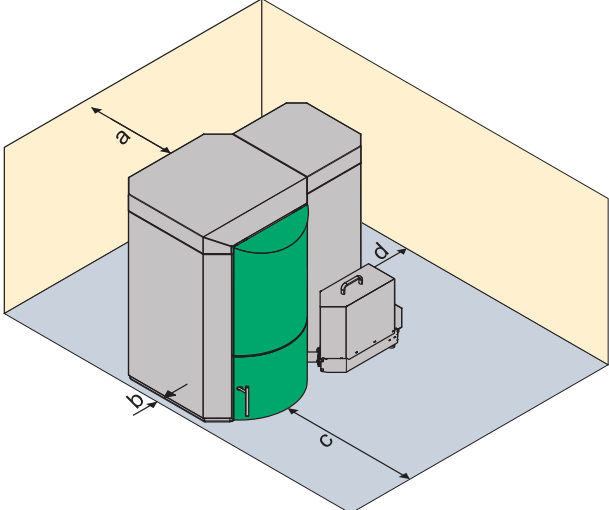
Boiler Weight

Boiler size		PE 08	PE(S) 12	PE(S) 15	PE(S) 20	PE(S) 25	PE(S) 32	PES 36	PES 48	PES 56
Weight of boiler packaged on pallet with wooden frame	kg	320	385	385	385	470	470	650	650	650
Weight of boiler with casing, hopper and burner	kg	290	350	350	350	430	430	605	605	605
Weight of boiler without casing, hopper and burner	kg	187	230	230	230	300	300	422	422	422

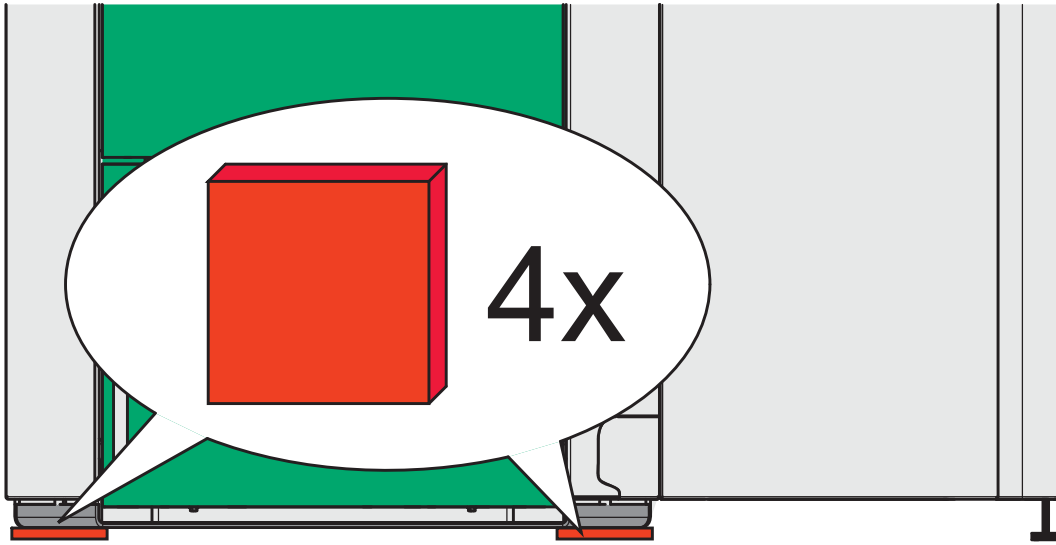
Minimum clearance dimensions required

Note:

To install the heating system properly and ensure economical operation, you need to make sure that minimum clearance dimensions indicated below are observed when setting up the boiler. **In addition, make sure that legislation in your country is complied with relating to the minimum clearance of the flue gas tube.**

	a	Min. clearance of flue gas connection from wall or part of building	450 mm
	b	Min. clearance of side of boiler from wall or part of building	50 mm
	c	Min. clearance of front of boiler from wall or part of building	700 mm
	d	Min. clearance of side of burner from wall or part of building	300 mm
Note: Legislation in your country must be observed!			

Placement of rubber plates

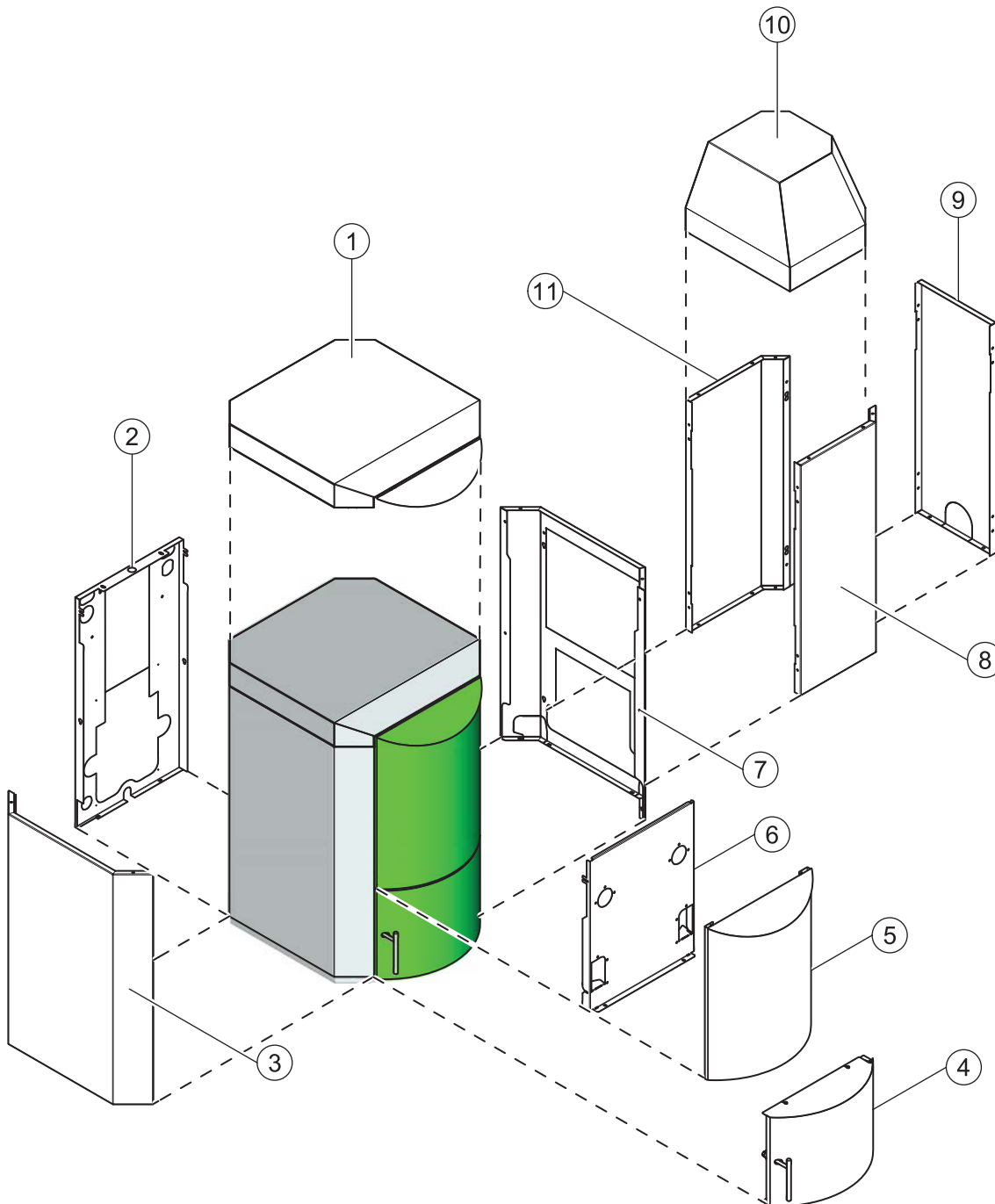


NOTICE

The pellet heating boiler must be placed on the supplied rubber plates.

7.3 Casing parts

The boiler is protected by a casing on all sides. The casing parts prevent contact with hot, moving and live components. They also give ÖkoFEN pellet boilers a unique appearance.



1	Boiler casing cover	7	Boiler side section with cutout
2	Boiler back plate	8	Burner side section (same as 11)
3	Boiler side section without cutout	9	Boiler end plate without cutout
4	Boiler door plate (semi-circle)	10	Burner cover suction system
5	Boiler front plate (semi-circle)	11	Burner side section (same as 8)
6	Boiler front plate (flat)		

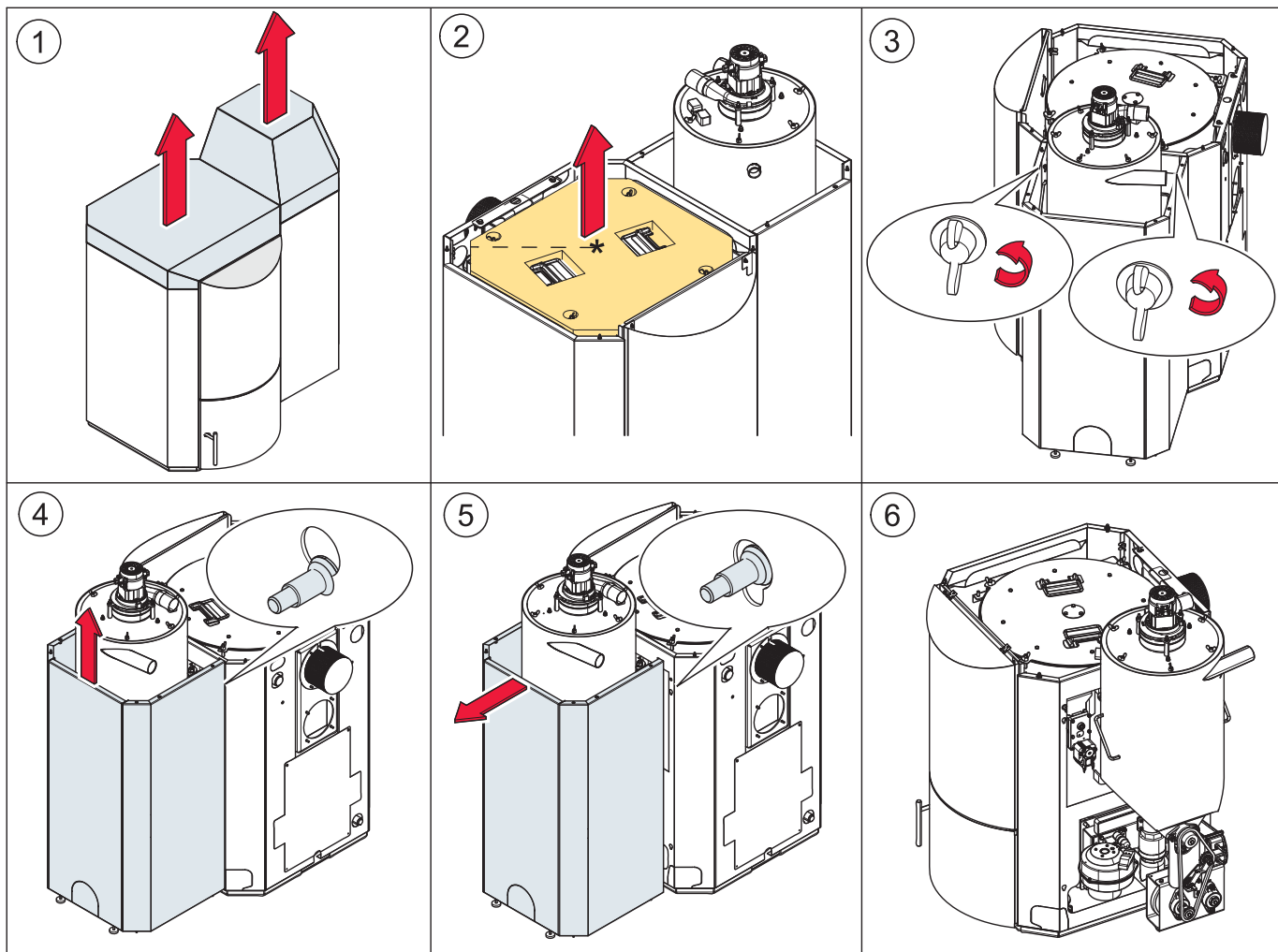
7.4 Removing the casing, the hopper and the burner

Dismantle the pellet boiler as far as necessary if site conditions require, so that the unit can be brought safely into the building.

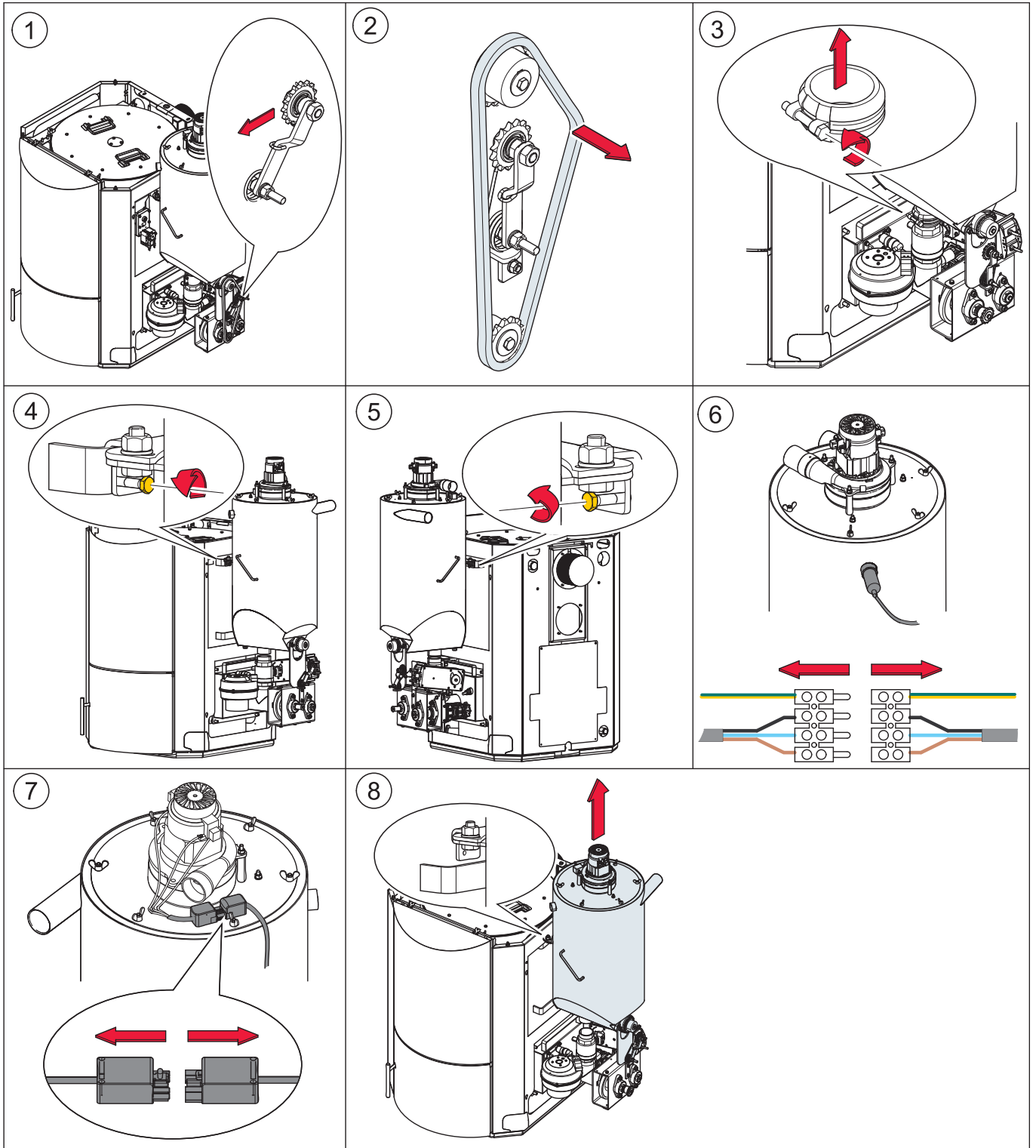
The complete dismantling of all components described here is divided into the following sections:

1. Dismantling the burner casing
2. Dismantling the hopper
3. Dismantling the burner
4. Dismantling the boiler door
5. Dismantling the boiler casing

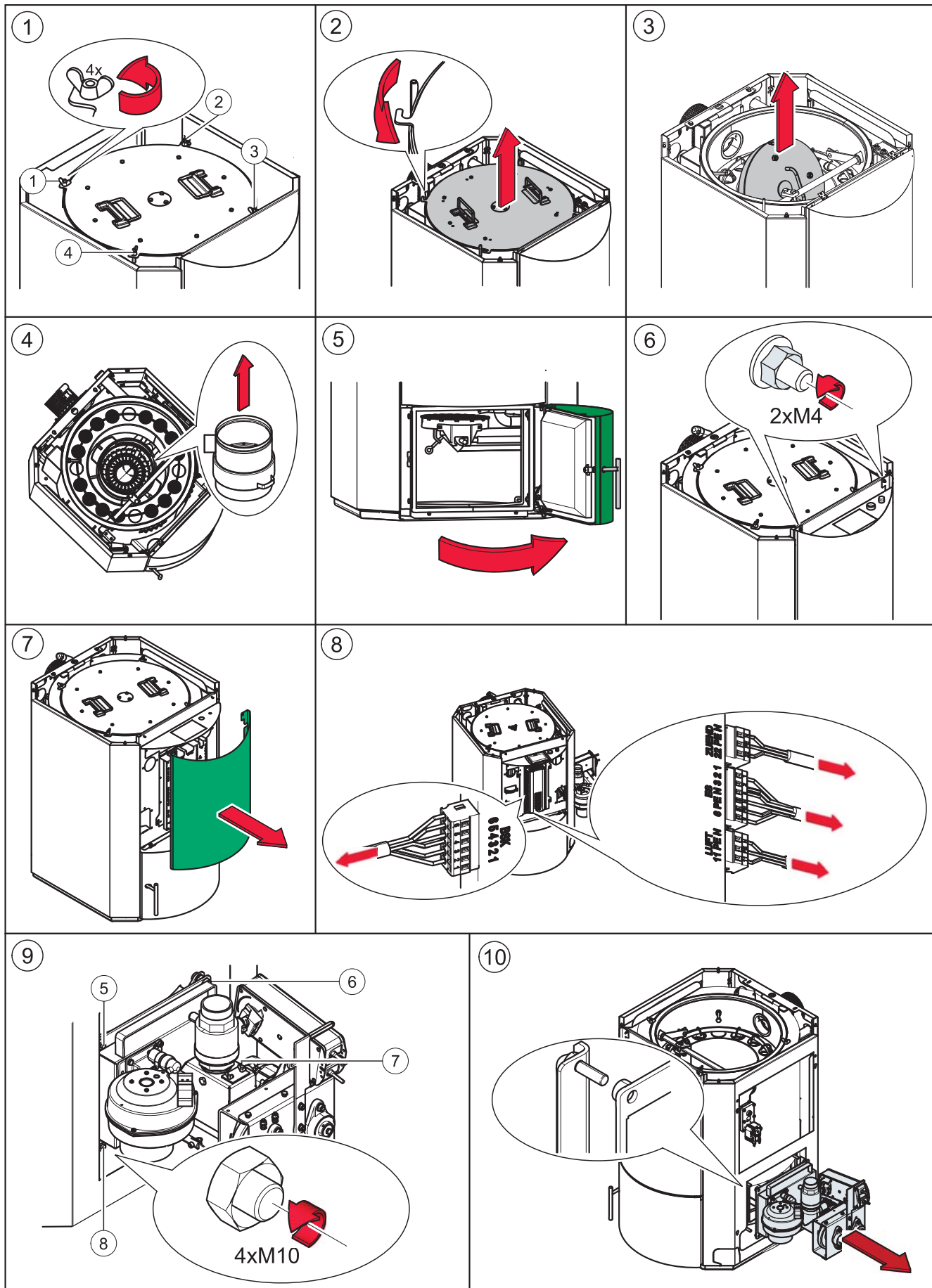
7.4.1 Dismantling the burner casing



7.4.2 Dismantling the hopper



7.4.3 Dismantling the burner





DANGER

Risk of electric shock

Behind the boiler front panel is the energized control unit. Disconnect main power before removing the front panel.

NOTICE

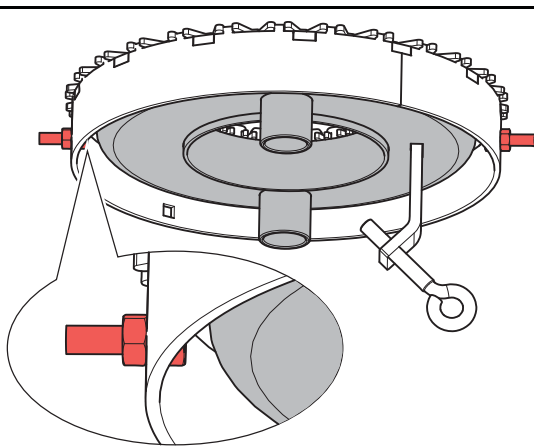
Damage of property

Remove the electric cables before removing the burner.

Multi segmented brazier

There are 2 mounting variants:

With burner plate cleaning system: Bolts loosened

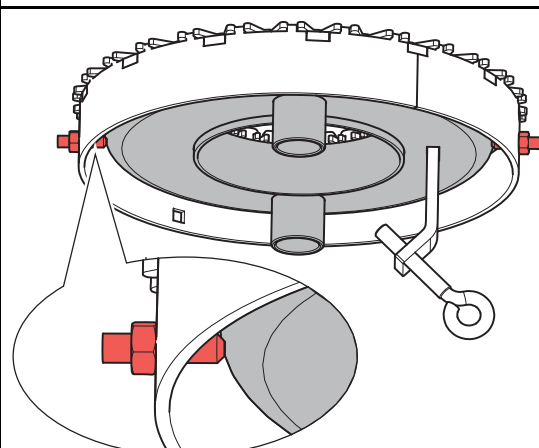


NOTICE

Damage to property

The **safety screws** for rotating the Multi segmented brazier must be loosened/removed when exchanging the Multi segmented brazier.

Without Burner plate cleaning system: Bolts tightened



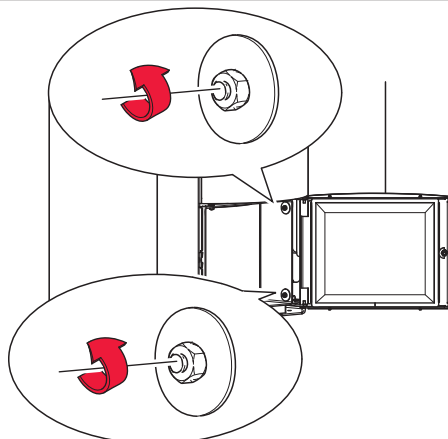
NOTICE

Damage to property

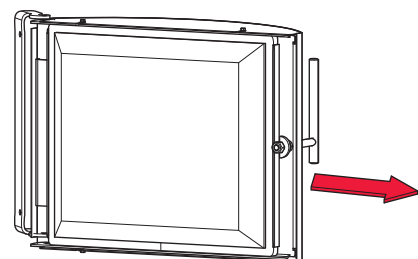
The **safety screws** for rotating the Multi segmented brazier may not be loosened/removed when mounting.

7.4.4 Dismantling the boiler door

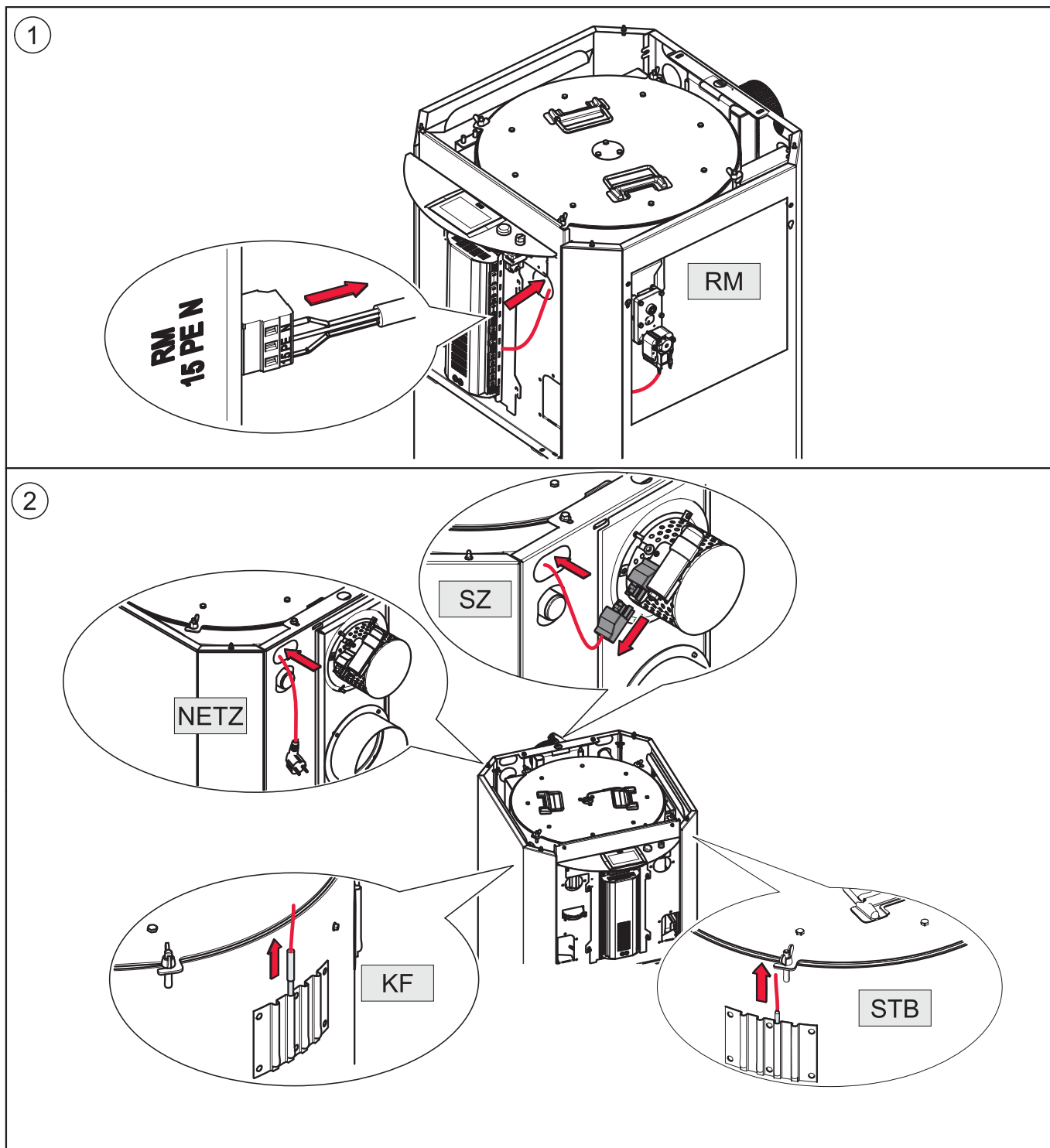
1

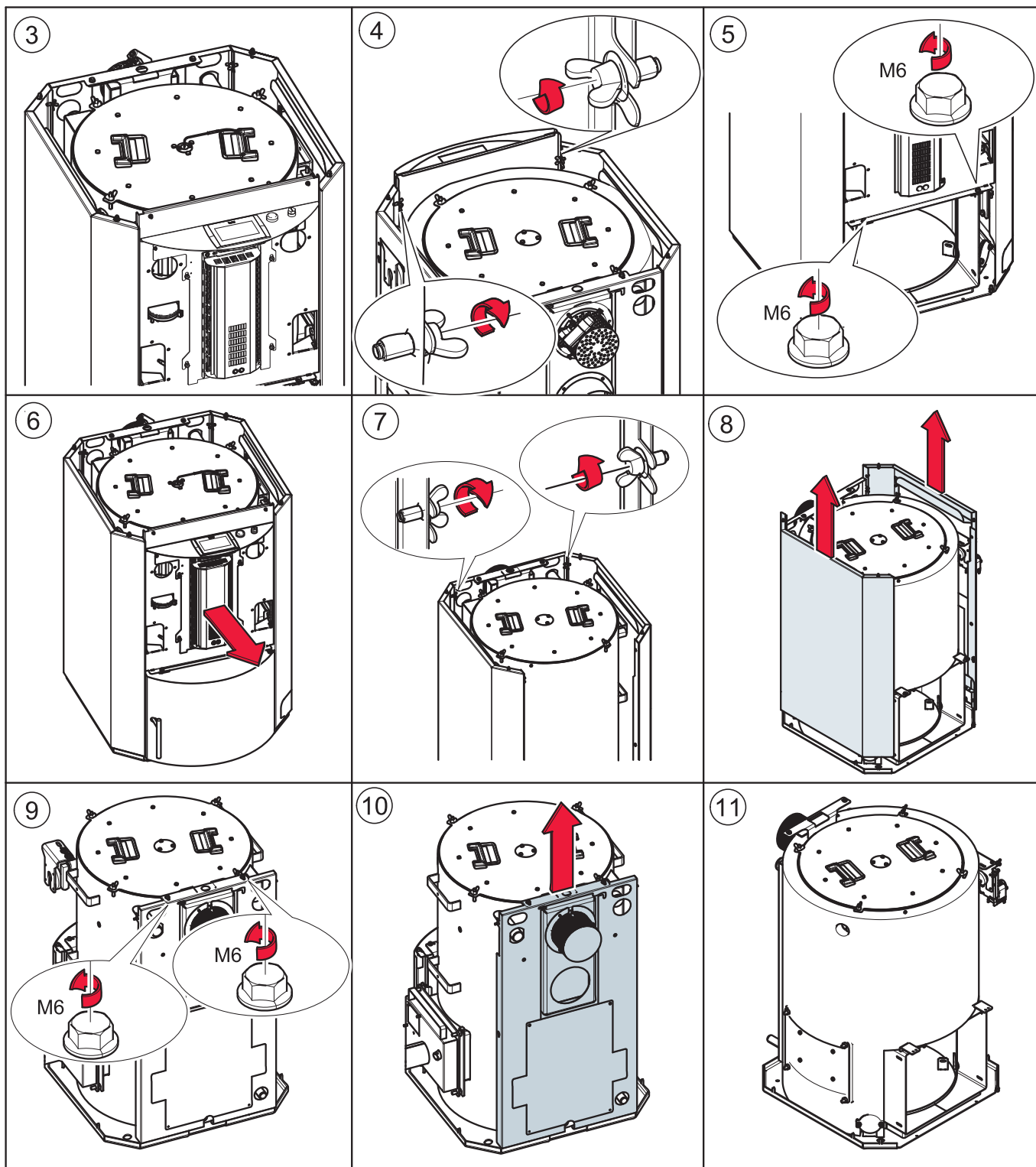


2



7.4.5 Dismantling the boiler casing





8 External de-ashing system

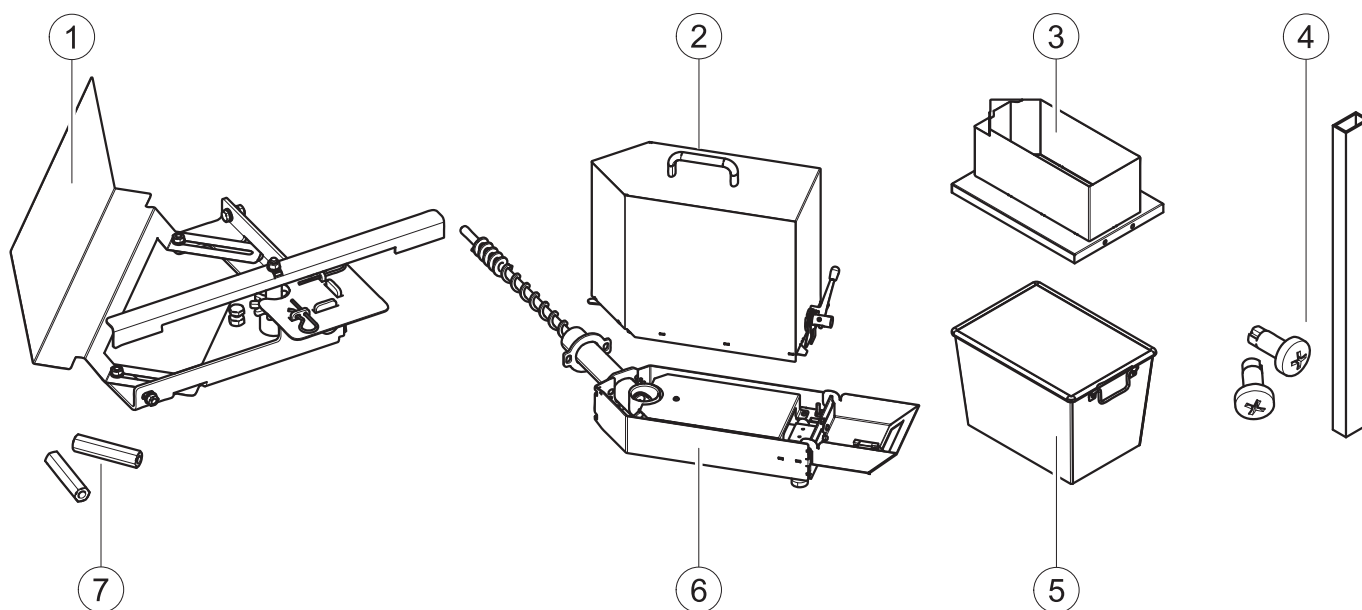
ÖkoFEN offers an optional automatic external de-ashing system.

1. Description of de-ashing system
2. How the de-ashing system works
3. Installing the de-ashing system
4. Emptying the de-ashing system

8.1 Description of de-ashing system

The de-ashing system compresses the ash and conveys it from the ash chamber into the ash box. The ash box enables the ash to be easily disposed off without creating dust.

The de-ashing system consists of:



For transport, all components for the de-ashing system are packaged in one box:

1	Turnstile complete with agitator, door plate and mounting bolts	5	Ash container
2	Ash box with single-hand lever	6	De-ashing system sub-assembly with extractor auger and connection cable
3	Mounting frame	7	Extended nuts to secure the sub-assembly to the pellet boiler
4	Cable duct with mounting bolts	8	1 package of bio-bags

Note:

All components for the de-ashing system are packaged in a separate box which is shipped together with the boiler. Open the box and check that all parts are available before starting work.

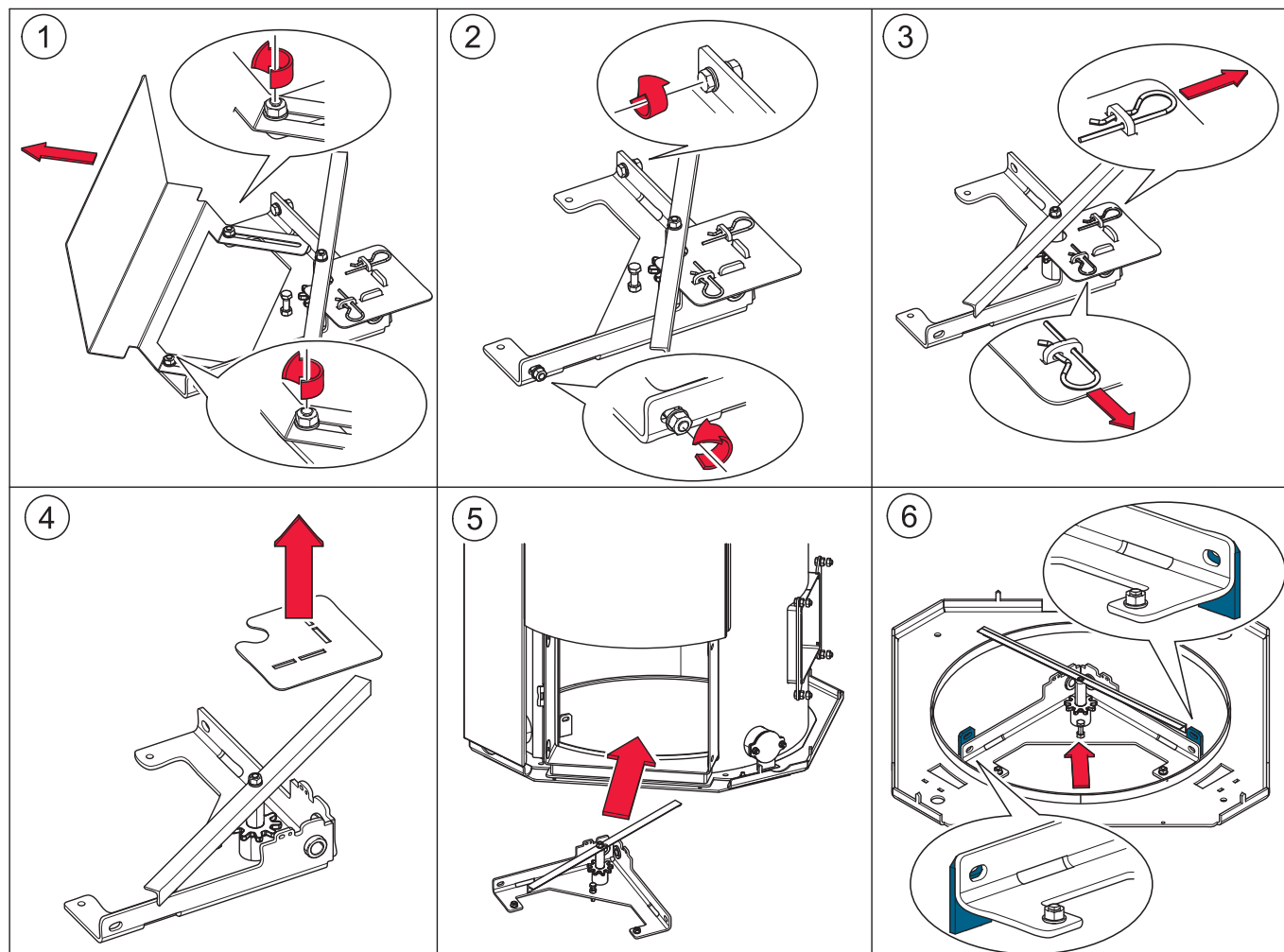
8.2 Installing the de-ashing system

ÖkoFEN recommends installing the de-ashing system after the boiler has been brought in, but before the boiler casing is fitted. The de-ashing system has to be installed before the burner casing is assembled.

Installation of the de-ashing system is divided into the following steps:

1. Bringing in and installing the boiler on the base plate
2. Installing the de-ashing auger, fitting the sub-assembly and mounting the door plate
3. Installing the burner side casing with cut-out and electrical connection
4. Assembling the pellet boiler and activating the ash box

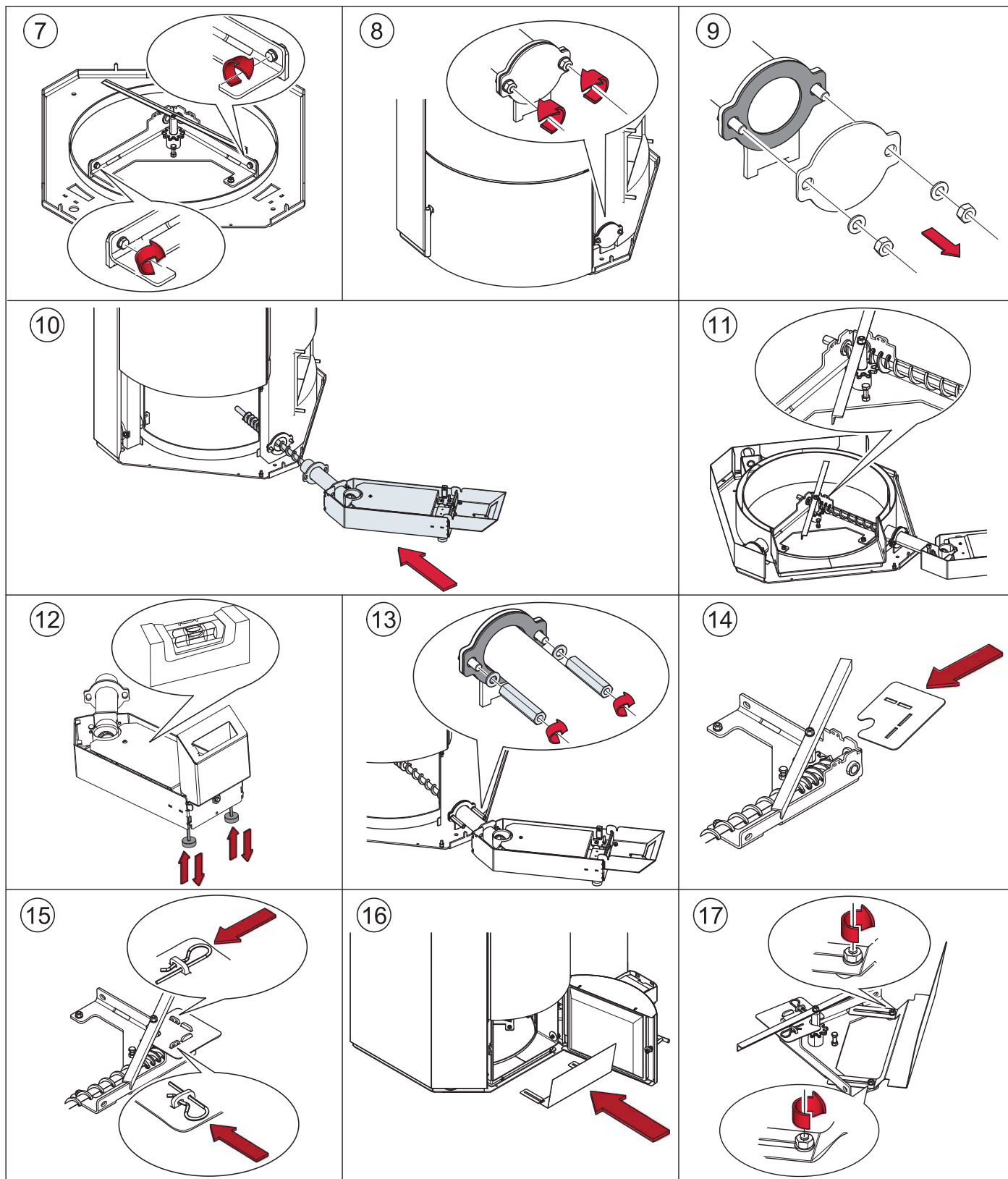
8.2.1 Bringing in and installing the boiler on the base plate



Note:

5: Replace the screw with the base in a horizontal position.

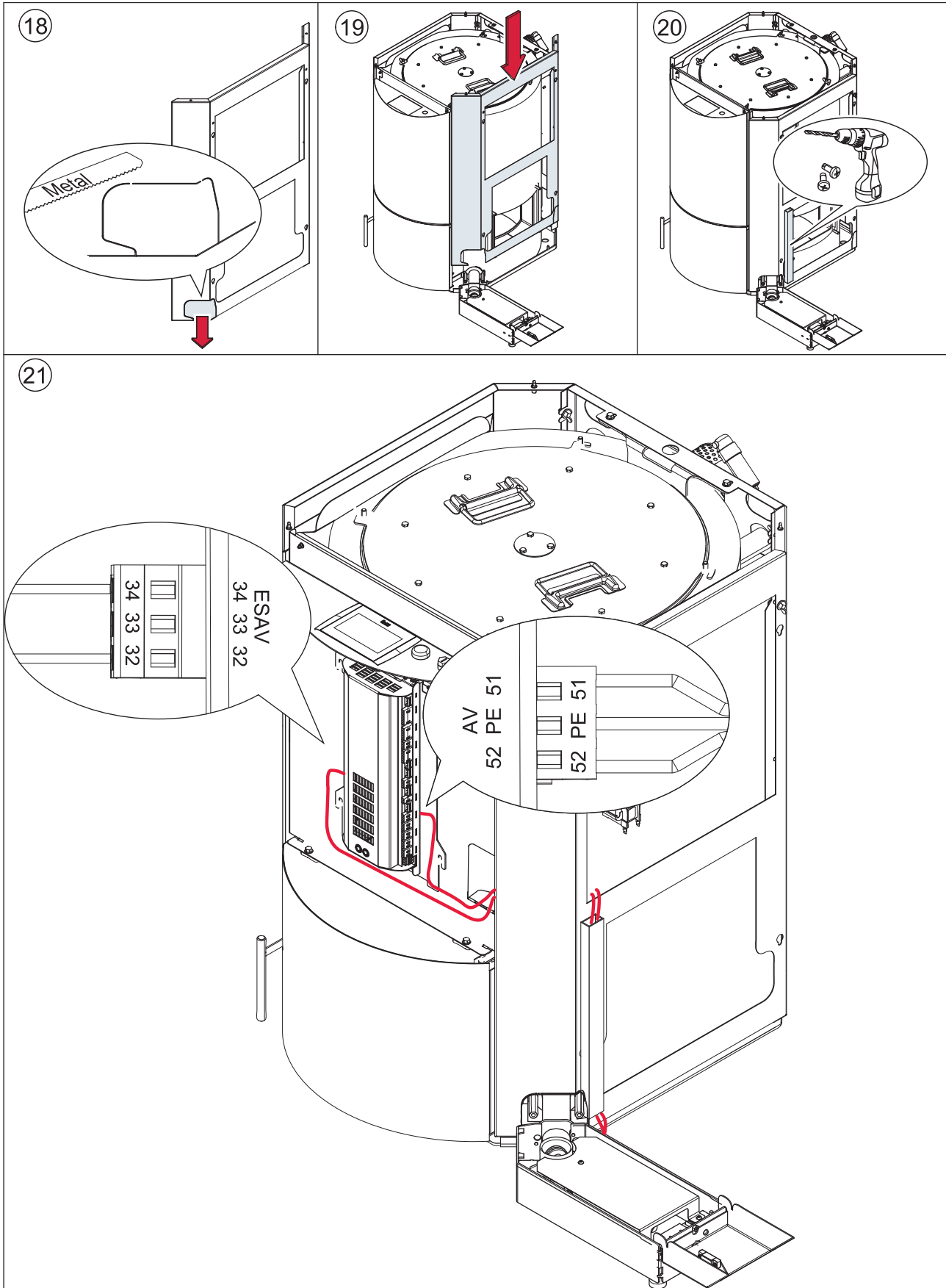
8.2.2 Installing the ash auger, fitting the sub-assembly and mounting the door plate



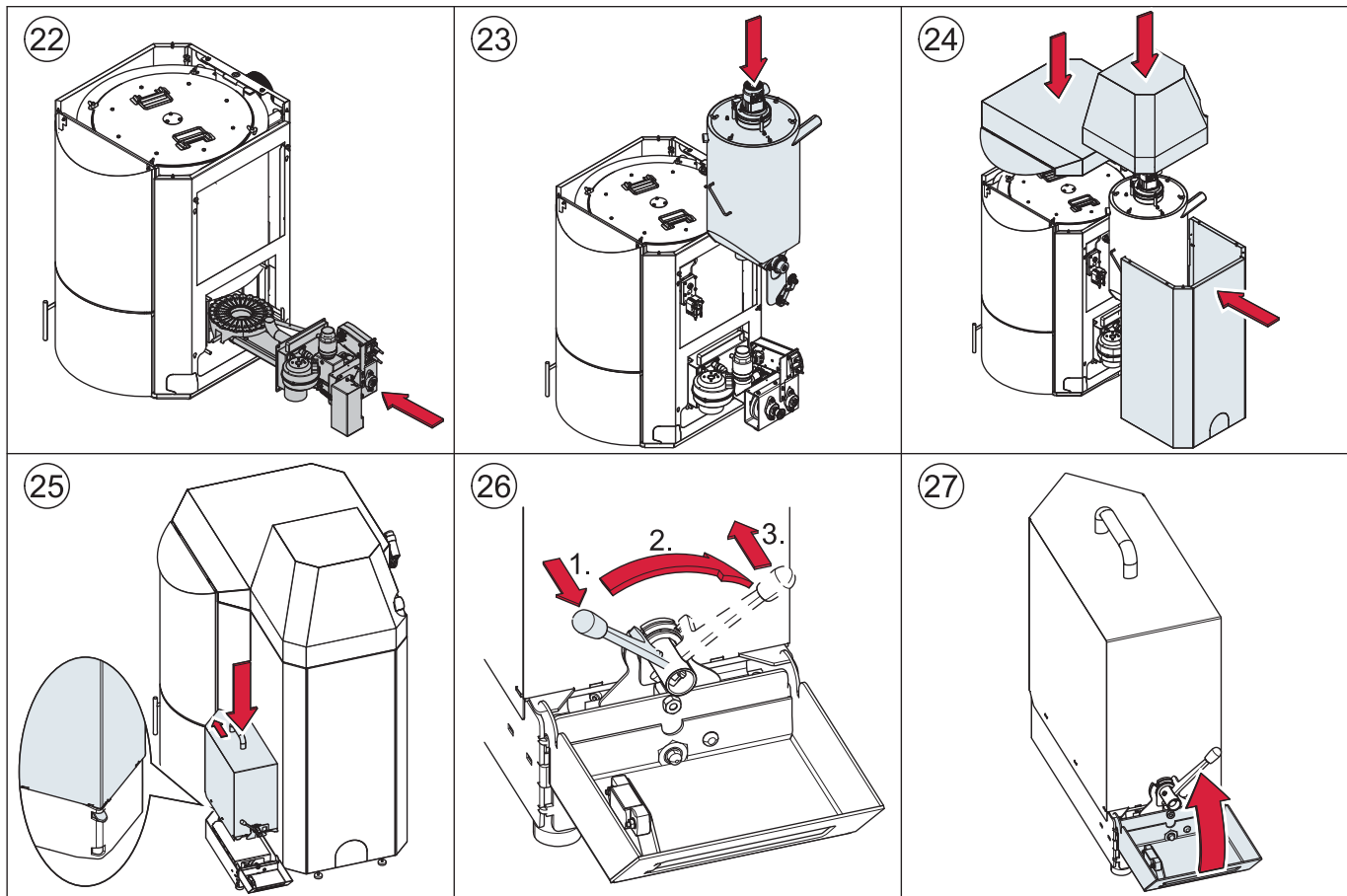
Note:

The ash auger engage with the gear must be so that the agitator moves freely.

8.2.3 Installing the burner side casing with cut-out and electrical connection



8.2.4 Assembling the pellet boiler and activating the ash box



Note:
Refer to the section on bringing the pellet boiler into the boiler room for detailed instructions on assembling the hopper, burner and casing components.

Activating the ash box

1. Switch the boiler ON
2. In the menu Pellematic, after entering the code, you can activate the function **Ashbox**.
3. Set up the number from **0** to **1**
4. Ash box is now active

9 Connecting up the hydraulics

The hydraulic connections are located on the rear side of the boiler.



DANGER

Risk of explosion

You may connect up the pellet boiler only after an authorised plumber has installed the hydraulic system completely with all safety devices.

NOTICE

Water damage, damage to pellet boiler

Only an authorised plumber may connect up hydraulics on the pellet boiler. Check the hydraulic system for leaks before starting up.

1. Return water temperature control

The return water temperature control is already integrated into the boiler. You do not need to make any adjustments to this.

2. Hydraulic schematics

Always refer to the ÖkoFEN hydraulic schematics when connecting up the pellet boiler. The ÖkoFEN hydraulic schematics are available from your ÖkoFEN sales partner or from the ÖkoFEN website.

3. Connections

The connections between the pellet boiler and the hydraulic system must be disconnectable.

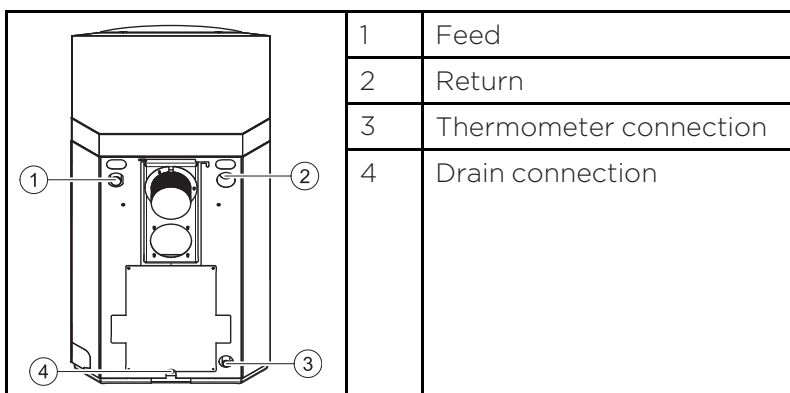
4. Drain connection

When you install the pellet boiler, remove the plug from the ENTLEERUNG connection and fit a 1/2" diameter shut-off valve.

5. Thermometer connection

Installing a thermometer (submersion sleeve 100mm long) enables you to measure the temperature of the return water after the return water temperature control.

Whether this is installed or not, after setting up the pellet boiler you need to remove the cap and fit a 1/2" diameter closure plug.



10 Connecting up to the power supply

10.1 Plugs on the boiler control unit

The designation of the plugs must correspond with the labeling of plug-in positions.

Designation of plug-in position		Voltage	Name of sensors, motors and pumps
X1A	3 2 GND 1	24 Volt	Operating display
X1B	3 2 GND 1	24 Volt	Heating controller (BUS)
X2	5 4	24 Volt	Power supply display
R1	46 45	24 Volt	Not used
R2	44 43	24 Volt	Not used
AF	42 41	24 Volt	Not used
KF	8 9	24 Volt	Boiler sensor
UP	2 3 4	24 Volt	Negative draft measuring
AE2	5 6 7	24 Volt	Level detection system
AE1	10 9 8	24 Volt	Not used
FRT	12 13	24 Volt	Combustion chamber temperature sensor
RGF	14 15	24 Volt	Flue gas temperature sensor (optional)
PWM	16 17	24 Volt	PWM for speed controlled high-efficiency pump
Analog IN	18 19	24 Volt	Not used
BR1	7 8	24 Volt	Burner contact
AK	11 12	24 Volt	Existing boiler (optional)
ESAV	32 33 34	24 Volt	End switch ash box
DE 1	37 36 35	24 Volt	Not used
DE 2	40 39 38	24 Volt	Not used
KAPZW	26 25 24	24 Volt	Capacitive sensor – hopper
KAPRA	5 4 3	24 Volt	Capacitive sensor – burner
BSK	6 5 4 3 2 1	24 Volt	Flame return gate
X21	PE L N	230 Volt	Power supply
VAK	56 PE 55	230 Volt	Vacuum turbine
ZUEND	N PE 22	230 Volt	Ignition
AV	52 PE 51	230 Volt	Motor ashbox
RES 2	54 PE 53	230 Volt	Not used
MA	48 PE 47	230 Volt	Magnetic valve (Cleaning nozzle, heat exchanger)
RM	15 PE N	230 Volt	Motor boiler cleaning device
SM	19 20	230 Volt	Relay fault signal (optional)
SZ	17 PE N	230 Volt	Flue gas fan
UW	13 PE N	230 Volt	Boiler controlled pump
STB	17 PE 19	230 Volt	Safety temperature sensor
NOT	41 43	230 Volt	Emergency stop heating
RA1	N PE 14 15 16	230 Volt	Fuel transport system

RES1	50 PE 49	230 Volt	Motor hopper - PES 36-56 only
ZW	N PE 26 25 24	230 Volt	Vibration motor
ES	1 2 3 N PE 6	230 Volt	Burner motor
LUFT	N PE 11	230 Volt	Burner fan

10.2 Cable routing

Reroute cables after dismantling the casing or other system components.



DANGER

Risk of electric shock

Switch off the system before performing work on the boiler.

Note the following points to ensure the cables are routed securely:

Cables must not be routed:

- over moving parts
- over hot parts
- over sharp edges

Cables must be:

- routed in the cable ducts provided
- through cable leadthroughs
- tied together
- secured with cable ties at the points provided
- Power cables must be routed in the right-hand duct and sensor cables must be routed in the left-hand duct.



DANGER

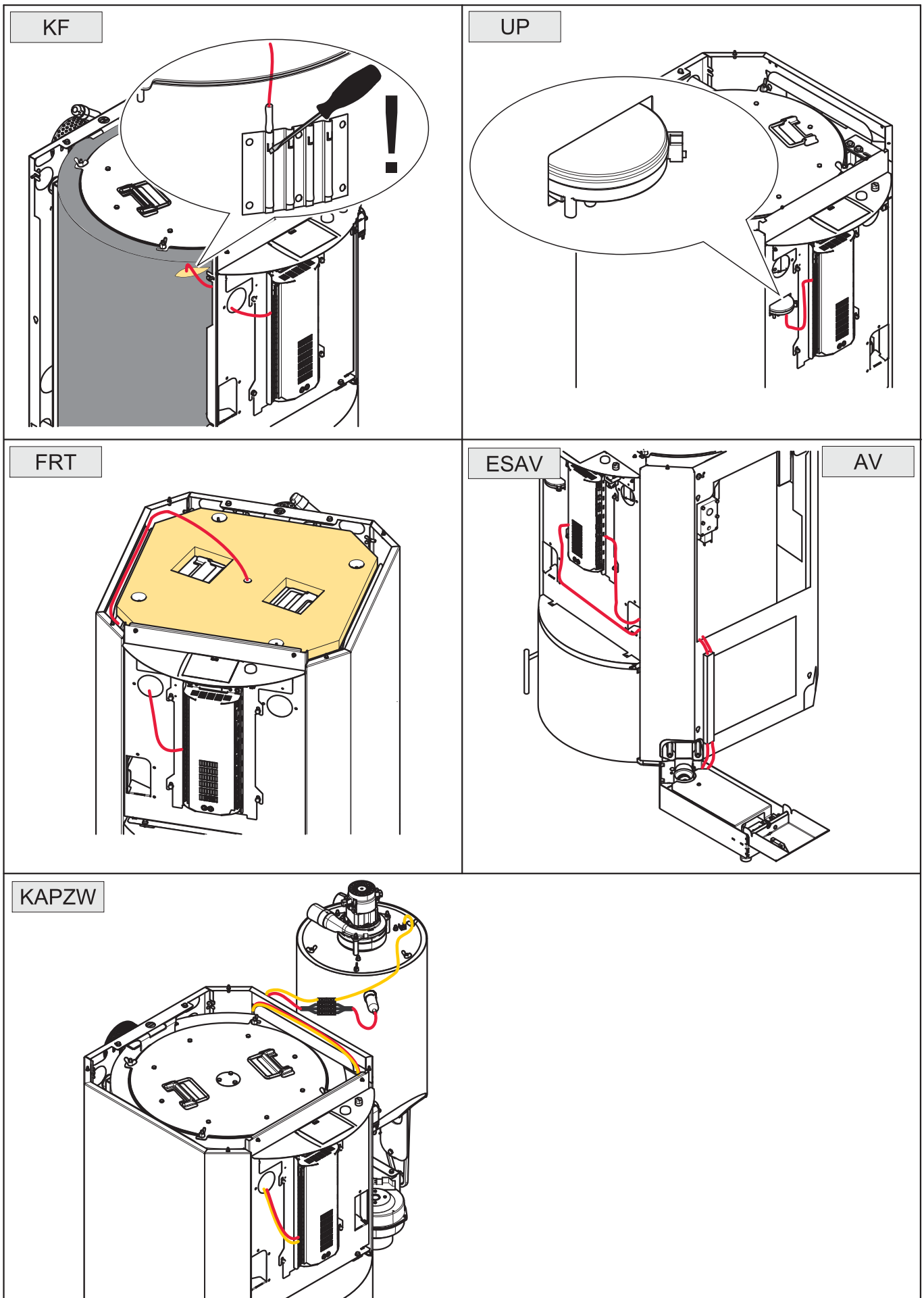
Risk of electric shock

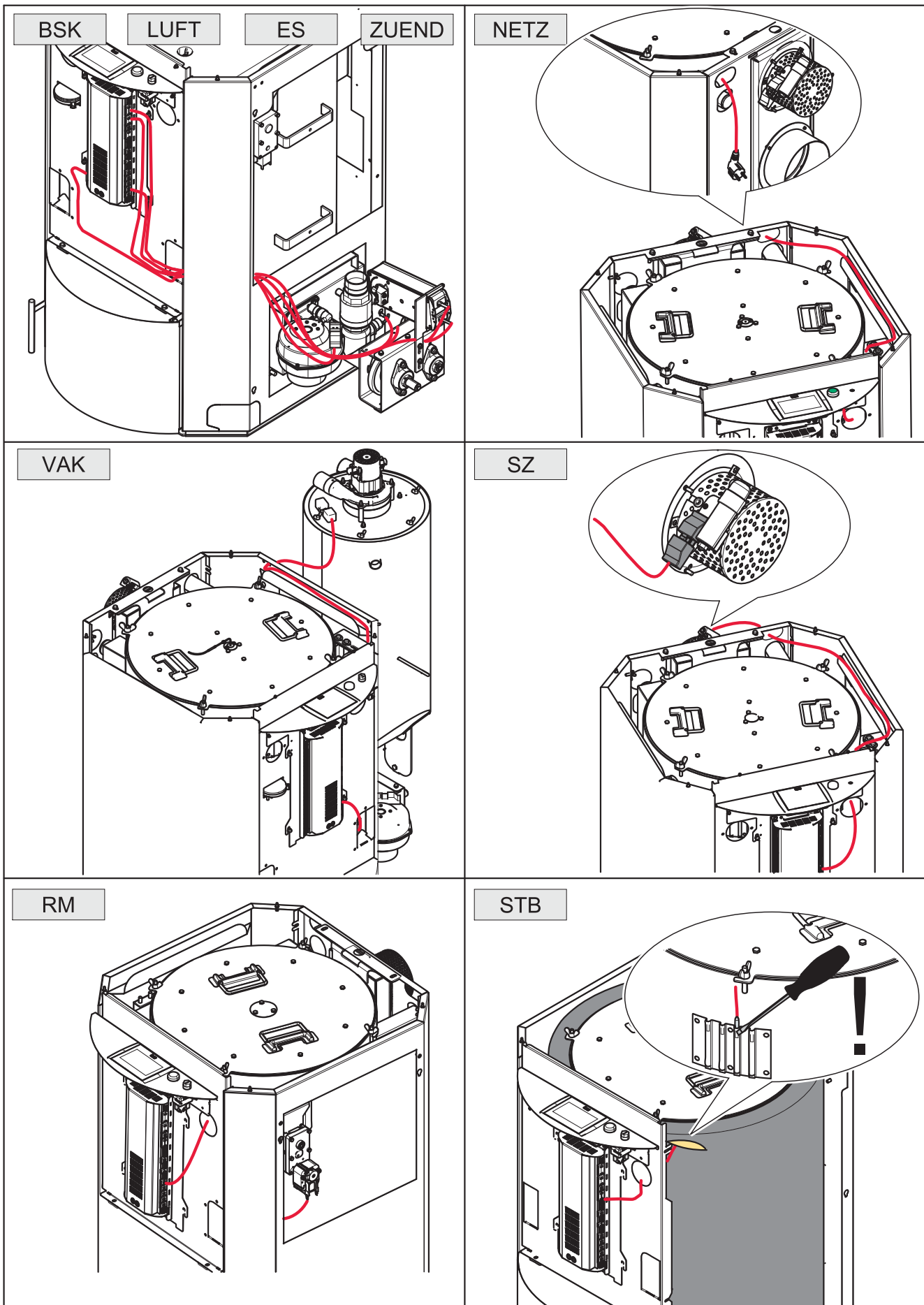
Check cables for damage.
Replace any cables that are damaged.

NOTICE

Damage to the boiler controller


Before fitting the casing components, make sure that all cables are connected to the correct points on the controller! Failure to do so can lead to damage to the controller, and such damage is not covered by warranty!



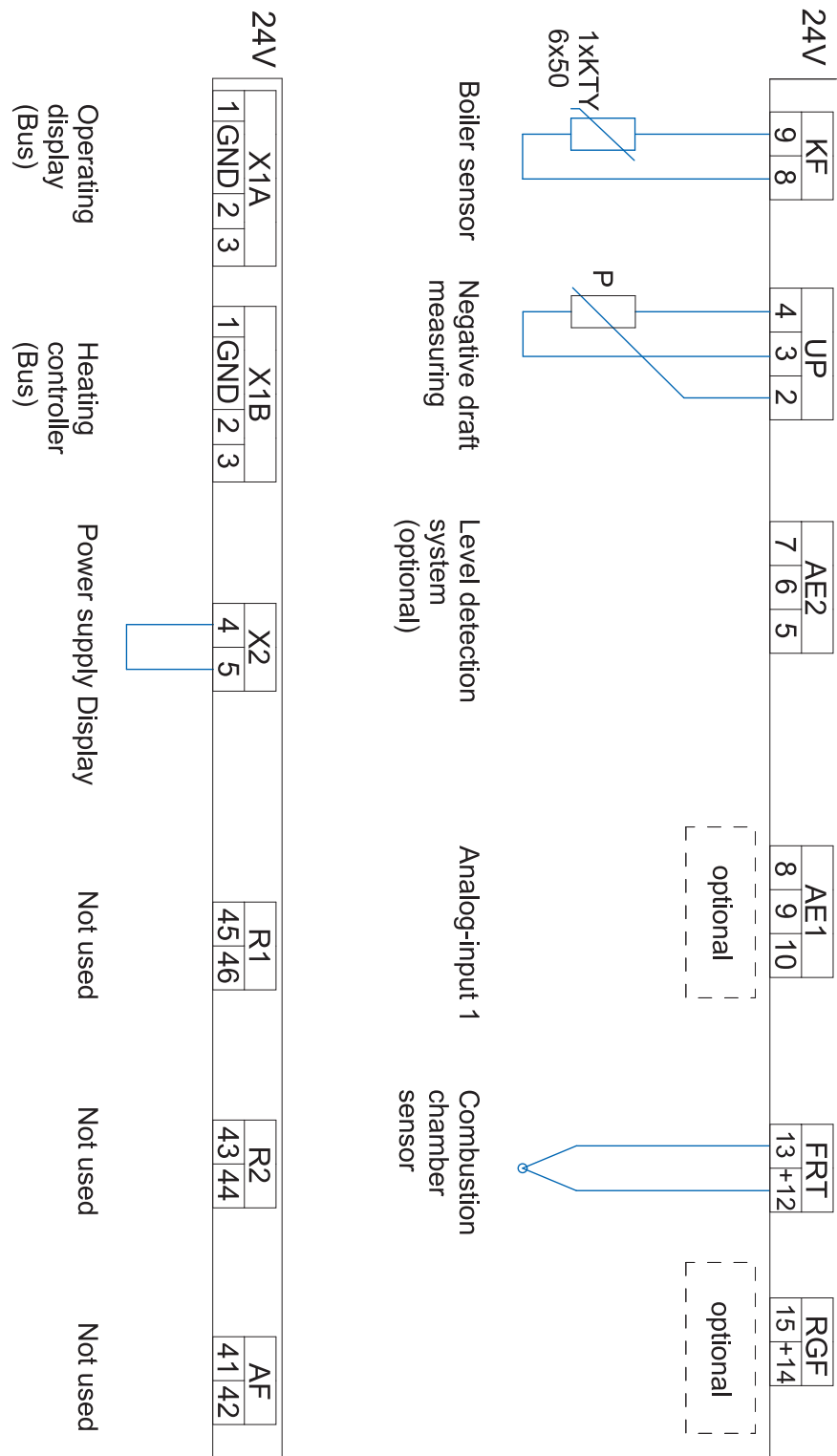


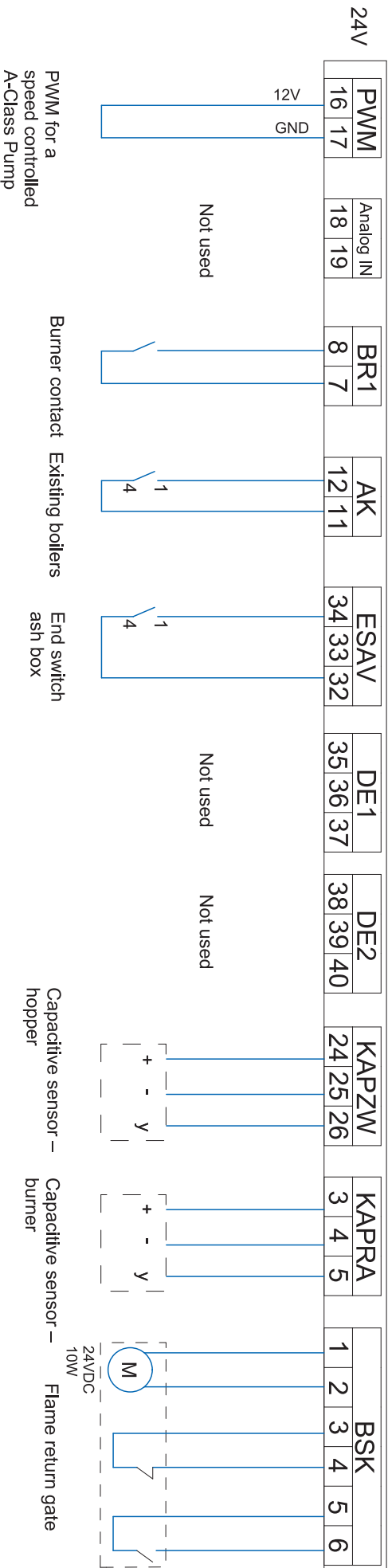
10.3 Wiring diagrams

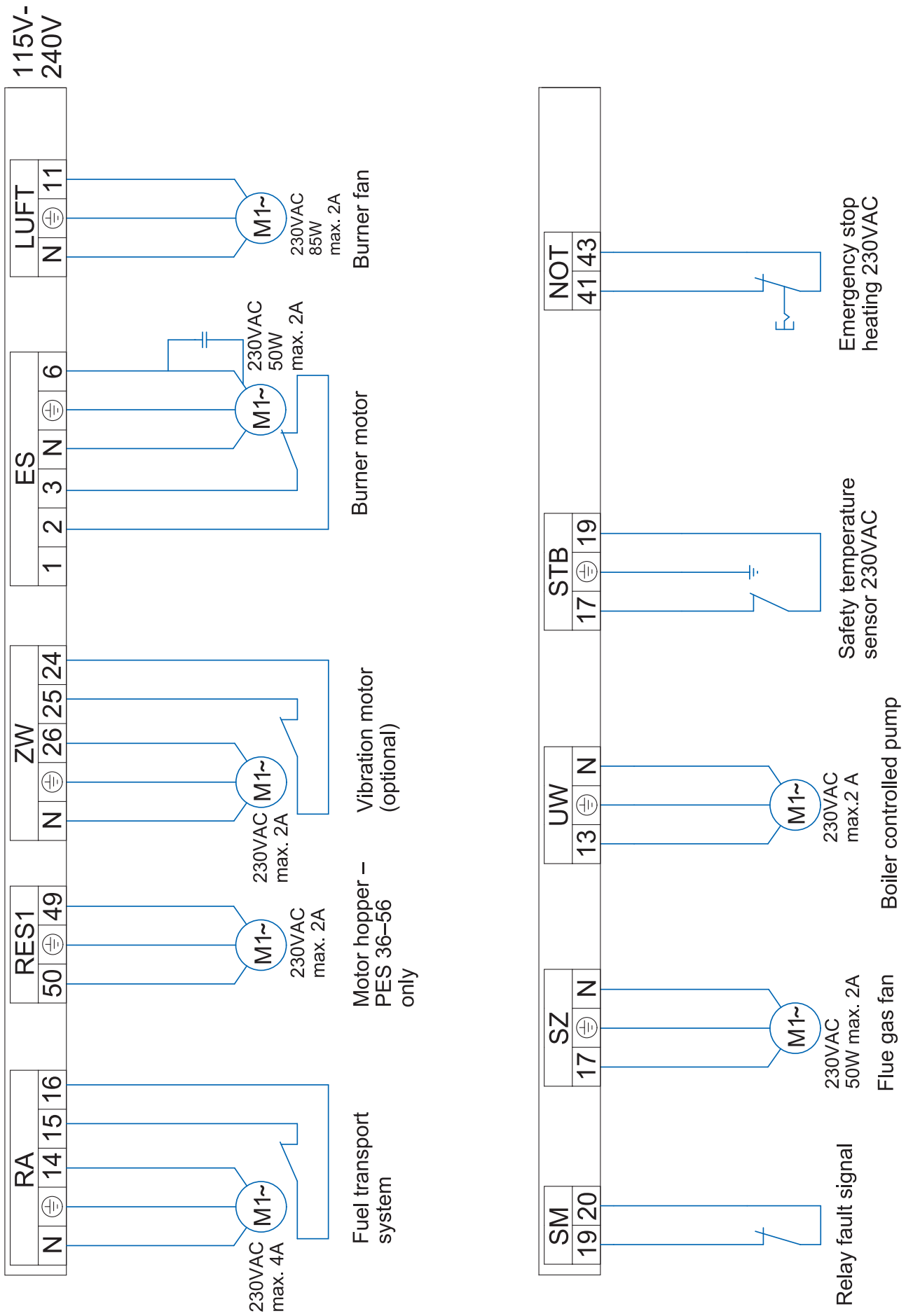
The wiring diagrams for the boiler control unit provide detailed technical information for certified installers. Only certified installers or electricians under the direction of a certified installer may connect to the controller.

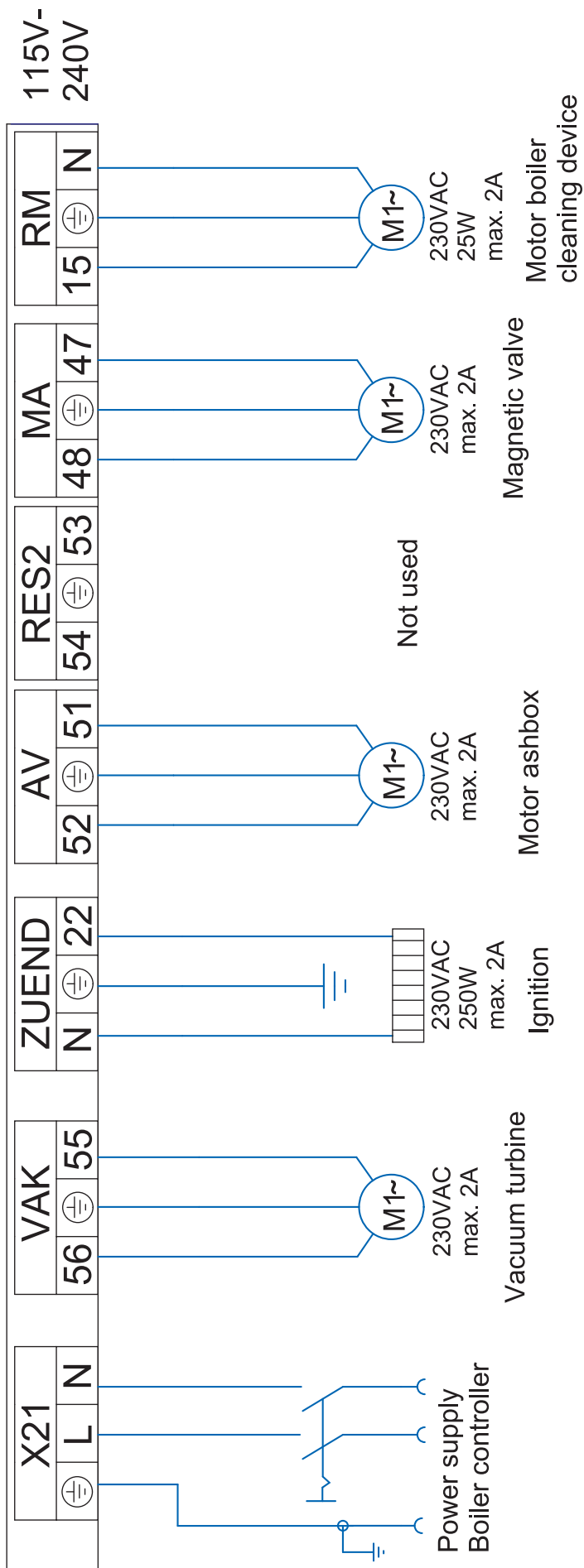

DANGER

Risk of electric shock
 Only an authorised installer may connect the pellet boiler to the power supply.
 Always disconnect / de-energize the power supply before working on the boiler.









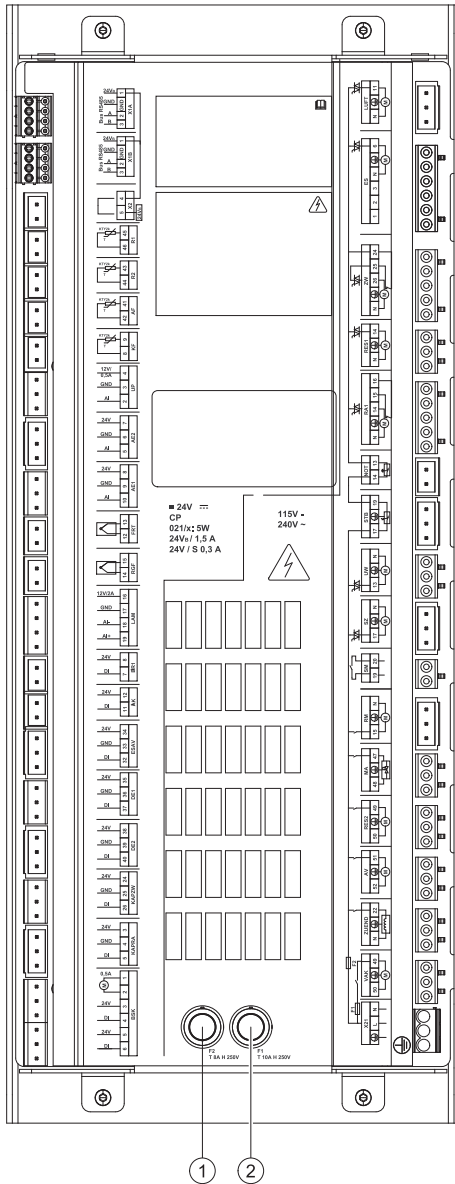
10.4 Fuses - boiler controller

The control unit is protected against short circuits by fuses which are in the control panel (under the front boiler panel). There are also fuses in the terminal box at the rear of the boiler. At the rear panel, there are 4 fuses. Two 6.3 amp for outputs there, and two 10 amp also for the main controller.

NOTICE

Damage of property

Should it become necessary to replace a fuse, it is critically important to replace the fuse only with a fuse having the same exact ratings.



1	F1: Fuse T8A
2	F2: Fuse T10A

10.5 Operating the Pellematic

The operation of the system is described in the **manual for the End User**.

11 Starting up for the first time

After bringing in the boiler, connecting up the hydraulics and power supply, the unit can be started up for the first time.

NOTICE

Density of the combustion chamber

To ensure a trouble-free operation, the density of the combustion chamber must be given.

Note:

The unit must be started up for the first time by an authorised ÖkoFEN service technician.

Before starting up the pellet boiler, the following settings must be made in the sequence specified below:

1. Adjust power rating
2. Settings in the boiler controller
3. Output test - test all motors
4. Settings in heating controller (if installed)
5. Start the pellet boiler

Note:

Use the checklist enclosed to document the start-up procedure.

NOTICE

Material Damage

The allowed operation temperature of the boiler controller is between 5 and 50°C.

11.1 Adjusting power rating

On ÖkoFEN pellet boilers the effective heat exchanger area can be changed within an assembly group. This involves opening or closing the heat exchanger tubes. The power rating of the pellet boiler is adjusted as a result. ÖkoFEN supplies the pellet boilers in one type group with the power rating shown below. If the condition as shipped is different from the power rating on the data plate supplied, then the service technician must adjust the power rating before starting up for the first time.

11.1.1 Installing the turbulators and closure plugs

The heat exchanger in the Pellematic boiler has between 12 and 36 heat exchanger tubes, depending on the size of the boiler. Springs are installed inside the heat exchanger tubes to clean the tubes as well as act as turbulators.

Increasing the boiler power rating

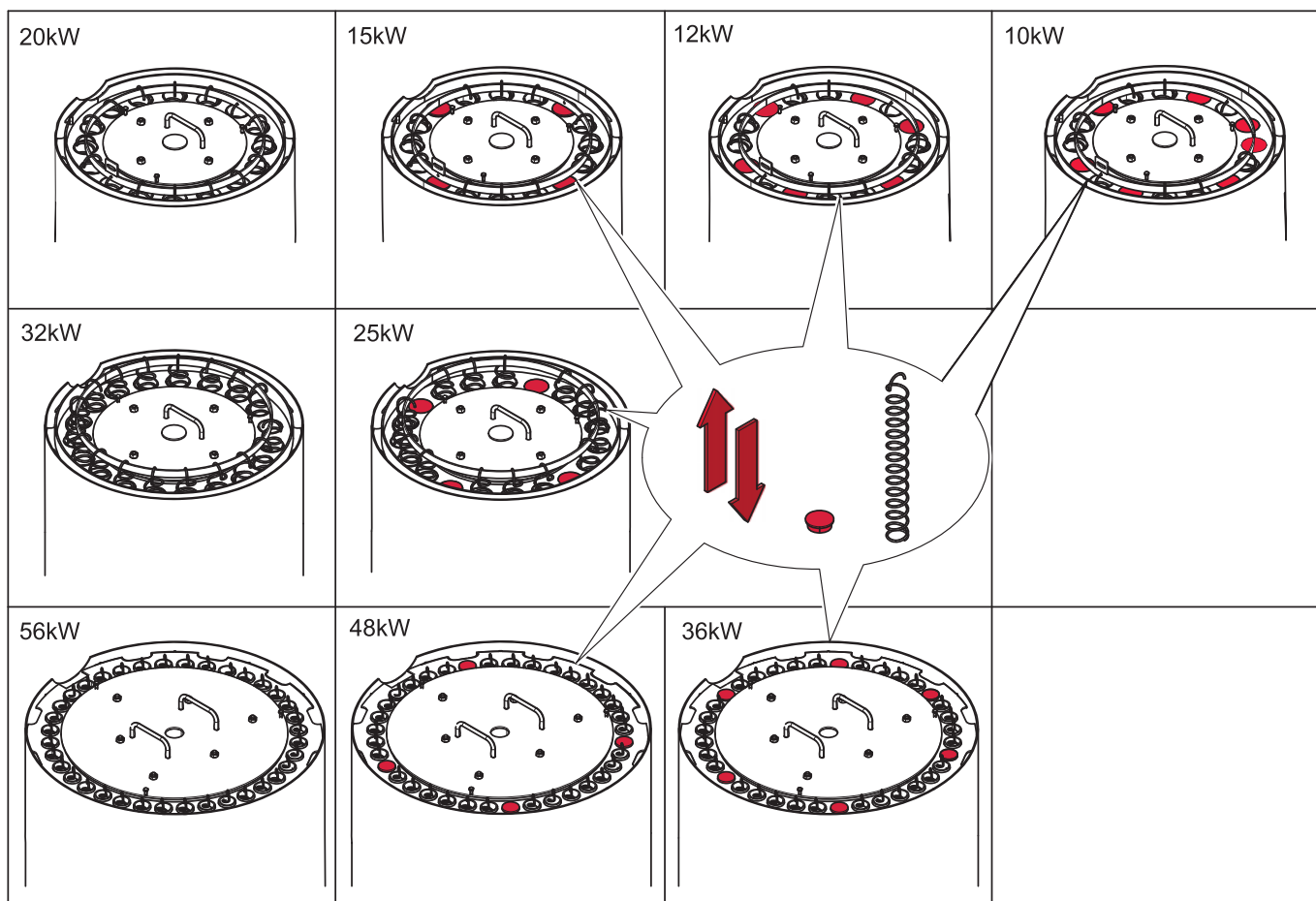
1. Remove the closure plugs from the ends of the heat exchanger tubes.
2. Insert the turbulators supplied into the heat exchanger tubes.
3. Hook the turbulators onto the ring of the cleaning system.

Reducing the boiler power rating

1. Unhook the turbulators from the ring of the cleaning system.
2. Remove the cleaning springs/turbulators from the heat exchanger tubes.
3. Close off the heat exchanger tubes using the closure plugs supplied.

Number of cleaning springs (turbulators) to be removed/installed:

Boiler power ratings as per data plate	Factory-set boiler power rating	
10 kW	15 kW	Remove 3 turbulators
12 kW	15 kW	Remove 2 turbulators
15 kW	15 kW	No adjustment required
20 kW	15 kW	Insert another 4 turbulators
25 kW	25 kW	No adjustment required
32 kW	25 kW	Insert another 4 turbulators
36 kW	36 kW	No adjustment required
48 kW	36 kW	Insert another 2 turbulators
56 kW	36 kW	Insert another 6 turbulators



Only the adjustment of the system by an authorized ÖkoFEN service technician can guarantee an optimal level of efficiency and with that a low-emission operation.

Starting up for the first time has to be performed only by an authorized ÖkoFEN service technician.

The single steps for the first start-up are described in the Manual for the Service technician.

12 Appendix

12.1 Checklist for checking the heating system

The checklist is intended to help authorised specialists perform and document a comprehensive check on the heating system.

Name and adress of the customer		Heating device	
Name:		Type of boiler:	
Street:		Rated power:	
Place:		Year of build:	
Name and adress of the seller		Manufacturer's serial number:	
Name:		Type of heating controller:	
Street:		Type of accumulator:	
Place:		Solar device:	

NOTICE

Damage to property

Use the checklist to check the heating system before starting up for the first time.

CHECKLIST		Yes	Comment
Textile tank			
Textile tank	Are the struts mounted?		
	Are all stayers straightened vertical?		
Delivery unit	Is the slot for the emergency gate valve closed?		
Filling coupling	Are the filling couplings correctly installed?		
	Closure plug outside: Does the closure plugs have an aeration opening?		
	Closure plug inside: Are the closure plugs airtight?		
	Are the safety warnings placed? (Caution - Switch off the heating system before entering)		
	Are the couplings correctly grounded?		
Aeration	Exists the required aeration opening of 170 cm ² for the storage room?		
Caution label	Is the caution label "Wood pellets storage room" placed on the door to the storage room?		
If auger delivery system is installed			
Drive unit	Is the direction of rotation correct?		
	Is a demounting possible?		
Spiral tube	Is the pitch to the burner > 45°?		
Sound insulation	Is the rock wool insulation fix at the wall duct?		
Pellet boiler			
Adjusting power rating	Is the power rating correctly adjusted?		
Burner plate	Is the screw fixing the burner plate, tightened?		

CHECKLIST		Yes	Comment
Flame tube	Is the flame tube placed correctly?		
Combustion chamber cover	Are the adjusting screws for the increasing of the flue gas temperature adjusted correctly?		
Flue gas connection	Is the connection line insulated? Is a chimney draft regulator implemented?		
Airation/boiler room	Exists the required aeration opening?		
Nameplate	Is the nameplate placed on the boiler?		
Electric installation and regulation			
Power supply	Check the electrical connection Check the dimensions of the fuses.		
Settings-Boiler control unit	Are the settings of the boiler control unit according to the installation manual?		
Settings-Heating controller	Set parameter in heating circuit program and domestic hot water program.		
Boiler sensor	Securing location and connection - see ch. Cable routing		
Hydraulic Connection			
Circuit pumps	Check the switch on temperature (min. 60°C)		
	Check the electrical connection.		
Boiler connection	Is the pellet boiler correctly connected (flow and return)?		
	Is the hydraulic system deaerated?		
	Is the system filled up with water? Check the pressure.		
Safety systems			
Fire prot. - ball valve	Check the function.		
Safety temp. sensor	Check the installation and explain the function. Securing location and connection - see ch. Cable routing		
Negativ draft control	Check the function.		
Safety valve	Is a safety valve installed?		
Emergency stop switch	Exists an emergency stop switch?		
Fire extinguisher	Exists a fire extinguisher?		
Instruction			
Heating-up	Explanation of functions, malfunctions and maintenance		
Operating manual	Explanation of the operating and maintenance regulations		
Maintenance contract	Notice to the legal regulations		

Date: _____

Signature authorized technician:

Signature customer:

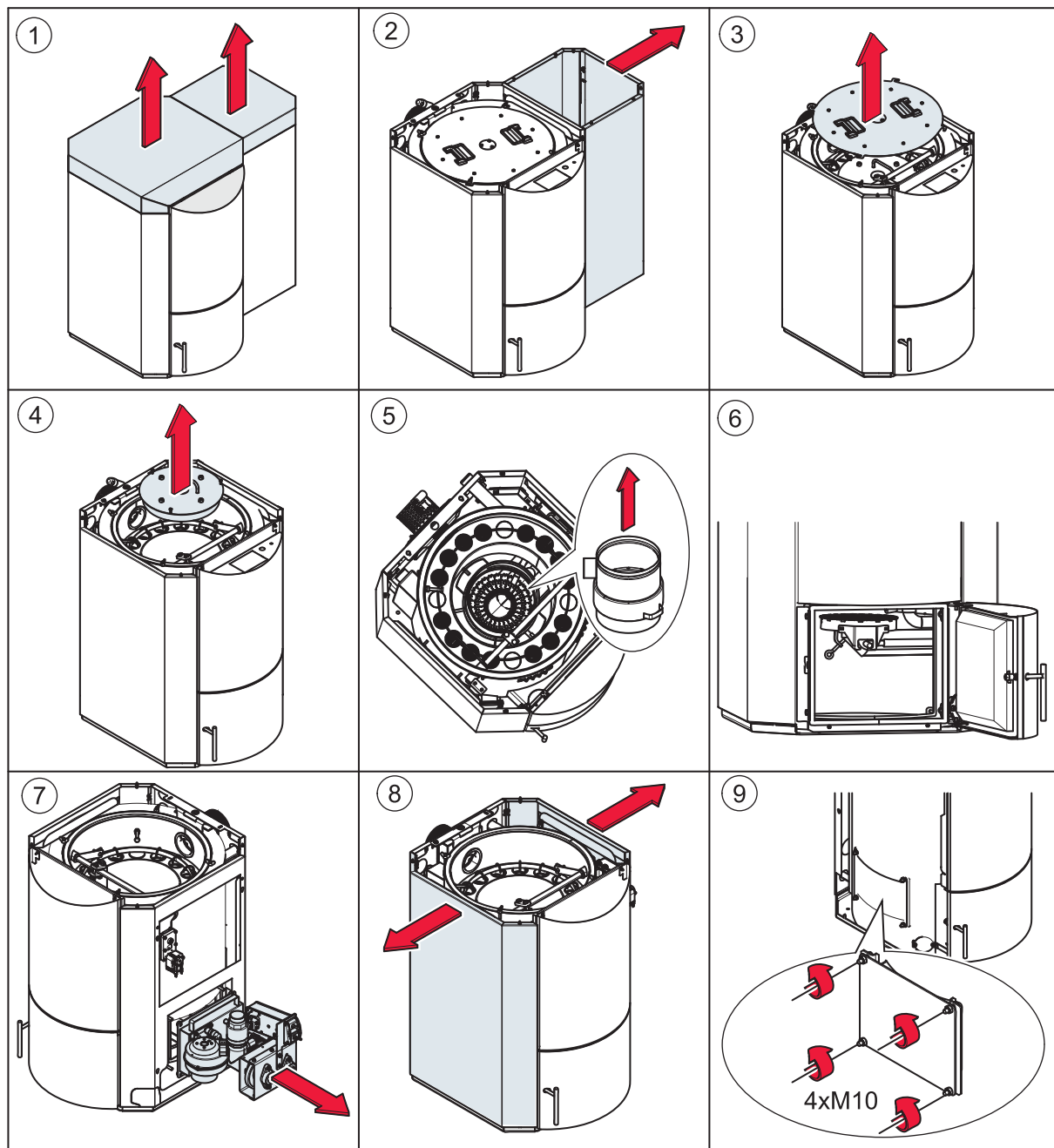
The customer confirms that he got enough information about operation and maintenance of the heating plant.

12.2 Modifying the burner

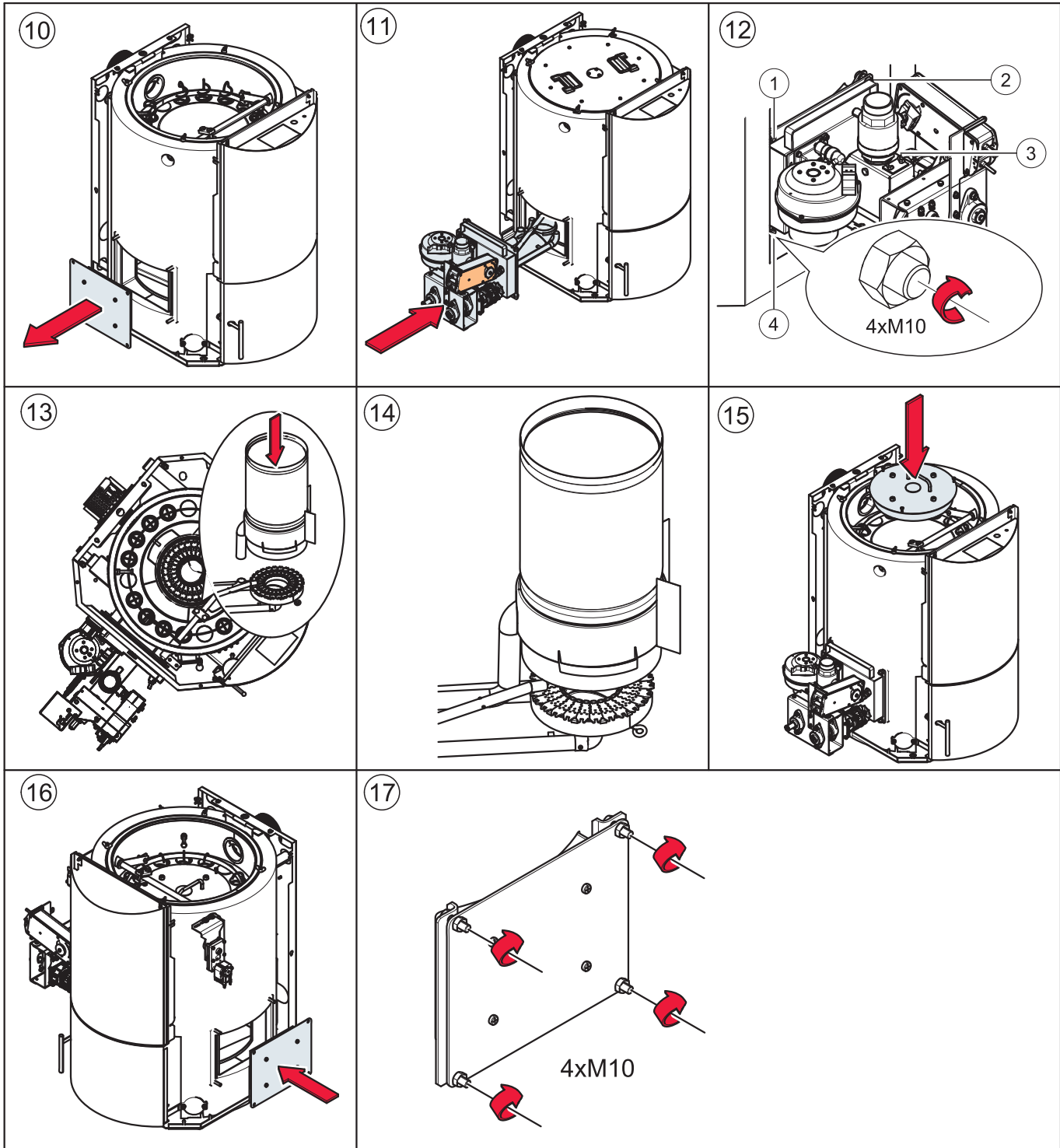
The pellet boiler is configured symmetrically. If required, you can remove the burner from the right-hand side (as shipped) and reinstall it on the left.

1. Dismantle the casing, hopper, combustion chamber lid, flame tube, burner and burner plug.
2. Modify the burner on the left.
3. Modify the cleaning system motor and off-set disc.
4. Change the direction of rotation of the cleaning motor.
5. Modify and re-assemble the cleaning system.
6. Route cables through cutouts to the boiler controller and connect up the plug.

12.2.1 Dismantling the casing, hopper, combustion chamber lid, flame tube, burner and burner plug



12.2.2 Modify the burner on the left



Note:

Do not tighten too firm, otherwise the dummy cover could become leaky.

12.2.3 Modifying the cleaning system motor and off-set disc

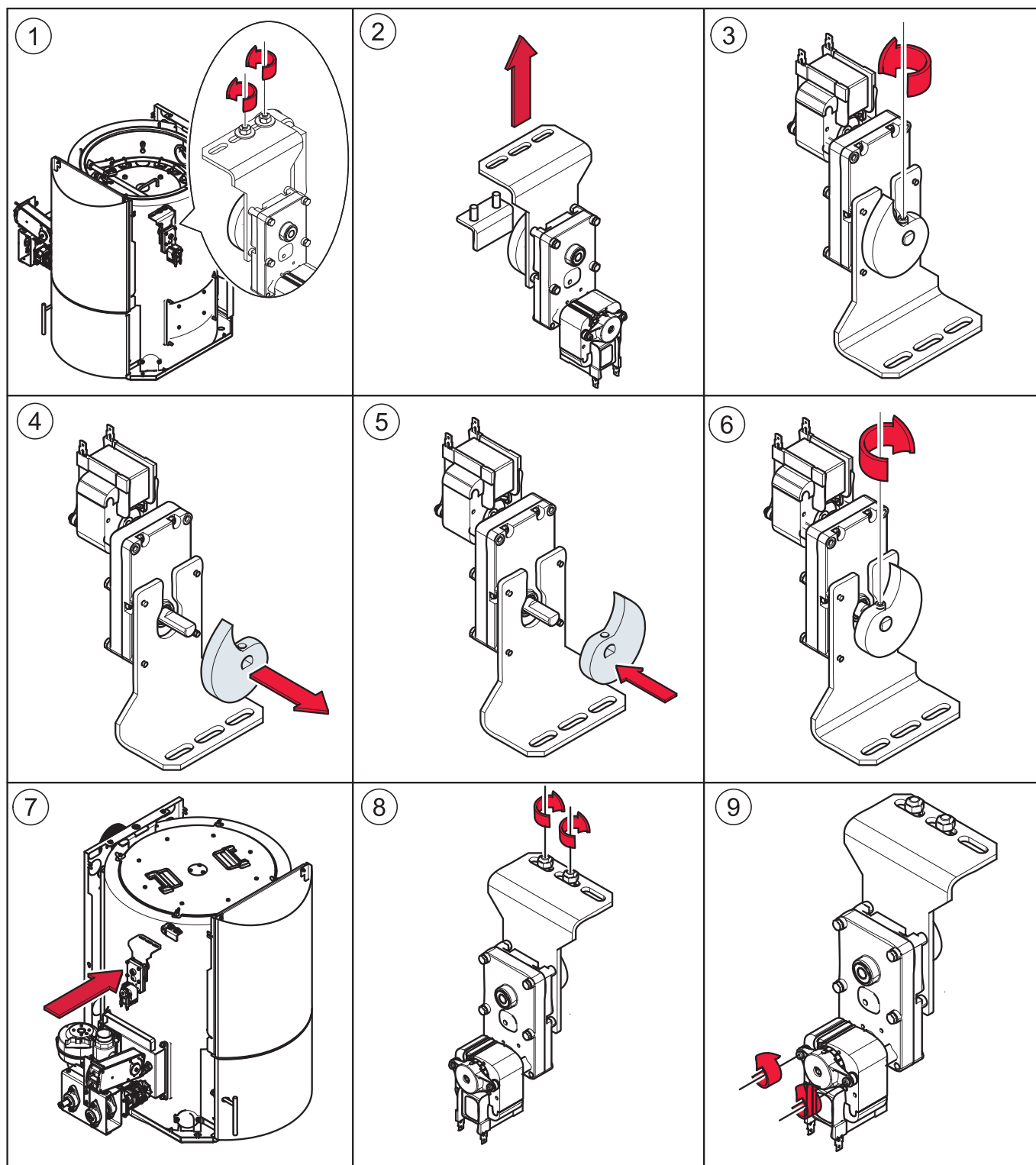
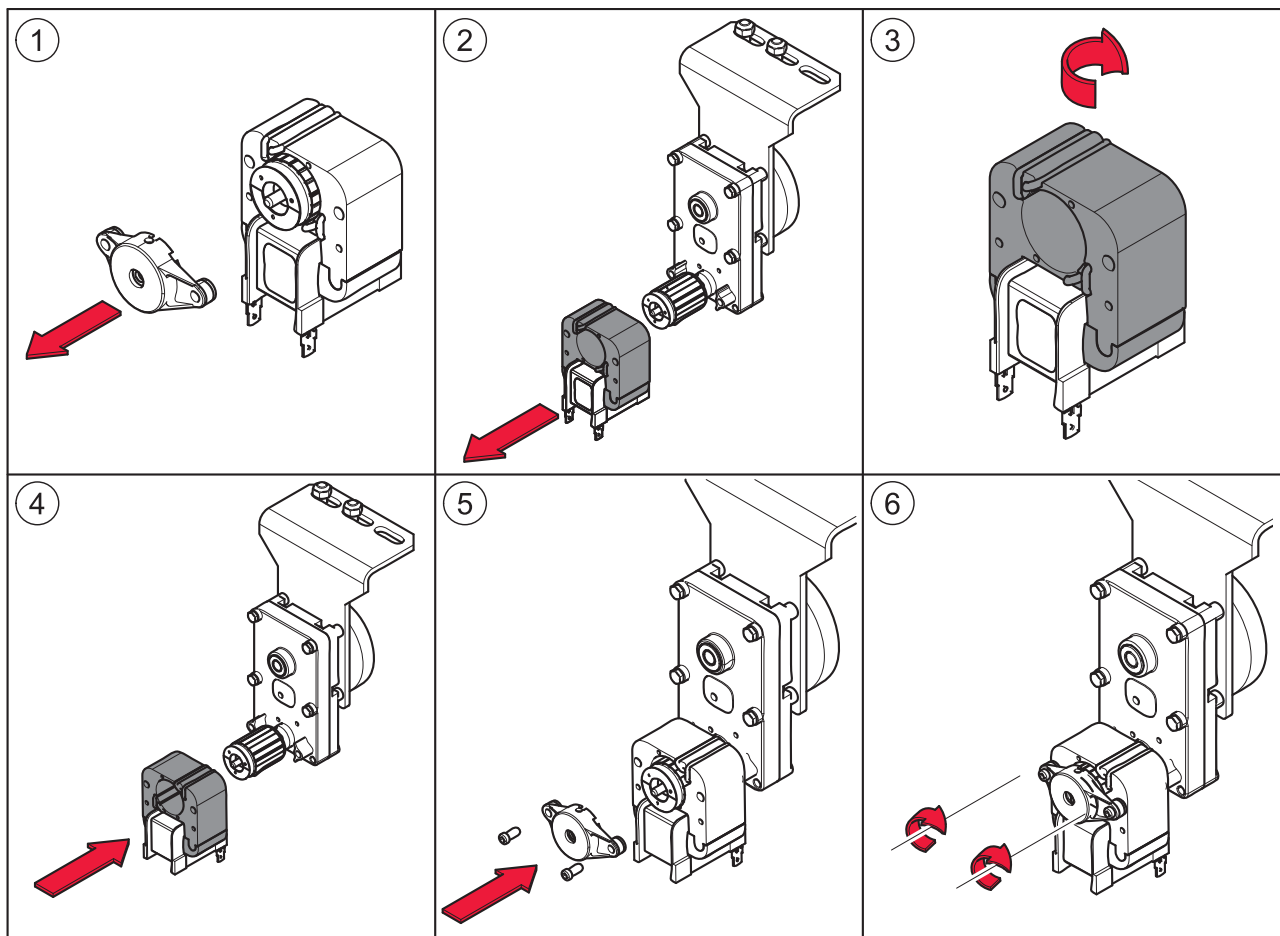


Figure 6: **Glue and tighten** the hex-socket nut to secure the off-set disc.

12.2.4 Changing the direction of rotation of the cleaning motor



12.2.5 Modifying and re-assembling the cleaning system

Setting up the cleaning system:

- Switch on the pellet boiler.
- Select "Output test" of the boiler controller for the **boiler cleaning motor**.
- Push the lever mechanism of the cleaning system against the cleaning shaft.
- Press the clip on the cleaning shaft against the off-set disc and switch on the cleaning motor.
- As soon as the off-set disc causes the clip to spring back, switch off the motor and tighten the shaft clamp as tight as possible.
- Use a lock nut to secure the shaft mounting.

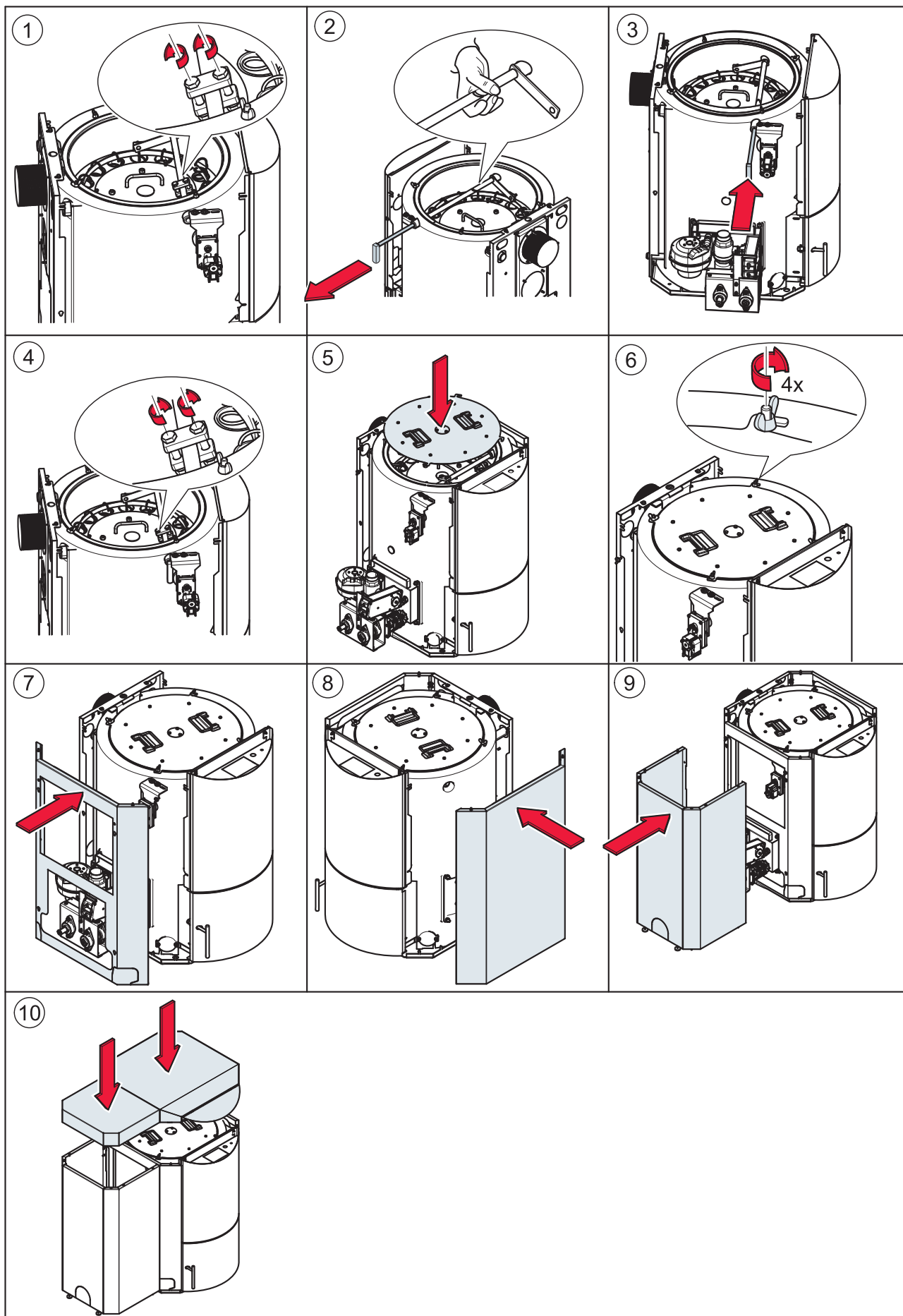


Fine adjustment:

- If the cleaning system does not lift high enough: loosen the mounting angle, push forward in the slots and tighten again.
- If the cleaning system stops at the limit bolt: loosen the mounting angle, push back in the slots and tighten again.

Note:

The motor mounting must not be able to move and the motor must rotate easily.

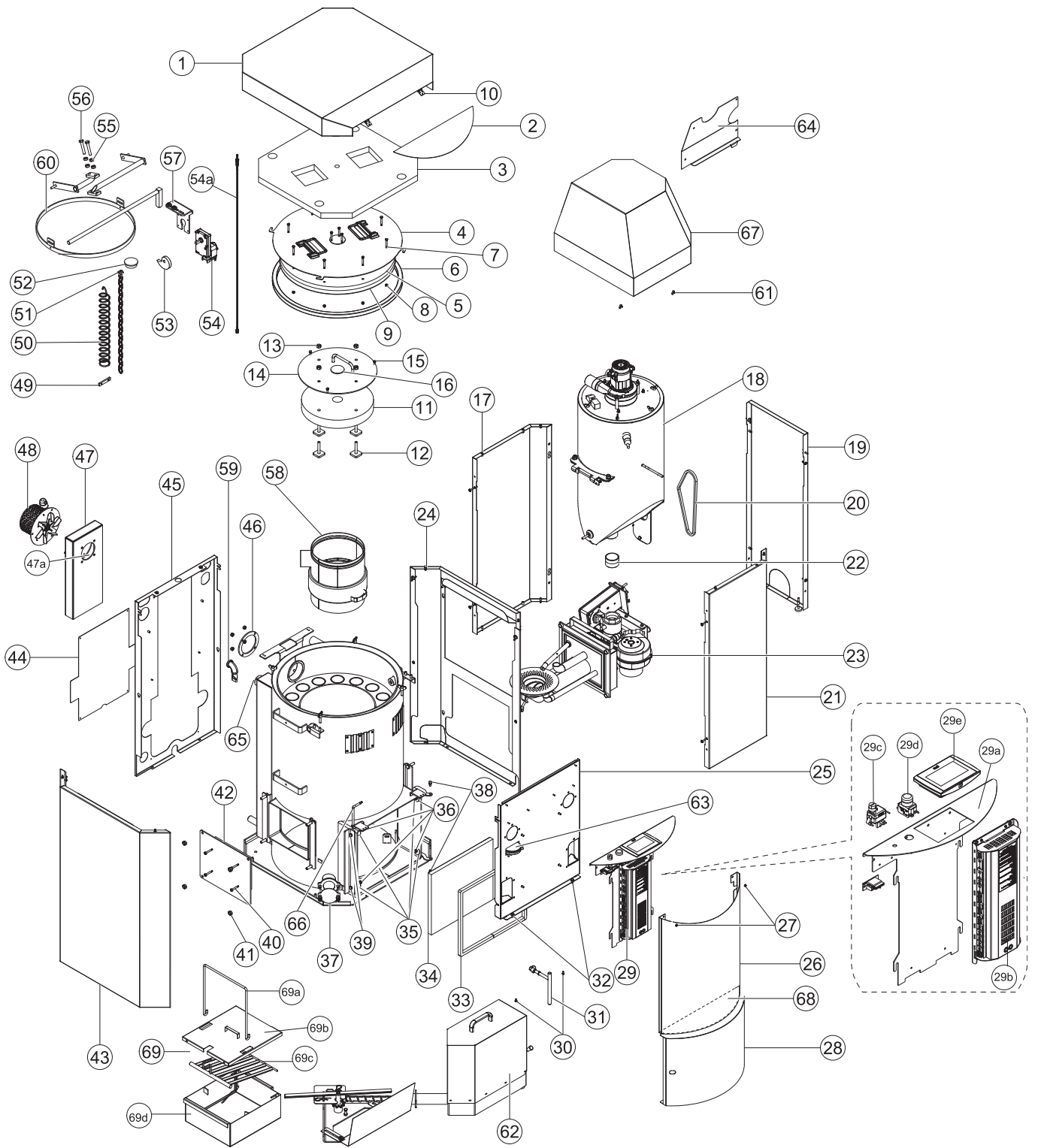


12.3 Parts list

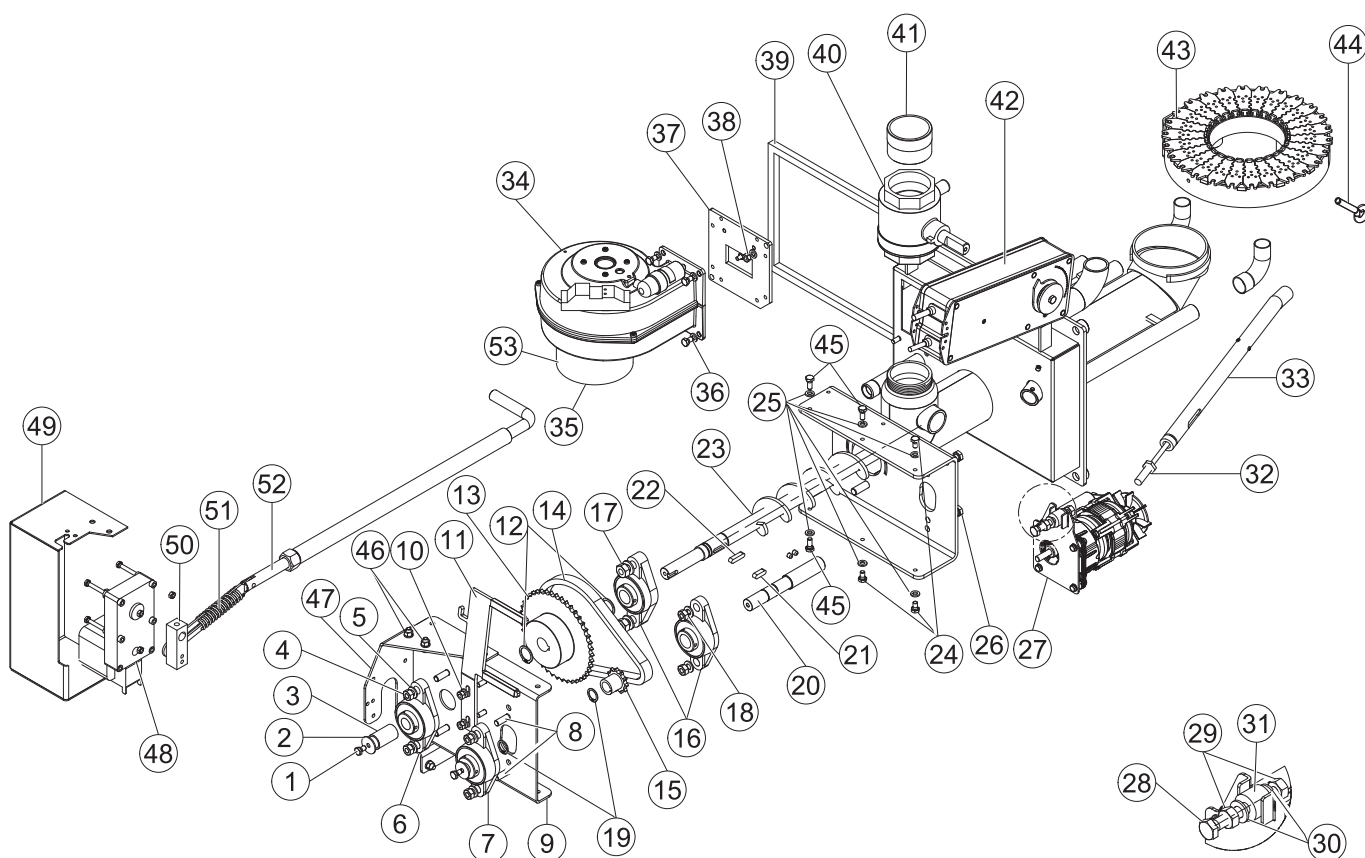
12.3.1 Pellematic PES 12 - 20

PPES 20

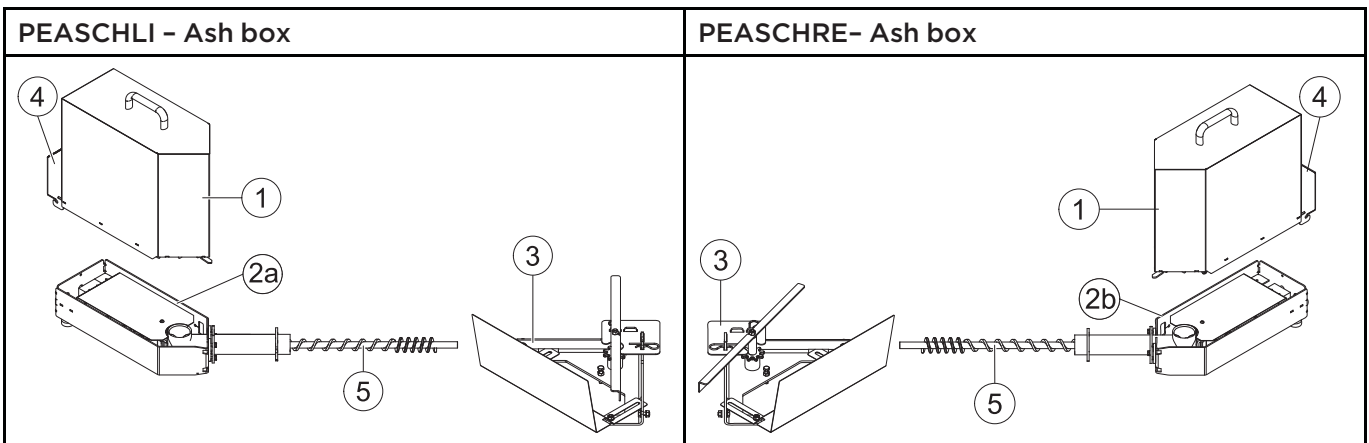
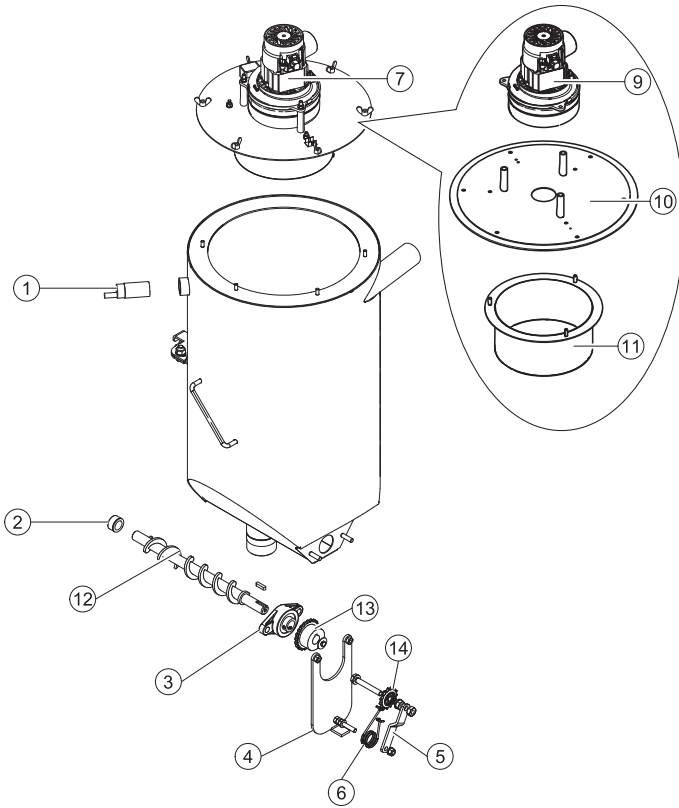
1	PE114	26	PE120 (B, G, R)	49	PE143
2	PE119	27	121159	50	PE129
2	PE119B	28	PE121 (B, G, R)	51	121049 / 121126
2	PE119G	29	E1412	52	PE103
2	PE119R	29a	PE564	53	PE142
3	PE200	29b	E1411	54	E1054R / E1054L
4	PE156	29c	E1330	54a	E1186
5	PE289	29d	E1238	55	121169
6	PE215	29e	E1073	56	121168
7	121259	30	on request	57	PE281
8	121347	31	PE191	58	B103
9	PE429 / 121037/ 121082	32	121378	58a	PE277S
10	PE131	33	PE160	59	PE133
11	PE212	34	PE176	60	PE475
12	PE174	35	on request	61	121380
13	121373	36	121039	62	PEASCHRE / PEASCHLI
14	on request	37	PE416 / PE413	63	24155 / 24157 / 121198 / 24315
15	121034	38	121410	64	PE 467 / 121327
16	PE264-1	39	121042	65	PE 192
17	121381	40	121379	66	24169
18	041876	41	121083 / 121029	67	PE260
19	PE185	42	PE188	68	PE419
20	121109 / 121255	43	PE115	69	PE330
21	PE123	44	PE117-1	69a	PE135
22	121123	45	PE117	69b	PE139
23	B0020 / B0020BR	46	PE209	69c	PE136
24	PE116	47	PE258	69d	PE134
25	PE118	48	E1001A		



B0020 BRE - Burner					
1	121041	19	121196	37	B147
2	121058	20	B172	38	121082
3	B150	21	121197	39	B152
4	121039	22	121023	40	B144
5	121038	23	B130	41	B132
6	121011	24	121041	42	E1413E
7	121195	25	121037	43	B225/B101
8	121051	26	121079	44	121284
9	B179	27	E1030 / E1002-1	45	121034 / 121082
10	121082 / 121037	28	121166	46	121034 / 121037 / 121082
11	B129P	29	121039	47	B181
12	121075	30	121038	48	E1204 / E1002.1
13	121193	31	B113	49	B182
14	121194	32	E1004	50	B183
15	121192	33	B105	51	B184
16	121010	34	E1005	52	B196
17	121083 / 121029	35	B202	53	B202
18	121039 / 121038	36	121041		



041876 - Hopper					
1	E1138	6	121122	12	SZB
2	121114	7	E1368	13	121250
3	121010	9	E1205	14	121253
4	041070	10	041869		
5	041071	11	041868		

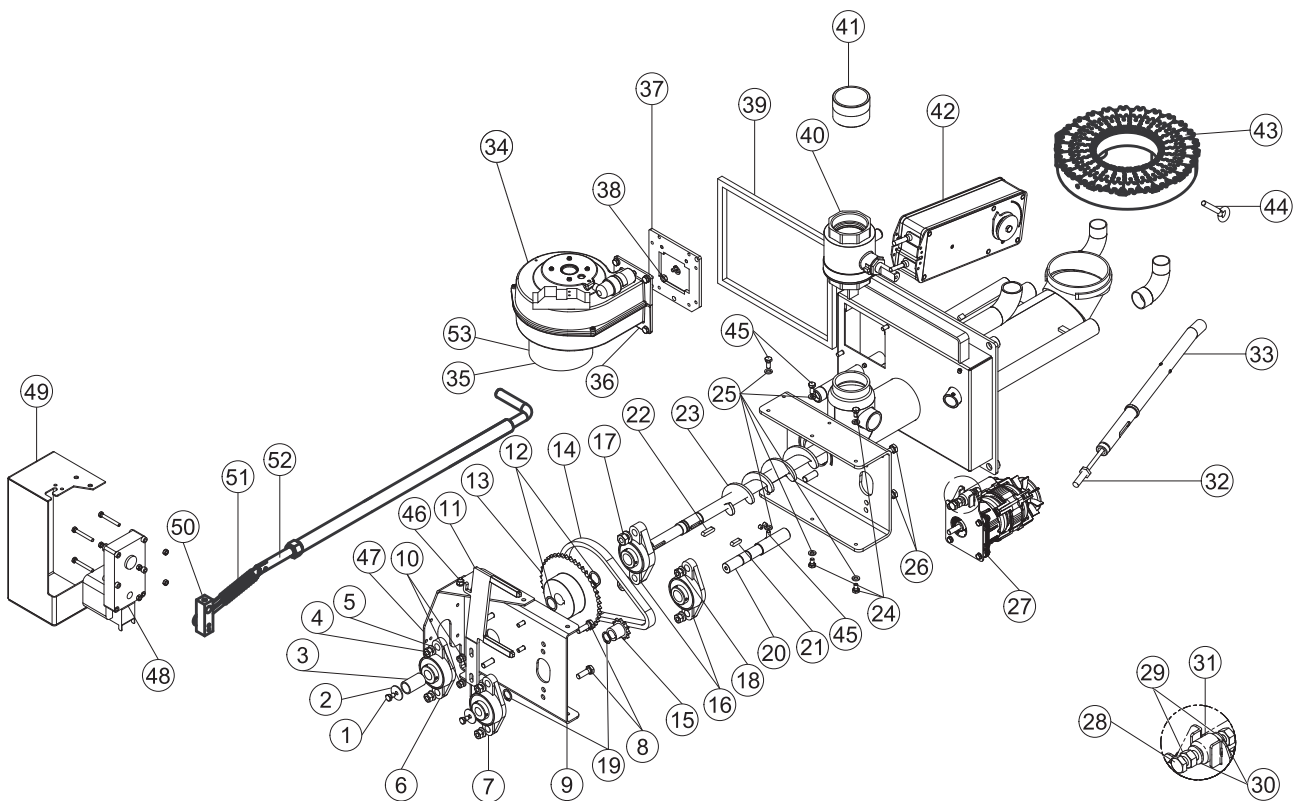


1	PE442	2b	PE439	4	PE453
2a	PE440	3	PE373	5	PE462

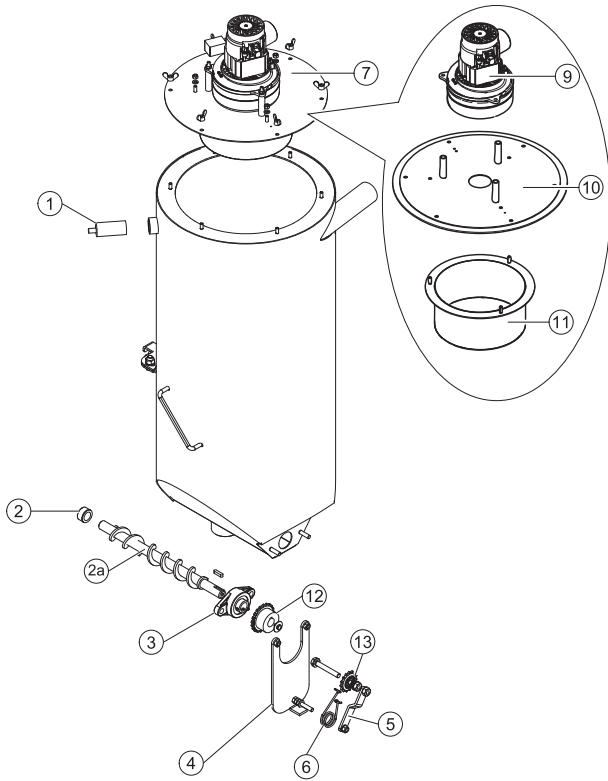
12.3.2 Pellematic PES 25 - 32**PPES 32**

1	PE166	26	PE173	44	PE117-1
2	PE119	26	PE173B	45	PE182-1
2	PE119B	26	PE173G	46	PE209
2	PE119G	26	PE173R	47	PE406
2	PE119R	27	121159	48	E1001A
3	PE205	28	PE121	49	PE143
4	PE157	28	PE121B	50	PE130
5	PE290	28	PE121G	51	121050 / 121126
6	PE2151	28	PE121R	52	PE103
7	121259	29	E1412	53	PE142
8	121347	29a	PE564	54	E1054R / E1054L
9	PE430 / 121082 / 121037	29b	E1411	54a	E1186
10	PE131	29c	E1073	55	121169
11	PE213	29d	E1238	56	121168
12	PE174	29e	E1330	57	PE281
13	121373	30	on request	58	B104
14	PE244-1	31	PE191	58a	PE277S
15	121034	32	121378	59	PE207
16	PE264-1	33	PE160	60	PE476
17	121381	34	PE176	61	121380
18	041886	35	on request	62	PEASCHRE / PEASCHLI
19	PE186	36	121039	63	24155 / 24157 / 121198 / 24315
20	121109	37	PE416 / PE413	65	PE192
20	121255	38	121410	66	24169
21	PE183	39	121042	67	PE260
22	121123	40	121379	67a	PE467
23	B0030/B0030BR	41	121083 / 121029	68	PE419
24	PE172	42	PE188		
25	PE181	43	PE171		

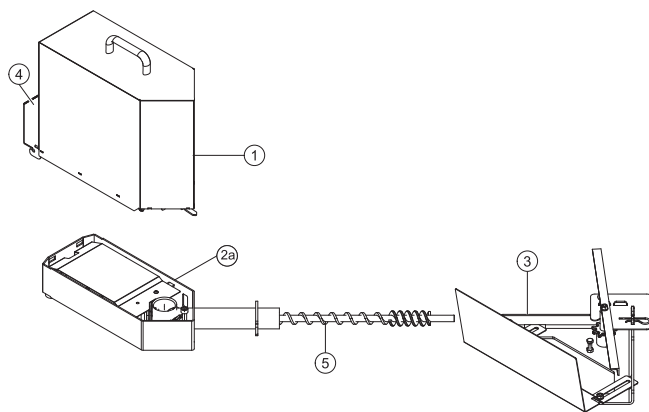
B0030 - Burner					
1	121041	19	121196	37	B148
2	121058	20	B172	38	121082
3	B150	21	121197	39	B152
4	121039	22	121023	40	B144
5	121038	23	B131	41	B132
6	121011	24	121041	42	E1413E
7	121195	25	121037	43	B226E
8	121051	26	121079	44	121284
9	B179	27	E1030 / E1002-1	45	121034 / 121082
10	121082 / 121037	28	121166	46	121034 / 121037 / 121082
11	B129P	29	121039	47	B181
12	121075	30	121038	48	E1204 / E 1304
13	121193	31	B113	49	B182
14	121194	32	E1004	50	B183
15	121192	33	B105	51	B184
16	121010	34	E1005	52	B197
17	121083 / 121029	35	B202	53	B202
18	121039 / 121038	36	121041		



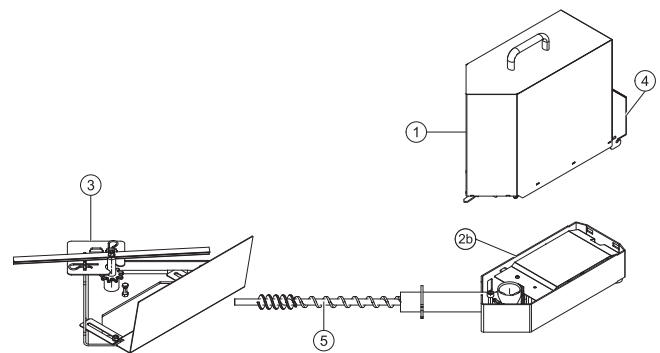
041886 - Hopper					
1	E1138	5	O41071	11	O41868
2	121114	6	121122	12	121250
2a	SZB	7	E1368	13	121253
3	121010	9	E1205		
4	O41070	10	O41869		



PEASCHLI - Ash box



PEASCHRE - Ash box



1	PE442	2b	PE439	4	PE453
2a	PE440	3	PE373	5	PE462

12.4 Technical data

Here you can find the technical data according to the boiler type.

Boiler - Type	PE 08	PE(S) 10	PE(S) 12	PE(S) 15	PE(S) 20	PE(S) 25	PE(S) 32	PES 36	PES 48	PES 56
Boiler-rated power [kW]	08	10	12	15	20	25	32	36	48	56
Boiler-partial load [kW]	2,4	3,0	3,4	5	6	8	10	11	15	17
Boiler efficiency rated power [%]	92 - 93									
Boiler efficiency partial power [%]	91 - 93									
Water area										
Water capacity [litres]	39	64	64	64	64	104	104	135	135	135
Water supply/return Ø [inch]	1	1	1	1	1	5/4	5/4	2	2	2
Water supply/return Ø [DN]	25	25	25	25	25	32	32	50	50	50
Water resistance at 10K [mBar]	22,3	54,7	95,2	150	220	284	376	38,9	51,9	60,5
Water resistance at 20K [mBar]	5,8	14,0	24,2	38	55	72	95	10,4	13,9	16,2
Boiler temperature [°C]	65-90									
Boiler input temperature minimum [°C]	55									
Operating pressure maximum [Bar]	3									
Test pressure [Bar]	4,6									
Flue gas area (Flue gas = F.g.)										
Fire vault temperature [°C]	800-1100									
Need of draught rated power [mBar]	0,08									
Need of draught partial load [mBar]	0,03									
Flue gas temperature rated power [°C]	120-140	160								
Flue gas temperature partial load [°C]	80-100	100								
F.g. volume rated power at f.g. tem. [kg/h]	16,3	18,9	24,2	30,4	40,6	51,1	65,8	73,7	97,5	113,2
F.g. volume partial load at f.g. tem. [kg/h]	4,8	5,5	7,4	10,3	12,2	16,4	20,4	22,5	31	34,9
F.g. volume rated power at AGT [m ³ /h]	19,3	21,9	28,6	37,6	50,2	63,2	81,4	91,1	120,-7	140
F.g. volume partial load at AGT [m ³ /h]	5,1	5,8	6,9	10,9	13	17,4	21,8	24	33	37,2
Flue gas tube diameter [mm]	130	130	130	130	130	150	150	180	180	180
Chimney diameter	as per chimney calculation									
Chimney construction	Steel or ceramic lined, damp resistant									

Boiler - Type	PE 08	PE(S) 10	PE(S) 12	PE(S) 15	PE(S) 20	PE(S) 25	PE(S) 32	PES 36	PES 48	PES 56	
Fuel	Pellets made of 100% natural wood according to EN 14961-2, class A1										
Colorific value [MJ/kg]	16,5 – 19										
Colorific value [kWh/kg]	4,6 – 5,3										
Bulk density [kg/m ³]	>600										
Water content [weight %]	>10										
Ash parts [weight %]	<0,7										
Length [mm]	<40										
Diameter [mm]	6										
Weight											
Overall Weight packing included [kg]	320	385			470			650			
Overall Weight [kg]	290	350			430			605			
Boiler Body Weight [kg]	187	230			300			422			
Internal ash pan volume [kg]	—	25			30			30			
External ash box volume [kg]	—	25									
Electrical Components											
Connection value	230 VAC, 50Hz, 16A										
Main Drive [W]	40										
Drive Motor [W]	250 / 370										
Suction Turbine [W]	1400										
Combustion Air Blower [W]	62						83				
Flue gas fan [W]	25						32				
Electrical Ignition [W]	250										
Cleaning Motor [W]	40										
Motor External Ash Box [W]	40										
Motor Burner plate cleaning system [W]	40										
Flame Return Gate [W]	5										
Emissions acc. to test reports	WB 1)	WB 1)	*)	WB 2)	*)	*)	WB 3)	*)	*)	*)	
O ₂ -contents rated power [Vol.%]	8,2	8,1	8	7,8	7,6	7,5	7,3	7,1	6,7	6,6	
O ₂ -contents partial load [Vol.%]	10,4	10,9	11,4	12,4	12,2	11,5	10,5	11,0	12,4	13,4	
Reference 10% O₂ dry (EN303-5)											
CO rated power [mg/m ³]	64	80	95	118	104	76	37	41	54	63	
CO partial load [mg/m ³]	221	196	170	132	125	134	146	151	169	180	
OGC rated power [mg/m ³]	1	2	2,5	3	3	2	<1	1	1	1	
OGC partial load [mg/m ³]	8	7	5	3	2	2	2	2	2	2	

Boiler - Type	PE 08	PE(S) 10	PE(S) 12	PE(S) 15	PE(S) 20	PE(S) 25	PE(S) 32	PES 36	PES 48	PES 56
Dust rated power [mg/m ³]	15	16	16	17	17	17	17	17,9	18	19,5
Reference 13% O2 dry										
CO rated power [mg/m ³]	46	58	69	86	76	56	27	30	39	45
CO partial load [mg/m ³]	161	142	123,5	95	91	97	106	110	122,5	130,- 8
OGC rated power [mg/m ³]	1	2	2	3	2	2	<1	1	1	1
OGC partial load [mg/m ³]	6	5	4	2	2	1	1	1	1,5	1,7
Dust rated power [mg/m ³]	11	11	11,5	12	12	12	12	10,2	13	13,5
Accord. to § 15a BVG Austria										
CO rated power [mg/m ³]	31	37	45,5	59	49	36	17	19	26	30
CO partial load [mg/m ³]	106	94	81	62	59	63	69	72	80	86
NOX rated power [mg/m ³]	74	72	71,5	69	71	73	77	80	87	92
NOX partial load [mg/m ³]	59	61	65,5	70	69	66	62	64	70	74
HC rated power [mg/m ³]	<1	1,2	1,5	2	2	1	<1	<1	<1	<1
HC partial load [mg/m ³]	4	2,8	2,5	1	1	1	<1	1	1	1
Dust rated power [mg/m ³]	7	7	7,5	8	8	8	8	8	8,5	9

The data are values of the test measurement and can vary from locally measured values

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Note:

Test reports are available at ÖkoFEN



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