Installation Manual

Please read carefully prior
to installation and servicing.

SAVE THESE INSTRUCTIONS

PELLET BOILER
PE 12–32

CMP 06.2B US_ST610

ENGLISH — USA

download french version:
www.maineenergysystems.com/manuals.htm

PE 196 USA 4.1

Title:	Installation Manual PE 12-32
Item number:	PE 196 USA 4.1
Number of version:	04.01
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Author:

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Contents

1 Dear Customer

We are specialist in pellet heating, licensed by ÖkoFEN
Expertise, innovation and quality from a single source. It is based on our tradition that we take on future challenges. We are delighted that also you have decided to purchase our product.

- This instruction manual is intended to help you operate the product safely, properly and economically.
- Please read this instruction 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.
- During installation and/or first start up the service engineer must carry out the following work.
- The installation has to be performed by a qualified installer.
- Please contact your authorised dealer if you have any questions.

We place great importance on the development of new products. Our R&D department continues to question accepted solutions and works continually on new improvements. That is how we maintain our technological lead. We have already received several awards for our products in Austria and abroad.
Our products fulfil European and USA requirements regarding quality, efficiency and emissions.

Tested & Listed By O-T L Portland Oregon USA
C US
OMNI-Test Laboratories, Inc.
Report No.: 4 29- 02-2

2 Use only for the purpose intended

The pellet boiler 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 boiler for any other purpose. Reasonable foreseeable inadvertent uses for the pellet boiler are not known.

The boiler fulfils the requirements of UL 391, “Standard for Safety for Solid-Fuel and Combination-Fuel Central and Supplementary Furnaces,”2006, and CAN/CSA-B366.1–M91, “Solid-Fuel-Fired Central Heating Appliances”

OMNI Certificate:

Models: Pellematic PE 12-20, 25-32, 36-56
Pellet Fuel-Fired Boiler

Date Issued: September 2009
Project: 429-S-01-2
Issued to: ÖkoFEN Forschungs- und Entwicklungs Ges.m.b.H.
Gewerbepark 1
A-4133 Niederkappel
Austria

Products listed to:

- UL 391, “Standard for Safety for Solid-Fuel and Combination-Fuel Central and Supplementary Furnaces,” 2006.
- CAN/CSA-B366.1-M91, “Solid-Fuel-Fired Central Heating Appliances.”

The models listed above are eligible to bear the mark shown.

Tested & Listed By O-T L Portland Oregon USA
C US
OMNI-Test Laboratories, Inc.

Issued by: OMNI-Test Laboratories, Inc.
13327 NE Airport Way
Portland, Oregon 97230

Paul E. Tiegs, President

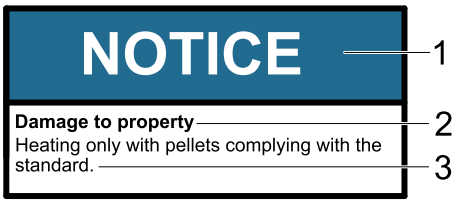
Gerald Coles, Accreditation Manager

3 Types of safety warning sign

The warning signs use the following symbols and text.

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-threatning injury.

Warning - indicates a situation that could lead life-threatning 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 Warnings and safety instructions

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

4.1 Basic safety instructions

- Never get yourself into danger; give your own safety the utmost priority.
- Keep children away from the boiler 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 installer. 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.

4.2 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 boiler 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 boiler 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
DO NOT BURN GARBAGE, GASOLINE, NAPHTHA, ENGINE OIL, OR OTHER INAPPROPRIATE MATERIALS. DO NOT USE CHEMICALS OR FLUIDS TO START THE FIRE.
Switch off the heating system before filling the storage room.

DANGER

Risk of fire
Do not store any flammable materials in the boiler room.
Do not hang out any washing in the boiler room.
Do not operate with fuel loading or ash removal doors open.

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 before it cooled down.

CAUTION

HOT SURFACES
Keep children away.
Do not touch during operation.
Maximum draft marked on nameplate.

CAUTION

Risk of cut injuries due to sharp edges.
Use gloves for performing all work on the boiler.

NOTICE

Damage to property
Heat the Auto pellet heating system using pellets that comply with PFI premium specifications 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, check the heating system by an authorized service technician and replace damaged parts.

4.3 What to do in an emergency

DANGER

Exhaust gas cause asphyxiation and endanger life
Never get yourself into danger; give own safety utmost priority.

What to do in the event of a fire	What to do if you smell smoke
Exit the building	Switch off the heating system.
Call the fire brigade	Close the doors leading to living areas.
Switch off the heating system.	Ventilate the boiler room.
Use approved fire extinguishers (fire protection class ABC).	

5 Prerequisites for installing a pellet boiler

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

5.1 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.

5.2 Boiler room

The pellet boiler is installed in the boiler room.

1. **Safety instructions for the boiler 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 boiler room - Keep children away.
   Do not operate with fuel loading or ash removal doors open.

2. **Air supply and ventilation of boiler room**

   The boiler room must be fitted with air supply and ventilation openings (at least 31 inch²/200cm²).Inany case you must comply with the state and local regulations

3. **Combustion air supply**

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

   a. take place using one or more air supply and ventilation openings in total min. 31 inch²/200 cm²

   b. **or** through a special air supply line directly from outside, where the diameter of the air supply line must be at least 4 inch/ 100mm in for type PE(S) 12 – PE(S) 32. Ambient air independent operation of PES 36-56 types is also available on request.

   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 of 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. It is recommended that no washing or drying of laundry is done in the boiler room or where the boiler may draw air from.

   Do not hang out washing in the boiler room.

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

4. **Damage due to frost and humid air**

   The boiler room must be frost-proof to ensure trouble-free operation of the heating system. The temperature of the boiler room must not fall below 37°F and must not exceed 90°F. The air humidity in the boiler room must not exceed 70%.

5. **Danger for animals**

   Make sure that household pets and other small animals cannot enter the boiler 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 boiler room. You must have all components that come into contact with water replaced, before you start up the pellet boiler again.

5.3 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. An existing chimney that is not damp-resistant needs to be rennovated before use. Follow guidelines below:

Boiler size		**PE(S) 12 – 20**	**PE(S) 25 – 32**	**PE(S) 36 – 56**
Flue gas tube diameter (at boiler)	inch/mm	5/130	6/150	7/180
Flue gas temp. / rated power	°F	320	320	360
Flue gas temp. / partial load	°F	212	212	230
Min. draft – full load/part load	in/wc	0.03/0.01		

Chimney size	**Min. Height**
6in/150mm x 6in/150mm	17ft/5,2m
7in/180mm x 7in/180mm	16ft/4,8m
8in/200mm x 8in/200mm	16ft/4,8m
6in/150mm round	19ft/5,8m
7in/180mm round	17ft/5,2m

Recommended and UL-103HT approved chimney materials are:

a. Selkirk sure temp

b. Supervent (JSC)

c. Security chimneys (secure temp ASHT)

Use heavy gauge (26ga or better) black smoke pipe to connect to existing chimney

CAUTION

Unregulated combustion
Please observe that combustion air openings and flue pipes are not reduced in size or closed. Make end user aware of these guidelines and their potential danger.
Clean the chimney and the flue gas tube at regular intervals.
Check if the draft inducer is clean and in a good condition.

2. **Flue gas temperature**

   The flue gas temperatures are the same for all boiler types:

   The dewpoint of flue gas with wood pellets (max. 10% water content) is approx. 120°F.

   It is possible to increase the flue gas temperature to prevent condensation inside the chimney and avoid damage due to damp. Only authorised specialist personnel may increase the flue gas temperature.

   Note

   The increase in flue gas temperature results in reduced efficiency and thus increases fuel consumption.

3. **Negative pressure of the chimney**

The boiler must be connected to a chimney or a vertical venting system that is capable of handling and producing a negative breeching pressure of –0.020 “WC (-5Pa). Use a draft gauge to verify the indicated draft value, adjust barometric damper as required. Drill a small hole in the connection pipe at about 2in/ 50mm from the boiler flue outlet and use this hole as your measuring point.

Chimney draft

The suction effect of the chimney draft must extend as far as the pellet boiler. 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 performend by authorised personnel.

NOTICE

Too strong a chimney draft increases heat loss while idling and reduces the efficiency of the heating system.
We recommend installing a chimney draft regulator (barometric damper). Chimney draft regulators are installed directly into the flue gas tube or chimney.
Your state and local regulations must be observed.

4. **Power venter**

AutoPellet boilers are approved by the manufacturer for installation with the Field Controls SWGAF power venter which is approved for wood pellet burning appliances.
Boiler installed with SWGAF power venters must follow all manufacturer´s installations and must comply with all applicable codes from agencies having authority over the installation.

5. **Cleaning**

Clean the flue gas tube and chimney regularly.

DANGER

Risk of chimney fire
Creosote-formation and need for removal:Low gas flue temperature can cause creosote. The creosote condense in the relatively cool chimney. As a result, creosote residue accumulates on the flue lining. When ingnited, this creosote makes a hot fire. The chimney and the chimney connector should be inspected at least twice monthly during the heating season to determine if a creosote buildup has occurred. If creosote has accumulated it should be removed to reduce the risk of a chimney fire.

NOTICE

Oxidation of chimney
Do not use metal brushes to clean chimneys made of stainless steel.
Your state and local regulations must be observed.

5.4 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 outside of the boiler room.

Safety valve

The hydraulic system must be equipped with a safety valve. This valve opens before the pressure inside the heating system increases to max. 43 P.S.I.. The safety valve must be installed at the highest point of the boiler, must not be locked and must be within 3.28 ft / 39.37 inch/ 1m of the boiler. A 30 lb/sq in relief value is supplied with each 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 203°F then the heating system switches off.

Low water cut off

The hydraulic system must be equipped with a low water cut off. Falls the water level below a certain level, the low water cut off switches off the heating system.

NOTICE

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

5.5 Installation with an existing boiler

A pellet fired boiler and an oil boiler can be flued only individually into an existing chimney providing the following conditions are met:

- All state and local codes permit the specific installation
- Electrical Interlocks are in place to prevent simultaneous operations.
- A mechanical lock-out device must also be in place to prevent simultaneous operations.
- At any given time, only one boiler can be vented into the chimney flue. Allow either boiler to completely shut down and cool off before changing the venting system.
- The flue must be of adequite size to handle the combustion products of either appliance.

NOTICE

Insecure and uneconomic operation
Place the boiler according to the minimum clearances to the existing boiler.

CAUTION

Insecure installation
In the case of a connecting boiler (existing boiler) contact an authorized technician for compliance information before connecting.
The following unit is approved for connecting with the authorized pellet boiler:
Model number connected unit:_____
Item number connected unit:_____

DANGER

Escape of flue gas
Do not connect this unit to a chimney flue serving another appliance.

6 Product description

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

The pellet heating system consists of 3 components

1	Pellet boiler
2	Auger delivery system
3	Storage system – textile tank

Pellet boiler with textile tank

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

6.1 The pellet boiler

The pellet boiler 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. We offer an optional automatic de-ashing system for the highest level of cleanliness and comfort.

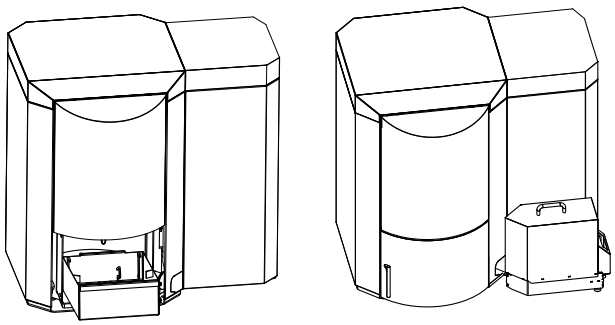
Pellematic types and power ratings

We offer the Pellet boiler with the following power ratings:
Auger systems: 27,300; 41,000; 51,000; 68,300; 85,300 and 109,500 BTU/hr

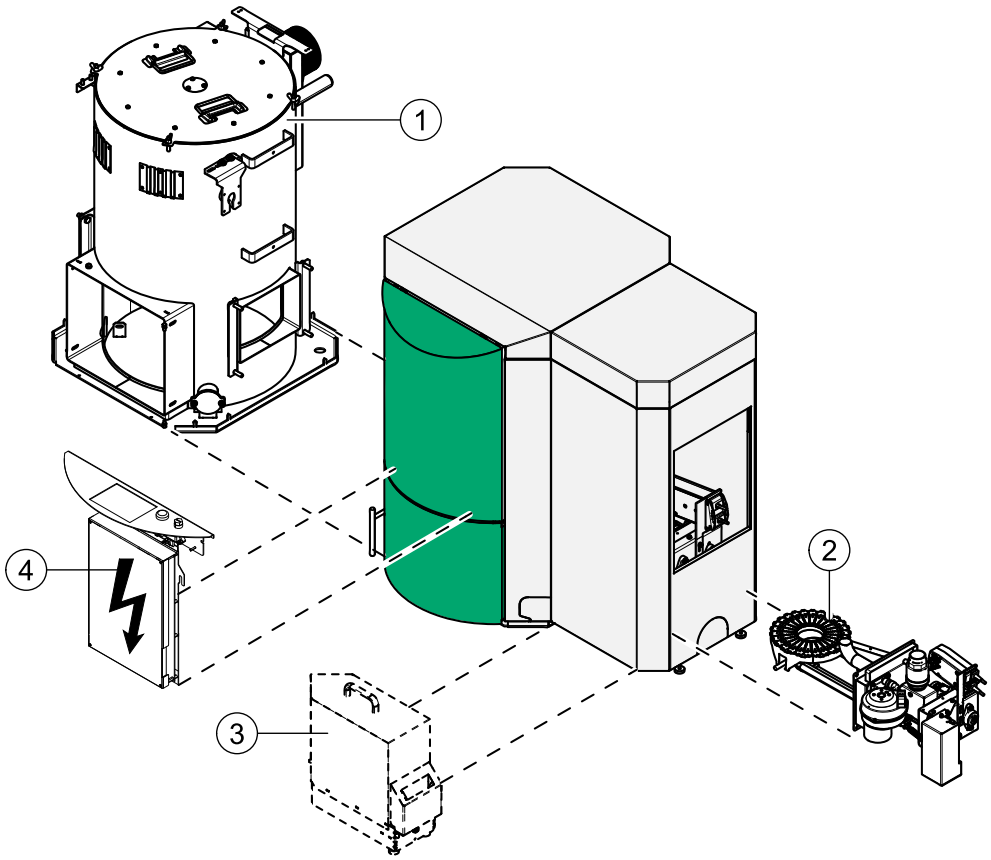
All power rating types are available with an external ash box with automatic de-ashing system.

Note

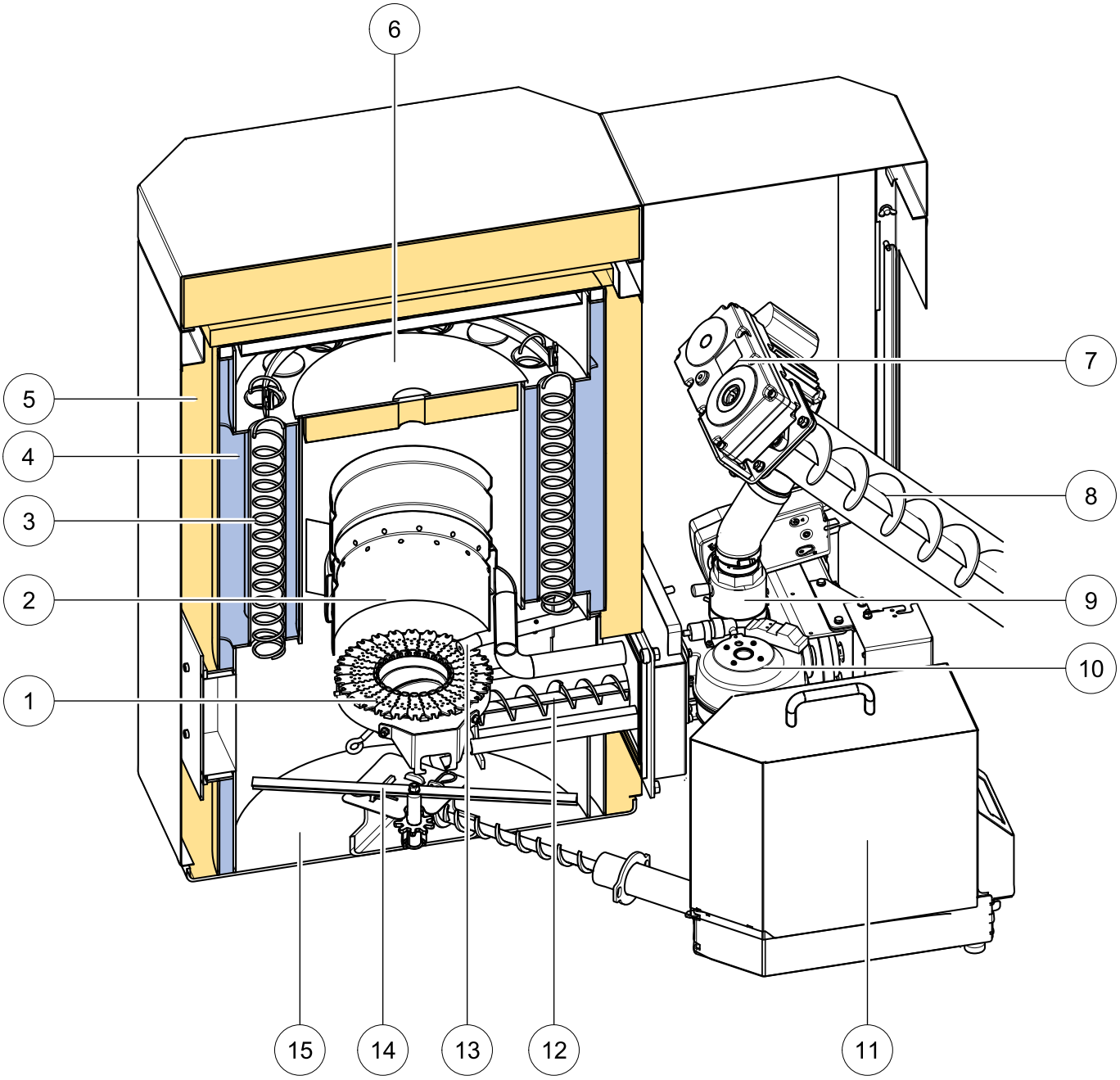
Refer to the data plate for the power rating of your Pellematic. The data plate is located on the rear side of the Pellematic. Here you will find the type designation, manufacturer's serial number and year of build.



Key components of the Pellematic



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



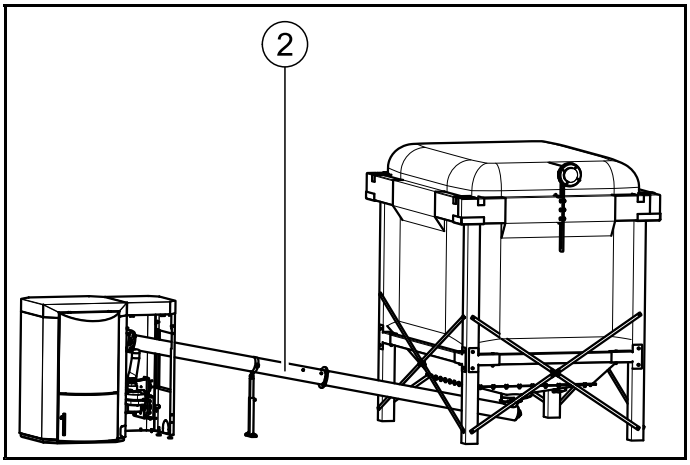
1	Multi segmented brazier	9	Fire protection – ball valve
2	Flame tube	10	Burner fan
3	Heat exchanger	11	External ash box
4	Boiler water	12	Burner auger
5	Boiler insulation	13	Electronic ignition
6	Combustion chamber cover	14	De-ashing system
7	Motor fuel transport system	15	Ash chamber
8	Auger		

6.2 Auger delivery system

The auger delivery system consists of: Delivery system motor, dropshaft and extraction auger. The delivery system motor powers the auger system and transports pellets from the textile tank to the burner plate.

Key components of auger delivery system

2	Extraction auger	Auger delivery with motor unit, Emergency gate, supporting leg and handcuffs; (Connection of textile tank and pellet boiler)



6.3 Storage systems

For storing pellets we offer a FleXILO textile tank. FleXILO textile tanks can be located inside the boiler room, storage room or protected from wet and sun outside.

NOTICE

Damage to property and loss of warranty
The combination of an pellet boiler with a storage and conveyor system from another manufacturer has to be permitted by our company.

6.3.1 FleXILO textile tank

The whole textile tank system is included in the scope of supply. We offer various sizes and types. The textile tank supplied may vary from the example shown above.

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

7 Bringing the pellet boiler into the boiler 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

We suppliy the pellet boiler on a pallet. The pellet boiler is ready to be connected up.
The control unit for the boiler controller and the operating drvice 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 you can 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.

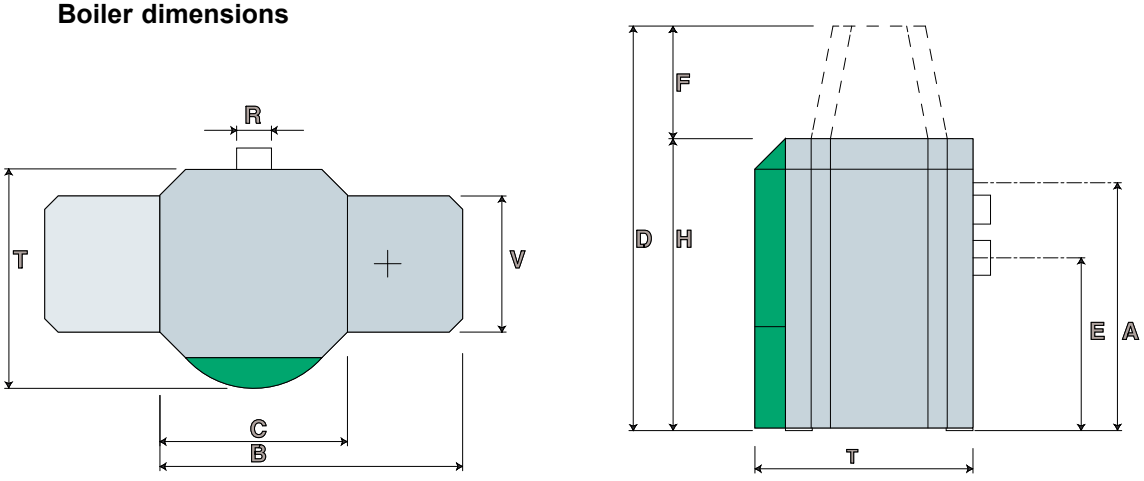
7.2 Notes on bringing the unit into the building

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, PES	12, 15, 20	27,5 inch / 750mm
PE, PES	25, 32	29,75 inch / 800mm
PES	36, 48, 56	31,2 inch / 900mm

Boiler dimensions



Boiler size		PE(S) 12	PE(S) 15	PE(S) 20	PE(S) 25	PE(S) 32	PE(S) 36	PE(S) 48	PE(S) 56
B – Overall width of pellet boiler	inch	44 1/2	44 1/2	44 1/2	46 3/4	46 3/4	51	51	51
	mm	1140	1140	1140	1190	1190	1297	1297	1297
C – Width of boiler casing	inch	27 1/2	27 1/2	27 1/2	29 3/4	29 3/4	34	34	34
	mm	700	700	700	756	756	862	862	862
H – Height of boiler casing	inch	43	43	43	51	51	61	61	61
	mm	1100	1100	1100	1300	1300	1555	1555	1555
D – Height of pellet suction system	inch	55	55	55	63	63	73	73	73
	mm	1400	1400	1400	1600	1600	1855	1855	1855
F – Height of suction filling unit	inch	12	12	12	12	12	12	12	12
	mm	300	300	300	300	300	300	300	300
T – Depth of boiler casing	inch	32	32	32	34 1/4	34 1/4	39	39	39
	mm	840	840	840	890	890	990	990	990
V – Depth of burner casing	inch	20	20	20	20	20	20	20	20
	mm	508	508	508	508	508	508	508	508
E – Flue gas tube connection height	inch	25 1/2	25 1/2	25 1/2	33 1/4	33 1/4	41	41	41
	mm	645	645	645	844	844	1040	1040	1040
A – Height of suply/return	inch	35 3/4	35 3/4	35 3/4	43 3/4	43 3/4	52	52	52
	mm	896	896	896	1110	1110	1320	1320	1320
R – Diameter of flue gas tube	inch	5	5	5	6	6	7	7	7
	mm	130	130	130	150	150	180	180	180

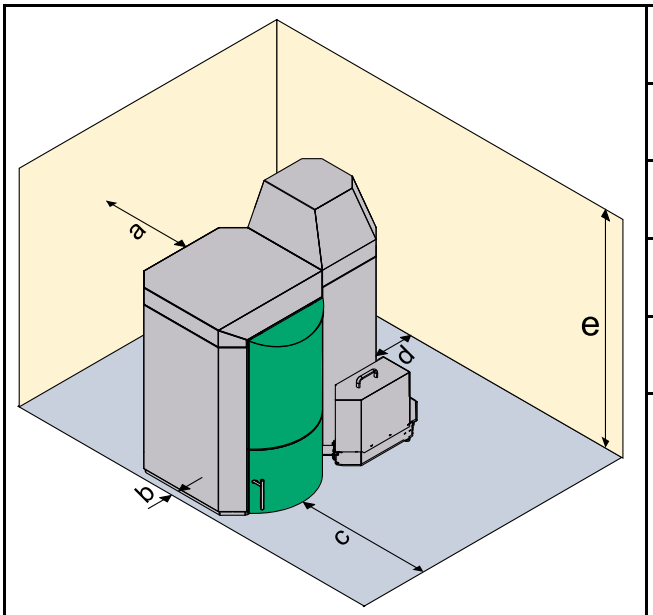
Boiler Weight

Boiler size		PE(S) 12	PE(S) 15	PE(S) 20	PE(S) 25	PE(S) 32	PE(S) 36	PE(S) 48	PE(S) 56
Weight of boiler packaged on pallet with wooden frame	Lb	858	858	858	1003	1003	1430	1430	1430
Weight of boiler with casing, hopper and burner	Lb	631	631	631	756	756	1120	1120	1120
Weight of boiler without casing, hopper and burner	Lb	529	529	529	664	664	930	930	930

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.**

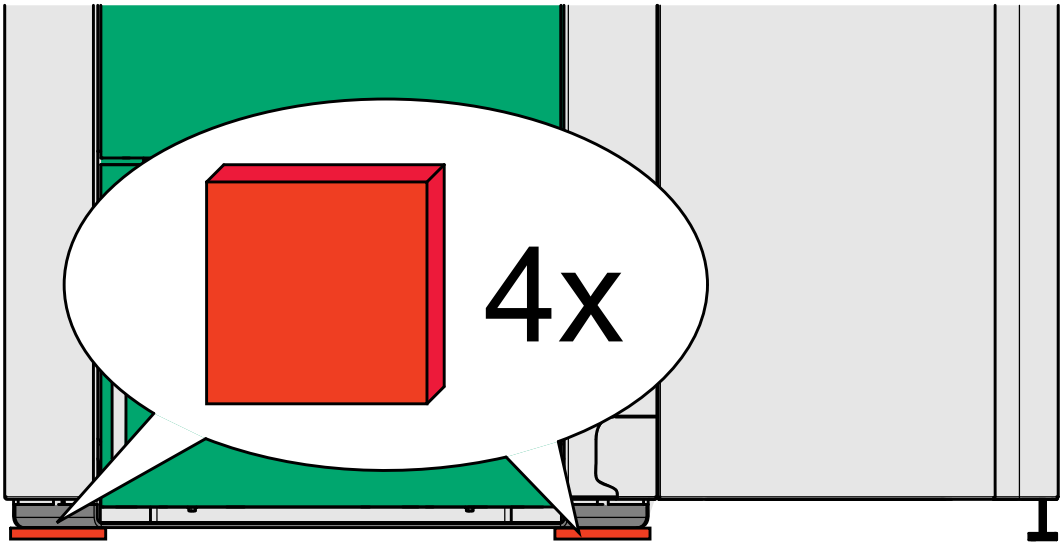


a	Min. clearance of flue gas connection	inch mm	18 450
b	Min. clearance of side of boiler	inch mm	5 50
c	Min. clearance of front of boiler	inch mm	28 700
d	Min. clearance of side of burner	inch mm	12 300
e	Min. ceiling height	inch mm	80 2000

Note

Place the boiler according to the minimum clearances to the flue tube connection piece as defined in NFPA 31 (distance of 18inch/450mm). Make sure that you also comply with local legal regulations.
For clearances required for floor protection, see following page.

Placement of rubber plates



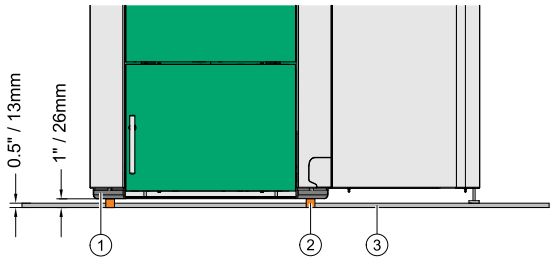
NOTICE

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

7.3 Flooring

The boiler base or foundation must be perfectly flat and level and must be able to support boiler gross weight. The floor must comply with the requirements of NFPA 31.

Generally the boiler should be placed on non-combustible floors. However, a shielding material can be placed underneath the boiler and the chimney connector in the case of a combustible floor like shown on the following drawing.

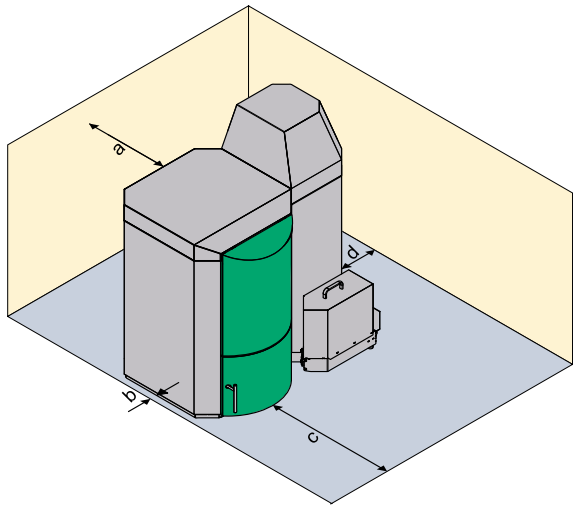


1	Boiler base plate
2	Spacer
3	Shielding material

The spacer must be able to support the weight of the boiler and has to be non combustable. The shielding material must be equivalent to a ½in / 13mm micro board with a K-value of 0.49 (W/m K) (R-value of 1.02 K m2/W) or greater. For detailed material specifications and offering contact our technician!

DANGER

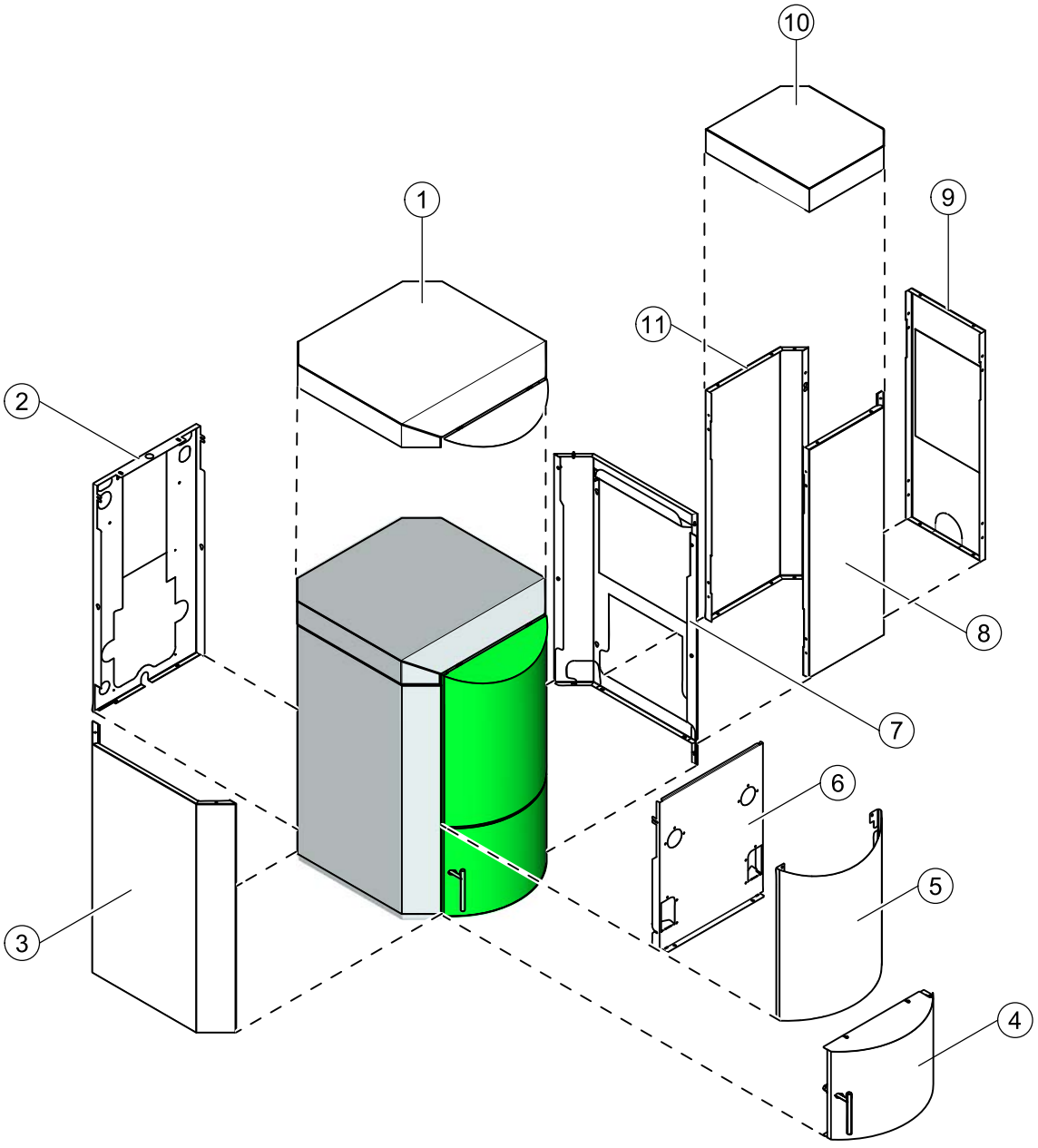
Risk of fire
The flooring needs to extend out to the clearances on the chart below.



Minimum clearances of shielding material required for floor protection		
Min. clearance of the shielding material from the boiler back – Note also the local restrictions in your area (a)	inch mm	17 450
Min. clearance of the shielding material from the boilers left side panel (b)	inch mm	8 200
Min. clearance of the shielding material from the boilers front panel (c)	inch mm	27 700
Min. clearance of the shielding material from the boilers right side panel (d)	inch mm	12 305

7.4 Casing parts

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



1	Boiler casing cover	7	Boiler side panel with opening
2	Boiler rear panel	8	Burner side panel (same as 11)
3	Boiler side panel without opening	9	Burner lug without opening
4	Boiler door panel (semi-circle)	10	Burner cover suction system
5	Boiler front panel (semi-circle)	11	Burner side panel (same as 8)
6	Boiler front panel (straight)		

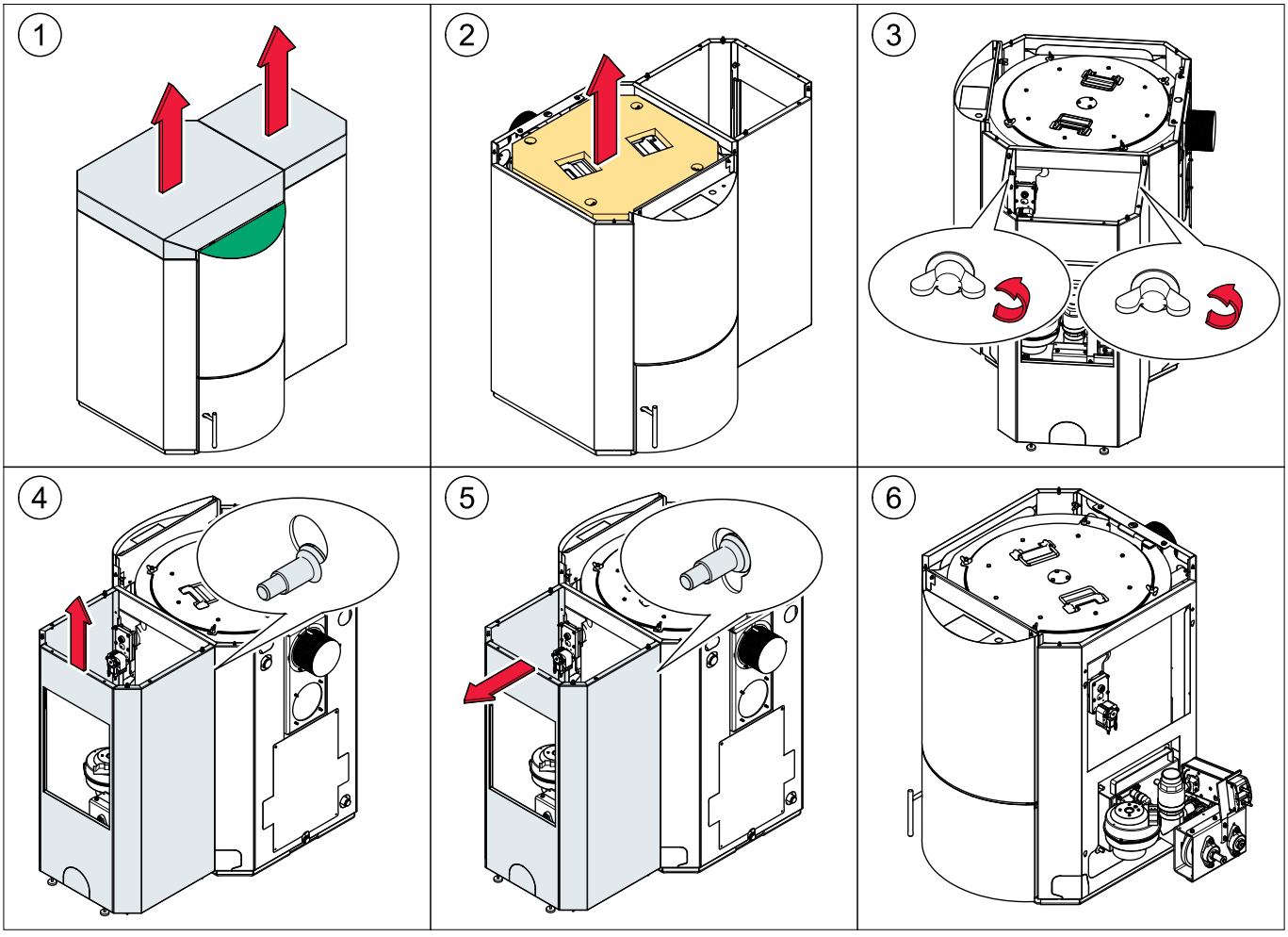
7.5 Removing the casing and the burner

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

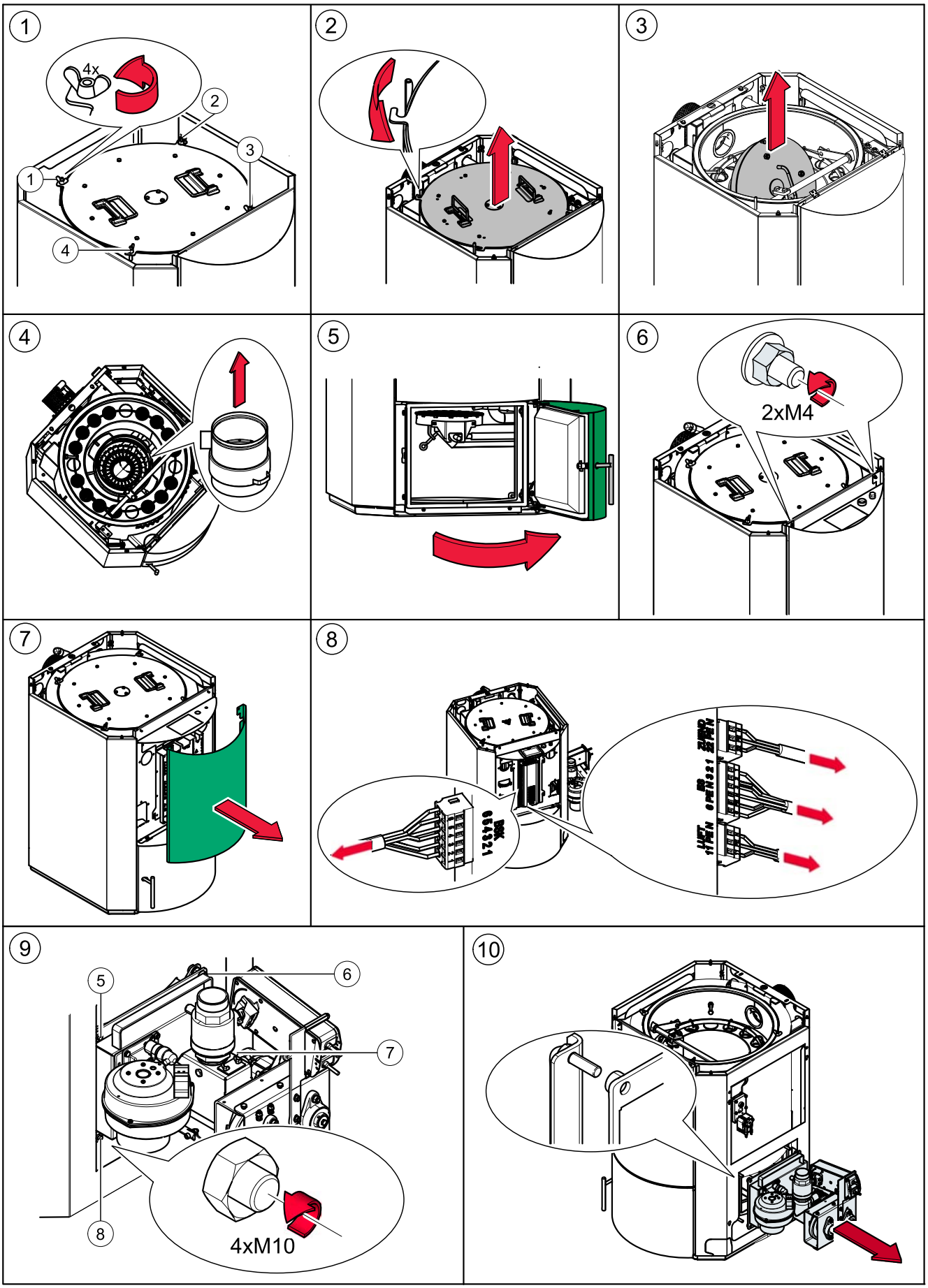
The complete dismantling of all components described here is divided into the following sections:

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

7.5.1 Dismantling the burner casing



7.5.2 Dismantling the burner



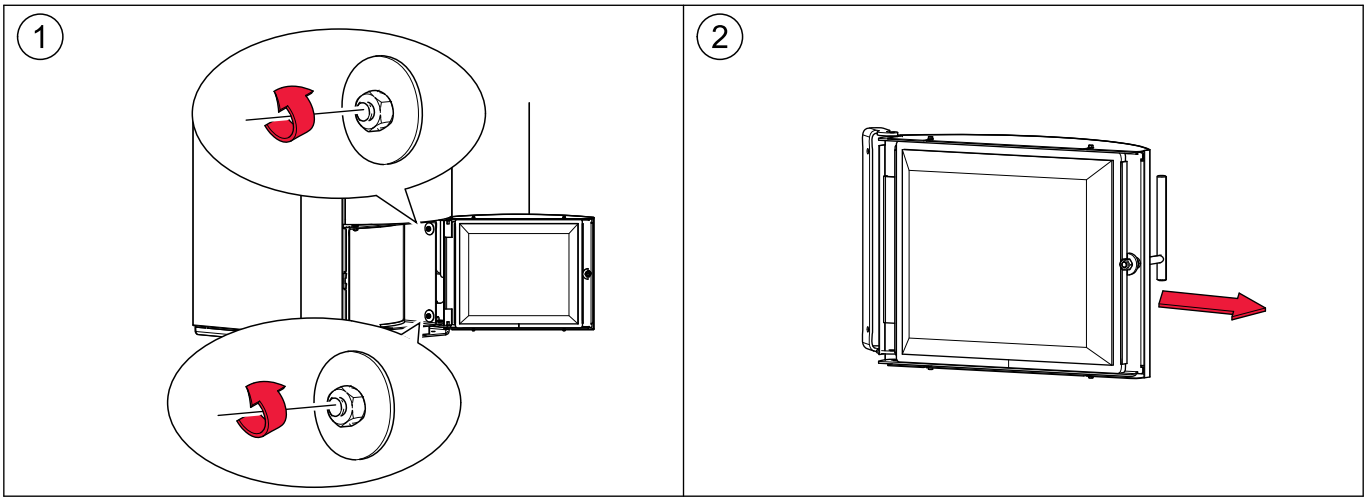
DANGER

Risk of electric shock
Behind the boiler front panel is the energized control unit CMP. Disconnect main power before removing the front panel.

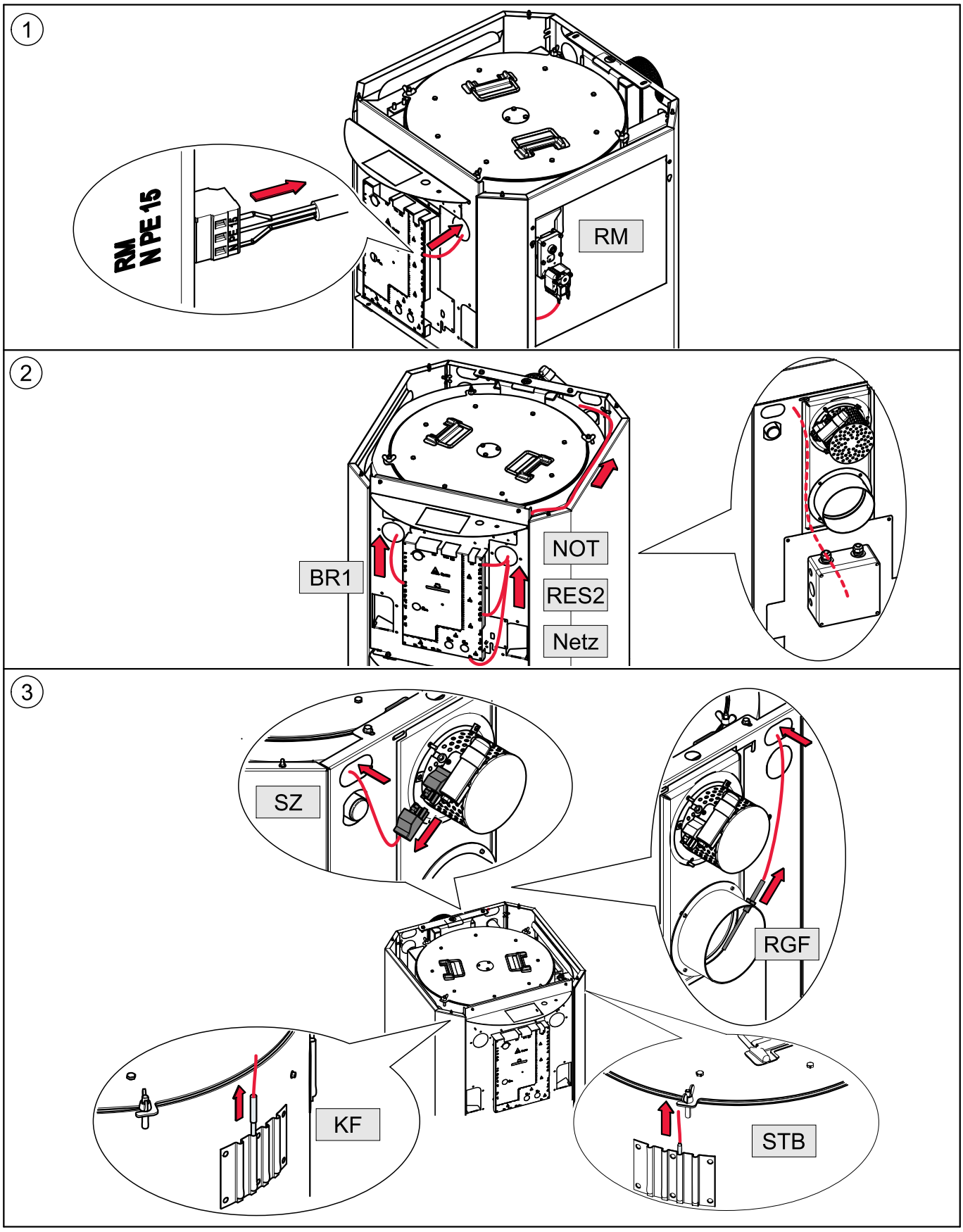
NOTICE

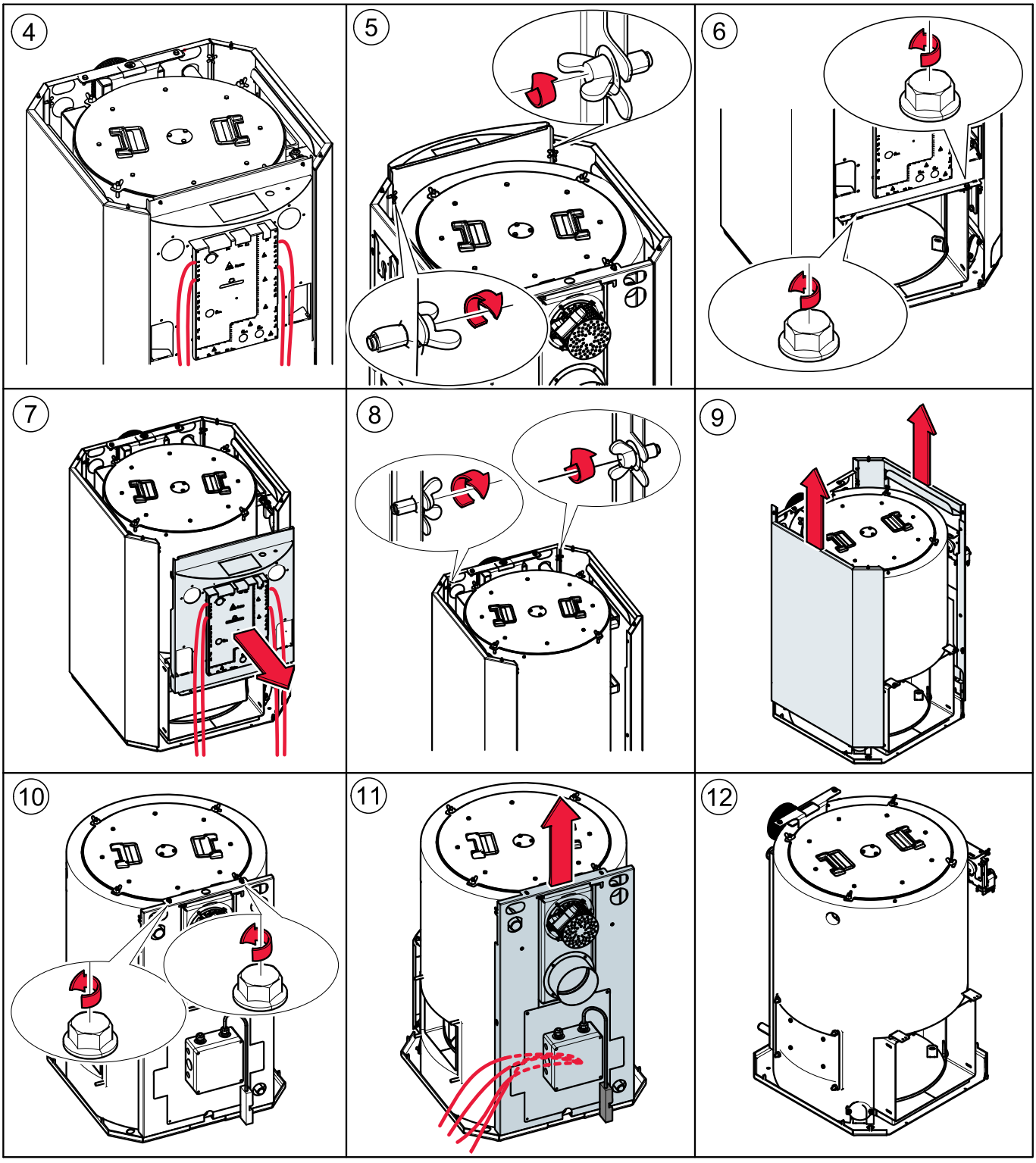
Damage of property
Remove the electric cables before removing the burner.

7.5.3 Dismantling the boiler door



7.5.4 Dismantling the boiler casing





Note

Before dismantling the rear panel burner contact–BR1, boiler controlled pump–RES 2, emergency stop heating–NOT; power supply–Netz must be disconnected and routed back. See picture number 2

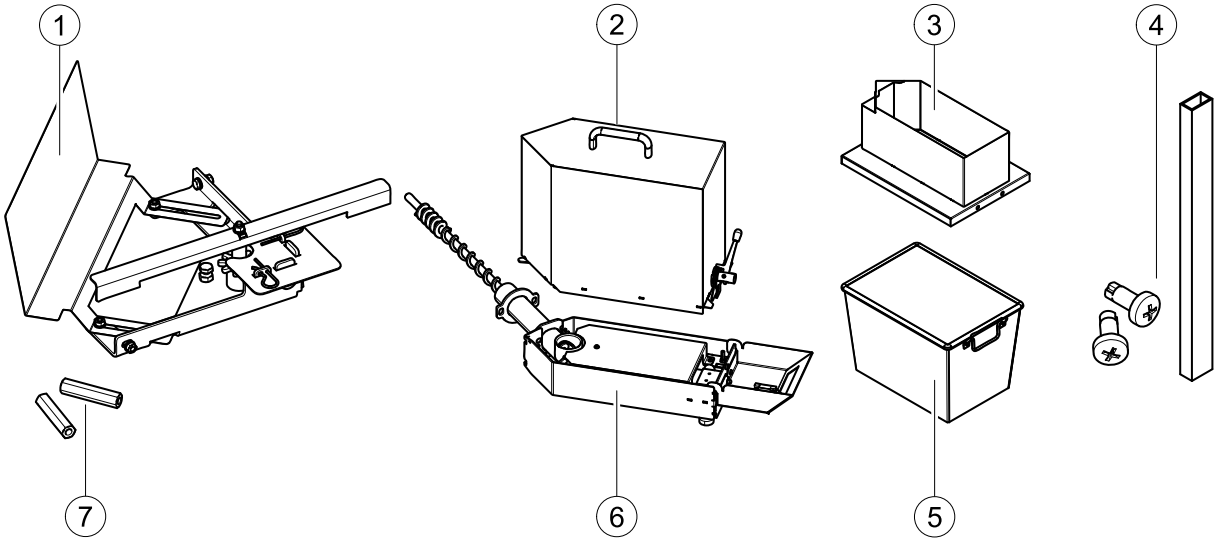
8 External de-ashing system

We offer an automatic external de-ashing system.

1. Description of de-ashing system
2. How the de-ashing system works
3. Installating 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.



1	Turnstile with agitator, door plate and mounting bolts	5	Ash container
2	Ash box with single-hand lever	6	Sub-assembly with extractor auger and cable
3	Mounting frame	7	Extended nuts to secure the sub-assembly
4	Cable duct with mounting bolts	8	1 pack 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 How the de-ashing system works

The de-ashing system is fully automatic. A dedicated motor in the sub-assembly of the de-ashing system drives the de-ashing auger. Its function is controlled and tested by the boiler controller.
The motor in the sub-assembly of the de-ashing system drives the de-ashing auger and the turnstile agitator arm. The agitator arm conveys the ash to the de-ashing auger. The de-ashing auger conveys the ash from the ash chamber into the ash box.
When the ashbox is full then the alarm text **"Ash"** appears on the display of the boiler controller. If you do not empty the ash box, the completes a futher 3 de-ashing sequences before failing. The boiler controller then displays the alarm text **"Ash box full"**. The heating system switches off. The heating system switches back on again automatically after the ash box has been emptied.

For pellets with a very high ash content, it is necessary to extend the duration of the de-ashing process and possibly also reduce the time interval between de-ashing processes. This can be done using parameters P195 and P196.

DE-ASHING PARAMETER			FACTORY SETTINGS		
Parameter	**Display on screen**	**Description**	**PE(S) 12–20**	**PE(S) 25–32**	**PES 36–56**
P195	Min running time ash	Burner run time until start of next de-ashing attempt	120 min	80 min	45 min
P196	Ash comp. duration	Duration of de-ashing process	3 min	3 min	5 min

Note

The de-ashing system compresses the ash and conveys it from the ash chamber into the ash box. How frequently you need to empty the ash box depends on pellet consumption and the ash content of the pellets.

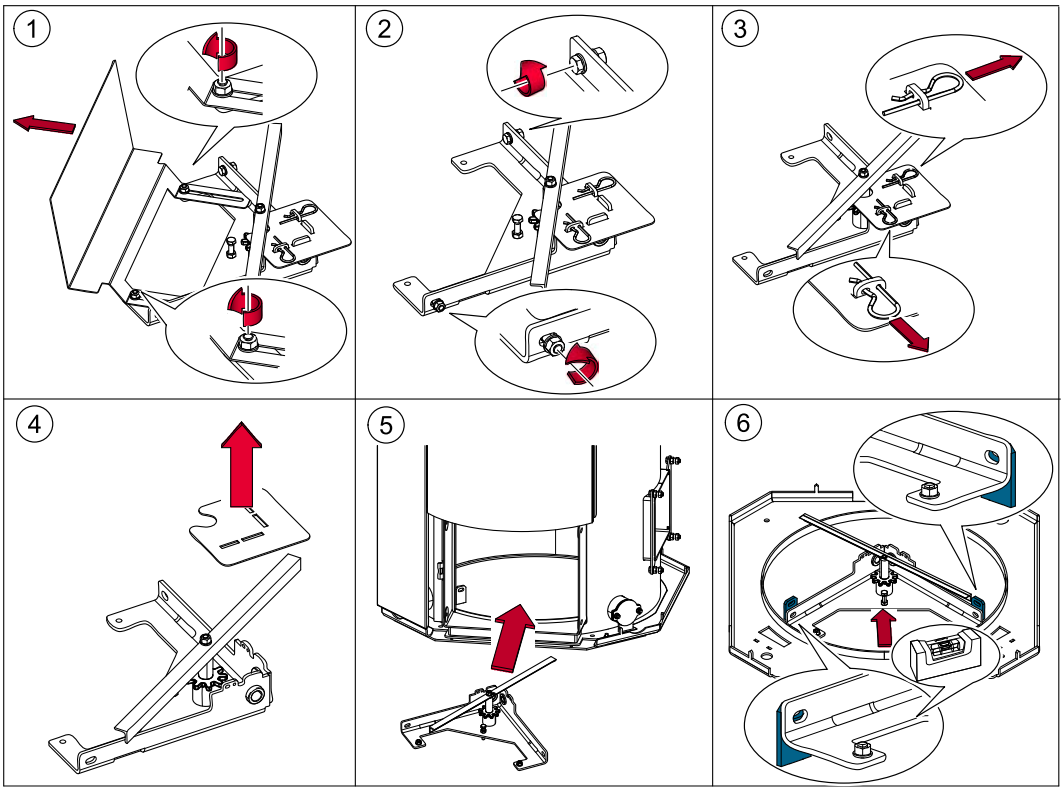
8.3 Installing the de-ashing system

We recommend 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 de–ashing system 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

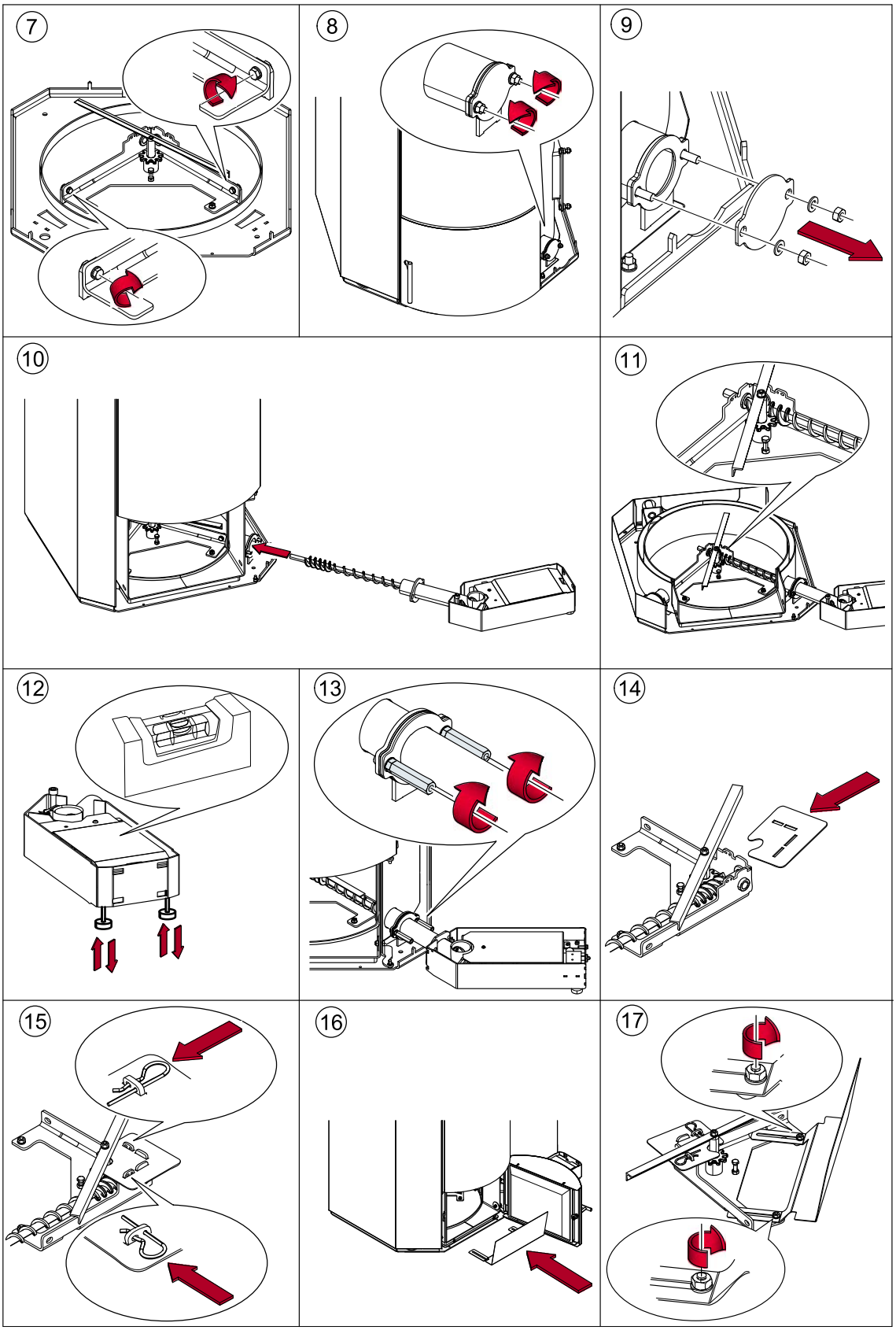
8.3.1 Bringing in and installing de–ashing system on the base plate



Note

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

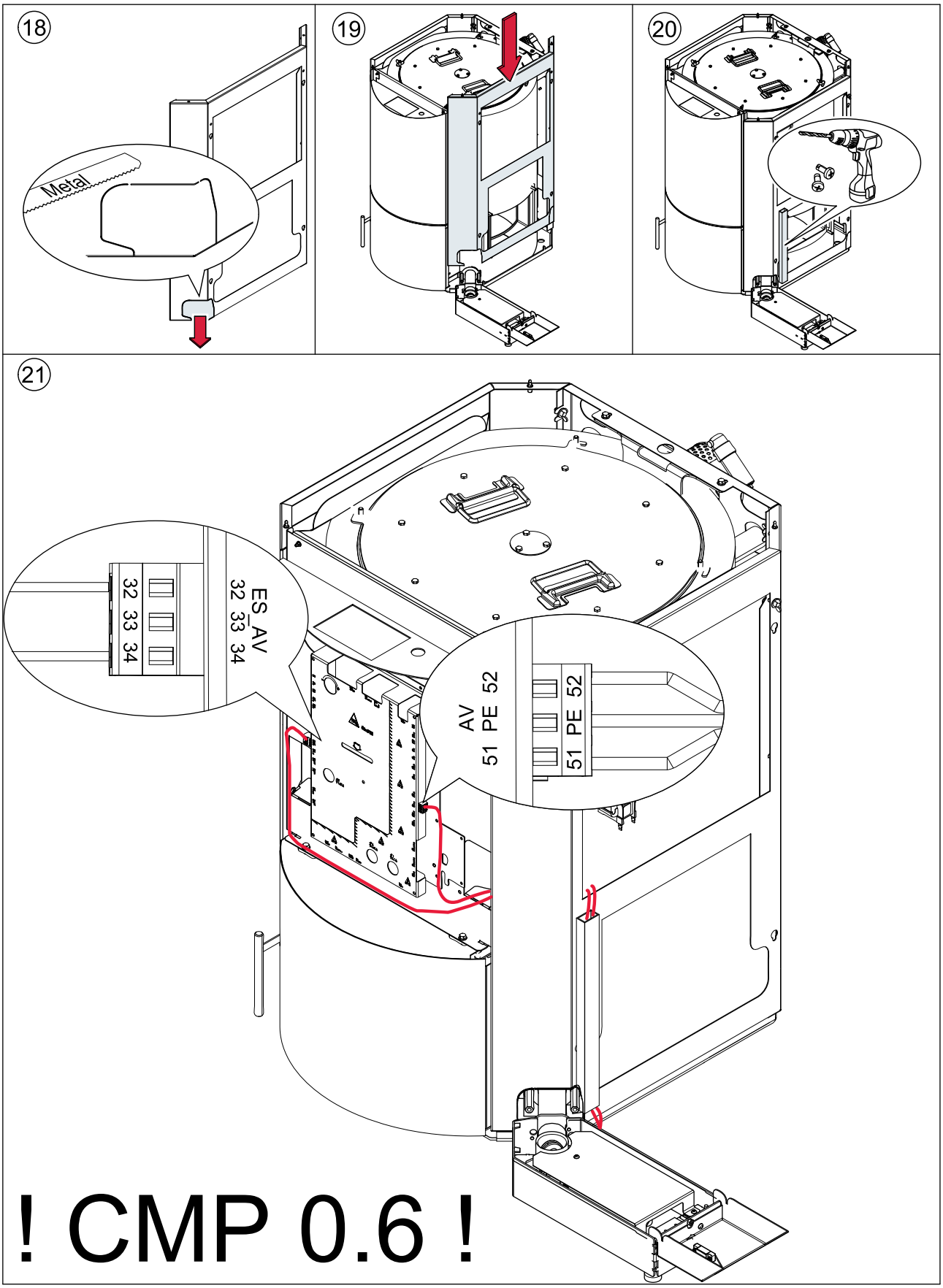
8.3.2 Installing the ash auger, fitting the sub-assembly and mounting the door plate



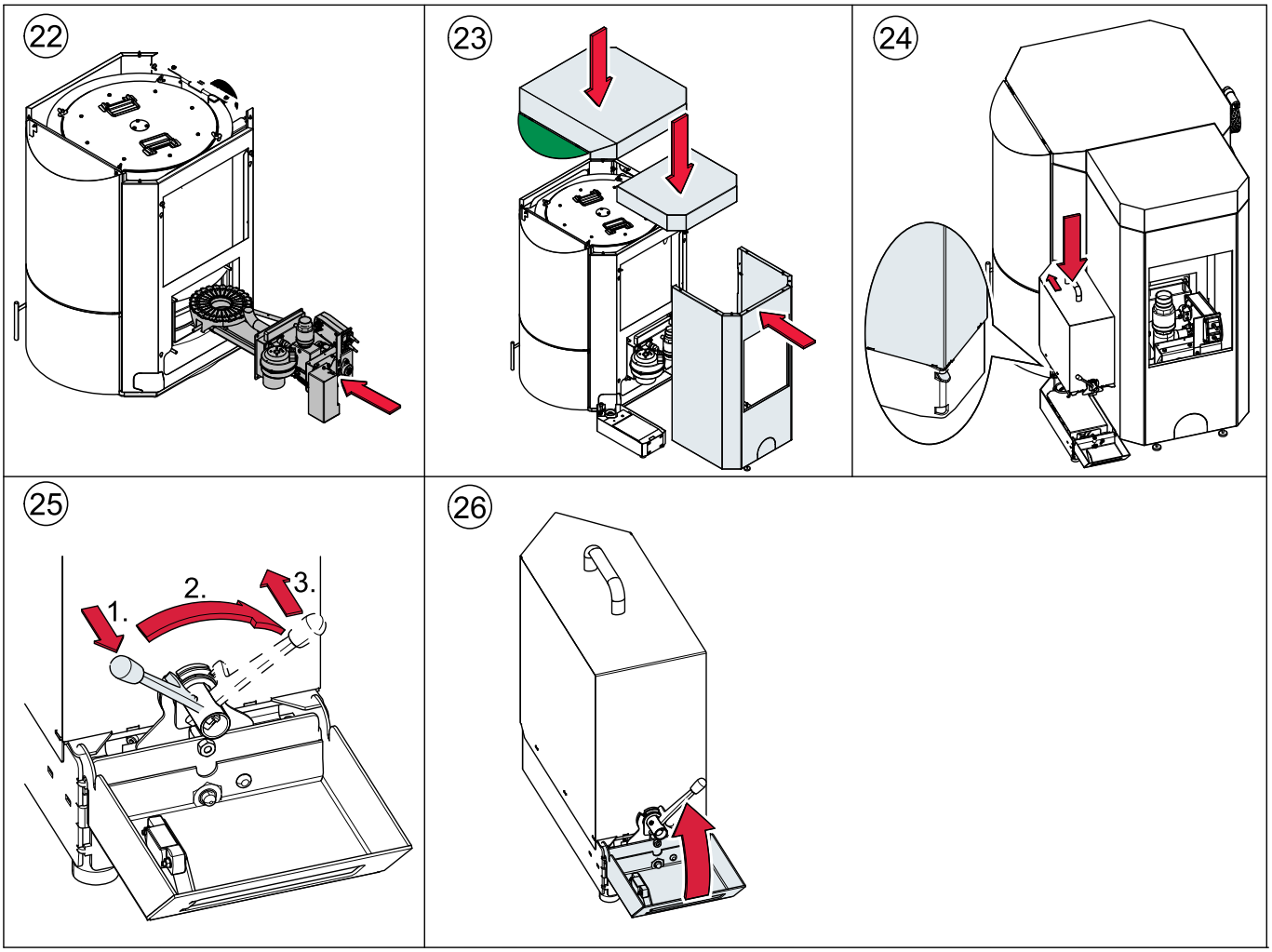
Note

Do not tighten the screws firmly (picture 7). Tighten the screws firmly only after working step in picture 11.
The ash auger engage with the gear must be so that the agitator moves freely.

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



8.3.4 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 ON the boiler
2. Open the Pellematic menu at the control unit by entering the code under parameter 199 in level 200. Then go to **parameter 212: Ash box**
3. Set up the number from **0** to **1**
4. Ash box is activ

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 device to increase the return temperature is already integrated into the boiler. You do not need to make any adjustments to this.

2. **Hydraulic schematics**

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

   Combination with an accumulator tank is possible and makes sense in certain circumstances.

3. **Connections**

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

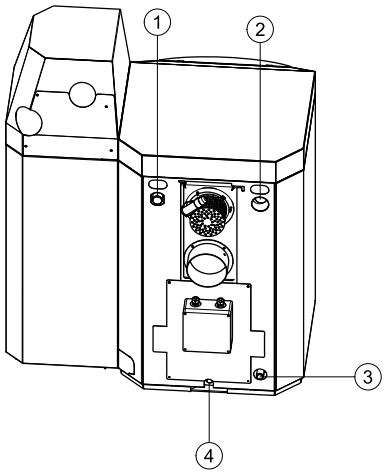
4. **Drain connection**

   When you install the pellet boiler, remove the plug from the drain connection (4) and fit a 1/2" diameter shut-off valve.

5. **Thermometer connection**

   Installing a thermometer at location (3) (submersion sleeve 3.94 in 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 at location (3).

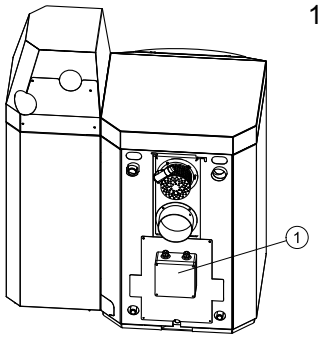


1	Flow	3	Thermometer connection
2	Return	4	Drain connection

10 Connecting up to the power supply

10.1 Terminal box

The terminal box serves for connecting up the power supply, low water cut off, curcuit pump an the summer winter switch.



1..... Terminal box

10.1.1 Wiring diagram - terminal box

The wiring diagrams for the terminal box provide detailed technical information for electricians.

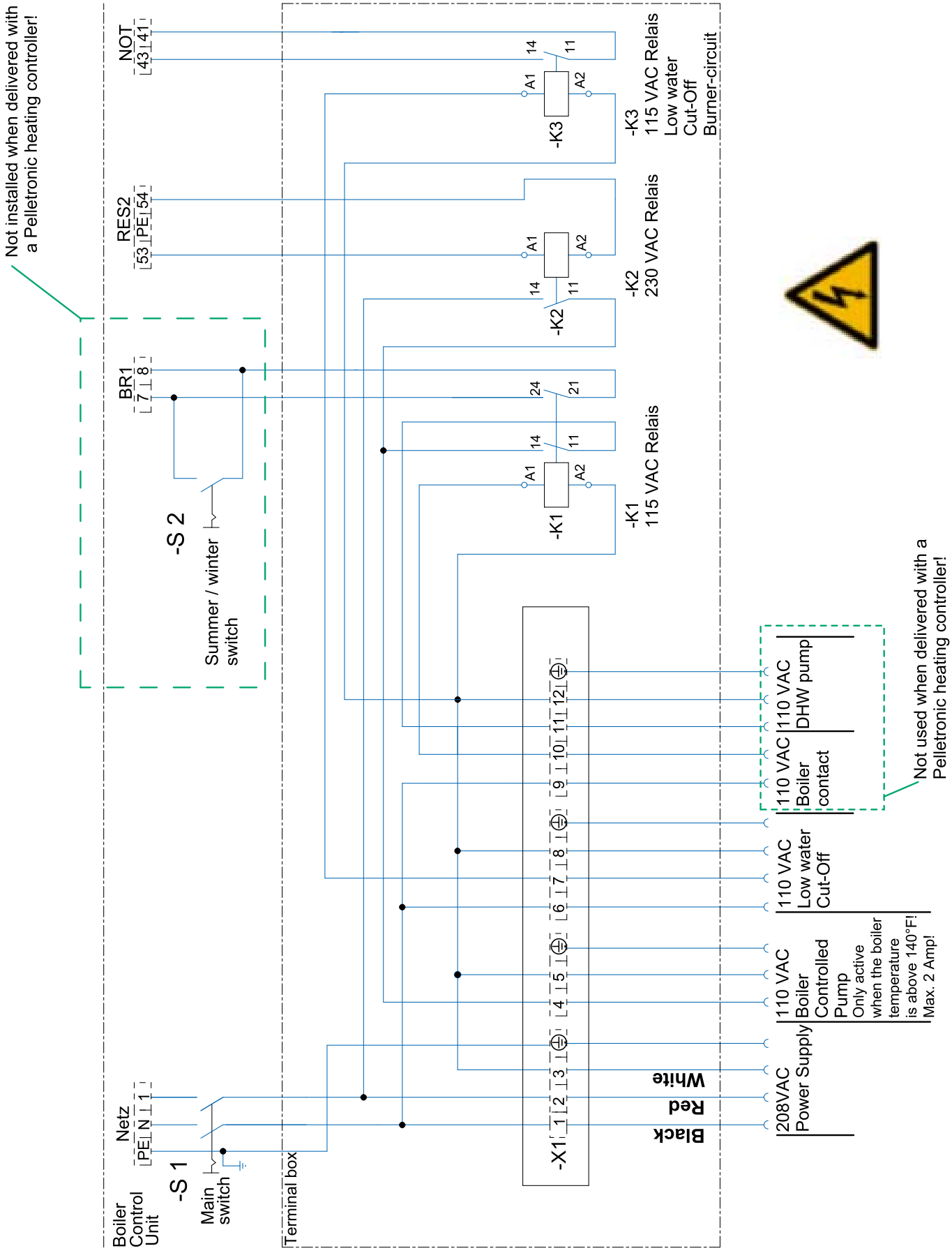
DANGER

Electric shock
Only an authorised service technician may connect up the pellet boiler to the power supply.
Isolate the entire heating system from the power supply before starting work on the pellet boiler.

General information for the electrician

- Voltage supply 208V: Supply line protection 16A
- Lightening protection: as there is no possible complete protection against lightening, we suggest fitting a voltage spike surpressorin the building distribution system.
- **Electrical connection:**
  USA 208 VAC, 60 Hz, 6A for auger delivery system, 16A for vacuum suction system
  EU 230 VAC, 50 Hz, 6A for auger delivery system, 16A for vacuum suction system

Wiring plan	
Terminal	**Specification**
1	Hot wire L1 (Black) - Power Supply
2	Hot wire L2 (Red) - Power Supply
3	Neutral wire (White) - Power Supply
⏚	Ground wire - Power Supply
4	Hot wire - Boiler Controlled Pump
5	Neutral wire - Boiler Controlled Pump
⏚	Ground wire - Boiler Controlled Pump
6	Hot wire - Power Supply water Cut-Off
7	Hot wire - Burner Circuit Low water Cut-Off
8	Neutral wire - Low water Cut-Off
⏚	Ground wire - Low water Cut-Off
9	Hot wire - boiler contact
10	Hot wire - boiler contact
11	Hot wire - Domestic hot water pump
12	Neutral wire - Domestic hot water pump
⏚	Ground wire - Domestic hot water pump

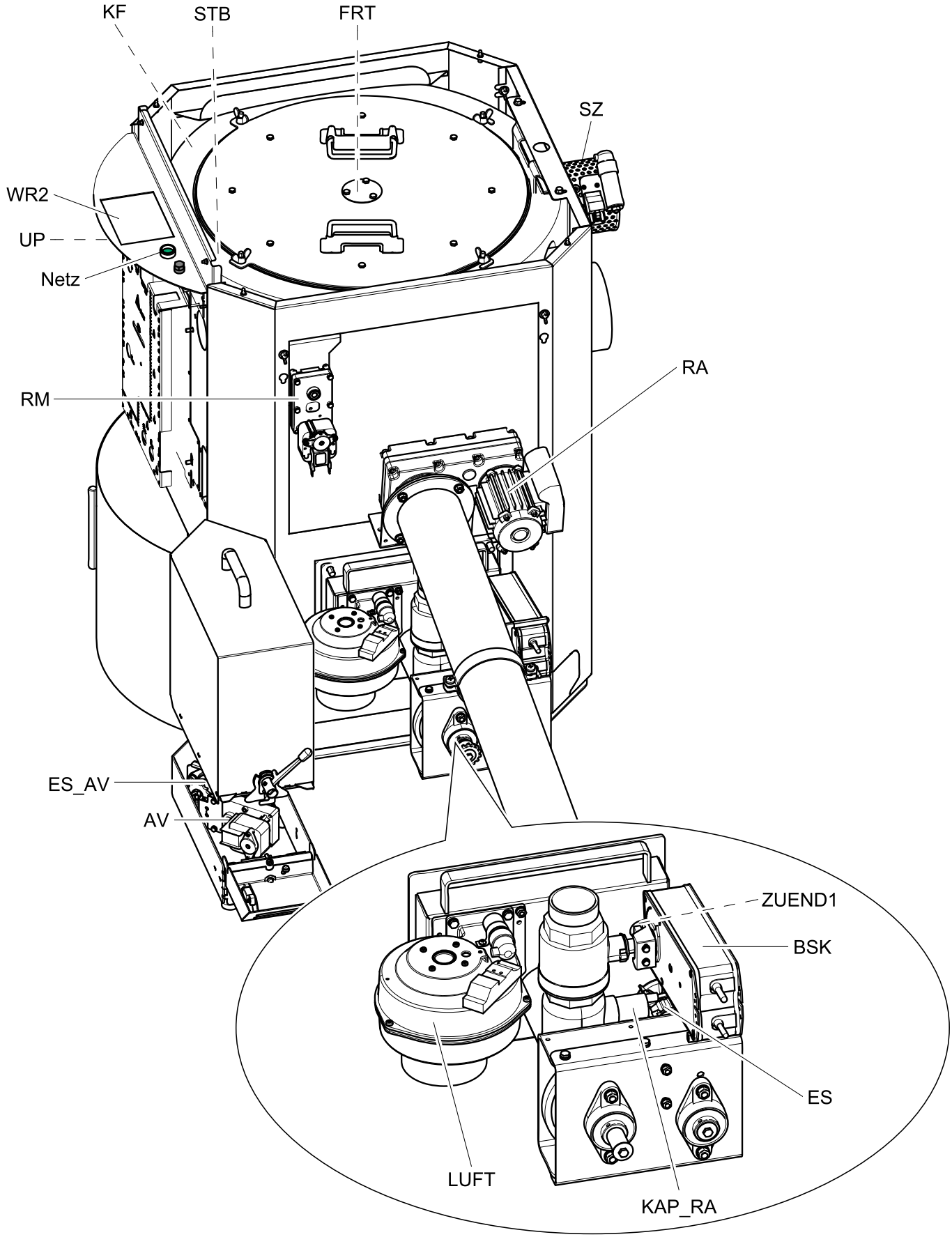

Not installed when delivered with a Pelletronic heating controller!
Boiler Control Unit
Netz
PE N 1
-S 1
Main switch
Terminal box
BR1
7 8
-S 2
Summer / winter switch
RES2
53 PE 54
NOT
43 41
-K1
115 VAC Relais
-K2
230 VAC Relais
-K3
115 VAC Relais
Low water Cut-Off
Burner-circuit
A1
A2
14
11
24
21
-X1
1 2 3 4 5 6 7 8 9 10 11 12
Black
Red
White
208VAC Power Supply
110 VAC Boiler Controlled Pump
Only active when the boiler temperature is above 140°F!
Max. 2 Amp!
110 VAC Low water Cut-Off
110 VAC Boiler contact
110 VAC DHW pump
Not used when delivered with a Pelletronic heating controller!

10.2 Plugs on the boiler controller

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

Designation of the plug-in position		Voltage	Name of sensors, motors and pumps
KF	8 9	24 Volt	Boiler sensor
UP	2 3 4	24 Volt	Negative draft measuring
AE2	5 6 7	24 Volt	Analog-input 2
FRT	+12 13	24 Volt	Combustion chamber sensor (optional)
RGF	+14 15	24 Volt	Flue gas sensor
BR1	7 8	24 Volt	Burner contact
AK	11 12	24 Volt	Existing boilers
ES_AV	32 33 34	24 Volt	End switch ash box
DE1	37 36 35	24 Volt	Not used
KAP_ZW	5 4 3	24 Volt	Capacitive Sensor – hopper
KAP_RA	5 4 3	24 Volt	Capacitive sensor – burner (only for auger system)
BSK	6 5 4 3 2 1	24 Volt	Fire protection – motor
ES_BSK	25 26	24 Volt	Fire protection – end switch
LUFT	11 PE N	230 Volt	Burner fan
ES	6 PE N 3 2 1	230 Volt	Burner motor
ZUEND	22 PE N	230 Volt	Ignition
MA	47 PE 48	230 Volt	Magnetic valve (only for condensing boiler)
Netz	PE N 1	230 Volt	Power supply
SPL	46 PE N	230 Volt	Vacuum suction system – relay board
RA	16 15 14 PE N	230 Volt	Fuel transport system – motor
ZW	16 15 14 PE N	230 Volt	Suction turbine
RES 1	49 PE 50	230 Volt	Motor hopper – PES 36–56 only
RES 2	53 PE 54	230 Volt	Boiler controlled pump
AV	51 PE 52	230 Volt	Motor ashbox
UW	N PE 13	230 Volt	Not used
SZ	N PE 17	230 Volt	Flue gas fan
RM	N PE 15	230 Volt	Motor boiler cleaning device
SM	20 19	dry contact	Fault signal relay (max. 5 A)
SI2	60 61	230 Volt	Not used
TUEB	13 14	230 Volt	Not used
STB	19 PE 17	230 Volt	Safety temperature sensor
NOT	43 41	230 Volt	Emergency stop heating, USA: Low water cut off
WR1	4 PE N	230 Volt	Power supply external heating controller
WR2	B A GND 24 V	24 Volt	Operating display
WR3	GND 24V B A	24 Volt	Pelletronic heating controller
EWB	A B GND	24 Volt	Not used

10.2.1 Illustration of sensors, motors and pumps



10.2.2 Cable routing

DANGER

Electric shock
Isolate the entire heating system from the power supply before starting work on the pellet boiler.

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

Cables must not be routed:

- over moving parts,
- over hot parts,
- or over sharp edges.

Cables must be:

- routed in the cable ducts provided and
- through cable leadthroughs,
- tied together,
- and 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

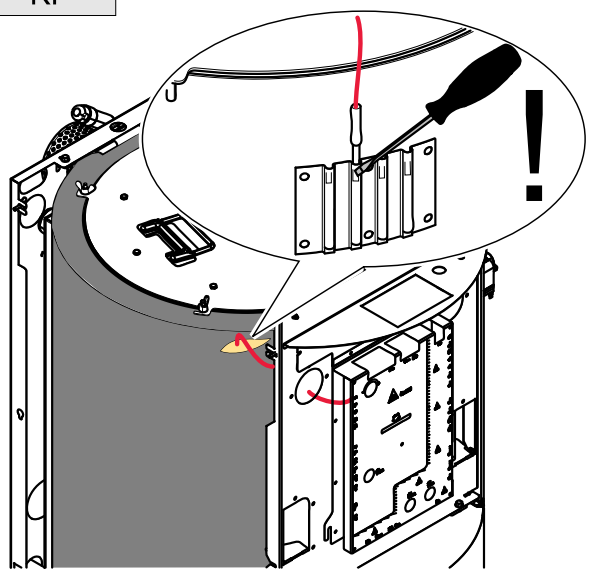
Electric shock
Check cables for damage.
Replace any cables that are damaged.

NOTICE

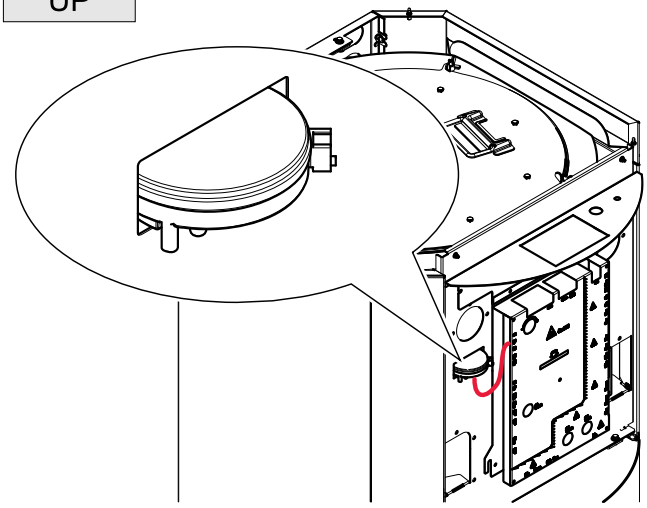
Damage to the boiler controller
Before fitting the casing components, make sure that the cable plug connector codes match the socket codes.

Cable routing from the boiler controller to the components

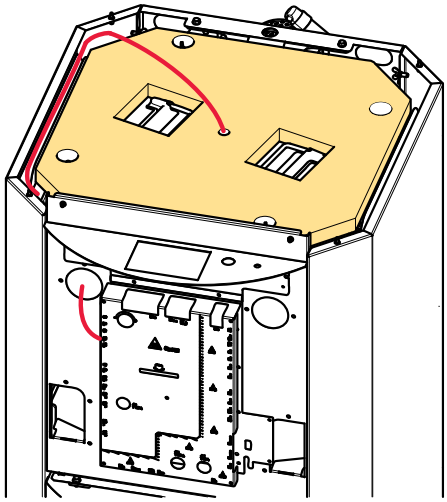
KF



UP

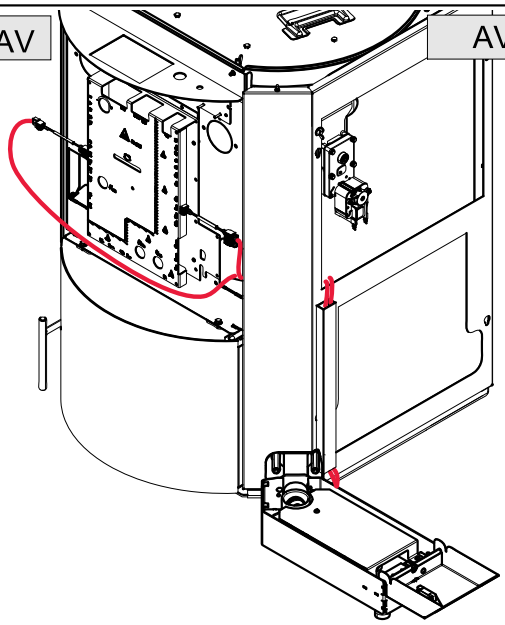


FRT

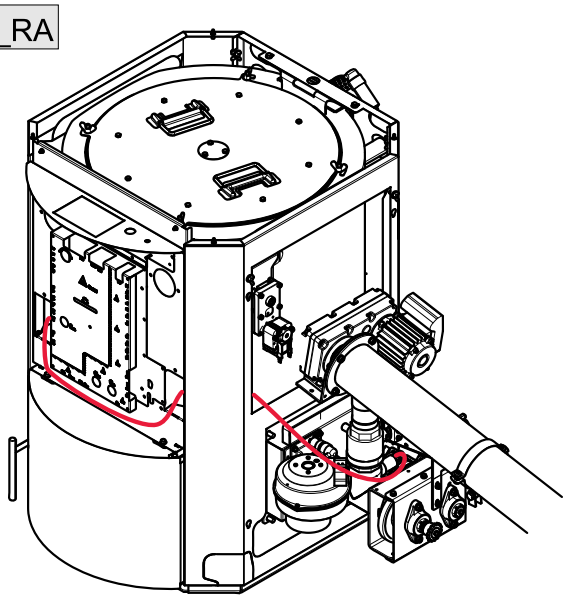


ES_AV

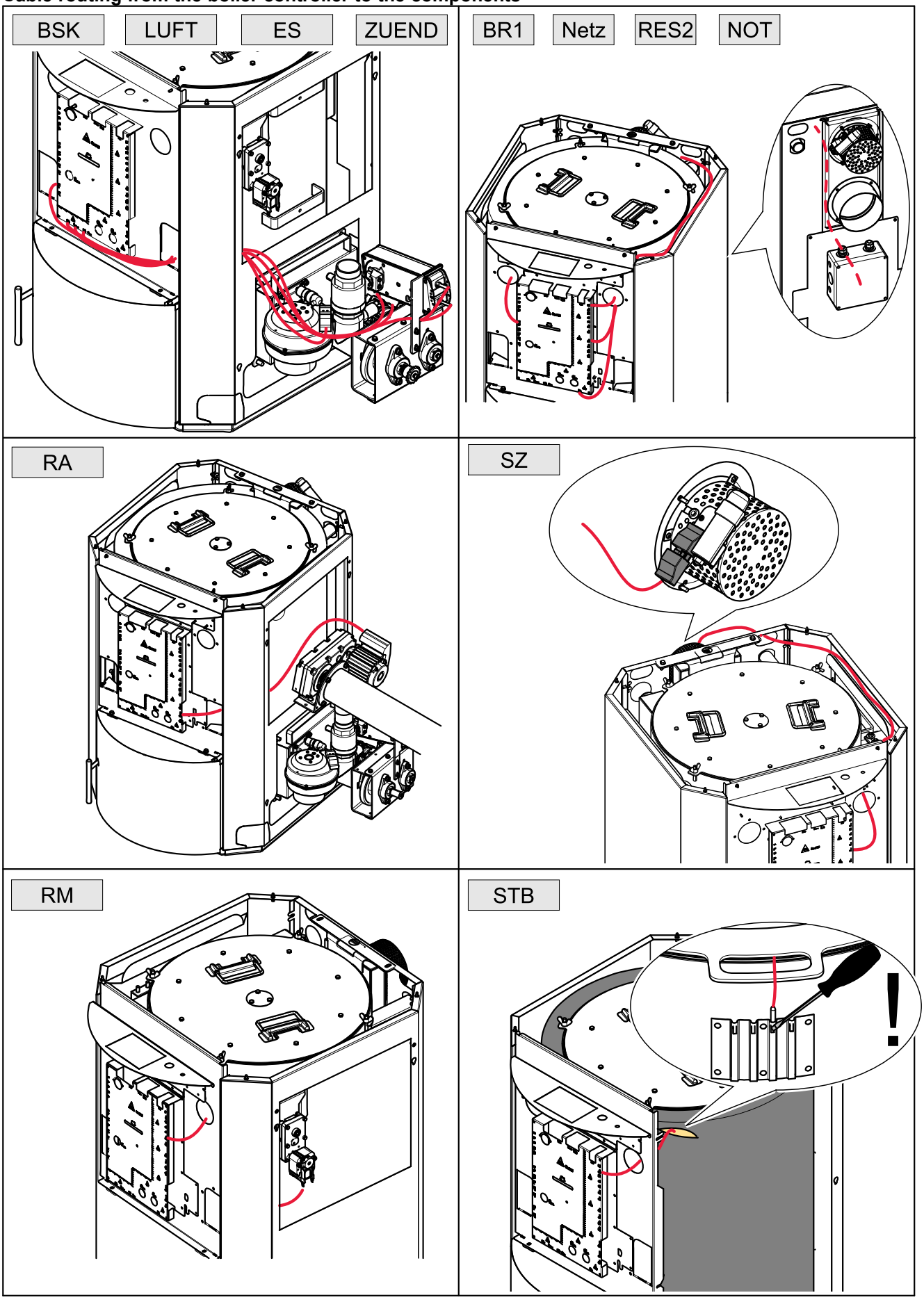
AV



KAP_RA



Cable routing from the boiler controller to the components

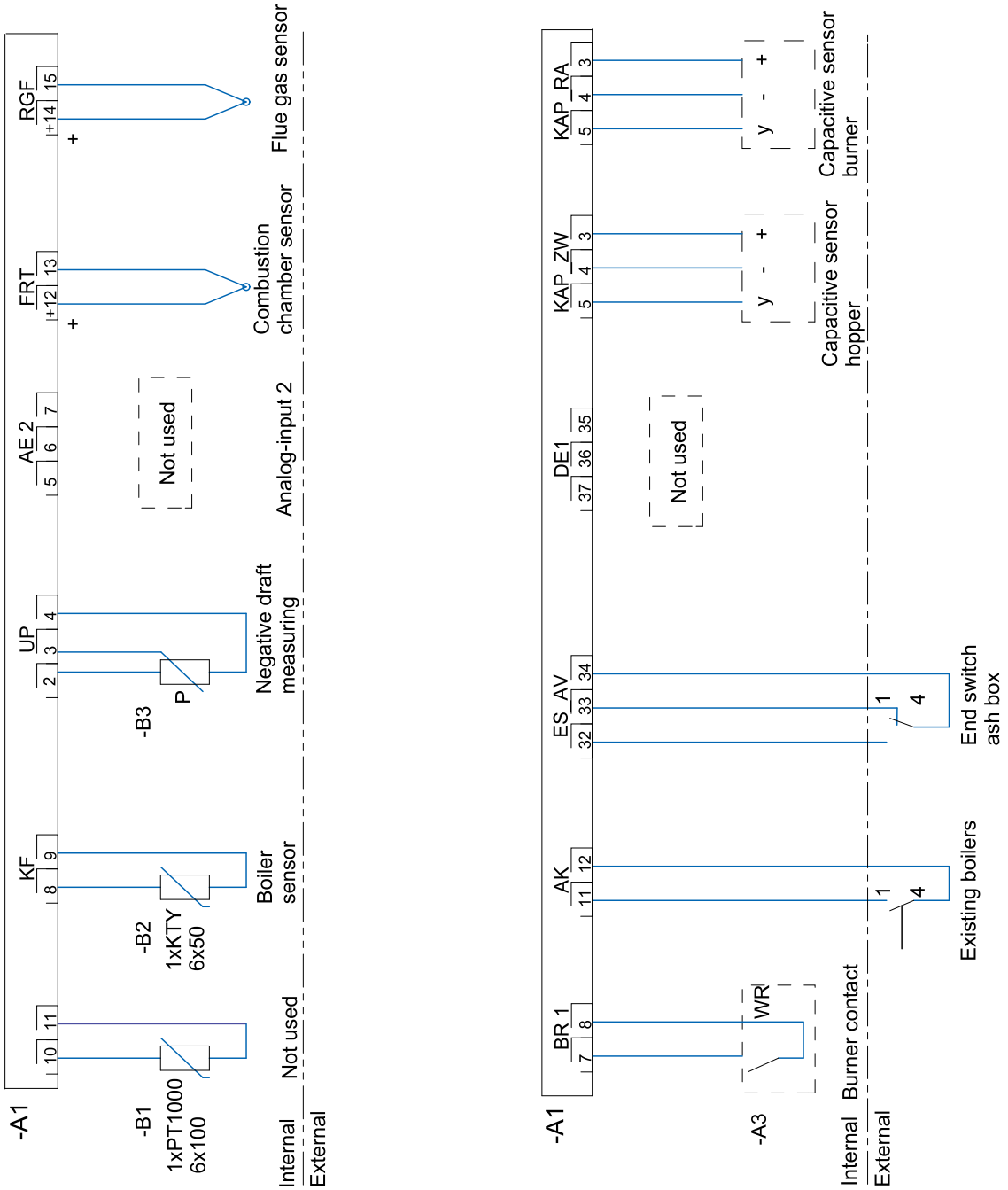


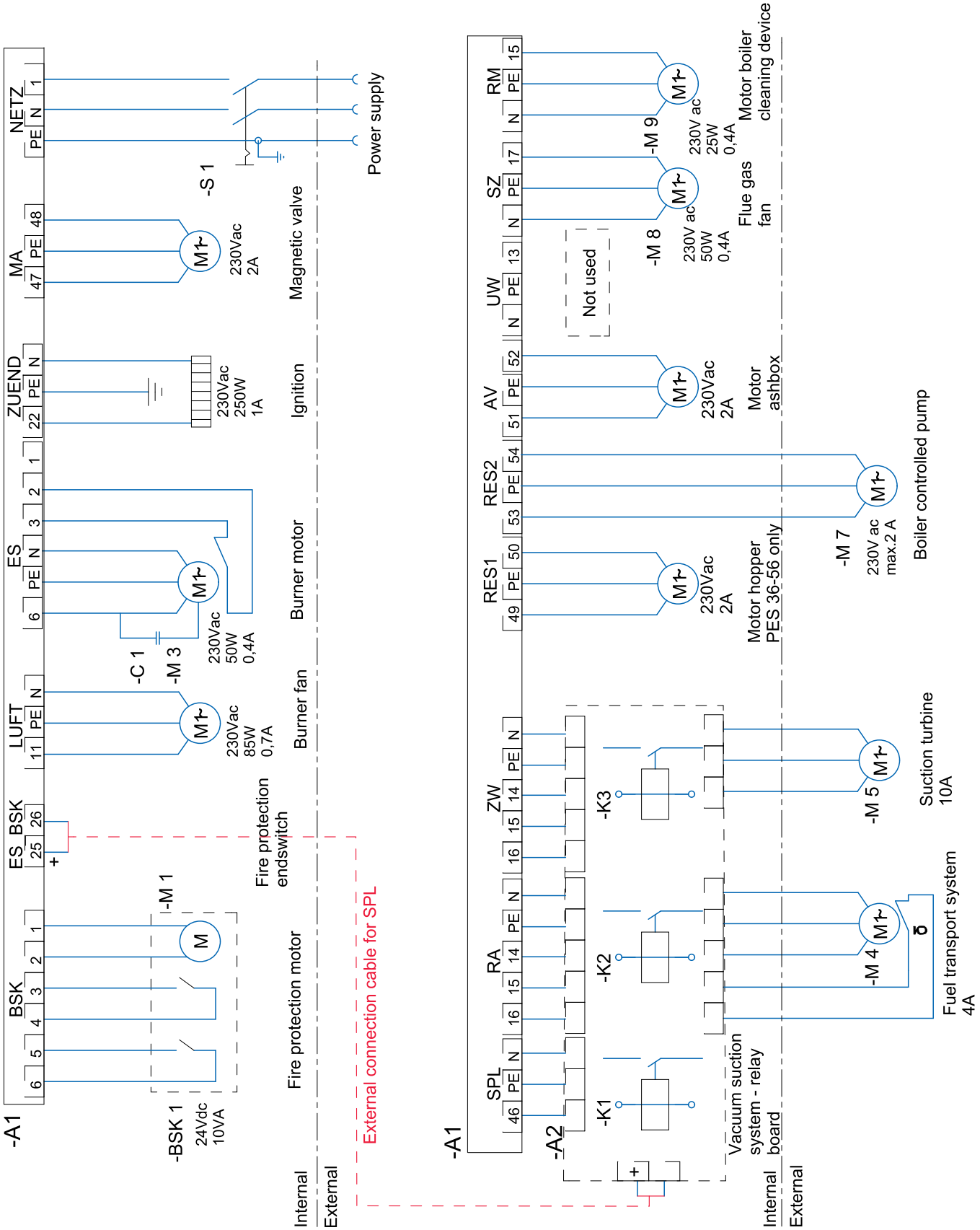
10.2.3 Wiring diagrams – boiler controller

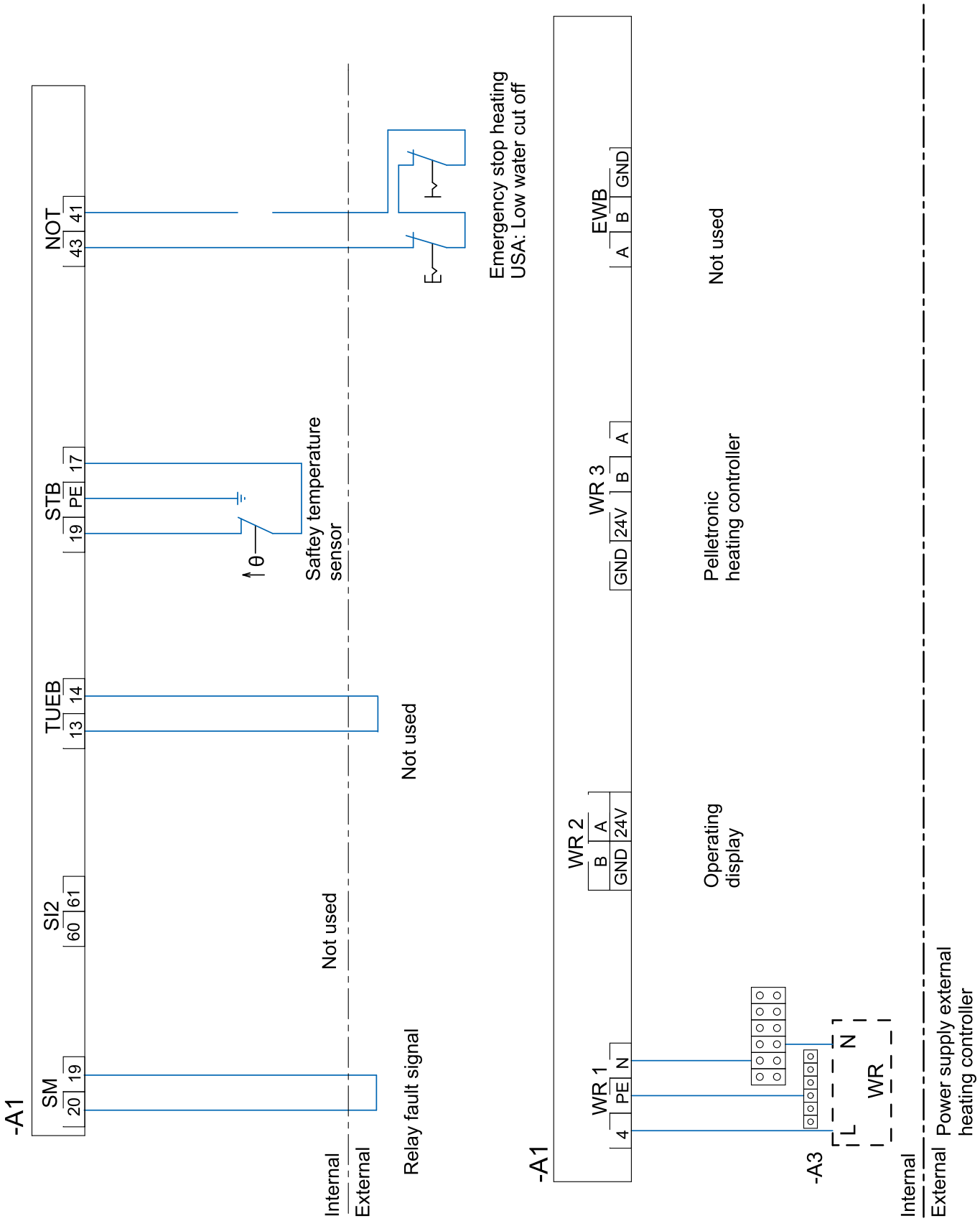
The wiring diagrams for the boiler control unit provide detailed technical information for electricians.

DANGER

Electric shock
Only an authorised service technician may connect up the pellet boiler to the power supply.
Isolate the entire heating system from the power supply before starting work on the pellet boiler.




-A1
BSK
ES BSK
LUFT
ES
ZUEND
MA
NETZ
-M 1
-BSK 1
24Vdc
10VA
Fire protection endswitch
Fire protection motor
-C 1
-M 3
230Vac
50W
0,4A
230Vac
85W
0,7A
Burner fan
Burner motor
230Vac
250W
1A
Ignition
230Vac
2A
Magnetic valve
-S 1
Power supply
Internal
External
External connection cable for SPL
-A2
-A1
SPL
RA
ZW
RES1
RES2
AV
UW
SZ
RM
-K1
-K2
-K3
Vacuum suction system - relay board
-M 4
-M 5
Suction turbine
10A
Fuel transport system
4A
-M 7
230V ac
max.2 A
Boiler controlled pump
Motor hopper
PES 36-56 only
230Vac
2A
Motor ashbox
Not used
-M 8
230V ac
50W
0,4A
Flue gas fan
-M 9
230V ac
25W
0,4A
Motor boiler cleaning device


-A1
SM
20
19
SI2
60
61
TUEB
13
14
STB
19
PE
17
NOT
43
41
θ
Saftey temperature sensor
Emergency stop heating
USA: Low water cut off
Not used
Relay fault signal
Not used
Internal
External
-A1
WR 1
4
PE
N
WR 2
B
A
GND
24V
WR 3
GND
24V
B
A
EWB
A
B
GND
Operating display
Pelletronic heating controller
Not used
-A3
L
N
WR
Internal
External
Power supply external heating controller

10.2.4 Fuses - boiler controller

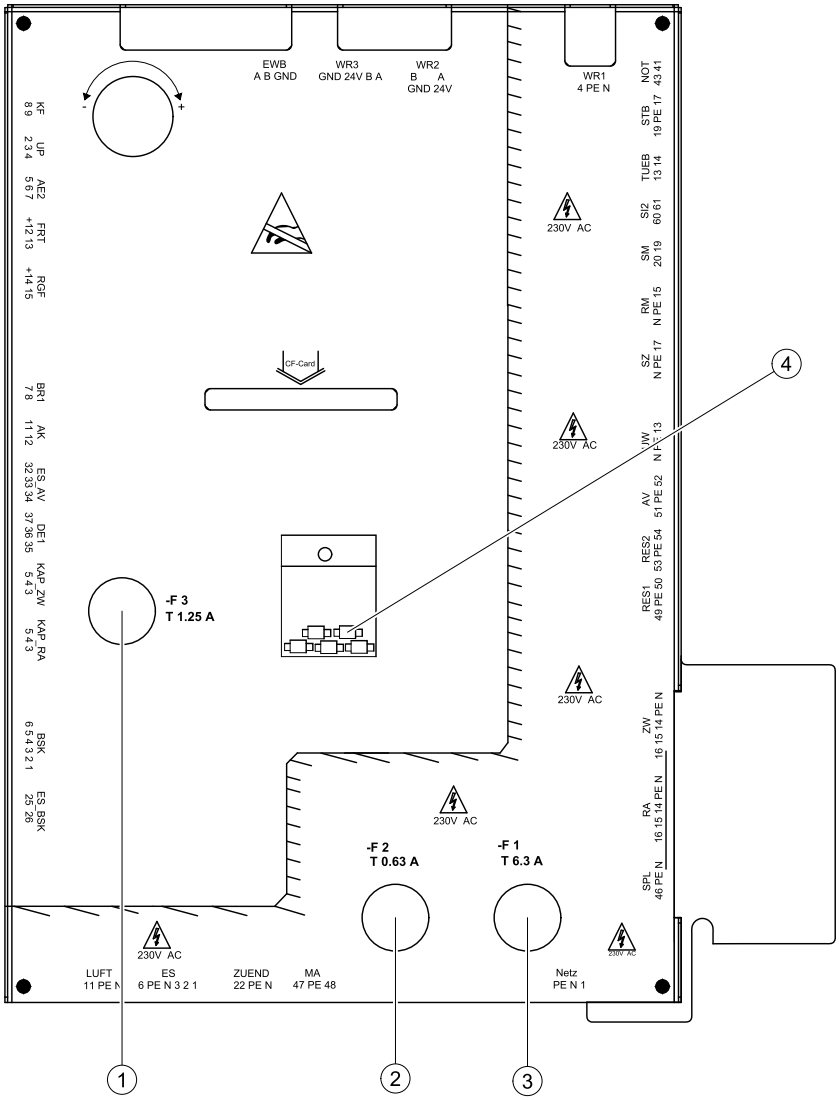
The control unit is protected against short circuits by fuses which are in the control panel (under the front boiler panel). on the boiler control unit card, behind the coloured front boiler panel are some spare fuses.

DANGER

Risk of electric shock
The clamps for the supply of the weather compensated heating circuit regulation are live when the main switch is ON. Pay attention to the varying voltages 24V and 230V

NOTICE

Damage of property
If you change microfuses, ensure correct current rating



1	F3: Safety fuse (24V area) 1,25A
2	F2: Safety fuse for external display 0,63A
3	F1: Safety fuse (230/208V area) 6,3A
4	Spare safety fuses (5mmx20mm)

11 Operating the pellet boiler

The pellet heating system is an automatic heating system. All pellet feed system and combustion system sequences are regulated automatically using an electronic boiler controller and heating controller.

11.1 Operating the heating system

NOTICE

Damage caused due to incorrect operation or incorrect settings.
Only trained operators may use the heating system.
Make sure no unauthorised persons enter the central heating room. Keep children away from the central heating room and storage room.

NOTICE

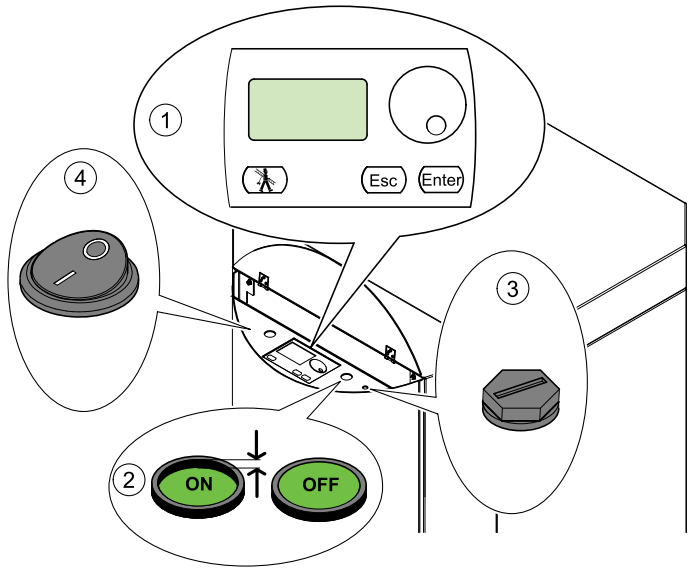
Property damage
The allowed temperature of the boiler controller is 40 to 122°F.

DANGER

Fire risk
Keep the ash removal door closed while the boiler is in operation.

11.2 Description of the control panel

The control panel is located underneath the flap above the door of the boiler.



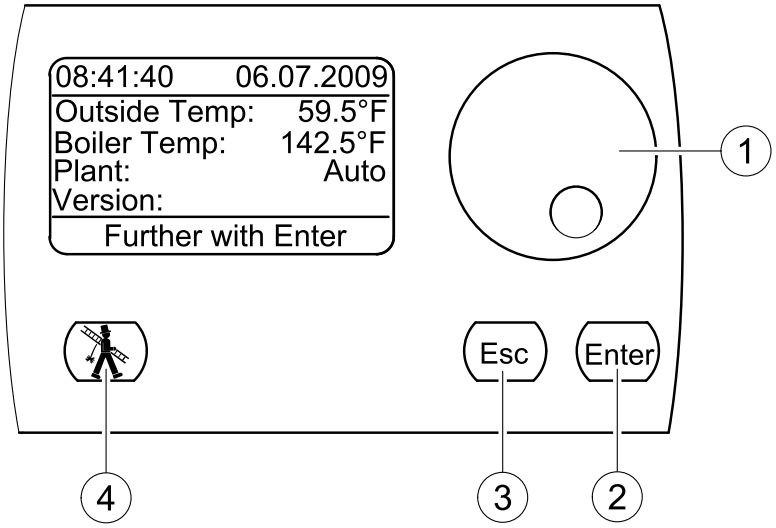
Note

Summer/winter switch does not exist with an integrated **Pelletronic heating controller**

1	Operating device	Operates the boiler controller and the heating controller.
2	Main switch	Switches off the heating system including the power supply to the control panel.
3	Safety temperature sensor	Switches the heating system off if the boiler temperature reaches 203°F. The heating controller remains active.
4	Summer/winter switch	**0 – Summer:** boiler operates if the connected domestic hot water thermostat is closed. **1 – Winter:** boiler operates on the adjusted boiler temperature.

11.3 Description operating device

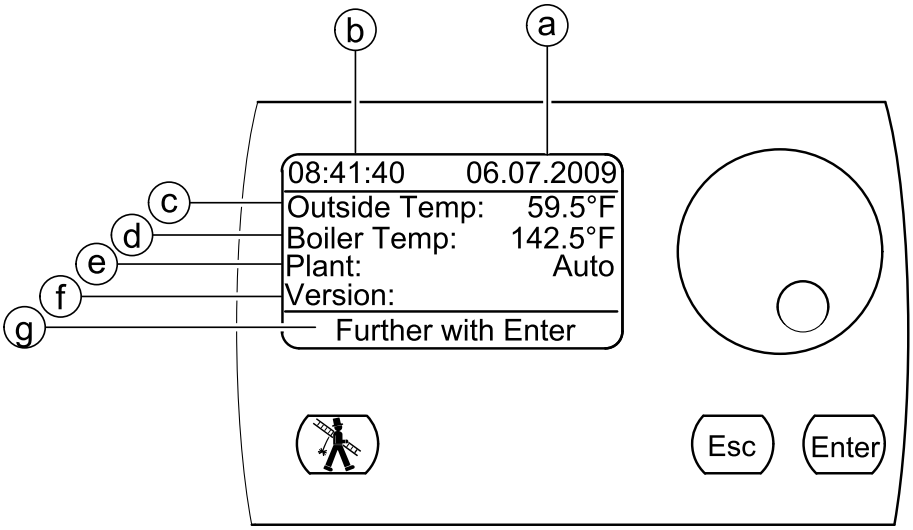
The operating device operates the heating controller and the boiler controller.



1	Thumbwheel	Select and change values
2	Enter	Confirm
3	ESC	Return
4	Chimney sweep	Used to monitor flue gas

Start screen:

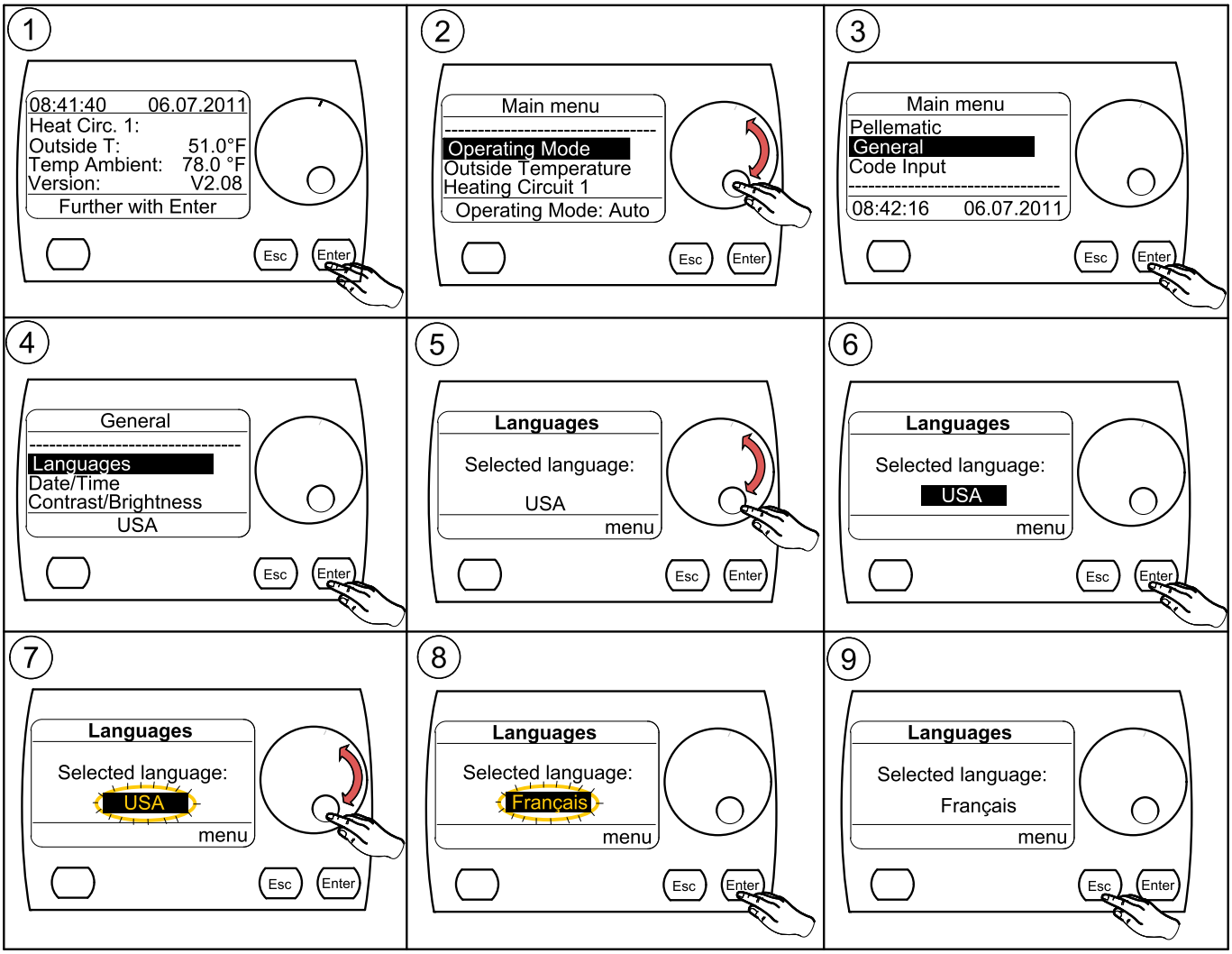
The display shows the following data during operation:



a	Date	b	Time
c	Temperature outside	d	Boiler temperature
e	Heating system mode	f	Software version
g	Command line		

11.4 Setting language, date and time

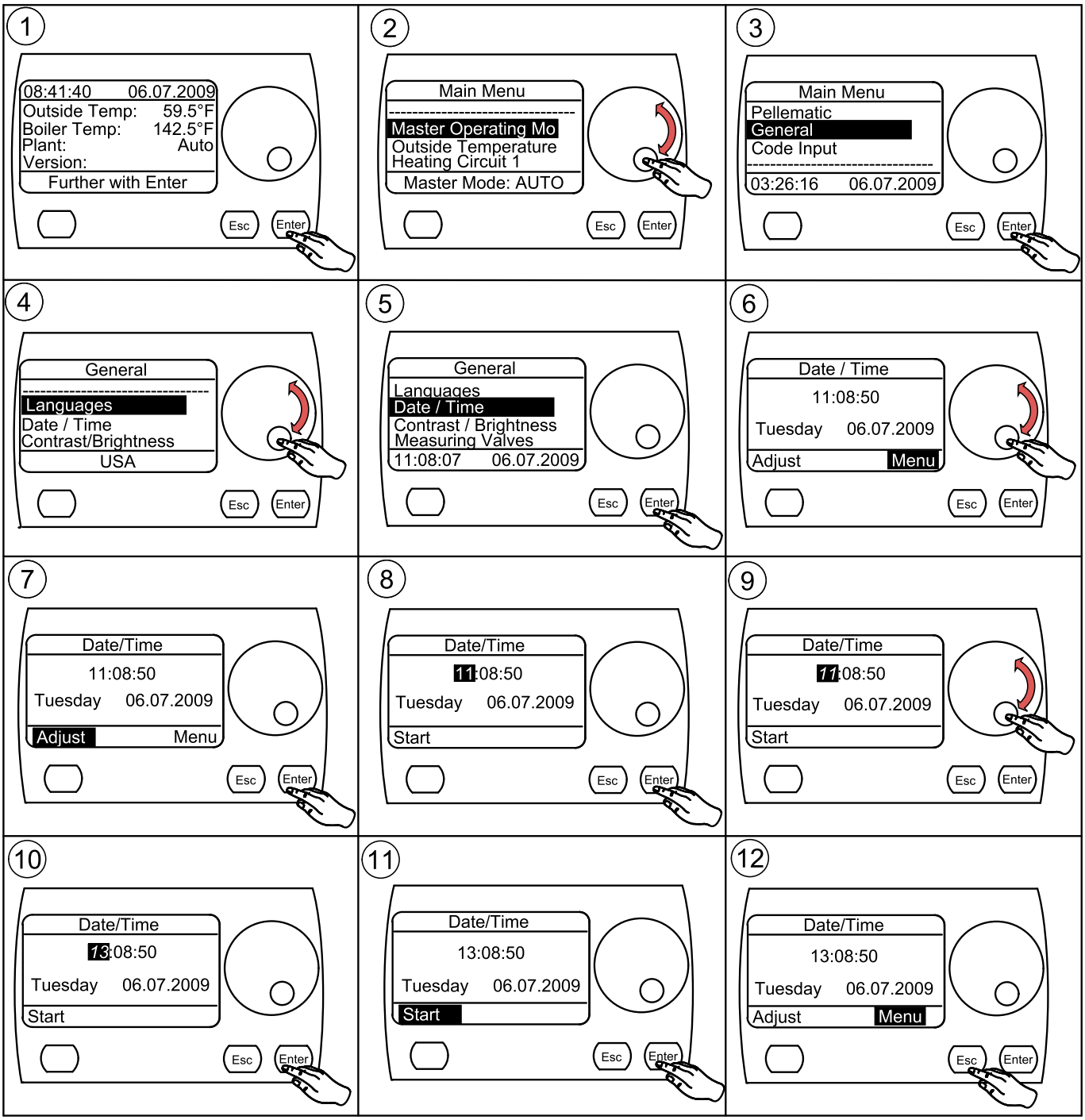
Setting the language (The factory setting for the language is USA)



Note

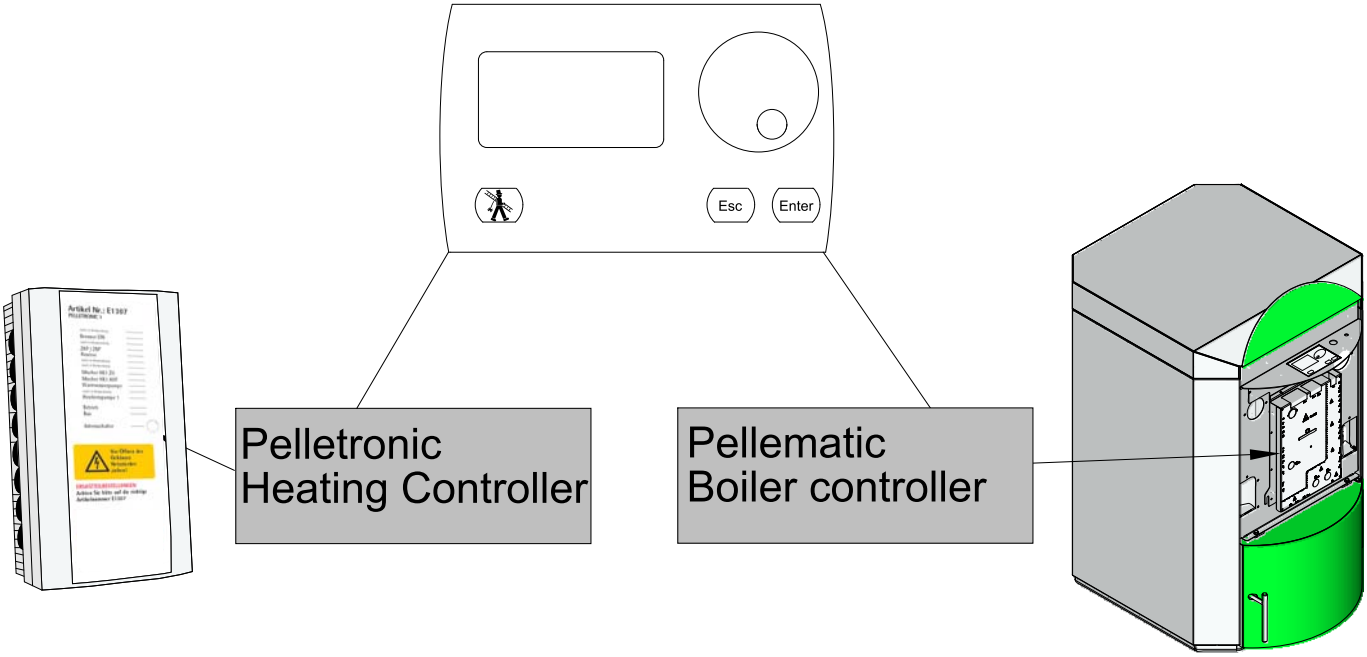
By selecting the language USA & Canada the imperial unit system is used automatically.
For all other languages the metric unit system is valid.
After each change of the language settings:
Go to **standard parameter P298**, set up the number from **0 to 1** and push the button **Enter**.

Setting date and time



11.5 Menu configuration

The operating device is used to operate the boiler controller **and** the heating controller



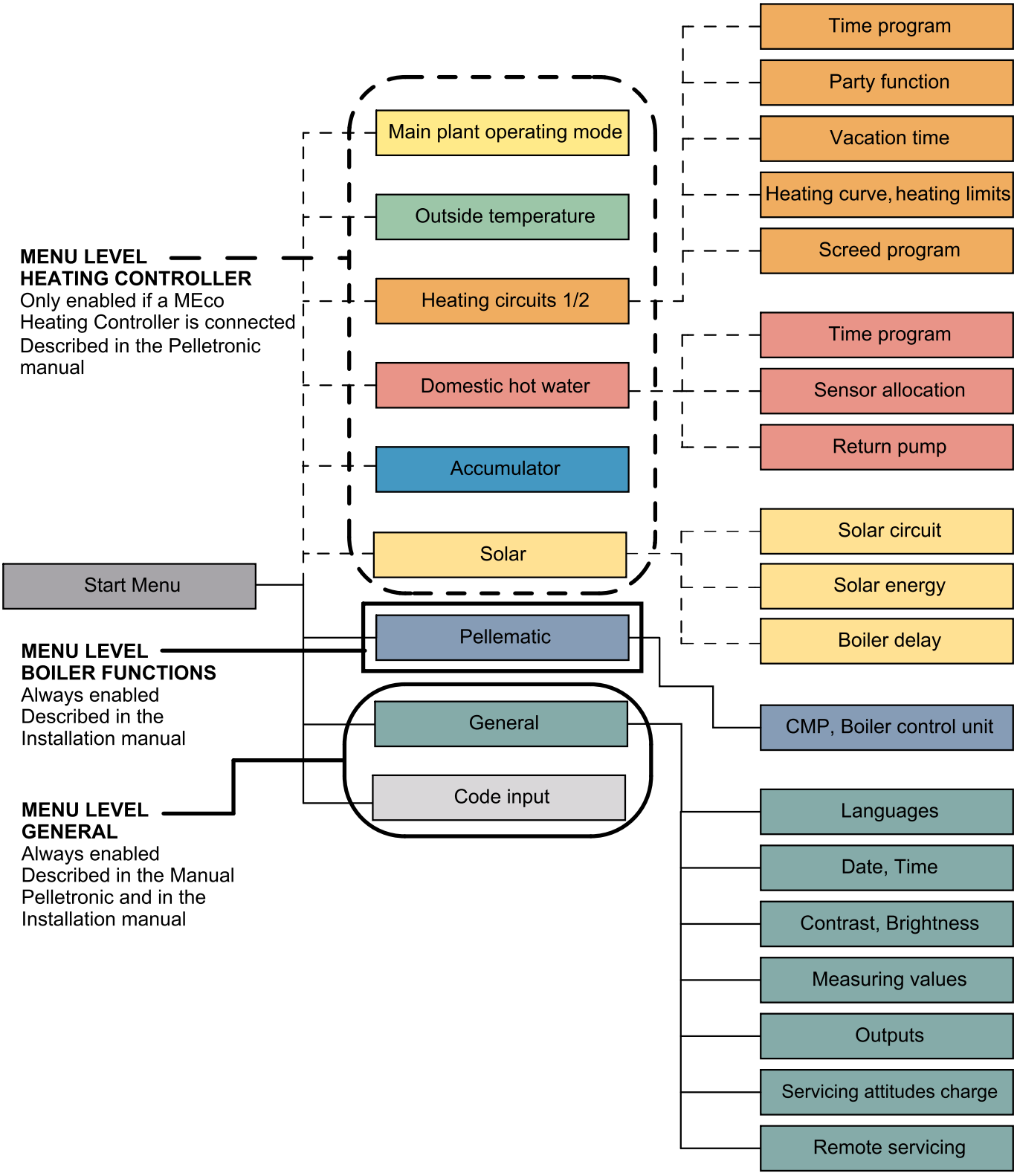
Note

The heating controller menu levels are only enabled if a Pelletronic heating controller is installed.
They are displayed until after Learn periphery has been run.

NOTICE

Damage to property and loss of warranty
Do not change any of the factory settings or settings in the protected parameter level

Menu configuration



Note

The heating controller functions are described in the **Pelletronic Plus** instruction manual.

12 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 authorized 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 control unit
3. Output test - test all motors
4. Settings in heating controller (if installed)
5. Start the pellet boiler

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

NOTICE

Property damage
The allowed temperature of the boiler controller is 40 to 122°F.

12.1 Adjusting power rating

On pellet boilers the effective heat exchanger area can be changed within a unti range. This involves opening or closing the heat exchanger tubes. The power rating of the pellet boiler is adjusted as a result. We supply 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. After the modification, each boiler will be provided with a new number plate.

12.1.1 Installing the turbulators and closure plugs

The heat exchanger in the pellet 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

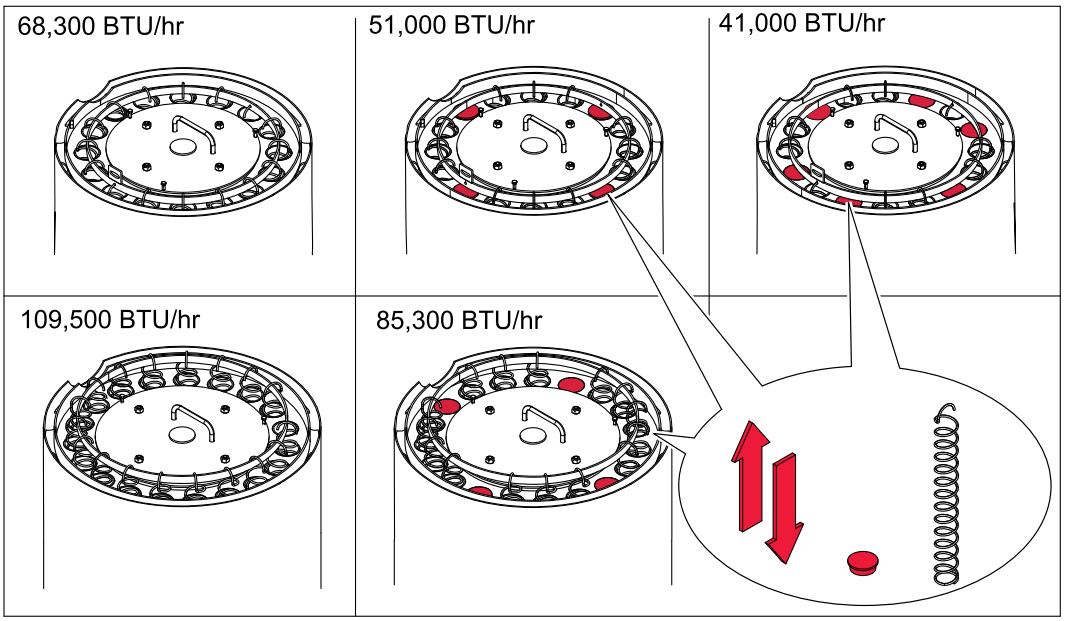
1. Remove the closure plugs from the ends of the heat exchanger tubes.
2. Insert the turbulators supplied into the heat exchanger tubes.
3. Hook the turbulators onto the ring of the cleaning system.

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 (tubulators) to be removed/installed:

Boiler power ratings as per data plate	No. of springs	**Delivery status power rating**	No. of springs	
41,000 BTU/h	10	68,300 BTU/h	16	Remove 6 turbulators
51,000 BTU/h	12	68,300 BTU/h	16	Remove 4 turbulators
68,300 BTU/h	16	68,300 BTU/h	16	No adjustment required
85,300 BTU/h	16	109,500 BTU/h	20	Remove 4 turbulators
109,500 BTU/h	20	109,500 BTU/h	20	No adjustment required



12.1.2 Adjusting the boiler controller

The boiler controller must be adjusted to match the changed boiler power rating.

Parameter level 200

Open the menu **Pellematic** at the operating device. Parameter level 200 is exclusively for customer service technicians and authorized employees. You access parameter level 200 by entering the code in parameter P199. The code for parameter level 200 is the sum of day plus hour, e.g. : Day: **26**/ 08/ 2009 and hour: **14**:30:47; (26 + 14 = 40) results in the code: 26 + 14 = 40.
Then go to parameter 265 and adjust the boiler power rating

Para-meter	**Display on screen**	**Description**	**Adjus table**	**Factory setting**
P265	Power level P265: level 15	Adjusting the boiler power rating	yes	15/25/36

Note

The setting for parameter 265 is the factory setting for the boiler power rating

12.2 Settings in the boiler controller

Parameters that you must adjust to the relevant boiler type.

P265	Adjusting the boiler power rating
P263	Setting the boiler setpoint temperature, default 175°F
P202	Setting the switch-off temperature, default 185°F
P212	Activating the de-ashing system, if installed
P270	Activating the flame sensor, if installed (optional)
P213	Activating the level detection system, if weighting cells are installed (optional)

12.3 Output test

The output test is designed to test all outputs connected to the system (e.g. all motors, the alarm signal relay, the solenoid valve and the recirculation pump).

Parameter level 200

Open the menu **Pellematic** at the operating device. Parameter level 200 is exclusively for customer service technicians and authorized employees. You access parameter level 200 by entering the code in parameter P199. The code for parameter level 200 is the sum of day plus hour, e.g. : Day: **26**/ 08/ 2009 and hour: **14**:30:47; (26 + 14 = 40) results in the code: 26 + 14 = 40
Then go to parameter 203 to test all outputs.

Para-meter	Display on screen	Description	Adjus table	Factory setting
P203	Output test P203: Enter	Output test - using the thumbwheel you can select each individual output. Press Enter to switch the output on. The current power draw is shown for motors. Press Enter again to switch the output off. The outputs for the suction fan and the air blower can be increased by 20% each time the button is pressed. Once you have reached 100%, the next press of the button returns the setting to 0%. Exit the output test menu at the bottom of the list.	yes	

Outputs/motors

Designation	Check if	If not, then check if
Burner motor ES	the motor that feeds pellets to the burner is running	• the burner motor is connected • the burner motor rotates easily • the motor is defective
Suction turb ZW	the suction turbine at the hopper is running	• the suction turbine is connected • the fuse is defective • the motor is defective
Fuel tr sys M RA	the fuel transport system – motor is running	• the fuel transport system motor is connected • the fuel transport system motor rotates easily • the fuel transport system motor is defective
De-ashing motor AV (optional for PE 12–32)	the motor de–ashing system is running	• the de–ashing system is switched on (P212) • the de–ashing system is properly located and locked in position • the de–ashing system is correctly wired up

Burner plate de-ashing motor AV (optional for PE 12–32)	the burner plate de-ashing motor is running	• the burner plate de-ashing system is switched on (P212) • the burner plate de-ashing system is properly located and locked in position • the burner plate de-ashing system is correctly wired up
Burner fan LUFT	the burner fan is running **Note** You can set 5 power levels: 20/40/60/80/100)	• the wiring is correct • the motor is defective
Magnet valve MA	the magnetic valve switches over and you can hear it click **Note** **Condensing boiler only**	• the scrubber is connected • the scrubber is defective
Flue gas fan SZ	the flue gas fan is running **Note** You can set 5 power levels: 20/40/60/80/100	• the wiring is correct • the motor is defective
Boil clean M RM	the cleaning motor raises and releases the cleaning springs	• the terminal bolts on the shaft are tight • the motor is defective
Malfunc relay SM	the malfunction relay switches on and off: you can hear it clicking on and off	• the wiring is correct • the malfunction relay is defective
Ignition ZUEND	the electrode is working: you can view the current draw at the control unit after it has been switched on.	• the wiring is correct • Check the ignition electrode
Fire pro sys BSK	the fire protection ball valve(orange motor on burner) opens	• the wiring is correct • the ball valve moves easily • the motor is defective
Boiler cont P RES2	the boiler controlled pump is running **Note** only possible if the boiler controlled pump is connected	• the wiring is correct • the boiler controlled pump is defective
Hopper M RES1	the hopper motor that feeds pellets from the hopper to the burner auger is running -**only on PES 36 – 56**	• the burner motor is connected • the burner motor rotates easily • the motor is defective

The system is ready for operation after all outputs/motors have been throughly tested

Note

In order to find the sensors, motors or pumps on the boiler look 10.2 **Plugs on the boiler controller**

12.4 Filling the delivery system

For the first start up or as the pellet storage room was empty, you fill the delivery auger with manual override or by hand.

1. Filling by Parameter **104** – **Manual override**

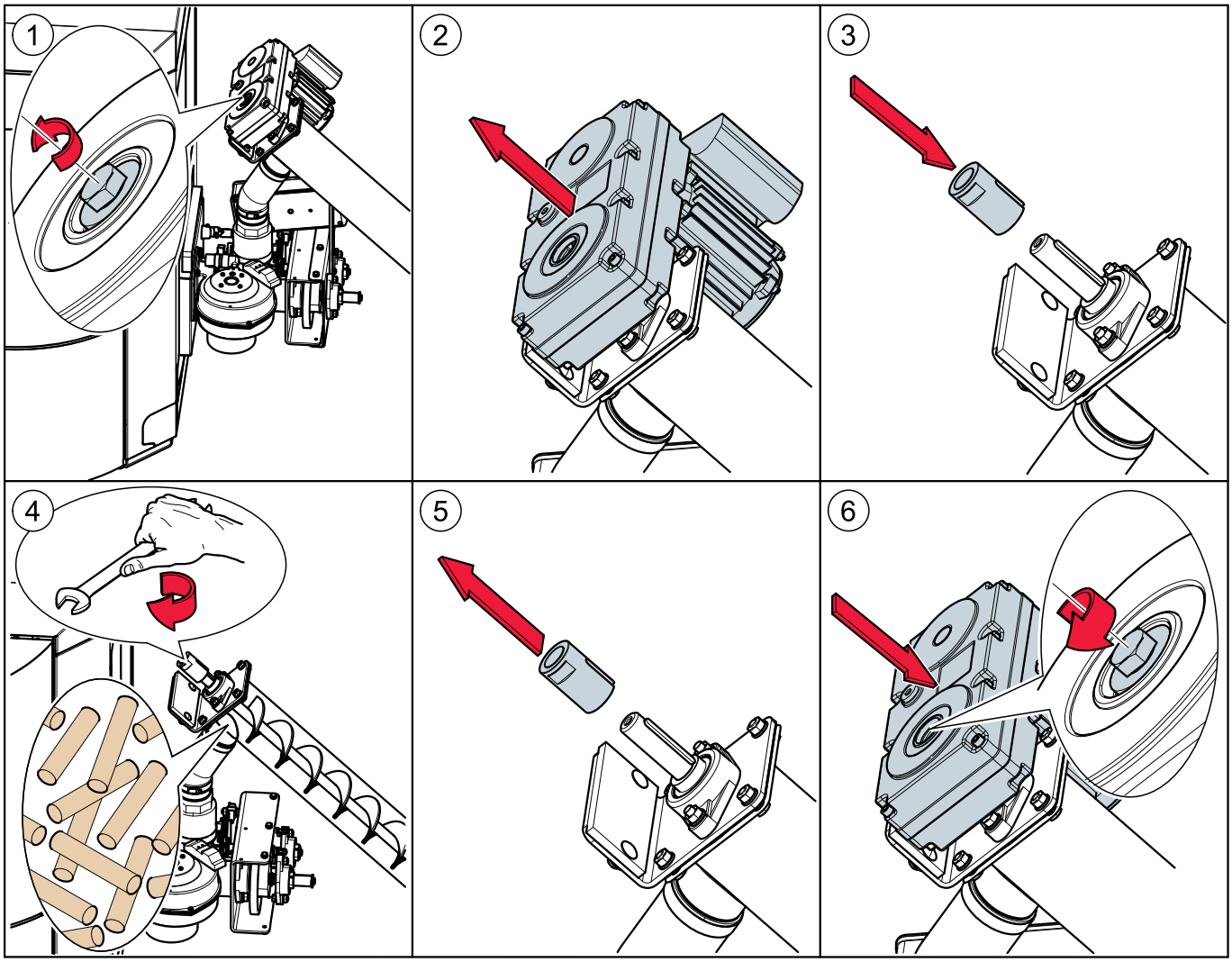
   - In the user control unit select the menu Pellematic.
   - By turning the thumbwheel select Parameter 104: **Manual override** ein.
   - Press **Enter**.
   - The flue gas fan starts, and the return-flame gate opens. The opening phase of the flame return gate lasts approximately 2 minutes. After this, the burner motor and the delivery auger motor operate continuously supplying pellets to the burner. Wait until you see Pellets on the burner plate. Press **Enter** to switch off the manual override.

     Note

     As the delivery augers are empty, some time is needed before the pellets reach the burner.
     Do not wait until the burner plate is completely full with pellet. Switch off, when the first pellets are visible!

2. Filling**by hand**

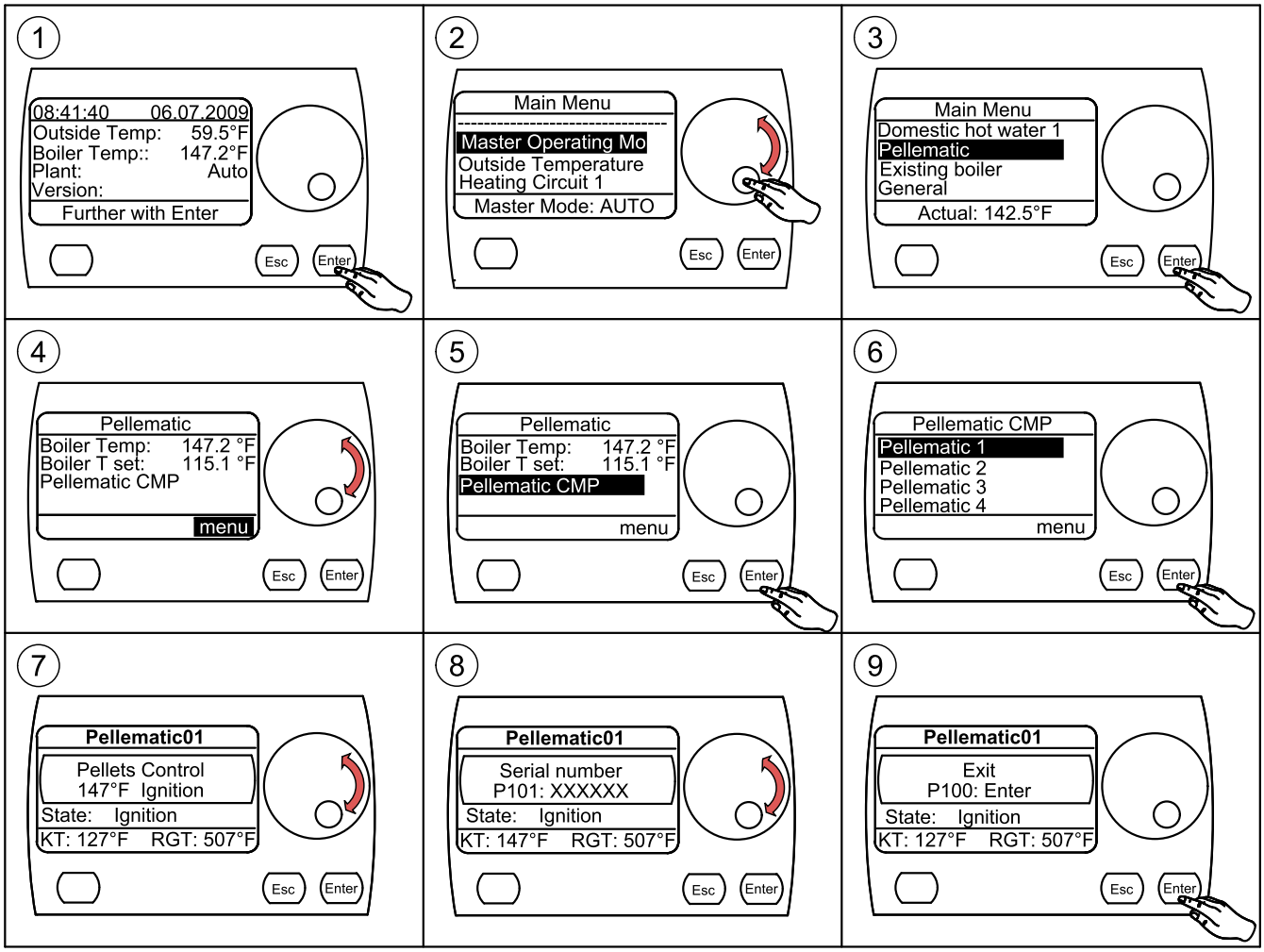
   We deliver with all auger systems a bush nut, which you plug on the delivery auger. You need additionally a spanner SW 13 and a flat spanner SW27.



12.5 Parameter level 100

You can use this parameter to adjust the function of the pellet heating system. Parameter level 100 has 99 values, from 100 – 199. Not all parameters are implemented. Parameters that are not used are also not displayed on the operating device.

How to come to parameter level 100



Note

There are adjustable parameters and non-adjustable parameters. To change adjustable parameters, press Enter to go into edit mode. Pressing Enter has no effect on non-adjustable parameters.
The control unit automatically returns to the start screen if you have not made any entries for the last 10 minutes.

Changing a parameter

1. Select a parameter using the thumbwheel.
2. Press Enter
3. ►Parameter appears in brackets◄
4. Change the value of the parameter using the thumb wheel
5. Confirm by pressing Enter

Description of parameter

Para-meter	Display on screen	Description	Adjus table	Factory setting
P100	Exit P100: Enter	Standard display: • Press ENTER once — displays boiler temperature • Press ENTER again — displays day, date, time, version of PLC program and power rating setting.	yes	
P101	Serial number P101: 00081	Serial number of CMP controller.	no	
P104	Continuous mode P104: Enter	Pressing ENTER activates the continuous operation function. First of all the fire protection system on the burner opens the fire protection flap (BSK) – this process takes approx. 2 min. The burner motor then runs continuously, transporting pellets to the burner plate. The pellet auger also runs continuously on heating systems fitted with an auger fuel transport system.		
P105	Boiler temp. P105: 145°F	Current boiler temperature	no	
P106	Flue gas temp. P106: 242°F	Current flue gas temperature	no	
P107	AGT/FRT temp. P107: 1009°F	Combustion chamber temperature (displayed only if NiCrNi flame sensor is connected)	no	
P109	Controller temp. P109: 73°F	Current temperature of boiler controller circuit board	no	
P110	Cap. hopper P110: 0	Capacitive sensor on hopper: 0 = material available 1 = no material available **Note** Displayed on vacuum-type conveyor systems Optional on auger-type systems	no	
P111	Cap. burner P111: 2	Capacitive sensor on burner: 2 = material available 0 = no material available	no	
P112	Burner starts P112: 345x	Number of system burner starts	no	
P113	Burner run time P113: 3562h	Burner run time in hours	no	
P114	Average run time P114: 127m	Average run time per burner start	no	
P115	Downtime P115: 3267m	Time expired since last burner stop. This value also applies to the boiler being switched off intermittently. The maximum value is 65000 min	no	
P116	Run time P116: 96zs	Run time of burner auger in tenths of a second.	no	
P117	Rest time P117: 80zs	Rest time of burner auger in tenths of a second.	no	
P118	Current air flow rate P118: 39%	Burner fan power in percent.	no	

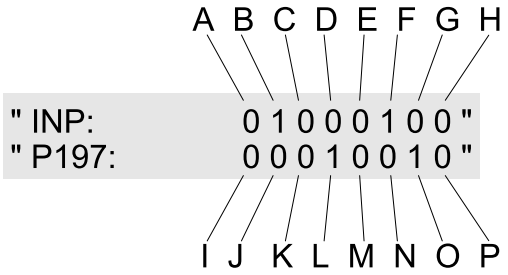
P119	Current flue gas P119: 30%	Flue gas fan power in percent.	no	
P120	Current ignition P120: 128s	Current ignition time This is 0 if the ignition is not active.	no	
P124	Comb ch setpoint P124: 1472°F	Combustion chamber setpoint Displayed on while combustion chamber temperature control is active and the combustion chamber sensor is connected.	no	
P125	Negative draft P125: 60EH	Displays negative draft in the combustion chamber.	no	
P126	Analog input 2 P126: 45%	not implemented	no	
P130	AGT ign/comb. P130: 212°F	Minimum flue gas temperature as condition for ignition and combustion chamber control. Displayed only with flue gas sensor connected.	no	
P131	Flue gas min. P131: 212°F	The minimum flue gas temperature for the boiler controller. If the temperature falls below the minimum flue gas temperature, the boiler increases the power independently of the boiler temperature. Displayed only with flue gas sensor connected	yes	100
P132	Current weight P132: 74kg	Displayed only, if P233 is 1. Display of the current weight in the FleXILO textile tank.		
P133	Current weight P133: 74kg	Displayed only, if P233 is 2. Display of the current weight in the storage room.		
P134	Low weight lim P134: 0kg	Displayed only, if P233 is 1 or 2. The threshold value, the minimum weight for a warning message, can be varied. The warning message appears on the operating device and disappears when the filling weight is above the set minimum weight.		
P135	Weight hopper P135: 0kg	Displayed only, if P233 is 2. Display of the current weight in the hopper.		
P136	Pellet level P136: 0	Displayed only, if P233 is 3. Display of the pellet level 1 = full 0 = empty – warning message displayed on the operating device.		
P137	Refill capacity P137: 0kg	Displayed only, if P233 is 3. Set the filling capacity after refilling the storage		
P138	Save capacity P138: 0	Displayed only, if P233 is 3. Save the set filling capacity. By turning to 1 the filling capacity is added to the actual weight and P137 is reset to 0		
P152	Motors P152: Enter	Pressing ENTER takes you to the motors sub-menu. Select a motor using the thumbwheel. The following data are displayed for each motor connected: mA-actual, Volt-actual, mA-minimum-setpoint, mA-maximum-setpoint, operating hours, time duration that the motor may operate outside the Min-Max values before an alarm is triggered. The Min-Max values and time duration are adjustable.	ja	

P160	Fuel Corr. P160: Step:00	The burner auger running duration is calculated automatically by the PLC depending on the rated power and the boiler setpoint temperature. The burner motor is controlled accordingly. You can reduce or increase the value calculated by the PLC 10 steps up or down.	yes	0
P161	Ext Auger delay P161: 0	Delay of the extraction auger in compare to the burner auger – only for Auger delivery systems.		
P162	Modulation level P162: 17	Current modulation level of boiler. You can set the modulation level to measure the flue gas if P 163 flue gas measurement is active.	yes	17
P163	Flue gas measure P163: 0	If flue gas measurement is active, the modulation level of the boiler is switched off. This can be set in P162. This remains fixed for the duration of the activation. 0 = inactive 1 = active – minimum power 17= maximum power. **Note** After 20 minutes has expired, (P164) the flue gas measurement finishes automatically.	yes	0
P164	Flue gas meas ti P105: 20m	Max. duration of flue gas measurement Displayed only if P163=1	yes	20
P170	Burner start P170: 0	Select between 2 types of burner control: 0: Pellet boiler runs inline with the burner demand signals from the heating controller 1: Pellet boiler starts, if it receives a single pulse from the heating controller and switches off when the switch-off temperature is reached.	yes	0
P171	Malfunction output P171: 0	When a malfunction occurs the boiler controller triggers the malfunction relay. The potential-free contact (output SM 20 19) enables the alarms to be displayed using an external malfunction system (230V). You can select the following functions: **0:** The contact closes when a malfunction occurs – normally open **1:** When a malfunction occurs the contact opens and closes in flashing pulses. 1 pulse = all other malfunction 2 pulses = one of the sensors is defective 3 pulses = one of the motors is defective 4 impulses = safety temperature sensor Emergency OFF **2:**If a malfunction occurs the contact opens – normally closed **3:** When malfunction "Ash box full" occurs a flashing pulse is signalled and all malfunction contacts closes **Note** If a remote maintenance system is implemented then an SMS text is transmitted for each flashing contact.	yes	0
P172	Flashing time P172: 20s	Flashing time for warning "Ash!", parameter 171 must be set to 3.	yes	20
P173	Flashing pulse P173: 1	Flashing pulse for warning "Ash!", screen must indicate 3 for the fault display.	yes	1

P180	Function RES2 P180: 2	Output boiler controlled pump RES2 (230V): is used to control a accumulator pump, etc. 1 = release the output when minimum boiler temperature is exceeded (P281) 2 = release the output when minimum boiler temperature is exceeded (P281) and burner is requested (burner runout time approx. 30 minutes, P280, value adjustable	yes	2
P181	Power RES2 P181: 100%	Display power draw of boiler controlled pump during pulse mode	no	
P183	Runout time P183: 6h	Remaining burner runout time(hours) after malfunction text "ash box full" until total switch-off.	yes	6
P184	Ash auger speed P184: 0 rpm	Displays speed of de-ashing auger	no	
P185	Run time suction P185: 80m	Run time (minuts) of burner auger until next suction interval	no	
P186	Suction time total P186: 68h	Operating hours of suction turbine, only on vacuum systems.	no	
P187	Frequ RA vacuum P187: 60s	Frequency for storage room suction systems in pulse mode, only for vacuum systems - only if parameter 188 < 0	yes	60
P188	Pause RA vacuum P188: 0s	Pause time for storage room extractor motor - suction system in pulse mode. If pause time = 0 then no pulse mode.	yes	0
P189	Cleaning hour 1 P189: -1h	In parameter 190 you can set an additional boiler cleaning time. The value to be set is the time (full hour) at which the boiler cleaning sequence is to be performed. Example: 10h = additional boiler cleaning at 10:00. –1h = no additional cleaning sequence will be performed.	yes	-1
P190	Cleaning hours 2 P190: 20h	The value to be set is the time (full hour) at which the boiler cleaning sequence is to be performed. Example: 20h = additional boiler cleaning sequence to be performed at 20:00. **Note** On vacuum systems the hopper is also filled at the same time, regardless of whether it is empty or not.	yes	20
P191	Min run time RM P191: 12h	Minimum running time (hours) of boiler until next cleaning sequence.	yes	12
P192	Cleaning duration P192: 120s	Duration of the boiler cleaning sequence in seconds.	yes	120
P193	Min run time scrubbing P193: 6h	Minimum running time (hours) of boiler until next cleaning of heat exchanger - **only on condensing boilers**.		6
P194	Scrubbing duration P194: 45s	Duration of scrubbing low temperature heat exchanger - **only on condensing boilers.**		45
P195	Min run time ash P195: 120min	Minimum running time of boiler until next de-ashing procedure, value adjustable - parameter available only when external de-ashing system is connected.	yes	120/80/45
P196	Ash duration P196: 3min	Duration of running time (minuts) of ash auger, value adjustable, parameter for external de-ashing system only.	yes	3/3/5

P197	see below	Status display of INPUTS*	yes	
P198	see below	Status display of OUTPUTS*	yes	
P199	Level 2 Code P199: 0	Level 2 - Customer service level, input code	no	

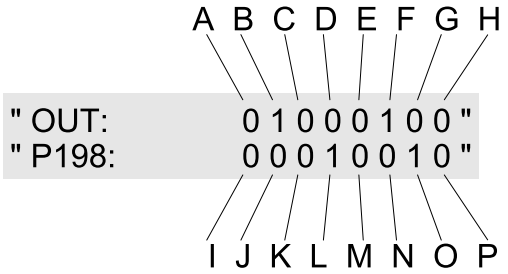
P 197 — Status display of inputs



Indication: 0 = OFF
Indication: 1 = ON

A	Capacitive sensor hopper	I	Limit switch external ash box
B	Capacitive sensor RA	J	Suction circuit board safety relay
C	Fire protection system open	K	Safety temperature system
D	Fire protection system closed	L	Low H2O
E	Burner motor	M	not implemented
F	Fuel transport system motor	N	not implemented
G	Burner request	O	Suction turbine
H	Input existing boiler	P	not implemented

P 198 — Status display of outputs



Indication: 0 = OFF
Indication: 1 = ON

A	Burner fan	I	Magnetic valve
B	Burner motor	J	Fire protection system
C	not implemented	K	not implemented
D	not implemented	L	not implemented
E	Malfunction relay	M	Boiler cleaning motor
F	Flue gas fan	N	Boiler controlled pump RES2
G	Ash box motor	O	Suction turbine
H	Fuel transport system motor	P	Ignition

12.6 Parameter level 200

Parameter level 200 is exclusively for customer service technicians and our employees. You access parameter level 200 by entering the code in parameter P199. The code for parameter level 200 is the sum of day plus hour, e.g. : Day: **26**/ 08/ 2009 and hour: **14**:30:47; (26 + 14 = 40) results in the code: 26 + 14 = **40**

You can use this parameter to adjust the function of the pellet heating system. Parameter level 200 has 99 values, from 200 – 299. Not all parameters are implemented. Parameters that are not used are also not displayed on the operating device.
There are adjustable parameters and non-adjustable parameters. Press Enter to switch adjustable parameters to edit mode.

Note

The control system automatically switches back to the standard display if you do not make any entries for 30 minutes. After a further 30 minutes the backlight on the screen switches off.

Changing a parameter

1. Select a parameter using the thumbwheel.
2. Press Enter
3. ►Parameter appears in brackets◄
4. Change the value of the parameter using the thumb wheel
5. Confirm by pressing Enter

Note

Pressing Enter has no effect on non-adjustable parameters.

Description of parameter

Para-meter	Display on screen	Description	Adjus table	Factory setting
P200	Level 1 P200: Enter	Press Enter to access level 1	no	
P202	Switch-off temp P202: 185°F	The boiler will shut off after the shut down time is over and the temperatures are under the shutdown limit.	yes	185
P203	Output test P203: Enter	Output test - using the thumbwheel you can select each individual output. Press Enter to switch the output on. The current power draw is shown for motors. Press again to switch the output off. The outputs for the flue gas fan and the air blower can be increased by 20% each time the button is pressed. Once you have reached 100%, the next press of the button returns the setting to 0%. Exit the output test menu at the bottom of the list.	yes	
P204	Malfunctions P204: Enter	Page through the malfunction fault text archive using the thumbwheel. When the alarm text archive is full, the next alarm text overwrites the oldest alarm text. Press Enter to return to the parameter level	no	
P205	Maintenance month P205: 0	Month in which the display indicates maintenance to performed on boiler 0 – maintenance text deactivated	yes	0
P206	Maintenance day P206: 0	Day on which the maintenance message is displayed on the boiler. 0 – maintenance text deactivated	yes	0
P207	Flue gas temp Max P207: 238°F	Displays the highest flue gas temperature recorded so far; can be reset to 0.	yes	

P208	FRT limit ++ P208: 30%	Only enabled if parameter P270 combustion chamber temperature control is activated. If the combustion chamber temperature does not reach the setpoint, the duration for the burner auger switching on is increased by a maximum of this percentage.	yes	30
P209	FRT limit – – P209: 80%	Only enabled if parameter P270 combustion chamber temperature control is activated. If the combustion chamber temperature exceeds the setpoint, the duration for the burner auger switching on is reduced by a maximum of this percentage.	yes	80
P210	Cap. hopper active P210: 1	Here you can activate the capacitive sensor for the hopper on the suction system. If an auger with textile tank with oscillating floor is implemented, the capacitive sensor for the hopper is located on the excentric motor.	yes	1
P211	Cap. RA active P211: 0	Kap RA is always active at auger systems	yes	1
P212	Ash box P212: 0	Here you can activate the de-ashing system. If Parameter 212 is active, Parameter 213 is not displayed. If you have also an burner plate deashing system (optional for PE(S) 12–32) it runs with the de-ashing system. 0 = inactive, 1 = active **Note** Does not start the boiler more than five days, on Friday 12.00 a.m. the de-ashing system runs for 3/5 minutes.	yes	0/0/1
P213	Deashing P213: 0	Here you can activate the burner plate deashing system 0 = inactive, 1 = active If Parameter 213 is active, Parameter 212 is not displayed	yes	0
P214	Neg. draft Min P214: 32EH	If the negative draft inside the combustion chamber falls below the minimum value for longer than 1 Minute (P217), the system switches to fault mode. Value = 0 negative draft supervision inactive. (Displayed only with negative draft measuring connected)	yes	32/32/45
P215	Neg. draft Max P215: 300EH	Maximum negative draft in combustion chamber. If this is exceeded for longer than 1 minute (P217), the system switches to fault mode. (Displayed only with negative draft measuring connected)	yes	300
P216	Neg. draft scrubber P216: 35EH	Min. negative draft of scrubber system only on condensing boiler systems. If the value falls below the minimum negative draft then the system switches to fault mode. If a value below 10 is set, the scrubber switches on according to the value set in P 193 and P 194.	yes	35
P217	Neg. draft time P217: 60s	If the negative draft inside the combustion chamber falls below the minimum value for longer than the set supervision time, the system goes to fault mode and displays "Negative draft".	yes	60
P218	Neg. draft setpoint P218: 60EH	If the negative draft in the combustion chamber falls below the setpoint, the speed of the flue gas fan is increased. If the negative draft increases then the speed of the flue gas fan is reduced again. Value = 0, negative draft supervision inactive. (Displayed only with negative draft measuring connected)	yes	60

P221	Min. downtime P221: 60m	The electronic ignition is not activated if the burner attempts to start within the set duration after the last burner stop.	yes	60
P222	Auger dur. ign P222: 50zs	Running duration of burner auger during the ignition phase, specified in tenths of a second	yes	50
P223	Auger pause ign P223: 20zs	Pause duration of burner auger during the ignition phase, specified in tenths of a second	yes	20
P224	Fan rpm ign P224: 100%	Speed of burner fan during ignition phase.	yes	100
P225	Suction ign P225: 100%	Speed of flue gas fan during ignition phase.	yes	100
P226	Hyst. flue temp. P226: 50°F	For ignition to take place successfully, the flue gas temperature must exceed the boiler temperature by Hyst. flue gas temperature.	yes	50
P228	Combustion ch. min. P228: 248°F	Setpoint of combustion chamber temperature for successful ignition. Combustion chamber temperature 248°F, only when combustion chamber sensor is active P270	yes	248
P229	Fan run on P229: 420s	Minimum run on time (seconds) of burner fan after switching off.	yes	420
P230	AGT++LL off P230: 58°F	After the minimum run on time has expired, the combustion air fan continues to run until the flue gas temperature is lower than the boiler temperature + the temperature value set: e.g.: boiler temperature = 169°F + 58°F = 227°F switch-off temperature.	yes	58
P231	AGT++ SZ off P231: 22°F	After the minimum run on time has expired, the flue gas fan continues to run until the flue gas temperature is lower than the boiler temperature + the temperature value set: e.g.: boiler temperature = 169°F + 22°F = 191°F switch-off temperature.	yes	22
P233	P233: 0	Activation of the level detection system 1.....Level detection system using weighing cells for FleXILO textile tanks. 2.....Level detection system using weighing cells at the hopper for storage rooms. 3.....Level detection system using a capacitive sensor for storage rooms and FleXilo textile tanks.		
P234	P234: 0 kg	Displayed only, if P233 is 1. Set the display of the current weight to 0 by putting in the negative of the current weight shown in P 132. Therefore you have to turn the thumbweel left.		
P235	P235: 0 kg	Displayed only, if P233 is 2. Set the display of the current weight to 0 by putting in the negative of the current weight of the hopper shown in P 132. Therefore you have to turn the thumbweel left.		

P236	CF Logger P236: 0	Activates the data logger on the CF card. This can only be activated if a CF card is located in the relevant socket. Display: • -1 – no CF card in socket 0 CF card in socket, logger not active • 1 – CF card in socket and logger program is running Records the current status and malfunctions of KT, RGT, FRT, ES, PA, LL, SZ, UP providing sensors are connected. (Displays parameters only with CF card)	yes	0
P237	Sample time P237: 60s	The recording interval of the data archive in seconds (displays parameters only with CF card)	yes	60
P238	Param. -> CF P238: 0	Outputs the current parameter values of the CF card. The file name is the 5-figure PLC number (Pxxxxx_0.csv). This is marked on the label in the CF socket. (Display only with CF card inserted)	yes	0
P239	CF -> Param. P239: 0	**NOTICE** **Damage to property** Do not change the format of the output file from "Startkennung &&&" onwards. You may only change the numerical values. Do not enter any new lines, no semi-colons, spaces or other characters. The values are checked for plausibility, not for parameter numbers. (Display only with CF card inserted) Reads in the parameter values from the CF card. The file name must be the 5-figure PLC number (Pxxxxx_0.csv). This is marked on the label in the CF socket and in parameter P101. The best method is to write data to the CF card using P238 – then edit the export file in Excel or a text editor and then read the data in again. You can insert comments such as the customers name and any special lines of code in front of the text "Startkennung &&&" . Exception: you cannot use "&"	yes	0
P242		Enable and disable the outdoor sensor with parameter P242 PT1000 outdoor sensor at the place of the PT1000 RGF Sensor Input at: -Outside temp. . >59°F set value P263: 158°F Stop temp. P202: P263+11°F –41°F < Outside temp. <=59°F set value P263: 176°F Stop temp. P202: P263+11°F –32°F < Outside temp. <=41°F set value P263: 183°F Stop temp. P202: P263+11°F –14°F < Outside temp. <=32°F set value P263: 183°F Stop temp. P202: P263+11°F —Outside temp. <14°F set value P263: 192°F Stop temp. P202: P263+11°F The parameter Boiler Set t + + / P264 (= correction factor to control temperature), serves to change additionally the set value in the range of +10 to -9 ° (move temperature curve) for example: outside temp. = 28 ° F and parameter P264 +2 ° F set value= 185°F (183°F+2°F)		

P243		Setting of the heating limit of the boiler. (visible when P242 to 1) Default = 68 ° F, adjustable from 23 ° F to 95 ° F. If the Outside temperature is higher than the heating limit no burner request.		
P244	Power vent P244: 0	Activate the power vent. –If the boiler is starting – the power vent box starts the external power vent. –If the boiler switch off - the power vent box stop the external power vent. **Note** If power vent box is activated with P244 you can change a delay time for the AK input. If there is an error on the power vent the power vent box will close the AK contact and the boiler switch off.	no	0
P250	Run time BSK P250: 247 h	Operating hours counter for fire protection system.	no	
P251	No. ignition P250: 283x	Displays the number of ignitions with electronic ignition system.	no	
P260	Burner auger ++ P260: 0zs	Adjust the running duration of the burner motor during heating at full power. Specified in tenths of a second (displays parameter only if combustion chamber temperature controller is inactive, P270 = 0)	yes	0
P261	Air flow rate ++ P261: 0%	Adjust the speed of the burner fan during heating at full power.	yes	0
P262	Draft ++ P262: 0%"	Adjust the speed of the flue gas fan during heating at full power.	yes	0
P263	Boiler set temp P263: 175°F	Adjust the boiler set point temperature.	yes	175
P264	Boiler set t++	The parameter P264 causes an external sensor. The parameter P263 is the reference of the controlled temperature and consists of the value of the external sensor and compensation value parameter P264. With parameter P264 you can raise or lower the set point of the external sensor to +10 to -9 ° F, that means you move the start point of the temperature curve. Example: Outside temperature: 28 ° F Correction Parameter P264: +2 ° F Reference Parameter P263: 30 ° F		
P265	Power level P265: level 15	Adjust the boiler power rating: 1 level = 3.412 BTU/hr, e.g.: level 15 = 51,000 BTU/hr	yes	15/25/36
P266	FRT++ P266: 0°F	Setpoint for controlling the combustion chamber temperature (displays only with activated FRT controller – P 270 = 1)	yes	0
P267	Amplify P267: 40%	P proportion for controlling combustion chamber temperature (displays only with activated FRT controller – P 270 = 1)	yes	40
P268	Reset time P268: 200s	I proportion for controlling combustion chamber temperature (displays only with activated FRT controller – P 270 = 1)	yes	200

P269	Derivative time P269: 20zs	D proportion for controlling combustion chamber temperature (displays only with activated FRT controller – P 270 = 1)	yes	20
P270	FRT controller P270: 0	The combustion chamber temperature controller can only be activated with the combustion chamber temperature sensor connected. 1 = active 0 = inactive	yes	0
P272	Gain SZ P272: 40%	P proportion for negative draft control in combustion chamber temperature (displays only with connected negative draft controller)	yes	40
P273	Reset time SZ P273: 10s	I proportion for negative draft control in combustion chamber temperature (displays only with connected negative draft controller)	yes	10
P274	Derivative SZ P274: 2 zs	D proportion for negative draft control in combustion chamber temperature (displays only with connected negative draft controller)	yes	2
P280	Run on RES2 P280: 15m	Run on time for boiler controlled pump after burner switches off - in minutes	yes	15
P281	Boiler min. temp. P281: 140°F	Switch-on temperature from boiler-controlled pump output	yes	140
P282	Boiler min. hyst. P281: 5°F	Hysterisis for boiler minimum temperature	yes	5
P283	Control range RES2 P283: 9°F	Control range of output from boiler-controlled pump. The control range starts at the minimum boiler temperature with a speed of 30% and increases to the boiler minimum temperature + control range to 100% speed.	yes	9
P284	Min speed AV P284: 2	Is the minimum speed of the ash auger in rounds per minute. If the ash auger turns less than 2 rounds per minute, the warning message appears on the operating device.	yes	2
P285	Suction int. setpoint P295: 175	Burner run time in minutes until filling hopper.	no	175/250/90
P291	Pelletswitch P291: 0	Activate the function pellets switch in parameter P291. Other parameter changes when using a Pellet Switch: P285: Sauginterval. Suction pause time: 120/180/70 min P187: RA-vacuum cycle for the cyclic operation of the RA motor: 5 sec P188: RA vacuum break for the rest of the time RA motor: 3 sec Because the RA motor is cyclic, it is necessary to reduce the suction pause time. It is also important that the hopper is filled completely after one suction run time. Only used with a Pelletronic heating controller and a cascade function possible. Every time starting the suction function the boiler waits until it receives a release from the Pelletronic heating controller. Only one boiler gets the release at the same time. e.g. That means that in the case of a power lost all the boilers run in sequence, not simultaneously. **Suction stop** is shown on the display. (Wait until the suction release appears) As security level it is necessary to have a mechanical locking of the suction fans and fire dampers.	no	0

P293	Pellematic P293: 1	Boiler code for cascade connection. It only changes when 2, 3 or 4 Pellematic plugs are plugged in for a cascade system of pellet boilers.	no	1
P294	Container boil. P294: 0	Set whether pellet boiler is installed as boiler with hand filling hopper. 0 = inactive, 1 = active **Note** This parameter is only shown with auger delivery system. If you have a Container boiler you have to activate it on Parameter P294. The agitator is plugged on RES1. This motor is controlled by the capacitive sensor Kap RA. If there is a hand filling system the lid is controlled with a contact which is connected to AK. If you open the lid the motor RES 1 will stop immediately. If there are no pellets motor RES1 will start a start/stop cycle for approximately 4 minutes.	yes	0
P295	Delete alarm P295: 0	You can delete the alarm archive (P204). **Note** Parameter is automatically reset to 0	yes	0
P296	Motor code P296: 0	A motor remains active until the motor detection starts again. If a motor is connected incorrectly, you can deactivate it again. **Note** Parameter is automatically reset to 0	yes	0
P297	CF card format P297: 0	Format a Compact Flash card. Press Enter to select edit mode. Use menu scroll to set value 1. The formatting process starts. After a short time (1 second) value 1 returns to 0. Formatting finishes. The format process deletes everything on the CF card.	yes	0
P298	Standard param P298: 0	Load standard parameters (default values). Use the menu scroll to set the value to 1. The standard parameters are loaded. After a short time (1 second) value 1 returns to 0. The parameter loading process finishes. All parameters in levels 100, 200 and 300 are now set to the factory settings.	yes	0
P299	Level 3 passw. P299: 0	Access level 3 - level for our technical department, enter password	no	

12.7 List of adjustable parameters

Use this list to enter all changes to factor settings, plus the date the changes were made. Documenting the settings provides a record of changes made to the system.

Parameter list

Para-meter	Factory setting			Display on screen only if:	Parameter changes					
	PE(S) 12–20	PE(S) 25–32	PES 36–56		Change and date		Change and date		Change and date	
P130	212	212	212	Flue gas sensor is installed						
P131	212	212	212	Flue gas sensor is installed						
P160	0	0	0							
P161	60	60	60	not cap. RA or cap. ZW						
P170	0	0	0							
P171	0	0	0							
P172	20	20	20	P171 = 3						
P173	1	1	1	P171 = 3						
P180	2	2	2							
P183	6	6	6							
P187	60	60	60	on a vacuum-type system						
P188	0	0	0	on a vacuum-type system						
P189	-1	-1	-1							
P190	20	20	20							
P191	12	12	12							
P192	120	120	120							
P193	6	6	6							
P194	45	45	45							
P195	120	80	45	with external de-ashing system						
P196	3	3	5	with external de-ashing system						
P202	185	185	185							
P208	30	30	30	only with FRT						
P209	80	80	80	only with FRT						
P210	1	1	1	vacuum = 1						
P211	0	0	1	always active at auger systems						
P212	0	0	1							
P213	0	0	0	not implemented						
P214	32	32	45	with low pressure sensor						
P215	300	300	300	with low pressure sensor						
P216	35	35	35	with low pressure sensor						
P217	60	60	60	with low pressure sensor						
P218	60	60	60	with low pressure sensor						

P221	60	60	60							
P222	50	50	50							
P223	20	20	20							
P224	100	100	100							
P225	100	100	100							
P226	50	50	50							
P228	122	122	122							
P229	420	420	420							
P230	32	32	32							
P231	22	22	22							
P260	0	0	0	no FRT or P170 = 0						
P261	0	0	0							
P262	0	0	0							
P263	175	175	175							
P265	15	25	36							
P266	0	0	0	FRT - control P270 = 1						
P267	20	20	20	FRT - control P270 = 1						
P268	200	200	200	FRT - control P270 = 1						
P269	20	20	20	FRT - control P270 = 1						
P270	0	0	0	combustion chamber sensor (FRT) is installed						
P272	40	40	40	P218 larger 1 EH						
P273	10	10	10	P218 larger 1 EH						
P274	2	2	2	P218 larger 1 EH						
P280	15	15	15							
P281	140	140	140							
P282	5	5	5							
P283	9	9	9							
P284	2	2	2	de-ashing system is installed						
P285	175	250	100	vacuum-type system						
P293	1	1	1							
P294	0	0	0	auger system						

13 Malfunctions

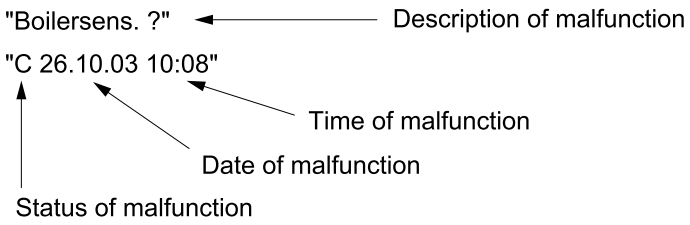
13.1 Malfunctions - what to do

Follow the sequence described for handling malfunctions.

- The heating system switches off automatically if a malfunction occurs.
- The control unit display shows a malfunction alarm text.
- You have to rectify the cause of the malfunction.
- After rectifying the malfunction, you have to reset the fault text by pressing Enter before starting the heating system again.

13.2 Malfunction texts

The malfunction text displayed on the screen provides information on the type, time and status of the malfunction as well as help for troubleshooting.



Malfunction texts have 3 statuses

1. C – New malfunction: when the malfunction comes.
2. G – Rectified malfunction: when the malfunction goes.
3. Q – Reset malfunction: when the malfunction quits.

Being able to trace the sequence of malfunctions will help you to establish the cause of the malfunction.

NOTICE

Damage of property
The authorized spezialist can track the chronology of faults and find the cause for the fault quickly.

13.3 Overview of malfunction alarm texts

This is a list of all malfunction alarms that are displayed

Table 13.1 Boiler sensor

Display:	**Boiler S fr**		
Description:	Boiler sensor fracture, measuring circuit from boiler sensor is open		
Cause and Remedy:	sensor not connected	►	connect sensor at input
	sensor defect	►	measure sensor (approx. 2kΩ at 77°F) replace if required
	sensor cable defect	►	replace sensor
	signal input defect	►	change CMP PLC
	sensor temp. too high	►	sensor temperature above measuring range (230°F)
Display:	**Boiler S sh-c**		
Description:	Boiler sensor short circuit, measuring circuit from boiler sensor is shorted out		

Cause and Remedy:	sensor defect	►	measure sensor (approx. 2kΩ at 77°F) replace if required
	sensor cable defect	►	replace sensor
	signal input defect	►	change CMP PLC
	sensor temperature too low	►	sensor temperature below measuring range (14°F)

Table 13.2 Flue gas sensor

Display:	**Flue gas S fr**		
Description:	Flue gas sensor fracture, measuring circuit from flue gas sensor is open		
Cause and Remedy:	sensor not connected	►	connect sensor at input
	sensor defect	►	measure sensor (approx. 1kΩ at 32°F) replace if required
	sensor cable defect	►	replace sensor
	signal input defect	►	change CMP PLC
	sensor temp. too high	►	sensor temperature above measuring range (752°F)
Display:	**Flue gas S sh-c**		
Description:	Flue gas sensor short circuit, measuring circuit from flue gas sensor is shorted out		
Cause and Remedy:	sensor defect	►	measure sensor (approx. 1kΩ at 32°F) replace if required
	sensor cable defect	►	replace sensor
	signal input defect	►	change CMP PLC
	sensor temperature too low	►	sensor temperature below measuring range (14°F)

Table 13.3 Combustion chamber sensor

Display:	**Comb S fr**		
Description:	Combustion chamber sensor fracture, measuring circuit from combustion chamber sensor is open		
Cause and Remedy:	sensor not connected	►	connect sensor at input
	sensor defect	►	Measure sensor (approx. 5mV at 257°F) replace if required
	sensor cable defect	►	replace sensor
	signal input defect	►	change CMP PLC
	sensor temp. too high	►	sensor temperature above measuring range (2012°F)
Display:	**Comb S sh-c**		
Description:	Combustion chamber sensor short-circuit, measuring circuit from combustion chamber sensor is shorted out		
Cause and Remedy:	sensor defect	►	Measure sensor (approx. 5mV at 257°F) replace if required
	sensor cable defect	►	replace sensor
	signal input defect	►	change CMP PLC
	sensor temperature too low	►	sensor temperature below measuring range (14°F)
	sensor polarity incorrect	►	exchange + and – connections

Table 13.4 Negative draft measurement

Display:	**UP open**
Description:	Negative draft input open, measuring circuit from negative draft measurement open

Cause and Remedy:	signal incorrect	►	check polarity and signal (0-10V)
	signal cable defect	►	replace sensor
	signal input defect	►	change CMP PLC
	signal too low	►	signal below 0V
	combustion chamber leak	►	check closure of boiler door
Display:	**UP sh-c**		
Description:	Negative draft input short-circuit, measuring circuit from negative draft measurement is shorted out		
Cause and Remedy:	signal wrong	►	check polarity and signal (0-10V)
	signal cable defect	►	replace sensor
	signal input defect	►	change CMP PLC
	signal too high	►	signal above 10V

Table 13.5 Analog input 2

Display:	**An. input open**		
Description:	Analog input 2 open, measuring circuit from analog input open		
Cause and Remedy:	signal incorrect	►	check polarity and signal (0-10V)
	signal cable defect	►	repair/replace cable
	signal input defect	►	change CMP PLC
	signal too low	►	signal below 0V
Display:	**An. input 2 sh-c**		
Description:	Analog input 2 short-circuit, measuring circuit from analog input is shorted out		
Cause and Remedy:	signal incorrect	►	check polarity and signal (0-10V)
	signal cable defect	►	repair/replace cable
	signal input defect	►	change CMP PLC
	signal too high	►	signal above 10V

Table 13.6 Controller sensor

Display:	**Control S fr**		
Description:	Controller sensor fracture, control system sensor on boiler control system is used as reference for combustion chamber sensor		
Cause and Remedy:	signal input defect	►	change CMP PLC
	temperature too high	►	temperature above 158°F
Display:	**Control S sh-c**		
Description:	Controller sensor short-circuit, control system sensor on boiler control system is used as reference for combustion chamber sensor		
Cause and Remedy:	signal input defect	►	change CMP PLC
	temperature too low	►	temperature below 14°F

Table 13.7 Ignition and flame supervision

Display:	**Ignition malf**		
Description:	Flue gas minimum temperature not reached during ignition phase		
Cause and Remedy:	no pellets available	►	fill up with pellets

	ignition electrode defect	►	check ignition electrode (approx. 200Ω) replace if required
	ignition nozzle blocked	►	clean burner plate and ignition tube
	flue gas sensor contaminated	►	clean flue gas sensor and flue gas tube
	flue gas sensor is not in flue gas tube	►	insert flue gas sensor into flue gas tube
Display:	**Flame contr malf**		
Description:	Flame supervision fault, minimum flue gas temperature not reached during heating up at full power		
Cause and Remedy:	no pellets available	►	fill up with pellets
	flue gas sensor contaminated	►	clean flue gas sensor and flue gas tube
	power is too low	►	increase boiler power rating

Table 13.8 Fire protection

Display:	**Fire prot sys op**		
Description:	Fire protection system open malfunction.		
Cause and Remedy:	Fire protection motor gate unplugged	►	Connect up fire protection system and check cable connections
	Fire protection motor does not reach OPEN limit switch	►	check ball valve to see if it is jammed
	no signal although open	►	check cables and fire protection system
Display:	**Fire prot sys cl**		
Description:	Fire protection system closed malfunction.		
Cause and Remedy:	fire protection system unplugged	►	connect up fire protection system and check cable connections
	fire protection system does not reach CLOSE limit switch	►	check whether ball valve is jammed, check ball valve throughway to see if foreign objects are preventing it from closing
	no signal although closed	►	check cables and fire protection system
Display:	**Fire prot sys**		
Description:	Both fire protection motor limit switches are closed at the same time		
Cause and Remedy:	both limit switches activated	►	check fire protection system, check cables, check connectors

Table 13.9 Negative draft supervision

Display:	**Negative draft**		
Description:	Negative draft in boiler is not achieved		
Cause and Remedy:	negative draft tube disconnected	►	connect up negative draft tube
	negative draft does not change	►	check negative draft tube for leaks. Check flue gas tube for blockage.
	negative draft pressure too low	►	close boiler door, check tube to negative draft sensor, check whether boiler flue gas outlet is clear, check whether condensation heat exchanger is clear. Make sure flue gas fan is running.

Table 13.10 Suction system

Display:	**Suction system**		
Description:	Hopper cannot be filled up even after 3 suction cycles		
Cause and Remedy:	storage room empty	►	fill up with pellets
	extraction system is blocked	►	clear extraction system
	extraction system not conveying pellets	►	pellet bridge - destroy bridge and make sure material flows properly
	suction fan unplugged	►	connect up suction fan
	fuse on suction fan defective	►	replace fuse
	storage room auger motor unplugged	►	connect up storage room motor

Table 13.11 Motors

Display:	**Burner motor**		
Description:	Burner motor malfunction		
Cause and Remedy:	motor unplugged	►	plug in motor, check cable connections
	motorpower too high	►	too low adjusted, motor sticks or is defective
	motorpower too low	►	too high adjusted, motor sticks or is defective
	motor is sticking		remove the pellets from the burner auger, make the motor easy-running
	motor defective	►	replace motor
Display:	**Suction turb**		
Description:	Suction turbine malfunction		
Cause and Remedy:	motor unplugged	►	plug in motor, check cable connections
	motor defect	►	replace motor
	fuse –F1 of the suction circuit board is defective	►	replace fuse –F1of the suction of the suction circuit board
	fire protection system does not reach CLOSE limit switch	►	check whether ball valve is jammed, check ball valve throughway to see if foreign objects are preventing it from closing
Display:	**Fuel trans sys M**		
Description:	Storage room auger 1 motor malfunction		
Cause and Remedy:	motor unplugged	►	plug in motor, check cable connections
	motor is jammed	►	remove pellets from auger and make sure auger rotates freely
	fuse –F2 of the suction circuit board is defective	►	replace fuse –F2 of the suction circuit board
	motor defect	►	replace motor
	fuse defect	►	replace fuse
Display:	**Ignition**		
Description:	Ignitions stick malfunction		
Cause and Remedy:	ignition stick unplugged	►	plug in ignition stick, check cable connections
	power too high	►	too low adjusted, ignition stick is defective

	power too low	►	too high adjusted, ignition stick is defective
	motor defective	►	check resistance to see if the ignition stick is defective or not. (0, 400 and ~ = ignition stick is defective, all other values = ignition stick is not defective), replace ignition stick
Display:	**Burner fan**		
Description:	Burner fan malfunction		
Cause and Remedy:	motor unplugged	►	plug in motor, check cable connections
	power too high	►	too low adjusted, motor sticks or is defective
	power too low	►	too high adjusted, motor sticks or is defective
	motor is sticking		make the motor easy-running
	motor defective	►	replace motor
Display:	**Flue gas fan**		
Description:	Flue gas fan malfunction		
Cause and Remedy:	motor unplugged	►	plug in motor, check cable connections
	power too high	►	too low adjusted, motor sticks or is defective
	power too low	►	too high adjusted, motor sticks or is defective
	motor is sticking		check and clean flue gas tube, make motor easy-running
	motor defective	►	replace motor
Display:	**Boiler clean M**		
Description:	Boiler cleaning motor malfunction		
Cause and Remedy:	motor unplugged	►	plug in motor, check cable connections
	power too high	►	too low adjusted, motor sticks or is defective
	power too low	►	too high adjusted, motor sticks or is defective
	motor is sticking		make the motor easy-running
	motor defective	►	replace motor
Display:	**Ash box M**		
Description:	Ash box motor malfunction		
Cause and Remedy:	motor unplugged	►	plug in motor, check cable connections
	power too high	►	too low adjusted, motor sticks or is defective
	power too low	►	too high adjusted, motor sticks or is defective
	motor is sticking		make the motor easy-running
	motor defective	►	replace motor
Display:	**Hopper motor**		
Description:	Hopper motor malfunction		
Cause and Remedy:	motor unplugged	►	plug in motor, check cable connections
	power too high	►	too low adjusted, motor sticks or is defective
	power too low	►	too high adjusted, motor sticks or is defective
	motor is sticking		make motor easy-running
	motor defective	►	replace motor

Table 13.12 Magnetic valve

Display:	**Magnetic valve**		
Description:	Magnetic valve malfunction		
Cause and Remedy:	motor unplugged	►	plug in motor, check cable connections
	power too high	►	too low adjusted, motor sticks or is defective
	power too low	►	too high adjusted, motor sticks or is defective
	motor defective	►	replace motor

Table 13.13 Boiler controlled pump

Display:	**Boiler contr P**		
Description:	Boiler controlled pump malfunction		
Cause and Remedy:	pump unplugged	►	plug in pump, check cable connections
	power too high	►	too low adjusted, pump sticks or is defective
	power too low	►	too high adjusted, pump sticks or is defective
	pump is sticking		make pump easy-running
	pump defective	►	replace pump

Table 13.14 Safety temperature limiter and Low H2O / —F1

Display:	**Safety T sys**		
Description:	Safety temperature limiter has tripped		
Cause and Remedy:	safety temperature limiter unplugged	►	connect up safety temp. limiter, check cable connections
	safety temperature limiter has tripped	►	check boiler controller
	safety temperature limiter defect	►	allow boiler to cool and reset alarm
Display:	**Low H2O/ – F1**		
Description:	Low H2O has been actuated		
Cause and Remedy:	low H2O unplugged	►	connect up low H2O and check cable connections
	low H2O button has been pressed	►	reset low H2O switch
	low H2O defect	►	replace low H2O switch
	fuse –F1of controller defective	►	replace fuse –F1 of controller

Table 13.15 Wrong system

Display:	**Wrong system**		
Description:	The wrong program has been saved to the boiler controller		
Cause and Remedy:	wrong program	►	upload and save the correct program to the boiler controller — see appendix

Table 13.16 External de-ashing system (optional)

Display:	**Ash box full**
Description:	The alarm text "Ash box full" is displayed after the motor has made 3 unsuccessful attempts to reach the normal speed of the external de-ashing system.

Cause and Remedy:	Ash box is full	►	Empty ash box, reset alarm text by pressing Enter. Status of the boiler is displayed.
	Ash box is not securely mounted	►	Check position of ash box , adjust if required.

14 Appendix

14.1 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 tie members installed?		
	Are all stayers straightened vertical?		
Delivery unit	Is the slot for the emercency gate valve closed with an adhesive tape?		
Filling coupling	Are the filling couplings correctly installed?		
	Are the plugs at the filling couplings?		
	Are the safety labels placed? (Caution – Switch off the heating systembefore entering)		
	Are the couplings correctly grounded?		
Aeration	Exists the required aeration opening of 27 inch² for the storage room?		
Caution label	Is the label "Wood pellets storage room" placed on the door to the storage room?		
Vibration plate	Check the electrical connection of the vibration motor and the capacitive sensor		
If auger delivery system is installed			
Drive unit	Is the direction of rotation correct?		
	Is a demounting possible?		
Spiral hose	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 corrrectly adjusted?		
Burner plate	Is the screw fixing the burner plate, tightened?		

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 a chimney draft regulator, barometric damper implemented?		
Airation/boiler room	Does the boiler room have required make-up air?		
Nameplate	Is the nameplate placed on the boiler?		
Electric installation and regulation			
Power supply	Check the electrical connection? (terminal box)		
	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 the parameters, the heating circuit program and domestic hot water program.		
Boiler sensor	Securing location and connection		
Hydraulic Connection			
Circuit pumps	Check the switch on temperature (min. 140°F) for boiler controlled pump (Parameter P 281).		
Low Water Cut Off	Is a low water cut off installed? (terminal box)		
	Test low water device		
Boiler connection	Is the pellet boiler correctly connected		
	Is the hydraulic system free of air?		
	Is the system filled up with water? Check the pressure.		
Safety systems			
Fire protection - ball valve	Check the function?		
Safety temp. sensor	Check the installation and explain the function. Securing location and connection		
Negativ draft control	Check the function.		
Safety valve	Is a safety valve installed?		
Emergency stop switch	Is there an emergency stop switch?		
Fire extinguisher	Is there a fire extinguisher?		
Instruction			
Heating-up	Explanation of functions, malfunctions and maintenance to the customer.		
Heating controller	Explanation of the heating controller.		
Operating manual	Explanation of the operating and maintenance regulations to the customer.		
Maintenance contract	Notice to the legal regulations;		

Date:_____

Signature authorizied technician: **Signature customer:**

_____ _____

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

14.2 Appendix G of CAN/CSA-B365–M91

Functioning of safety and operating controls
This Annex is not a mandatory part of this Standard, but is written in mandatory language to accommodate its adaption by anyone wishing to do so.

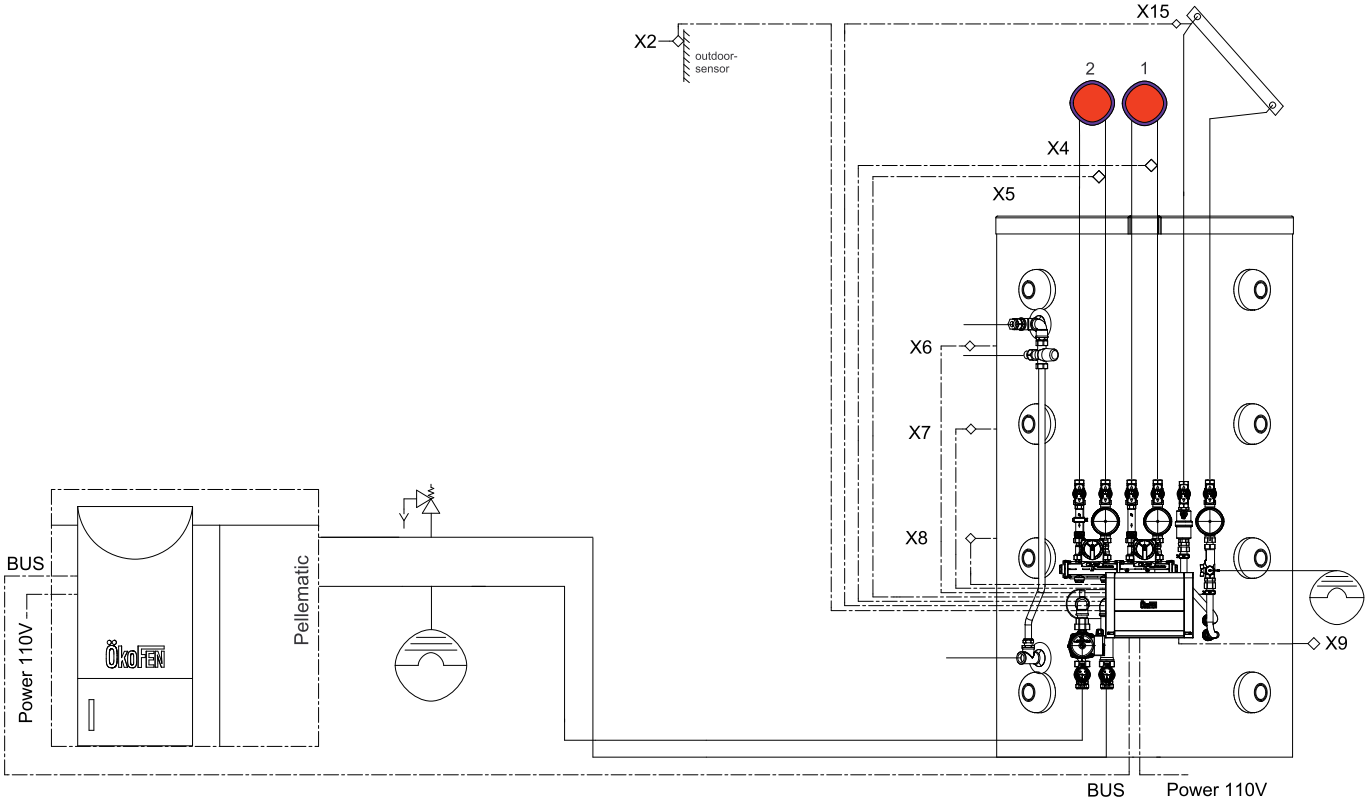
The safety and operating controls shall function within the limits specified by the manufacturer for the type of equipment. The following test shall be performed:

1. Check the operation of the automatic fuel_feeding interrupt device at each entrance to the floor space within which the fuel-feeding device is installed.
2. Check that when the low water level control on steam and hot water boilers is operated to indicate a low water level, the automatic fuel-feed is interrupted.
3. Check that when the excessive pressure control on steam and hot water boilers is operated as in an excessive pressure situation, the automatic fuel-feed is interrupted.
4. Check that when the excessive water temperature control on steam and hot water boilers is operated to indicate excessive water temperature, the automatic fuel-feed is interrupted and, if appropiate, that one or more zone control valves open.
5. Check that if the temperature exceeds 200°F in a furnace supply plenum on hot air furnaces, the automatic fuel-feed is interrupted.
6. Check that if there is a failure of the fan providing combustion air, the automatic fuel-feed is interrupted.
7. Check that if there is a failure of the combustion air supply control mechanism to remain fully open, the automatic fuel-feed is interrupted.
8. Check that when the hot water circulating pump manual disconnect switch is opened, the automatic fuel-feed is interrupted.
9. Check that if there is a shutdown or failure of the mechanical flue-gas exhauster, the automatic fuel-feed is interrupted.
10. Check that if there is a failure in the flue gas flow, the automatic fuel-feed is interrupted, or the combustion air supply is shut off in manually fuelled appliances.
11. Check for the proper operation of the minimum fire maintenance controls and system or, if applicable, of the automatic ignition system.
12. Check for the proper operation of the controls used for normal automatic fuel-feeding.
13. Check the operation of any other controls supplied on the appliance by the manufacturer, or required by the authority having jurisdiction.

14.3 Hydraulic diagrams

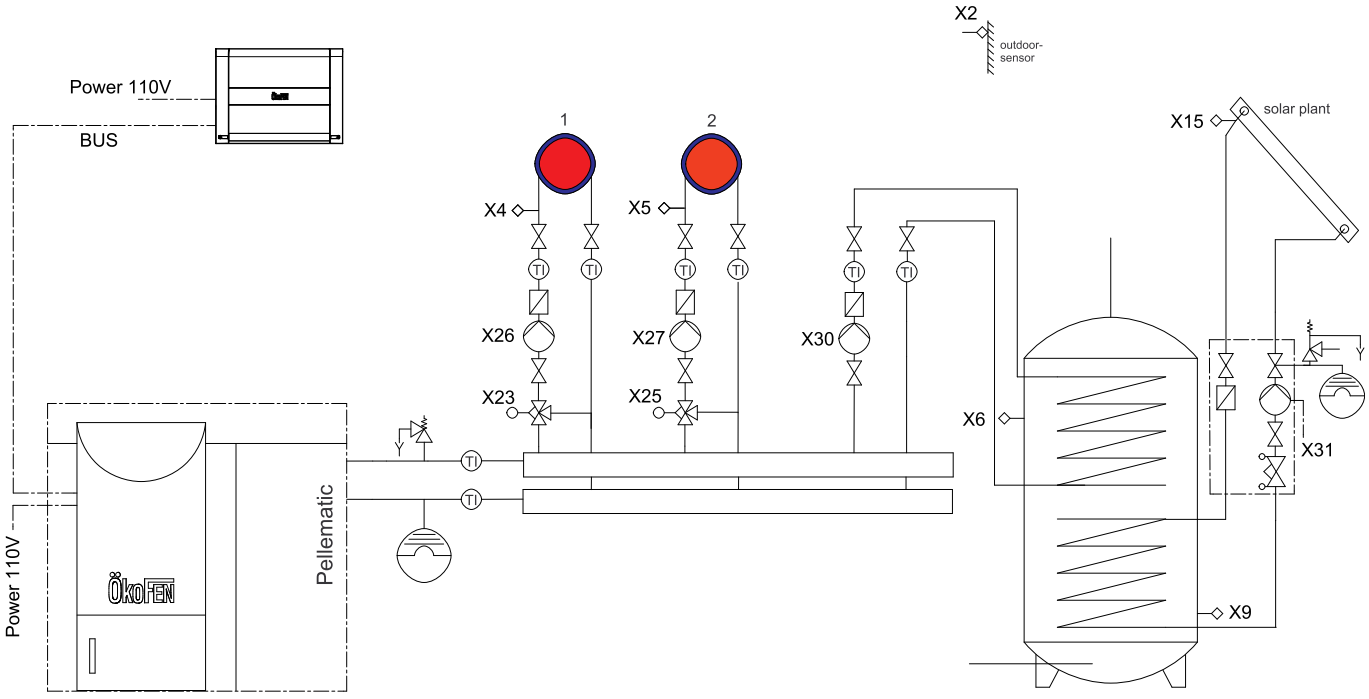
14.3.1 Hydraulic diagram 1

1 boiler Pellematic – 1 accumulator Pellaqua – 2 heating circuits – 1 solar circuit



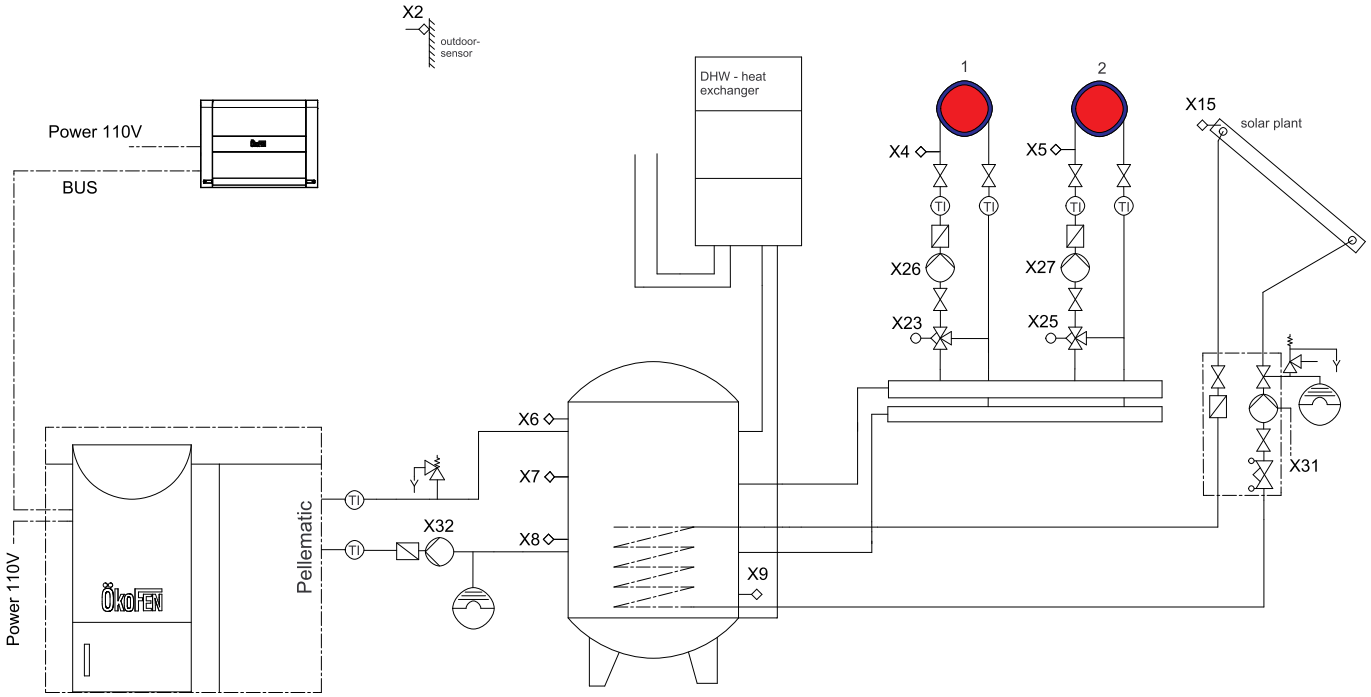
14.3.2 Hydraulic diagram 2

1 boiler Pellematic – 1 warm water boiler – 2 heating circuits – 1 solar circuit



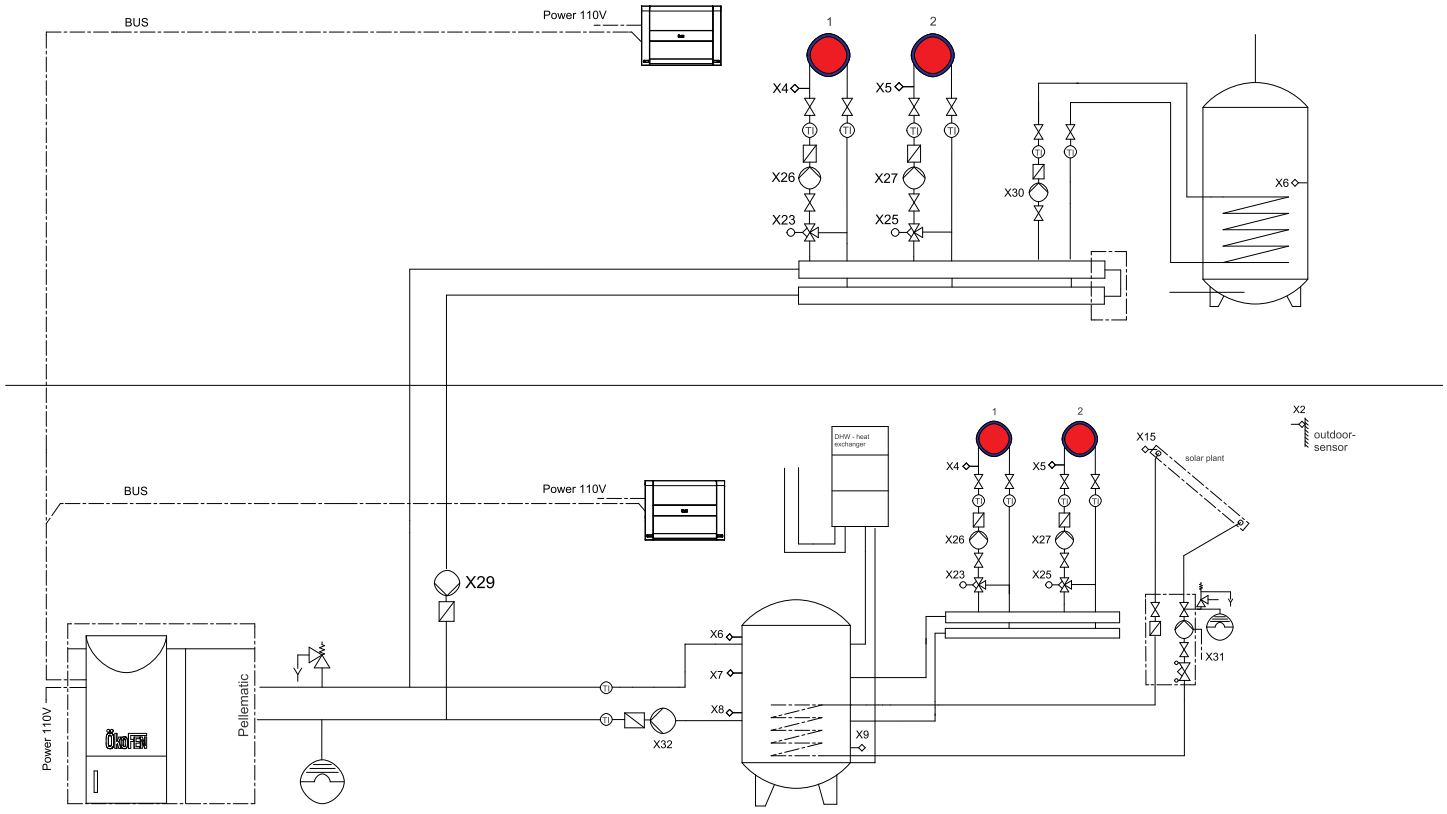
14.3.3 Hydraulic diagram 3

1 boiler Pellematic – 1 accumulator – 2 heating circuits – 1 fresh water module – 1 solar circuit



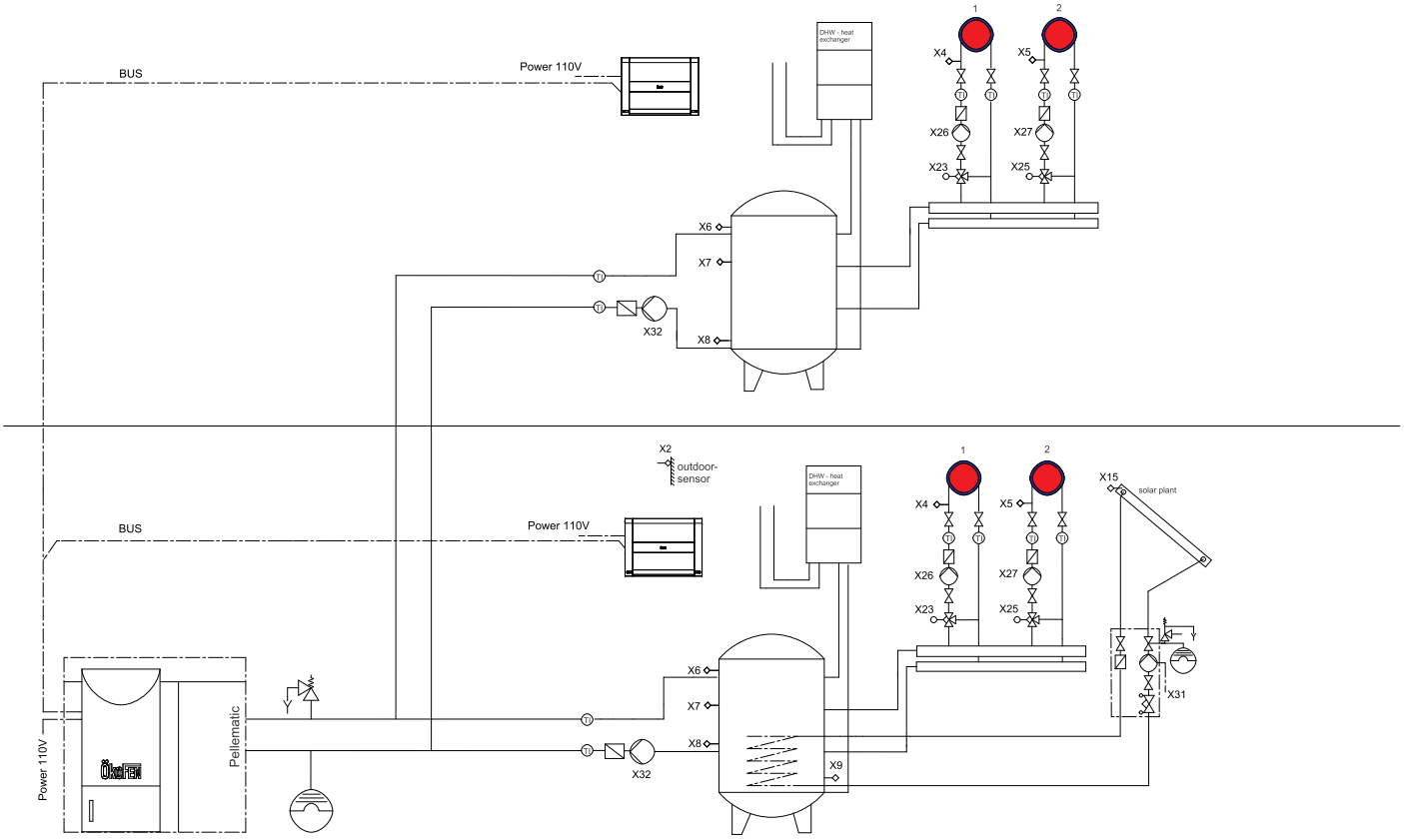
14.3.4 Hydraulic diagram 4

1 boiler Pellematic – 1 accumulator – 1 fresh water module – 4 heating circuits – 1 solar circuit – 1 warm water boiler



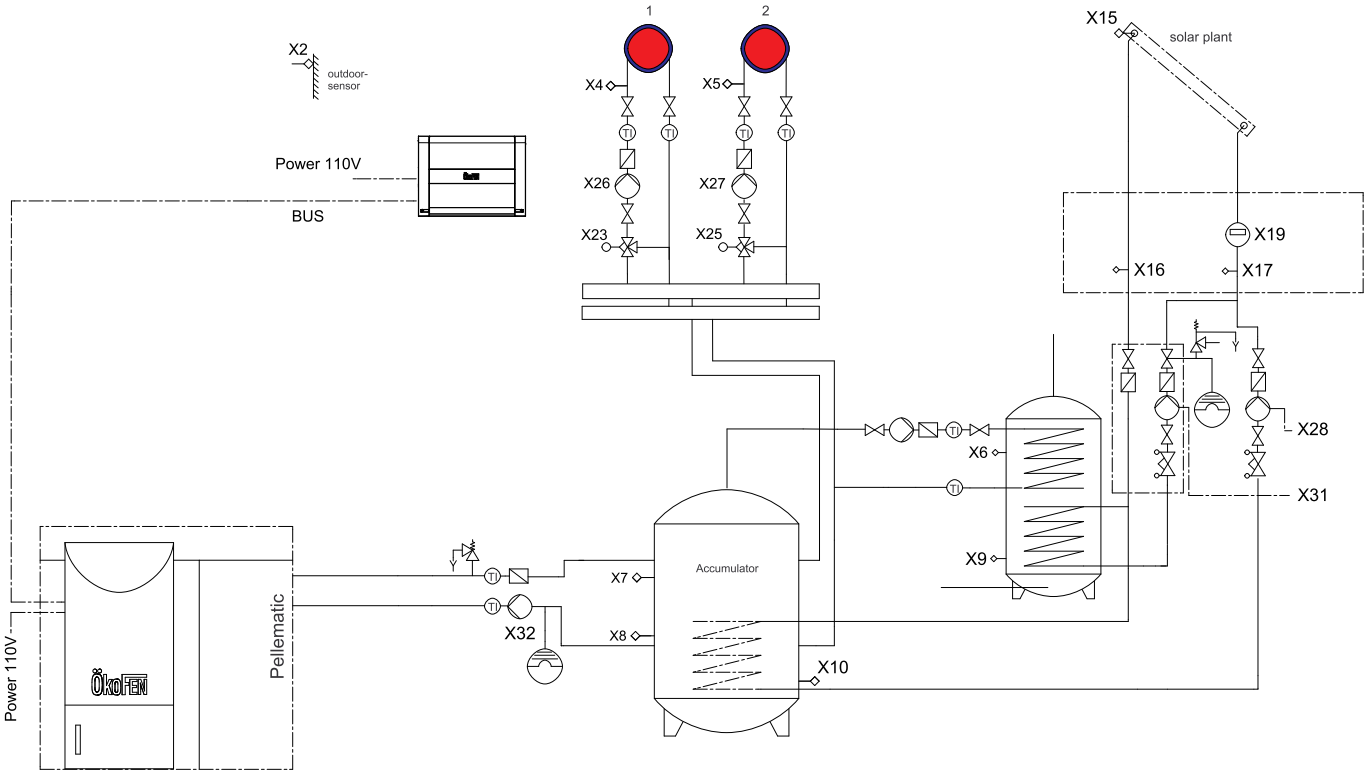
14.3.5 Hydraulic diagram 5

1 boiler Pellematic – 2 accumulatores – 1 fresh water module – 4 heating circuits – 1 solar circuit



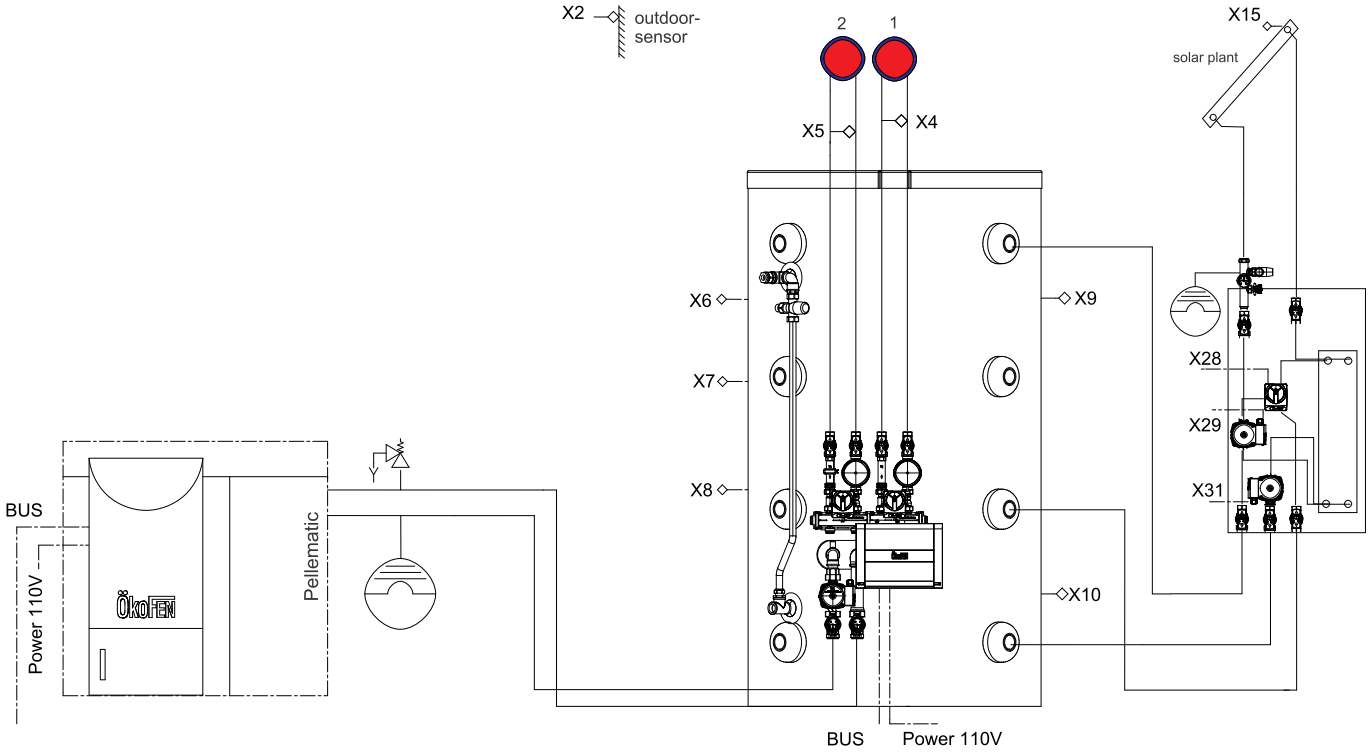
14.3.6 Hydraulic diagram 6

1 boiler Pellematic – 1 accumulator – 1 warm water boiler – 2 heating circuits – 2 solar circuits



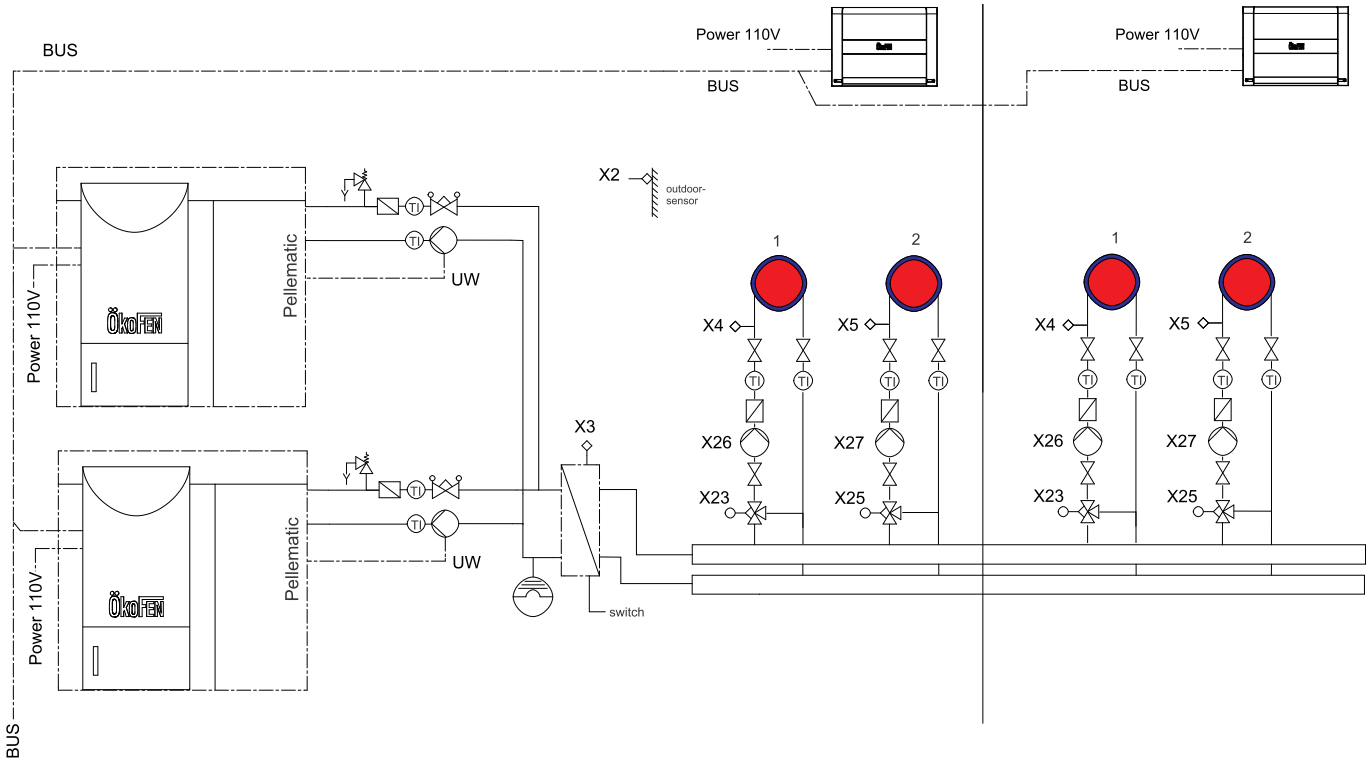
14.3.7 Hydraulic diagram 7

1 boiler Pellematic – 1 accumulator Pellaqua – 2 heating circuits – 1 Schichtlademodul/Solar



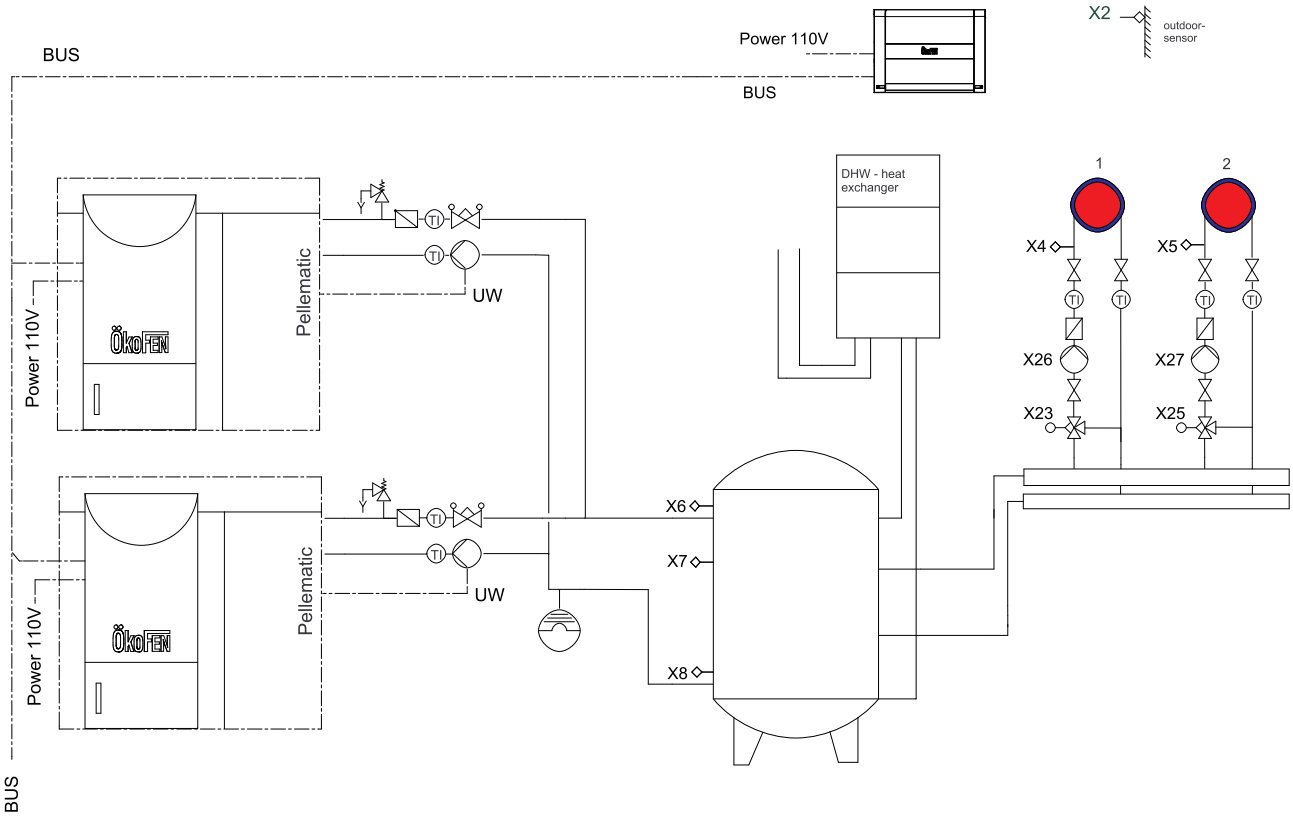
14.3.8 Hydraulic diagram 8

2 boilers Pellematic – 1 switch – 4 heating circuits



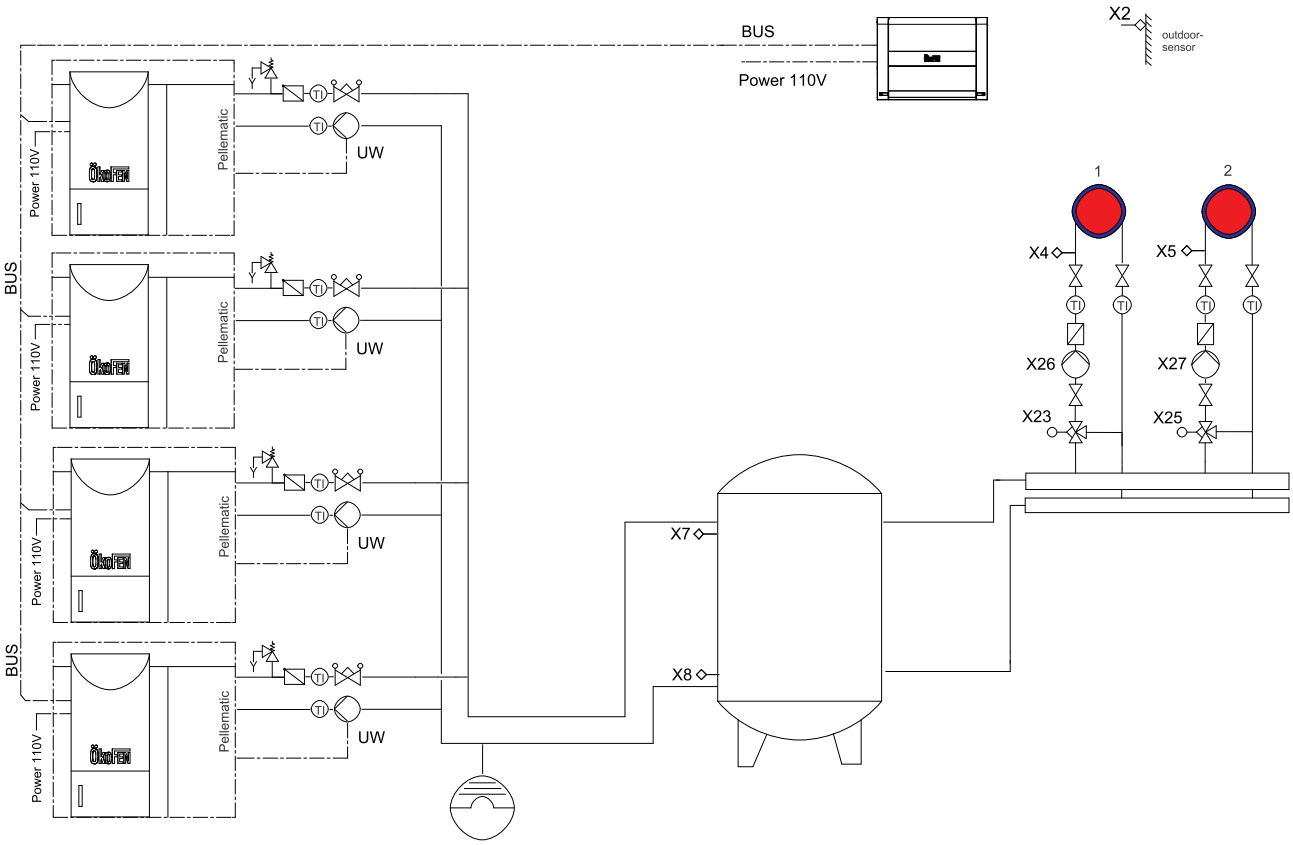
14.3.9 Hydraulic diagram 9

2 boilers Pellematic – 1 accumulator – 1 fresh water module – 2 heating circuits



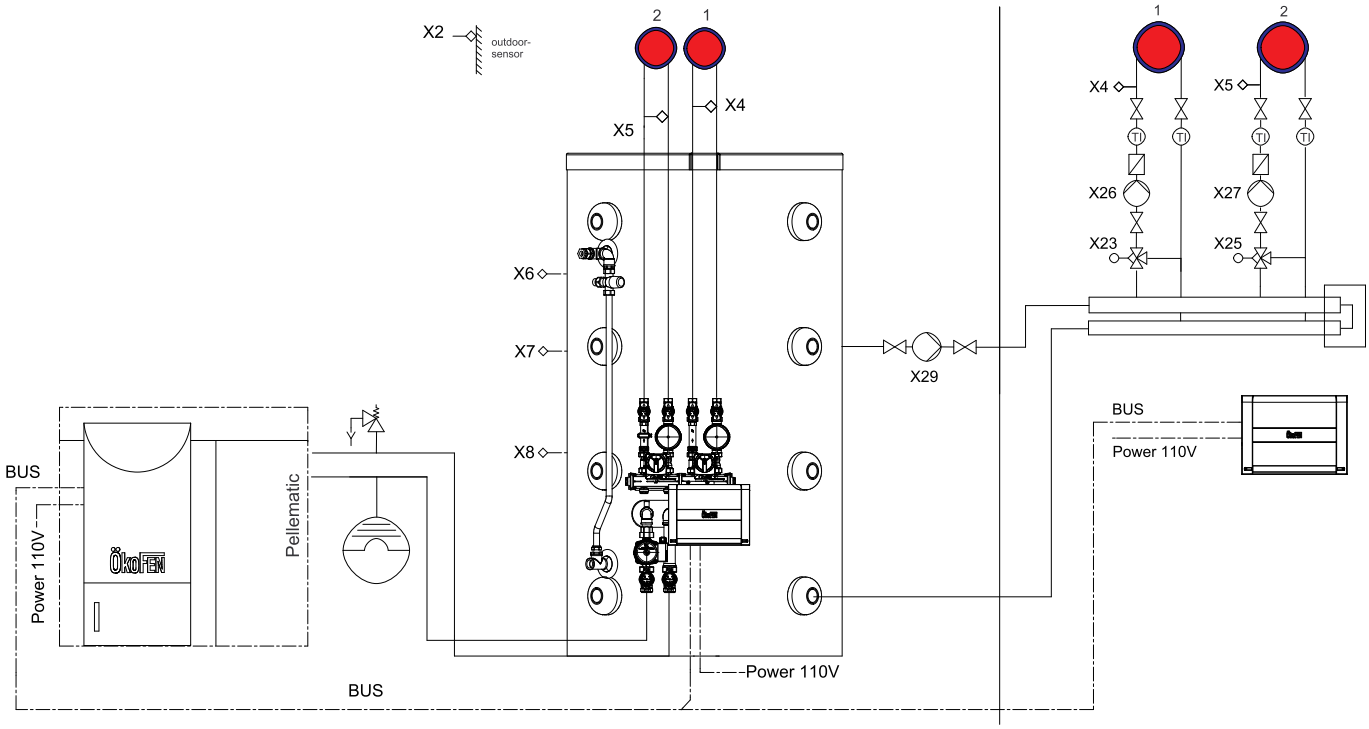
14.3.10 Hydraulic diagram 10

4 boilers Pellematic – 1 accumulator – 2 heating circuits



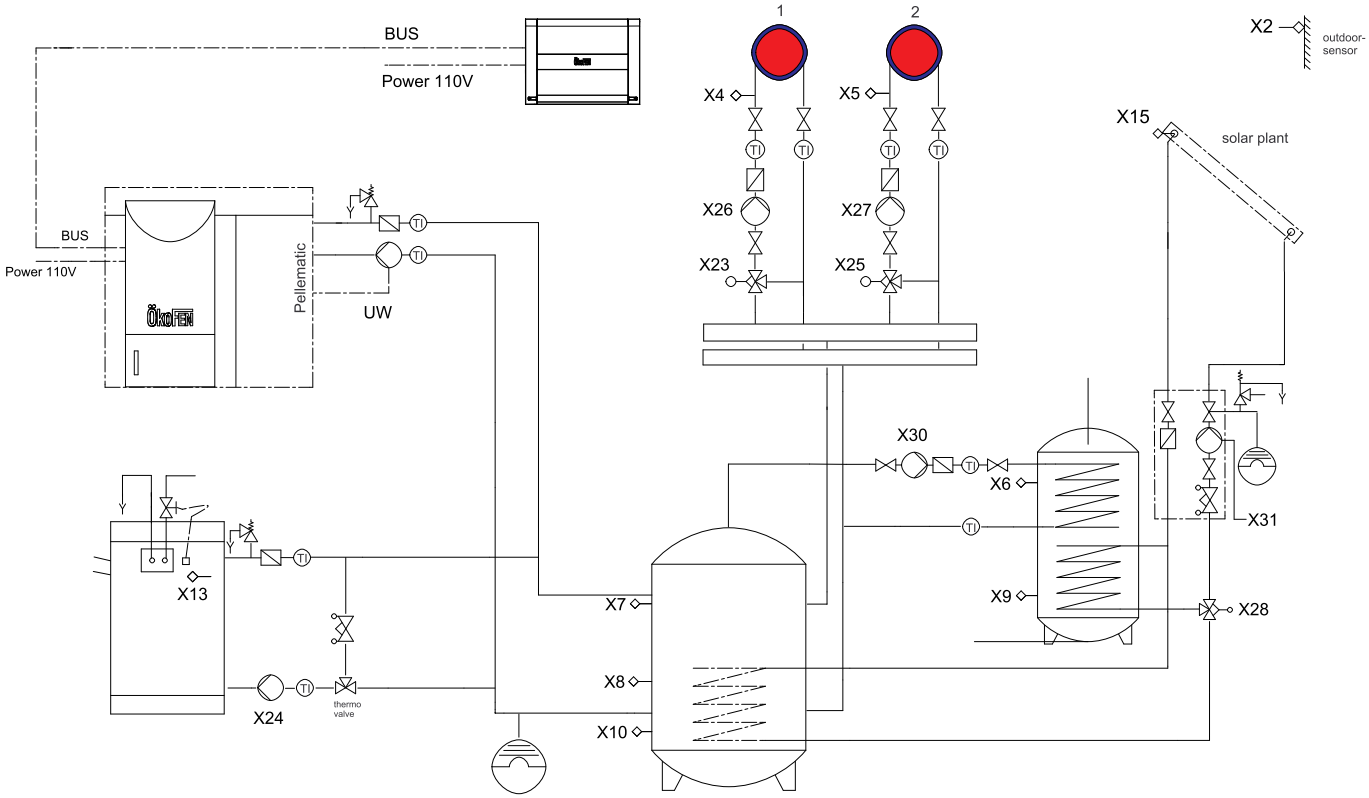
14.3.11 Hydraulic diagram 11

1 boiler Pellematic – 1 accumulator Pellaqua – 2 heating circuits



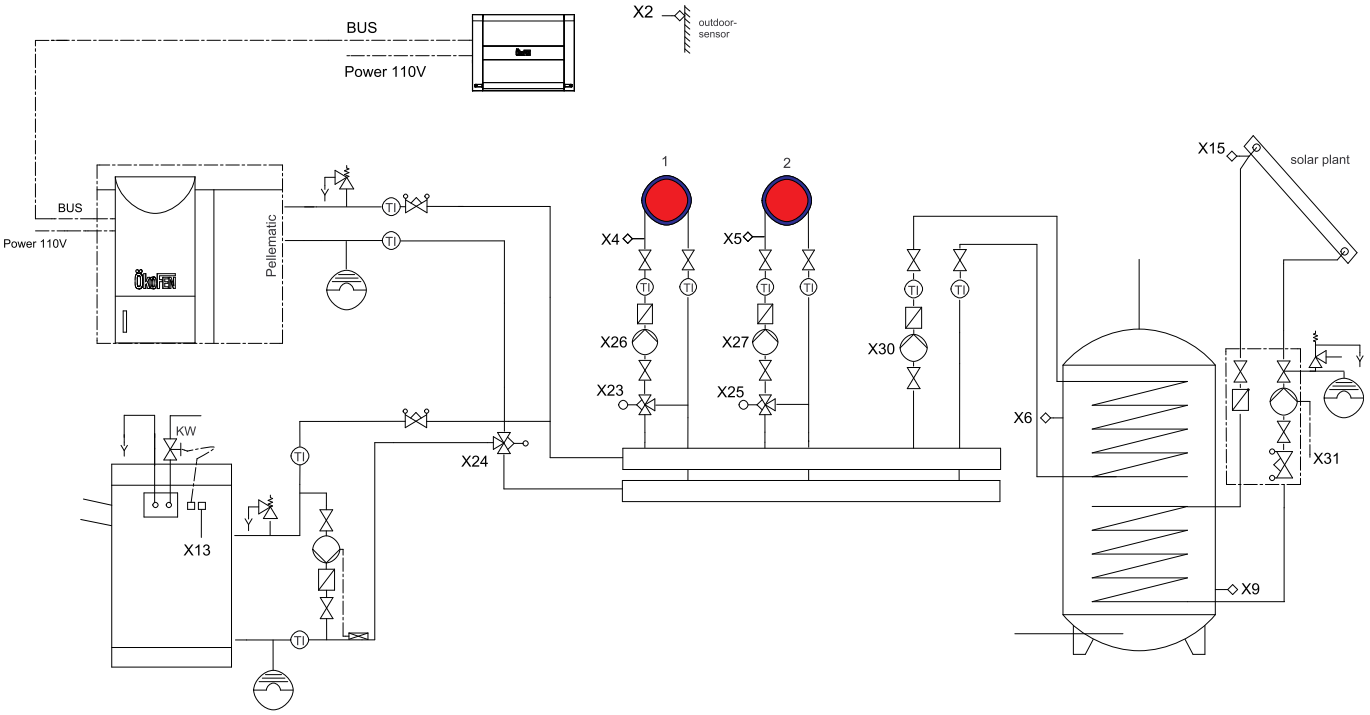
14.3.12 Hydraulic diagram 12

1 boiler Pellematic – 1 wood boiler – 1 warm water boiler – 1 accumulator – 2 heating circuits – 2 solar circuits



14.3.13 Hydraulic diagram 13

1 boiler Pellematic – 1 wood boiler – 1 warm water boiler – 2 heating circuits – 1 solar circuit

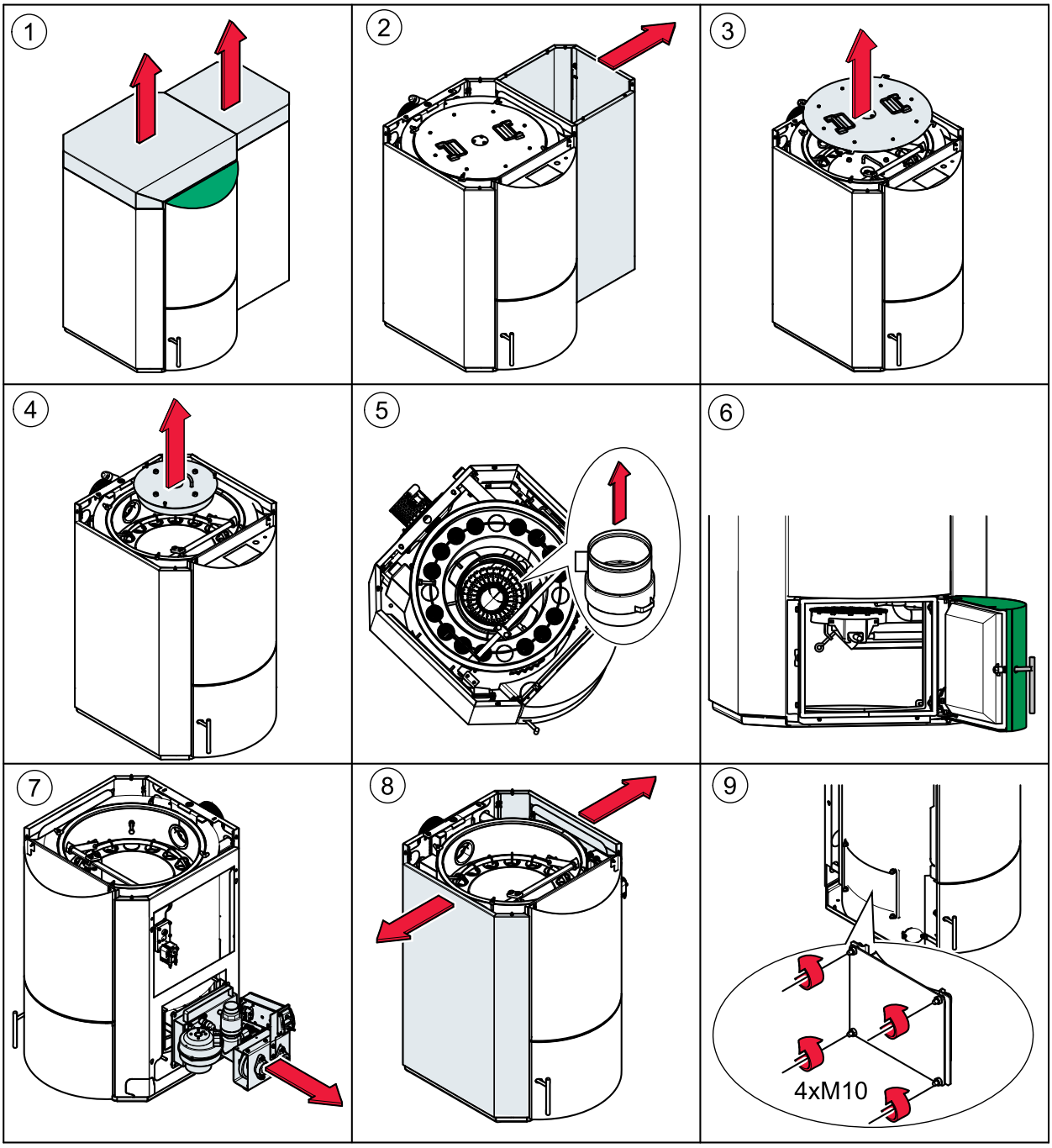


14.4 Modifying the burner

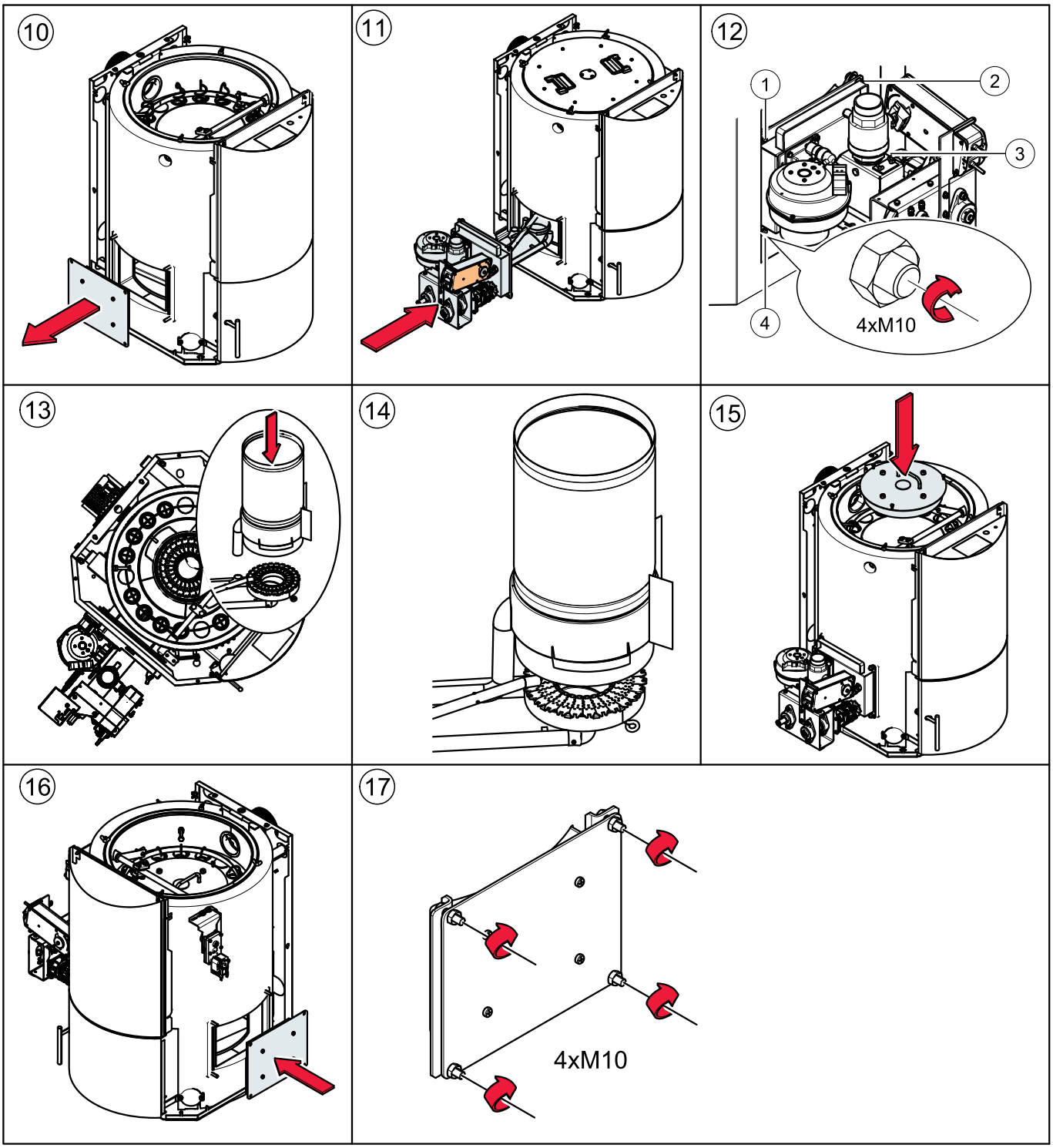
The pellet boiler is configured symmetrically. If required, you can remove the burner from the right-hand side (as shipped) and reinstall it on the left.

1. Dismantle the casing, 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.

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



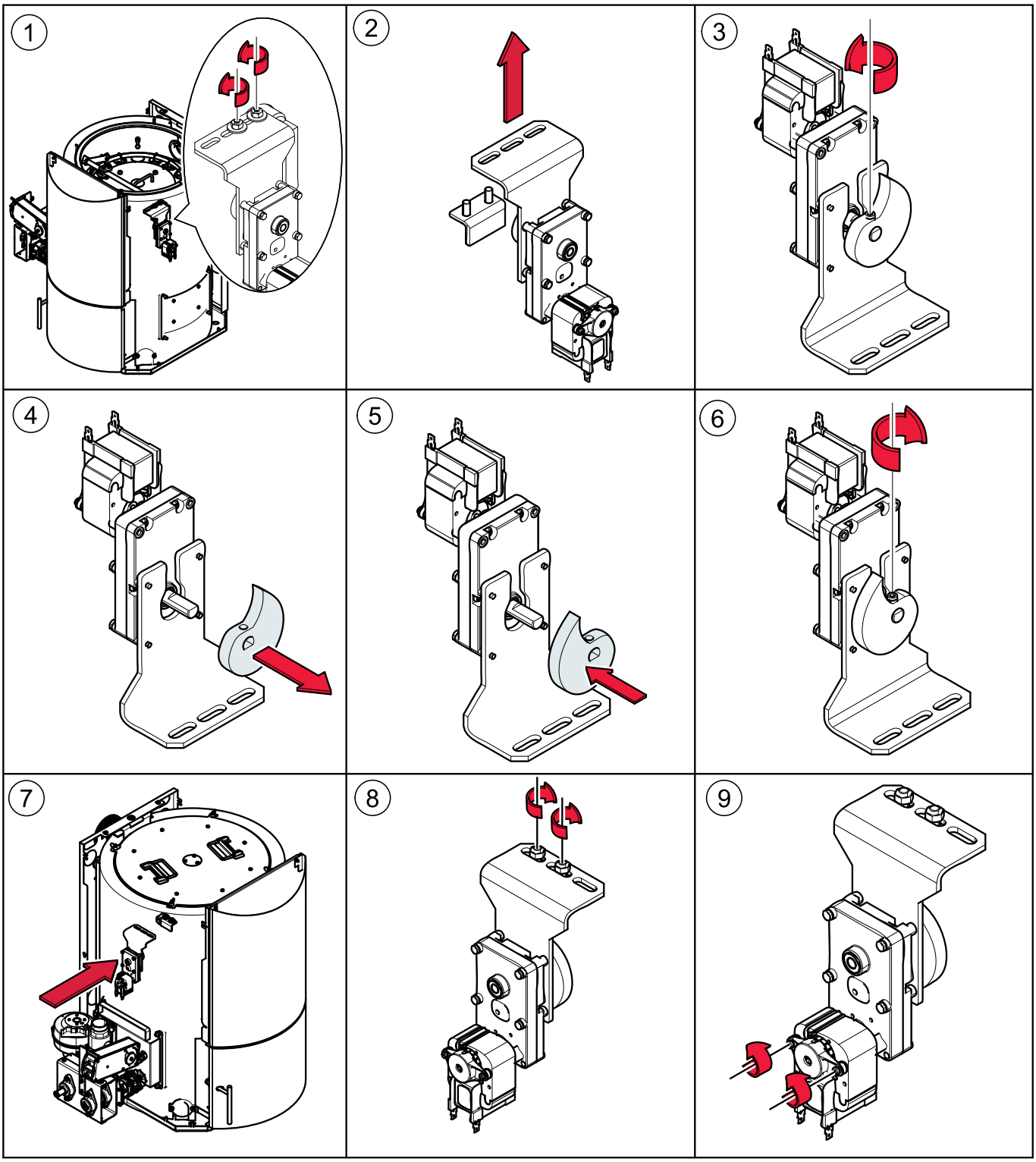
14.4.2 Modify the burner on the left



Note

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

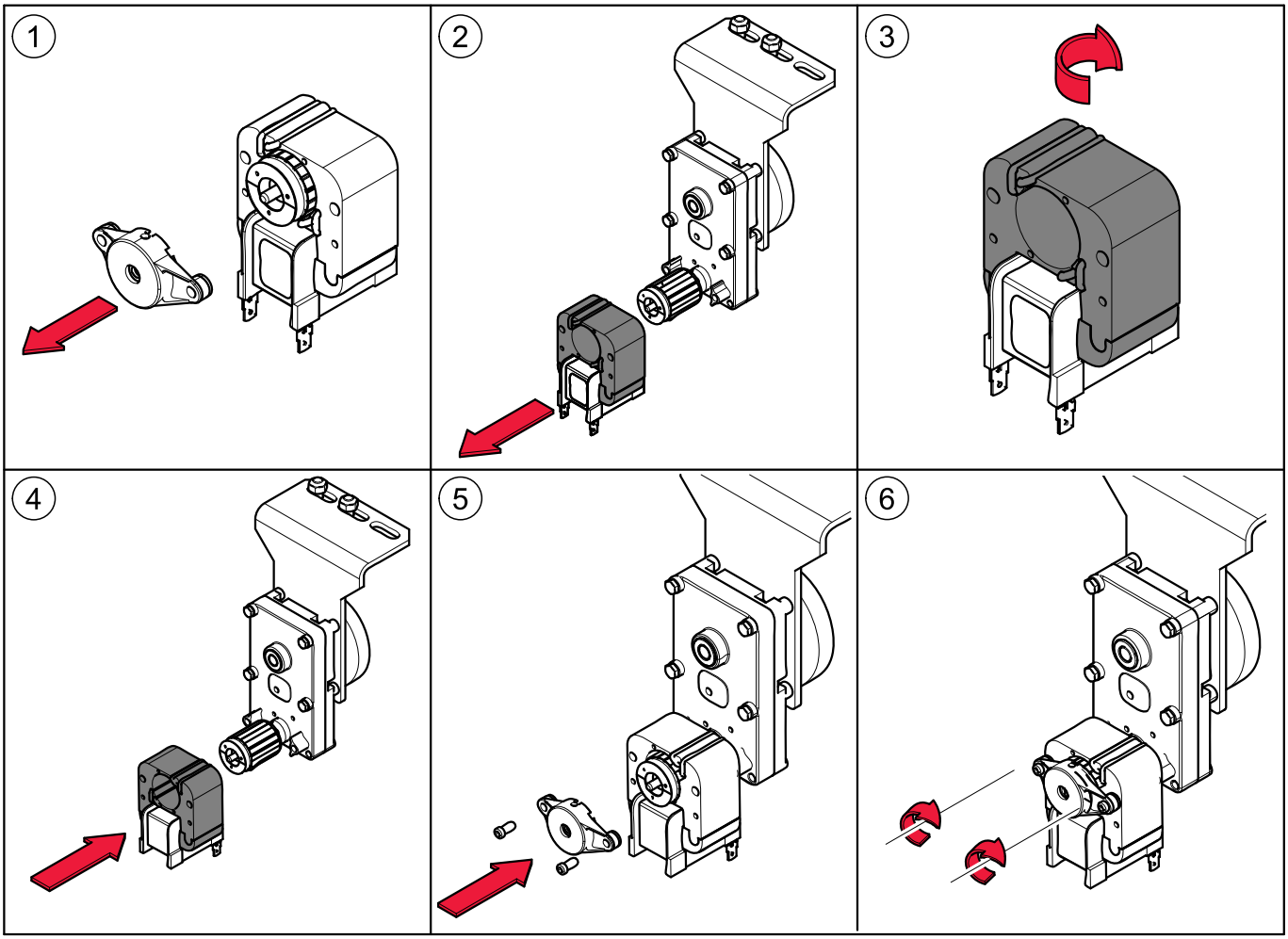
14.4.3 Modifying the cleaning system motor and off-set disc



Note

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

14.4.4 Changing the direction of rotation of the cleaning motor



14.4.5 Modifying and re-assembling the cleaning system

Setting up the cleaning system:

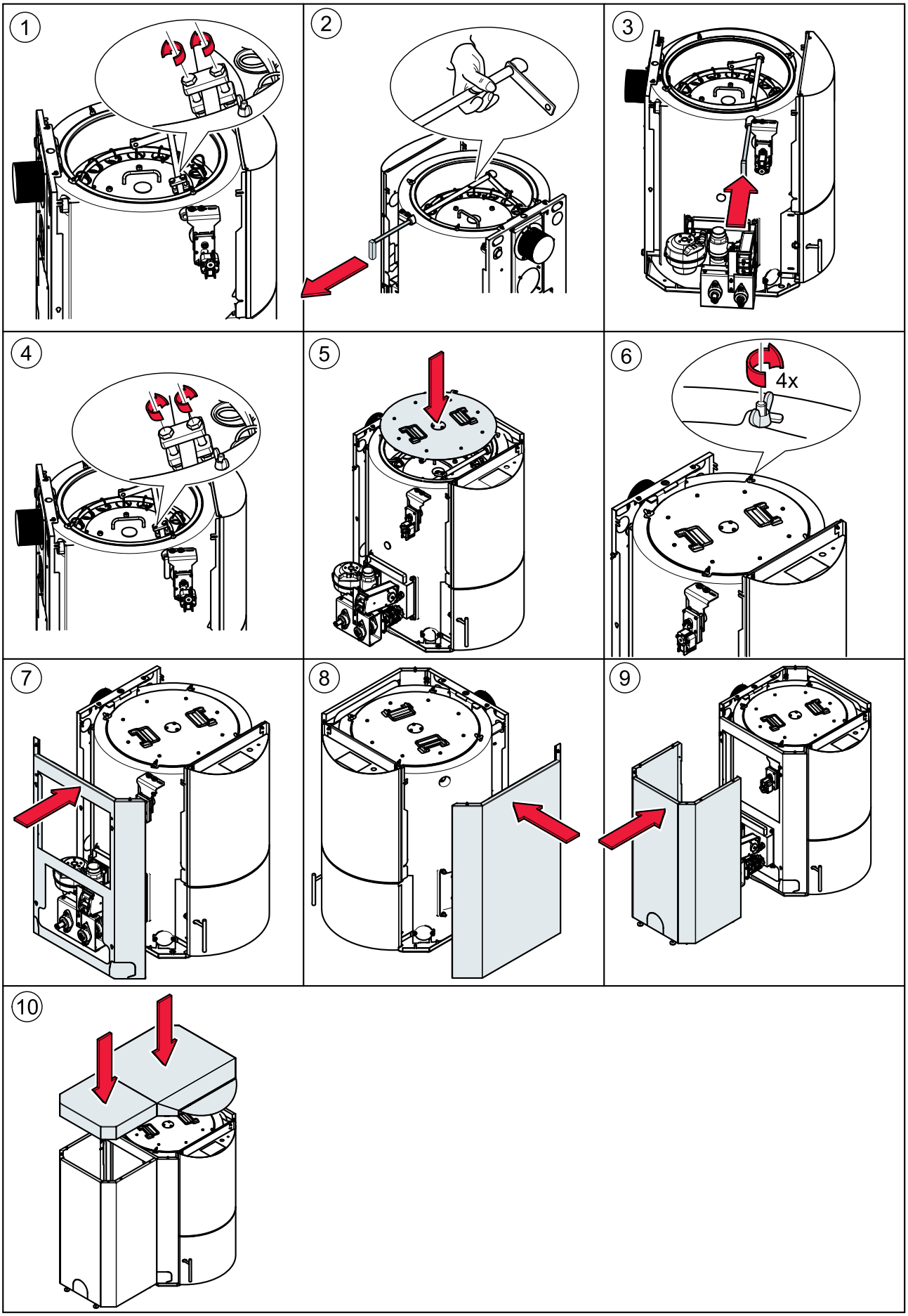
- Switch on the pellet boiler.
- Find "Output test" in parameter 203 of the boiler controller for the **cleaning motor**.
- Push the lever mechanism of the cleaning system against the cleaning shaft.
- Press the clip on the cleaning shaft against the off-set disc and switch on the cleaning motor.
- As 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.


1
2
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4x
7
8
9
10

14.5 Software program - boiler controller

The software programs are called

US_VA....HEX
Program for auger system is

US_ST609.H86 (1 2 3 4)	1	Userware
	2	Kind of system (VA-suction system, ST- auger system)
	3	Version
	4	Ending for Hex-programs

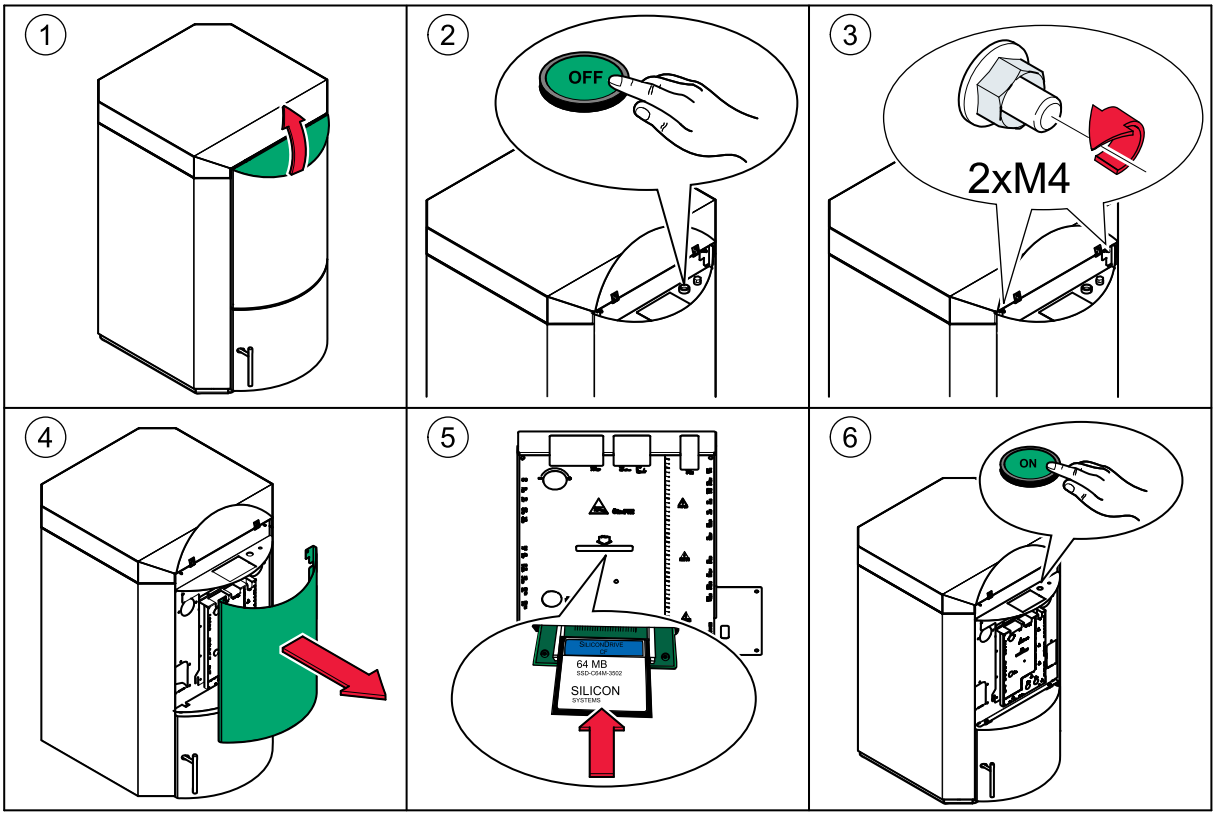
14.5.1 Software update - boiler controller

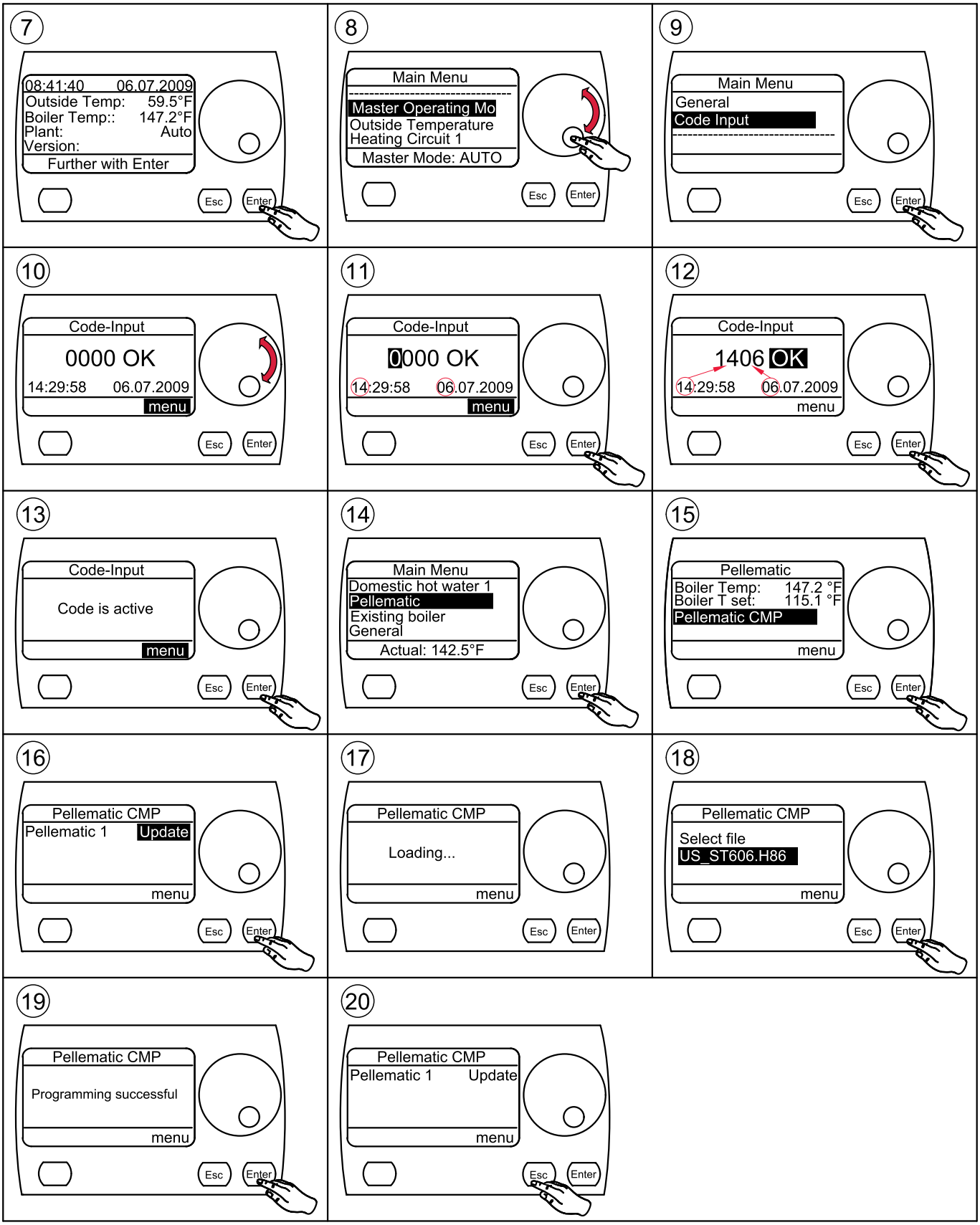
NOTICE

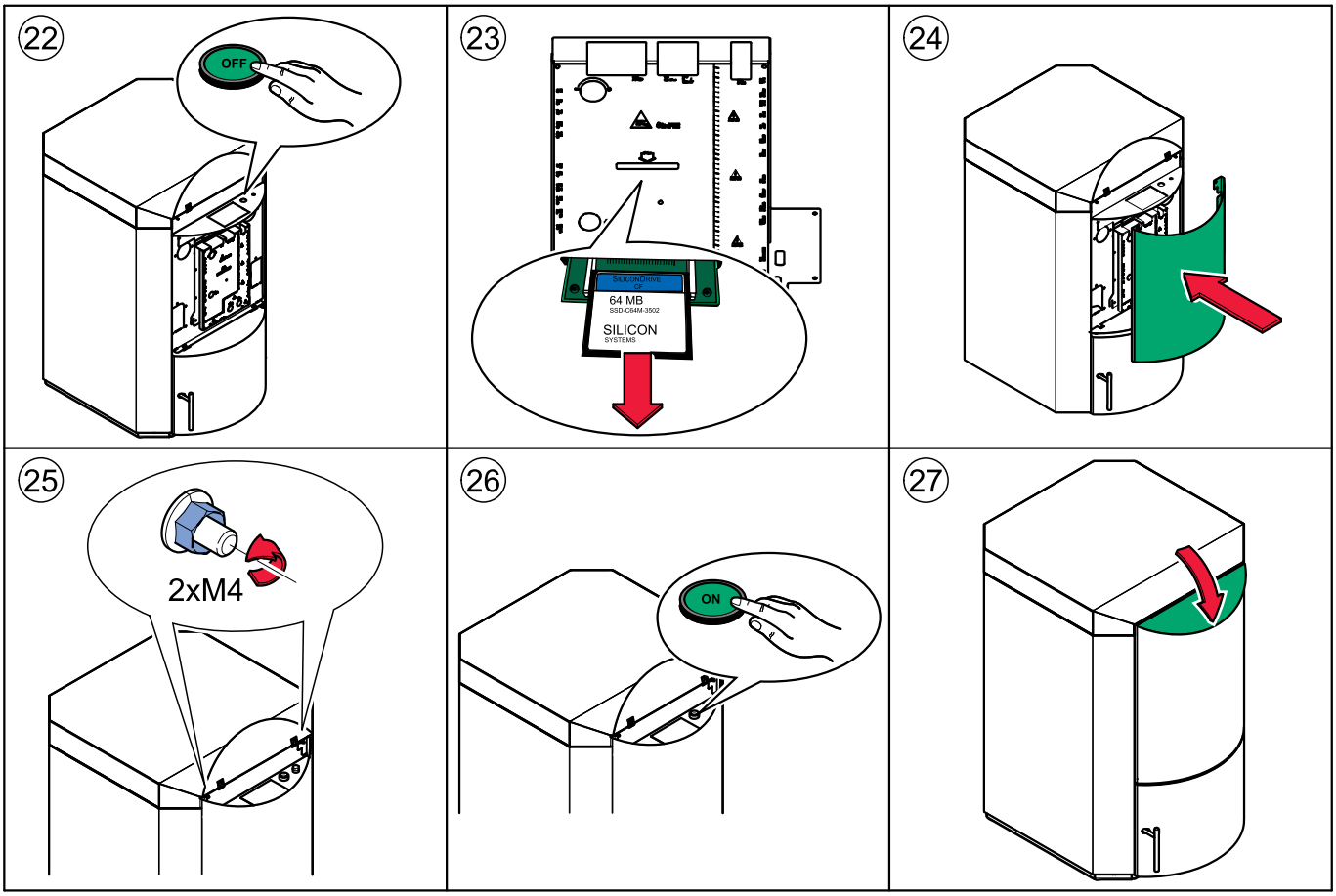
Damage of property
Softwareupdate only with software US_VA**6xx**.H86 or US_ST**6xx**.H86

DANGER

Risk of electrocution
Only authorized specialists may perform maintenance work on electrical components
Behind the boiler front panel is the energized boiler control unit CMP. Disconect main power before removing the front panel




7
08:41:40 06.07.2009
Outside Temp: 59.5°F
Boiler Temp:: 147.2°F
Plant: Auto
Version:
Further with Enter
Esc
Enter
8
Main Menu
Master Operating Mo
Outside Temperature
Heating Circuit 1
Master Mode: AUTO
Esc
Enter
9
Main Menu
General
Code Input
Esc
Enter
10
Code-Input
0000 OK
14:29:58 06.07.2009
menu
Esc
Enter
11
Code-Input
0000 OK
14:29:58 06.07.2009
menu
Esc
Enter
12
Code-Input
1406 OK
14:29:58 06.07.2009
menu
Esc
Enter
13
Code-Input
Code is active
menu
Esc
Enter
14
Main Menu
Domestic hot water 1
Pellematic
Existing boiler
General
Actual: 142.5°F
Esc
Enter
15
Pellematic
Boiler Temp: 147.2 °F
Boiler T set: 115.1 °F
Pellematic CMP
menu
Esc
Enter
16
Pellematic CMP
Pellematic 1 Update
menu
Esc
Enter
17
Pellematic CMP
Loading...
menu
Esc
Enter
18
Pellematic CMP
Select file
US_ST606.H86
menu
Esc
Enter
19
Pellematic CMP
Programming successful
menu
Esc
Enter
20
Pellematic CMP
Pellematic 1 Update
menu
Esc
Enter



14.5.2 Wrong system

If the wrong software was updated, the message **wrong system** is displayed.

In this case follow please exactly the guidance below.

1. **switch OFF** the boiler at the main switch
2. plug the plug **ES BSK** at the boiler controller (CMP). You find the plug in the small plastic bag where the Spare safety fuses are.
3. **Switch ON** the boiler
4. go to **Code input**
5. push the button **Enter**
6. enter the **Code**
7. push the button **Enter**
8. go to **Pellematic**
9. push the button **Enter**
10. go to **Pellematic CMP**
11. Push the button **Enter**
12. go to **Update**
13. push the button **Enter**
14. select the file US_**ST**
15. push the button **Enter**
16. if **Progress successful** is displayed – push the button **Enter**

Note

The message **Wrong system** is displayed again – that`s o.k.

17. switch **OFF** the boiler again
18. unplug the plug **ES BSK** at the boiler controller (CMP)
19. switch **ON** the boiler
20. go to **Pellematic**
21. push the button **Enter**
22. go to **Pellematic CMP**
23. push the button **Enter**
24. go to **Pellematic 1**
25. push the button **Enter**
26. once more — push the button **Enter**
27. the date and the time is displayed – please note the first two numeric from the date and the two numeric from the time. Sum this numeric and note it – you need ist for step number 30 “Code”.
28. go to **Parameter 199**
29. push the button **Enter**
30. enter in the **Code**
31. push the button **Enter**
32. go to **Parameter 298**
33. push the button **Enter**
34. set up the number from **0** to **1**
35. push the button **Enter**

Note

The number gets back to **0** – that`s o.k.

36. push the button **ESC**
37. the boiler is running on the right software version.

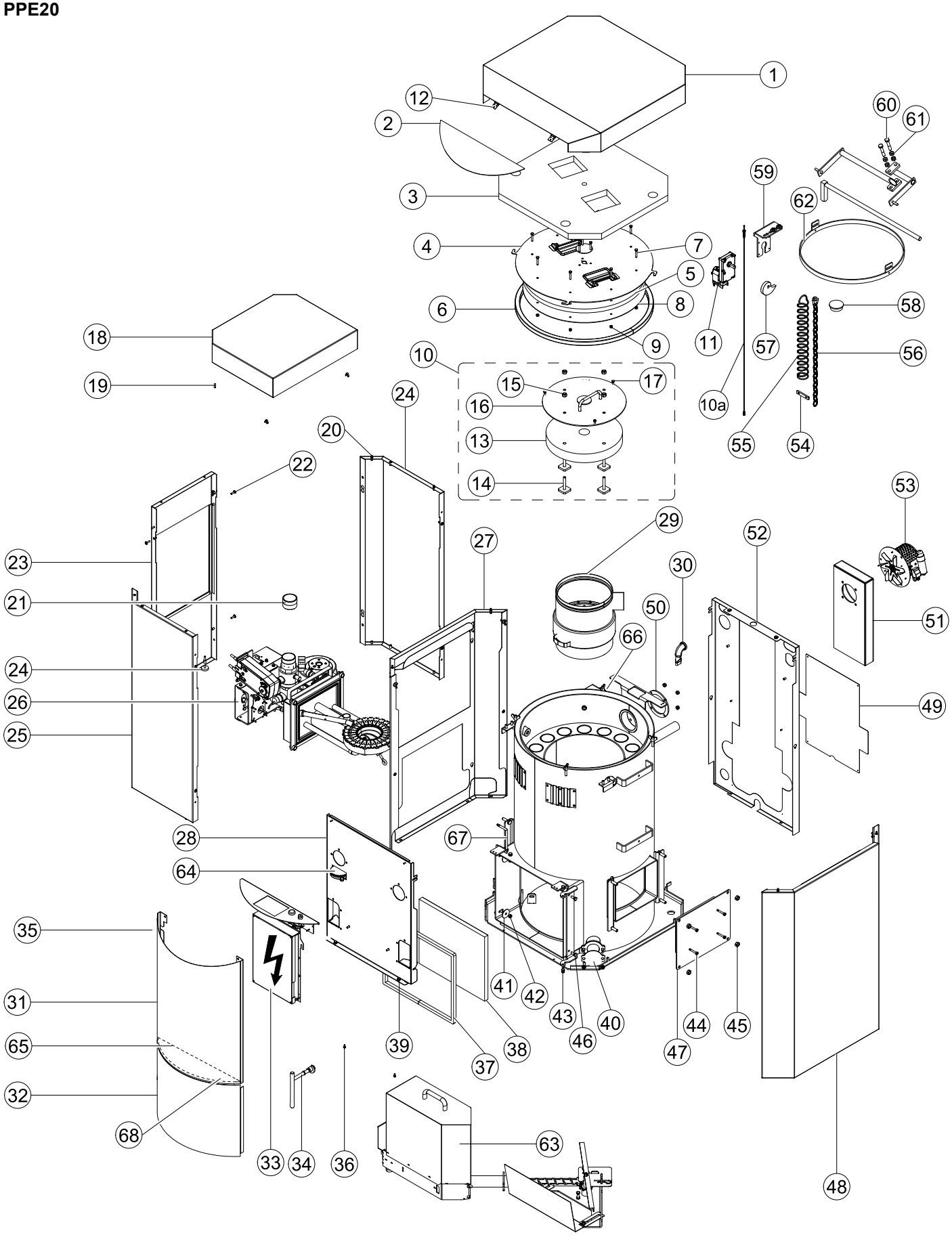
14.6 Parts list

14.6.1 Pellematic PE 12 - 20

PPE20

Pos.	Article number	Pos.	Article number
1	PE114	32	PE121B
2	PE119	32	PE121G
2	PE119B	32	PE121R
2	PE119G	33	E1252E
2	PE119R	34	PE191
3	PE200	35	121159
4	PE156	36	121377
5	PE289	37	PE160
6	PE215	38	PE176
7	121259	39	121378
8	on request	40	PE416
9	121347	41	121375
10	PE243	42	121039
11	E1054	43	on request
11a	E1186	44	121379
12	PE131	45	121234 / 121029
13	PE212	46	121042
14	PE174	47	PE188
15	121373	48	PE115
16	on request	49	PE117.1
17	121034	50	on request
18	PE122	51	PE258
19	121380	52	PE117
20	121381	53	E1001A
21	B136	54	PE143
22	121374	55	PE129
23	PE124	56	121049 / 121126
24	PE210	57	PE142
25	PE123	58	PE103
26	B0020KF	59	PE281
27	PE116	60	121168
28	PE118	61	121169
29	B103	62	PE475
30	PE133	63	PEASCH RE – LI
31	PE120	64	24155 /24157 / 121198
31	PE120B	65	PE419
31	PE120G	66	PE 192
31	PE120R	67	24169
32	PE121	68	PE419

PPE20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31
65
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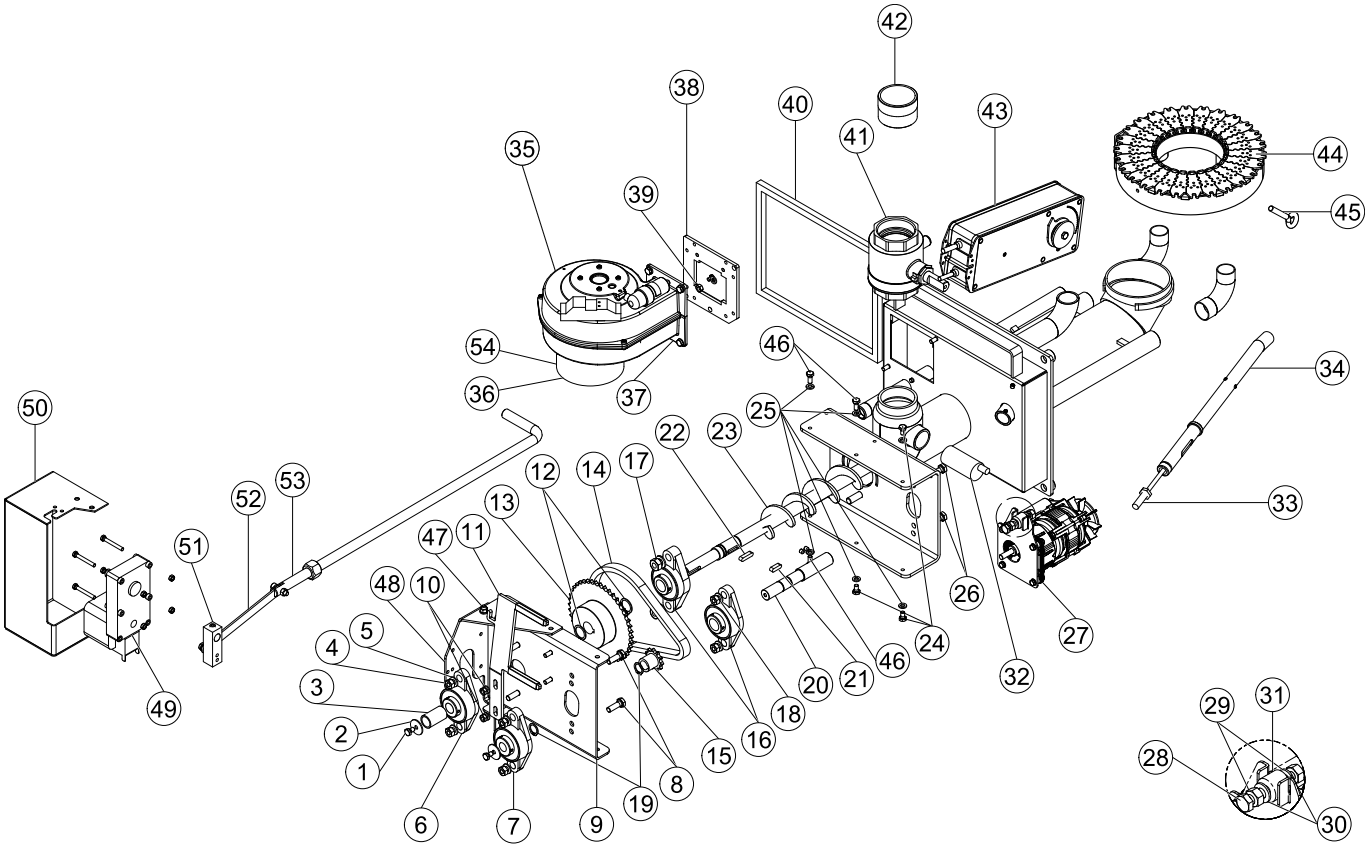
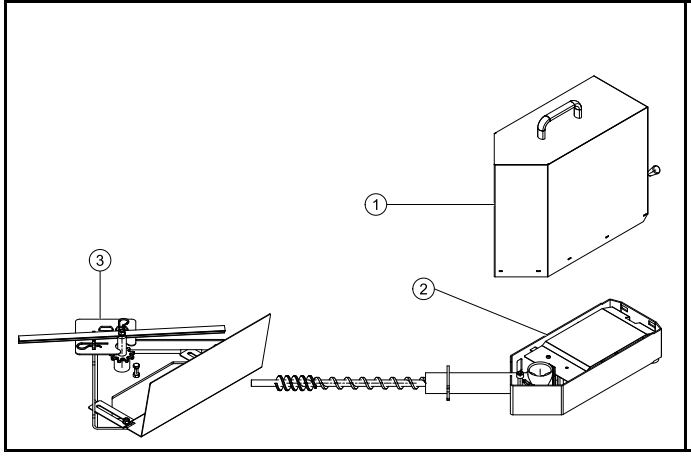
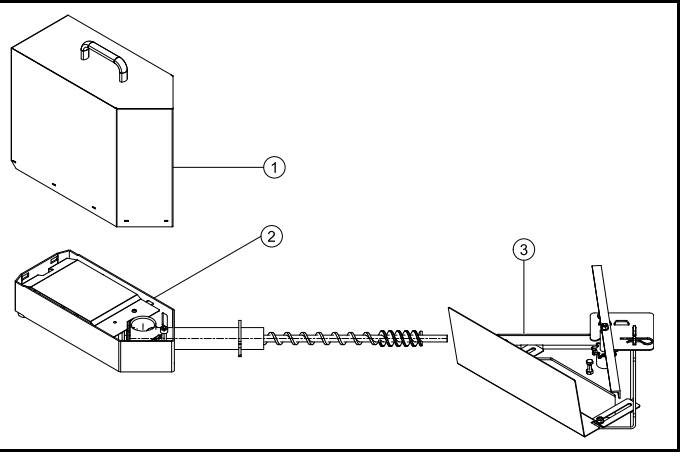
47
48

B0020KF –Burner					
1	121041	20	B172	39	121082
2	121058	21	121197	40	B152
3	B150	22	121023	41	B144
4	121039	23	B130	42	B136
5	121038	24	121041	43	E1006A / B144.1
6	121011	25	121037	44	B225
7	121195	26	121079	45	B101
8	121051	27	E1030 / E1002.1	46	121034 / 121082
9	B179	28	121166	47	121034 /121037 / 121082
10	121082 / 121037	29	121039	48	B181
11	B129	30	121038	49	E1204 / E1304
12	121075	31	B113	50	B182
13	121193	32	E1059	51	B183
14	121194	33	E1004	52	B184
15	121192	34	B105	53	B196
16	121010	35	E1005	54	121361
17	121083 / 121029	36	B2025		
18	121039 / 121038	37	121041		
19	121196	38	B147		



PEASCHRE – Ash box		PEASCHLI – Ash box	
1	PE442	1	PE442
2	PE439	2	PE440
3	PE373	3	PE373



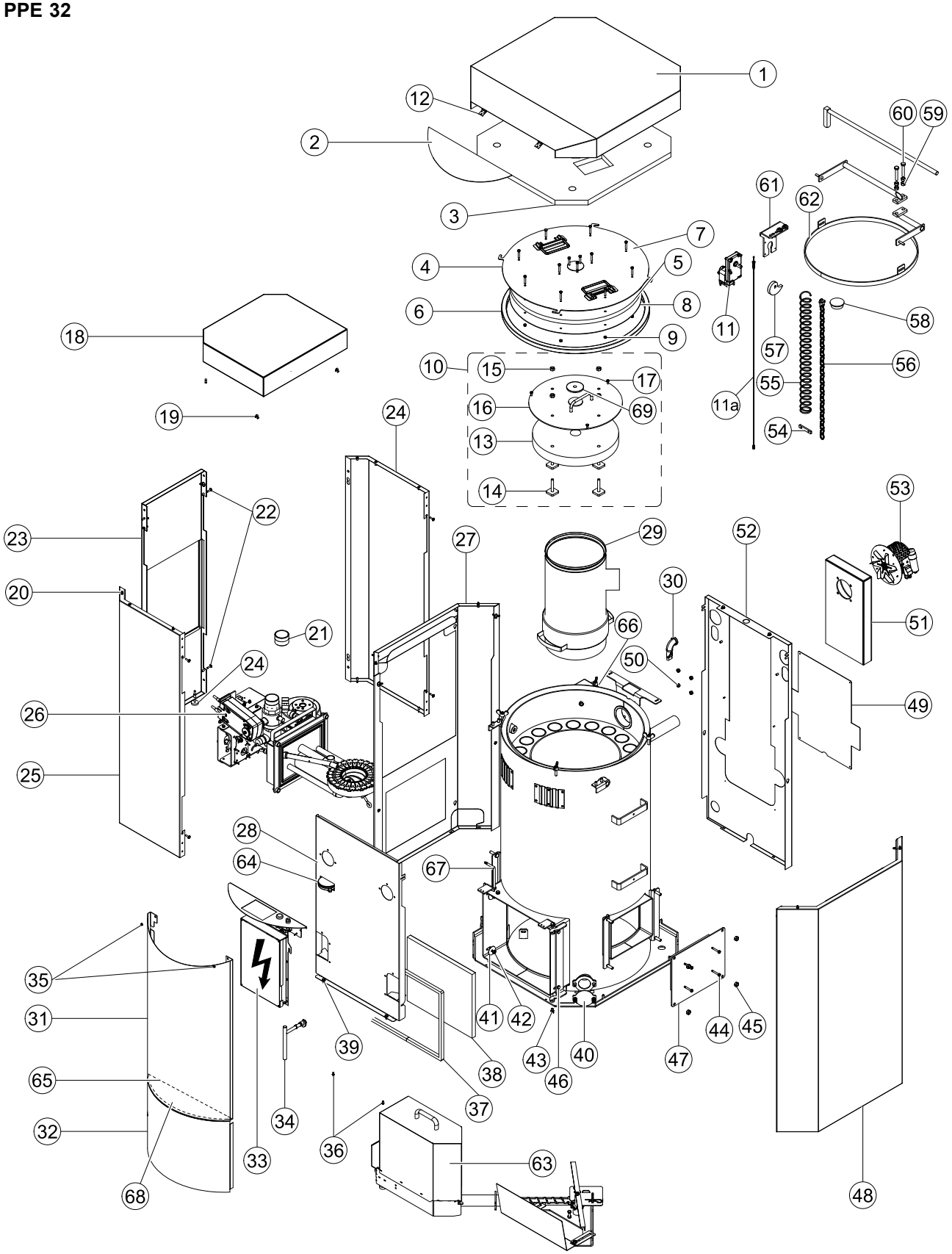


14.6.2 Pellematic PE 25 - 32

PPE 32

Pos.	Article number	Pos.	Article number
1	PE166	32	PE121G
2	PE119	32	PE121R
2	PE119B	33	on request
2	PE119G	34	PE191
2	PE119R	35	121159
3	PE205	36	on request
4	PE157	37	PE160
5	PE290	38	PE176
6	PE215	39	on request
7	121259	40	PE416
8	on request	41	121378
9	121347	42	121039
10	PE244	43	on request
11	E1054	44	121379
11a	E1186	45	121234 / 121029
12	PE131	46	121042
13	PE213	47	PE188
14	PE174	48	PE171
15	121373	49	PE117.1
16	PE244	50	121247
17	121034	51	PE258
18	PE122	52	PE182
19	121380	53	E1001A
20	121381	54	PE143
21	B136	55	PE130
22	121374	56	121050 / 121126
23	PE184	57	PE142
24	PE210	58	PE103
25	PE172	59	121169
26	B0030KF	60	121168
27	PE183	61	PE281
28	PE181	62	PE476
29	B104	63	PEASCH RE – LI
30	PE207	64	24155 / 24157 / 121198
31	PE173	65	PE419
31	PE173B	66	PE192
31	PE173G	67	24169
31	PE173R	68	PE419
32	PE121	69	PE264
32	PE121B		

PPE 32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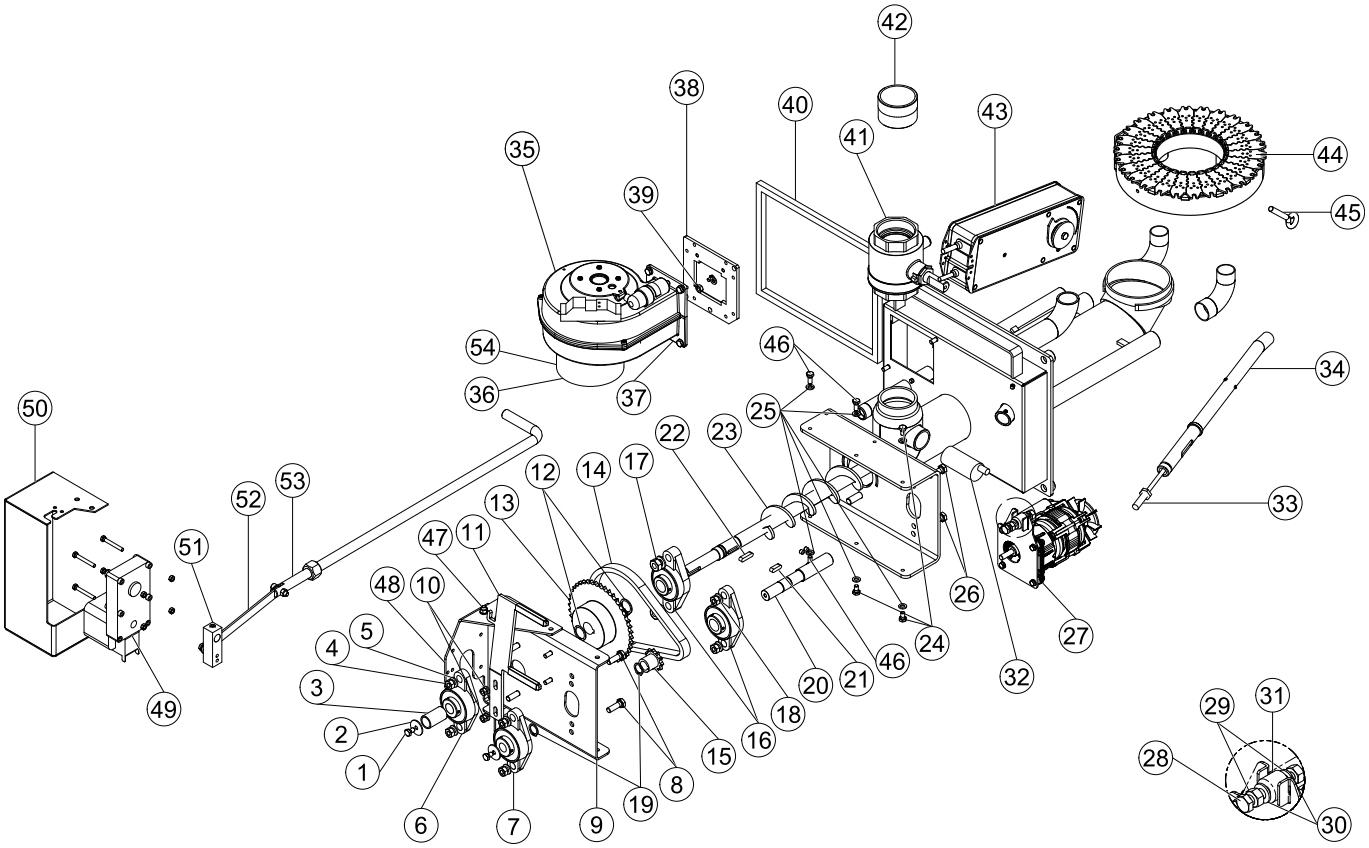
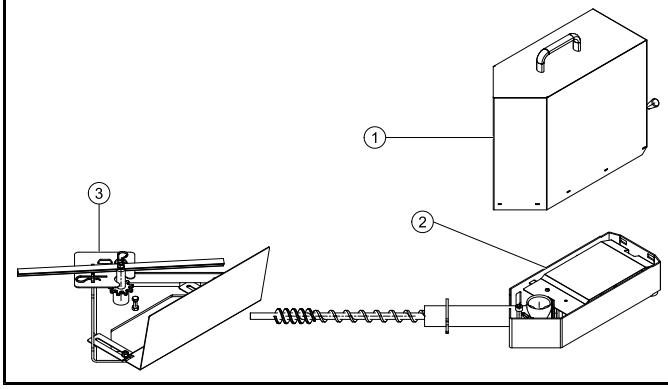
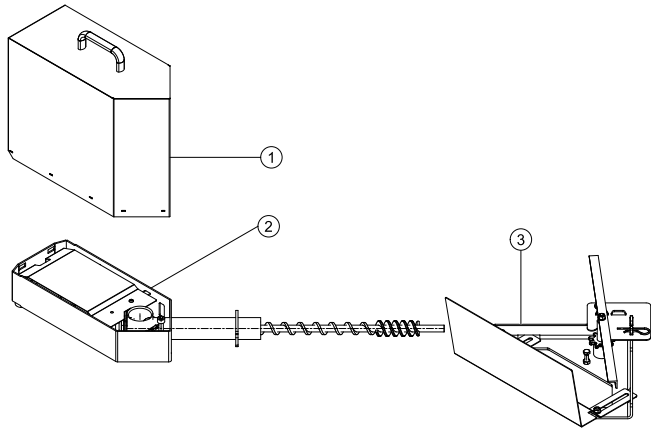
B0030 KFBRE – Burner					
1	121041	19	121196	37	121041
2	121058	20	B172	38	B148
3	B150	21	121197	39	121082
4	121039	22	121023	40	B152
5	121038	23	B131	41	B144
6	121011	24	121041	42	B136
7	121195	25	121037	43	E1006A / B144.1
8	121051	26	121079	44	B226
9	B179	27	E1030 / E1002.1	45	121284
10	121082 / 121037	28	121166	46	121034 / 121082
11	B129	29	121039	47	121034 /121037 / 121082
12	121075	30	121038	48	B181
13	121193	31	B113	49	E1204 / E1304
14	121194	32	E1059	50	B18254
15	121192	33	E1004	51	B183
16	121010	34	B105	52	B184
17	121083 / 121029	35	E1005	53	B197
18	121039 / 121038	36	B202	54	121361



PEASCHRE – Ash box		PEASCHLI – Ash box	
1	PE442	1	PE442
2	PE439	2	PE440
3	PE373	3	PE373





14.7 Technical data

Boiler – Type		PE(S)12	PE(S)15	PE(S)20	PE(S)25	PE(S)32	PES36	PES48	PES56
Boiler-rated power	BTU/hr	41,000	51,000	68,300	85,300	109,500	123,000	164,000	191,000
	kW	12,00	15,00	20,00	25,00	32,00	36,00	48,00	56,00
Boiler-partial load	BTU/hr	11.601	17.061	20.473	27.297	34.121	37.534	51.182	58.006
	kW	3,40	5,00	6,00	8,00	10,00	11,00	15,00	17,00
Measurements									
Width - total (B)	Inch	44 1/2	44 1/2	44 1/2	46 3/4	46 3/4	51	51	51
	mm	1.130	1.130	1.130	1.186	1.186	1.297	1.297	1.297
Width - boiler (C)	Inch	27 1/2	27 1/2	27 1/2	29 3/4	29 3/4	34	34	34
	mm	700	700	700	756	756	862	862	862
Height - boiler (H)	Inch	43	43	43	51	51	61	61	61
	mm	1.100	1.100	1.100	1.300	1.300	1.555	1.555	1.555
Height - vacuum system execution (D)	Inch	55	55	55	63	63	73	73	73
	mm	1.400	1.400	1.400	1.600	1.600	1.855	1.855	1.855
Height - filling unit (F)	Inch	12	12	12	12	12	12	12	12
	mm	300	300	300	300	300	300	300	300
Depth - boiler (T)	Inch	32	32	32	34 1/4	34 1/4	39	39	39
	mm	814	814	814	870	870	990	990	990
Depth - burner casing (V)	Inch	20	20	20	20	20	20	20	20
	mm	508	508	508	508	508	508	508	508
Flow/return - dimensions	Inch	1	1	1	5/4	5/4	2	2	2
Flow/return - height of connection (A)	Inch	35 3/4	35 3/4	35 3/4	43 3/4	43 3/4	52	52	52
	mm	905	905	905	1.110	1.110	1.320	1.320	1.320
Flue size - diameter	Inch	5	5	5	6	6	7	7	7
	mm	130	130	130	150	150	180	180	180
Flue - height of connection (E)	Inch	25 1/2	25 1/2	25 1/2	33 1/4	33 1/4	41	41	41
	mm	645	645	645	844	844	1.040	1.040	1.040
Overall Weight	Lb	631	631	631	756	756	1.120	1.120	1.120
	kg	286	286	286	343	343	508	508	508
Boiler Body Weight	Lb	529	529	529	664	664	930	930	930
	kg	240	240	240	301	301	422	422	422
Efficiency rated power	%	92,5	92,6	92,4	91,9	91,4	92,3	92,5	93,0
Efficiency partial power	%	92,1	91,1	91,0	91,1	91,2	91,0	91,1	91,1
Water capacity	Gal	15,0	15,0	15,0	23,6	23,6	30,6	30,6	30,6
	l	66,0	66,0	66,0	104,0	104,0	135,0	135,0	135,0
Flue gas area									
Fire vault temperature	°F	1652 - 2012							
	°C	900 - 1100							
Fire vault pressure	Inch WC	-0,0040							
	mbar	-0,0100							

Draft at max/min Power	**Inch WC**	0,03 / 0,01							
	mbar	0,08 / 0,03							
Flue gas temperature rated power (Flue gas temperature can be adjusted)	**°F**	320							
	°C	160							
Flue gas temperature partial load (Flue gas temperature can be adjusted)	**°F**	212							
	°C	100							
Flue gas inertia current rated power	**Lb/hr**	49,60	62,17	82,89	99,43	115,96	149,25	198,85	231,92
	kg/h	22,50	28,20	37,60	45,10	52,60	67,70	90,20	105,20
Flue gas inertia current partial load	**Lb/hr**	14,11	20,72	24,91	29,76	35,71	45,64	62,17	70,33
	kg/h	6,40	9,40	11,30	13,50	16,20	20,70	28,20	31,90
Flue gas volume rated power	**Cft/hr**	918	1.232	1.642	1.971	2.627	2.956	3.941	4.598
	m³/h	26	35	47	56	74	84	112	130
Flue gas volume partial load	**Cft/hr**	240	353	424	509	607	777	1.059	1.204
	m³/h	7	10	12	14	17	22	30	34
Chimney diameter	according to chimney calculation								
Chimney construction	steel or ceramic lined, withstand humidity								
Electrical connection	**USA**	208 VAC, 60 Hz, 13A for auger delivery system, 16A for vacuum suction system							
	EU	230 VAC, 50 Hz, 13A for auger delivery system, 16A for vacuum suction system							
Water area									
Water resistance at 10K	**Inch WC**	38,22	60,22	88,32	114,02	150,95	15,62	20,84	24,29
	mbar	95,20	150,00	220,00	284,00	376,00	38,90	51,90	60,50
Water resistance at 20K	**Inch WC**	9,72	15,26	22,08	28,91	38,14	4,18	5,58	6,50
	mbar	24,20	38,00	55,00	72,00	95,00	10,40	13,90	16,20
Boiler temperature	**°F**	149 - 194							
	°C	65 - 90							
Boiler input temperature minimum	**°F**	131							
	°C	55							
Operating pressure maximum	**psi**	50							
	bar	3,50							
Test pressure	**psi**	67							
	bar	4,60							
Flue gas volume rated power at flue gas temperature	**Cft/hr**	1.010,0	1.327,8	1.772,8	2.231,9	2.874,6	3.217,2	4.262,5	4.944,1
	m³/h	28,6	37,6	50,2	63,2	81,4	91,1	120,7	140,0
Flue gas volume partial load at flue gas temperature	**Cft/hr**	243,7	384,9	459,1	614,5	769,9	847,6	1.165,4	1.313,7
	m³/h	6,9	10,9	13,0	17,4	21,8	24,0	33,0	37,2
Fuel	**USA**	According to PFI Standards							
	Europe	According to EN14961–2 Standards (A1 Class)							

Colorific value	**BTU/lbs**	> 7.200		
	MJ/kg	>16,5		
Bulk density	**Lb/cft**	> 40,00		
	kg/m³	>600		
Water content	**Mass%**	<10		
Ash content	**Mass%**	<1		
Lenght	**Inch**	1 1/4 – 1 1/2		
	mm	3,15 – 40		
Diameter	**Inch**	1/4 – 5/16		
	mm	6,00 – 8,00		
Fine material	**Mass%**	<0.5		
	Mass%	<1%		
Ash melting point	**°F**	> 2.200		
	°C	> 1.200		
Contents	**USA**	untreated wood		
	Europe	stemwood or chemically untreated wood		
Components				
Internal ash pan volume	**Gal**	5,68	6,81	-
	lb	25	30	-
External ash box volume	**Gal**	4,54		5,675
	lb	20		25
Main Drive	**W**	40		
Drive Motor	**W**	250/370		
Suction Turbine	**W**	1200		
Combustion Air Blower	**W**	83		
Suction Fan Blower	**W**	32		
Electrical Ignition	**W**	250		
Cleaning Motor	**W**	40		
Motor External Ash Box	**W**	40		
Fire protection motor	**W**	5		

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

WB Federal Institute of Agricultural Engineering Wieselburg
Address: A-3250 Wieselburg, Rottenhauserstraße 1; Tel.: +43-7416-52175-0

Note

Test reports are available

14.8 Pellet boiler cautionary markings

Labeling 60x30

 BEFORE OPENING TURN OFF THE MAIN SWITCH	TO START THE SYSTEM PRESS THE GREEN ON/OFF BUTTON	THE CONTAINER CAN BE TAKEN DOWN ONLY BY LOOSENING **THE YELLOW LOCKING SCREW** 
CAUTION DO NOT ALTER THIS EQUIPMENT IN ANY WAY LOSS OF WARRANTY	**CAUTION** POWER SOURCE NOT CONTROLLED BY SUCTION TURBINES MAIN DISCONNECT	**CAUTION** POWER ORGINATED FROM A SOURCE OF POWER OTHER THAN THIS MOTOR
CAUTION DO NOT REMOVE THE SNAP RING! LOSS OF WARRANTY	**CAUTION** FOR USE WITH WOOD PELLET FUEL ONLY LOSS OF WARRANTY	**CAUTION** VACUUM SUCTION SYSTEMS: REMOVE THE PROTECTIVE CAP FROM THE BALL VALVE

Labeling 99x34

PRUDENCE THE THREADED GRUB-SCREW IS BONDED TO THE ECCENTRIC AFTER LOOSENING AND WHEN REFASTENING, BOND AGAIN	**CONTACT** LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION INSPECTION IN YOUR AREA
DANGER **KEEP** VIEWING AND ASH REMOVAL DOORS TIGHTLY CLOSED DURING OPERATION!	**PRUDENCE** DO NOT CONNECT THIS UNIT TO A CHIMNEY FUEL SERVING ANOTHER APPLIANCE. **SEE LOCAL RESTRICTIONS!**
PRUDENCE INSTALL AND USE ONLY IN ACCORDANCE WITH INSTALLATION- AND OPERATING INSTRUCTIONS!	**FORWARD** **WATER QUALITY ACC. TO VDI 2035 STANDARD** (THE MEDIUM HAS TO BE FREE FROM AIR AND MUD)
DANGER **MOVING PARTS CAUSE INJURY! DO NOT OPERATE WITH REMOVED COVERING!**	**RETURN** **WATER QUALITY ACC. TO VDI 2035 STANDARD** (THE MEDIUM HAS TO BE FREE FROM AIR AND MUD)

Labeling 105x74

IN THE CASE OF A“RUN-AWAY” FIRE:

- NEVER PUT YOUR SELF AT RISK OF FATAL INJURY. YOUR SAFETY MUST ALWAYS TAKE HIGHEST PRIORITY!
- SWITCH OFF THE HEATING SYSTEM
- EXIT THE BUILDING AND CALL YOUR SERVICE CONTRACTOR AND LOCAL FIRE DEPARTMENT

⚠ CAUTION

HOT SURFACES

- DO NOT TOUCH DURING OPERATION!
- KEEP CHILDREN AWAY
- KEEP CLOTHING AND COMBUSTIBLE MATERIALS AWAY FROM MARKED CLEARANCES.

⚠ CAUTION

IN THE CASE OF A CONNECTING BOILER CONTACT A SERVICE TECHNICIAN FOR COMPLIANCE INFORMATION BEFORE CONNECTING!

THE FOLLOWING UNIT IS APPROVED FOR CONNECTING WITH THE AUTOPELLET SYSTEM:

MODEL NUMBER CONNECTED UNIT: _____
ITEM NUMBER CONNECTED UNIT:_____

⚠ WARNING

RISK OF FIRE!

- DO NOT OPERATE WHILE FLUE DRAFT EXCEEDS -0.05 IN WC!
- DO NOT OPERATE WITH DOORS OPEN!
- DO NOT STORE FUEL OR OTHER COMBUSTIBLE MATERIAL WITHIN MARKED INSTALLATION CLEARANCES!
- INSPECT AND CLEAN FLUE AND CHIMNEY REGULARLY!

⚠ DANGER

HOT SURFACES AND MOVING PARTS MAY CAUSE INJURY!

RISK OF FIRE OR EXPLOSION – DO NOT BURN GARBAGE, GASOLINE, DRAIN OIL OR OTHER FLAMMABLE LIQUIDS

DO NOT USE CHEMICALS OR FLUIDS TO START THE FIRE

⚠ CAUTION

UNSAFE TO ADJUST FLUE DRAFT HIGHER THAN 200,000 PA / BAR (29 PSI; 804 INCH WATER COLUMN)

⚠ CAUTION

THE HEAT EXCHANGER, FLUE PIPE AND CHIMNEY MUST BE CLEANED REGURARLY TO REMOVE ACCUMULATED CREOSOTE AND ASH, ENSURE THAT THE HEAT EXCHANGER, FLUE PIPE, AND CHIMNEY ARE CLEANED AT THE END OF THE HEATING SEASON TO MINIMIZE CORROSION DURING THE SUMMER MONTHS, THE APPLIANCE FLUE PIPE AND CHIMNEY MUST BE IN GOOD CONDITION.
THESE INSTRUCTIONS ALSO APPLY TO A DRAFT INDUCER IF USED.

LOSS OF ELECTRICAL POWER

NO DANGER
PELLET BOILER COOLS DOWN AUTOMATICALLY

INSPECT AND **CLEAN** EXHAUST VENTING SYSTEM FREQUENTLY

Manufacturer:

MAINE ENERGY SYSTEMS LLC

8 Airport Road – P.O. Box 547 Bethel
Maine 04217

e-mail: info@maineenergysystems.com
web: www.maineenergysystems.com