Installation Manual

Please read carefully prior to installation and servicing.

SAVE THESE INSTRUCTIONS



PELLET BOILER PES 36–56

CMP 06.2B US_VA610

ENGLISH — USA

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PE 3671 USA 4.1

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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.



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:

N	Iodels: Pellematic PES 12-20, 25-32, 36-56 Pellet Fuel-Fired Boiler
Date Issued Project: Issued to:	September 2009 429-S-02-2 ÖkoFEN Forschungs- und Entwicklungs Ges.m.b.H. Gewerbepark 1 A-4133 Niederkappel Austria
Products list • UL 3 Supp • CAN	ted to: 91, "Standard for Safety for Solid-Fuel and Combination-Fuel Central and lementary Furnaces," 2006. (CSA-B366.1-M91, "Solid-Fuel-Fired Central Heating Appliances."
The models Tested & Listed By C OMNI-T	listed above are eligible to bear the mark shown.
Issued by: Paul E. Tiegs	OMNI-Test Laboratories, Inc. 13327 NE Airport Way Portland, Oregon 97230 President

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:

 Damage to property
 1

 Heating only with pellets complying with the standard.
 3

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



DANGER



NOTICE

2. Consequences of risk

Effects and consequences resulting from incorrect operation.

3. Avoiding risk

damage.

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



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



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
- 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 performed by authorised personnel.



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.



Clean the flue gas tube and chimney regularly.

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.

DANGER

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.

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	Conveyor 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 also 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: Suction-feed systems: 41,000; 51,000; 68,300; 85,300; 109,500; 123,000; 164,000 and 191,000 BTU/hr

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



Product description



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	Suction turbine	15	Ash chamber
8	Hopper		

6.2 Pellet suction system

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

1	Pellet hose	Hose from textile tank to the hopper.
2	Air hose	Hosee from the suction turbine to the textile tank.
3	Suction turbine	Located above the hopper underneath the Pellematic burner casing.
4	Suction switch	Located underneath the textile tank.

Key components of pellet suction system

Pellet boiler	FleXILO textile tank

6.2.1 Assembly of the vacuumsystem

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

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

Bending radius	The hose should be led as briefly as possible and with a few curves as necessarily. Bending radius may never be smaller than 12inch .
Upward gradients	Max difference in height = 236inch <u>Note:</u> A difference in height of up to 118inch can be overcome at one time. Larger differences in height must by interrupted with a minimum 40inch long crossbar.
Impact protection	The spiral hose can be mounted up to 236inch exactly straight. Small bends particularly in front of curves reduces the abrasion of the spiral hose.
Installation in the soil and openings:	When laying directly in the ground and trough openings the spiral tube must be conducted in a drain pipe with at least 0,39inch diameter. This pipe must be sealed and may not make any larger arc than 15°.
Tightness	In order to keep problem-free a sucking of the pellets, an absolute tightness in the system must be respected. All connection points must be provided with a hose clip.
Potenzial- equalization	The hoses are provided with a copper braid, those the hose keeps antistatic. In order to ensure the function of the anti-statics, those copper braid must be attached at each end to the existing grounding become.
Fire protection	At a wall break-through to the heating room must be installed a fire protection seal in the pellet- and the air hose.
Crossing	Please make sure please that you cross the hoses as few as possible.
Length of the spiral hose	The maximum length of the spiral hose is 1570inch. The maximum for pellets hose and air hose are 785inch.

Assembly

Use securing clips and carrying bowls.



*Pay attention to the defined distances!





Connection of the pellet and air hose to the suction turbine

6.3 Storage systems

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.

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.



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.

	а	Min. clearance of flue gas connection	inch mm	18 450
	b	Min. clearance of side of boiler	inch mm	5 50
	с	Min. clearance of front of boiler	inch mm	28 700
	d	Min. clearance of side of burner	inch mm	12 300
	е	Min. ceiling height	inch mm	80 2000
	F c c r f	Note: Place the boiler according to the minimum clearances to the flue tube connection piec defined in NFPA 31 (distance of 18inch/450 Make sure that you also comply with local regulations. For clearances required for floor protection ollowing page.	n ce as Omm). legal I, see	

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.



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 $\frac{1}{2}$ in / 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 floor protection	uired fo)r
	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)		8 200
	Min. clearance of the shielding material from the boilers front panel (c)		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 also 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 raise panel (semi-circle)		

7.5 Removing the casing, the hopper and the burner

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

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

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

7.5.1 Dismantling the burner casing



7.5.2 Dismantling the hopper

7.5.3 Dismantling the burner



Bringing the pellet boiler into the boiler room



7.5.4 Dismantling the boiler door



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7.5.5 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

7.5.6 Deassembling the base plate

The base plate consists of three parts. Two parts on the left and the right side can be deassembled.



Note:

31.1 inch is the minimum width of the boiler.

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 PAR	AMETER		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





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

Note:

PICTURE 7: Do not tighten the screws firmly. Tighten the screws firmly only after working step in picture 11.

(19) 20 (18)(22) (21) 52 52 ES_AV 32_33_34 ЧÄ 32 ЫП မ္မ 51 51 34 34 -

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

! CMP 0.6 !


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		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			
\oplus	Ground wire - Power Supply			
4	Hot wire - Boiler Controlled Pump			
5	Neutral wire - Boiler Controlled Pump			
\oplus	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			

Connecting up to the power supply



Installation Manual PES 36-56

10.2 Plugs on the boiler controller

Designation of the plug-in position		Voltage	Name of sensors, motors and pumps	
KF	89	24 Volt	Boiler sensor	
UP	234	24 Volt	Negative draft measuring	
AE2	567	24 Volt	Analog-input 2	
FRT	+12 13	24 Volt	Combustion chamber sensor (optional)	
RGF	+14 15	24 Volt	Flue gas sensor	
BR1	78	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	543	24 Volt	Capacitive Sensor – hopper	
KAP_RA	543	24 Volt	Capacitive sensor – burner (only for auger system)	
BSK	654321	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	

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

10.2.1 Illustration of sensors, motors and pumps





Note:

RA – Fuel transport system – is connected differently according to the storage system.

1	Textile tank – RA has to be connected to the suction switch.
2	Textile tank with vibration plate

10.2.2 Cable routing

Reroute cables after dismantling the casing or other system components.



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

Cable routing from the boiler controller to the components



10.2.3 Wiring diagrams – boiler controller

DANGER

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

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. Flue gas sensor RGF 14 15 +14 Combustion chamber sensor 13 FRT 12 1 + Analog-input 2 ~ Not used AE 2 9 S Negative draft measuring <u>ط</u> 2 ۵ Ë sensor σ Boiler 쮸 ×КТУ -B2 6x50 Not used ÷ 10 1xPT1000 6x100 þ Ę External nternal

Electric shock



Connecting up to the power supply

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Connecting up to the power supply

PE 3671 USA 4.1

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.



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	F1: Safety fuse for suction turbine 10A
5	F2: Safety fuse for pellets delivery motor 4A
6	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.



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.



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:



а	Date	b	Time
с	Temperature outside	d	Boiler temperature
е	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 ${\bf 0}$ to ${\bf 1}$ and push the button ${\bf Enter}.$

Setting date and time



11.5 Menu configuration

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



Note:

PE 3671 USA 4.1

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.



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
123,000 BTU/h	30	191,000 BTU/h	36	Remove 6 turbulators
164,000 BTU/h	32	191,000 BTU/h	36	Remove 4 turbulators
191,000 BTU/h	36	191,000 BTU/h	36	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

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)

Parameters that you must adjust to the relevant boiler type.

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	the motor that feeds pellets to the burner	the burner motor is connected	
ES	is running	 the burner motor rotates easily 	
		the motor is defective	
Suction turb	the suction turbine at the hopper is running	the suction turbine is connected	
ZW		the fuse is defective	
		the motor is defective	
Fuel tr sys M	the fuel transport system – motor is running	the fuel transport system motor is connected	
RA		the fuel transport system motor rotates easily	
		the fuel transport system motor is defective	
De-ashing motor	the motor de-ashing system is running	 the de–ashing system is switched on (P212) 	
AV (optional for PE 12–32)		 the de–ashing system is properly located and locked in position 	
		 the de-ashing system is correctly wired up 	

Burner plate de-ashing motor	the burner plate de-ashing motor is running	 the burner plate de-ashing system is switched on (P212)
AV (optional for PE 12–32)		 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	the burner fan is running	the wiring is correct
LUFI	Note: You can set 5 power levels:	the motor is defective
	20/40/60/80/100)	
Magnet valve	the magnetic valve switches over and you	 the scrubber is connected
MA	Note:	the scrubber is defective
	Condensing boiler only	
Flue gas fan	the flue gas fan is running	the wiring is correct
SZ	Note:	the motor is defective
	You can set 5 power levels: 20/40/60/80/100	
Boil clean M	the cleaning motor raises and releases the	 the terminal bolts on the shaft are tight
RM	cleaning springs	the motor is defective
Malfunc relay	the malfunction relay switches on and off:	the wiring is correct
SM	you can hear it clicking on and off	 the malfunction relay is defective
Ignition	the electrode is working: you can view the	the wiring is correct
ZUEND	current draw at the control unit after it has been switched on.	Check the ignition electrode
Fire pro sys	the fire protection ball valve(orange motor	the wiring is correct
BSK	on burner) opens	 the ball valve moves easily
		the motor is defective
Boiler cont P	the boiler controlled pump is running	the wiring is correct
RES2	Note:	 the boiler controlled pump is defective
	only possible if the boiler controlled pump is connected	
Hopper M	the hopper motor that feeds pellets from	the burner motor is connected
RES1	the hopper to the burner auger is running	 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 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	Standard display:	yes	
	P100: Enter	 Press ENTER once — displays boiler temperature 		
		 Press ENTER again — displays day, date, time, version of PLC program and power rating setting. 		
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	yes	0
		1: Pellet boiler starts, if it receives a single pulse from the heating controller and switches off when the switch-off temperature is reached.		
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

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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



A B C D E F G H 01000100" 00010010" I J K L M N O P

Indication: 0 = OFF Indication: 1 = ON

А	Capacitive sensor hopper	Ι	Limit switch external ash box
В	Capacitive sensor RA	J	Suction circuit board safety relay
С	Fire protection system open	К	Safety temperature system
D	Fire protection system closed	L	Low H2O
Е	Burner motor	М	not implemented
F	Fuel transport system motor	Ν	not implemented
G	Burner request	0	Suction turbine
Н	Input existing boiler	Р	not implemented

P 198 — Status display of outputs



Indication: 0 = OFF Indication: 1 = ON

А	Burner fan	I	Magnetic valve
В	Burner motor	J	Fire protection system
С	not implemented	к	not implemented
D	not implemented	L	not implemented
Е	Malfunction relay	М	Boiler cleaning motor
F	Flue gas fan	Ν	Boiler controlled pump RES2
G	Ash box motor	0	Suction turbine
Н	Fuel transport system motor	Р	Ignition

12.5 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 1Level detection system using weighing cells for FleXILO textile tanks. 2Level detection system using weighing cells at the hopper for storage rooms. 3Level 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	P237: 60s	(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	P239: 0	NOTICEDamage to propertyDo 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 	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. <=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 $^{\circ}$ F, adjustable from 23 $^{\circ}$ F to 95 $^{\circ}$ 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.	no	0
		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.		
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
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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	no	0
		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.		

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.	yes	0
		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.		
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	

12.6 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.

Para- Factory			Display on screen only if:	Parameter changes						
	PE(S)	PE(S)	PES	,	Cł	hange and	С	hange and	C	nange and
D130	212-20	20-02	212	Flue das consor is installed		uale		uale		uale
F 130	212	212	212	Flue gas sensor is installed	┼──					
D160	0	0	0	Fide gas sensor is installed	┼──					
P161	60	60	60	not can DA or can 71/1						
P170	00	00	00							
P170	0	0	0							
P171	20	20	20	D171 - 2						
D172	1	1	20	P171 = 3	┼──					
P173	ו ר	ו ר	ו ר	F171 - 5	┼──					
P 100	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		<u> </u>					
P192	120	120	120		_					
P193	6	6	6		_					
P194	45	45	45		<u> </u>					
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	1					
P216	35	35	35	with low pressure sensor	1					
P217	60	60	60	with low pressure sensor						

Parameter list

60

60

60

with low pressure sensor

P218

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.

"Boilersens. ?"
Description of malfunction
"C 26.10.03 10:08"
Time of malfunction
Date of malfunction
Status of malfunction

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. $2k\Omega$ at $77^{\circ}F$) 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. $2k\Omega$ at $77^\circ F)$ 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. $1k\Omega$ at $32^\circ F)$ 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,	me	asuring circuit from flue gas sensor is shorted out		
Cause and Remedy:	sensor defect	•	measure sensor (approx. $1k\Omega$ at $32^{\circ}F$) 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	Comb S sh-c				
Description:	Combustion chamber sensor sensor is shorted out	' sh	ort-circuit, measuring circuit from combustion chamber			
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	٨	check polarity and signal (0-10V)		
	signal cable defect	٨	replace sensor		
	signal input defect	٨	change CMP PLC		
	signal too low	٨	signal below 0V		
	combustion chamber leak	٨	check closure of boiler door		
Display:	UP sh-c				
Description:	Negative draft input short-cir is shorted out	cuit,	measuring circuit from negative draft measurement		
Cause and Remedy:	signal wrong	٨	check polarity and signal (0-10V)		
	signal cable defect	٨	replace sensor		
	signal input defect	٨	change CMP PLC		
	signal too high		signal above 10V		

Table 13.5 Analog input 2

Display:	An. input open				
Description:	Analog input 2 open, measur	ing	circuit from analog input open		
Cause and Remedy:	signal incorrect check polarity and signal (0-10V)				
	signal cable defect	٨	repair/replace cable		
	signal input defect	٨	change CMP PLC		
	signal too low	٨	signal below 0V		
Display:	An. input 2 sh-c				
Description:	Analog input 2 short-circuit, r	nea	suring circuit from analog input is shorted out		
Cause and Remedy:	signal incorrect	٨	check polarity and signal (0-10V)		
	signal cable defect	٨	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	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. 200 Ω) 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	
	Flame contr malf			
Display:	Flame contr maif			
Display: Description:	Flame contr main Flame supervision fault, mini up at full power	mur	n flue gas temperature not reached during heating	
Display: Description: Cause and Remedy:	Flame contr main Flame supervision fault, mini up at full power no pellets available	mur	n flue gas temperature not reached during heating fill up with pellets	
Display: Description: Cause and Remedy:	Flame contr main Flame supervision fault, mini up at full power no pellets available flue gas sensor contaminated	mur	n flue gas temperature not reached during heating fill up with pellets clean flue gas sensor and flue gas tube	

Table 13.8 Fire protection

Display:	Fire prot sys op			
Description:	Fire protection system open malfunction.			
Cause and Remedy:	Fire protection motor gate unplugged	٨	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	٨	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 lim	it s	witches 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		
	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	ma	lfunction
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 \sim = ignition stick is defective, all other values = ignition stick is not defective), replace ignition stick			
Display:	Burner fan	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	Boiler clean M				
Description:	Boiler cleaning motor malfun	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		r			
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	1				
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	٨	plug in motor, check cable connections
	power too high	٨	too low adjusted, motor sticks or is defective
	power too low	٨	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	٨	check boiler controller	
	safety temperature limiter defect	٨	allow boiler to cool and reset alarm	
Display:	Low H2O/ – F1			
Description:	Low H2O has been actuated			
Cause and Remedy:	low H2O unplugged	٨	connect up low H2O and check cable connections	
	low H2O button has been pressed	•	reset low H2O switch	
	low H2O defect	٨	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.		

14.1 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.

	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 inch ² for the storage room?		
Caution label	Is the label "Wood pellets storage room" placed on the door to the storage room?		
Vibration plate			
If auger delivery system	m 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?		

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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	d 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 appropriate, 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 Modifying the burner

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

- 1. Dismantle the casing, hopper, combustion chamber lid, flame tube, burner and burner plug.
- 2. Modify the burner on the left.
- 3. Route cables through cutouts to the boiler controller and connect up the plug.

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



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14.3.2 Modify the burner on the left



Note:

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

14.3.3 Reassembling the pellet boiler after modifying the burner



14.4 Software program - boiler controller

The software programs are called

US_VA....HEX

Program for suction system is

US VA609 H86	1	Userware
	2	Kind of system (VA-suction system, ST- auger system)
	3	Version
(1) (2) (3) (4)	4	Ending for Hex-programs

14.4.1 Software update - boiler controller

DANGER

Risk of electrocution

Only authorized specialists may perform maintenance work on electrical components.

NOTICE

Damage of property

Softwareupdate only with software UW_VA6xx.H86 or UW_ST6xx.H86







14.4.2 Wrong system - vacuum suction 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. unplug the plug ES BSK at the boiler controller (CMP)
- 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_VA
- 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. plug in the plug ES BSK
- 19. switch **ON** the boiler
- 20. go to Pellematic
- 21. push the button $\ensuremath{\textbf{Enter}}$
- 22. go to $\ensuremath{\text{Pellematic CMP}}$
- 23. push the button $\ensuremath{\textit{Enter}}$
- 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 ${\bf 0}$ to ${\bf 1}$
- 35. push the button Enter

Note:

The number gets back to $\mathbf{0}$ – that's o.k.

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

14.5 Parts list

14.5.1 Pellematic PES 36-56

Pos.	Article number	Pos.	Article number
1	PE356	34	on request
2	PE408	35	PE160
3	121259	36	PE176
4	PE199–1	37	on request
5	PE199	38	121039
6	PE411	39	121042
7	on request	40	24169
8	121347	41	PE416
9	121373	42	121039 / 121038
10	PE374	43	PE188
11	121034	44	121234 / 121029
12	PE410	45	on request
13	PE466	46	PE352
14	on request	47	PE295
15	PE260	48	PE357
16	121381	49	E1249
17	041915	50	B174
18	PE353	51	PE363
19	PE355	52	E1204
20	121123	52a	E1186
21	B0056	53	PE142
22	PE351	54	PE296
23	PE354	55	on request
24	PE358	56	PE486
25	on request / PE379	57	121380
26	24155 / 24157 / 121198	58	PEASCH RE – LI / 36 – 56
27	PE350	59	PE467 / 121327
28	PE120	60	PE485
29	PE121	61	PE488
30	E1152E	62	PE487
31	121379	63	PE419
32	PE191	64	PE264
33	on request		



B003	6 – Burner				
1	121041	20	B172	39	B183
2	121058	21	121197	40	B181
3	B150	22	121023	41	121034 / 121037 / 121082
4	121039	23	B190	42	B184
5	121038	24	121041	43	B185
6	121011	25	121037	44	E1005
7	121195	26	121079	45	121041
8	121051	27	E1306 / E1002.1	46	B202
9	B179	28	B191	47	121082
10	121082 / 121037	29	121026	48	B148
11	B129	30	121040	49	B152
12	121075	31	121185	50	B132
13	121193	32	121039	51	B144
14	121194	33	121038	52	E1006A / B144.1
15	121192	34	B113	53	B213
16	121010	35	E1059	54	121284
17	121083 / 121029	36	E1004	55	E1204 / E1304
18	121039 / 121038	37	B176	56	121361
19	121196	38	B182		



041916 – H	041916 – Hopper						
1	E1368	6	041910				
2	E1138	7	E1205				
3	E1197	8	041869				
4	121197	9	041868				
5	121010						



PEASCHR	E 56- Ashbox	PEASCHLI	56- Ashbox
1	PE441	1	PE441
2	PE437	2	PE438
3	PE373	3	PE373

14.6 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	Inch	55	55	55	63	63	73	73	73
execution (D)	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	Inch	35 3/4	35 3/4	35 3/4	43 3/4	43 3/4	52	52	52
connection (A)	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	Inch	25 1/2	25 1/2	25 1/2	33 1/4	33 1/4	41	41	41
(E)	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
	I	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				-0,0	040			
	mbar				-0,0	100			

Draft at max/min Power	Inch WC	0,03 / 0,01							
	mbar				0,08	/ 0,03			
Flue gas temperature	°F				32	20			
rated power (Flue gas temperature can be adjusted)	°C				16	60			
Flue gas temperature	°F				2	12			
partial load (Flue gas temperature can be adjusted)	°C				1(00			
Flue gas inertia current	Lb/hr	49,60	62,17	82,89	99,43	115,96	149,25	198,85	231,92
rated power	kg/h	22,50	28,20	37,60	45,10	52,60	67,70	90,20	105,20
Flue gas inertia current	Lb/hr	14,11	20,72	24,91	29,76	35,71	45,64	62,17	70,33
partial load	kg/h	6,40	9,40	11,30	13,50	16,20	20,70	28,20	31,90
Flue gas volume rated	Cft/hr	918	1.232	1.642	1.971	2.627	2.956	3.941	4.598
power	m³/h	26	35	47	56	74	84	112	130
Flue gas volume partial	Cft/hr	240	353	424	509	607	777	1.059	1.204
load	m³/h	7	10	12	14	17	22	30	34
Chimney diameter			acc	ording to	chimney	calculatio	n		
Chimney construction			steel or	ceramic	lined, with	nstand hu	midity		
Electrical connection	USA	208 VAC, 60 Hz, 13A for auger delivery system, 16A for vacuum suction system							
	EU	U 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	°F				13	31			
minimum	°C				5	5			
Operating pressure	psi				5	0			
maximum	bar				3,	50			
Test pressure	psi				6	7			
	bar				4,	60	-		
Flue gas volume rated	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
power at flue gas temperature	m³/h	28,6	37,6	50,2	63,2	81,4	91,1	120,7	140,0
Flue gas volume	Cft/hr	243,7	384,9	459,1	614,5	769,9	847,6	1.165,4	1.313,7
temperature	m³/h	6,9	10,9	13,0	17,4	21,8	24,0	33,0	37,2
Fuel	USA	Accordin	ig to PFI S	Standards	;				
	Europe	e 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

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Note:

Test reports are available

14.7 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
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 SNA RING! LOSS OF WARRANTY	FOR USE WITH WOOD PELLET FUEL ONLY LOSS OF WARRANTY	CAUTION VACUUM SUCTION SYSTEMS: REMOVE THE PROTECTIVE CAP FROM THE BALL VALVE

Labeling 99x34

CAUTION 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	CAUTION
KEEP VIEWING AND ASH REMOVAL	DO NOT CONNECT THIS UNIT TO A
DOORS TIGHTLY CLOSED DURING	CHIMNEY FUEL SERVING ANOTHER
OPERATION!	APPLIANCE. SEE LOCAL RESTRICTIONS!
CAUTION	FORWARD
INSTALL AND USE ONLY IN	WATER QUALITY ACC. TO VDI 2035 STANDARD
ACCORDANCE WITH INSTALLATION-	(THE MEDIUM HAS TO BE FREE FROM AIR AND MUD)
AND OPERATING INSTRUCTIONS!	MAINE ECO PELLET HEATING LLC
DANGER	RETURN
MOVING PARTS CAUSE INJURY!	WATER QUALITY ACC. TO VDI 2035 STANDARD
DO NOT OPERATE WITH REMOVED	(THE MEDIUM HAS TO BE FREE FROM AIR AND MUD)
COVERING!	MAINE ECO PELLET HEATING LLC

Labeling	105x74
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Manufacturer:

MAINE ENERGY SYSTEMS LLC

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