

EFFECTA KOMPLETT

- INSTALLING
- MAINTENANCE
- SERVICE
- ASSEMBLY



Rev. JG.012-01-02

■ Introduction

We at Effecta would like to thank you for putting your trust in us when choosing your new boiler. The "Effecta Komplet" has been developed to give you maximum performance, comfort and quality. In order to get the best results from your boiler, we suggest that you follow the recommendations in this installation guide.

Checking your delivery

Check that the boiler has not been damaged during transportation. If the boiler has been damaged, you must report this to the transportation company immediately.

Your safety

If you discover any faults or defects in our products, it is important that you report them as quickly as possible to your installation engineer, so that the fault can be rectified. Make sure that there are no flammable materials close to the boiler, to help prevent risk of fire. You must use your own judgement when operating the pellet boiler. Remember that the hatches and some surfaces can get hot. You must take caution to avoid being burnt.

The user

It is the user's responsibility to operate the boiler according to our instructions. If you do not operate and maintain your boiler correctly, the environmental impact of the boiler will be greater, its efficiency will be reduced and the service life of some components will be shorter. If there is anything that you are not sure about, please contact your installation engineer or Effecta for advice.

Warranty

The warranty takes effect from the date on which the boiler is installed. The supplied installation form must be completed and returned to Effecta. You can find the other guarantee terms on (page 3).

■ Scope of delivery

Please check all components delivered.

The standard delivery as follows:

- Effecta Komplet boiler
- Cleaning handle with brush
- Rake with scraper
- Flue tube with draught stabiliser
- Turbulators, 8pcs.
- Drain cock
- Shunt valve (mounted)*
- Electrical heater 3-9 kW (mounted)
- Valve combination
- Room thermostat
- Flow sensor
- Flue gas sensor
- Boiler temp sensor

* not delivered with Effecta without coil

■ Warranty

Effecta products are guaranteed to be free of defects in materials and workmanship for two years from the installation date. This applies to wear parts, such as seals, the main body of the boiler and electrical components. This guarantee also covers original spare parts. Any faulty products will be replaced or repaired at the discrimination of the retailer or Effecta. If a faulty product is replaced, Effecta is entitled to replace it with a new or reconditioned product of the same or a similar type. Effecta is liable for the costs of any servicing or repairs. Effecta gives a 5 year guarantee on the remaining components. See the attached guarantee document.

If you have a complaint, you must contact Effecta before starting any servicing work. You must submit your complaint without delay. You must always state the type of product, the date of purchase and the serial number.

Otherwise the heating and plumbing industry's current regulations apply in the case of complaints.

Guarantee terms:

The guarantee is valid on condition that:

- The boiler and the heating system have been installed in accordance with the installation instructions and in a professional manner.
- The location where the product is installed is suitable for the purpose.

The guarantee does not cover:

- The overall functioning of the heating system, costs incurred as a result of the heating system being out of operation or the cost of the temporary replacement of products.
- Damage or injury caused by negligence during the installation or by operating the boiler in a way which conflicts with the installation and user instructions.
- Damage caused by abnormal wear, incorrect operation and maintenance.
- Damage caused by the boiler being positioned in an unsuitable location.
- Damage caused by vermin.

■ System data:

Installer:	
Date:	
Electrical installer:	

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■ In general

The Boiler

Effecta Complete is a boiler which is to be fueled with wood pellets. No other kind of fuel is allowed to be used. Not logs or oil.

Disassembly and disposal

It will be many years before your Effecta boiler is worn out, but it is important that you follow the regulations in force at the time concerning disassembly and disposal of your boiler.

The fuel

The boiler should normally burn 6/8 mm fuel pellets which come either in 16 kg sacks or are supplied by bulk truck. If you have built a bulk storage container, you should follow the current recommendations to ensure that the quality of the pellets does not deteriorate. Never use pellets which do not meet European pellet standards, as this may result in problems in operating the burner.

■ Symbols in this document



Information

This symbol is shown with info to the installer which can be important to know and understand. Neglecting these informations can be harmful to the prestanda in the product.



Warning

This symbol is shown when the installer or user must be careful in the handling of the product. Neglecting these warnings can result in damage to the product or personal injury.



Dangerous electricity

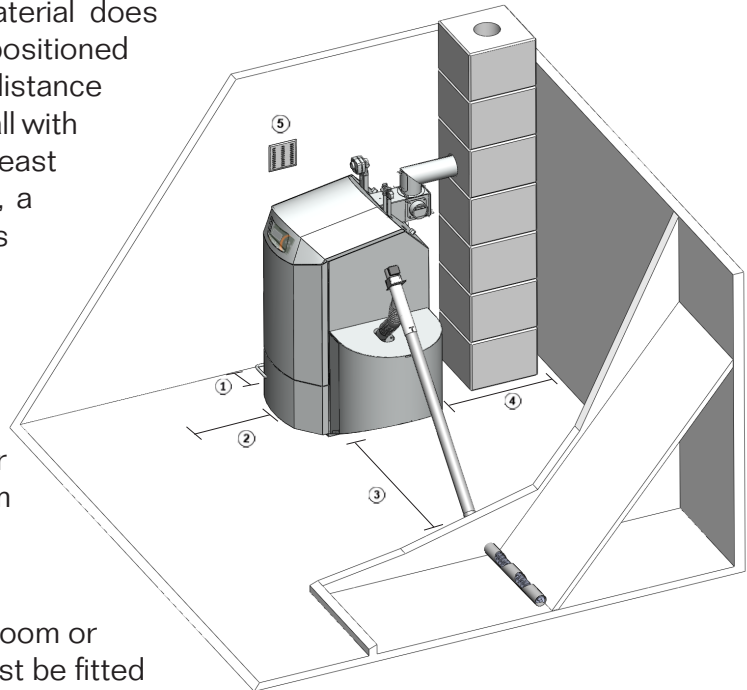
This symbol means that extra caution should be taken. Otherwise serious personal injury might occur. When maintaining the product where this symbol is present the power must be disconnected. All electrical wiring must be done by a professional.

■ To the installer

It is time to install the Effecta Komplet pellet boiler. Please follow the examples we provide for a safe installation. After installation, be sure to instruct the customer on how the heating system and the boiler work, in order to avoid unnecessary complications in the future.

Set up

The boiler is positioned so that the surface temperature of flammable building material does not exceed 80°C. The boiler should be positioned at least 15 cm (1) from the wall. The distance from the smoke valve to a flammable wall with ignition protective covering must be at least 30 cm (4). In order to clean the boiler, a minimum clear space of 1 metre (2) is required in front of the boiler and on the side at the convection section and at any inspection panel in the chimney. A passage with a minimum width of 0.5 (3) m is required along one of the long sides of the boiler. The pellet hopper aint allowed to stand closer than 120 cm from the boiler.



The boiler room

The boiler must be installed in a boiler room or boiler house. The ceilings and walls must be fitted with ignition protective covering and the floor must be made of non-combustible material. Minimum ceiling height at the boiler is 2 metres. The boiler room or boiler house must be equipped with a fresh air intake with the minimum dimensions 150 x 150 (5.) mm or with a sufficiently large free sectional area to avoid low pressure in the boiler room. It must be impossible to close the air intake.

Chimney

The chimney should have a diameter of at least 120 mm. If your chimney is smaller, Effecta should be consulted before installation. The draught in the chimney should be about 15 pa at low temperatures. It is important that the chimney is tested and approved by a certified chimney sweep before a new boiler is installed. If the chimney has a strong draught, a draught controller (see page 32) may need to be installed for good boiler operation. If you have a tall chimney and an outgoing flue gas temperature below 170°C, there is a risk of condensation in the chimney, which can damage the chimney in the long term. A suitable temperature is 70-80°C one metre down into the chimney. Ask your local chimney sweep for help to measure the temperature. If the chimney is tall and has a large area, a draught that is too strong may mean high levels of flue gas and overignition in the firebox. If this is the case, a draft stabiliser must be installed.

■ The components

The shunt valve

The shunt valve controls the heat supply from the boiler to the radiator circuit. Effecta Complete is fitted with motorised shunt control. The room temperature can be adjusted on a scale on the thermostat. An automatic system will significantly reduce fuel consumption and provide a more comfortable environment.

The valve combination

The mixing valve is used to ensure that the temperature of the hot water in your shower and elsewhere in the house is comfortable. Set the system to the temperature you want by turning the thermostat between +/-.

The burner

The burner is mounted on the left or right side. The burner heats the water in the boiler which provides heat to the domestic and hot water.

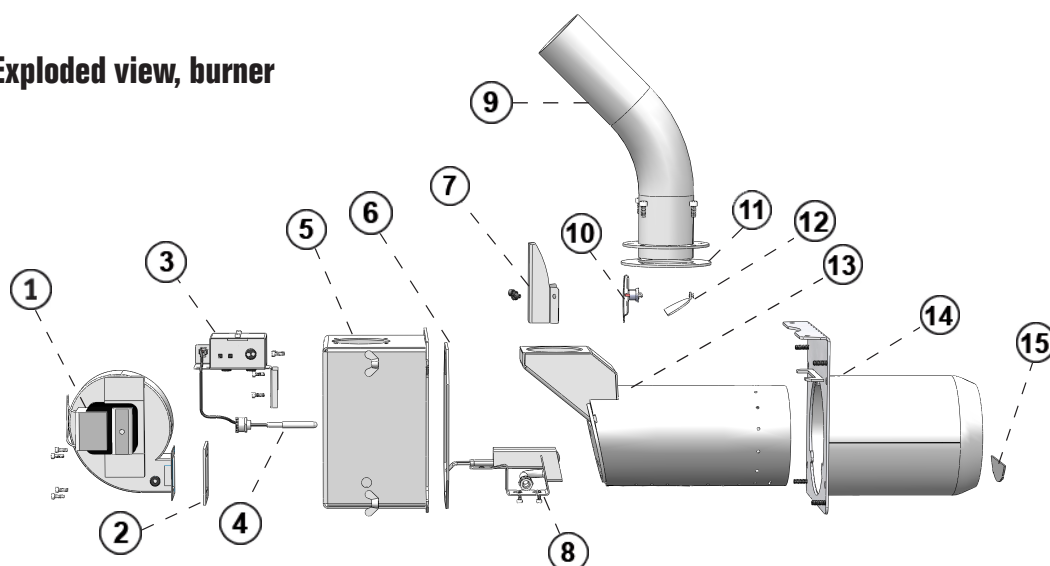
The turbulators

In the tubes in the convective part hangs the turbulators. The turbulator's function is to reduce the heat in the flue gases on behalf of the temperature in the boiler. They must always be fitted in the boiler. If the flue gas temperature should be to low, the turbulators can be cut off. Always contact the installer before doing this.

The sealings

The seals on the hatches must be checked every year. If the hatches do not seal properly, the efficiency and the combustion process of the boiler will deteriorate.

■ Exploded view, burner



1.	Combustion fan	9.	Feeding tube
2.	Fan seal	10.	Overheating protection
3.	Electrical console	11.	Seal feeding tube
4.	Flame detector	12.	Pellet retarder
5.	Rear housing	13.	Inner tube
6.	Rear housing seal	14.	Outer tube
7.	Cover overheating protection	15.	Stop plate
8.	Ignition console		

■ Safety and function

Before using the product, the owner and/or other user must read and understand the content in this manual. The directions must be followed. This is to make sure that the product is functioning correctly and accidents and injuries are avoided. Incorrect use or incorrectly tuning can result in damages to property and personal injury or lacking function in the product. The boiler room where the product is installed, the chimney and other components must be approved according to current legislations.

The commissioning of the product must be made by a professional, according to Effecta's directions and current legislations. Controls and tuning of the product should be made by a professional. A chimney sweeper should also be contacted when commissioning the product. The electrical connections must be done by a professional, according to Effecta's instructions in this manual.

The casing outside of the burner must always be fitted on the boiler when the boiler is connected to the electrical power. Before cleaning and maintenance of the product, make sure it is disconnected from the power line.

It is strictly forbidden to open any doors when the burner is igniting. If any door or hatch is opened when the burner is running, great caution must be taken. Any kind of interference or using of other than original spare parts can result in damage to the product or person. It also removes Effecta from any liability.

This manual should be kept during the whole life span of the product. Any updates will be reported on the Effecta web page: **www.effecta.se**.

■ The safety systems

The flexi pipe between burner and auger

The flexi pipe prevents any fire coming in to the hopper. It is made from a heat sensitive material which melts if it gets to hot. If replaced, a new must be ordered from Effecta.

The overheating protection on the feeding tube

It stops the feeding if the fan temperatures gets to high. Reset is made manually. The cover must always be in place when connected to main power.

Flame sensor

The flame sensor monitors the fire in the burner. If light is missing for a set time during fire the burner stops and goes into cooling phase.

Overheating protection on the boiler

There is an overheating protection on the boiler which cuts the power to both the boiler and the burner if the temperature in the boiler exceeds 95°C.

Compressed air cleaning system

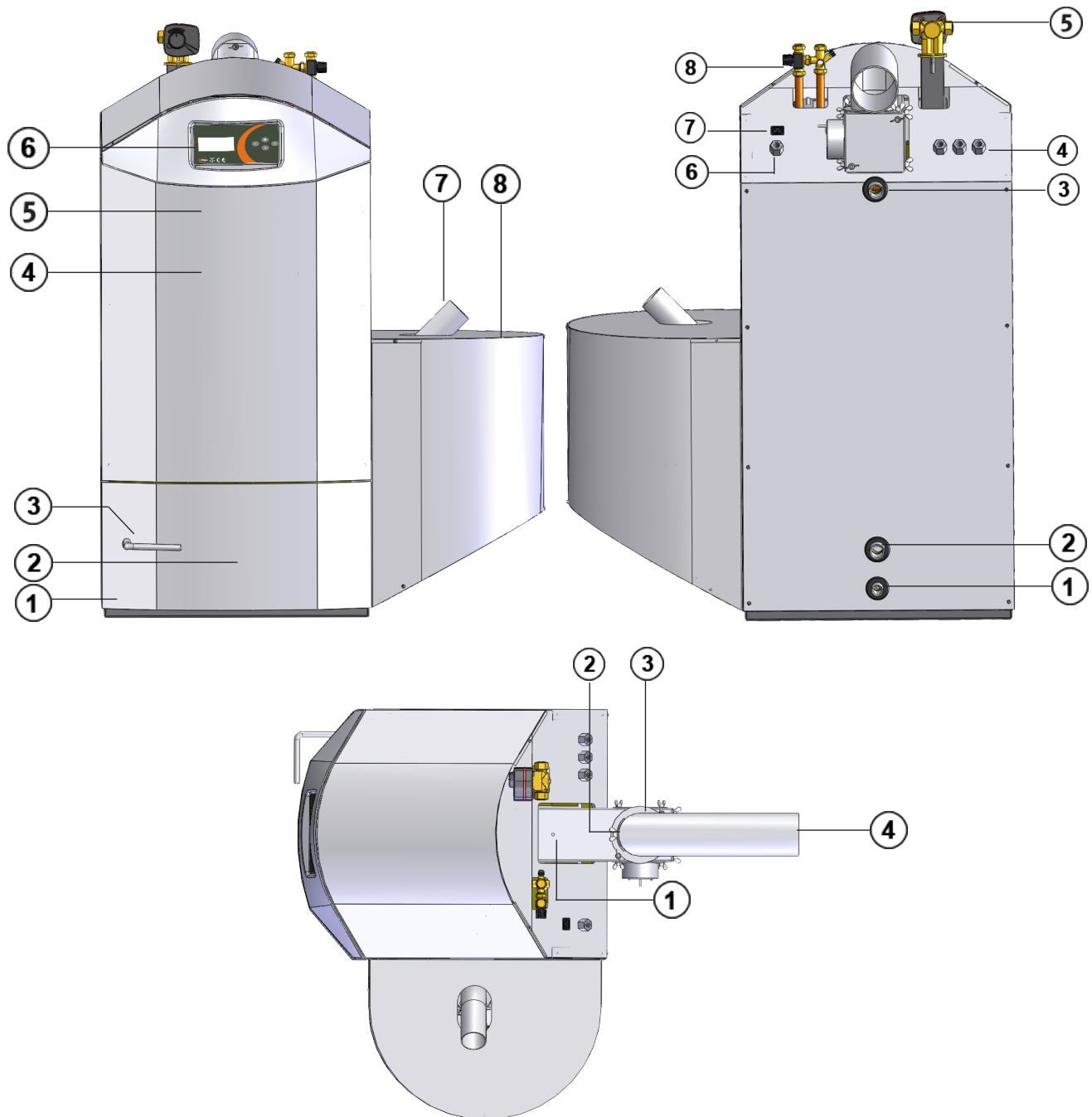
In this cleaning system there are three different safety devices.

1. The motherboard controls the time the compressor can run.
2. There is a pressure switch that stops the compressor at a preset pressure.
3. A safety valve wich releases air if pressure exceeds 9bars.

Power outage

After a power outage the control system remembers where in the sequence the burner was. If it was in the "Run" mode, the fan blows for four minutes to burn out any pellet rests. Then it goes into normal mode.

■ Placement of the components



	Front		Back		Topp
1	Adjustable feet	1	Drain tap 1/2"	1	Hole for measuring instruments
2	Soot door	2	Return hot water circuit 1"	2	Sootdoor flue pipe
3	Handle soot door	3	Flow hot water circuit 1"	3	Sootdoor 3 pc.
4	Cover plate electricity	4	Hoses electrical wiring	4	Flue pipe
5	Over heat protection (behind front)	5	Shunt valve		
6	Display	6	Hose for sensor		
7	Feeding tube pelletburner	7	Connector feedmotor/auger		
8	Protective cover	8	Mixing valve		

■ The fuel

Wood pellet is made by sawdust, a byproduct from handling woods. Wood contains lignin that makes the pellet hard without any glue or other binder used.

On the market there are several different kinds of pellet. The quality and energy can be different between them. The diameter is 6 or 8mm, the normal length is between 5 and 30mm. Pellet with high quality has a density of 600-750 kg/m³. The moist content is 5-9% in weight.

Oil has an energy content of 9,9kW/kg and wood logs about 4,0kW/kg. Wood pellet has 4,7-5,0kW/kg in energy content. To maintain a good combustion the pellet should be stored in a dry place and be protected from dirt. Pellet is delivered in sacks with 16kg content or in bulk by truck.

Effecta Complete can handle most of the different types of wood pellet that is 6-8mm. The quality should meet european standards. Good pellet with small amount of dust and an even quality helps to reach good combustion, less maintenance of the product and also less environmentally harmful emissions.

The worse quality of the fuel, the more cleaning and maintenance of the product.



The amount of pellet fed into the burner should be controlled every time the pellet brand or quality is changed. If the deviation is more than 0,5kg/hour compared to the numbers in the "Warranty and Installation" paper, the burner should be tuned.

■ The chimney

Inspection

We recommend that the local chimney sweeper inspect and give advices and guidances regarding any necessary steps needed to be taken regarding the chimney and the boilers connection to it. Some issues needed to be considered:

Dimensions

Suitable dimensions are from about ca Ø120 to Ø160 mm for a steel construction and about 140x140 mm for a bricked. The length of the chimney should be so that a draft of 15-20 Pa is reached during operation.

A much larger/smaller flue might be needed to be adjusted to receive a proper draft. If a new installation of the flue is done, the chimney manufacturer can give advice regarding the dimensioning. Generally speaking, a flue used for burning oil works for firing pellet in the same power range. The draft stabiliser attached to the flue tube should always be used if nothing else is stated from Effecta.

The flue gas temperature should be checked.

The temperature in the flue directly after the boiler in the flue should be about 160 - 200°C.

With a tall and big chimney there is a risk of condensation which can lead to corrosion and/or frost damages. To control this you can check the temperature 1 meter down from the top of the chimney. The temperature should be at least 80°C in the end of a burning session. Suggestions for actions to be taken if needed is e.g. insulate the chimney or mount a steel pipe inside the chimney. This will increase the temperature in the flues without effecting the efficiency of the boiler. Other actions are increasing the power output of the burner or removing/cutting off turbulators. This will however decrease the burners efficiency some. The draft stabiliser helps keeping the chimney free from condensation by ventilating it.

■ Cleaning system boiler

Function and service

Cut the power to the boiler before servicing. The solenoid is mounted on the boiler to keep the convective part clean. It is controlled from the menu "Cleaning" on the control panel. It can be set to work/not work in different times during the day.

The solenoid

The solenoid is mounted on the right side of the soot hatch on the top of the boiler. The solenoid flips the turbulators up and down to keep the tubes clean.

Lifting shaft

The shaft is pulled up by the magnet making the turbulators also being pulled up.

The turbulators

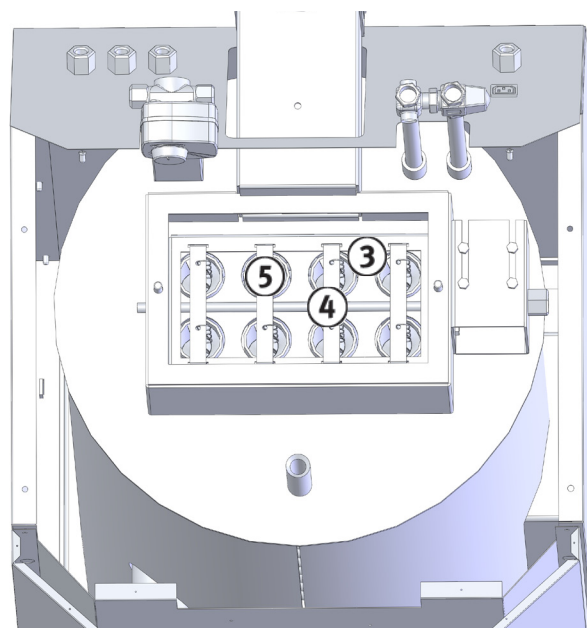
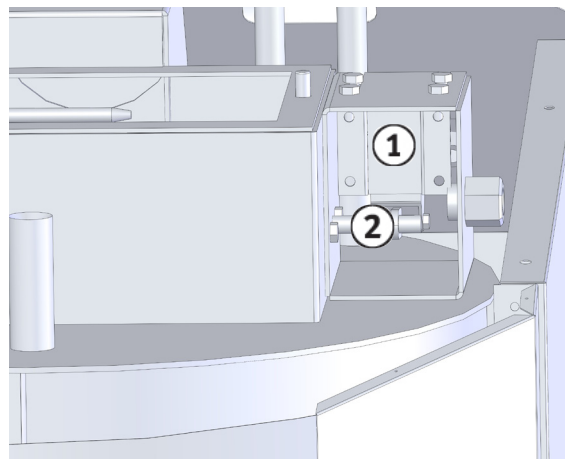
The turbulators in the tube helps reducing the flue gas temperature and also cleaning the tubes when pulled up and down.

Suspension

On every suspension there are two turbulators that is removed when cleaning the tubes with a brush.

Flipper

Flips when the solenoid activates.



1	Solenoid
2	Lifting shaft
3	Flipper
4	Suspension
5	Turbulator

■ Cleaning system burner

Function and service

Cut the power to the boiler before servicing. Next to the burner a air compressor is mounted that provides pressurised air for cleaning the burner. This is done by letting high pressure air into the burner after the burner has made a heating cycle. The compressor build up a pressure in the air container which is released into the burner in one blast. This is made four times and all ashes and pellet rests are blown out into the firebox. In the menu "Service" the settings are made.

The compressor

The compressor creates a pressure in the container. The compressor has a life span of at least 2500 hours. It might then need to be serviced. Effecta provides a renovating kit.

Air container

The air container stores the air before it is released into the burner.

The pressure gauge

Displays the pressure in the air container.

The safety valve

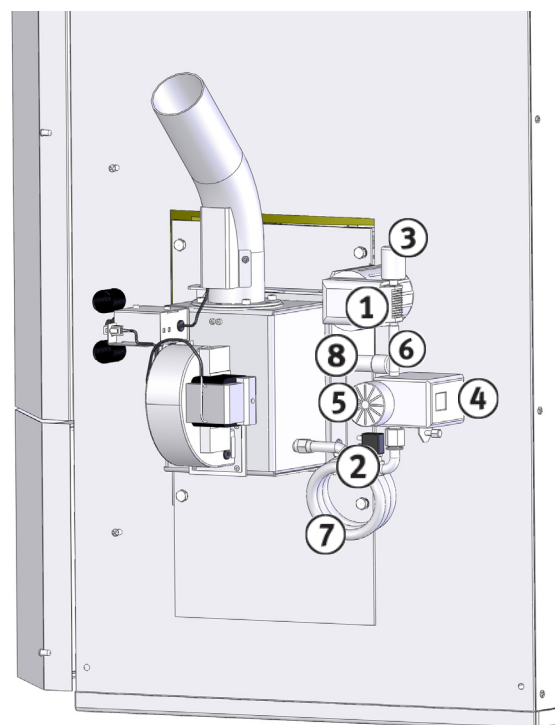
The safety valve prevents the pressure to exceed 9bars by releasing air if the pressure switch fails.

The pressure switch

It stops the compressor at a pre-set value. Normally 7 bars. This is also adjustable.

Non return valve

Makes the air stay in the container and not putting pressure on the compressor.



1	Compressor
2	Solenoid
3	Silencer
4	Pressure Switch
5	Safety valve
6	Non return valve
7	Air container
8	Capacitor

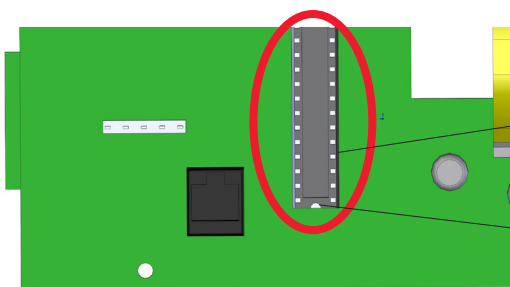
■ The motherboard



Remember to always cut the power to the controller before starting any work on it. All electrical work should be done by a certified electrician, for everyone's safety.

G1	Temp sensor boiler NTC 22 kΩ
G2	Sensor flue gas PT1000
G3	Extern control
G4	
G5	Sensor accumulator tank low NTC 22 kΩ
G6	Sensor accumulator tank high NTC 22 kΩ
G7	Sensor, radiator flow NTC 22 kΩ
G8	Flame sensor
1U.	Connection to display board
2U.	Connection electricity board
1.	Outdoor sensor
2.	Outdoor sensor
3.	Room sensor (6)
4.	Room sensor (1)
5.	Room sensor (4)
6.	Not used
+	--
-	--

PE	Incoming Ground
N	Incoming zero
Li	Incoming phase 6,3 A/230 VAC
PE	Ground
N	Zero
11	Radiator pump 2A/230 VAC
12	Shunt motor
N	Zero
13	Shunt motor 2A/230 VAC
PE	Ground
N	Zero
14	Solenoid valve AERO 2A/230 VAC
PE	Ground
N	Zero
15	Compressor 2A/ 230 VAC
PE	--
N	--
16	Solenoid valve tube cleaning 2A/230 VAC
N	Zero
17	Loading pump 2A/230 VAC



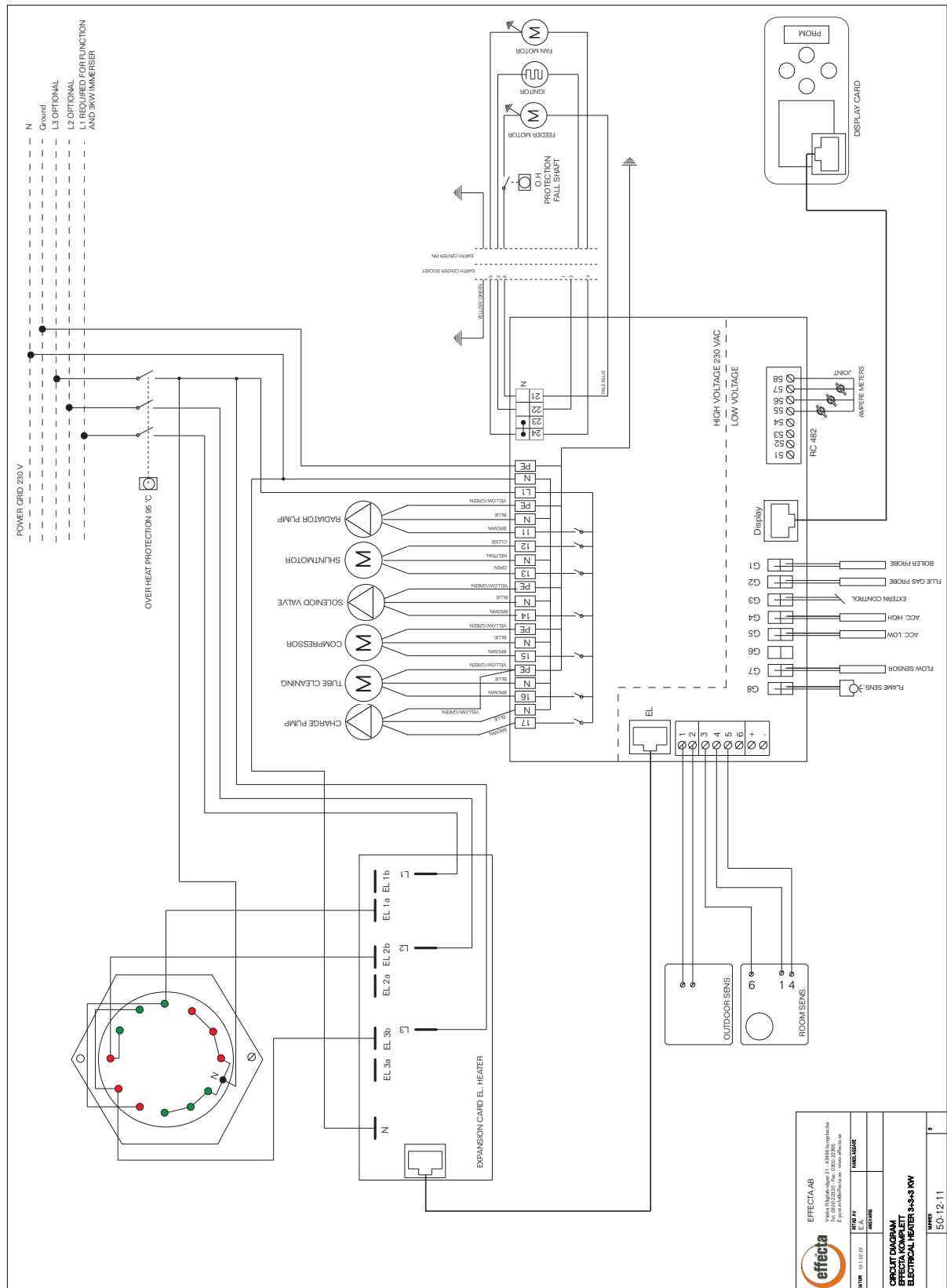
While mounting the e-prom make sure that the "legs" isn't damaged.

Check so that the marking of the prom is set at the correct side.



Before shifting a e-prom make sure to write down all the settings that has been done to the boiler. This since all the changes that has been done will be lost.

1, 2 or 3 Phase connection



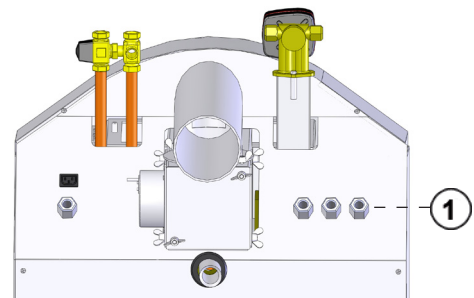
Electrical connection



NOTE! The boiler must be filled with water before the wiring begins.

When it's time to do the electrical connection you need to remove the front casing which are in front of the motherboard. On the backside of the boiler there are four (1) hoses that ends in the front of the boiler (5). Those shall be used to connect the sensors and electrical cables. Don't put the low and high voltage in the same hose. When you remove the front casing you unscrew the three screws that hold the plastic panel in place (2). Don't forget to disconnect the cable to the display. To loosen the front cover you need remove the upper (3) screws all the way. Then lift the casing up.

Then connect the input voltage to the card's ports, according to wiring diagram on previous page.

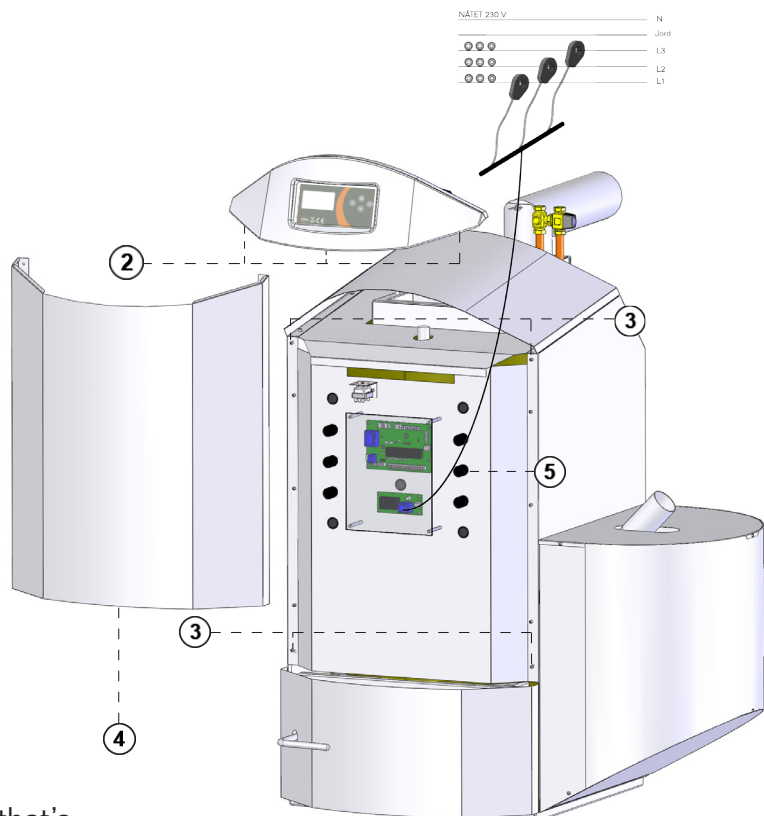


Current sensors

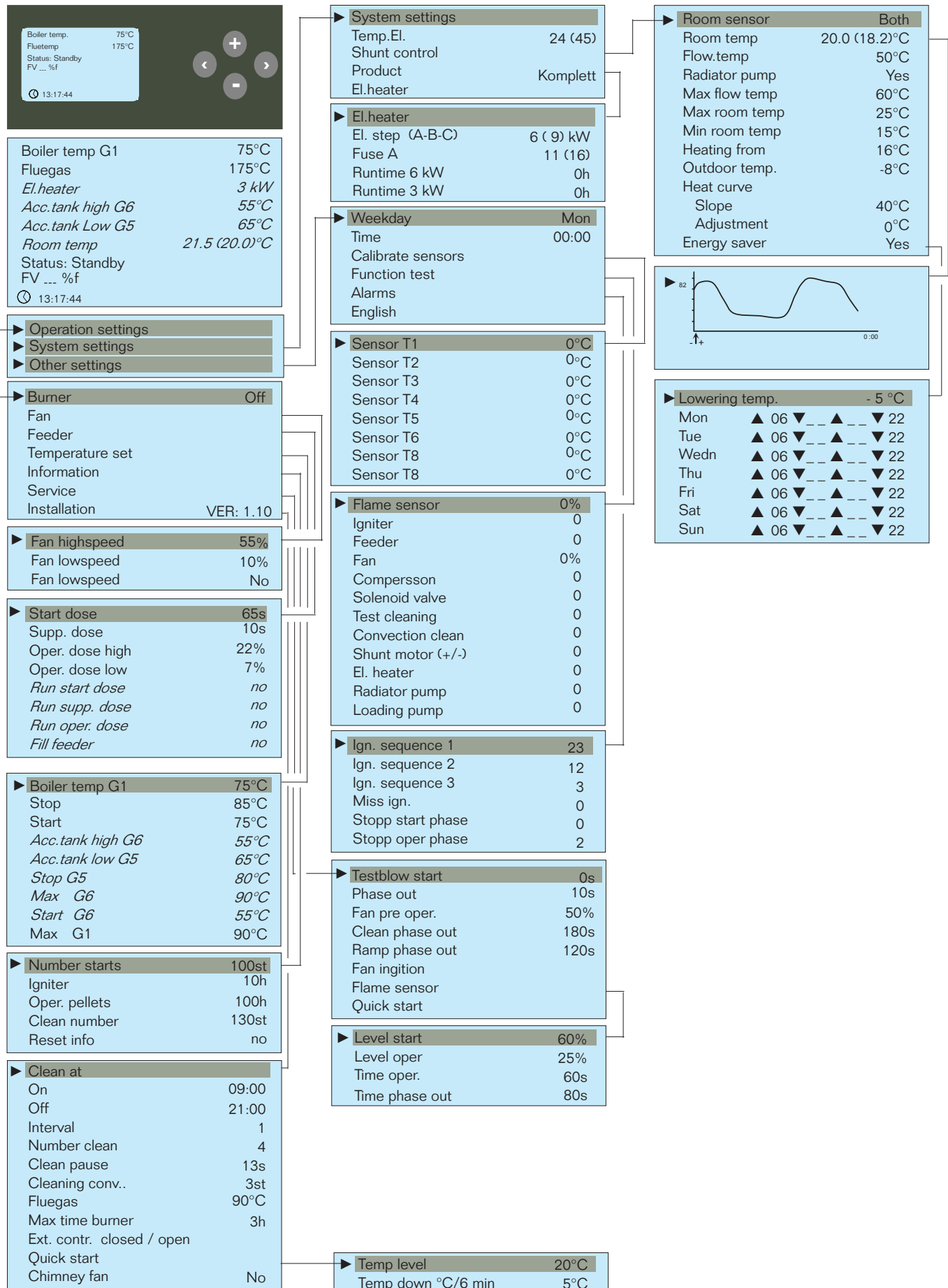
If you're electrical system have a problem to provide enough electricity to the electrical heater and the house at the same time you can install current sensors that lower the power to the electrical heater if its necessary. This is done by distributing the power to the building's different phases.

Connection of current sensors

To measure the power you must install one current sensor to each incoming phase in the house. This must be done directly in the electrical central. Connect the sensors to a cable with the area of 0,5mm² to the circuit board. In the menu "electrical heater" you set the max power that's allowed on the fuses in your house.



The menu system



Menu system

<i>Boiler temp</i>	Current boiler temp. G1
<i>Fluetemp</i>	Current temperature of the flue gases G2
<i>El. heater</i>	Current effect of the electrical heater in the boiler.
<i>Acc. tank high G6</i>	Current temp of the acc. tank top. (Only shown when sensor is installed)
<i>Acc. tank low G5</i>	Current temp of the acc. tank bottom. (Only shown when sensor is installed)
<i>Room temp</i>	Current room temperature. (Only shown when installed and activated in software.)
<i>Status</i>	Current burner mode. (Ignition-Running-Cooling-Standby-Off)
<i>FV ---%</i>	Current strength (brightness) of flame in boiler.
► <i>Operation settings</i>	Settings for burner.
► <i>System setups</i>	Settings for heating systems.
► <i>Other settings</i>	Remaining settings.
<i>Burner</i>	Burner mode (on/off)
<i>Fan</i>	Settings for the fan of the burner.
<i>Feeder</i>	Settings of the augers feeding control.
<i>Temperature set</i>	Settings for the burners operation temp.
<i>Information</i>	Operations log of the burner.
<i>Service</i>	Menu for burner service settings.
<i>Installation</i>	Settings for automatic cleaning etc.
► <i>Fan</i>	
<i>Fan highspeed</i>	Setting of the fan speed in full effect oper. mode.
<i>Fan lowspeed</i>	Setting of the fan speed in low effect oper. mode.
<i>Fan lowspeed</i>	Low effect mode active: (YES/NO)
► <i>Feeder</i>	
<i>Start dose</i>	Start dose size, measured according to (page 23).
<i>Supp. dose</i>	Size of support dose, dose is given between ignition and running mode.
<i>Oper. dose high</i>	Size of the high effect feeding dose (page 23).
<i>Oper. dose low</i>	Size of the low effect feeding dose (page 23).
<i>Run start dose</i>	Test run of start dose for measuring. Only available in burner mode off.
<i>Run supp. dose</i>	Test run of supp. dose for measuring. Only available in burner mode off.
<i>Run operation dose</i>	Test run of operation dose for measuring. Only available in burner mode off.
<i>Fill feeder</i>	Activates auger feeding for 15 minutes. Only available in burner mode off.
► <i>Temperature set</i>	
<i>Boiler temp G1</i>	Shows the boiler temp, start/stop sensor with overheating function.
<i>Stop</i>	Temperature when the burner goes to standby mode.
<i>Start</i>	Temperature when the burner starts up from standby mode.
<i>Acc.tank high G6</i>	When loading acc. tank, sensor G6 should be installed at the tank top of the primary tank. The sensor starts the burner at set temp.
<i>Acc.tank low G5</i>	When loading acc. tank, sensor G5 should be installed low or at the bottom of the primary tank. The sensor stops the burner at set temp.
<i>Start G6</i>	Temperature when burner starts.
<i>Max G6</i>	Maximal allowed temperature G6, tank overheated.
<i>Stop G5</i>	Temperature when burner stops.
<i>Max G1</i>	Maximal allowed temperature in the boiler.

Menu system

► Installation	
Testblow start	Seconds the fan blows before ignition phase. Detection of "old" flame.
Phase out	Seconds the ignitor is active after the flame sensor has approved start value.
Fan pre oper.	The fan speed before operation phase.
Clean phase out	Time that the fan afterblows before standby or cleaning.
Ramp phase out	Time that the fan decreases it's speed after running cycle.
► Flame sens	
► Quick start	
► Flame sensor	
Level start	Set value where the burner goes from ignition mode to operation mode.
Level oper	Lowest approved value in operation mode. If lower: "ALARM BURNER"
Time oper	Time before "ALARM BURNER" when flame sensor lower than level oper.
Time phase out	Time the fan goes to max speed.
► Quick start	
Temp down - °C	Degrees temp shall fall before burner goes to quick start.
Temp down - min	The time in which the temp. shall fall before burner activates quick start.
► Information	
Number starts	Displays the number of burner starts been done
Igniter	Displays the number of hours ignitor has been lit.
Oper. pellets	Displays the number of hours the burners been running.
Clean number	Displays the number of times the AERO unit has cleaned the burner.
Reset info	Resets the information above.
► Service	
Clean at phase out	Option if cleaning should be done prior to or after the running cycle.
On	Time when AERO cleaning is allowed (ON).
Off	Time when AERO cleaning is not allowed (OFF).
Interval	Choice of how often the AERO cleaning is to be done.
Number clean	The amount of blows in a cleaning cycle.
Clean pause	Time between each blow in a cleaning cycle.
Cleaning conv..	The amount of pulls of the solenoid valve for the flue tubes.
Cleaning at	Temperature when flue tubes is cleaned.
Max time burner	Max operation time of the burner before pause with AERO cleaning.
Extern control	Choice of external START/STOP control to the boiler. The control could be done either by NC or NO connection.

Menu system

► <i>Shunt control</i>		Options for the shunt control
Room sensor		Option of control, (ROOM, OUTDOOR or BOTH).
Room temp		Option of set value of the room temperature
Flow. temp.		Temp. to radiator/underfloor heating G7.
Radiator pump		On/Off control of radiator pump.
Max flow temp		Maximum allowed temperature to the flow.
Min flow temp		Minimum allowed flow temp.
Max room temp.		Maximum allowed room temp.
Min room temp		Minimum allowed room temp. Shunt opens full at set temp.
Heating off		Outdoor temp when heating turns off. Rad. pump is runned 1 min/2hours.
Outdoor temp		Outdoor temperature at the outdoor sensor
Heat curve		The heating curve for the heating control (page 27).
► Slope		Option of slope to the heat curve (page 27).
► Adjustment		Option of adjustment to the heat curve (page 27).
► Energy saver		Options for energy saver (such as day/time/temp control).
Lowering temp.		The amount of degrees to be lowered at choosen times.
Mon ▲ 06 ▼ __ ▲ __ ▼ 22		Weekly schedule of lowering the indoor temp/ flow temp at choosen times. Please note that for instance underfloor heating is slow and therefore takes time to reheat.
Tue ▲ 06 ▼ __ ▲ __ ▼ 22		
► <i>El. heater</i>		Options for the electrical heater.
El. step 3-6-9		Choose between different effects on the electrical heater. 1 phase is maximum 3kW
Fuse A		Current load to the fuse in Amps.
El. heater 6 kW		Log of runtimes of the different electrical heating steps.
El. heater 3 kW		
► <i>Other settings</i>		
Weekday		Setting of current weekday
Time		Setting of current time
► Calibrate sensors		Option to calibrate/adjust all the sensors connected.
► Function test		Test mode of the products different functions.
► Alarms		Alarm log
Language		Choice of system language
► <i>Calibrate sensors</i>		
Givare G1		Calibration of each sensor +/- 4 °C
Givare G2		
Givare G3		
Givare G4		
Givare G5		
Givare G6		
Givare G7		
Givare G8		

Menu system

► Function test

Flame sensor	Function test of the flame sensor. Must be illuminated to test function.
Ignitor	Activates ignitor, the fan starts at 40% to protect the ignitor.
Feeder	Activates the auger/feeder.
Fan	Activates the fan
Compressor	Activates compressor for cleaning.
Solenoid valve	Activates/opens solenoid valve for cleaning.
Test cleaning	Activates and tests the full AERO cleaning cycle.
Convection cleaning	Activates the flue cleaning.
Shunt motor	Activates the shunt motors open or close, +/-
El. heater	Activates electrical heater.
Radiator pump	Activates the radiator pump.
Loading pump	Activates the loading pump for another unit such as Laddomat.

► Alarms

Ign sequence 1	Registration of which ignition sequence the boiler goes to operation mode.
Ign sequence 2	
Ign sequence 3	
Stop start	If there is a failure during ignition phase alarm will show: "ALARM IGNITION"
Stop operation	If there is a failure during normal operation alarm will show: "ALARM BURNER"

Alarm at disruption

Alarm Burner

There has been a problem during operation phase. Most likely problem is that the pellets is out. Flame sensor can also be covered by soot.

Alarm Ignition

The burner has missed the ignition phase, most likely problem is poorly adjusted starting dose. Also check the ignitor in the function test.

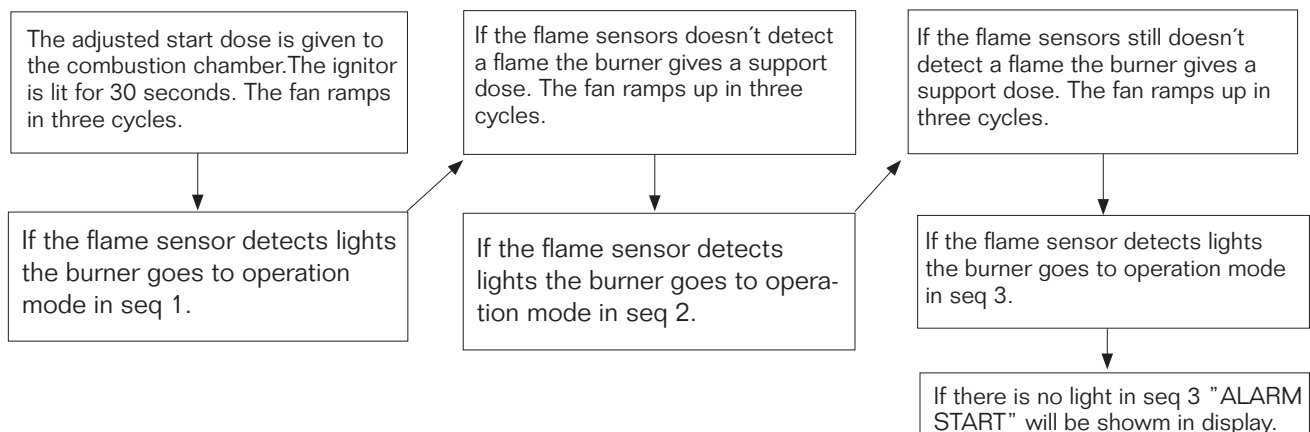
Alarm Flue gas

The flue gas temperature has been above 320°C. This is a extremely high temperature, please check that the automatic cleaning is working (function test). Also check the flue gas sensor.

Alarm Boiler temp.

The temperature of the boiler has been above it's max value. Normally this can happen from the heat after the combustion cycle. Try to lower the stopping temperature if the problem reoccurs.

Ignition phase of the burner



■ First start

The boiler is only roughly set from the factory. Before first start an easier tuning must be done. Then the boiler can be started and the combustion can be controlled and fine tuned with a flue gas analyzer. After a couple of week in service, a check of the flue gas values should be done.



The values shown in the menus earlier are good for a startup of the boiler. Then fine tuning is needed.

■ Tuning the boiler.

Start with the settings by entering the boilers menu (page 17.).

► Temperature settings

The start and stop temperatures for the burner is set in the menu "TEMPERATURE SETT." The start temperature should not be set below 75°C, there might be problem with hot water running out. This is of course depending on which boiler being used.

► Temperature el.heater

Set the temperature for the electrical heater to start if there would accure a fault or the pellet should run out. Set the temperature 5-10°C below the burners start temperature.

► Cleaning of tubes

Set the time when the cleaning of the tubes should be activated.

► Clock

In this menu, the same as "Cleaning", the time is set. If there is a power outage, unfortunately the clock has to be set again.

► Shunt

Set the desired indoor temperature. Do this by turning the room thermostat. There is no value on the knob, the value is changed on the display on the boiler. The thermostat should be placed in an open space without interferences by heat from e.g a stove or cold draft. Sometimes the heating system might need to be trimmed by turning the thermostats on the radiators in different rooms.

► El. heater

Here you set what effect the electrical heater should have if activated. You can choose 3 or 6kW, or both. If both is set to active the effect will be 9000W. Remember to check that the fuses in the house can handle the power to the electrical heater.

■ Tuning the burner

► Fill screw

Start with filling the auger by setting "FILL SCREW". The auger will run for 15 min. Put a bucket under the outlet to prevent pellet from falling out. It is important that the auger is filled properly, therefore it is a good idea to tap it with for example a rubber mallet during the filling.

► The fan

The rpm for the fan is set in the menu "FAN". The rpm is dependent upon the operation dose set. For the best efficiency a flue gas analyzer should be used. We recommend 12% CO₂ in the flue gases. You also choose if the low power option should be activated. Which might be good if for example there is a small amount of water in the boiler.

► Start dose

The feeding of the pellet is the most important part in the system for a good combustion and function. Set the start dose by activating the "RUN START DOSE". It is important that the start dose is correct and it should be controlled when the burner has been running a number of hours. The amount of pellet fed when running the start dose should be about 3,5 dl. If the burner fails to start, the dose can be increased a bit, and if it smokes a lot during startup it might be decreased a bit.

► Operation dose

The operation dose is set in the menu "RUN OPER.DOSE". Weigh the pellet that is fed through the auger and adjust the power according to the diagram below. Never run the burner at a higher power than needed, it is harder to maintain best efficiency at higher power.

► Service

In this menu the settings is deciding how and when the burner should be cleaned with the compressed air. The less time the cleaning is set to be prevented, the better. There will be fewer times/year the burner needs to be cleaned manually if the compressor is allowed to do the work. Here is also the maximum time set for the burner to be running before it cleans itself. It goes into cooling phase and cleans and then startup again. When the settings are made, set the burner to "ON", and the first start will take place if there is a heating need from the boiler.

Doses calculated with pellet with the energy content 4.8 kWh/kg.

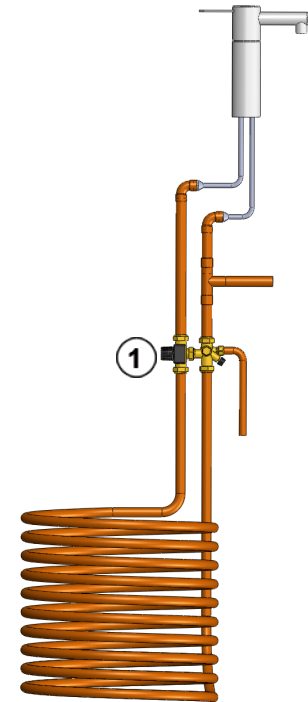
Power kW	12,5	15	17,5	20	22,5	25	27,5	30
Amount of fuel kg/h	2,6	3,1	4,7	4,1	4,7	5,2	5,7	6,25

If "RUN OPER.DOSE" is set, the auger will feed small doses of pellet for 6 minutes in the same way as when it is running normally. Weigh the pellet fed to get the right power. 6 minutes is equal to 1/10 of 1 hour. If you set the burner on 20 kW it should have 410 g as operation dose.

Hot water

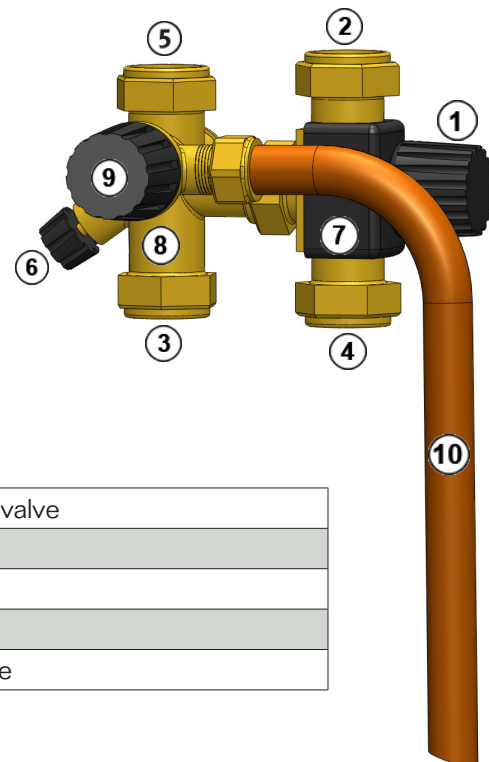
Hot water is produced in a copper coil. There are flanges on the outside on the coil for best heat absorption. The cold incoming water is mixed with the heated water from the coil in the mixing valve (1). The mixing valve includes a thermostat where you set the temperature on the outgoing water. If you don't run the boiler with pellet there also is a possibility to heat the hot water with the electrical heater which should be set to 70°C for good hot water comfort. If the operating temperature of the burner or electrical heater is too low, the coil will not deliver the quantity of hot water as desired for larger amounts.

When hot water is prepared in a coil, legionella bacteria cannot occur.



Valve combination

The valve combination is there so the hot water temperature doesn't get to scalding temperature. In order to increase the temperature turn (1) against +. You may also need to tune the flow valve (6) to reduce the flow through the coil. There is a safety valve (9) that releases the water out of overflow tube (10) if the pressure in the hot water circuit is too high. Note that overflow pipe should always have drainage to a floor drain.



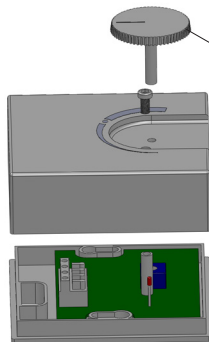
1	Temperature control	6	Flow control valve
2	Hot water	7	Mixing valve
3	Cold water	8	Vent pipe
4	Hot water out	9	Safety valve
5	Cold water in	10	Overflow pipe

■ Shunt control

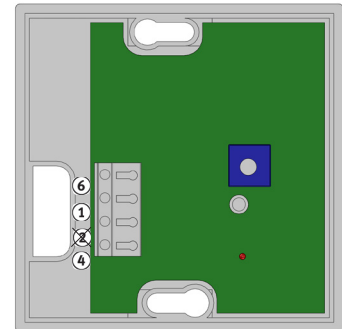
In the menu "shunt control" there are different options of controls; indoor sensor, outdoor sensor or both in combination.

Room sensor

If the room sensor is used it is recommended to be installed in a open space near the center of the house. The sensor shouldn't be interfered by draught, doors, sunlight directly to it or other heat sources since it then will block the entire heating output to the house.



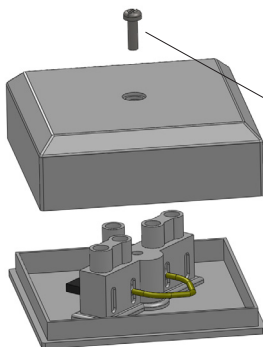
Loosen the control wheel by pulling outwards. The loosen the screw to open the box.



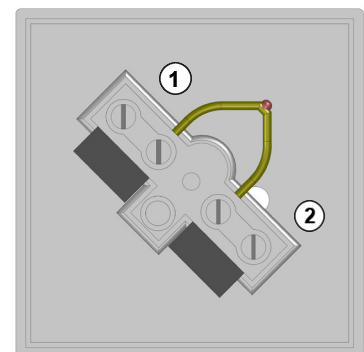
6	Connected to number 3 on the main board	4	Connected to number 5 on the main board
2	Not used	1	Connected to number 4 on the main board

Outdoor sensor

If a outdoor sensor is used this should be mounted on the facad of the house. It is important the sensor is mounted on the north side of the house. Make sure that the sensor isn't disturbed from solar insolation. It is recommended that the sensor is mounted about 2 metres from ground level and if possible protected from water and such.



Loosen the screw and split the casing. It is then possible to mount the box to the wall.



1	Connected to 1 on the main board
2	Connected to 2 on the main board

■ Adjustments of heating curves

The appropriate heating curve is essential in order to have the right indoor temperature. The heating curve needs to be adjusted to the specific energy demands of the house it is installed in. All houses have different demands, which could give that one house would need a 25°C flow at an outdoor temperature of +0°C while another house needs 45°C.

Adjustment to the heating curve is done in the menu "Shunt control". In this menu it is possible to alter both the slope and the adjustment to the curve. To find and adjust the correct heating curve it is important that the following points are fulfilled:

- *The outdoor temperature must not be higher than +5°C*
- *Energy saver function must be switched off.*
- *Valves on the radiators must be fully open.*
- *Radiators must be checked and in function.*

It is normal that during the first heating season changes must be done several times in order to find the right setting for the house. When the right setting is found there is no need for any changes for years to come. This is the greatness with an outdoor sensor. To start out with something as a rule of thumb we could recommend these initial settings:

- *Houses with underfloor heating in concrete. "Slope 35"*
- *Well insulated low energy house with low temp. radiators. "Slope 40"*
- *A high temp. radiator system in an older house with poor insulation. "slope 55"*

Example of slope:

If the slope is set to 50°C this is the temperature sent to the flow at an outdoor temperature of -15°C.

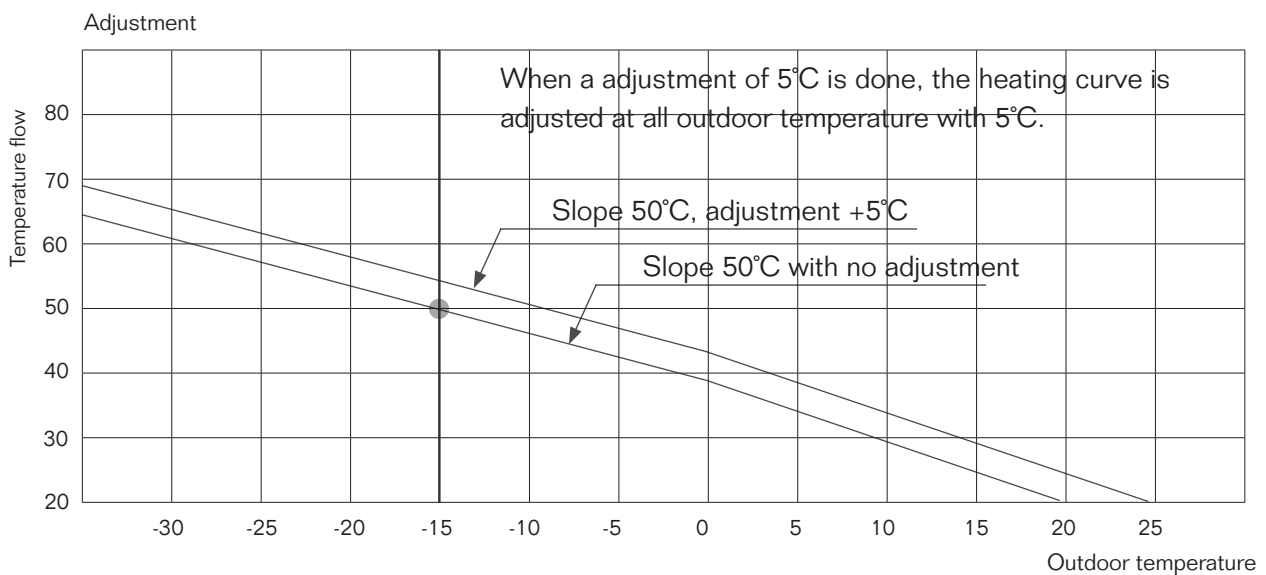
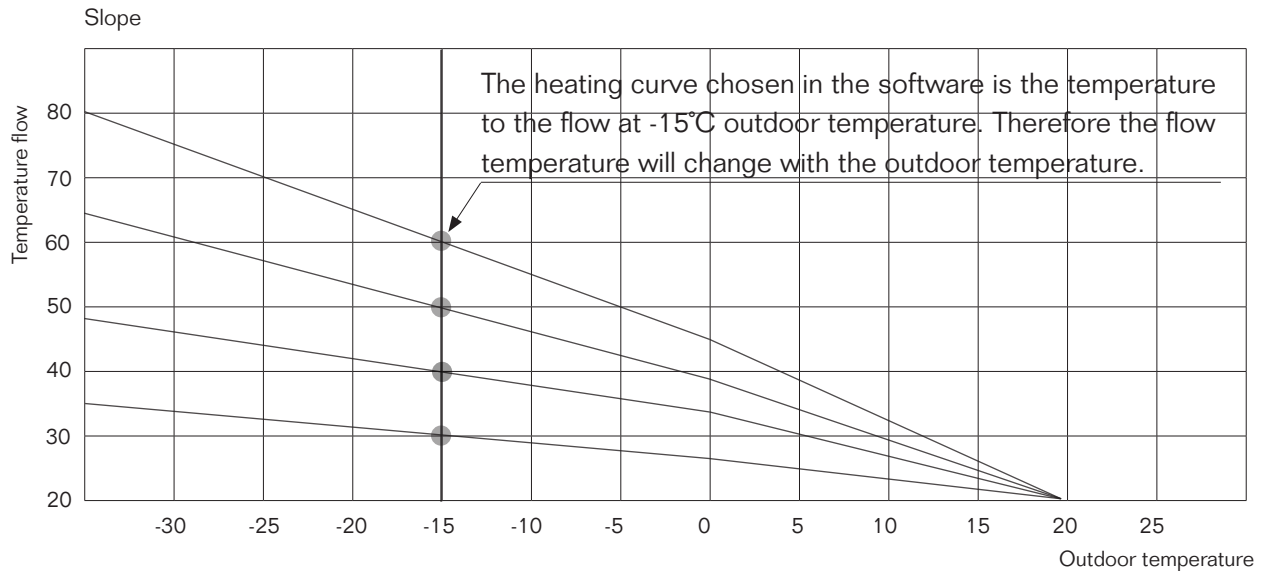
Example of adjustment:

When an adjustment is done to the slope this is done parallel to the curve. Meaning that if an adjustment of 5°C is done. This happens for the whole slope.

Example of curves



A too low heating curve will result in that the house will not have the correct indoor temperature



! If it is cold outdoors (cold winter) and the room temperature is too low. Increase the slope with 1-2°C

! If it is cold outdoors (cold winter) and the room temperature is too high. Decrease the slope with 1-2°C

! If it is warm outdoors (average autumn/spring) and the indoor temperature is too low. Increase the adjustment with 1-2°C

! If it is warm outdoors (average autumn/spring) and the indoor temperature is too high. Decrease the adjustment with 1-2°C

! Wait at least 24 hours between adjustments and changes due to slow response of heating.

■ Mounting the auger

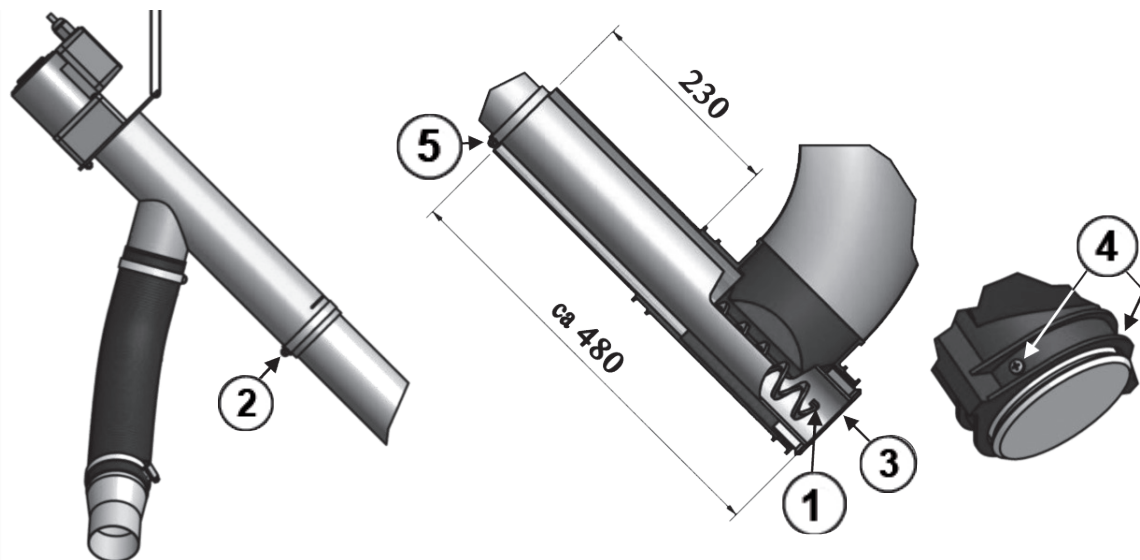
Ø75, 1.7 and 2.5 m, mounting in Mafa Micro, Mini or Mini Storage.

Make sure the helix spiral is 15-25 mm inside the plastic tube (1). Adjust by loosening the clamp (2) and move the plastic tube to the correct dimensions.

Adjust the store location so that the feed screw is properly positioned over the burner, with a tilt of between 30 - 45 °. Mount a hook in the ceiling above the auger for hanging it in the strap. (min. Ø6, not included).

Insert the auger into the store pipe, it shall rest entirely on the store lid (3). Secure Mafa storage lid with 2 short screws (4), alt. used a hose clamp (5) as a stop. Hang the auger on the hook with the strap. Install appropriate flexi hose and make the final adjustment to the burner. Move the screw and the storage so that the hose reduction can be pressed in to the drop pipe. The tube should not be stretched or squashed.

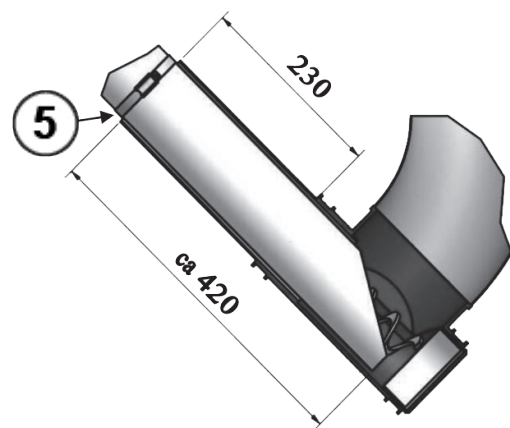
Check inside the store that the auger intake is completely visible. Adjust, if necessary, by loosening the clamp (2) and rotate the plastic tube to the correct position. First select the pipe location in the longitudinal direction so that the former adjustment does not change. Make sure the clamp is applied and tightened before the auger is in operation. Connect the power cable to the burners connector.



Ø90 steel, 1.7 and 2.3 m, mounting in Mafa Micro, Mini or Mini Storage.

The spiral must stay just outside or in line with the tube (not adjustable). Insert the auger 420 mm of the store pipes, mount hose clamps (5) to stop. Check inside the store that the auger intake is completely visible. Adjust and hang up as described for Ø75 feed screw.

Install the screw engine in the flange of the screw. The M8-screw with distance tube should stay in the motor plate to lock the motor from rotating. Be sure the locking screw in flange is in the groove on the motor shaft and tighten. Connect the power cable to the burner.



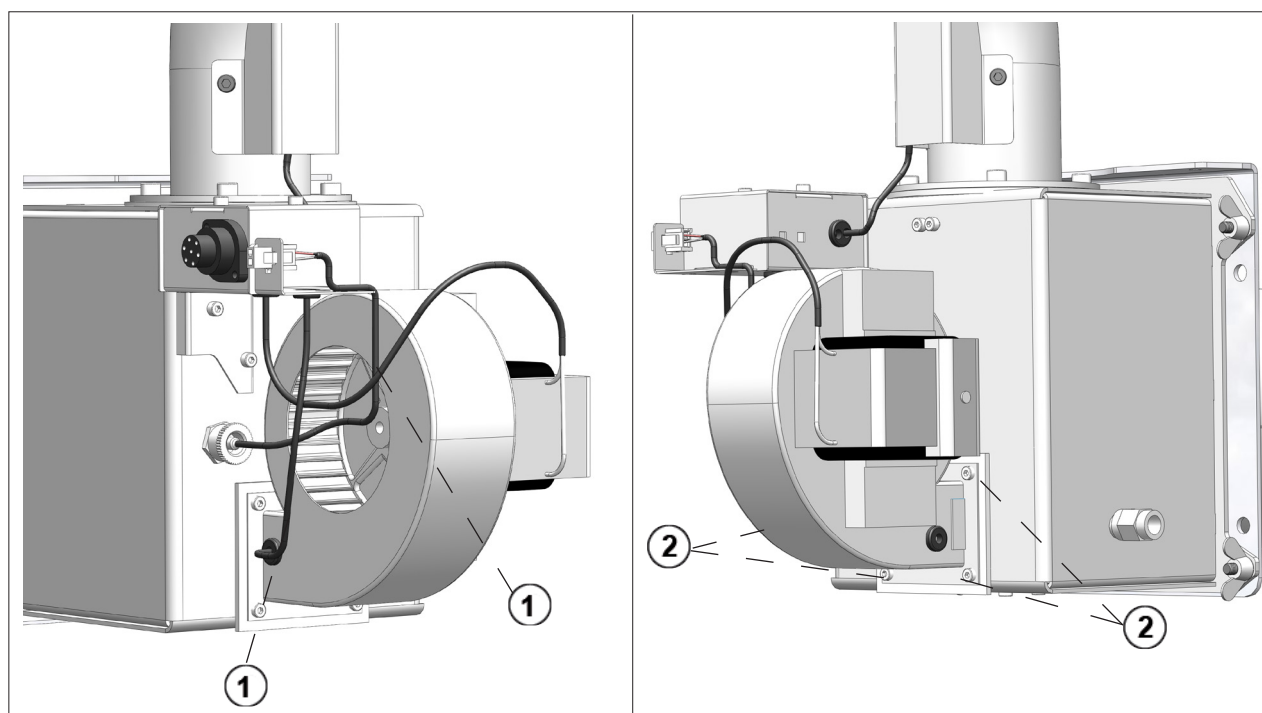
■ Replacing the combustion fan

Disconnect the power supply to the boiler. Loosen the three wing nuts and lift the cover up. Disconnect the power supply to the burner. Loosen the power cable to the burner, cable to the flame sensor and the air supply if its connected. (let the ignition element stay remain in the ignition device). Note the electrical routing and attachment of all cables.

Disconnect power leads from the fan by pulling out the pins (1). Remove the four screws (screw 3 mm) and remove the fan (2). Install the new fan. Make sure the conduit to the ignition element cable, is in place.

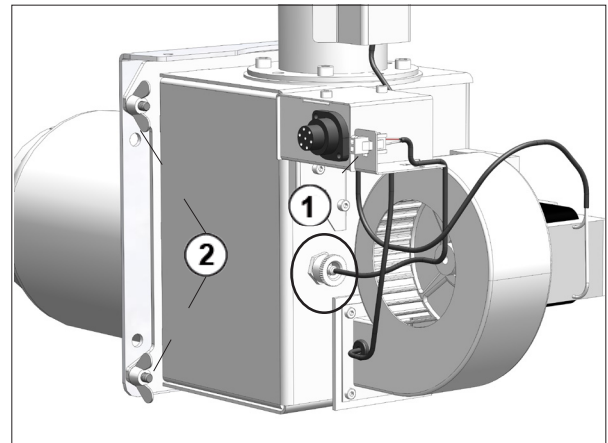
Replace the ignition device according to the "change of ignition elements." Attach the wires to the igniter and thermal protection and flame sensor with cable ties in the mounting bracket.

! *When a fan has been replaced, a new analyze of the flue gas should be done. The RPM can vary between fans.*



■ Changing and/or servicing the flame detector

Disconnect the power supply to the boiler. Loosen the three wing nuts and lift the cover up. Note how the flame sensors are coated and remove the cable tie from the mounting bracket. Disconnect the terminal block of the flame sensor (1) by pulling it straight back. Then loosen the burner from the outer tube by loosening the four wing nuts (2). Then loosen the nut that holds the flame sensor in place inside the house. Then take the flame sensor out and replace with the new. Reassemble in reverse order. When cleaning the flame sensor, use a damp cloth after you loosened the burner from the burner tube.



! *It is important that the cables are connected the same way to burner as they were, otherwise it will display 100% light all the time and the burner will be faulty.*

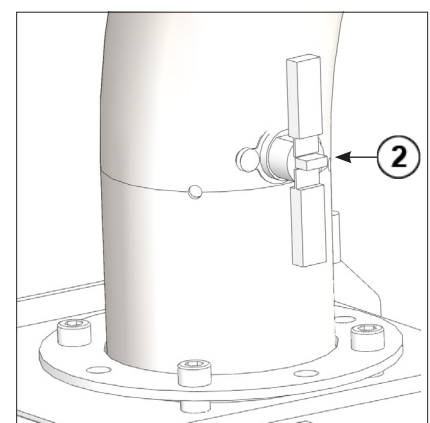
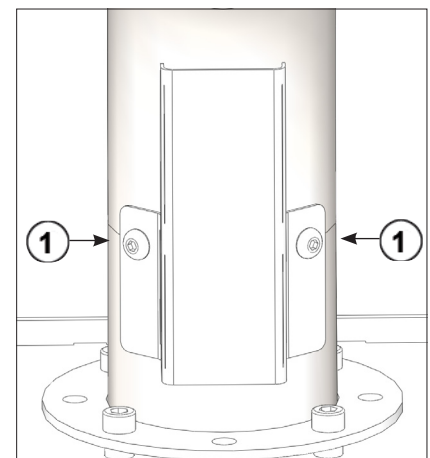
■ Overheated feeder tube

On the feeder tube of the pellet burner there is a heat protection. This turns out to protect against backfires. If the protection tripped, the voltage disappear to the auger. The cause of overheating is usually due to large back pressure in the boiler, which in turn usually depends on:

- Burner tube is full of soot.
- The boiler is full of soot.
- The chimney is too narrow.
- The burner is set to high power.

Reset the protection by loosen the bracket which is placed in front of the overheating protection (1). Then press the reset button (2) and you will hear a click when it is restored.

If the protection is activated again, we recommend that you contact your installer to review the function and settings.



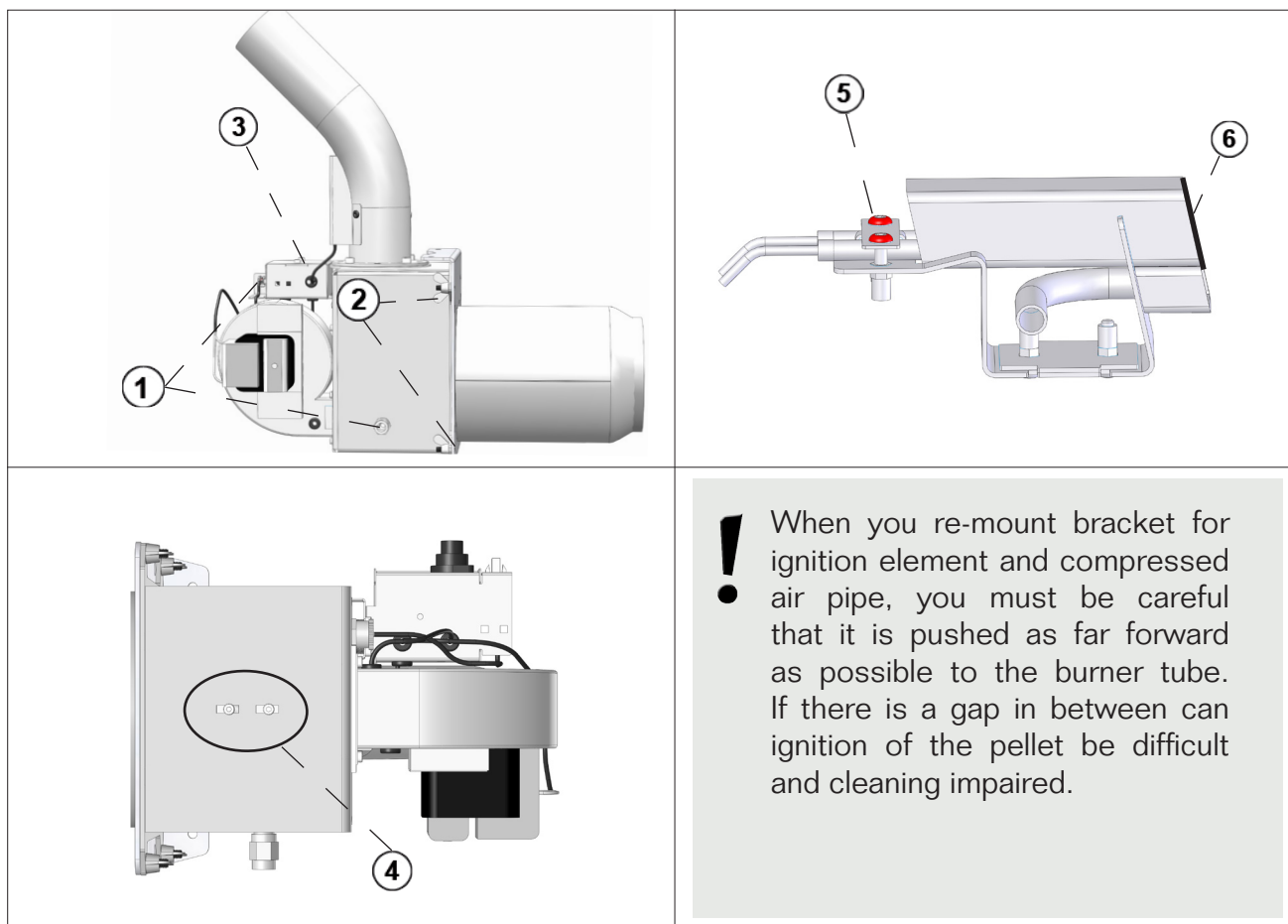
■ Changing the igniter.

Disconnect the power supply to the boiler. Loosen the three wing nuts and lift the cover up. Loosen the power cable of the burner, the cable to the flame sensor and the air supply. (1)

Remove the four bolts (2) which are holding the burner housing against the end plate of the mantle. Angle the burner housing and pull it upwards/backwards so that the feeder tube loosens from the burner. Then detach the pipe to purging by unscrewing the quick connector on the outside of the rear housing. Then disconnect the ignition element wires on the terminal block located under the metal lid of the connection box (3). Remove the ignition device from the rear housing (two screws on the bottom of the burner (4). Ignition element cap is removed (5) and the element is pulled out of the square tube.

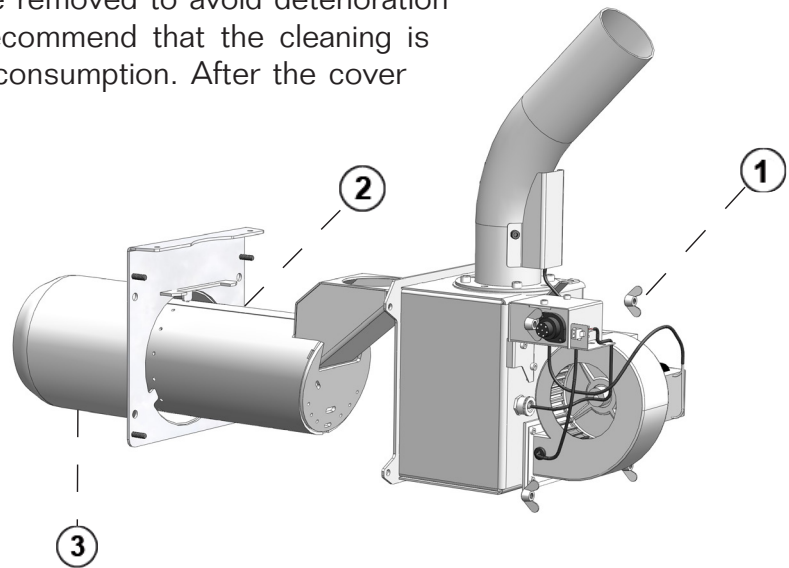
Slide the new element in the square tube. Push to lie on the outer edge of the square tube (6). Install the clamp and tighten the screws with moderate force, so that the element is not going to fly back and forth.

Insert the ignition device in the rear housing. The cables should be pulled out through the fan's cable access. Connect the cables on the terminal. Secure the two cables to each other with a cable tie. Reassemble in reverse order, wait to fasten ignition device in the burner until the burner is mounted together with the mantle. Push the ignition device to the burner tube and tighten the two bolts. Check that the square tube is in the middle of the hole in the burner tube.



■ Cleaning the rear housing and outer tube

After a period of heating up, there will be dust and soot from the burner's inner and outertube. These must be removed to avoid deterioration in combustion and function. We recommend that the cleaning is done after about 6 tons of pellets consumption. After the cover is removed, start by loosening the four wing nuts (1) which are holding the burner in place and then unload according to description. Then pull out the inner tube (2) and clean from ash and soot. It is important that the holes are not clogged with soot, as these are essential to good combustion. Then clean the outer tube (3) from the soot and pellet residues. Reassemble in reverse order.



■ Mounting and adjusting of the draft stabiliser

A draft stabiliser makes sure that a constant and stable draft is achieved. Also condensation in the chimney is avoided.

Adjusting the balancing shaft

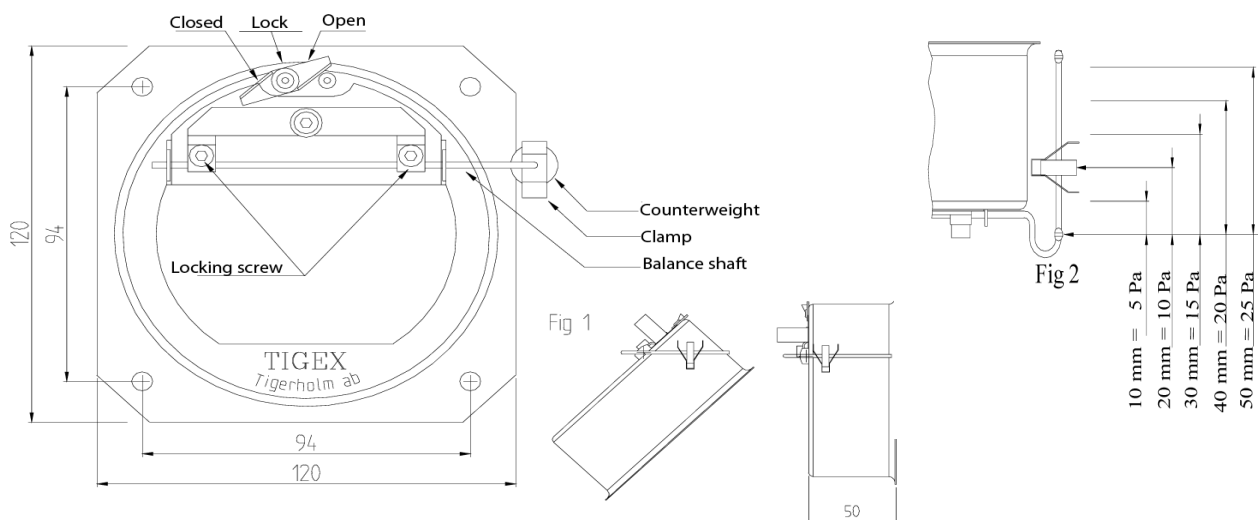
To adjust this shaft, loosen the two screws a bit and turn the shaft so that it is horizontally when the hatch is closed. Then fasten the screws.

Adjusting the draft

By moving the counterweight along the balanceshaft, the draft needed to open the hatch is adjusted. About 1Pa per 2mm.(fig.2) The hatch is preset at about 1Pa. A professional should measure the draft and make the adjustments.

Functions

Tigex draft stabiliser opens the hatch just as much as needed depending on the current draft. The draft varies a lot depending on the chimney, weather and also if the burner is running or not. This means that the hatch can be open alot, a little or closed, depending the situation.

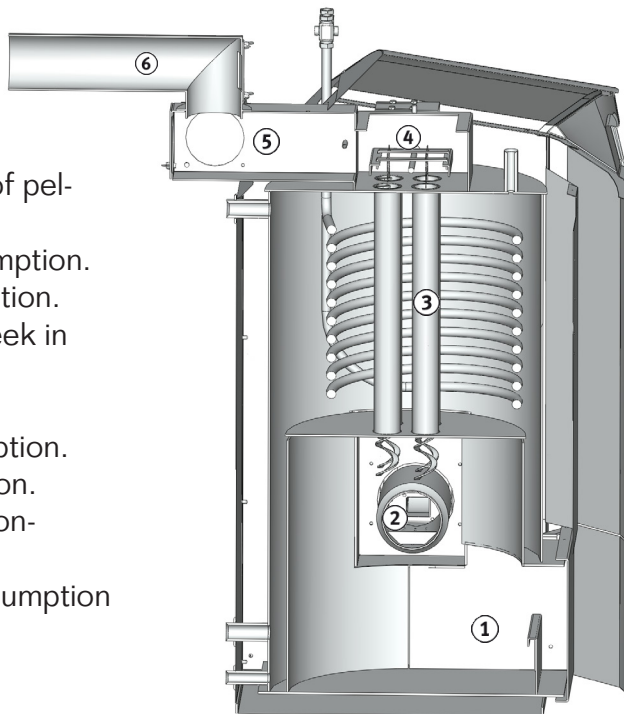


■ Service and cleaning

Cut the power to the boiler before starting the service. We recommend a good service/cleaning of the burner and boiler 2-3 times a year. Do as follows for best result and minimizing the chances for failures.

Sweeping range

1. Firebox, if necessary, or at about 3 tons of pellets consumption.
2. Burner tubes after 3 tons of pellets consumption.
3. Convection part 3 tons of pellets consumption.
3. Without automatic cleaning every other week in winter.
4. Soot box if necessary.
5. Smoke box after 3 tons of pellets consumption.
6. Flue pipe after 3 tons of pellets consumption.
7. The burner's outer tube 6 tons of pellets consumption.
8. Flame detector after 6 tons of pellets consumption (page 30)



Cleaning the firebox

Cleaning the firebox is done through the ash door on the front. The easiest way is to use some type of ash cleaner. If you do not have access to a an ash cleaner, remove the ash with a scrape and keep it in a fireproof bin. Remember that ashes can contain hot particles for a long time and may not be stored near flammable materials.

Cleaning the burner

Remove the ash contained in the burner tube, this is done either through the firebox with the supplied scraper or by taking the burner tubes apart outside the boiler, which sometimes can be the easiest way.

Cleaning of convection

Cleaning of the tubes is done with the included brush, lifting the turbulators acc. (page 12). It is important for the efficiency that these are cleaned thoroughly at the service.

Cleaning of ash and flue

Soot box, which is placed above the tubes must be emptied of ash, if the soot box is full, the flue gas has no place to escape out through the chimney and you will receive a disruption. Also clean the flue tube that goes to the chimney, when it is not certain that the chimney sweep do it.

The burner's outer / innertube

The space between the outer - inner tube must be cleaned out of dust and particles after about 6 tons of pellets consumption (page 32)

■ Trouble shooting

There are actions that the end user can take to fix a stop. However, a professional should always be advised before doing any adjustments.

Fault	Cause	Action
The burner does not ignite	<ul style="list-style-type: none"> - Incorrect start dose - Igniter faulty - Igniter console poorly attached - Inner tube filled with ashes 	<ul style="list-style-type: none"> - Adjust start dose - Replace igniter - Adjust the console - Clean the burner
The burner "puffs" at start	<ul style="list-style-type: none"> - Incorrect start dose 	<ul style="list-style-type: none"> - Adjust start dose
High temp protection on feeding tube activated	<ul style="list-style-type: none"> - Low draft - Inner tube filled with ashes 	<ul style="list-style-type: none"> - Control the draft - Clean the burner
Inner tube fills up with ashes	<ul style="list-style-type: none"> - Poor combustion - The burner cleaning malfunctioning 	<ul style="list-style-type: none"> - Contact your installer - Contact your installer
Ashes are totally black	<ul style="list-style-type: none"> - Poor combustion 	<ul style="list-style-type: none"> - Contact your installer
Poor hot water capacity	<ul style="list-style-type: none"> - Low temperature in the boiler - To high flow in the pipes 	<ul style="list-style-type: none"> - Set the burners "Stop" temperature higher - Adjust the flow on the mixing valve - Changing the water tap
Low/high indoor temperature	<ul style="list-style-type: none"> - Incorrect set thermostat - Sensor untrimmed - Placement of thermostat in a bad place 	<ul style="list-style-type: none"> - Adjust thermostat - Trim sensor (page 17) - Move the sensor to a better place
Soot in the boiler room	<ul style="list-style-type: none"> - Leaking seals 	<ul style="list-style-type: none"> - Contact your installer
Alarm (flue gas)	<ul style="list-style-type: none"> - Sooty boiler - Poor combustion - Broken sensor 	<ul style="list-style-type: none"> - Clean the boiler - Contact your installer - Contact your installer
No heat on radiators	<ul style="list-style-type: none"> - Shunt motor broken - Thermostat set to low 	<ul style="list-style-type: none"> - Contact your installer - Adjust thermostat
White smoke from the chimney	<ul style="list-style-type: none"> - Low flue gas temperature - To big chimney - Rain water in the chimney 	<ul style="list-style-type: none"> - Cut turbulators/increase power - Contact a professional - Mount a rain hood

■ The sensors

The value of the resistance on the Pt1000 sensors is measured with ohm meter. Disconnect the sensor from the motherboard in order to measure. Remember that the sensors need good connection in order to get a correct result.

If the cables are lengthened, use these cables:

- For a length up to 15m 2 x 0,5m²
- For a length up to 50m 2 x 0,75m²
- Do not place these cables together with main cables(high voltage).

-10°C	960 ohm	60°C	1232 ohm
0°C	1000 ohm	70°C	1271 ohm
10°C	1039 ohm	80°C	1309 ohm
20°C	1077 ohm	90°C	1347 ohm
30°C	1116 ohm	100°C	1385 ohm
40°C	1155 ohm	120°C	1461 ohm
50°C	1194 ohm	140°C	1535 ohm

Documentation of settings

Before you commission the boiler system we ask you to fill out the different values set in the menus. This is important for the future services and makes it easier in the communication between the customer and the installer and between the installer and Effecta.

Basic settings

Parameters	Value
Start temperature burner	
Stop temperature burner	
Fan speed	
Temperature electrical heater	
Power electrical heater	
Operation dose	
Start dose	
Flame sensor start	
Flame sensor running	

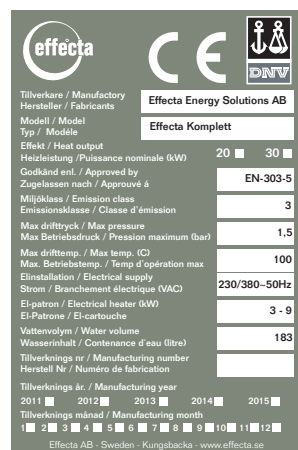
Settings in buffer system

Parameters	Value
Acc.tank high G6	
Acc.tank low G5	
Stopp G5	
Max G6	
Start G6	
Max G1	

Prestanda

Parameters	Value
CO2 content	
CO (ppm)	
Flue gas temperature	
Negative pressure in the flue (pa)	

Type plate

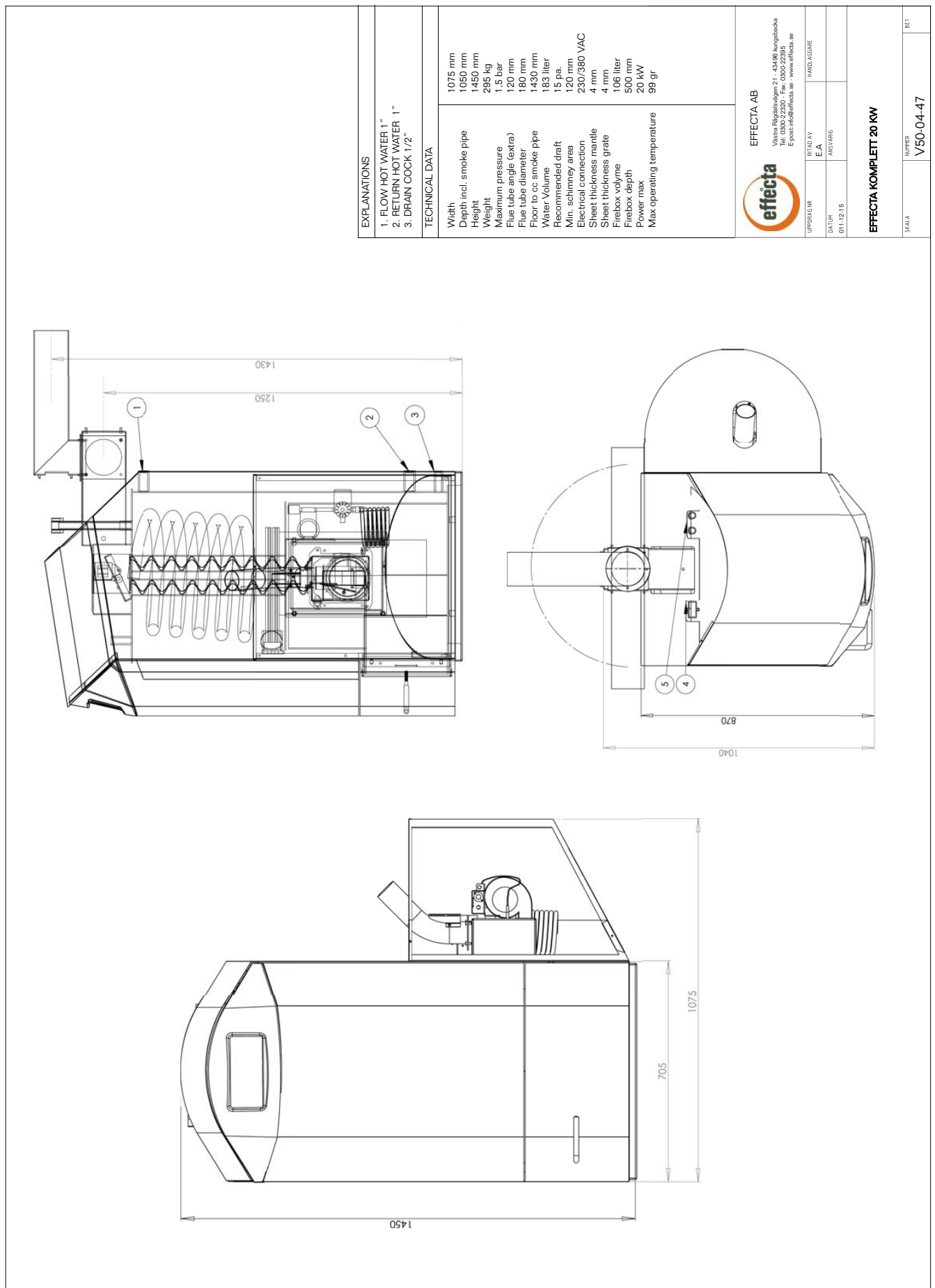


The type plate contains the following information:

- Effecta logo
- CE mark
- DNV logo
- Tillverkare / Manufacturer: Effecta Energy Solutions AB
- Modell / Model: Effecta Komplet
- Effekt / Heat output: 20 ■ 30 ■
- Heizleistung / Puissance nominale (kW):
- Godkänd enl. / Approved by: EN-303-5
- Zugelassen nach / Approuvé à:
- Miljöklass / Emission class: 3
- Emissionsklasse / Classe d'émission:
- Max drifttryck / Max pressure: 1,5
- Max Betriebsdruck / Pression maximum (bar):
- Max drifttemp. / Max temp. (°C): 100
- Max. Betriebstemp. / Temp. d'opération max:
- Installation / Electrical supply: 230/380-50Hz
- Strom / Branchement électrique (VAC):
- El-patron / Electrical heater (kW): 3 - 9
- El-Patrone / El-câbletuche:
- Vattenvolym / Water volume: 183
- Wasserinhalt / Contenance d'eau (litre):
- Tillverknings nr / Manufacturing number:
- Herstell Nr / Numéro de fabrication:
- Tillverknings år / Manufacturing year: 2011 ■ 2012 ■ 2013 ■ 2014 ■ 2015 ■
- Tillverknings månad / Manufacturing month: 1 ■ 2 ■ 3 ■ 4 ■ 5 ■ 6 ■ 7 ■ 8 ■ 9 ■ 10 ■ 11 ■ 12 ■
- Effecta AB - Sweden - Kungälv - www.effecta.se

← The label is placed on the outer casing on the burner. Here
 ← you can see the production number, month and year.

Dimensions



Hydraulic scheme

