

effecta Lambda

- Operation
- Service
- Installation



effecta

Innehållsförteckning

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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 seal, the main body of the boiler, ceramics 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 gives a 5 year warranty on the remaining components. See the attached warranty 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 pellet burner used is recommended by Effecta.

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.

Date	
Installer	
Electrician	

In General

Effecta Lambda is a woodfired boiler with a suction fan. The boiler should be connected to one or more accumulators, which are heated via a Laddomat valve. Warm water is taken from the top of the boiler and is fed to the top of the tank. The return water is taken from the bottom of the tank and is fed to the bottom of the boiler.

Domestic water

To get domestic water, the tank needs to be equipped with a coil. The temperature of the water is regulated with a mixing valve. The amount of warmwater is dependent upon the temperature and size of the tank.

Combustion

On the front of the boiler is two airinlets with dampers, which are controlled by two motors. The motors gets signals from the lambdacontrol depending on the amount of oxygen in the fluegases. The system is designed to get as low output of harmful gases as possible. Normally you don't need to change the settings when you are burning different kinds of wood with different moisture content.

The system

Effecta Lambda should be connected to at least 1500l of accumulation volume. At installation, there should always be a Laddomat valve connected. A woodfired boiler that is connected to one or more buffertanks will have a lot of advantages:

- The grate can always be fully loaded
- The user will have a long time between the warmups
- Prolonged lifespan
- The boiler is always used on maximum prestanda
- Efficiency and environmental assets will be on top

You should always strive after a dimension of the accumulationsystem, so that you don't need to make more than one warmup a day. When you startup a new fire, the fan will start to provide combustion air and to prevent smoke from coming out of the fireside. When the boiler has reached a temperature of 78degrees, the charging of the tank starts. The laddomat valve care for the stratification in the tanks. When the accumulators are heated, the pump and fan stops. The warm water in the tanks then heats the radiators in the house, and the domestic water through a coil.

To the installer

It's now time for the installation of the boiler. Try to follow the examples we are describing for a safe installation. After the installation, be careful to educate the end user of the boiler how the system is used and maintained, this is to avoid unnecessary stops and problems.

Location

The boiler shall be placed on a firm foundation, try also to place the boiler as horizontally as possible, this to avoid airpockets in the boiler. Keep in mind the laws and regulations regarding distances to combustible materials.

The boiler room

The boiler room shall be constructed according to current laws and regulation, if uncertain regarding this, contact concerned authority. You need good ventilation in the boiler room to get the best performance of the Woody Lambda.

The accumulator

It's important that the accumulators are well isolated, this is to get as small heatlosses as possible. To get a good comfort regarding the number of times you have to be in boiler room, you need at least 1500l of accumulation volume.

The chimney

The chimney should have a diameter of at least 150mm, if you have a chimney with less diameter, Effecta should be consulted before installation. The draft in the chimney should at low temperature be approx 15 pa. It's important that the chimney is tested and approved by concerned authority before a new boiler is installed. If the draft is too hefty a draft stabiliser might be needed. If you have a tall chimney and a flue gas temperature below 170degrees there is a risk of condensation, which in the long run can be harmful to the chimney. Adequate temperature 1 metre from the vent of the chimney is 70-80degrees.

If the chimney is tall and wide it may result in too much draft which can lead to too much gasification and too much fire in the grate. This can be prevented by installing a draft stabiliser.

Components

Laddomat 21

A Laddomat valve should always be mounted between boiler and tank. It's described further on page 10.



Automatic Shunt

It's recommended to use an automatic shunt valve to control the flue in the radiator circuit. It feels the temperature in a special place in the house and regulates the temperature in the radiator circuit flue. Using an automatic shunt will significantly reduce the amount of wood needed during a year, and your indoor climate comfort will also improve.



Expansion Vessel

The expansion vessel normally is tested for 6bars. Highest working temperature is 99degrees. The vessel has a prepressure of 2,5bar. The volume should be approx. 10% of the total volume of the system. An open vessel should have a volume of 5% of the total.



Safety Valve

The safety valve will release when pressure exceeds 1,5bars. When it opens water will drip out of it and the pressure goes down. Remember that the system is designed for a maximum pressure of 1,5bars, and shall under no circumstances be under higher pressure.



Shuntvalve

The shunt valve is mounted on the radiator circuit, and it's designed to mix the accumulatorwater and the return water from the radiator to get the right temperature indoor. If mounting an automatic shunt valve, read it's instructions.



Valve Combination

The valve combination is mounted on the domestic water circuit. It's purpose is to mix the hot water with cold before it reaches the water taps. This is to avoid burns, and to keep the taps and seals from being destroyed by too hot water.



Piping

Normally copper is used for installing these systems. Piping between boiler and accumulators should not be less 28mm. If the piping is longer than 6 meters to the first tank it's recommended to use 35mm.

OBS !

Tänk på att alltid isolera rörledningarna i systemet.

The Accumulator Tank

Effecta Lambda must always be connected to some sort of accumulator tank, where the energy is stored, and where the domestic water and the warm water to the radiators is taken. The accumulator is described more thorough on page 13.



The Draft Stabiliser

If you have a tall and wide chimney, it's possible that you have to install a draft stabiliser. You might notice that you have an irregular combustion, puffing sounds from the boiler. This happens when the chimney sucks too much air through the boiler. The placement of the draft stabiliser in the chimney should be approx. one meter above the connection to the boiler. This is because you have an overpressure from the fan, and if you place the draft stabiliser too close to the boiler you might have smoke coming out of the stabiliser.

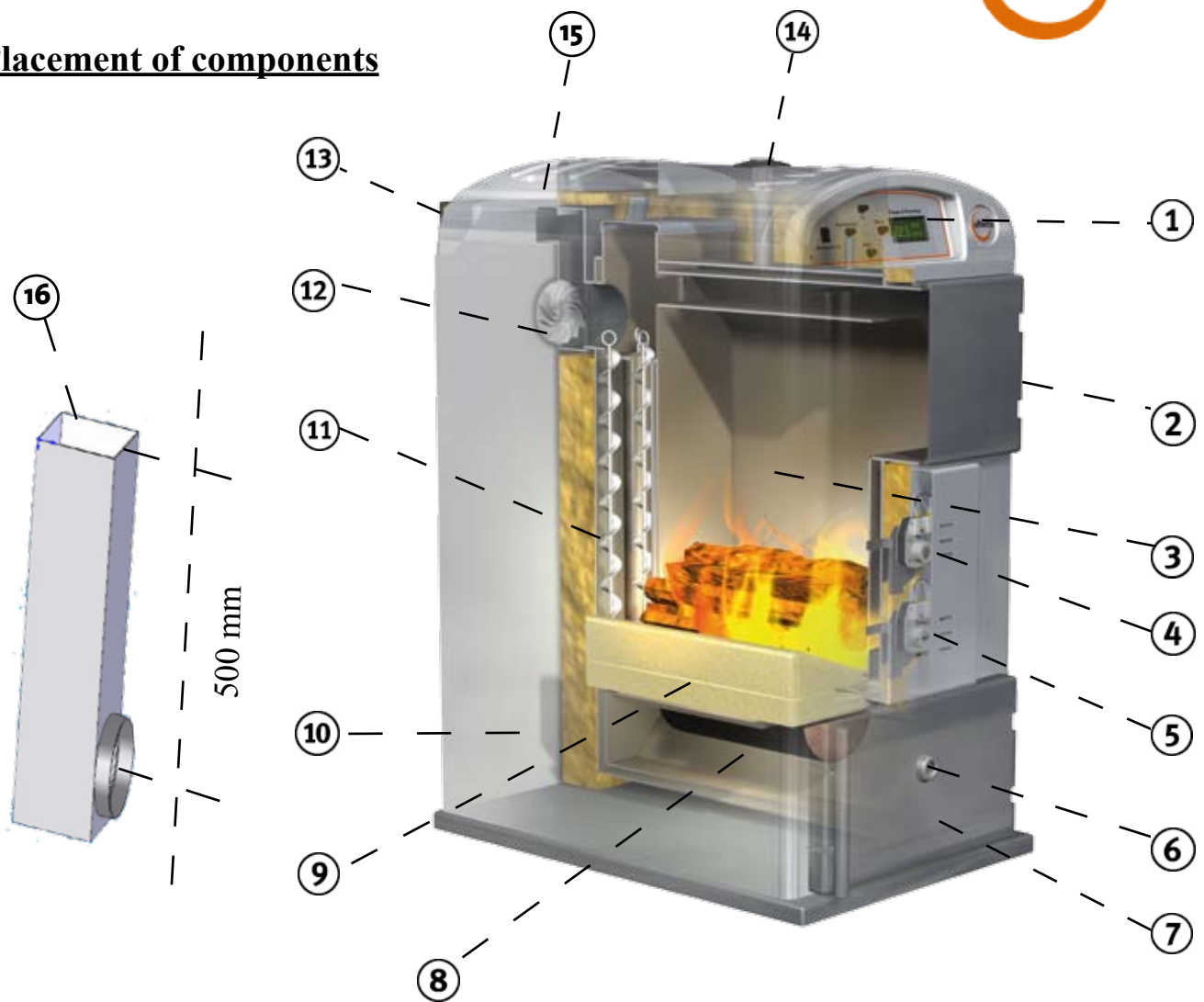


Systemet



1	Wood gasification boiler
2	Safety valve, 1,5bars
3	Laddomat valve
4	Electrical heater
5	Valve combination
6	Shunt valve with automatic motor
7	Outlet frfom safety valve
8	Suitable connection for an open expansion vessel
9	Suitable placement for air escape vent
10	Suitable connection for pressure vessel
11	Return water from the radiators
12	Domestic cold water inlet

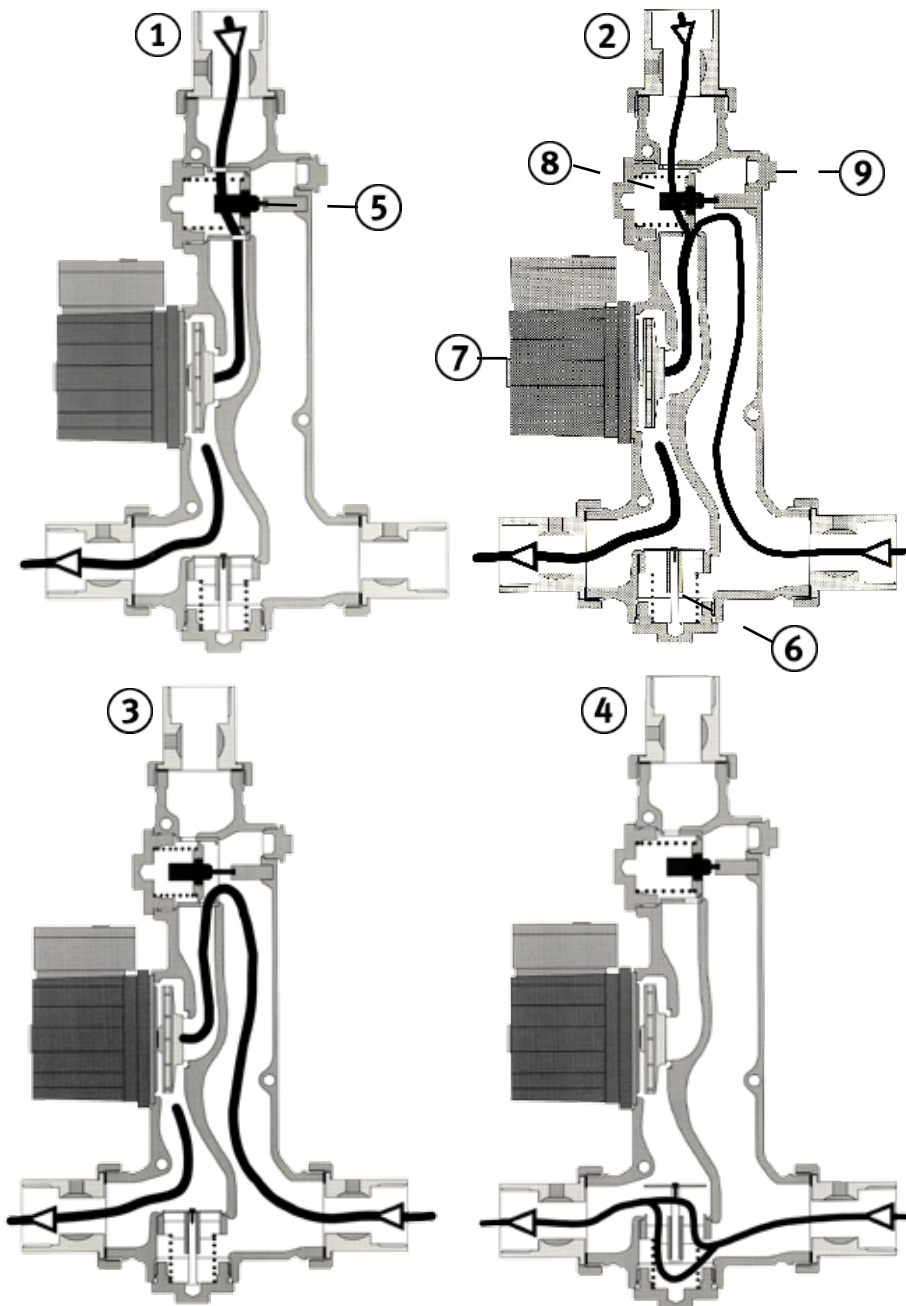
Placement of components



Component		Component	
1	Control panel	9	Ceramics
2	Grate hatch	10	Return from tank, drain cock
3	Grate	11	Convection area
4	Primary air inlet	12	Flue gas fan
5	Secondary air inlet	13	Smoke pipe 150 mm
6	Inspection panel	14	Hot water outlet 1 1/4"
7	Ash hatch	15	Soot hatch
8	Afterburner	16	Smoke pipe elbow (500x150x150)

Installation data		Technical data	
Height	1130 mm	Output	35 kw
Width	650 mm	Grate depth	540 mm
Depth	920 mm	Grate volume	135 liters
Depth incl. smoke pipe	1150 mm	Max. working pressure	1,5 bar
Weigth	420 kg	Max. working temperature	100°
Electricity supply	230 volt	Water volume	80 liter
Floor to centre smoke pipe	1340 mm	Min. diameter chimney	150 mm

Function Laddomat 21



1. **Start;** Before the boiler temperature has reached 78degrees, the thermostatic valve is closed, and the valve for self circulation is closed from the pump pressure.

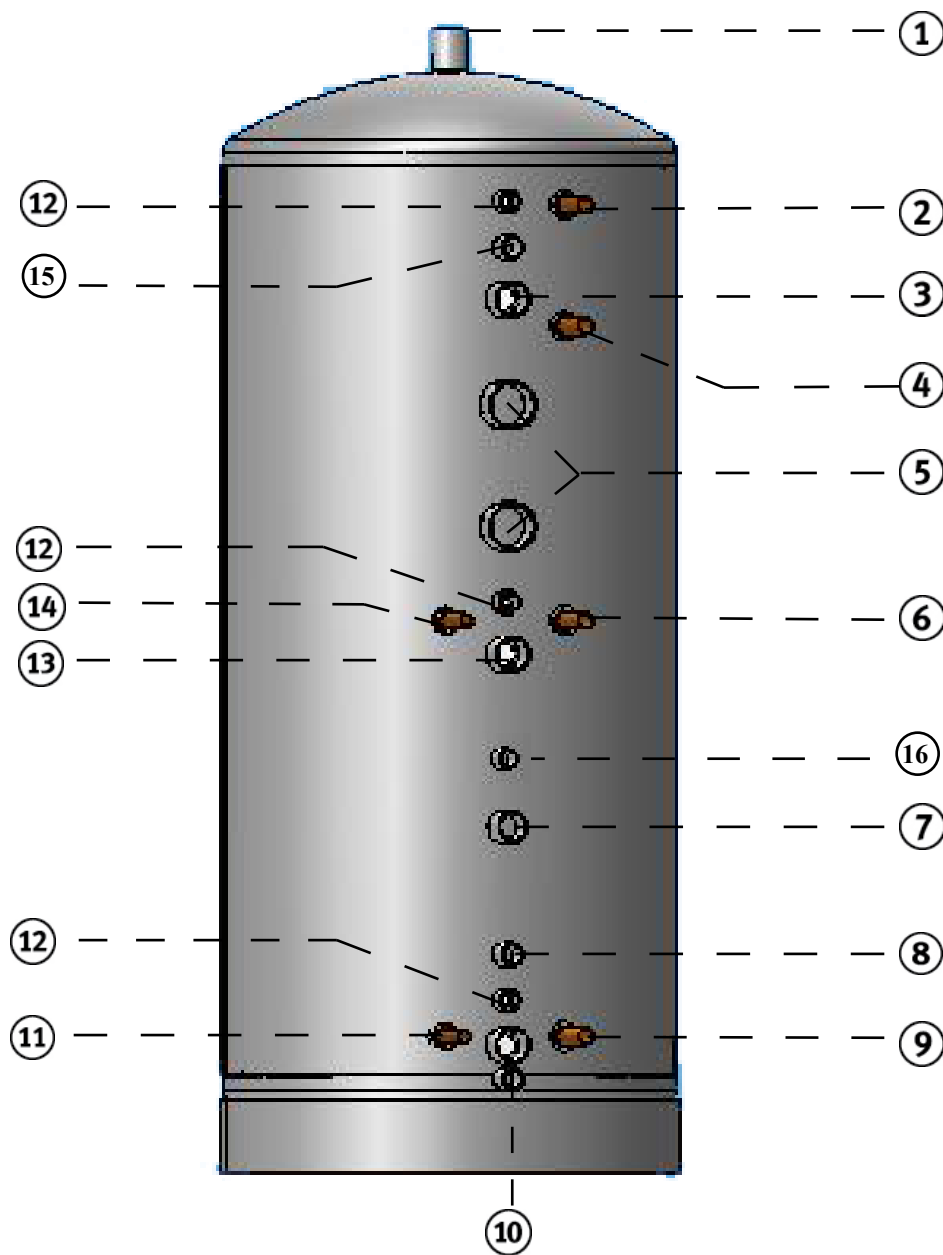
2. **Heating phase;** When the boiler temperature exceeds 78degrees the thermostatic valve begins to open and mixes cold water from the tank. Normally the temperature of the return water to the boiler is about 70degrees and the hot water from the boiler about 80-85degrees.

3. **Final part;** When the accumulator is getting almost fully charged the Laddomat, thanks to the unique thermal valve, charges the accumulator completely by closing the bypass opening.

4. **Self circulation** In the event of a power failure the Laddomat immediately starts charging the accumulator by self circulation. The same happens if the pump breaks down.

5	Thermal valve
6	Reverse circulation valve
7	Pump
8	Spring
9	Filling valve

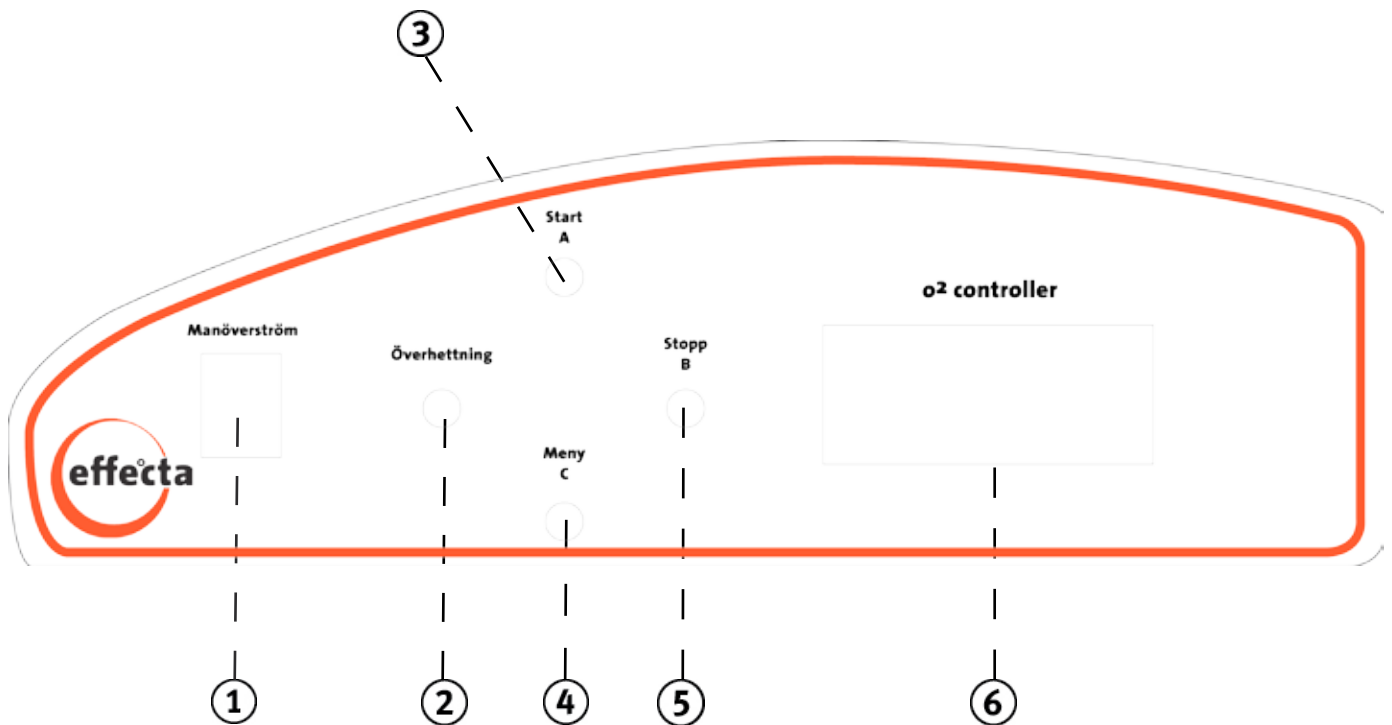
Connections in Solar accumulator



OBS! detta är en standard tank och behöver ej vara exakt levererad.

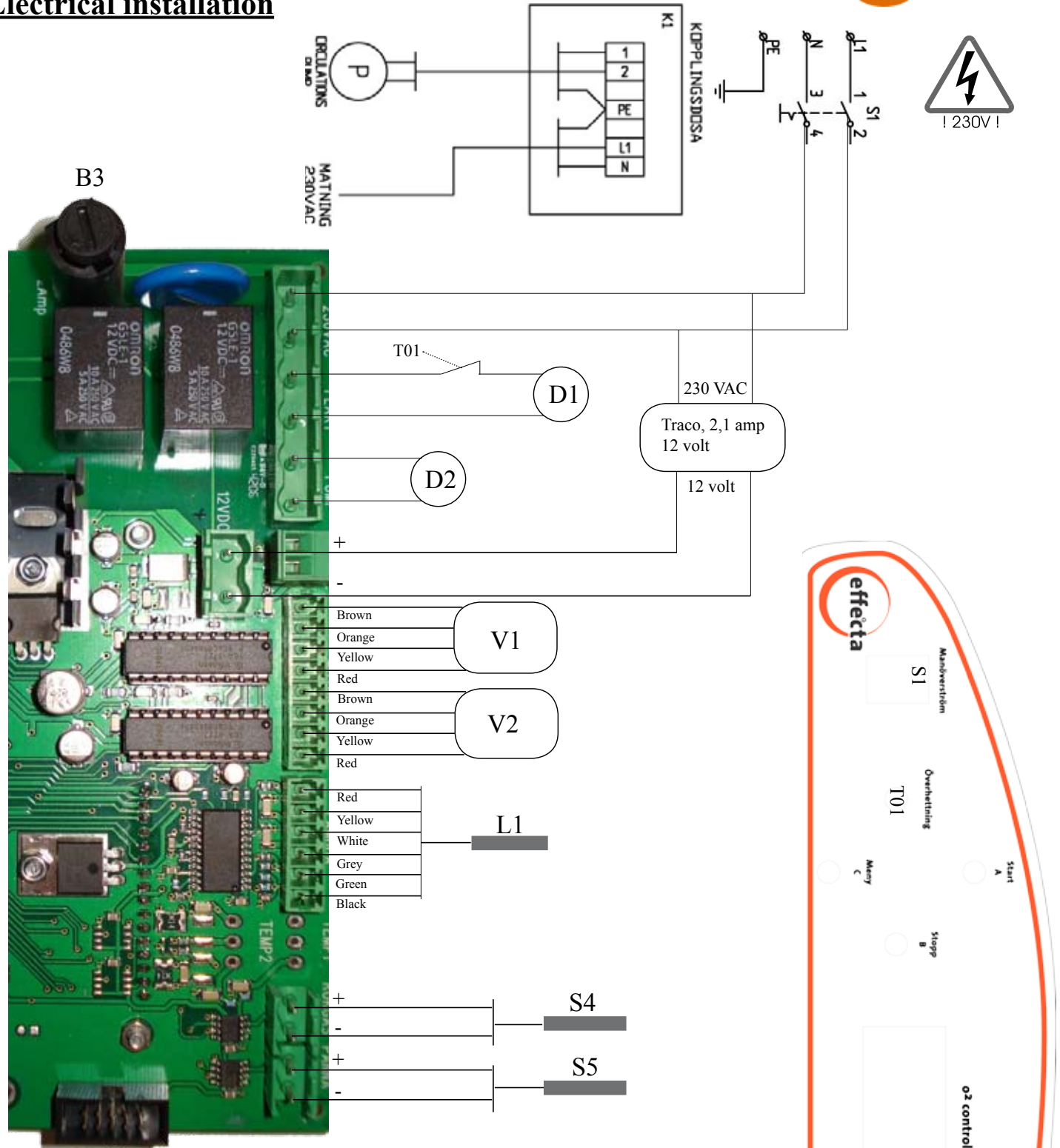
1	Charging-Expansion 1 1/4"	9	Cold domestic water 22mmcu
2	Domestic water 22mm cu	10	Drain cock 1/2"
3	Warm water to radiators 1 1/4"	11	Water to solar panels 18mm cu
4	Connect to nr6 22mm cu	12	Thermometers 1/2"
5	Electrical heater 2"	13	Connection/Return radiators 1"
6	Connect to nr4 22mm cu	14	Water from solar panels 18mm cu
7	Allternativ return from radiators 1"	15	Sensor solar 1/2"
8	Sensor solar 1/2"	16	Alternative sensor 1/2"

THE CONTROL PANEL



1	Control power supply	ON/OFF
2	Overheating protection	Stops the fan at boiler temperature 95°
3	Start (A)	Start fire (increase value)
4	Menu (B)	Browse the menus (confirm)
5	Stopp (C)	Stops program (decrease value)
6	LCD Display	Shows temperatures, oxygen value, effectivity, etc. etc.

Electrical installation



S1	Power supply	Incoming 230 VAC
T01	Overheating protection	Mecanical overheating protection
B3	Fuse	Fuse 2 amp
S4	Sensor flue gas	Sensor TYP K
S5	Sensor boiler temperatur	Sensor TYP K
D1	Flue gas fan	230 VAC
D2	Pump laddomat	230 VAC
V1	Motor primary air	12 volt
V2	Motor secondary air	12 volt
L1	Lambdasond	-----

Environment

The surroundings

When you're using a wood gasification boiler it's important to fire in a way that's not harmful for the environment or your neighbours. Take considerations in the following things:

The fuel

Effecta Lambda designed to be used with wood logs. The kind of tree species has no bigger importance other than that birch, beech and oak have a higher efficiency value than conifer. This means that the accumulator is heated faster with broad leaved trees than with coniferous trees.

Birch, beech and oak also have a slightly higher density than conifer, which lead up to a bit more compressed pile of wood in the grate which leads to a smoother gasification of the wood and a steadier combustion.

When making a fire, big and small logs should be mixed, with the largest on top in the grate. You shouldn't use only fine cloven wood or the opposite, only big logs.

Using only fine cloven wood can lead to a fire with higher effect than the boiler is designed for. The consequences can be shortened lifespan of wear parts, such as ceramics, fan etc.

Using only bigger logs might lead to a fire with low effect, with low flue gas temperature as aftermath. This might lead up to damages on the chimney if you get condensation in it.

Never make a bonfire with stuff that is harmful to the environment such as impregnated wood, domestic waste, plastics or rubber etc.

Storage of the fuel

To ensure that the Effecta Lambda works in best possible way, the quality of the fuel must be good.

It's important that the wood has the right moisture, it should be somewhere around 15-20%. The logs should be split into 5-15cm big bits, and the length should be 45-50cm. Never use logs longer than 51-52cm, this will make the logs jam in the grate.

Try to use the sun and wind when storing the wood. If it's too much dampness in the logs, the efficiency of the boiler will drop.

Cannibalisation

It is many years to come before your Effecta boiler is spent, but we ask you to follow the rules and regulation currently valid at the time for cannibalisation of your boiler.

The control

The Effecta Lambda's combustion is controlled by a lambda sond, placed in the smoke pipe.

Start of a fire cycle is done by pressing the button "Start", the dampers is then placed in a position to give the right amount of air to the up start.

When the start is done and the flue gas temperature has reached a temperature of 100degrees, a measurement of the gases starts. The control strive after a preprogrammed value (13%) of co₂, and moves the dampers to achieve this. The lambda sond leaves a signal every second. +/- 0,5 %.

The button "Stopp" interrupts the fire and stops the fan and pump. The button "Menu" gives you the opportunity to browse the menus.

The menus

- **Calibration lambda sond:** This should be done prior to the first fire, and there can be no fire in the grate when doing this.
- **Tuning of lambda value:** This is done by pressing + (A) stopp - (B). This can be changed if you have big differenses in wood qualites.
- **Sooting:** After some time of using, a recommandation to soot the boiler will appear in the display. Then clean the boiler and reset the control by pressing yes in the menu.

Making a fire

Now it's time to make a fire. Remember that during the first fire, the boiler can appear to be slow and it can be a bit hard to get a good combustion. This is because alla the metalsheets in the boiler are clean and cooled by the boilerwater. Also the ceramics have some moiste in it which needs to dry out. This uses extra energy and makes the fire a little more slow.

During the first warm ups there are also lots of air in the system, and this might lead to some strange noices in the pipings and the boiler. This will dissapear after a few warm ups of the system.

The power supply should always be switched "ON"

Put a handful of fine cloven wood in the bottom of the grate. Then put quite a lot of paper and put on top of the pile. Push the button "Start", and then ignite. All hatches should be closed, except the grate door which can be opened a little bit. You might have to try some small changes, i.e. closing the grate door, etc, to get the best result.

When the fire has started and it's been burning for a while a glow should appear in the bottom. Now you can fill the grate with wood. Start by putting smaller bits in the bottom and increasing the size further up in the grate. The better packed the logs are, the higher the efficiency and less emmisions you will get.

When it has been burning for about 15 minutues, the flames should fill up the afterburner that you can see in the inspection panel in the lower ash door. The boiler makes best use if it's left alone without interference. If you open the grate door during a fire there is risk for too much gasification which leads to deterioration of the function.

If you are using very dry wood and have a powerful draft, you might hear a "puffing" sound from the dampers. This doesn't deteriorate the combustion, but to avoid this you can install a draft stabiliser.

NOTE! On the occasion of second inlay there is a risk of smoke pooring out of the grate door. Therefore, open the door cautiously to evacuate gas and smoke in the grate.

Sooting

To get the best performance from your Effecta boiler, it is important to clean it on regular basis. In winter time it's appropriate to clean it once a week, in summer once a month.

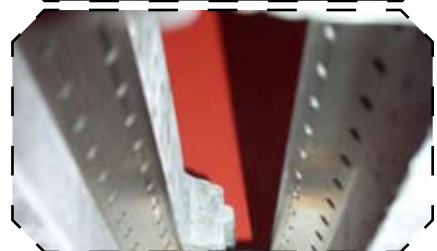
- Start by removing the stainless stick which lies on top of the ceramics. Remove bits of logs and coal through the opening between the ceramics. The walls in the grate is usually covered with a thin layer of tar. There is no need to remove this.



- Then remove the rear top plate and the ash hatch. Remove the 7 turbulators and use the appurtenant brush to clean the tubes.



- Then open the lower front door, pull out the afterburner and empty it from ash. This should be done every third warm up to get the most out your boiler. Then scrape out the dirt in the space beneath the ceramics.



When cleaning the boiler, you might also clean the fan. Remove the wing nuts at the fan and pull the fan out from the boiler.

Clean the wheel from dust and soot. If not properly cleaned the boiler will deteriorate and burn with lower efficiency. Cleaning of the fan should normally be done 3-4 times/year.

Annual Service

Every year you should do a more thorough control of the boiler, a good time to do this is before winter, when the boiler will be used more frequently.

Start by controlling the combustion zone and ceramics. In the interspace between the ceramics is metall plate with holes (seen from under), remove dust and other objects.

Control the seals in the doors, they must not leak.

Remove the lambda sond and clean it from ash and soot.



Trouble shooting

Problem	Possible faults	Action
Smoke from the grate at start up.	The fan is not running.	Press (Start).
Smoke from closed doors	Seals leaky	Adjust doors, replace seals.
The fan doesn't start	Faulty control panel. Overheating protection released.	Contact Effecta. Press the reset pin under the hat.
Tar in the convection area.	Too much soot in the grate. Lambda sond dirty Dampers faulty	Clean grate Clean lambda sond Contact Effecta
None or little heat is transferred to the accumulator.	Air in the system. Poor wood.	Try to deair the system Switch to better wood, or split it finer.
The boiler gives less effect and is hard to use	Moisty wood, to little draft through the chimney. The boiler needs to be cleaned.	Try wood with less moist. Clean the boiler
The laddomat valve is banging or making strange noises, poor flue through the system.	Air in the system, To low pressure in the system	Try to deair the system Increase pressure
The pressure is decreasing in the system	You have a leak in the system. Water have vaporised from the open expansion vessel. Wrong pre-pressure in the pressure vessel.	Check for the leak. Fill the system. Adjust pressure.

Försäkran om överensstämmelse:

Effecta Pannan AB
Västra rågdalsvägen 21
43496 Kungsbacka



Försäkran avser under eget ansvar produkten:

Effecta Woody: Vedpanna
Nummer: 02-756697-02

Direktiv:

89/336/EEG med tilläggen 92/31/EEG, 93/68/EEG (EMC)
73/23/EEG med tillägget 93/68/EEG (LVD)
97/23/EC (PED)

Harmoniserande standarder:

SS-EN 60204-1 Elektrisk utrustning för industrimaskiner -
Del 1: Allmänna fordringar kopplat till maskin och LVD.

SS-EN 50081-2 För emission-industri (EMC –standard)
SS-EN 50082-2 För immunitet-industri (EMC- standard)

Kungsbacka 2004-12-12

Erik Andersson
Effecta Pannan AB



