

EFFECTA KOMPLETT III

20-25-35 kW

68.000-85.000-120.000 BTU

INSTALLATION
MAINTENANCE
SERVICE
ASSEMBLY



■ Introduction

We at Effecta would like to thank you for putting your trust in us when choosing your new boiler. The "Effecta Komplet III" 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 care 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 III boiler
- Cleaning handle with brush
- Rake with scraper
- Flue attachment
- Draft stabiliser
- Turbulators, 8pcs.(mounted)
- Drain cock
- Shunt valve + motorized shunt control, not in "Light" version
- Electrical heater 3-9 kW (mounted), not in "Light" version
- Thermostatic mixer valve, not in "Light" version
- Room thermostat, optional in "Light" version
- Outdoor sensor, optional in "Light" version

■ Warranty

Effecta products are guaranteed to be free of defects in materials. The main body has a 5 year warranty against leakage of water and all other parts have a 2 year warranty.

The warranty also covers original spare parts. Any faulty products will be replaced or repaired at the discretion of the retailer or Effecta. If a faulty product is detected, Effecta is entitled to replace it with a new or reconditioned product of the same or a similar type.

If you have a complaint, you must contact your retailer 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 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 purpose.

The guarantee does not cover:

- The overall function 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 use of non-original spare parts.
- Damage caused by the boiler being positioned in an unsuitable location.
- Damage caused by vermin.

The terms may be different from country to country. Check with your installer.

■ System data:

Installer:	
Date:	
Electrical installer:	

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■ In general

The boiler

Effecta Komplet 3 is a boiler which is to be fueled with wood pellets. No other kind of fuel is allowed, 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 burn 6 mm ø pellets which come either in sacks or are supplied by bulk truck. If you have built a bulk storage, 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 DIN+, as this may result in problems in operating the burner.

■ Symbols in this document



Information

This symbol is shown with to indicate important information the installer should know and understand. Neglecting this information can affect the performance of the product.



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 and comply with current building regulations.



Hot surfaces

This symbol is shown when there is a risk of burns to people. Always wait for the boiler to cool down before you do any service.



The product manual is a document that gets updated. You always find the latest version on our webpage www.effecta.se

■ Your safety



*Remember to always disconnect the power before working with the boiler.
Wait until the boiler has cooled down before starting work.*



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 so accidents and injuries are avoided. Incorrect use or burner adjustment can result in damage to property and personal injury or poorer performance of the product. The boiler room where the product is installed, the chimney and other components must be approved according to current legislation.

The commissioning of the product must be made by a professional, according to Effectas 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 qualified electrician, according to Effectas 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 main power.

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 use of anything other than original spare parts can result in damage to the product or person. It also removes Effecta from any liability.

It is strictly forbidden to make any changes or alterations to the boiler without prior approval from Effecta. If any changes are made, the safety functions, or any other function, might not work as it is supposed to, and all warranties and liabilities from Effecta are cancelled.

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.

■ Safety components

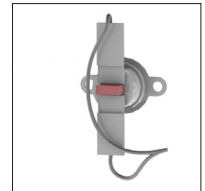
Drop tube

Between the storage and the feeder there is a meltable plastic tube which is destroyed when it is overheated.



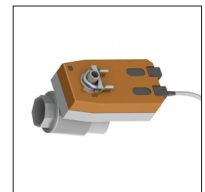
The overheat protection on the fall shaft

This stops the feeding and the fire damper if the fan temperatures gets too high. Reset is made manually. The cover must always be in place when connected to main power. It only cuts the power to the auger and fire damper.



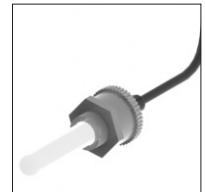
Safety lock

If the boiler is equipped with a suction system there is a fire damper mounted. This is closed during filling, overheating or loss of power.



Flame sensor

The flame sensor monitors the flame in the burner. If a valid value is lost for more than 120sec the feeder stops. The burner is cooled down with maximum rpm of the fan for (X) minutes before stopping. The pellets suction is not allowed to start if the flame sensor detects light



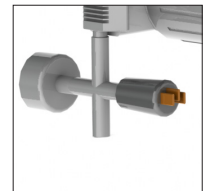
Overheat protection on the boiler

There is overheat protection on the boiler which cuts the power to both the boiler and the burner if the temperature in the boiler exceeds 95°C / 203°F.



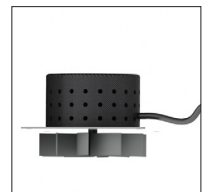
Compressed air cleaning

On the cleaning to the burner there are two safety systems. The controller limits the the time the compressor is allowed to run, there is also a pressure switch which closes the compressor when preinstalled pressure is reached.



Flue gas fan

A flue gas fan is mounted on the flue tube. The fan helps to maintain a stable underpressure in the boiler and prevents back heat but also improves the combustion. More on the fans adjustments are on pg. 33.



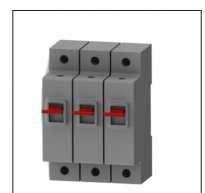
Door switch

The door switch stops the auger/feeder and no more pellets are fed into the burner when the door to the combustion chamber is open.



Automatic fuses

Automatic fuses are installed in the electrical system, which are triggered if there are any electrical faults in the boiler. If triggered, an authorized electrician should be contacted to determine the cause.



■ Components

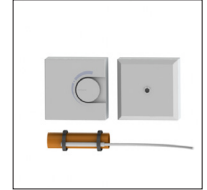
The shunt valve

The shunt valve is connected to the boiler or accumulator tank. The shunt valve controls the heat supply from the boiler to the heating circuits of the house. The shunt valve is standard on all Komplett III Standard and optional on the Komplett III Light models.



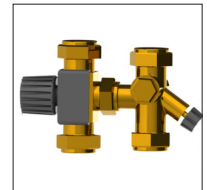
Heat regulation

The boiler is equipped with its own heat regulator. In the "Shunt control" menu you can choose how to control the heat in the house. More on how to regulate the heat is found on pg. 36.



The thermostatic mixer valve

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 +/- . If you have a Komplett Light the mixer valve is mounted on the accumulator tank. The thermostatic mixer valve is standard on all Komplett III Standard and optional on the Komplett III Light models.



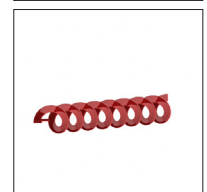
Feeder

The feeder is either internal or external on the boiler. The feeder controls the amount of pellets fed to the burner.



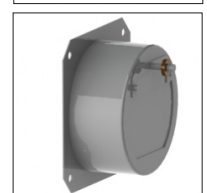
The burner

The burner is mounted on either the right or left side. The fuel from the feeder is ignited and combusted, which heats up the water in the boiler.



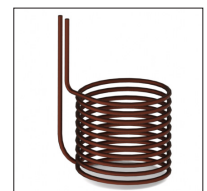
Turbulators

Within the tubes in the heat exchanger hang the turbulators. The turbulators function is to transfer heat from the flue gas to boiler water. They must always be placed in the boiler. If the flue gas temperature in the chimney is too low, the turbulators can be shortened to increase the temperature.



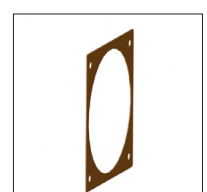
Draft stabiliser

The draft stabiliser gives the boiler stable draft conditions, this improves combustion and efficiency.



Hot water coil

Within the boiler is a hot water coil that heats up the water for the house. The water you can drain from the boiler depends on the boiler temperature, the mount of flow you through and which effect the boiler is set to. We recommend a flow of 12-42l/min in the taps. In the Light model there is no coil, here you heat your water in a external water heater.



The sealings

The seals on the hatches must be checked every year. If the hatches do not seal

■ The fuel

Wood pellets are made of sawdust, a byproduct from handling wood. Wood contains lignin that makes the pellet hard without any glue or other binder being used.

There are several different kinds of pellet on the market. The quality and energy can vary between them. The diameter is 6-8mm or .230-.285 inches, the normal length is between 10 and 30mm or .5 to 1.5 inches.

High quality pellets have a density of 40-48 lbs/ft³. The moisture content is 5-9% in weight. Wood pellets have a energy content of 4,7-5,0kWhr/kg. To maintain good combustion the pellets should be stored in a dry place and be protected from dirt. Pellets are delivered in sacks with 10-15kg content or in bulk by truck.

The Effecta Komplet III can handle most of the different types of wood pellets that are between 6-8mm. The quality should meet DIN+ standards or similar. Good pellets with a small amount of dust and that are uniform helps achieve good combustion, less maintenance of the product and also less environmentally harmful emissions.

The worse the quality of fuel is, the more cleaning and maintenance of the product will be required.



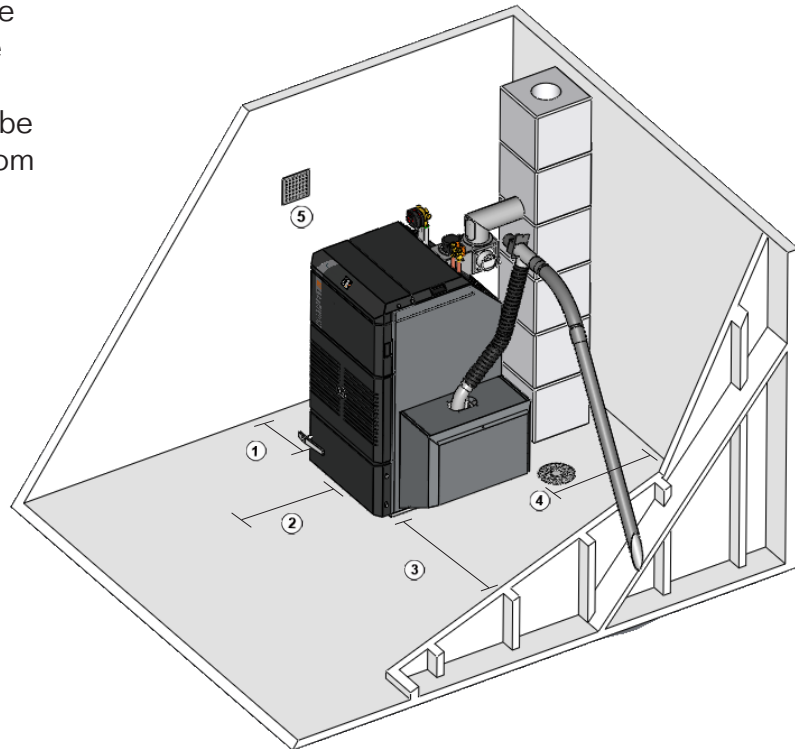
The amount of pellets fed into the burner should be controlled every time the pellet brand or quality is changed. If the deviation is more than 0,5kg/hour or 1.1 lbs/hour compared to the numbers in the "Warranty and Installation" paper, the burner should be tuned.

Boiler room

It is time to install the Effecta Komplet III 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 works, 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 or 175°F. The boiler should be positioned at least 4 inches (1) from the wall. If the distance between the flue tube and flammable wall less than 12 inches an ignition protective covering must be used (4). In order to clean the boiler, a minimum clear space of 3 ft (2) is required in front of the boiler. A passage with a minimum width of 2ft (3) is required along one of the long sides of the boiler. Check the regulations of your country in order to place the pellet hopper an approved distance from the boiler.



is

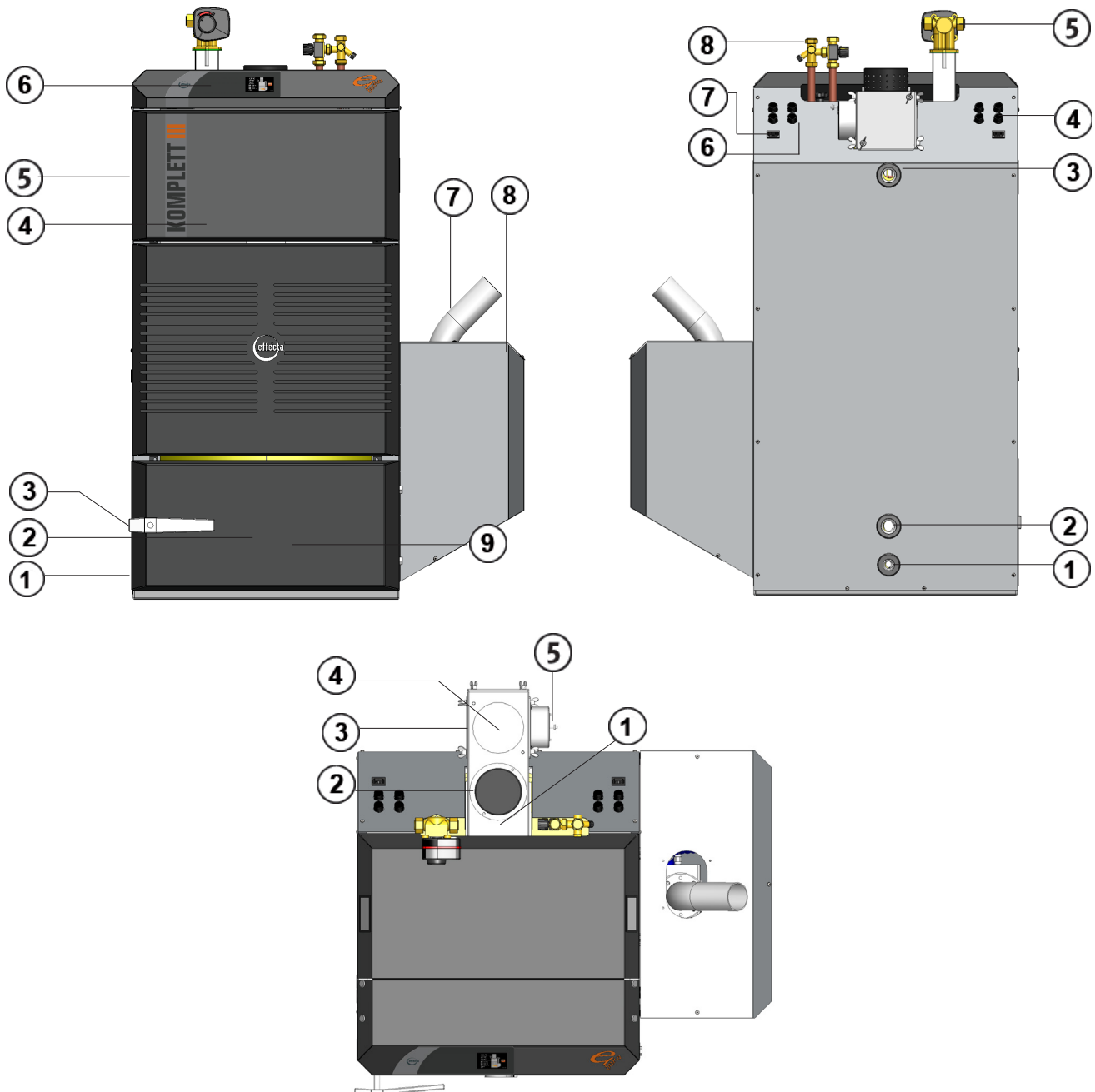
Boiler room

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 in the boiler room is 6 ft. The boiler room or boiler house must be equipped with a fresh air intake with the minimum dimensions 6 x 6 inches (5.) 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 enough area to manage the effect from the boiler. At standstill the draft should be between 5-10pa. or 0,02 to 0,04 inches water column. It is important that the chimney is tested and approved by a approved installer before a new boiler is installed. If the chimney is tall and has a lot of mass to heat up there is a risk of condensation. Measure the temperature 1m down from the top when the burner is running, the temperature should not be lower than 160°F. Read more about the chimney on pg 42.

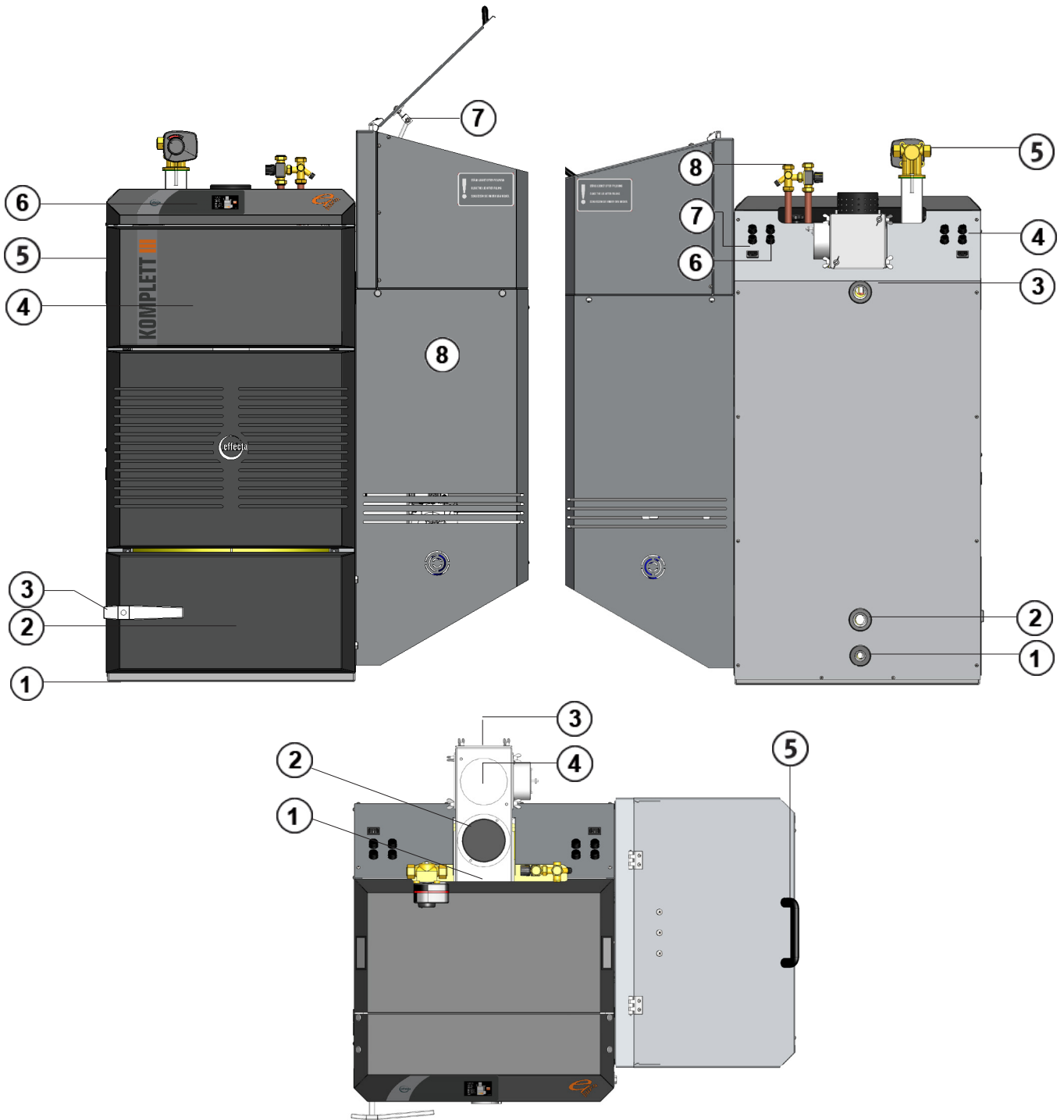
Placement of components K3 external feeder



	Front		Back		Top
1	Adjustable feet	1	Drain cock	1	Flue gas measuring point
2	Ash door	2	Return hot water circuit	2	Boiler fan
3	Door switch	3	Flow hot water circuit	3	Cleaning access
4	Front cover	4	Hoses electrical wiring	4	Flue connection
5	Handle Front cover	5	Shunt valve*	5	Draft stabiliser
6	Display	6	Conduit for sensor		
7	Fall shaft pellet burner	7	Connector feed motor/auger		
8	Protective cover	8	Mixing valve * for hot water		

* Not on Light

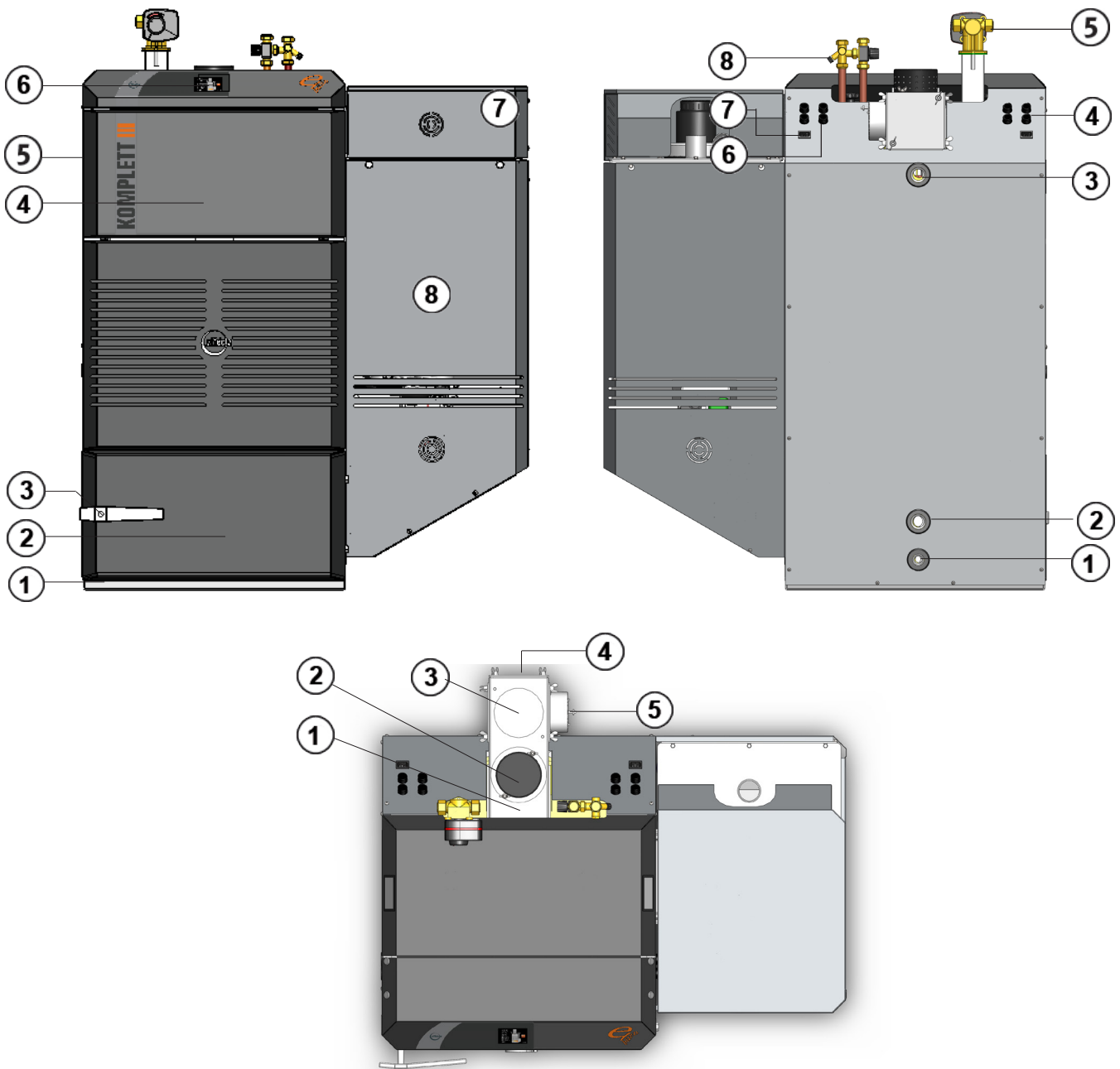
■ Placement of components K3 internal storage



	Front		Back		Top
1	Adjustable feet	1	Drain cock	1	Flue gas measuring point
2	Ash door	2	Return hot water circuit	2	Boiler fan
3	Handle ash door	3	Flow hot water circuit	3	Cleaning access
4	Front cover	4	Hoses electrical wiring	4	Flue connection
5	Handle Front cover	5	Shunt valve*	5	Handle storage lid
6	Display	6	Conduit for sensor		
7	Gas damper	7	Connector feed motor/auger		
8	Internal storage	8	Mixing valve * for hot water		

* Not on Light

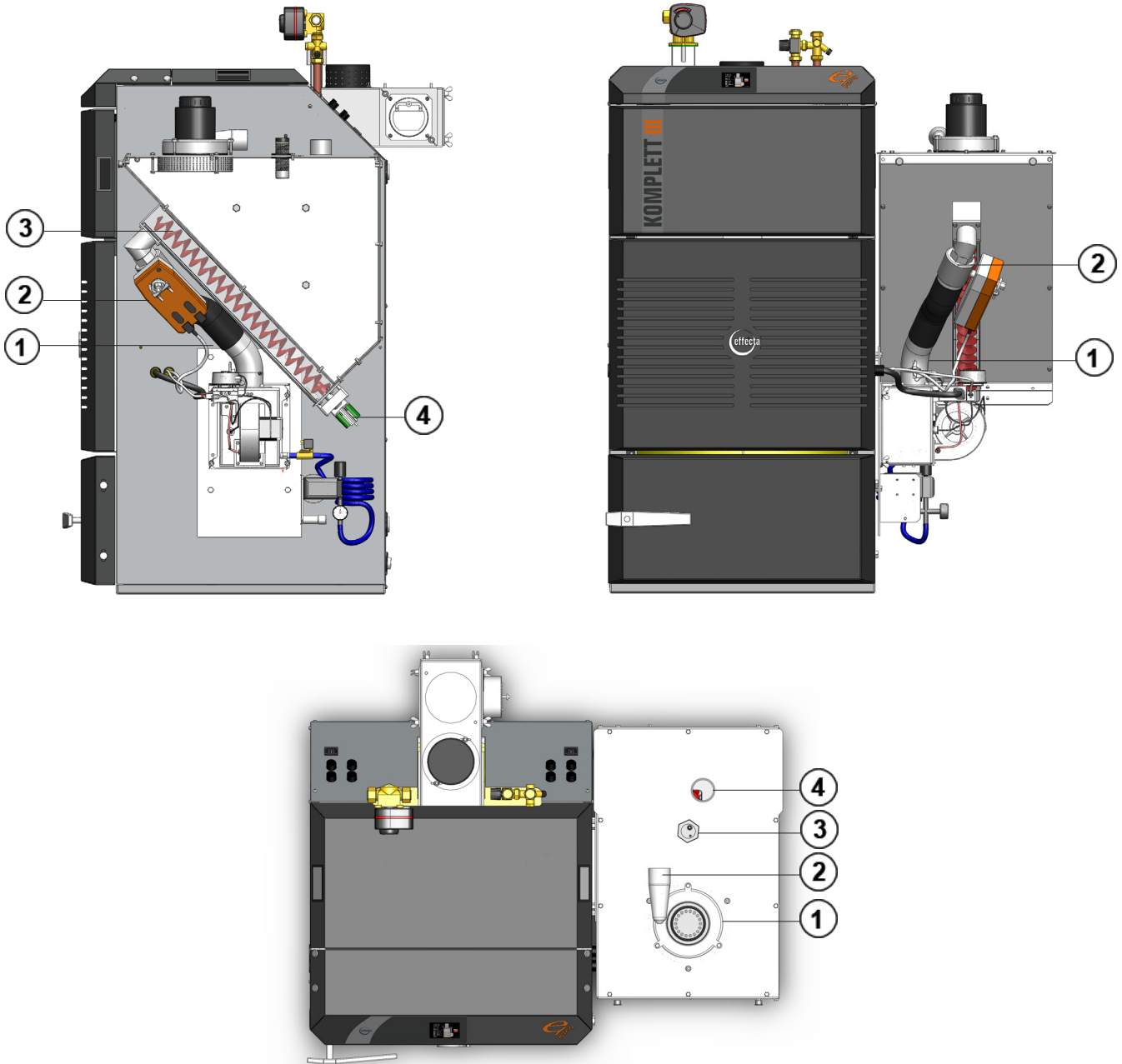
■ Placement of components K3 vacuum system



	Front		Back		Top
1	Adjustable feet	1	Drain cock	1	Flue gas measuring point
2	Ash door	2	Return hot water circuit	2	Boiler fan
3	Handle ash door	3	Flow hot water circuit	3	Cleaning access
4	Front cover	4	Hoses electrical wiring	4	Flue connection
5	Handle Front cover	5	Shunt valve*	5	Draft stabiliser
6	Display	6	Conduit for sensor		
7	Insulated cover plate	7	Connector feed motor/auger		
8	Lower cover plate	8	Mixing valve * for hot water		

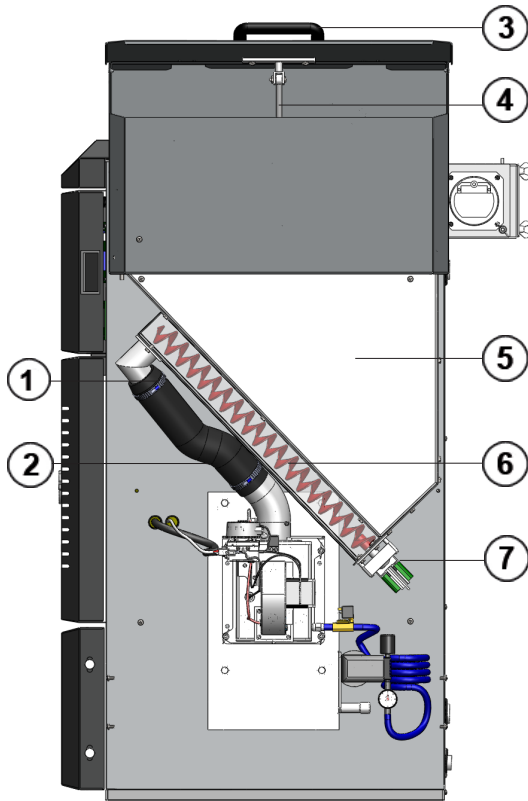
* Not on Light

■ Placement of components K3 vacuum system



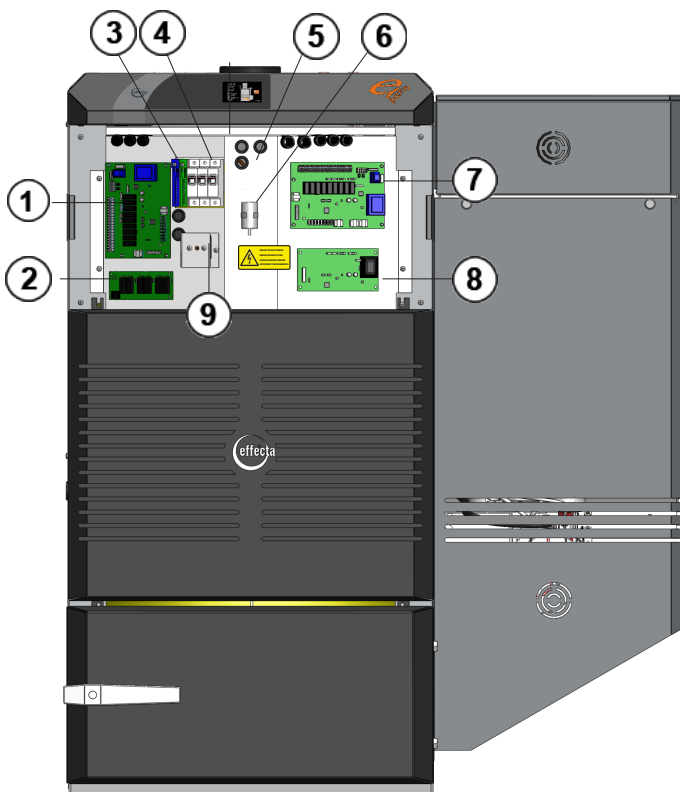
	Side		Front		Top
1	Meltable plastic tube	1	Fallshaft	1	Vacuum fan
2	Safety ball valve	2	Safety lock	2	Connection hose suction nozzle
3	Internal feeder			3	Capacitive sensor
4	Internal feed motor			4	Connection for filling pellets

■ Placement of components K3 internal storage



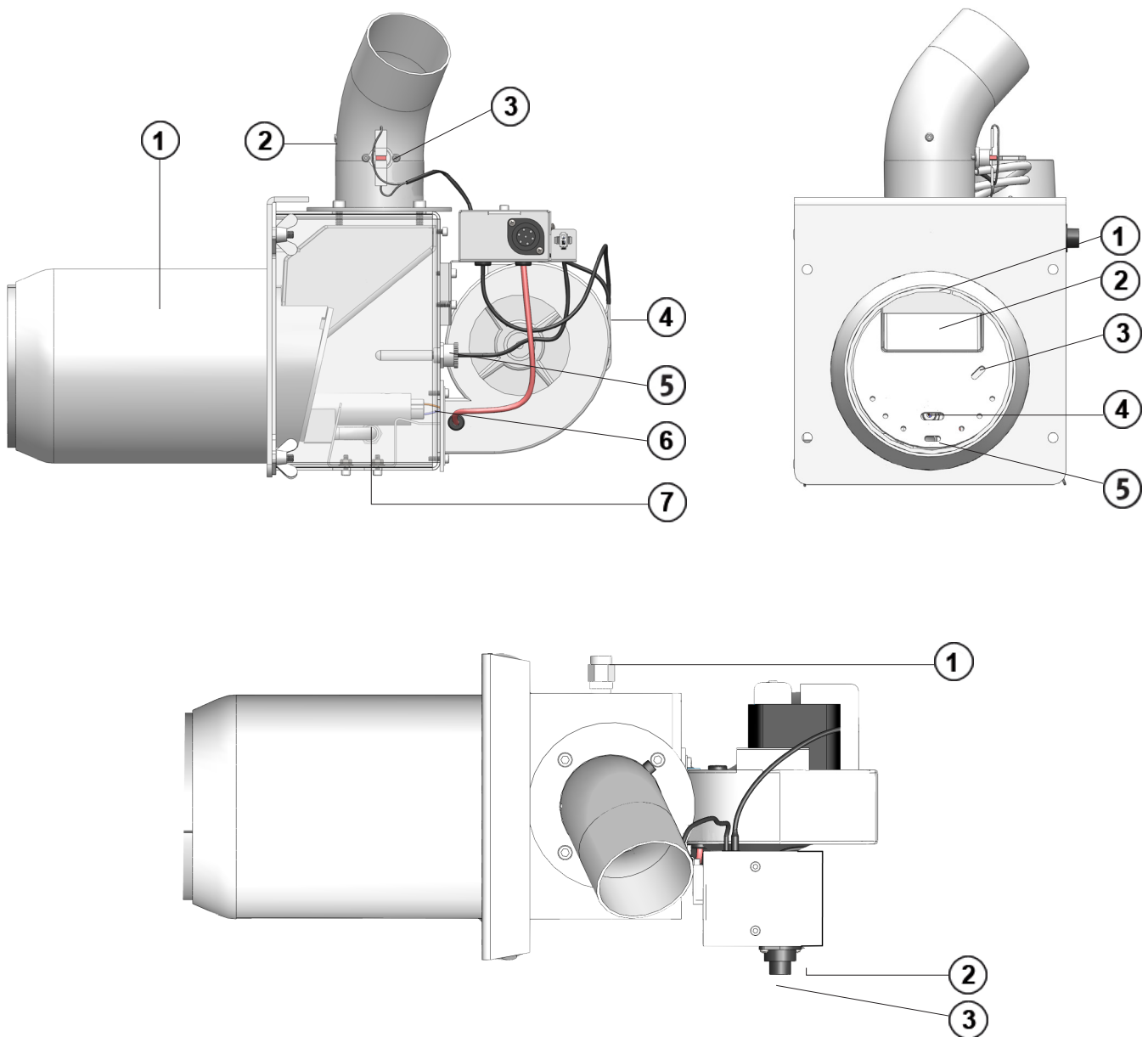
1	Hose clamp 2pcs
2	Meltable plastic tube
3	Handle storage lid
4	Gas damper
5	Internal storage
6	Internal feeder
7	Internal feed motor

■ Placement of components K3 electrical system



1	Motherboard
2	Card electrical heater
3	Terminal block N and PE
4	Power supply boiler 20A fuse
5	USB connection for updating software
6	Capacitor underpressure fan
7	Expansion board
8	Lambda board
9	Mechanical overhear protection

■ Placement of components K3 burner



	Side		Front		Top
1	Outer tube	1	Combustion tube	1	Connection compressed air
2	Fallshaft	2	Fallout pellets	2	Connection flame sensor
3	Overheat protection fall shaft	3	Flame sensor hole	3	Power to the burner
4	Combustion fan	4	Hole for ignition element		
5	Flame sensor	5	Hole for compressed air		
6	Ignition console				
7	Blowpipe to the compressor				

■ Cleaning system burner



Remember to always cut the power to the boiler before starting any work on it.



Function

On the side of the burner there is a compressor with a compressed air hose mounted which cleans the burner. Compressed air is blown into the burner. When the cleaning starts the compressor builds up a pressure in the hose which then is released with a pressure shock and the ashes are removed from the burner. You can set how often, how long and during which times cleaning is allowed in the "SERVICE" menu.

Compressor

The compressor builds up a pressure in the air hose. The compressor has a life span of about 2500h, and can then drop in pressure head or leak air. Then there is a renovation set to renovate the compressor.

Compressed air hose

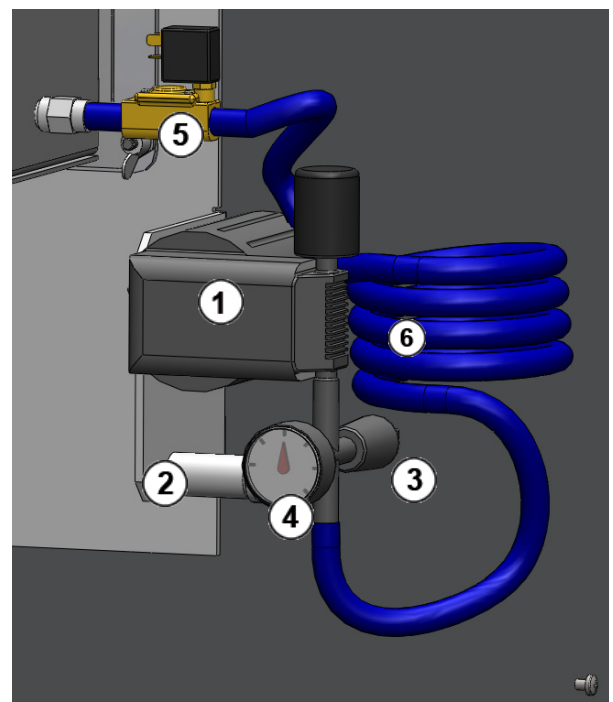
The hose is only used to store air before it is released into the burner.

Pressure gauge

Shows the pressure in the hose. It is also an indicator when or if you need to adjust the pressure for optimisation.

Pressure switch

Stops the compressor when targeted pressure is reached, there is a adjustment screw which is preset on 7 bar.



1	Compressor
2	Capacitor
3	Pressure switch
4	Pressure gauge
5	Solenoid valve
6	Compressed air hose

■ Cleaning system boiler



Remember to always cut the power to the boiler before starting any work on it.



Function

On the boiler there is an magnet motor which does the maintenance and ash cleaning of the convection section. The magnet is controlled from the "Cleaning" menu, there you can set the times it allowed to clean. The magnet is relatively quiet, and if it doesn't disturb it should be allowed to clean around the clock.

Magnet

The magnet is mounted on the right side of the boiler. The magnet lifts the turbulators in the tubes.

Lifting shaft

Rotating the lift shaft lifts the turbulators and clean the tubes.

Turbulators

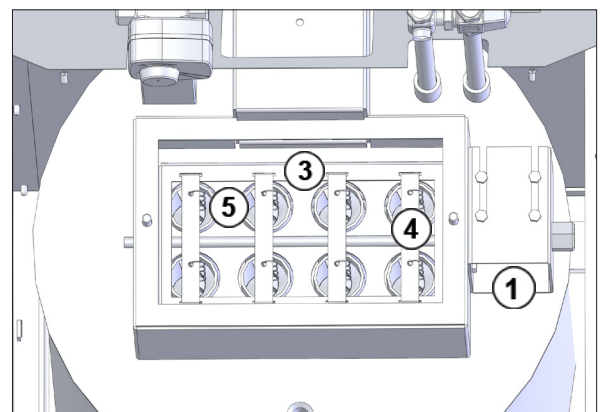
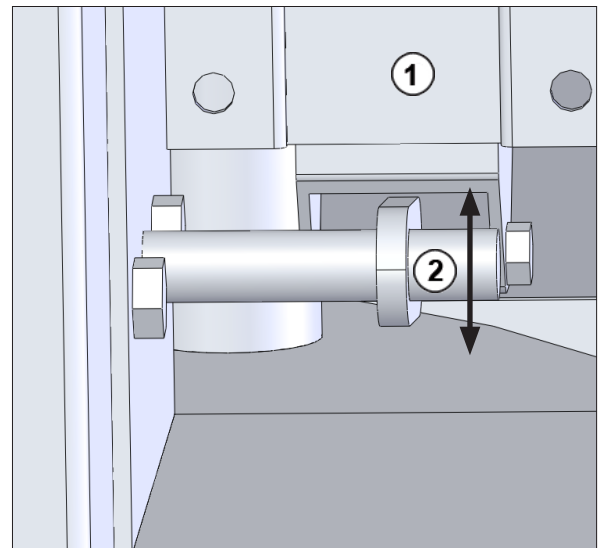
The turbulators in the tube help by reducing the flue gas temperature and also cleaning the tubes when pulled up and down.

Suspension

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

Flipper

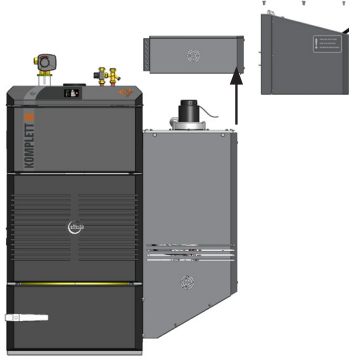
Flips when the magnet motor activates.



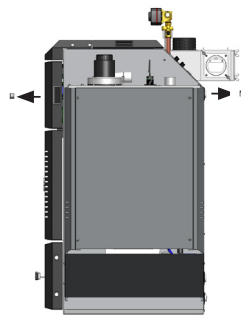
1	Magnet
2	Lifting shaft
3	Flipper
4	Suspension
5	Turbulator

Disassembly for move

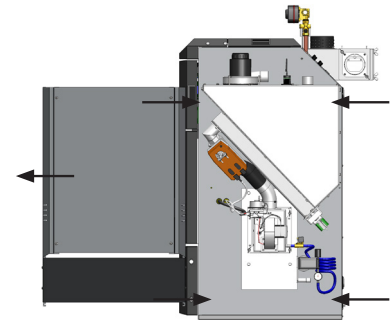
The boiler is fully mounted when delivered. If the boilers width exceed the door you can disassemble it to a smaller size



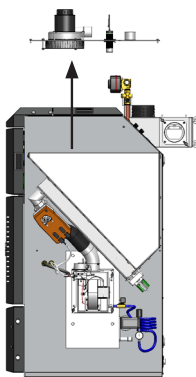
Remove the cover of the suction system. If the boiler has an internal storage remove the screws which holds the top part.



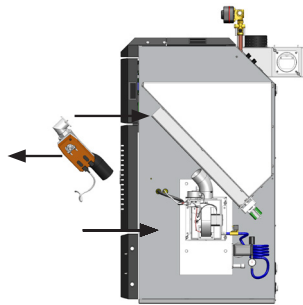
Then remove the 4 plastic covers which conceals the screws for the cover plates. They hold the coverplates to the internal storage.



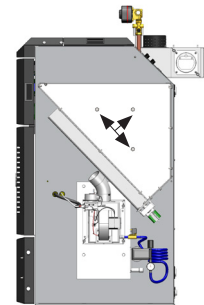
Loosen the 4 screws and remove the cover plates.



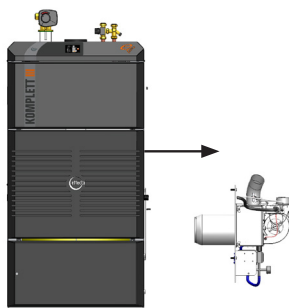
Loosen the bolts to the lid. Remember to disconnect all the cables to the suction system before you remove the lid



If the boiler has a suction system disconnect the safety ball valve. Loosen the hose clamp on the fall shaft. Loosen the 2 nuts which holds the safety ball valve to the storage and remove it all. If there is an internal storage just remove the hose.



Unscrew the 3 bolts holding the storage and remove it.



Disconnect all the cables to the burner. Then unscrew the 4 bolts which holds the burner plate to the boiler. Remove the burner straight out.

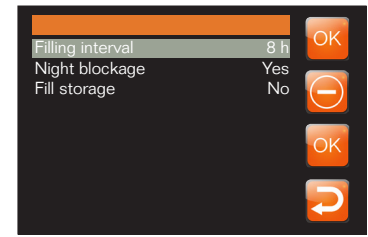
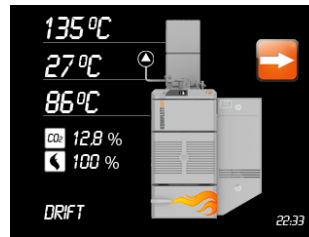
! Make sure when you reassemble the storage that all hose clamps and other sealings are tight. Leakage will cause disruptions due to there being no underpressure.

■ Function suction system

If the boiler is equipped with a suction system the menu on the right is shown. In the "INSTALLATION" menu you need to change settings in order to customize the system for your energy needs.

Function

The suction system includes a number of important components. On the boilers integrated fuel store there is a suction motor which builds up a underpressure in the hose connected to the filling outlet of the storage. The proximity sensor senses the need for filling pellets, when set time between fillings is reached, the safety ball valve closes and the suction system is allowed to start, with a delay of 60sec. The suction motor tries to fill the storage by running for 15min - resting for 15min - running for 15min and so on. If the storage hasn't been filled after 80mins the boiler alarms "Suction time". A filling normally takes 15-20min suction time.



Consumption		
BTU/h	BTU/day	Time filling, h
17.000	400.000	15
35.000	800.000	12
51.000	1.230.000	8
68.000	1.650.000	6
85.000	2.050.000	4

Time between fillings

How often your system chooses to fill is down to your settings in the menu. We recommend you set it as far a part you can, but with a margin so that the storage never is empty. A full storage contains roughly 600.000 BTU of energy. If your house consumes 27.000 BTU, the storage lasts about 24hours. However dust content in the storage varies and will limit the volume for pellets.

Night blocking

If the boiler is placed so you can hear it, you can block refilling of pellets certain times of the day. In the "SERVICE" menu you can set when refilling is allowed(On) and when its not allowed(Off). Then refilling isn't allowed between these hours, unless there is a risk of downtime of the burner, in which case the filling cycle runs even though you have turned it off.

Fill storage

If you activate "Fill Storage", the storage will be filled regardless of settings. This function is used when you first start the system or if the storage is empty. Note that if the storage has been emptied, the feeder must be filled again. In the "Installation" menu you find the function "Fill feeder". The boiler must be in mode "Off" for this function.

Proximity sensor

The proximity sensor is mounted from the factory. When the light is on there are pellets near the top of the storage. If the sensor needs to be adjusted it should be done when the storage full. Find the setting for On/Off on the screw. Adjust it so that light is lit.



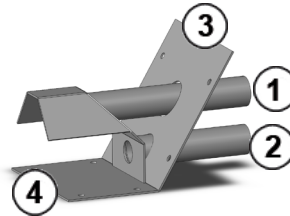
■ Suction system and storage

Storage

If you build your own storage make sure that the walls can take the pressure of the pellets. It is also important that the storage is completely tight so that it does not allow dust to escape. An inspection hatch must also be installed so that you can serve and clean the storage when needed.

Suction nozzle

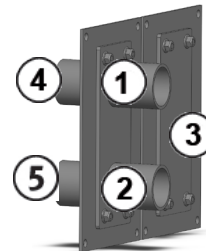
In your system you need to install one or more suction nozzles. The nozzle collect pellets from storage via the suction hose that is connected to the internal storage. The number of nozzles needed depends on the size and shape of the storage. On pg 22 you can see how to place them.



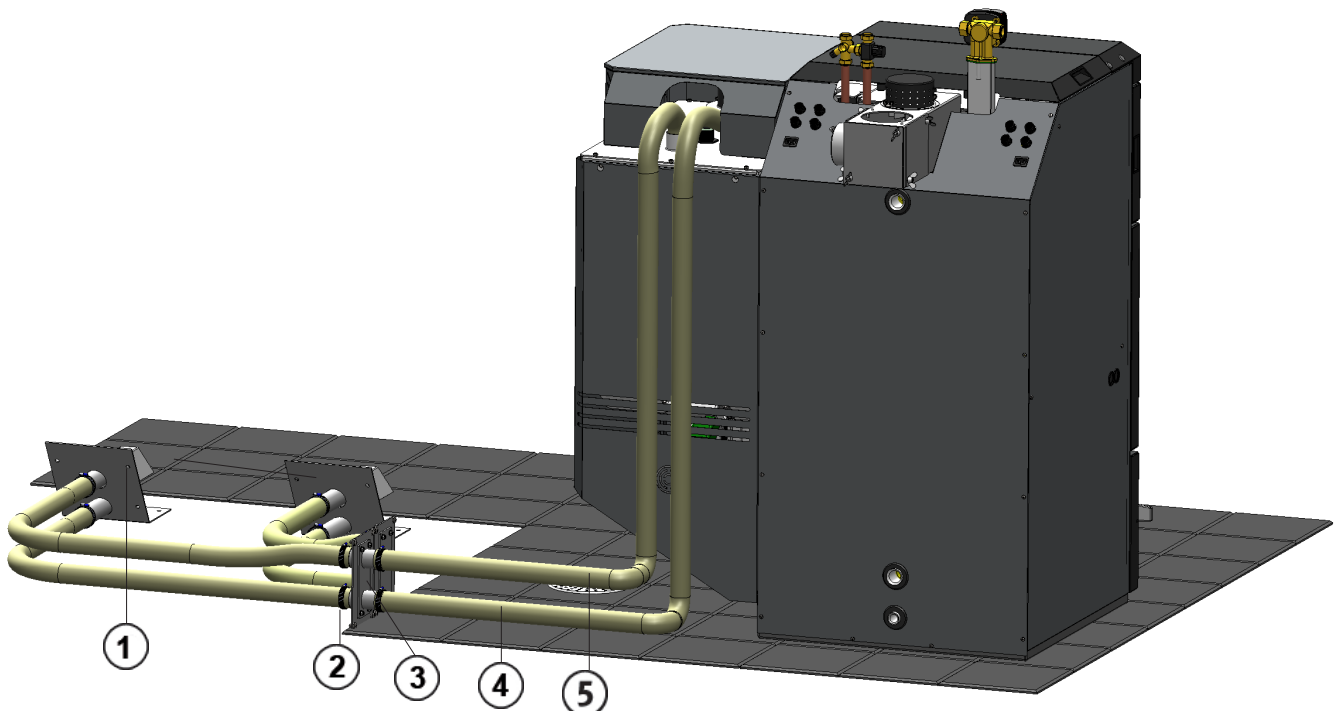
1	Suction to boiler
2	Return from boiler
3	Mounting plate inclined wall
4	Mounting plate floor
5	Return nozzle

Switch

For every nozzle you need a switch. The switch is placed on the storage. If several nozzles are installed you complement the switch with a connector and a cover plate. When the pellets have ran out at a nozzle you just switch connector.



1	Suction to boiler
2	Return from boiler
3	Cover plate
4	Suction nozzle
5	Return nozzle

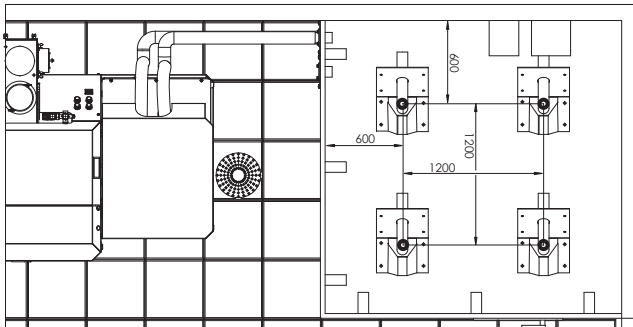


1	Suction nozzle	3	Connector
2	Hose clamp	4	Hose for return
5	Hose		

■ Installation of suction nozzles

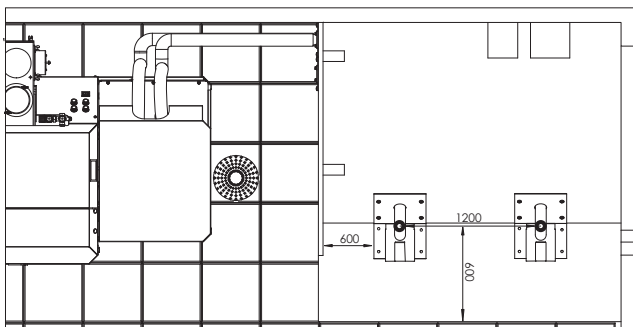
! *Regardless of the number of nozzles installed there will always be a certain amount of pellets left in the bottom of the storage.*

The nozzles are designed so that they can be mounted on the bottom of a flat storage or in a storage with a sloped wall. It is important that the slope of the wall is 45° so that the mounting plate comes in at the right angle. Make sure to seal behind the mounting plate so no dust can leak out. When the nozzle is placed on the bottom of the storage it is important that it is bolted firmly due to the pressure it has to take when the storage is filled with pellets.



Flat bottom

When placing the nozzles on the bottom you need to decide how many to place. We recommend a distance of 23 inches from wall and 45 inches between the nozzles. It is possible to place them further apart but it effects the ability to empty the storage completely.

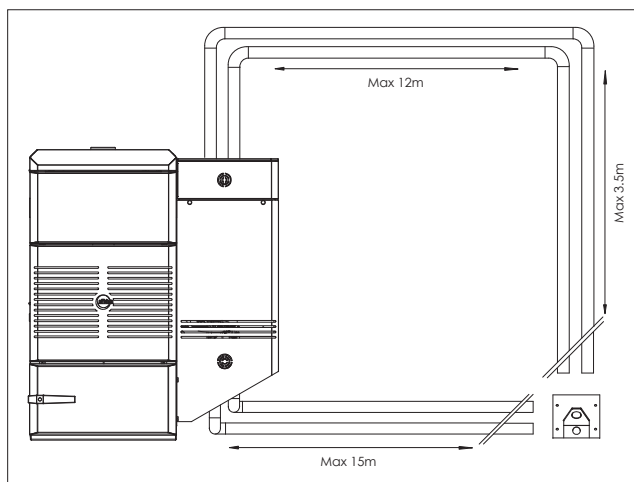


Sloped wall

In a storage with sloped walls we recommend a distance between the nozzles of 45 inches and 23 inches from a vertical wall. The wall the nozzle is to be mounted on must have a slope of 45°.

■ Mounting of hoses

! *When mounting the hoses make sure that all connections are tight. The hoses must also be grounded to avoid static electricity.*



The suction motor on the boiler's storage has limitations in which underpressure it can produce. Therefore, it is important that the hoses between the switch and the boiler are not too long. We can guarantee the function according to the distances on the sketch, if you want a longer distance there is a risk for reduced feeding and disruptions to the boiler. It is paramount that the connections against nozzles and switches are tight. If there are leaks, the suction capacity deteriorates significantly.

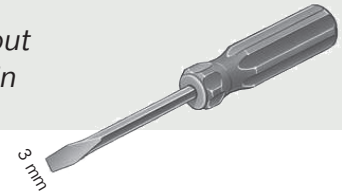
■ Electrical connection



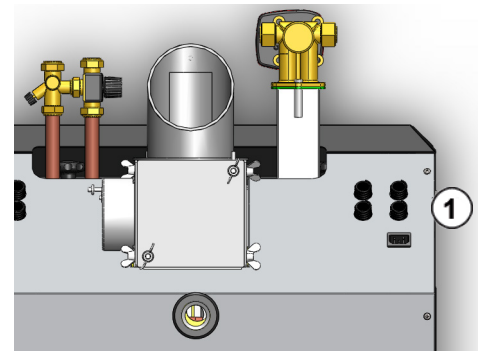
NOTE! The boiler must be filled with water before the wiring begins.



For wiring to the motherboard you need to use a standard screwdriver with a tip width of 0.11 inches and a length of about 4.5 inches. You can open the spring load of the motherboard in both the tracks that are on every cable entry.



When it's time to do the electrical connection you need to remove the front casing which is in front of the motherboard. On the backside of the boiler there are eight (1) conduits that end in the front of the boiler. These are used to connect the sensors and electrical cables. Don't put the low and high voltage in the same hose, it can effect the showing of temperature. To remove the front casing, grab the two handles and pull it straight out, hard. Then connect the input voltage to the card's ports.

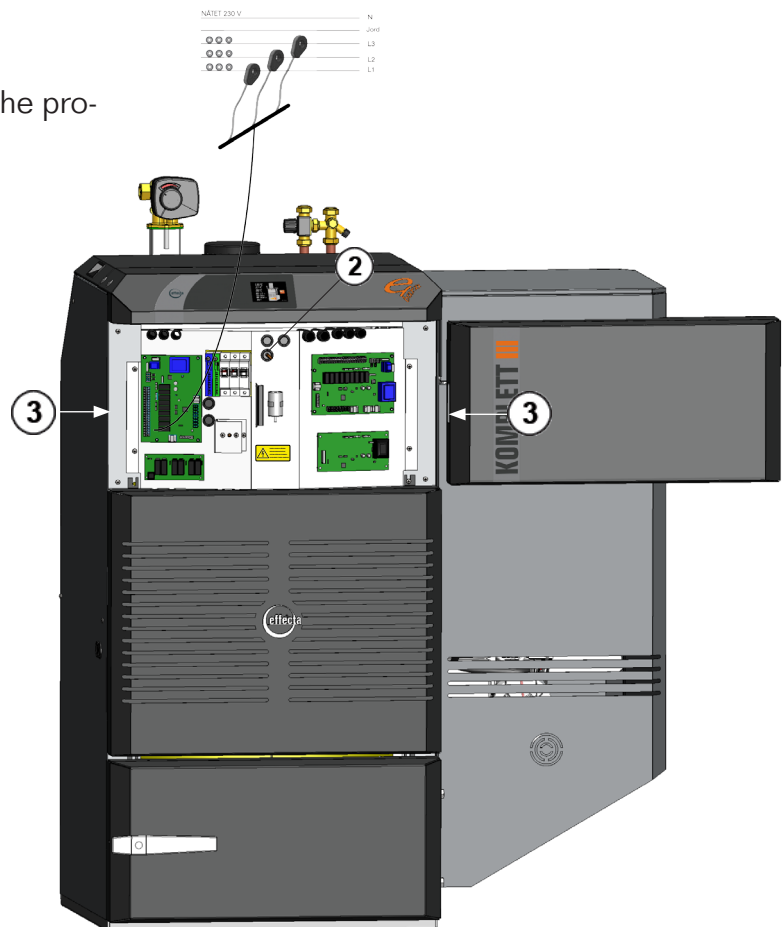


Power guard

If the electricity consumption is high in the property while the electrical heater is operating there is a risk that the property's main fuses will blow. The Effecta Komplet III is equipped with a power guard which prevents electrical overload by redistributing the power supply between the 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 control. Connect the sensors to a cable with the area of 0,5mm² to the circuit board. In the "electrical heater" menu you set the max power that's allowed on the fuses in your house.



NOTE! Built in electrical back up on the Komplet III Standard is currently not available for the US and Canadian models.

■ Outlets of the motherboard



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



Mother board

G1	Temp sensor boiler NTC 22 kΩ	PE	Earth
G2	Sensor flue gas PT1000	N	Zero
G3	Extern control	L1	Incoming phase 6,3 A/110 VAC
G4	Tacho meter	PE	Earth
G5	Sensor accumulator tank low NTC 22 kΩ	N	Zero
G6	Sensor accumulator tank high NTC 22 kΩ	11	Radiator pump 2A/110 VAC
G7	Flow sensor NTC 22 kΩ	12	Shunt motor 2A / 110 VAC
G8	Flame sensor	N	Zero
1U.	Connection to display board	13	Shunt motor 2A/110 VAC
2U.	Connection to electricity board	PE	Earth
		N	Zero
1.	Outdoor sensor	14	Solenoid valve AERO 2A/110 VAC
2.	Outdoor sensor	PE	Earth
3.	Room sensor shunt group (1)	N	Zero
4.	Room sensor shunt group (2)	15	Compressor 2A/ 110 VAC
5.	Room sensor shunt group (3)	PE	Earth
		N	Zero
52		16	Magnet motor 2A/110 VAC
53	Tachometer	N	Zero
54	Tachometer	17	Loading pump 2A/110 VAC
55	Amperemeter	N	Zero
56	Amperemeter	18	Alarm 110 VAC
57	Amperemeter	19	Alarm - closed on larm
58	Joint	20	Alarm - closed on larm

Lambda board

1	Lambda	White	
2.	Lambda	Brown	
3.	Lambda	Black	
4.	Lambda	Red	
5.	Lambda	Grey	
6.	Lambda	Blue	
N	Power	Zero	110 VAC
L	Poiwer	Phase	110 VAC

Outlets of the expansion card



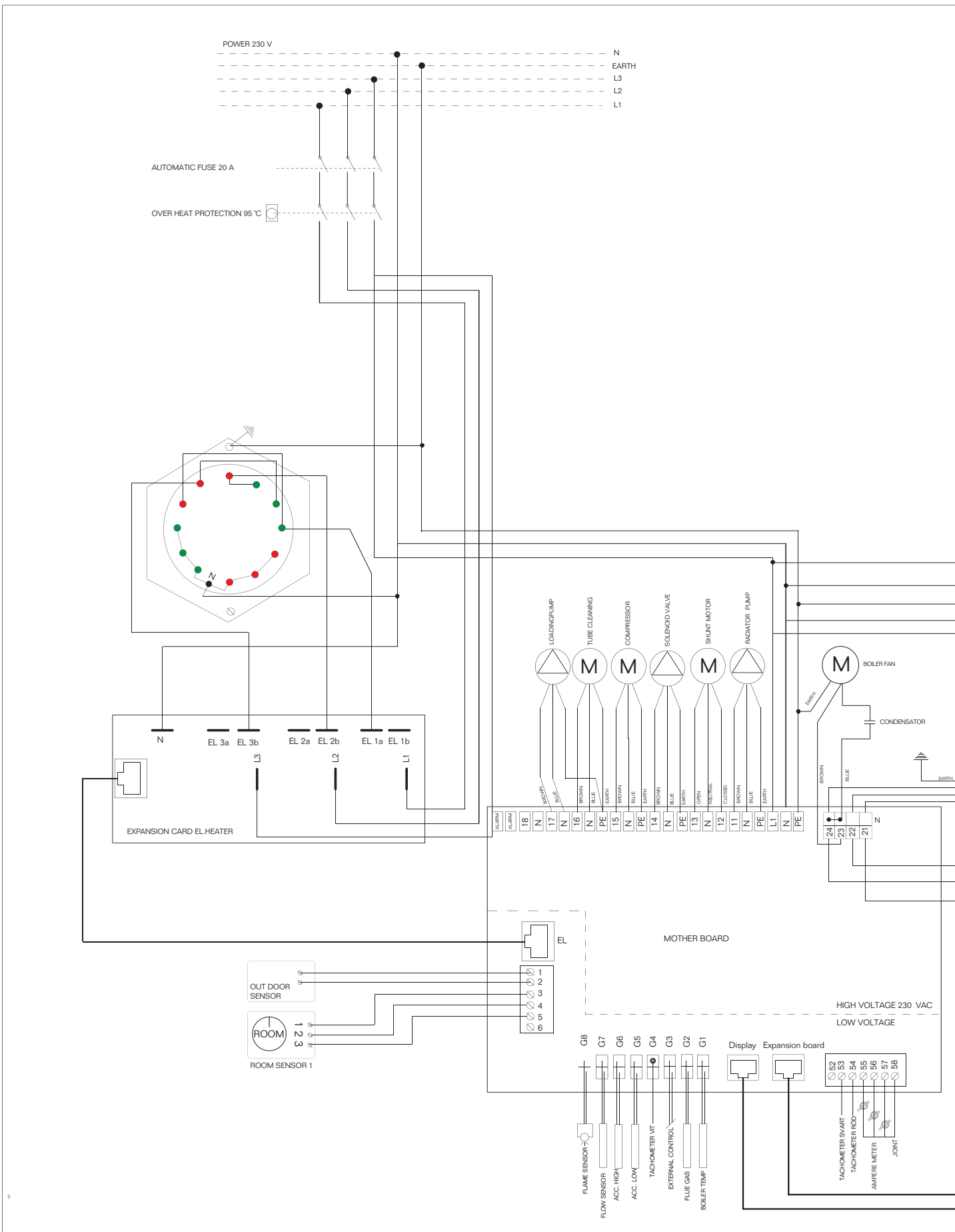
Remember to always cut the power to the boiler before starting any work on it. All electrical work should be done by a certified electrician, for your safety.

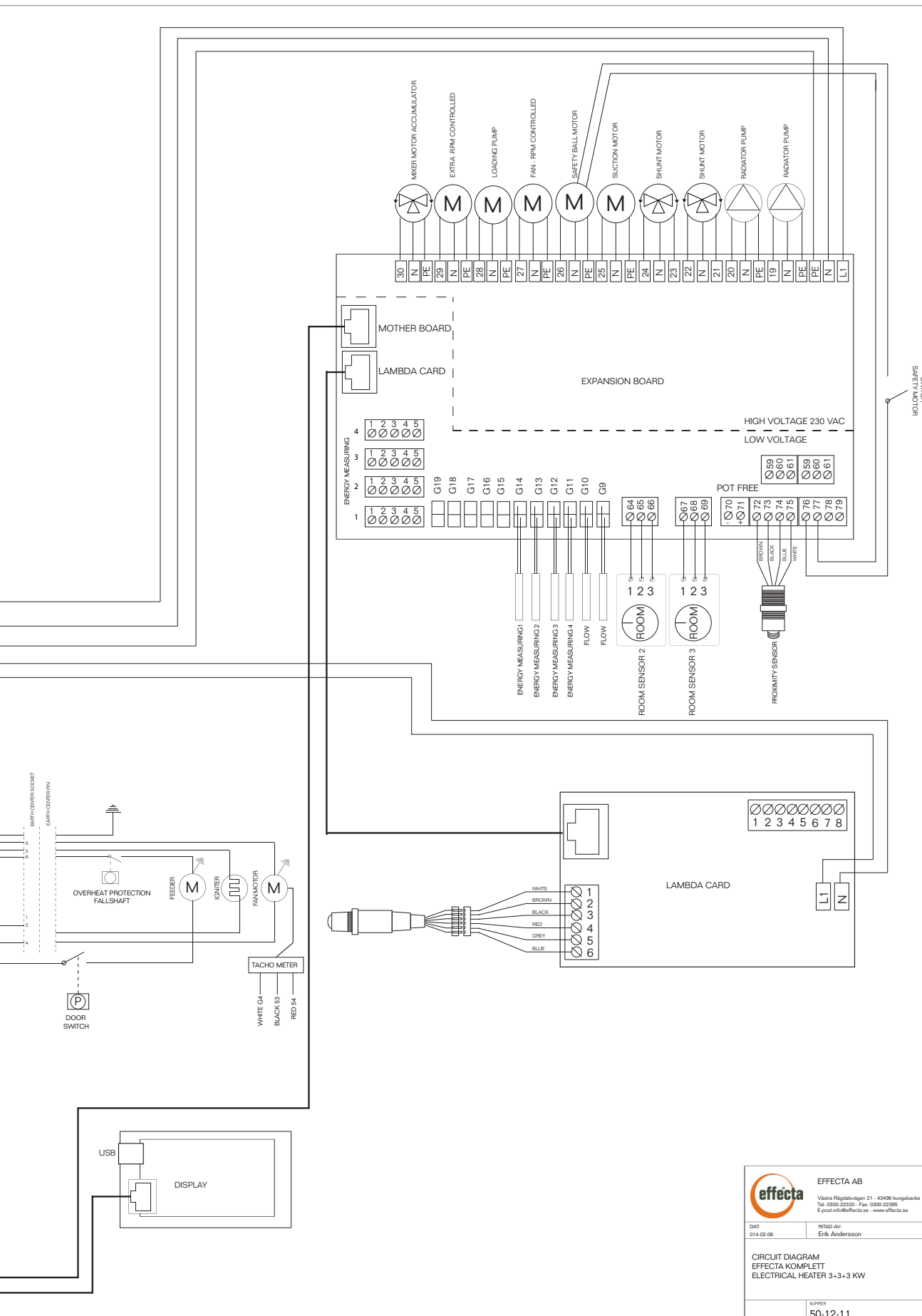


Expansion card

G9	Flow sensor shunt group 2 NTC 22 kΩ	L1	Incoming 110 VAC
G10	Flow sensor shunt group 3 NTC 22 kΩ	N	Zero
G11	Flow sensor energy measuring 1 NTC 22 kΩ	PE	Earth
G12	Flow sensor energy measuring 2 NTC 22 kΩ	PE	Earth
G13	Flow sensor energy measuring 3 NTC 22 kΩ	N	Zero
G14	Flow sensor energy measuring 4 NTC 22 kΩ	19	Radiatorpump shunt group 2 / 2A/110 VAC
G15	Flow sensor loading circuit NTC 22 kΩ	PE	Earth
G16	---	N	Zero
G17	---	20	Radiatorpump shuntgroup 3 / 2A/110 VAC
G18	---	21	Shunt motor group 2 / 2A / 110 VAC
G19	---	N	Zero
1	Flowmeter 1-5	22	Shunt motor group 2 / 2A / 110 VAC
2.	Flowmeter 1-5	23	Shunt motor group 3 / 2A / 110 VAC
3.	Flowmeter 1-5	N	Zero
4.	Flowmeter 1-5	24	Shunt motor group 3 / 2A / 110 VAC
		PE	Earth
64.	Room sensor shunt group 2 (1)	N	Zero
65.	Room sensor shunt group 2 (2)	25	Suction motor
66.	Room sensor shunt group 2 (3)	PE	Earth
67.	Room sensor shunt group 3 (1)	N	Zero
68.	Room sensor shunt group 3 (2)	26	Safety ball valve 2A / 110 VAC
69.	Room sensor shunt group 3 (3)	PE	Earth
70.	Port free -	N	Zero
71.	Port free +	27	Pump loading circuit 2A / 110 VAC
72.	Proximity sensor internal (Brown)	PE	Earth
73.	Proximity sensor internal (Black)	N	Zero
74.	Proximity sensor internal (Blue)	28	Additional fan speed controlled 2A / 110 VAC
75.	Proximity sensor internal (White)	29	Extra valve 2A / 110 VAC
76.	Proximity sensor external (Brown)	N	Zero
77.	Proximity sensor external (Black)	30	Extra valve 2A / 110 VAC
78.	Proximity sensor external (Blue)	--	--
79.	Proximity sensor external (White)	--	--

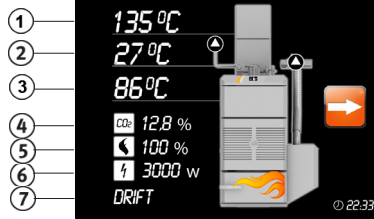
Electrical schematic





EFFECTA AB Västra Rågdalsvägen 21 · 434 99 Kungälv Tel: 0300-22320 · Fax: 0300-22386 E-post: info@effecta.se · www.effecta.se	
DATE: 014-02-06	RITAD AV: Erik Andersson
CIRCUIT DIAGRAM EFFECTA KOMPLETT ELECTRICAL HEATER 3+3+3 KW	
NUMBER: 50-12-11	

Menu system



1. Flue temp.
2. Flow temp.
3. Boiler temp.
4. CO2
5. Flame sens.
6. El.heater
7. Igniter



Menu system

1. Flue gas temp.	Current temperature of the flue gases G2
2. Flow temp.	Current temperature of the flow G7
3. Boiler temp.	Current boiler temperature G1
4. CO2	Current CO2 value
5. Flame sensor	Current strength of flame in boiler.
6. El. heater	Current effect of the el. heater in the boiler.
7. Igniter	Current burner mode.
Operation	Settings for burner.
Heating system	Settings for heating systems.
Other	Settings for other functions
Burner >	Burner mode (on/off)
Fan >	Settings for the fan of the burner.
Feeder >	Settings of the augers feeding control. (password needed)
Temperature set >	Settings for the burners operation temp.
Information >	Operations log of the burner.
Service >	Menu for burner service settings.
Installation >	Settings for automatic cleaning etc.
▶ Fan	
Fan burner	Setting of the burner fan in operation mode.
Fan boiler	Setting of the boiler fan in lowspeed.
Fan lowspeed On	Activating low speed (On/Off)
Fan burner lowspeed	Settings of burner fan in lowspeed.
Fan boiler lowspeed	Settings of boiler fan in lowspeed.
Fan larm Tacho	Activates Tacho mode
Fan larm 5s	Time before alarm triggers
▶ Feeder	
Start dose	Start dose size, measured according to (pg.33.)
Support dose	Size of support dose, dose is given between ignition and running mode.
Pellets diameter mm	Size of the pellet
Run start dose	Test run of start dose for measuring. Only available in burner mode off.
Run supp. dose	Test run of supp. dose for measuring. Only available in burner mode off.
Run oper. dose	Test run of operation dose for measuring. Only available in burner mode off.
▶ Temperature set	
Boiler temp G1	Shows the boiler temp, start/stop sensor with overheating function.
Stop	Temperature when the burner goes to standby mode.
Start	Temperature when the burner starts up from standby mode.
Acc.tank high G6	When loading acc. tank, sensor G6 is installed at the tank top of the primary tank. The sensor starts the burner at set temp. (Only shown if mounted)
Acc.tank low G5	
Stop G5	Temperature when burner stops.
Max G6	Maximum allowed temperature G6, tank overheated.
Start G1	Temperature when burner starts.
Loading pump Start	Temperature when loading pump starts
Loading pump Stop	Time loading pump runs
▶ Information	
Number starts	Displays the number of burner starts been done
Igniter hours	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.

Menu system

► 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		Setting of how many cleaning cycles.
Number clean		Setting of the amount of blows in each cycle.
Clean pause		Time between each blow in a cleaning cycle.
Cleaning conv.		Settings for cleaning the convection
Flue gas		Temperature for the cleaning to start.
Max time burner		Max operation time of the burner before pause with AERO cleaning
External control	Off	Choice of external START/STOP control to the boiler

► Installation

Advanced	>	Advanced settings (requires password)
Fill feeder		Activates feeder for 15min. Only in mode Burner Off.
Effect high speed		Setting for the burners effect in high speed.
Effect low speed		Setting for the burners effect in low speed.
Testblow		Seconds the fan blows before ignition phase.
Phase out		Seconds the ignitor is active after the flame sensor has approved start value.
Fan pre oper.		The fan speed before operation phase.
Fan low pre oper.		The fan low speed before operation phase.
Clean phase out		Time that the fan afterblows before standby or cleaning.
Flame sens	>	To flame sensor menu
Quickstart	>	To quick start menu
Lambda	>	To Lambda menu
Time between filling		Time between fillings
Night block		Time when filling is not allowed.
Fill storage		Manually filling of the storage

► 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 before the fan goes to max speed.

► Snabbstart

Temp down	°C	Degrees temp shall fall before burner goes to quick start.
Temp down	min	The time in which the temp. shall fall (X) degrees before burner activates quickstart.

► Lambda

co2 level	%	Settings of required oxygen level in combustion.
Calibrate	%	Possible calibration of lambda +/-.

► Advance

FanPulse 1		Fan speed in Fan Pulse 1.
FanPulse 2		Fan speed in Fan Pulse 2.
FanPulse 3		Fan speed in Fan Pulse 3.
Fan start		Time before the fan starts.
Oper. start		Time before the burner goes into operation.
Burner starts		Number of registrated ignitions.
Igniter hours		Number of hours the igniter has operated
Oper. pellets		Number of hours the burner has operated.
Number clean		Number of starts the compressor has done
Ign. Sequence 1		Registration of which Ign. sequence ignition occurs.
Ign. Sequence 2		
Ign. Sequence 3		

Menu system

► Heating system

Shunt group 1	>	Selection of shunt group
Shunt group 2	>	Selection of shunt group
Shunt group 3	>	Selection of shunt group
El. heater	>	Settings for the electrical heater

► Shunt control

Sensor		Option of control.
Room temp		Settings of the room temperature
Flow. temp.		Temp. to radiator/underfloor heating.
Radiator pump		Activates 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 1min/2hours.
Outdoor temp		Outdoor temperature at the outdoor sensor
Heat curve		The heating curve for the heating control (pg.36-38).
Slope		Option of slope to the heat curve (pg.36-38.).
Adjustment		Option of adjustment to the heat curve (pg.36-38.).
Energy saver	>	Options for energy saver
DHW Priority	>	Options for DHW Priority

► Shunt group 1 & 2

Sensor		Option of control
Flow. temp.		Flow temperature
Radiator pump		Activates radiator pump.
-Current control-		Selection of system
Energy saver	>	Options for energy saver
DHW Priority	>	Options for DHW Priority

► Energy saver

Lowering temp.	- 5 °C	Weekly Schedule when the indoor temperature is lowered by a number of degrees.
Mon	▲ 06 ▼__▲__▼ 22	Example: At 06 returns to normal temperature and to be lowered again at 22.
Tue	▲ 06 ▼12 ▲ 16 ▼ 22	Example: At 06 returns to normal, lowered at 12 and at 16 returns to normal again and lowered at 22.

► DHW Priority

Temp G1 min		Temperature when shunt closes to priority hot water.
Max flow temp.		Maximum allowed temperature to the flow.

► El. heater

El step (A-B-C)		Choose between different effects on the electrical heater. 1 phase is maximum 3kW.
Fuse A		Enter the house's main fuse.
El. heater 6 kW		
El. heater 3 kW		
		Log of runtimes of the different electrical heating steps.

► Other

Weekday	>	Weekday settings
Clock	>	Clock settings.
Calibrate sensors	>	Options calibrate sensors
Function test	>	Test mode of the products different functions.
Alarm	>	Alarm log
Language	>	Choice of system language
Start guide	>	Initiates the Start guide

Menu system

Function

Flame sensor	Function test of the flame sensor. Must be illuminated to test function.
Igniter	Activates ignitor, the fan starts at 60% 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 air clean.	Activates and tests the full AERO cleaning cycle.
Convection cleaning	Activates the cleaning of the convection.
Shunt motor (+/-)	Activates the shunt motor, 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.
Boiler fan	Activates and tests boiler fan.
Shunt motor 2 (+/-)	Activates the shunt motor 2.
Radiator pump 2	Activates the radiator pump 2.
Shunt motor 3 (+/-)	Activates the shunt motor 3.
Radiator pump 3	Activates the radiator pump 3.
Fill storage	Activates suction system.
R27	
R28	
VridM	

Alarms

Ignition failure	Number of failed ignitions
Start phase failure	Number of Start phase failure
Oper. phase failure	Number of Operation phase failure

Alarm at disruption

Alarm Burner

There has been a problem during operation phase. The most likely problem is that the pellets have run out. The flame sensor can also be covered by soot.

Alarm Ignition

The burner has missed the ignition phase. The most likely problem is a 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 an extremely high temperature, please check that the automatic cleaning is working (function test) and that the boiler is clean. Also check the flue gas sensor. Contact installer.

Alarm Boiler temp.

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

Alarm Flow.

Alarm from the Tachometer on the burner fan, check for faults on the fan.

USB connection



*Don't interrupt the download. This will damage all software in the boiler. Make sure that your USB-stick contains the correct files. There should be an *.hex- and *.bin file on the USB stick.*

In order to upgrade the software in the boiler you need to connect a USB-memory to the boiler. There is an connection cable located behind the cover plate . Turn off the power to the boiler. Insert the USB-memory, then turn the power back on. The controller starts downloading the new software. It's important not to interrupt the updating procedure, this will damage the controller. Wait until the picture of flags comes up on the display . Disconnect the USB-memory. Your boiler is now updated.

■ Tuning the boiler

! It is important that the start dose is absolutely accurate and 14 oz, if it is incorrect the boiler will not run correctly. Key functions uses the start dose as reference dose.

! The boiler has factory settings when delivered but must be adjusted upon commissioning. Before the first start fans and feeding must be adjusted. Always use a flue gas analyzer when tuning the combustion.

Fans

In the "Fan" menu you set the fan speed. After you have measured the start- and support dose you fine tune the combustion with the burner fan speed. The boiler fan must always have a speed that builds underpressure. The fan speed is monitored and the feeding of pellets will stop if the fan stops spinning. In operation the boiler fan is recommended to be set at 50-80%, the higher effect of the boiler requires higher speed. The burner fan fine tunes the combustion.

Start dose

Before the start dose is adjusted you need to make sure that the feeder is filled. You fill the feeder by activating "Fill feeder" in the menu. Then choose "Run start dose" in the feeders menu. Measure 14 oz. Repeat the start dose test at least three times to confirm even feeding.

Boiler effect

In the "Installation" menu you set the boiler's effect. If you have activated low speed, also set it. Check the oper.dose by activating "Run oper.dose". The feeder then compresses 1 hour of running in to 6 minutes. Measure the pellets and check that it is compatible with the building power demand. If you have activated low speed, also run and measure it.

Boiler temperature

The boiler temperature is set in the "Temperature set" menu. There are a number of different systems that need different settings. If the boiler has an internal hot water circuit you set start and stop temperature not to be too cold for hot water production, for example start at 160°F and stop at 176°F. If it is a Light you need to set the temperature to the external tank. You place the sensor connected to G6 high in tank, this is the temperature that starts the burner. Sensor G5 is to be placed low in the tank, this is the temperature that stops the burner.

Values	Unit	Recommended value	Values measured
CO ₂	%	9-11	
CO	mg /m ³ (ppm)	<40-300	
Flue gas temperature	°F	280-400	
Vacuum in chimney	Pa	15-20	
Combustion efficiency	%	90-92	

■ Tuning the boiler

Electrical heater

You must choose which effect you want your electrical heater is to use if activated. You can choose between 3-6-9 kW (9000W). Note that you need to specify the main fuse of the house, if you only have 16A it is not sure you can run the el.heater in full effect, 9kW, then you need to install power monitors. Set which temperature you want the el.heater to start if there is a disruption or if the pellets has ran out. Set the temperature 10°F below the burners start temperature so that it does not activate unnecessarily. If you have a Light, the boiler has no electrical heater.

Cleaning

In the "Service" menu you set how often the boiler should be cleaned. For minimal maintenance it should be activated as much as possible. You can also block the cleaning during some times of the day/night.

Clock

In the "Other" menu you can set the clock. The clock controls functions such as night blocking.

Shunt control

In the shunt control you can choose between room sensor/outdoor sensor/both or constant. You can activate 3 different shunt groups.

- When you choose both, the room sensor only works as a logger and a regulator of the indoor temperature. Choose the appropriate curve for your house. The curve might have to be adjusted several times before you find the ideal indoor temperature.
- When you choose Room sensor, the desired temperature is set on the included thermostat. There is no temperature scale on the sensor so you change the temperature on the boiler. Place the sensor in an open area of the house where there is no interference from other heat sources. In order to get the right temperature in each room you may have to adjust each radiator separately.
- When you choose more than one shunt group, each one must be adjusted with the included room sensors.

More info about the shunt control is on pg 36-38.

Energy saver

In the shunt control there is also a possibility to lower the temperature certain time of the day or some days in the week.

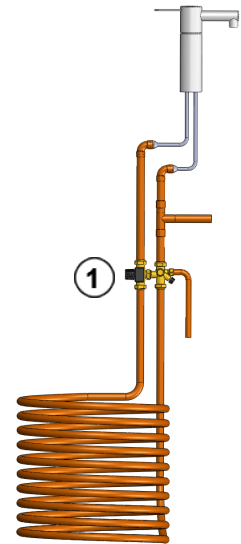
Suction system

If the boiler has a suction system you need to set the time when it is allowed/not allowed to retrieve pellets from the storage. You find the settings on pg 20.

Hot water

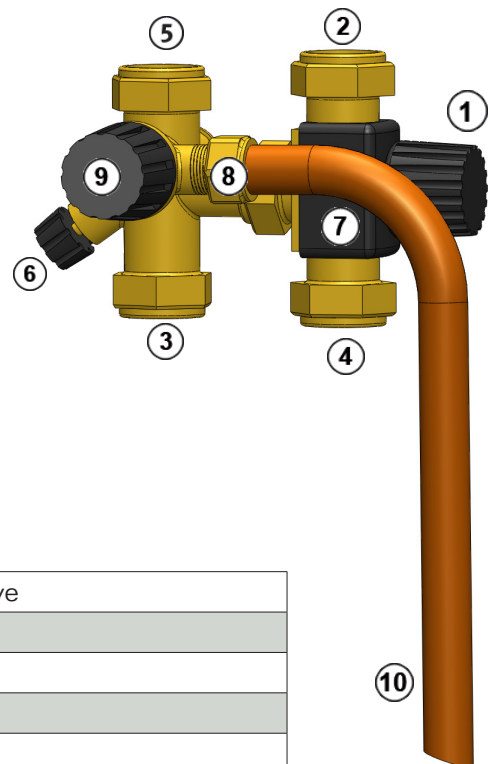
Hot water is produced in a copper coil on the Komplet III Standard models. There are ribbed flanges on the outside on the coil for best heat absorption. The cold incoming water is mixed with the heated water from the coil in the mixing valve (1). The mixing valve includes a thermostat where you set the temperature on the outgoing water. If you don't run the boiler with pellets 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 combination valve is there so the hot water temperature cannot scald. In order to increase the temperature turn (1) towards +. 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 drain 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

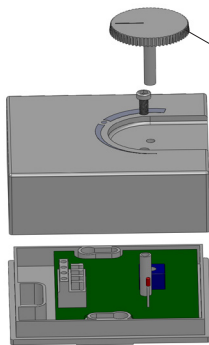
■ Shunt control

In the "Shunt control" menu you choose how to control the heating of the house. Start by deciding which sensors to use, room-/outdoor sensor or both. When you choose both, the room sensor only works as a logger of the temperature which is shown in a curve. The room sensor also lowers the flow temp by 10°F if max room temp is reached.

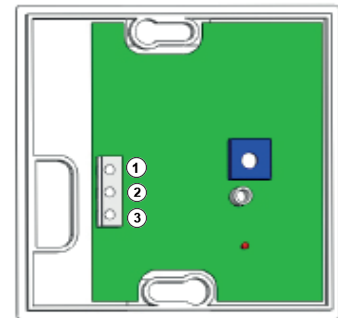
If both sensor are connected you have to choose both in the menu for the system to work.

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 influenced by draught, doors, sunlight directly to it or other heat sources since it then will affect the heating output to the entire house.



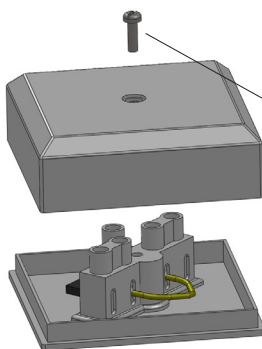
Loosen the control wheel by pulling outwards. Then loosen the screw to open the box.



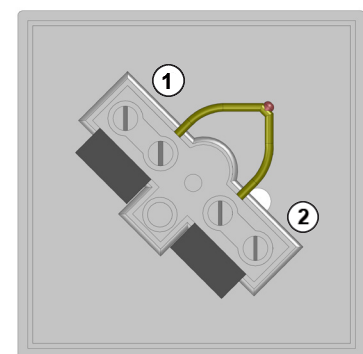
1	Connected to number 3 on the motherboard
2	Connected to number 4 on the motherboard
3	Connected to number 5 on the motherboard

Outdoor sensor

If an outdoor sensor is used this should be mounted on the facade 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 gain. It is recommended that the sensor is mounted about 6 feet 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 motherboard
2	Connected to 2 on the motherboard

■ Tuning the boiler

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 mean that one house would need a 77°F flow at a outdoor temperature of 32°F while another house needs 115°C.

Adjustment to the heating curve is done in the “Shunt control” menu. 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 +40°F
- 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. If you do not know at all what temperatures your house needs, you can use our recommended values:

- Houses with underfloor heating in concrete. “Slope 95”
- Well insulated low energy house with low temp. radiators. “Slope 105” (factory settings)
- A high temp. radiator system in a older house with poor insulation. “Slope 135”

Example of curve:

If the slope is set to 122°F this is the temperature sent to the flow at an outdoor temperature of 5°F.

If the house has underfloor heating the temperature on the curve is set significantly lower.

Example of adjustment:

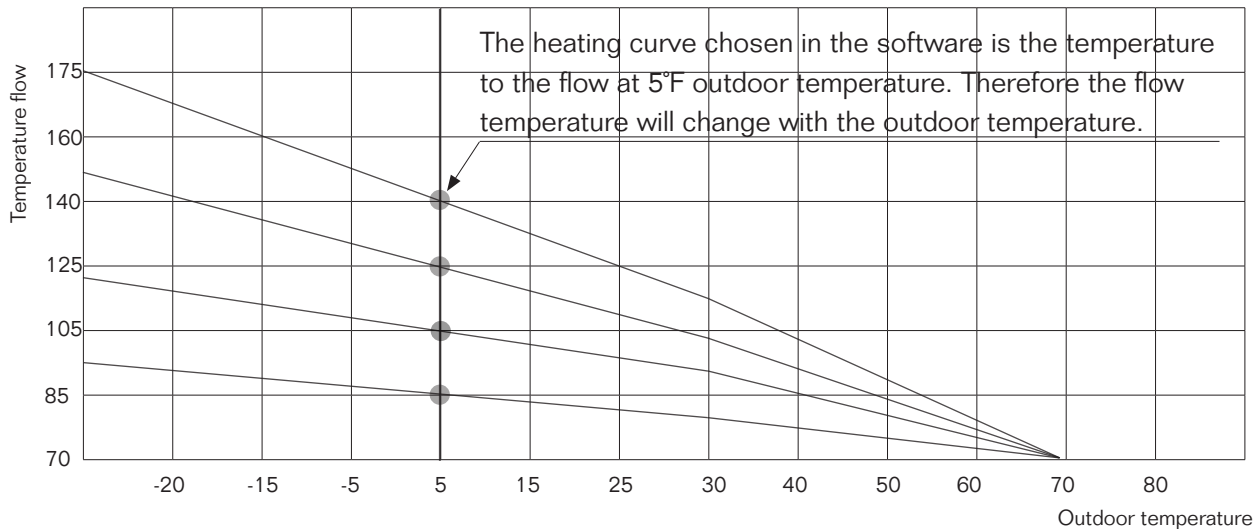
Adjustment of the curve means that you can raise or lower the indoor temperature at a certain outdoor temperature. Curve adjustment 0 means that the flow is 68°F when the outdoor temperature is 68°F. A curve adjustment of -10 means that the temperature is 58°C.

Example of curves

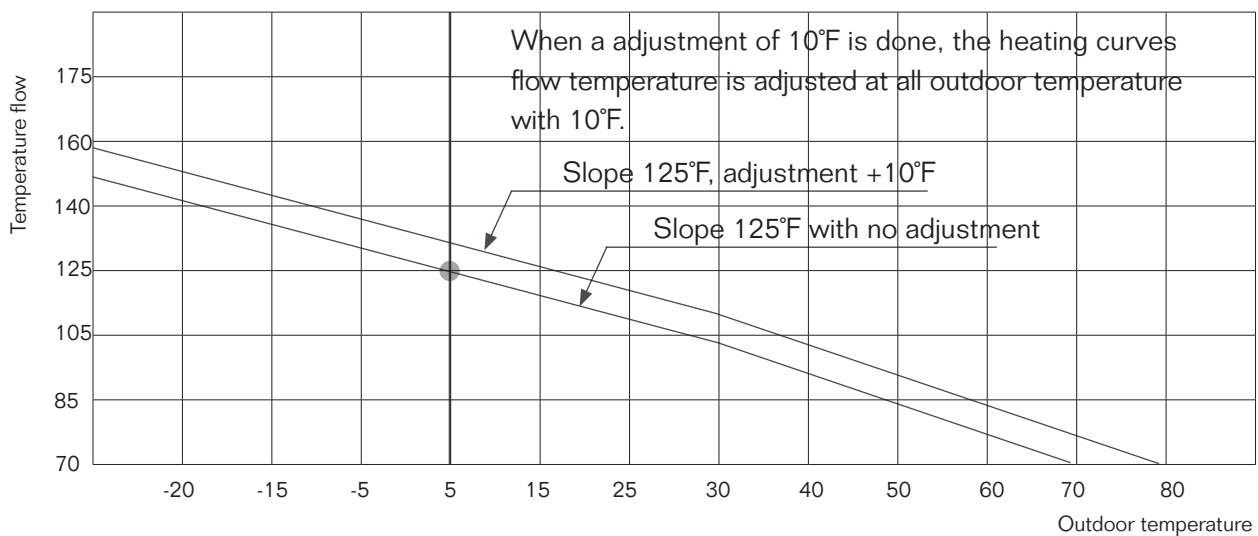


Too low a heating curve will result in the house not having the correct indoor temperature

Slope



Adjustment



If it is cold outdoors (cold winter) and the room temperature is too low. Increase the slope by 2-4°F.

If it is cold outdoors (cold winter) and the room temperature is too high. Decrease the slope by 2-4°F.

If it is warm outdoors (average autumn/spring) and the indoor temperature is too low. Increase the adjustment by 2-4°F.

If it is warm outdoors (average autumn/spring) and the indoor temperature is too high. Decrease the adjustment by 2-4°F

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

■ 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. To confirm the desired effect is achieved it should be verified by the installer or property owner. Tigex draft stabiliser has developed a design which enables mounting of the flue tube in all directions, vertical, angled as well as horizontal. Tigex is mounted on a adaption plate, which can be located where it is best suited on the flue tube.

Adjusting the balancing shaft

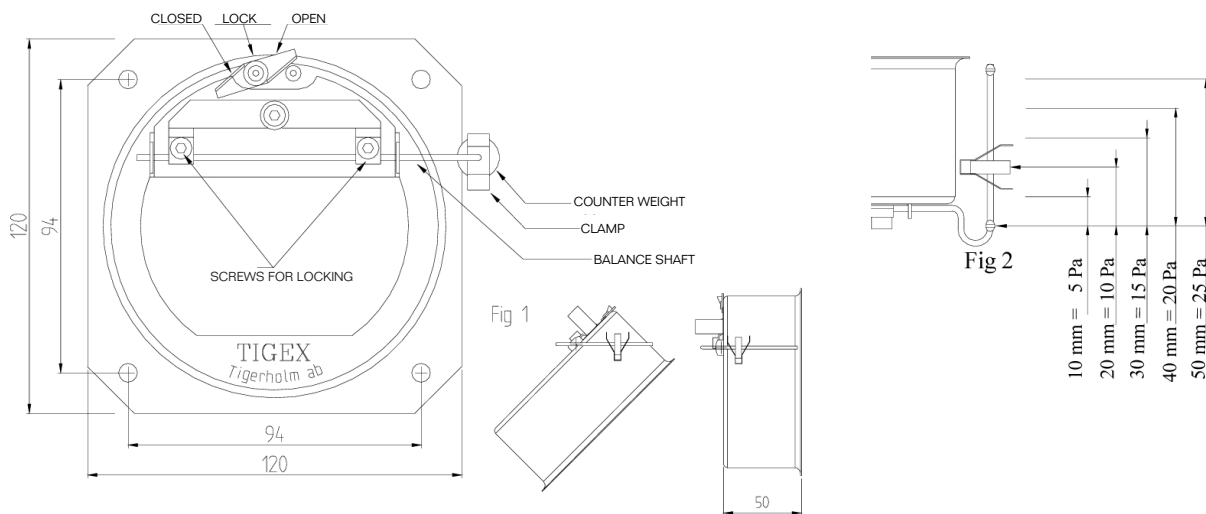
To adjust this shaft, loosen the two screws a bit and turn the shaft so that it is horizontally when the hatch is closed. Then fasten the screws.

Adjusting the draft

By moving the counterweight along the balance shaft, the draft needed to open the hatch is adjusted. About 1Pa per 2mm.(fig.2) The hatch is preset at about 10Pa. - 0.04 inches of water column. A professional should measure the draft and make the adjustments.

Functions

Tigex draft stabiliser opens the hatch just as much as is 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 a lot, a little or closed, depending on the situation and the need for ventilation in the chimney . The need for ventilation in the chimney varies greatly between different sites, so the required pressure and ventilation needs must be determined on a case to case basis.



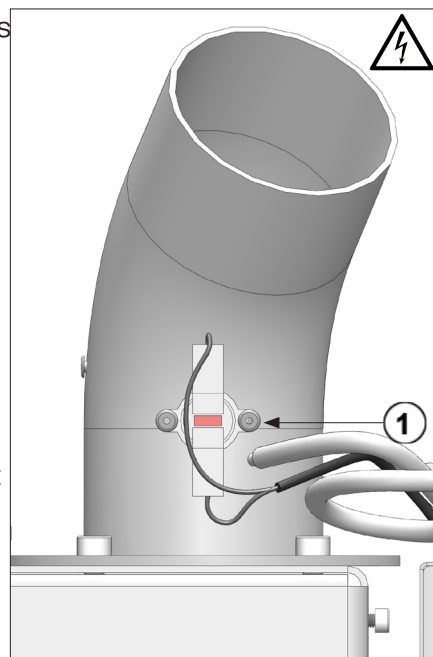
Overheated fallshaft

There is a overheat protection located on the burners fallshaft. This prevents back heat. If the protection has tripped, the power to the feeder is cut. The cause of overheating is usually due to back pressure in the boiler being too large, which in turn is usually due to:

- The burner tube is full of ash.
- The boiler is full of ash.
- The chimney is too narrow.
- The burner is set on a too high effect.

Reset the protection by removing the cover plates of the boiler. Then press the reset button (1), you should hear a "click" when it is reset.

If the protection is tripped again we recommend you to contact your installer to look over the function and settings of the boiler.

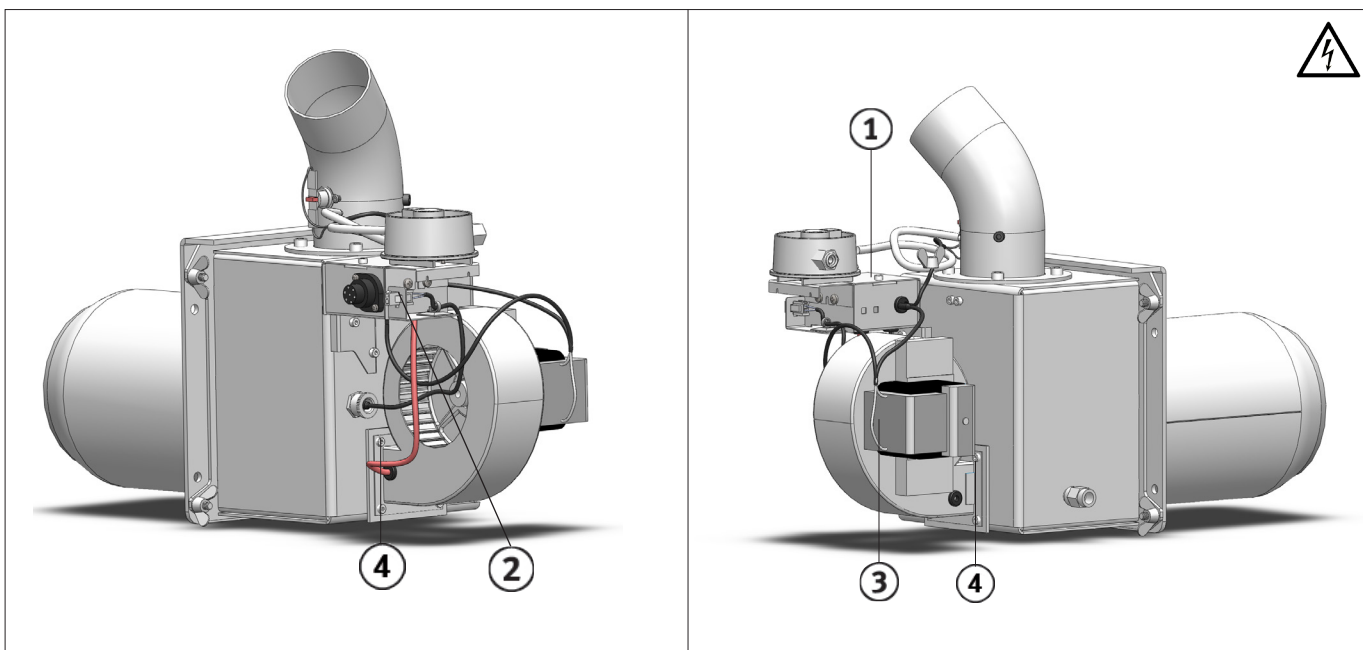


Change of burner fan

Cut the power to the boiler. Remove the cover plates needed. Unscrew the lid of the electrical box (1) and remove the cable ties, loosen the cables for the igniter (2) and the fan (3).

Unscrew the four hexagon socket screws (size 2.5) and remove the fan (4). The cable for the igniter is pulled through the fan. Mount the new fan in reverse order.

! After a change of burner fan, measure the flue gases as you might have to tune the burner slightly due to fans having some variations in speed.



■ Change of the igniter

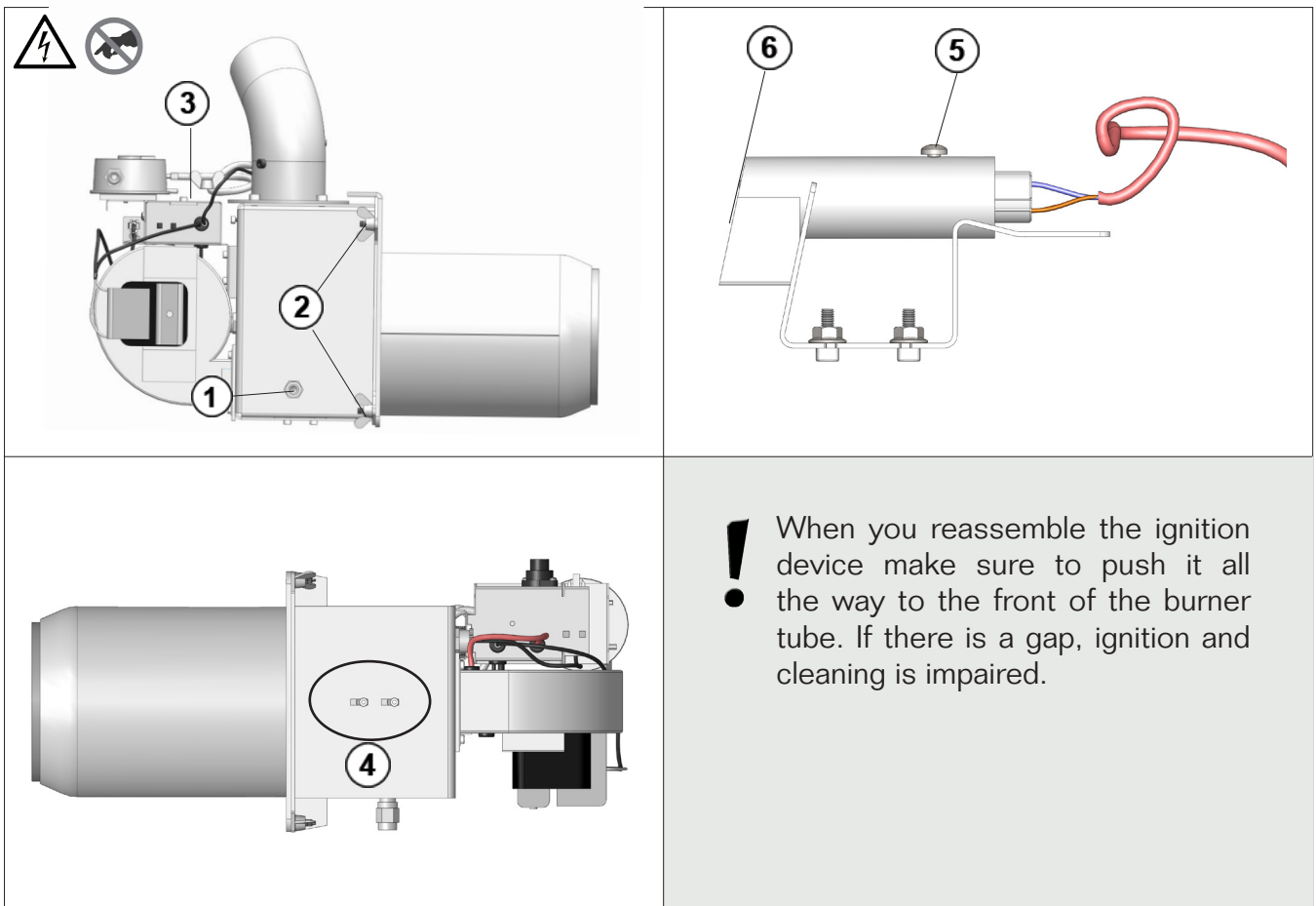
Cut the power to the boiler. Loosen the main cable to the burner, the cable to the flame sensor and the compressed air hose to the burner.(1)

Remove the four wing nuts (2) which are holding the rear housing against the end plate of the outer combustion tube. Angle the rear housing and pull it upwards/backwards so that the fall shaft loosens from the inner tube. Then detach the pipe to compressed air 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 electrical console (3). Remove the ignition device from the rear housing by taking out the two screws on the bottom of the burner (4). Ignition element clamp is removed (5) and the element is pulled out of the square tube.

Slide the new element in the square tube. Push so it lies 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 console. 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 outer tube. 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 inner tube.



■ The chimney

Inspection

We recommend you to let the local chimney sweep inspect, give advise and instructions about necessary actions on the chimney and connections. Some points to consider before and after the commissioning of the installation:

Dimensions

You can see suitable dimensions in the table below. The chimney should be so long that the draught at standstill is between 5-10Pa. - 0,02 to 0,04 inches of water column. A large or small chimney may have to be adjusted to give a tolerable draught and flue gas stream. The included draft stabiliser should be used unless Effecta has recommended otherwise in specific cases.

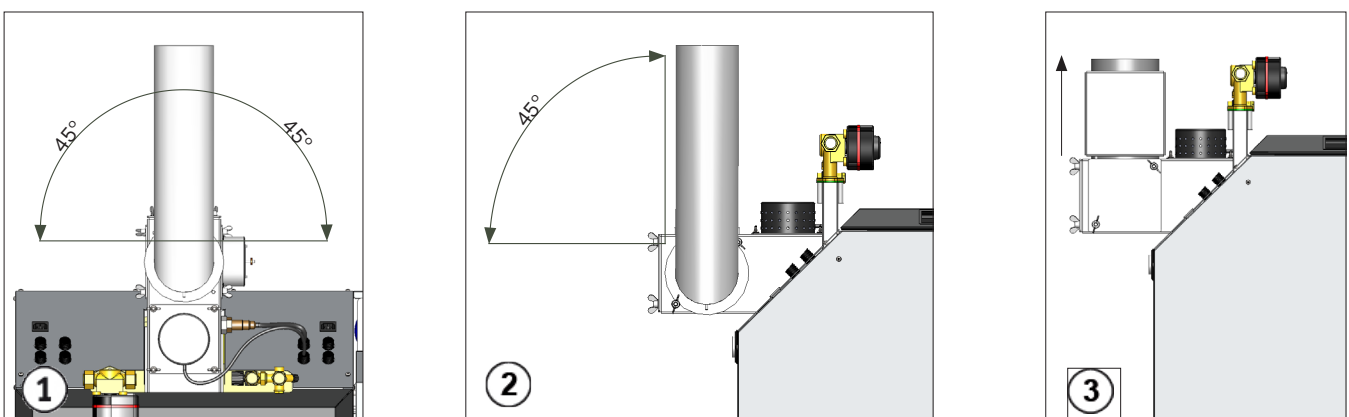
The flue gas temperature must be controlled.

Directly after the boiler, we recommend a flue gas temperature of 320 - 400°F.

With a high chimney or chimney with a big area there is a risk of condensation, which can lead to corrosion and frost damage. Measure the temperature 1m down from the top of the chimney, the flue gas temperature should be at least 175°F, measure when the burner almost has reached its stop temperature. If you have too low flue gas temperature, you can mount insert tubes on the turbulators or add insulation to the chimney. These suggestions increase the flue gas temperature without changing the efficiency of the boiler. The draft stabiliser vents the chimney from some condensation, but it can not fix large quantities.

Rec. dimension chimney	Round	Rectangular
Komplett 20 kW	ø 4.5 in	4x4 in
Komplett 25 kW	ø 5.5 in	4.5x4.5 in
Komplett 35 kW	ø 6.5 in	5.5x5.5 in

■ Flue attachment



You can mount the included flue attachment in any of the holes on the boilers flue tube. Option (1) place the flue attachment on the hole on top of the flube tube and direct it to wanted direction. In option (2) you place the flue attachment in any of the three holes around the flue adaptor, direct it in any direction but not downwards. Option (3) is for chimneys placed directly over the flue tube, this has to be specially ordered.

Cleaning

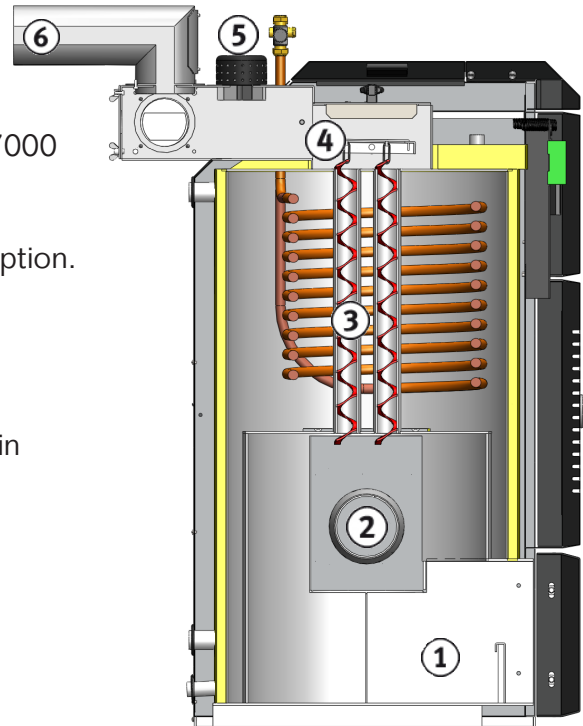


Cut the power to the boiler before starting the service. We recommend a good service/clean of the burner and boiler 2-3 times a year. Do as follows for the best result and minimizing the chances for downtime.



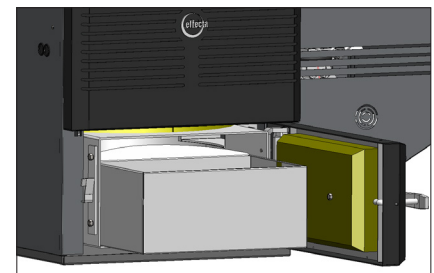
Sweeping interval

1. Ash compartment, as necessary, or at about 7000 lbs of pellets consumption
2. Burner tubes after 7000 lbs of pellets consumption.
3. Convection part after 7000 lbs of pellets consumption.
3. Without automatic cleaning every other week in winter.
4. Ash box as necessary.
5. Fan after 19.000 lbs of pellets consumption.
6. Flue attachment after 7000 lbs of pellets consumption.



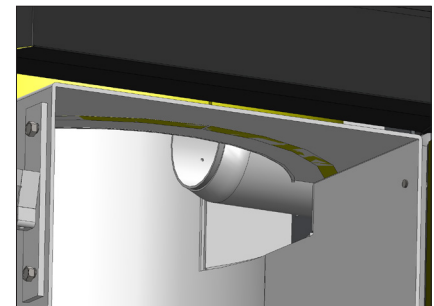
1. Cleaning the ash compartment

Cleaning the ash compartment 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 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.



2. Cleaning the burner tube

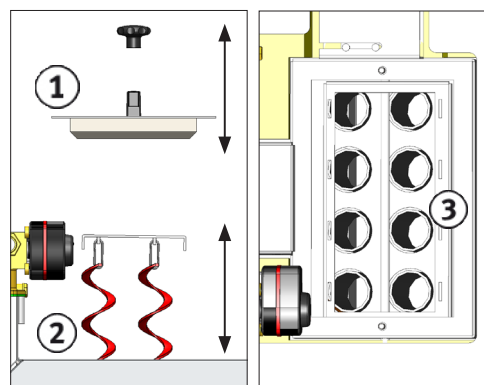
Remove the ash contained in the burner tube, this is done either through the ash compartment with the supplied scraper or by taking the burner tubes apart outside the boiler, which sometimes can be the easiest way.



■ Service and cleaning

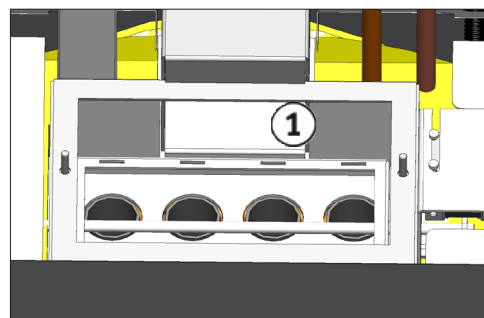
3. The tubes

After 7000 lbs of pellets consumption you need to clean the tubes. Start by removing the cover plate on top of the boiler. Unscrew the plastic knobs and remove the lid. Lift the turbulators out of the tubes. Use the included brush to clean the tubes.



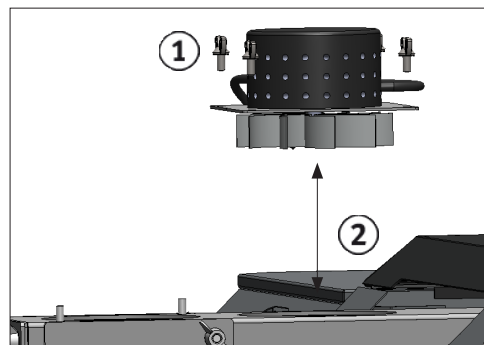
4. Ash box

Clean the ash box at the same time as the turbulators. Do not forget the area below the boiler's fan, as there can be fly ash from the combustion.



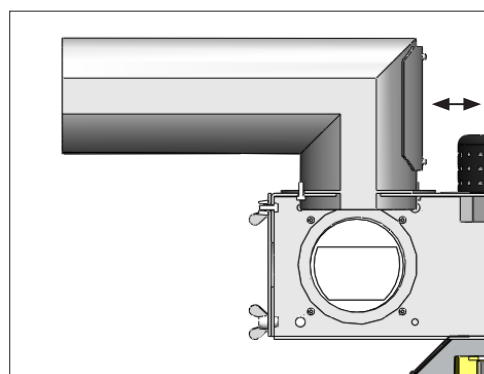
5. The fan

Clean the fan twice a year. Remove the 4 wingnuts (1) located on the mounting plate. Lift fan and clean the "wings" (2) from dust and soot. If the fan is not cleaned, it will result in the boiler having slower heating and poor combustion.



6. Flue attachment

Clean the connection to the chimney twice a year. In time these will gather fly ash. Loosen the 2 wingnuts which holds the lid on the angle. Scrape or use suction to remove ash.



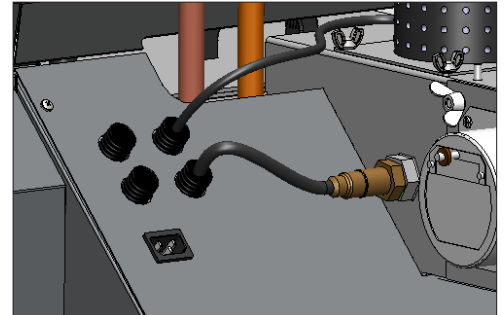
Service



*Don't "tap" the lambda against something in order to get it clean.
Use a brush.*

Lambda

The Lambda needs to be cleaned once a year. Unscrew it from the flue tube. Brush it clean and make sure that the holes on the top are clean.

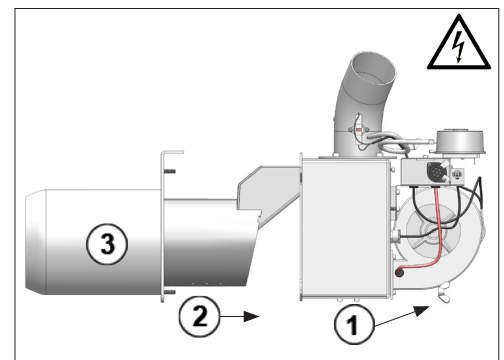


Outer tube

After a period of heating up, there will be dust and ash from the burner's inner and outer tube. It must be removed to avoid deterioration in combustion and function. We recommend that the cleaning is done after about 9 tonnes 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 combustion tube (2) and clean from ash and soot. It is important that the holes are not clogged with ash, as these are essential to good combustion.

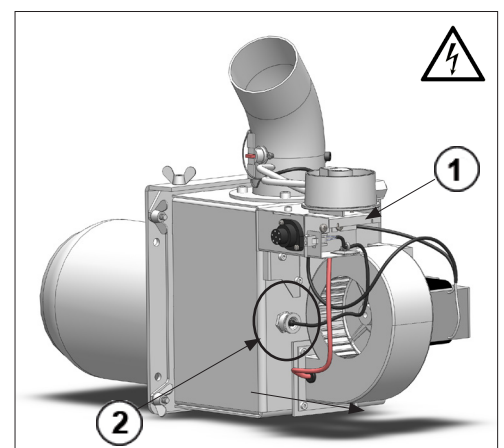
Then clean the outer tube (3) from the ash and pellet residues.

Reassemble in reverse order.



Changing and/or servicing the flame sensor

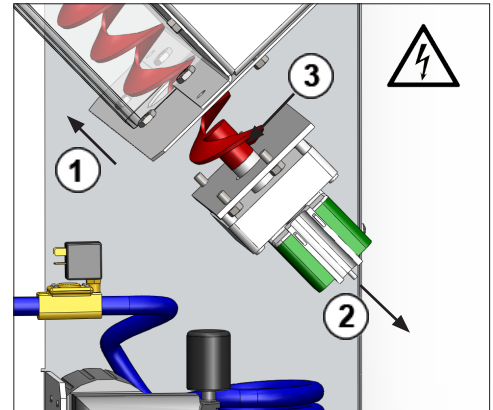
Remove the contact to the flame sensor by pulling straight back (1). The outer nut of the flame sensor is loosened completely (2). Pull the flame sensor, with nut and clamp bushing, out of the container. If you are going to replace the flame sensor, move the nut and clamp bushing to the new sensor. The clamp bushing is to be pushed fully back against the shrink tubing. Mount the flame sensor in the container. Screw the nut by hand so that the sensor is tight, but not overly. Mount the flame sensors contact (1).



■ Service

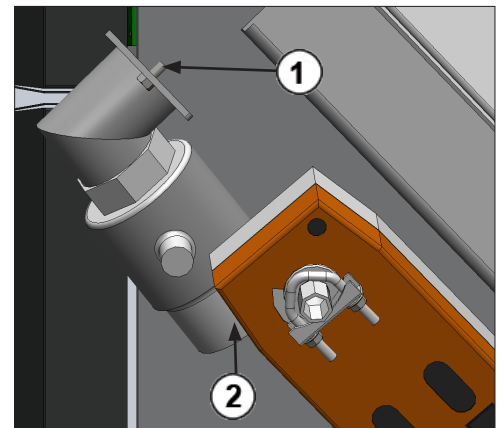
Internal feeder

Remove cover plates. Unscrew the 4 bolts which hold the motor in place (1). Pull the motor and spiral down diagonally (2). Use a vacuum cleaner to remove the dust. If there is packed dust, the spiral and motor needs to be separated. Unscrew the bolt located on the shaft (3).



Safety ball valve and angle

If service or cleaning need to be done in the fallout bend that is located before the safety ball valve, loosen the 2 nuts (1) which holds the bend in place. Then loosen the hose clamp which holds the plastic hose to the ball valve (2). The bend is now free and can be cleaned. Make sure that there is no packed dust at the top of the feed beam. When reassembling, ensure the hose clamp is tight.



Internal storage

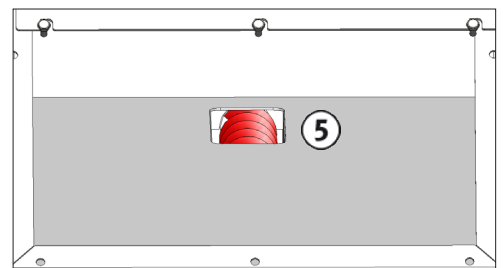
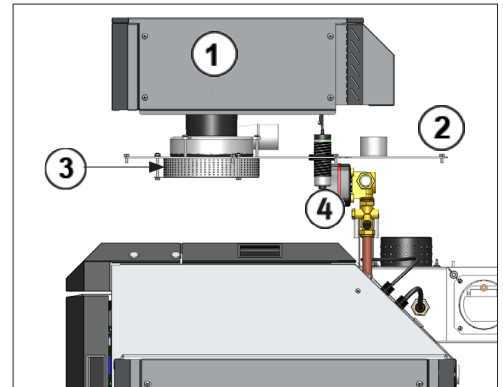
To clean the internal storage do as follows:

Remove the insulated cover plate (1).

Unscrew the 10 bolts which holds the lid to the storage (2).

Clean the grate under the suction motor (3), if the grid gets clogged the suction deteriorates. The proximity sensor is wiped carefully so no dust is sitting on the sensor (4).

Clean the storage from dust etc. Be extra careful at the inlet to the feeder (5).



When reassembling make sure all sealing and bolts are tight. If the storage is not tight there will be no underpressure and no pellets will feed through.

■ Adjusting door to ash compartment

There are several ways to adjust the door. In the picture below you see the hinge to the door to the ash compartment. After some time of use some adjustments may have to be done in order to ensure the door seals correctly.

1. Depth adjustment

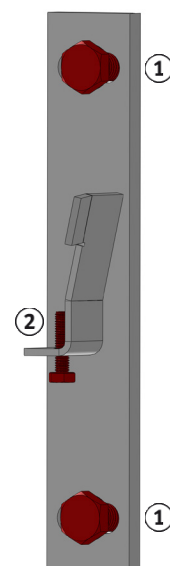
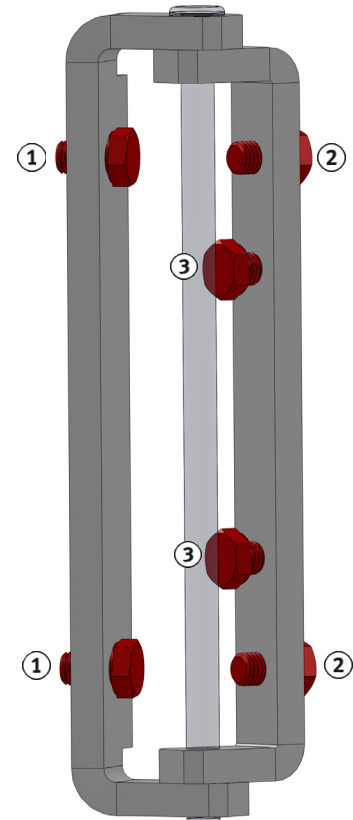
If the seal is not tight on the hinge side, loosen the 2 bolts that holds the hinge to the frame. Loosen the bolts about two turns then adjust the door inward to tighten the door and reverse to loosen the pressure on the sealing.

2. Vertical adjustment

In order to centre the sealing over the frame loosen the two bolts (2) on the outside of the door. Loosen the bolts abouts two turns and adjust the door.

3. Lateral adjustment

To centre the sealing sideways loosen the two bolts (2) and adjust with the the two bolts (3). Make sure to tighten all bolts when adjustment is completed.



Adjustment of the door locking

If the seal is not tight on the handle side, loosen the two bolts (1) which holds the lock in place. Loosen about two turns and push the lock inwards to tighten and reverse to loosen. If the door handle is not in a horizontal position when the door is closed, you can adjust the bolt (2) up or down to change the position.

■ Trouble shooting

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

Fault	Cause	Action
No start dose while tuning	- No underpressure	- Seal the hole to the fallshaft
Burner does not ignite	- Incorrect start dose - High draft in the chimney - Igniter faulty - Igniter console poorly attached - Burner tube filled with ash - Overheat protection fallshaft tripped - Feeder malfunction	- Adjust start dose - Adjust draft stabiliser - Change igniter - Adjust console - Clean the burner - Reset - Check feeder
The display is black	- Overheat protection on boiler tripped	- Reset protection
Overheat protection fallshaft tripped	- High back pressure in the chimney - Burner tube filled with ash	- Check draft - Clean the burner
Ashes are totally black	- Poor combustion	- Contact your installer
Poor hot water capacity	- Low temperature in the boiler - Too high flow in the pipes - Too big diff between start and stop	- Set the burners "Stop" temp. higher - Adjust the flow on the mixing valve - Reduce diff
Low/high indoor temperature	- Incorrect temp on sensor - Sensor untrimmed - Improperly placed room sensor - Improper tuned curve to outdoor sensor	- Adjust temp/curve to the sensor - Calibrate the temp - Move sensor to a suitable position - Adjuste curve
Soot in the boiler room	- Leaking seals	- Contact your installer
Alarm (flue gas), flue gases over 600°F	- Sooty boiler - Poor combustion - Broken sensor	- Clean the boiler - Contact your installer - Change / Contact your installer
No heat on radiators.	- Shunt motor closed - Shunt motor broken - Radiator pump not activated - Radiator pump broken - Air in the radiator circuit	- Contact your installer - Contact your installer - Activate in Shunt control - Contact your installer - Vent the circuit
White smoke from the chimney	- Low flue gas temperature - Too big chimney - Rain water in the chimney	- Cut turbulators/increase effect - Contact your installer - Mount a rain hood
Convection clean does not clean	- Increase the number of cleanings - The motor does not lift turbulators	- Increase in the Service menu - Check function
The burner tube does not get clean	- Low pressure from compressor - The compressor leaks - The compressor is not activated	- Check air pressure, min. (6bar) - Seals need to be replaced - Activate in the Service menu
The feeder does not feed pellets	- No underpressure - Feeder broken - Feeder filled with dust - Overheat protection fallshaft tripped	- Check underpressure switch - Check seals/hoses - Check the draft in the chimney - Replace motor - Check and clean the feeder - Clean the boiler and burner - Reset overheat protection
A sensor shows wrong temperature	- Sensor broken - Calibrate	- Replace sensor - Calibrate in the Other menu
The suction system does not fill the storage	- System not activated - Proximity sensor incorrectly set	- Activate in the Installation menu - Check and adjust sensor
The suction system is running but no pellets comes through the hoses	- Connection/hoses loose - No pellets near a suction point - The seal to the internal storage is loose - Safety ball valve is open - Missing screws on the storage	- Check for leaks - Check the pellet level in the storage - Check the seal - Check function - Check that all screws is in place

Documentation of settings

Before you as a installer 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.



Settings for the system

Menu	Parameters	Value
Temperature set	Start temp. burner	
Temperature set	Stop temp. burner	
Fan	Burner fan, speed	
Fan	Burner fan, lowspeed	
Fan	Boiler fan, operation speed	
Advance	Fan start	
Advance	Oper. phase start	
Advance	Fan Pulse 1-2-3	
El.heater	Temperature el.heater	
El.heater	Effect el.heater	
Feeder	Operation dose	
Feeder	Start dose	
Installation	Effect high and low, if activated	
Installation	Fan pre oper.	
Installation	Fan low pre oper.	
Shunt group 1	Sensor, heat curve, room temp, adjust.	
Shunt group 2	Sensor, room temp., cylinder	
Shunt group 3	Sensor, room temp., cylinder	

Parameters, operation with an accumulator tank

Menu	Parameters	Value
Temperature set	Acc.tank high G6	
Temperature set	Acc.tank low G5	
Temperature set	Stop G5	
Temperature set	Max G6	
Temperature set	Start G6	
Temperature set	Max G1	

Type plate

Tillverkare / Manufactory
Hersteller / Fabricants
Modell / Model
Typ / Modèle

Effecta Energy Solutions AB

Effecta Komplet III
Effecta Komplet III Light

Effekt / Heat output
Heißleistung / Puissance nominale (kW)

20 25 35

Codkänd enl. / Approved by
Zugelassen nach / Approuvé á

EN-303-5

Miljöklass / Emission class
Emissionsklasse / Classe d'émission

5

Max drifttryck / Max pressure
Max Betriebsdruck / Pression maximum (bar)

3

Max drifttemp. / Max temp. (°C)
Max Betriebstemp. / Temp d'opération max

100

Elinstallation / Electrical supply
Elektronanschluss / Branchement électrique

230 / 380 ~ 50Hz

El-patron / Electrical heater (kW)
El-Patrone / El-cartouche

0 3 - 9

Vattenvolym / Water volume
Wasserinhalt / Contenance d'eau (litre)

99 183

Bränsleklass / Fuel class
Brennstoffklasse / Classe d'carburant

EN Plus / DIN Plus

Tillverknings nr. / Manufacturing number
Herstell Nr. / Numéro de fabrication

Tillverknings år. / Manufacturing year

2014 2015 2016 2017 2018

Tillverknings månad / Manufacturing month

1 2 3 4 5 6 7 8 9 10 11 12

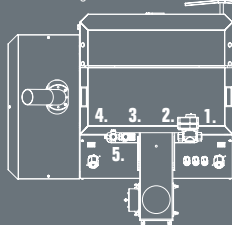
Effecta AB - Sweden - Kungälv - www.effecta.se

Komplet III

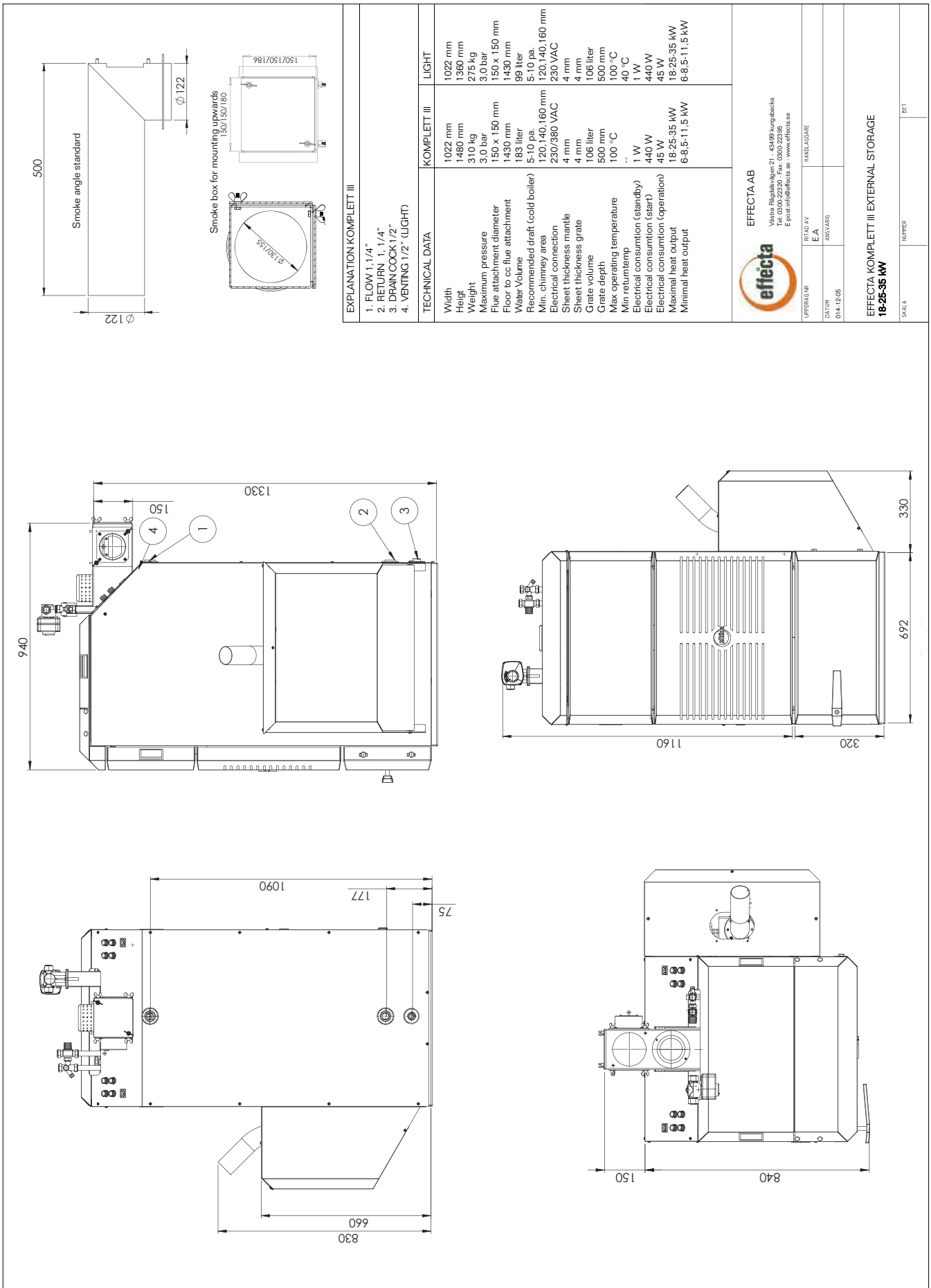
- Radiator fram / Flow
Vorlauf / Depart radiateurs
- Radiator retur* / Return*
Rücklauf* / Retour radiateurs*
(*standard flowing of the pipe)
- Kallvatten in / Cold water in
Kaltwasser / Eau Froide (ECS)
- Varmvatten ut / Hot Water out
Warmwasser / Eau Chaude (ECS)

Komplet III Light

- Avluftning / Venting
Entlüftung / Ventilation



Technical specification K3 external storage



Technical specification K3 internal storage

EXPLANATIONS KOMPLETT III

1. FLOW HOT WATER 1.1/4"
2. RETURN HOT WATER 1.1/4"
3. DRAIN COOK 1/2"
4. VENTING 1/2" (LIGHT)

TECHNICAL DATA	KOMPLETT III	LIGHT
Width	1172 mm	1172 mm
Height	1480 mm	1360 mm
Weight	310 kg	275 kg
Maximum pressure	3,0 bar	3,0 bar
Flue attachment diameter	150 x 150 mm	150 x 150 mm
Floor to cc flue attachment	1430 mm	1430 mm
Water Volume	183 liter	99 liter
Recommended draft (cold boiler)	5-10 pa	5-10 pa
Min. chimney area	120, 140, 160 mm	120, 140, 160 mm
Electrical connection	230/380 VAC	230 VAC
Sheet thickness mantle	4 mm	4 mm
Sheet thickness grate	4 mm	4 mm
Grate volume	106 liter	106 liter
Grate depth	500 mm	500 mm
Max operating temperature	100 °C	100 °C
Min returntemp	--	40 °C
Electrical consumption (standby)	1 W	1 W
Electrical consumption (start)	440 W	440 W
Electrical consumption (operation)	45 W	45 W
Maximal heat output	18-25-35 kW	18-25-35 kW
Minimal heat output	6-8,5-11,5 kW	6-8,5-11,5 kW

EFFECTA AB
 Västra Rågdalsvägen 21 - 434 99 Kungsbacka
 Tel: 0300-22320 - Fax: 0300-22385
 E-post: info@effecta.se - www.effecta.se

UPPERKÄNSEL: E.A. SERIENUMMER: E.A.
 DATUM: 01/4-12-05 ANSÖRARE: ANSÖRARE

EFFECTA KOMPLETT III INTERNAL STORAGE
18-25-35 kW

SKALA: NUMMER: BET:

Technical specification K3 suction system

EXPLANATIONS KOMPLETT III

1. FLOW HOT WATER 1,1/4"
2. RETURN HOT WATER 1, 1/4"
3. DRAIN COOK 1/2
4. VENTING 1/2" (LIGHT)

TECHNICAL DATA	KOMPLETT III	LIGHT
Width	1172 mm	1172 mm
Height	1480 mm	1360 mm
Weight	310 kg	275 kg
Maximum pressure	3,0 bar	3,0 bar
Flue attachment diameter	150 x 150 mm	150 x 150 mm
Floor to cc flue attachment	1430 mm	1430 mm
Water Volume	98 liter	98 liter
Recommended draft (cold boiler)	5-10 pa.	5-10 pa.
Min. chimney area	120, 140, 160 mm	120, 140, 160 mm
Electrical connection	230/380 VAC	230 VAC
Sheet thickness mantle	4 mm	4 mm
Sheet thickness grate	4 mm	4 mm
Grate volume	106 liter	106 liter
Grate depth	500 mm	500 mm
Max operating temperature	100 °C	100 °C
Min returntemp	-	1 W
Electrical consumption (standby)	440 W	440 W
Electrical consumption (start)	45 W	45 W
Electrical consumption (operation)	18-25-35 kW	18-25-35 kW
Maximal heat output	6-8.5-11.5 kW	6-8.5-11.5 kW
Minimal heat output		

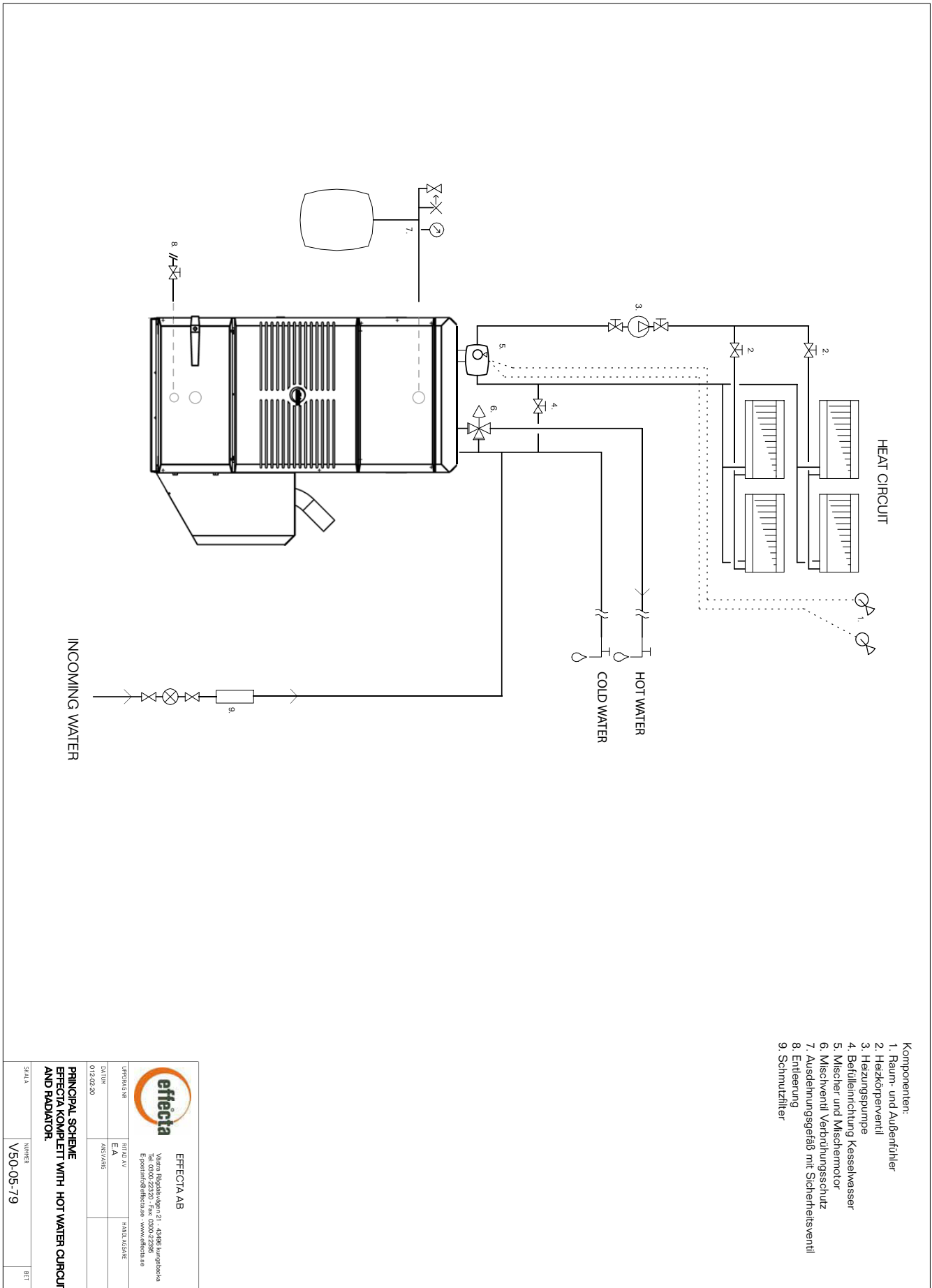
EFFECTA AB
Västra Rågdalsvägen 21 · 434 99 Kungälv
Tel: +46 (0)300 22320 · Fax: +46 (0)300 22321
E-post: info@effecta.se · www.effecta.se

UPPRÄDD AV: PÅNELL ÅBERGARE
E.A.
ANSVARIG: ANSVARIG
DA TID: 01.12.05

EFFECTA KOMPLETT III SUCTION SYSTEM
18-25-35 kW

SKALA: NUMBER: BET:

■ Connection suggestions internal hot water and radiators



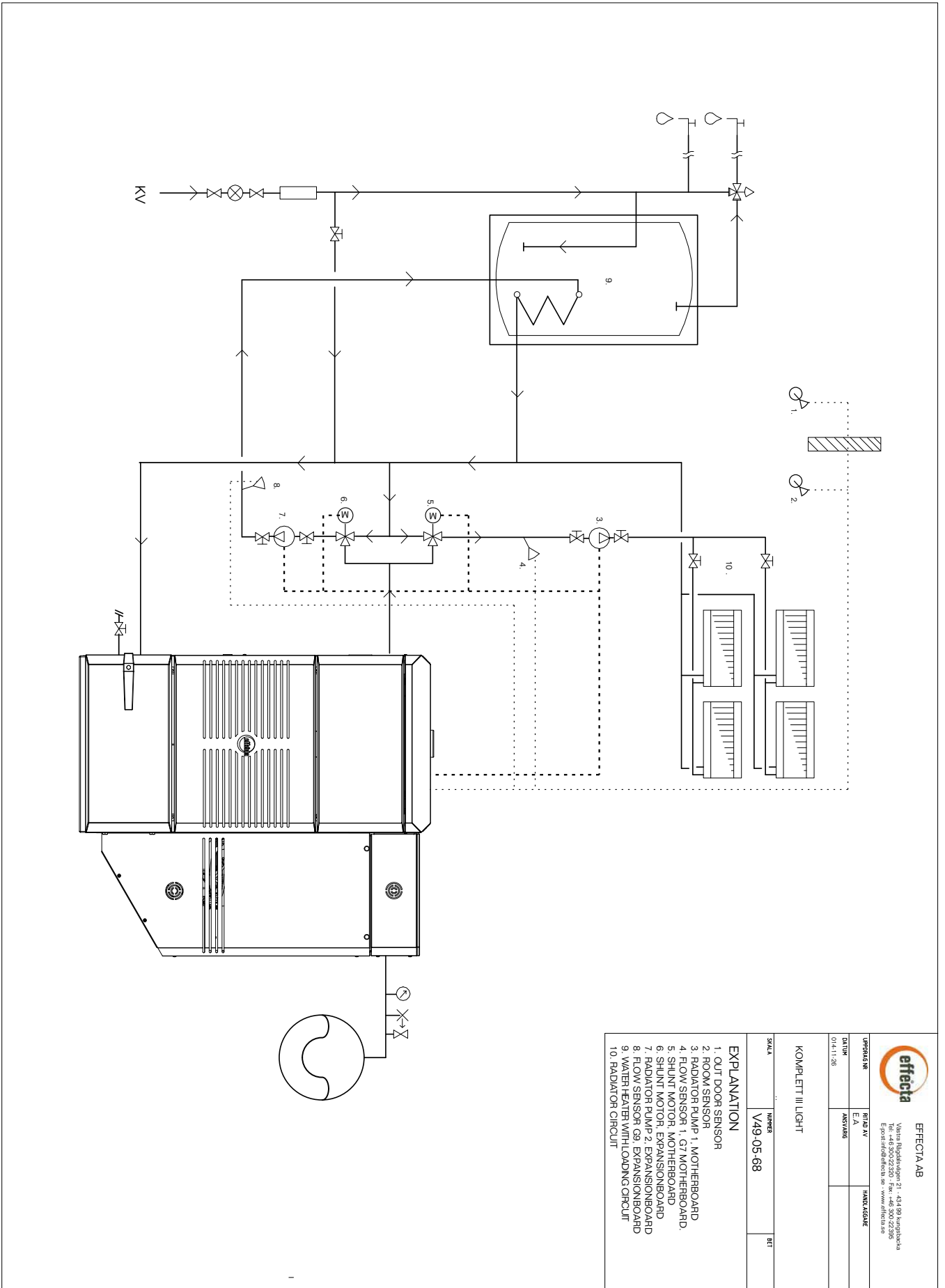
EFFECTA AB
 Västra Rågdalsvägen 21 - 434 99 Kungsbacka
 E-post: info@effecta.se - www.effecta.se


UPPDRAGS NR	RI 1 AD A V	HANDELSBESKR
DATE	EA	
012/0220		

**PRINCIPAL SCHEME
 EFFECTA KOMPLETT WITH HOT WATER CIRCUIT
 AND RADIATOR.**

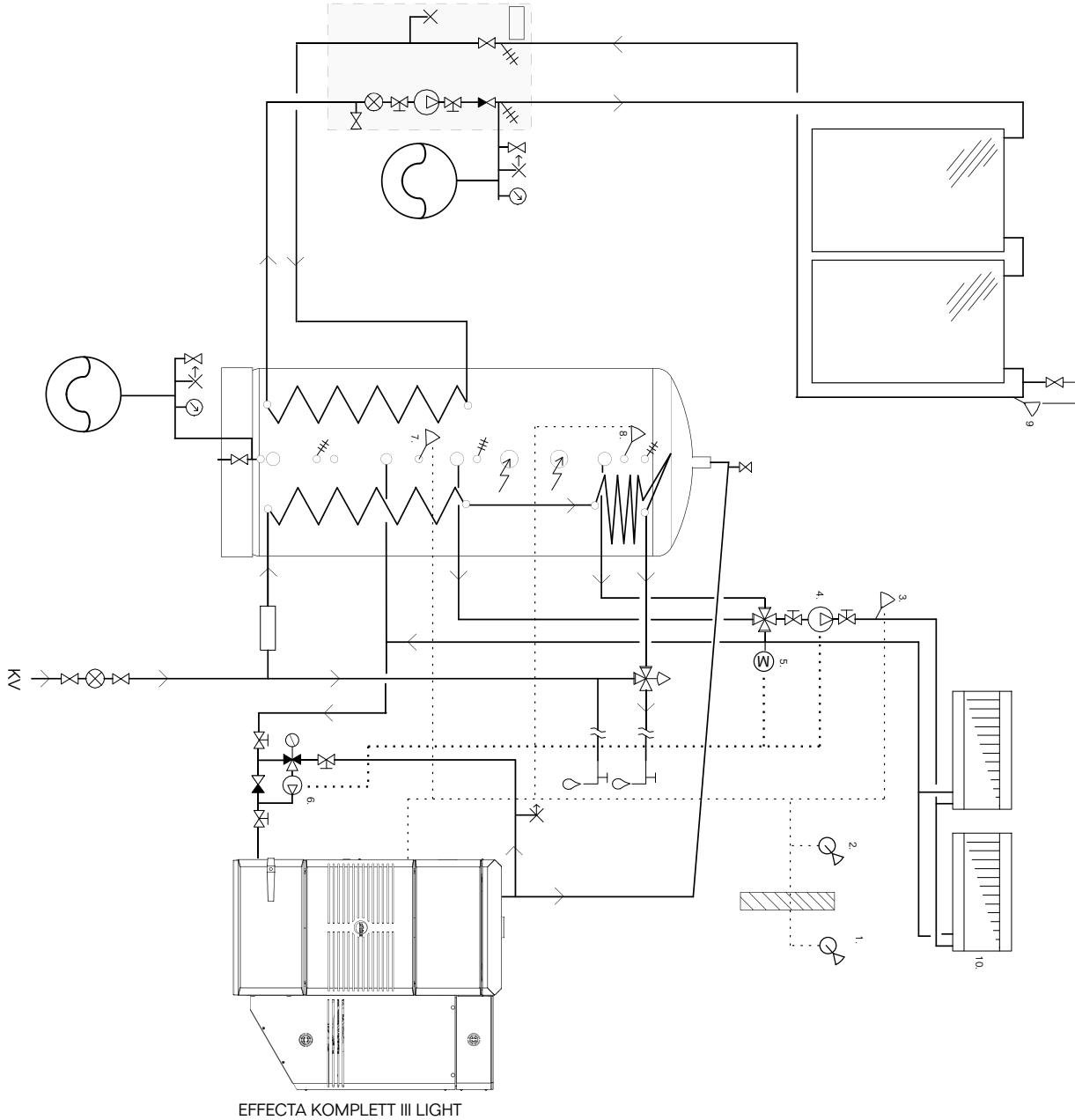
SKALA	NUMER	BET
	V50-05-79	

■ Connection suggestions radiators and heaters




		EFFECTA AB	
		<small>Västra Rågdalsvägen 21 - 434 99 Kungälv Tel: +46 300 22320 Fax: +46 300 22385 E-post: info@effecta.se - www.effecta.se</small>	
OPERATION	BRÅDE AV	HANDLAGARE	
DATUM	ANSVARIG		
01-11-26			
KOMPLETT ILL LIGHT			
SKALA	NUMER	BT	
	V49-05-68		
EXPLANATION			
1. OUT DOOR SENSOR			
2. ROOM SENSOR			
3. RADIATOR PUMP 1, MOTHERBOARD			
4. FLOW SENSOR 1, G7 MOTHERBOARD			
5. SHUNT MOTOR, MOTHERBOARD			
6. SHUNT MOTOR, EXPANSIONBOARD			
7. RADIATOR PUMP 2, EXPANSIONBOARD			
8. FLOW SENSOR G9, EXPANSIONBOARD			
9. WATER HEATER WITH LOADING CIRCUIT			
10. RADIATOR CIRCUIT			

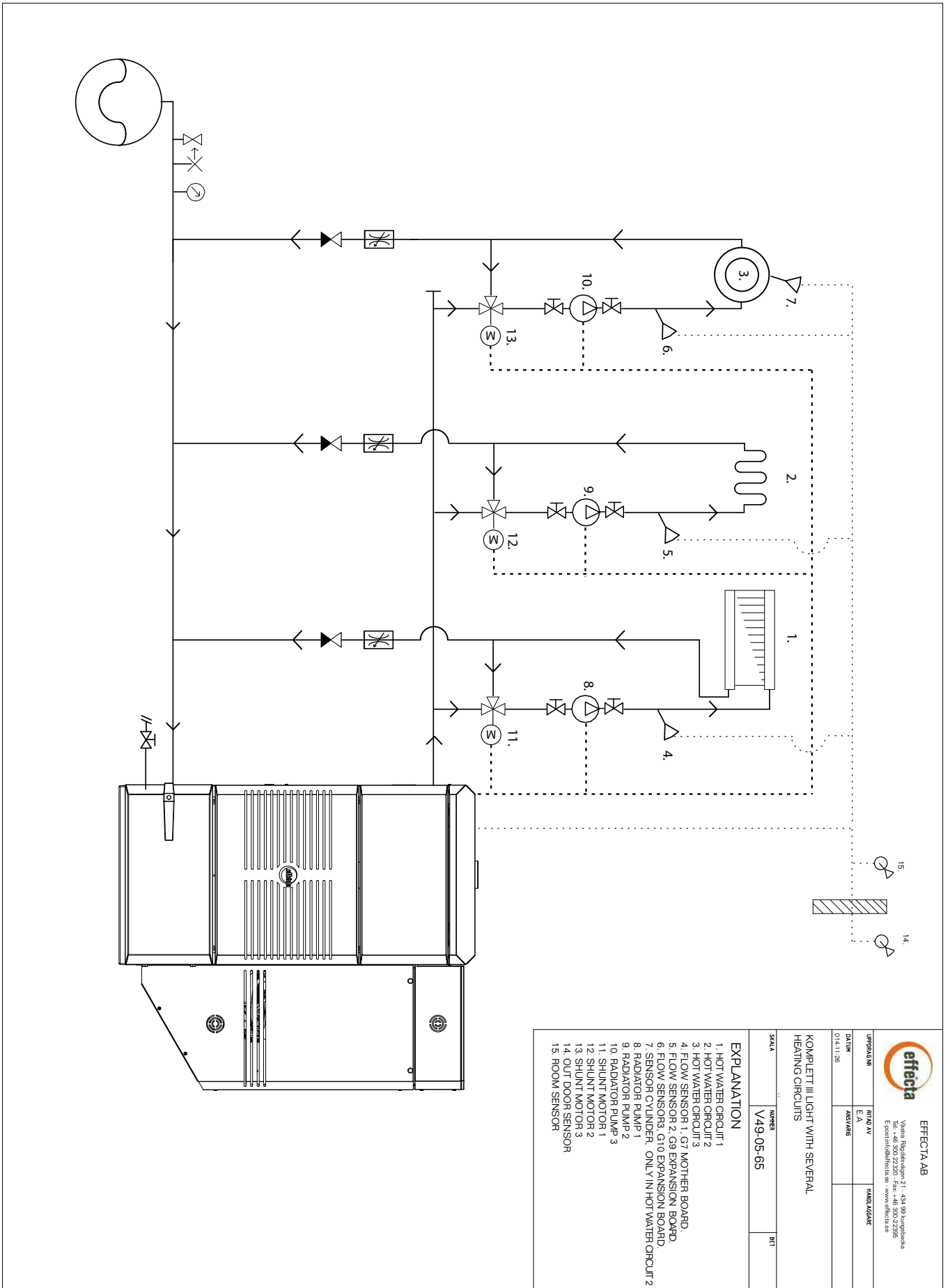
■ Connection suggestions accumulator tank with solar heating



EFFECTA KOMPLETT III LIGHT

		EFFECTA AB Västra Rågdalsvägen 21 - 434 99 Kungälv Tel: +46 300 22320 - Fax: +46 300 22315 E-post: info@effecta.se - www.effecta.se	
OPERATOR	SRAD AV	TÄNKTÄGARE	
DATUM	EA	ANSÖKAN	
04.11.26			
KOMPLETT III LIGHT WITH ACCUMULATOR TANK AND SOLAR HEATING			
SKALA	1:1	REVIS	REJ
	V/49-05-69		
EXPLANATION 1. OUT DOOR SENSOR 2. ROOM SENSOR 3. FLOW SENSOR G7 4. RADIATOR PUMP HOT WATER ORCUIF 1 5. SHUNT MOTOR HOT WATER ORCUIF 1 6. LOADING PUMP WITH THERMIC VALVE 7. SENSOR LOAD STOP G6 8. SENSOR LOAD START G5 9. SENSOR START/STOP SOLAR (EXTERNAL) 10. RADIAATORS			

Connection suggestions several heating circuits



Component placement

EFFECTA AB
 Västra Rågdalsvägen 21 - 434 99 Kungälv
 Tel. 0300-22320 - Fax 0300-22325
 E-post: info@effecta.se - www.effecta.se

UPPSÄTTNING: 015-02-05
 SKALA: 1:1

COMPONENTS EFFECTA K3
 VARYING ARTICLES DEPENDING ON MODEL

SHALLA: V50-04-59

PART NR.	PRODUCT 20kW	PRODUCT 25kW	PRODUCT 35kW	DESCRIPTION	NUMBER
1	1088	1088	1088	Flue gas fan	20/25/35
2	115	115	115	Lambda probe	1/1/1
3	1081	1081	1081	Vacuum motor	1/1/1
4	6532	6532	6532	Capacitive sensor	1/1/1
5	1082	1082	1082	Gasket vacuum motor	1/1/1
6	67102	67102	67102	Safety motor	1/1/1
7	226	226	226	Feeder internal	1/1/1
8	1036	1036	1036	Feeder motor internal	1/1/1
9	1110	1110	1110	Compressor	1/1/1
10	720	720	720	Insulation burner plate	1/1/1
11	2841	2841	2841	Safety ball valve	1/1/1
12	1130	1130	1130	Aero package	1/1/1
13	10024	10024	10024	Safety tube	1/1/1

Component placement

EFFECTA AB
 Västra Rågdalsvägen 21 - 434 99 Kungsbacka
 Tel: 0300-22320 - Fax: 0300-22395
 E-post: info@effecta.se - www.effecta.se

UPPERBUDSR: RETAD AV: HANDELSGÄRE:
 EIA ANSÄRIG

DATELOR: 015-02-05

COMPONENTS EFFECTA K3
 VARYING ARTICLES DEPENDING ON MODEL

SKALA: V50-04-59

PART NR.	PRODUCT 20KW	PRODUCT 25KW	PRODUCT 35KW	DESCRIPTION	NUMBER
1	76	76	76	Seal for ash door	1/1/1
2	721	721	721	Insulation ash door	1/1/1
3	1814	1814	1814	Ash box	1/1/1
4	30179	30179	30179	Electrical heater board	1/1/1
5	30177	30177	30177	Mother board	1/1/1
6	1073	1073	1073	Automatic fuse	3/3/3
7	10801	10801	10801	Start condenser	1/1/1
8	301790	301790	301790	Display card	1/1/1
9	58	58	58	Knobs	2/2/2
10	7211	7211	7211	Insulation cover plate	1/1/1
11	767	7672	7672	Silicon seal	1/1/1
12	56102	56102	56102	Magnet motor	1/1/1
13	226	226	226	Turbulators	6/6/6
14	301693	301693	301693	Expansion board	1/1/1
15	301691	301691	301691	Lambda board	1/1/1
16	1271	1271	1271	Overheat protection	1/1/1



Försäkran om överensstämmelse, Declaration of conformity,
Konformitätserklärung, Déclaration de conformité.

Försäkrar under eget ansvar att produkten,
Declare under our sole responsibility that the product,
Erklären in alleiniger Verantworren, daß das Produkt,
Déclare sous sa seule responsabilité que les modèles,

Pellet gasification boiler
Effecta Komplett III / 20-25-35 kW
Effecta Komplett III Light / 20-25-35 kW

som omfattas av denna försäkran är i överensstämmelse med följande direktiv
to which this declaration relates is in conformity with requirements of the following directives
auf das sich diese Erklärung bezieht, konform ist mit den Anforderung der Richtlinien
auxquels la présente déclaration s'applique, sont conformes aux exigences des directives suivantes

EC directive on:

- * Electromagnetic Compatibility (EMC): 2004/108/EC
- * Machinery directive
- * Low Voltage Directive (LVD): 2006/95/EC
- * Pressure Equipment Directive (PED): 97/23/EC

This pressurized equipments are not covered by Article 3 in EU Directive 97/23/ EC.

However, as prescribed

in item 3 of this article, the equipments are designed and manufactured in accordance with the sound engineering practice of a member state in order to ensure safe use.

Överensstämmelsen är kontrollerad i enlighet med följand EN-stadarder
The conformity was checked in accordance with the following EN-standards
Die Konformität wurde überprüft anhand der EN-Normen
Cette conformité été vérifiée selon les normes suivantes

- | | |
|--|---|
| * EN 287-1:2004 | Approval testing of welders - fusion welding... |
| * EN 303-5 | Heating boilers for solid fuels |
| * EN 10 204:2005 | Metallic products - type of inspection documents... |
| * EN 50 366:2003, A1:2006 | EMF |
| * EN 55 014-1:2006 | Emission |
| * EN 55 014-2:1997, A1:2001 | Immunity |
| * EN 60 335-1:2002, A1:2004,
A2:2006, A11:2004, A12:2006,A13:2008 | Safety of households |
| * EN 60 335-2-21:2003, A1:2005,
A2:2008 ... | for storage water heaters |
| * EN 60 335-2-102:2006 | For gas, oil and solid-fuel burning appliances having
electrical connections |
| * EN 61 000-3-2:2006 | Harmonics (equipment with rated current \leq 16A/phase) |
| * EN 61 000-3-3:1995, A1:2001, A2:2005 | Voltage fluctuations (equipment with rated current \leq 16A/phase) |
| * SPCR 028 | |

Kungsbacka 2014-04-20

Erik Andersson
CEO
Effecta Energy Solutions AB

