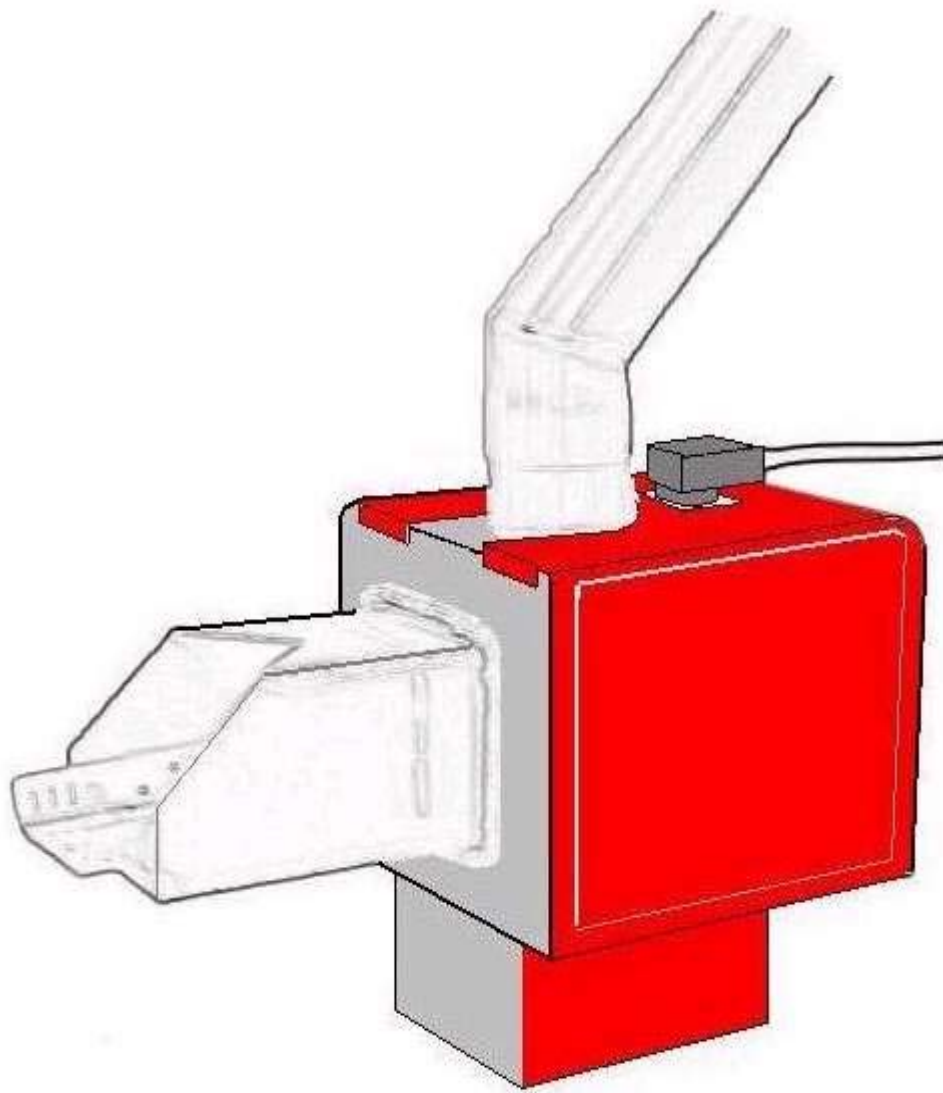


Scotte pellets burner



NORDIC BIO ENERGY LTD
Pellets Systems.

The Burner

The Scotte Pellets burner has been constructed to replace an oil/gas burner and can be installed into the existing boiler.

Scotte is equipped with Drop Shaft and Melting Hose which makes it unnecessary to install a Fire Extinguisher by means of Water.

A built in Photo Censor is surviving the burning process.

The Scotte pellets burner is operating very similar to an ordinary oil burner apart from the unique operating system with 2 step modulating run.

This means that Scotte will always keep running by adjusting itself up or down currently with the need for heat rising or falling.

If the Temperature at low esteem rises in the boiler,

Scotte will start pause firing and then adjust itself up again when the need arises.

Basic settings (Guidelines)

Blower % Low strain	15 %
Auger time Low strain	1,5 sec.
Blower % High strain	40 %
Auger time High strain	6.0 sec.
Boiler temperature	60 Degrees Celsius
Oxygene Low strain (Only at Oxygene operating)	14 %
Oxygene High strain (Only at Oxygene operating)	10 %

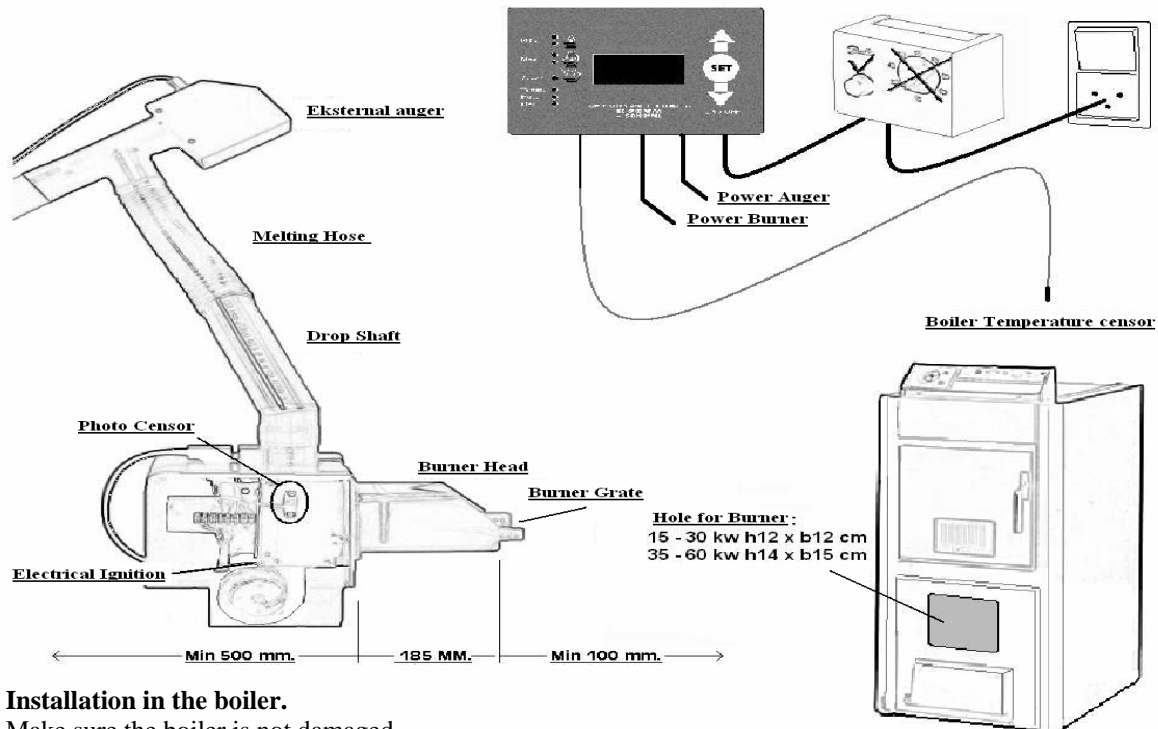
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HIDDEN MENU....

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A. Actual Photo Censor displaying	???
B. Lighting quantity	30 sec.
C. Lighting time	8 min.
D. Electrical Lighting Effect.	80 %
E. Max time of Pause firing	120 min
F. No. of Auger intake per minute	3 x
G. Oxygen operating	0
H. Calibrating oxygen	0

Mounting on the boiler



Installation in the boiler.

Make sure the boiler is not damaged.

Make sure there is enough space inside the boiler (min. 30 cm depth is required)

1. Make a hole of 12 x 12 cm. in the lower door or mount a sheet instead of the lower door. (Extra equipment)

Place the burner into the hole and drill two 8 mm. holes in which to place the wing nuts.

2. The burner must be placed horizontally.
3. It is important that all gatherings are tight.
4. Use boiler putty or fibre glass packing to tighten the gathering.
5. Mount the burner by the wing nuts enclosed.
6. Make sure nothing burnable is situated close to the boiler.

Eksternal auger

Mount the eksternal auger with the drop above the burner,

the enclosed plastic hose should have sufficient drop so that the pills fall into the burner.

The steeper the auger is placed the less pills it lets out,

be aware that the starting point of the auger also becomes smaller.

Electrical connection

Plug the steering to the burner.

Place the boiler thermometer into the same tube as the DTO. (Oil furnace thermostat)

Connect the power (230 Volt) in a series with the boiler over thermostat

so that the power for the steering is disconnected in case of the boiler boiling over.

A power switch should be situated close to the steering so that the power can easily be turned off.

Pill container

The pill container can be an oil drum or a ready made container depending on space available.

However the directions from the chimney sweep must be followed.

Filling up the eksternal auger.

The feeding auger is filled for the first time when the system is new or if it has run out of pills.

Keep the UP button in and the auger runs. Keep running till pills drop into the burner.

Starting the burner for the first time.

1. Make sure there are pills at the end of the auger.
2. Turn on the steering.
3. Keep pressing the UP button till pills are inside the burner.
4. The furnace will now start.

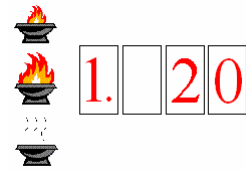
Adjusting the burner

You enter the menu pressing the Set button.

Blower Low strain : 1st.

Adjustment of Blower at low strain 0-100 %.

The more blow the higher effect and reverse – the lesser effect the better. (Overall).
However, there must always be a flame at the burner.



Auger time Low strain : 2nd.

Adjustment of quantity of wooden pills according to the speed of the blower.

It is essential that this adjustment is correct according to the speed of the blower, operating with a wrong adjustment will reduce economy of the stoker considerably and risk operation stop



Blower High esteem : 3rd.

Adjustment of Blower at high esteem 0-100 %.

The lesser blow the lesser effect and reverse – the lesser effect the better. (Overall).



Auger time High esteem: 4th.

Adjustment of quantity of wooden pills according to the speed of the blower.

It is essential that this adjustment is correct according to the speed of the blower, operating with a wrong adjustment will reduce economy of the stoker considerably and risk operation stop



Auger time Pause : 5th.

Adjustment of quantity of wooden pills needed by the burner at Pause firing, should be as low as possible without losing fire.

The burner takes in pills every 5 min.



Temperatur : 6th.

Adjustment of temperature in the boiler.

Scotte runs till it has reached 5 degrees C above the fixed value before entering Pause firing. Starts again 3 degrees C below fixed value.



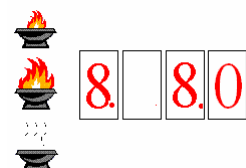
Oxygen Low strain : 7th. (only at Oxygen operating)

Adjustment of Oxygene at low strain. To be adjusted so high (about 12-14 %) that there is only a lean flame.



Oxygen High strain : 8th. (only at Oxygen operating)

Adjustment of Oxygen at high strain. To be adjusted so low (about 6-10 %) that there is a vigorous flame.



Adjusting the burner

THE HIDDEN MENU.....

(DOWN AND UP ARROWS ARE HELD AT THE SAME TIME FOR 5 SEC.)

The first point you reach is the actual value of the Photo Sensor,
 (This Sensor is at the right side of the burner) if it shows 0 there is no fire and 350 is max. fire.
 You run through the menu by pressing the SET button.

A.....

The value the Photo Sensor must be below before fire starts.....

B.....

Adjusting the quantity of pills the burner needs to light fire.

C.....

Adjusting electrical ignition, the lower time the longer life of electrical ignition.

D.....

Adjusting effect of electrical ignition, the lower effect the longer life of electrical ignition.

E.....

The maximum of time the burner runs at Pause firing.

F.....

Adjustment of how often the Auger needs to give pills.

G.....

The Operating systems is prepared for Oxygen, here it can be connected (2)

Show oxygen only (1) or

disconnected (0)

H.....

calibrating of the oxygen

Auger force run :

The UP button is held at connecting power,

The DOWN button disconnects the Auger.

Reset the programme :

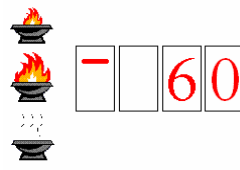
The DOWN button is held at connecting power,
 the programme resets to standard settings.

Switch between temperature and oxygen showing :

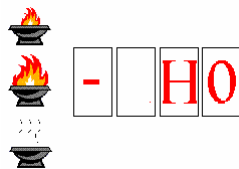
Down button is held once (only when there is oxygen control)



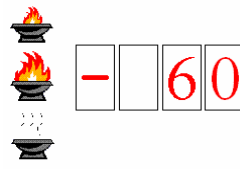
Burner can not se the fire.



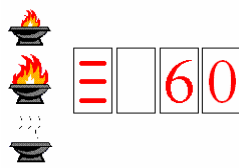
Burner is in Low strain



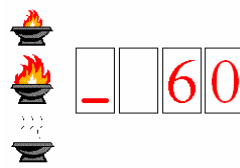
Burner is to hot.



Burner is in High strain



Burner is using the ignition.



Burner is in Pause.

Adjusting the burner

Negative pressure.

The chimney should be able to create a negative pressure in the boiler, light a match over the falling shaft and the flame should draw against the falling shaft.

At lack of draught in the chimney contact the chimney sweep.

Be aware that the chimney draught will vary from day to day depending on the wind.

So even if there is a nice chimney draught one day it is not necessarily the same the day after.

Adjusting High and Low strain for the first time.

Start the burner, adjust auger time downwards for high and low strain so that the burner burns with a lean flame, how far down to adjust depends on the slope and efficiency of the feeding auger.

When the burner switches to high strain after 5 min. then adjust the blower high strain to the efficiency required.

Adjust auger time high strain up or downwards till there is a nice flame with glow.

Adjust in small bites at the time and give the burner time to adjust.

When high strain has reached correct burning process adjust boiler temperature down 3 degrees C below the actual boiler temperature.

The burner now runs low strain and you repeat the manoeuvre now only with a blower efficiency of about 10-30 % and proportionate lesser pills.

If the boiler during the settings of low strain drops in temperature the burner will start to run high strain (3 degrees C under set point).

You can reduce boiler temperature a little currently whilst adjusting.

Adjusting High and Low strain on every day basis.

As part of the daily maintenance of the furnace you should once in a while open so that you can see the burning and estimate the flame.

The auger will feed differently whenever there is a change of quality in pills (dust, length etc...),

If the flame is fat (dark, perhaps black at both ends) or the ashes is black with black pills you need either more air (blower high / low strain up) or less auger time (auger time high / low strain down)

If the flame is lean (small like a sparkler) or the ashes is light grey you need either less air (blower high / low strain down) or more auger time (auger time high / low strain up)

Correct burning normally provides dark grey ashes which still will vary from the source of wooden pill.

Adjusting Pause Firing.

The steering runs firmly by letting in pills every 5 min.

The main issue is to decrease amount of pills at each drop as much as possible without the furnace stopping.

During winter time it is not as vital as in the summer time where the need for heat is small.

Adjust little by little.

Type of solid fuel

The Scotte burner is designed for wooden pills Ø 6-8 mm which do not burn into cinders.

Electrical data

Voltage 230Volt AC

Nominal effect 35 W

Cleaning of the Burner

Turn off the burner when cleaning.

Stop the feeding of pills by unplugging the auger the burner will then stop and cool off, when the fire alarm is on the burner is ready.

Starting the burner after power switch off.

The burner will start automatically after power switch on, however, cinders in the head of the burner may disturb the starting up.

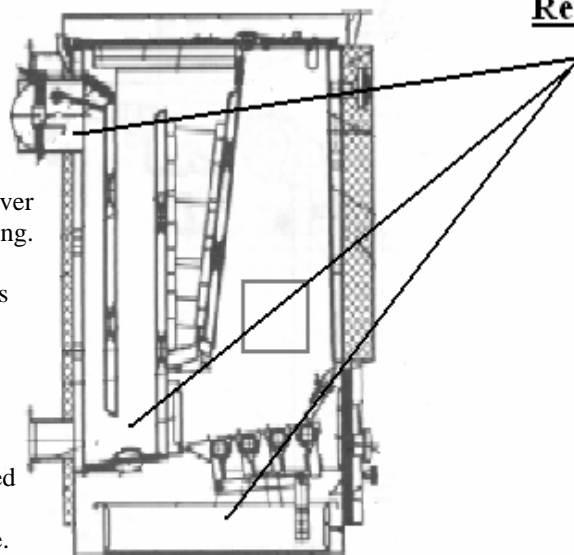
Cleaning should be done on a regular basis whenever needed to ensure best possible economy and running.

The better boiler and better quality of wooden pills the longer time between cleaning the furnace.

The boiler.

The boiler must be emptied for cinders and brushed on all surfaces in order to remove soot particles. Be much aware of smoke turner and chimney tube.

An old vacuum cleaner or ashes bucket is quite suitable as the ashes normally is without soot and tar.



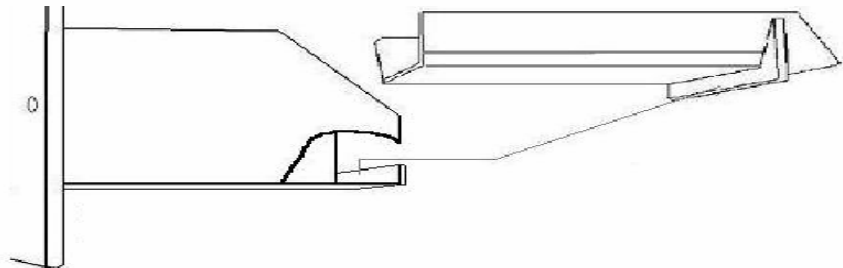
Remove ashes

The head of the burner

Remove ashes and cinders from the grate.
Remove rests of pills underneath the grate.

Wipe off the flame indicator
(situated inside the burner at its right side)

Make sure there is nothing in the blower to disturb its running.



OBS; Make sure the grate is placed again correctly.

The grate is to lie on the projection of the head of the burner.

The pill silo.

As the pills contain dust it is necessary sometimes to empty the silo totally, the more dust in the silo the lesser pills the auger will feed and the furnace will eventually come up with an alarm..

It depends on the design and the silo and the quality of the wooden pills you use, how often it is necessary to empty the silo totally.

Wiring and technical data

