

# NBE / OPOP

## *Pellet burner with Black Star boiler* *Version 6.70*



### **Content list:**

<b>Page 2:</b>	<b>Mounting instructions</b>
<b>Page 3:</b>	<b>Adjusting by weight</b>
<b>Page 4-11:</b>	<b>Operating manual. STAGE 0-4</b>
<b>Page 12:</b>	<b>General information about the combustion</b>
<b>Page 13:</b>	<b>Cleaning guide</b>
<b>Page 14:</b>	<b>Maintenance guide</b>
<b>Page 15:</b>	<b>Trouble shooting</b>
<b>Page 16-18:</b>	<b>Electrical wiring diagram</b>
<b>Page 19:</b>	<b>Interface / Additional Equipment</b>
<b>Page 20:</b>	<b>Installation and operation of flow meter</b>
<b>Page 21:</b>	<b>Installation and operation of circulation pump</b>
<b>Page 22:</b>	<b>Installation and operation of smoke temperature</b>
<b>Page 23:</b>	<b>Installation and operation of wireless room thermostat</b>
<b>Page 24-25:</b>	<b>Installation and operation of oxygen control</b>
<b>Page 26:</b>	<b>Installation and operation of Interface</b>
<b>Page 27:</b>	<b>Installation and operation of compressor cleaning</b>
<b>Page 28:</b>	<b>Warranty</b>
<b>Page 29:</b>	<b>Installation of pellet silo</b>
<b>Page 30:</b>	<b>Exception to the pressure vessel / conformity declaration</b>

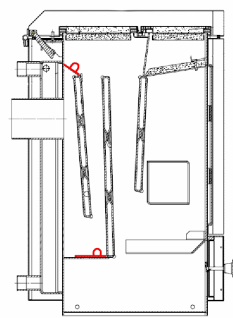
Nordjysk Bioenergi ApS  
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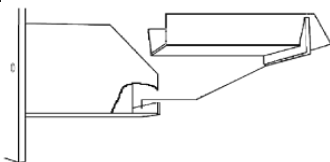
EN303-5 approved at DTI .  
Approved for pressurised system.

# Manual

## NBE Pellets Systems Mounting instructions



	Black Star	Mini	10-16 kW	20 kW	30 kW	40 kW
Height mm:	980	980	980	980	980	1084
Width mm:	900	430	430	530	530	628
Depth mm:	760	630	630	693	693	795
Chimney mm:	130	130	150	150	150	150
Outlet pipe:	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
Return pipe:	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
Filling pipe:	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
Efficiency :	91,0%	91,7%	93,0%	92,0%	92,0%	92,5%



### General guidelines:

The boiler should be installed by an authorized fitter and must be installed in accordance with work supervision publication 42 ( Danish ) covering equipment working with water. The outlet duct should be no longer than 1 meter, and should be fitted with a cleaning door.

The chimney draught should be at least 5 PA and should be stable.

A draught stabilizer should always be installed. If combustion gases

**Burning grate must be fitted correctly to prevent damage to the burner !**

condense in the chimney (i.e. wet ash) open the flue (the flap inside at the back of boiler) as wide as possible to increase the temperature of the smoke. The boiler must be fitted with a bypass to ensure the back flow is always kept above 45 degrees.

### **Mounting the burner:**

1. Check that the burner is undamaged.
2. Fit the controls either on the cabinet or on the wall.
3. Install the overheating safety cut off into the immersion sleeve on the side of the boiler and connect the controls so that the overheating safety cut-off is able to disable the power in the instance the boiler overheats.
4. Install the heat sensor on the output flow either in the thermo well or on the output flow. (**NOTE: The sensor must be insulated to the output flow.**)
5. Fit the burner and tighten it firmly using the two wing nuts supplied.
6. Ensure that the burner is in a horizontal position and all connections are tight.
7. Fit the cover and the plug. (**NOTE: When installing the burner on the Black Star Mini System, no outer burner cover should be attached to the burner.**)

### **Outer auger:**

8. Install the auger through the opening over the burner.
9. Ensure that the pipe slopes enough to allow the pellets to fall into the burner.

### **When using for the first time:**

10. Make sure that there are enough pellets by the entrance of the outer auger.
12. Force-start the auger by holding down the UP button by the power input point.
13. If the pellets fall into the combustion chamber, turn off again by pressing DOWN.
14. Then restart the burner using the electrical ignition.

### **Turning off the alarm:**

15. If the alarm goes off, the burner will not start. Press the Down button to reset the alarm.

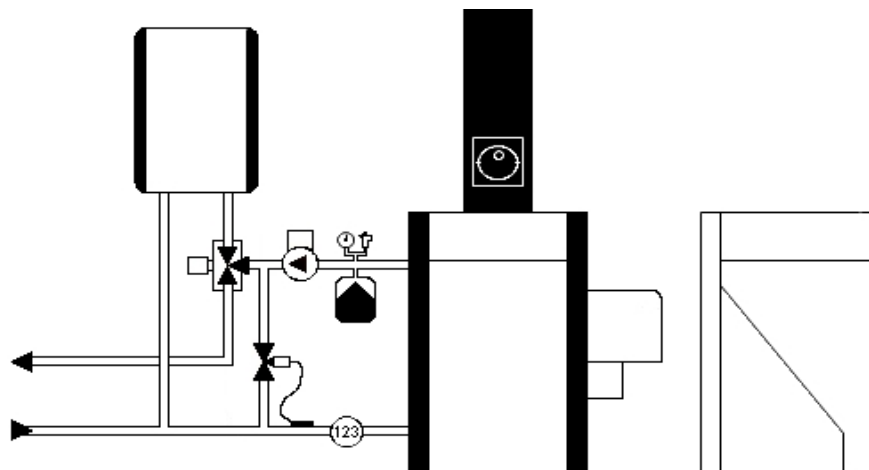


Diagram example of installation.

# Manual

## NBE Pellets Systems

### Adjusting by weight .

#### Step 1.

Attach a bag or similar, to collect the wood pellets.

#### SETUP

- 01. TEMPERATURE
- 02. MAGAZINE
- 03. IGNITION
- 04. AUTO COMBUSTION
- 05. TIMER BOILER

#### Step 2.

Go to AUTO COMBUSTION in the control box

#### 04. AUTO COMBUSTION

AUGER CAPACITY	1000G
AUTO NO/YES	YES
360 S TESTDRIVE	YES
CHIMNEY DRAFT	1
PELLETS LOW	1.40 %

#### Step 3.

Enable 360 sec. TEST DRIVE by selecting to YES. This will begin a test that simulates normal operation



#### 04. AUTO COMBUSTION

AUGER CAPACITY 1580G

#### Step 4.

After the 360sec TEST DRIVE is complete, weigh the pellets in grams and insert the weighted value under AUGER CAPACITY.

#### 04. AUTO COMBUSTION

CHIMNEY DRAFT 1

#### Step 5.

Estimate the current draft of the chimney. The greater the drag the greater the number to be entered. A chimney with the draft stabilizer added will typically have value of approx. 0-3.  
(NOTE: Repeat 1– 5 after 14 days if the facility is new or as needed.)



#### 04. AUTO COMBUSTION

360S TESTDRIVE	7:32
ON= 5:23	OFF= 2:09



# Manual

NBE Pellets Systems

## Operating manual. STAGE 0-4 See what is active on page 2

(NOTE: Changing the operating display view, as seen on the right column, can be easily changed by pressing the up/down button.)

### Operating Display 1:

Boiler temp. / Temp smoke. / DHW temp.  
Return temp. / Silo content / light / KW /  
clock management/ Circulating pump / 3 way valve. /  
Electric ignition.

( NOTE :When the electric ignition is displayed,  
you may also see an ignition time countdown  
of the time used during the ignition start )

### Operating Display 2:

Boiler temp. / Return temp. / Smoke temp. / Oxygen%.  
The flow system. / KW / light. / Shaft temp.  
External temperature. (T5) / pump / electric ignition

### Operating Display 3:

Heating time / DHW time / heat consumption /  
DHW consumption / Magazine(Hopper) content / time

### Operating Display 4: (only in stage 4)

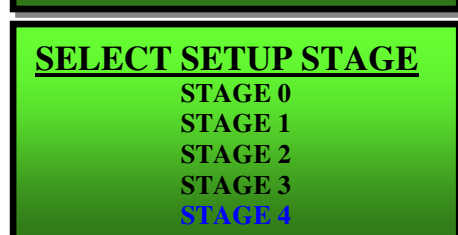
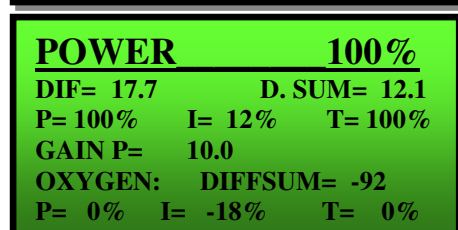
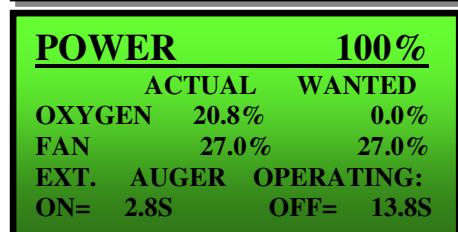
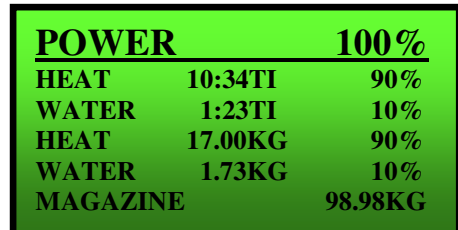
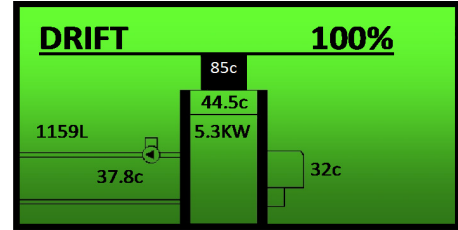
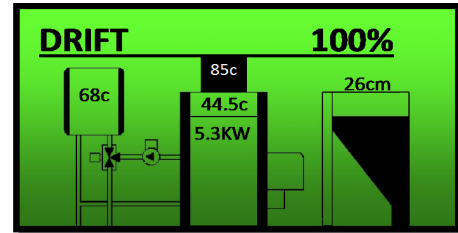
Current O2 / Desired O2 /  
Actual fan% / corrected fan%  
Current driving auger / current pause time auger

### Operating Display 5: (only in stage 4)

Calculated P & I supplementary in temperature control.  
Calculated P & I supplementary in oxygen control.  
Oxygen control supplementary of auger feed time.

Press the SET and SETUP menu  
for general adjustment to appear in the display.  
UP key is used for up adjustments.  
DOWN key is used for down adjustments  
and on / off the control box (hold for 10 sec.)'

To reset the alarms  
(press DOWN once / only in bottom of picture).



### STAGE 0.

1. Temperature  
2. Magazin  
3. Ignition

### STAGE 1.

1. Temperature  
2. Magazin  
3. Ignition  
4. Auto Combustion

### STAGE 2.

1. Temperature  
2. Magazin  
3. Ignition  
4. Auto Combustion  
5. Timer boiler  
6. Timer hot water  
7. Cleaning

### STAGE 3.

1. Temperature  
2. Magazin  
3. Ignition  
4. Auto Combustion  
5. Timer boiler  
6. Timer hot water  
7. Cleaning  
8. Oxygen control

### STAGE 4.

1. Temperature  
2. Magazin  
3. Ignition  
4. Auto Combustion  
5. Timer boiler  
6. Timer hot water  
7. Cleaning  
8. Oxygen control  
9. PI regulation  
10. Blower  
11. Temperature alarm  
12. Accessories  
13. Manual control  
14. Temperature sensor

**Press SET for 8 sec to  
choose between STAGES 0-4.**



# Manual

NBE Pellets Systems

Operating manual. STAGE 0-4 See what is active on page 2

## SETUP

### 01. TEMPERATURE

- Boiler difference over
- Boiler difference under
- Hot water temperature
- Hot water diff. temp.
- Pump start
- Pump stop
- Stop ext temp
- Ext diff stop
- Contact wait

#### BOILER TEMPERATURE

(0-85) degrees

Adjusts the value of the desired boiler temperature from 0-85 degrees Celcius.

*(NOTE: The pellet boiler will adjust itself to maintain the BOILER TEMPERATURE through starts and stops that are controlled by the default settings or via a user defined temperature range. This range is defined under user setting which include: BOILER TEMPERATURE, BOILER DIFFERENCE OVER, and BOILER DIFFERENCE UNDER. The pellet boiler will shut off the heat produced when the temperature reaches the selected BOILER TEMPERATURE + BOILER DIFFERENCE OVER temperature(top range temperature) and will reactivate again to produce heat once the BOILER TEMPERATURE—BOILER DIFFERENCE UNDER temperature (bottom range temperature) is reached. )*

#### BOILER DIFFERENCE OVER

(0-15) degrees

Adjusts the amount of degrees allowed to be reached **over** the desired BOILER TEMPERATURE value before the boiler is shut off to cool down.

#### BOILER DIFFERENCE UNDER

(0-20) degrees

Adjusts the amount of degrees allowed to be reached **under** the desired BOILER TEMPERATURE value before the boiler starts up to produce more heat.

#### HOT WATER TEMP.

(0-80) degrees

Adjusts the temperature value controlling for the desired temperature of hot water.

*(NOTE: Can only be used when equipped with a hot water temperature sensor. The temperature sensor can be combined with one of the outputs (L5/L6), a 2 or 3-way motorized valve for hot water priority, or can be used independently to activate the burner.)*

#### HOT WATER DIFF. UNDER

(0-20) degrees

Adjusts the amount of degrees allowed to be reached **under** the desired HOT WATER TEMP value before the boiler starts up to produce more heat/ switch to hot water operation. *(NOTE: Increasing the HOT WATER DIFF. UNDER value ensures fewer starts/ stops).*

#### PUMP START

(0-80) degrees

Adjusts the temperature value at which the controller starts the circulation pump.

NOTE: PUMP START is only possible if any of the additional outputs (L5 / L6) are connected to the circulation pump and are made active in the control setting ACCESSORIES. *(NOTE: The PUMP START has a fixed hysteresis at 5 degrees.)*

#### PUMP STOP

(0-80) degrees

Adjusts the desired temperature at which the controller turns off the circulation pump.

*(NOTE: PUMP STOP is not active when the boiler is in operation. The PUMP STOP turns off the circulation pump when the pellets burner is at stop.)*

#### STOP EXT TEMP

(0-90) degrees

An adjustable temperature value that stop the burner at the given temperature (T5)

*(NOTE: Can also be used for inside temp., Outside temp., Or in an accumulation tank, etc. )*

#### EXT DIFF TEMP

(1-20) degrees

Adjusts the temperature value that stops the burner at STOP EXT TEMP minus EXT TEMP DIFF (T5)

#### CONTACT WAIT

(0-60 min)

Adjusts the number of minutes delay of a signal on the external contact.

Used to prevent rapid on / off for example. due to electrical noise or, for example. at extremely responsive room thermostats.

# Manual

NBE Pellets Systems

Operating manual. STAGE 0-4 See what is active on page 2

## SETUP

### 01. TEMPERATURE

### 02. MAGAZIN

- Actual content
- Reset consumption
- Distance top
- Distance bottom
- Auto filling

### ACTUAL CONTENT

(0-9999) kg

The number of kg of pellets in the magazin (hopper).  
Consumption is automatically dragged from the silo,  
(The auger driving time multiply with auger capacity )

### RESET CONSUMPTION

(YES / NO)

Resets the counters consumption in operation picture 3

POWER		96 %
HEAT	10:34TI	90 %
WATER	1:23TI	10 %
HEAT	17.00KG	90 %
WATER	1.73KG	10 %
MAGZIN		98.98KG

### DISTANCE TOP

(0-500) cm

Specifies the distance in cm from the tank sensor to the top of the pellets when the magazin (hopper) is filled up.

### DISTANCE BOTTOM

(0-500) cm

Indicates empty magazine at a given distance in cm to the tank sensor

### AUTO FILLING

(0-9999) kg

Specifies the amount kg of pellets in a magazine (hopper) when the tank sensor reads DISTANCE TOP

## SETUP

### 01. TEMPERATURE

### 02. MAGAZIN

### 03. IGNITION

- Pellets
- Heater start
- Heater power
- Blower begin
- Blower middle
- Blower end
- Max minutes
- Total hours
- Total starts

### PELLETS

(0.0 to 60) sec.

Specifies the number of seconds of an augor's running time, when providing pellets for ignition. ( **NOTE:** Changing this figure will automatically override the AUTO CALCULATION figure.)

### HEATER START

(0-120) sec.

Adjusts the number of seconds an ignitor is preheated before the blower starts.

### HEATER POWER

( 0-100 ) %

Adjusts the percentage of power used by the ignitor during ignition.

(**NOTE:** Reducing the percentage of power given to the ignitor can allow for an extended lifetime of the ignitor. However, beware that if the ignitor power % is set too low, this could cause an electrical ignition failure.)

### BLOWER BEGIN

(0-100)%

Adjusts the % of blower speed during the start of an electrical ignition cycle.

### BLOWER MIDDLE

(0-100)%

Adjusts the % of blower speed during the middle of an electrical ignition cycle

### BLOWER END

(0-100)%

Adjusts the % of blower speed during the end of an electrical ignition cycle

### MAX MINUTES

(2-20) min.

Adjusts the max amount of time in minutes an electrical ignition cycle will take.

### TOTAL HOURS

(xxxxx) Hours

Provides the total number of hours the electrical ignition has been active.

### TOTAL STARTS

(xxxxx) times

Provides the total number of electric ignition starts performed.

(**NOTE:** Typically a wood pellet burner has approx. 1000 ignitions / year.

If your number is higher, this may be due to an incorrect installation or a poorly adjusted pellet burner.



# Manual

NBE Pellets Systems

Operating manual. STAGE 0-4 See what is active on page 2

## SETUP

02. MAGASIN

03. ELTÆNDING

04. AUTOBEREGNING

- Auger capacity
- Auto combustion
- 360 s test drive
- Chimney draught
- Pellets low
- Pellets high
- Output kW
- Min. power
- Max power
- Wood burning
- Hot water max



### AUGER CAPACITY

(300-9999) grams

The number of grams of pellets collected during a 360 SECOND TEST  
(NOTE: This value is used for example to calculate the AUTO COMBUSTION setting)

### AUTO COMBUSTION

(YES / NO)

Auto Calculation of pellets feed low, pellets feed high, and fuel for electric ignition.

Put Auto Calculation to YES, the parameters are calculated automatically.

Put Auto Calculation to NO, the parameters must be adjusted manually.

### 360 S. TEST DRIVE

(YES / NO)

360 S. TEST DRIVE is a setup program to test the amount of pellets being dispensed within 360 seconds of auger running time. Enabling the program is performed by selecting YES. (NOTE: The results of this test are used in the AUTO COMBUSTION setup procedure.)

### CHIMNEY DRAUGHT

(-1-10)

At high chimney draft conditions the blower output will be higher, especially at minimum power. Increasing the CHIMNEY DRAUGHT number under the AUTO COMBUSTION menu will provide more pellets at minimum power to compensate for the larger blower flow.

**IT IS ALWAYS RECOMMENDED TO INSTALL A DRAUGHT REGULATOR.**

### PELLETS LOW

(0.5 - 25) %

Adjusts the % of auger driving time when running at 10% power. (NOTE: Can only be adjusted if AUTO COMBUSTION is set to NO.)

### PELLETS HIGH

(1 - 100) %

Adjusts the % of auger driving time when running at 100% power. (NOTE: Can only be adjusted if AUTO COMBUSTION is set to NO.)

### OUTPUT KW

(5-250) KW

Adjusts the burner output in KW when running at 100% power.

(NOTE: This is used in AUTO COMBUSTION to calculate the pellets fed.)



**Important: Must match the blower parameters and the burner size!**

### MIN. POWER

(10-100) %

Adjusts the minimum % of power level of the burner.

Runs pellet burner in low load, most of the time, and it gives problems.

The minimum power can be raised, then burner turns off sometimes.

### MAX. POWER

(10-100) %

Adjusts the burner's maximum power level %.

(Note: Use if the burner increases in temperature too quickly or if the boiler installed is too small to effectively utilize the full potential of the burner.)

### WOOD BURNING

(YES / NO)

Enabling this setting to YES has the effect of preventing pellets from entering the boiler when burning wood until the boiler temperature reaches a desired boiler temperature minus 10 degrees. (NOTE: The blower will continue to run in order to provide air supply for wood burning.)

### HOT WATER MAX.

(10-100) %

Adjusts the % of the burner's max power when producing hot water.

(NOTE: If there is only a little heat absorption at the hot water tank the power may be reduced.)



# Manual

NBE Pellets Systems

Operating manual. STAGE 0-4 See what is active on page 2

## SETUP

03. IGNITION  
04. AUTO COMBUSTION  
05. TIMER BOILER

- Set watch
- Period
- 1. start
- 2. start
- 3. start
- 4. start

### SET WATCH

Allows for clock setting/adjustment

(NOTE: If the jumper is mounted, there is battery backup on the clock in the instance of a power cut off )

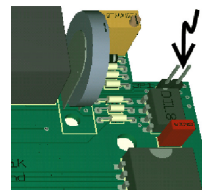


#### Important:

The controller must not be turned off by using the DOWN button when the clock controller is activated

(HH: MM)

Move jumper to activate battery



### PERIOD

Specifies the length of operating hours.

#### 1. START

Time of start of the burner to produce heat.

After starting the burner will be in operation according to the time specified in PERIOD.

#### 2. START

#### 3. START

#### 4. START

(HH: MM)

(HH: MM)

(HH: MM)

(HH: MM)

(HH: MM)

## SETUP

04. AUTO COMBUSTION  
05. TIMER BOILER  
06. TIMER WATER

- Period
- 1.start
- 2. start
- 3. start

### PERIOD

Indicates the length of a hot water period of operation.

#### 1. START

Time of start for the burner to produce heat.

After starting the burner is in operation in the time specified in PERIOD.

#### 2. START

#### 3. START

(HH: MM)

(HH: MM)

(HH: MM)

(HH: MM)

## SETUP

05. TIMER BOILER  
06. TIMER WATER  
07. CLEANING

- Cleaning period
- Cleaning time
- Cleaning power
- Compressor ( kg )
- Compressor time
- Compressor wait
- Compressor wait
- Compressor blower

### CLEANING PERIOD

Adjusts how often the burner is cleaned by the blower

(NOTE: The blower speed will rise briefly to blow the grate clean.)

(1-120) min.

### CLEANING TIME

Adjusts the amount seconds for cleaning. (NOTE: The shorter the intervals, the shorter the time should be.)

(0-60) sec.

### CLEANING BLOWER

Adjusts the the blower speed% during cleaning.

(25-100) %

### COMPRESSOR ( KG )

Adjusts the amount of X kg of pellets consumed before compressor cleaning begins. (NOTE: This burner accessory can be installed on all burners.) (NOTE: can only be enabled in the controlbox when L5 or L6 is connected to the compressor cleaning system )

(0-999) kg

### COMPRESSOR TIME

Adjusts the amount of seconds of blowing time performed by the compressor cleaner. ( NOTE: Only active in controlbox if L5 or L6 is connected to compressor cleaning )

(0.1 to 10) sec.

### COMPRESSOR WAIT

Adjusts the amount of seconds that the pellets are to be prevented from entering the burner prior to compressor cleaning. (NOTE: This is only active in the control box if L5 or L6 is connected to compressor cleaning)

(0-900) sec.

### COMPRESSOR BLOWER

Adjusts the % of blower speed allowed during compressor cleaning.

(0-100) %



# Manual

NBE Pellets Systems

Operating manual. STAGE 0-4 See what is active on page 2

## SETUP

06. TMER WATER

07. CLEANING

08. OXYGEN CONTROL

- Oxygen control
- Wanted oxygen low
- Wanted oxygen middle
- Wanted oxygen high
- Sensor tune
- Blocking Time
- Regulatory Time
- Gain P
- Gain I
- Blower low O2
- Blower middle O2
- Blower high O2
- Gain pills

### OXYGEN CONTROL

(NO / DISPLAY/ YES)

Enables the activation of oxygen control.

(NOTE: A lambda probe and oxygen print must be installed)

#### IMPORTANT:

Lambda probe must be calibrated before it can be activated.

The pellets must be weighed and the results must be entered into AUTO COMBUSTION.

### WANTED OXYGEN LOW

(00-21) %.

Adjusts the desired % of oxygen when running at 10% power.

( *NOTE: Will only be active in the controlbox if the Lanbda probe is calibrated and undamaged*)

### WANTED OXYGEN MIDDLE

(00-21) %.

Adjusts the desired % of oxygen when running at 50% power. ( *NOTE: Will only be active in the controlbox if the Lanbda probe is calibrated and undamaged*)

### WANTED OXYGEN HIGH

(00-21) %.

Adjusts the desired % of oxygen when running at 50% power. ( *NOTE: Will only be active in the controlbox if the Lanbda probe is calibrated and undamaged*)

### SENSOR TUNE

(00-100)

The calibration data for the lambda sensor.

To calibrate the oxygen sensor, it must be hot ( i.e. warmed for at least 10 minutes and kept in the open air.)

If calibrating is in range, and the OXYGEN CONTROL is YES, adjustments can then be made.

### BLOCKING TIME

(01-30) min.

Blocks auger if the oxygen % is less than 2% from the desired oxygen % in x min. (NOTE: To be used for solid fuel firing only. If wood is fed into the boiler, the % of oxygen will drop and auger will stop delivering pellets.)(NOTE: To be used only with a burner mounted on a solid fuel boiler.)

### REGULATORY TIME

(01-60) sec.

Specifies how often the controller adjusts the blower relative to the measured O2 %.

### GAIN P

(0.1 to 5.00)

Adjusts how much the controller will adjust the blower in relation to the % deviation of O2%

### GAIN I

(0.0 to 5.00)

Adjusts how much the controller will adjust the blower in relation to the time deviation of O2%

### BLOWER LOW O2

(00-100) %

The percentage range that the Oxygen control will regulate the blower at 10% power.

### BLOWER MIDDLE O2

(00-100) %

The percentage range that the Oxygen control will regulate the blower at 50% power.

### BLOWER HIGH O2

(00-100) %

The percentage range that the Oxygen control will regulate the blower at 100% power.

### GAIN PILLS

(0.01 to 1.0) %

Oxygen control regulating the pellet feeding

# Manual

NBE Pellets Systems

Operating manual. STAGE 0-4 See what is active on page 2

## SETUP

07. CLEANING  
08. OXYGEN CONTROL  
09. PI REGULATION  
-Gain P  
-Gain I  
-Power / minute

### GAIN P

(0.1 - 10.0) %

GAIN P gives a contribution to the current operating% which is dependent on the current difference between the desired and measured boiler temperature.

When starting from stop, the GAIN P is always 10, when the boiler temperature is obtained, GAIN P is reduced to the desired value.

### GAIN I

(0.00 to 5.00) %

GAIN I gives a contribution to the overall effect, that is dependent on the summed up time between the desired and the measured boiler temperature. The longer the burner has been from the desired boiler temperature the greater this effect contributions.

GAIN I become weighted with only 10%, when the boiler temperature is more than 10 degrees below the desired boiler temperature.

### POWER / MINUTE

(0-100) %

Increase in power / minute from the start (slow startup)

## SETUP

08. OXYGEN CONTROL  
09. PI REGULATION  
10. BLOWER  
-Blower low  
-Blower Middle  
-Blower high

### BLOWER LOW

(4-50) %

The blower speed at 10% power.

### BLOWER MIDDLE

(5-75) %

The blower speed at 50% power.

### BLOWER HIGH

(5-100) %

The blower speed at 100% power.

## SETUP

09. PI REGULATION  
10. BLOWER  
11. TEMP. ALARM  
-Burner temp.  
-Boiler temp. min.

### BURNER TEMP.

(50-90) degrees

Max temperature of the burner before being stopped with an alarm.  
Protection against back fire.

### BOILER TEMP. MIN

(10-70) degrees

Set minimum boiler temperature.

If the burner is operated under this temperature, and the boiler temperature does not rise at least 1 ° C per minute every 10 minutes, the the burner will stop and COLD BOILER alarm will alert.

# Manual

NBE Pellets Systems

Operating manual. STAGE 0-4 See what is active on page 2

## SETUP

09. PI REGULATION

10. BLOWER

11. TEMP. ALARM

12. ACCESSORIES

-Flow (1 / pulse )

-Pump

-Hot water valve

-Compressor

-Alarm

### FLOW (L / PULSE)

(1-1000)

Adjusts the flow meter to the boiler.

Allows you to see the current FLOW and KW output of the display.

Requires a flow meter and return temperature sensor on the boiler.

### PUMP

( NO )

Selection of output in the control box

( L5 NO - L NO )

for the operation of the circulation pump.

( L5 NC - L6 NC )

### HOT WATER VALVE

( NO )

Selection of output in the control box

( L5 NO - L NO )

for the operation of the 2 or 3 way valve for hot water tank.

( L5 NC - L6 NC )

THE OUTPUT CAN BE SET TO

NO (Normally Open) or NC (Normally Closed)

**NOTE:** Requires minimum hot water temperature sensor for hot water and for example 3 way valve / 2 way valve.

### COMPRESSOR

( NO - L5 - L6 )

Selection of output in the control box

for the operation of compressor cleaning system.

**NOTE:** Requires compressor cleaning kit

### ALARM

( NO )

Selection of output in the control box for the operation,

( L5 NO - L NO )

when an alarm occurs. Can also be used to start up an oil burner. ( L5 NC - L6 NC )

## SETUP

09. PI REGULATION

10. BLOWER

11. TEMP. ALARM

12. ACCESSORIES

13. MANUAL CONTROL

-External auger

-Blower

-Internal auger

-Ignition

-Accessories L5

-Accessories L6

### EXTERNAL AUGER

( NO / YES )

Manual on / off to test relay for EXTERNAL AUGER

### BLOWER

( NO / YES )

Manual on / off to test relay for BLOWER

### INTERNAL AUGER

( NO / YES )

Manual on / off to test relay for INTERNAL AUGER

### IGNITION

( NO / YES )

Manual on / off to test relay for IGNITION

### ACCESSORIES L5

( NO / YES )

Manual on / off to test relay for ACCESSORIES L5

### ACCESSORIES L6

( NO / YES )

Manual on / off to test relay for ACCESSORIES L6



### **IMPORTANT:**

To be used with extreme caution.

Users are only able to exit the menu if all settings are set to NO.

## SETUP

09. PI REGULATION

10. BLOWER

11. TEMP. ALARM

12. ACCESSORIES

13. MANUAL CONTROL

14. TEMP. SENSOR

-Boiler t1

-Smoke T2

-Return T3

-Hot water T4

-External T5

-Burner T7

Selecting the type of temperature sensor.

New model temperature sensor (metal model) NTC

Old model temperature sensor (Plastic model) PTC KTY81-210

### BOILER T1

( NTC / PTC / PT1000 )

Indication of sensor type for boiler temperature.

### SMOKE T2

( NTC / PTC / PT1000 )

Indication of sensor type for smoke temperature.

### RETURN T3

( NTC / PTC / PT1000 )

Indication of sensor type for return temperature.

### HOT WATER T4

( NTC / PTC / PT1000 )

Indication of sensor type for hot water temperature.

### EXTERNAL T5

( NTC / PTC / PT1000 )

Indication of sensor type for external temperature.

### BURNER T7

( NTC / PTC / PT1000 )

Indication of sensor type for burner temperature.

# Manual

NBE pellet system

## General information about the combustion

### SETTING THE CONTROLS

The controls work in a 100 step modulation and alternate through step automatically.



**If you use the AUTO COMBUSTION program i.e. weighing the pellets, and measuring the auger performance no further setting are necessary.**

#### Setting pellets at low and full load...

During normal everyday use it is recommended to occasionally check the combustion and assess the flames. Whenever the heating pellets are changed (i.e. size, type, or length of pellets, etc. ...), the dosing rate of the auger will also change and will affect combustion. ( However, if the burner is equipped with oxygen control, the burner will regulate this automatically. )

#### If there is a big flame on low power (i.e. 10-30% of performance)

(Dark, or with black tips) or the ash is black, then fewer pellets are required at low power. (**NOTE:** Reduce the chimney draught or reduce the PELLETS LOW menu item )

#### If there is a big flame on full load (70-100% performance)

(Dark, or black tips) or the ash is black then fewer pellets are required at full load. (**NOTE:** Increase the performance of the auger or reduce the PELLETS HIGH menu item.)

#### If there is a weak flame on low load (10-30% performance)

(i.e. Small flame and sputtering stars) or the ash is light grey then more pellets are required. (**NOTE:** Increase the chimney draught or set the PELLETS LOW menu item higher.)

#### If there is a weak flame on full load (70-100%)

(i.e. Small flame and sputtering stars) or the ash is light grey, with dark pellets then more pellets are required. (**NOTE:** Reduce the AUGOR CAPACITY or set the PELLETS HIGH menu item higher.)

**The pellet burner must not smoke, but must be sealed tight.**

**(Take care that smoke does not mingle with condensed steam.)**



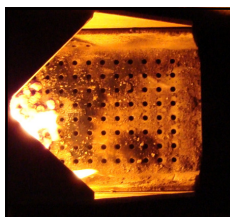
**Correct combustion normally results in dark grey ash, although this can vary slightly depending on the type of pellets used.**

**White and light ash in the boiler means excess air.**

**Having the boiler set up correctly has a great effect on the economy of burning wooden pellets**

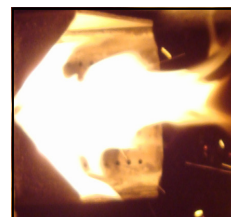
#### Small 10 % flame.

Photo sensor will have problems to see light.



#### Small 100 % flame.

A lot of unnecessary air.  
Cool down the boiler.  
Can cause black pellets in the ash.



#### Correct 10% flame



#### Correct 100 % flame.

Big and powerful.  
With red colours



#### Fuel type

The boiler is set up for wooden pellets Ø 5-8mm, which do not burn to cinders!! ( Hard ashes )

# Manual

NBE pellet system

## CLEANING GUIDE

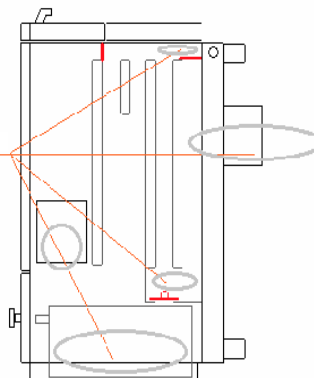
### When cleaning, turn off the burner...

Turn off the controls by hold down the on/off button for 10 seconds.  
Allow the burner to cool down for about 3 minutes.  
When the burner is completely switched off it is ready to be cleaned.  
Unplug the burner, remove the cover and the drop shaft,  
and unscrew the burner from the boiler before continuing.



**The burner should be cleaned regularly and whenever necessary. This will ensure that the burner runs as economically as possible. The more suitable the boiler you have and the better the pellets you use, the longer the intervals between each cleaning session.**

Area for  
Cleaning



### Boiler Cleaning

Clean the ash out of the boiler and brush off all the surfaces to remove any deposits.  
Be very careful of the ash in the backflow valve and the chimney pipe.

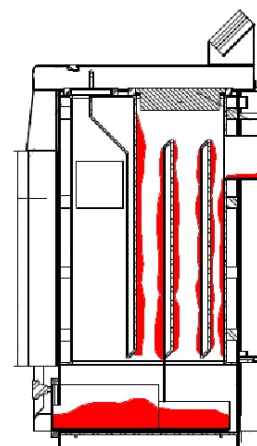
(NOTE: The chimney-sweeper may not be responsible for cleaning your chimney pipe)

In this instance you must do this yourself.

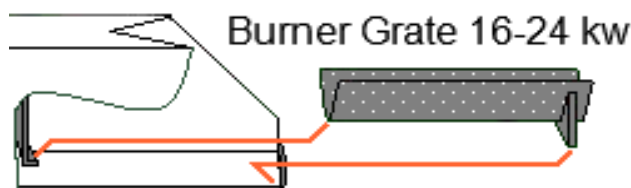
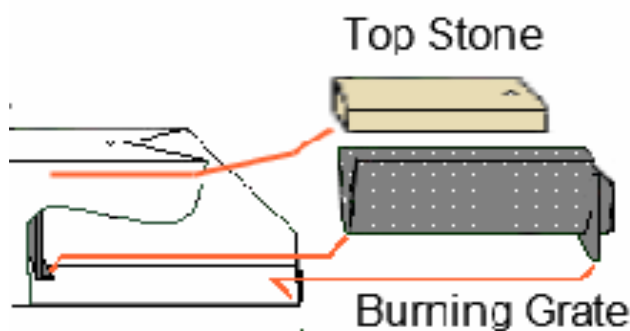
An old vacuum cleaner or ash bucket are suitable for cleaning since, the ash does not normally contain carbon particles or tar.

### Cleaning the Combustion Head

Remove any ash and any cinders from the grate.  
Remove any remnants of pellets from underneath the grate.  
Wipe the flame indicator.  
Ensure there is no debris in the ventilator.



**VERY IMPORTANT!!!  
THE COMBUSTION HEAD WILL  
BE DAMAGED IF THE GRATE IS  
NOT POSITIONED CORRECTLY!!!**



### Cleaning the Magazin(Pellet Hopper)

Since the pellets you put in the hopper may contain detritus, the hopper should be completely emptied from time to time. The more detritus there is in the hopper, the less the auger feeds, which can interfere with the settings and cause the burner to cut out.  
The frequency with which you empty the pellet hopper depends entirely on the angle inside of the hopper and the quality of the pellets being used.

### Restarting after cleaning...

Reassemble the pellet burner and ignite it (hold the on/off button down for 10 seconds), at which point the burner will start automatically. **DO NOT FORGET** to replace the cover, to ensure that the temperature of the combustion chamber is measured correctly.



# Manual

NBE pellet system

## MAINTENANCE GUIDE

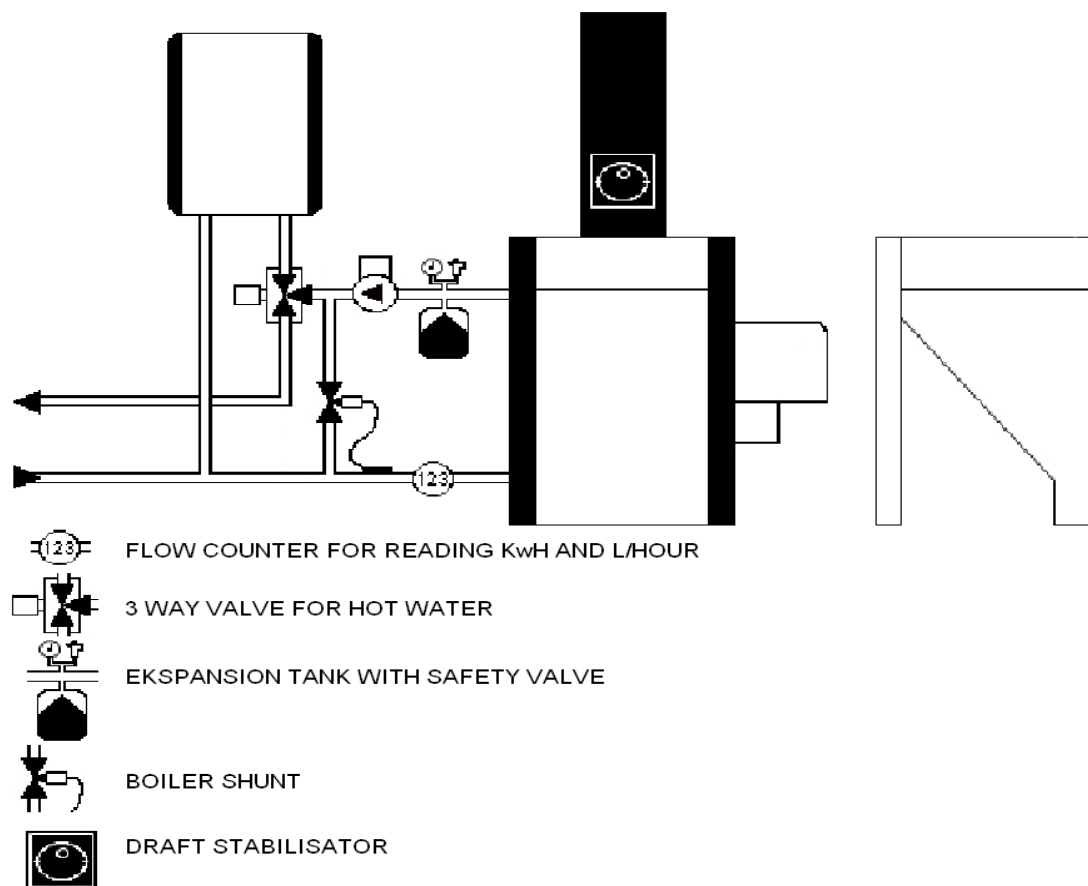
To make sure that you get a good experience with your pellet burner it is important that you maintain it correctly.

If required	7 day	14 day	30 day	1/2 year	Every year	
x	x	x				Clean the burner head, if there are hard ashes.
		x	x			Clean below the burner grate for any dust or ashes.
x			x	x		Clean the photo sensor for dust and soot
				x	x	Clean the blower for dust
x		x	x			Clean the burner and the boiler.
x			x	x		Clean the chimney pipe and the back of the boiler.
					x	Control sealing and replace worn-out sealing.
x						Adjust the burning.
x	x	x				Refill the magazine (hopper)
				x	x	Run the magazine (hopper) empty
					x	Chimney sweeper

The cleaning schedule above are only suggestions. You must always clean your equipment as needed. Cleaning is very individual, since the choice of pellets, the system type, and adjustment of the pellet burner have a major impact on the cleaning intervals.

**It is important that errors and defective parts are immediately corrected or replaced.**

One should always have a spare photo sensor and ignition in reserve.  
A properly adjusted pellet burner should not have any faults or downtimes.  
If this occurs, contact your dealer to identify the error or adjust your burner.



# Manual

NBE pellet system

## TROUBLESHOOTING

Problem	Cause	Solution
<b>ALARM HOT DROP SHAFT OR BACK SMOKE</b>	<ol style="list-style-type: none"> <li>1. Cinders/ash in the combustion head.</li> <li>2. Ash in the boiler, smoke pipe and chimney.</li> <li>3. Backflow valve installed incorrectly in the boiler.</li> <li>4. No draught in chimney.</li> <li>5. Performance too high (kW) in proportion to boiler.</li> <li>6. Defective sensor.</li> <li>7. Air flow wrong.</li> </ol>	<p>Clean the combustion chamber!</p> <p>Clean the boiler, smoke pipe and chimney!</p> <p>Rectify or remove the backflow valve panel in the boiler!</p> <p>Strip the insulation in the smoke pipe, raise the chimney!</p> <p>Contact your dealer!</p> <p>Change the heat sensor on the printed circuit board!</p> <p>Contact chimney-sweep or NBE!</p>
<b>ALARM FAULTY IGNITION</b>	<ol style="list-style-type: none"> <li>1. Burner grate not fitted correctly.</li> <li>2. Ash/cinders in the combustion head.</li> <li>3. Damp pellets.</li> <li>4. Ignition not fitted correctly.</li> <li>5. Defective ignition.</li> <li>6. Excessive chimney draught.</li> <li>7. Photo sensor is faulty/covered in soot.</li> <li>8. Blocked ventilator.</li> </ol>	<p>Check the burner grate.</p> <p>Clean the combustion chamber!</p> <p>Change supplier/storage!</p> <p>Fit into quadrangular holder.</p> <p>Change ignition/ignite manually!</p> <p>Install a draught stabilizer in the chimney.</p> <p>Clean/change the sensor.</p> <p>Clean the ventilator and check that it works.</p>
<b>ALARM LOW BOILER TEMPERATURE</b>	Boiler temperature has not exceeded 35 degrees after 2 hours of operation, or has dropped below 35 degrees when running.	<p>Low burner performance.</p> <p>Check pellet feed/ventilator!</p> <p>Check that the temp. sensor is on the boiler.</p>
<b>ALARM PLUG NOT FITTED</b>	<ol style="list-style-type: none"> <li>1. Plug on the burner is not fitted correctly.</li> <li>2. Dirt in the plug.</li> <li>3. Faulty sensor.</li> </ol>	<p>Check the plug on the burner !</p> <p>Clean any pellet residue from the plug.</p> <p>Change the sensors (photo/temperature).</p>
<b>Control display is black</b>	<ol style="list-style-type: none"> <li>1. Boiler overheated</li> <li>2. Control fuses broken.</li> <li>3. Contrast button not set on controls.</li> </ol>	<p>Reset overheating fuse!</p> <p>Change the fuses. Check for short circuits!</p> <p>Set contrast button.</p>
<b>Burner ejects HFI relay</b>	<ol style="list-style-type: none"> <li>1. Ignition faulty.</li> <li>2. Faulty cables.</li> </ol>	<p>Change Ignition/ignite manually!</p> <p>Check cables and plug on the burner.</p> <p>Check condition of burner.</p>
<b>Burner goes out on “LOW STEAM” Weak flame</b>	<ol style="list-style-type: none"> <li>1. Fuel supply is unstable.</li> <li>2. Pellets may be lodged in the pipe.</li> <li>3. LOW FEED is set too low.</li> <li>4. The chimney draught may be estimated incorrectly.</li> <li>5. Amount in auger is measured incorrectly.</li> </ol>	<p>Check for sawdust at the entrance to the auger.</p> <p>Check that the slope of the auger is correct</p> <p>Check that the auger drops into the combustion chamber.</p> <p>Increase the chimney draught and watch the LX indicator at low performance.</p> <p>Measure the auger again for 360 seconds.</p>
<b>Burner goes out on “PAUSE” Weak flame</b>	<ol style="list-style-type: none"> <li>1. Pellets supply is unstable.</li> <li>2. Pellets remain in pipe.</li> <li>3. Chimney draught is set too low.</li> <li>4. Chimney draught too strong.</li> </ol>	<p>Check there is no sawdust at the entrance to the auger.</p> <p>Check the slope of the auger.</p> <p>Check that the auger drops into the combustion chamber.</p> <p>Watch LX indicator during pause.</p> <p>Increase chimney draught.</p> <p>Install a draught stabilizer in the chimney.</p>
<b>Excessive pellet consumption / boiler will not reach required tem- perature</b>	<ol style="list-style-type: none"> <li>1. Combustion is set incorrectly.</li> <li>2. Chimney draught too strong.</li> <li>3. Backflow valve installed incorrectly in the boiler.</li> <li>4. Bad boiler /low efficiency/ insulation.</li> <li>5. Combustion chamber is working too hard.</li> <li>6. Damp pellets/poor quality.</li> </ol>	<p>Check that the ash is dark grey!</p> <p>Measure the chimney draught / install a draught stabilizer.</p> <p>Check boiler, install backflow valve.</p> <p>Measure smoke temperature, insulate the boiler!</p> <p>Reduce performance of combustion chamber.</p> <p>Use efficient pellets.</p>
<b>Boiler and burner are clogged up / black.</b>	<ol style="list-style-type: none"> <li>1. Too many pellets.</li> <li>2. Lag set incorrectly.</li> <li>3. Blocked ventilator.</li> </ol>	<p>Increase auger performance in calculation program.</p> <p>Reduce chimney draught.</p> <p>Clean the ventilator!</p>

**Support:** [www.nordjysk-bioenergi.dk](http://www.nordjysk-bioenergi.dk)

## NBE Pellets Systems



# Manual

NBE Pellets Systems

## ELECTRICAL WIRING DIAGRAMS

	IN	OUT	
<b>POWER</b>	PE-N-L		Power to controlbox
<b>AUGER</b>		PE-N-L1	External auger
<b>BLOWER</b>		PE-N-L2	
<b>INT. AUGER</b>		PE-N-L3	Internal auger
<b>IGNITION</b>		PE-N-L4	
<b>EKSTRA 1</b>		PE-N-L5	Pump, hotwater valve , compressor cleaning
<b>EKSTRA 2</b>		PE-N-L6	Pump, hotwater valve , compressor cleaning
<b>BUS</b>	V+, TX, RX, V-		Intelligent motor print
<b>PULS</b>	PULS A-B		Water flowmeter
<b>EKST</b>	EKST A-B		External power off / on
<b>PC</b>	GND, RX, TX		Computer interface
<b>Boiler Temp.</b>	T1 - T		
<b>Smoke Temp.</b>	T2 - T		
<b>Boiler return Temp.</b>	T3 - T		
<b>Hot water Temp.</b>	T4 - T		
<b>External Temp.</b>	T5 - T		
<b>Tank sensor</b>	T6 - T-GND		
<b>Burner Temp.</b>	T7 - T		Motor print
<b>Photo Sensor</b>	T8 - T		Motor print

TEKST IN DISPLAY	
<b>WAIT</b>	Updating temperature sensor
<b>IGNITION 1</b>	First ignition.
<b>IGNITION 2</b>	Second ignition.
<b>POWER</b>	Regular mode.
<b>HOT WATER</b>	Hot Water mode
<b>PAUSE</b>	Pause firing.
<b>COLD BOILER</b>	Boiler temperature has been to low and.
<b>STOP</b>	Pellets burner has stopped and waiting for the temperature to drop.
<b>SUMMER STOP</b>	Out temperature is high and the burner has stopped.
<b>SUN STOP</b>	Watt / m2 is to high and the burner has stopped.
<b>HOT BURNER</b>	The burner has been to high and is in an alarm..
<b>PLUG DISCONNECTED</b>	Plug on the burner is disconnected.
<b>FAULT IGNITION</b>	The burner couldn't ignite and got in to an alarm.
<b>OFF</b>	The burner is turned off.
<b>FAULT BOILER TEMP.</b>	The boiler temperature sensor is out of range.
<b>FAULT PHOTO SENSOR</b>	The photo sensor is out of range.
<b>FAULT BURNER TEMP.</b>	The burner temperature sensor is out of range.
<b>FAULT OUTPUT</b>	An relay is broken.
<b>NO LIGHT</b>	Flashing when light sensor can see light, after 5 minutes it is an alarm
<b>FORCE RUNNING AUGER</b>	Force running auger.
<b>CLEANING</b>	The burner is cleaning, with more fan speed.
<b>WOOD FIRING</b>	O2 % has been 2% under the allowed level for more than X minutes
<b>COMPRESSOR CLEANING</b>	The burner is using compressor cleaning

# Manual

## NBE Pellets Systems

### Interface / Additional Equipment

There can be coupled a different types of extra equipment to the burner

#### Smoke temperature sensor:

Get an reading on the control box.



#### O2 regulation:

The burner adjusts the fan according to the feed of pellets.



#### Outside temperature sensor:

Allows for burner deactivation according to outside temperature.



#### Hot water temperature sensor and 3 way valve.

Is able to heat only the hot water when needed.



#### Tank sensor

Is able to identify pellet tank levels



#### Compressor cleaning:

Allows for automatic cleaning of your burner.



#### Flow counter:

Provides a reading of kWh and litre/hour on your control box.



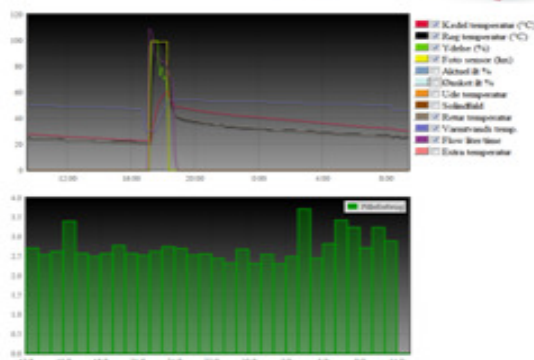
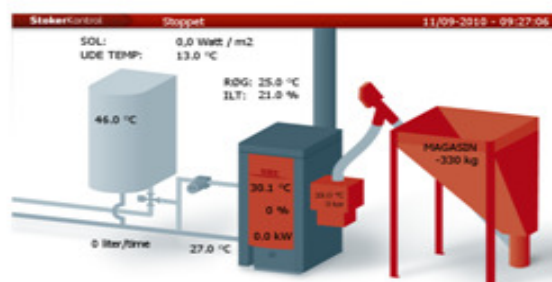
#### Interface:

With interface opens up numerous possibilities for adjustment and adaptation.

The main characteristics are:



- \*Show live stats for your pellets burner.
- \*Publish statistics to the Internet and keep track of your burner wherever you are.
- \*Control your burning at home or from the Internet.
- \*Keep an eye on your pellets consumption through manageable consumption graphs.
- \*Save money by fine tune your pellets burner to the extreme.
- \*Receive an email if there is an emergency.
- \*More than 40 options can be set to optimize your burner.
- \*Lower the temperature at night.
- \*See the operation status from your mobile phone (WAP).
- \*And much more.....





# Installation and operation of: hot water priority

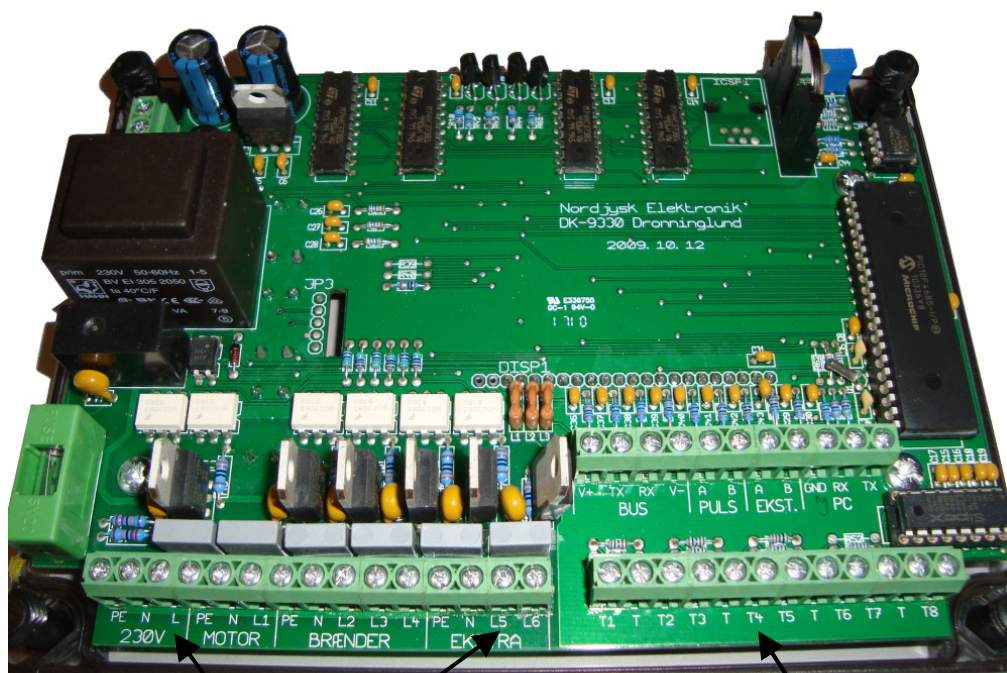
## What you need:

Temperature sensor for hot water tank.

3 way motorized valve.



1. Mount the temperature sensor in the hot water tank
2. Connect the temperature sensor to the controller at terminals T4 & T
3. Mount the 3-way motorized valve on the supply pipe. (Should be ¾" - 1")
4. Connect the motor valve to the control box on N - L5 or N - L6



Motor valve mounted

BLACK	N
BROWN	L
BLUE	L5 or L6

Temperature sensor for hot water tank  
mounted on T4 & T

5. Output is selected in the control box under **accessories** and can be selected respectively.  
NO ( Normally Open ) or NC ( Normally closed ),  
depending on whether the valve should open or close when powering from control box.
6. Desired temperature of hot water tank is adjusted in the control box under **temperature**
7. Select the correct sensor type in the Control Box menu under **TEMP SENSOR**

**SETUP**  
09. PI REGULATION  
10. BLOWER  
11. TEMP. ALARM  
12. ACCESSORIES  
13. MANUAL CONTROL  
14. TEMP. SENSOR



**The controller can perform several different types of hot water tank controls.**

- ~ The controller can run hot water operation (start and stop) according to a timer ( **Timer hot water** )
- ~ The controller can run hot water operation (start and stop) according to the temperature in the hot water tank
- ~ The controller can (start and stop) the circulation of heating water to the hot water tank ( 2-way valve )
- ~ The controller can switch between heating radiators / floor heating and hot water tank ( 3-way valve )

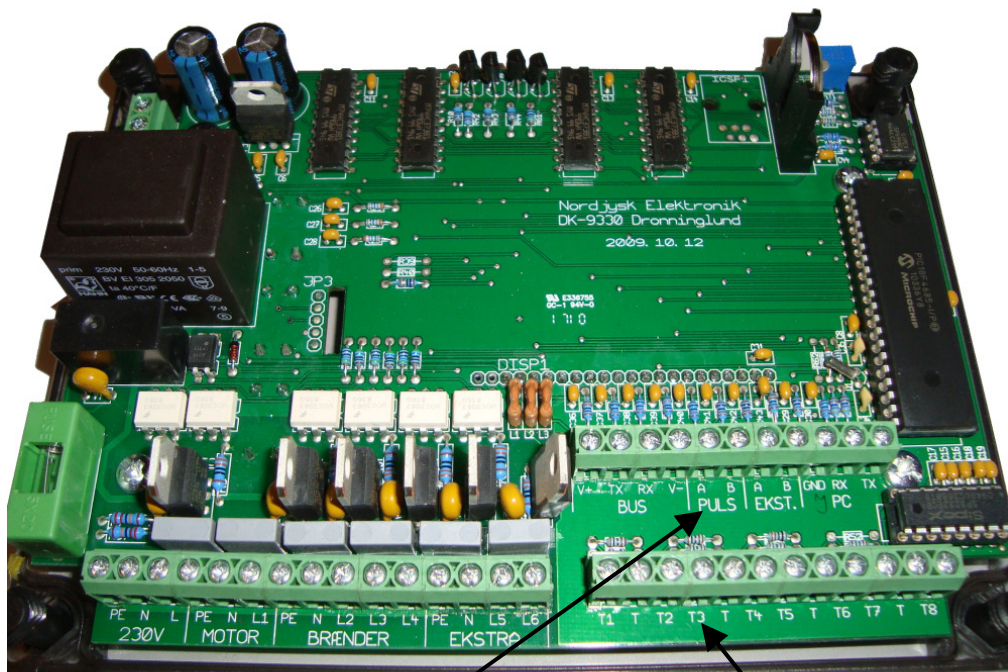
## Installation and operation of: flow meter

### What you need:

Flow meter 3/4"

Temperature sensor

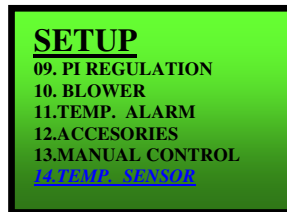
1. Mount the flow meter on return on boiler
2. Connect the temperature sensor to T3 & T
3. Connect the flow meter to PULS A & B



Flow meter connected to Puls A & B

Temperature sensor to return connected to T3 & T

4. Select the correct sensor type in the menu **TEMP SENSOR** in the control box



Then the burner is set up to read the flow and calculate Kwh consumption from the boiler to the house.  
( i.e. the energy put into the house )

Insulate the temperature sensor to the return pipe for a more accurate calculation.

Kwh calculation is performed based on a outlet / return temperature and flow (liters / hour)

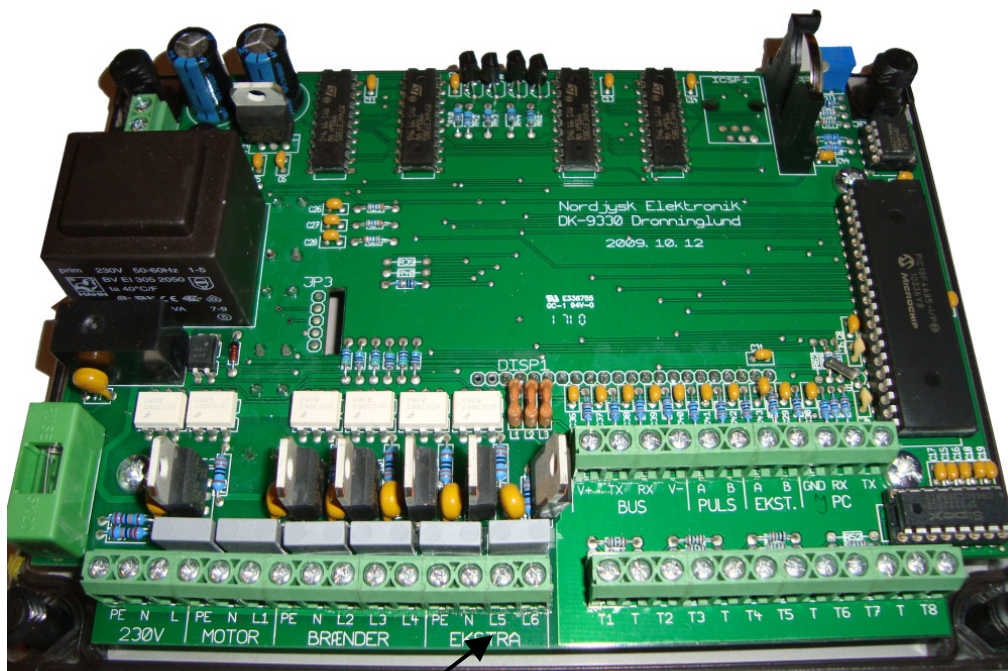
If the temperature sensor is not long enough, extend it ( **NOTE:** can be extended up to max. 25 meters )

# Installation and operation of: circulation pump

## What you need:

Circulation pump.

1. Connect the circulation pump to control box in N-L5 or L6-N
2. Select output in the controlbox under **accessories**
3. Choose which temperature to start / stop the circulation pump (i.e. the "pump start" / "pump stop" menu under **temperature**).



Circulation pump connected in N - L5 or N - L6  
and output is activated under Accessories

Then the boiler is configured to start / stop the circulation pump.

The pump starts when the boiler is in operation and the boiler temperature is above the "PUMP START".

The pump stops when the boiler is stopped and the boiler temperature is below "PUMPSTOP"

If you use an accumulation tank, set the stop temperature high, so you do not cool the tank down.



If you have used the two outputs, for example for hot water priority and compressor cleaning, then fit a normal operating thermostat on the boiler and let it manage the circulationpump.



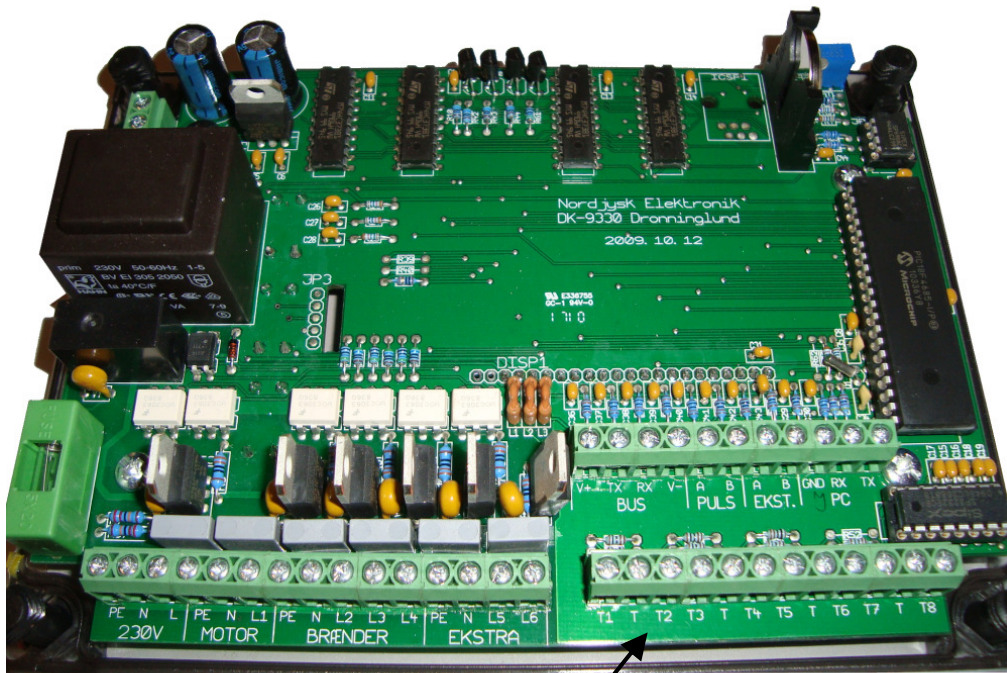


# Installation and operation of: smoke temperature

## What you need:

Smoke temperature sensors (PT1000) or NTC

1. Connect the temperature sensor in the flue, as close to the boiler as possible.
2. Connect the temperature sensor in the control box in T2 & T



Temperature sensor for smoke mounted on T2 & T

3. Select the correct sensor type in menu **temperature sensor** in the control box

**SETUP**  
09. PI REGULATION  
10. BLOWER  
11. TEMP. ALARM  
12. ACCESSORIES  
13. MANUAL CONTROL  
14. TEMP. SENSOR



After mounting the smoke temperature sensor a display will be available in the control box.  
The smoke temperature sensor is for informational purposes only and has no function in the regulation etc..

# Installation and operation of: wireless thermostat

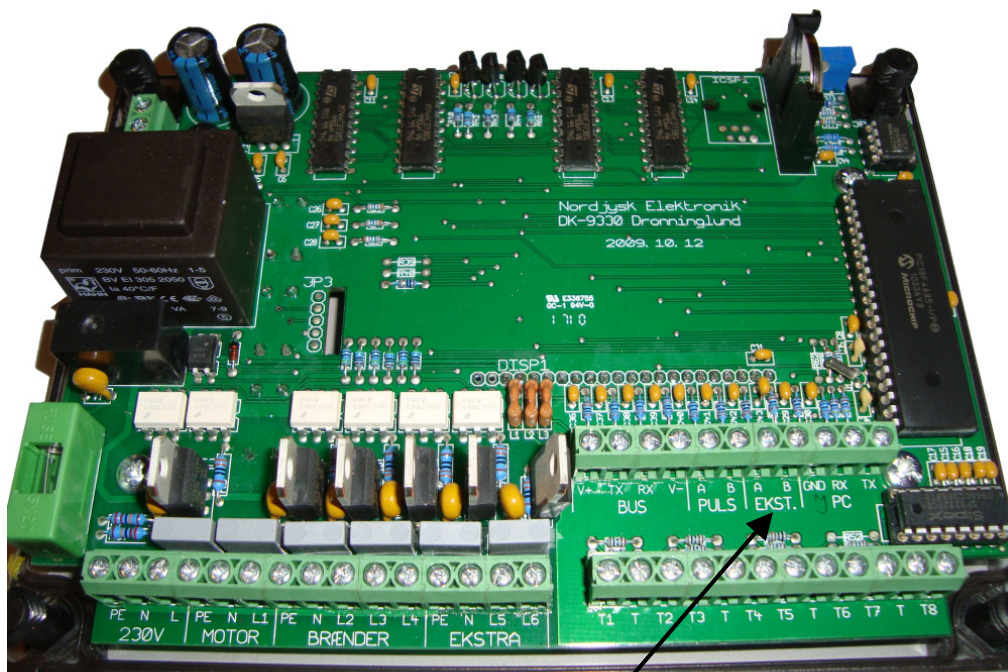
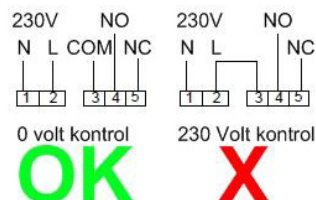
## What you need:

Wireless room thermostat.

1. Connect the receiver to the burner control box
2. Connect 230 Volts to the receiver.
3. Connect the 2 wire cable from the receiver ( COM and NO ) to the burner control box in EKST.



**DO NOT PUT IN 230 VOLT ON  
CONTACT INPUT IN THE BURNER CONTROL BOX  
IT WILL IMMEDIATELY DAMAGE THE CONTROL**



*Jumper is removed and the wireless receiver connected to EKST. Input (COM & NO) from receiver  
Never connect power on this input!*

The transmitter is placed where you want to measure the inside temperature.  
The hot water will be a priority, even if the thermostat has interrupted the burner.



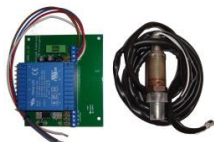
( Only if there is mounted a temperature sensor on hot water tank and set a desired temperature )



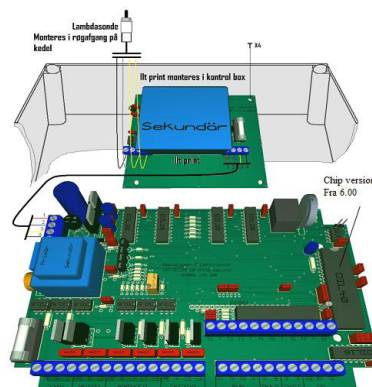
# Installation and operation of: oxygen control

## Package includes:

Oxygen Print, with 4 wires.  
Bosch Lambda probe.  
Nut to the probe.



1. Mount oxygen print at the bottom of the control box, or in a separate box
2. Link the lambda probe to the oxygen PCB, according to colors.
3. Insert the wires from the PCB to oxygen control, S +, S, N and L Coupled onto the corresponding terminals on the control PCB.
4. Mount the lambda probe in the smoke pipe, as close to the boiler as possible, seal all connections with suitable sealants.
5. Mount the drag stabilizer (Must be installed!)



6. Check boiler for leaks in doors, undercarriage. Etc.  
( Leaks will give an incorrect reading from the lambda probe)



## Before starting, calibrate the lamda probe as followed:

1. Connect the power to the controller and wait approx. 10min. (Heated probe)  
Burner must not be started!
2. When the probe becomes hot, calibrate the probe in the expanded menu under "oxygen control"
3. Calibration number must be between 0-40. If the calibration is over 40, check all cable connections again and wait another 10 minutes.  
Repeat then the calibrate.  
If failure occurs, contact NBE for further troubleshooting.



*To be able to adjust the oxygen control correctly, you should be aware of it's function and the way it regulates.*

## Lambda probe:

Meters the residual content of oxygen in the smoke.

There is 21% oxygen (O<sub>2</sub>) in air and pumped into the combustion, the flame consumes a portion of this oxygen (O<sub>2</sub>) and the remaining O<sub>2</sub> % is measured by the lambda probe. This result is then sent to control box.

## Control:

In the control box set a desired oxygen % (O<sub>2</sub>)

at low load	(10% power) is typically around 12-16% oxygen (O <sub>2</sub> )
at medium load	(50% power) is typically around 10-13% oxygen (O <sub>2</sub> )
at full load	(100% power) is typically around 7-10% oxygen (O <sub>2</sub> )

When the controller gets a signal that the oxygen % (O<sub>2</sub>) is to high, the control will set the blower speed down so that the fire will be able to consume more of the oxygen (O<sub>2</sub>) of the air supplied from the blower.

The same is repeated in reverse if the oxygen% is to low.

The blower will be adjusted by the oxygen control menu.

Blast oxygen low	(10% std.) Control can regulate the blower speed by 10% at 10% power
Blast oxygen in the middle	(20% std.) Control can regulate the blower speed by 20% at 50% power
Blast oxygen high	(30% std.) Control can regulate the blower speed by 30% at 100% power

These figures may be adjusted if you want a stronger / less reaction to oxygen control.

# Installation and operation of: oxygen control

## Balancing of oxygen control:

1. Start out by weighing the wood pellets for 6 min.
2. Enter the results in the AUTO COMBUSTION menu  
This will give a basic adjustment of the pellet volume under low and high load.
3. Enable oxygen control (YES) in the "oxygen control"

Under high load (i.e. 100% power), as seen in the picture on the right, the flame must be broad and orange in color.



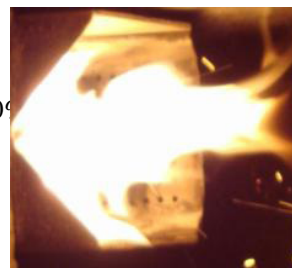
If smoking occurs during firing and the control box shows for example. 8% oxygen while the desired oxygen % is also 8% , then adjust the oxygen level higher in the OXYGEN menu

If smoking occurs during firing, and the control box shows for example. 6% and the desired oxygen%, is 8%

The controller cannot raise the oxygen% enough through the fan adjustment.

1. Then you should increase the "Blower Oxygen High" in the menu oxygen control, and try to raise it by 10%
2. Alternatively, to disable the AUTO COMBUSTION and adjust the "pellets high" DOWN

If the flame is narrow, quick tempered like a sparkler and the controller displays for example 10% and the desired oxygen% is also 10% then adjust the oxygen high down under the oxygen control menu



If the flame is narrow, quick tempered like a sparkler and the controller displays for example 12% while the desired oxygen% is 8%, then the controller is unable to reach the Oxygen % by the fan adjustment.

1. Then you can increase the "Blower Oxygen High" in the menu under oxygen control, and try to raise it by 10%
2. Alternatively, to disable AUTO COMBUSTION and adjust the "pellets high" UP



In low load ( 10 % power ) the flame should be small and a little thin, however, the photo sensor has to be able to see the flame  
Adjust the low load by repeating the same procedure as performed with high load.

# Installation and operation of: interface / stokerkontrol

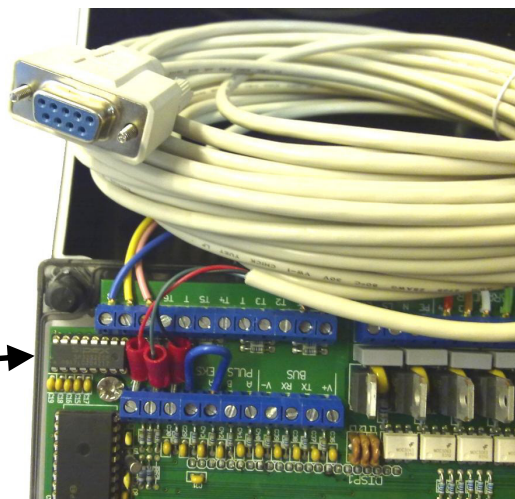
## What you need:

Stoker Kontrol CD  
3m. cable

Attach the cable in control box

Leg 2: **Red-TX** on control box  
Leg 3: **Green-RX** on control box  
Leg 5: **Black-GND** on control box

Check that the communication chip is mounted and correctly oriented:  
Chop on the socket to the dot on the chip.  
Connect the power again to the control box



Install the Stokerkontrol on your PC.  
Follow the instructions in the program!  
Close the Stokerkontrol after completing the installation!

If possible, visit **[www.stokerkontrol.dk](http://www.stokerkontrol.dk)** for updates and new versions.  
A 1 year subscription of updates is provided for free.

When the Stokerkontrol starts the program, it will search for the correct COM port!  
To manually find the correct COM port: Windows XP / VISTA:  
Click the Start menu, right click on My Computer  
Click on Properties / Hardware / Device Manager.  
Click the + Com Port.  
Find the port that communicates with the pellets burner control box.



## NOTE:

If you use a USB-Serial converter, the COM will change if switching USB input on your PC!  
Once the correct COM port is found, check this in Stoker Control:  
Click Setup / serial port. Enter the correct COM port, below, and click Add.  
If changes to the COM port in the Stokerkontrol are made, the program must be shut down and reopened before changes take place.  
If the connection has been interrupted, you may need to restart both the control box and Stokerkontrol!

Now Stokerkontrol opened and will retrieve data from sacked after a short time.

## NOTE:

If you have a computer with COM ports built-in, some program can “take” the port and close it  
And an USB control will make a new “free” COM PORT, not taken by other programs.



***Check regularly [www.stokerkontrol.dk](http://www.stokerkontrol.dk) for updates and new features.***

***New ! Now we can offer upload of data to <http://www.stokercloud.dk/>***

# Installation and operation of: the compressor cleaning

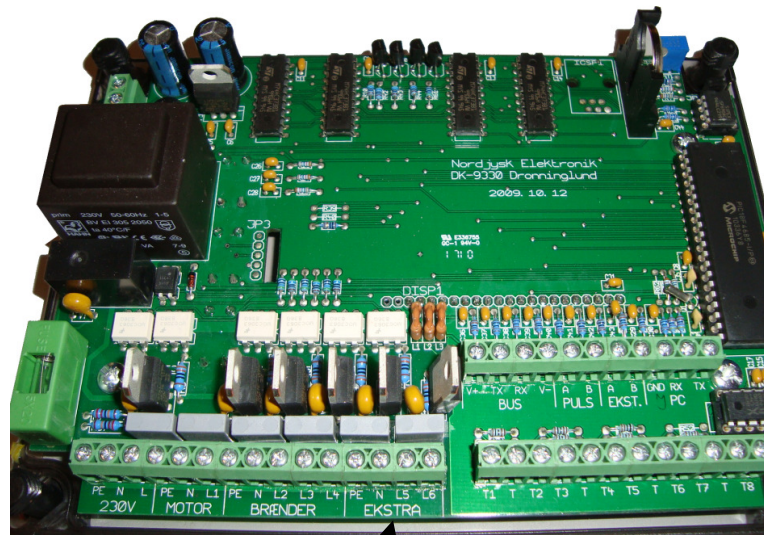
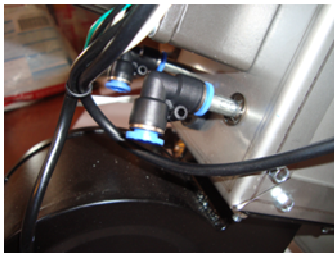
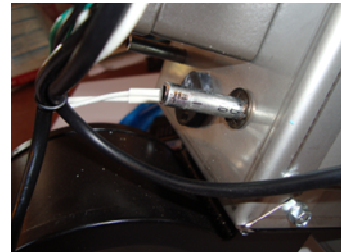
## What you need:

compressor kit small or large (including compressor).



## To mount it:

1. Remove the rubber plug behind the burner
2. Slide the tube into the same hole from the front
3. Cut the tube so that it sticks out 30mm from the burner
4. Put a lock washer on the pipe
5. Attach the fittings to the pipe
6. Attach the hose fittings
7. Attach the hose to the magnet valve



Magnet valve is put in the N - L5 or N - L6  
and output is activated under Accessories

# Manual

## NBE Pellets Systems

### Warranty

All products purchased from NBE are naturally covered by the applicable Danish purchasing law. Products come with a 6 month warranty valid from the date of receipt.

**However, this does not cover the oxygen sensor, electrical ignition or the combustion grate.**

These are considered to be replaceable parts.

The warranty only covers production and material faults.

If there is a fault with goods under warranty,

NBE will send a replacement part for repair at no cost to the purchaser.

The purchaser shall install the replacement part himself.

If NBE offers to repair a defective part, the purchaser shall send it to NBE, who will repair it and then return it.

The warranty becomes void if the fault is caused through circumstances caused by the purchaser, by accident, or by improper use of the goods, incorrect cleaning, chimney condition, as well as circumstances unrelated to NBE. In addition to this the warranty becomes void upon improper use of the boiler, for example by using fuel not approved by NBE. The warranty does not cover parts such as the exhaust gas oxygen sensor, electrical ignition and combustion grate. The purchaser is obliged to check the goods immediately upon receipt. If on the basis of this inspection the purchaser would like to make a claim to the effect that the delivery was inadequate or somehow at fault, the customer must immediately file the claim with NBE without delay. Goods can only be returned upon agreement with NBE. To the extent that NBE is liable to the purchaser, the responsibility of NBE is limited to direct damage, i.e. damage to connected equipment, and indirect damage, for loss of earnings, operating losses, connection costs, etc.

#### **responsibility:**

NBE accepts no responsibility as a result of the purchaser's legal relations with third parties.

All orders are accepted with the exception of *force majeure*, such as war, civil unrest, natural catastrophes, strikes and lockouts, breakdown in the supply of raw materials, fire, damage to NBE or its supplier network, breakdown in transport facilities, bans on import or export or any other event which prevents or restricts NBE from supplying its goods.

In the case of *force majeure*, NBE may choose to either cease trading in full or in part, or to supply the contractual goods as soon as the obstacle preventing normal delivery has passed. In the event of *force majeure*, NBE is in no way responsible for any damage caused to the supplier as a result of its failure to deliver.

We do not vouch for printing errors, price adjustments, changes in the exchange rate, sold-out goods or changes to specifications in products such as the manual.

It is the purchaser's responsibility to have the equipment registered with the appropriate offices; any disputes between the authorities and the purchaser do not relate to NBE and are not its responsibility.

Upon request the following documents can be issued:

**12. Exception to pressure expansion from Work Supervisor.**

**13. Declaration of conformity.**

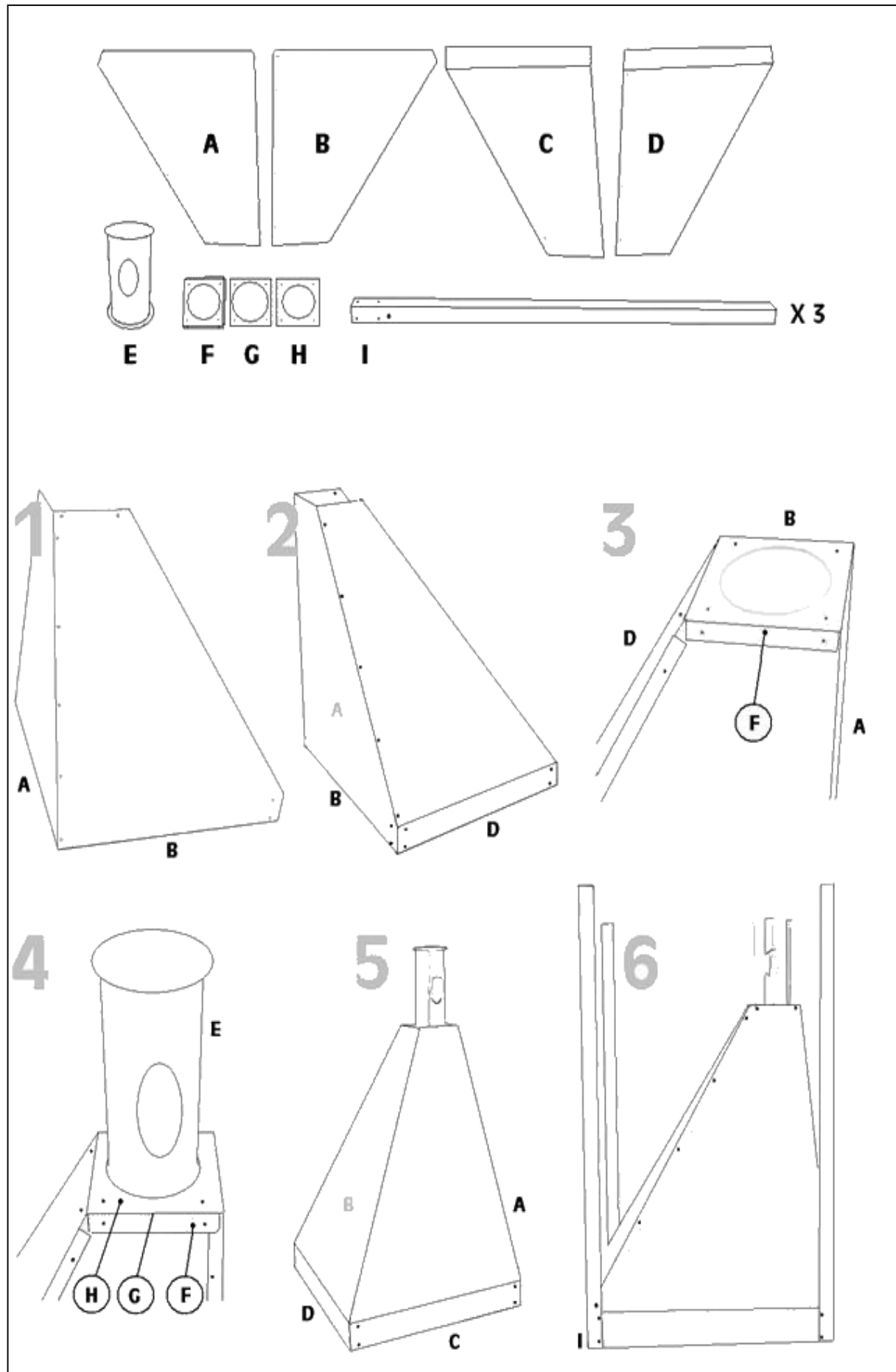
**14. DTI type approval (Danish Technological Institute).**

**15. Printed circuit board diagrams.**

This material is also available at [www.nordjysk-bioenergi.dk](http://www.nordjysk-bioenergi.dk).

# Manual

NBE Pellets Systems  
Installation of pellet silo





# Manual

NBE Pellets Systems

## The exception to the pressure vessel / conformity declaration

Nordjysk-bioenergi  
Jannich Hansen  
Vangen 22  
9760 Vrå.



Landekronagade 33  
2100 København Ø  
Telefon 3915 2000  
www.arbejdstilsynet.dk

Deres ref. JH  
Vores sag 20030027413  
Vores ref. G. Agersnap  
Direkte tlf. 39152659

15 sep. 2004

**Ang: Anvendelse af træpillefyr typerne Woody, Scotte, Mascot, Bio-comfort og Mini Bio på kedelanlæg i forbindelse med mindre, lukkede anlæg i henhold til Arbejdstilsynets Forskrifter for Fyrede Varmtvandsanlæg. (publ. 42/1980 afsnit 4.)**

Med henvisning til Deres ansøgning dateret 10. september 2004 vedrørende anvendelse af træpillefyr typerne Woody, Scotte, Mascot, Bio-comfort og Mini Bio på kedelanlæg i forbindelse med mindre, lukkede varmeanlæg med trykeksansion meddeles, at Arbejdstilsynet har gennemgået det forelagte materiale og kan acceptere, at træpillefyr typerne Woody, Scotte, Mascot, Bio-comfort og Mini Bio kan monteres på varmeanlæg, som er omfattet af afsnit 4 i Arbejdstilsynets publikation 42/1980 Forskrifter for Fyrede Varmtvandsanlæg.

Det er en forudsætning, at kedlen har fornødent vandindhold og hele varmeanlægget er udført i nøje overensstemmelse med anvisningerne i publikation 42/1980, samt at brænderens eltilslutning kun sker via en på kedlen korrekt monteret og tilsluttet driftstermostat med tilhørende overkogssikring, der efter aktivering kræver manuel genindkobling.

Al indfyring i kedlen skal ske via pillebrænderen, og der må kun benyttes de i instruktionen nævnte brændselstyper. I modsat fald skal anlægget monteres med åben eksansion. (jævnfør afsnit 2 i publikation 42/1980.)

Denne afgørelse er baseret på de fremsendte instruktionsmanualer og tegningsmateriale, Prøvningsrapport nr.: 300-ELAB-0741 samt den udførte Strømsvigtprøve med aflæsning af temperatur udviklingen i kedlerne efter afbrudt el forsyning til anlægget.

Venlig hilsen

  
G. Agersnap

### EC DECLARATION OF CONFORMITY

No. : ..... 0109-2010

The undersigned, representing the following manufacturer

manufacturer : NBE  
address : Brinken 10, DK9750 Oester Vrå

or representing the manufacturer's authorized representative established within the Community (or the EEA) indicated hereafter

authorized representative :  
address :

herewith declares that the product

product identification :  
Pellets burner : BioPel, BMHT, Woody, Scotte, Boink, Bio Comfort

is in conformity with the provisions of the following EC directive(s)  
(including all applicable amendments)

Reference n°	Title
EN 303-3	Europe Norm
2006/93-EC	Low Voltage Directive
2004/108-EC	EMC directive (EMCD)
97/23/EEC	Pressure Equipment Directive
2006/42-EC	Machinery directive
Arbejdstilsynets bekendtgørelse	Nr. 612

and that the standards and/or technical specifications referenced overleaf have been applied.

Last two digits of the year in which the CE marking was affixed: ...10

Jannich Hansen

Oester Vrå

01/09/2010

  
(signature)

Jannich Hansen, Director