

UK



NBE O2 CONTROLLER MANUAL

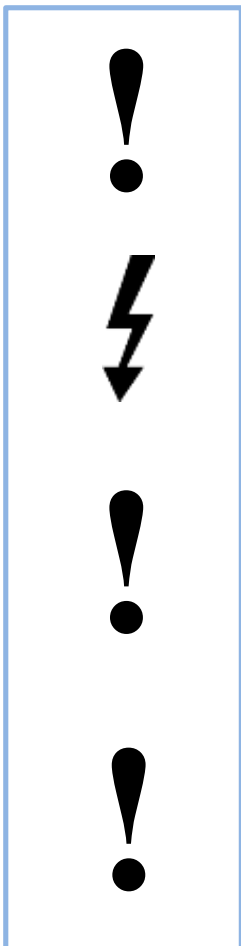


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WARNING:



Warnings:

Never touch the lambda probe, when it is connected, it is equipped with a heating element and becomes very hot.

The controller is provided with an electrical current of 230V/50Hz. An improper installation or improper repair can cause life-threatening electrical shock. Electrical connection must be performed by the person who has the right skills and training. Execution of the electrical installation must be carried out according to the current national rules.

Always disconnect the system from the power supply before starting maintenance work and servicing. The system must be connected to a separate electrical circuit, which is equipped with the proper circuit breaker and earth leakage breaker.

Always read the manual before installing and repair of the system, search, if necessary, professional help.

The system may only be operated by knowledgeable people. If you are in doubt as to the safe use of the system, contact your dealer.

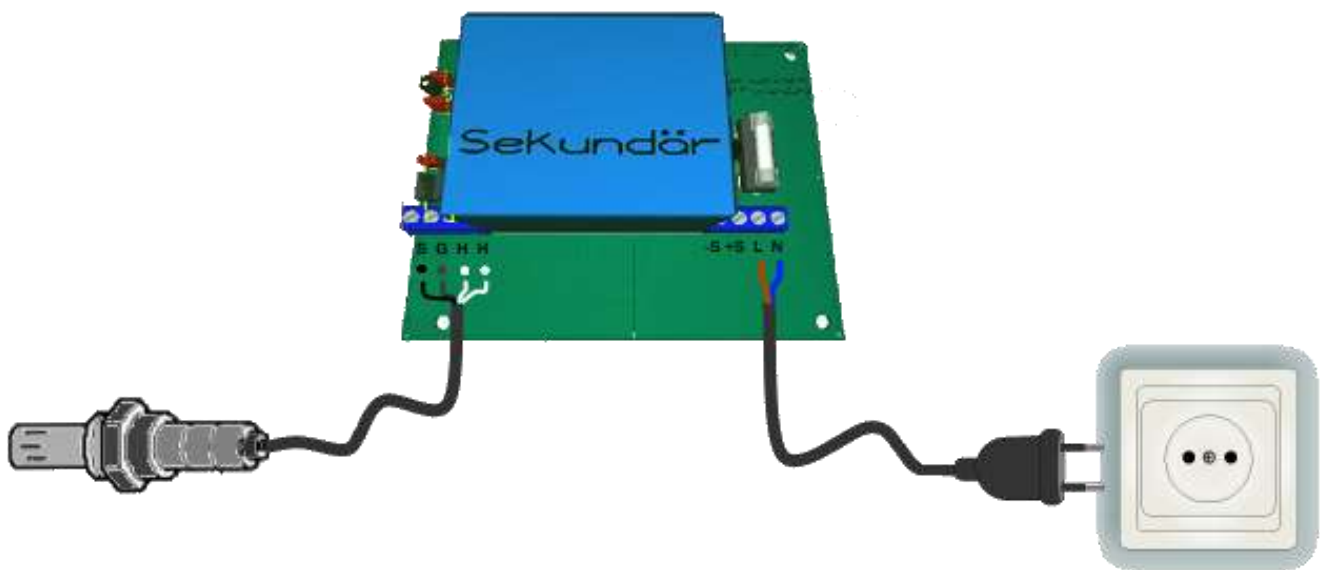
This manual must be kept by the boiler!

Assembly:

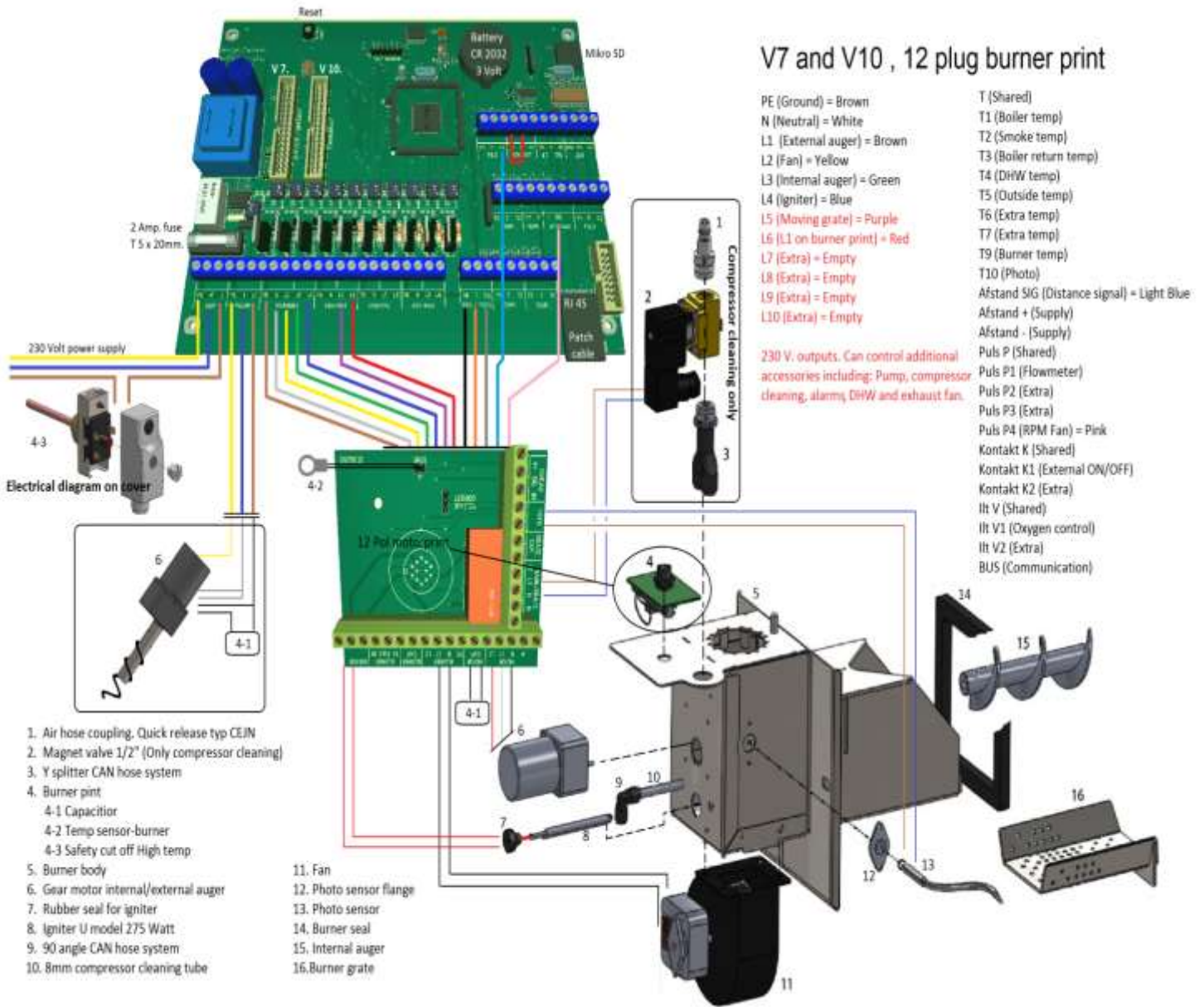
1. Install the oxygen controller after electric diagram.
2. If the boiler is not prepared to a Lambda sensor, then weld a mounting nut on the chimney pipe, must be fully welded or sealed well with heat-resistant silicone.
3. Sealed all connections before the lambda probe, if possible.
4. Connect the oxygen control to 230V AC, and lambda sensor becomes hot after 15min. And can be calibrated.
5. Calibrate the probe, it is done from the wood pellet boiler controller, under the oxygen control menu.
6. Weight the wood pellets, controller must have the correct gram/6min number, to calculate the basic feed.
7. Set oxygen control to ON in the wood pellet boiler controller.

ELECTRIC DIAGRAM:

- S -----> Black Lambda sensor
- G -----> Grey Lambda sensor
- H -----> White Lambda sensor
- H -----> White Lambda sensor
- S -----> ILT V in the controller
- +S -----> ILT V1 in the controller
- L -----> 230V AC supply
- N -----> 230V AC supply



ELECTRIC DIAGRAM:



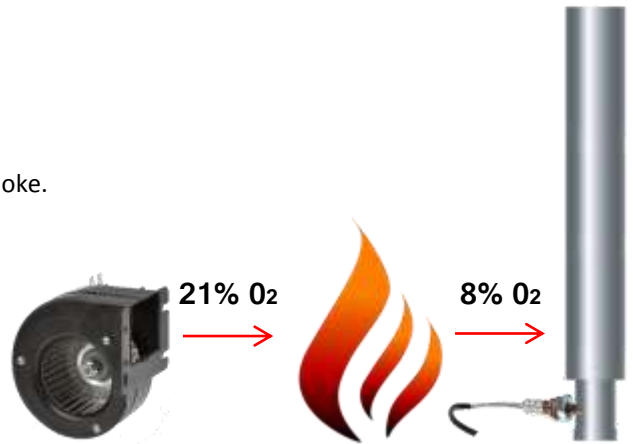
DESCRIPTION:

Description of operation:

Oxygen control provides an automatic adjustment of pellets and the fan with respect to a desired oxygen contents in the smoke.

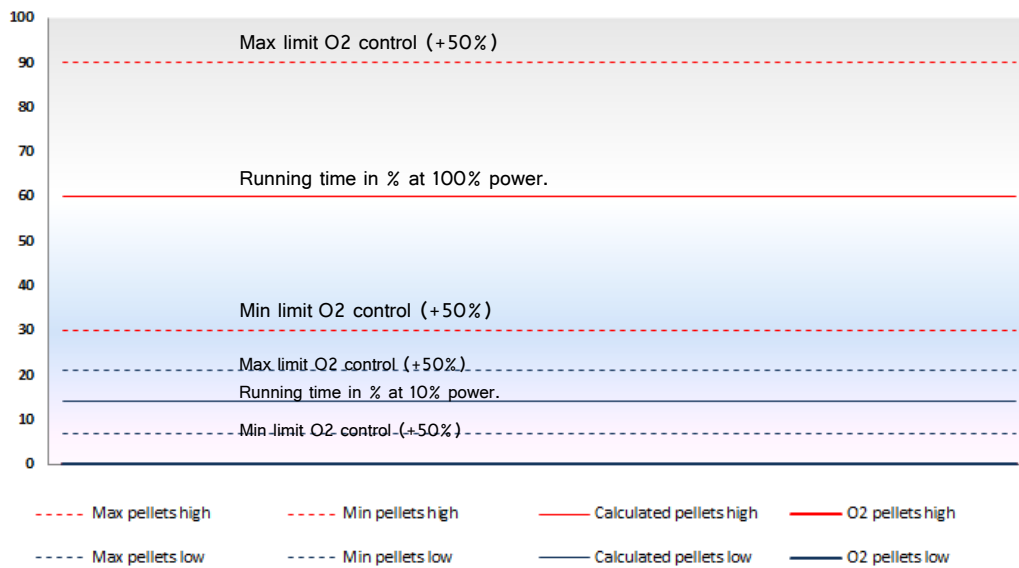
Typical desired values :

- At 10% power 16-18% oxygen content.
- At 50% power 12-16% oxygen content.
- At 100% power 7-10% oxygen content.



Numbers are indicative only and must be adapted to the installation, and draft conditions.

When performing a weighing of the auger performance, gram/6min, will be calculated an auger running time at 10% power and 100% power.



If oxygen controller measures a too high O2% compared to desire:

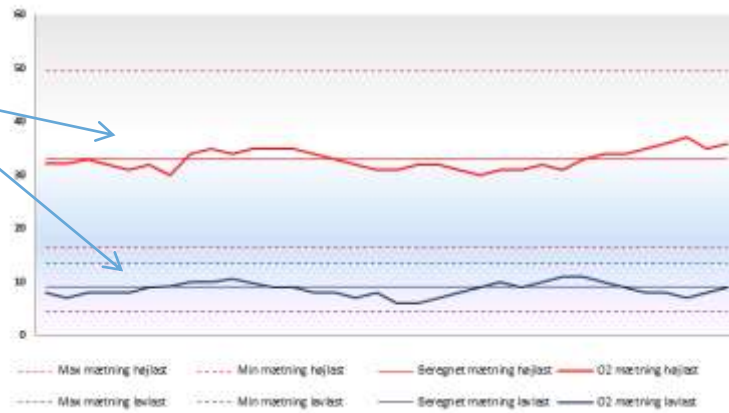
- Fan speed is lowered.
- The auger running time increased.

If oxygen controller measures a too small O2% compared to desire:

- Fan speed is increased.
- The auger running time is lowered.

The perfect regulation:

The auger performance during high-load and low-load is near the calculated run time. The system is perfectly balanced both in high-load and low load.

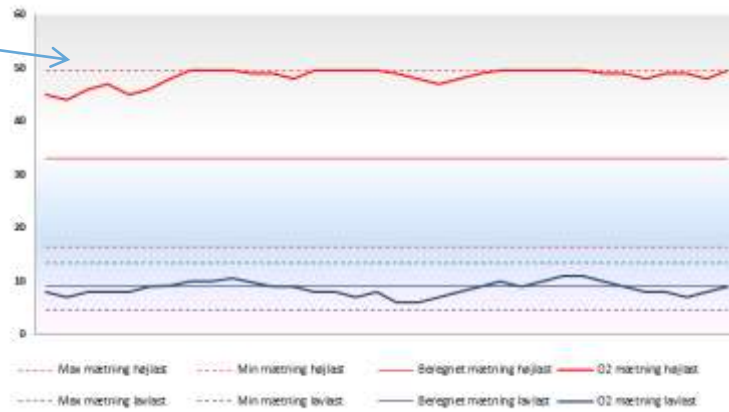


Too much air at 100%:

The auger performance during high-load and is constant near "Max limit high"

Possible causes:

- Too much air at 100%.
- Weighing gram/6min, which is too high.



Too much air at 10%:

The auger performance during low-load and is constant near "Max limit low"

Possible causes:

- Too much air at 10%.
- KW at 10% is to low.



Too little air at 100%:

The auger performance during high-load and is constant near “Min pellet high”

Possible causes:

- Too little air at 100%.
- Weighing gram/6min, witch is too low.



Too little air at 10%:

The auger performance during low-load and is constant near “Min pellet low”

Possible causes:

- Too little air at 10%.
- Weighing gram/6min, witch is too low.
- KW at 10% is to high.



Unstable auger performance:

The auger performance is swinging, running time goes up and down, both at 100% and 10% power.

Possible causes:

- Dust in the auger and hopper.
- The auger's angle is too high.
- Long pellets.



Chimney draft unstable:

The auger performance during high-load is constant close to "Calculated pellets high"

The auger performance in low load varies considerably, The chimney has more power over the blower performance in low load and therefore doing more "damage"



Possible causes:

- Lack of draft stabilizer.
- To low output by 10%.

•Maintenance of the system:

- If the lambda probe does not show 20-21% oxygen,
- when the boiler is switched off and the probe is hot.
- It is time for a calibration, it is done from the menu "oxygen control".
- Never make a calibration, while the boiler is in operation!**
- The auger performance should be weighed, when switching between pellets
- or min. 3-4 times / year.
- The result is stated in the controller under "auto calculation"
- Lambda probe has an expected life of 2-4 years.
- and should be replaced if the calibration number change significantly, or is 0 (zero).

TROUBLESHOOTING

Problem.	Possible cause.	Possible solution.
Light ash.	Lean burn.	Lower the desired oxygen %, starting with the area where the boiler is running the most.
Black ash.	Fed combustion.	Raise the desired oxygen %, starting with the area where the boiler is running the most.
Cinders on the grate.	Fed combustion.	Raise the desired oxygen %, starting with the area where the boiler is running the most.
	Cleaning blowing speed is too low.	Adjust cleaning blowing up, possibly with shorter intervals between cleaning.
	Poor quality pellets.	Change supplier of wood pellets.
		Mount the compressor cleaning system.
Black pellets in the ash.	Lean burn.	Lower the desired oxygen %, starting with the area where the boiler is running the most.
	To high fan speed in cleaning.	Reduce fan speed in cleaning.
Oxygen % can not go below 10% at 100% power.	Leaking joints.	Check joints and make them tight.
	High chimney draft.	Install a draft stabilizer in the chimney.
	Missing fuel.	Make a new startup weighing. Etc..
High consumption.	Lean burn.	Lower the desired oxygen %, starting with the area where the boiler is running the most.
	High chimney draft.	Install a draft stabilizer in the chimney.
Oxygen control calibrates to 0 (zero).	Cable connection to the probe is interrupted.	Check cable connections.
	Defective oxygen probe.	Change oxygen probe with a new one.
	Defective oxygen print.	Change oxygen print with a new one.
Lambda probe does not heat up.	No power on oxygen print.	Check 230V supply.
	Fuse of oxygen print defect.	Replace the fuse.
	Lack of 12V on the probe.	Check that there is 12V on the white wires from the oxygen print to oxygen probe. If no voltage on them, replace the controller.

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