

## **Electrostatic Micro-Dust Filter OekoTube Top (OT-TOP)**

### **Installation, Operation, Maintenance And Service Manual**



**EnviroSolve Limited**

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**This appliance is not intended by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.**

**Children should be supervised to ensure that they do not play with the appliance.**

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## 1 General information

The OekoTube filters are high quality precision devices designed and engineered in Switzerland. EnviroSolve Ltd is the General Distributor for New Zealand and Australia, and has adapted the product to meet the specific needs and characteristics of the New Zealand market. This device is designed to meet the highest safety standards if handled professionally and in accordance with all safety precautions during installation, operation and maintenance. The device is specifically designed to generate a high voltage charge on an electrode that is inserted into the flue of any wood fired stove. The device must never be operated outside of a flue.

### **CAUTION: Risk of severe electric shock!**



#### Notice and Disclaimer:

You must read these instructions carefully prior to the installation and operation of the OekoTube device. Failure to follow these instructions or tampering with the product in any way will void the warranty. In no case will the distributor be liable for personal or material damages arising out of the improper installation, maintenance and operation of this product. In no event will the distributor be liable for potential damages that exceed the purchase price of the device and will not cover labour or other incidental costs.

### 1.1 Safety Notes

- The installation of the device must be installed by only authorised and skilled personnel.
- The dust-separation module must be installed subject to local fire code, but no less than 40 cm from combustible materials.
- The statics and stability of the flue must be ensured prior to installation.
- The flue must be checked for deposits and fire safety prior to installation.
- After ignition of a fire, the temperature in the flue increases and the high voltage from the electrostatic precipitator (ESP) automatically switches on. The electrode or the electrode holder **MUST NOT** be touched during operation! **WARNING: CONTACT WITH THE ELECTRODE DURING OPERATION MAY LEAD TO SERIOUS INJURY OR DEATH.**
- During the installation of the OekoTube device all applicable occupational health and safety requirements prescribed by law must be complied with.
- The relevant policies and regulations when performing any work on the roof must be observed.
- Disconnect all electric power from the OekoTube before commencing any work on the OekoTube device.
- The OekoTube device must be accessible at all times for maintenance.

**No liability is assumed for personal or material damages caused by failure to follow these safety instructions.**

## **1.2 General description of OekoTube**

The OekoTube is an electrostatic micro-dust precipitator that significantly reduces particulate emissions from small wood burners (pellets, wood chips, logs). The precipitator is suitable for wood combustion with a capacity of less than 40 kW and is mounted on top of the chimney. The OekoTube has a tested efficiency up to 95%. In a masonry chimney without an inbuilt stainless steel flue pipe, the precipitating efficiency can be lower.

## **1.3 Advantages of the OekoTube**

Electrostatic precipitators offer several advantages over regular dust removal filters like wet scrubbers and other traditional filters:

- High efficiency removal of particles < PM2.5
- No loss of chimney draught and no effect on combustion efficiency
- Low operating costs and maintenance requirement
- No parts for wear and tear

### **1.3.1 Chimney draft and burner combustion**

**Neither chimney draft nor burner combustion are affected by the use of the OekoTube.**

## **1.4 Notes on cleaning**

The owner or the chimney sweep should perform a relevant check within the first month of the OekoTube operation and set a cleaning interval.

The OekoTube can be cleaned from above and below.

The OekoTube shall be installed and maintained by a qualified expert, trained and certified by Envirosolve Ltd, according to the manufacturer's requirement. All maintenance and monitoring must be carried out in accordance with Clauses 7, 8a and 8b of the Resource Consent CRC201823, issued by Environment Canterbury (see Appendix 9.1).

## **1.5 Notes on maintenance**

Depending on the capacity and the frequency of using the wood heating, maintenance may need to be carried out on the OekoTube from the roof on a yearly based and therefore, depends on the operational hours. The OekoTube should therefore be easily accessible.

The OekoTube shall be installed and maintained by a qualified expert, trained and certified by Envirosolve Ltd, according to the manufacturer's requirement. All maintenance and monitoring must be carried out in accordance with Clauses 7, 8a and 8b of the Resource Consent CRC201823, issued by Environment Canterbury (see Appendix 9.1).

### **1.6 Activation of the OekoTube**

When the exhaust gas temperature changes within a short time, or when the temperature difference between reference temperature and the exhaust passes a certain point, the OekoTube will be activated.

### **1.7 OekoTube switched-on**

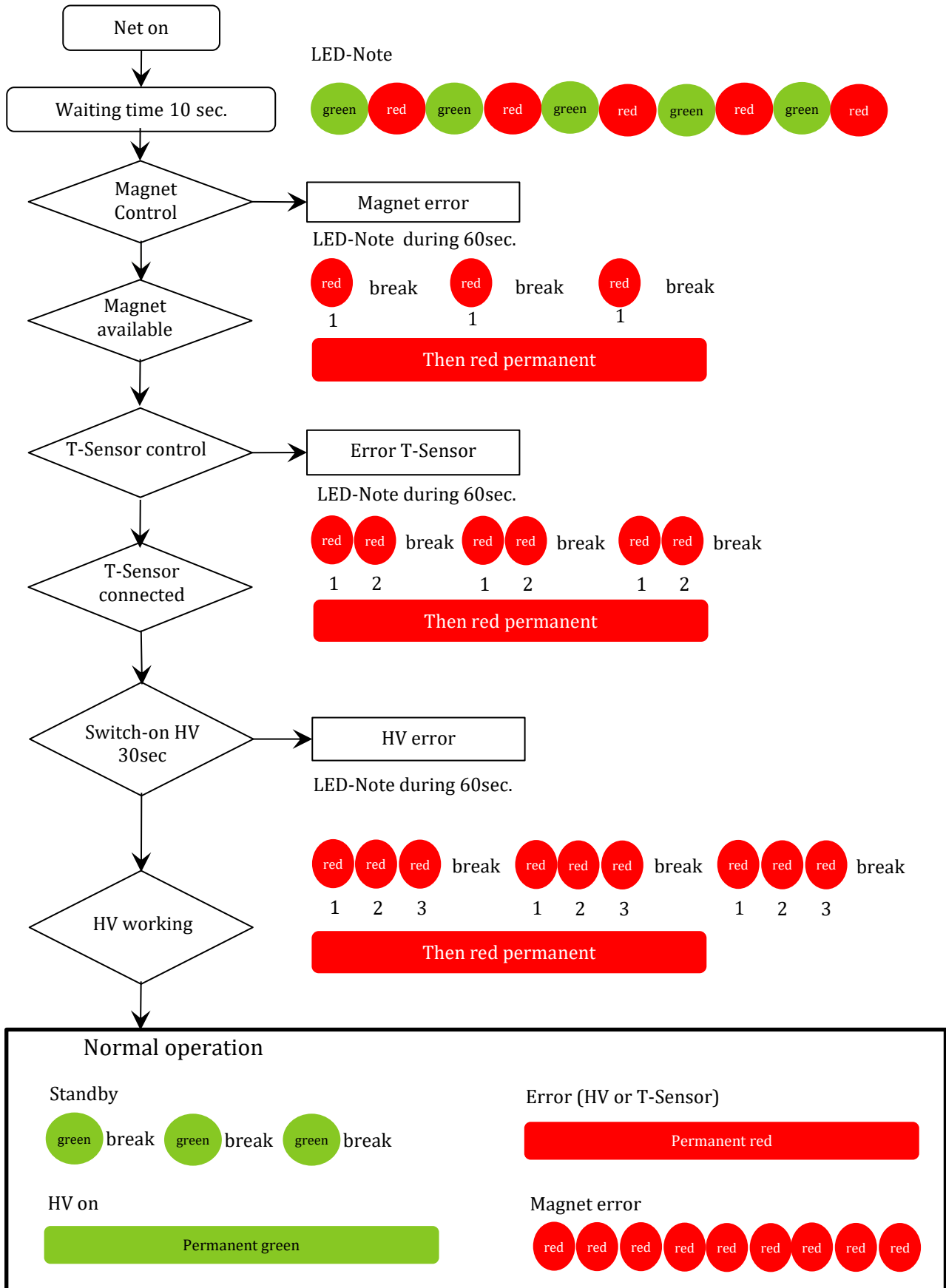
The OekoTube stays switched-on as long as the temperature difference between the reference temperature and the exhaust rests above a certain point.

### **1.8 Switch-off the OekoTube**

The OekoTube switches himself off when the temperature difference between the reference temperature and the exhaust fall below a certain point.



### 1.9 Significance of the LED-Signal



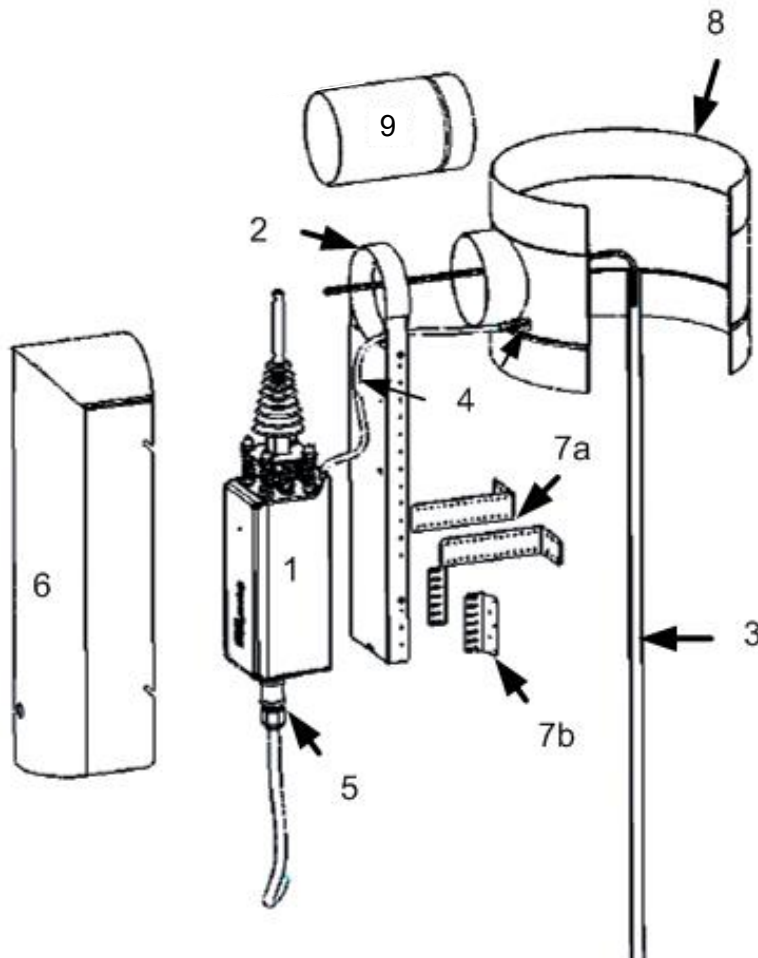
## 2 Description of the OekoTube

### 2.1 Scope of delivery

1. Electronic box with springs, nuts and insulator
2. Console
3. Flexible electrode with 6-edged electrode holder
4. Temperature sensor (cable and holder)
5. Main plug (110 V / 230 V AC)
6. Cover
7. a) Mounting bracket for brick chimney  
b) Mounting bracket for steel chimney

Optional

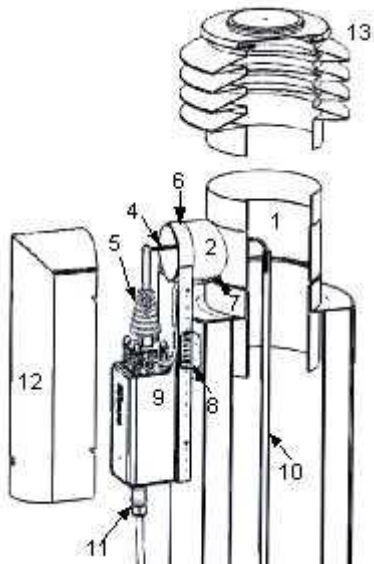
8. T-piece
9. Extension pipe 500 mm





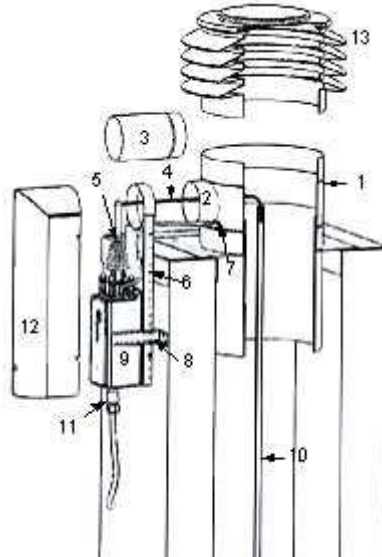
## 2.2 Overall view

### Steel chimney (type A)



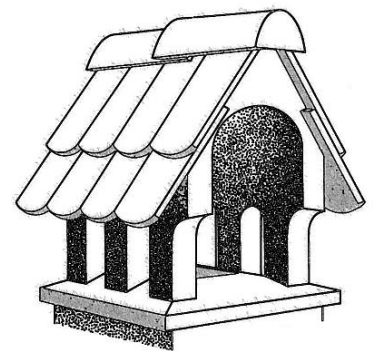
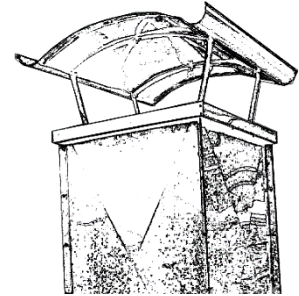
1. T-piece
2. T-piece connector (panel connection)
3. Extension pipe (brick chimney)
4. 6-edged electrode holder (steel rod)
5. Insulator
6. Console
7. Temperature sensor with holder
8. Assembly bracket
9. Electronic box

### Brick-lined chimney (type B)



10. Electrode
11. The mains plug 230V AC
12. Cover
13. Removable chimney cowl (is not an OekoTube component)

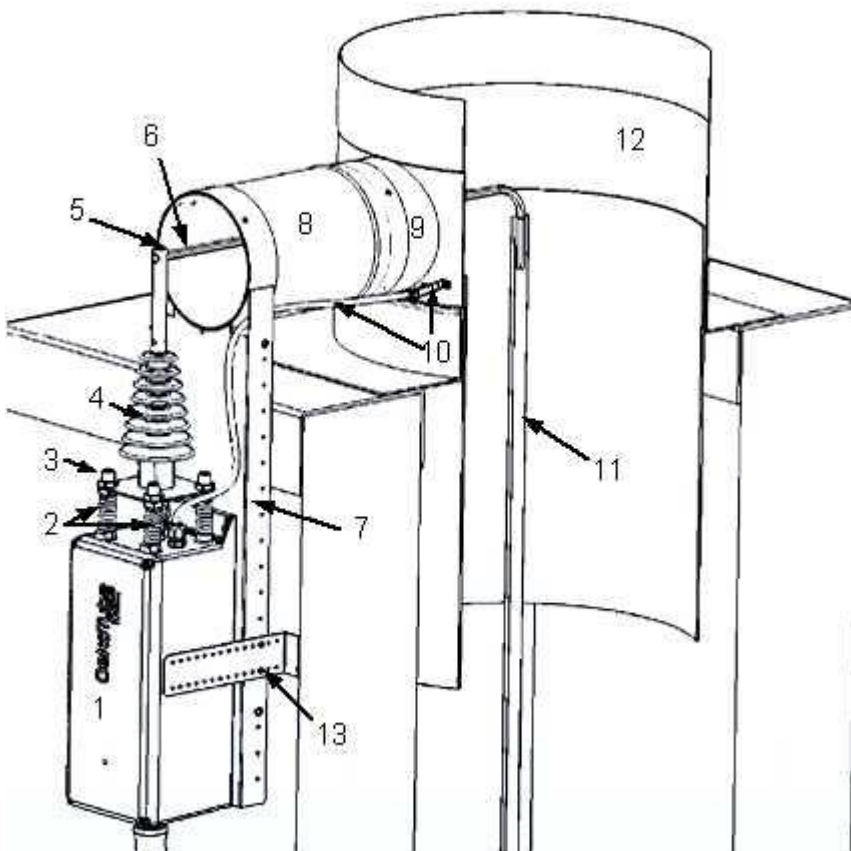
### Brick-lined or forged chimney (type C)



### Special case

### 2.3 Detailed view

1. Electronic box
2. Table Springs
3. Adjustable nuts
4. Insulator
5. Grub screw to fix the hexagonal electrode holder (6)
6. Hexagonal electrode holder (steel rod)
7. Console for mounting the electronic box
8. Extension pipe
9. Flange of T-piece for the extension pipe
10. Temperature sensor and cable holder
11. Flexible electrode
12. T-piece
13. Mounting bracket



### 3 Installation instructions

#### 3.1 Fireplace structure

3.2 The OekoTube has to be installed with professional expertise. Please follow the installation instructions for different types of chimneys:

##### **Type A:**

Steel chimney with insulation

- Steel chimney (round) with heat insulation 30-80 mm
- Flue pipe with protective cover
- Optionally with a chimney hat



##### **Type B:**

Brick fireplace with removable chimney hat

- Guided into brickwork or in a shaft
- Protective cover (connection piece max. 100 mm) available



##### **Type C:**

Brick chimney hat

- Bricked or forged chimney hat
- Lateral opening: min. 130mm diameter



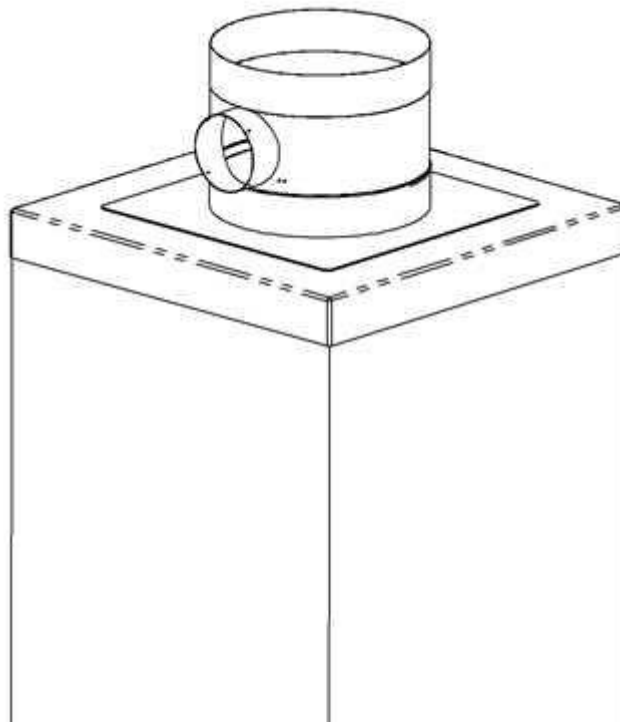
### 3.3 Toolkit

- Rivet gun
- Cordless screwdriver / hammer drill for brick chimneys
- 3mm Allen key (all screws can be tightened with the same Allen key)
- Metal drill 3.3 mm
- Concrete drill (brick chimney)
- Open-end spanner size 17
- Screws and anchors (brick chimney)
- Hand torch
- Water level

### 3.4 Installation type A + B (steel or brick-lined chimney with removal hat)

#### Step 1: Fitting the T-piece

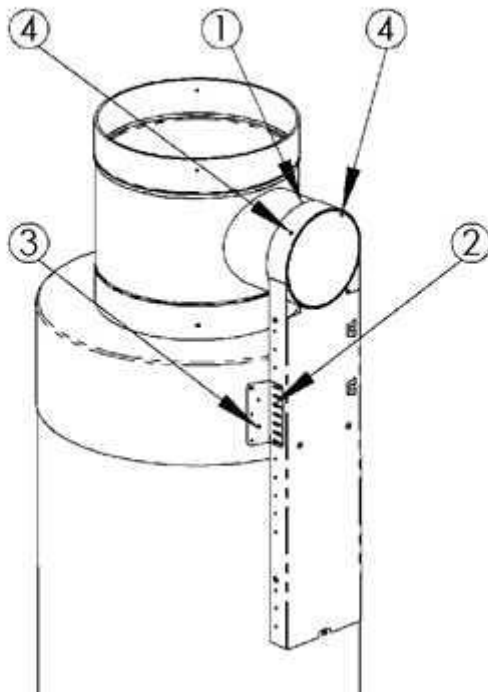
1. Remove the chimney hat.
2. Put the T-piece onto the protective cap.
3. Determine the position of the panel. Ensure the visibility, aesthetics and the numerous mounting possibilities of the console.
4. Drill holes in the protective cap connecting the T-piece (predetermined holes for the rivets,  $D = 3.3$  mm are available on the T-piece).
5. Rivet the T-piece.



## Step 2: Securing the console type A + B (removal of the chimney hat)

Steel chimney with an insulation thickness between 30 and 50 mm

1. Push the opening of the console directly over the connecting piece of the T-piece.
2. Rivet the 120° brackets on both sides of the console at the height of the protective cover.
3. Rivet the bracket onto the protective cover.  
Recommendation: Drill a hole (3.3 mm in diameter) in the protective cover through one of the specified holes of the bracket. Rivet the first hole before you drill the next one.
4. Rivet the console onto the connecting piece of the T-piece (at least 2 rivets)





**Steel and brick chimneys with an insulation thickness more than 50 mm**

1. Slide the supplied extension pipe over the connecting piece of the T-piece.
2. Slide the opening of the console over the extension pipe. Adjust the extension pipe in such a way that the console is vertically aligned with the edge of the extension pipe. Cut the overhang of the extension pipe flush with the opening of the console.





If the connecting pipe protrudes through the opening of the console, it has to be cut.

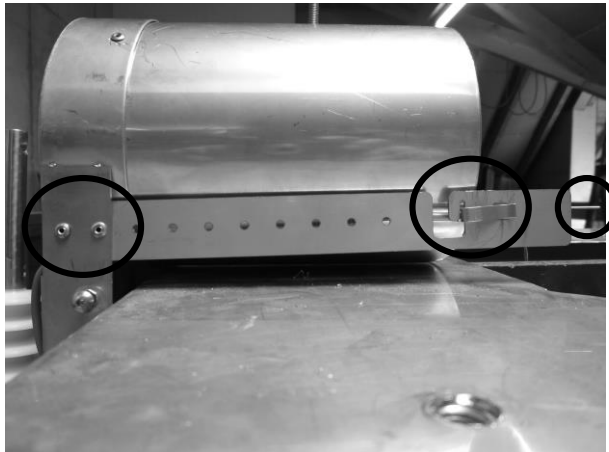
<p><b>Steel chimney (Type A)</b></p> <p>(3a) Rivet the 120° brackets on both sides of the console at the height of the protective cover.</p> <p>(3b) Rivet the bracket on the protective cover. Recommendation: Drill a hole (3.3 mm in diameter) in the protective cover through one of the specified holes of the bracket. Rivet the first hole before you drill the next one.</p> <p>(3c) Drill holes and rivet the extension pipe on the connecting piece of the T-piece. Drill holes and rivet the extension pipe on the console's opening.</p> <p>(3d) Drill holes and rivet the extension pipe on the console's opening.</p>	
<p><b>Brick-lined chimney (Type B)</b></p> <p>(4a) Rivet the 90° bracket on both sides of the console.</p> <p>(4b) Fasten the bracket with the provided screws (use anchors if necessary) on each side of the console onto the brick chimney.</p> <p>(4c) Drill holes and rivet the extension pipe onto the connecting piece of the T-piece.</p> <p>(4d) Drill holes and rivet the extension pipe onto the console opening.</p>	



**Step 3: Fitting the console type C (brick-lined or forged chimney hat)**

-  The lateral opening of the chimney the hat has to be at least 130 mm.
-  For the installation of a brick-lined or forged chimney you don't need a T-piece.

3. If necessary, fix the extension pipe onto the console.  
ATTENTION: the extension pipe has to be cut 1 cm beyond the flue duct.
4. Fix the console with 4 assembly brackets
5. Rivet the holder of the temperature sensor onto the console



**OekoSolve** OekoSolve Ltd  
Switzerland

Serial Number: OT-2-0001




Type: OekoTube OT-2

Voltage: 230 V AC / 0.2 A / HZ

Rated Power: 1500 W

Approved fuel: soft wood


Date of instalment:

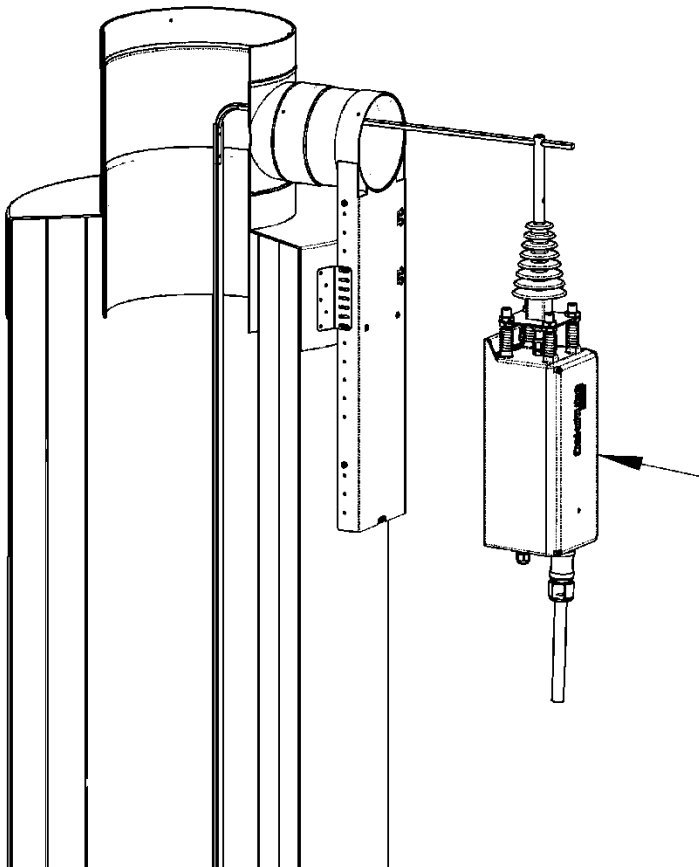




max. -38 kV


#### Step 4: Installation of the electrode and the electronic box

1. The flexible electrode is inserted through the T-piece into the flue pipe.
2. Unscrew the grub screw on top of steel rod above the insulator. Push the hexagonal steel rod from the electrode through the hole. Do not cut the hexagonal rod yet.
3. Push the electronic box with the two holes on top forward over the two screws in the console. Slide the electronic box along the console downwards over the bottom hook, so the electronic box sits secure and cannot slip. Tighten the two screws with a 3 mm Allen key.

 Do not use cordless screwdriver. Danger of corrosion of the stainless screws.



## Step 5: Alignment of the electrode

 Make sure that the flexible electrode is positioned absolutely centred for entire length in the flue pipe. Thereby, trouble-free functioning of the OekoTube can be ensured.

1. Check if the 'upper end' of the electrode is positioned centrally in the chimney flue. Keep the insulator rod vertical to prevent the hexagon leverage effect. Tighten the grub screw temporarily.

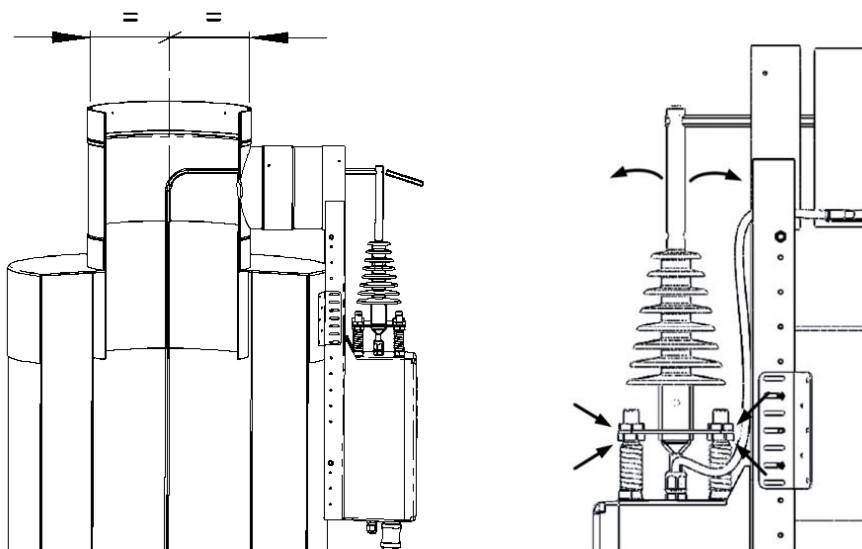
NOTE: Use the grinder's cut-off disc or a hacksaw to cut off the rest of the hexagon rod a few centimetres behind the grub screw. Then the leverage effect is eliminated by the weight of the hexagon.

2. Check if the 'upper end' of the electrode position is still absolutely centred in the flue pipe. If necessary, adjust the position of the hexagon rod using the grub screw.
3. Check if the grub screw is tight.
4. Fine adjustment: Align the electrode exactly in the middle of the flue pipe along its entire length using the eight nuts above the springs.

Minimum distance between the electrode and chimney wall: 50 mm

Note: The insulator rod may be slanted.

5. When the electrode for its whole length is vertical, tighten all nuts with the open-end spanner (size 17).
6. With a circular or metal saw, crop the 6-edged rod.



### Step 6: Fitting of the temperature sensor

1. Type A + B (with T-piece): Insert the temperature sensor into the holder (fig. 1).
2. Type C (without T-piece): Insert the temperature sensor into the groove of the holder (fig. 2).
3. Insert the top of the temperature sensor through the hole on the T-piece. The top has to extend into the chimney pipe (T-piece) 3 mm. Check in the chimney pipe (fig. 3).
4. Compress the two tops of the temperature sensor slightly with a pincer (fig. 1).
5. Secure the cable of the temperature sensor into the two notches on the console. Make sure the cable is not over-stretched (fig. 4).
6. Roll up the remaining cable of the temperature sensor and secure it onto the springs (fig. 4). Make sure that the cable does not contact the insulator.

Figure 1

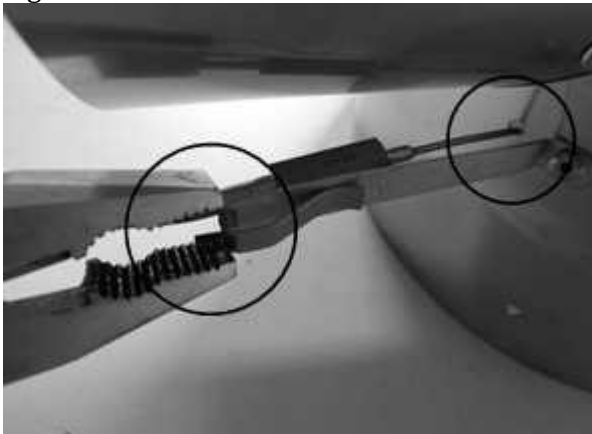


figure 2

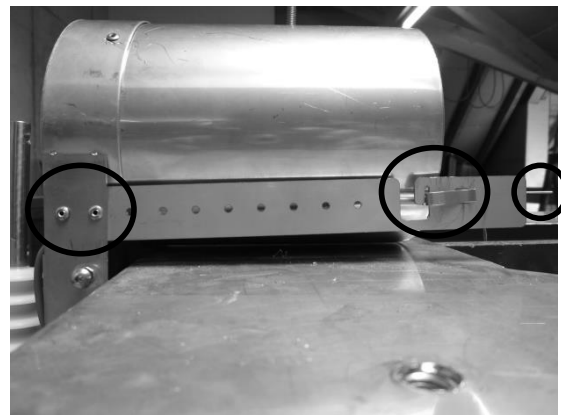


Figure 3

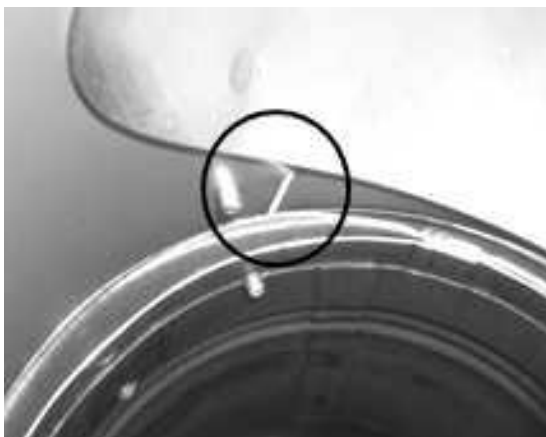
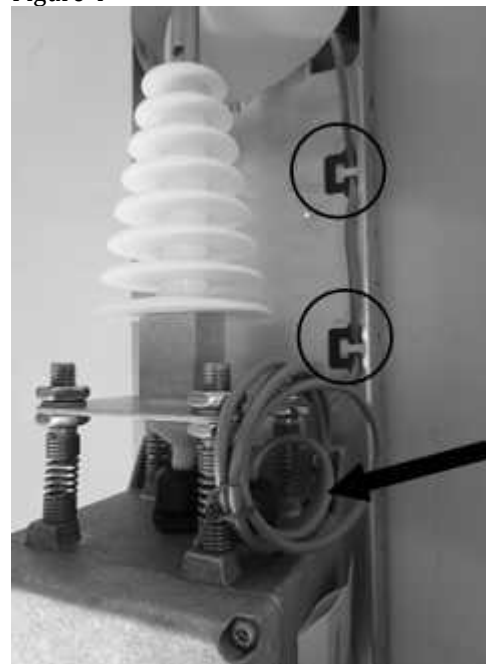
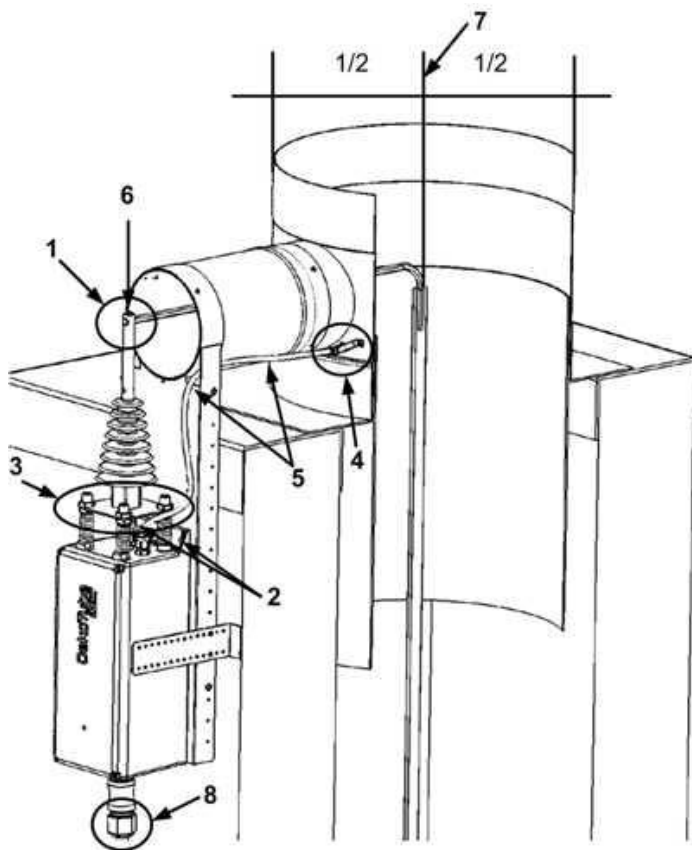


Figure 4



**Step 7 – Prior to mounting the cover, make sure that:**

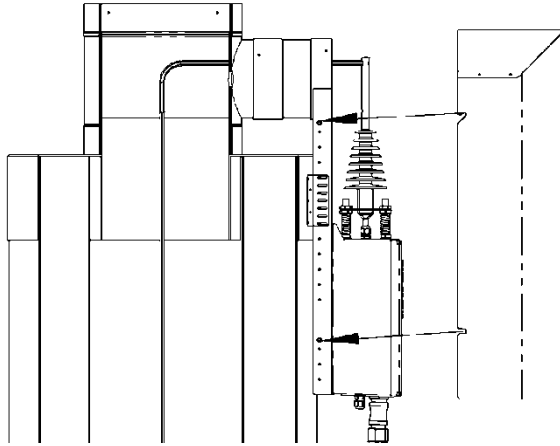
1. The hexagonal rod is cut off flush and the sharp edges ground or sanded back to a smooth surface
2. The 2 screws on the electronic box are tightened
3. The nuts above the springs are tightened
4. The temperature sensor is riveted and fixed at the right place and sticks out into the flue pipe
5. The cable of the temperature sensor is installed
6. The grub screw used to secure the hexagonal holder (steel rod) is tightened
7. Inspection view: The electrode is positioned



### Step 8: Fitting the cover

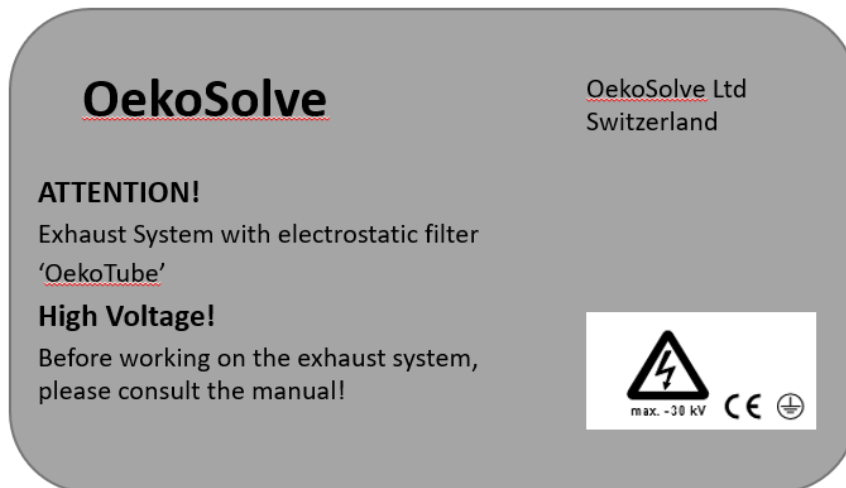
1. Fasten the cover with the 4 available screws.

Do not use a cordless screwdriver to prevent danger of corrosion of the stainless screws.



### Step 9: Affix the appropriate warning signs

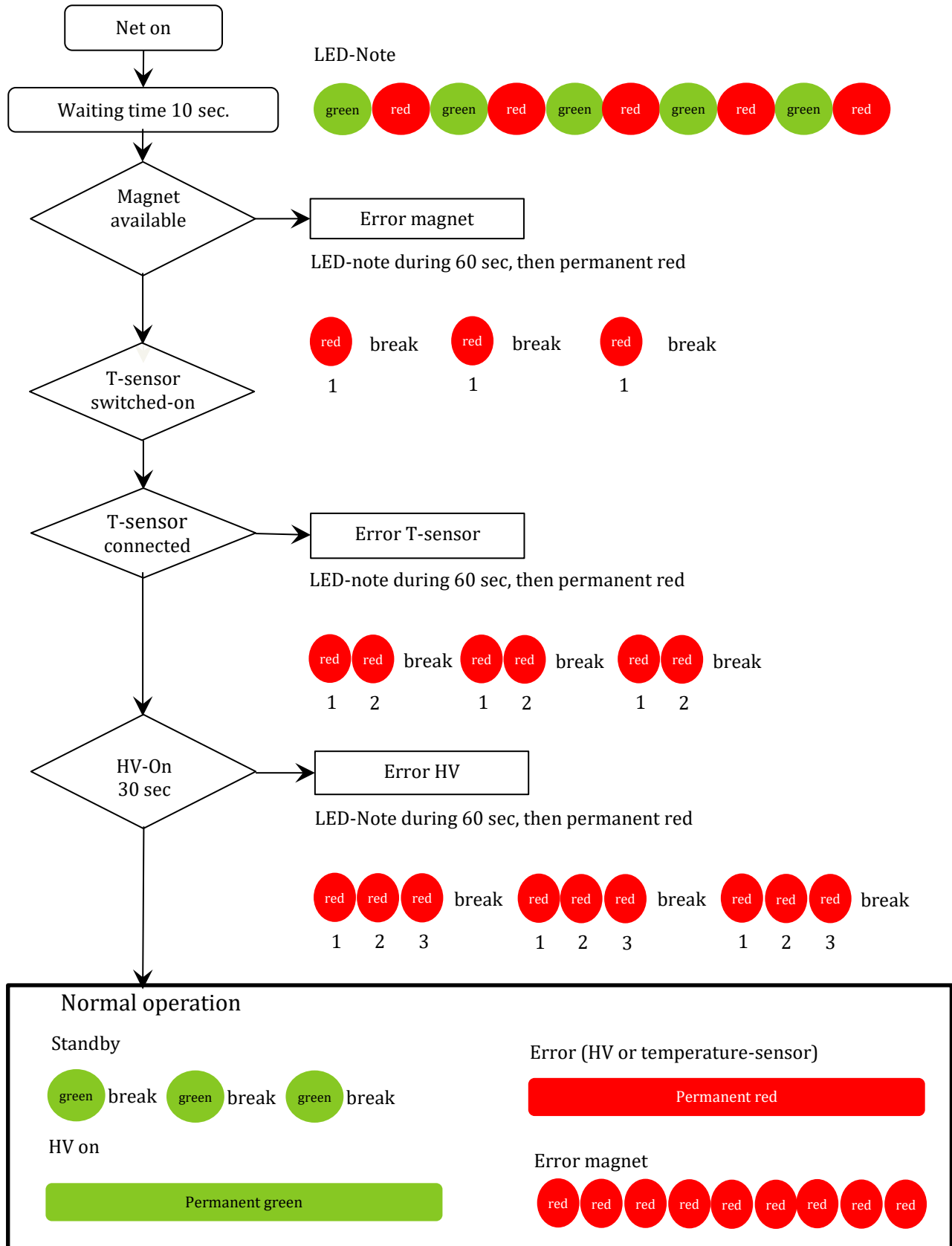
The chimney sweep has to be aware of that the chimney is equipped with an OekoTube. Affix a “Warning Sign” on all access doors. Filter system with the OekoTube micro-dust precipitator.



### Step 10: Connect the power socket

Connect the plug to the electronic box. The LED blinks orange and then flashes green every 10 seconds if the OekoTube is on stand-by mode. When the OekoTube is in operation, the LED light is continuously green. A qualified electrician must perform the electrical installation.

#### 4 LED-Signal: Test mode and normal mode



## 5 Electrical connection

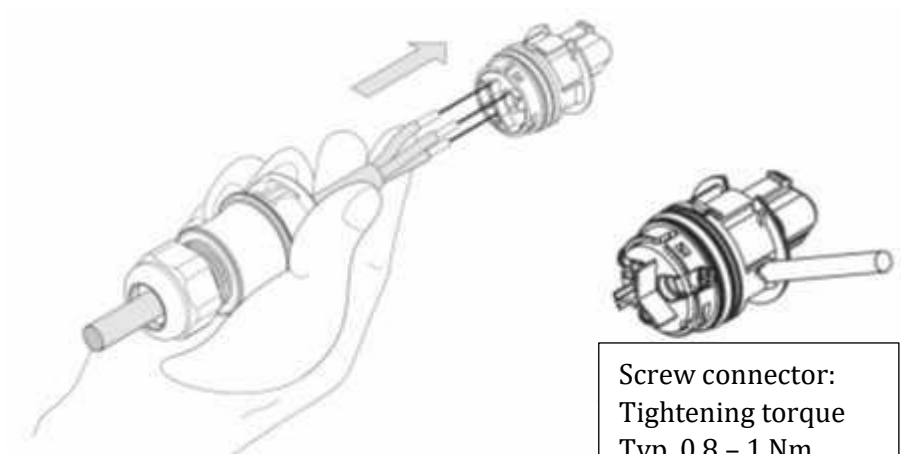
### 5.1 General information

A qualified electrician must perform the electrical installation. Pull out the plug from the OekoTube so it is disconnected from the mains.

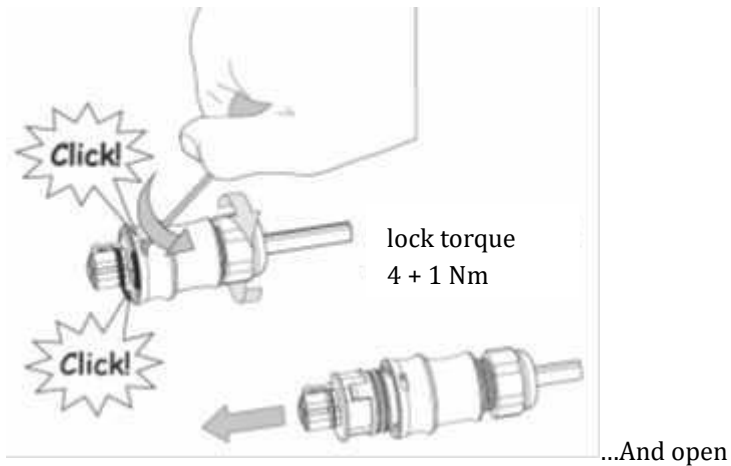
Connector: 110V AC / 230 V AC / 0.2 A / 30W, 50 Hz

### 5.2 Connection of the appliance plugs

Check designation on the connector (L = conductor, N = neutral, ⊕ earth conductor).







### 5.3 Electrical specifications OekoTube

Nominal voltage: 230 V AC

Rated power: 30W

Current consumption: max. 0.2A

Protection class: 1  $\oplus$

Colour code:

Brown: L1

Blue: N

Green/yellow: PE

### 5.4 Guidelines for Electrical Installation of the OekoTube

Please refer to Appendix 9.3: Guidelines for Electrical Installation of the OekoTube.

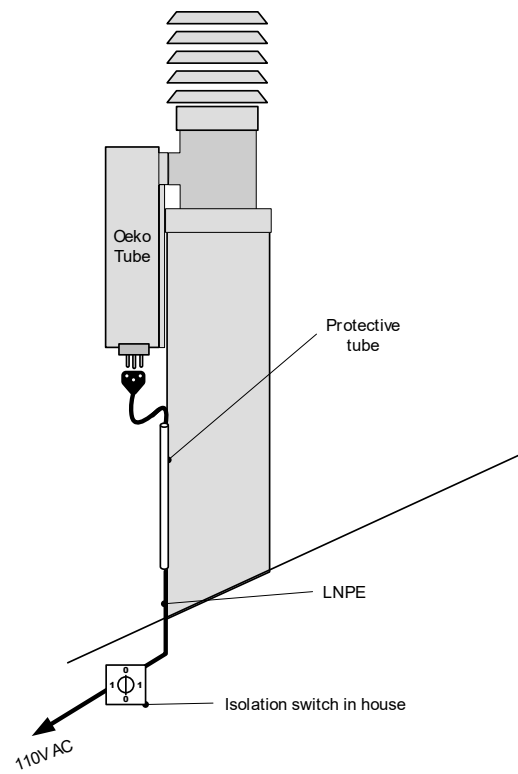
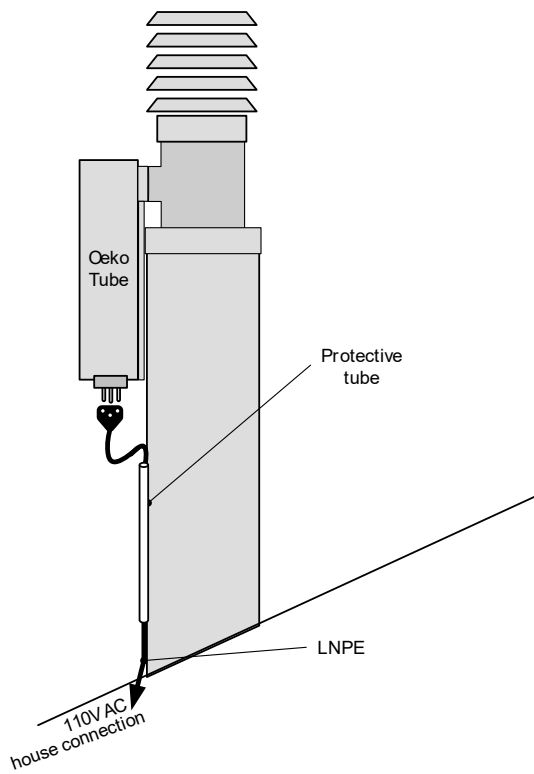
### 5.5 Electrical connection OekoTube

#### Cleaning from below

The isolation switch must be accessible to the chimney sweep.

#### Cleaning from above

The isolation switch must be accessible to the chimney sweep.

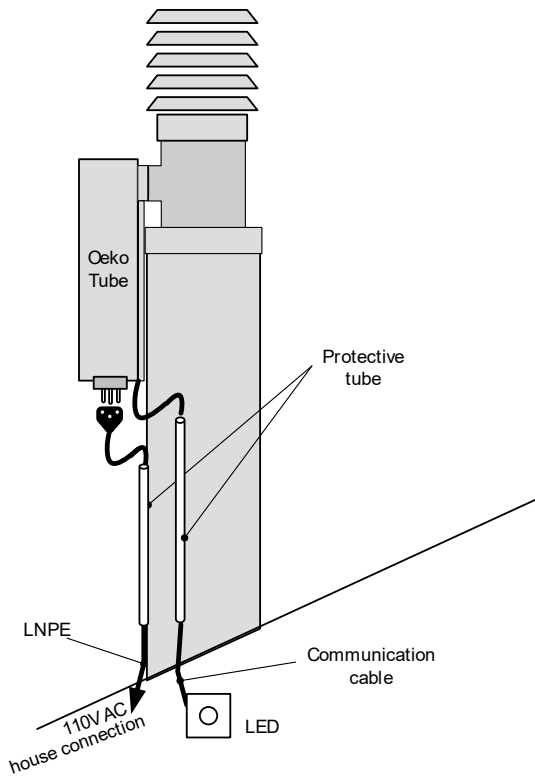


Affix the "Caution! Particle precipitator!" on the inspection door. The chimney sweep can unplug the OekoTube when cleaning the roof.

## 5.6 Electrical connection OekoTube with LED indoor (special circuit board, optional, only indoor)

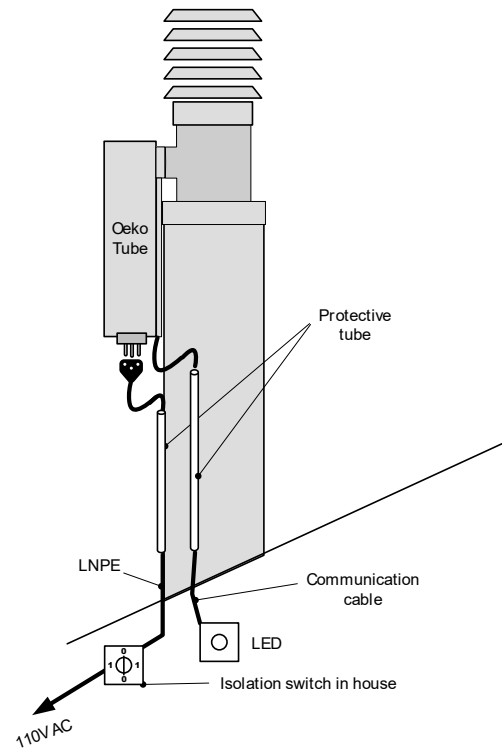
Cleaning from below

The insulation switch must be accessible to the chimney sweep.



Cleaning from above

The insulation switch must be accessible to the chimney sweep.



Affix the "Caution! Particle precipitator!" on the inspection door. The chimney sweep can unplug the OekoTube when cleaning the roof.

### 5.6.1 Electrical specifications LED (special circuit board, optional, only indoor)

Max. voltage: 24 V  
 Max. current: 10 mA

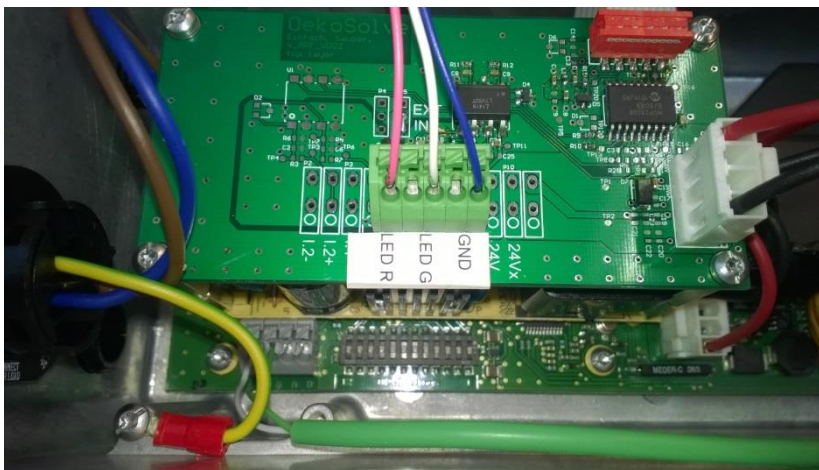
3-conductor cable

### 5.6.2 Dimensions

Length 74 mm  
 Wide 74 mm  
 Height 60 mm

### 5.6.3 Connection

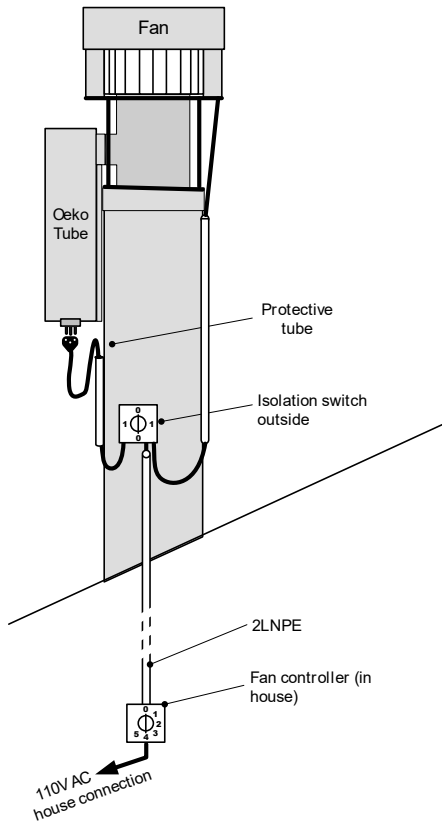
- Blue conductor on GND
- White conductor on 0.1-
- Red conductor on 0.2-



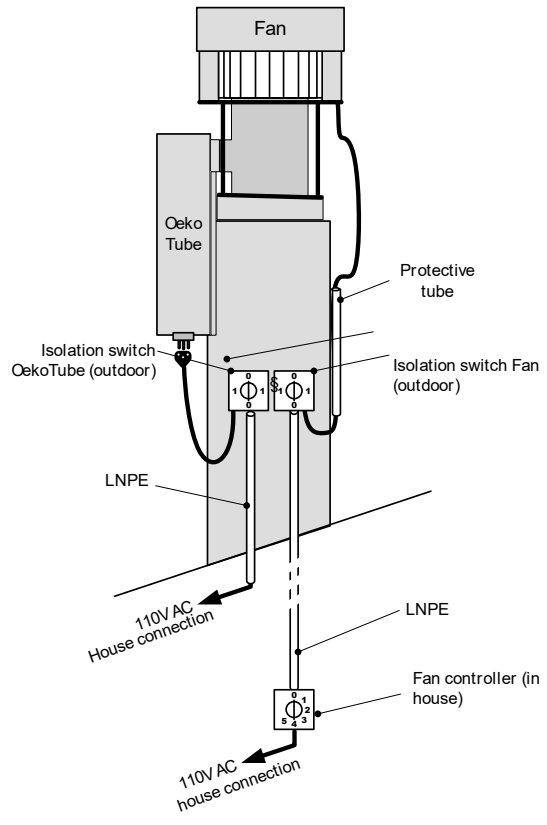


### 5.7 Electrical connection OekoTube and Ventilator

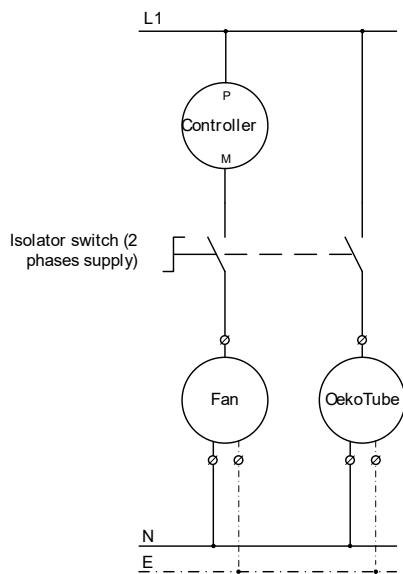
Isolation switch 2 phases supply



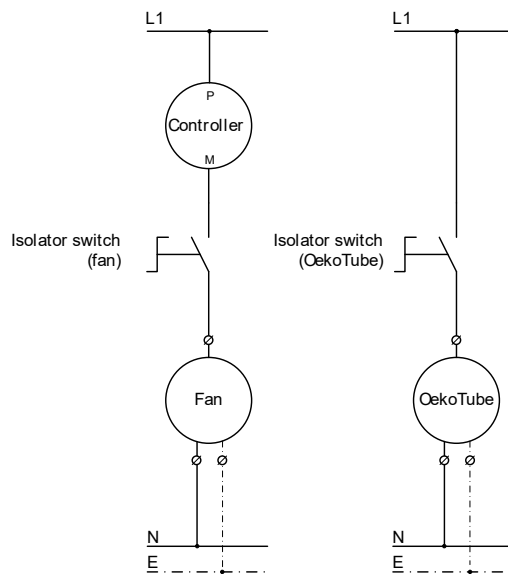
2 separate isolation switches



Circuit diagram



Circuit diagram



## 6 Maintenance and cleaning of the OekoTube

(The interval between two cleanings will be determined by the chimney sweep)

### 6.1 Safety:

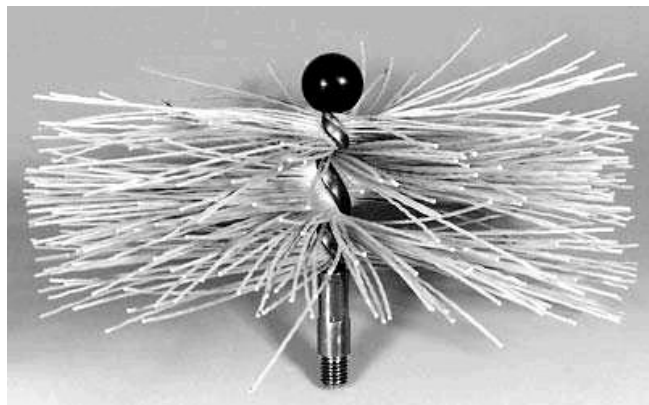
- Before any kind of work is done on the OekoTube, it must be switch off (main plug, possibly by switch in the house).
- The cleaning must be performed by a skilled and certified expert.
- The OekoTube shall be installed and maintained by a qualified expert, trained and certified by Envirosolve Ltd, according to the manufacturer's requirement. All maintenance and monitoring must be carried out in accordance with Clauses 7, 8a and 8b of the Resource Consent CRC201823, issued by Environment Canterbury (see Appendix 9.1).
- Through a temperature increase in the exhaust installation, the high voltage switches on automatically. During operation, touching the electrode or the electrode holder is dangerous to life!
- The precipitator made of acid-proof and rust-free steel. Do not use a metal brush for the cleaning.
- All works on the roof require one to follow the appropriate guidelines and provisions.

The manufacture or the distributor shall not take liability for accidents or damage caused by inobservance of these instructions.

### 6.2 Cleaning brush

The OekoTube shall be installed and maintained by a qualified expert, trained and certified by Envirosolve Ltd, according to the manufacturer's requirement. All maintenance and monitoring must be carried out in accordance with Clauses 7, 8a and 8b of the Resource Consent CRC201823, issued by Environment Canterbury (see Appendix 9.1).

We recommend the use of a twisted nylon brush. As the 6-edged holder stands vertical in the chimney pipe, it is useful (in particular for the cleaning from below) to use a brush with a little bowl on the top.



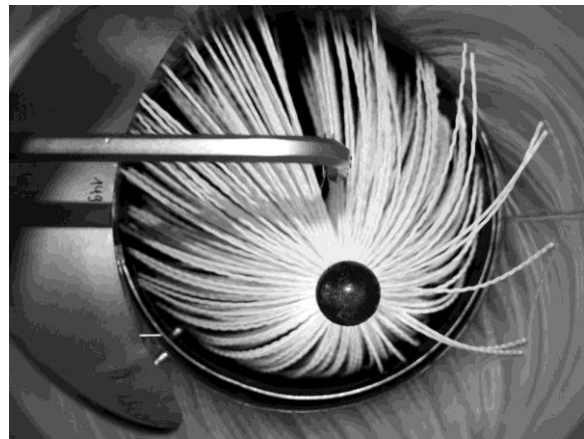


For standard cleaning do not remove or open any piece of the OekoTube!

### 6.3 Cleaning from below

The OekoTube shall be installed and maintained by a qualified expert, trained and certified by Envirosolve Ltd, according to the manufacturer's requirement. All maintenance and monitoring must be carried out in accordance with Clauses 7, 8a and 8b of the Resource Consent CRC201823, issued by Environment Canterbury (see Appendix 9.1).

1. Switch-off the OekoTube (main plug, possibly by switch in the house).
2. Clean it with a synthetic brush. Twisted nylon brushes with a little bowl on the top are ideal. This type ensures that the brush passes the electrode without any problem.
3. For cleaning right on top of the hexagon, the brush has to be repeatedly pushed up again.

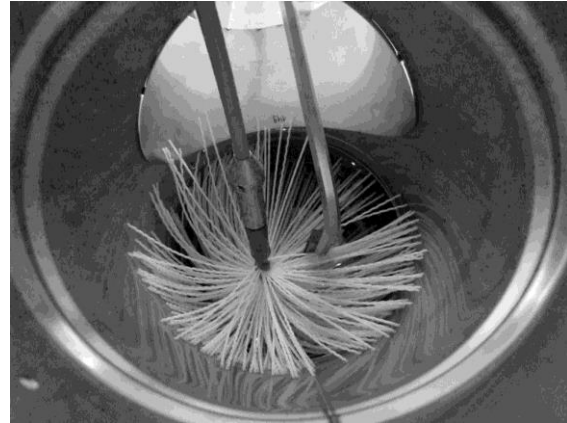


Depending on the degree of contamination, the extension pipe and the insulator should be cleaned every 1 - 2 years.

### 6.4 Cleaning from above

The OekoTube shall be installed and maintained by a qualified expert, trained and certified by Envirosolve Ltd, according to the manufacturer's requirement. All maintenance and monitoring must be carried out in accordance with Clauses 7, 8a and 8b of the Resource Consent CRC201823, issued by Environment Canterbury (see Appendix 9.1).

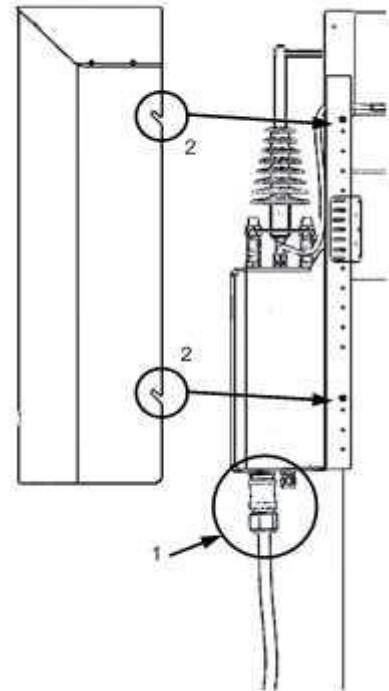
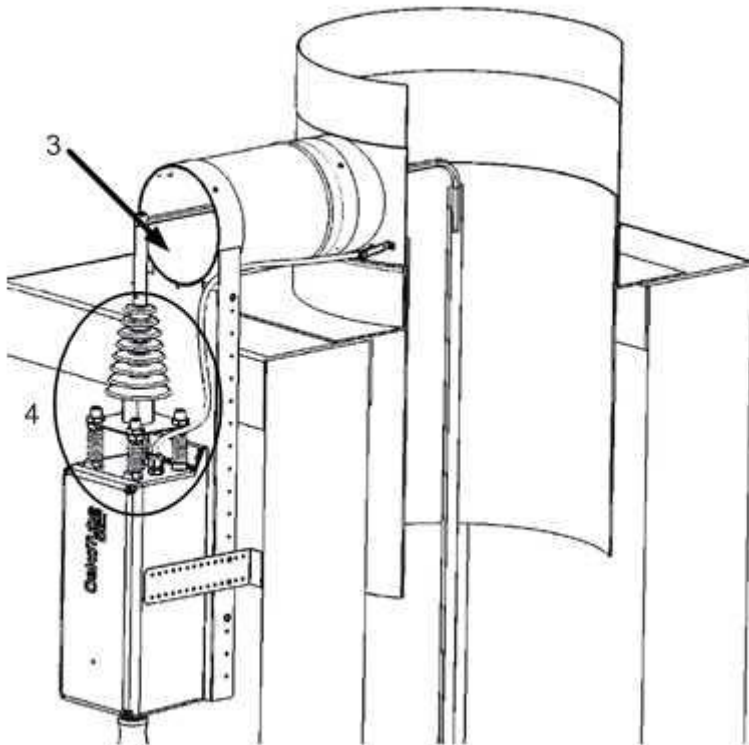
1. Switch-off the OekoTube (remove the connector).
2. DO NOT remove the electrode.
3. Clean with a synthetic brush. Twisted nylon brushes with a little bowl on the top are ideal. This type ensures that the brush passes the electrode without any problem.
4. The hexagon can be pushed away with the hand and the chimney cleaning can be done in the normal way.





## 6.5 Circular cleaning of the box, the insulator and the connecting pipe (every 1 -2 years)

1. Switch off the OekoTube (remove the plug).
2. Loosen the screws and remove the cover (3 Allen key).
3. Clean the horizontal extension pipe (130mm diameter)
4. Clean the insulator, the tongues and the electronic box.
5. Re-fix the cover (at point 2)
6. Re-connect the device. Make sure that the LED starts blinking (at 10 sec intervals).



## 7 Fault indication / Fault reason

### 7.1 List of causes of errors

Symptom	Fault	Action (Always disconnect the electricity supply)
Remains in standby mode despite temperature rising in the flue	Temperature sensor is not inserted into the exhaust duct	Check the temperature sensor (ensure sure it is in the correct position)
LED light comes on too late or not at all after starting the fire of the fire	The high voltage is not switched on	Open cover of the control box, choose the operating temperature
	Pellet furnace: the exhaust temperature is rising too slowly	Regulate the starting temperature using the dipswitches to 35°C (look at the label on the inner side of the control box-cover)
Damaged to the temperature sensor cable	Sight check of the check temperature sensor cable	Replace temperature sensor in the control box
LED light permanently red	Electrode not centred	Centre the electrode by adjusting the 4 nuts
	6-edged holder is not flush with the insulator pin	Cut the hexagon shorter
	Soot extension pipe (130 mm entry)	Clean
	Soot in the chimney flue	Clean
	Chimney cowl too close to the hexagon rod	Place the chimney cowl into the correct position and secure it with a screw
	High voltage cable damaged below the insulator (visible check)	Replace the electronic box
	High voltage cable inside the electronic box damaged (Audible beat inside the box)	Replace the electronic box
	Dirty insulator	Clean the insulator
LED permanent on red after cleaning	Problem with the temperature sensor: damaged cable	Replace the cable
	Electrode is not centred (cause it to short)	Centre the electrode by adjusting the nuts
	Ash accumulation in the 130 mm opening	Clean out the ash
LED light on red and blinking	Temperature sensor is not connected	Control the connection of the temperature sensor / damaged cable (replace)
	Cover is not properly attached	Attach the cover in the correct way
	Missing magnet	Replace magnet
	Bent cover	Straighten the cover to reduce the distance to the control box (contact inside the box)

Symptom	Fault	Action (Always disconnect the electricity supply)
LED light no colour	Plug is not connected	Connect the plug
	No power from the plug	Check the electrical connection
	Wire inside the control box is not connected correctly	Connect the wire correctly
	No power on the ACDC / ACDC defective	Replace the control box

## 7.2 Frequent causes of errors

### 7.2.1 Hexagon is not cut off

Wrong



Right



### 7.2.2 Missing magnet, or it is too far from the contact

There is a magnet attached inside the cover. If the cover is not attached correctly or the magnet is missing, the OekoTube cannot switch-on (LED light note: red blinking).

### 7.2.3 Contamination of the extension tube and / or the insulator

If the insulator is overused, it will become conductive and the system will refuse to function (LED note: permanently red).

If there is ash in the extension pipe, it will lead to shorts with the hexagon rod (LED note: permanently red).

### 7.2.4 The electrode is not centred

If the nuts are not tightened enough, the electrode might move during the first cleaning. This will cause a short between the electrode and the chimney, and the system refuses to function (LED note: permanently red).

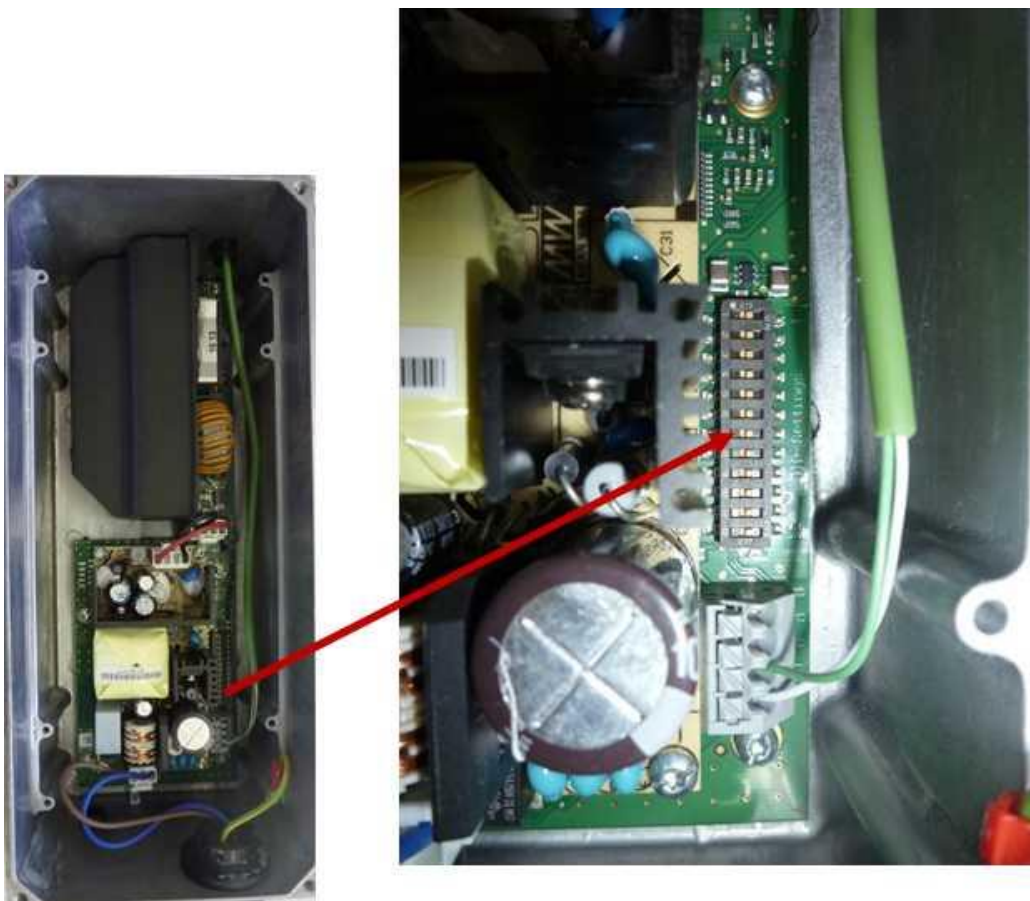
### 7.2.5 The electrode is too long

If the last vertical space of the flue is less than 1.6 m, it could cause a short between the electrode and the chimney and the system will refuse to function (LED note: permanently red).

## 8 Dip Switches

Through the dip- witches, parameters like the high voltage or the starting temperature can be adjusted.

1. Disconnect the OekoTube
2. Remove the cover
3. Open the control box-cover



### 8.1 Readjusting the Dip Switches

1. Refer to the label on the inside of the cover
2. Readjust the dip switch (1=ON / 0=OFF)

On this picture all dip switches are on 1=ON



1 = on  
0 = off

### OekoTube Settings

1	2	3	4	5	6	7	8	9	10	11	12	
address				RS485 Abschluss	u.limit			temp.			1 = enable 0 = disable	
"1111 = 31"					111 = 30	111 = + $\Delta$ T °C						
0111 = 14					011 = 26	011 = 50 °C						
..					101 = 25	101 = 70 °C						
..					001 = 24	001 = 60 °C						
..					110 = 22	110 = 45 °C						
0100 = 2					010 = 20	010 = 40 °C						
1000 = 1					100 = 18	100 = 35 °C						
0000 = 0				000 = Soft	000 = (ON)							

### 8.2 Recommendation according to chimney diameter and combustible material

Chimney diameter

- 130 mm diameter: u.limit : 001 = 24 kV

Combustible

- Pellets:  
starting temperature : 100 = 35 °C

**Please note: Construction and demonstration changes to this device may occur as a result of further technical development.**

## 9 Appendix

### 9.1 Resource Consent CRC201823

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#### **RESOURCE CONSENT CRC212092**

*Pursuant to Section 104 of the Resource Management Act 1991*

**The Canterbury Regional Council (known as Environment Canterbury)**

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GRANTS TO:	EnviroSolve Limited
A DISCHARGE PERMIT (S15):	To discharge contaminants to air.
COMMENCEMENT DATE:	13 Dec 2019
DATE CONSENT NUMBER ISSUED:	09 Dec 2020
EXPIRY DATE:	13 Dec 2044
LOCATION:	Canterbury Region

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***SUBJECT TO THE FOLLOWING CONDITIONS:***

- 1 The discharge of contaminants to air shall be only from a National Environmental Standard compliant burner ('the burner') fitted with an OekoTube secondary emission reduction device.
- 2
  - a. The burner shall be authorised by Canterbury Regional Council or by the Ministry for the Environment (MfE) as having a particulate emission factor of 1.5 g/kg or less.
  - b. When fitted to an NES-compliant burner with a particulate emission factor of 1.5 g/kg, the OekoTube shall achieve a particulate reduction efficiency of at least 67%. The OekoTube shall effectively transform the performance of the NES compliant burner into the equivalent of an Ultra Low Emission Burner (ULEB), with a particulate emission factor of no greater than 0.5 g/kg.
- 3 The only fuel to be used shall be wood that meets the following criteria:
  - a. Less than 25% moisture (dry weight),
  - b. Has not been treated with preservatives or impregnated with chemicals or glue,
  - c. Is not chipboard, particle board, or laminated board, and
  - d. Is not painted, stained, or oiled.
- 4 The owner and occupier of a dwelling with the burner and OekoTube installed shall be provided with a copy of this resource consent and the OekoTube maintenance instructions.





- 5 The burner and OekoTube shall be operated at all times in accordance with the "Installation and Operating Instructions" supplied with each appliance i.e. the woodburner and the OekoTube respectively.
- 6 The OekoTube shall be installed by a suitably qualified technician and shall be connected to a power-supply by a qualified electrician:
  - a. the appliance shall be hard-wired to the dwelling power supply;
  - b. the isolating switch shall be installed in the roof cavity where practicable and legal; and
  - c. The OekoTube shall be operated at all times the burner is in operation.
- 7 The burner and OekoTube shall be maintained in accordance with the relevant manufacturer's instructions i.e. for the wood burner and the OekoTube respectively.
- 8 The OekoTube shall be maintained through a maintenance contract between the supplier and owner which shall include at a minimum:
  - a. Cleaning of the flue and OekoTube from above and below including cleaning of the tube, insulator and connecting pipe; and
  - b. Any other maintenance as required to ensure ongoing efficient particulate removal.
- 9 A permanent label shall be attached to the OekoTube in a position that is readily visible after installation. The labels shall contain the following information.
  - a. The manufacturer of the appliance (OekoSolve Ltd, Switzerland);
  - b. The unique model name (OekoTube);
  - c. The unique serial number of the device;
  - d. The approved fuel for use in the burner (soft wood);
  - e. Space to allow the installer to place the date of installation.
- 10 This approval applies only to the specific OekoTube model described in the testing reports, documents and drawings accompanying the application for Authorisation or any superior operating model.
- 11 A report shall be submitted to the Canterbury Regional Council within 12 months of approval, and annually thereafter, signed by the consent holder:
  - a. verifying that the model being sold as the OekoTube is the same as that which was tested and described in the consent application or any superior operating models;

- b. listing addresses where OekoTube devices have been installed;
- c. Details of maintenance contracts including yearly maintenance and chimney sweep by trained technician.

**Advice Note:**

Any necessary building consents for the installation of the device must be obtained from the appropriate district or city council.

- 12 The Canterbury Regional Council may annually, on any of the last five days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of:
- a. Dealing with any adverse effect on the environment which may arise from the exercise of this consent; or
  - b. Requiring the consent holder to carry out monitoring and reporting instead of, or in addition to, that required by the consent.

**Issued at Christchurch on 9 December 2020**

Canterbury Regional Council






## 9.2 Supplier Declaration of Conformity (SDoc)

### SUPPLIER DECLARATION OF CONFORMITY (SDoC)

In accordance with ISO/IEC 17050-1:2004

<b>SDoC Identification Number<sup>1</sup>:</b> <input type="text" value="OekoTube080414"/>		
<b>Issuer details</b>		
Name <sup>2</sup> (of New Zealand manufacturer or importer): <input type="text" value="EnviroSolve Ltd."/> Telephone: <input type="text" value="06 385 4871"/> New Zealand Company No. (if applicable): <input type="text" value="935397"/> Email Address: <input type="text" value="rene.haeberli@xtra.co.nz"/>	Contact Address: <input type="text" value="Ohakune Road, RD 3, Raetihi, Wanganui&lt;br/&gt;New Zealand"/>	
<b>Medium Risk Article – Details<sup>3</sup> (Product name, type, rating, brand, model, batch numbers, and serial numbers, as applicable):</b>		
Brand: OekoTube. Model: OT-2. Type: Electrostatic Probe. Rating: 230 V~, 0.2 A, 50 Hz, 30W.		
<b>The Medium Risk Article listed above, fully complies:</b>		
<b>With cited standard(s), as listed<sup>4</sup>:</b>		
Standard number and issue year: <input type="text" value="IEC60335-1:2001"/> Edition / Amendment status: <input type="text" value="4.2"/> Standard title: <input type="text" value="Household and similar electrical appliances&lt;br/&gt;- Safety - General requirements"/>	Standard number and issue year: <input type="text"/> Edition / Amendment status: <input type="text"/> Standard title: <input type="text"/>	
AS/NZS ZZ modified Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	AS/NZS ZZ modified Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
<b>OR Complies with the Conformity Cooperation Agreement<sup>5</sup></b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
<b>Names and addresses of any testing organisation or body</b>		
Name(s): <input type="text" value="Spectrum Laboratories Limited"/> Address(es): <input type="text" value="1/25 Highbrook Drive, East Tamaki, Auckland, New Zealand."/>	Name(s): <input type="text" value="TüV Süd Industrie Service GmbH"/> Address(es): <input type="text" value="Feuerungs Und Wärmetechnik, Ridlerstraße 65, 80339 München, Deutschland."/>	
<b>Reference to relevant test reports/certification and the issue date that show how compliance is achieved</b>		
Standard(s) or document(s) used, to show how compliance with cited standard is achieved: <input type="text" value="Test report (DIN EN 60335-1:2007)"/> <input type="text" value="Test Report (Annex ZZ of AS/NZS 60335.1:2002 incl. Amdts. 1-4, EN to IEC 60335-1 Ed. 4.2 assessment)"/>	Report Certification or Document reference N°(s): <input type="text" value="SE11360011"/> <input type="text" value="6258"/>	Issue dates(s): <input type="text" value="23/03/2011"/> <input type="text" value="06/03/2014"/>
Reference to any management quality system involved: <input type="text" value="nil"/>		
Additional information <sup>6</sup> : <input type="text" value="This is a voluntary supplier declaration outside of Medium Risk classification."/>		
<b>Declaration (signed for and on behalf of)</b>		
Name and position as authorized by the issuer <sup>7</sup> : <input type="text" value="Dr. Rene Haeberli"/> Issuer Identification (as affixed to the article): 	Signature: <input type="text"/> Date: <input type="text"/>	

### 9.3 Guidelines for the Electrical Installation of the OekoTube

**All wiring must comply with local and national electrical codes and be installed by qualified and skilled electricians.**

**Perform the electric safe check after completing installation:**

1. Earth connection - Check the earth connection visually and with a multi meter following national wiring rules to confirm a good earth connection of the outdoor unit.
2. Earth leakage test - While the unit is running, conduct earth leakage test with a multi meter. If high leakage current is detected, immediately switch off the unit and solve the problem before proceeding. Follow earth leakage test procedure as per national wiring rules Electric Safety Regulations for the initial installation.
3. The appliance shall be installed in accordance with national wiring regulations.
4. An all-pole disconnection device which has at least 3mm clearances in all poles, the residual current device (RCD) having a rated residual operating current not exceeding 30mA, and disconnection must be incorporated in the fixed wiring in accordance with the wiring rules. Refer to the table for recommended circuit breaker rating for normal installation.
5. A switch has to be built into the electrical circuit, preferably near the manhole in the roof space. Optional, the switch can be placed outside the building. In this case, the switch must be both weather proof and lockable (PDLWSW201LE).
6. Loose wiring may cause the terminal to overheat or result in unit malfunction. A fire hazard may also exist. Therefore, be sure all wiring is tightly connected.
7. The filter unit may or may not need to be installed on its own separate circuit, please refer to AS/NZS 3000 and local wiring regulations for requirements.
8. Regarding outdoor unit terminal block, ensure that the main power supply wires running to the outdoor unit are sufficiently water proofed - particularly protrusions through the roof.