

Handbook Of Microbiological Safety Cabinet Type

BIO II 9 (3 ft) and 12 (4 ft)

Handbook of Microbiological Safety Cabinet Type BIO II

Dear Sirs,

Thank for buying the ADS Linaire "BIO II"

This cabinet guarantees you:

- To work in sterile conditions.
- The protection of the operator.
- The protection of the surrounding environment from all risks of contamination.

Your cabinet **BIO II** is recommended for the **manipulations of pathogenic germs (levels 2 and 3)**.

The model **BIO II** is built according to the European Norm **EN 12469**.

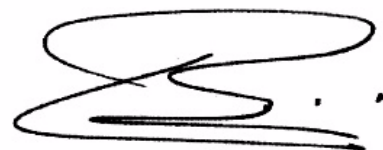
We wish you a good utilisation and we are staying at your complete disposal for further details.

Eric FITOUSSI



Managing Director

Bernard BIJAOU



CEO

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I – CONSTRUCTION

1 – FRAMEWORK

The structure of the enclosure is made out of epoxy coated steel.
The unit is rigid and not subject to deformations and alterations.

2 – WORK SURFACE

Removable, it is made of 3 removable parts. Those parts are in stainless steel 304 L and are perforated.

3 - AIR FLOW BARRIER/ FRONT GRILLE

The front grille is in stainless steel 304 L and is removable. Thanks to the front grille. This barrier is created through a Perforated Grid in stainless steel 304L. This grille permits to avoid cross contamination.

5 – LIGHTING

A fluorescent lighting is fixed outside the work volume on the front panel.
The level is 600-800 LUX on the work surface.

6- UV LIGHT

A 254 nm UV lamp is installed in all the hoods. The UV lamp can be use only in standby mode.

7 – PULL DOWN WINDOW

A front pull down window panel (Plexiglas window) acts as a protective shield. This window is inclined, ensuring a comfort for the access to the working. The standard working position is 240 mm (9.5”) high above the work surface.

Two positions of the window panel are possible:

- Working position for normal use with the flipping part close
- Opening position with the flipping part up.

A removable cap in epoxy coated steel enables to seal the working volume between 2 periods of use.

8 - VENTILATION

This cabinet is equipped with an adjustable and direct centrifugal fan designed to maintain the air flow velocity at low rotation speed (ECM technology: principle here under)

In order to avoid any vibration, engine and turbine are balanced together and the blower is mounted on rubber vibration isolators.

9 - FILTRATION

HEPA Filters are installed with an efficiency of 99.999% for particles greater than 0.3µ (classification H14 DOP tested).

Those filters are designed for laminar air flow blowing (ISO 5, Class 100, US Norm) and exhaust.

<u>Media:</u>	Glass Fiber
<u>Frame:</u>	Aluminium frame and two white epoxy grids (both sides of the filter).
<u>Gasket:</u>	Neoprene Gasket.
<u>Laminator:</u>	Little glue on the downstream of the <u>supply</u> filter. Ensure the laminarity of the flow.

10 - AUTOMATIC AIR FLOW REGULATION

Downflow Velocity is maintained constant automatically at 55 fpm (0,3 m/s) +/-10% whatever the clogging of the filters. The inflow velocity is 105 fpm (0,5 m/sec).

The use of ECM Fans allows an automatic flow rate regulation due to the microprocessor integrated inside the fan.

- Fan for BIO II 9 (3 ft) ECM DP 9.7

- Fan for BIO II 12 (4 ft): ECM DP 9.9

11- ELECTRICAL PLUG

On the back wall and right side, you benefit from 1 American electrical plug without pin.

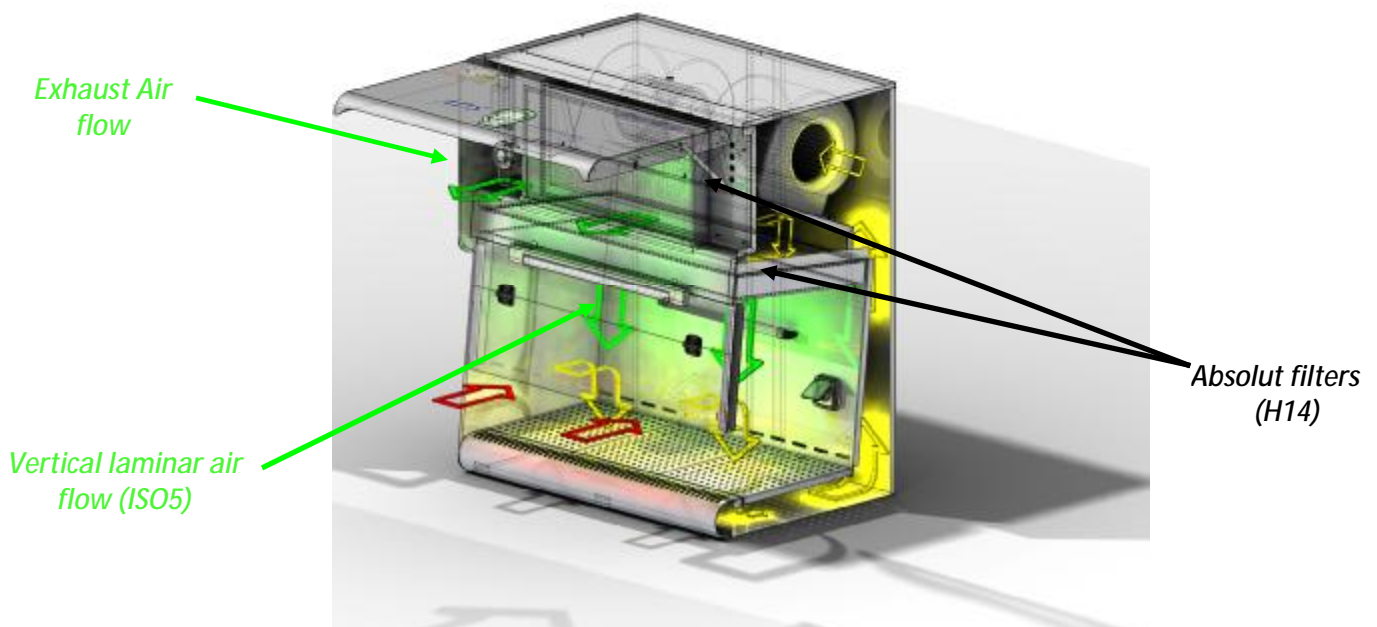
10 A is the maximum admissible load, taking in account the sum of the two electrical plugs.

II – OPERATING DESCRIPTION SECURITY

1 – OPERATING DESCRIPTION

The vertical laminar air flow ISO 5 (class 100) is issued from the first absolute filter above the work surface, sweeping all the work volume in order to keep the handling out of any contamination.

The 30% of air flow rate exhausted through the second HEPA filter (located on the top of the booth) is compensated by new air sucked through a grille in the forepart of the work surface. This is creating a real air flow protection for the user.



2 – INSTALLATION

The equipment has to be placed over a lab bench or a stand. This one must not be close to strong aeraulic turbulences (blowing type), that might cause consequences over the manipulations of the equipment.

The support must be adapted to the weights and the size of the equipment.

3 – SECURITY

The use of the BIO II is possible only when the key position is ON: in position “OFF”, the cabinet is simply OFF.

When the BIO II is in use (key in position ON), you benefit from the following safe principle:

In order to protect the operator, the BIO II regulation system is designed to maintain the air flow constant whatever the clogging of the filter.

A spot light and a buzzer alarm inform that you have to remove the HEPA Filters in a delay of 3 to 4 weeks, when it is clogged.

To avoid creating a short circuit, it is necessary to limit the projections of liquid at the level of the UV lamp.

Other alarm prevents when the flipping window position is not appropriate higher for the manipulation use. Nevertheless you can stop the alarm if you need a longer delay with the sash window completely open (use the switch board behind the front panel for filters access: change position n°2 on the switch.

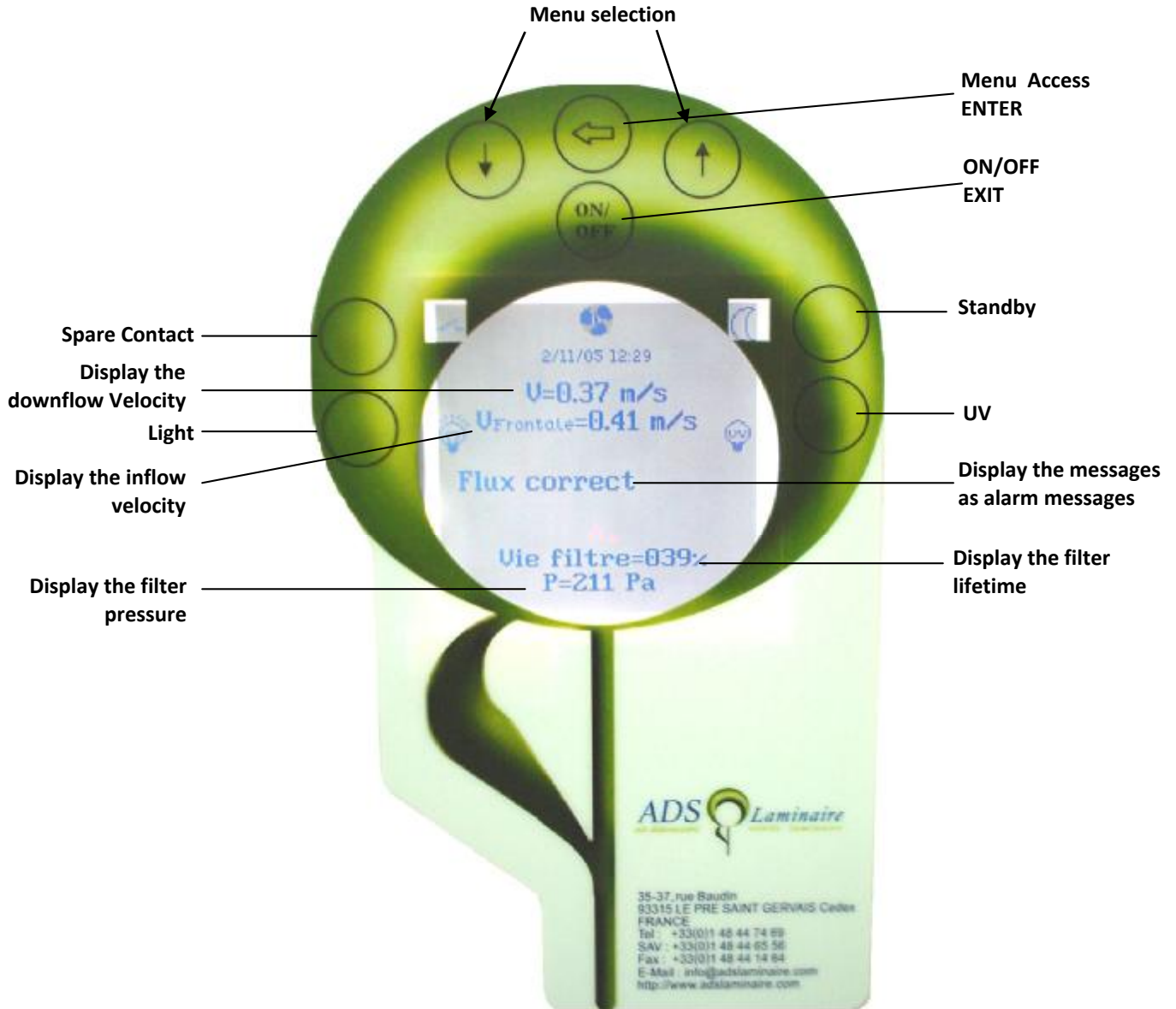
3 - PACKAGING AND TRANSPORT

In case of long time without using your Biosafety cabinet, you must **protect (pack it)** the cabinet to avoid climatically variations. The conditions are stipulated in the part IV of this present Handbook.

If the BIO II has to be shipped, it has to be pack in the way to have the maximum of protection and avoid the shocks.

III – CONTROL PANEL

A. PRESENTATION



B. Switch

- *On/Off*: On/Off switch of the cabinet. Turns on and off the fan and all functions.

This switch is at the same time the “exit switch”. It uses to exit the different menus or a sub menu or to cancel a function.

- *Sleep*: Switch on and off the stand by mode.
- ↓ ↑: Up & down the sash windows.
Use it to navigate into the menu or to select a choice.
- *Light*: Switch on and off of the light
- *UV*: Switch on and off of the UV Lamp. Only available during the stand by Mode.
- *Spare contact*: Switch on and off a contact in the main board ready to connect any accessory (solenoid, electrical socket, ...)

IV – USER MANUAL

A. STARTING



Push ON/OFF switch to turn ON.
 If no password has been recorded, the cabinet starts directly.
 If a password has been recorded (Factory settings) you need to enter it.



The Factory settings password is "0001". You can change it in the User Menu.



The panel displays "Wait" until the velocity is OK. Then, the panel displays "Flow Correct" and you can work.




Push ON/OFF switch to turn OFF the cabinet. If no password has been recorded, the cabinet will stop directly.

If a password has been recorded (Factory settings) you need to enter it. The Factory settings password is "0001". You can change it in the User Menu. Then, the window closes automatically (a message is displayed) and the light switches off.

B. STAND BY MODE



Push Sleep switch  during 2 seconds to turn on the cabinet in stand by mode. When the moon is highlighted, it's OK.

If no password has been recorded (Factory settings), the cabinet switch in Stand by mode directly.

If a password has been recorded you need to enter it before.

Then, the hood turn in stand by mode automatically (an alert message displays) and the light switches off. It is possible to switch ON the light if necessary.



The screen display that you need to push Sleep switch 2s more to come back to the using mode. If a password has been recorded you need to enter it.

After few seconds, the flower icon appears in standard mode and the airflow reduces itself at the value recorded in the Program menu.



When the cabinet comes back to the normal use, you need to wait until it displays on the control panel "correct flow" to start to work in the cabinet.

C. ACCESSORIES

- **Window** : The BIO II is equipped with a flipping Plexiglas window. During normal use the flipping part is down, giving access only to the arms inside the hoods. For maintenance you can flip up the flipping part. This operation can be down only when the hood is not working.
- **Light** : press the “light” button, to switch on or off the light. The icon display little rays when the light is ON.



UV : Press the “Light” to switch on or off the UV Lamp. UV can be activated only in the “Stand by” Mode”. If the cabinet is in “Normal Mode”, this message appears : “Sleep mode for UV”. The icon display little rays when the light is ON.



- **Spare Contact**: Press the “Contact” button, to switch on or off the spare contact.

D. ALARMS

- **Clogging Alarm** : When the filter is clogged, the alarm beeps and this message appears “ Filter Clogged”
- **Incorrect Flow Alarm** : When the velocity is out of the usual range, the alarm beeps and this message appears “ speed too low ” or “speed to high”



- **Window's Alarm** : When the window is not in the right position, the alarm beeps and this message appears “ Speed too low”



- **Fan Alarm** : When the fan is out of service, the alarm beeps and this message appears “ Fan Default “
- **Maintenance Alarm** : After calibration due date, this message is displayed: “Call After Sales Service”

E. Malfunctioning

If the cabinet presents any malfunctioning, you can try to reinitialize it to fix the problem. To reinitialize the cabinet unplug then plug it again to the power jack. Then push Up & Down switches together during 3 second while the flower appears.

CONDITIONS :

The conditions of the environment hereunder have to be respected for a good operation of your MSC (Microbiological Safety Cabinet):

Ambient temperature: +41° F to 104°F (+ 5°C to + 40°C).

Humidity: 30% to 95%.

Maximum height: 2000 m

Agents of pollution: Do not install the MSC in a place where the quantity of pollutants is abnormal.

Radiation: The BIO can not be exposed to important radiations.

OPERATING PROCEDURE OF THE CABINET:

Place the BIO II on its stands or on an existing work bench (pallet or stable horizontal table).

- Connect the hood on current
- Press the **ON/OFF switch**: fan starts to blow. You shall wait 2 hours (time of purge) before the first utilisation.

ELECTRICAL FEATURES

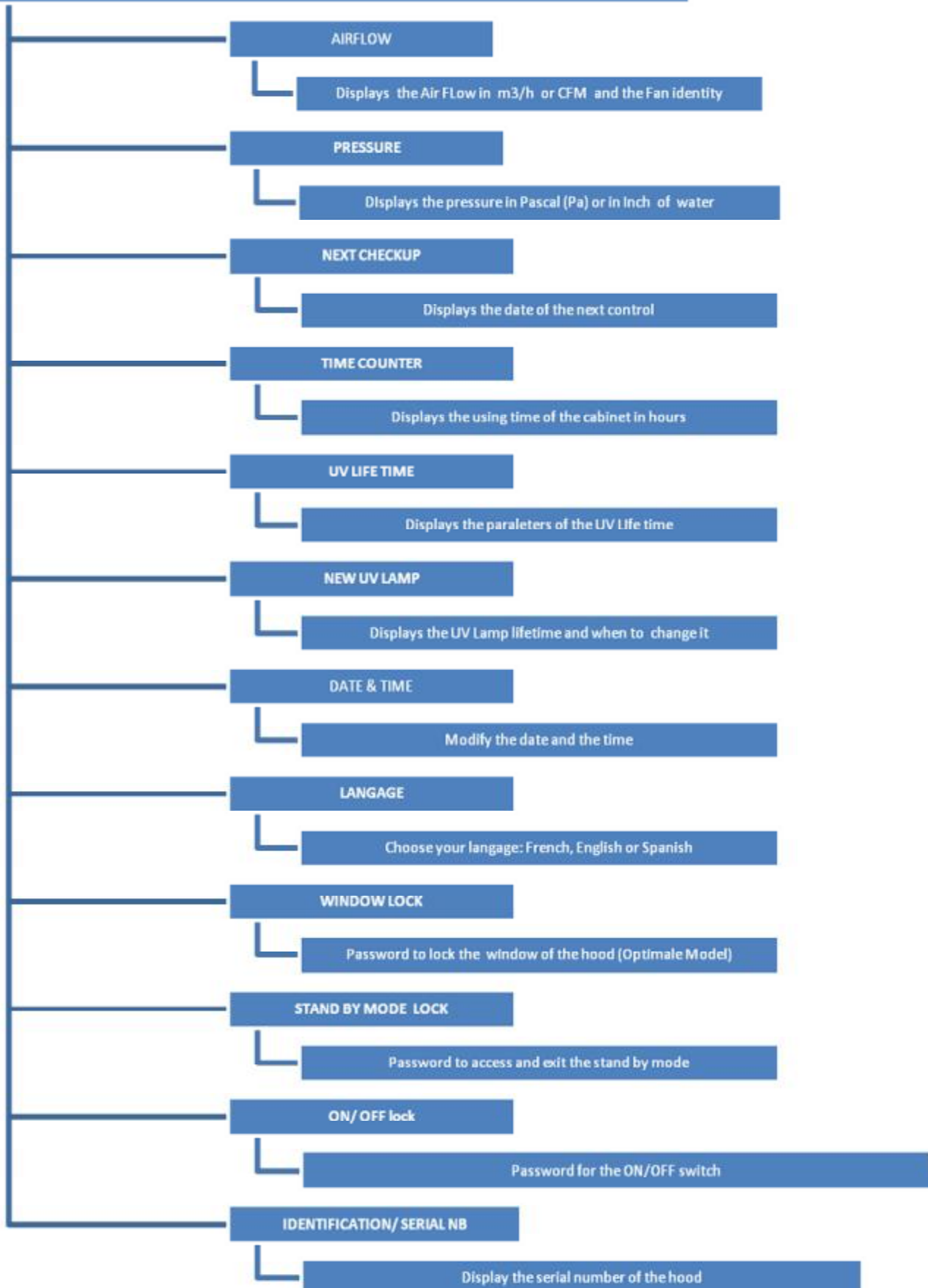
Tension: 120 V / 220 V ~ with a tolerance of +/- 10%

Frequency: 50 Hz / 60 Hz

Maximum Intensity: 15 A with a self-intensity (nominale) equipment of = 5 A

V – USER MENU

USER MENU (PUSH ENTER SWITCH)



2. PARAMETERS

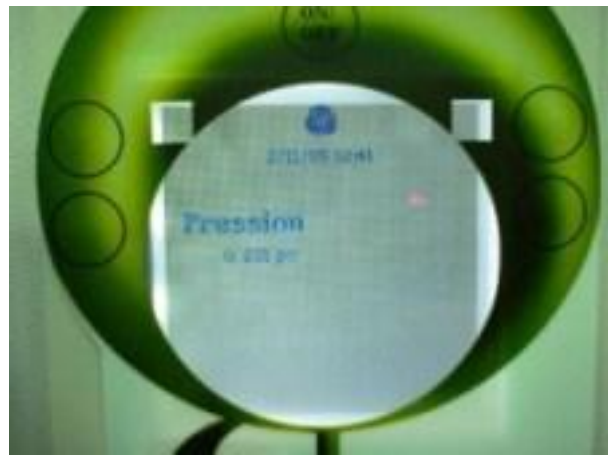
Airflow:

Displays the airflow in cubic meter per hour (m³/ h) or in cubic feet per minute (CFM) depending of your choice.



Pressure drop:

Displays the pressure in Pascal (Pa) or in inch of water (" wg)



Next check up:

Displays the date of the next check up



Time counter:

Displays the total hours of use of the cabinet



UV :

Displays the time the UV light will work in standby mode. An automatic timer is activated.



New UV tube:

Displays the lifetime of the UV Lamp. You can update the clock when the UV had been replaced.
 (Factory password necessary)



Date & Hours :

Allows to set up the date and time
 (European way DD/MM/YY)



Menu langage:

Changes the languages :

French, English or Spanish



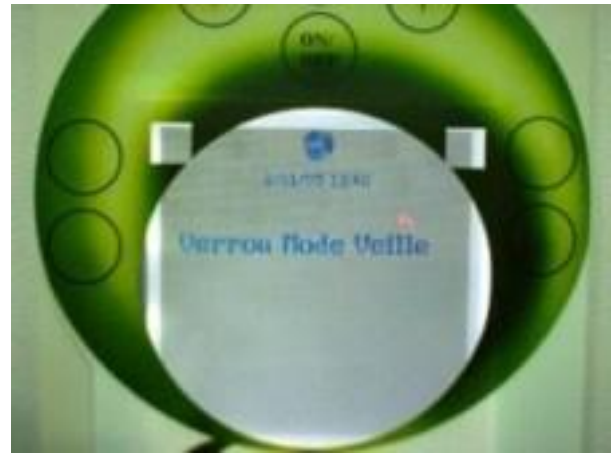
Stand by mode/ Sleep mode lock :

Allows thanks to a password to activate or deactivate the stand by mode ?.

If the password is "0000", it means that no password will be asked.

To change the password you have to enter first the old password follows by the new one.

The factory setting password is 0000 (no password)



ON/OFF Lock :

Allows to create a password which will be asked to turn ON or OFF the hood.

If the password is "0000", it means that no password will be asked.

To change the password you have to enter first the old password follows by the new one.

The factory setting password is 0001.



Identification/ Serial number:

Displays the serial number of the hood.



VI – ADVISES

Following the Norms Recommendations

- You should **manipulate only when the flipping window is in using position (down)** and at a distance of 5" (13 cm) on the work surface from the front grids.
- After Installation and the first start of the cabinet, you can use and work easily after each interruption or standby mode as described hereunder:
 - **Standby mode** when the flipping window is maintained on bottom position the cabinet and the moon is dark the cabinet is on Standby Mode. To return to the standard mode press 2 second the switch of the moon.
 - During the **night** or **week- end** the **window should be flip down and the cover should be put on to close the cabinet. The cabinet is in Standby Mode** (half normal Velocity). The spot lights for "V" and "M/A" are still ON. This is the normal and recommended position for standby: you needn't to switch off completely the cabinet, just let it in Standby with red light "V" in position ON.
 - In case where you switch off the cabinet by pushing M/A button: the **spot lights are off.**

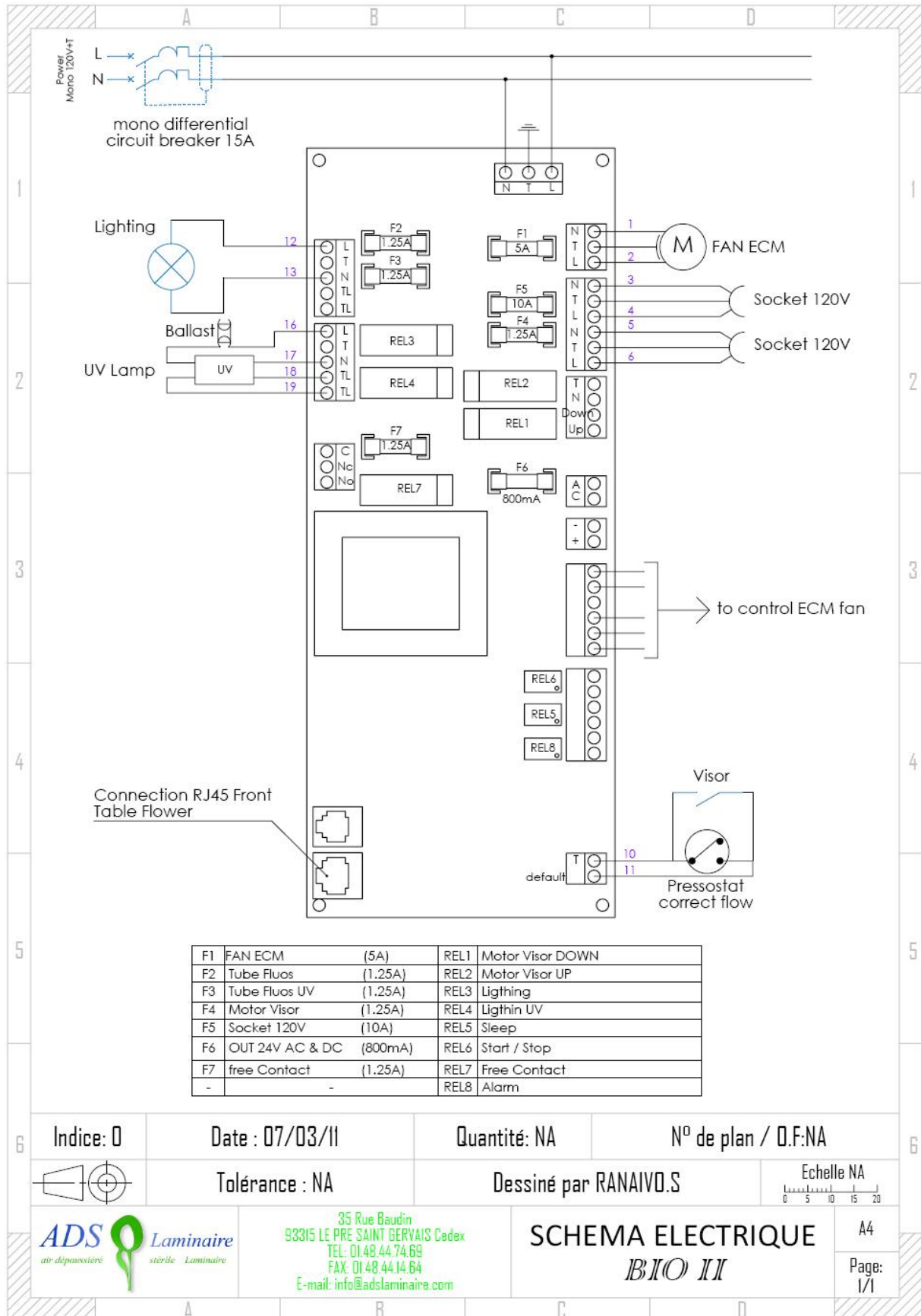
IMPORTANT: You benefit from an automatic air flow re-start after a prolonged stop if you have a general electrical power cut in your building).

- **Light** : press on **the light bulb**. The rays mean, it is on. Press a second time to switch off
 - **Alarms** : If **COL** and **ALM** get in function simultaneously, you have to remove imperatively the absolute filters which are clogged.
Others Alarm : Alarm clogging optical and acoustic (hepa filter)
Alarm fan dysfunction optical and acoustic
Alarm on sash window to ensure the right height
An alarm permanently tests the exhaust air and the air flow barrier.
The alarm of the air flow is in function while the normal air flow velocity is not reached.
 - **Security**: The way to cut off the device from the network is by removing the electrical plug of the main power supply.

VII – TECHNICAL DATA

	BIO II 9 (3 ft)		BIO II 12 (4 ft)	
	EU	USA	EU	USA
Weight	120 Kg	264 lbs	150 Kg	330 lbs
Recycling Airflow	790 m ³ /h	465 cfm	1310 m ³ /h	771 cfm
Extracted Airflow	350 m ³ /h	206 cfm	580 m ³ /h	341 cfm
Internal Length	919 mm	36"	1226 mm	48,2"
External Length	922mm	36,5"	1276 mm	48,4"
Fan Type	DD 9/7 ECM	DD 9/7 ECM	DP 9/9 ECM	DP 9/9 ECM
Blowing HEPA Filter	M4/9	M4/9	M4/12	M4/12
Exhaust HEPA Filter	M3/6/68	M3/6/68	M3/7/68	M3/7/68
Light	900 mm / 30 W	900 mm / 30 W	1200 mm / 36 W	1200 mm / 36 W
	>750 LUX	>750 LUX	>750 LUX	>750 LUX
UV Light	UV 450/G15T8	UV 450/G15T8	UV 900 / G30T8	UV 900 / G30T8
Electrical connection	220 V – 15 A	110V – 15 A	220V – 15 A	110V – 15 A
Noise level	<60 dBA	<60 dBA	<60 dBA	<60 dBA

VIII – ELECTRICAL SKETCH

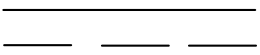

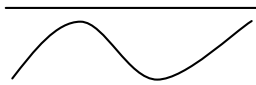







I. Characteristic of fuse:

There are 7 fuses in this card of power:

- Four Fuses F1A5 L 250V for tubes fluos, tubes fluos UV, motor visor and free contact
- One Fuse T10A L 250V for socket 120V
- One Fuse T5A L 250V for FAN ECM
- One Fuse T800mA L 250V for out 24V AC&DC

II. BOARD SYMBOLS

SYMBOL	REFERENCE	DESCRIPTION
	CEI 60417-5031	Direct current
	CEI 60417-5032	Alternating Current
	CEI 60417-5033	Direct current & Alternating Current
	CEI 60417-5017	Earth terminal
	CEI 60417-5019	Earth terminal of protection
	CEI 60417-5007	ON (Power Supply)
	CEI 60417-5008	OFF (Power Supply)
	ISO 3864 n°5036	Careful, risk of electrical shock

IX- MAINTENANCE

WARNING: Before accessing to the cabinet components, you have to cut the current of the MSC.

Before changing HEPA Filters, you must proceed to a decontamination of Cabinet.

As soon as the diode COL is switch ON, you have to change the two HEPA filters. Before their replacement, anticipate the sterilization of the cabinet. Thanks to a very easy access and a simple fixation system, HEPA filters are easily removable.

Blowing Filter: Unscrew from inside the booth, under the filter. Filter is free.
 Do the reverse in maintaining the new filter on the top for screwing.

Exhaust Filter: The access of the filter is direct behind the front panel.
 Unscrew and take out HEPA filter to replace the new one.

Fan Motor: Without maintenance.

Fluorescent lighting: Direct access behind front panel.

IMPORTANT

- HEPA Filters replacement must be made by a Specialist with validation and control.
- After long time of no use, proceed to a control and validation before your manipulations
- For usual Control and Test, you benefit from 2 inlets for DOP testing: refer to the photo hereunder
- You can use Formaldehyde Fumes to decontaminate the cabinet



X – GUARANTEE AGREEMENT

The **BIO II** is guaranteed One Year for spare parts, except for wrong use and disposables.

CONDITIONS OF THE GUARANTY:

- During the period of guaranty, the customers will benefit in case of failure, from free spare parts replacement.

- The guarantee is not available for:

- In case of consecutive damages referring to a wrong utilisation or a default of maintenance.
(non respect of orders) or an external cause (damages of water, fire, and so on C.f. the insurance of your establishment.)
- In case of external intervention, other than **ADS LAMINAIRE** company during the period of the guaranty.