# Captair® Flex™
# S-M-SD-XLS

# User Manual

Kunshan erlab D.F.S Co.,Ltd
100 Liu Shi Jing Road Kunshan Development Zone PengLang Jiangsu Province
Tel : +86 (0) 512 5781 4085 - Fax . : + 86 (0) 512 5781 4082 - E-mail : Sales.china@erlab.com.cn

# Congratulations!

By choosing Captair® Flex™ ductless filtering fume hoods, you have chosen an **efficient, reliable** way to ensure safety.

Your Captair® Flex™ filtering fume hood guarantees that you are protected when working with chemicals that pose an inhalation risk for the user.

Your fume hood functions based on the recirculation of filtered air, which makes it possible to use high-efficiency filters to trap toxic particles and molecules and to recycle this air within the laboratory. The air downstream from the hood's modular filtration column, which uses the new Flex™ technology, is thus free of all chemical pollutants.

Nevertheless, **the effectiveness of this system is directly dependent upon it being used correctly and monitored by its users.** Your laboratory may also benefit from ergonomic, economic, and ecological advantages provided by the Captair® Flex™ fume hood throughout its life cycle.

captair® flex

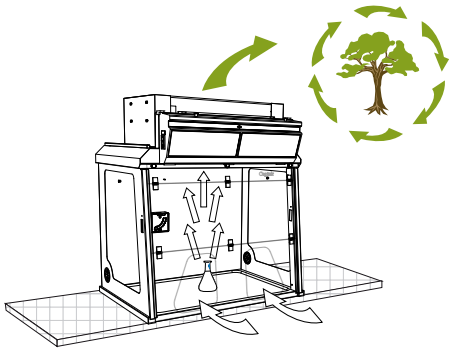
**Designed to protect the user,**
**the environment and your budget.**

**Do you want to work in a 100% safe environment year after year?**
**A careful reading of this manual is a must!**

# Your new Captair® Flex™ ductless filtering fume hood offers several advantages from day one:

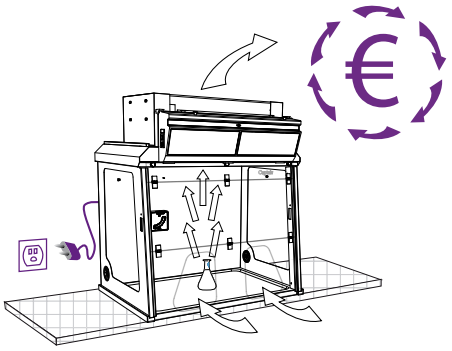
## Protect the environment

Since no ductwork is required, a captair® Flex™ filtered enclosure totally eliminates the direct discharge of pollutants into the atmosphere and therefore contributes to the protection of the environment. Furthermore, a captair® Flex™ filtered enclosure does not generate any pollution linked to energy production unlike a traditional ducted fume hood.



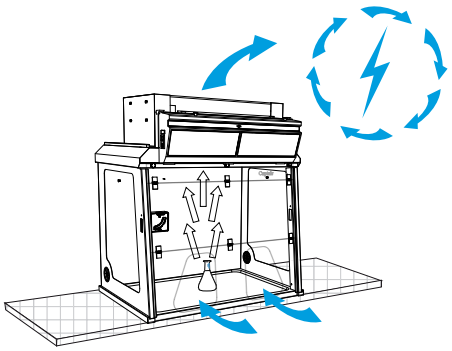
## Eliminate installation costs

The installation of a captair® Flex™ filtered enclosure is quick and easy. There is no need for a ductwork linked to an air supply / air extraction system, in comparison to traditional ducted systems. A single electrical outlet is all that is needed to make it work Its setting up can be realized at any time, without any complex forward planning. Do not hesitate to compare this cost to a traditional ducted fume hood cost.



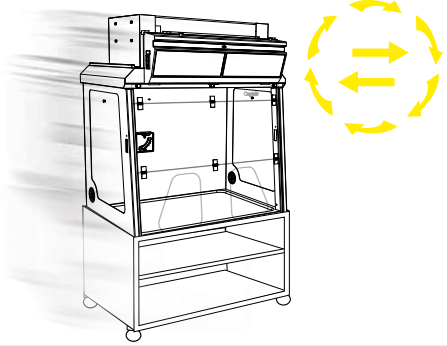
## Achieve significant energy savings

Ductwork air balance is essential to the proper operation of a traditional ducted fume hood however; it is also the source of very important energy consumption. In fact, captair® Flex™ filtered enclosures do not generate any energy costs associated with the use of expensive extraction systems or conditioned air supplies. Operational costs remain at a minimum even when taking into account filter changes.



## Benefit from the use of an immediately available unit, easy to relocate.

Captair® Flex™ filtered enclosures can be moved depending on the protection needs of the laboratory and can be easily relocated without disturbing room air balance.



# Contents

# Getting started

- Flex™ technology
- Description of the control box
- First start-up
- Navigating the digital display screen

# FLEX™ TECHNOLOGY

A modular filtration column which provides unprecedented adaptability and flexibility.

By combining molecular and particulate filtration technologies, erlab® was able to devise the new Flex™ modular filtration column technology.

This single device can thus be configured to meet the protection needs of your laboratory.

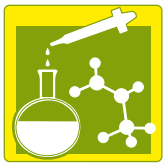
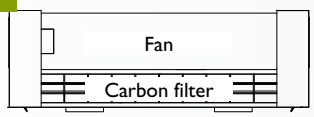
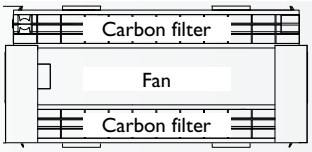
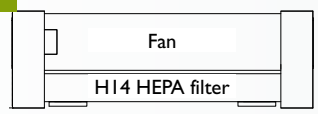
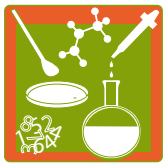
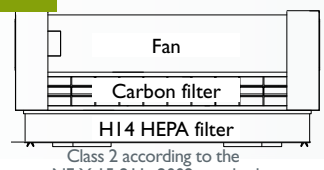
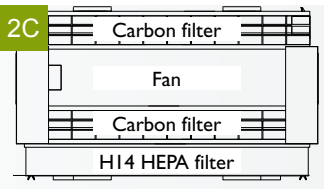
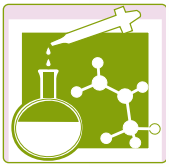
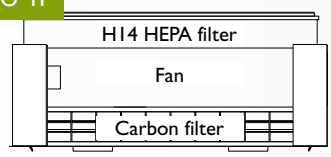
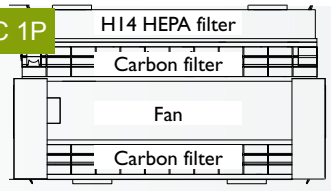
This flexibility was made possible by creating stackable, one-size-fits-all filtration cartridges—an innovation that is key to your new Captair® Flex™.

This innovation developed by the erlab® R&D laboratory offers unprecedented flexibility, adaptability, and savings.

Your device can be quickly reconfigured and can be easily used for other applications.

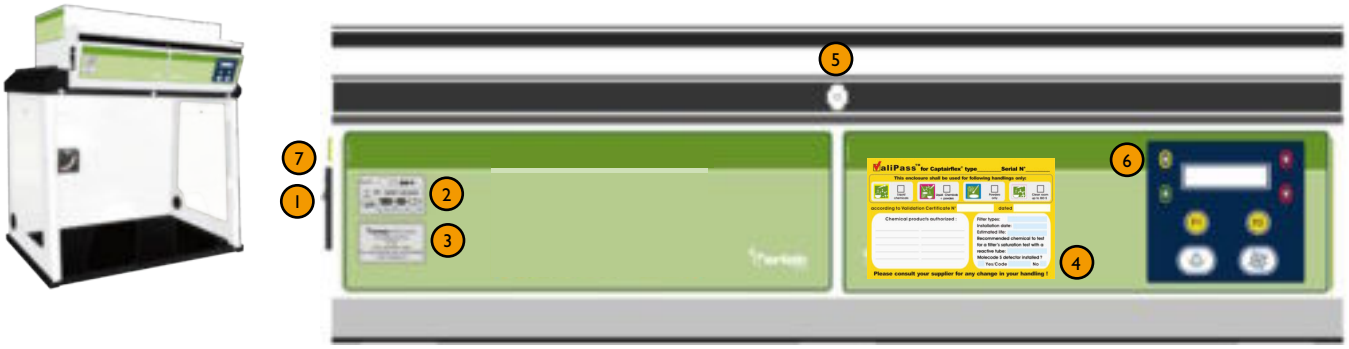
**Possible configurations for your Captair® Flex™ fume hood**

Manipulated chemicals/ Applications

| | | | |
|---|---|---|---|
|  **Liquids** For dilutions, titrations, extractions, transfers, … | 1C<br>  <br>Class 2 according to the NF X 15-211 : 2009 standard | 2C<br>  <br>Class 1 according to the NF X 15-211 : 2009 standard |
|  **Solids** For sievings, grindings, weighings, formulations, compressions… | 1P<br>  | |
|  **Liquids & solids** For dissolutions, filtration, extractions, … | 1P 1C<br>  <br>Class 2 according to the NF X 15-211 : 2009 standard | 1P 2C<br>  <br>Class 1 according to the NF X 15-211 : 2009 standard |
|  **Handlings in clean rooms** Up to class ISO 5 rooms | 1C 1P<br>  <br>Class 2 according to the NF X 15-211 : 2009 standard | 2C 1P<br>  <br>Class 1 according to the NF X 15-211 : 2009 standard |

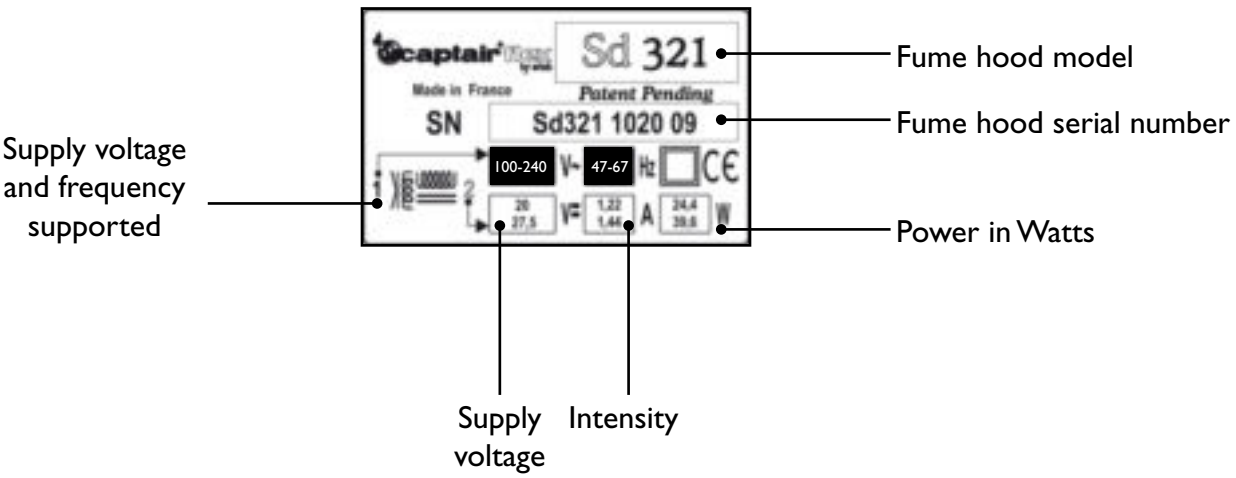
**You may contact your E.S.P. agent at any time to confirm the safety parameters related to the use of your device!**

# DESCRIPTION OF THE CONTROL BOX



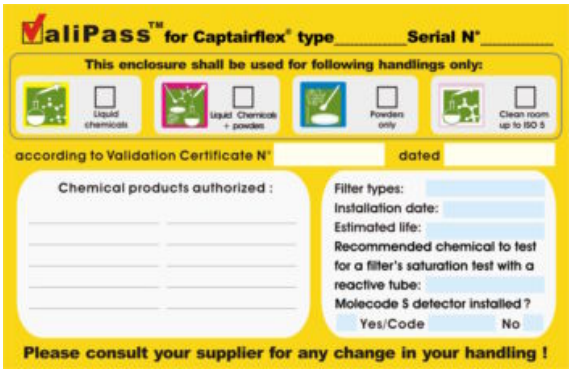

1. Master switch

2. Model label



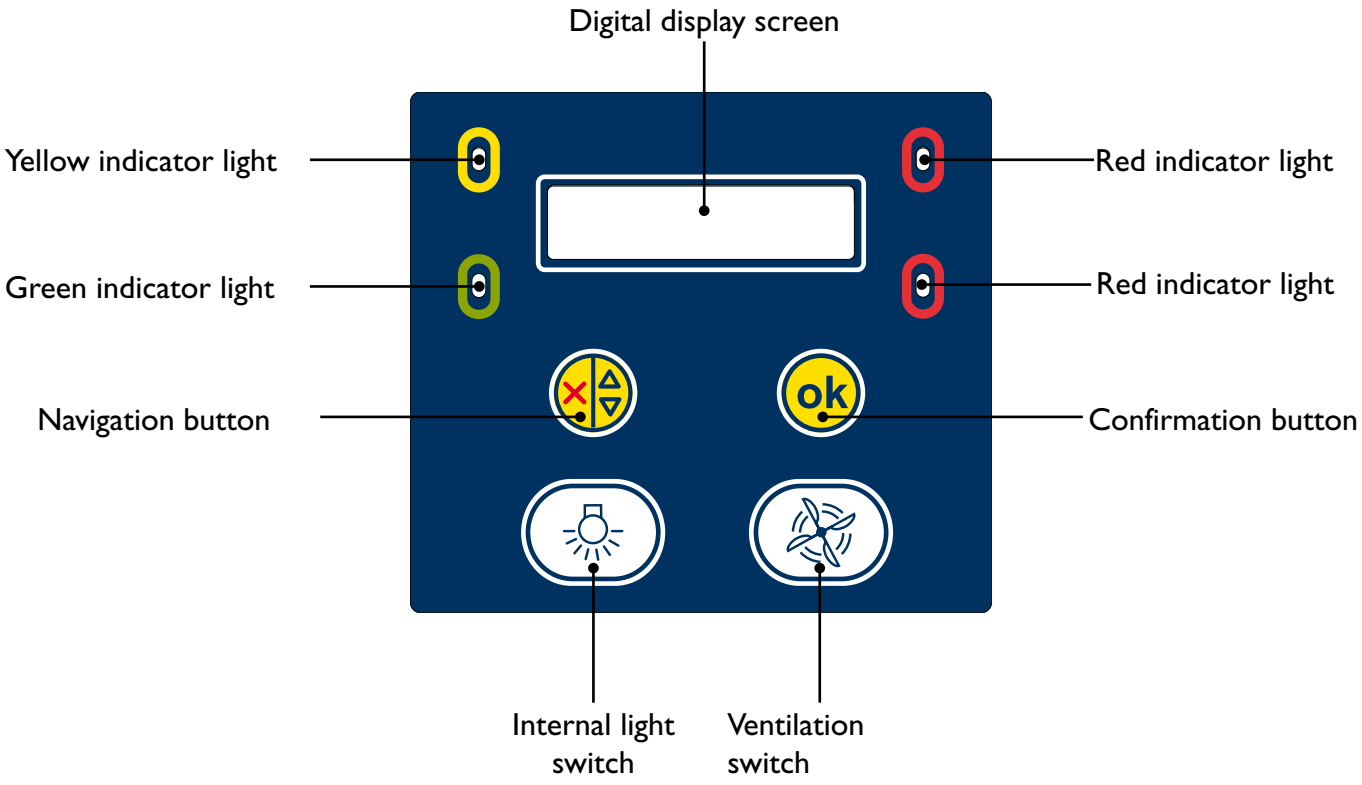

3. Name of the manufacturer or their representative

4 Valipass® form: Refer to the Valiquest® section for details.



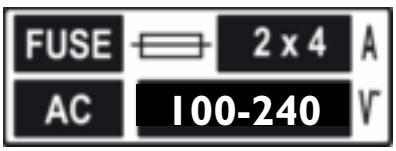

5 Sampling port for the manual filter saturation test or for an ambient air sensor when the machine is equipped with the Molecode™ S option.

6 Control panel



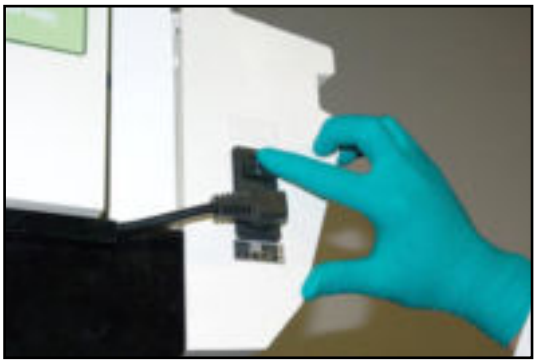

**For information on the various scenarios related to the triggering of the device's indicator lights and audible alerts, refer to the EVENT ALERTS section of the FIRST START-UP chapter.**

7 Fuse tag.



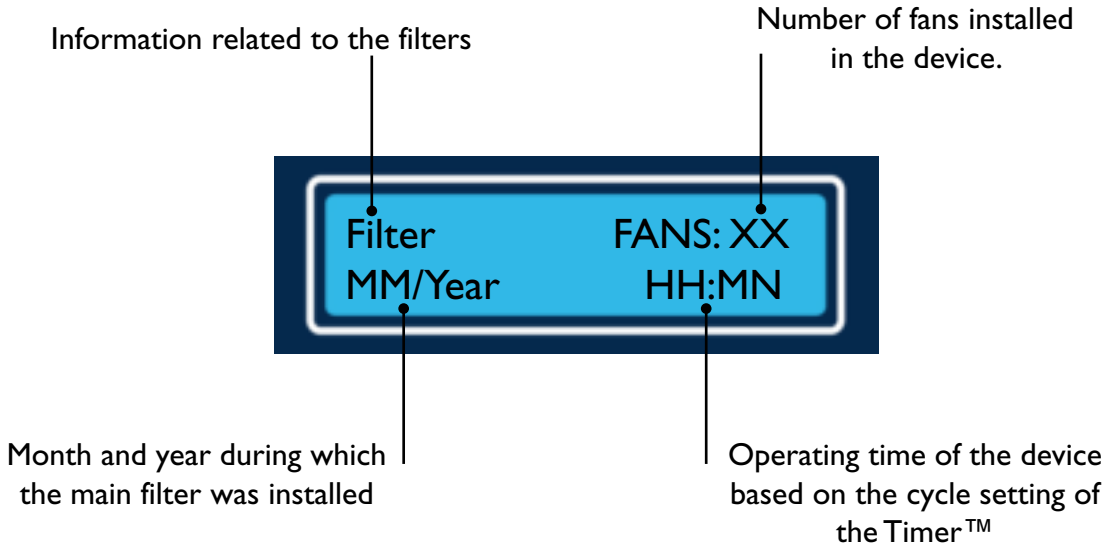
# FIRST START-UP

You have carefully followed the steps described in the assembly instructions and your Captair® Flex™ fume hood is ready to use.



Turn on the device using the switch located on the left side of the control panel.
Activate the device's ventilation system using the ventilation button located underneath the digital display screen.
The green indicator light comes on and the screen displays the DEFAULT SCREEN DISPLAY.
The Timer™ begins to count down based on its factory settings (60 hours).

## Default screen display



In order to guarantee that your device functions properly and in order to ensure your safety, your Captair® Flex™ fume hood is equipped with a monitoring system linked to the air flow parameters and to the device's Flex™ technology.

# The Timer™

The Timer™ keeps track of the amount of time that your Captair® Flex™ fume hood has been in operation in order to remind the user when it is necessary to carry out a periodic filter saturation test.

The default setting (factory setting) is 60 hours (as required by NF X 15-211: 2009 standard).

An alarm will alert the user to check that the filter is still able to function properly.

A pre-warning alarm may go off between 0 and 10 hour(s) before the Timer™ alarm (according to factory settings).

**Activation / Deactivation:**
It is possible to activate or deactivate the Timer™ and its pre-warning alarm.
To make use of this functionality please refer to the section on **"Navigating the digital display screen."**

# Event alerts

This section describes all of the audible and visual alerts triggered by the alarms included in your Captair® Flex™ fume hood.

**Event 1:**

**Fan control problem**

**Event conditions:**
The fume hood does not reach the proper number of rotations per minute (RPMs) within a period of ten seconds after the ventilation system has been started.

**Display screen**


**Alarm type**

Yellow indicator light on, constant
Intermittent audible alarm

**Solution:**
Contact your maintenance service as quickly as possible.

**Event 2:**

**Fan out of order**

**Event conditions:**
The rotation speed of the fan is less than 700 RPM.

**Display screen**


**Alarm type**

Red indicator light on, constant
Continuous audible alarm

**Solution :**
Contact your maintenance service as quickly as possible.

**Event 3:**

**Solvent detected in the sampling chamber**

**Event conditions:**
The detection limit of the Molecode™ S unit has been reached.

**Display screen**


**Alarm type**

Yellow indicator light on, constant
Intermittent audible alarm

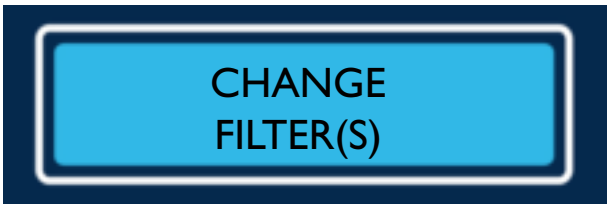
**Solution :**
Press the navigation and confirmation buttons simultaneously and release them to deactivate the alarm.
The red indicator light will stay on.
The concentration at the exhaust of a filter nearing its saturation point can build up very quickly. Consider replacing the filter.

**Event 4:**

**Solvent detected 2**

**Event conditions:**
The detection limit of the Molecode™ S unit has been surpassed.

**Display screen**




**Alarm type**

Red indicator light on, constant
Continuous audible alarm

**Solution :**
It is necessary to replace the filter.
Please contact your maintenance service.

**Event 5:**

**Pollutant detected in the ambient air of the laboratory**

**Event conditions:**
The ambient air sensor on the front detects that pollution is likely in the ambient air of the laboratory.

**Display screen**


**Alarm type**

Red indicator light on, blinking
Continuous audible alarm

**Solution :**
Press the navigation and confirmation buttons simultaneously and release them to deactivate the alarm.
Identify the source of the pollution.

**Event 7:**

**Pre-warning alarm maintenance**

**Event conditions:**
If the Timer™'s pre-warning alarm is activated, this alarm is triggered when the counter's value is less than the pre-warning value.

**Display screen**


**Alarm type**

Yellow indicator light on, blinking
Intermittent audible alarm

**Solution :**
Press the navigation and confirmation buttons simultaneously and release them to deactivate the alarm.
Consider checking whether or not the filter is saturated.
Refer to the maintenance section of this manual.

**Event 8:**

**Maintenance**

**Event conditions:**
The value of the Timer™ is equal to zero.

**Display screen**

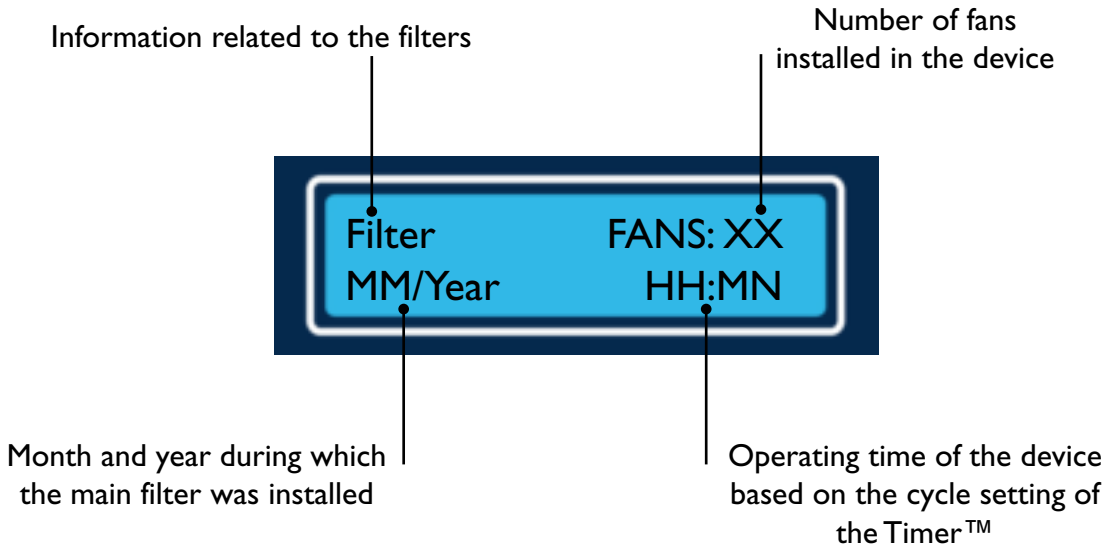

**Alarm type**

Red indicator light on, constant
Continuous audible alarm

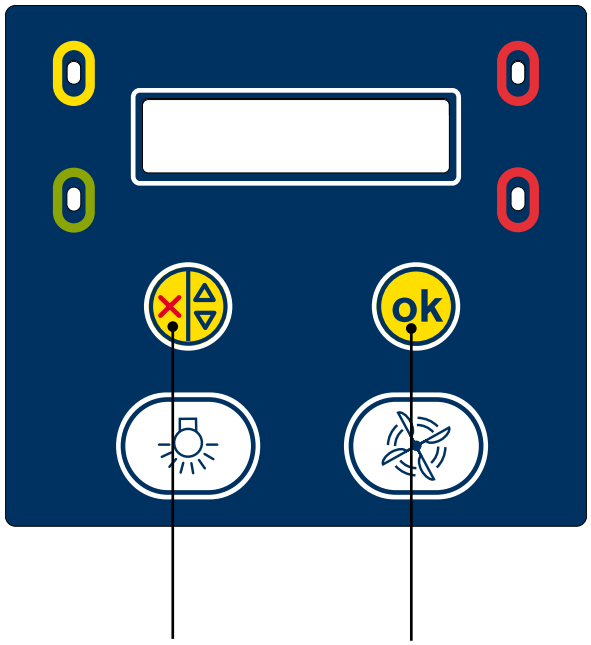
**Solution :**
Press the navigation and confirmation buttons simultaneously and release them to deactivate the alarm.
Consider checking whether or not the filter is saturated.
Refer to the maintenance section of this manual.

# NAVIGATING THE DIGITAL DISPLAY SCREEN

## DEFAULT SCREEN DISPLAY

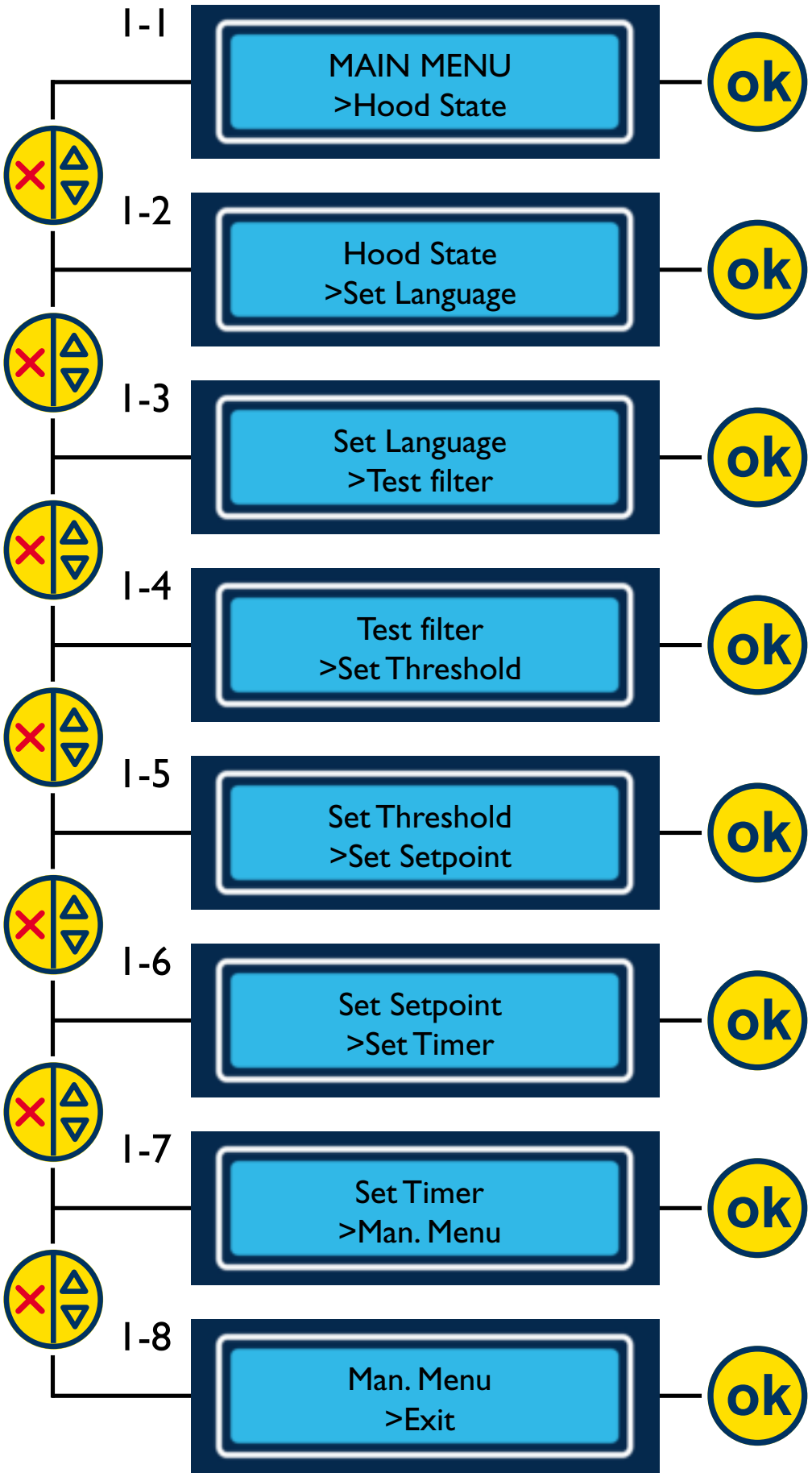



## ACCESSING THE MENUS




To access the menus of the screen, press down on the navigation and confirmation buttons simultaneously.
The menus will appear when the buttons are released.

# 1 Main Menu




## Notes:

Allows the user to view the status of the fume hood. Press the confirmation button to access the contents of the menu.

Allows the user to modify the parameters of the screen display language.
Press the confirmation button to access the contents of the menu.

Allows the user to update information after testing for filter saturation.
Press the confirmation button to access the contents of the menu.

Allows the user to modify the limit settings of the Molecode™ S detection sensor.
Press the confirmation button to access the contents of the menu.

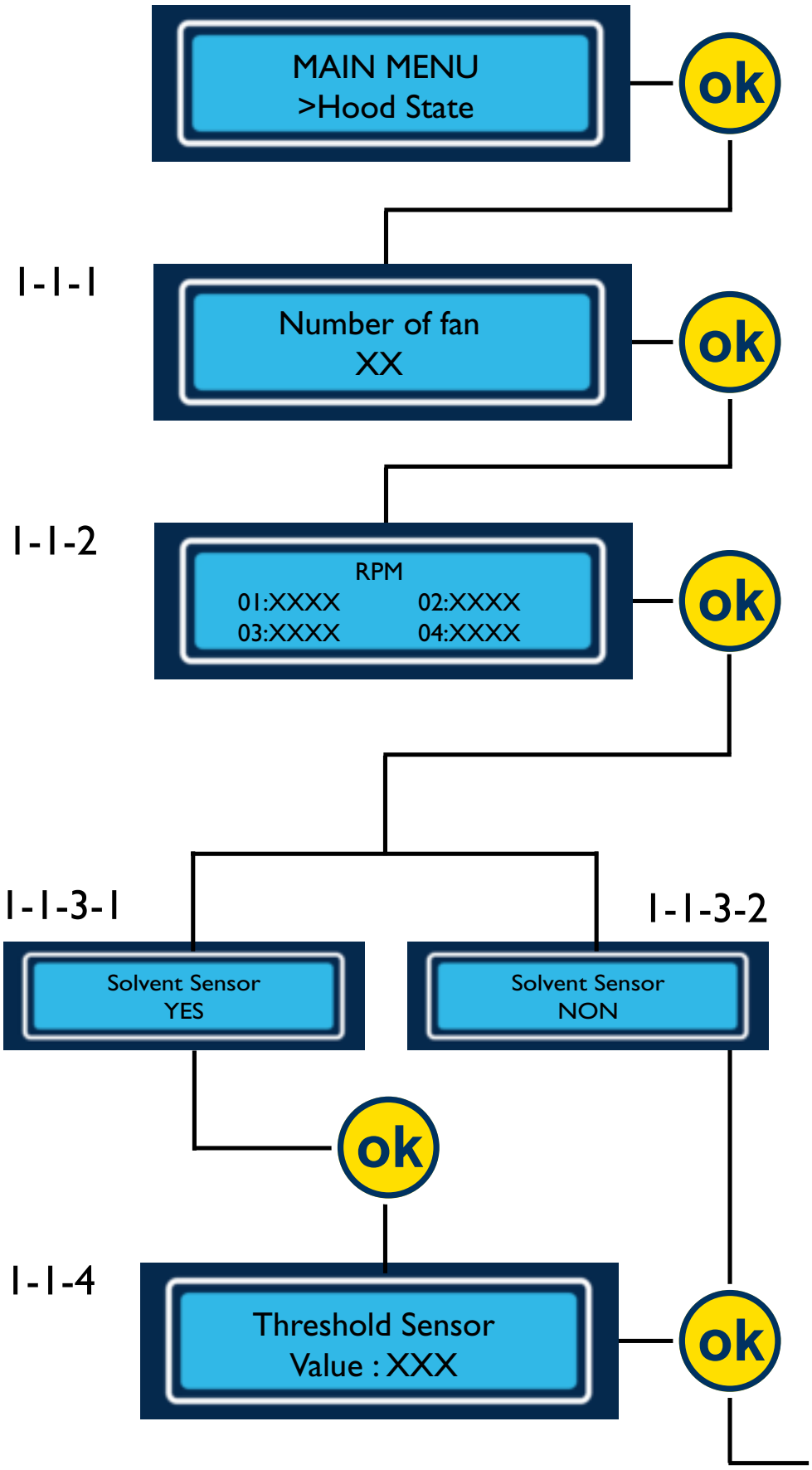
Allows the service engineer to set the ventilation flow rate.
Protected by an access code.
Press the confirmation button to access the contents of the menu.

Allows the user to activate or deactivate the Timer™. Press the confirmation button to access the contents of the menu.

Allows the service engineer to access the device's configuration.
Protected by an access code.
Press the confirmation button to access the contents of the menu.

Allows the user to exit the main menu.
Press the confirmation button to display the default screen display.

## 1-1 Hood State




## Notes :

This number corresponds to the number of fans detected by the device.
It may be between 1 and 4 depending on the Captair® Flex™ model in question. (Refer to the technical specifications listed at the end of the manual.)

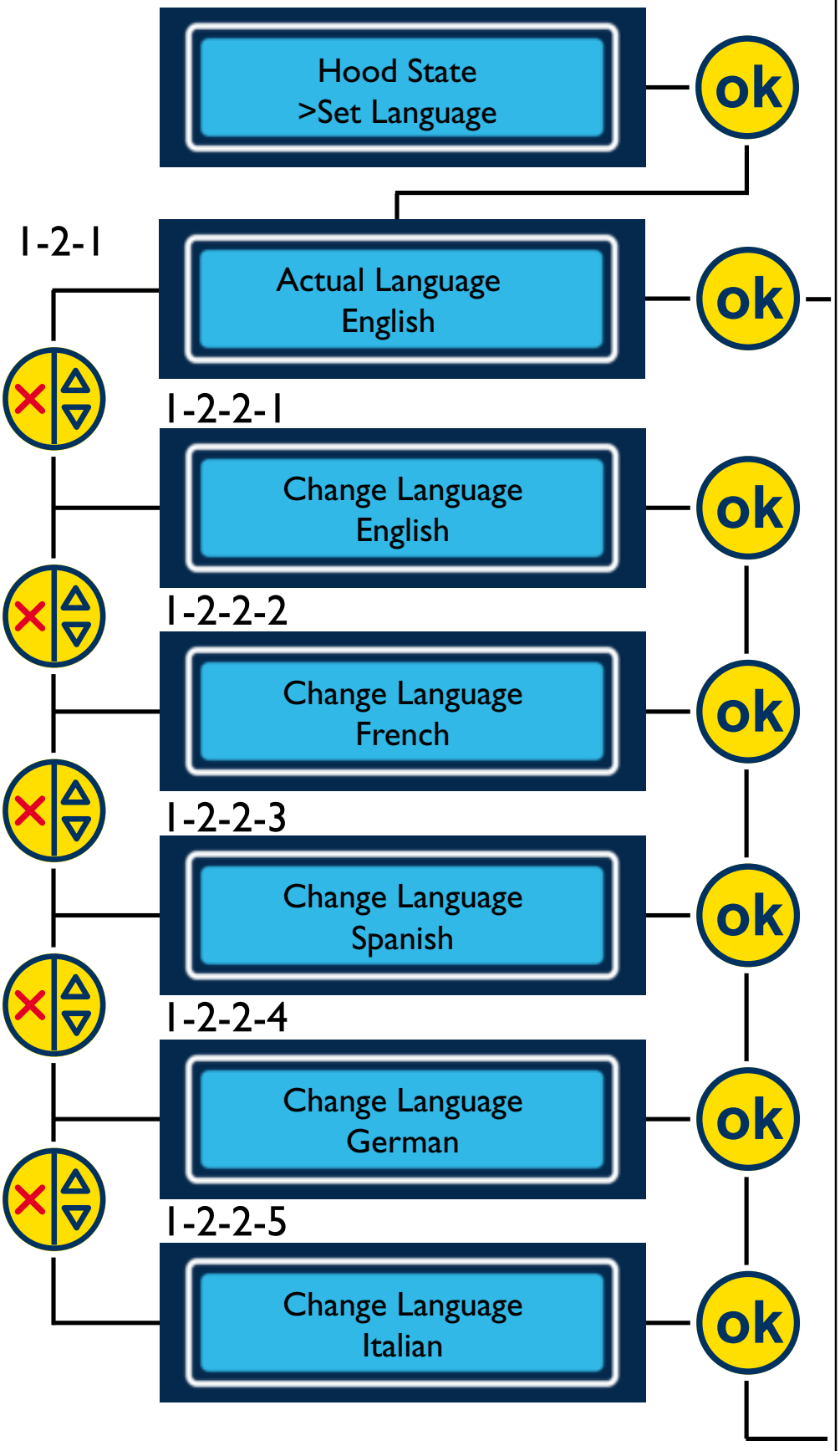
RPM: rotations / minute. This number indicates the rotation speed of each fan. It may be between 0 and 3000 depending on the Flex™ technology installed in your device and on the factory settings. The rotation speed must be the same for each fan installed, +/- 5%.

Indicates the presence or absence of the Molecode™ S option on your device.

This number indicates the sensitivity on the Molecode™ S detection sensor included on your device. If the device is not equipped with a Molecode™, the contents of this screen are not visible.

**Display the Hood Stat menu.**

## 1-2 Set Language




## Notes:

By default the screen displays the name of the factory-set navigation language. Other possible display languages: French, Spanish, German, and Italian.

Display the current navigation language.

**Display the Set Language menu.**

Allows the user to modify the language displayed on the screen.

Confirm the chosen language to save the selection.

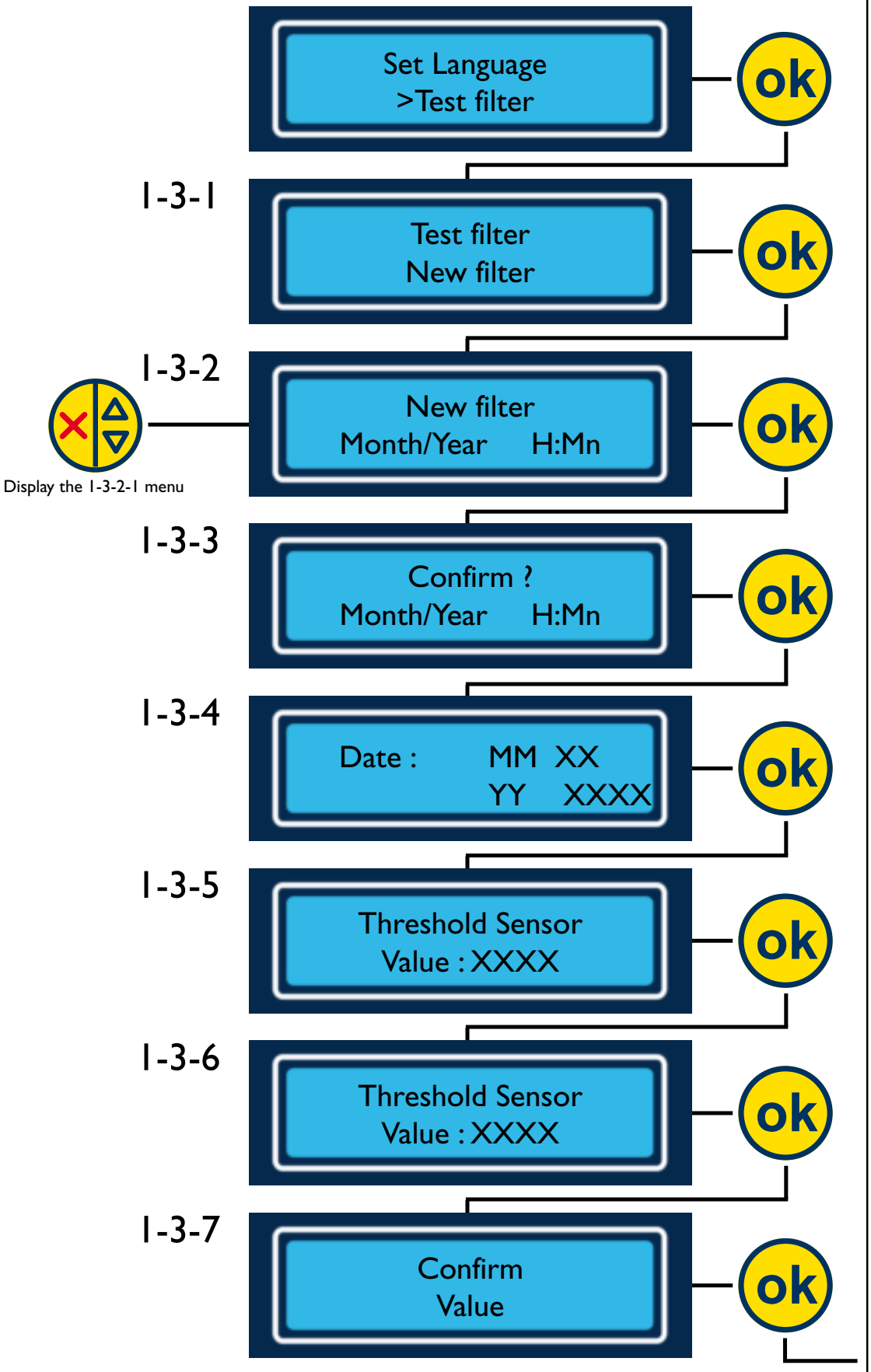
Confirm the chosen language to save the selection.

Confirm the chosen language to save the selection.

Confirm the chosen language to save the selection.

**Display the Set Language menu.**

## 1-3 Test filter




## Notes:

**N.B.: accessing this menu interrupts the ventilation system of your device. It is strongly recommended to access this menu after the filter saturation tests have been performed. Press the confirm button to proceed to the next step.**

Parameter reset menu after a new filter has been installed.

Displays the month, year, and operating time of the device after a new filter has been installed in the Manufacturer menu.

**Allows the user to confirm the installation date of the new filter and to reset the Timer™ if the Timer™ is activated according to factory settings. If the Timer™ is not activated, "H:Mn" is not displayed on the screen.**

Allows the user to indicate the new filter installation date.

**Displays the sensitivity value of the current sensor as stored in the device's memory or previously modified. If the Molecode™ S is not installed on the device, screens 1-3-5, 1-3-6, and 1-3-7 do not display.**

Allows the user to adjust the sensitivity value of the unit after a new filter has been installed. Scroll through the numbers using the scroll button and confirm each digit using the confirmation button.

Confirm the previously selected value.

**Display the Test filter menu.**

# 1-3 Test filter

1-3-2-1


1-3-2-2


1-3-2-3


## Notes :

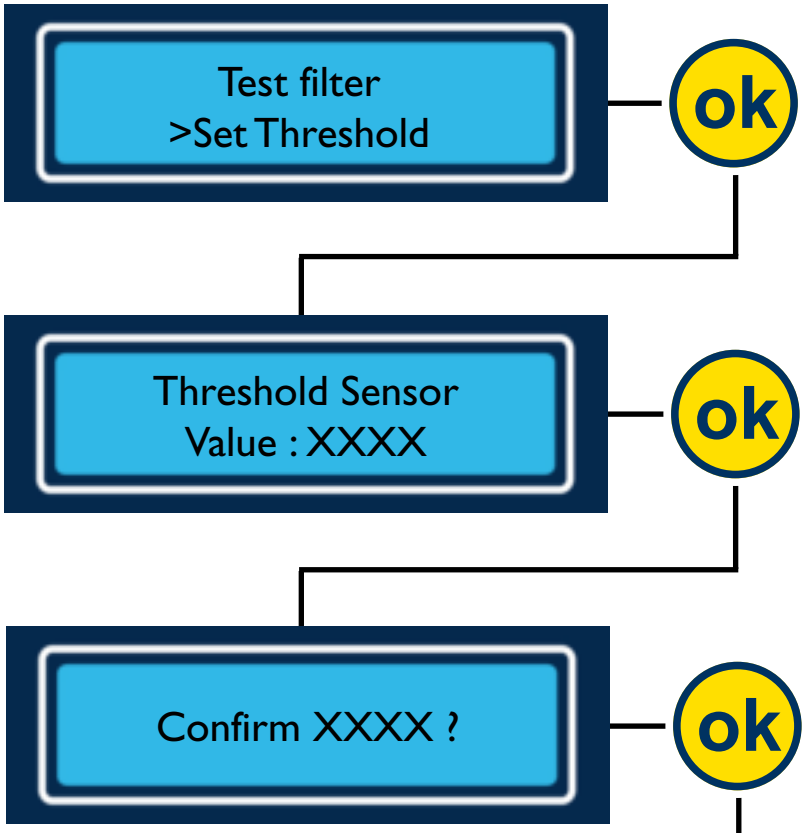
N.B.: Accessing this menu interrupts the ventilation system of your device. Press the confirm button to proceed to the next step.

After verifying the condition of the filter via a saturation test, display the installation date and operating time of this filter.

By pressing the confirm button, the Timer™ is reset according to the factory configuration if the Timer™ is activated.

**Display the Test filter menu.**

## 1-4 Set Threshold




## Notes:

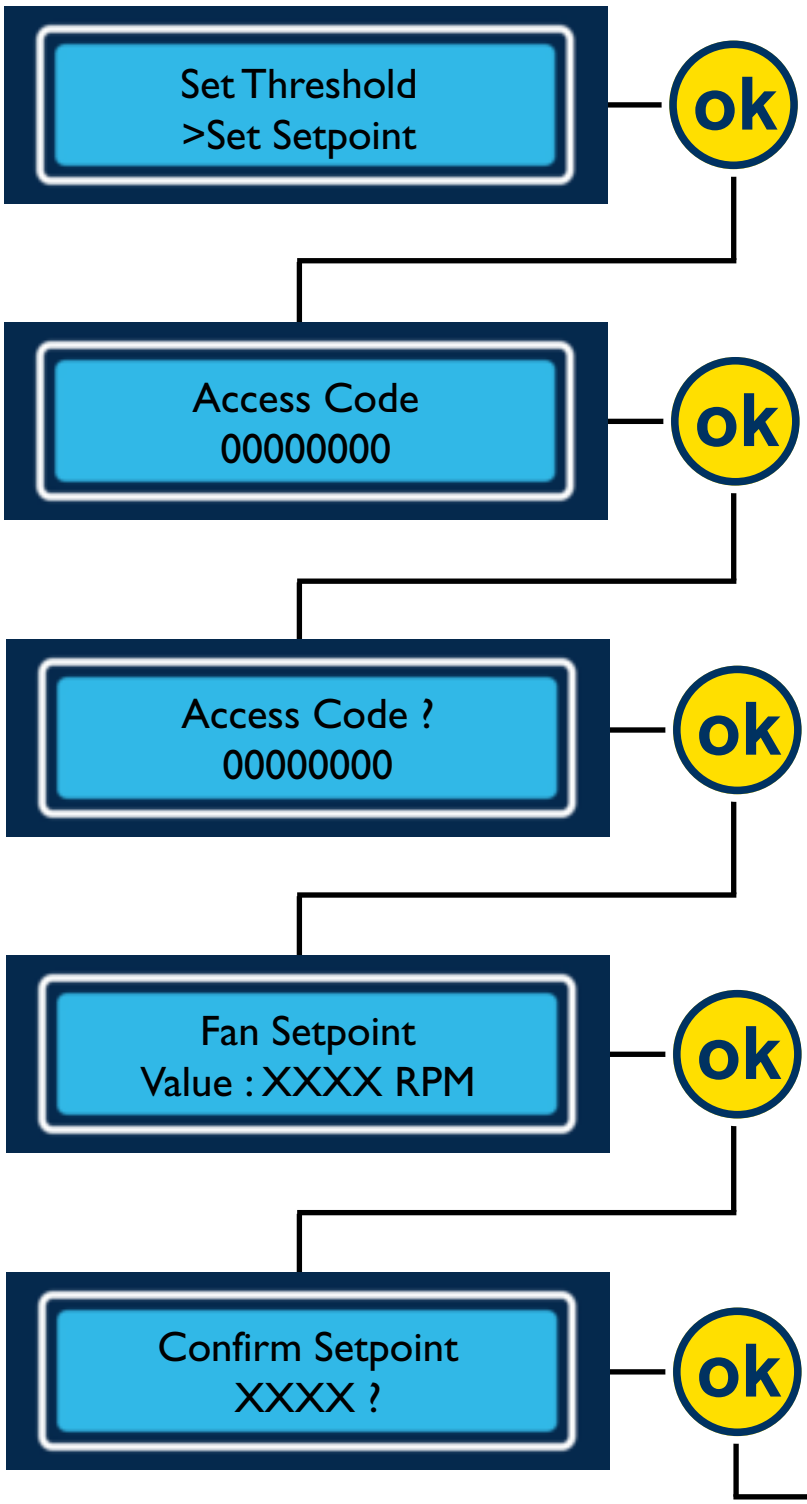
**N.B.: accessing this menu interrupts the ventilation system of your device. Press the confirm button to proceed to the next step. IMPORTANT: this menu only appears if the device is equipped with a Molecode™ S.**

Displays the sensitivity value of the Molecode™ S unit as configured in the factory or previously modified. Scroll through the numbers using the scroll button and confirm each digit using the confirmation button.

Allows the user to confirm the selected value.

**Display the Set Threshold menu**

# 1-5 Set Setpoint




## Notes:

**N.B.: the contents of this menu are protected by an access code. Contact your maintenance service for additional information.**

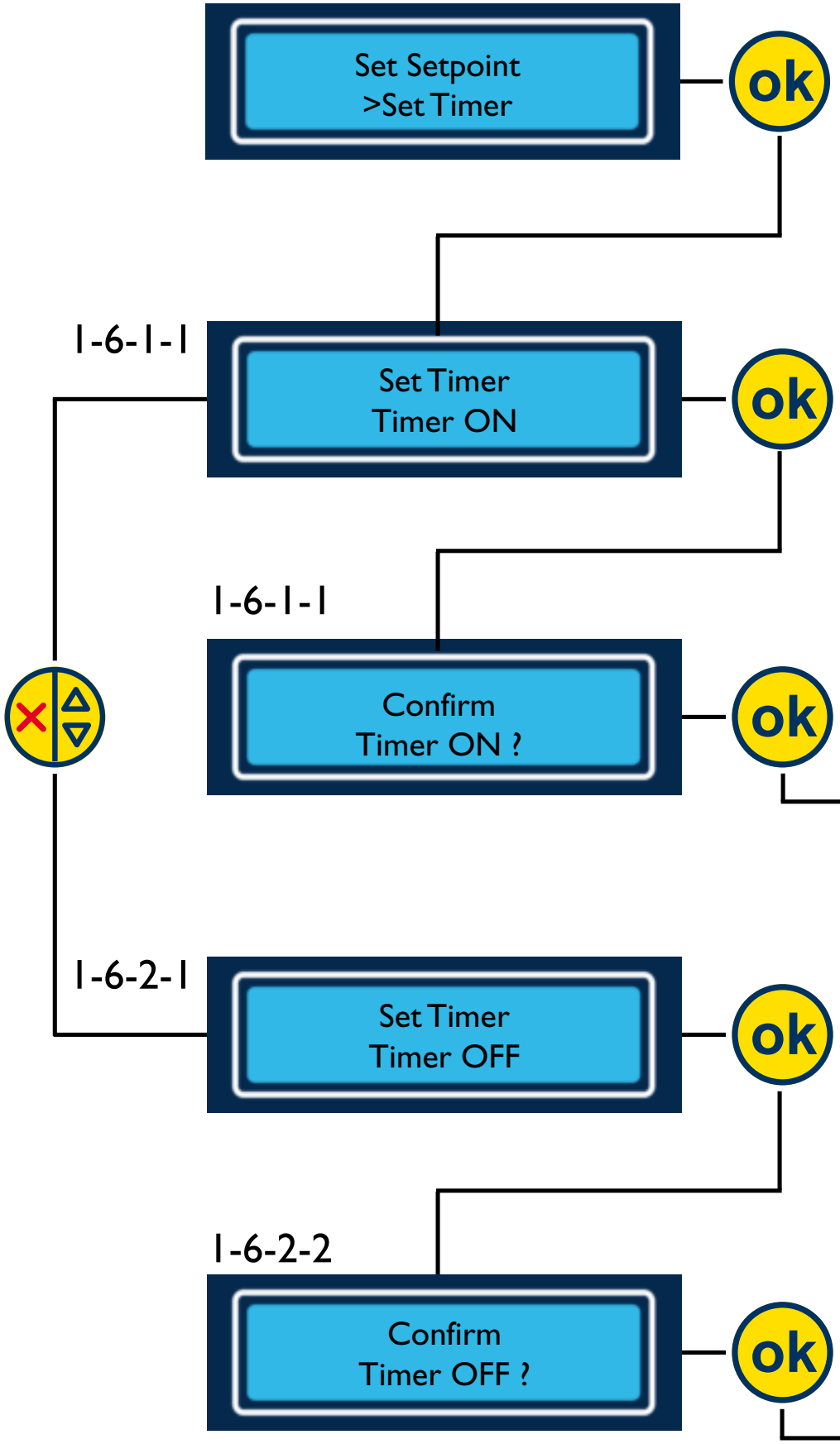
By default, the screen displays 00000000. Using the scroll buttons, select the appropriate digit in the active box and press the confirm button to move to the next digit.

Confirm the selected access code.

Allows the user to enter the device's ventilation settings based on the Flex™ technology installed in your fume hood. This setting may be between 0 and 3000 RPM (rotations/minute). Using the scroll buttons, select the appropriate digit in the active box and press the confirm button to move to the next digit. Confirm the previously selected setting.

**Display the Set Setpoint menu.**

# 1-6 Set Timer




## Notes:

This menu allows the user to activate or deactivate the Timer™.

Displays the fact that the Timer™ is activated.

Confirm activation of the Timer™.

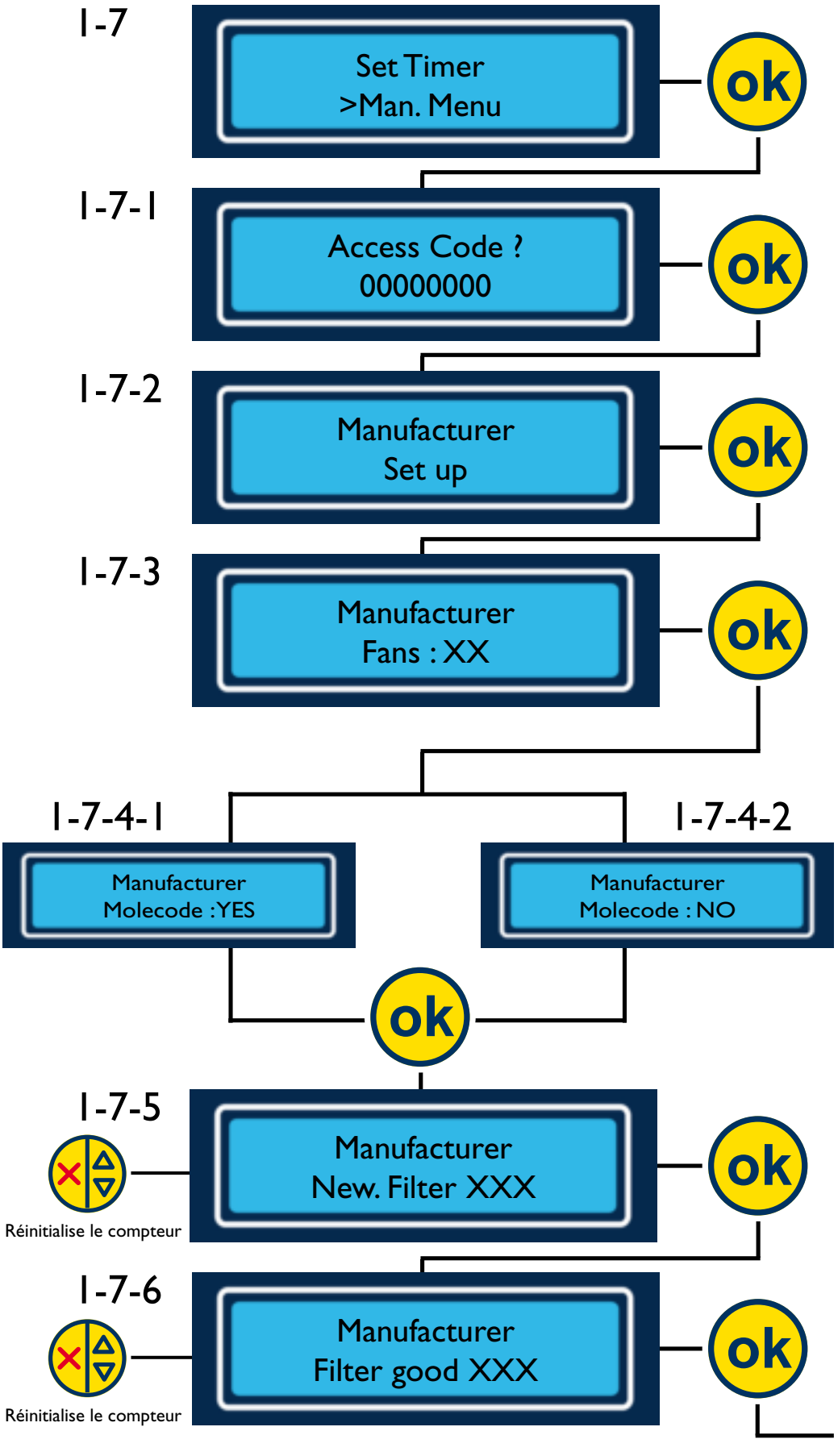
**Display the Set Timer menu.**

Displays the fact that the Timer™ is deactivated.

Confirm deactivation of the Timer™.

**Display the Set Timer menu.**

# 1-7 Manufacturer Menu




## Notes:

N.B.: the contents of this menu are protected by an access code. Contact your maintenance service for additional information.

To enter the access code, scroll through the numbers in the active box using the scroll button. Press the confirm button to proceed to the next box. Once the code is entered, confirm the code using the OK button.

Indicates the number of fans detected by the CPU card when the device is first plugged in.

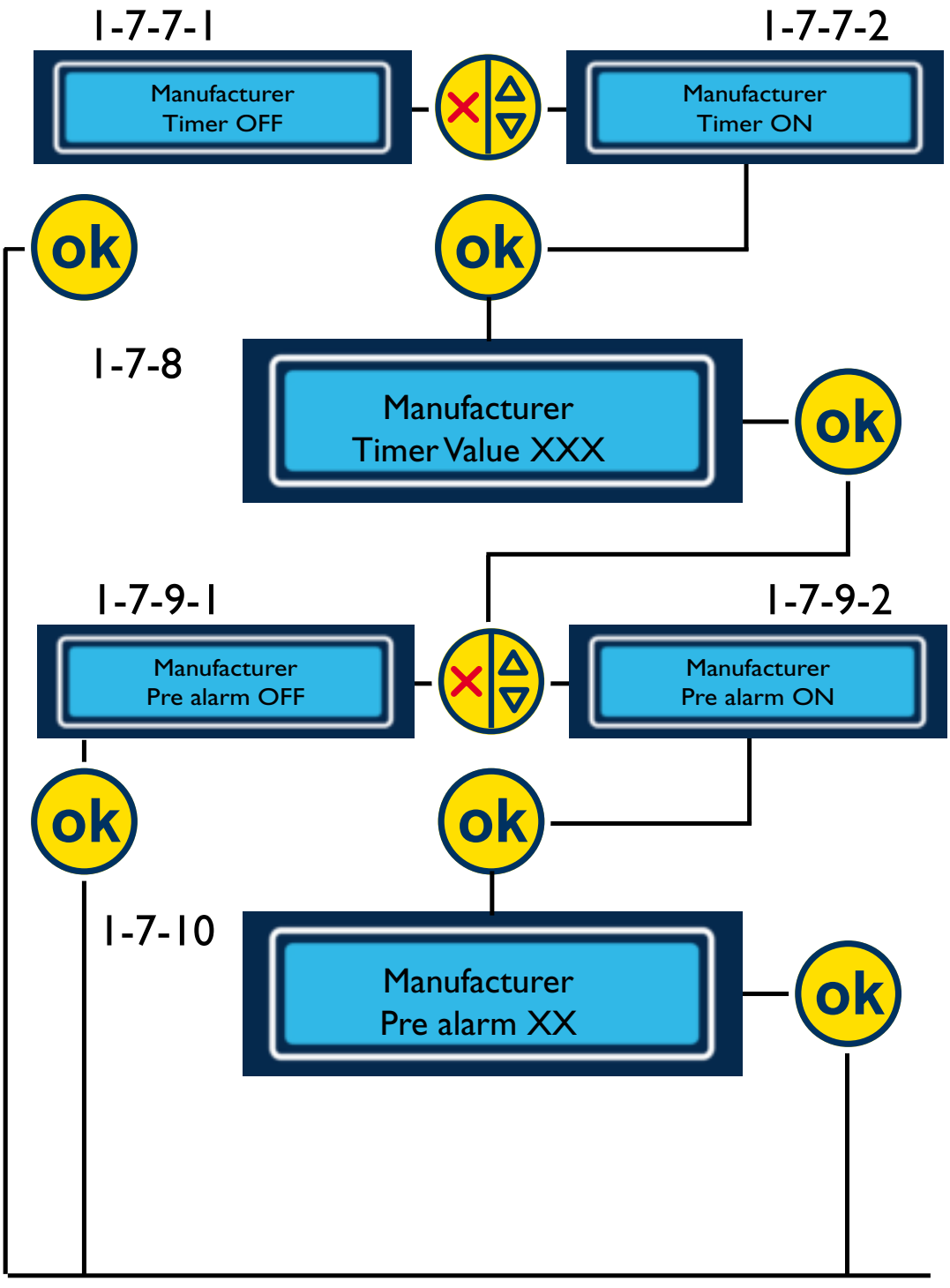
Indicates that the CPU card detects the Molecode™ S option when the device is first plugged in.

Counts the number of resets to the New filter mode (menu 1-3-1-1).

Counts the number of resets to the Good filter mode (menu 1-3-2-1).

**Allows the user to access menu 1-7-7.**

## 1-7 Manufacturer Menu




## Notes :

Allows the user to activate or deactivate the Timer™.

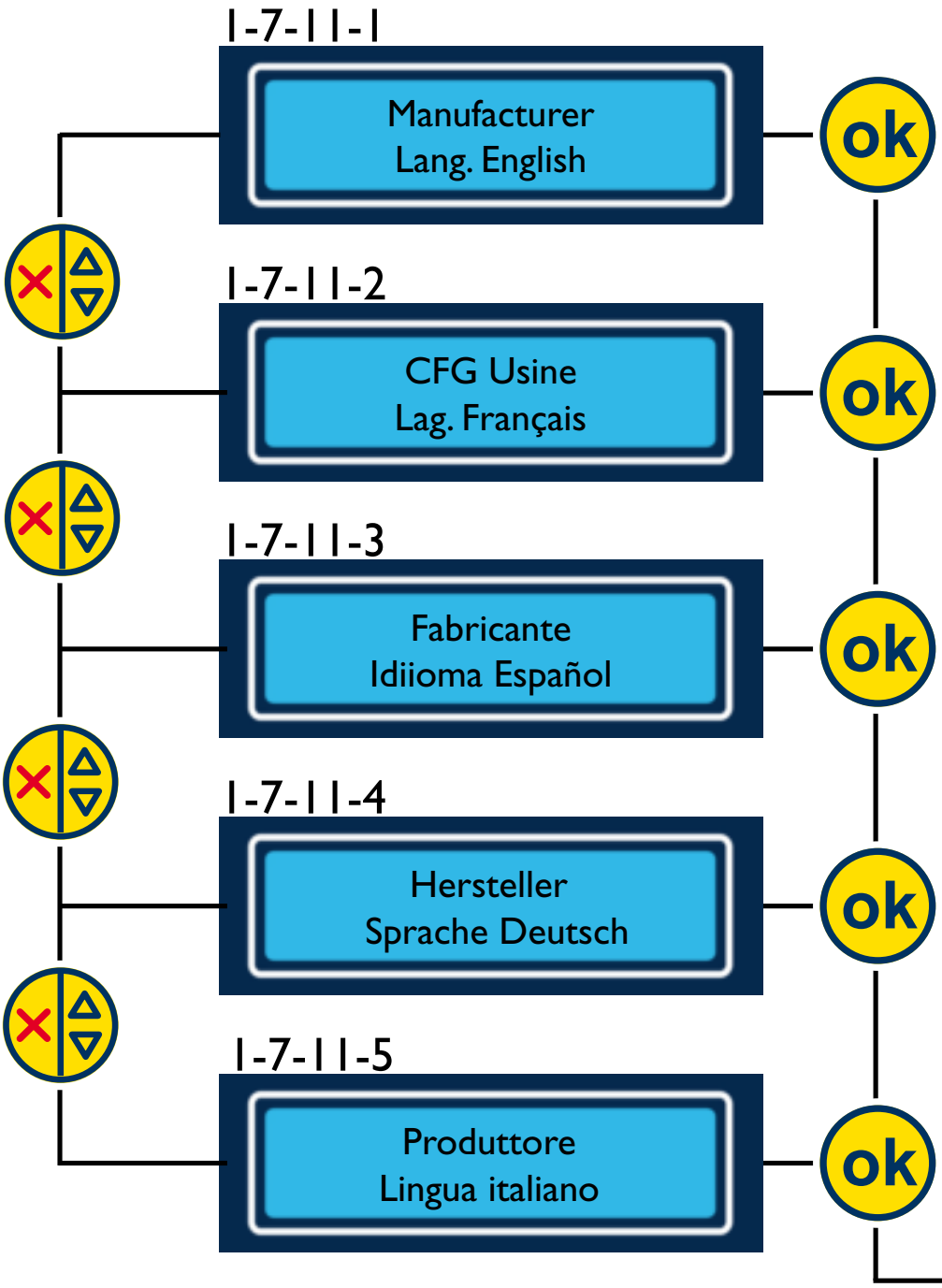
Allows the user to set the Timer™'s time value if the Timer™ is activated. Possible values: from 1 to 250 hours. Scroll through the numbers in the active box using the scroll button and confirm the selected value using the confirmation button.

Allows the user to activate or deactivate the pre-warning alarm for the filter saturation test.

Allows the user to set the point at which the pre-warning alarm is triggered. Possible values: between 0 and 10 hour(s). Scroll through the numbers in the active box using the scroll button and confirm the selected value using the confirmation button.

**Allows the user to access menu 1-7-11.**

# 1-7 Manufacturer Menu




## Notes:

Allows the user to modify the language displayed on screen.

Allows the user to modify the language displayed on screen.

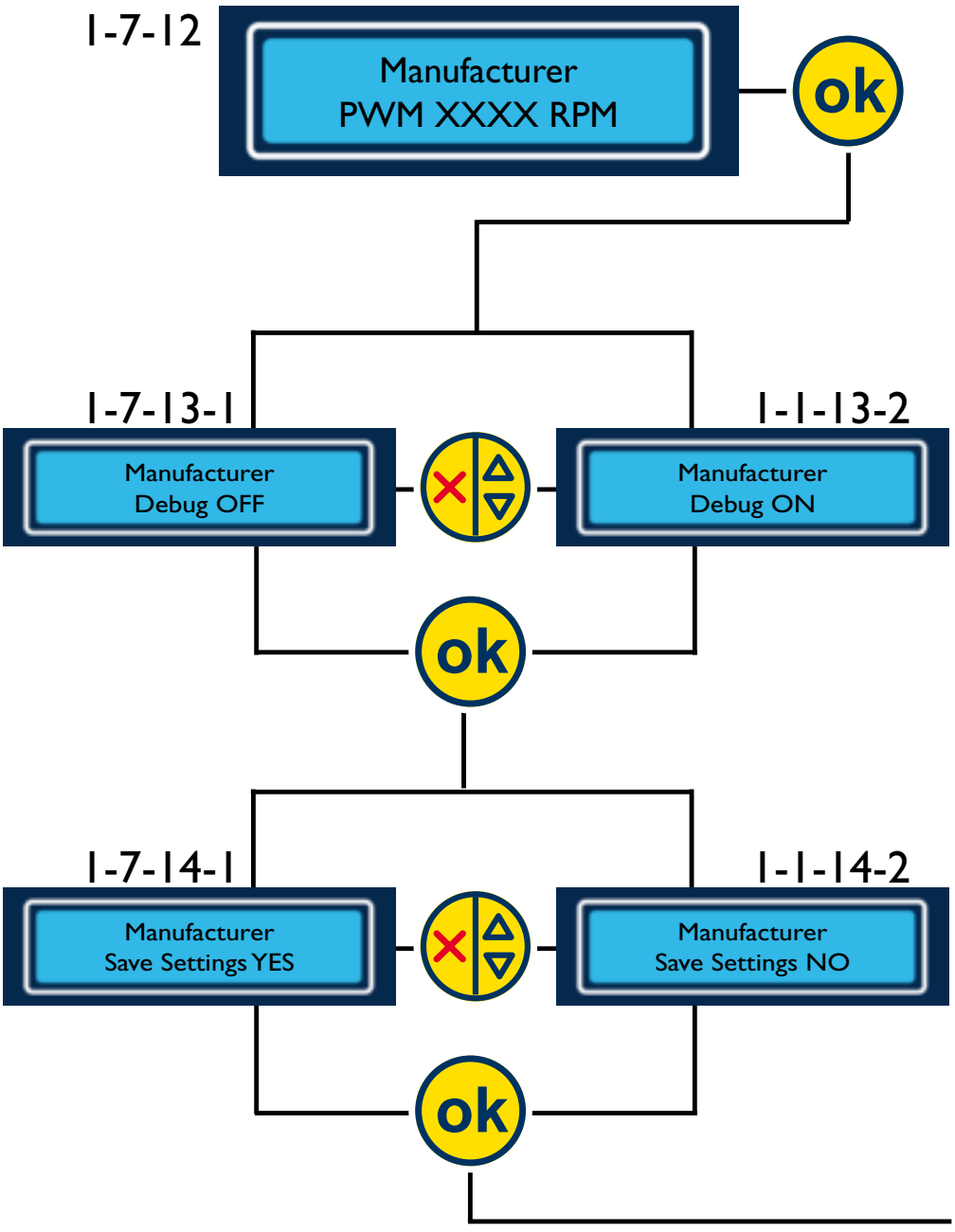
Allows the user to modify the language displayed on screen.

Allows the user to modify the language displayed on screen.

Allows the user to modify the language displayed on screen.

**Allows the user to access menu 1-7-12.**

# 1-7 Manufacturer Menu




## Notes:

Allows the service engineer to enter ventilation settings for the device. The rotation speed, between 0 and 3000 RPM (rotations / min), must correspond to the device's Flex™ technology settings. Refer to the various Flex™ technology settings for more information. Scroll through the numbers in the active box using the scroll button and confirm the selected value using the confirmation button.

The Debug ON mode allows the user to reduce the Timer™ cycle in order to verify the proper functioning of the alarms in the factory (pre-warning, Timer™, Molecode™ S, etc.). The cycle takes 3 minutes to run.

Allows the service engineer to save or cancel parameters that were previously modified.

**Display the default screen display mode.**

# Protecting yourself

- Via the E.S.P. program (Erlab Safety Program)
- Via AFNOR NF X 15-211: 2009 standard

# THE esp® PROGRAM—KEEPING YOU SAFE

## erlab® safety program

### A long-lasting commitment by erlab® to the safety of the operator

An essential part of user safety, our laboratory's mission is to assess the interactive behavior of molecules and their interactive effect with the Flex™ filtration technology.
Based on this scientific investigation, your E.S.P.® specialist will recommend the most appropriate unit, define the adapted filtration column and the enclosure design and ensure a complete protection to the user. After installation, your E.S.P.® specialist will provide you with a constant monitoring of the unit regarding the handlings performed.

### The ValiQuest® service:
**Determine the most appropriate filtering fume hood for total safety during your handlings**

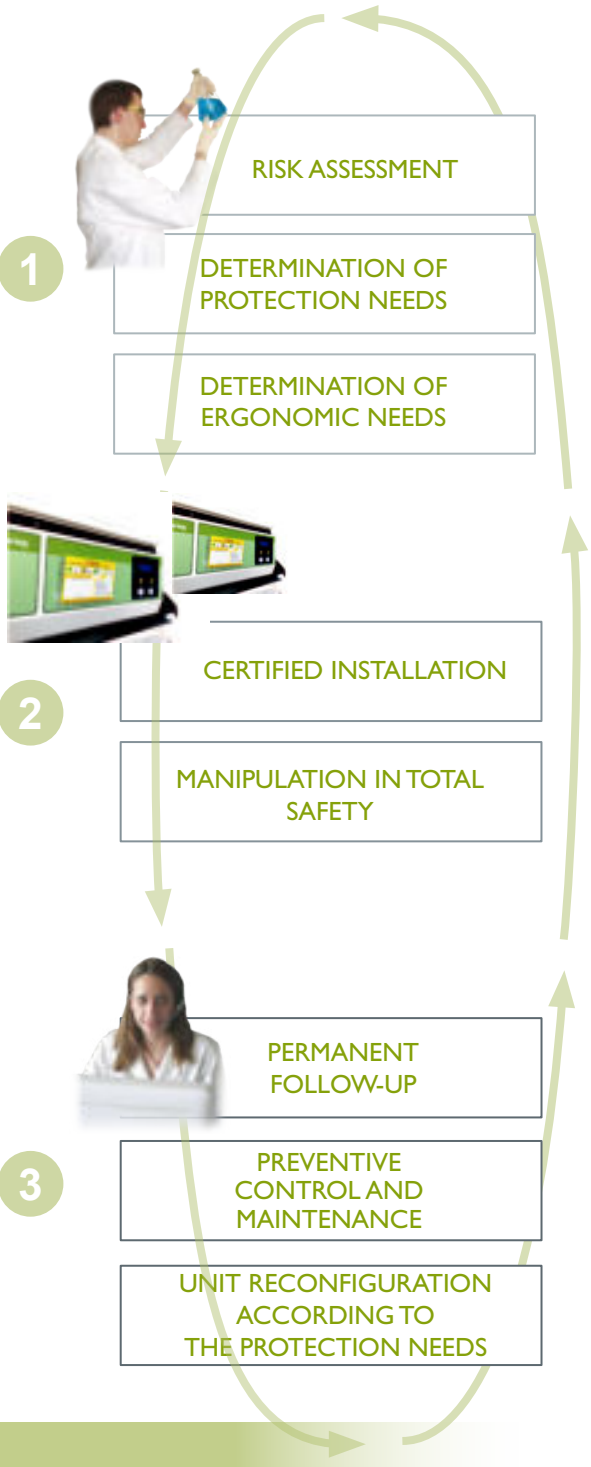
Assisted by an E.S.P.® agent, you complete the investigation questionnaire, which precisely describes your intended chemical handlings. Our validation laboratory specialists will recommend the appropriate filtration fume hood and filter type. Personalized advice and accurate answer within 48 hours. A certificate validating the handling is supplied: real commitment of the manufacturer to the safety of the operator.

### The ValiPass® service:
**Certify and secure the usage framework at installation**

When you receive your Captair® filtering fume hood, a usage certificate will give precise details on the chemicals to be used, the filter type and an estimation of its lifetime expectancy, for which your Captair® filtering fume hood has been validated. This certificate is a permanent reminder to the user or the safety officer of the data relating to their protection.

### The ValiGuard® service:
**A constant monitoring of your filtering fume hood.**

Periodically (about every six months), the E.S.P.® agent will contact you to make sure that you have not changed your handlings and that the filter is still active. The E.S.P.® agent will show you how to perform step by step filter saturation tests and also the procedure for filter replacement. During this contact, if the E.S.P. ® agent finds that there is a change in chemical handlings, you will be asked to complete a new questionnaire (see step 1). After review, a new certificate for use (to be placed on the front of the filtering fume hood) naming the approved chemicals will be sent to you to ensure that your chemical handlings are still performed within optimum safety conditions.



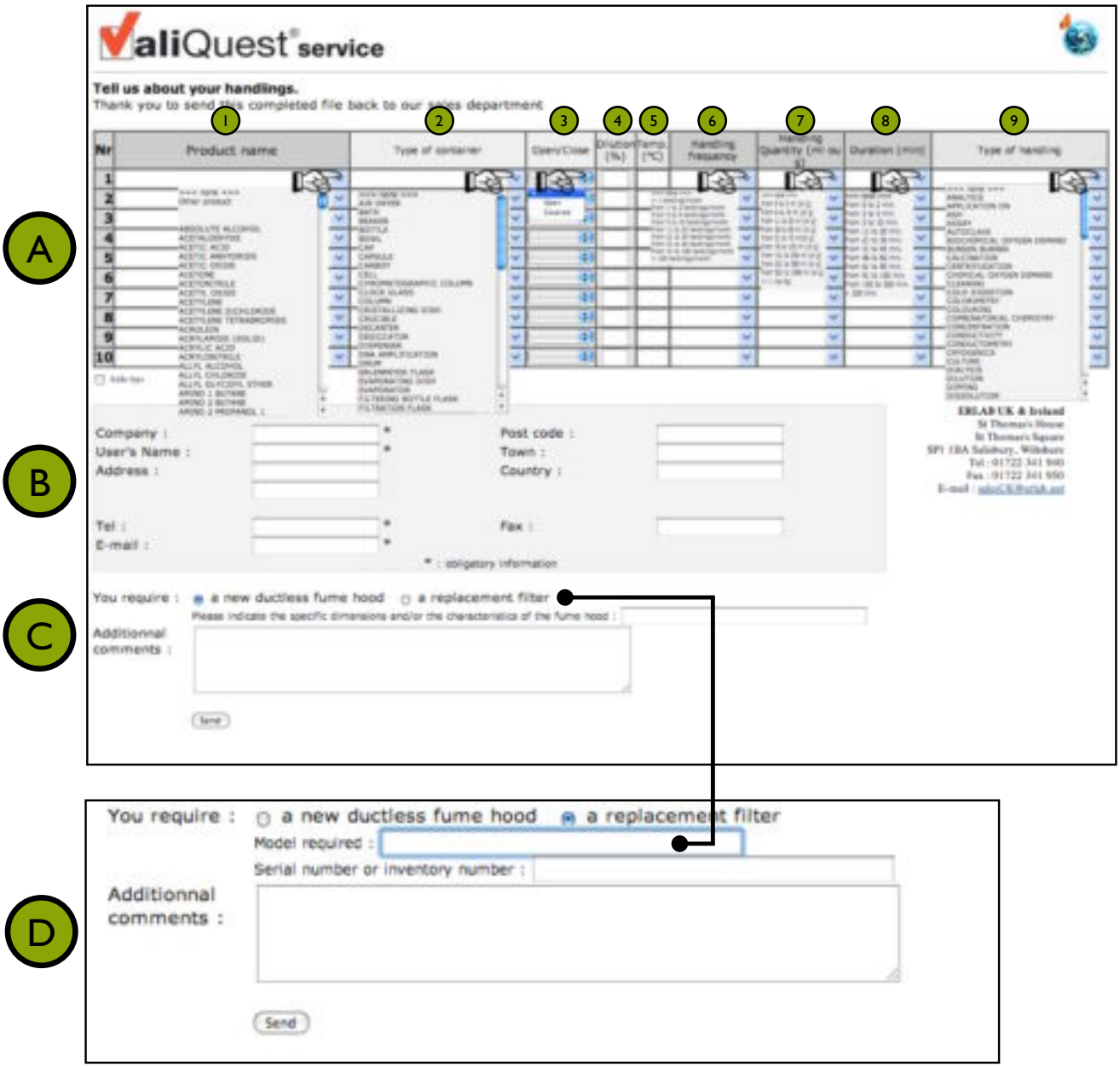

**Call your ESP® specialist today and configure this unique Captair® Flex™ solution to your requirements.**

**www.erlab.com**

# THE ValiQuest® SERVICE

# IDENTIFIES THE FILTERING FUME HOOD BEST SUITED FOR YOUR APPLICATIONS

**Risk analysis and identification of protection needs**




This service, which is completely free of charge, is offered to you before the purchase of your fume hood.
You may contact your E.S.P. agent at any time to reconfigure the Flex™ technology of your filtering fume hood. The fume hood can be modified according to the protection needs and the environment of your laboratory.

**This service is available online at www.erlab.com or at one of our commercial branches.**

## A Information related to your applications

1. Name of the chemical (drop-down menu): Select the name of the chemical handled by your lab from the list of options. If the name of the chemical does not appear on the list, select the «unlisted chemical» field from the list, then enter the name of the chemical. If this is the case, you must provide the material safety data sheet for the chemical in question to the erlab® laboratory so that we can evaluate the behavior of this molecule.

2. Type of container (drop-down menu): Select the type of recipient used to handle the chemical in question from the list of options.

3. Open / Closed (drop-down menu): Indicate whether the recipient used is open or closed.

4. Dilution (text field): Enter the concentration of the chemical in question as a weight percentage. If the chemical is used in its pure form, enter 100; if it is diluted, enter its concentration: 50, 1N, etc. and enter the name of the diluting agent on the next line.

5. Temperature (text field): Temperature of the chemical when handled (in  C).

6. Handling frequency (drop-down menu): Number of times that the chemical is actually handled per month. Select the frequency of use of the chemical in question from the list of options.

7. Handling quantity (drop-down menu): Volume of the chemical per use. Select the volume of the chemical in question from the list of options.

8. Duration (drop-down menu): Time, in minutes, per use. Select the length of time that the chemical in question is handled from the list of options.

9. Type of handlings (drop-down menu): Select the type of application performed from the list of options. If your application does not appear in the list, describe the application in the "Comments" text field of section C.

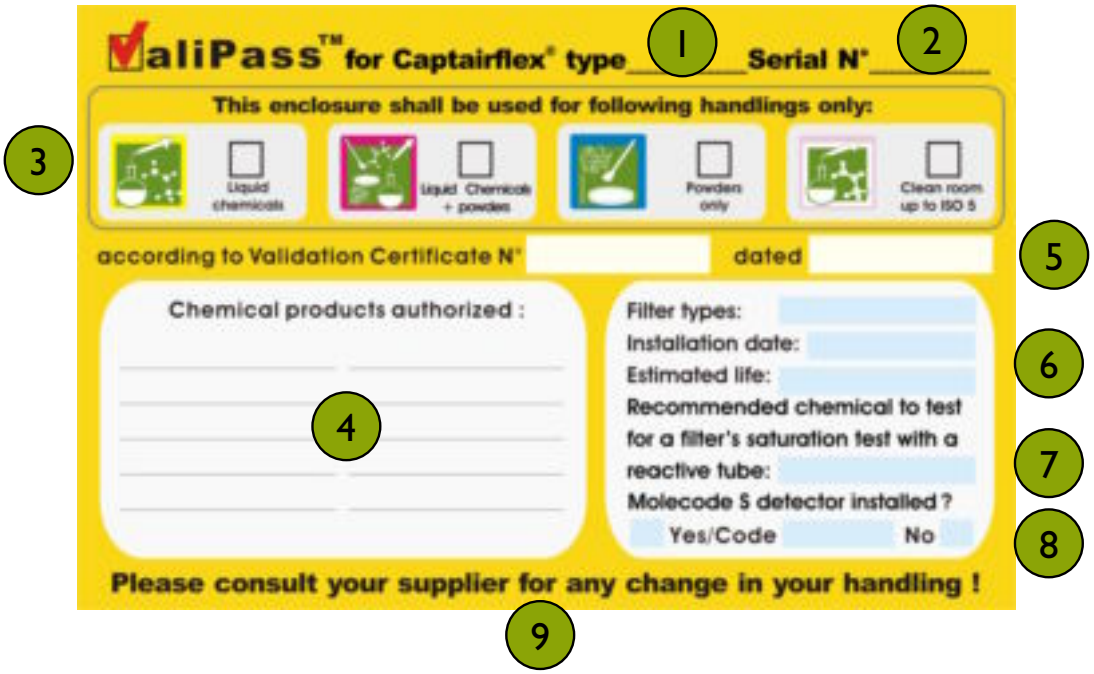
## B Contact details : 
All fields marked with a * are required—this information allows us to properly process your file and to trace any information provided.

## C Specifications of the request: 
New device, updating of your Flex™ filtration technology. The «Comments» text field allows you to provide all necessary information to enable us to refine the analysis conducted by the erlab® laboratory.

## D Updating of your Flex™ filtration technology : 
If you select this option, you must indicate the brand name and type of fume hood that you currently own as well as its serial number.

# ValiPass® certificate

**The ValiPass certificate shall be delivered together with your Captairflex at the time of the first installation. It is the result of the ValiQuest you submitted to your supplier and is designed to remind the user(s) of this Captairflex unit of the chemical products which have been approved to be used, the expected life of the filter(s) and the saturation detection methods.**
**If this document is not delivered with your captairflex, we strongly recommend you to require it from your supplier, after filling the valiQuest questionnaire mentionned page 29.**
**If the application mentionned in the previous ValiQuest is designed to change, it is very important to fill in a new ValiQuest and require a new validation and a new ValiPass from your supplier before operating the change of application.**




1. Type of Captair® flex model:
2. Serial N  of the Captar® flex:
3. Main use of this Captairflex (depends on the Captair® flex model and the filters installed)
4. Restricted list of chemicals which can be used in this Captair®  flex fume hood
5. Filter(s) type and date of installation
6. Estimated life of the filter (in  months)
7. Chemical to be tested for the filter's saturation test with reactive tubes (check with suppliers such as Draeger, Gastec, Kitagawa, RAE system for the appropriate tube reference).
8. Inform if the Molecode automatic detector for the filter's is installed on this Captairflex and what is the setting Code N°  (see page 40/41).
9. Alert the user to fill in a new ValiQuest questionnaire and tranfer it to the supplier for a new validation, in case the application shall be changed, such as change of chemicals, quantities, etc…..

# THE ValiGuard® SERVICE :

# CONTINUOUS MONITORING OF YOUR FILTERING FUME HOOD

**The E.S.P.® agent contacts users about every six months.**

The agent checks to see whether or not the laboratory's applications have changed.

**YES**

**NO**

ValiQuest® Service


You are asked to describe your new application in order to validate the safety parameters.

The E.S.P®. agent will guide the user step by step through the tests to check for filter saturation as well as through the filter replacement procedure.

# AFNOR NF X 15-211: 2009 standard

Appointed by the AFNOR, the Union de Normalisation de la Mécanique (UNM), composed of a college of experts (INRS, national organizations, professional syndicates), has established the AFNOR NF X 15-211 : 2009 standard. This standard applies to filtration fume hoods (also named recirculatory fume hoods or ETRAF) designed for research, analysis, education works,…. for all laboratories where chemicals subjected to professional exposure limit values (OEL or TLV) are manipulated. This text imposes performances criteria linked to:

- **Filtration efficiency**
- **Containment efficiency**
- **Air face velocity**

As well as a specific documentation attached with each filtration fume hood.

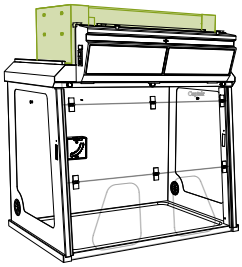
## The classes established by the standard

| Class 1 | Class 2 |
|---|---|
| Filtration fume hood with safety reserve | Filtration fume hood without safety reserve |
| one main filtration level and one safety filtration level | One filtration level |

## Classification according to filtration type

| | Denominations according to the NF X 15 211:2009 standard | Denominations equivalence for the erlab® products |
|---|---|---|
| Particles filtration* | Type P | Type P |
| Vapours filtration** | Type V | Type C |
| Particles and vapours filtration** | Type PV | Type PC |

* : The particulate filter must be at least of H14 type according to the NF EN 1822-1 standard
** : The filters for vapours must be submitted to two successive performance tests with Cyclohexane and Isopropanol for the filters designed to retain Volatile Organic Compounds (VOC). Another test for the acid vapours is carried out with Hydrochloric acid.



## The filtration efficiency

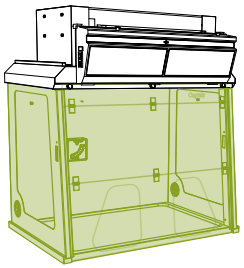
It is defined by the filter capacity to retain noxious molecules manipulated within the enclosure and qualifies the quality of the recirculated air at the filter exhaust.

| | Class 1 | Class 2 |
|---|---|---|
| Normal operation phase | Emissions concentration at the filter exhaust must be lower than 1% of the TLV | |
| Detection phase | The concentration at the filter exhaust must be lower than 1% of the TLV, and the automatic saturation detector must warn the user | The concentration at the filter exhaust must be lower than 50% of the TLV |
| Safety operation phase | The concentration at the filter exhaust must be lower than 50% of the TLV ; its duration must not be lower than 1/12 of the normal operation phase duration. | |

**The retention** capacities recorded during the tests performed on our filters demonstrate **the technical performance developed by Erlab®.**
These results ensure a very high protection level to the Captair® Flex™ users.

Example of test carried out on a Captair® Flex™ XL 714, equipped with BE+ filters in class 1

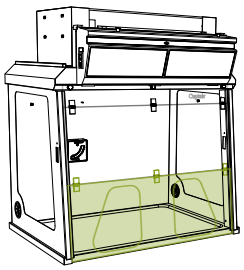
| Isopropanol | Cyclohexane | HCL (35%) |
|---|---|---|
| 2250 gr | 3204 gr | 7862 gr |



## Containment efficiency of the enclosure

**It is defined by the fume hood capacity to maintain chemical vapors or particles within the enclosure without any propagation in the laboratory environment.**

To prove this efficiency, a test is carried out following the protocol described in the standard.
SF6 (Sulfur Hexafluoride) tracer gas emissions are made into the enclosure. A grid composed of sensors is placed in front of the working openings. Some samplings are done at the grid. Based on the emitted gas concentration and the samplings done (which will allow the determination of an average operator exposure to this tracer gas), it is possible to determine a containment performance level of the filtration fume hood.
The containment threshold specified by the NFX 15-211:2009 standard imposes a maximum concentration of 0.1 ppm of SF6 gas at the measuring points on the grid.



## Air face velocity

**It represents the fume hood capacity to create a dynamic barrier between the operator and the handling.**

For filtration fume hoods with fixed front panel, the air face velocity at any point of the front openings must be between 0.4 and 0.6 m/s. They must be equipped with a permanent monitoring system for the air face velocity which also acts as a real time containment indicator.

## The documentation

**Filtration fume hoods must be delivered with a booklet containing an exhaustive list of chemicals, certified by the manufacturer, that can be handled into the filtering fume hood in the conditions described in the AFNOR NF X 15-211:2009 standard. The following information must be indicated in the booklet for each chemical listed:**


- The chemical name, its formula, its CAS number, its boiling point, its molecular weight, its saturation vapour pressure
- The appropriate filter reference and its retention capacity during the normal operation phase
- The type of saturation detection system for the filter(s)
- The maximum quantity of the chemical that can be introduced within the enclosure
- The name of the test laboratory having performed the test

**Erlab® has created its own booklet called the CHEMICAL LISTING. This booklet contains a list of approved chemicals indicating analysis data for about 700 molecular substances commonly used in laboratories. This booklet is delivered with each unit, as per the requirements of the AFNOR NF X 15-211:2009 standard.**

Every Erlab® filtration fume hood is in compliance with these safety criteria.

## The international standards

Erlab® products are in compliance with the following standards which guarantee your total protection.

**France :** **AFNOR NF X 15-211 : 2009**

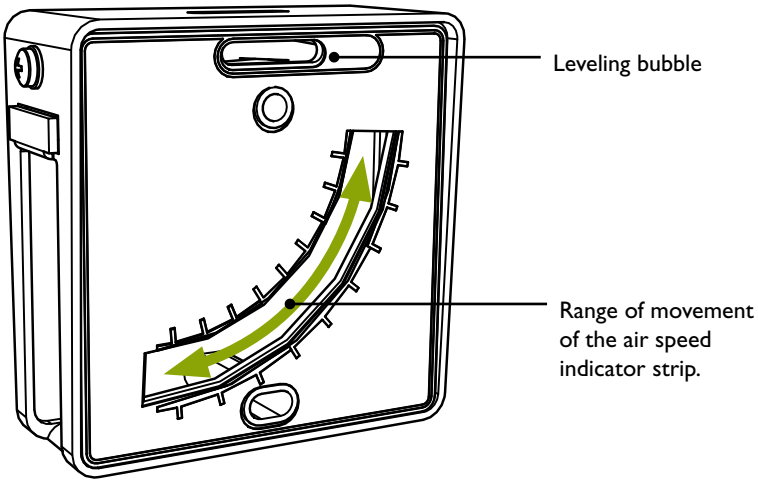
**USA :** **ANSI/AIHA Z9.5**
**ASHRAE 110 : 1995**

# Maintenance

- Monitoring air face velocity
- Manually detecting filter saturation
- Automatically detecting filter saturation
- Replacing the filters
- The revolving system
- Cleaning and maintenance

# Monitoring air face velocity

The anemometer provided with your Captair® Flex™ fume hood allows the user to constantly monitor the face velocity.
If the anemometer is not installed during assembly, please install this device according to the steps listed in the installation instructions provided with your fume hood.



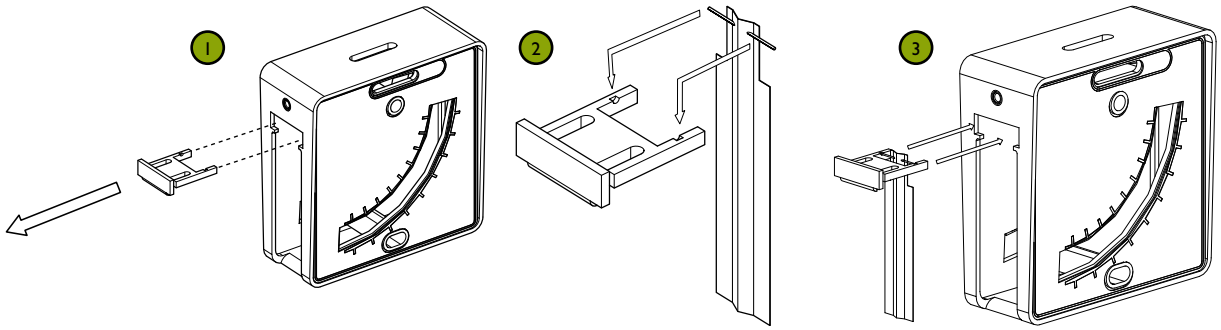


When reading the face velocity, first be sure to check that the leveling bubble on the anemometer is positioned correctly. To ensure proper movement of the strip, the anemometer must be level. The air face velocity must be between 0.4 and 0.6 m/s (as required by AFNOR NF X 15-211: 2009 standard).

**What should you do if the strip does not move or if its movement is irregular?**

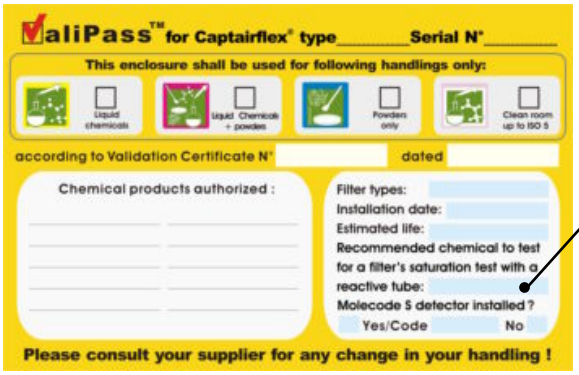
First of all, verify that the fume hood's ventilation system is turned on.

If the strip's movement is highly irregular, verify that the strip is correctly positioned in the housing located within the anemometer as shown in the diagrams below. The two pins of the strip must be correctly positioned in the support slots.



# MANUALLY DETECTING FILTER SATURATION

Your application was analyzed and validated by the erlab® laboratory as part of the erlab Safety Program (E.S.P.). During this validation, the erlab® laboratory used the information provided to determine the chemical that must be the subject of the molecular filter saturation test. You have access to this information at any time on your Valipass® certificate.


ValiPass™ for Captairflex® type_____Serial N°_____

This enclosure shall be used for following handlings only:

Liquid chemicals | Liquid Chemicals + powders | Powders only | Clean room up to ISO 5

according to Validation Certificate N° dated

Chemical products authorized :

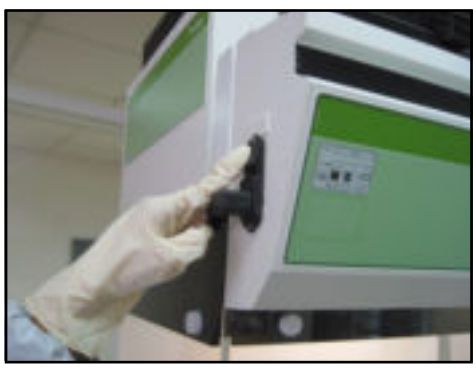
Filter types:
Installation date:
Estimated life:
Recommended chemical to test for a filter's saturation test with a reactive tube:
Molecode 5 detector installed ?
Yes/Code No

Please consult your supplier for any change in your handling !

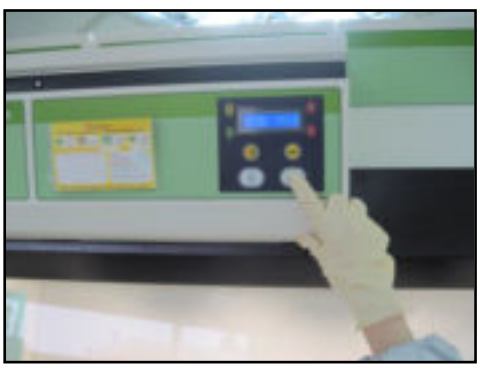
Verify the chemical for which you will carry out the fiter saturation test with a reactive tube



To carry out a manual filter saturation test, you need the following equipment:
- a pump (a simple plastic pump A is provided, For more accurate result use a professional pump type B from Draeger, Gastec, Kitagawa, RAE, etc…)
- a flexible silicone tube (provided)
- the chemical to be tested (not provided)
- an appropriate color coded tube for the chemical (Dreager, Gastec, Kitagawa, RAE, etc…)



Turn on the Captair® Flex™ fume hood



Turn on the ventlation

Soak a roll up piece of paper in a container placed inside the enclosure. Pour a sufficient quantity of the chemical to be tested on the paper.

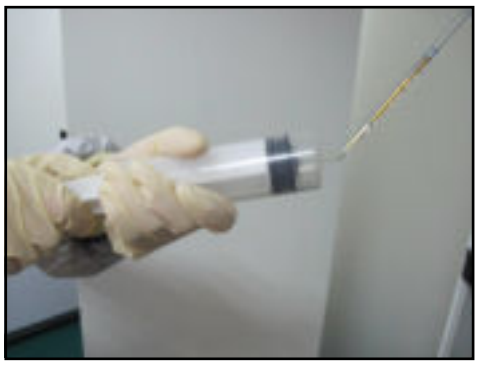
Connect the quick connector to the sampling port on the Control panel

Break off the 2 ends of the tube by inserting them into the plastic pump end.

Break off the 2 ends of the tube by inserting them into the designed hole of the professional pump

Connect the tube to the plastic pump following the direction of the arrow printed on the tube

Connect the tube to the professional pump following the direction of the arrow printed on the tube



Coonect the other end of the tube to the silicone tube, pump gently to sample air from downstream. Refer to the instructions provided with the tube for the number of pump strokes

If you notice achange of coloration of the tube, your filter has to be changed.

**After performing this test and depending on the results, you can then record this information by accessing the menus of the digital screen:**

**Either to enter the parameters related to the new filter installed (menu 1-3-1).**


**Or to confirm that the filter has not been changed (menu 1-3-2-1).**

# AUTOMATICALLY DETECTING FILTER SATURATION

## Molecode™ S:

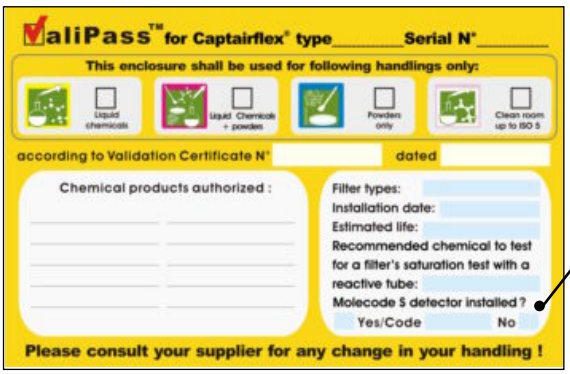
The automatic Molecode™ S detector is automatically activated when the ventilation system of your Captair® Flex™ fume hood is started.

It uses a sensor designed to detect various organic vapors and gases, which, based on the parameters set for the sensor, make it possible to detect saturation of the main filter.

**How do you modify the settings of the sensor ?**

Before turning on your Captair® Flex™ fume hood for the first time, verify that the detector setting corresponds to the code provided by the erlab® laboratory after analyzing and validating your application. This configuration was factory-set using the information provided.

**This information is available at any time on your Valipass® form, which is attached to the control panel of your Captair® Flex™ fume hood.**




Find the setting for the Molecode™ S , automatic detection of filter saturation by solvents.

To enter this setting, refer to section 1-5 of the chapter on "Navigating the digital display screen."

### MODIFYING THE LIMIT SETTINGS FOR THE UNIT

**For the detection of a single chemical:**
Refer to the limits listed on the next page.

**For the detection of multiple chemicals:**
Contact your E.S.P.® agent as soon as possible in order to determine the limit value corresponding to your application.

# MODIFYING THE LIMIT SETTINGS FOR THE MOLECODE™ S UNIT

**You can modify the detection limit of the Molecode™ S at any time.**
The table at left lists the setting codes to be entered for the detection of a single chemical.
To convey this information to the detector, refer to menu 1-4 of the section on "Navigating the digital display screen" in this manual.


| CHEMICAL NAME | FORMULA | CAS Number | Molecode™ setting |
|---|---|---|---|
| 1, 4-Dioxane | C4H8O2 | 123-91-1 | 3500 |
| 1,1,1-Trichloroethane | C2H3Cl3 | 71-55-6 | 2700 |
| 1,1-Dichloroethane | C2H4Cl2 | 75-34-3 | 2800 |
| 1,2-Dibromoethane | C2H4Br2 | 106-93-4 | 2700 |
| 1,2-Dichloroethane | C2H4Cl2 | 107-06-2 | 2700 |
| 1,2-Ethanediol | C2H6O2 | 107-21-1 | 3100 |
| 1-Aminobutane | C4H9NH2 | 109-73-9 | 2800 |
| 1-Butanol | C4H10O | 71-36-3 | 4000 |
| 1-Chloro butane | C4H9Cl | 109-69-3 | 3000 |
| 1-Propanol | C3H8O | 71-23-8 | 4100 |
| 2, 2'-Dichlorodiethyl ether | C4H8OCl2 | 111-44-4 | 2800 |
| 2, 4-Dimethyl pentane | C7H16 | 108-08-7 | 3600 |
| 2,4-Dimethyl-3-pentanone | C7H14O | 565-80-0 | 2800 |
| 2,6-Dimethyl-4-heptanone | C9H18O | 108-83-8 | 3500 |
| 2-Amino butane | C4H9NH2 | 13952-84-6 | 2800 |
| 2-Butanol | C4H10O | 78-92-2 | 4200 |
| 2-Butanone | C4H8O | 78-93-3 | 4000 |
| 2-Butenal | C4H6O | 4170-30-3 | 3600 |
| 2-Butoxyethanol | C6H14O2 | 111-76-2 | 2700 |
| 2-Chloroacetaldehyde | C2H3OCl | 107-20-0 | 2700 |
| 2-Chloroethanal | C2H3OCl | 107-20-0 | 2700 |
| 2-Chloroethanol | C2H5OCl | 107-07-3 | 3000 |
| 2-Chloroethyl alcohol | C2H5OCl | 107-07-3 | 3000 |
| 2-Ethoxyethanol | C4H10O2 | 110-80-5 | 3500 |
| 2-Furylmethanol | C5H6O2 | 98-00-0 | 3100 |
| 2-Heptanone | C7H14O | 110-43-0 | 4300 |
| 2-Hexanone | C6H12O | 591-78-6 | 2800 |
| 2-Hydroxymethylfuran | C5H6O2 | 98-00-0 | 3100 |
| 2-Methyl-1,3-butadiene | C5H8 | 78-79-5 | 2800 |
| 2-Methyl-1-propanol | C4H10O | 78-83-1 | 2800 |
| 2-Methylbutane | C5H12 | 78-78-4 | 3500 |
| 2-Methylpropyl acetate | C6H12O2 | 110-19-0 | 3000 |
| 2-Methylpropyl ester of acetic acid | C6H12O2 | 110-19-0 | 3000 |
| 2-Pentanone | C5H10O | 107-87-9 | 4000 |
| 2-Pentanone | C5H10O | 107-87-9 | 4000 |
| 2-Phenyl propane | C9H12 | 98-82-8 | 3000 |
| 2-Propanol | C3H8O | 67-63-0 | 4100 |
| 2-Propanone | C3H6O | 67-64-1 | 4200 |
| 2-Propen-1-ol | C3H6O | 107-18-6 | 2800 |
| 2-Propenol | C3H6O | 107-18-6 | 2800 |
| 2-Propyl acetate | C5H10O2 | 108-21-4 | 3000 |
| 3-Chloro-1-propene | C3H5Cl | 107-05-1 | 2800 |
| 3-Pentanone | C5H10O | 96-22-0 | 4500 |
| 4-Methyl 2-pentanone | C6H12O | 108-10-1 | 2800 |
| 4-Methyl-2-pentanone | C6H12O | 108-10-1 | 2800 |

| CHEMICAL NAME | FORMULA | CAS Number | Molecode™ setting |
|---|---|---|---|
| 4-tert-Butyl toluene | C11H16 | 98-51-1 | 2800 |
| 5-Methyl-3-Heptanone | C2H6O2 | 541-85-5 | 3500 |
| Absolute alcohol | C2H6O | 64-17-5 | 4500 |
| Acetaldehyde | C2H4O | 75-07-0 | 2800 |
| Acetic acid | C2H4O2 | 64-19-7 | 2800 |
| Acetone | C3H6O | 67-64-1 | 4200 |
| Acetonitrile | C2H3N | 75-05-8 | 3000 |
| a-Chlorotoluene | C7H7Cl | 100-44-7 | 2700 |
| Alcohol | C2H6O | 64-17-5 | 4500 |
| Aldehyde ethylique | C2H4O | 75-07-0 | 2800 |
| Allyl alcohol | C3H6O | 107-18-6 | 2800 |
| Allyl chloride | C3H5Cl | 107-05-1 | 2800 |
| Allylglycidylether | C6H10O2 | 106-92-3 | 2800 |
| Allylic alcohol | C3H6O | 107-18-6 | 2800 |
| Aminocyclohexane | C6H11NH2 | 108-91-8 | 2700 |
| Aminoethane | C2H7N | 75-04-7 | 2700 |
| Ammonia | NH3 | 7664-41-7 | 2600 |
| Ammonium hydroxyde sol | NH4OH | 7664-41-7 | 2600 |
| Amyl alcohol n | C5H12O | 71-41-0 | 3200 |
| Azine | C5H5N | 110-86-1 | 2700 |
| Benzene chloride | C6H5Cl | 108-90-7 | 2700 |
| Benzyl chloride | C7H7Cl | 100-44-7 | 2700 |
| beta-Methyl acrolein | C4H6O | 4170-30-3 | 3600 |
| beta-Methylpropyl ethanoate | C6H12O2 | 110-19-0 | 3000 |
| Bicyclopentadiene | C10H12 | 77-73-6 | 2800 |
| Bromoethane | C2H5Br | 74-96-4 | 2700 |
| Bromoform | CHBr3 | 75-25-2 | 2800 |
| Butyl acrylate | C7H12O2 | 141-32-2 | 2800 |
| Butyl alcohol | C4H10O | 71-36-3 | 4000 |
| Butyl alcohol sec | C4H10O | 78-92-2 | 4200 |
| Butyl alcohol ter | C4H10O | 75-65-0 | 3000 |
| Butyl carbinol | C5H12O | 71-41-0 | 3200 |
| Butyl Cellosolve® | C6H14O2 | 111-76-2 | 2700 |
| Butyl ether | C8H18O | 142-96-1 | 3500 |
| Butyl glycol | C6H14O2 | 111-76-2 | 2700 |
| Butyl lactate | C7H14O3 | 138-22-7 | 3000 |
| Butyl metacrylate | C18H14O2 | 97-88-1 | 2800 |
| Butyl vinyl ether | C6H12O | 111-34-2 | 3500 |
| Butyl vinyl ether | C6H12O | 111-34-2 | 3500 |
| Butylene hydrate | C4H10O | 78-92-2 | 4200 |
| BVE | C6H12O | 111-34-2 | 3500 |
| Carbon disulfide | CS2 | 75-15-0 | 2600 |
| Cellosolve® | C4H10O2 | 110-80-5 | 3500 |
| Chlorobenzene | C6H5Cl | 108-90-7 | 2700 |
| Chlorothene | C2H3Cl3 | 71-55-6 | 2700 |

| CHEMICAL NAME | FORMULA | CAS Number | Molecode™ setting |
|---|---|---|---|
| Cinamene | C8H8 | 100-42-5 | 2800 |
| Crotonaldehyde | C4H6O | 4170-30-3 | 3600 |
| Cumene | C9H12 | 98-82-8 | 3000 |
| Cumol | C9H12 | 98-82-8 | 3000 |
| Cyanomethane | C2H3N | 75-05-8 | 3000 |
| Cyclohexane | C6H12 | 110-82-7 | 2800 |
| Cyclohexanol | C6H12O | 108-93-0 | 3000 |
| Cyclohexanone | C6H10O | 108-94-1 | 3500 |
| Cyclohexene | C6H10 | 110-83-8 | 3800 |
| Cyclohexyl alcohol | C6H12O | 108-93-0 | 3000 |
| Cyclohexyl ketone | C6H10O | 108-94-1 | 3500 |
| Cyclohexylamine | C6H11NH2 | 108-91-8 | 2700 |
| Cyclopentane | C5H10 | 287-92-3 | 2800 |
| Decane | C10H22 | 124-18-5 | 2700 |
| Dibutyl ether | C8H18O | 142-96-1 | 3500 |
| Dichloropropane 1, 2 | C3H6Cl2 | 78-87-5 | 4500 |
| Dicyclopentadiene | C10H12 | 77-73-6 | 2800 |
| Diethamine | C4H11N | 109-89-7 | 3200 |
| Diethyl ether | C4H10O | 60-29-7 | 3700 |
| Diethyl ketone | C5H10O | 96-22-0 | 4500 |
| Diethyl oxide | C4H10O | 60-29-7 | 3700 |
| Diethylamine | C4H11N | 109-89-7 | 3200 |
| Diethylene dioxide | C4H8O2 | 123-91-1 | 3500 |
| Diethylene oxide | C4H8O | 109-99-9 | 4200 |
| Diisopropyl ketone | C7H14O | 565-80-0 | 2800 |
| Diisopropyl ketone | C9H18O | 108-83-8 | 3500 |
| Dimethoxymethane | C3H8O2 | 109-87-5 | 3800 |
| Dimethyl amine | C2H7N | 124-40-3 | 2700 |
| Dimethyl benzene (and isomers) | C8H10 | 95-47-6 | 2800 |
| Dimethyl carbinol | C3H8O | 67-63-0 | 4100 |
| Dimethyl ketone | C3H6O | 67-64-1 | 4200 |
| Dimethyl sulfoxide | C2H6SO | 67-68-5 | 2700 |
| Dimethylacetone | C5H10O | 96-22-0 | 4500 |
| Dipropyl ketone | C7H14O | 123-19-3 | 4300 |
| DMA | C2H7N | 124-40-3 | 2700 |
| DMSO | C2H6SO | 67-68-5 | 2700 |
| Ethanal | C2H4O | 75-07-0 | 2800 |
| Ethanoic acid | C2H4O2 | 64-19-7 | 2800 |
| Ethanol | C2H6O | 64-17-5 | 4500 |
| Ether | C4H10O | 60-29-7 | 3700 |
| Ethyl acetate | C4H8O2 | 141-78-6 | 4000 |
| Ethyl acrylate | C5H8O2 | 140-88-5 | 3000 |
| Ethyl alcohol | C2H6O | 64-17-5 | 4500 |
| Ethyl benzene | C8H10 | 100-41-4 | 2800 |
| Ethyl bromide | C2H5Br | 74-96-4 | 2700 |
| Ethyl ethanoate | C4H8O2 | 141-78-6 | 4000 |
| Ethyl ether | C4H10O | 60-29-7 | 3700 |
| Ethyl formate | C3H6O2 | 109-94-4 | 3000 |
| Ethyl ketone | C5H10O | 96-22-0 | 4500 |
| Ethyl methyl ketone | C4H8O | 78-93-3 | 4000 |
| Ethyl nitrile | C2H3N | 75-05-8 | 3000 |
| Ethyl oxide | C4H10O | 60-29-7 | 3700 |
| Ethylamine | C2H7N | 75-04-7 | 2700 |
| Ethylen chlorhydrin | C2H5OCl | 107-07-3 | 3000 |
| Ethylene alcohol | C2H6O2 | 107-21-1 | 3100 |
| Ethylene bromide | C2H4Br2 | 106-93-4 | 2700 |
| Ethylene chloride | C2H4Cl2 | 107-06-2 | 2700 |
| Ethylene chlorohydrin | C2H5OCl | 107-07-3 | 3000 |
| Ethylene dibromide | C2H4Br2 | 106-93-4 | 2700 |
| Ethylene dichloride | C2H4Cl2 | 107-06-2 | 2700 |
| Ethylene glycol | C2H6O2 | 107-21-1 | 3100 |
| Ethylene glycol mono ethyl ether | C4H10O2 | 110-80-5 | 3500 |

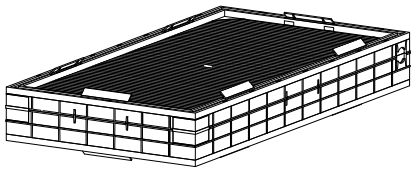
| CHEMICAL NAME | FORMULA | CAS Number | Molecode™ setting |
|---|---|---|---|
| Ethylidene chloride | C2H4Cl2 | 75-34-3 | 2800 |
| Formic acid | CH2O2 | 64-18-6 | 2600 |
| Furfuryl alcohol | C5H6O2 | 98-00-0 | 3100 |
| Furyl carbinol | C5H6O2 | 98-00-0 | 3100 |
| Glacial acetic acid (pure compound) | C2H4O2 | 64-19-7 | 2800 |
| Glutaraldehyde | C5H8O2 | 111-30-8 | 2600 |
| Glycol | C2H6O2 | 107-21-1 | 3100 |
| Heptan-4-one | C7H14O | 123-19-3 | 4300 |
| Hexane | C6H14 | 110-54-3 | 2800 |
| Hexone | C6H12O | 108-10-1 | 2800 |
| Hydroxybenzene | C6H6O | 108-95-2 | 2800 |
| Hydroxycyclohexane | C6H12O | 108-93-0 | 3000 |
| IPA | C3H8O | 67-63-0 | 4100 |
| Isoamyl acetate | C7H14O2 | 123-92-2 | 3700 |
| Isoamyl alcohol | C5H12O | 71-41-0 | 3200 |
| Isobutanol | C4H10O | 78-83-1 | 2800 |
| Isobutenyl methyl ketone | C6H10O | 141-79-7 | 3000 |
| Isobutyl acetate | C6H12O2 | 110-19-0 | 3000 |
| Isobutyl alcohol | C4H10O | 78-83-1 | 2800 |
| Isobutyl methyl carbinol | C6H14O | 108-11-2 | 2700 |
| Isobutyrone | C7H14O | 565-80-0 | 2800 |
| iso-Nitropropane | C3H7NO2 | 79-46-9 | 3000 |
| Isooctane | C8H18 | 540-84-1 | 3400 |
| Isopentane | C5H12 | 78-78-4 | 3500 |
| Isopentyl acetate | C7H14O2 | 123-92-2 | 3700 |
| Isoprene | C5H8 | 78-79-5 | 2800 |
| Isopropanol | C3H8O | 67-63-0 | 4100 |
| Isopropyl acetate | C5H10O2 | 108-21-4 | 3000 |
| Isopropyl alcohol | C3H8O | 67-63-0 | 4100 |
| Isopropyl benzene | C9H12 | 98-82-8 | 3000 |
| Isopropyl benzene | C9H12 | 98-82-8 | 3000 |
| Isopropylcarbinol | C4H10O | 78-83-1 | 2800 |
| Isopropylideneacetone | C6H10O | 141-79-7 | 3000 |
| MEK | C4H8O | 78-93-3 | 4000 |
| Mesityl oxide | C6H10O | 141-79-7 | 3000 |
| Mesitylene | C9H12 | 108-67-8 | 4000 |
| Methanoic acid | CH2O2 | 64-18-6 | 2600 |
| Methanol | CH4O | 67-56-1 | 4200 |
| Methyl acetate | C3H6O2 | 79-20-9 | 3000 |
| Methyl acetone | C4H8O | 78-93-3 | 4000 |
| Methyl alcohol | CH4O | 67-56-1 | 4200 |
| Methyl benzene | C7H8 | 108-88-3 | 3000 |
| Methyl butyl ketone | C6H12O | 591-78-6 | 2800 |
| Methyl celllosolve | C3H8O2 | 109-86-4 | 2700 |
| Methyl chloroform | C2H3Cl3 | 71-55-6 | 2700 |
| Methyl cyanide | C2H3N | 75-05-8 | 3000 |
| Methyl cyclohexanol | C7H14O | 25639-42-3 | 3800 |
| Methyl ethyl ketone | C4H8O | 78-93-3 | 4000 |
| Methyl formate | C2H4O2 | 107-31-3 | 2700 |
| Methyl isobutenyl ketone | C6H10O | 141-79-7 | 3000 |
| Methyl isobutyl ketone | C6H12O | 108-10-1 | 2800 |
| Methyl metacrylate | C5H8O2 | 80-62-6 | 3000 |
| Methyl propyl ketone | C5H10O | 107-87-9 | 4000 |
| Methyl styrene | C9H10 | 25013-15-4 | 3700 |
| Methyl-2-propanol-2 | C4H10O | 75-65-0 | 3000 |
| Methyl-3-butanol-1 | C5H12O | 71-41-0 | 3200 |
| Methylal | C3H8O2 | 109-87-5 | 3800 |
| methylamyl alcohol | C6H14O | 108-11-2 | 2700 |
| Methylethyl carbinol | C4H10O | 78-92-2 | 4200 |
| MIBC | C6H14O | 108-11-2 | 2700 |
| MIBK | C6H12O | 108-10-1 | 2800 |
| n-Amyl acetate | C7H14O2 | 123-92-2 | 3700 |

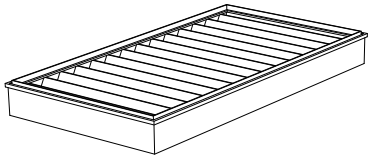
| CHEMICAL NAME | FORMULA | CAS Number | Molecode™ setting |
|---|---|---|---|
| Naphta 30/60 | 85% Nonane/15% trimethylbenzene | 8052-41-3 | 3600 |
| n-Butanol | C4H10O | 71-36-3 | 4000 |
| n-Butyl acetate | C6H12O2 | 123-86-4 | 3000 |
| n-Butyl amine | C4H9NH2 | 109-73-9 | 2800 |
| n-Butyl chloride | C4H9Cl | 109-69-3 | 3000 |
| N-Ethylethanamine | C4H11N | 109-89-7 | 3200 |
| n-Hexane | C6H14 | 110-54-3 | 2800 |
| Nitroethane | C2H5NO2 | 79-24-3 | 3700 |
| Nitropropane 2 | C3H7NO2 | 79-46-9 | 3000 |
| n-Octane | C8H18 | 111-65-9 | 3400 |
| Nonane all isomers | C9H20 | 111-84-2 | 3600 |
| n-Pentane | C5H12 | 109-66-0 | 3000 |
| o-Xylene | C8H10 | 95-47-6 | 2800 |
| p-Dichlorobenzene | C6H4Cl2 | 106-46-7 | 2700 |
| Pentanol 1 | C5H12O | 71-41-0 | 3200 |
| Phenol | C6H6O | 108-95-2 | 2800 |
| Phenyl chloride | C6H5Cl | 108-90-7 | 2700 |
| Phenyl hydroxide | C6H6O | 108-95-2 | 2800 |
| Phenylethane | C8H10 | 100-41-4 | 2800 |
| Phenylethylene | C8H8 | 100-42-5 | 2800 |
| Phenylmethane | C7H8 | 108-88-3 | 3000 |
| Propanol-1 | C3H8O | 71-23-8 | 4100 |
| Propyl acetate | C5H10O2 | 109-60-4 | 3000 |
| Propyl alcohol | C3H8O | 71-23-8 | 4100 |
| Propylacetate | C5H10O2 | 109-60-4 | 3000 |
| Propylamine | C3H9N | 107-10-8 | 3500 |
| Propylbenzene | C9H12 | 108-67-8 | 4000 |
| Propylene aldehyde | C4H6O | 4170-30-3 | 3600 |
| Propylene chloride | C3H6Cl2 | 78-87-5 | 4500 |
| Propylene dichloride | C3H6Cl2 | 78-87-5 | 4500 |
| Propylene oxide | C3H6O | 75-56-9 | 2800 |
| Pyridine | C5H5N | 110-86-1 | 2700 |
| SBA | C4H10O | 78-92-2 | 4200 |
| sec-Amyl acetate | C7H14O2 | 123-92-2 | 3700 |
| sec-Butyl amine | C4H9NH2 | 13952-84-6 | 2800 |
| Stoddard solvent | 85% Nonane/15% trimethylbenzene | 8052-41-3 | 3600 |
| Styrene | C8H8 | 100-42-5 | 2800 |
| ter-Butyl acetate | C6H12O2 | 540-88-5 | 3500 |
| tert-Butyl alcohol | C4H10O | 75-65-0 | 3000 |
| Tetrahydrofuran | C4H8O | 109-99-9 | 4200 |
| THF | C4H8O | 109-99-9 | 4200 |
| TMA | C3H9N | 75-50-3 | 2700 |
| Toluene | C7H8 | 108-88-3 | 3000 |
| Toluol | C7H8 | 108-88-3 | 3000 |
| Tribromomethane | CHBr3 | 75-25-2 | 2800 |
| Triethylamine | C6H15N | 121-44-8 | 2700 |
| Trimethyl carbinol | C4H10O | 75-65-0 | 3000 |
| Trimethyl pentane-2,2,4 | C8H18 | 540-84-1 | 3400 |
| Trimethylamine | C3H9N | 75-50-3 | 2700 |
| Trimethylbenzene | C9H12 | 108-67-8 | 4000 |
| Turpentine oil | C10H16 | 8006-64-2 | 3500 |
| Vinyl acetate | C4H6O2 | 108-05-4 | 3500 |
| Vinyl carbinol | C3H6O | 107-18-6 | 2800 |
| Vinyl toluene | C9H10 | 25013-15-4 | 3700 |
| Vinylbenzene | C8H8 | 100-42-5 | 2800 |
| White spirit | 85% Nonane/15% trimethylbenzene | 8052-41-3 | 3600 |
| Xylene (isomers) | C8H10 | 1330-20-7 | 2800 |

# REPLACING THE FILTERS

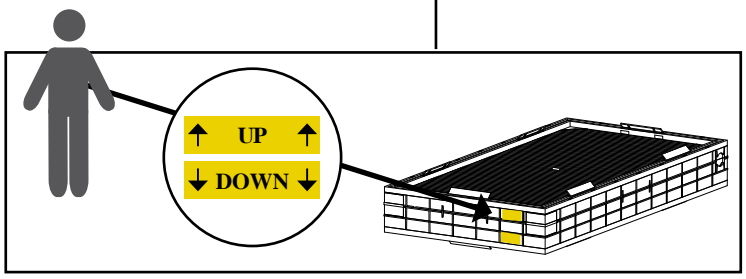
Your device is equipped with FLEX™ technology that was configured to the user's protection needs when the device was purchased. The design of the column is thus directly dependent on the applications carried out in the enclosure. These applications may change over time. Your FLEX™ technology can therefore be reconfigured if your fume hood is used for applications other than those anticipated when the device is first set up.

The table below summarizes all possible Flex™ technology configurations for your device.





| | | Molecular filter | HEPA filter H14 |
|---|---|---|---|
| SD321 - SD 391 - SD 481 - SD 631 | 1C | x1 | |
| SD321 - SD 391 - SD 481 - SD 631 | 2C | x2 | |
| SD 321 | 1P | | x1 |
| SD321 - SD 391 - SD 481 - SD 631 | 1P 1C | x1 | x1 |
| SD321 - SD 391 - SD 481 - SD 631 | 1P 2C | x2 | x1 |
| SD321 - SD 391 - SD 481 - SD 631 | 1C 1P | x1 | x1 |
| SD321 - SD 391 - SD 481 - SD 631 | 2C 1P | x2 | x1 |

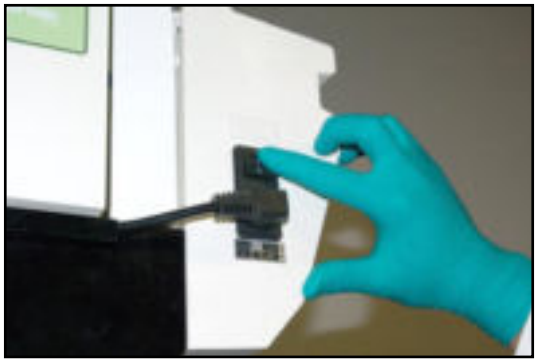



Each molecular filter is labeled as shown at left. Please follow these markings.

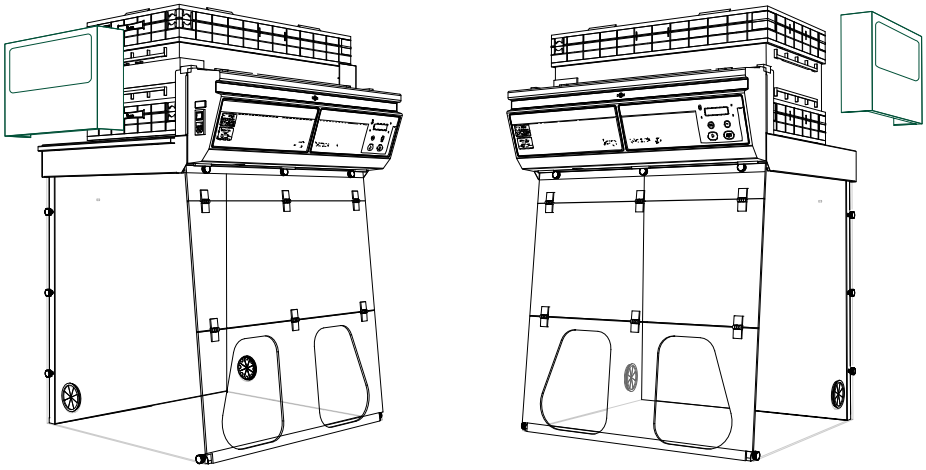
The table below summarizes the different types of carbon filters that erlab® offers as well as the range of application of these filters.

| | |
|---|---|
| **Type AS** | For organic vapors |
| **Type BE +** | For acid and organic vapors |
| **Type K** | For ammonia vapors |
| **Type F** | For formaldehyde vapors |
| **HEPA H14** | For powders |

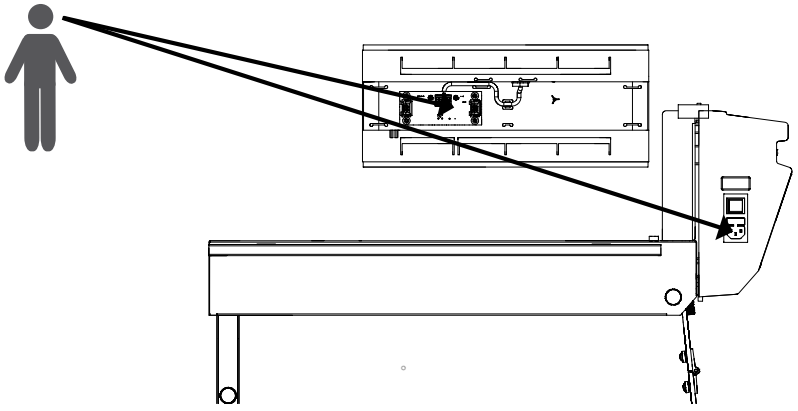
For these operations, we strongly recommend that the user or maintenance technician wear the necessary safety equipment, including: safety glasses, a safety suit, and gloves.



Turn off your Captair® Flex™ fume hood.



Remove the two protective casings on either side of the hood.

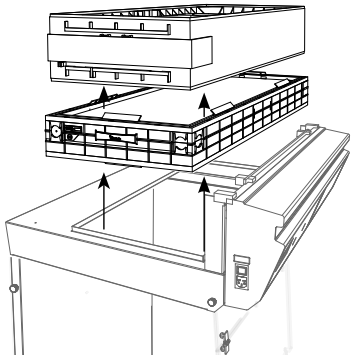


You should be able to see the ventilation card located beside the master switch.

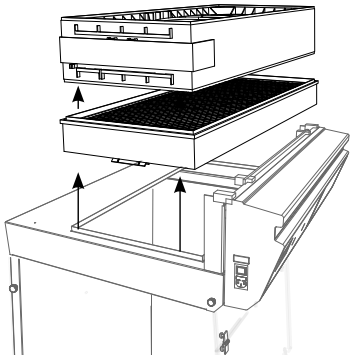
Disconnect the power supply to the ventilation card then the flexible silicone tube.

Remove all items comprising your fume hood's Flex™ technology.

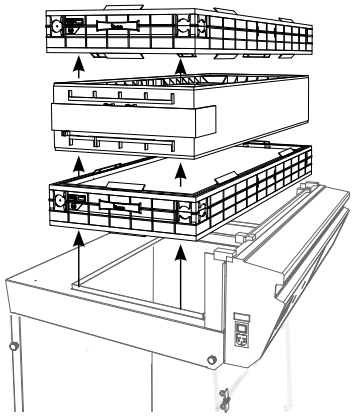
1C



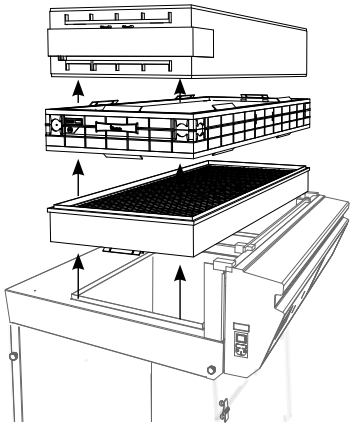
1P



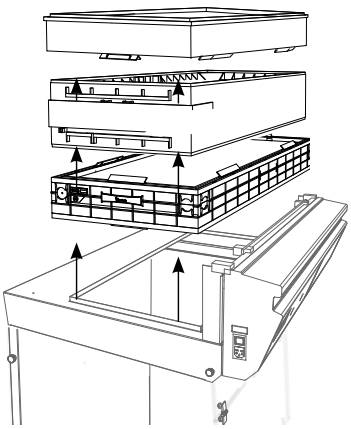
2C



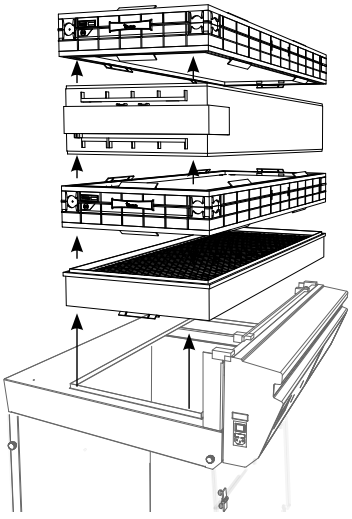
1P 1C



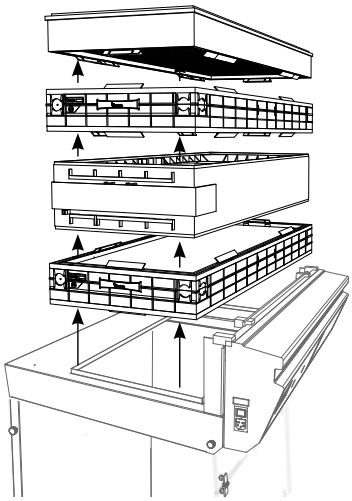
1C 1P



1P 2C

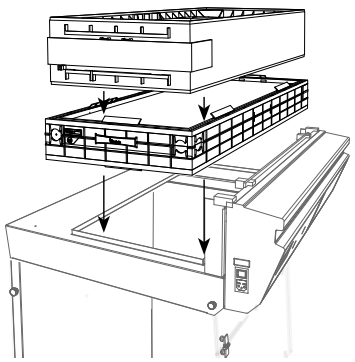


2C 1 P

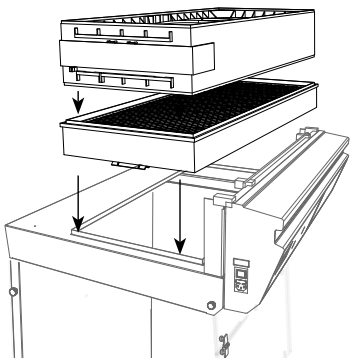


After carefully removing the filters from their packaging, assemble the column based on the Flex™ technology to be installed.

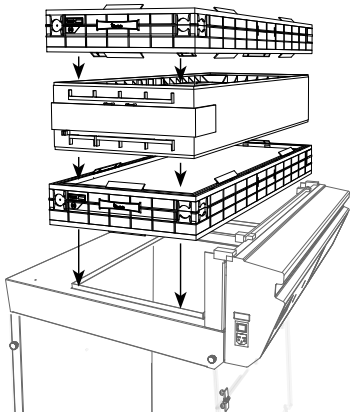
1C



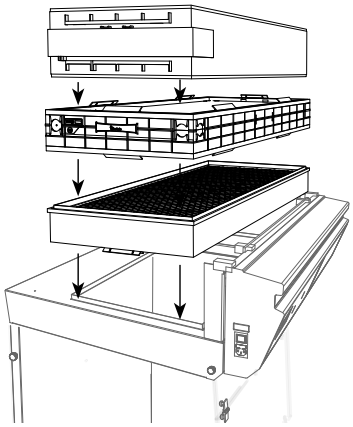
1P



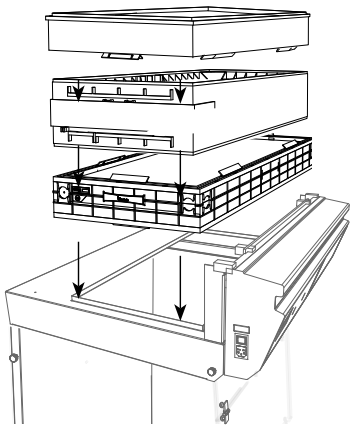
2C



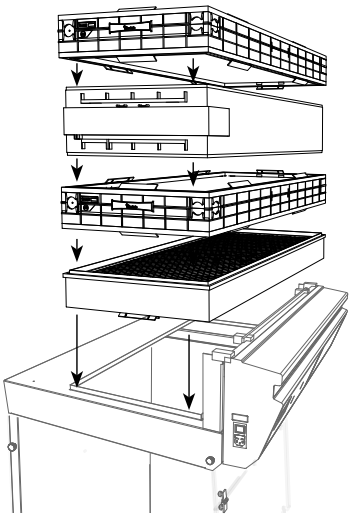
1P 1C



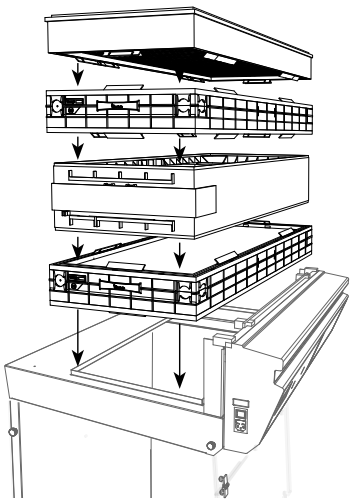
1C 1P

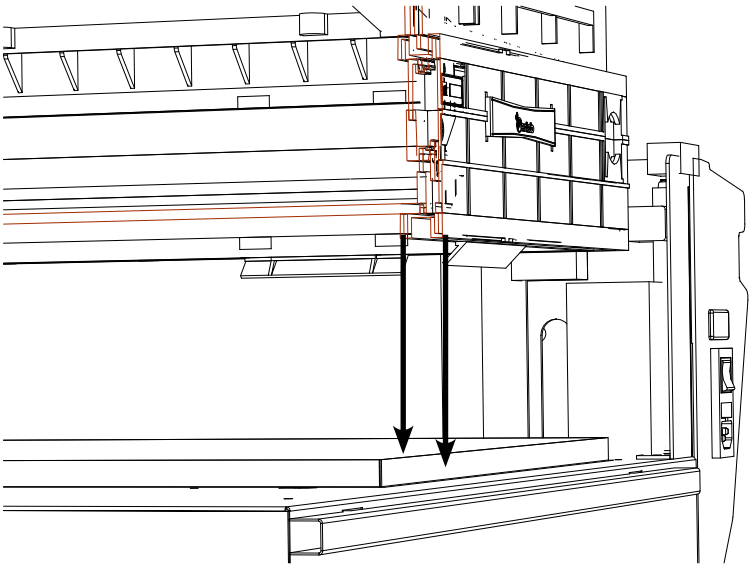


1P 2C



2C 1 P

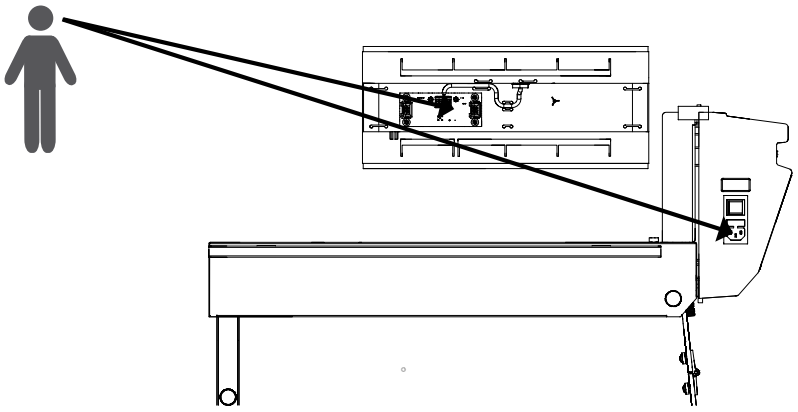




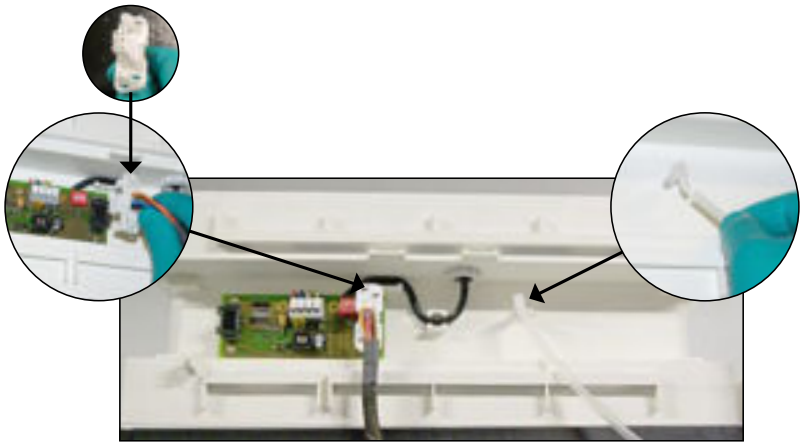
**The column is guaranteed to be airtight:**

The design of the filtration cartridges guarantees that the filtration column is completely airtight. The vertical stacking principle of the modular filtration column uses a gel-based joint technology that, when applied to the perimeter of all of the filtration cartridges, ensures a perfect seal of the entire column thanks to gravity.

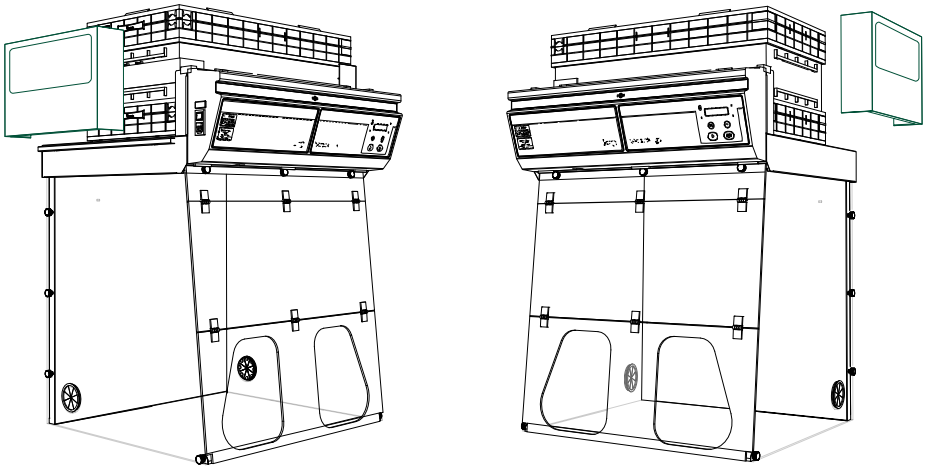
Be sure that the filters are positioned as shown in this diagram.



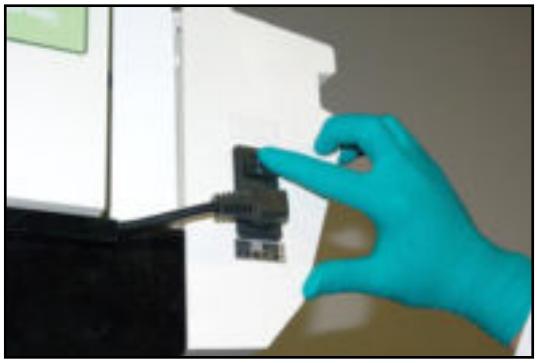
When reassembling the filtration column, be sure that the ventilation module is positioned correctly.



Reconnect the power supply to the ventilation card and the flexible silicone tube to the sampling chamber.



Re-attach the two protective casings.



You may then turn on your Captair® Flex™ fume hood.

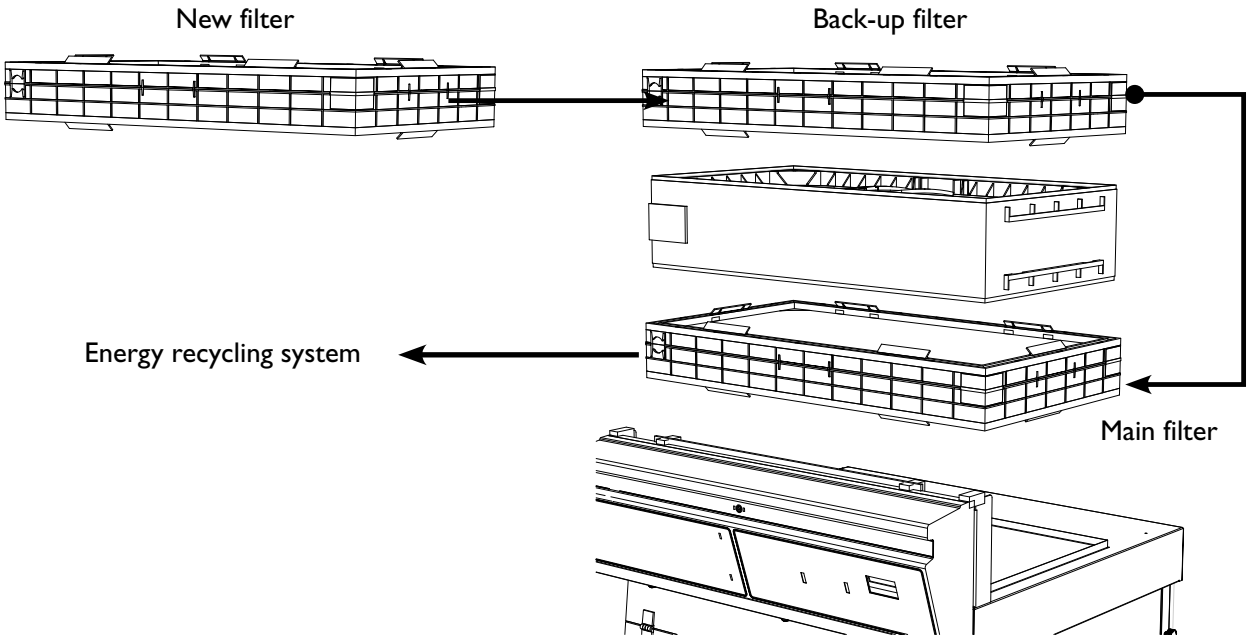
**Do not forget to record the information related to the new filter installed by accessing the menus of the digital display screen (menu 1-3).**

# THE «REVOLVING» SYSTEM

This simple concept involves placing one chamber equipped with a molecular detection system between two filters having the same capacity. When the main filter is saturated, the molecules are directed to an identical back-up filter that is placed just above the detection chamber.

This system prevents all molecules from being released into the environment since they are automatically absorbed by the back-up filter. The back-up filter replaces the main filter when the main filter has reached its maximum saturation point. A new filter is then installed in place of the back-up filter. This cycle may be repeated indefinitely.

Compared to traditional filtration systems, the "revolving filter" concept increases the retention capacity of the filter by 25% and decreases replacement costs by 25%.




The "revolving system" may be used with following Flex™ technology types:

**1P 2C** **2C** **2C 1 P**

# CLEANING AND MAINTENANCE

## CHECKING THE MECHANICAL PARTS

**Hinges:**
Hinges must be properly attached and should not jam; they must allow the front panel of the hood to be instantly and easily lifted upward.

**Acrylic parts:**
These parts must be clean; white streaks or spatters indicate rather heavy use of acid (hydrocholoric acid) or products handled at a high temperature. Ensuring the transparency of the panels is a part of regular maintenance for the enclosure.

## CLEANING THE ENCLOSURE

**The enclosure must be cleaned on a regular basis.**

This can be done using several different methods:

- Using soapy water then rinsing with clean water and drying with a smooth, non-abrasive paper towel.

- Using a commercial pH neutralizer and drying with a smooth, non-abrasive paper towel.

- Using a commercial window cleaner.

**Metal-plated parts:**
These parts should be inspected and must be free from any sign of corrosion.
Verify that there is no stagnant water in the retention tray.
Clean the retention tray if necessary.

# WARNING

# WARNING

The E.S.P.® program (Erlab Safety Program) was established to guarantee your safety. We remind you of the need to verify the safety parameters before using the device for the first time and in the event of a new application.

Substances that are carcinogenic, mutagenic, or toxic for reproduction (CMRs) may be handled underneath a fume hood according to the French Labor Code. However, the nature of these chemicals requires special attention from their users.

The device is not designed to be used in an explosive environment.
The filters delivered with this device must be removed from their packaging, positioned correctly, and must be suitable for the type of chemicals being handled in order to guarantee user safety.

Erlab® recommends testing for filter saturation on a regular basis.

Although the Timer™ alarm can be deactivated, Erlab® recommends keeping the alarm activated. This alarm is triggered after every sixty hours of operation.

Erlab® recommends regularly monitoring the air face velocity according to the values set forth by AFNOR NF X 15-211: 2009 standard.

The quantities of the chemicals handled in the enclosure should not be greater than those listed in the guide of approved chemicals (the Chemical Listing).

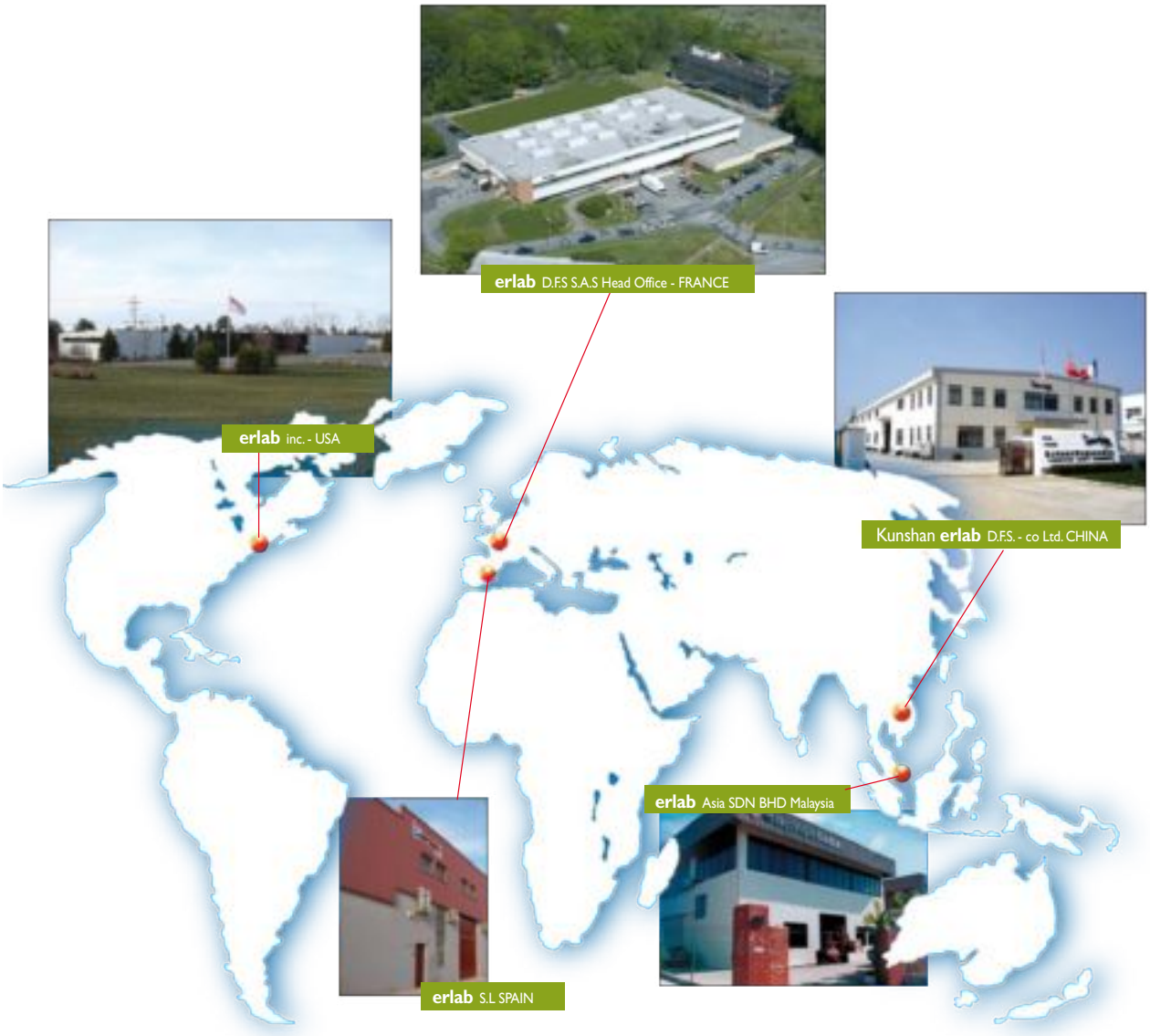
AFNOR NF X 15-211: 2009 standard specifies that only those chemicals with a TLV (Threshold Limit Value) should be handled in the enclosure. These chemicals must also be included in the exhaustive list of authorized substances provided by erlab®. In accordance with NF X 15-211: 2009 standard, it is only possible to carry out operations that can be immediately stopped in a class 2 enclosure. The fume hood's filter must also be replaced as soon as the presence of a chemical is detected downstream from the filter.

New filters must be stored in their packaging, laid flat, in a dry place.

Erlab® recommends keeping a log specific to this device that includes the chemicals handled, the frequency with which these chemicals are handled, as well as any operations related to device maintenance.

**Feel free to contact our company at any time with any questions related to the set-up, maintenance, or use of this device.
Our team is at your disposal, providing you with clear and detailed responses in a timely manner.**

# erlab® group World Leader




## www.erlab.com

### EUROPE

**FRANCE :**

**erlab** D.F.S. S.A.S.
Parc d'Affaires des Portes BP 403
27104 Val de Reuil Cedex
Tel. : +33 (0)2 32 09 55 80
Fax. : +33 (0)2 32 09 55 90
E-Mail : Ventes@erlab.net

**U.K. :**

**erlab** D.F.S. S.A.S.
UK and Ireland representation office
Home Farm Buildings / Home Farm
Netherhampton - Salisbury - SP2 8PJ
Tel. : +44 (0)1722 341 940
Fax. : +44 (0)1722 341 950
E-Mail : SalesUK@erlab.net

**GERMANY :**

**erlab** D.F.S. S.A.S.
Vertretungsbüro Deutschland
Siegburger Straße 215
50679 Köln
Tel. : (0)800 330 47 31
Fax : (0)800 330 47 32
E-Mail : Verkauf@erlab.net

**International sales**
sales@erlab.net

**ITALY :**

**erlab** D.F.S. S.A.S.
Ufficio di rappresentanza in Italia
Via Leone XIII, 10 – 20145 Milano
Tel. : +39 (0)2 89 00 771
Fax. : +39 (0)2 72 097 812
E-Mail : Vendite@erlab.net

**SPAIN :**

**erlab** S.L.
Pol. Ind. Sur
Passaje Newton 3A
08754 El Papiol-Barcelona
Tel. : +34 93 673 24 74
Fax. : +34 93 673 24 76
E-Mail : Ventas@erlab.net

### NORTH AMERICA

**U.S.A. :**

**erlab** inc.
388 Newburyport Turnpike
Rowley, MA 01969
Tel : +1 (978) 948-2216
Fax : +1 (978) 948-3354
E-mail : captairsales@erlab.com

### ASIA

**CHINA :**

**Kunshan erlab** D.F.S. co Ltd.
100 Liu Shi Jing, road
Kunshan Development Zone
Jiangsu Province
Penglang - P.R. China 215333
Tel. : +86 (0) 512 5781 4085
Fax. : +86 (0) 512 5781 4082
E-mail : Sales.china@erlab.com.cn

**MALAYSIA :**

**erlab asia** sdn bhd
25 Jalan Firma - /1 Kawasan Perindustrian
Tebrau - 81 100 Johor Bahru, Johor State
Tel. : +60 (0)7 3 555 724
Fax. : +60 (0)7 3 552 810
E-Mail : Erlab@tm.net.my