OPERATING & MAINTENANCE MANUAL

CHEMFAST
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1. GENERAL

The fume cupboards operating with molecular filtration system CHEMFAST are designed to meet all safety requirements of operator and environment whenever vapours, aerosols and chemicals are used in the routine work in laboratories. They must not be used when large quantities of solvents are evaporated, in acid digestion procedures or when working with unknown chemicals.

Especially suitable for applications such as:
- Chemicals handling
- Practice in schools
- Cytology
- Hematology/Pathology
- Sterilization of endoscopes
- Ria test
- Manipulation of radioactive labelled compounds
- Assembly of medical devices

The performances of the cabinets are detailed in the TESTING CERTIFICATE below, in compliance with the requirements of:
- BS 7258-1: Laboratory Fume Cupboards Part 1: Specification for safety and performance

The fume cupboards CHEMFAST fulfil the harmonized standards EN 61010-1 as well as EN 61326 according to the applicable European directives regarding the CE marking. The fume cupboards CHEMFAST comply with the above-mentioned Directives ONLY if the instrumentation that is eventually connected to the electric socket positioned inside the work chamber are "CE" marked or in any case meets the standards mentioned in the above directives aiming to avoid any electromagnetic interference.

All FASTER's cabinets are provided with high insertion loss filters.

Faster s.r.l. disclaims any responsibilities for malfunctions, damages to people or properties due to non-compliance, omitted or poor maintenance, and improper use of the equipment.

Attention: The CHEMFAST is not suitable for working in sterility and cannot be used either as biosafety cabinet or for cytotoxic drugs.
2. INSTALLATION

2A. INSTRUCTIONS AND CHECKS ON DELIVERY

Installation plays an important role for CHEMFAST cupboards, whose use is sometimes critical; therefore they should always operate under their best conditions. The fume cupboards CHEMFAST are located on a pallet, wrapped into a stretchable film and placed inside a multilayer strapped cardboard package.

For a general check, place the unit in its working place, open the package and remove the stretchable film, then check if the unit has suffered from any dents or scratches due to transportation or incorrect handling.

In case of transportation, packaging and stocking by the user after a first period of use (i.e. laboratory or plant change), contact the technical service or the distributor in order to obtain accurate and precise directions or to ask for the intervention of qualified technicians.

CHEMFAST fume cupboards - with or without packages - must always be sheltered from rain.

2B. INSTALLATION REQUIREMENTS

During installation, the unit shall be protected from draughts and heat sources (radiator, fan convectors) in order to create the best working conditions.

- The clearance around the work opening shall measure at least 1,000 mm.
- The front distance between the work openings of two cupboards used by one single operator shall measure at least 1,500 mm.
- No walls or obstacles should affect the air flow within 1,500 mm from the work opening.
- No cupboard shall be installed where it could be disturbed by another equipment and/or unit.
- The distance between the work opening and any air source shall be at least 2,000 mm.
- The distance between the front opening and the door or any other entrance way shall be at least 1,500 mm.
- The distance from the exhaust to the ceiling shall be at least 200 mm.

Min. temperature: 5 °C
Max. temperature: 40 °C
Max. humidity: 80% at 31 °C, linear drop in relative humidity down to 50% relative humidity at 40 °C.

Before connecting the fume cupboard to the main power supply, check the voltage and power on the label next to the power cable. The room must be grounded, connected to the gas and/or vacuum network, if required, and fitted with an air exhausting duct outside the building where the unit is to be installed (if air shall be discharged outside, instead of being recirculated in the environment).

The unit is always installed by Faster S.r.l. authorized staff.
2C. ELECTRICAL/GAS CONNECTION

The electrical connection of the fume cupboard CHEMFAST is carried out by connecting the power cable located on the upper of the right side of the cabinet to a suitable power point (see technical table). When the cabinet is connected, the green light on the control panel switches on (see chapter 4D).

If provided by the laws in force, insert an automatic protection switch (at its maximum power) upstream on the power input line. The switch shall be fitted with a differential relay with operating rat current not exceeding 30 mA.

Any instrument with a heat source shall be located at a distance of at least 150 mm from the bottom and side walls. Moreover we recommend not to use a flame at less than 300 mm from the adsorbing filter.

2D. POSITIONING OF THE CABINET ON THE SUPPORTING TABLE

ChemFAST cupboards can be supplied with the relevant supporting table, which they have to be fixed to.

After assembling the supporting table (see instructions at para. 14) put the supporting table on a flat not sloping floor and be sure that all the parts of the cabinet, that can be opened (control board panel and window) are locked. Then position the cabinet on the table.
### Technical Features Table

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>ChemFAST 6</th>
<th>ChemFAST 9</th>
<th>ChemFAST 12</th>
<th>ChemFAST 15</th>
<th>ChemFAST 18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Dimensions (L x H x P(*))</td>
<td>mm</td>
<td>595x1120x760</td>
<td>885x1120x760</td>
<td>1185x1120x760</td>
<td>1500x1120x760</td>
<td>1800x1120x760</td>
</tr>
<tr>
<td>Useful dimensions (L x H x P)</td>
<td>mm</td>
<td>553x660x600</td>
<td>823x660x600</td>
<td>1123x660x600</td>
<td>1438x660x600</td>
<td>1738x660x600</td>
</tr>
<tr>
<td>Maximum front aperture</td>
<td>mm</td>
<td>455</td>
<td>455</td>
<td>455</td>
<td>455</td>
<td>455</td>
</tr>
<tr>
<td>Working aperture</td>
<td>mm</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Weight</td>
<td>Kg</td>
<td>70</td>
<td>85</td>
<td>100</td>
<td>115</td>
<td>130</td>
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<tr>
<td>Noise level</td>
<td>dB (A)</td>
<td>52</td>
<td>52</td>
<td>52</td>
<td>52</td>
<td>52</td>
</tr>
<tr>
<td>Lighting level</td>
<td>Lux</td>
<td>&gt;1000</td>
<td>&gt;1000</td>
<td>&gt;1000</td>
<td>&gt;1000</td>
<td>&gt;1000</td>
</tr>
<tr>
<td>Frequency</td>
<td>Hz</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Power consumption (measured at 0.55m/s)</td>
<td>W</td>
<td>88</td>
<td>122</td>
<td>207</td>
<td>210</td>
<td>297</td>
</tr>
<tr>
<td>Current (measured at 0.55m/s)</td>
<td>A</td>
<td>0,527</td>
<td>0,665</td>
<td>1,06</td>
<td>1,23</td>
<td>1,55</td>
</tr>
<tr>
<td>Electrical class</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Protection level</td>
<td></td>
<td>IP20</td>
<td>IP20</td>
<td>IP20</td>
<td>IP20</td>
<td>IP20</td>
</tr>
<tr>
<td>Internal outlet (maximum current for all the sockets: 4A)</td>
<td></td>
<td>2P+T 230V 4A</td>
<td>2P+T 230V 4A</td>
<td>2P+T 230V 4A</td>
<td>2P+T 230V 4A</td>
<td>2P+T 230V 4A</td>
</tr>
<tr>
<td>Fluorescent lamps</td>
<td>W</td>
<td>2x15</td>
<td>2x18</td>
<td>2x30</td>
<td>2x36</td>
<td>2x58</td>
</tr>
</tbody>
</table>
3. OPERATION PRINCIPLES

The working process for the CHEMFAST is the following:

- air is taken from outside through the front opening; the contaminant is removed at work surface level and is carried upwards into the upper part or head of the fume cupboard, with an air flow.

- inside the fume cupboard head, air goes through a prefilter which cleans the air from particles and aerosol or mist; then air goes through an activated charcoal filter (standard type and chemiadsorbing type) where the physical, chemical-physical and chemical reactions to remove the contaminant from the air flow take place. The air is then exhausted outside the fume cupboard and recirculated in the environment.
4. OPERATION

4A. SCOPE

The fume cupboards CHEMFAST are designed to protect the operator and the environment from fumes, vapours and smells produced during routine laboratory operations whenever chemicals, reagents etc. are used. Their use is NOT recommended for particular workings which do not belong to laboratory routines, such as those generating large quantities of evaporated solvents, acid digestions and the use with solvents whose nature, structure and chemical formula are unknown.

4B. SYSTEM AND PERFORMANCE CONTROLS

The fume cupboards CHEMFAST are fitted with regulator in order to keep the airflow speed constant with the progressive clogging/saturation of the main activated charcoal filter and prefilter.

The control panel is fitted with various controls, such as:

CHEMFAST-Top

- manual regulation for airflow speed
- hours counter monitoring the real operation time of the fume cupboard

CHEMFAST-Elite

- microprocessor for air speed, prefilter and main filter efficiency automatic control
- alarm devices for low/high airflow speed, device monitoring possible explosive concentrations, motorfan malfunctioning and gas sensor control
- hours counter monitoring the real operation time of the fume cupboard and the activated charcoal filter
4C. REMOTE SIGNALS (OPTIONAL AVAIBLE FOR CHEMFAST ELITE)

The electronic control board can be improved with an output signal: it is possible to obtain a 12 Vdc output to connect a led light or alternatively a Normally Open voltage free contact to be connected to an external circuit. This signal can be set in three different modes:

Motor ON:
The signal starts when ventilation is turned ON and stops when ventilation is OFF.

Alarm:
That signal is ON in case of any flow alarm and it is OFF when air flow rate is in the correct range.

LAF OK:
That signal is ON when air flow rate is in the correct range and it is OFF in case of any flow alarm.
4D. SYMBOLS OF CONTROL BOARD

List and description of all the symbols and controls of the control board:

1 MAIN SWITCH:

Position "OFF" in the "OFF" position, the green light of the mains voltage is on (4); the LCD displays the model name. In this position the operator can activate only the fluorescent light (12), the U.V. lamp (3) and the power outlet (13) (with plug installed) and can activate the data stored in the microprocessor by pressing the “Right Arrows” key (9-10).

Position "ON" Press the key "ON" [1], insert the password using the small numbers in the right lower corner of the keys and press SET. Default password is 5 [9] – 4 [6]. When the password is typed in the green led of the switch lights up and the cabinet starts operating, the motor-blower is powered and first "CHECK PANEL" then "STAND-BY" appears on the display till the air flow reaches the pre-set value. In addition, an audible alarm will sound intermittently during this stand-by period, alerting the operator not to start working yet. When the audible alarm stops and the message "STAND-BY" disappears from the display, the cabinet is ready for use. The air velocity is displayed.

NOTE: In any case, it is advisable to wait 5 minutes before starting work.
2  STAND BY (speed reduction) Not available:

3  U.V.  Not available

4  LINE  The green mains light switches on if the unit is connected to the mains and the line is live

5-6 UP/DOWN ARROWS  Use the arrow keys to scroll the menu, to program changing parameters.

The same keys are also used to change the airflow speed within the minimum and maximum set limits.

7  ESC  ESC key deletes the operation of data input and goes back to the starting condition.

When an alarm condition occurs, which is shown also by the message appearing on the LCD. By pushing "ESC" the alarm stops sounding (only if enabled). If the cause of the alarm is not resolved after 2 minutes the buzzer starts to sound again.

8  SET  SET key lets you enter the different functions or confirm the data input going back to the upper level.

9-10 LEFT/RIGHT ARROWS (ONLY CHEMFAST ELITE)  Use the arrow keys to scroll the menu:

if pressed the following data will appear on the display:

GAS concentration:

1, 2, Residual lifetime of filters: it is the operation time of the filters installed in the cabinet that can be programmed by the user. The LCD will display (for example) "RES. TIME FILTER 1=XXXX:XX h:min". When such time is over, the message "CHECK FILTER (i.e.) 1" will appear on the line below.

The filters installed in the cabinet follow the numbering listed below

<table>
<thead>
<tr>
<th>TYPE of FILTER</th>
<th>NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAIN FILTER (CARBON OR HEPA)</td>
<td>1</td>
</tr>
<tr>
<td>SAFETY FILTER (CARBON OR HEPA)</td>
<td>2</td>
</tr>
</tbody>
</table>

LAF Power: it is shown indirectly by the power supply voltage of the motor, expressed as percentage of max. load voltage displayed also in proportion by a bar.

The display shows the notice(es.): "MOT.LAF = XX % " (max.100%).

Operating Time: Shows the operating time of the cabinet from the moment when the main switch is positioned on "I"

The LCD will display (for example) "WORK TIME=XXXXXh". This value cannot be reset.
11 ALARM
When an alarm occurs the red LED lights up.

12 LIGHT
This switches on the fluorescent light; when enabled, the display shows "Light on". Switching on the fluorescent light automatically the U.V. lamp switches off.

13 SOCKET
This supplies voltage; when enabled, if the PCB for the automatic regulation is installed the display shows "POWER SUPPLY ON". The global current for all the sockets installed on the cabinet is 4 Amps.

14 GAS
Not available

15 DISPLAY
CHEMFAST ELITE: Rearlight liquid crystal "LCD" display composed of 2 lines of 20 characters each showing the operating parameters and alarms.

CHEMFAST TOP: Rearlight liquid crystal “LCD” display; it show the operating time of the cabinet.
4E. OPERATOR MENU (ONLY FOR CHEMFAST ELITE)

It’s possible enter the operator menu, with the cabinet in stand-by mode and when the cabinet is switched on, by pressing at the same time the keys “ESC” (7) and “ARROW UP” (6). Entering the operator menu while the ventilation is running it’s possible to set only the “ALARM CLOCK” and the “TIMER”.

![Diagram of operator menu options]

- Stand-by mode
- Password: ESC + UP arrow
- Operator menu
  - Set timer
  - Set alarm clock
  - UV program
  - UV residual time
  - Filter residual time
  - Language
    - Italiano
    - English
    - Espanol
    - Deutsch
    - Espanol
  - Set up the clock
  - Change password
  - History view

- Set timer
  - Set up
  - hh:mm

- Set alarm clock
  - Enable YES/NO
  - Date and hour

- UV lamp
  - Set up
  - 5000

- Filter 1 lifetime
  - Set XXXX

- Filter 2 lifetime
  - Set XXXX

- Filter 3 lifetime
  - Set XXXX

- Set up the clock
  - Date and hour

- Current password: Psw:
  - Set up password: Psw:
  - Verify password: Psw:
FILTERS RESIDUAL LIFETIME:

- use "UP/DOWN arrow" keys [5/6] to choose the desired menu
- select “FILTERS RESIDUAL LIFETIME.” and press "SET" [8] key; the display will show:

  FILTER 1 RESIDUAL LIFETIME
  set XXXX

  where XXXX shows the number of the hours set for lifetime of the FILTER 1
- Use the “up and down arrow” keys to adjust the hours parameter
- Then press the "SET" key [8] to confirm the data and pass to filter 2 and so on up to filter 5
  (as for relation between number and type of filter see table par. 4C)

LANGUAGE SELECTION

- use “UP/DOWN arrow” keys [5/6] to choice the desired menu
- select “LANGUAGE” and press the “SET” key and the following message will be shown on the display:

  LANGUAGE
  English

- With the “up and down arrow” keys select the desired language (Italian, English, French, German, Spanish).
- Press the “SET” key to confirm and exit the “LANGUAGE” menu.
SET UP THE CLOCK

- Use "UP/DOWN arrow" keys [5/6] to choose the desired menu
- Select "SET UP THE CLOCK." and press "SET" [8] key; the display will show:

  SET UP THE CLOCK
  set XXXX

- Use the “left and right arrow” keys to select the desired parameter and set it using the “up and down arrow” keys
- Then press the "SET" key to confirm the data and/or go back to previous menu

PASSWORD CHANGE

- Use "UP/DOWN arrow" keys [5/6] to choose the desired menu
- Select "PASSWORD CHANGE" and press "SET" [8] key; the display will show:

  CURRENT
  PSW:

- Digit the present Password then press “SET” key

  SET UP PASSWORD
  PSW:

- Digit the new Password then press “SET” key

  VERIFY PASSWORD
  PSW:

- Digit the password again and then press “SET” key to confirm the data and/or go back to previous menu

DISPLAY OF HISTORICAL FILES

- Use "UP/DOWN arrow" keys [5/6] to choose the desired menu
- Select "ALARMS DISPLAY " and press "SET" [8] key;
- Use "UP/DOWN arrow" keys to scroll through the list of the possible troubles happened. The list is in chronological order and contains up to 64 voices
• use "UP/DOWN arrow" keys [5/6] to choice the desired menu
• select “ALARM CLOCK” and press "SET" [8] key; the display will show:

  Alarm clock set up  
  Set up XXXX

• Use the “left and right arrow” keys to select the desired parameter and set it using the “up and down arrow” keys
• Then press the "SET" key to confirm the data and/or go back to previous menu
• Press “ESC” to abort the procedure
• When the set time is reached the buzzer start to ring and the display show this message

  ALARM CLOCK  
  ALARM

• Press the “ESC” key to silence the acoustic signal

**TIMER SET UP**

• use "UP/DOWN arrow" keys [5/6] to choice the desired menu
• select “TIMER SET UP” and press "SET" [8] key; the display will show:

  Timer set up  
  Set up XXXX

• Use the “left and right arrow” keys to select the desired parameter and set it using the “up and down arrow” keys
• Then press the "SET" key to confirm the data and/or go back to previous menu
• Press “ESC” to abort the procedure
• At the end of the countdown the buzzer start to ring and the display will show this message:

  TIMER  
  ALARM

• Press the “ESC” key to silence the acoustic signal
5. HOUR COUNTER / UV TIMER (ChemFAST Top)
Available only in English language.

5A. Hours counter

During the standard operating of the cabinet the display shows:

The hour counter starts when the ventilation is switched ON and stop when the ventilation is turned OFF.
It is possible to reset the hour counter pressing in sequence the following keys:

ESC – Arrow down – Arrow up – SET

After this the display will show this message:

WORKTIME RESET
Confirm? No

Change the answer with the arrow keys and press SET.

5B. Energy save

The hours counter/UV timer PCB has the function: Energy save:
When the cabinet is in Stand by mode, after few minutes the display switch OFF (only the green led still remain lighted).
To switch on the display it is necessary press any key.

The functions of this PCB are available only in English language.
5C. DISPOSAL OF WASTES AND CONTAMINATED MATERIALS

DISPOSAL OF ELECTRIC AND ELECTRONIC DEVICES (AEE)

<table>
<thead>
<tr>
<th>INFORMATION FOR EUROPEAN UNION USER</th>
</tr>
</thead>
<tbody>
<tr>
<td>This symbol on the device means that when it needs to be disposed, it must be handled separately from urban waste.</td>
</tr>
<tr>
<td>At the moment of the disposal, contact the dealer, to receive information about the collect and disposal in accordance with the laws in force in the country.</td>
</tr>
</tbody>
</table>

Appropriate disposal of this product will help to prevent potential negative effects on health and environment and to promotes re-use and / or recycling of materials of the equipment.

The improper disposal of the product by holder involves the application of sanctions in accordance with the regulations in their own country.

<table>
<thead>
<tr>
<th>INFORMATION FOR USERS OUTSIDE THE EUROPEAN UNION</th>
</tr>
</thead>
<tbody>
<tr>
<td>This symbol is valid only in the European Union. If you want to dispose this product, contact your local authorities or dealer and ask for the correct method of disposal.</td>
</tr>
</tbody>
</table>

**ATTENTION:** Before disposal, the cabinet where contaminants and pathogens have been manipulated, must be sterilized

The materials replaced during maintenance operations are activated charcoal filters and pre-filters. Obviously, these materials are not toxic when they are new; they become toxic after using them, since they absorb a number of contaminant agents (generally speaking chemical substances). The above materials shall be considered just like the substances used in the fume cupboard. Therefore, for their disposal and treatment, it is necessary to comply with the relevant local regulations and ministerial decrees.

5D. ERGONOMICS

This cabinet has been designed and manufactured according to the general directions on the ergonomics provided for by the EN ISO 14738 standard. Furthermore all maintenance operations are assured to be carried out in safety by merely following the instructions given in this manual at chapter 7.
6. LIMITATIONS

Conditions for a correct use of the fume cupboard.

We list below the most important conditions and the substances to avoid for a correct use of the fume cupboard:

- DO NOT use manipulations/reactions generating large quantities of solvents and/or industrial quantities.
- AVOID operations such as acid digestions, operations with radioactive compounds in potentially hazardous quantities, avoid the use with substances having an unknown formula, nature and origin.
- DO NOT use the fume cupboard for manipulations/operations if the activated charcoal filter installed is not adequate. In case of doubts, contact the FASTER S.r.l. distributor.
- DO NOT use the fume cupboard if the pre-filter is clogged and/or the activated charcoal filter is saturated.
- DO NOT use the fume cupboard if the front side is totally open, since this could create a drastic reduction in the airflow speed and in efficiency.
- AVOID high concentrations of smokes, for instance in case of an accidental leakage of chemicals, since this could create a temporary block of the main filter. Therefore, immediately remove/clean the spillage (preferably by using adsorbent granules). The use of adsorbent papers or fabrics could worsen the evaporation process. In case of several spillages, it is necessary to remove the filter and replace it with a new one. The old filter, once stabilized after a few days, can be used again if not saturated.
7. OPERATING PROCEDURES

7A. GENERAL OPERATING INSTRUCTIONS

Before carrying out any type of action, the operator shall check the following conditions:
- That the cabinet power cable is connected to a power point at a suitable voltage and frequency as per instructions shown on the label stuck near the electric cable.
- The fume cupboard can work in an efficient way if the filter installed was correctly selected according to the type of application (in case of doubts, contact Faster S.r.l. distributor).
- Periodically check the efficiency of the activated charcoal filter and pre-filter.
- When you use the fume cupboard, the front door shall ALWAYS be completely lowered in order to obtain the maximum airflow speed.
- For information purposes, reduced airflow speeds (<0.4 m/s) indicate reduced toxic vapours containment capacities. Therefore, we recommend to work at speeds higher than 0.5 m/s, except for the storage of reagents bottles or when low toxicity compounds are handled.
- We recommend to replace the pre-filter each time you replace the activated charcoal filter. A spare filter should always be kept available, in case of emergency.

7B. FUME CUPBOARD SWITCHING ON

To start the cabinet, proceed as indicated below:

1. turn on the light by pushing the blue button [10]
2. press the main key I/0 (see chapter 4D.) and enter the password to switch on the cabinet (5 – 4 – SET). At first the display shows “CHECK PANEL” and the corresponding control leds of the keyboard light up. Then the message “STAND-BY” is displayed for about 40 seconds and the hour-counter starts operating
3. after 40 seconds of stand-by, the cabinet is ready for work. "STAND-BY" disappears from the screen and the LAF velocity are displayed
4. Adjust the airflow speed by means of the HIGH/LOW ARROW keys of the keyboard, according to the type of process to carry out.

7C. FUME CUPBOARD SWITCHING OFF

Once the process is over, carry out the following actions:

1. Remove any waste material from the work chamber.
2. Clean the work surface and the inner chamber walls as described under "Cleaning instructions" (chapter 7A).
3. If the lamp is on, switch it off by pressing the keyboard key.
4. press “I/0” key switch and enter the password for switching off the cabinet (5 – 4 – SET).
8. MAINTENANCE

ATTENTION: Disconnect the fume cupboard from the main power supply before carrying out the operations described below.

8A. INSTRUCTIONS FOR SIX-MONTH CLEANING (By The User)

- Remove and clean the work surface and the side walls, the bottom and the front door with a diluted detergent solution. This should be a non-corrosive solution for the fume cupboard structure.
- Control the side walls, the bottom and the front door in order to check if there are corrosive actions and damage/breakage to the structure.
- Control the hinged doors for corrosion; if necessary adjust the hinge friction by acting on the central adjusting screw.
- Remove the prefilter/s and filter/s and control the head inside and the fan assembly for correct operation.

8B. CONTROL AND MONITORING PROCEDURES

The monitoring of the fume cupboard CHEMFAST operating parameters aims at assuring an efficient operation. In particular: the use of fume cupboards with clogged prefilter/s implies a reduction in the airflow speed and therefore a non-removal of the contaminant. Their use with saturated activated charcoal filter/s implies the non-removal of the contaminant.

With CHEMFAST-Elite fume cupboards, the microprocessor monitors the airflow speed; therefore there is no need for the operator to check the prefilter. With CHEMFAST-Top fume cupboards, which are not fitted with an airflow speed control system, the prefilter must be controlled manually every month or every three month, according to the amount of work carried out, by the user or by a service company with adequate monitoring devices.

Cupboards like the CHEMFAST-Elite (fitted with an optional gas detector), a gas detector constantly monitors the exhaust air and is able to signal possible concentrations of explosive gases.

NOTE: We remind that the smell of some compounds (e.g. H₂S or NH₃) is very strong. Therefore the presence of smells does not automatically imply a higher concentration of solvent in the air than that allowed.

AIRFLOW SPEED MEASUREMENT (carried out on a monthly basis by the user)

The airflow speed is measured by means of an anemometer which can be a hot-wire, fan, vane anemometer or others.

Start the fume cupboard and wait at least 5 minutes to balance the airflow speed. Minimum three readings should be taken across the working opening; note these data in the "CHEMFAST monitoring card". If the average airflow is lower than 0.5 m/sec, REPLACE THE PREFILTER/S.
MANUAL MEASUREMENT OF THE CHARCOAL FILTER SATURATION DEGREE (carried out on a monthly or quarterly basis by the user)

The test is executed by means of a sampling device (Gastec or Draeger or Kittigawa type). Select the sampling tube for the substances used in the laboratory routine (e.g. alcohol or toluene or trichloroethylene).

Place 6 ml of the selected solvent into a beaker; with a hotplate make it boil in two minutes. This operation gives a solvent concentration equal to 100-200ppm.

Sample the outlet airstream from the unit, following the instructions of the gas sampling tube supplier.

Read the detected concentration. If higher than TLV, REPLACE THE CHARCOAL FILTER/S. If lower, note the value read on the "CHEMFAST MONITORING CARD".

Example:

CHEMFAST MONITORING CARD

Model : .................................................................
Serial number : ..........................................................
Installed filter type/code : .........................................
Filter installation date : ...........................................
Pre-filter installation date : ......................................
Used chemicals : ....................................................

PRE-FILTER CONTROL

Date    Speed (m/s)    Replaced Pre-filter    Signature

FILTER CONTROL

Date    Used Solvent    CONC(PPM)    Replaced Filter    Signature

Facsimile
8C. PREFILTER REPLACEMENT (by the user)

- Open the front control panel, rotate and unlock the tightening lock (13), then lower the pre-filter case (6).
- Remove the prefILTER from the relevant case
- Insert the new prefilter in its seat.
- Close the prefilter case (6) and fix it with the tightening lock (13)

8D. ACTIVATED CHARCOAL FILTER REPLACEMENT (By The User)

ATTENTION: For safety and environmental reasons, the worn-out activated charcoal filter/s shall be handled with rubber gloves and deposited in polyethylene bags

- Open the front control panel (1) unscrewing the fastening socket head screws (2) and block it with the proper bracket (3) located on the right side of the panel.
- Raise the activated charcoal filters (4) by unscrewing the proper knobs (5) for a few centimeters.
- Remove the activated charcoal filter (4) from its slide guide.
- Insert the new activated charcoal filter/s (4) into the relevant slide guides so that it correctly leans on the structure.
- Turn the knobs (5) of the filter group and block the activated charcoal filter (4).
- Close the control panel (1) and fix it with the proper screws.
- When you switch on the fume cupboard again, set the installation date (only for the "Elite" version).

8E. FLUORESCENT LAMPS REPLACEMENT (by the user)

- Open the front control panel (1) unscrewing the fastening socket head screws (2)
- and block it with the proper bracket (3) located on the right side of the panel.
- Turn the fluorescent tube (8) by 90° and remove it.
- Put the new fluorescent tube (8) into the lamp holder and turn it of 90°.
- Close the front control panel (1) and fix it with the proper screws.
8F. MOTOR FAN REPLACEMENT (by the technical assistance staff)

- Disconnect the cabinet from the main
- Open the front control panel (1) unscrewing the fastening socket head screws (2) and block it with the proper bracket (3) located on the right side of the panel.
- Disconnect the electric connectors of the motorfan terminal board (9).
- Unscrew the fixing screws (10) of the motorfan (9).
- Remove the motorfan (9) without damaging the activated charcoal filter (4).
- Install the new motorfan (9) and fix it with the proper screws and washers (10).
- Reconnect the electric connectors to the terminal board of the new motorfan (9).
- Close the control panel (1) and fix it with the proper screws.

8G. GAS SENSOR REPLACEMENT (for Elite-ersion if installed - by the technical assistance staff)

- Open the front control panel (1) unscrewing the fastening socket head screws (2) and block it with the proper bracket (3) located on the right side of the panel.
- Loosen the cable press of the gas sensor (11) located on the control box (7) inside the front panel (1).
- Remove the gas sensor (11) from the cable press and from the base on which it is mounted.
- Place the new gas sensor (11) on the previous base and block it in the cable press of the control box (7).
- Close the control panel (1) and fix it with the proper screws.
## 9. SPARE PARTS LIST

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>6</th>
<th>9</th>
<th>12</th>
<th>15</th>
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<td>V40000003190</td>
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<td>V20000005990</td>
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<td>18 W/84 fluorescent lamp</td>
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<tr>
<td>ITEM</td>
<td>DESCRIPTION</td>
<td>6</td>
<td>9</td>
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<td>V01000017050</td>
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<td>V20000003380</td>
<td>Box for interlocked socket</td>
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### 10. ACTIVATED CHARCOAL FILTERS AND PREFILTERS LIST

<table>
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<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>QUANTITY</th>
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<tbody>
<tr>
<td>FX0000854010</td>
<td>A/C filter for CHEMFAST 6/12/15(2)</td>
<td>13.0 kg</td>
</tr>
<tr>
<td>FX0000854020</td>
<td>SULF filter for CHEMFAST 6/12/15(2)</td>
<td>15.5 kg</td>
</tr>
<tr>
<td>FX0000854030</td>
<td>UR filter for CHEMFAST 6/12/15(2)</td>
<td>5.5 kg</td>
</tr>
<tr>
<td>FX0000854040</td>
<td>AM filter for CHEMFAST 6/12/15(2)</td>
<td>21.5 kg</td>
</tr>
<tr>
<td>FX0000854050</td>
<td>CYAN filter for CHEMFAST 6/12/15(2)</td>
<td>15.5 kg</td>
</tr>
<tr>
<td>FX0000854060</td>
<td>MER filter for CHEMFAST 6/12/15(2)</td>
<td>15.5 kg</td>
</tr>
<tr>
<td>FX0000854070</td>
<td>ACR filter for CHEMFAST 6/12/15(2)</td>
<td>16.0 kg</td>
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<tr>
<td>FX0000854080</td>
<td>FOR filter for CHEMFAST 6/12/15(2)</td>
<td>18.0 kg</td>
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<tr>
<td>FX0000854090</td>
<td>HEPA FILTER FOR ChemFAST 06/12/15(2)</td>
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</tr>
<tr>
<td>FX0000844010</td>
<td>A/C filter for CHEMFAST 9/15(1)/18</td>
<td>9.0 kg</td>
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<tr>
<td>FX0000844020</td>
<td>SULF filter for CHEMFAST 9/15(1)/18</td>
<td>10.0 kg</td>
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<tr>
<td>FX0000844030</td>
<td>UR filter for CHEMFAST 9/15(1)/18</td>
<td>10.0 kg</td>
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<td>FX0000844040</td>
<td>AM filter for CHEMFAST 9/15(1)/18</td>
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<td>CYAN filter for CHEMFAST 9/15(1)/18</td>
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<td>FX0000844060</td>
<td>MER filter for CHEMFAST 9/15(1)/18</td>
<td>10.0 kg</td>
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<tr>
<td>FX0000844070</td>
<td>ACR filter for CHEMFAST 9/15(1)/18</td>
<td>10.5 kg</td>
</tr>
<tr>
<td>FX0000844080</td>
<td>FOR filter for CHEMFAST -9/15(1)/18</td>
<td>11.5 kg</td>
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<tr>
<td>FX0000844090</td>
<td>HEPA FILTER FOR ChemFAST 09/15(1)/18</td>
<td></td>
</tr>
<tr>
<td>FX0000854000</td>
<td>PREFILTER FOR ChemFAST 09/15/18 Top-Elite (10 pos.)</td>
<td>pack of 10 pcs.</td>
</tr>
<tr>
<td>FX0000844000</td>
<td>PREFILTER FOR ChemFAST 06/12/15 Top-Elite (10 pos.)</td>
<td>pack of 10 pcs.</td>
</tr>
</tbody>
</table>

### ATTENTION:
- **CHEMFAST 6** is fitted with no.1 suitable filter
- **CHEMFAST 9 and 12** are fitted with no. 2 suitable filters.
- **CHEMFAST 15** are fitted with no. 2+1 suitable filters
- **CHEMFAST 18** are fitted with no. 4 suitable filters

### PREFILTERS
High performance prefilters are designed to remove particulates from the air stream. The filter material is based on electrets, which are permanently charged di-electrics. They remove particulates from polluted air by strong electrostatic forces generated by the fibres of which they are made. The combination of strong electric charges and open structure provides a filter with high efficiency, low airflow resistance and high loading capacity.

Prefilter efficiency is equal to 75±85 dust weight arrestance (ASHRAE)
MAIN FILTERS
Three types of filter media are available. Most of these are impregnated activated charcoal, to provide a higher filter capacity for lower molecular weight organic compounds and inorganic gases and vapours. A number of filter efficiency studies have been carried out and all results using single bed filters show efficiencies very close to 100%.

1. A/C FILTER
The A/C filter is the most widely used filter in the range and is used primarily for solvent fume removal. It is manufactured from coco-nut shell based activated charcoal of 4 x 8 USS mesh size and surface area up to 1050m²/gm. Filtration is achieved by the physical adsorption of molecules in the pores of the activated charcoal by Van der Waals forces.

2. ACR FILTER
This filter is impregnated with halide salts and is used for the high efficiency removal of iodine and methyl iodine. It is frequently used for iodination reactions with low-level radioactive iodine and efficiencies in excess of 99.99% have been measured.

3. FORM FILTER
This filter is impregnated with an oxidizing agent to oxidise formaldehyde to formate salts. It is widely used in hospital pathology laboratories and suitable for use with formalin, gluteraldehyde and aldehydes in general.

<table>
<thead>
<tr>
<th>CHEMFAST EXH. FILTER (OPTIONAL)</th>
<th>Code</th>
<th>Dimension</th>
<th>Cabinet Model</th>
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<tr>
<td>Sulfuric acid</td>
<td>FX0000834840</td>
<td>450x300x30</td>
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<td></td>
<td>FX0000854840</td>
<td>610x610x30</td>
<td>9 – 12 – 15 – 18</td>
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<td>Ammonia</td>
<td>FX0000834850</td>
<td>450x300x30</td>
<td>6</td>
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<td></td>
<td>FX0000854850</td>
<td>610x610x30</td>
<td>9 – 12 – 15 – 18</td>
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<tr>
<td>Cyanides</td>
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<td>450x300x30</td>
<td>6</td>
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<td>Formaldehyde</td>
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<td>HEPA filter</td>
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<td>457x610x69</td>
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<td>FX0000854880</td>
<td>610x610x69</td>
<td>9 – 12 – 15 – 18</td>
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## 11. TROUBLESHOOTING

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<th>DEFECT</th>
<th>CAUSE</th>
<th>REMEDY</th>
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<tbody>
<tr>
<td>Nothing works</td>
<td>Power cut off before the equipment</td>
<td>Check if power reaches the equipment</td>
</tr>
<tr>
<td></td>
<td>PCB out of order</td>
<td>Replace PCB located in the control panel</td>
</tr>
<tr>
<td></td>
<td>Fuses are interrupted.</td>
<td>Replace the fuses.</td>
</tr>
<tr>
<td>&quot;GAS DETECTOR&quot; pre-alarm. (for CHEMFAST Elite)</td>
<td>Gradual clogging/saturation of the activated charcoal filter (pre-alarm threshold value)</td>
<td>Reduce the quantity of solvent used under the cupboard.</td>
</tr>
<tr>
<td>&quot;GAS DETECTOR&quot; alarm (for CHEMFAST Elite)</td>
<td>The charcoal filter is completely saturated</td>
<td>Replace the activated charcoal filter</td>
</tr>
<tr>
<td></td>
<td>&quot;Gas sensor&quot; broken, if you are not working under the cupboard.</td>
<td>Replace the &quot;Gas sensor&quot;</td>
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<tr>
<td>Total absense of airflow in the work area</td>
<td>The motorfan does not work.</td>
<td>Replace the motorfan</td>
</tr>
<tr>
<td>Low airflow speed in the work area.</td>
<td>The exhaust duct is obstructed (if present)</td>
<td>Check if the exhaust duct is obstructed (if present)</td>
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<tr>
<td></td>
<td>The prefilter is clogged</td>
<td>Replace the prefilter</td>
</tr>
<tr>
<td>Unsteady reading of the speed displayed (only for CHEMFAST ELITE)</td>
<td>Anomalies in the fan anemometer</td>
<td>Check/replace the fan anemometer</td>
</tr>
<tr>
<td></td>
<td>The exhaust duct is obstructed (if present)</td>
<td>Check the exhaust duct (if existing)</td>
</tr>
<tr>
<td></td>
<td>Loss of calibration values in the PCB</td>
<td>Reset the calibration values of the PCB</td>
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12. TRANSPORT, PACKING, STORAGE INSTRUCTIONS

**ATTENTION:** Disconnect the unit from the main power supply before doing any of the following operations

Following indications are of the essence in case the end user has to transport, pack and storage the fume cupboard after a first period of routine operation (e.g. laboratory/plant moving):
- Disconnect the inlet tubes of gas/vacuum.
- If the fume cupboard exhausts to the outside of the building or is connected to the exhaust duct of the conditioning system, remove the connection tube cabinet/outside cabinet/conditioning system duct, paying attention not to damage or to cover with dust (or any other material) the exhaust duct of the fume cupboard.
- In case the fume cupboard is moved from a laboratory to another in the same building:
  - by means of table with wheels: it is sufficient to put the cabinet on the table avoiding to turn it on a side or on the back panel.
  - by means of a forklift: put the cabinet on a pallet to ensure good conditions of stability and to prevent the spill tray in the lower part of the fume cupboard from damages for transport.
- Pay attention not to damage the fume cupboard when passing through doors/windows.
- If the cabinet must be kept temporarily unused at the final destination, film the cabinet itself with a protective cover (pluriball or expandible films).
- On the contrary, we recommend extreme caution on long-distance movings carried out by forwarding agents (e.g. change of address): we suggest to use the same packages supplied by the manufacturer with the cabinet made as follows:

Wooden pallets of the following dimensions:

- **CHEMFAST 6**: 111 x 90 x 12 cm
- **CHEMFAST 9**: 111 x 90 x 12 cm
- **CHEMFAST 12**: 147 x 90 x 12 cm
- **CHEMFAST 15**: 202 x 90 x 12 cm
- **CHEMFAST 18**: 202 x 90 x 12 cm

Carton basement to be laid on the pallet of the following dimensions:

- **CHEMFAST 6**: 108 x 79,5 x 1 cm
- **CHEMFAST 9**: 108 x 79,5 x 1 cm
- **CHEMFAST 12**: 138,5 x 83,5 x 1 cm
- **CHEMFAST 15**: 147 x 90 x 1 cm
- **CHEMFAST 18**: 147 x 90 x 1 cm

Pluriball to wrap and protect the cabinet from dust

Package in carton of the following dimension:

- **CHEMFAST 6**: 111 x 90 x 128 cm (1 cm thick)
- **CHEMFAST 9**: 111 x 90 x 128 cm (1 cm thick)
- **CHEMFAST 12**: 147 x 90 x 128 cm (1 cm thick)
- **CHEMFAST 15**: 202 x 90 x 128 cm (1 cm thick)
- **CHEMFAST 18**: 202 x 90 x 128 cm (1 cm thick)
Steel strap and clips

During transport pay attention to maintain the package in vertical position (i.e. the pallet at the bottom)

The cabinet (with or without the package) must be kept in a place ensuring following environmental conditions:

- Min. temperature: 0°C
- Max. temperature: 70°C
- Max. humidity: 90%
13. ADDITIONAL INFORMATION

13A. GUARANTEE

The guarantee for fume cupboards ChemFAST is 24 months from invoice date. The limitations of the guarantee established by Faster S.r.l. concern, besides the cases indicated in Chapter 5 relating to improper use of the fume cupboard by user, also several contra-indications in the instruction manual, among which the following are reminded:

- installation in a place not conforming to instructions
- wrong feed voltage
- poor earthing
- utilization of chlorine or its derivatives, incompatible with stainless steels, for cleaning the cabinet,
- tampering or changes made by the client
- tampering cupboard with any type of tool
- wrong connection between electric intake and feed cable, wrong connection between gas cock or electro-valve and gas mains

13B. MAINTENANCE SERVICE ADDRESS

| Company | ................................................................. |
| address | ....................................................................... |
| Tel     | ..................................................................... | Fax............................ |
| Contact | .................................................................... |
### LEGENDA

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Control panel</td>
</tr>
<tr>
<td>2</td>
<td>Fastening socket head screws</td>
</tr>
<tr>
<td>3</td>
<td>Bracket</td>
</tr>
<tr>
<td>4</td>
<td>Charcoal filter</td>
</tr>
<tr>
<td>5</td>
<td>Knobs</td>
</tr>
<tr>
<td>6</td>
<td>Pre-filter case</td>
</tr>
<tr>
<td>7</td>
<td>Control box</td>
</tr>
<tr>
<td>8</td>
<td>Lamps</td>
</tr>
<tr>
<td>9</td>
<td>Motor fan</td>
</tr>
<tr>
<td>10</td>
<td>Screws of motor fan</td>
</tr>
<tr>
<td>11</td>
<td>GAS sensor</td>
</tr>
<tr>
<td>12</td>
<td>Screws</td>
</tr>
<tr>
<td>13</td>
<td>Lock of pre-filter case</td>
</tr>
<tr>
<td>14</td>
<td>Air flow sensor</td>
</tr>
<tr>
<td>15</td>
<td>Fan</td>
</tr>
</tbody>
</table>
14C. SIDE DIAGRAM

- 760 OVERALL DIM.
- 250 EXHAUST DUCT
- 600 USEFUL DIM.
- 660 OVERALL DIM.
- 155 MAXIMUM A.C.T.
- 660 USEFUL DIM.
- SUPPORT STAND (OPTIONAL)
- 50 WORKING SURFACE
- 810 WORKING SURFACE
15. ASSEMBLY DIAGRAM FOR SUPPORT TABLE

The supporting stand is supplied not assembled, with the kit of screws and the feet.
### 16. SENSORS LIST

<table>
<thead>
<tr>
<th>PCB PLUG</th>
<th>SOFTWARE NAME OF THE SENSOR</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>J9 – CPULAF</td>
<td>-</td>
<td>GAS SENSOR</td>
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<tr>
<td>J4 - CPULAF</td>
<td>S0</td>
<td>Air flow sensor (only ChemFAST Elite)</td>
</tr>
<tr>
<td>J3 - CPULAF</td>
<td>S1</td>
<td>Window sensor (only ChemFAST Elite)</td>
</tr>
<tr>
<td>J2 - CPULAF</td>
<td>S2</td>
<td></td>
</tr>
<tr>
<td>J3 - PWLAF</td>
<td>S3</td>
<td>Not used</td>
</tr>
<tr>
<td>J2 - PWLAF</td>
<td>S4</td>
<td>Not used</td>
</tr>
<tr>
<td>INITIALS</td>
<td>DESCRIPTION</td>
<td>QUANTITY</td>
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<tr>
<td>----------</td>
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<td>----------</td>
</tr>
<tr>
<td>1</td>
<td>CHEMFAST 6</td>
<td></td>
</tr>
<tr>
<td>2</td>
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<td>CHEMFAST 15</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>CHEMFAST 18</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:**

- Initials: CHEMFAST 6, CHEMFAST 9, CHEMFAST 12, CHEMFAST 15, CHEMFAST 18
- Description: WIRING DIAGRAM SCHEMA_ELETTRICO
- Quantity: 1
- Design: N. CAD: K600084900
- Title: ChemFAST Elite/Top

**Diagram:**

- CAD: AUTOCAD
- Rev: 00
- Schematic Diagram: SCHEMA_ELETTRICO
18. DECLARATION OF CONFORMITY

The undersigned legal representative of the company Faster S.r.l. hereby declares that the follow products:

**ChemFAST Elite/Top**

are in compliance with the following directives:

- **2006/95/EC** Directive of the European Parliament and of the Council on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits

and with the following standards:

- **BS 7258-1**: Laboratory Fume Cupboards Part 1: Specification for safety and performance
- **EN 61010-1**: Safety requirements for electrical equipment for measurement, control and laboratory use Part 1: general requirements
- **EN 61326-1**: Electrical equipment for measurement, control and laboratory use EMC requirements

and, according to the above-mentioned directives, the CE IIA mark has been applied.

The undersigned also declares that the person who is authorised to compile the relevant technical documentation is Mr.: **Ing. Pietro Bascapè**

Faster S.r.l.
Maria Giulia Turzi
Chairman of the board