

labmodul

Designing safety

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Labmodul is a leading company in innovative and customer-adapted furniture solutions for laboratories in the industrial sector, technical schools, universities, as well as in the research and hospital sector.



labmodul

FUME CUPBOARDS GREENLINE PRO



GREENLINE

FUME

CUPBOARD

- ┌ Highest safety
- ┌ Optimized for lower energy consumption
- ┌ Large glass area for maximum possible view
- ┌ High quality for daily use
- ┌ Designed for GMO facilities
- ┌ Ergonomics and comfort features
- ┌ EN / DS 14175-200:23



GREENLINE™ PRO

Efficient fume cupboard with maximum security, ergonomics and flexibility in a modern design. The construction of the fume cupboard adheres to the EN/DS 14175 fume cupboard safety standard and fulfills international demands for safety and performance with a special focus on user friendliness.

Greenline™ series is prepared for a number of options that provide the fume cupboard with comfort, service and energy saving features. The fume cupboard is designed for flexibility in relation to future requirements, functions and ergonomics.

The fume cupboard can be added an electric height regulation function for an optimum working posture and for wheel chair users.

The fume cupboard is made of resistant materials for intensive professional use with a design made for installation of power, gasses, water etc. on the inside as well on the outside of the fume hood. The plumbing installations are placed in the front panel under the worktop for easy access.

Design

Aerodynamics in the chamber.

The fume cupboard compartment is the central part of an effective user protection. Safety is enhanced through a comprehensive analysis of the flow conditions inside the chamber using computational fluid dynamics computer models. These are optimized to ensure a smooth air flow both with and without equipment and setups inside the fume cupboard.

Flexibility

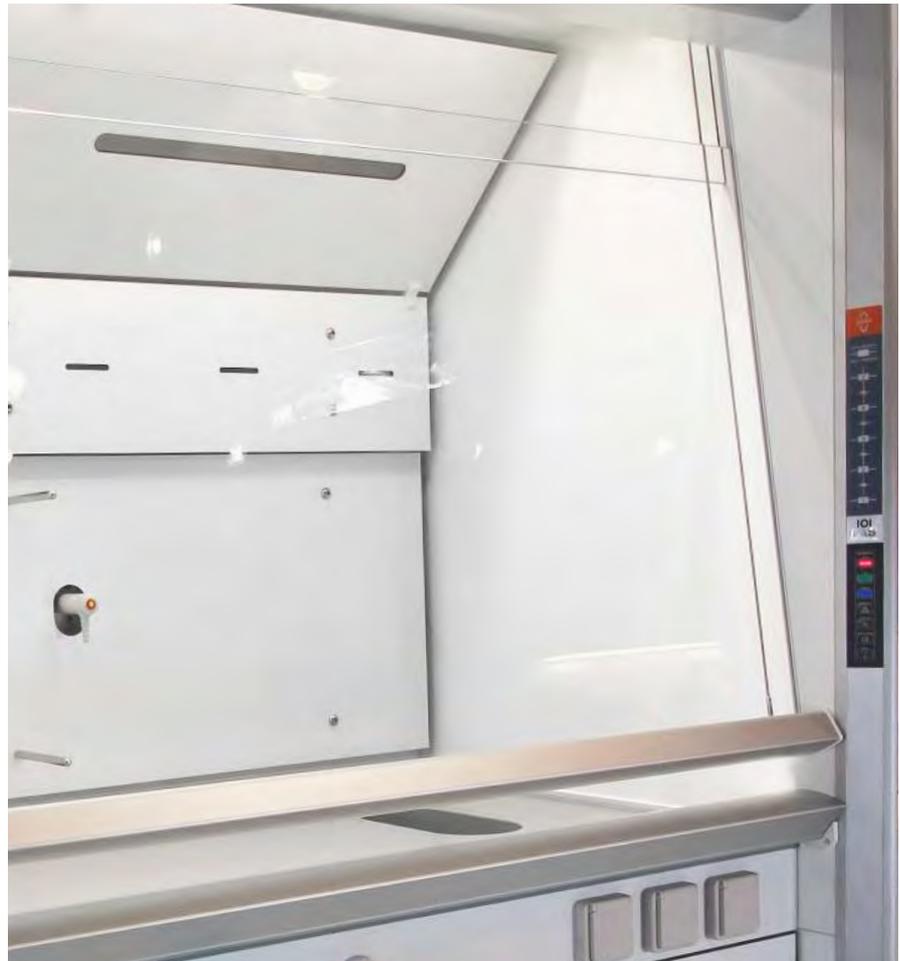
GREEN LINE PRO series is configurable, and consists of a basic module which can be fitted exactly to the specific needs and performance requirements. The fume cupboard can easily be supplied with additional technical outlets or other functions for future needs.

Maximum possible view

In the definition of hood design, the ease of use and safety was the primary desire. Parameters such as a large glass area and easy access through the high sash window ensures that the operator achieve maximum overview and insight into the chamber of the fume cupboard and get a safe and easy access to setup's and larger equipment.

Direct personal protection

The sash window is made of safety glass, which protects the user in case of accidents with chemical splash, explosion or similar. The sash window is balanced by a counterweight placed on the backside of the fume cupboard which provides an easy operation. A double-wire system made of stainless steel, fixed with professional system brackets are connecting the two components.



Instant lock - fall protection

In the unlikely event that a breach occurs on a wire or a bracket - the sash window locks and is kept in position. The built-in safety mechanism locks both the sash window and counterweight to avoid injury.

Lighting

Pro fume cupboard comes with dual LED worklight lights on the top.

Pressure relief device

In case of sudden pressure in the cabin, for example by an explosion, the pressure is effectively away from the operator through 2 explosion fields and the light unit located at the top of the fume cupboard.

Tilbehør

The PRO series is prepared for a range of assistive accessories for installation in the fume cupboard. For more information about monkey bars, shelves and holders, see our prospectus.



Safety

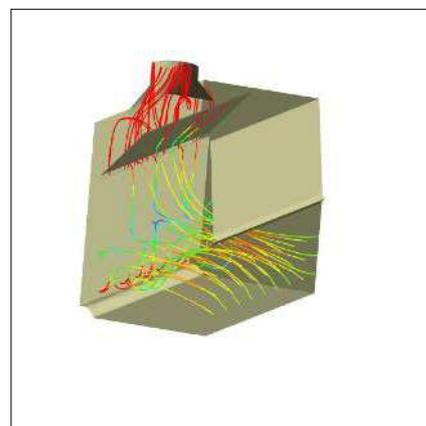
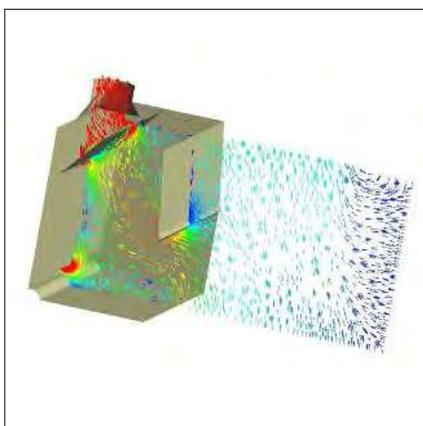
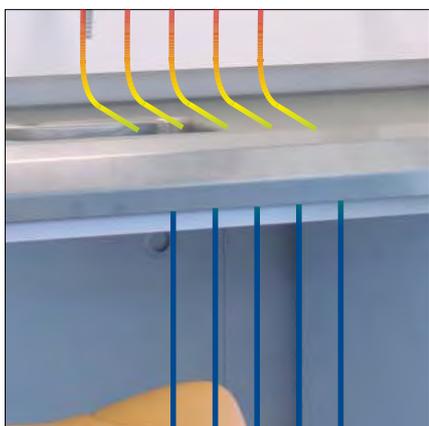
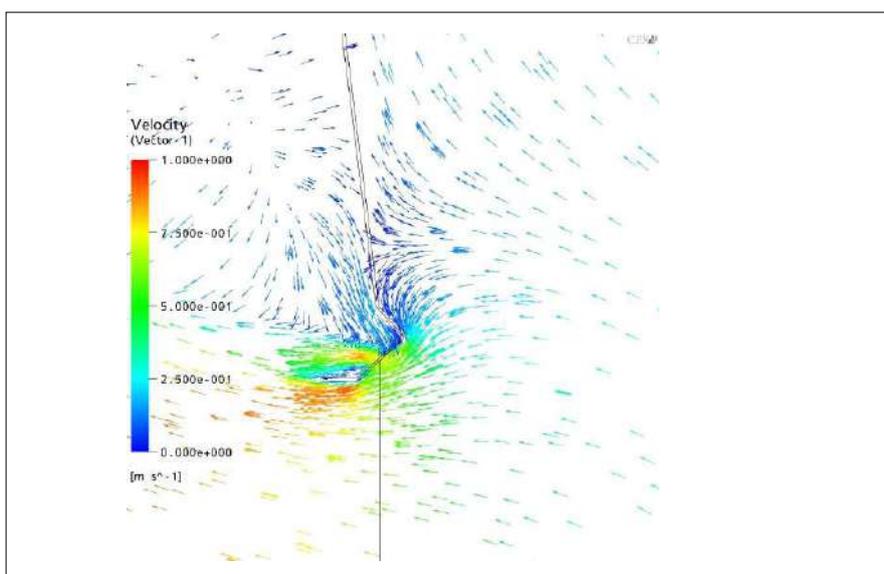
Airflow technology

Security and protection of the user is the fume cupboard's main feature. High security and durability is an important element in our product development, therefore we use sophisticated CFD modeling to create the optimum airflow user protection in the working chamber.

The operator is effectively protected against chemical vapors, gases, aerosols, carcinogens and other hazardous materials.

The working chamber acts as a physical barrier between the reactions in the fume cupboard and the surroundings in the laboratory, and is designed to protect against chemical spills, runaway reactions, fires etc. The air flow in the fume cupboard prevents the accumulation of potentially explosive atmosphere inside the chamber.

The sash window is fitted with a protective rail / Airflowrail™, and in front of the worktop is an airfoil that ensures a steady and controlled airflow over the work surface. This prevents accidental air turbulences, which can result in increased emissions and hazardous emissions from the working compartment. The airflow is also safely controlled on both sides through the rounded aluminum profiles, and the well proven design ensures that the jet streams are managed properly and removes heavy gases, vapors and other harmful substances inside the chamber.



Ventilation

The fume cupboard is connected to the ventilation system in the room via the connection on the top deck, either via a motorized damper connected to the main ventilation system, or a separate frequency controlled ventilator box.

In accordance with EN / DS 14175 the fume cupboards must be equipped with an alarm and control unit. The fan and the control unit ensures automatically a proper ventilation for the fume cupboard during operation.

The fume cupboard is working by creating a negative pressure inside the work chamber that prevents any contaminant from escaping. The air passes into the fume cupboard between the worktop and the sash window, and there are requirements for the air velocity measured in meters per second (m/s). Is the air velocity too high in the

chamber, it might cause a severe turbulence and a risk of harmful fumes escaping to the outside of the fume cupboard. An excessively low air velocity can likewise cause harmful fumes escaping. The correct air speed is essential for a safe and economically efficient fume cupboard.

In general it is recommended that the air velocity is between 0.3 and 0.5 m/s. However, it is important to check with the local safety regulations before the fume cupboard is in service.

Low energy fume hoods are designed and tested to run with minimal air speed during use.

Energy savings

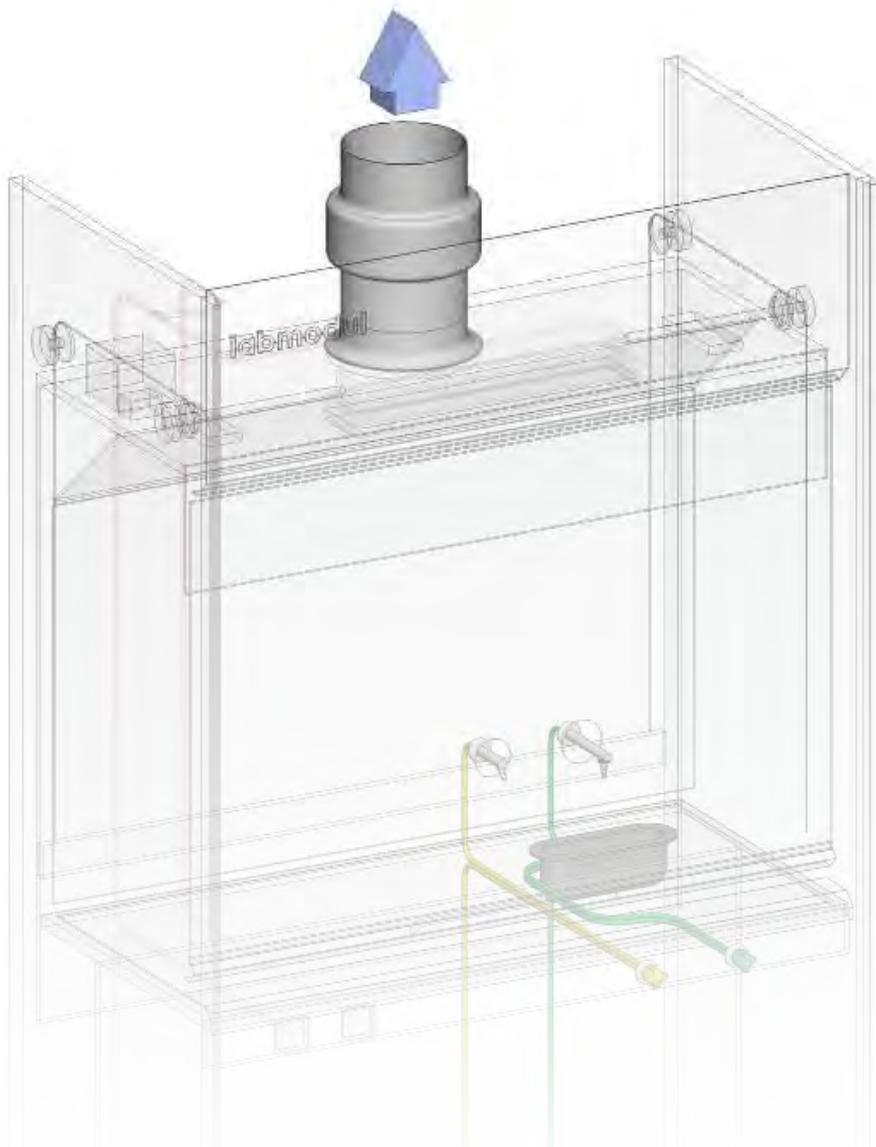
To save more energy, these fume cupboards can be equipped with a sash automation that lowers the sash when there has been no acti-

vity in the chamber in a specified time. The sash window automatically closes and the air velocity is lowered to the standby mode.

Suction from chemical cabinets

Chemicals should be stored properly and thus kept in a ventilated cupboard, substances that are marked as toxic requires also that the cabinet must be locked. Chemical cabinets shall be constantly ventilated 24 hours a day and connected independently of the fume cupboard exhaust system.

- Chemical tall units, connected on top to 100 mm pipe.
- Chemical base cabinets connected on 50 mm pipe placed on top of the fume cupboard





Sustainability

The fume cupboard is made of resistant materials for professional use, and is prepared for the installation of sockets for electrical and plumbing both inside and outside the fume cupboard cabinet.

Greenline™ has been developed with a particular focus on sustainability and reducing CO2 consumption.

Certified quality components are used by recognized Danish and European producers.

The material selection has been made to meet the requirements of Labmodul A / S for the use of products that are or may be used in a natural recycling cycle for both energy and environmental reasons.

Including a sample of typically used recycled materials in the production of the Greenline Pro fume cupboards.

- Furniture plate based on recycled wood
- Glass
- Steel
- Stainless steel
- Aluminum
- Copper / cables



Energy-saving automatic sash window for fume cupboards

Function Description

The main task of the system is to ensure that the fume cupboards sash is closed when the fume cupboard is not in use. A PIR sensor detects whether there is a person in front of the fume cupboard. If the operator leaves the fume cupboard, the automatic sash window will shut down automatically after 10 minutes (custom). It has been strongly emphasized that safety at the closure is as high as possible.

The sash does not close at any time when there is an operator in front of the fume cupboard. During the shutdown of the sash window, the collision check of the system monitors that misplaced objects are not exposed to excessive mechanical impact. However, any operation of the system must always comply with basic requirements for safe conduct in laboratories.

The GIS technology can be mounted on new fume hoods as well as retrofitted to existing fume cupboards. Installation of the sash control system will improve the energy economy while increasing the safety of the work in the fume cupboard.

GIS•3

GIS•3 is specially designed to meet future requirements for fume cupboards. The flexibility of system structure means that GIS3 can be continuously adapted to new future requirements for fume cupboards management.

GIS3 energy-saving automatic sash shuts down the sash window when there has been no activity in front of the fume cupboard for a defined period. The system also has built-in comfort and safety features:

- Soft close / open of sash window for manual use
- Built-in lock for MAX. safe sash opening.
- Easy programmable around time management
- Acoustic alarm when the sash is automatically closed
- Prepared for "Handfree" operation with foot control panel
- Prepared for connection of overflow alarm to waste bin etc.

GIS•4

GIS•4 is specially designed to meet future requirements for fume cupboards. The flexibility of system structure means that GIS4 can be continuously adapted to new future requirements for fume cupboards management.

GIS4 energy-saving automatic sash shuts down the sash window when there has been no activity in front of the fume cupboard for a defined period. The system also has built-in comfort and safety features:

- Automatic sash control operation via keypad, stepless from closed to maximum safe working opening and button for full maximum opening.
- Soft close / open of sash window for manual use
- Built-in lock for MAX. safe sash opening.
- Easy programmable around time management
- Acoustic alarm when the sash is automatically closed
- Prepared for "Handfree" operation with foot control panel
- Prepared for connection of overflow alarm to waste bin etc.

Handfree - foot operation of hoisting pane



GIS4 keypad for easy operation of the sash window



Fume Cupboard components

1. Fume cupboard cabin

The visible part of the chamber enclosing hazardous gases and vapors.

2. Back plate for suction

The demountable plates used to create suction along the back and side of the chamber. The back panels also ensure that the suction becomes uniform across the opening of the sash window and that the polluted air is efficiently removed to prevent emissions.

3. Sash window

The balanced sash window is opened vertically, and is equipped with a combined glass airfoil and control lever. Never use a larger opening than necessary as the sash safety glass is also used as operator protection in case of sudden splashes or explosions in the fume cupboard.

4. Table top airfoil

The table top airfoil is located along the front edge of the work surface and controls the airflow into the chamber. The rail is designed to effectively prevent turbulent eddies, which may carry vapors out of the fume cupboard. The underside of the rail is open so air can flow freely into the chamber, even when the operator leans against the table top when operating the fume cupboard.

The opening can also be used to lead wires and hoses out of the chamber. Both the sash- and table top airfoil are designed so the operator is effectively protected in case of fluids and other items should escape from the chamber by accident.

5. Table top

The workspace is defined by the work top. When a larger apparatus or other large items are placed in the chamber, they can create turbulences. Therefore they shall be placed on a stand, lifting the item 3-5 cm above the work top in order to ensure that the air can pass around and under the equipment.

6. Slanted cover

The slanted cover distributes air streams evenly over suction plates. Materials such as paper napkins or other light materials can be pul-

led into the chamber and cause inappropriate turbulences or poor airflow if sucked into the inclined chamber or other ventilation components. It is recommended that a mesh be installed that ensures that items remain in the fume cupboard.

7. Working opening

The work opening is the field between the table top and the sash window. The fume cupboard cabinet air velocity is measured across this opening. The maximum working opening in a fume cupboard is up to 50 cm opening, there is a need for greater opening in connection with cleaning, settings or similar presses for full sash opening with the lock signature. The sash is then automatically opened for full opening.

8. Alarm and automatic fume cupboard system (option)

If the fume cupboard ventilation can not maintain the desired air velocity in the door opening, an alarm is given by the lamp indication and an acoustic alarm on the control panel. The alarm is triggered automatically when the sash is raised above the maximum work opening of 50 cm. The alarm is set on the control panel by pressing the alarm button. It is possible to set both alarm time offsets and alarm limits in the fume cupboard automation box.

The system is prepared for external interruption of the acoustic alarm signal, possibly by the planned stop of the associated ventilation system. In addition to interrupting the acoustic alarm, the fume cupboard / frequency controlled engine is also closed.

If forced operation has been activated via the control panel for more than the programmed time factor (usually 40 minutes), the automatics will switch back to normal operation if no activity has been detected in front of the fume cupboard. The individual time intervals can be set from 5 to 60 minutes as desired.

The system maintains a constant air velocity at the work opening, regardless of the sash height and pressure variations in a suction duct, the above cabinets are connected,

the air velocity in the work opening is adjustable. When there is no operator in front of the fume cupboard, the air velocity of the hatch opening is automatically reset from the normal operating air velocity approx. 0.5 m / s.

9. Energy-saving automatic sash system (option)

The main task of the system is to ensure that the sash is closed when the fume cupboard is not in use. A PIR sensor detects if there is a person in front of the fume cupboard. If the operator leaves the fume cupboard, the automatic sash system will shut down the sash after an optional time interval, typically 5 minutes. It has been strongly emphasized that the safety of closing is as high as possible. During the shutdown of the sash, the system's collision control monitors that misplaced objects are not exposed to major mechanical impact. However, any operation of the system must always comply with basic requirements for safe conduct in laboratories.

The automatic sash system deactivation closes the sash if there has been no activity in front of the fume hood for more than 5 minutes and continuously detects whether there are items in the sash lane opening way. If there is an object in the sash opening, the sash will stop during contact with the object and drive 20 mm up again. The lockdown of the sash does not continue until the object is removed and the sash is again released via the START / STOP wbutton on the control panel or manually driven to the closing position.

10. Pressure detector for fume cupboards (option)

The fume cupboard service system is fitted with a cleaning-friendly PIR sensor that detects the activity in front of the fume cupboard. When an operator approaches the cabinet, the air velocity is automatically changed to the operating airflow normal operation. It is possible to set the operating and economy air velocity and set the time switch between the two operating modes. The PIR sensor covers an area of up to 1.8 meters above the floor and an area of 0.5 meters from the sides of the fume cupboard.

11. Height adjustment of the table top height

The fume cupboard design is designed so that the working height can be freely height controlled via the built-in actuators to the desired working height between 75 and 115 cm above the floor.

The table top can, in addition to the special weight of the fume cupboard, lift up to 157 kg. Control buttons for the electric height adjustment are located under the table top. The fume cupboard is designed according to accessibility requirements, so operators in the seated position, including wheelchair users, can safely and comfortably use all functions. The system can be upgraded with keyboard with pre-defined heights that are convenient in facilities where multiple users use the same fume cupboard.

12. Service plug (option)

An RJ45 service plug can be placed easily accessible on the front of the fume cupboard. The service plug provides access to the parameters of the fume cupboard automatic regulator and other components that can be viewed and configured via laptop.

All operating data of the fume cupboard can be read by the standard communication bus and covers operating data, about the number of active operation hours, the load capacity, the air gap, the current air velocity, the position of the regulator damper (both supply and exhaust) alarms that can be logged and read by the CTS system as required.

13. Light

Switching the light on in the fume cupboard is done by pressing the control panel light button or on the separate light switch mounted in the fume cupboards frame.

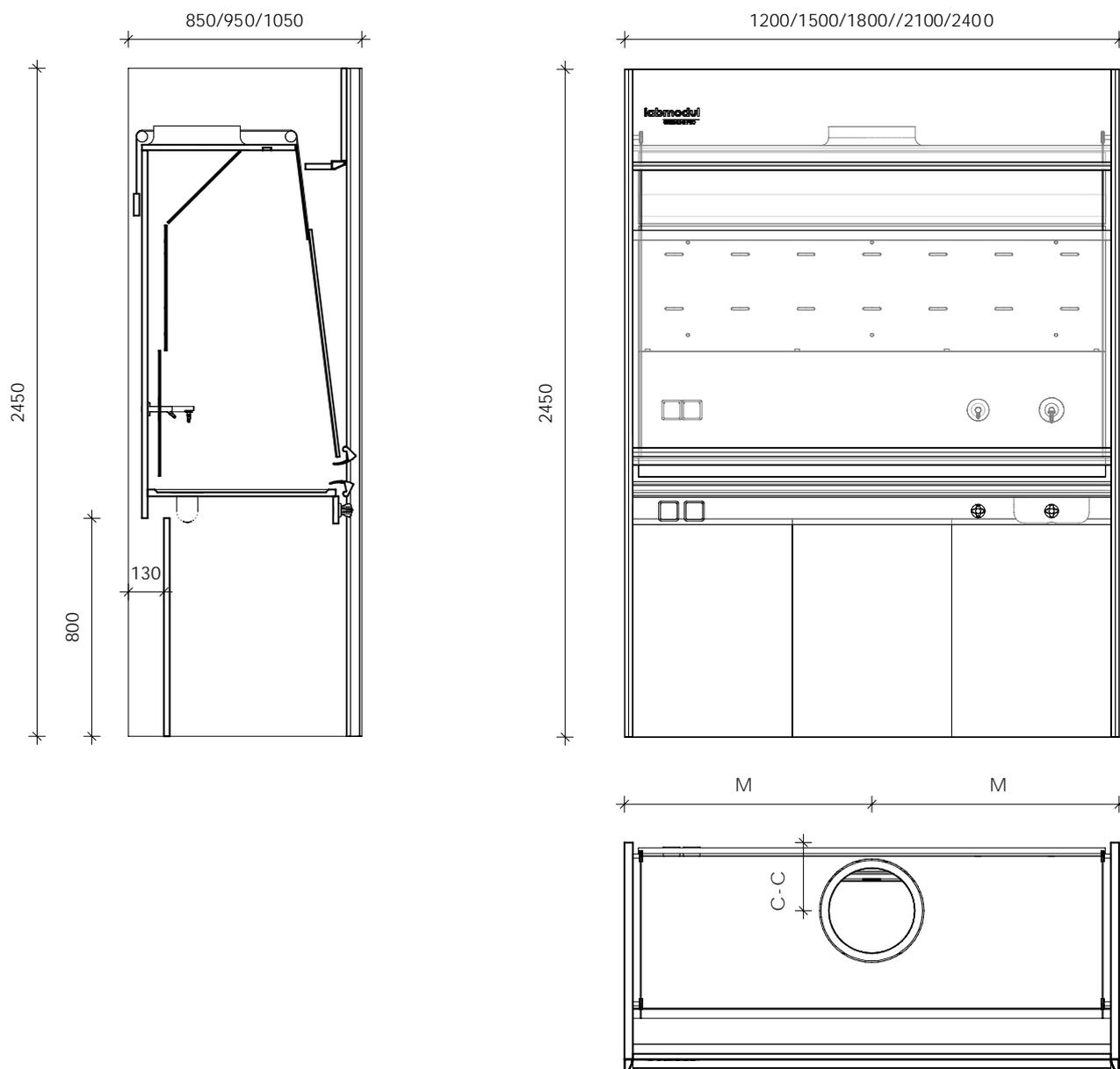
1. Fume cupboard cabin
2. Back plate for suction
3. Sash window
4. Table top airfoil
5. Table top
6. Slanted Cover
7. Working opening
8. Alarm and fume cupboard automatic box
9. Energy saving automatic sash system
10. Pressure detector for fume cupboard
11. Height adjustment of the table top height
12. Service plug (option)
13. Lys



Fume cupboard with fixed table height



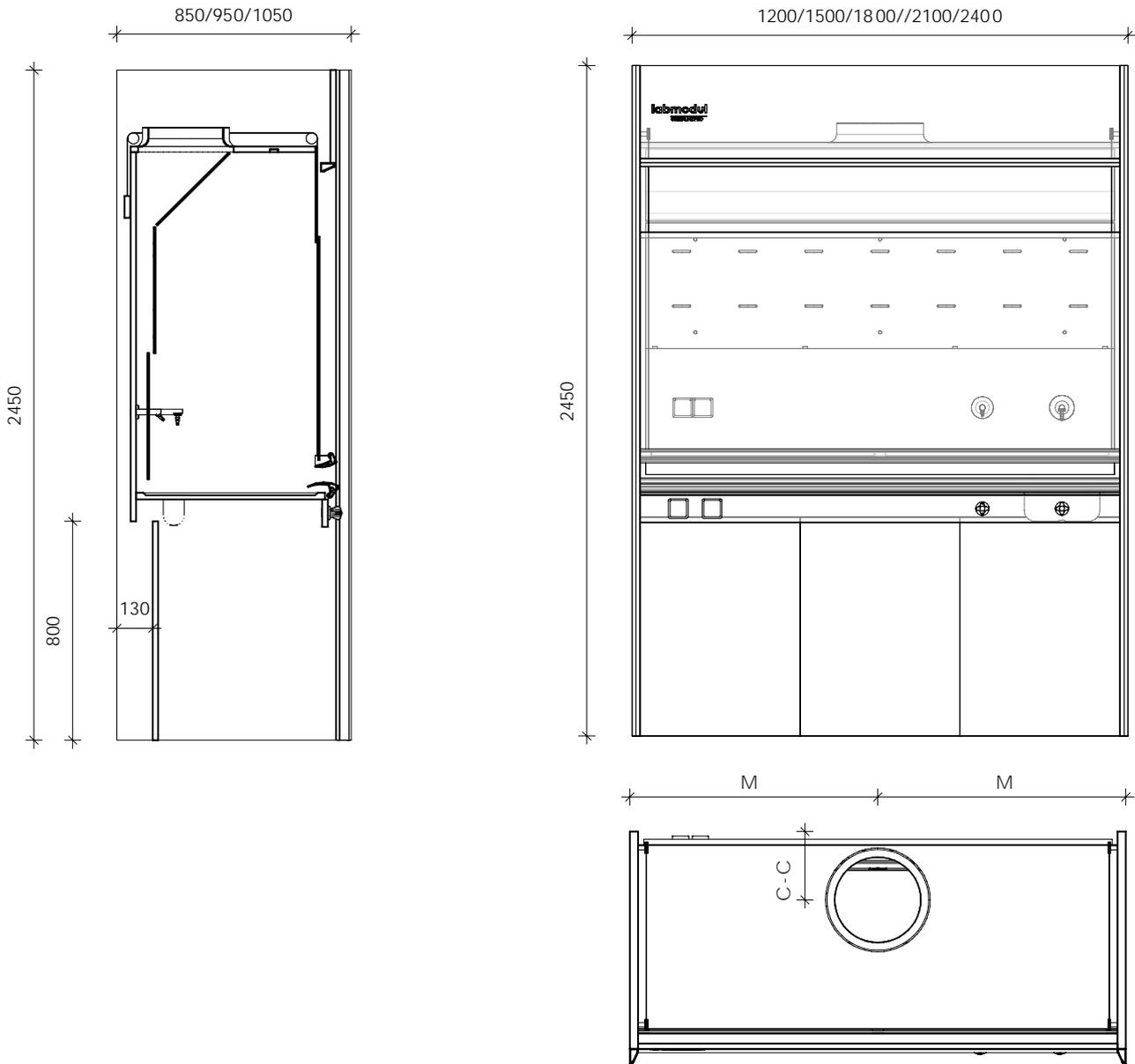
GREENLINE PRO - MODEL STP-SFA, SLANTED SASH WINDOW



Technical data

| Model STP-SFA | Greenline Pro 120 | Greenline Pro 150 | Greenline Pro 180 | Greenline Pro 210 | Greenline Pro 240 |
|--|-------------------|-------------------|-------------------|-------------------|-------------------|
| Width outside (mm) | 1200 | 1500 | 1800 | 2100 | 2400 |
| Depth exterior (mm) | 850 / 950 / 1050 | | | | |
| Height exterior (mm) | 2450 | | | | |
| Width inside cabin (mm) | 1140 | 1440 | 1740 | 2040 | 2340 |
| Depth countertops (mm) | 680 / 780 / 880 | | | | |
| Height inside cabin (mm) | 1250 | | | | |
| Max Lift pane opening (mm) | 850 | | | | |
| Connector for ventilation (mm) | Ø250 | Ø250 | Ø315 | 2 x Ø250 | 2 x Ø250 |
| Position from the back wall to ventilations c-c (mm) | 207.5 | 207.5 | 240 | 207.5 | 207.5 |
| Position from fume cupboard side to c-c (mm) | 600 | 750 | 900 | 465/ 465 | 615/ 615 |
| Height adjustable movement (mm) | Fixed Bottom | | | | |

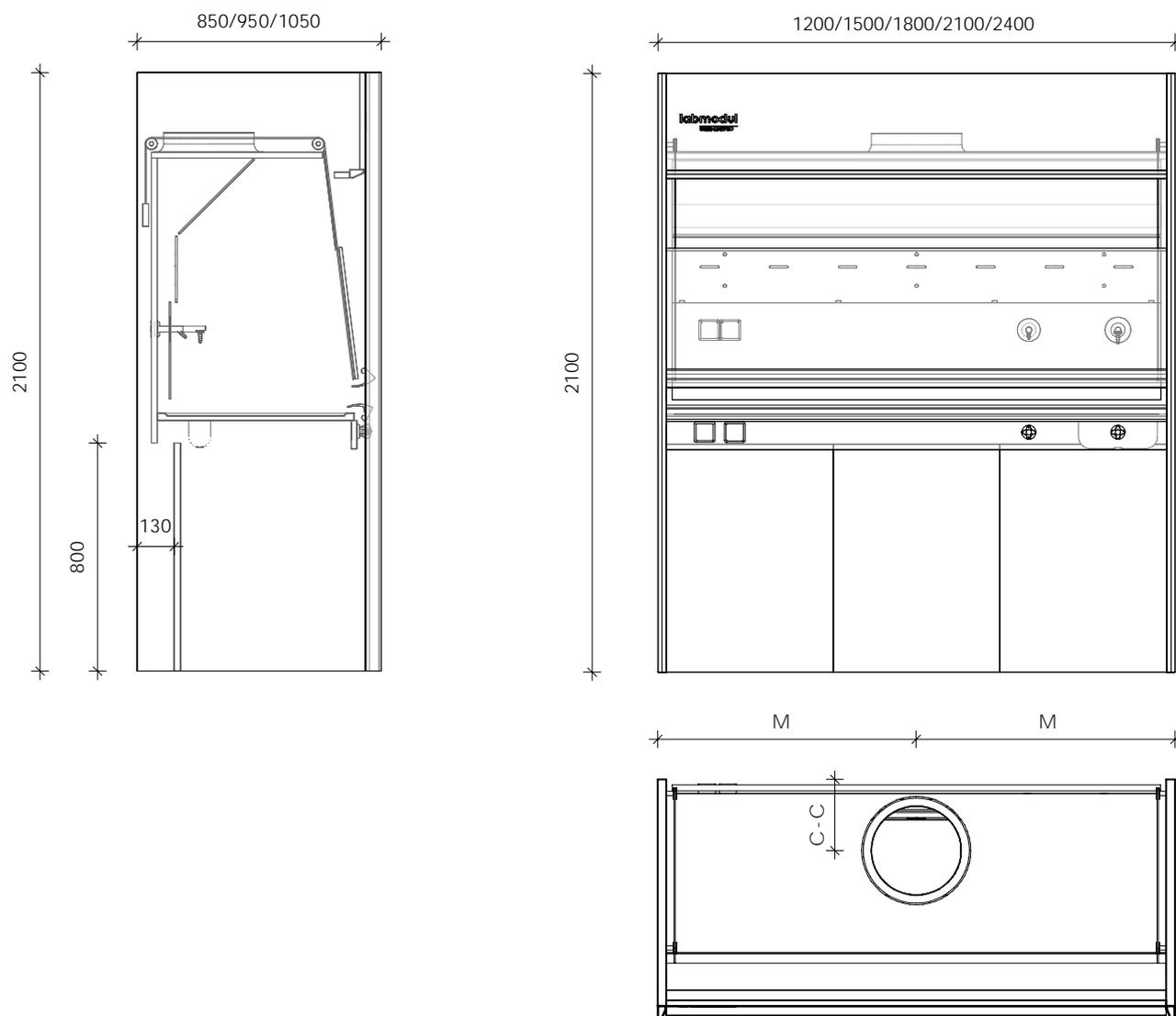
GREENLINE PRO - MODEL STP-LFA, VERTICAL SASH WINDOW



Technical data

| Model STP-LFA | Greenline Pro 120 | Greenline Pro 150 | Greenline Pro 180 | Greenline Pro 210 | Greenline Pro 240 |
|--|-------------------|-------------------|-------------------|-------------------|-------------------|
| Width outside (mm) | 1200 | 1500 | 1800 | 2100 | 2400 |
| Depth exterior (mm) | 850 / 950 / 1050 | | | | |
| Height exterior (mm) | 2450 | | | | |
| Width inside cabin (mm) | 1140 | 1440 | 1740 | 2040 | 2340 |
| Depth countertops (mm) | 680 / 780 / 880 | | | | |
| Height inside cabin (mm) | 1250 | | | | |
| Max Lift pane opening (mm) | 850 | | | | |
| Connector for ventilation (mm) | Ø250 | Ø250 | Ø315 | 207.5 | 207.5 |
| Position from the back wall to ventilations c-c (mm) | 207.5 | 207.5 | 240 | 207.5 | 207.5 |
| Position from fume cupboard side to c-c (mm) | 600 | 750 | 900 | 465/ 465 | 615/ 615 |
| Height adjustable movement (mm) | Fixed Bottom | | | | |

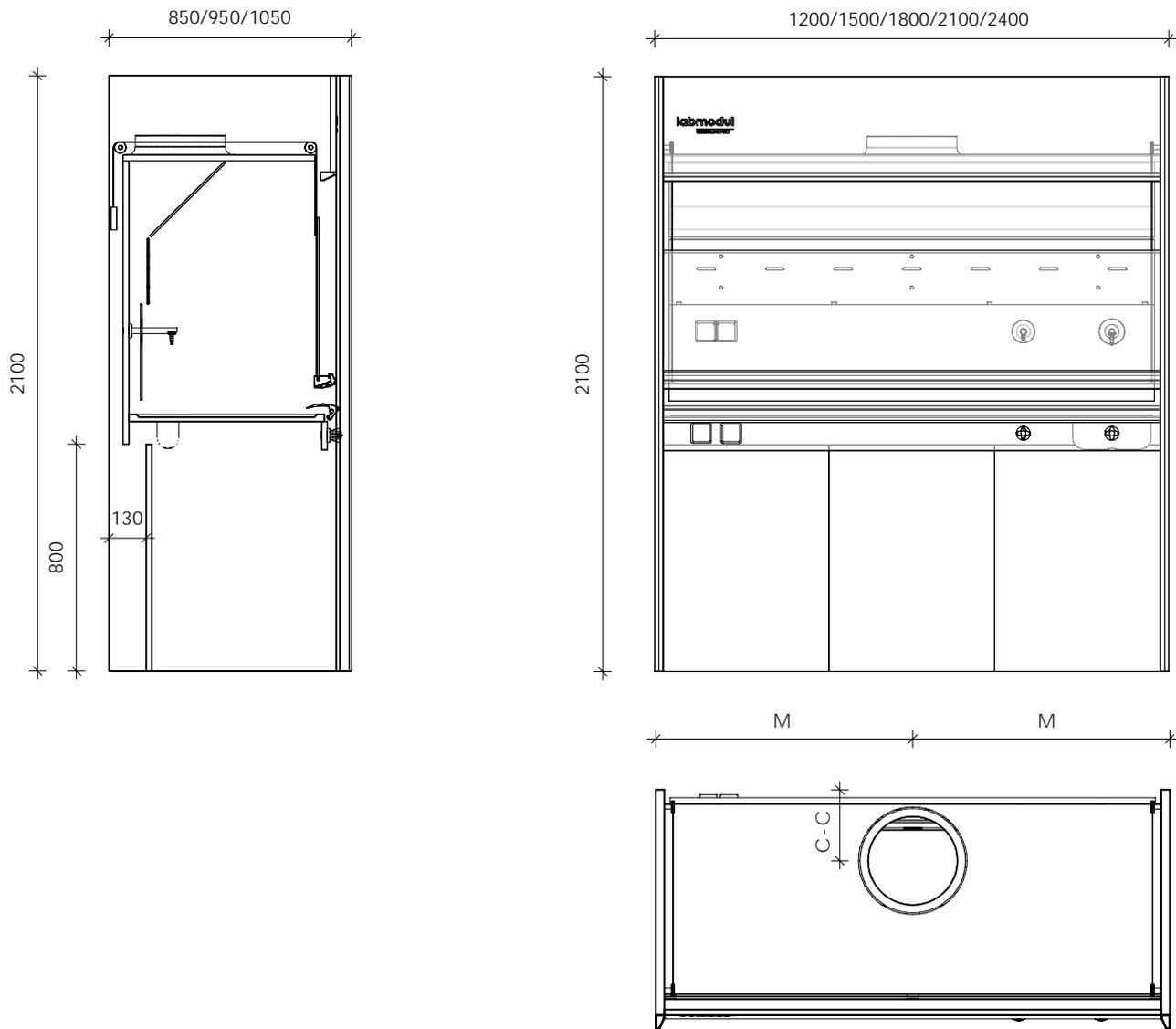
GREENLINE PRO - MODEL STP-SFA, SLANTED SASH WINDOW



Technical data

| Model STP-SFA | Greenline Pro 120 | Greenline Pro 150 | Greenline Pro 180 | Greenline Pro 210 | Greenline Pro 240 |
|--|-------------------|-------------------|-------------------|-------------------|-------------------|
| Width outside (mm) | 1200 | 1500 | 1800 | 2100 | 2400 |
| Depth exterior (mm) | 850 / 950 / 1050 | | | | |
| Height exterior (mm) | 2100 | | | | |
| Width inside cabin (mm) | 1140 | 1440 | 1740 | 2040 | 2340 |
| Depth countertops (mm) | 680 / 780 / 880 | | | | |
| Height inside cabin (mm) | 1025 | | | | |
| Max Lift pane opening (mm) | 700 | | | | |
| Connector for ventilation (mm) | Ø250 | Ø250 | Ø315 | 2 x Ø250 | 2 x Ø250 |
| Position from the back wall to ventilations c-c (mm) | 207.5 | 207.5 | 240 | 207.5 | 207.5 |
| Position from fume cupboard side to c-c (mm) | 600 | 750 | 900 | 465/ 465 | 615/ 615 |
| Height adjustable movement (mm) | Fixed Bottom | | | | |

GREENLINE PRO - MODEL STP-LFA, VERTICAL SASH WINDOW



Technical data

| Model STP-LFA | Greenline Pro 120 | Greenline Pro 150 | Greenline Pro 180 | Greenline Pro 210 | Greenline Pro 240 |
|--|-------------------|-------------------|-------------------|-------------------|-------------------|
| Width outside (mm) | 1200 | 1500 | 1800 | 2100 | 2400 |
| Depth exterior (mm) | 850 / 950 / 1050 | | | | |
| Height exterior (mm) | 2100 | | | | |
| Width inside cabin (mm) | 1140 | 1440 | 1740 | 2040 | 2340 |
| Depth countertops (mm) | 680 / 780 / 880 | | | | |
| Height inside cabin (mm) | 1025 | | | | |
| Max Lift pane opening (mm) | 700 | | | | |
| Connector for ventilation (mm) | Ø250 | Ø250 | Ø315 | 2 x Ø250 | 2 x Ø250 |
| Position from the back wall to ventilations c-c (mm) | 207.5 | 207.5 | 240 | 207.5 | 207.5 |
| Position from fume cupboard side to c-c (mm) | 600 | 750 | 900 | 465 / 465 | 615 / 615 |
| Height adjustable movement (mm) | Fixed Bottom | | | | |

Installations for for fume cupboard with fixed bottom part

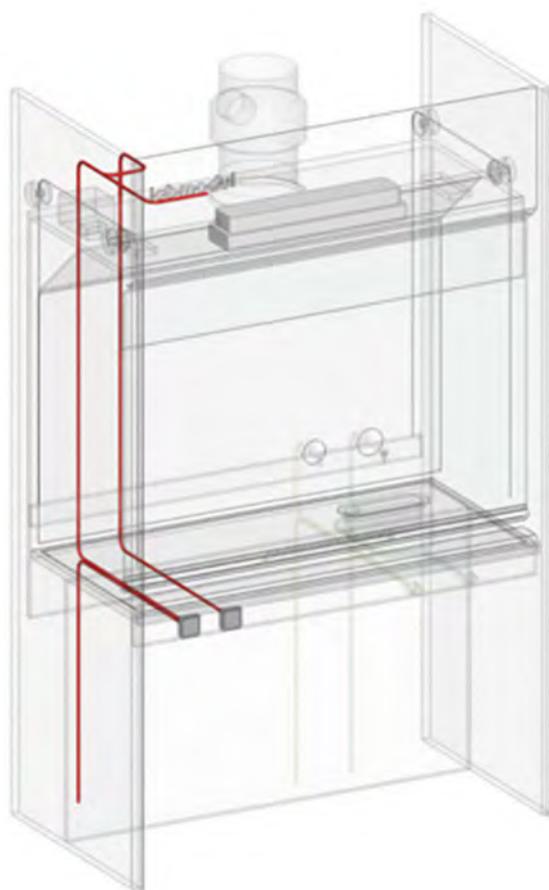
Electrical installations

Internal cable connections are made in 3-wire installation cable with 1-phase distribution. The installation is completed in a junction box located on top of the fume cupboard. From the junction box, a cable length of 130 cm is completed with a CEE plug 16A.

Consumption on the stage up to 2200 watts.

The fume cupboard is supplied with all internal connections made in cable installation and in accordance with the Strong Power Order, Section 6, Electrical Installations.

In case of special fume cupboard that must meet ATEX requirements, this is carried out in accordance with the applicable regulatory requirements.



Plumbing installations

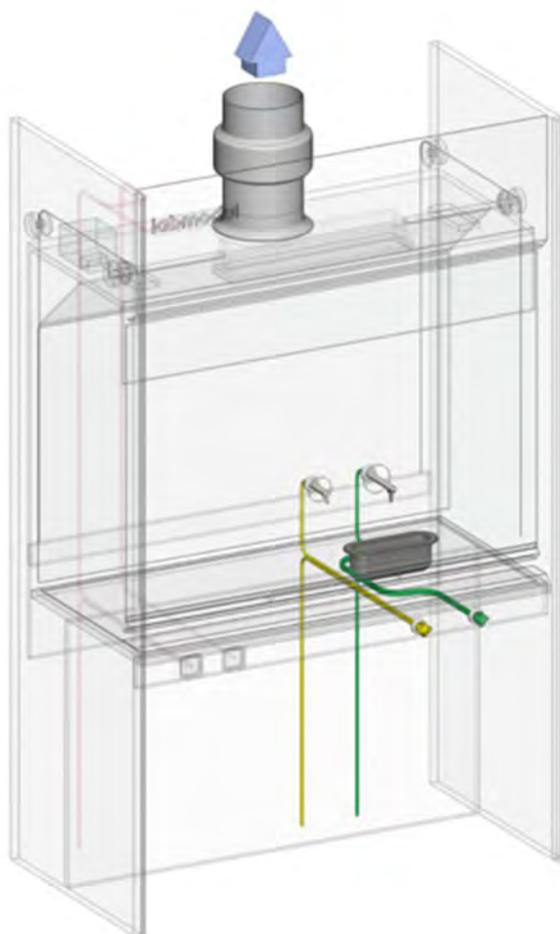
In general

Internal plumbing components are carried out in the BROEN UniFlex system. The system includes a wide range of fixtures and a unique concept of pipes for the connection and connection of plumbing installations.

The fume cupboard comes with a (plug'n play) that ends in a ½ "uniflex switch, which also constitutes the contract price between" the house "installations.

Fume cupboards with height adjustable function are performed with flexible pipes after water trap.

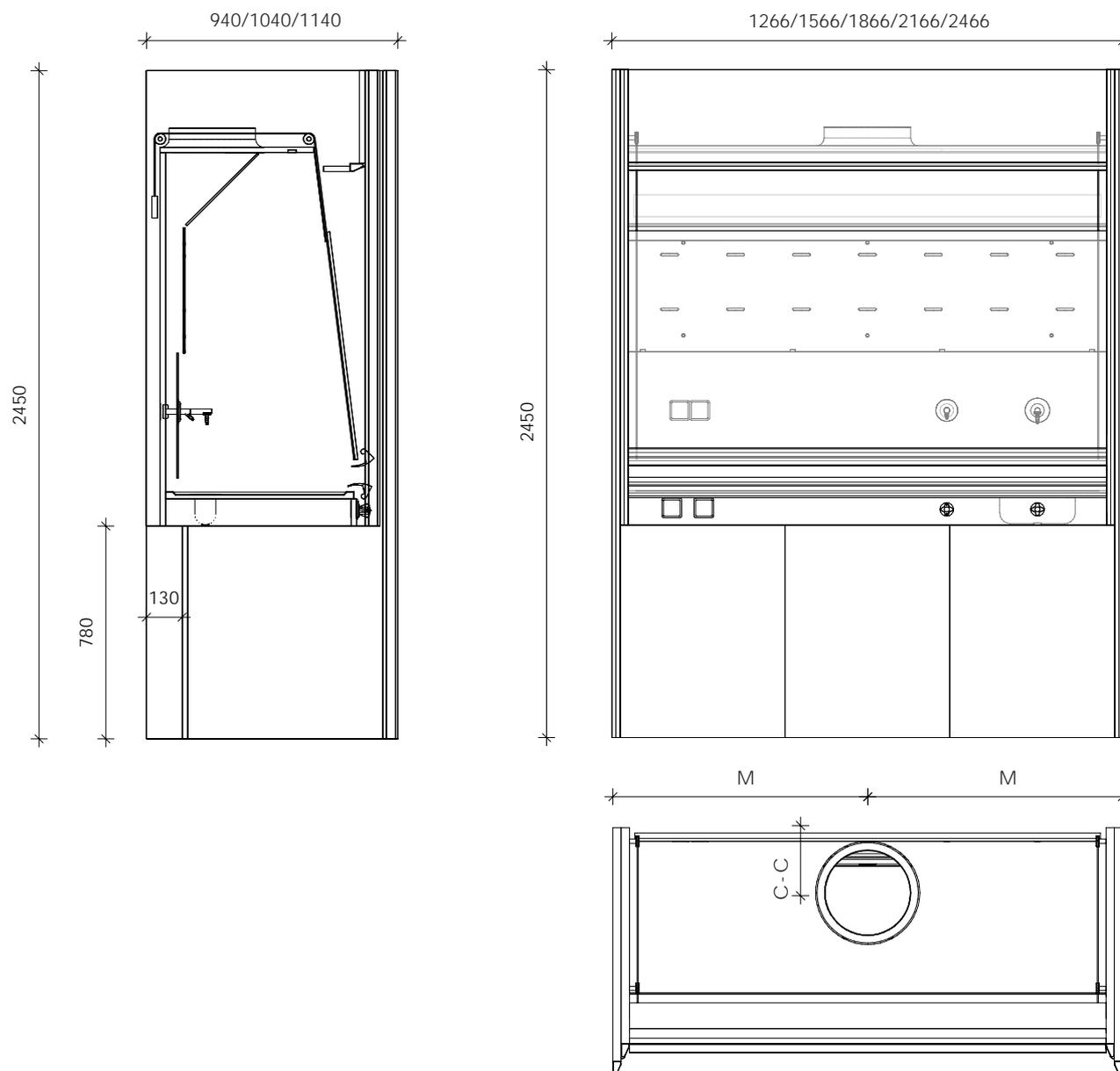
Pressure tested from the factory.



Fume cupboard with electrical height- adjustment



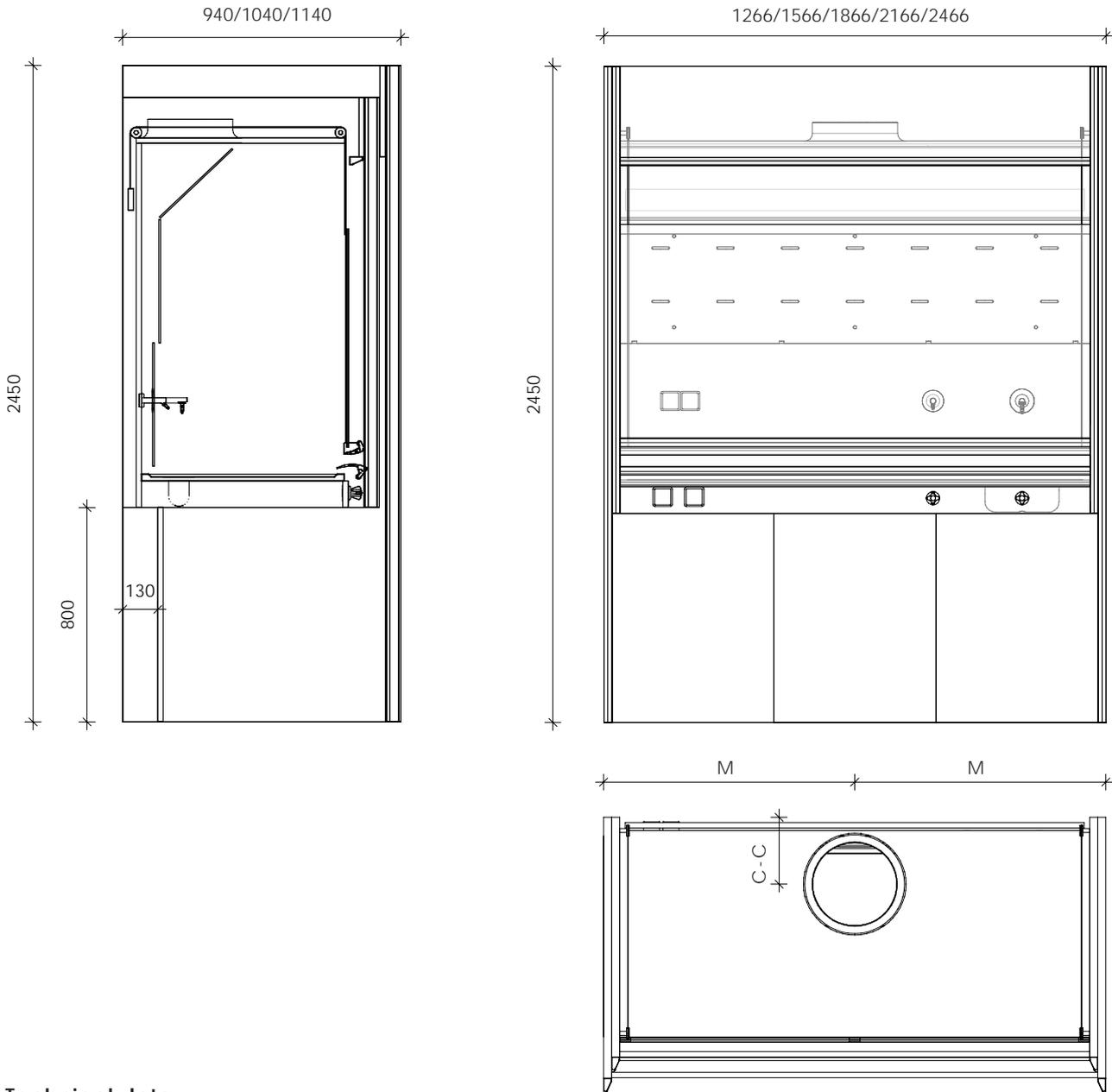
GREENLINE PRO - MODEL STP-SHS, SLANTED SASH WINDOW, ELECTRIC HEIGHT ADJUSTABLE



Technical data

| Model STP-LHS | Greenline Pro 1266 | Greenline Pro 1566 | Greenline Pro 1866 | Greenline Pro 2166 | Greenline Pro 2466 |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|
| Width outside (mm) | 1266 | 1566 | 1866 | 2166 | 2466 |
| Depth exterior (mm) | 940 / 1040 / 1140 | | | | |
| Height exterior (mm) | 2450 | | | | |
| Width inside cabin (mm) | 1140 | 1440 | 1740 | 2040 | 2340 |
| Depth countertops (mm) | 680 / 780 / 880 | | | | |
| Height inside cabin (mm) | 1250 | | | | |
| Max Lift pane opening (mm) | 850 | | | | |
| Connector for ventilation (mm) | Ø250 | Ø250 | Ø315 | 2 x Ø250 | 2 x Ø250 |
| Position from the back wall to ventilations c-c (mm) | 207.5 | 207.5 | 240 | 207.5 | 207.5 |
| Position from fume cupboard side to c-c (mm) | 633 | 783 | 933 | 498/498 | 648/648 |
| Height adjustable movement (mm) | 700 - 1000 | | | | |

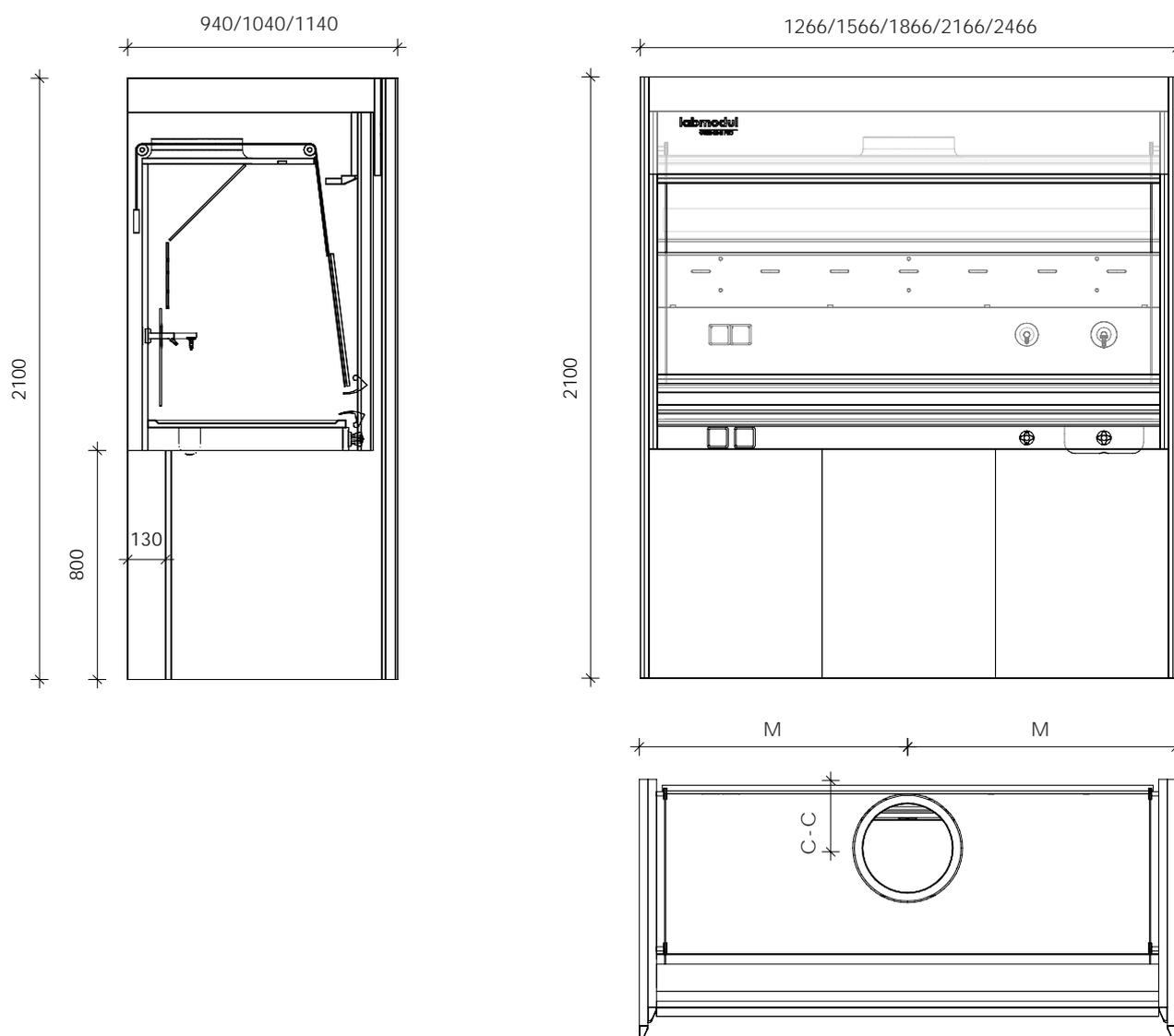
GREENLINE PRO - MODEL STP-LHS, VERTICAL SASH WINDOW, ELECTRIC HEIGHT ADJUSTABLE



Technical data

| Model STP-LHS | Greenline Pro 1266 | Greenline Pro 1566 | Greenline Pro 1866 | Greenline Pro 2166 | Greenline Pro 2466 |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|
| Width outside (mm) | 1266 | 1566 | 1866 | 2166 | 2466 |
| Depth exterior (mm) | 940 / 1040 / 1140 | | | | |
| Height exterior (mm) | 2450 | | | | |
| Width inside cabin (mm) | 1140 | 1440 | 1740 | 2040 | 2340 |
| Depth countertops (mm) | 680 / 780 / 880 | | | | |
| Height inside cabin (mm) | 1250 | | | | |
| Max Lift pane opening (mm) | 850 | | | | |
| Connector for ventilation (mm) | Ø250 | Ø250 | Ø315 | 2 x Ø250 | 2 x Ø250 |
| Position from the back wall to ventilations c-c (mm) | 207.5 | 207.5 | 240 | 207.5 | 207.5 |
| Position from fume cupboard side to c-c (mm) | 633 | 783 | 933 | 498/498 | 648/648 |
| Height adjustable movement (mm) | 700 - 1000 | | | | |

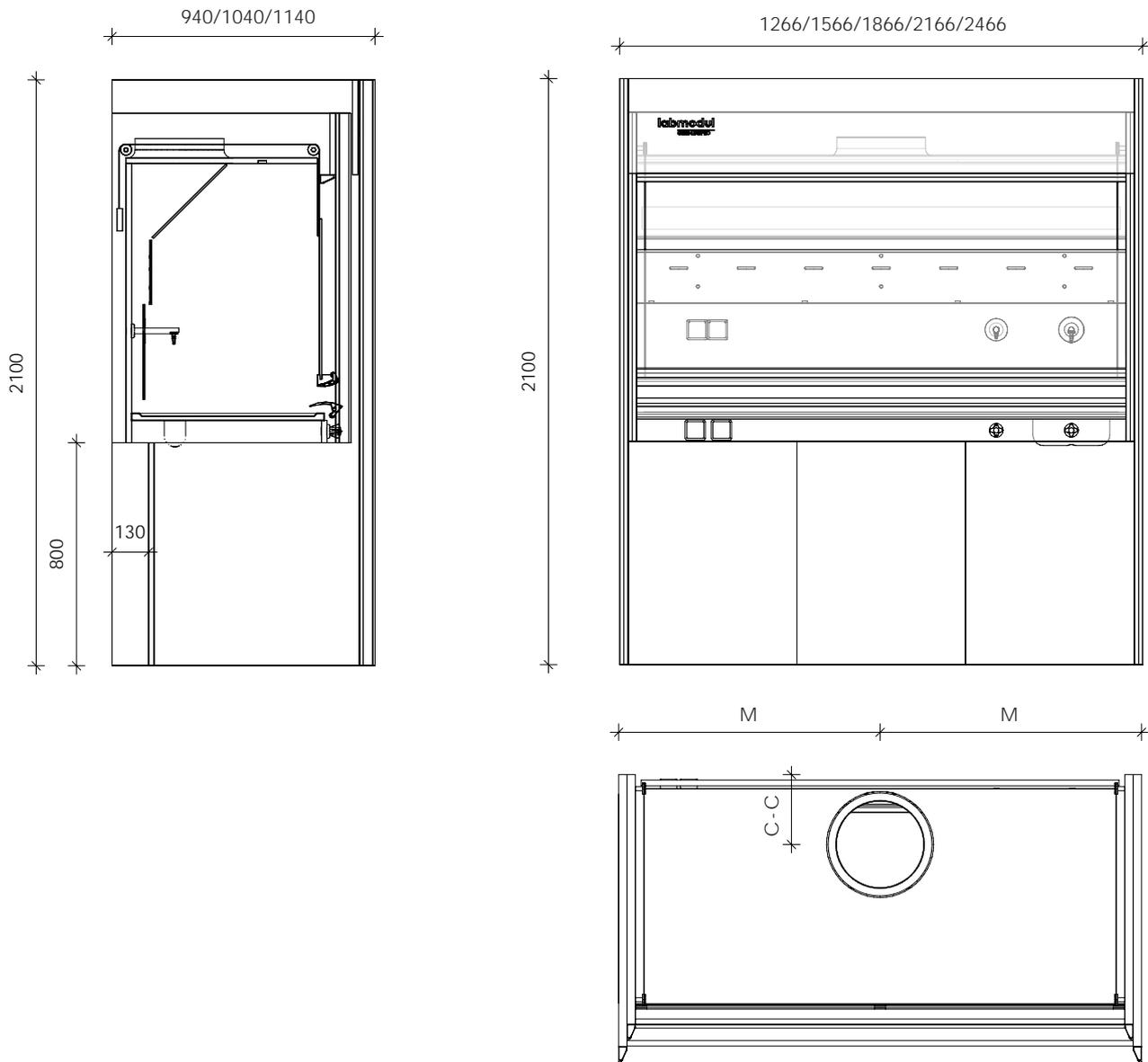
GREENLINE PRO - MODEL STP-SHS, SLANTED SASH WINDOW, ELECTRIC HEIGHT ADJUSTABLE



Technical data

| Model STP-LHS | Greenline Pro 1266 | Greenline Pro 1566 | Greenline Pro 1866 | Greenline Pro 2166 | Greenline Pro 2466 |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|
| Width outside (mm) | 1266 | 1566 | 1866 | 2166 | 2466 |
| Depth exterior (mm) | 940 / 1040 / 1140 | | | | |
| Height exterior (mm) | 2100 | | | | |
| Width inside cabin (mm) | 1140 | 1440 | 1740 | 2040 | 2340 |
| Depth countertops (mm) | 680 / 780 / 880 | | | | |
| Height inside cabin (mm) | 1025 | | | | |
| Max Lift pane opening (mm) | 700 | | | | |
| Connector for ventilation (mm) | Ø250 | Ø250 | Ø315 | 2 x Ø250 | 2 x Ø250 |
| Position from the back wall to ventilations c-c (mm) | 207.5 | 207.5 | 240 | 207.5 | 207.5 |
| Position from fume cupboard side to c-c (mm) | 633 | 783 | 933 | 498/498 | 648/648 |
| Height adjustable movement (mm) | 700 - 1000 | | | | |

GREENLINE PRO - MODEL STP-LHS, VERTICAL SASH WINDOW, ELECTRIC HEIGHT ADJUSTABLE



Technical data

| Model STP-LHS | Greenline Pro 1266 | Greenline Pro 1566 | Greenline Pro 1866 | Greenline Pro 2166 | Greenline Pro 2466 |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|
| Width outside (mm) | 1266 | 1566 | 1866 | 2166 | 2466 |
| Depth exterior (mm) | 940 / 1040 / 1140 | | | | |
| Height exterior (mm) | 2100 | | | | |
| Width inside cabin (mm) | 1140 | 1440 | 1740 | 2040 | 2340 |
| Depth countertops (mm) | 680 / 780 / 880 | | | | |
| Height inside cabin (mm) | 1025 | | | | |
| Max Lift pane opening (mm) | 700 | | | | |
| Connector for ventilation (mm) | Ø250 | Ø250 | Ø315 | 2 x Ø250 | 2 x Ø250 |
| Position from the back wall to ventilations c-c (mm) | 207.5 | 207.5 | 240 | 207.5 | 207.5 |
| Position from fume cupboard side to c-c (mm) | 633 | 783 | 933 | 498/498 | 648/648 |
| Height adjustable movement (mm) | 700 - 1000 | | | | |

Installations for fume cupboards with height adjustable parts

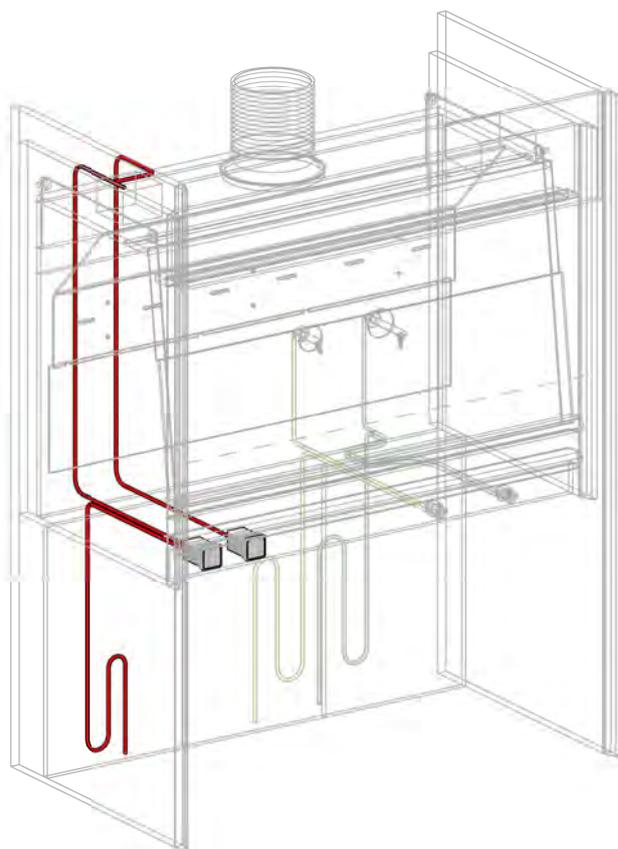
Electrical installations

Internal cable connections are made in 3-wire installation cable with 1-phase distribution. The installation is completed in a junction box located on top of the fume cupboard. From the junction box, a cable length of 130 cm is completed with a CEE plug 16A.

Consumption on the stage up to 2200 watts.

The fume cupboard is supplied with all internal connections made in cable installation and in accordance with the Strong Power Order, Section 6, Electrical Installations.

In case of special fume cupboards that must meet ATEX requirements, this is carried out in accordance with the applicable regulatory requirements.



Plumbing installations

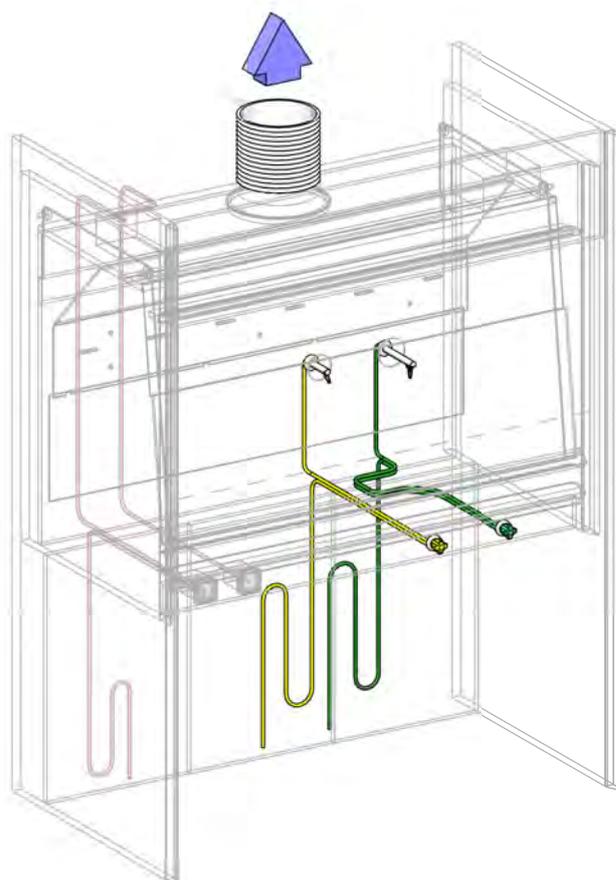
In general

Internal plumbing components are carried out in the BROEN UniFlex system. The system includes a wide range of fixtures and a unique concept of pipes for the connection and connection of plumbing installations.

The fume cupboard comes with a (plug'n play) that ends in a ½ "uniflex switch, which also constitutes the contract price between" the house "installations.

Fume cupboards with height adjustable function are performed with flexible pipes after water trap.

Pressure tested from the factory.



Medieoversigt

- | | |
|---|--|
|  01 - Water potable, cold (WPC) |  23 - Nitrogen (N ₂) |
|  02 - Water potable, hot (WPH) |  24 - Carbon Dioxide (CO ₂) |
|  03 - Distilled water (WDI) |  25 - Argon (Ar) |
|  07 - Water non-potable, cold (WNC) |  26 - Helium (He) |
|  08 - Water non-potable, hot (WNH) |  27 - Dinitrogen monoxide, nitrous oxide (N ₂ O)** |
|  10 - Natural gas (G) |  28 - Low vacuum - 100 kPa to 0,1 kPa (V) |
|  12 - Liquefied petrol gas (LPG) |  29 - Fine vacuum - 0,1 kPa to 0,001 kPa (VF) |
|  14 - Butane (C ₄ H ₁₀) |  30 - High vacuum - 0,1 kPa to 0,0000001 kPa (VH) |
|  16 - Propane (C ₃ H ₈) |  35 - Tempered water (one handle mixer) |
|  18 - Acetylene (C ₂ H ₂) |  36 - Deionised water, cold (WDC) |
|  20 - Hydrogen (H ₂) |  39 - Water potable (WPC /WPH) |
|  21 - Compressed air (CA) |  40 - Water non-potable (WNC /WNH) |
|  22 - Oxygen (O ₂)** | 46 - Methane (CH ₄) |

Entreprise Limit Greenline Pro

| Labmodul | | | | | ENTREPRISE LIMIT | installation-related | | | |
|-------------|----------------|--------------|-------------------|-----------|------------------|----------------------|------------|----------------|------|
| Media | Tube | Pressure | Collection | Dimension | | Dimension | Collection | Valve | Zone |
| Use Water | Uniflex (SPX) | Max. 10 bar | nut | G½" | ENTREPRISE LIMIT | G½" | Nippel | Shut-off valve | A |
| DEM water | PA | Max. 6 bar | Push-fitting OD10 | G½" | | G½" | Nippel | Shut-off valve | A |
| Technic gas | Uniflex (SPX) | Max. 16 bar | nut | G½" | | G½" | Nippel | Shut-off valve | A |
| Clean-gas | Uniflex (SS) | Max. 132 bar | nut | G½" | | G½" | Nippel | Shut-off valve | A |
| Ren-gas | Uniflex (PTFE) | Max. 21 bar | nut | G½" | | G½" | Nippel | Shut-off valve | A |
| Strainer | PP | - | | G1½" | | G1½" | | | B |

Air volumes in m³/h at 0,3 m/s

| Opening cm | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|-------------------|-----|-----|-----|-----|-----|-----|------|------|------|
| Greenline Pro 120 | 130 | 194 | 259 | 324 | 389 | 454 | 518 | 583 | 648 |
| Greenline Pro 150 | 162 | 243 | 324 | 405 | 486 | 567 | 648 | 729 | 810 |
| Greenline Pro 180 | 194 | 292 | 389 | 486 | 583 | 680 | 778 | 875 | 972 |
| Greenline Pro 210 | 227 | 340 | 454 | 567 | 680 | 794 | 907 | 1021 | 1134 |
| Greenline Pro 240 | 259 | 389 | 518 | 648 | 778 | 907 | 1037 | 1166 | 1296 |



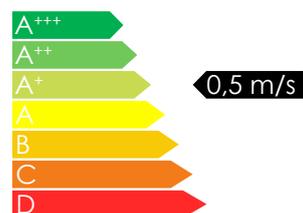
Air volumes in m³/h at 0,4 m/s

| Opening cm | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|-------------------|-----|-----|-----|-----|------|------|------|------|------|
| Greenline Pro 120 | 173 | 259 | 346 | 432 | 518 | 605 | 691 | 778 | 864 |
| Greenline Pro 150 | 216 | 324 | 432 | 540 | 648 | 756 | 864 | 972 | 1080 |
| Greenline Pro 180 | 259 | 389 | 518 | 648 | 778 | 907 | 1037 | 1166 | 1296 |
| Greenline Pro 210 | 302 | 454 | 605 | 756 | 907 | 1058 | 1210 | 1361 | 1512 |
| Greenline Pro 240 | 346 | 518 | 691 | 864 | 1037 | 1210 | 1382 | 1555 | 1728 |



Air volumes in m³/h at 0,5 m/s

| Opening cm | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|-------------------|-----|-----|-----|------|------|------|------|------|------|
| Greenline Pro 120 | 216 | 324 | 432 | 540 | 648 | 756 | 864 | 972 | 1080 |
| Greenline Pro 150 | 270 | 405 | 540 | 675 | 810 | 945 | 1080 | 1215 | 1350 |
| Greenline Pro 180 | 324 | 486 | 648 | 810 | 972 | 1134 | 1296 | 1458 | 1620 |
| Greenline Pro 210 | 378 | 567 | 756 | 945 | 1134 | 1323 | 1512 | 1701 | 1890 |
| Greenline Pro 240 | 432 | 648 | 864 | 1080 | 1296 | 1512 | 1728 | 1944 | 2160 |



Ventilation connection

| Model STP-SFA & STP-LFA (Fast) | Greenline Pro 120 | Greenline Pro 150 | Greenline Pro 180 | Greenline Pro 240 |
|--------------------------------------|-------------------|-------------------|-------------------|-------------------|
| Outside width (mm) | 1200 | 1500 | 1800 | 2400 |
| Connection pipe for ventilation (mm) | Ø250 | Ø250 | Ø315 | 2 x Ø250 |
| Height from floor to OK stud (mm) | 2385 | | | |

| Model STP-SHS & STP-LHS (hæve-sænkefunktion) | Greenline Pro 120 | Greenline Pro 150 | Greenline Pro 180 | Greenline Pro 240 |
|--|-----------------------------|-------------------|-------------------|-------------------|
| Outside width (mm) | 1266 | 1566 | 1866 | 2466 |
| Connection pipe for ventilation (mm) | Ø250 | Ø250 | Ø315 | 2 x Ø250 |
| Height from floor to OK stud (mm) | 2085 - 2385 (flexible pipe) | | | |



Table tops

Compact laminate is made in 12, 16 or 20 mm thickness. Available in white with black core, but also available in black and white. The edges are rounded and polished and can be delivered in different profiles. Sinks and dripping cups can be integrated by either loading, planing or sublimation.

Trespa+ is performed in 16 or 20 mm thickness. Supplied standard in white with black core, but also available in black and gray. All edges rounded and polished. Sinks and dripping cups can be integrated by either loading, sinking or sublimation.

Stainless steel is made of 1.25 mm Scotch Bright AISI 316 steel glued to a waterproof wood core. Available with or without beads, 25 mm thick and at edge 30 mm. Sinks, dripping cups, chemical drains and garbage can be integrated with ice welding.

Epoxy Resin is performed as a solid table top with or without edges. The table top has a thickness of 19 mm and at the rim 25 mm, or 26/32 mm. Epoxy sinks and dripping cups can be integrated by either loading, planing or sublimation.

Polypropylen is done as a solid table top with or without marine edges. The table top has a thickness of 20 mm and with a marine edge of 30 mm. Sinks and dripping cups in PP can be integrated by ice welding or loading.

Ceramic is done as a solid table top with or without marine edges. The table top is glazed and has a thickness of 26 mm and a marine edge of 33 mm. Ceramic sinks and dripping cups can be integrated by either loading, planing or sublimation.

Resistance Overview

| Material | Critical media | Malicious media | Advantage | Application |
|-----------------------------|---------------------------------------|--|--|--|
| Compact laminate | Acids > 10 % | Salt Acids Nitric acids Sulfur Acids | Water Resistant Shockproof Inorganic material Sinks and dripping cups are integrated | Table tops Fronts Fume cupboards |
| Trespa+ | Acids > 10 % | Salt Acids Nitric acids Sulfur Acids | Water Resistant Antibacterial High chemical resistance Shockproof Sinks and dripping cups are integrated | Table tops Fronts Fume cupboards |
| Stainless steel ASI 316L | Cadmium Lactic acid Oxalic acid | Fabrics with chlorine and bromine Formic acid Sulfur Acids | Water Resistant No collections High resistance to solvents Withstand high temperatures Easy to clean Sinks and dripping cups are integrated | Table tops Fume cupboards |
| Epoxy Resin | Acids > 20 % | Hydrofluoric acid Mineral acids | Water Resistant Shockproof High chemical resistance Withstand high temperatures Durable | Table tops Fume cupboards |
| Polypropylene | Acids > 10 % | Salt Acids Nitric acids Sulfur Acids Heat > 60 degrees | Water Resistant No collections High chemical resistance | Table tops Fume cupboards |
| Ceramic | None | Hydrofluoric acid | Water Resistant Best chemical resistance Withstand high temperatures Easy to clean Durable | Table tops Fume cupboards |

| For table tops | Acid / base | Solvent | discoloration | Heat |
|--------------------------|-------------|---------|---------------|------|
| Compact laminate | • | • | • | • |
| Trespa + | • | • | • | • |
| Stainless steel ASI 316L | • | • | • | • |
| Epoxy Resin | • | • | • | • |
| Polypropylene | • | • | • | • |
| Ceramic | • | • | • | • |

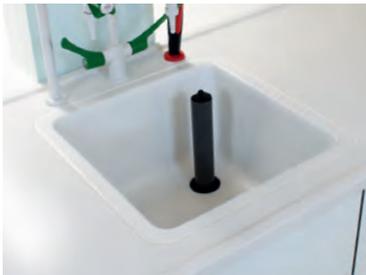
- Unsuitable Not resilient
- Suitable Resistant, weak discoloration after prolonged exposure
- Suitable Resistant, no impact



Stainless steel



PP



Epoxy



Ceramic



Placement possibilities of drip cup in sink bottoms

Sinks

Stainless steel sinks which is undermounted or welded. Lid can be supplied as an accessory.

| | |
|-------------|------------------------------------|
| Model TR100 | Ø100 mm round Funnel |
| Model TR150 | Ø150 mm round Funnel |
| Model DK130 | Ø130mm round Drip cup |
| Model DK250 | 250 mm x 150 mm x 100 mm, Drip cup |
| Model A340 | 340 mm x 300 mm x 200 mm |
| Model A400 | 400 mm x 340 mm x 145 mm |
| Model A480 | 480 mm x 340 mm x 180 mm |
| Model A500 | 500 mm x 400 mm x 160 mm |
| Model A600 | 600 mm x 400 mm x 200 mm |

Epoxy sinks which is dropped in or undermounted.

| | |
|-----------------|--------------------------|
| Model S497 | 150x70x108 mm, Drip cup |
| Model S499 | 229x76x134 mm, Drip cup |
| Model S1000 | 250x125x150 mm, Drip cup |
| Model SDS5-DI | 300x200x200 mm |
| Model SA5-DI | 356x254x152 mm |
| Model SN9-DI | 406x305x203 mm |
| Model SGL 10-DI | 400x400x300 mm |
| Model SM8-DI | 450x365x200 mm |
| Model SEL 16-DI | 600x450x300 mm |
| Model SVL15-DI | 635x381x254 mm |

PP sinks with round corners.

| | |
|-------------|--------------------------|
| Model PPDK1 | 265x117x185 mm, Drip cup |
| Model PPDK2 | Ø170x115 mm, Drip cup |
| Model PP320 | 320x320x200 mm |
| Model PP400 | 400x400x250 mm |
| Model PP500 | 500x400x250 mm |
| Model PP600 | 600x400x250 mm |

PVC sinks

| | |
|--------------|----------------|
| Model PVC400 | 400x300x200 mm |
| Model PVC550 | 550x400x200 mm |
| Model PVC650 | 650x400x200 mm |

Ceramic sinks.

| | |
|-------------|-------------------------|
| Model KKDK1 | Ø105x112 mm, Drip cup |
| Model KKDK2 | 250x95x112 mm, Drip cup |
| Model KK400 | 400x400x250 mm |
| Model KK500 | 500x400x250 mm |
| Model KK600 | 600x400x250 mm |

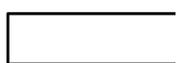
Table top profiles

Front edges

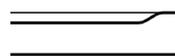
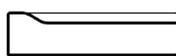
Rear edges



Compact laminate with Alu edge



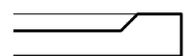
Trespa+ compact laminate with Alu upturned edge



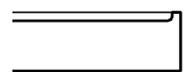
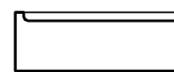
Stainless steel with steel marine edges

Front edges

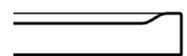
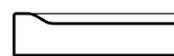
Rear edges



Epoxy Resin with marine edges



Polypropylene with marine edges



Ceramic with marine edges



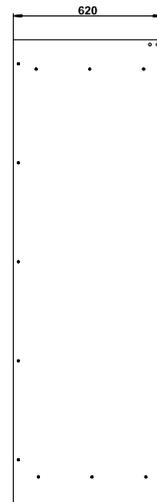
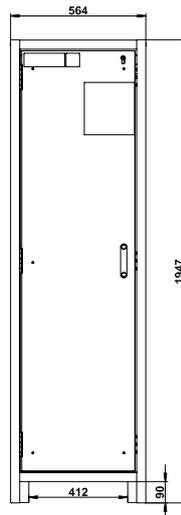
Steel special cabinets

Fire resistant tall storage cabinet 30 minutes

With self-closing door in case of fire. The cabinet is equipped with 4 pull-out trays; Load capacity of 25 kg / pc. Collection pots in PP or PE are offered separately.
Model nr. Q30.195.056



Standard colors

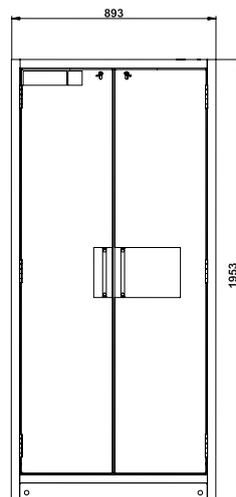


Fire resistant tall storage cabinet 90 minutes

With self-closing door in case of fire. Integrated ventilation duct for extraction. The cabinet is equipped with 3 shelves; Load capacity of 75 kg / pc. Collection pots in PP or PE are offered separately.
Model nr. Q90.195.090



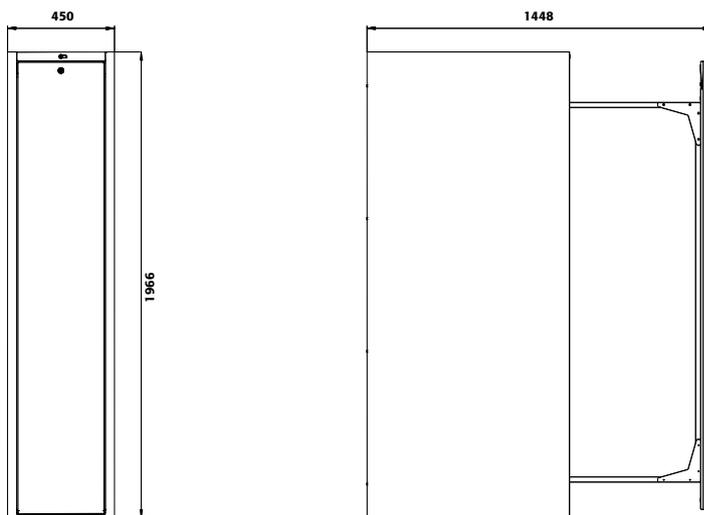
Standard colors



Fire resistant tall chemical storage cabinet 90 minutes

Pull-out cabinet with electric open/close function. Self-closing door in case of fire. Integrated ventilation duct for extraction. Supplied with 5 shelves and 1 x bottom with collecting swamp.

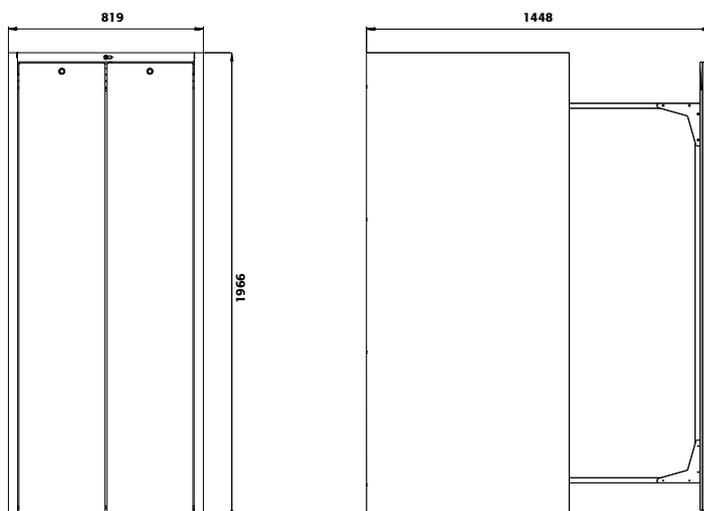
Model nr. Single Cabinet:
V90.196.045.VDAC



Fire resistant tall chemical storage cabinet 90 minutes

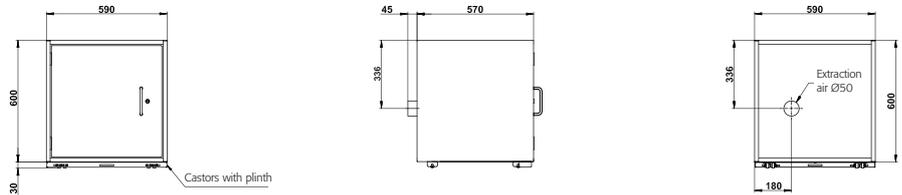
Double pull-out cabinet with electric open / close function. Self-closing door in case of fire. Integrated ventilation duct for extraction. Supplied with 10 shelves and 2 x bottom with collecting swamp.

Model nr. double cabinet:
V90.196.081.VDAC

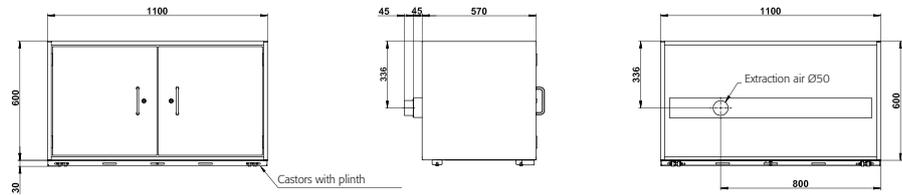


Acid / Base cabinet with pull-out shelves

Ventilated under cabinet with 2 pull-out shelves, prepared for connection of ventilation. For storing aggressive and non-combustible chemicals. Model nr.: SL.060.059.UB.2T

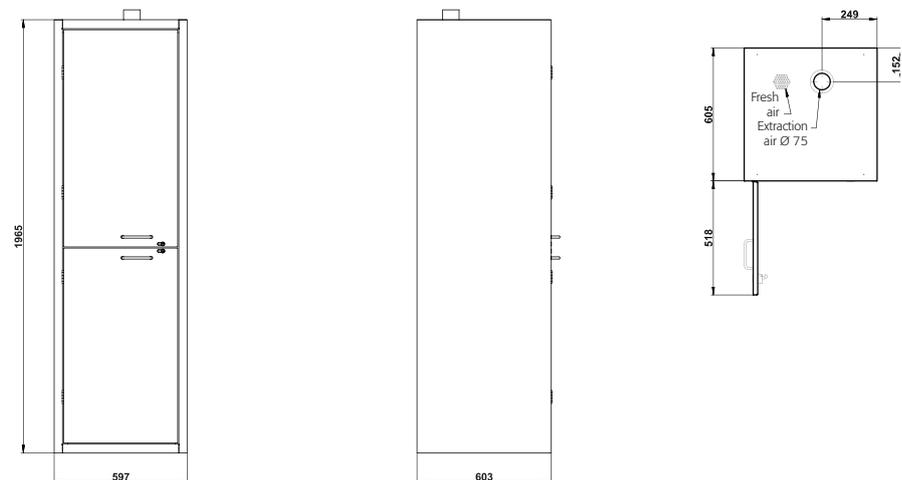


Ventilated double under cabinet with 4 pull-out shelves, prepared for connection of ventilation. For storing aggressive and non-combustible chemicals. Model nr.: SL.060.110.UB.2T



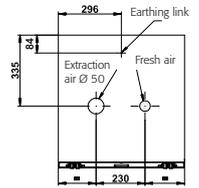
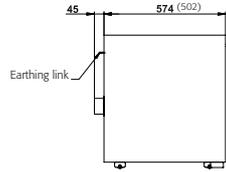
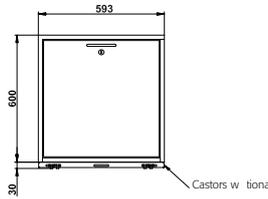
Acid / Base tall storage cabinet with pull-out shelves

Ventilated 2 split tall storage cabinet with 6 pull-out shelves, prepared for connection of ventilation. For storing aggressive and non-combustible chemicals. Model nr.: SL.196.060.MH



Fire resistant under cabinet 90 minutes / with pull-out door

Fire resistant under cabinet 90 minutes, with drawers.
Model nr.: UB90.060.059.S



Fire resistant under cabinet 90 minutes, for chemical collection

Fire resistant under cabinet 90 minutes, for chemical collection in a drawer, prepared for the liquid level gauge with alarm.
Model nr.: UB90.060.059.T

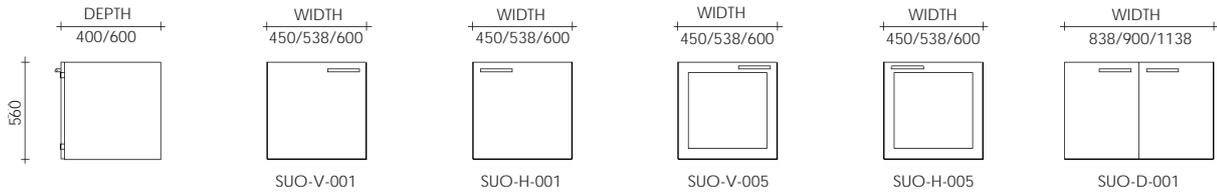


Accessories:
Table-mounted waste suit for collecting in the dunk located in the under cabinet.
Varenr.: 28931

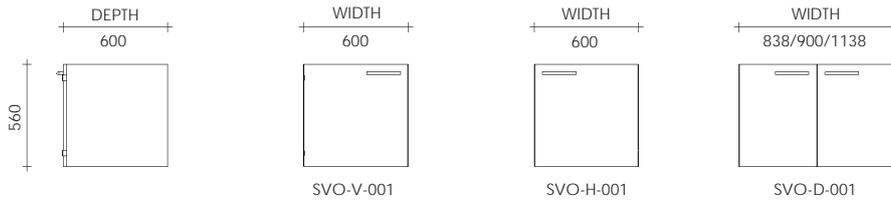


Under bench cabinets for fume cupboards

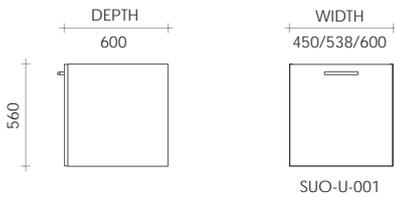
Ventilated suspended under bench cabinets



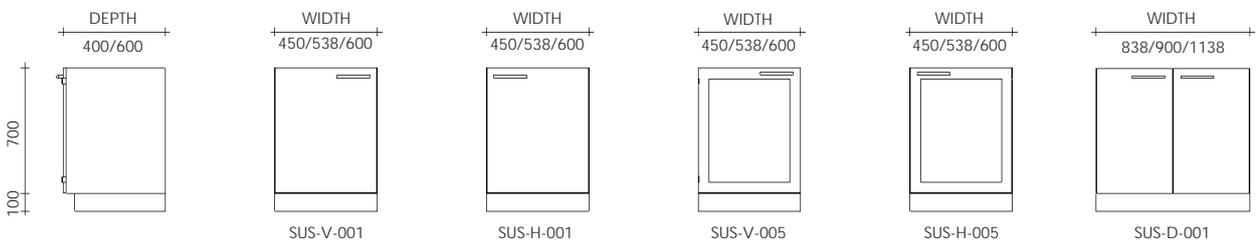
Suspended under bench sink cabinets



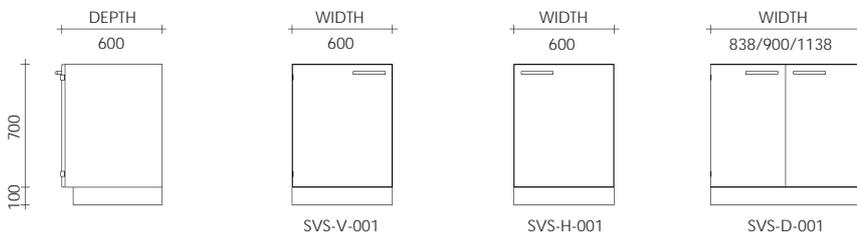
Ventilated suspended under bench cabinets with pull-out door



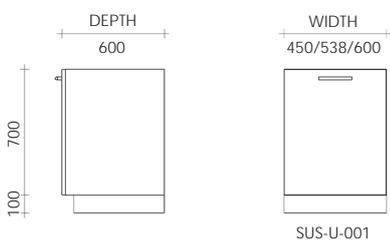
Ventilated under bench cabinets on plinth



Under bench sink cabinets on plinth



Ventilated under bench cabinets on plinth with pull-out door



Other regulations

All standards, regulations, guides, etc. for materials, workmanship and safety measures are complied with.

EN/DS Standards

- EN/DS 14175 Danish/Europe standard for fume cupboards,
- EN/DS 1030
- EN/DS 12600: $\alpha(\beta)\phi$ 6mm tempered glass: 1(C)2,

SBI-instructions

Nr. 108 Moisture and facade joints

- DIN-standards
- DIN-standards 68761, pages 1, 2 og 3
- DIN-standards 1052

Notices

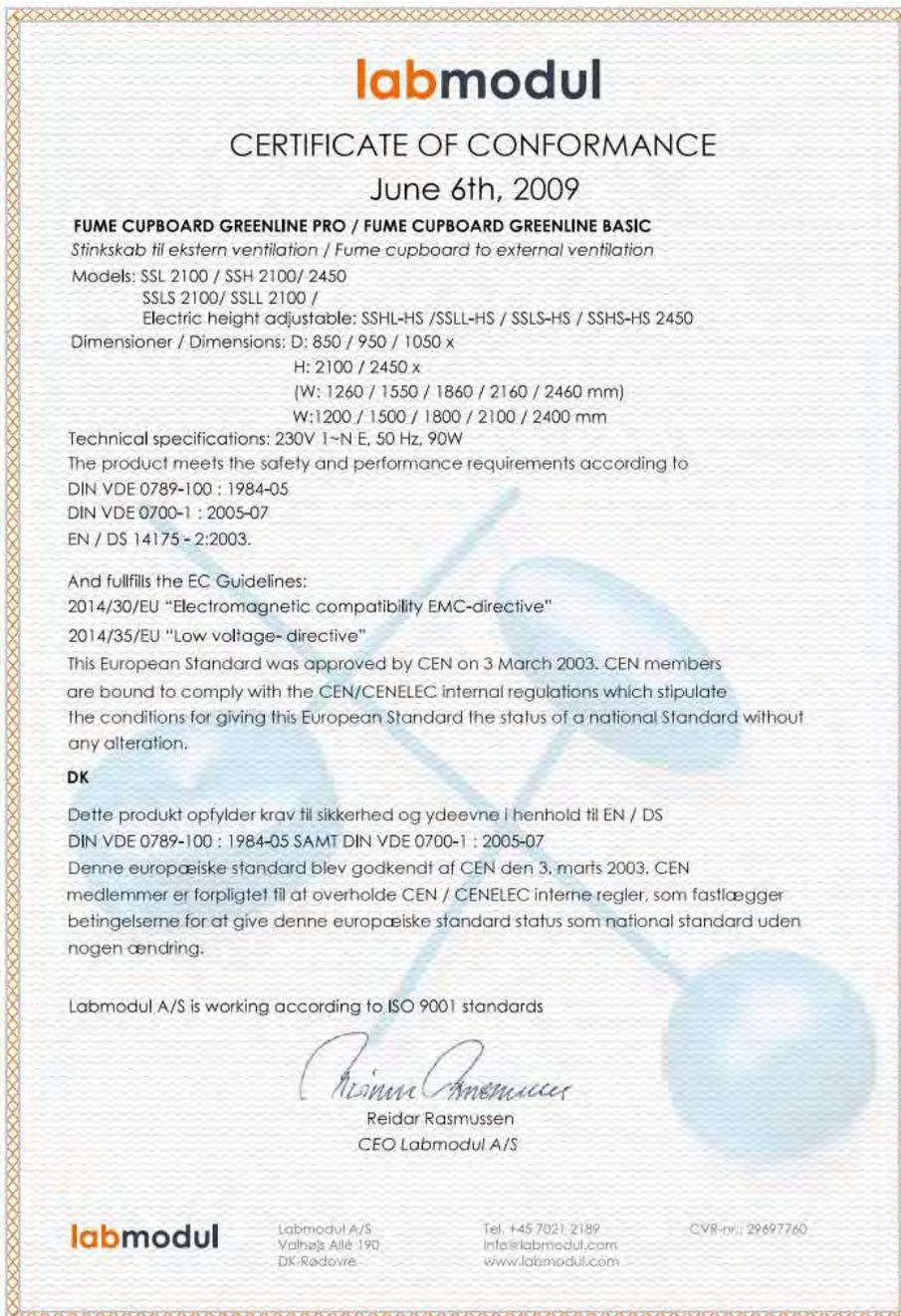
- Strong Power Order Section 6, Electrical Installations 1st Edition.
- Ministry of the Environment's Order No. 289.
- Ministry of Labor's Order No. 642 on Genetic Engineering and the Working Environment.
- Executive Order No. 864 on biological agents and occupational health and safety.
- Danish National Board of Health Order No. 954 on the use of open radioactive sources in hospitals, laboratories, etc.

Instructions

- AT guidance C.0.4. December 2009 Guidance on classification of laboratories, plants for production, etc., where work is done with genetically modified organisms.
- Industry's Industrial Work Environment Council Guidelines on fume cupboards - Guide to Work in fume cupboards, 2010.
- SIS - Radiation Protection Guidelines for Working with Open Radioactive Sources (Used in Isotope Laboratories). Edition 10, September 2005.

Industry Publications

- MBK Painting Processing Directory
- FSO Sealing industry's Cooperation and Information Council
- V.S.O. Guidance from the Glass Industry Cooperation Organizations
- Various supplier information.



Service agreements and maintenance

Inventory Service



Check for agreed interval. All functional parts are reviewed, adjusted and maintained.

Any necessary repairs that require new materials are noted and the customer is informed. Smaller repairs are arranged immediately.

Settlement of actual consumption of hours and materials.

Fume cupboards Service



Review 1 x yearly and in relation to government requirements.

All vital functional parts are reviewed and maintained.

Any necessary repairs are noted and the customer is informed.

Settlement at fixed price or after actual consumption of time and materials.

LAF Benches Service



Check 1 x yearly

All vital functional parts are reviewed and maintained.

Any necessary repairs are noted and the customer is informed.

Settlement at fixed price or after actual consumption of time and materials

24 hours on call



Remedy within 24 hours in case of emergency shutdown

Any necessary repairs are informed and rectified immediately or as soon as possible.

Delivery of new components within 3 days.

Settlement of actual consumption of hours and materials as well as annual subscription tax.



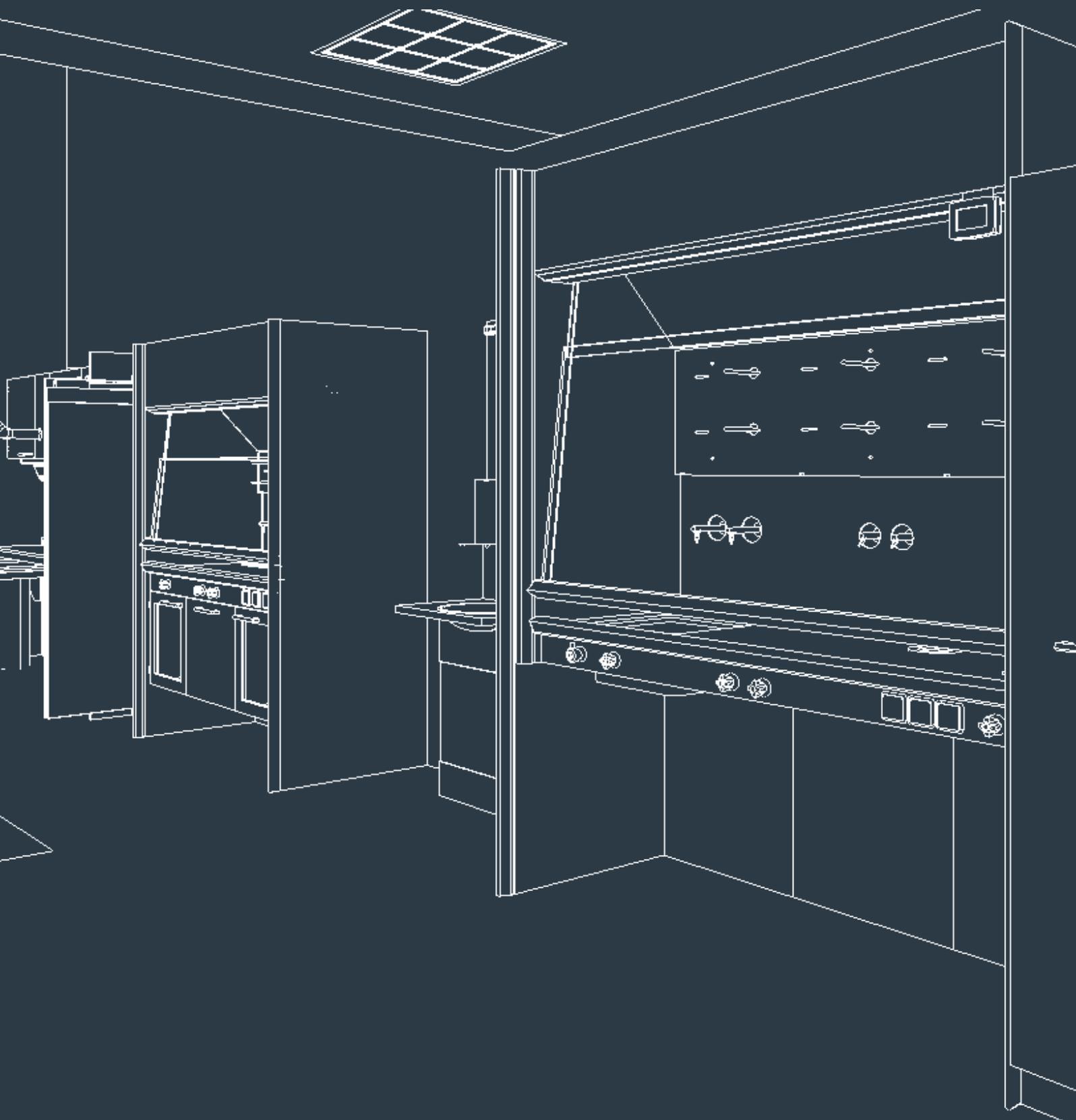


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GREENLINE PRO

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Three square control buttons for the water dispenser.

Water dispenser compartment containing a blue water bottle.





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Designing safety