

**Pol-Lab spółka z ograniczoną odpowiedzialnością sp. k.**  
**Kwiatkowskiego 19 str.**  
**43-365 Wilkowice, Poland**  
**tel +48 33 488 79 15**  
**fax +48 33 810 16 28**  
**e-mail: [biuro@poll.pl](mailto:biuro@poll.pl)**  
**[www.poll.pl](http://www.poll.pl)**



# **Technical Specification**

## **Table top fume hood TV-M**

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## 1. General description

True Vent table top fume hood are used to protect the laboratory personnel from the toxic or stinking fumes, gases and ashes that occur during work with aggressive and caustic substances, with the exception of explosive substances i.e. ether with hydrofluoric or hydrosiliconfluoric compounds.

The sQ-L table top fume are made entirely of steel covered with epoxy paint.

The exhaust system is always made completely of steel covered with epoxy paint, is located at the top of the working chamber and equipped with perforation on back wall to provide a uniform air flow throughout the volume of the chamber.

Fume hood isn't equipped with sinks and taps in standard, but can be equipped optionally. All necessary media should be installed on supporting frame, or on table beneath the chamber.

The sash may is motorized, operated from the button or pedal.

Sufficient lighting is provided by a double glow discharge tube lamp.



## 2. Technical Data

Dimensions			
Model	TV-M 1200	TV-M 1500	TV-M 1800
Width (mm)	1200	1500	1800
Depth (mm)	788		
Height closed/open sash (mm)	1460		
Workspace dimensions:			
width (mm)	1149	1449	1749
depth (mm)	750		
height (mm)	1200		
Recommended air flow with sash open (m <sup>3</sup> /h)	500-9000	800-1400	800-1400
Recommended minimal air flow with sash closed (m <sup>3</sup> /h)	250	510	410
Recommended air flow speed at front face (m/s)	0,3 - 0,5		
Extract-air manifold (mm)	Ø160	2 x Ø200	Ø250

Variants		
Element	Standard	Optional
Worktop	<ul style="list-style-type: none"> <li>Mixture phenolic resins</li> </ul>	<ul style="list-style-type: none"> <li>Solid ceramics</li> <li>Polypropylene</li> <li>Large size technical ceramics</li> </ul>
Work chamber walls (external and internal)	<ul style="list-style-type: none"> <li>Steel covered with epoxy paint</li> </ul>	<ul style="list-style-type: none"> <li>VSG glass</li> </ul>
Sash window	<ul style="list-style-type: none"> <li>VSG glass</li> </ul>	<ul style="list-style-type: none"> <li>Polycarbonate</li> </ul>
Flow control	<ul style="list-style-type: none"> <li>Without controller</li> </ul>	<ul style="list-style-type: none"> <li>Q-Flow Advanced</li> <li>Q-Flow Touch</li> </ul>
Sash operation	<ul style="list-style-type: none"> <li>Electrical</li> </ul>	
Lighting	<ul style="list-style-type: none"> <li>Fluorescent lamp with 2 tubes</li> </ul>	<ul style="list-style-type: none"> <li>EX explosion-proof lamp with 2 tubes</li> </ul>
Fittings	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li><b>Available only if</b></li> </ul>

		<ul style="list-style-type: none"> <li>• Additional 230V 16A sockets</li> <li>• 400V socket</li> <li>• Scaffolding inside the work chamber</li> <li>• Water tap and sink</li> <li>• Technical gas taps complete with fitting</li> </ul>
Underbench cupboards	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Available only if equipped with supporting frame</b></li> <li>• Lock</li> <li>• Polypropylene cupboard</li> <li>• Laminated chipboard ventilated cupboard with sliding doors</li> <li>• PVC internal lining</li> <li>• 1 shelf</li> </ul>
Guarantee	<ul style="list-style-type: none"> <li>• 24 months</li> </ul>	<ul style="list-style-type: none"> <li>• 36 months</li> </ul>

### 3. Electrical installation

The fume cupboards wiring system consists of:

- Main switch, located on side panel.
- Fluorescent lighting with two glow discharge tubes (2x18W)
- Two 230V 16A electrical sockets (optional)
- Electrical wiring 1,5 mm<sup>2</sup>

### 4. Technical requirements

#### Installation instructions

Fume cupboard installation is performed by the customer. After delivery, remove the chamber from the palette, next - without unwinding protective film - move it to the destination. After setting the chamber on the table, remove the protective film and remove the counterweight lock of the window.

It is recommended to determine the position of the chamber on the countertop by applying a small amount of silicone below the front-side panels. This prevents you from accidentally moving the chamber.

It is necessary to connect the chamber to the air duct, providing the ability to remove air from the chamber with the recommended capacity.

User is obliged to complete the installation of electric shock protection

circuit.

Prior to the delivery the possible access to the laboratory should be inspected and a suitable storage place for storing the cupboards before installation should be prepared. If the corridors do not provide a sufficient access way, an outside scaffolding for access through the window might be necessary.

When evaluating the possible access, special attention should be drawn to:

- a) door dimensions;
- b) staircases and landings;
- c) lift load capacity and dimensions;
- d) corridor dimensions, corridor bends and potential obstacles

Fume cupboards may be installed in premises at least 2,5m high.

The fume cupboard should be stored in a safe place before installation, and steps should be taken to minimise the risk of damaging the cupboard in any way. Similar precautions should be taken if there is any structural work to be done in the vicinity of the cupboard. The recommendations supplied by the manufacturer should be complied with at all time.

Fume cupboard cannot be installed if the air temperature or humidity is significantly different from the temperature or humidity at the storage place. Storing is only allowed in the following conditions:

- a) air temperature -10°C to +30°C
- b) relative humidity at 20°C: 40-70%

If it is necessary to install the fume cupboards before drying of the building, after finishing the works the building should be heated and dehumidified for a couple of days. It is recommended to use dehumidifiers instead of just heating devices, if this is not possible, the premises should be well ventilated during the process.

The sockets' openings (including typical voltage electric networks, electric networks of atypical voltage, computer and communication networks) should be covered and protected from liquid penetration. The sockets have to be made in conformity with national technical standards and have to be cased in a metal or plastic housing.

If electric equipment is built into the fume cupboard, one has to assume the possibility of contact with liquids and corrosives, mechanical impact or contact with flammable gases and fumes and choose an adequate way of securing the equipment.

## **5. Installation conditions:**

### **1. Ventilation**

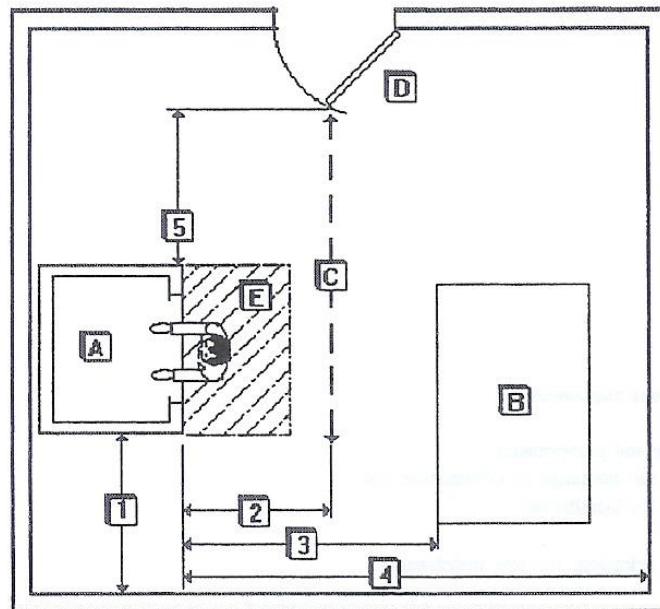
Before installation of the fume cupboards the client is obliged to provide an exhaust ventilation system, allowing adequate air exchange rate according to a project, prepared by a qualified designer.

## 2. Electrical installation

An electrical (230V, 50Hz) installation should be prepared, with YDYP  
3x2,5 mm<sup>2</sup> cable, ending with an electrical box at 50cm above the floor, behind the fume cupboard.

## 6. Recommendations for positioning the table top fume cupboards

The position of a fume cupboard within a room may influence its ability to contain contaminants, so care must be taken to avoid close proximity to features known to cause adverse effect. These include: walls, columns, cabinets, work benches, or other features likely to disturb the flow of air through the enclosure and traffic routes through the laboratory, likely to result in disturbance. These problems are reduced by ensuring there is an *undisturbed zone* within which the operator can work in front of the cupboard.



- A) Fume cupboard
- B) Bench positioned behind the fume cupboard
- C) Traffic route
- D) Door
- E) Undisturbed operator zone - approx.:  
(width of cupboard) x 100 cm



No	Feature	Recommended minimal distance (cm)
1	Distance from side of the cupboard to a nearest wall or significant body (i.e. cabinets, column etc.) Note: This does not include a second fume cupboard.	30
2	Distance from the cupboard's front to a traffic route.	130
3	Distance from the cupboard's front to a workbench.	150
4	Distance from the cupboard's front to a rear wall or major feature.	200
5	Distance between undisturbed zone and any regularly opening door. Fire escapes not in normal use are excluded from this requirement.	100

## 7. Operating conditions

Table top fume cupboards should work in laboratories, heated or ventilated equipment rooms, heated or ventilated halls. It is forbidden to locate them in places exposed to vibrations, high temperature or mechanical impacts.

Fume cupboards should be used only in places secured from the risk of fire, explosion, high temperatures or influence of magnetic and electromagnetic fields.

Fume cupboard should be used only in places where it is not necessary to use personal protection, according to Health and Safety at Work rules.

Maximum permissible concentration of gases (for a single gas) is:

Gas	Concentration (mg/l)
SO <sub>2</sub>	0,025
H <sub>2</sub> S	0,025
Cl <sub>2</sub>	0,003
NO	0,035
NO <sub>2</sub>	0,035
NH <sub>3</sub>	0,040

In the case of gas mixtures, the total of concentrations for all of the component gases, defined in percent, cannot be higher than 100% of maximum permissible concentration.

## 8. Table top fume hood functioning

Primary - contains and conveys potentially dangerous or irritating fumes from the fume cupboard workspace to an outside discharge point where

it can be safely dispersed at low concentration.

The work chamber is ventilated through a baffle located at the ceiling of working chamber, equipped with a deflector to provide a uniform air flow throughout the volume of the chamber. On the front face the work chamber has a sash, with single non-moveable glass pane or two horizontally moveable panes (depending on frame type). The sash has limiters, that leave an air intake gap between the sash and worktop after the sash is closed.

## 9. Table top fume cupboard operation

- Before commencing work in the cupboard it is required to switch on the light, ventilation and control systems;
- After finishing work, the ventilation should keep working until all fumes are removed.

### **Rules of conduct during work**

- The bigger the range of different activities performed in the fume cupboard, the higher the risk of explosion;
- Closed sash is the best way to protect from contaminants and possible explosion;
- The sash should be opened only when it is necessary for the current activity;
- During work when the sash is lifted, it is recommended to avoid fast and violent moving through the air flow, to prevent the contaminants from the fume cupboard from leaking out of it and into the laboratory;
- Experimental work conducted in the fume cupboard should be limited only to the necessary;
- It is required to regulate the air flow through the work chamber, according to currently performed actions and used chemicals;
- Work chamber should be periodically cleaned from the residues left after work;
- The baffle and ventilation system should be periodically cleaned.

### **Prohibited actions:**

- It is forbidden to conduct work in the fume cupboard without prior connecting to the ventilation system;
- The maximum permissible heat loads should never be exceeded;
- Heating devices should be positioned on distance feet
- It is forbidden to conduct work in the fume cupboard with improper chemical load;
- The minimal distance between a heat source and work chamber walls should never be exceeded;
- The fume cupboard should never be considered a storage place for reagents, flammable substances, acids and alkalis;

## 10. Conservation

### **Table top fume cupboard conservation includes:**

- Keeping all the surfaces clean;
- Periodically checking all the earthing connections, especially ones for ventilation shaft, underbench cupboard and chassis;
- Temporarily securing any scratches and damages to prevent corrosion;
- The sash is held by a counterweight in any position. The counterweight and sash are connected by steel cables covered in plastic. The cables should be checked once a year and changed if any signs of damage are found;

### **Cleaning**

- Each time after finishing work, but at least once a day the cupboard should be cleaned from any liquid splashes, especially inside the work chamber;
- Once a week all the cupboard's surfaces should be cleaned with warm water with addition of a surface-active agent, then washed off with warm water and wiped dry;
- When necessary but at least once every 3 months the sash sliding guides should be lubricated with vaseline;
- Common household and technical cleaners (including alcohol-based, ethyl or propyl alcohol) may be used for cleaning the cupboard;
- If stains occur benzine or kerosene should be used
- It is prohibited to use organic solvents with medium polarization like acetone, ethylene or chlorinated water with carbon;
- It is prohibited to use scrubbing cleaners, as they may have an adverse effect on furniture surface smoothness.

### **Health and Safety**

It is required to assure conformity with all health and safety and fire prevention rules mandatory in the laboratory and other common rules, like:

- Making the workplace safe and eliminating or controlling health risks;
- Ensuring the premise and machinery are safe and that all work safety systems are set and followed;
- Providing adequate health and welfare facilities;
- Giving the workers information, instructions, training and supervision necessary for their health and safety;

- Consulting the workers on health and safety matters;

Any repairs of the electrical, gas or water installations may be performed only by authorised personnel and after disconnecting from the supply installation.

## 11. Warranty and repairs

Pol-Lab Sp. z o.o. sp. k. guarantees the product for the time of 24 months from the selling date, provided that it is used properly and according to instructions.

The manufacturer is obligated to repair the device in 14 days, unless there is a necessity of delivering parts from abroad. All the repairs have to be performed by authorised service personnel.

## 12. Drawings

Fig. 2 TV Table top fume cupboards' dimensions.

