

## LAMINARFLOWS



## Basic-types



### BA-900

This laminar flow cabinet can be placed on a table and the air flows through its working area horizontally and laminar. The laminar airflow of the working area is classified into the ISO 5<sup>th</sup> class according to the Standard EN ISO 14644



### BL-1200

This laminar flow cabinet is a standing unit and the air flows through its working area horizontally and laminar. The laminar airflow of the working area is classified into the ISO 5<sup>th</sup> class according to the Standard EN ISO 14644.



### BV-1200

This laminar flow cabinet is a standing unit and the air flows through its working area vertically and laminar. The laminar airflow of the working area is classified into the ISO 5<sup>th</sup> class according to the Standard EN ISO 14644.



### BPV-1200 A és BPV-1200 B

This laminar flow cabinet is a vertical airflow microbiological workstation classified into 2<sup>nd</sup> biohazard class. The laminar airflow of the working area is classified into the ISO 4<sup>th</sup> class according to the Standard EN ISO 14644.



### Cytotflow-915

This laminar flow cabinet provides a working area of high cleanness. The laminar airflow of the working area is classified into the ISO 5<sup>th</sup> class according to the Standard EN ISO 14644.



### KAT-FSZ animal containment cabinet

Animal containment cabinet (KAT) is suitable for keeping experimental animals in a closed clean space.

KAT-F: supply type

KAT-SZ: exhaust type

KAT-F/SZ: combination of the previous types

## BA-900

BA-900 laminar cabinet can be placed on a table and the air flows through its working area horizontally and laminar. The fine filter of high filtration efficiency and the laminar airflow provides that the cleanness of the working area meets the high standards granted in the technical description.

This laminar box can be used widely during microbiological works, pharmaceutical manufacturing and packaging, in the area of semiconductor manufacturing or during laboratory works, in which no health hazard chemicals are released.



The working surface is made of stainless steel which can be cleaned easily. Other parts of the cabinet are powder-coated according with color RAL9010 (white). Both sides of the workstation are closed with tempered security glass. It is equipped with topside light.

**Options:** Additionally we can provide for the cabinet: UV-light, gas- vacuum connections, operating hour counter, painted frame construction, differential pressure gauge for fine filter.

The cabinet can be made of stainless steel on the whole surface and by customer request the working surface's size is variable.

### TECHNICAL DATA

<b>Working area :</b>	The laminar airflow of the working area is classified into the ISO 5 <sup>th</sup> class according to the Standard EN ISO 14644
<b>Pre-filter:</b>	95% filtration efficiency at particle which size is greater than 0,5 µm.
<b>Main filter:</b>	HEPA H13 fine filter is of 99,997% filtration efficiency at particle which size is greater than 0,3 µm
<b>Airflow rate:</b>	0,45 m/s ± 20%
<b>Operating voltage:</b>	230V; 50Hz
<b>Size of the device:</b>	Length: 970 mm Height: 1165 mm Width: 920 mm
<b>Size of work stationery:</b>	Length: 875 mm Height: 570 mm Width: 520 mm
<b>Lighting:</b>	1x30 W fluorescent light
<b>Power consumption:</b>	0,4 W
<b>Weight:</b>	200 kg

## BL-1200

BL-1200 F laminar cabinet is a standing unit and the air flows through its working area horizontally and laminar. The fine filter of high filtration efficiency and the laminar airflow provides that the cleanness of the working area meets the high standards granted in the technical description.

The cabinet can be used widely during microbiological works, pharmaceutical manufacturing and packaging, in the area of semiconductor manufacturing or during all kind of laboratory works, in which no health hazard chemicals are released.



The working surface is made of stainless steel which can be cleaned easily. Other parts of the cabinet are powder-coated according with color RAL9010 (white). Both sides of the workstation are closed with tempered security glass. It is equipped with topside light.

**Options:** Additionally we can provide for the cabinet: UV-light, gas- vacuum connections, operating hour counter, painted frame construction, differential pressure gauge for fine filter.

The cabinet can be made of stainless steel on the whole surface and by customer request the working surface's size is variable.

### TECHNICAL DATA

<b>Working area :</b>	The laminar airflow of the working area is classified into the ISO 5 <sup>th</sup> class according to the Standard EN ISO 14644
<b>Pre-filter:</b>	95% filtration efficiency at particle which size is greater than 0,5 $\mu\text{m}$ .
<b>Main filter:</b>	HEPA H13 fine filter is of 99,997% filtration efficiency at particle which size is greater than 0,3 $\mu\text{m}$
<b>Airflow rate:</b>	0,45 m/s $\pm$ 20%
<b>Operating voltage:</b>	230V; 50Hz
<b>Size of the device:</b>	Length: 1260 mm Height: 1385 mm Width: 870 mm
<b>Size of work stationery :</b>	Length: 1130 mm Height: 570 mm Width: 520 mm
<b>Lighting:</b>	1x30 W fluorescent lamp
<b>Power consumption:</b>	0,9 W
<b>Weight:</b>	200 kg

## BV-1200

BPV-1200 F laminar flow cabinet is a standing unit and the air flows through its working area vertically and laminar. The fine filter of high filtration efficiency and the laminar airflow provides that the cleanness of the working area meets the high standards, granted in the technical description.

This laminar box can be used widely during microbiological works, pharmaceutical manufacturing and packaging, in the area of semiconductor manufacturing or during laboratory works, in which no health hazard chemicals are released.



The working surface is made of stainless steel which can be cleaned easily. Other parts of the cabinet are powder-coated according with color RAL9010 (white). Both sides of the workstation are closed with tempered security glass. It is equipped with topside light.

**Options:** Additionally we can provide for the cabinet: UV-light, gas- vacuum connections, operating hour counter, painted frame construction, differential pressure gauge for fine filter.

The cabinet can be made of stainless steel on the whole surface and by customer request the working surface's size is variable.

### TECHNICAL DATA

<b>Working area :</b>	The laminar airflow of the working area is classified into the ISO 5 <sup>th</sup> class according to the Standard EN ISO 14644
<b>Pre-filter:</b>	flat filter of 95% filtration efficiency at particle which size is greater than 0,5 µm.
<b>Main filter:</b>	HEPA H13 fine filter is of 99,997% filtration efficiency at particle which size is greater than 0,3 µm
<b>Airflow rate:</b>	0,45 m/s ± 20%
<b>Operating voltage:</b>	230V; 50Hz
<b>Size of the device:</b>	Length: 1400 mm Height: 2330 mm Width: 800 mm
<b>Size of work stationery:</b>	Length: 1300 mm Height: 550 mm Width: 590 mm
<b>Lighting:</b>	2x30 W fluorescent lamp
<b>Power consumption:</b>	0,7 W
<b>Weight:</b>	260 kg

## BPV-1200 A

BPV-1200 A laminar flow cabinet is a vertical airflow microbiological workstation classified into 2nd biohazard class and it is suitable for work processes during which chemicals with low or medium hazardousness are used. This equipment provides proper protection for laboratory workers at different working circumstances and chemicals.

Pre-filtered air, flowed by the top fan, streams laminar through a HEPA-filter of high filtration efficiency, than throughout the whole working area.

The working surface and the back plate are made of stainless steel which can be cleaned easily. Other parts of the cabinet are powder-coated according with color RAL9010 (white). Both sides of the workstation are closed with tempered security glass. It is equipped with topside light.

A standard cabinet has an UV-lamp and an electronic airflow control system and 2 pieces electrical connections.



**Options:** Additionally we can provide for the cabinet: UV-light, gas- vacuum connections, operating hour counter, painted frame construction, differential pressure gauge for fine filter.

The cabinet can be made of stainless steel on the whole surface and by customer request the working surface's size is variable.

### TECHNICAL DATA

<b>Working area :</b>	The laminar airflow of the working area is classified into the ISO 4 <sup>th</sup> class according to the Standard EN ISO 14644
<b>Pre-filter:</b>	95% filtration efficiency at particles which size is greater than 0,5 µm.
<b>Main filter:</b>	HEPA H14 fine filter is of 99,9997% filtration efficiency at particles which size is greater than 0,3 µm
<b>Airflow rate:</b>	0,45 m/s ± 20%
<b>Operating voltage:</b>	230V; 50Hz
<b>Size of the device:</b>	Length: 1400 mm Height: 2380 mm Width: 850 mm
<b>Size of work stationery:</b>	Length: 1300 mm Height: 800 mm Width: 660 mm
<b>Lighting:</b>	2x30 W fluorescent lamp
<b>Power consumption:</b>	0,9 W
<b>Weight:</b>	360 kg

## BPV-1200 B

BPV-1200 B laminar flow cabinet is a vertical airflow microbiological workstation classified into 2nd biohazard class and it is suitable for work processes during which chemicals with low or medium hazardousness are used. This equipment provides proper protection for laboratory workers when they mix different chemicals and the environment is kept safe this way as well.

Pre-filtered air, flowed by the top fan, streams laminar through a HEPA-filter of high filtration efficiency, than throughout the whole working area.

In the area under the perforated table air is filtered two times and a supply fan at the bottom makes it flow continually. These two airflow form a flowing air curtain which prevents that the pollutants entrance into the working area or serves as a protection against their escape from it.

The working surface and the back plate of the working area are made of stainless steel which can be cleaned easily. Other parts of the cabinet are powder-coated according with color RAL9010 (white). Both sides of the workstation are closed with tempered security glass. Workstation has a . A standard cabinet has a topside light, an UV-light an electronic airflow control system and 2 pieces electrical connections.



**Options:** Additionally we can provide for the cabinet: UV-light, gas- vacuum connections, operating hour counter, painted frame construction, differential pressure gauge for fine filter. The cabinet can be made of stainless steel on the whole surface and by customer request the working surface's size is variable.

### TECHNICAL DATA

<b>Working area :</b>	The laminar airflow of the working area is classified into the ISO 4 <sup>th</sup> class according to the Standard EN ISO 14644
<b>Pre-filter:</b>	95% filtration efficiency at particles which size is greater than 0,5 $\mu\text{m}$ .
<b>Main filter:</b>	HEPA H14 fine filter is of 99,9997% filtration efficiency at particles which size is greater than 0,3 $\mu\text{m}$
<b>Airflow rate:</b>	0,45 m/s $\pm$ 20%
<b>Operating voltage:</b>	230V; 50Hz
<b>Size of the device:</b>	Length: 1400 mm Height: 2380 mm Width: 850 mm
<b>Size of work stationery:</b>	Length: 1300 mm Height: 800 mm Width: 660 mm
<b>Lighting:</b>	2x30 W fluorescent lamp
<b>Power consumption:</b>	0,9 W
<b>Weight:</b>	360 kg

## CYTOFLOW-915

Cytoflow 915 laminar flow cabinet provides a working area of high purity and gives protection to the person who works with cytostatics. Its partly closed working area is suitable for portioning of low-hazardousness biological substances and infusion.

The air flowed by the fan streams laminar through a HEPA-filter of high filtration efficiency to the working area. There is another HEPA-filter at the upper side of the box, where 30% slot air escapes, so an air curtain is created while air is coming through the holes of the table and through the openings of the transparent polycarbonate front plate and the generated air curtain prevents that health hazard substances leave the working area.



**Exterior design:** The working surface and the back plate of the working area are made of stainless steel which can be cleaned easily. Other parts of the cabinet are powder-coated according with color RAL9010 (white). Both sides of the workstation are closed with tempered security glass. It is equipped with topside light. A standard Cytoflow-cabinet is equipped with differential pressure gauge checking filter clogging.

**Options:** Additionally we can provide for the cabinet: UV-light, gas- vacuum connections, operating hour counter, painted frame construction, differential pressure gauge for fine filter. The cabinet can be made of stainless steel on the whole surface and by customer request the working surface's size is variable.

### TECHNICAL DATA

<b>Working area :</b>	The laminar airflow of the working area is classified into the ISO 4 <sup>th</sup> class according to the Standard EN ISO 14644
<b>Pre-filter:</b>	95% filtration efficiency at particle which size is greater than 0,5 µm.
<b>Main filter:</b>	HEPA H14 fine filter is of 99,9997% filtration efficiency at particle which size is greater than 0,3 µm
<b>Airflow rate:</b>	0,45 m/s ± 20%
<b>Operating voltage:</b>	230V; 50Hz
<b>Size of the device:</b>	Length: 1000 mm Height: 1300 mm Width: 700 mm
<b>Size of work stationery:</b>	Length: 920 mm Height: 550 mm Width: 535 mm
<b>Lighting:</b>	1x30 W fluorescent lamp
<b>Power consumption:</b>	0,45 W
<b>Weight:</b>	200 kg



## Animal containment cabinets

Animal containment cabinets (KAT) are suitable for keeping experimental animals in a closed clean space, where the air – while streaming toward the working area - is blown through a HEPA-filter of high filtration efficiency, so the animals are protected from infection inside.

We produce three kind of different types of animal containment cabinets:

**KAT-F-1000:** this is a supply type and it blows the air through a filter of high filtration rate into the working area, where a slight overpressure is formed. Discharge air flows through a pre-filter into the laboratory.

**KAT-SZ-1000:** this type works as follows: air is exhausted from the animal containment cabinet which results slightly depression. Exhausted air flows through a filter of high filtration efficiency into the laboratory.



**KAT-F/SZ-1000:** this type is a combination of the two basic types.

Both the inner parts and the outer casing of the animal containment cabinet is made of stainless steel which can be cleaned easily. The cabinet is equipped with wheels and differential pressure gauge checking filter clogging. Doors are transparent.

**Options:** The cabinet can be ordered with inner electrical heating, with lighting at every shelves (~8W), with analogue humidity and temperature sensor, with light ON/OFF switch relay. The size of the animal containment cabinet and its compartments can be changed based on customer request.

### TECHNICAL DATA

<b>Fine filter:</b>	HEPA H13 fine filter is of 99,997% filtration efficiency at particles which size is greater than 0,3 µm. The size of the filter: 305x610x69 mm
<b>Pre-filter:</b>	flat filter, filtration rate 95%
<b>Airflow rate:</b>	0,45 m/s
<b>Overpressure at KAT-F:</b>	80-90 Pa
<b>Reduced pressure at KAT-SZ:</b>	60-70 Pa
<b>Air exchange rate:</b>	20x
<b>Size of the device:</b>	Length: 1010 mm Height: 1885 mm Width: 670 mm
<b>Size of work stationery:</b>	Length: 950 mm Height: 300 mm Width: 470 mm With 4 shelves
<b>Operating voltage:</b>	230V; 50Hz
<b>Power consumption:</b>	80 W
<b>Weight:</b>	185 kg

## Special laminar flow cabinets, hoods

### BV-1200 x 3500 suspended laminar flow hood

Place of installation: CEVA-Phylaxia (Hungary)

This laminar flow hood made of stainless steel and has polycarbonate windows which open upward and working area is bordered with PVC anti-static foils at its two edges, where the air streams vertically after leaving the fine filter.

The air of high purity streams through the fine filter, removes the dust particles from the working area, so this type of boxes are suitable in case of work processes, where especially clean environment is required. Working area is balance-pressured.

Dimensions: 1400 x 3550 x 2800 mm (*W x L x H*)  
 Size of the working area: 1400 x 3500 x 2000 mm (*W x L x H*)

*Cleanness of the working area:* 5<sup>th</sup> class according to EN ISO14644 standards  
*Main filters:* 5 pieces H13 HEPA filters of 99,95% dust filtration efficiency at dust particles, which size are greater than 0,2 µm.  
*Operational voltage:* 400V 50 Hz  
*Fan:* 5 pieces of RH 40 V-4DK.4F.1R fan  
*Transported air volume:* V = 6000 m<sup>3</sup>/h  
*Airflow setup:* frequency converter  
 Protection class: IP 44  
*Airflow rate:* 0,45 m/sec ± 20%  
*Power consumption:* 2,4 kW  
 Lighting: 4 pieces 1 x 36 W fluorescent lighting armature



## Special laminar flow cabinets, hoods

### BV-2600x4000/RA M12-12 CHEMICAL FUME HOOD EQUIPPED WITH AIR HANDLING UNIT

Place of installation: Chinoin - Veresegyház (Hungary)

The air handling unit – placed in the machine house - blows the pre-filtered air through a HEPA-filter, which is located at the ceiling of the chemical fume hood and air is streaming laminar and vertically in the working area, which results that dust particles, formed during laboratory work processes, are forced to stream toward the exhaust filter wall.

The working space is underpressured, which means that the air volume exhausted from the working area is bigger, than the air volume injected into it! Air supply of the hood is performed by an RA M12-12 ZK-type air handling unit. Electrical cabinets placed next to the air handling unit on technical floor.

Frequency converter sets the desired air volume automatically, depending on the filter clogging. Two lights with 58 W provides the necessary lighting in the chemical fume hood. Cooling is adjusted by a 3-way cooling valve, based on the temperature of the exhausted air. Adjustment functions are performed by a P-I-D regulator. Operation and function can be switched from outside with an LCD display. It gives some other information: temperature, position of the cooling valve and operation frequency which is variable.



Air volume which steams outside the working area through HEPA-filters and through nozzles: 1200(2x600) m<sup>3</sup>/h

Maximum dust exposure measured at head level, under operational conditions: 100 mg/m<sup>3</sup>

Noise level in the working area at height of 1,5 m:< 55 dB

Lighting of the working area at height of 1 m: 500 lux

*Operational voltage:* 400 V 50 Hz 3 ph.

Electrical capacity: 9,2 kW

Cooling (in air handling units) Qh: 22 kW

Refrigerant: 7/11 °C water

Dimensions of the working area:  
2600 x 3915 x 2900 mm (WxLxH)

Feature of the working area: underpressured

Supply air volume in the working area: 10 800 m<sup>3</sup> /h

Exhausted air volume: 12 000 m<sup>3</sup> /h

Airflow velocity at the working area: 0,4 m/sec ± 20%

Cleanness class of the working area: 10.000 US 209/E

Flat filter on the suction side: G 4

Bag fine filter in the air handling unit: F9

Fine filters on the exhaust side: H 13

## Special laminar flow cabinets, hoods

### BV-type suspended laminar hood

Place of installation: Medi-Radiopharma (Hungary)

BV suspended laminar hood has three tent groups, which are enclosures surrounded by PVC anti-static foils, where air streams vertically after leaving the filter. The air which streams through the fine filter is of high clean and removes the dust particles from the working area, so this laminar tent is suitable for work processes where especially clean environment is required. Streaming air flows out under the curtain and flows back to the fans of the tent. Working area is underpressured. Outer and inner surfaces of the tent are made of KO-33 stainless steel.



#### 1. Group of tents:

This special working area is covered by PVC anti-static foils and has 9 pieces filters; a fan and module elements, hanging above the door of the technological device at the side of the sterile lyophilizer.

#### 2. Group of tents:

This special working area is covered by PVC anti-static foils and has 8 pieces filters; a fan and module elements, which are hanging above the sterile lyophilizer and its inner space.

Notes: no fan are integrated into the diffusers Nr.16 and Nr.19 which equipped with H13 HEPA-filters, because these are connected to the central ventilation system and overspressure is provided through the airflow controller.

#### 3. Group of tents:

This special working area is covered by PVC anti-static foils and has 5 pieces filters; 2 pieces fan and module elements, which are hanging above the inner space of the sterile lyophilizer.

Notes: no fan are integrated into the diffusers Nr.20; Nr.22 and Nr.24 which equipped with H13 HEPA-filters, because these are connected to the central ventilation system and they overspressure in the hall is provided through the airflow controller.

A suspendable module elements consist of fans, placed in sound absorbing casing, H13-filters which can be mounted from below, an antistatic PVC-curtain, which enclosures the working area and lightings mounted on the bottom of the cabinet. Tent groups Nr.1-9 and Nr.10-19 create one working area, which protects the technological equipments, but they belong to two different groups regarding electric control. PVC anti-static curtain consists of PVC of width of 350 mm. The PVC-curtain which surrounds the working area are built-up from permeable, transparent and unhangable PVC-stripes of width of 350 mm. Differential pressure gauge shows the presence of airflow in each tent groups and the condition of the H13 filters. There are no pre-filters in this device, because these laminar tents operate in a cleanroom! A control cabinet is mounted next to the tent and contains the electrical fuses and the operational mode select. Color LED-lamps indicate any accidentally arisen problem with the fans. The airflow rate of the tent can be set with frequency controller.

Filters can be mounted from below in the section which contains the ceiling module and H13-filters.

Dimensions of the working area:  
Width x length x height: 2600 x 3915 x 2900 mm

Feature of the working area: underpressured

Supply air volume in the working area: 10 800 m<sup>3</sup> /h

Exhausted air volume from the working area: 12 000 m<sup>3</sup> /h

Airflow velocity in the working area: 0,4 m/sec ± 20%

Cleanness class of the working area: 10.000 US 209/E

Flat filter on the suction side: G 4

Bag fine filter in the air handling unit: F9

Fine filters on the exhaust side: H 13



## Special laminar flow cabinets, hoods

### Chemical fume hood

Place of installation: Richter Debrecen (Hungary)

Installed 8 pieces

BV chemical fume hoods have closed working area, where air streams vertically after leaving the filter. The high clean air which streams through the fine filter removes the dust particles from the working area, so this fume hood is suitable for work processes where especially clean environment is required. Working area is balance-pressured.

#### BV-40x21-RH



*Dimensions:* 2942 x 3960 x 2550 mm (WxLxH)

*Size of the working area:* 2192 x 3960 x 2100 mm

*Cleanliness of the working area:* it is classified into **7<sup>th</sup> class according to EN ISO14644 standards**

*Main filters:* HEPA H14 with gel sealant

Dust filtration efficiency is 99,995% at dust particles which size is greater than 0,2  $\mu\text{m}$ .

*Pre-filters:* G4 min. dust filtration efficiency is 95%

*Bag filters:* F7 min. dust filtration efficiency >99%

*Operational voltage:* 400V 50 Hz

*Transported air volume:*  $V = 11760 \text{ m}^3/\text{h}$

*Airflow setup:* frequency converter

*Protection class:* IP 44

*Airflow velocity.:*  $0,45 \pm 20\% \text{ m/sec.}$

*Power consumption.:* 6,8 kW

*Lighting:* 4 pieces 1 x 58 W dropshaped-fluorescent light armature

*Dimensions:* (WxLxH) 3620x2640x2550 mm

*Size of the working area:* (WxLxH) 2870x2640x2100 mm

*Cleanliness of the working area:* it is classified into **7<sup>th</sup> class according to EN ISO14644 standards**

*Main filters:* HEPA H14 with gel sealant

Dust filtration efficiency is 99,995% at dust particles which size is greater than 0,2  $\mu\text{m}$ .

*Pre-filters:* G4 min. dust filtration efficiency is 95%

*Bag filters:* F7 min. dust filtration efficiency >99%

*Operational voltage:* 400V 50 Hz

*Transported air volume:*  $V = 10\,200 \text{ m}^3/\text{h}$

*Airflow setup:* frequency converter

*Protection class:* IP 44

*Airflow velocity.:*  $0,45 \pm 20\% \text{ m/sec.}$

*Power consumption:* 4,2 kW

*Lighting:* 6 pieces 1 x 36 W drop-shaped fluorescent light armature

#### BV-28x28-RH

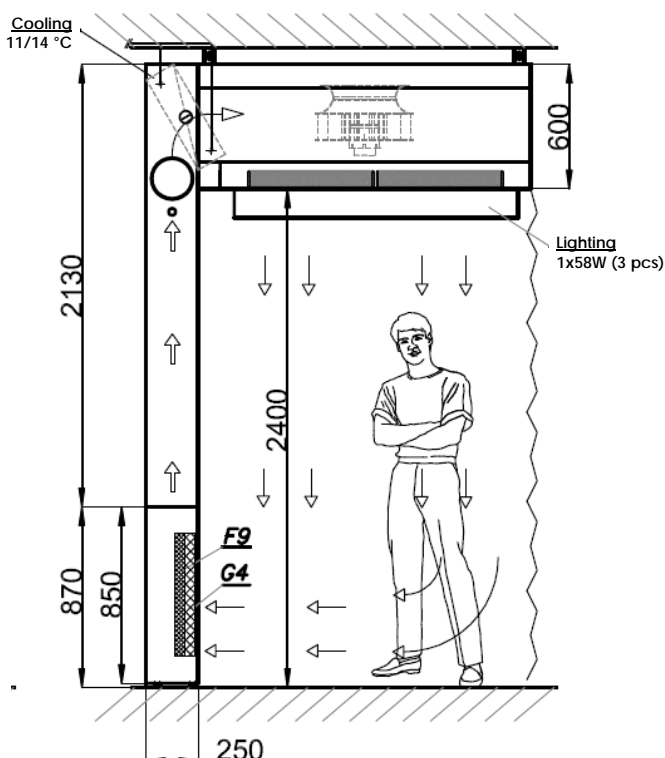
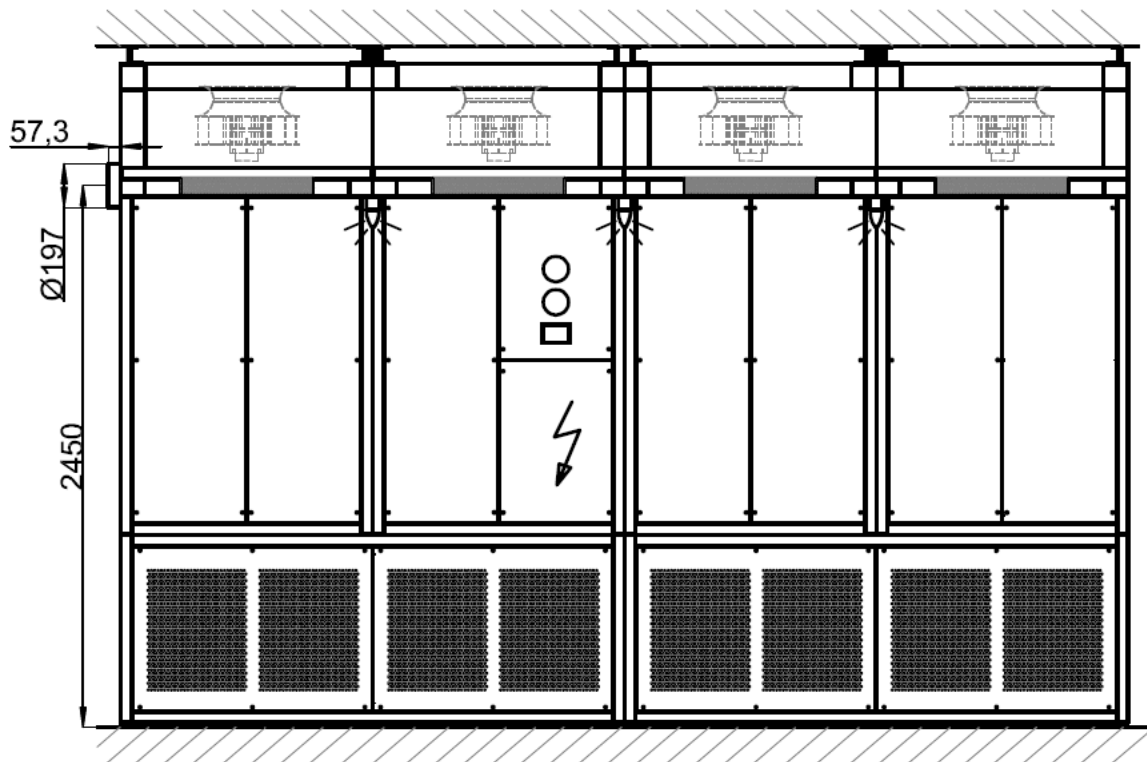


## Special laminar flow cabinets, hoods

### BV-46x16 RH laminar flow cabinet

Place of installation: Richter - Budapest - MOP washer

BV-46x16-RH cabinet is a closed workspace, in which air streams laminarly and vertically after it leaves the fine filter. The high purity air which streams through the fine filter, flows through a G4-G9-filters which are installed at the lower front part of this enclosure and removes the dust particles from the working area, so this LAF device is suitable for work processes where especially clean environment is required. Working area is balance-pressured.



Dimensions: (WxLxH) 1850x4560x3000 mm

Size of the working area: (WxLxH)  
2870x2640x2100 mm

Cleanliness of the working area: it is classified into  
7<sup>th</sup> class according to EN ISO14644 standards

Main filters: HEPA H14, 99,995% at dust particles which  
size is greater than 0,2  $\mu\text{m}$ .

Pre-filters: G4 min. dust filtration efficiency is 95%

Bag filters: F7 min. dust filtration efficiency >99%

Operational voltage: 400V 50Hz

Transported air volume  $V = 8\,000\text{ m}^3/\text{h}$

Airflow setup: frequency converter

Protection class: IP 44

Airflow velocity: 0,4+-20% m/sec.

Power consumption: 3,0 kW

Lighting: 3 pieces 1x58W drop-shaped fluorescent light  
armature

## Special laminar flow cabinets, hoods

### BV-2500x2200 laminar flow hood

Place of installation: Richter - Dorog (Hungary)

BV-2500x2200 laminar flow hood has a closed working area, where air streams vertically, and it is suitable for work processes where especially clean environment is required. A BV-2500x2200 suspended laminar hood is enclosures surrounded by PVC anti-static foils, where air streams vertically after leaving the filter. The air of high purity flows out under the curtain it removes the dust particles from the working area, so this type of laminar box is suitable for work processes where especially clean environment is required. Working area is balance-pressured.



*Size of the working area: (WxLxH) 2130 x 2586 x 500 mm*

*Size of the working area: (WxLxH) 2130 x 2586 x 2200 mm*

*Cleanness of the working area: it is classified into  
5<sup>th</sup> class according to EN ISO14644 standards*

*Main filters: HEPA H13 which are of 99,95% dust filtration efficiency at dust particles which size is greater than 0,2  $\mu$ m.*

*Operational voltage: 400 V 50 Hz*

*Transported air volume:  $V = 6\,780\text{ m}^3/\text{h}$*

*Airflow setup: frequency converter*

*Protection class: IP 44*

*Airflow velocity: 0,4+-20% m/sec.*

*Power consumption: 2,9 kW*

*Lighting: 2 pcs 2 x 36 W fluorescent light armature  
2 pcs 2 x 58 W fluorescent light armature*

## Special laminar flow cabinets, hoods

### BV-1200x2500/SS exhaust cabinet

The working area is underpressured, which means that the exhausted air volume is bigger than the supplied air volume. This is an exhaust box with gloves for the safe manipulation of the material. Its purpose is to protect the workers from hazardous substances occurring in the working area. Air cleanness of the box meets the requirement of the standard US209E so the air cleanness rate of the box is 10.000. Air exhaust in the cabinet of the fumagilin manufacturing area is performed by exhaust air handling unit, which is internally in the house. The cabinet was designed the way that exhausted air streams through a ceiling HEPA-filter vertically toward the working surface, than it passes its perforated surface over, than flows through a flat filter which is installed on the exhaust wall than it goes to the outside. Switches of the control panel - mounted on the side wall – serves for the adjustment of the airflow, lighting and lights signal in case of any error of the airflow or the filters.

An analog differential pressure gauge with colorful frontplate provides the necessary information about the condition of the HEPA-filters /for example they might be clogged/. During working in the cabinet, doors should be closed and manipulation gloves should be worn of course, since the above mentioned vertical airflow direction is created only this way.



**BV-1200x2500/KO exhaust cabinet**



**BV-2000x2900 sampling cabinet**

### BV-2000x2900 sampling cabinet

Sampling cabinet is applied, when high cleanness is required during sampling. (Place of installation: CHINOIN)

Installing sampling cabinets are to prevent the release of any hazardous substance. The working area is underpressured, airflow rate by air supply is 5500 m<sup>3</sup>/h, but 6000 m<sup>3</sup> air is exhausted in every hour.

The size of the sampling cabinet: 2750x2185x2600mm. This working area belongs to the 10 000th class according to US 209/E standards. The airflow velocity in the working area is 0,5 m/s ± 20%



## Special laminar flow cabinets, hoods

### RA-SZ 800 drying chamber

The air - which is heated up to 60-80°C - is streaming through a HEPA-filter inside the RA-SZ 800-type drying chamber. The inner size of the drying chamber is 800x800x450 mm and 2x4 pieces of trays are placed in it. There are trays inside the drying chamber, its inner space is divided into two separated spaces in the middle; equipped with double-door which are made of AISI 316 L KO 38 stainless steel, so it meets the requirements GMP standards.

Both the inner surfaces and the removeable trays are rounded and of polished surfaces in order that they can be cleaned easily. A HEPA filter of high filtration efficiency - which belongs to the EU13 quality class - is placed at the top of the box, where air enters into the chamber and leaves it and therefore a high purity of the working area of the chamber is granted.

Doors of the working area open rightwards independently from each other and their good sealing is granted by the silicone „O“-rings and fitting locks. Casing of the chamber is made of AISI 304 (KO33) quality polished stainless steel which is clean sustainability is equally good. There is 100 mm thick thermal insulation between the inner and outer casing, so the chamber is insulated to a proper degree.

We are informed about the quality of the HEPA-filters placed at the top of the chamber and about the existence of airflow by an analog differential pressure gauge and there are switches and control lights at the top of the chamber as well, which starts and stops the drying process.



RA-SZ 800 drying chamber



### Manipulation chamber

A manipulation chamber is used in case of special pharmaceutical manufacturing technologies. It requires working areas of high cleanness. Manipulation chamber is an enclosed working area. It was designed this way in order to be kept sterile, so it is compulsory to use manipulation glasses when a person reaches into it. Manipulation chambers are suitable for inertisation, which means that nitrogen is let into the chamber and it is streamed inside it.

## Special laminar flow cabinets, hoods



**BV-1200 laminar flow cabinet**  
The laminar airflow of the working area is classified into the 100<sup>th</sup> class according to the Standard US209/E



**BV-1000x1800 laminar flow tent**  
The laminar airflow of the working area is classified into the 100<sup>th</sup> class according to the Standard US209/E



**BV-1800 laminar flow cabinet with airlock**



**BV-1800 x 1800 displaceable Laminar flow hood with airlock**

## Special laminar flow cabinets, hoods



**BV-1850 x 2500 laminar flow cabinet**



**BV-2400x2400 laminar flow hood**



**BV-2400 x 2400 laminar flow hood**



**2S-305 airlock**

## Special laminar flow cabinets, hoods



KAT F-SZ-1000 Animal containment cabinet



FST -2000 steam sterilisator



ZS-600 airlock



TVK-1000 and BPV-1200 FRM laminar flow cabinets

## Quality equipments

Our control units are microprocessor-controlled which are our own developments and productions and they meet the highest technical requirements and fully satisfies our customer's wishes.



Differential pressure gauge



Operating hours counter



UV-lighting



Pressure switch



Airflow sensor



Humidity sensor



Room temperature sensor



## References

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Richter Gedeon Nyrt. Budapest, Debrecen, Dorog, Vecsés  
Chinoin Zrt. Budapest, Csanyikvölgy  
EGIS Nyrt. Budapest,  
Ceva-Phylaxia Zrt.  
Medi-Radiopharma Kft.  
Debreceni Egyetem OEC,  
Semmelweis Egyetem,  
Pécsi Tudományegyetem,  
Szegedi Tudományegyetem,  
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Omninvest Kft. Pilisborosjenő,  
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You may download the full referenclist from our web-site:

[www.radel-hahn.hu](http://www.radel-hahn.hu)



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