Kalstein

Vertical Laminar flow Cabinet

Model YR0483

Instruction Manual

Thank you very much for purchasing our Kalsteins´s Vertical Laminar flow Cabinet Model YR0483

Please read the “Operating Instructions” and “Warranty” before operating this unit to assure proper operation. After reading these documents, be sure to store them securely together with the “Warranty” at a hand place for future reference.

Warning: Before operating the unit, be sure to read carefully and fully understand important warnings in the operating instructions.

Kalstein®

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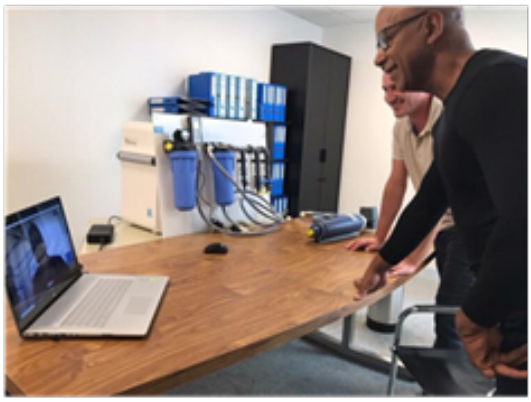

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Thanks to your purchase, a donation will be made to a non-profit foundation that fights against breast cancer and helps most vulnerable communities.

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Enjoy of personalized advice for the correct preventive and corrective maintenance of your equipment, thanks to Kalstein's manuals and articles, special catalogues and video tutorials.

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Kalstein Worldwide

With more than 25 years growing with our customers, Kalstein's multiformat and modern content, is now present in more than 10 countries and increasing.

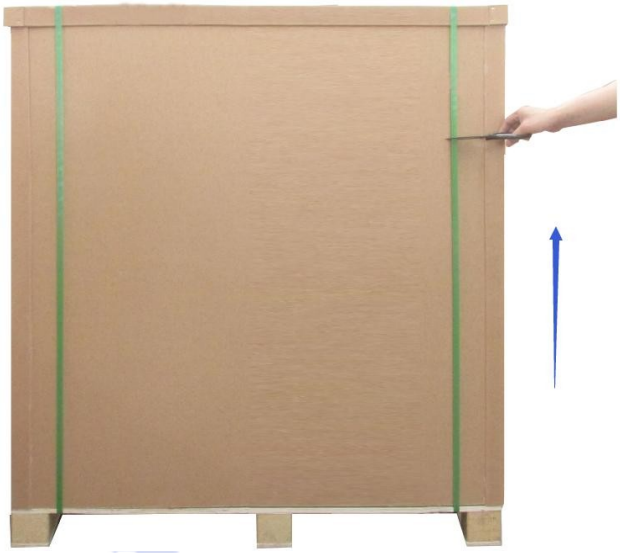
Content

1. Unpacking, Installation and Debugging

Please firstly check if the packing box is in good condition. If the packing box is damaged, pleasetake photos.

1.1 Unpacking

Use scissor to cut the packing tape, take off the package cover, and then move up the box body.



Picture 1

1.2 Accessories Checking

Refer to the packing list and check the accessories.
（accessories are standby, the equipment can be used when finish the unpacking）

YR0483 packing list

Name	Quantity	Location
YR0483 main body	1unit	Wood package
Power line	1pc	Packing bag(On top of main body)
fuse（5A）	1pc	Packing bag(On top of main body)
UV lamp（T5 8W）	1pc	Paper package(On top of main body)
User manual of YR0483	1pc	File bag(On top of main body)
Test report	1pc	File bag(On top of main body)
Quality certification card	1pc	File bag(On top of main body)
Warranty card	1pc	File bag(On top of main body)

1.3 Installation Conditions and Operating Environment

Laminar flow cabinet should be placed in a position where the airflow can be protected.
Laminar flow cabinet should not be Installed apposite to door or window and far away from the air outlet of air conditioner. It should avoid airflow influence from ventilating system, air conditioner, door, window and movement of people.
At least 300mm gap must be kept in the side and back side of the Laminar Air Flow for clean operating and for inspection.
Working environment:
(1) Only applicable to indoor operation;
(2) Ambient temperature: 15° C～35° C
(3) Relative Humidity: ≤75%;
(4) Atmospheric pressure range: 70 kPa～106 kPa;
(5) Electrical parameters: adequate power supply to the laminar flow cabinet (See 2.1.4 Technical Parameters);
(6) Power supply need to be grounded; (Judging method: test the live wire and the neutral line of thepower supply with multimeter, the voltage between live and ground should equal to the voltage of local electrical grid, and the voltage between neutral and ground should equal to 0, otherwise the power supply is not grounded correctly);

1.4 Installation

a. Remove all the packing materials;
b. Check the surface of main body to make sure there is no scratch, deformation or foreign bodies;
c. Carefully check the accessories and material according to packing list in the manual

1.5 Checking after Installation

First, make sure the voltage and frequency to be same as nameplate showing, and then check the follows items with power on：

Checking Items	Normal situation
Fan motor	Running normally
LED lamp	Lamp lights after pressing button
UV Lamp	Lamp lights after pressing button
Display screen buttons	All buttons can be used

If you have any questions, please contact engineer to debugging, debugging methods showed in the service manual

2. Operation Instructions

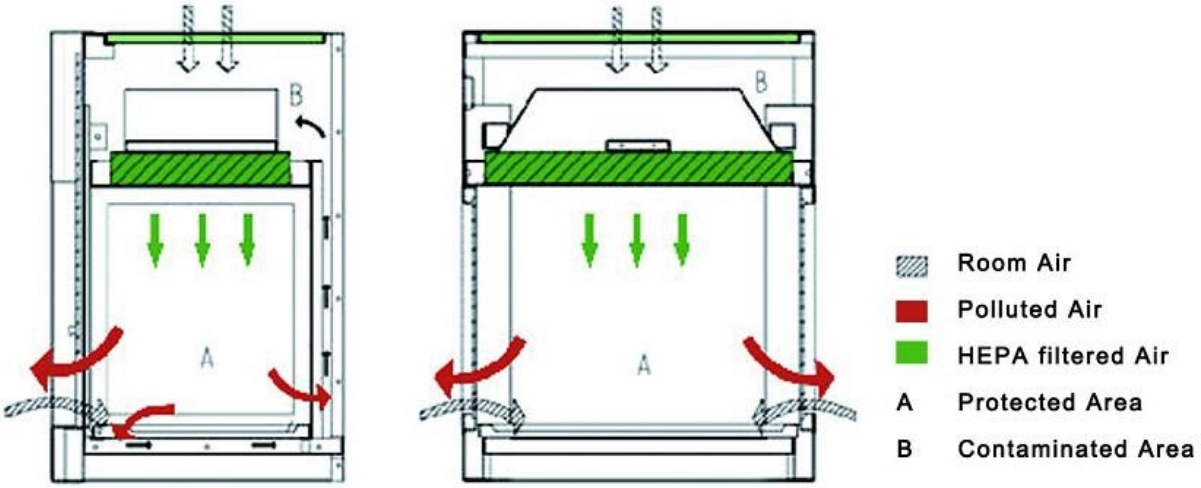
2.1 Functions

2.1.1 Product Concept

Laminar Flow Cabinet – **is used only for sample protection.**

Laminar Flow Cabinet is a work bench or similar enclosure, which creates a particle-free working environment by taking air through a filtration system and exhausting it across a work surface in a laminar or unidirectional air stream. It is widely divided into vertical and horizontal laminar airflow type.YR0483 is
vertical type Laminar Flow Cabinet

2.1.2 Operating Principle/Air flow Pattern



Picture 2 Air flow pattern

2.1.3 Protected objects

Laminar flow cabinet is designed to protect the experimental materials, to make local air environment with high degree of cleanliness, the main role is to ensure the accuracy of the operating area of the experiment, but for the environment and operators can't afford protection.

2.1.4 TECHNICAL PARAMETERS

Model / Parameters	YR0483
Power Supply AC	220V±10% ☐ 110V±10% ☐
Frequency	50 Hz ☐ 60Hz ☐
External Size (W*D*H)	550*460*700 mm
Internal Size (W*D*H)	480*340*370 mm
Consumption	100 W
UV Lamp Consumption	8 W

LED lamp Consumption	4 W (LED)
Air Velocity	0.3～0.5m/s
HEPA Filter	99.999% efficiency at 0.3um
Noise	＜65Db(A)

Note: the company reserves the rights to changes in product design , if there are any design change, we will not inform in advance.

1） Vibration amplitude

The net vibration amplitude between frequency 10Hz and 10KHz is no more than 5μm (rms).

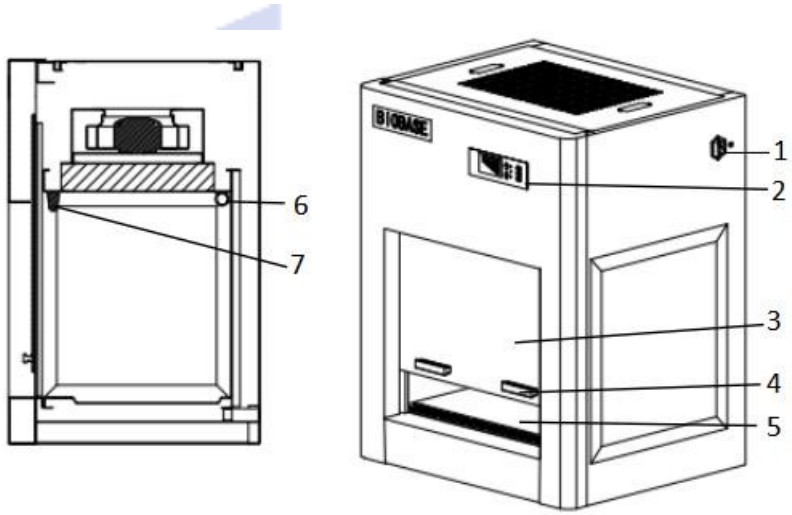
2) Illumination

The average illumination is no less than 350 lux.

3) Electrical properties

The voltage increases to 1390V(AC) in 5s and keep for another 5s without breakdown.Grounding resistance ≤0.1Ω

2.2 Product Structure



1. Power socket
2. Control panel
3. Front window
4. Door handle
5. Work table
6. UV lamp
7. LED Lamp

Picture 3

2.2.1 Structural Composition of YR0483

1） Driving system of front window

Driving system consists of front window and constant force spring.

2) Air filtration system

Air Filtration System is the most important system of Laminar flow cabinet. It consists of blower, airfilter. The function of Air Filtration System is transferring filtered air to work area, ensure the down

flow velocity, and keep Class 100 cleanness of work area.

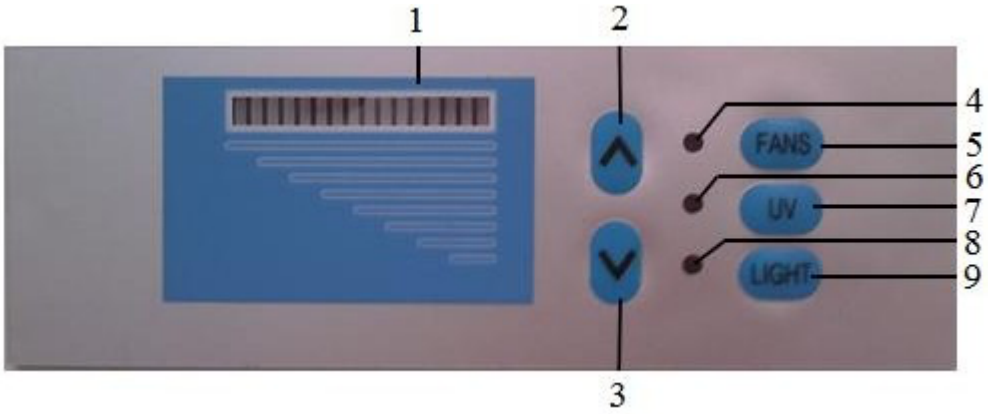
3) UV Lamp

The entire work zone could be sterilized effectively by the UV lamp located at the top of work zone.

4) LED lamp

The laminar flow cabinet is equipped with LED light, which ensures the standard requirement ofaverage illumination is met.

5) Control panel



Picture 4

1. Gear indicator
2. Increased air velocity
3. Reduced air velocity
4. Fan indicator
5. Fan (FANS)
6. UV lamp indicator
7. UV lamp (UV)
8. LED lamp indicator
9. LED lamp (LIGHT)

a. Gear indicator

We can understand the clean bench wind speed situation when working by gear.

b. Soft touch button.

Main functions of clean bench could be executed by touch-buttons.LED lamp key（LIGHT）： To control LED lamp

UV lamp key（UV）：To control UV lamp.(UV lamp and fan, LED lamp interlock, i.e., when open the fan or LED lamp, UV lamp automatically shut down) Fan key （FANS）： To control blower working status

Airflow control key（"∧""∨"）： When fan is running， press this key"∧"， air flow will increase； When press key"∨"， air flow will reduce。6）

Protective tube

This equipment is equipped with a total power protective tube, located in the box body side next to the power cord outlet, protective tube label corresponding to the corresponding specifications, referto 3.5.1 , the replacement of insurance tube, refer to 3.2.

7)Mechanical glass door control

The front glass window are controlled by constant force spring, glass window can be placed at any position, make sure that at the time of power failure, user can still control the glass window and remove the samples or instrument while operating.

8) Structure

a) Cabinet body is built of 1.2mm cold-rolled steel with anti-powder coating. Strong and sturdy.

b) Work table is made up of stainless steel which provides corrosion resistance as well as attractive appearance.

c) Base stand is made of steel with anti-bacteria powder coating.

d) Soft touch type control panel, easy to handle and beautiful appearance.

2.3 Instructions for Operation

2.3.1 Normal Operation Notice

(1) Make sure input voltage is correct and stable. The rated load of main power socket should be higher than cabinet consumption. Plug must be well grounded. This plug with a third foot, can onlybe used with grounded power outlet, which is a safety device. If socket can not plug in, please contact with your install a grounding type power socket by a electrician.

(2) Moving principles of different samples inside cabinet: When two or more samples need to be moved, be sure that low-polluting samples move to high-polluting samples. Movement of items should also follow the principles moving slowly and stably.

(3) The weight of items placed in the cabinet should not be more than 23Kg/25×25cm^2

(4) AVOID VIBRATION: avoid using vibration equipment (eg centrifuges, vortex oscillator, etc.) inside the cabinet. Vibration would cause lower cleanliness of operating area;

(5) NO FLAME: No flame is allowed inside the cabinet. Using of fire will lead to airflow disorder, and filter damage. If sterilization is required during the experiment, infrared sterilizer is highly recommended;

(6) HEPA filter life: With the usage time increasing, dust and bacteria accumulate inside HEPA filter.Filter Resistance is getting bigger, when it reaches the maximum point, the speed requirements can't be met. Then need contact KALSTEIN service department to get a new one. The used filter should be processed as medical waste.

(7) The fan and the bottom steel plate is static pressure cover, which is sealed strictly in the factory. The operator is not allowed to remove or loose screws of those parts. If necessary, please contact service personal;

(8) The maximum storage period is one year. If the period is more than one year, performance test should be done .

⚠ **Serious declaration: we will take no responsibility for risks caused by improperoperation and man-made damages!**

2.3.2 Operation Process

a、 Connect the power reply

b、 press the related function key (please refer to the operation instructions of 2.2.1 of related buttons, functions);Check whether the function keys are consistent with the results of operations, and check the fan if is working normally and wind speed if reach requirements, UV lamp and LED lamp is working normally according to laminar flow cabinet technical parameters.

c、 Before doing experiment, please sterilize the cabinet for more than 30 minutes by UV lamp;

⚠ **(1) For safety of eyes and skin, people should leave room during the UV sterilization.(2)UV lamp intensity should be tested regularly. UV lamp life is generally 600 hours**

d、Please move the front window at appropriate height, turn on the fan, make sure the experimentshould be started after fan working for at least half an hour;

⚠For operating safety, please put testing materials inside the cabinet in advance.

After finishing the experiment, please move the front window down to the bottom, and make sure to sterilize the cabinet by UV lamp for 30 minutes before turning off the cabinet.

2.4 Daily Maintenance

Preparations before maintenance： remove the items in cabinet

Items needed to be prepared： cotton or towel, concentrated soap liquid, hot water, water, medical alcohol or other disinfectants, etc.

2.4.1 Clean the Operating Area Surface

Wipe the entire surface with a soft cotton cloth or towel soaked with concentrated liquid soap, then wipe up the soap with another cotton cloth or towel soaked with clean hot or warm water, and then wipe the surface with a dry cotton cloth or towel rapidly.

For the contaminated or dirty work surface, use medical alcohol or other disinfectant to wipe.

⚠Disinfectants used for wiping should not damage 304 stainless steel!

2.4.2 Clean the External Surface and Front Window.

Use soft cotton cloth or towel to wipe the surface with non-abrasive household cleanser.

2.4.3 Overall Maintenance Period

We suggest comprehensive maintenance period is one year or 1000 working hours.

2.4.4 Maintenance Methods

1) Weekly or daily maintenance

a. Disinfect and clean the operating area; (pls refer to instruction 2.4.1)
b. Clean the external surface and front window; (pls refer to instruction 2.4.2)
c. Check the various functions of the cabinet;
d. Record down the maintenance result

2) Monthly maintenance

a. Clean the external surface and front window. (pls refer to instruction 2.4.2)
b. Use towel with 70% rubbing alcohol or 1:100 dilution of household bleach to wipe the working table, the inner face of front window and the inner wall surface of the working area(exclude the top wind grid). Use another towel with sterile water to wipe those area to erase the remain of chlorine.
c. Check the various functions of the cabinet;
d. Record down the maintenance result;

3) Annual maintenance

a. Check the front window drive unit, and ensure that their tightness is coincident.
b. Check the UV lamp and LED light.
c. Apply for overall performance test of the cabinet annually to ensure that the safety meets requirements. User is responsible for testing costs.
d. Record down the maintenance result.

⚠ When doing maintenance, please pay attention to cut off the power, so as to avoid electric

shock!

2.4.5 Storage Conditions

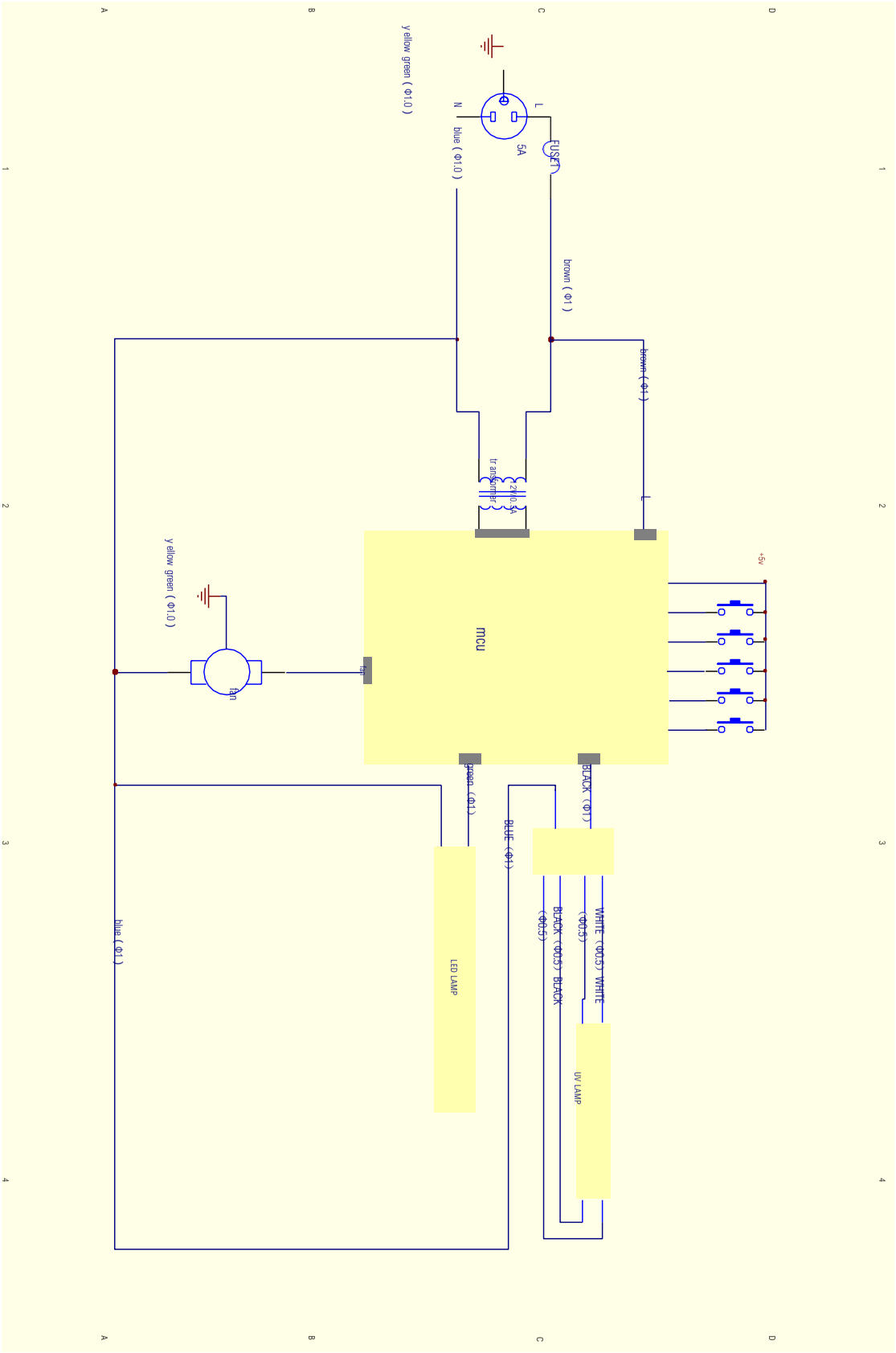
Laminar flow cabinet should be stored in a warehouse with relative humidity no more than 75%, and temperature lower than 40℃. The warehouse should have good ventilation performance,without acid, alkali or other corrosive gases. Storage period shall not exceed one year, laminar flow cabinet stored for more than one year needs to be unpacked and checked before selling and using. Only the tested and qualified laminar flow cabinet could be sold.

2.5 Replacement Parts List

YR0483 Replacement parts list

Number	Name	Specification
BO-01	Fuse	5A
BO-02	Lamp holder T5	LG05-01A
BO-03	UV Lamp	T5 8W
BO-04	LED T5 stand	T5 4W
BO-05	UV lamp ballast	1*TL5-8W
BO-06	HEPA filter	480*280*50
BO-07	Fan	FH190
BO-08	Control panel(one set)	Laminar flow cabinet(ten streamer)control panel
BO-09	Toughened glass	Size: 496*470*5
BO-10	Ordinary glass	Size:310*360*5
BO-11	Constant force spring component	Constant force spring, nylon sleeve, nylon sets of baffle

2.6 Wiring Diagram (Picture 5)



Picture 5

3. Common Failures & Solution

3.1 Trouble Shooting

Please confirm that the power is well connected, the cord is in good condition(without any damage)and the fuse is good before trouble shooting the following problems.

Faults	Checking parts	Suggestion
LED lamp fail to work	LED stand plug	Connect the plug and stand tightly
	LED stand	Replace stand
	Circuit	Check the circuit
	Control panel	Change the control panel
UV lamp doesn't work	Interlock	Check the fan and LED lamp if closed
	Lamp holder	Connect the tube and lamp holder tightly
	Lamp	Changed the lamp
	Ballast	Changed the ballast
	Circuit	Check the circuit
	Control panel	Change the control panel
Button doesn't work	Control panel	Make sure the power connects well and the fuse is well
		Check if the button is broken
		Make sure the connecting wire is connected well
		Change control panel
Blower doesn't work	Fan	If blower is broken, change it
	Circuit	Check the circuit
	Control panel	Change the control panel
No electricity in equipment	Power	Check power supply connects well
	Power wire	Check whether power wire has obvious damage
	Fuse	Check if the fuse is good
	Transformer	Check whether the transformer works normally
	Control panel	Change the control panel
Display doesn't work	Connection winding displacement	Connection winding displacement whether connect well
	Display screen	Check the screen whether work normally
	Control panel	Change the control panel

⚠ NOTES

(1) The above trouble shooting methods should be done by qualified electricians under safeconditions(cut off power supply). Other components should not be removed. Risk caused by failing to follow those instructions would be responsible by user;

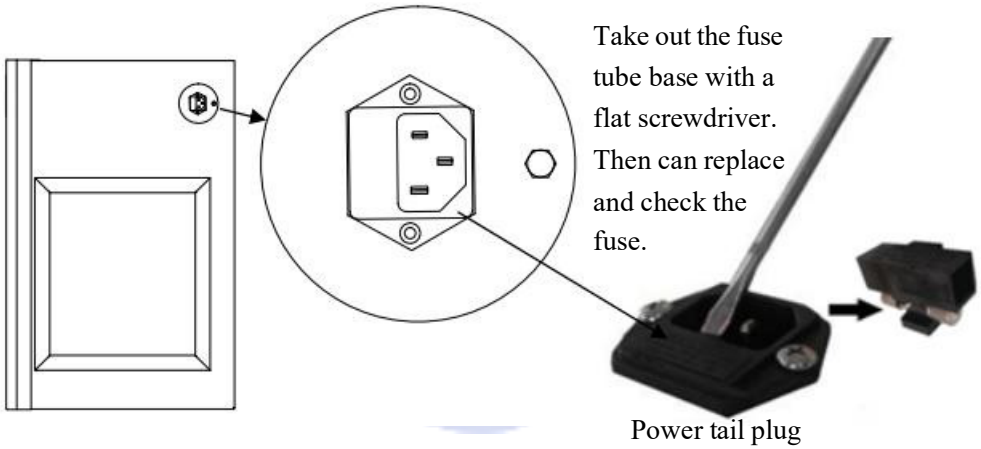
(2) Please contact Kalstein technical department if a failure could not be traced or solved. Do NOT repair the equipment without a qualified electrician;

(3) The trouble shooting and repair of this equipment only can be undertaken by trained and recognized technicians;

(4) Please contact Kalstein technical department or agent to order required component or part. The model number and the serial number of purchased cabinet need to be indicated.

3.2 Replace Fuse

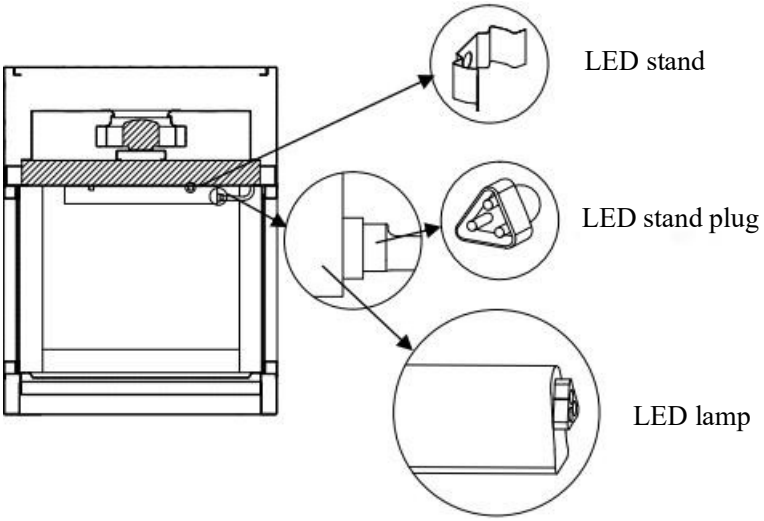
Turn off the power and disconnect the plug. Use a Phillips screwdriver and rotate it anticlockwise to unscrew the fuse holder. Replace the fuse inside the fuse holder and then, use a Phillips screwdriver and rotate it clockwise to screw back the fuse holder. （Picture 6）



Picture 6

3.3 Replace LED Light

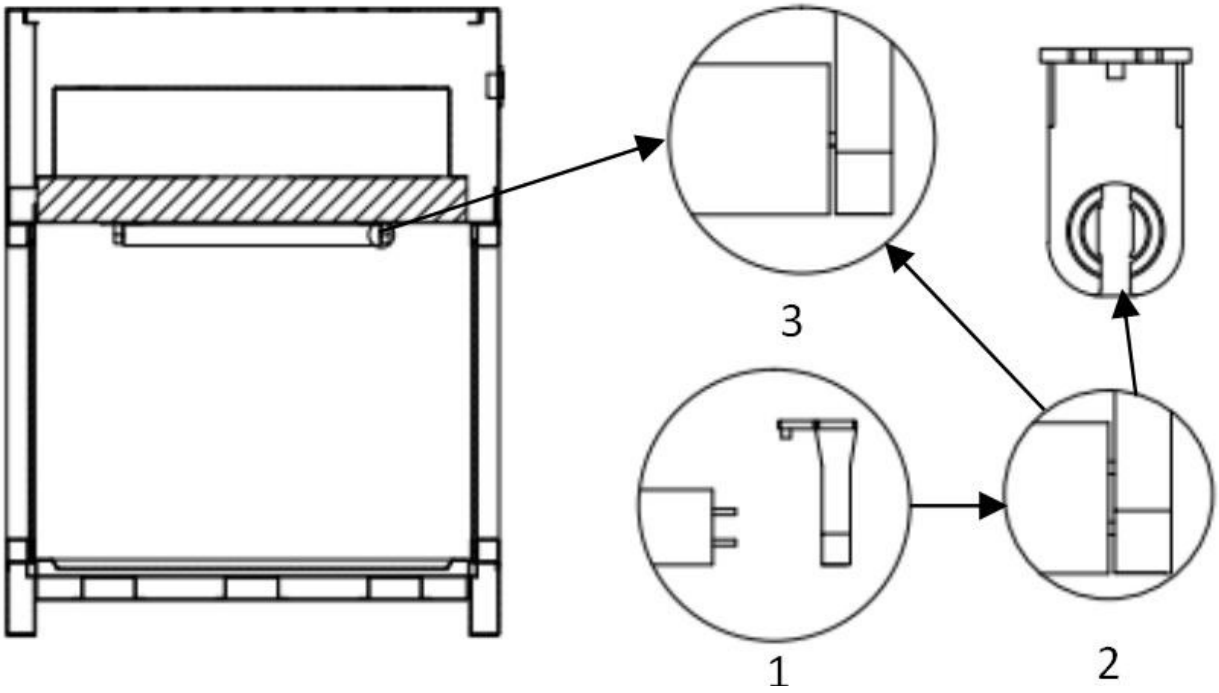
When the LED light needs to be changed, turn off the power. Then remove the LED stand, unplugthe right side, After replacing a new LED stand, inserted into the inclined slot.（Picture 7）



Picture 7

3.4 Replace the UV lamp

UV lamp should be replaced regularly according to the frequency of use, when using UV lampsreach to the time of 600 hours, we recommend to replace the lamp. When replacing, press UP button to raise front window to the highest level, and turn off the power, and then screw the bulb 90 ° andtake it off, then take the correspondence type of lamp, and put it to the lamp holder and and screw90 ° in reverse direction. Please reference to Picture 8.



Put hands at the double ends of the lamp, clockwise or anticlockwise screw 90°.the lamp to take down the lamp as shown in the picture.Put aside it carefully. Put a new lamp into the holder, clockwise or anticlockwise screw 90°.Then turn on the power and test it

Picture 8

3.5 Label Description

3.5.1 Fuse label (Picture 9)

Picture 9

Notice： 5A fuse label

3.5.2 Ground label （picture 10）

Picture 10

4. Warranty

1) Warranty is 12 months from EX-factory date (excluding consumable accessories, UV and LEDlamp, fuse).
2) Kalstein would not be liable for any repair of damage caused by improper operation.
3) If the warranty has been expired, Kalstein would still responsible for repair with relative charges.
4) Life time of Laminar flow cabinet is 8 years from production date on the label.
5) Kalstein would provide equipment drawings and necessary technical data for maintenancecompanies or personnel trained by Kalstein engineers.