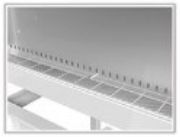
AC Series Class II A2 Biological Safety Cabinet

Color Screen
Real-time and clearer display of various values and appointment timing function.

The front window glass can be lowered below the operating area



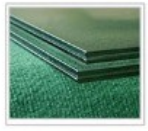
Anti-paper dust structure

The base stand is optional

Work Zone
Work zone, made of 304 stainless steel, is surrounded by negative pressure.

Foot Switch
Adjust front window height by foot during experiment, to avoid airflow turbulence caused by arm movement.

Remote Control
All functions can be realized with it, making the operation much easier and more convenient.



Front Window
Motorized, Two-layer laminated toughened glass ≥6mm, Anti UV.

Footmaster Caster
Universal caster with brake and leveling feet.

Cabinet Support Block
Easy to lift, prevent hand pressing

Iron hook support rod for panel support

UV Lamp
Emission of 253.7 nanometers for most efficient decontamination.

ADVANTAGE

1. Small dimension, save space.
2. Centrifugal fan, speed adjustable. ULPA filter.
3. Motorized front window: The front window is motorized for convenient, one-hand operation.
4. Audio and visual alarm:Abnormal airflow velocity,Filter replacement,Front window at unsafe height,High filter pressure alarm.
5. Time reserve function: This can save 30 minutes waiting time after activating the cabinet and the sterilization time after experiment.
6. Remote control: Each function can be realized 6 meters away from the cabinet by remote control, which can protect the operator under emergency.
7. Large LCD display: Operators can check detailed status of the cabinet, such as inflow and downflow velocity, work area temperature and humidity, filter pressure, UV working time and filter working time, filter life indicator etc.
8. With memory function in case of power-failure.
9. Interlock function: UV lamp and front window; UV lamp and blower, LED lamp; blower and front window.
10. Regarding the sensor, we have equipped it with a differential pressure sensor
11. Automatic airflow control function.
12. Internal working place is stainless steel, and antistatic
13. U15 class of filtration

TECHNICAL PARAMETERS

Model		BSC-700 II A2-Z
External Size（W*D*H）		700*650*1920mm (700*650*1280mm without base stand)
Internal Size（W*D*H）		600*500*540mm
Tested Opening		Safety height 200mm
Max Opening		380mm
Inflow Velocity		0.53±0.025m/s
Down Flow Velocity		0.33±0.025m/s
ULPA Filter		Two, 99.9995% efficiency at 0.12μm, filter life indicator
Front Window		Motorized
Noise		≤65 dB
UV Lamp		15W*1 UV timer, UV life indicator, emission of 253.7 nanometers for most efficient decontamination
LED Lamp		8W*2
Illumination		≥1000Lux
Consumption		≤500W
Socket		Two, total load of two sockets: 500W
Display		LCD display: exhaust filter and downflow filter pressure, filter and UV lamp working time, inflow and downflow velocity, filter life, humidity and temperature, system working time etc.
Control System		70% air recirculation,30% air exhaust
Visual and Audio Alarm		Filter replacement, window over height, abnormal air flow velocity; High filter pressure alarm, abnormal power failure
Material		Work Zone: 304 stainless steel Main Body: Cold-rolled steel with anti-bacteria power coating
Work Surface Height		750mm with base stand
Power Supply		AC220V 50/60Hz; 110V 60Hz
Standard Accessory		Cabinet*1, LED Lamp*2, UV lamp*2, Remote control, Drain valve*1, Waterproof Socket*2,Foot switch
Optional Accessory		Water and gas tap, Electric height adjustable base stand, Armrest, Base stand*1
Package Size (W*D*H)	Without Base Stand	800*760*1470mm
	With Base Stand	800*900*1470mm
Gross Weight	Without Base Stand	130kg
	With Base Stand	154kg

BIOBASE

Biological Safety Cabinet
BSC-700IIA2-Z
User Manual

Jinan Biobase Biotech Co., Ltd

Version 2024.09

Preface

Thank you very much for purchasing our class II A2 Biological Safety Cabinet.
Please read the User Manual before operating this unit to assure proper operation. After reading these documents, be sure to store them securely together with the “Warranty Card” at a hand place for future reference.

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

Content

1. Precautions

Under all conditions marked with ⚠, it is necessary to consult the document, so as to clarity the nature of potential risks and any countermeasures that must be taken.

Actions or operations which are prohibited.

Actions or operations which must be followed

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.

In order to avoid air turbulence, the operator should slightly move his arms during experiment. Hands should stay inside the working area at least 1 minute before operating. In order to decrease the times of arms moving into and out of the working area, prepare all the necessary items inside the cabinet before starting experiment.

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 of slow-moving.

Samples placed in parallel: Samples should be placed in the cabinet parallel to avoid cross-contamination between samples and blocking back air grille.

In order to avoid samples being sucked into the negative passage or the blower, do not place soft and slight samples (for example: soft tissue) on the surface during experiment;

The weight of items placed in the cabinet should be no more than 23kg/(25×25cm^2);

Avoid vibration: avoid using vibration equipment (e.g. centrifuges, vortex oscillator, etc.) inside the cabinet. Vibration would cause lower cleanliness of operating area and affect operator protection.

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.

The UV lamp can only be turned on when the front window is closed and the fluorescent lamp is off.When UV lamp working avoid looking straight.

ULPA filter life: With the usage time increasing, dust and bacteria accumulate inside ULPA

filter. Filter Resistance is getting bigger, when it reaches the maximum point, there will be audible and visual alarm. Please replace new ULPA filter, otherwise it will affect the safety performance of the equipment. The used filter should be processed as medical waste.

There is a negative passage surrounding the work area, 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.

Front Grille is used for air intake and drain. Do not block it, otherwise it will affect airflow. Armrest is recommended to solve this problem and reducing the operator's wrist fatigue.

Long-term use of Microbiological Safety Cabinets will inevitably cause pollution (e.g. ULPA filters, corner cabinets, etc.). In order to sterilize thoroughly every 500 hours, formalin (formaldehyde) fumigation sterilizer is recommended. After sterilization, neutralize formaldehyde gas with ammonium hydrogen carbonate. Make sure no sterilization gas escapes during the whole process.

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

In transportation process should take appropriate protective measures according to diagram on the surface of package. Purchaser in receiving should carefully check the integrity of the box. if there is damage and crush, please refuse to accept. And timely contact with our company.

When Microbiological Safety Cabinet installed and used move again, please timely contact with our company.

The ground bearing requirements: ground bearing capacity ≥350KPa.

Gross weight: 165kg.

Allowable pressure of water socket: ≤0.8MPa. (Optional)

For experiments that produce waste liquid, please timely drain wastewater in the sump through drain valve. If the liquid waste is harmful to human’s body, according to the grade of pollution should add the corresponding grade container, or connect to the corresponding grade drainpipes, and drain waste into the experimental equipment to immediately dispose.

Person can operate Microbiological Safety Cabinet only if he is qualified after training, during using Microbiological Safety Cabinet if it is a harmful experiment, operator must wear appropriate protective gloves, masks and lab coats, etc., and avoid touching mouth, eyes and face.

There is risk to move the parts moving. Relevant personnel can use this equipment must after training. while the front window must be raised to 200mm and in this case person can operate in the cabinet. In this way we can reduce harm out of front window trouble.

When the equipment is repaired or scrapped. The internal parts can't be thrown about because of biological hazards. please deal with them according to local regulations.

Serious declaration: we will take no responsibility for risks caused by improper operation and man-made damages!

2.Warranty

1) Warranty is 12 months from EX-factory date (excluding consumable accessories and Fluorescent lamp, fuse).
2) We will take no responsibility for risks caused by improper operation and man-made damages.
3) After the expiration of warranty, our company is also responsible for repairs, but the corresponding maintenance cost should be charged.
4) Lifetime of Microbiological Safety Cabinet is 8 years from production date on the label.
5) We can provide equipment drawings and necessary technical data for maintenance companies or personnel trained by our company.

Warranty declaration: One-year Warranty, Life-long Maintenance.

3. Unpacking, Installation, Debugging

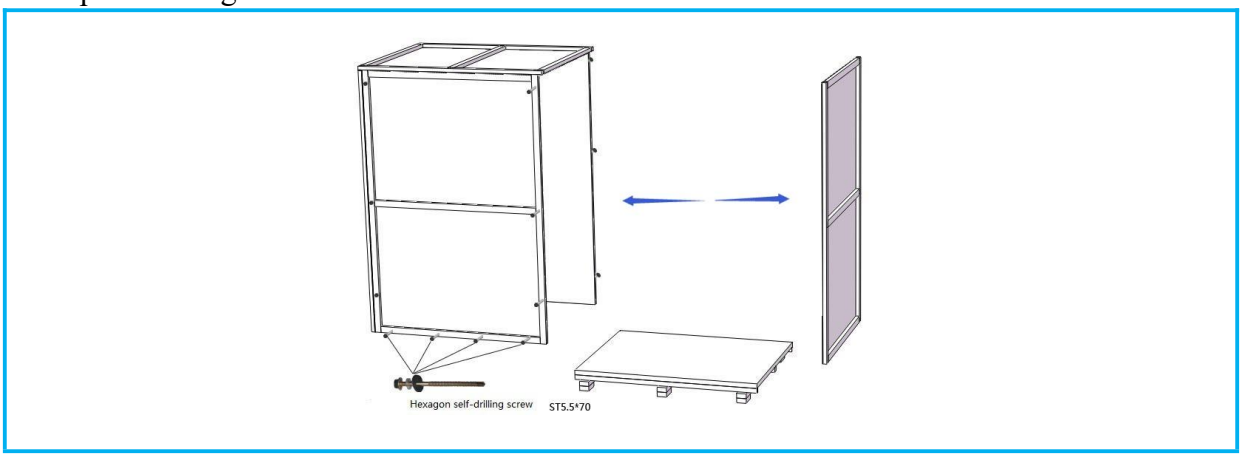
Please firstly check if packing box is in good condition. If the packing box is damaged, please take photos.

3.1 Unpacking

Choose the proper unpacking method according to the actual situation.

1) Method 1: Use M8 Wrench to unpack 2) Method 2: Electric drill with hexagon dead M8

Rapid unpacking diagram . Disassemble the screws shown in the below picture , then move the wooden pieces to right and left.



Unpacking method for carton

Using ordinary scissors to cut packing tape, take off the package cover, then move up the paper box body.

3.2 Accessories Checking

Refer to the packing list and check the accessories.

BSC-700IIA2-Z Packing List

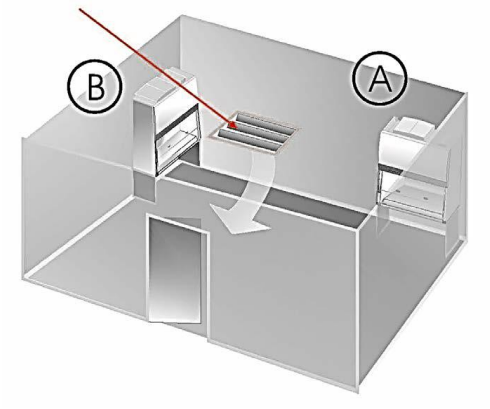
	Name	Position	Quantity
1	BSC-700IIA2-Z host	Wooden packaging	1
2	BSC-700IIA2-Z base	Paper packaging	1
3	UV lamp tube (T8 15W)	Foam packing	1
4	The RVV power cord	Accessory case	1
5	Insurance Tube (10A)		1
6	Insurance Tube (5A)		1
7	Remote control (including the battery)		1
8	Foot switch		1
9	Inner hexagon cylindrical head screw M10*20(base fittings)		5
10	Stainless steel flat washer (base fittings)		5
11	Stainless steel spring washer (base fittings)		5
12	Internal hexagon wrench (base fitting)		1
13	Drainage ball valve coupling fastening nut (drawing No. NXA4028-1)		1
14	Drainage ball valve coupling part (drawing No. NXA4028)		1
15	Drainage ball valve (Figure No. 3ZB1142)		1
16	Rubber large gasket (inner diameter * outer diameter * Φ20*Φ28*2mm thickness)		1
17	Rubber small gasket (inner diameter * outer diameter * Φ13*Φ19*2mm thickness)		1
18	Motor adjustment rod		1
19	I weld + drain block plate II + flat washer 6 + spring washer 6 + M6 nut		1
20	Key	Zip-bag	2
21	BSC-700IIA2-Z User Manual		1
22	Certificate of conformity		1
23	Warranty card		1
24	Inspection report		1
29	Remote control color page		1

3.3 Installation Conditions & Working Environment

Biological safety cabinet should be placed in a protected zone of airflow, front window operation mouth cannot face Windows and doors, Away from the ventilation system and air conditioning vents, prevented from ventilation systems, air-conditioned, doors, windows and people move caused an airflow impact on the safety cabinet. The tests show that if the air flow interference than other cabinet inlet suction air velocity, indoor infection air will enter the work space of biological safety cabinet. So the correct place safety cabinet, make its in the correct position, it is very necessary. It should also pay attention to safety cabinet exhaust and indoor and ventilated air or exhaust pipe, the relationship between safety cabinet exhaust air from above the cabinet put oneself in another position, at the time of placing safety cabinet should avoid limiting exhaust it. Biological safety cabinet should be in the direction of air flow downstream, must be in the safe cabinet side to keep at least 300 mm of space, in order to check.

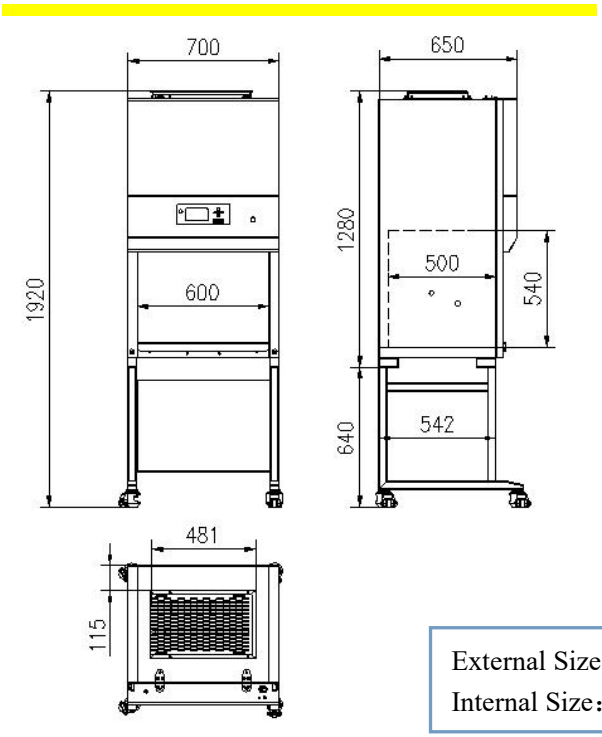
Working environment:

1. Only is suitable for indoor;
2. Ambient temperature: 15℃～35℃;
3. Relative Humidity:≤75%;
4. Atmospheric pressure range: 70 kPa～106 kPa;
5. Electrical parameters: Consistent with the rated voltage of the biological safety cabinet (See 2.1.5 technical parameter performance index);
6. Power supply need to be grounded; (Judging method: testing the live line and the zero line of the power supply with multimeter, the live line to ground voltage should be grid voltage and the zero line to ground voltage should be 0, otherwise the power supply ground is bad);
7. Installation location: The biosafety cabinet should not be located in the passage, away from the room air flow that can destroy the isolation layer generated by the working air barrier. Should not be placed in the laboratory return air outlet, affect the laboratory return air; If the laboratory has Windows, they should be closed at all times. The biosafety cabinet should not be placed in the circulation air inlet, so that air can blow through the front window operating port or blow the exhaust filter; If space permits, a 30cm space should be left behind and around the biosafety cabinet for cleaning. If not permitted, 5cm on the back should be left for cleaning the biosafety cabinet. The power socket of the biosafety cabinet can be approached to facilitate the maintenance of the biosafety cabinet, and the biosafety cabinet can be tested for electrical safety without moving it; The biosafety cabinet should be installed near the laboratory exhaust outlet, that is, downstream of the indoor air flow direction, so as to facilitate the discharge of polluted air around the biosafety cabinet as soon as possible.



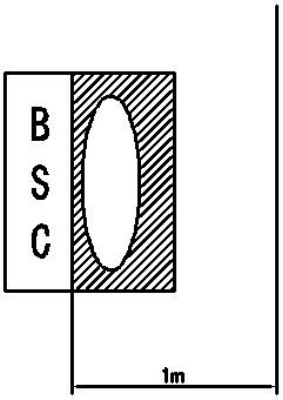
Recommended biosafety cabinet installation location in the laboratory

Note: "A" is the best position, "B" is optional position. The air outlet above or near the safety cabinet should be changed to avoid the front of the safety cabinet.

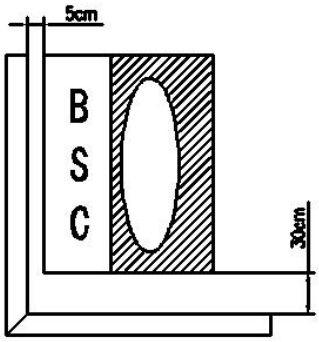


External Size：700*650*1920(mm)
Internal Size：600*500*540(mm)

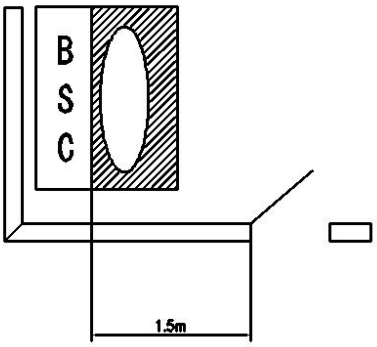
Biosafety cabinet dimensions



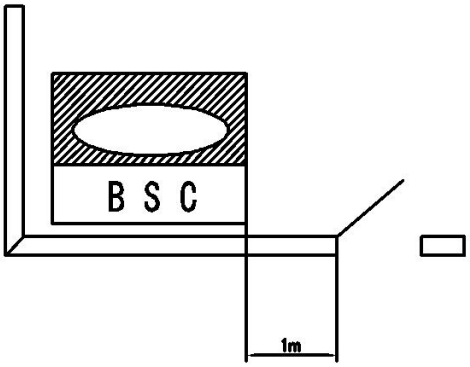
Allow at least 1.0 m between the cabinet and pedestrian traffic routes, thoroughfares or walkways



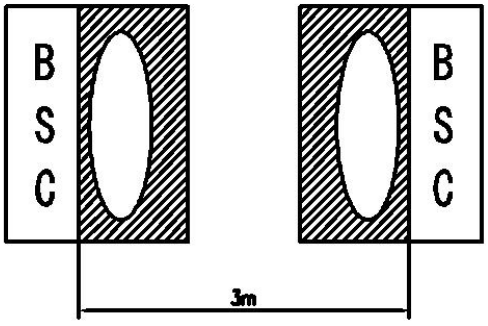
Allow at least 30 cm clearance on both sides of the cabinet and 5cm space on the rear of the cabinet



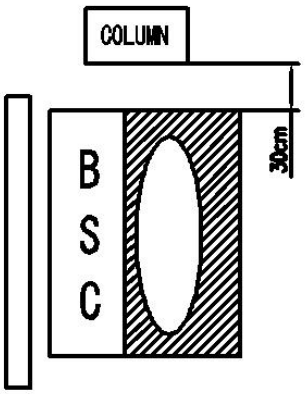
The distance between the cabinet aperture and any doorway is at least 1.5 m



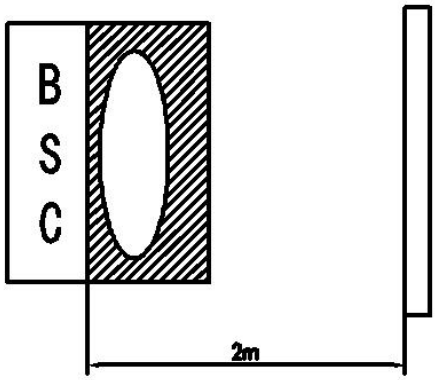
The distance between the side panel and any doorway is at least 1.0 m



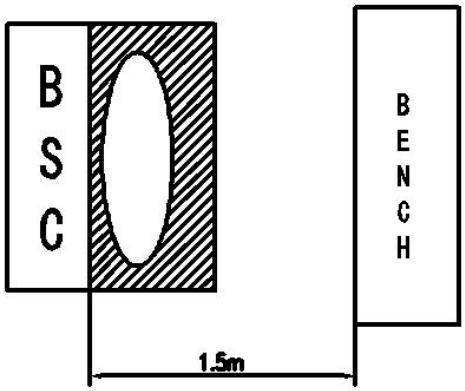
Allow at least 3m between the aperture and the aperture of an opposing cabinet, fume cupboard, etc.



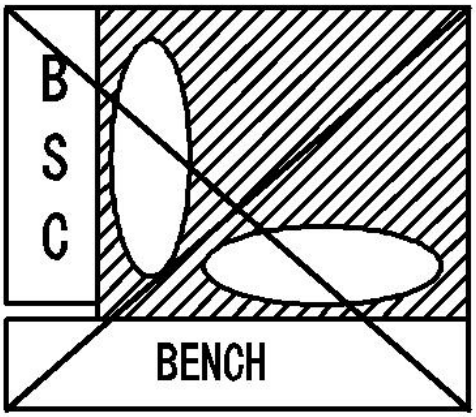
Any large obstruction projecting beyond the plane of the front aperture should not be within 30 cm of the sides of the cabinet



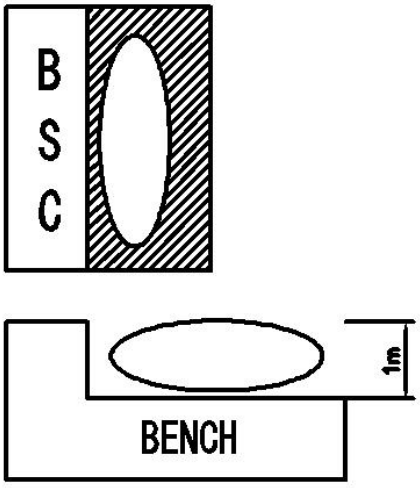
You should not position the cabinet in a location where there is an obstruction that affect airflow within 2 m of the front



The distance between cabinet aperture and the front of a bench opposite should be at least 1.5 m aperture



Avoid positioning a bench at right angles to the cabinet. Any person working at the bench is likely to disturb airflow close to the cabinet.aperture

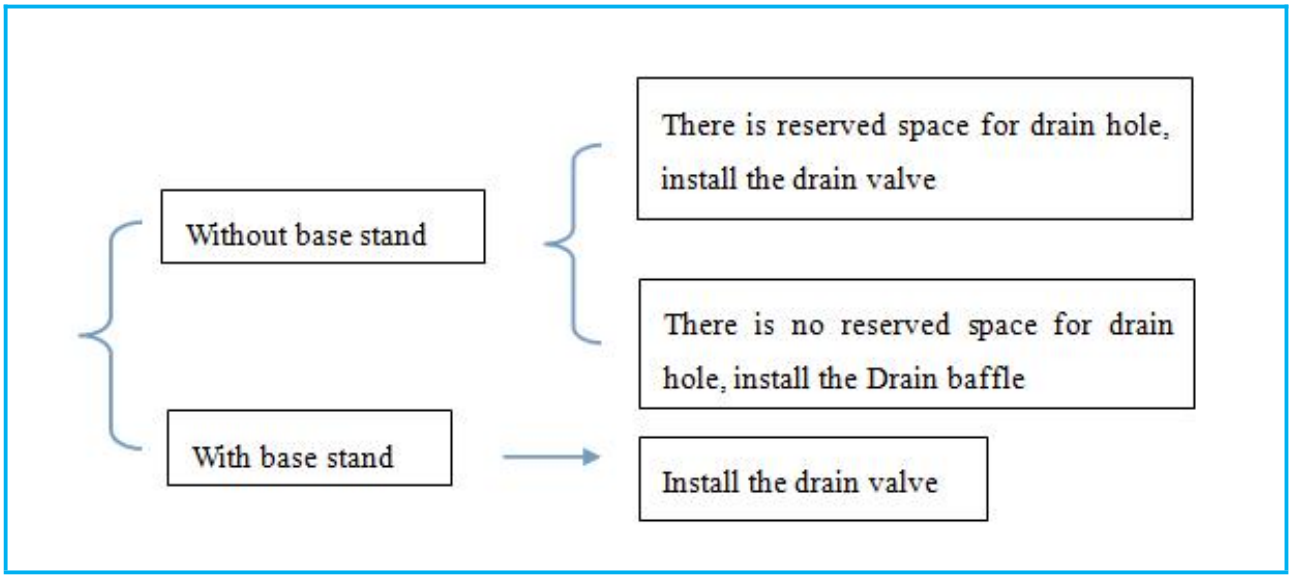


A projecting bench will help minimize traffic in front of the cabinet as long as the front of the bench is situated at least 1 m from the side of the cabinet

Position Requirements

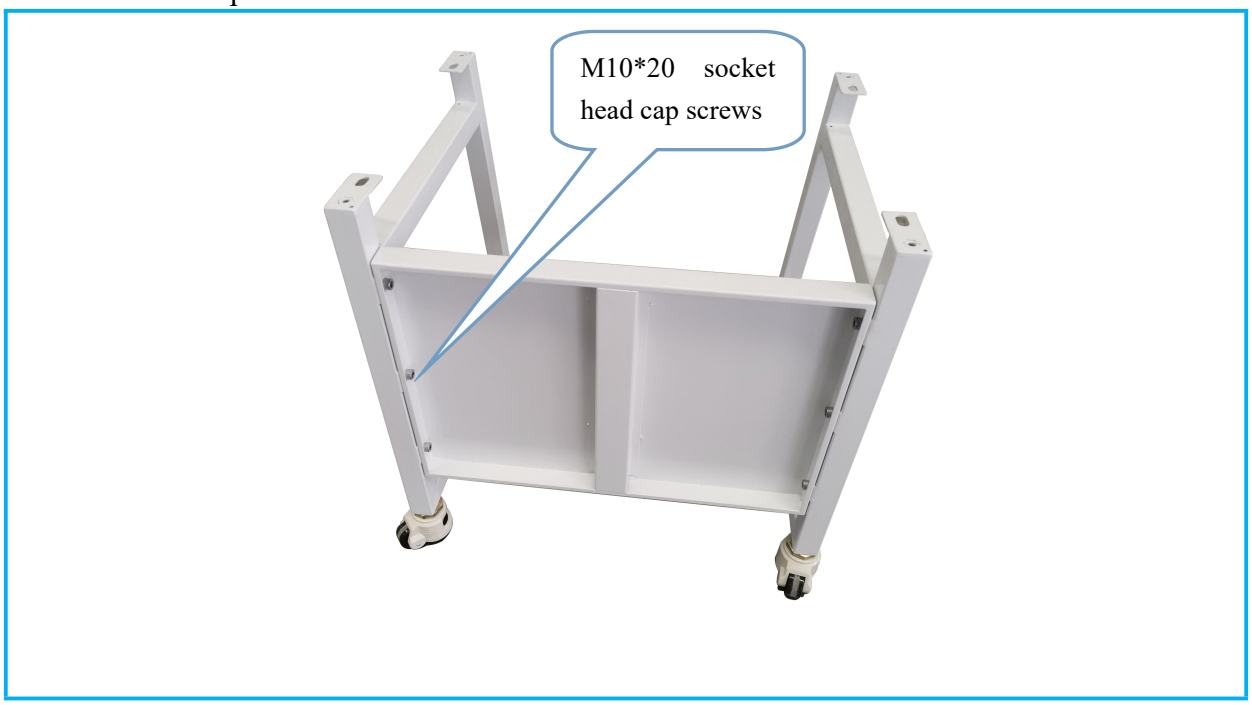
3.4 Installation

1. Remove all the package modules;
2. Inspect the surface of main body whether there is scratch, deformation or foreign matters;
3. Move the whole device to the final installation location;
4. Assembly of base stand, drain valve.
5. According to the operating platform which the biological safety cabinet will be placed, to judge if the biological safety cabinet is with base stand; if the drain hole has reserved installation space, then installation of drain valve or drain baffle is needed.



Note: Support section at the time of transport on the back of the safety cabinet, it should be removed before installation, it is forbidden to the bottom up and place or remove dumping.

1. Refer to below picture to assemble the base stand.

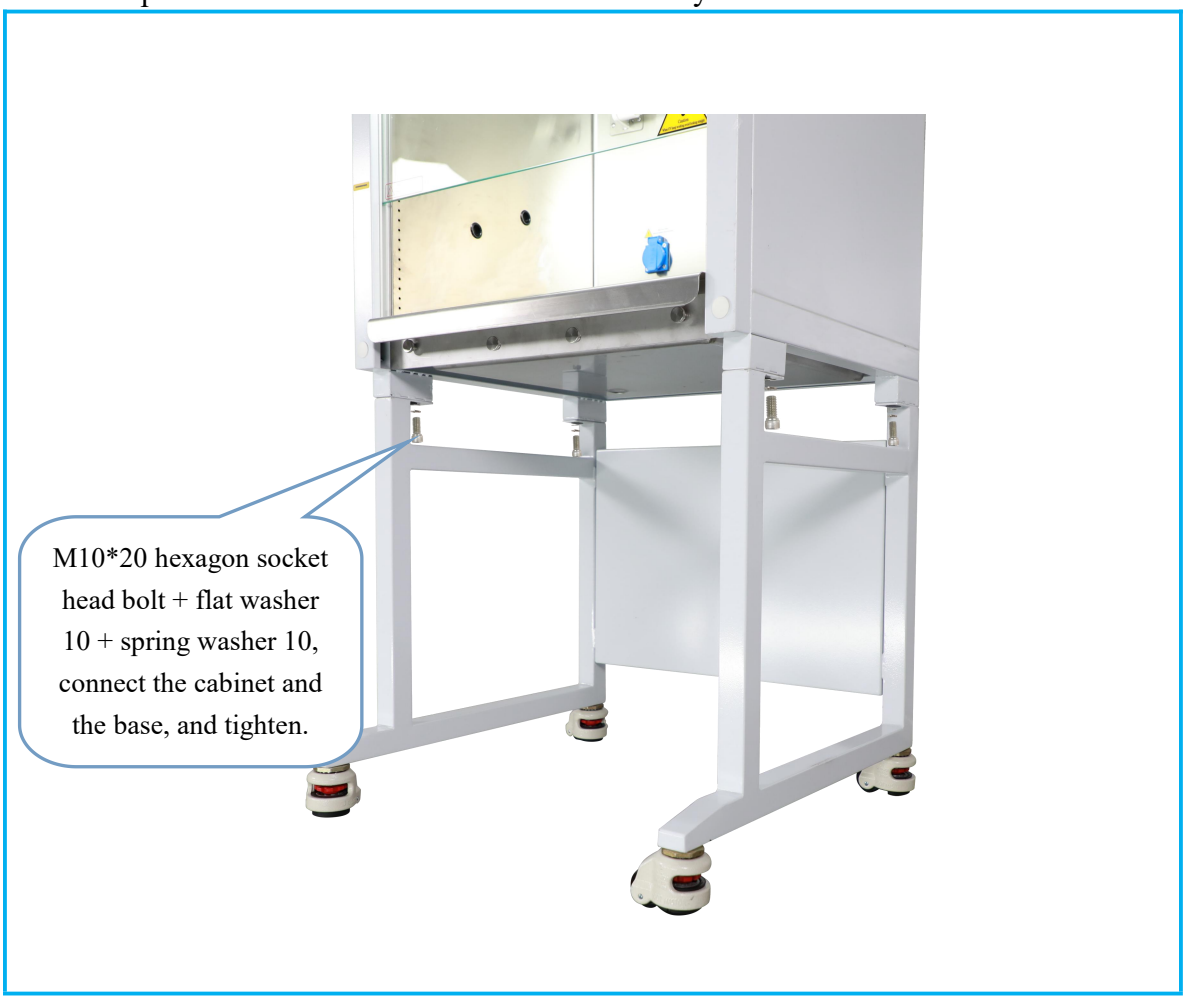


Remove the M10×20 hex cylinder head bolts from the accessory box, from the left side bracket and right side bracket of the base stand to inset screw, for connecting with the connecting plate, then tighten the screws with inner hexagon wrench, referring to above picture.

Note: The base mounting bolts are fixed to the base stand. When install the base stand, except the 4 bolts marked with red circle in above picture, please remove the other bolts and install.

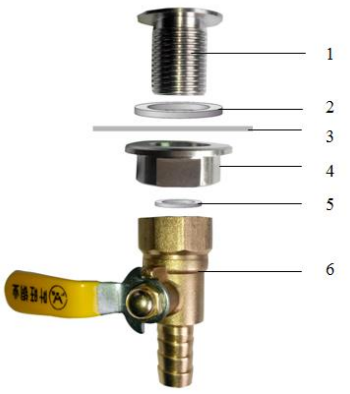
2. Connect base stand and main body

Refer to below picture to connect base stand and main body.



Take out the hex cylinder head bolt M10*20, spring washer10, flat washer10 from the accessory box, and connect the base stand and the main body as is shown in above picture.

3. Assembly of drain valve



1	Drain valve connector
2	Shim (Inner diameter*outer diameter*thicknessΦ20*Φ28*2mm)
3	Safety cabinet bottom installation holes
4	Drain valve connector fastening nut
5	Rubber gasket (Inner diameter*outer diameter*thicknessΦ13*Φ19*2mm)
6	Drain valve

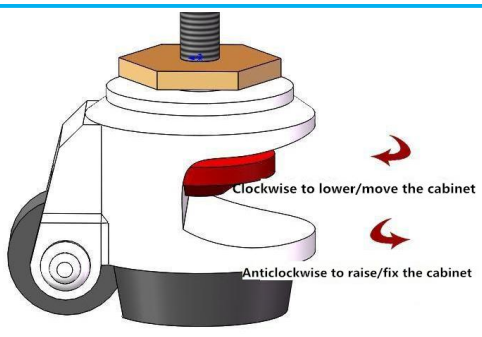
Take out drain valve connector, shim, drain valve connector fastening nut, rubber gasket, drain valve, assembling from up to down as are shown in above picture.

4. Assembly of drain baffle

1	M6 nut
2	Spring washer 6
3	flat washer 6
4	Drainage board I
5	Safety cabinet bottom installation holes
6	Drainage board II

Take out drainage board I, drainage board II, flat washer 6, spring washer 6, M6 nut, assembling from up to down as above picture illustrated.

5. Adjustment of footmaster caster



Clockwise rotate caster’ red part to low down the base feet and the cabinet height. Low down all four casters can move the cabinet. Counterclockwise rotate casters’ red part can raise the base leg and cabinet height. Raise all four casters at same time can fix the cabinet. Adjust the four casters to make the cabinet stable.

3.5 Checking after Installation

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

Checking Item	Normal Situation
Wind speed display	Inflow0.53±0.025m/s , downflow0.33±0.025m/s
Pressure display	Exhaust filter80-110Pa, downflow filter 80-110Pa
Fan running	Normally
Fluorescent lamp	Lamp lights after pressing button
UV lamp	Lamp lights after pressing button
Display screen buttons	All buttons can be used
Socket	Press the socket key, multimeter testing output supply voltage

4. User Instructions

4.1 Functions

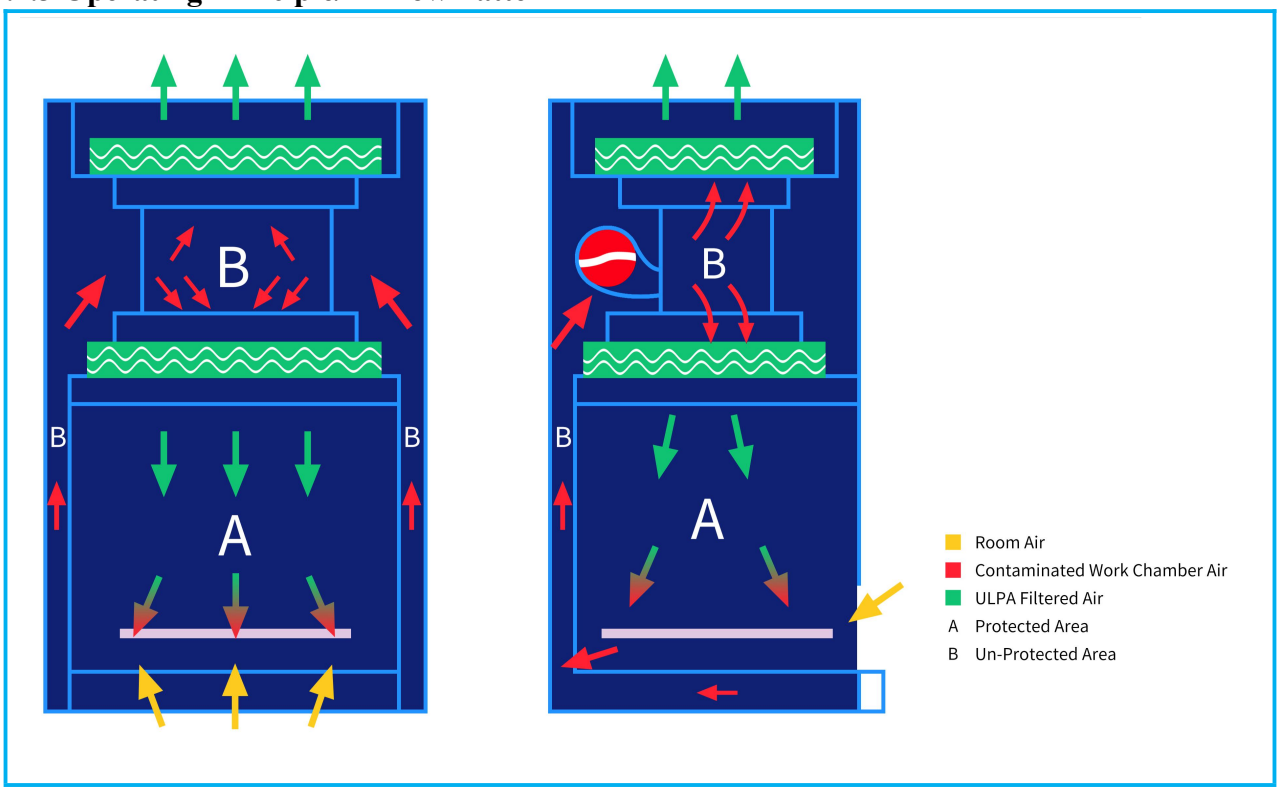
4.1.1 Product Concept

Biological safety cabinet is a kind of negative pressure filtration system for protecting operator, the laboratory environment and work materials, the front opening which air flow inward have protection function for operator, the filtered laminar flow generated by vertical ULPA can protect work materials, what's more, the polluted air flow become pure after processed by ULPA filter. When it's used in microbiology experiment environment filled with volatile or toxic chemical and radionuclide, suitable exhaust hood in function have to be linked.

4.1.2 Application Range

Biological Safety Cabinet is necessary equipment in the laboratory in the search of microbiology, biomedical, DNA recombinant, animal experiment, and biological products, especially in the occasion that operator need to adopt protective measure, such as medical and health, pharmacy, medical research. Our equipment provides a safety working environment which don't have bacterial and dust in the process of bacterial culture.

4.1.3 Operating Principle/Airflow Pattern



4.1.4 Protected Objects

Biological safety cabinets (BSCs) are designed to protect the operator, the laboratory environment and work materials from exposure to infectious aerosols and splashes that may be generated when manipulating materials containing infectious agents, such as primary cultures, stocks and diagnostic specimens.

4.1.5 Technical Parameters

Parameter	BSC-700IIA2-Z
External Size(W*D*H)	700*650*1920 mm
Internal Size(W*D*H)	600*500*540 mm
Power Supply (AC)	220V±10% ☐ 110V±10% ☐
Frequency	50 Hz ☐ 60Hz ☐
Consumption	500 W
Total Airflow Volume	230 m^3/h
UV Lamp Consumption	15W
Fluorescent Lamp Consumption	8W *2(LED)
Down-flow Velocity	0.33±0.025m/s
Inflow Velocity	0.53±0.025m/s
ULPA Filter	99.9995%（Diameter:0.12μm）
Noise	≤65dB(A)

Notes:

(1) Electric consumption power includes the power used to load the base stand (optional).

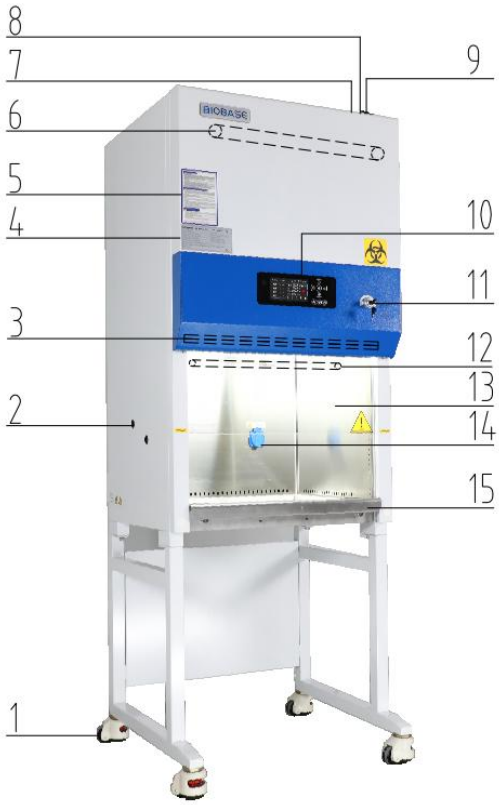
(2) Our company has right for changing the products, if we need to change and re-design, please forgives us for not notifying you.

1. Biological safety functions
   Personnel protection: with the KI way, the protection factor of the front window operating port should not be less than 1 * 10^5;
   Sample protection:microbial colony count ≤5CFU;
   Cross contamination protection: microbial colony count ≤2CFU.
2. Leak-proof Cabinet
   If cabinet pressurized to 500Pa, the pressure should be no less than 450 Pa after 10 min.
3. Integrity of ULPA Filter
   Scan and detect the ULPA filter, the leakage rate at any point should not be ＞0.01%.
4. Vibration amplitude
   The net vibration amplitude between frequency 10Hz and 10KHz is no more than 5μm(rms).
5. Illumination
   The average illumination is no less than 650 lux, max illumination is no less than 1000lux.
6. Mechanical performance

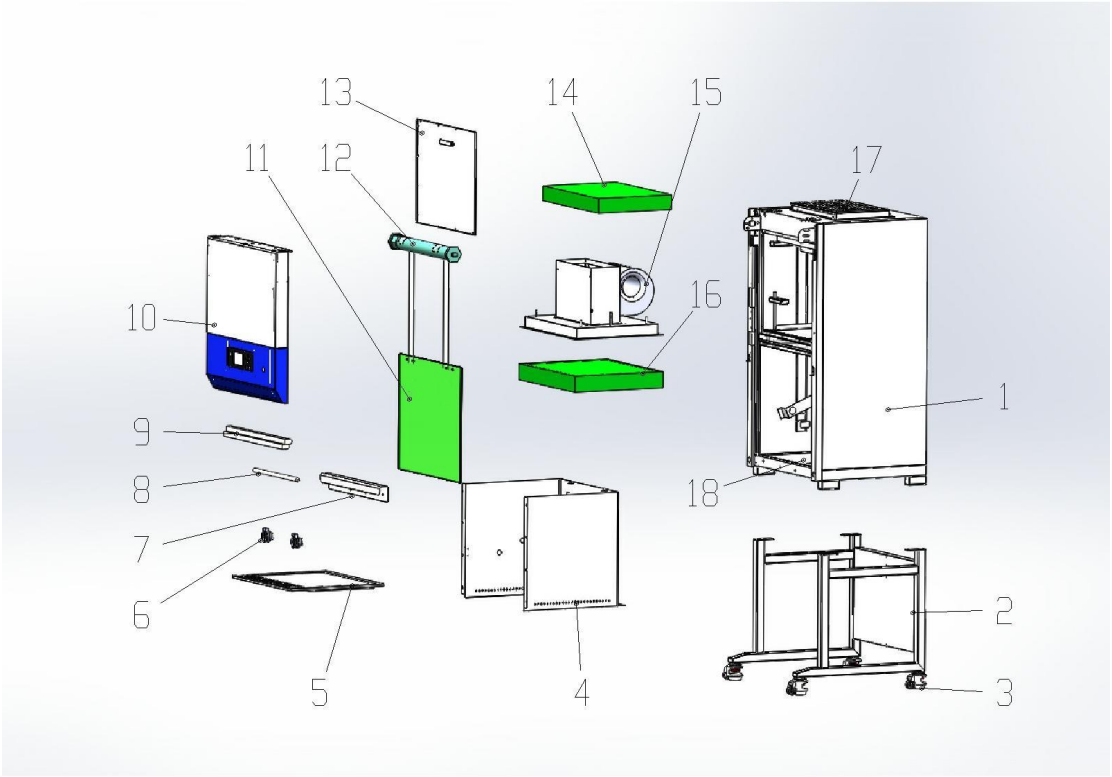
Structure design is reasonable, high quality materials are adopted for the cabinet.
It can resist shape global deformation caused by external force.
The working surface will not occur permanent deformation when weight put reaching 23kg.

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

4.2 Product Structure



1	Footmaster caster
2	Reserved holes for water and air faucets
3	LED lamp
4	Nameplate
5	Operating instruction
6	Door motor
7	Fuse socket
8	General power fuse socket
9	Power socket
10	Control panel
11	Power lock
12	UV lamp
13	Front window glass
14	Waterproof socket
15	Handrest panel



1	Cabinet	2	Base	3	Footmaster caster	4	Apron board
5	Operating table	6	Waterproof socket	7	Handrest panel	8	UV lamp
9	LED lamp	10	Front panel	11	Front window glass	12	Door motor
13	Inner front plate	14	Exhaust filter	15	Fan assembly	16	Supply filter
17	Exhaust opening	18	Sump				

4.2.1 Structure Introduction

1) Driving system of front window

Driving system consists of tube motor, front window, hauling sash and position switch.

2) Air filtration system

Air Filtration System is the most important system of BSC. It consists of fan, supply filter and exhaust filter. The function of Air Filtration System is transferring filtered air to work area, ensure the down flow velocity, keep cleanness of work area and exhaust gas reach the standard request.

3) UV lamp

UV lamp is inside work area. So UV lamp can well sterilize all space of work area.

4) Fluorescent lamp

The BSC is equipped with straight tube type energy-saving fluorescent lamp. It can make sure

average
illumination inside work area which meets standard requirements.

5) Sampling port
The sampling port reserved on the safety cabinet for testing the aerosol concentration of the upstream of the ULPA filter is located at the lower part of the worktable in the working area.The transparent tube marked with "filter upstream" is the sampling port for aerosol concentration test on the upstream of air supply filter and exhaust filter.

6) Power lock
When the power cord is connected to main power, switch the key for power lock, then the equipment is powered on.

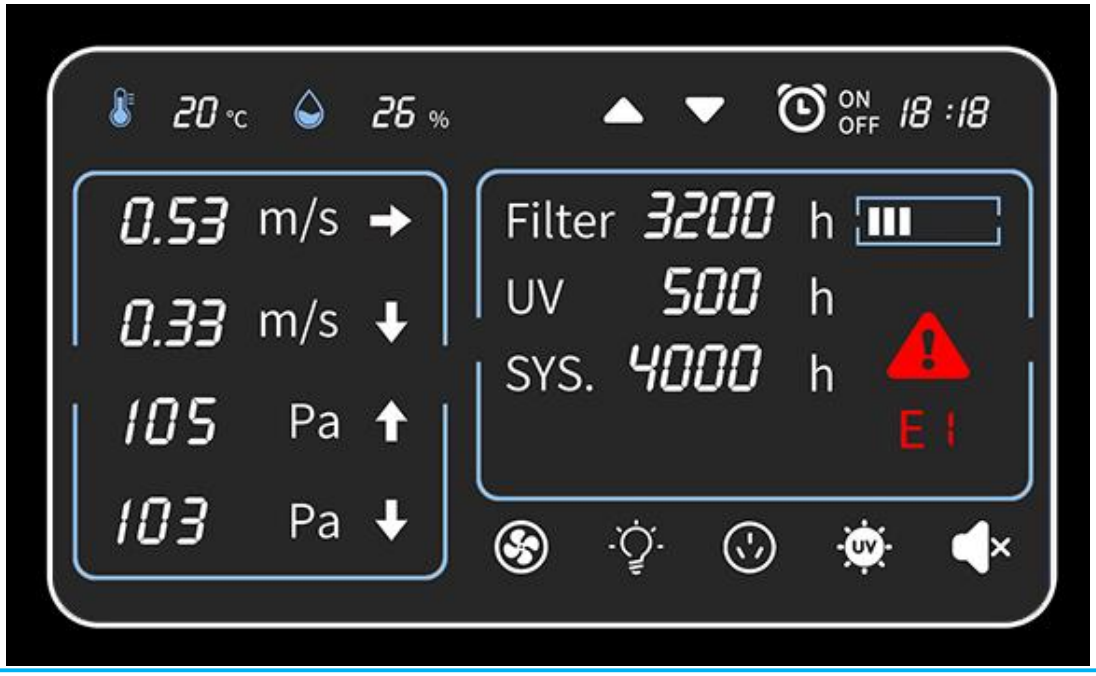
7) Waterproof socket
Waterproof Sockets are located on the right side of the work area, which can be controlled by SOCKET button.

⚠**(1) Please make sure the total load of sockets should be ≤ 500W;**

(2) Waterproof connector can only be waterproof when the lid down, the socket cannot be regards as waterproof connector when the cover is opened.

8) Fuse protector
The equipment is equipped with main power fuse, waterproof socket fuse. They are located near the power cord's outlet. Fuse label is corresponding to the relevant specifications. Please refer to 3.2.

9) LCD display
LCD Crystal Display is placed in the middle of the two pieces of parallel glass liquid crystal, there are many vertical and horizontal fine wire between two pieces of glass, control rods crystal molecules change direction through electricity or not, and will have a picture lamp refraction. Low power consumption, no electromagnetic radiation, and the service life can be up to 100000 hours.



Large LCD display indicates detailed key parameters; it can real-time display to reflect the equipment working condition, such as effective working state of the filter, which is more intuitive.

10) Control of front window

Front window is motorized. It could be controlled by remote control, and control panel.

11) Structure

a) Biological Safety Cabinet's both sides and back area are negative pressure air channel. Make a double isolation by air curtain and cabinet between working area and external environment And the working area surrounded by negative pressure to avoid any leakage.

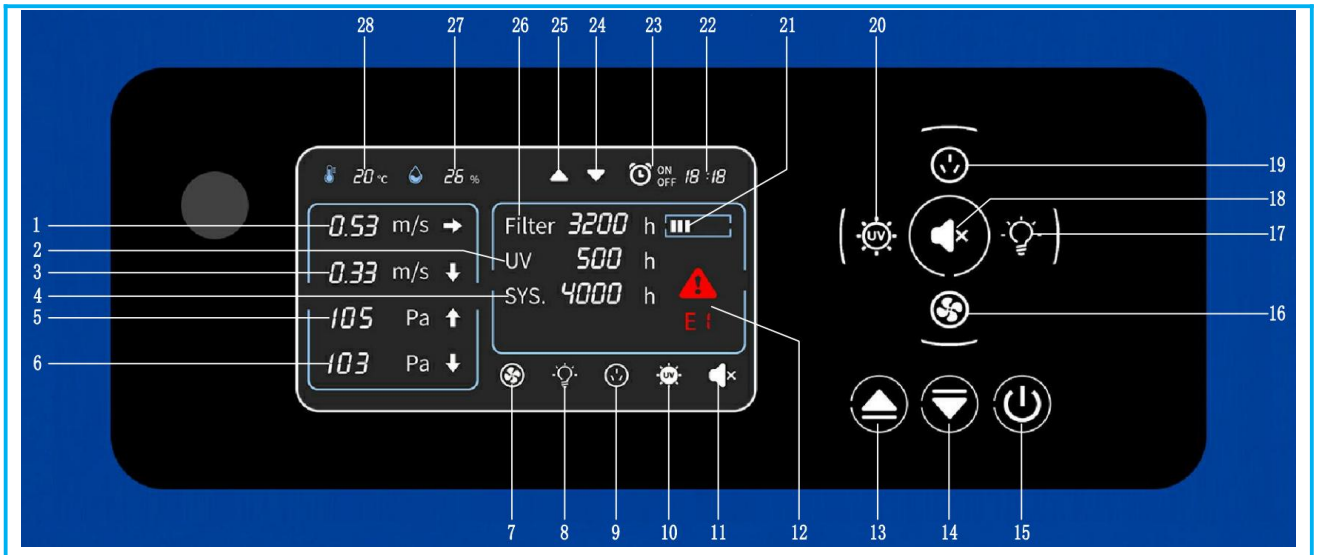
b) Cabinet body is built of 1.2mm cold-rolled steel with anti-powder coating. Strong and steady.

c) Work area is fully made of 304 stainless steel which looks beautiful and with corrosion resistance performance.

d) Base stand is made of cold-rolled steel with anti-powder coating.

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

4.3 Control Panel



1	Inflow velocity display	2	UV lamp working time display	3	Downflow velocity display
4	System working time display	5	Exhaust filter differential pressure display	6	Air supply filter differential pressure display
7	Fan working state display	8	LED lamp working state display	9	Socket working state display
10	UV lamp working state display	11	Mute state display	12	Alarm state display
13	Glass door up button	14	Glass door down button	15	Power button
16	Fan button	17	LED lamp button	18	Mute button
19	Socket button	20	UV lamp button	21	Filter working time barcode display
22	Clock display	23	Timing function state display	24	Glass door down state display
25	Glass door up state display	26	Filter working time display	27	Humidity display
28	Temperature display				

a) LCD screen

The working status of the equipment and operation can be seen on the LCD screen

b) Soft touch button.

Main functions could be executed by touch-buttons.

	Power button	Master switch for controlling other function buttons.
	LED lamp button	Control button for LED lamp. Each time you press it, the state of the LED lamp and the indication state on the LCD will change once, that is, from on to off, or from off to on.
	UV lamp button	Control button for UV lamp. Each time you press it, the state of the UV lamp and the indication state on the LCD will change once, that is from on to off, or from off to on. (This button will be valid only when the glass door is completely closed)
	Fan control button	Control button for fan working state. Each time you press it, the working state of the fan and the indication state on the LCD will change once. (This button does not work when the glass door is closed)
	Socket button	The control button for the the power on/off state of the socket. Each time you press it, the power on/off state and the indication state on the LCD will change once.
	Mute button	When this button is pressed, the mute function is activated.
	Glass door up button	Press the up button, the glass door will keep rising, and stop when it is 200mm away from the work table. Press the UP button again it reaches the highest point of travel, the glass door will stop moving.
	Glass door down button	Press the down button, the glass door will keep falling, and stop when it is 200 mm away from the table panel.Press the button again, the glass door will shut down and stop moving.

You can also complete the time adjustment and one-key timing function of the UV lamp through the combination of buttons:

Combination button	Time adjustment	After power on, in the standby (black screen) state, first press the Mute button 5 seconds,the clock adjustment state will be entered. At the beginning, the minute bit will flash, then adjust the minute bit to the current time by pressing the up button and down button . Then press the mute button to switch to the hour bit , and adjust the hour bit to the current time by pressing the up button and down button . After the clock is adjusted, press the Mute button 5 seconds to save.
	One button timing function of the UV lamp	1. When the device is running, close the fan, LED lamp and glass door, long press the UV lamp for 3s, after the interface displays the off countdown, then start the one button timing sterilization function; At the end of the timing, the UV lamp will automatically be turned off and returned to the standby mode. (The default ex-factory setting sterilization time of the safety cabinet is 30min) 2. Change the UV timing time: In the standby (black screen) state, long press the UV button for 3s to enter the timing setting, press the mute button to switch between minute bit and hour bit, then press the up button and down button to adjust the time. After the timing setting, long press the UV button to save.

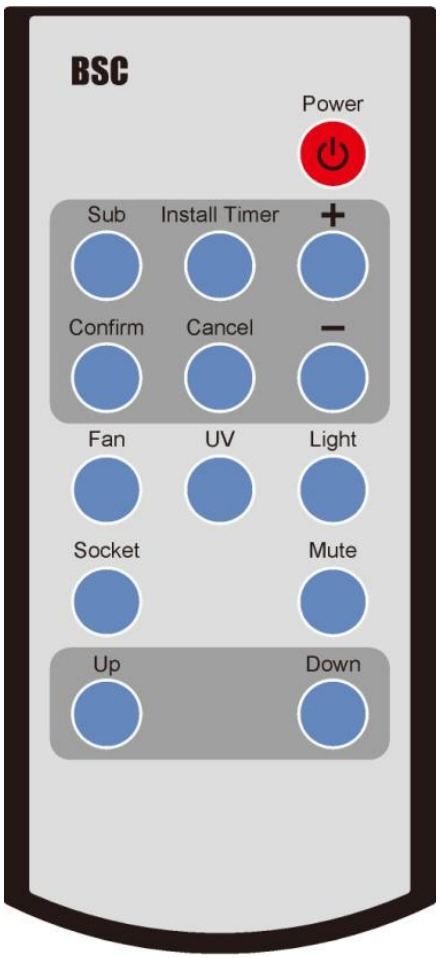
4.4 Remote Control

It is inconvenient for the users to operate from a distance. Small &lamp remote control is flexibly to be used to control all the functions of the cabinet in a distance ≤6m, 30° range. The operator can even carry it with themselves during experiment for convenience.

This remote control adopt specific chip which is featured with good anti-jamming performance, longer control distance and high control precision.

Biological safety cabinet is equipped with special UV lamp. When turning on or turning off the cabinet, sterilization time of UV lamp should be at least 30 minutes. In order to save the waiting time of turning on or turning off the cabinet, we develop reservation time function. It realizes function of automatic turning on or turning off the cabinet after the sterilization finished. Reservation time

setting range is from 0 to 99 hours and 59 minutes. This function helps operators to save time and improve efficiency.



Buttons of Remote Control:
1. Power (POWER)
2. Reservation Time (SUB)
3. Timer (INSTALL TIMER)
4. Confirm (CONFIRM)
5. Cancel (CANCEL)
6. Turn up (+)
7. Turn down (-)
8. Fan (FAN)
9. UV (UV)
10. Illumination (lamp)
11. Socket (SOCKET)
12. Mute (MUTE)
13. Front window up (UP)
14. Front window down (DOWN)

A、Timed shutdown

a、When the equipment is running, press the reservation key (SUB) to set the timed shutdown, and the LCD displays off;

b、Adjust the time by pressing the+and - buttons, press the INSTALL TIMER to switch the 10 minutes' bit, hour bit and 10 hours' bit of the time, press the CONFIRM button to save the settings and start the timed shutdown;

c、Press the SUB key twice in succession to exit the timed shutdown function.

B、Reservation timing

a、Plug in the power supply, open the power lock, and select each function button (UV, FAN, SOCKET) to start the corresponding function;

b、Modify the reservation time: when the reservation function is running, press the SUB button to set the reservation opening time, and the interface displays (on). Press the INSTALL TIMER to switch the 10 minutes' bit, hour bit and 10 hours' bit of the time, and press the + and - buttons to adjust the time; Press the CONFIRM button again, and the interface displays (off). Set the running time of the reservation function. The modification steps are the same as above; Finally, press the CONFIRM button to start the reservation timing function;

c、 To start the reservation function immediately, set the start time (on) to 00:00; If it is not necessary to start the reservation function immediately, after completing the corresponding reservation settings, press the corresponding buttons (UV, FAN, SOCKET) to exit, and then press the reservation function button to start the reservation function;

d、The glass door must be closed before starting the UV reservation timing function; The glass door must be at a safe height before starting the fan reservation timing function;

e、Interface on: indicates the function will be started after a period of time; Interface off: indicates the function will be closed after running a period of time.

C、Other buttons have the same function as the touch buttons on the operation panel.

4.5 Instructions for Operation

4.5.1 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.
2) In order to avoid air turbulence, the operator should slightly move his arms during experiment. Hands should stay inside the working area at least 1 minute before operating. In order to decrease the times of arms moving into and out of the working area, prepare all the necessary items inside the cabinet before starting experiment;
3) 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 of slow-moving.
4) Samples placed in parallel: Samples should be placed in the cabinet parallel to avoid cross-contamination between samples and blocking back air grille.
5) In order to avoid samples being sucked into the negative passage or the Fan, do not place soft and slight samples (for example: soft tissue) on the surface during experiment;
6) The weight of items placed in the cabinet should be no more than 23Kg/25×25cm2;
7) Avoid vibration: avoid using vibration equipment (eg centrifuges, vortex oscillator, etc.) inside the cabinet. Vibration would cause lower cleanliness of operating area and affect operator protection.
8) 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.
9) ULPA filter life: With the usage time increasing, dust and bacteria accumulate inside ULPA filter. Filter Resistance is getting bigger, when it reaches the maximum point, there will be audible and visual alarm. Please contact our company service department in time, replace new ULPA filter, otherwise it will affect the safety performance of the equipment. The used filter should be processed as medical waste.
10) There is a negative passage surrounding the work area, 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.
11) Front Grille is used for air intake and drain. Do not block it, otherwise it will affect airflow. Armrest is recommended to solve this problem and reducing the operator's wrist fatigue.
12) Long-term use of biological safety cabinets will inevitably cause pollution (e.g. ULPA filters,

corner cabinets, etc.). In order to sterilize thoroughly every 500 hours, formalin (formaldehyde) fumigation sterilizer is recommended. After sterilization, neutralize formaldehyde gas with ammonium hydrogen carbonate. Make sure no sterilization gas escapes during the whole process.

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 improper operation and man-made damages!**

4.5.2 Operation Process

1) Connect the same power reply, as required of equipment
2) Open the power lock, LCD display lamps up and alarm rings at the same time, then the machine enters to standby status. Waiting for the operator to input button to use it;
3) Press POWER button, then the following functions are available: Fluorescent lamp. UV lamp, Fan, Mute, Sockets, Front window up and down, Reservation timing;

   ⚠ **When front window is closed and fluorescent lamp is off, then press the UV button to select the sterilization function.**
4) 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. If there is no test conditions, it should be replace when the UV timer on the display indicate the working time reaches to 1000 hours.
5) Please move the front window at 200mm height from the work table, turn on the fan, make sure the experiment should be started after fan working for at least half an hour;

   ⚠ **For operating safety, please put testing materials inside the cabinet in advance, and keep the front window at 200mm height from the work table during operation.**
6) 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.

4.6. Daily Maintenance

Because the operating time will directly affect the judgment of maintenance needs, we recommend the user keep a detailed record of operating time for reference.

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

4.6.1 Preparations before Maintenance

Soap, hot water or warm water, a soft cotton cloth, dry cloth or towel, medical alcohol or other disinfectants, 100 dilution of household bleach, abrasive household cleaners, sterile water

4.6.2Clean the Cabinet Surface

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 or sump., use 70% medical alcohol or other disinfectant to wipe.

⚠**Disinfectants used for wiping should not damage 304 stainless steel.**

Clean the external surface and front window.
Use soft cotton cloth or towel to wipe the surface with non-abrasive household cleanser.

4.6.3 Overall Maintenance Period
We suggest comprehensive maintenance period is one year or 1000 working hours.

4.6.4 Maintenance Methods

1) Daily or weekly maintenance
a) Disinfect and clean operating area;
b) Clean the external surface and front window around the operating area;
c) Check the various functions of equipment;
d) Record this maintenance result;

2) Monthly maintenance
a) Clean the external surface and front window.
b) Wipe the working table, inner wall surface of operating area (excluding the wind distributing grid of operating area) and the inner surface of glass door with 70 % medical alcohol or household bleach diluted 1:100. Then wipe again with sterile water in order to eliminate the rest chlorine.
c) Check the various functions of equipment;
d) Record this maintenance result;

3) Annual maintenance
a) Check the two conveyor belts of front window drive unit, and ensure that their tightness is coincident.
b) Check the UV lamp and fluorescent lamps.
c) Apply for testing the overall performance of cabinet on an annual basis to ensure the performance safety. User is responsible for testing costs.
d) Record this maintenance result.

4.6.5 Storage Conditions
Safety cabinet should be stored in a relative humidity no more than 75%, the temperature is below 40℃, in the warehouse with good ventilation performance, no acid, no alkali and no other corrosive gases, storage period shall not exceed one year, safety cabinet for more than a year needs to unpacked and checked. Only the tested and qualified safety cabinet can be sold.

4.7 Methods &Procedures for Disinfection

Disinfection is necessary when any contaminated part of the biological safety cabinet needs for routine maintenance, filter replacement, and performance testing, etc. Before doing certification test and gas sterilization, all internal working surface and the exposed outer surface should be disinfected with a suitable disinfectant. what is more, using Class II biological safety level designated medicament to sterilize the cabinet by gases is required. The cabinet, under the risk of being polluted by the biological factor, should be sterilized before sliding position.

The polluted working surface caused by overflowed and spilled reagents reagents also should be sterilized. Most of the cases that need gas sterilization use depolymerized triformol as the disinfector as noted below, the period parameters and its validity of each model and size of the cabinet are required to be listed before change sterilization method. The relevance of the material has connections with the absorption and degeneration of spare decontaminant, which is the key factor of keeping the cabinet integrated and the sterilization time. There need those alternative sterilization way in some case, such as: slow disease virus. The sterilization method is used against the consult between the end user and certification authority. Pointing out the given area, gas mask, safeguard procedures, corresponding test, medical monitoring, conveying danger and training, record and reserve etc and follow these steps.

1. Figure out the total volume of the cabinet by multiplying the height, width and depth.
2. The required quantity of the triformol will be worked out through the total volume multiply 11g/m³, figuring out the weight of ammonium bicarbonate or its alternative by chemometry.
3. It must be bubble-tight if there are exhaust pipe with the biological safety cabinet, which can be realized at the end of the pipe or sealing at the control valve if there is valve nearby the cabinet, more triformol will need to compensate the added volume if the length of exhaust pipe is more than 3m. If the exhaust re-circulation of the cabinet connects with the exhaust system of the construction, open the connection between the biological safety cabinet with construction system for sealing (Sealing by plastic film/ strip).
4. If the exhaust of the cabinet is released to the room, the exhaust vent must be sealed with plastic strip.
5. In order to urgently eliminate formaldehyde, sterilize and eliminate formaldehyde after neutralizing, putting a tube (which is required to connect with chemical smoke hood or other exhaust devices that is suitable for releasing the harmful gas nearby)the biological safety cabinet in advance .
6. Put the heater, such as electric-heating frying pan which can be bought from market, formaldehyde generator or neutralizer on the working table. Set up the temperature at 232℃～246℃, the triformol is spraying over the surface of the heater devices equably.

   ⚠ The autoignition temperature of paraformaldehyde is 300℃.
7. The heating device of the neutralizer with is placed on the work table. Neutralizers (Ammonium bicarbonate or alternative) should be isolated from the air in the cabinet before use. The following two examples illustrate how to achieve air separation.

   Eg.1

   Ammonium bicarbonate or alternative is uniformly sprayed on the heated surface of the heating device and covered with aluminum foil to prevent the ammonium bicarbonate or its alternative reacting with with formaldehyde during disinfection. The aluminum foil should be placed so that ammonia can be released during heating or ready to remove aluminum foil at the beginning of the neutralization phase. If some formaldehyde is leaking out of the safety cabinet, it is not allowed to remove aluminum foil.

   Eg.2

   The safety cabinet is sealed with plastic film that is together with the glove. Place ammonium bicarbonate or alternative in a container in the safety cabinet and seal well them. During the neutralization phase, the staff go into the safety cabinet through the gloves which can not break

the sealing system. Remove the ammonium bicarbonate or alternative from the sealed container container and uniformly spray them on the heating surface of the heating device, then power on the heating device , the ammonium bicarbonate or the alternative can be heated to release the ammonia.

8. Putting heating plate, water beaker and hygrometer on the work table, do not connect the wires to the power supply in the cabinet.
9. Sealing the front operating window with thick plastic film and plastic strips. Seal all areas that are likely to leak. Such as wire outlet, the surrounding of front operating window and joint between plastic film and biological safety cabinet.
10. Measure the temperature and humidity inner the cabinet.
11. The humidity should be 60％～85％ temperature should be above 21℃, heat the water in the beak with the heating plate to reach the expected temperature and humidity.
12. Before depolymerizing the formaldehyde, strictly restrict entry to the area around biological safety cabinet or room in accordance with related regulation and safety measures.
13. Connect the wire of the heating device to the socket on the outside of the cabinet.
14. After 25% formaldehyde is depolymerized, power on the safety cabinet fan for 10 s～15 s.
15. After the para-formaldehyde is depolymerized by 50%, 75% and 100%, repeating the above steps. If the safety cabinet fan does not work, use auxiliary fans to promote air circulation in the cabinet, or prolong the disinfection time, which should be longer than the time stipulated in Step 17 .
16. Disconnect the power supply of the heating plate and heating device used for the paraformaldehyde.
17. Keep the biological safety cabinet at least 6 hours, it is better to leave it for a night.
18. Prepare the neutralizer based on Step7, power on the heating device and the fan of biological safety cabinet until ammonium bicarbonate volatilizes away, like the operation to the paraformaldehyde, after 20% of ammonium bicarbonate is decomposed, power on the fan for 10 s ～ 15 s, if the safety cabinet fan does not work, use auxiliary fans to promote air circulation in the cabinet, or prolong the neutralization time at least to 6h.
19. If the neutralized formaldehyde is released with a tube, tear out the plastic cover in the exhaust vent, connect the exhaust vent with tube and seal it. The plastic cover in the front operating window of the biological safety cabinet will be sucked in and cut 1 or 2 openings to let the fresh air be into the cabinet , while the neutralized formaldehyde is exhausted via tube of the exhaust vent if the tube works well.

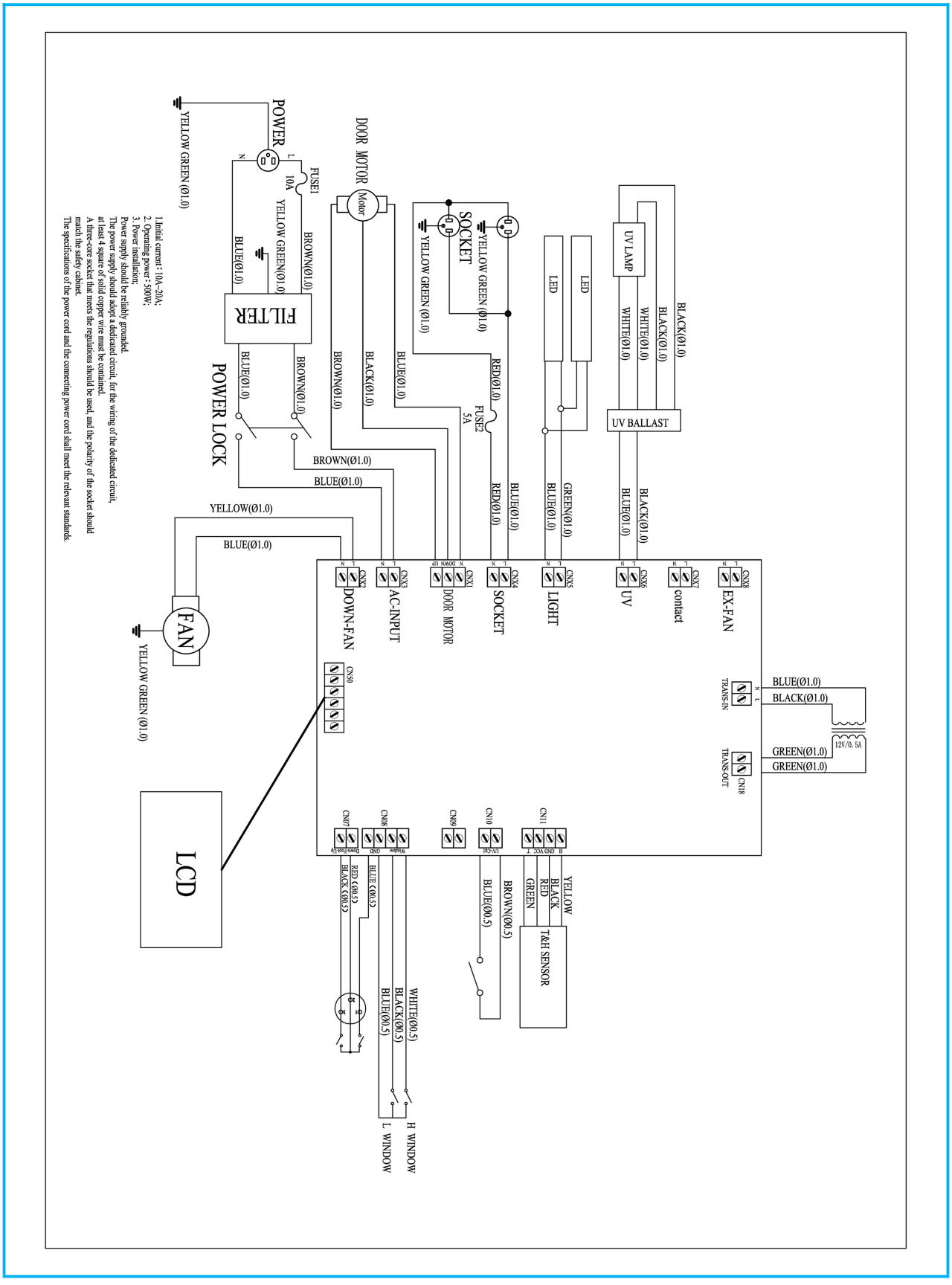
⚠ **Before sterilization, all the hydrogen chloride should be moved away from the cabinet. There will result in carcinogenic substance-BCME when it meet with formaldehyde under the ambient air.**

4.8 Replacement Parts List

BSC-700IIA2-Z Replacement Parts List

No.	Item	Specification
ADA01	Fuse	10A
ADA02	Fuse	5A
ADA03	Lamp holder T8	LG13-01A,CQC certified
ADA04	UV Lamp	T8 15W
ADA05	Fluorescent Lamp	2*8W
ADA06	UV lamp ballast	1*TL8-18W
ADA07	Upper filter (Exhaust filter)	570*380*69mm
ADA8	Lower filter (Supply filter)	570*460*69mm
ADA9	Fan	DH146A1-AG5-30-001
ADA10	Control panel	LCD control board
ADA11	Remote control (with battery)	With film
ADA12	Key selection button	YJ139
ADA13	Glass	629*540*6.38mm

4.9 Wiring Diagram



5. Trouble Shooting & Labels

5.1 Common Faults & Solutions

5.1.1 Warning and Reminder

Digital display of pressure difference, digital velocity display, audible and visual alarm system.

1) Over safety height alarm for front window

There will be audio and visual alarm when front window is lifting over safety height. Same time LCD display will twinkle E1 mark. Then just adjust the height of the front window.(Front window height setting value is 200mm).

2) ULPA filter pressure difference alarm

There will be audio and visual alarm if pressure of air supply filter or exhaust filter can't meet present value, at the same time LCD display will twinkle E2mark. Remind the operator to replace the filter immediately to protect the operator's safety.

3) Velocity fluctuation alarm

There will be audio and visual alarm if the inflow velocity and down flow velocity below 20% of the standard value, namely, inflow velocity below 0.42m/s, LCD display will twinkle E3 mark . Down flow velocity below 0.26m/s, LCD display will twinkle E4 mark. Remind the operator pay attention.

4)Abnormal power cut alarm

When the device is in the boot state, there are functional keys pressed, abnormal power cut and then power on, LCD display will twinkle E5 mark.

5.1.2 Trouble Shooting

Please confirm whether the power is connected or not, whether the power cord is obvious damaged or not, whether the fuse is good or not, and whether the power locks are in the open state or not before the fault diagnosis.

Faults	Check parts	Measures
Fluorescent lamp doesn't work	Lamp holder	Tube and lamp holder is connected securely
	Circuit	Check circuit
	Fluorescent tube	Change it
	Control panel	Change it
UV lamp doesn't work	Front window, fluorescent lamp and fan	Check the front window, fluorescent lamp and the fan is open or not.
	Lamp holder	Tube and lamp holder is connected securely.
	Circuit	Check circuit
	UV lamp	Change it
	Micro switch	Check if micro switch is broken
	Control panel	Change it
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
Fan doesn't work	Front window	Front window is open or not, fan works only when the front window is open
	Micro switch	Check if Micro Switch is broken or works fine
	fan	If fan is broken, change it
	Circuit	Check circuit
	Control panel	Change it
No electricity in socket	Socket fuse	Check if socket fuse is broken
	Socket	Check if socket is broken
	Circuit	Check circuit
	Control panel	Change it
Pressure or air speed displayed incorrectly	Gas circuit	Check whether gas circuit has dropped, is broken, or jammed
	Control panel	Change it
Front window doesn't work	Circuit	Check circuit
	Motor of front window	Check front window motor
	Transmission part	Check transmission connection and lead rail
	Control panel	change it
Remote control doesn't work	Remote control	Check if the Remote control is broken or not, and if there's electric in the battery
	Connection cable	Check whether main control panel and display board is connected well.
	Control panel	Change it
No electricity in equipment	Power supply	Check power supply connects well
	Power wire	Check whether power wire has obvious
	Fuse	Check if the fuse is good
	Power key	Check if power key is open, is broken or not
	Transformer	Check whether the transformer works
	Control panel	Change it
Display doesn't work	Connection winding displacement	Connection winding displacement

	Display screen	Display screen
	Control panel	Control panel
No alarm	Micro switch	Check whether the micro switch is good, and it works normally or not.
	Circuit	Check whether connection circuit of micro switch is good.
	Control panel	Change it

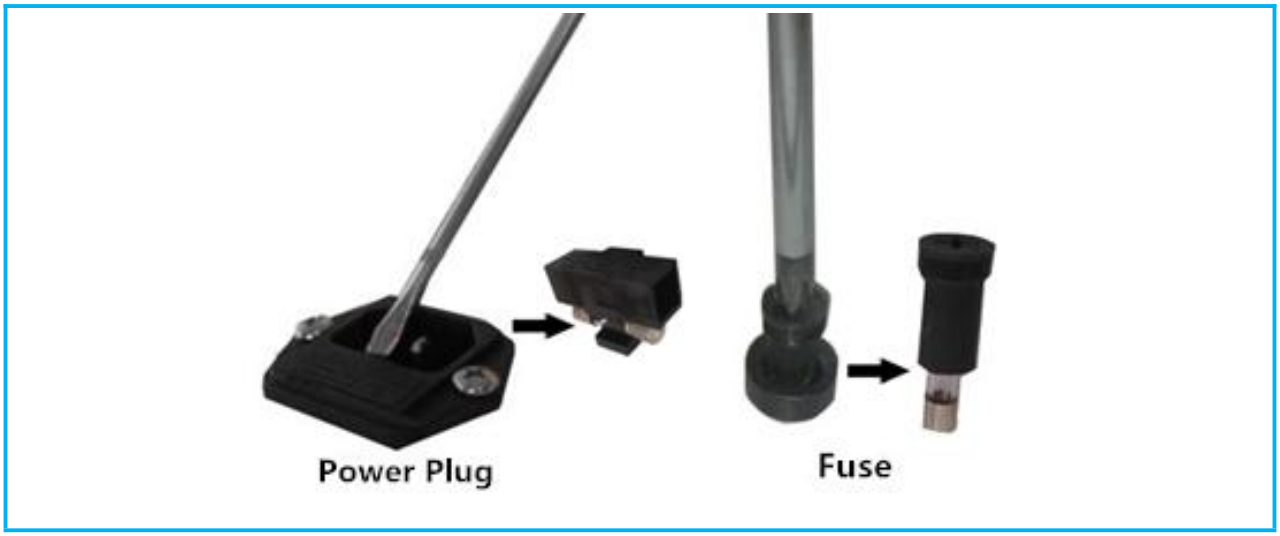
NOTES

1) **The above electrical parts must be operated by a qualified electrician in safety conditions (cutting off power supply). The other parts are not allowed to remove; otherwise the user should take responsibility by them;**
2) **If failures cannot be solved by the operator, please notify our maintenance department immediately. For your safety, please do not maintain equipment by yourself;**
3) **The maintenance of this equipment is undertaken by trained and recognized technicians;**
4) **If you need to order parts, contact the agent or our technical service department, and please indicate the model and serial number of the cabinet purchased.**

5.1.3 Simple Accessories Replacement

1) Replace the fuse

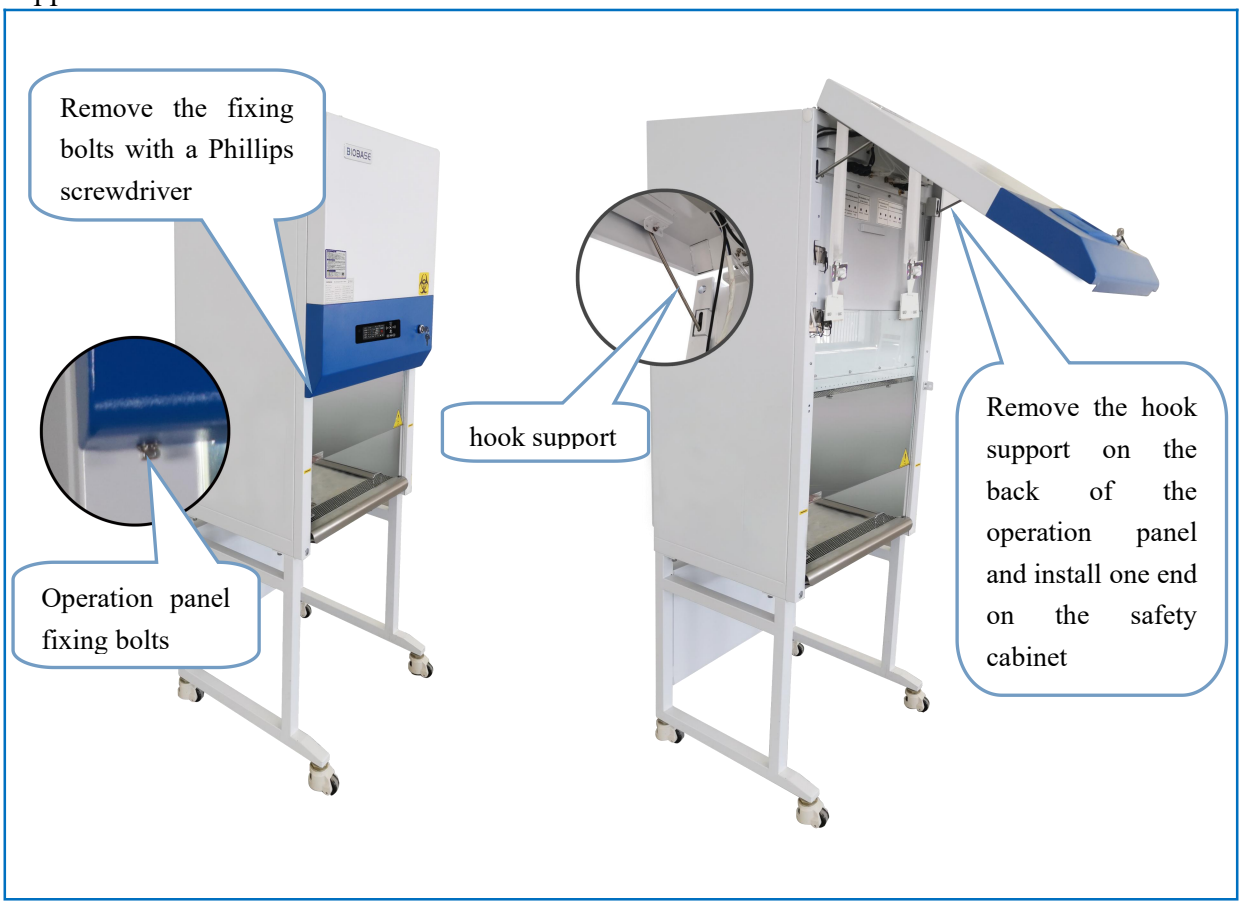
Waterproof socket are located in the top operation panel. When replace them, turn off the power and disconnect plug, use a Phillips screwdriver counterclockwise pressing screwed fuse holder, remove the fuse out and replace a new fuse, and then clockwise pressing screwed fuse holder; Fire wire fuse is located in the side of the cabinet operation panel, take out of the fuse holder using a slotted screwdriver and replace with a new fuse, and then press it back.

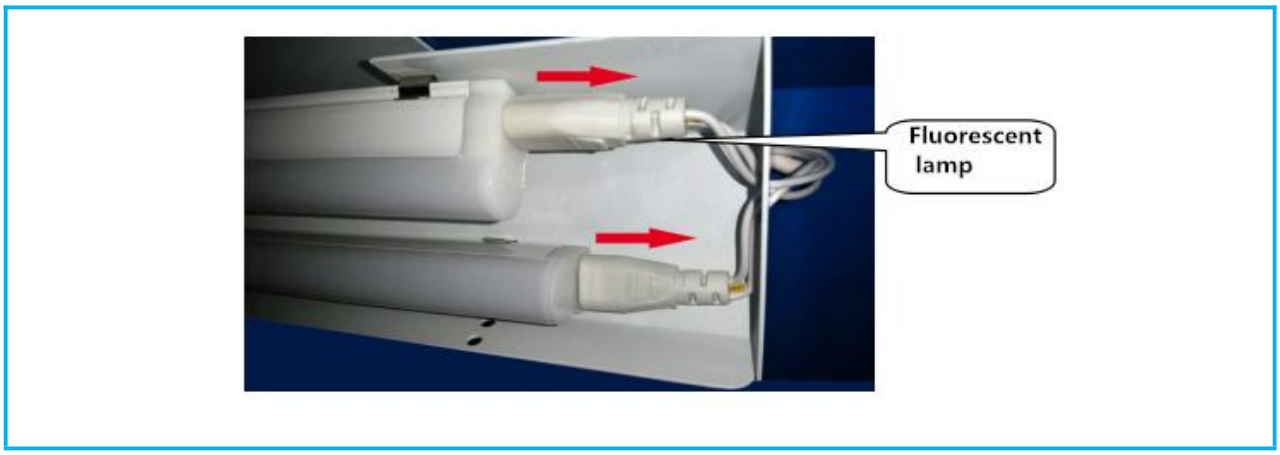


2) Replace fluorescent lamp

When replacing lamp, make sure that the power is off, open the operation panel like shown in the first below picture, use the control panel support frame (fixed in the inside position of the control panel as shown) to open the gray operation panel, then like the second below picture shown, remove the lamp towards the arrow direction, then take a new lamp tube, put it in the lamp holder and plug in

the opposite direction.

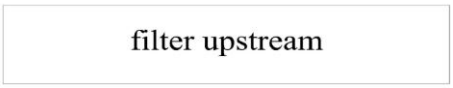
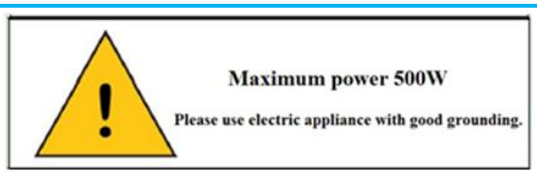


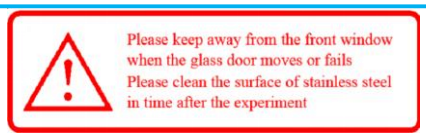
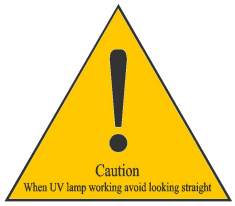
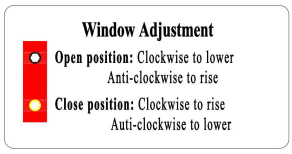


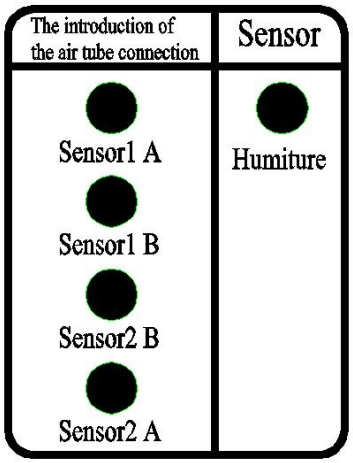
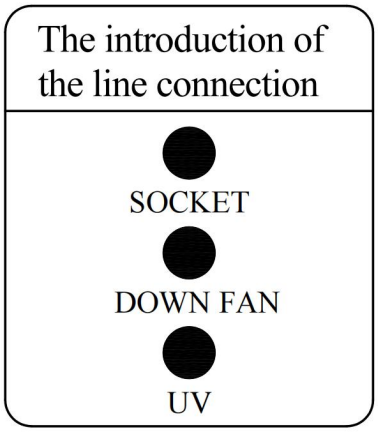
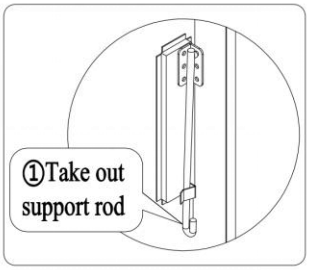
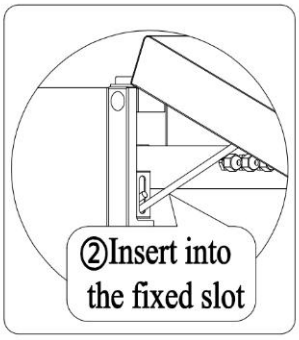
3) Replace the UV lamp

UV lamp should be replaced regularly according to the frequency of use, when using UV lamps reach to the time of 1000 hours, we recommend to replace the lamp. When replacing, first make sure the power is off, and then screw the bulb 90 °and take it off , then take the correspondence type of lamp, and put it to the lamp holder and and screw 90 °in reverse direction. After replacing the UV lamp, it needs to keep pressing the button of UV for about five seconds when the machine stays standby.

5.2 Label Description

	Biological hazard label
	Ground label (Protected Ground Earthing)
	Safe operation glass door height
	Filter scan label
	Sewage valve label, sewage valve biological hazard label, warning label
	Waterproof socket power total capacity

GAS	Label of air tap
WATER	Faucet label
	Front window warning film
	UV lamp warning label
	Electrical warning label
	Window Adjustment label
F10AL250V a Tubular Fuse For Socket F5AL250V b	Fuse label a.10A power fuse label b. Operating area 5A socket fuse labels

	Marking of left internal wiring
	Marking of right internal wiring
	Support rod Remove label
	Use instruction label for support rod

JINAN BIOBASE BIOTECH CO., LTD

ADDRESS: NORTH SIDE OF JIWANG ROAD, MINGSHUI ECONOMIC DEVELOPMENT

TEL：+86-531-81307661

Email: export@biobase.com

After-sales email: service_sd@biobase.cc