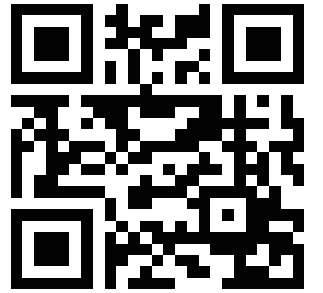


Haier



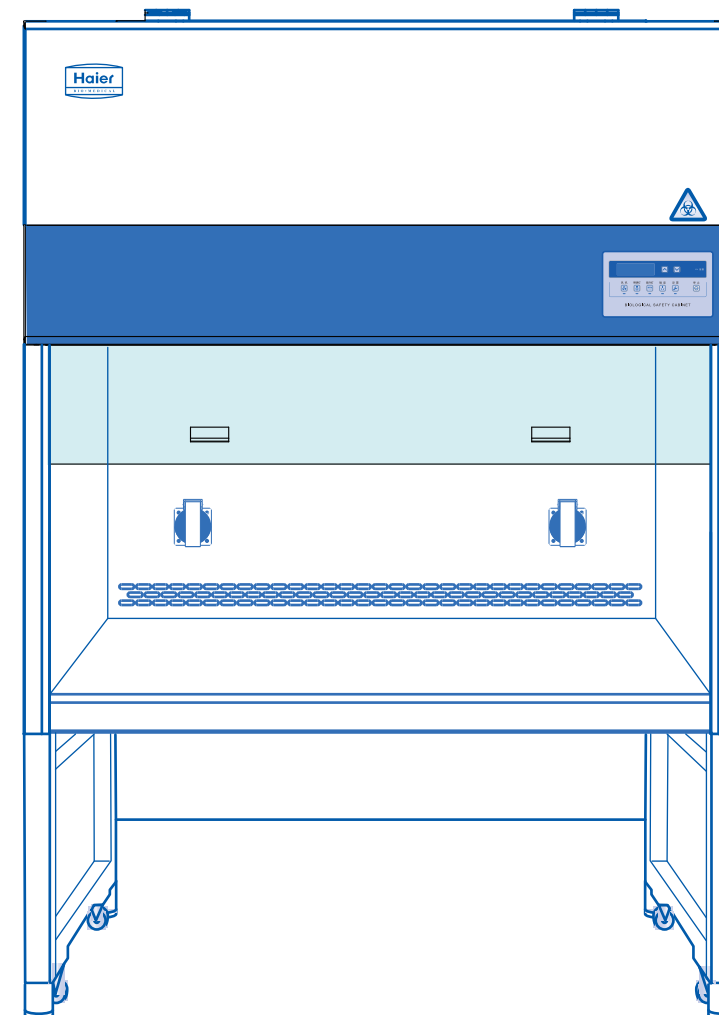
Clean Bench

Operation Manual

Certificate of Quality

checker:

Manufacturer: Qingdao Haier Biomedical Co.,Ltd.
Address: Haier Industrial Park, Economic Technology Development
Zone, Qingdao P.R. China
Web:www.haiermedical.com
Revision date:12/2018
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V13026



Model:

HCB-1600H

HCB-1300H

HCB-1300V

HCB-900V

- Read the Operation Manual carefully before using your appliance.
- Keep the Operation Manual in a safe place.
- Appearance , color and layout of the door may vary.

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●Packing List

S/N	Category	Name	Unit	Qty.	Remarks
1	Main body	Product	Set	1	
2	Document	Instruction Manual	Copy	1	
3	Accessory	Packaging bag for Instruction Manual	Piece	1	
4	Accessory	Hook	Piece	6	Only for horizontal Clean Bench
5	Accessory	Base assembly and Packaging accessories	Set	1	

●Product Introduction

With the rapid development of science and technology, the air cleaning technology has been widely used in laboratories, electronics, aerospace, precise instruments, meters, fine chemical engineering, bio-pharmacy, bio-medical, pharmacy, food and other various research and production sectors. The Clean Bench is an ideal local air purification equipment to provide working environment with high cleanliness.

The Clean Bench provides local working environment with Class 100 cleanliness. It has beneficial effects on improving the process conditions and ensuring the precision, high purity and high reliability of products.

The Clean Bench manufactured by the company is designed to purify the air in the operation area of special working environment. This Clean Bench not only can be used in purification rooms, but also can be used in general rooms. And now it is widely used in the medical industry.

●Product Property

Performance structure and components of the product: longitudinally steel split type structure is adopted for the workbench, with the upper part composed of air supply chamber and plenum chamber, and the lower part composed of as assembling bottom rack. There is an efficient filter in the plenum chamber, with UV disinfection lamp provided. Fan system with regulatable air volume is adopted for the workbench, and the air volume is regulated by touch switch, which can keep the average air speed in the working area at an ideal range, thus efficiently prolongs the service life of the efficient filter.

The Clean Bench surface is made of high quality stainless steel, beautiful and durable. Its panels and supports are made of high quality cold-rolled steel sheets, with an anti-rust spray layer on the surface.

The Clean Bench adopts an UV sterilization lamp to radiate intense UV-C type UV light with 254nm-wavelength, which not only can kill micro-organic living cells, but also can kill the spores with strong heat resistance and other mold spores. In addition, the phage and virus under UV light will be quickly ruptured.

Working principle of the Clean Bench: in one-way flow form, the variable centrifugal fan pushes the air in the negative-pressure box pre-filtered by a roughing filter into the plenum box; then the air is secondarily filtered by HEPA filter. When the clean air from the air outlet of HEPA filter enters the operation area at average air speed, it will take away both dust particles and microbial particles, to make a local clean space with cleanliness class of 100.

For the Clean Bench, the average air speed is 0.2-0.5m/s; the noise is ≤ 65dB; the illumination is ≥ 300Lux; the amplitude is ≤ 5μm and the cleanliness is Class 100.

Application scope of product: this product is capable of providing a local clean space with cleanliness class of 100.

●Performance Index

Model	HCB-1600H	HCB-1300H	HCB-1300V	HCB-900V
Cleanliness Class	Class 2 of US standard 209E and Class 4 of international ISO 14644.1			
Colony Number	≤0.5cfu/(dish·0.5h)			
HEPA Filter Spec./Qty.	HEPA filter FILTERX1 Filtering efficiency ≥ 99.99%@0.3μm			
Roughing Filter Spec./Qty.	ROUGHING FILTERX1 particle size ≥2.0μm			
External Size (mm) (L × W × H)	1780×792×1960	1380×792×1960	1370×620×1730	970×620×1730
Internal Size (mm) (L × W × H)	1710×550×750	1310×550×750	1300×530×520	900×530×520
Airflow Speed of Air Outlet	0.2m/s-0.5m/s			
Power Supply of Laminar Flow Cabinet	AC220V/50Hz			
Power of Laminar Flow Cabinet	350W	350W	1200W	1200W
Power Supply of Fan	AC220V/50Hz			
Max. Power of Fan	270W	270W	115W	115W
Net Weight	165Kg	145Kg	145Kg	115Kg

●Preservation and Maintenance

- 6.Fan
When the fan breaks down, remove the roughing filter first and disconnect the system power before the fan is repaired.
- 7.Replacement of electrical parts
1) The operation for all electrical parts of the equipment must be performed by qualified electricians under a safe condition.
2) The operation personnel who have received training regarding to electrical parts can undertake the replacement of illuminating lamp, ultraviolet lamp and barretter. The ultraviolet lamp or illuminating lamp is rotated 90 degrees so that the PIN is located at the opening of lamp holder. By pulling down, the lamp can be removed. After a new lamp is replaced, it is necessary to make the PIN be located at the opening of lamp holder. By pushing it upward, coordinating the lamp and lamp holder, and rotating 90 degrees, the lamp can be used.
- For anywhere marked with  , please refer to the operation manual.
- 3) The product power line is equipped with leakage protection and overcurrent protection (the total current of power line is 10A, and if it exceed 10A, the power line plug will be power-off automatically), and replacement by the user or use of other types is forbidden.

Solemnly declaration:

1) Only technicians who are recognized and trained by Haier Group can repair this equipment!

2) When the equipment breaks down and operation personnel cannot carry out troubleshooting immediately. Notify the Maintenance Department immediately, and for safety, do not repair the device by yourself!

3) Do not replace the parts without our approval. You can order required parts from our Technical Service Department, and indicate the model and number of the Clean Bench purchased!

●Troubleshooting and repair

Symptom	Causes	Solutions
Operation switch does not work (it cannot switch on/off)	1. Power supply is disconnected	1. Insert the plug
	2. Line fault	2. Check and replace the circuit board
The operation voltage is at the maximum but the air speed is low	1. Too much dust accumulated in the pre-filter	1. Clean or replace the pre-filter
	2. Failure of HEPA filter	2. Replace the HEPA filter
Fan does not work	1. Fan is faulted on its own	1. Check or replace the fan
	2. Failure of control panel without signal output	2. Check and replace the control circuit board

●Structure and Function

- The Clean Bench mainly consists of: plenum box, base, working chamber, HEPA filter, roughing filter, fan and electrical controls.
- 1.Plenum box**
As an air filtration system, the plenum box is the most important system to ensure the equipment performance, mainly consisting of fan, air duct, roughing filter and HEPA filter.
- 2.Base**
The base is one of the most important components to support the working chamber, consisting of three parts: left base support, rear base support and right base support.
- 3.Working chamber**
It consists of working framework, stainless steel cabinet surface, rear panel and cover plate. The air from the upper air inlet enters the internal recycling air duct, which makes the cleanliness of the working chamber up to Class 100 to provide clean experimental operating environment.
- 4.HEPA filter**
The air outlet of The Clean Bench is equipped with an HEPA filter. The HEPA filter is a HEPA filter without partition and its filter efficiency is up to 99.99% in accordance with the national standard, which is used as the last filter equipment during air purification. The HEPA filter is formed by sealing the damp-proof and anti-flaming glass fiber filter paper imported from American, two-sided plastics spraying steel screen, electroplate aluminum extruded profile and two-sided closed-cell neoprene via sealant.
- Main Technical Performance of HEPA Filter**
- | Model | External Dimensions L×D×H(mm) | Rated Air Flow (m³/h) | Initial Resistance (Pa) | Filter Efficiency (%Sodium Flame%) | Usage |
|-----------|-------------------------------|-----------------------|-------------------------|------------------------------------|--|
| HCB-1600H | 1610×750×50 | 1956 | 120 | ≥99.99% | Horizontal laminar flow single-phase two-person cabinet |
| HCB-1300H | 1210×750×50 | 1556 | 120 | ≥99.99% | Horizontal laminar flow single-phase two people cabinet |
| HCB-1300V | 1196×434×50 | 900 | 120 | ≥99.99% | Vertical laminar flow single-phase two-person cabinet |
| HCB-900V | 796×390×50 | 500 | 120 | ≥99.99% | Vertical laminar flow single-phase single-person cabinet |
- 5.Roughing filter**
The air inlet of the Clean Bench is equipped with a roughing filter which is used as the pre-filter for the HEPA filter, so as to reduce its load and extend its service life.

●Structure and Function

6.Fan

The Clean Bench is equipped with a fan, which provides the source power for the air flow in the ventilation circuit. The fan consists of motor, centrifugal fan, volute, volute seal ring, etc. To reduce the vibration and noise of the Clean Bench, the fan is provided with a 220V capacitor-run asynchronous motor with low noise and small vibration. In addition, a device with favorable shock absorption effect is installed between the motor support and cabinet body.

7.Electrical appliance

Electric appliance: is integrated with fan, lighting lamp, UV sterilization lamp and computer board. To ensure the safety of equipment and personnel, The Clean Bench must be earthed after it is positioned for using as it is not provided with an earthing device

●Preservation and Maintenance

Operability and safety of this equipment can be guaranteed only in the event that competent personnel and organizations carry out inspection, maintenance and repair.

I.Full maintenance period

It is necessary to carry out maintenance every year or every 1,000 working hours and every time the cabinet is restarted.

II.Recommended maintenance and protection method

1.Cleaning

Under normal circumstances, only a small amount of household or commercial dishwashing agent is needed for clean. After dissolved in water, the agent can be used directly for wiping dirt off the equipment surface.

2.Daily or weekly cleaning during use

- 1) Use medical alcohol for disinfection and cleaning of working room
- 2) Use medical alcohol to disinfect and clean the operation panel.
- 3) Use flexible detergent or glass detergent to clean the outer surface of box and glass.
- 4) Examine various functions of the equipment as per the manual.

3.Monthly cleaning

- 1) Use detergent to remove all dust on the outer surface.
- 2) Disinfect the interior of equipment.
- 3) Conduct functional inspection for the equipment and check the equipment for safety under normal use.

4. Annual maintenance

The equipment is checked fully for safety and maintained.

5. HEPA filter

After long time of use, the dust accumulation of HEPA filter is increased, resulting in increase of resistance and decrease of air speed. If the constant speed in the operation area cannot reach 0.3m/s, the HEPA filter must be replaced.

Replacement method: it is likely to open the back plate to remove and care shall be taken to the laminar flow direction when replacement. It is necessary to check the border around the filter for good seal. Any air leaks are not allowed; otherwise it will affect the filtering effect.

Special tips:

- 1) Due to possible pollution, the replacement of filter is an important work that must be taken seriously and conducted by specialized equipment. In addition, it is necessary to have a full knowledge of appropriate laws, standards and regulations. Learning detailed characteristics of the product is critical for replacement work!
- 2) Only professionals who have received specialized training by Haier Group can undertake this work, which is a method to minimize the risk of pollution!
- 3) Only the filter authorized by Haier Group can be used, and other filters are not allowed to be used, which may lead to unknown risks.

●Testing

5.Air cleanliness

Air cleanliness class of the operation area of Clean Bench is Class 100.

Test method:

Location of measuring point: the measured Clean Bench is placed under normal operation conditions to run 10min. The measuring border of cleanliness is 100mm from the inner surface or operation window and sampling port of particle counter is placed in a place that 200mm above the Clean Bench.

Number of samples for each point: the number of samples for each point shall record three stable similar numerical values continuously, and the average value represents numerical value of this point. When it is suspected that test results calculated on site may exceed the standard, number of measuring points can be increased.

Sampling port and tube: for unidirectional flow measurement, the sampling head shall be aligned with airflow; while for non-unidirectional flow measurement, the sampling head is always up.

During sampling, the diffusion deposition loss and impact deposition loss of particles in the sample tube shall not exceed 5%. The length of horizontal sampling tube of particle counter of 28.3L/min shall not exceed 3m and that of horizontal sampling tube of particle counter of 2.83 L/min shall not exceed 0.5m. If the flow speed of sampling port is not equal to airflow speed, the proportion shall be 0.3:1 – 7:1.

Deletion of abnormal value: when single non-random abnormal value is generated due to measuring error or smaller particle concentration (air is extremely clean) and the calculation results are affected, this abnormal value can be deleted, but it shall be recorded in the original record. It is allowed to delete the measuring value once for each measuring space only, and the retained measuring value shall be no less than 3.

6.Airflow state

Horizontal airflow test:

Visible smoke detection is used.

Smoke is located in a place where is at 1/2 depth and 300mm height inside operation area of front window, it moves from side wallboard to the other side wallboard operation area. The horizontal airflow of Clean Bench is in outward mode in the front side of laminar plate, and there is no inward airflow.

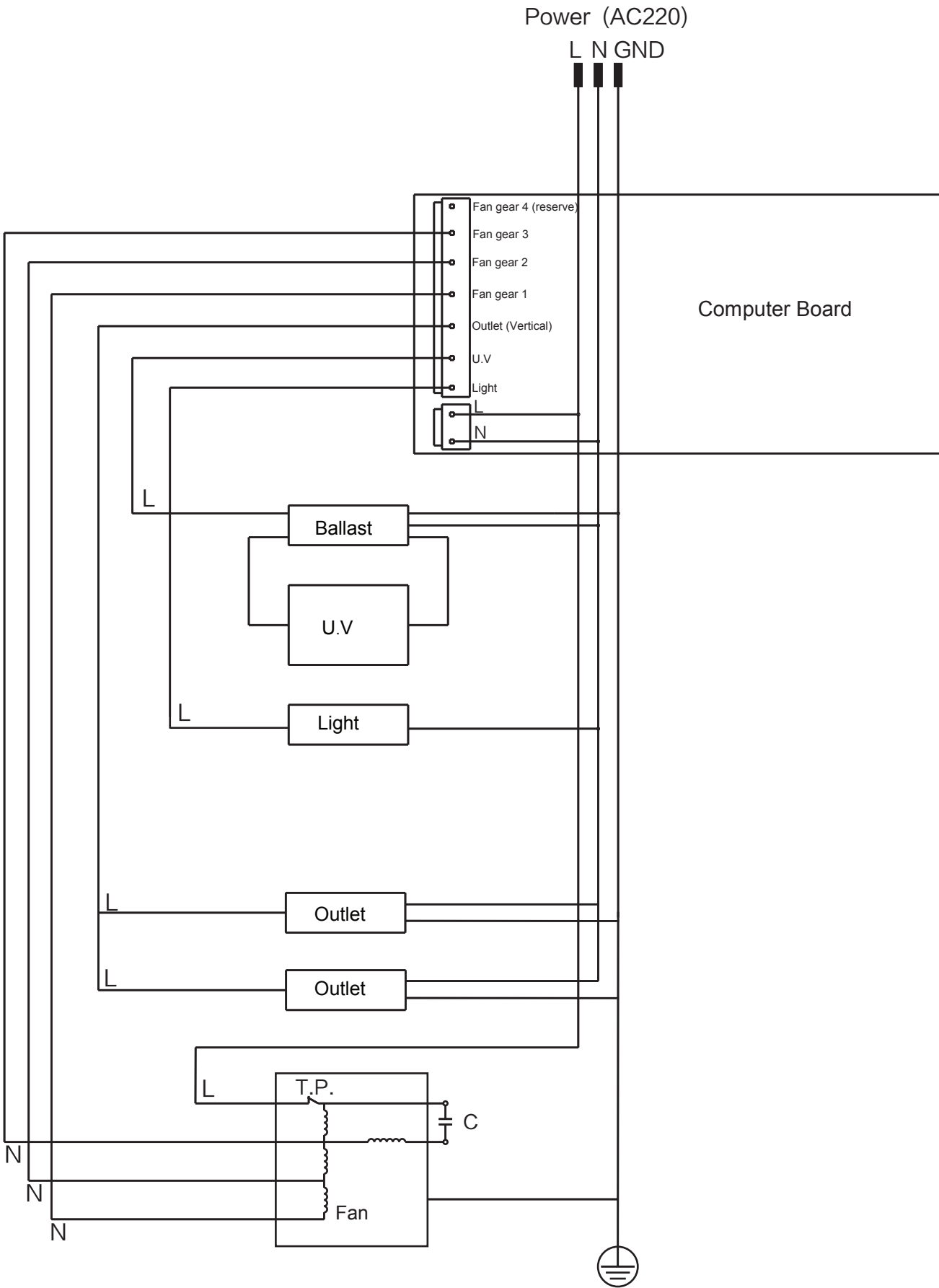
Vertical airflow test:

Visible smoke detection is used.

Smoke is located in a place where is at 1/2 depth and 300mm height inside operation area of front window, it moves from side wallboard to the other side side wallboard operation area. The vertical downward airflow of Clean Bench is in downward mode in the front side of flow equalization board, and there is no upward airflow.

●Structure and Function

Wiring Diagram



● Installation

The installation site of the Clean Bench will directly affect its performance and service life, thus, it is necessary to pay attention to following matters for selecting the installation site of the laminar flow cabinet:

I. Installation environment

- a) Indoor use;
- b) Altitude: <2000 m
- c) Temperature: 5°C~40°C;
- d) When the temperature is below 31°C, the max. relative humidity is 80%; when the temperature is 40°C, the relative humidity reduces linearly by 50%;
- e) The supply voltage fluctuation shall not exceed $\pm 10\%$ of the nominal voltage;
- f) The transient state is Category II facility (overvoltage category);
- g) Rated pollution level: Class 2.

II. Site Selection

The Clean Bench shall be installed in a clean laboratory or in a room away from dust and vibration sources, instead of passageways. If the laboratory is provided with windows, keep them closed. The Clean Bench shall not be placed in the circulation air inlet, so as to prevent the air entering the frontal operation area or the HEPA filter.

If possible, the rear and surrounding space of 30cm shall be reserved for the Clean Bench for its cleaning; if not, each side and the rear shall be reserved with at least 8cm and 3.8cm space respectively for its cleaning. The power socket of the Clean Bench shall be accessible for the repair of the Clean Bench and the performance of electrical appliance safety test without moving the Clean Bench.

Do not place the equipment in the place where is difficult to operate the disconnecting apparatus.

III Installation Steps and Post-installation Check

1. Move the Clean Bench to the designated place in the room, remove the packing materials and check the hardware equipment as per the packing list to check if it is damaged during transportation. After the base is installed at the designated place, properly install the upper part of the equipment on corresponding place on the base for fixing. Properly assemble and install the base. At least 4 staffs are required to handle the equipment considering its weight. Contact the manufacturer if any question during handling.
2. The enclosure must be earthed in reliable manner. The three-wire plug has one earthing wire. Press the "Power" button, the system is powered on and corresponding indicator light is on; press it again to turn them off. The power-off memory function is enabled for parameters that are set so that all parameter settings will be saved when the power is cut off. Press the fan button, corresponding indicator light is on and the fan starts operation, check if there is air coming out from the air outlet side of HEPA filter.

● Testing

1. Appearance

The Clean Bench surface, and the side walls and table of working area shall be free of scratch and indentation; the surface shall be smooth; the appearance shall be flat; the surface coating shall be free from cracking, lifting, falling off and sagging and free of uneven color.

Surface of parts shall be smooth, be free from oxidation, corrosion indentation, sharp edge and visible burr.

Words, graphical symbols and signs indicating the functions shall be correct, clear, upright, and secure and be resistant to cleaning with alcohol.

The welding of cabinet shall be firm and its surface shall be smooth without burning-through, leak, crack, crater residue or waste etc.

2. Functions

The operation of switches and buttons shall be flexible and reliable, and the parts shall be secure but loose, and shall indicate correctly. There shall be no obvious vibration when the Clean Bench is at the normal working state. The Clean Bench equipped with the static pressure difference and custom display panel shall work normally and display clearly and correctly.

3. Scanning & leak detection

The permeability shall be no more than 0.01% which may be detected by the DOP method.

Test method:

Use the atmospheric dust or polydisperse aerosol as the pollution source. The dust content of aerosol shall be $\geq 0.5\text{pm} : \geq 4000$ (particles/L). When the above specifications cannot be met, polydisperse aerosols (such as PSL, DEHS and DOP) are suitable to be generated. Use the laser particle counter or photometer to scan along whole surface, frames and frame joints at the 20-30mm of the filter surface downstream the HEPA filter. And the scanning speed shall be 20-30mm/s, and there shall be appropriate overlap among these scanning strokes.

4. Air speed

The average air speed of this Clean Bench is 0.2m/s-0.5m/s.

Test method:

The average air speed of airflow in the plane area where is 100mm from inside wallboard and 100mm from the front side of laminar plate in the outlet side is measured. Measuring points is distributed by grid with 150mm of row and column. If the net size is not the integer multiples of 15 after the measuring border is removed, the distance between measuring points is allowed to be corrected.

●Cleaning Method

1. When the Clean Bench is used for the first time or used after a long period of non-use:

Remove surface dust with a dry and clean towel first. Repetitively clean with dry and clean towel and confirm all dust is removed, then disinfect the operation area, laminar flow plate and workbench with medical gauze sprayed with medicinal alcohol, with no position missed. Before using, turn on the UV disinfection lamp for disinfection, turn off the UV disinfection lamp after 30min, press "Fan", and the fan will run (the vertical laminar flow clean workbench shall be used after the fan has been running for 3min after turning off the UV disinfection lamp and raising the glass door).

2. When the Clean Bench is used for continuous service:

After the use of the Clean Bench every day, firstly remove all the debris on The Clean Bench table, then clean The Clean Bench with the dry and wet clean towels, and completely sterilize the operation area, laminar plate and Clean Bench by spraying medical alcohol on the medical gauze so as to be used for the next day.

3. Precautions:

Only spray alcohol on the medical gauze with alcohol sprayer but not on the laminar plate as the HEPA filter in the laminar plate cannot get damp.

●Installation

3.Press the "Lighting Lamp" button, both the corresponding indicator light and lighting lamp are on; press it again to turn them off; press the "UV Sterilization Lamp", both the corresponding indicator light and UV sterilization lamp are on; press it again to turn them off. The UV sterilization lamp and lighting lamp is interlocked.

4.Check the fan for leakage and airflow speed after it is started; regarding leakage check, move the probe of dust particle counting instrument around the air outlet side and observe instrument indications, correct if any leakage detected. The leakage may be caused by the loosening or damage of the sealing sponge mat at the edge or the HEPA filter itself. The air-flow speed can be detected with anemometer. Move its probe 100mm away from the air outlet side and observe the reading.

5.After the installation, wipe thoroughly the upper part and lower base of the Clean Bench with cloth and water or neutral domestic cleaners.



Button Definition

“Power” button: control the system power. Press the button, the system and corresponding light are on; press it again to turn them off.

Parameters automatically saved after power-off:

A. Fan gear position set before the horizontal flow cabinet is powered off;

B. Long press the “Setting” button to set parameters in system parameter list; others settings of lighting lamp, UV lamp, socket and appointment before power-off will not be automatically saved and they will remain in Off state when the power is on next time.

“Fan” button: power on/off the fan.

“UV Lamp” button: control the UV lamp.

“Lighting Lamp” button: control the lighting lamp.

“” button: increase/up regulation button.

“” button: decrease/down regulation button.

“Setting” button: set function parameters or turn on/off appointment function.

“Socket” button: turn on/off standby socket. (Unavailable for the horizontal flow model)

Steps:

I. Startup steps

1. Power on
2. Press the “Power” button, the system is powered on and corresponding light is on.
3. Press the “Fan” button, corresponding indicator light is on. The fan starts operation.
4. Clean the Clean Bench and inner wall.
5. Experimental operation

8. Fan control

Horizontal flow model: The fan is off when the power is on and the digital tube will not display any information. Only the “Fan” button is pressed, the fan can operate according to the last gear setting. When the fan is in the working state, the “” and “” may be used to adjust the rotating speed of fan (the cyclical adjustment can only be carried out when the fan is in gears 1, 2 and 3). When the “Fan” button is pressed again, save current fan gear position and exit. The fan will be turned off and the digital tube will display “00”.

Note:

When the power is on for the first time, the corresponding gear is Gear 1 (default value) after the fan button is pressed.

Vertical flow model: The fan is turned off when the power is on and the digital tube will display “STOP”. When the door is open, press the “Fan” button to enter the pretreatment time, and the fan will run. Current digital tube will display the counting-down time, and the tube will display “RUN” when the counting-down time is up. The lighting lamp will be turned on synchronously and automatically. Exit the pretreatment state (if the lighting lamp is on during the counting-down period, the lamp will remain on when the counting-down time is up). When the fan is turned on and after the door is closed, the fan will be turned off automatically. The digital tube will display “STOP” and the fan cannot be turned on.

During the counting-down period, the “Lighting Lamp” can be turned on and off by pressing the button manually. The fan running could be cancelled by pressing the “Fan” button, and the digital tube will display “STOP”.

Note: The fan button can control the fan running/stopping at any time only when the door is open.

9. Enable and turn off the appointment function

At the normal working state, user can enable the appointment function for which the time is set by pressing the “Setting” button; if the appointment function needs to be cancelled, such function may be cancelled by pressing the “Setting” button so as to appoint by pressing one button.

Note: Long press the “Setting” button for 5s to set the appointment time, and enter the parameter list in Table 3.1 to set the parameter Pt.

If the equipment is not used according to the manner regulated by the manufacturer, the protections provided by such equipment may be damaged.

Pay attention to the symbol  on the front panel during the UV lamp operation. Such symbol means that: refer to the operation manual for the precautions of UV lamp operation.

5.Restore ex-factory settings

User can restore ex-factory default settings for system parameters.Method: long press “Setting” button firstly, and then connect the plug of power cable to the power socket. Now the four-digital tube will display “----” for 3s, and system parameters (except t3 in Table 3.1) will be restored to factory settings.

Note: The parameter t3 in Table 3.1 is the current system time and there is no ex-factory default. When the ex-factory settings are restored, this time parameter will remain the setting prior to the factory settings restoration.

6. UV lamp control

The UV lamp must be turned off each time when the power is on.

Horizontal flow Model: When the “UV Lamp” button is pressed, the UV lamp will be on with delay (default delay for 10s, which can be set by t2), and the lamp will be off automatically when the sterilization process lasts 30min (default time 30, which can be set by t1).After the “UV Lamp” button is pressed and prior to the completion of sterilization process (10s + 30min), such lamp can also be turned off by pressing the “UV Lamp” button manually.

Vertical flow Model: The door must be closed firstly. When the “UV Lamp” button is pressed, the UV lamp will be on with delay (default delay for 10s, which can be set by t2), and the lamp will be off automatically when the sterilization process lasts 30min (default time 30, which can be set by t1).After the “UV Lamp” button is pressed and prior to the completion of sterilization process (10s + 30min), such lamp can also be turned off by pressing the “UV Lamp” button manually.**The UV lamp cannot be turned on when the door is not closed.**

Note:

1. The UV lamp will only be turned on when the lighting lamp is off; the lighting lamp will only be turned on when the UV lamp is off; the UV and lighting lamps cannot be turned on at the same time, and they are interlocked.

2. After the “UV Lamp” is pressed, if there are delay conditions, the indicator lamp under the button blinks (blinking for 10 times if delay for 10s, and so on) during the delay. When the UV lamp is on, however, this indicator lamp will not blink.

7. Lighting lamp control

Horizontal flow model: The lighting lamp is turned off each time while the power is on.When the UV lamp is turned off, the lighting lamp will be turned on by pressing the “Lighting Lamp” button, and the lighting lamp will be turned off by pressing the “Lighting Lamp” button again.

Vertical flow model: The lighting lamp is turned off each time while the power is on.When the UV lamp is turned off, the lighting lamp will be turned on by pressing the “Lighting Lamp” button, and the lighting lamp will be turned off by pressing the “Lighting Lamp” button again.When the lamp is on, the lighting lamp will be turned off automatically while the door is closed when it is open. At this time, when the UV lamp is not turned on, the lighting lamp will be on by pressing the “Lighting Lamp” button, and the lighting lamp will be turned off by pressing the “Lighting Lamp” button again.

II. Shutdown steps

1. Take out all experimental articles.
2. Press the “Fan” button, corresponding indicator light is on.The fan starts operation.
- 3.Clean the Clean Bench and inner wall.
4. Press the “Power” button, the system is powered off and corresponding light is off.

III. User Setting Mode

Press the “Setting” button to set sterilizing time of “UV Lamp”, delay time for lighting UV lamp, current system time, appointment time and pretreatment time of vertical flow fan.

Press the “Setting” button for 5s to switch to user setting mode. The list of user parameters is as shown in Table 3.1 below:

Parameter	Description	Min. Value	Max. Value	Step Length/Unit	Defaults
t1	Sterilizing time of UV lamp	00	99	1min/time	30min
t2	Delay time of UV lamp sterilization	00	99	1s/time	10s
t3	Current system time setting	None	None	1s/time	None
Pt	Appointment time setting	None	None	1s/time	08:00
Ft	Pretreatment time of vertical flow fan	3	15	1s/time	3min

● Use

1. Setting of sterilizing and delay time of UV lamp

User can change parameter t1 and t2 in Table 3.1 above as required. The digital tube displays “t1” and the t1 character is displayed on No.2 and No.3 digital tubes after the parameter list is accessed. Press the “Setting” button to change parameter t1 and current value blinks (default value as 30). Change parameters by pressing “” or “”, press “Setting” button to confirm it after it is changed. The parameter value is confirmed and stops blinking. If user needs to re-change parameter t1, press “” or “” button again and the confirmed parameter value blinks again. Change the parameter by pressing “” or “” button. Long press the “” or “” button when changing parameters and the value will be changed in a continuous and rapid manner. Press “Setting” button after it is changed, the parameter changed is confirmed and stops blinking. Press “Setting” button to confirm return and display t1. Press “” or “” to select and set parameter t2 in the same way as t1. Press “Setting” button for 5s to exit and return to normal display mode after t1 and t2 are set. The digital tube redisplay the gear states during fan operation.

2. Setting of current system time

User may set or correct the current system time (24-hour clock) to synchronize with local time. The system time setting can be saved in memory when the power is off after it is set and needs not to be reset when the system is started next time. Setting method: long press “Setting” button for 5s to enter user setting parameter list 3.1. No.2 and No.3 digital tubes are defaulted to display t1. Query parameters by pressing “” or “”. Repress “Setting” button when No.2 and No.3 digital tubes display “t3”, and the digital tube displays current system time (defaulted as 12:00). At the same time, No.1 and No.2 digital tubes (defaulted as 12) blink; press “” or “” to change the hour value (long press for continuous and rapid change), then enter minute (defaulted as 00) setting by pressing “Setting” button with minute value blinking, change the value by pressing “” or “” (long press for continuous and rapid change), press “Setting” button to confirm and current values of hour and minute are the values after setting and both stop blinking. If user needs to reset the value of t3, press “” or “” to return and reset t3 value (in the same way as described above), press “Setting” button to confirm and current values of hour and minute are the values after setting and both stop blinking. Press “Setting” value to confirm and display t3, then long press “Setting” button for 5s to return to normal display mode.

Note: the current system time is taken as a reference for appointment time of UV lamp startup and user may change or correct current system time to synchronize with local time before setting appointment time (absolute time) for UV lamp startup.

● Use

3. Appointment time setting of sterilization

The system is featured with sterilization appointment and user may set auto sterilizing time of UV lamp, after which, the system will perform auto sterilization before experiment to well prepare for experiment.

Setting method: long press “Setting” button for 5s to enter user setting parameter list 3.1. No.2 and No.3 digital tubes are defaulted to display t1. Query parameters by pressing “” or “”, repress “Setting” button when No.2 and No.3 digital tubes display “Pt”, and the digital tube displays current appointment time (defaulted as 08:00). At the same time, No.1 and No.2 digital tubes (defaulted as 08) blink; press “” or “” to change the hour value (long press for continuous and rapid change), then enter minute (defaulted as 00) setting by pressing “Setting” button with minute value blinking, change the value by pressing “” or “” (long press for continuous and rapid change). Press “Setting” button to confirm and current values of hour and minute are the values after setting and both stop blinking. If user needs to reset the appointment time, press “” or “” to reset the values of hour and minute (in the same way as described above), press “Setting” button to confirm and current values of hour and minute are the values after setting and both stop blinking. Press “Setting” button to confirm and “Pt” will be displayed. Long press “Setting” button for 5s to return to normal display mode.

Note:

Regarding appointment function, special treatment must be carried out under following circumstances for the sake of personal safety:

- (A. In case user has enabled the appointment function, and the computer board has detected that functions of other buttons except “Power” button have been enabled (which indicates that the user is using these functions) at the moment (defaulted as 08:00) when the appointment time is up, this appointment function will be invalid and the UV lamp is not bright, but the appointment indicator lamp must be on (for the user has not cancelled the appointment function by pressing “Setting” button). And the appointment function will still be valid at the setting time of the next day (delay for 24 hours)).
- (B. In case one of these functions of lighting lamp, fan and socket buttons is enabled (considering that the user is operating the Clean Bench), the appointment function will be enabled by pressing the “Setting” button. If case that above buttons are still enabled when the appointment time is up, the UV lamp will not be enabled at this moment but the appointment indicator lamp is still on. As long as you have not cancelled the appointment function by pressing “Setting” button manually, such function will still be valid at the time when the next enabling cycle arrives (delay for 24 hours). And the enabling state of above buttons will also be detected. If the detection result shows that no such button functions have ever been enabled, the UV lamp is still on and the sterilization process is carried out.)

4. Self-locking function of “Setting” button

During above setting process, the “Setting” button will be self-locked while no buttons have been pressed within 30s. The parameter setting will not be saved and the system returns to normal display mode. Press the “Setting” button for 5s to enter the parameter list in Table 3.1 again.