



# Operation Manual

# Ductless Fume Hood

Model : DLH-01G, DLH-11G

Manual no. : B2001L002 Ver : 0.1

**JEIO TECH**

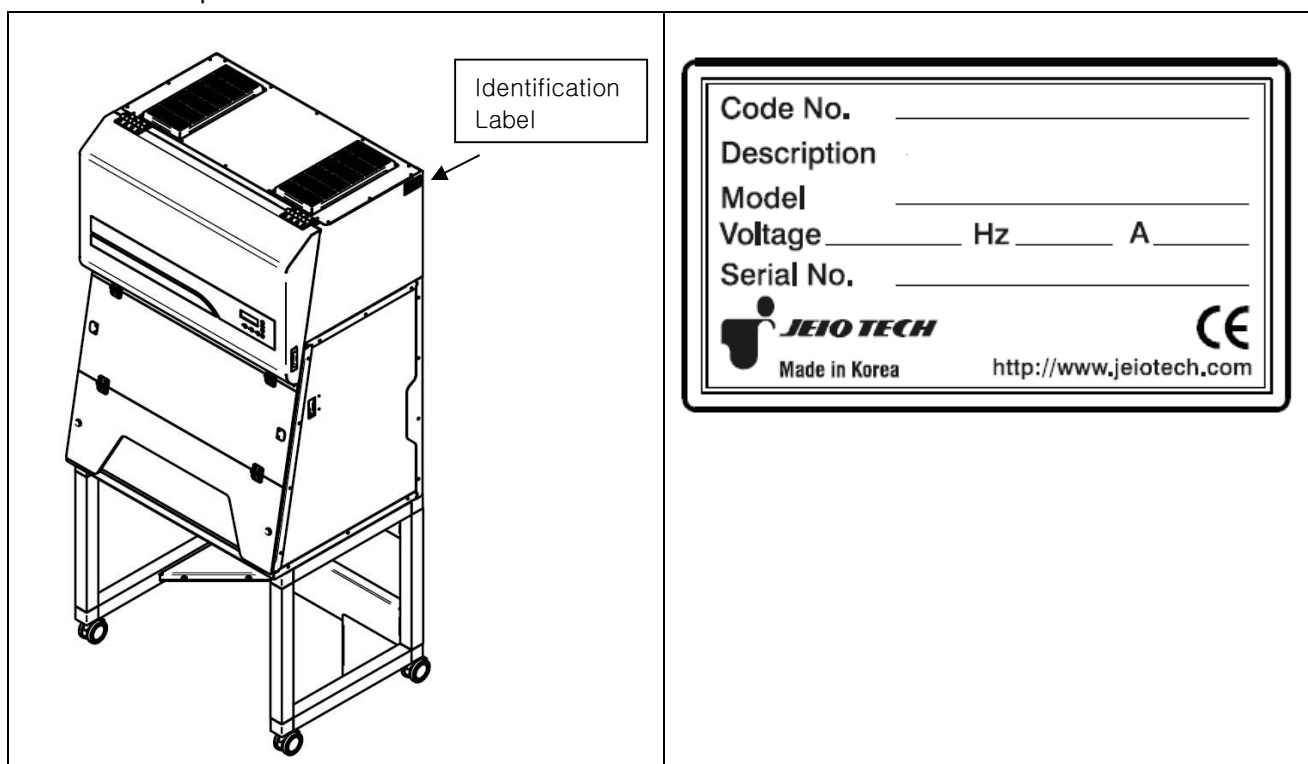
## ⚠ WARNING



Before using this product, read this entire Operator's Manual carefully. Users should follow all of the Operational Guidelines contained in this Manual and take all necessary safety precautions while using this product. Failure to follow these guidelines could result in potentially irreparable bodily harm and/or property damage.

Thank you for purchasing Jeio Tech's products.

Jeio Tech Co., Ltd. is committed to customer service both during and after the sale. If you have questions concerning the operation of your unit or the information in this manual, contact our Sales Department. If your unit fails to operate properly, or if you have questions concerning spare parts or Service Contracts, contact our Service Department.



Please locate the identification label on the right side of the Ductless fume hood. Fill in the information found on the identification label in the spaces provided above in Figure A. Refer to this identification label information when calling, if your unit fails to operate properly, or if you have questions concerning spare parts or service contracts. Additionally, use this information at [www.jeiotech.com/](http://www.jeiotech.com/) when you register your DLH series (Ductless Fume Hood) or when you fill out the enclosed registration card.

## Quality Management System

 	<p>Jeio Tech Co, Ltd. is dedicated to providing world-best product quality and customer satisfaction. To ensure we maintain this commitment we have developed and implemented a total quality program, which conforms to the requirements according to DIN EN ISO 9001:2000 for the design, development, production, sales and servicing of biotechnology, environmental chemical engineering related products, and reliable measuring equipment for electric and electronics (ovens, incubators, constant temperature humidity chambers, constant temperature baths, refrigerating bath circulators, heat exchangers and shakers).</p>
---	---

Visit our Web site at <http://www.jeiotech.com> to view a copy of our certificate.

## Disclaimer

Jeio Tech Co., Ltd. is committed to a continuing program of product development and improvement, and reserves the right to change information, such as specifications, appearance, and dimensions, described in this document without notice.

## Copyright

No part of this manual may be reproduced or transmitted in any form or by any means, including photocopying, recording, or using information storage and retrieval systems, for any purpose other than the purchaser's own use, without the express written permission of Jeio Tech Co., Ltd.

©2012. All Rights Reserved. Jeio Tech Co., Ltd.

Any other product names and services identified in this manual are trademarks or registered trademarks of their respective owners. No such use, or the use of any trade name, is intended to convey endorsement or other affiliation with Jeio Tech Co., Ltd.

# Table of contents

<b>1.0 Safety .....</b>	<b>7</b>
1.1 How to use the manual.....	8
1.1.1 Introduction	
1.1.2 Chapter summary	
1.1.3 Model number nomenclature	
1.2 Safety Notice.....	9
1.3 Symbols used in this Manual.....	10
1.3.1 Signal word panels	
1.3.2 Safety symbols	
1.3.3 Miscellaneous none safety symbols used in manual	
1.4 Where to Locate Safety Labels.....	13
1.4.1 DLH Series	
1.5 Precautions for Ductless fume hood.....	14
1.5.1 Warning statements	
1.5.2 Caution statements	
1.6 Responsibility.....	16
1.6.1 General responsibility	
1.6.2 Operator responsibility	
1.6.3 Maintenance responsibility	
1.6.4 Reporting a safety defect	
<b>2.0 Functional Description.....</b>	<b>19</b>
2.1 Interdiction.....	20
2.2 Structure.....	22
2.2.1 General	
2.2.2 Filtration	

## 2.2.3 Structure

# 3.0 Installation..... 27

## 3.1 Uncrating and Inspecting.....28

### 3.1.1 Inspecting before removing outer container

## 3.2 Unit Components.....28

## 3.3 Environmental setting.....29

### 3.3.1 Location by environmental condition

## 3.4 Locking casters.....31

## 3.5 Attaching Electrical Connections.....32

## 3.6 Initial Start-up.....33

### 3.6.1 Pre start-up checks

### 3.6.2 Electrical connections

### 3.6.3 Lighting on fluorescent lamp

### 3.6.4 Fan operation

# 4.0 Operation.....36

## Usage instruction of Ductless Fume Hood.....37

## 4.1 Controller.....37

### 4.1.1 Control.

### 4.1.2 Control button description

### 4.1.3 F.L Lamp Display

### 4.1.4 Fan Display

### 4.1.5 Menu Function Display

#### 4.1.5.1 FILTER USED TIME

#### 4.1.5.2 FILTER TYPE SET

#### 4.1.5.3 FILTER TIME CLEAR

#### 4.1.5.4 FILTER ALARM SET

#### 4.1.5.5 FILTER Fan Speed CHANGE

#### 4.1.5.6 FILTER LCD LIGHT SET

# 5.0 Preventive Maintenance.....42

## 5.1 Inspection Cycle.....43

## 5.2 Cleaning.....44

## 5.3 Replacing fluorescent lamp.....45

5.4 Filter replacement.....	48
<b>6.0 Troubleshooting.....</b>	<b>52</b>
6.1 Troubleshooting.....	53
<b>7.0 Accessories.....</b>	<b>54</b>
7.1 Accessories.....	55
<b>8.0 Appendix.....</b>	<b>57</b>
8.1 Technical specification.....	58
8.2 Disposing of unit.....	59
8.3 Warranty and Disclaimer.....	59
8.4 After-sales Service and Customer Assistance.....	60

## **1.0 Safety**

## 1.1 How to use the Manual.

### 1.1.1 Introduction

This manual is intended for individuals requiring information about the use of Ductless fume hood. Use this manual as a guide and reference for installing, operating, and maintaining your Jeio Tech **Ductless Fume Hood**. The purpose is to assist you in applying efficient, proven techniques that enhance equipment productivity. This manual covers only light corrective maintenance. No installation, service procedure or other maintenance should be undertaken without first contacting a service technician, nor should be carried out by someone other than a service technician with specific experience with laboratory equipment and electricity.

### 1.1.2 Chapter summary

**The Functional Description chapter** outlines models covered, standard features, and safety features. Additional sections within the manual provide instructions for installation, preoperational procedures, operation, preventive maintenance, and corrective maintenance.

The Installation chapter includes required data for receiving, unpacking, inspecting, and setup of the unit. This section includes instructions, checks, and adjustments that should be followed before commencing with operation of the Ductless fume hood. These instructions are intended to supplement standard laboratory procedures performed at daily and weekly intervals.

**The Operation chapter** includes a description of controller features, lamp control instructions and parameter setting instructions.

**The Accessories chapter** includes a description of available accessories / options.

**The Appendix chapter** includes a description of technical specifications.

### 1.1.3 Model number nomenclature

This manual covers all two models of the DLH series.

→ DLH-01G

→ DLH-11G

## 1.2 Safety Notice

Be sure that you are completely familiar with the safe operation of this Ductless fume hood. If this unit is used without safety notice completely, it can cause serious or fatal injury.

Installation and repair procedures require specialized skills with laboratory equipment and electricity. Any person that installs or repairs this unit must have these specialized skills to ensure that this unit is safe to operate. Contact Jeio Tech or their local authorized distributor for repairs or any questions you may have about the safe installation and operation of this unit.

The precaution statements are general guidelines for the safe use and operation. It is not practical to list all unsafe conditions. Therefore, if you use a procedure that is not recommended in this manual you must determine if it is safe for the operator and all personnel in the proximity to this instrument. If there is any question of the safety of a procedure please contact Jeio Tech before starting or stopping the instrument.

This equipment contains high voltages. Electrical shock can cause serious or fatal injury. Only qualified personnel should attempt the startup procedure or troubleshoot this unit.

- Documentation must be available to anyone that operates this equipment at all times.
- Keep non-qualified personnel at a safe distance from this unit.
- Only qualified personnel familiar with the safe installation, operation and maintenance of this unit should attempt start-up or operating procedures.
- Always stop this instrument before making or removing any connections.

## 1.3 Symbols used in this Manual

The following signal word panels, safety symbols and non safety symbols are used to alert you to potential personal injury hazards or information of importance. Obey all safety messages that follow these symbols to avoid possible personal injury or death.

### 1.3.1 Signal word panels

Signal word panels are a method for calling attention to a safety messages or property damage messages and designate a degree or level of hazard seriousness. It consists of three elements: a safety alert symbol, a signal word and a contrasting rectangular background. The following signal word panels are in accordance with ANSI Z535.4-2007 and ISO 3864 standards.



Indicates a hazardous situation which, if not avoided, will result in death or serious injury.



Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury..



Indicates a property damage message.

### 1.3.2 Safety symbols

Safety symbols are graphic representations—of a hazard, a hazardous situation, a precaution to avoid a hazard, a result of not avoiding a hazard, or any combination of these messages—intended to convey a message without the use of words. The following safety symbols are used in this manual.

#### Mandatory



Read Manual



Wear a face mask



Wear gloves



Wear goggles

#### Prohibition



No direct sunlight



No high frequency noise



No corrosive fluid or cleaners



No water

#### WARNING



Safety Alert Symbol.  
General caution.



Hand crush or pinch



Electrical shock



Foot crush



Flammable or fire  
could be caused.



Lifting hazard



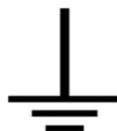
Sharp points

### 1.3.3 Miscellaneous none safety symbols used in manual

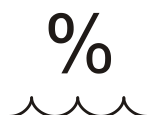
The following graphic representations are intended to convey a message without words or to bring your attention to important information about the use of the Ductless fume hood or a feature.



Altitude



Earth ground



Relative humidity



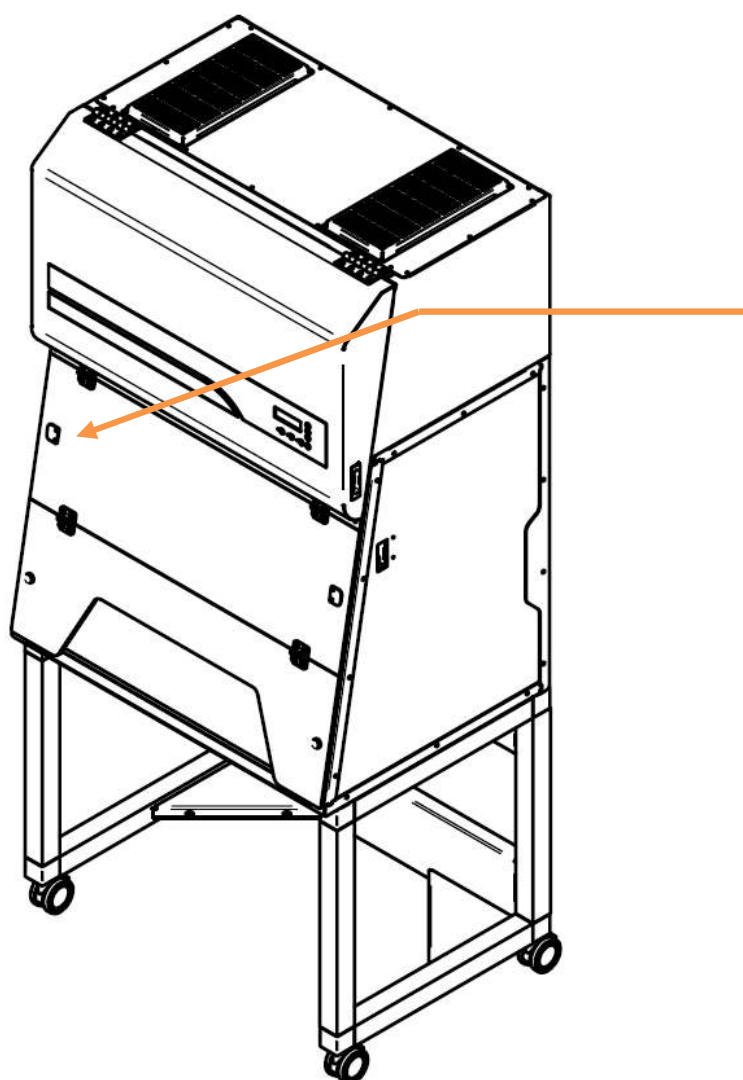
Note

## 1.4 Where to Locate Safety Labels

The safety labels are attached to provide important information about potential hazards and how to avoid them. All users must read this operating instruction carefully to operate the product properly.

The following illustrations show where the safety labels should be attached to the instrument until service of the product is discontinued. If the safety labels are damaged, please contact your local Jeio Tech office or distributor to request new labels

### 1.4.1 DLH Series



	<b>⚠ 위험 DANGER</b> 전기 감전에 주의 하세요. <b>Protect yourself from electric shocks.</b>
	<b>⚠ 경고 WARNING</b> 가연성 물질을 보관하지 마세요. <b>The Space below this equipment must not be used for storing flammable materials.</b>
	<b>⚠ 경고 WARNING</b> 임의로 분해하지 마세요. <b>Do not take the device apart deliberately.</b>
	<b>⚠ 경고 WARNING</b> 운전중에 문을 열지 마세요. <b>Do not open the door in operation.</b>
	<b>⚠ 주의 CAUTION</b> 문을 닫을 때 손 또는 머리를 주의하세요. <b>Crush hazard Door may cause crush you.</b>

## 1.5 Precautions for Ductless fume hood

Our ductless fume hood is designed to provide safe and reliable operation when installed and operated within design specifications. Make sure you read and understand all instructions and safety precautions listed in this manual before installing or operating your unit. If you have any questions concerning the operation of your unit or the information in this manual, contact our Sales Department.

To avoid possible personal injury or equipment damage when installing, operating, or maintaining this instrument, use good judgment and follow these safe practices:

### 1.5.1 Warning statements

Observe all warning labels.

DO NOT remove warning labels.

Check the voltage, phase and capacity of the power supply and connect properly.

DO NOT ground the instrument to gas pipes or water pipes.

DO NOT insert multiple plugs into the outlet at the same time.

DO NOT operate equipment with damaged line cords

DO NOT handle or touch electrical cord and electrical parts with wet hands.

DO NOT move this instrument it is plugged into the power source.

DO NOT use or keep flammable gases near this instrument.

DO NOT install this instrument near environments where flammable gas may leak.

DO NOT use the machine near environments where explosion can occur due to organic evaporating gases.

DO NOT put explosive and flammable chemicals (Alcohol, Benzene, and etc) into this instrument

DO NOT let moisture, organic solvents, dust, and corrosive gas enter the control panel.

DO NOT expose this instrument to direct sunlight.

DO NOT expose this instrument to direct heat sources.

DO NOT use this instrument in places where moisture is high and flooding can occur.

DO NOT install this instrument near machinery generating high frequency noise.

DO NOT use this instrument in environments that contain industrial oil smoke and metallic dust.

DO NOT operate damaged or leaking unit.

DO NOT operate this instrument when there is strange sound, smell and smoke coming from the unit.

DO NOT disassemble, fix or change the Ductless fume hood other than for those items described in

this operating manual.

### **1.5.2 Caution statements**

DO NOT use doors, handles or knobs to lift or stabilize the unit.

DO NOT place heavy objects on the power cord.

DO NOT put the instrument on the power cord.

DO NOT make the machine wet while cleaning.

DO NOT pour water or put liquid on this instrument when cleaning the unit.

DO NOT operate this instrument and immediately disconnect the main power supply and request service when water may be in the unit.

DO NOT sprinkle insecticide or flammable spray on this instrument.

DO NOT clean this instrument with a strong cleanser (e.g., solvent type) and use a soft cloth.

In addition to the safety warnings listed above, safety messages are posted throughout the manual. These safety messages are designated by the use of a signal word panel followed by text and a safety symbol where applicable. Read and follow these important instructions. Failure to observe these instructions can result in permanent damage to the unit, significant property damage, personal injury or death.

## 1.6 Responsibility

Our Ductless fume hoods are constructed for maximum operator safety when used under standard operating conditions and when recommended instructions are followed in the maintenance and operation of the machine.

All personnel engaged in the use of this instrument should become familiar with its operation as described in this manual.

Proper operation of the unit promotes safety for the operator and all workers in its vicinity. Each individual must take responsibility for observing the prescribed safety rules as outlined. All caution, warning and danger labels must be observed and obeyed. All actual or potential danger areas must be reported to your immediate supervisor.

### 1.6.1 General responsibility

No matter whom you are, safety is important. Owners, operators and maintenance personnel must realize that every day, safety is a vital part of their jobs.

If your main concern is loss of productivity, remember that production is always affected in a negative way following an accident. The following are some of the ways that accidents can affect your production:

- Loss of a skilled operator (temporarily or permanently)
- Breakdown of shop morale
- Costly damage to equipment and laboratory samples
- Downtime

An effective safety program is responsible and economically sound.

Organize a safety committee or group, and hold regular meetings. Promote this group from the management level. Through this group, the safety program can be continually reviewed, maintained, and improved. Keep minutes or a record of the meetings.

Hold daily equipment inspections in addition to regular maintenance checks. You will keep your equipment safe for production and exhibit your commitment to safety.

Please read and use this manual as a guide to equipment safety. This manual contains safety warnings throughout, specific to each function and point of operation.

### 1.6.2 Operator responsibility

The operator's responsibility does not end with efficient experimentation and production.

The operator usually has the most daily contact with the equipment and intimately knows its capabilities and limitations.

Plant and personnel safety is sometimes forgotten in the desire to meet incentive rates, or through a casual attitude toward laboratory equipment formed over a period of months or years. Your employer probably has established a set of safety rules in your workplace. Those rules, this manual, or any other safety information will not keep you from being injured while operating your equipment.

#### REMEMBER

- **NEVER** place your hands or any part of your body in any dangerous location.
- **NEVER** operate, service, or adjust the equipment without appropriate training and first reading and understanding this manual.
- Before you start the portable drying/conveying system check the following:
  - Remove all tools from this instrument.
  - Be sure no objects, samples or chemicals are laying on this instrument.
- If your ductless fume hood has been inoperative or unattended, check all settings before starting the unit.
- At the beginning of your shift and after breaks, verify that the ductless fume hood is functioning properly.
- Report the following occurrences **IMMEDIATELY**:
  - unsafe operation or condition
  - unusual Ductless fume hood action
  - leakage
  - improper maintenance

Clean the equipment and surrounding area **DAILY**, and Shut off power to this instrument when it is not in use. Turn the power switch to the **OFF** position, or unplug it from the power source.

### 1.6.3 Maintenance responsibility

Proper maintenance is essential to safety. If you are a maintenance worker, you must make safety a priority to effectively repair and maintain equipment.

Before removing, adjusting, or replacing parts on this dustless fume hood, remember to turn off all electric supplies and all accessory equipment at the machine, and disconnect and lockout electrical power. Attach warning tags where possible.

When you have completed the repair or maintenance procedure, check your work and remove your tools.

**DO NOT** restore power to the Ductless fume hood until all persons are clear of the area.

**BEFORE** you turn this instrument over to the operator for production, verify the unit is functioning properly.

### 1.6.4 Reporting a safety defect

If you believe that your Ductless fume hood has a defect that could cause injury, you should immediately discontinue its use and inform Jeio Tech or local authorized distributor.

The principle factors that can result in injury are failure to follow proper operating procedures or failure to maintain a clean and safe working environment.

## **2.0 Functional Description**

## 2.1 Introduction

**2.1.1** The JEIO Tech DLH-01G, DLH-11G offer efficiently clean and safety environment from occurring gas of chemical or chemical related experiment in the laboratory.

This instrument is designed Recirculation Air-Flow it Air through the chemical filter after then release to the laboratory. Also this instrument doesn't need Exhaust system.

The laboratory application such as;

- PCR Operations
- Slide Staining Operations
- Drum decanting
- Robotics Enclosures
- Graphic arts preparation
- Powder weighing and dispensing
- Solvent bonding, welding or decanting

**2.1.2** The Jeio tech Ductless fume hood is that adopting large capacity Blower, maintaining enough inhalation face velocity, and reducing noise under 55dB. The ductless fume hood possible to control Blower speed on the Digital Controller, and attached anemometer support the information of inhalation face velocity controlling which is changeable depend on around environment and filter condition.

The standard Face Velocity list on different environment condition.

Condition	Face Velocity (m/s)
(1) when the average of air velocity the extract air collecting located on the ceiling panel is below 0.2 m/s, Horizontal sliding sash, Inner 30 cm there is not located any instrument from hoods extract air collecting on opened face, the hoods are located few away from door traffic ways.	0.3
(2) same condition "(1)" with many people moving around hood, Inner 15 cm there is not located any instrument from hoods extract air collecting on opened face, the hoods are located few away from door traffic ways.	0.4

(3) when the average of air velocity the extract air collecting located on the ceiling panel is below 0.3 m/s and the ceiling diffuser locate suitable place, the diffuser is not located front of hood, hoods extract air collecting on opened face part blocked 25%, The final injection speed blower 0.3m/s, Inner 15 cm there is not located any instrument from hoods extract air collecting on opened face, the hoods are located few away from door traffic ways.	0.4
(4) Same condition "(3)" with many people are moving around hood, Inner 15 cm there is not located any instrument from hoods extract air collecting on opened face	0.5
(5) It is possible to installation near grille type wall, but it is not recommending installation.	-

2.1.3. Adopted built in Mycom controller offer convenient operation, LCD is indicated current condition and button operating, User can know filter exchange time easily by indicating Filter using time.

2.1.4. The basic application Activated carbon filter (optional) is possible large extend Chemical, User can choice their on purpose filter in 6 type of Filters (each type of filter have their major filtering functions), and the main filter life extend by adopting Pre-filter, so the Main Filter extend their life. (The ductless fume hood can adopt together 2 type of Filters so, it operate more wide Chemical possibility)

## 2.2 Structure

### 2.2.1 General

- Upper part can be seeing through made by transparent acryl.
- Sash opened convertible into folded, or unfolded.
- Front cover make it easy accessible to key components; Filter/Blower/Lamp for replacement & checking.
- Lower Stand mounted fixable casters easy for moving & fixing.

### 2.2.2 Filtration

- Activated carbon filter applies to most extensive range of chemicals.
- The absorbing grade list for activated carbon as below chart;
- Selective one of six filters.
- Pre-filter mounted make it longer the main filter's life span

#### -The absorbing grade list for activated carbon

<b>E - Excellent High capacity</b> <b>G –Good. Satisfactory capacity</b> <b>F – Fair</b> <b>P – Poor.</b>							
Compound	Adsorptive Ability	Compound	Adsorptive Ability	Compound	Adsorptive Ability	Compound	Adsorptive Ability
Acetaldehyde	F	Cyclohexanol	E	Hydrogen cyanide	G	Paint & redecorating odors	E
Acetic Acid	E	Cyclohexanol	E	Hydrogen fluoride	F	Palmitic Acid	E
Acetic anhydride	E	Cyclohexene	E	Hydrogen iodide	G	Paradichlorobenzine	E
Acetone	G	Decane	E	Hydrogen selenide	F	Pantane	G
Acetylene	P	Dibromoethane	E	Hydrogen sulfide	G	Pentanone	E
Acrolem	G	Dichlorobenzene	E	Incensen	E	Pentylene	G
Acrylic Acid	E	Dichlorodifluoromethane	G	Indole	E	Pentyne	G
Acrylonitrile	E	Dichloroethane	E	Iodine	E	Perchloroethylene	E
Alcoholic Beverages	E	Dichloroethylene	E	Iodoform	E	Perfumes, cosmetics	E
Amines	F	Dichloroethyl	E	Irritants	E	Phenol	E
Ammonia	F	Dichloromonofluoromethane	G	Isophorone	E	Phosgene	G
Ameyl acetate	E	Dichloronitroethane	E	Isoprene	G	Pitch	E
Amyl alcohol	E	Dichloroprpane	E	Isopropyl acetate	E	Poison gases	G
Amyl ether	E	Dichlorotetrafluoroethane	E	Isopropyl alcohol	E	Pollen	G

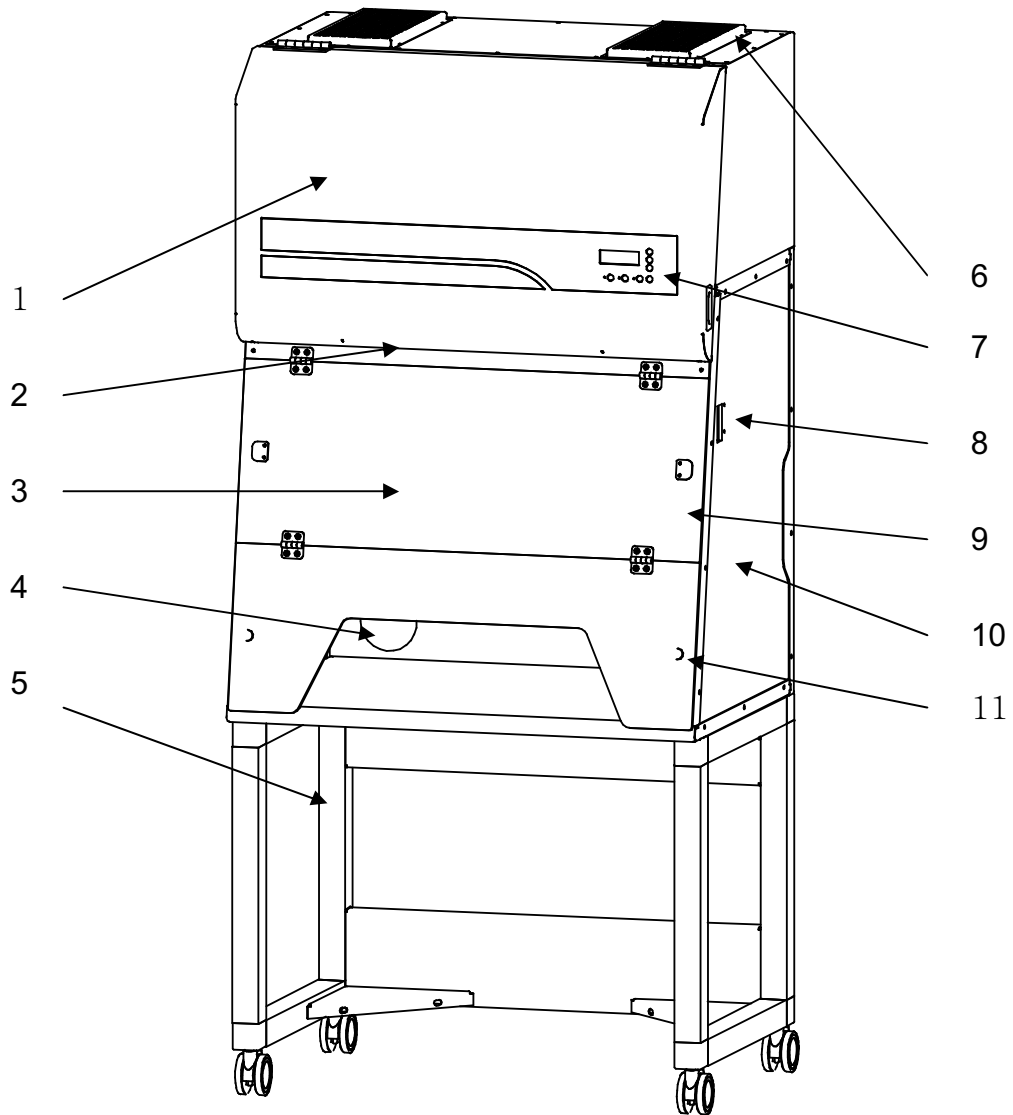
Aniline	E	Diesel fumes	E	Isopropyl ether	E	Popcorn and candy	E
Asphalt fumes	E	Diethylamine	G	Kerosene	E	Poultry odors	E
Automobile Exhaust	G	Diethyl ketone	E	Kitchen odors	E	Propane	F
Benzene	E	Dimethylaniline	E	Lactic acid	E	Propionaldehyde	G
Body odors	E	Dimethylsulfate	E	Menthol	E	Propionic acid	E
Borane	G	Dioxane	E	Mercaptans	E	Propyl acetate	E
Bromine	E	Dipropyl ketone	E	Methane	P	Propyl alcohol	E
Burned Flesh	E	Ethane	P	Methyl acetate	G	Propyl chloride	E
Burned Food	E	Ether	G	Methyl acrylate	E	Propyl ether	E
Butadiene	G	Ethyl acetate	E	Methyl alcohol	G	Propyl mercaptan	E
Butane	F	Ethyl acrylate	E	Methyl bromide	G	Propylene	F
Butanone	E	Ethyl alcohol	E	Methyl butyl ketone	E	Propyne	F
Butyl acetate	E	Ethyl amine	G	Methyl cellosolve	E	Putrefying substances	G
Butyl alcohol	E	Ethyl benzene	E	Methyl cellosolve acetate	E	Putrescine	E
Butyl cellosolve	E	Ethyl bromide	E	Methyl chloride	G	Pyridine	E
Butyl chloride	E	Ethyl chloride	G	Methyl chloroform	E	Resins	E
Butyl ether	E	Ethyl ether	G	Methyl ether	G	Rubber	E
Butylene	F	Ethyl formate	G	Methyl ethyl ketone	E	Sauerkraut	E
Butyne	F	Ethyl mercaptan	G	Methyl formate	G	Sewer odors	E
Butyraldehyde	G	Ethyl silicate	E	Methyl isobutyl ketone	E	Skalote	E
Butyric acid	E	Ethylene	P	Methyl mercaptan	E	Slughtering odors	G
Camphor	E	Ethylene chlorhydrin	E	Methylcyclohexane	E	Smog	E
Caprylic acid	E	Ethylene dichloride	E	Methylcyclohexanol	E	Sour milks	E
Carbolic acid	E	Ethylene oxide	G	Methylcyclohexanone	E	Stoddard solvent	E
Carbon disulfide	E	Essential oils	E	Methylene chloride	E	Styrene monomer	E
Carbon dioxide	P	Eucalyptole	E	Monochlorobenzene	P	Sulfur dioxide	F
Carbon monoxide	P	Fertilizer	E	Monofluorotrichloromethane	E	Sulfur trioxide	G
Carbon tetrachloride	E	Film processing odors	G	Naphtha	E	Sulfuric acid	E
Cellosolve	E	Fish odors	E	Naphthziene	E	Tetrachloroethane	E
Cellosolve acetate	E	Floral scents	E	Nitric acid	G	Tetrachloroethylene	E
Cheese	E	Fluorotrichloromethane	G	Nitro benzenes	E	Tobacco smoke odor	E
Chlorine	G	Formaldehyde	F	Nitroethane	E	Toilet odors	E
Chlorobenzene	E	Formic acid	G	Nitrogen dioxide	F	Toluene	E

Chlorobutadiene	E	Gangrene	E	Nitroglycerine	E	Toluidine	E
Chloroform	E	Garlic	E	Nitromethane	E	Trichlorethylene	E
Chloronitropropane	E	Gasoline	E	Nitropropane	E	Trichloroethane	E
Chloropicrin	E	Heptane	E	Nitrotoluene	E	Turpentine	E
Citrus and other fruits	E	Heptylene	E	Nonane	E	Urea	F
Cleaning compounds	E	Hexane	G	Octalene	E	Uric acid	E
Coal smoke	G	Hexylene	G	Octane	E	Valeric acid	E
Creosote	E	Hexyne	G	Onions	E	Valeraldehyde	E
Cresol	E	Hydrogen	P	Organic Chemicals	E	Varnish fumes	E
Crotonaldehyde	E	Hydrogen bromide	G	Ozone	E	Xylene	E
Cyclohexane	E	Hydrogen chloride	F	Packing house odors	E		

#### - Selection for Chemical Filter

Code	Filter Name	Application
<b>GF</b>	<b>Activated carbon Filter</b>	All common laboratory chemicals, especially VOC, Organic, Benzene, Toluene, etc
<b>AC</b>	<b>Acid Filter</b>	An acidic solvent; Acetic acid, Hydrochloric acid, etc
<b>HF</b>	<b>Halogen Compounds Filter</b>	Halogen compounds like Chlorine, Fluorine, Iodine, Bromine, Astatine, etc
<b>FF</b>	<b>Formaldehyde Filter</b>	Formaldehyde applications
<b>AM</b>	<b>Ammonia / Amines Filter</b>	Ammonia/Amines by chemisorptions
<b>HEPA</b>	<b>HEPA Filter</b>	the filtration efficiency of 99.99% at 0.3 microns For trapping biohazardous aerosols and others

### 2.2.3 Structure



## 1) Component

### (1) Front cover

Made by steel plate with powder coating, front-opening

### (2) F.L. Lamp (INNER)

To prevent contamination and damage when using, it's located at inside of lower part of front cover away from working zone.

### (3) Door

Strong & transparent by acryl at 8mm thick. Sloped front improve user comfortable , 2 step-folded, fixable, movable into the working zone.

### (4) Utility Hole

Compatible by connecting to the external power and other device.

### (5) Stand

Solid structure joined to the upper main body.

### (6) Exhaust Hole

Made of reinforced glassware, balancing with the weight of the weight balance at back side enable to open/close smoothly.

### (7) Control Panel

Consist of fluorescent lamp, Fan Start/Stop, Blower speed controller, alarm, menu and etc.

### (8) Anemometer

Visual for the input air velocity at real time.

### (9) Door Stay

Fixture to fix it when door open at 2 step.(if it's dropped without backing up, result in damage. Pay more attention.

### (10) Side viewing Panel

made in transparent acryl in 6 thickness, visual at both side of view point enable to look thru it in the work zone.

### (11) Door Opening Fixing Magnet

Fixing magnetic enable to open hold it to 1 step-door.

## 3.0 Installation

## 3.1 Uncrating and Inspecting

### 3.1.1 Inspecting before removing outer container

After you have received your Jeio Tech DLH, inspect the shipping container carefully for any damage that may have occurred during shipping.

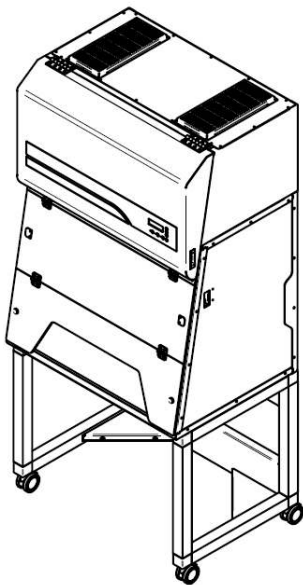
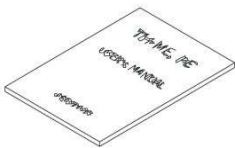
Report any damage to the carrier and to your local Jeio Tech office or the distributor from which the DLH was purchased.

If the container and packing material are in re-usable condition, save them for reshipment if necessary.

## 3.2 Unit Components

After unpacking, please check the contents to ensure you have received all the following components;

If you didn't receive one or more of the components or if the model is incorrect, contact your local Jeio Tech office, or the distributor from which DLH was purchased.







COMPONENT	QUANTITY	REMARK
 <p>Unit</p>	1	Stand (Optional)
 <p>Operation Manual</p>	1	

### 3.3 Environmental setting

Thoughtful consideration should be taken into the installation because DLH can be readily influenced by the environmental air flow patterns. Also needed to be enough space for the operation & checking for DLH.

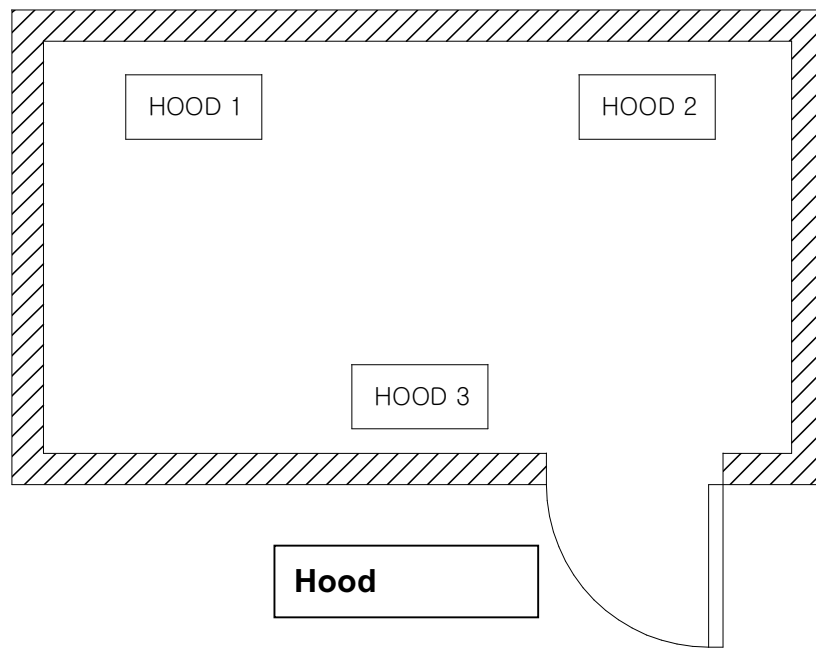
#### 3.3.1 Location by environmental condition.

##### A. General location

	No direct sunlight on DLH
	Ambient Temperature : 5°C ~ 40°C (41°F~104°F)
	Relative Humidity below 80%
	Altitude below 2000m (6562 ft)
	Keep it away from high frequency noise produced. (DLH can not operated properly due to an electromagnetic waves affected by its micro process controller inside.)
	Earth ground

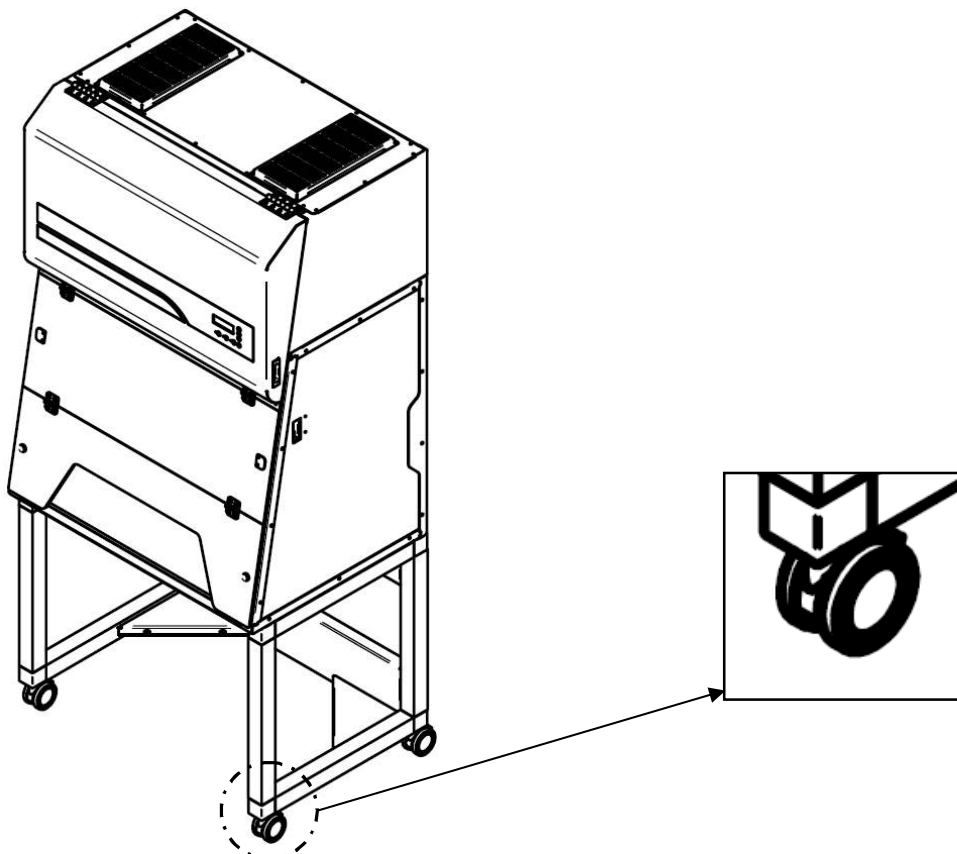
#### B. Installation characteristics for DLH

1. Below figure shows some examples for their location of hood.
2. HOOD 2 & HOOD 3 are the worst locations for hood that could disrupted to directly influence to food by door opening and closing, or door opened.
3. HOOD 1 is the optimum location for hood that could not be disrupted by externally environmental change..
4. HOOD should be located away from traffic patterns, doors, windows, air conditioners and any other air-handling device that could disrupt its airflow patterns.



### 3.4 Locking casters

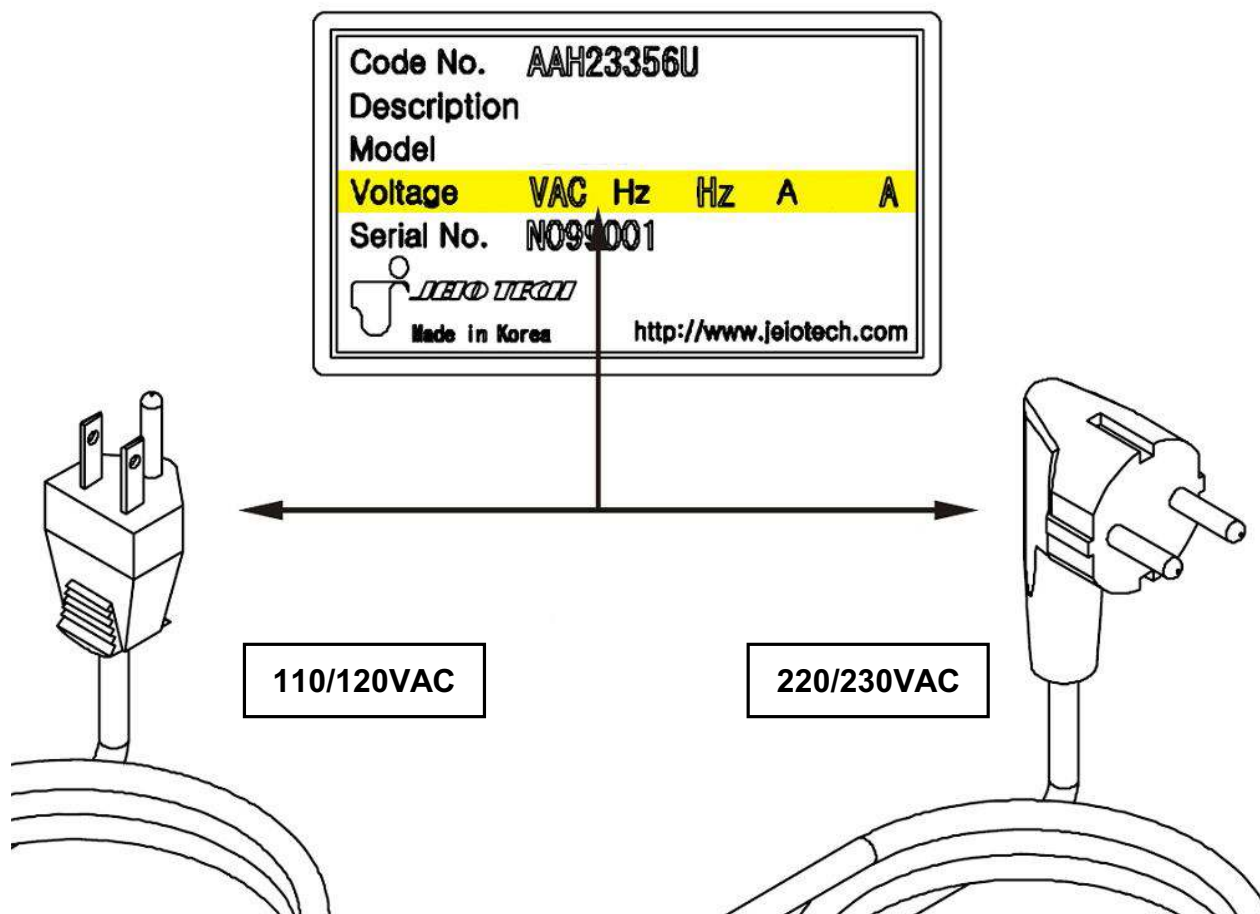
Place the DLH in its location. Lock the casters not to move when operation.



### 3.5 Attaching Electrical Connections

Jeio Tech DLH is designed for single-phase, earth-grounded voltage operation. Compare voltage on unit's identification plate, wall outlet connection on electrical cord and the wall outlet to ensure proper connection before making any electrical connections.

Voltage must be within plus or minus ten percent ( $\pm 10\%$ ) of the nameplate rating.



**DANGER**



#### **ELECTRICAL SHOCK HAZARD.**

Improper electrical connections can damage the unit and cause serious injury or death.



## **3.6 Initial Start-up**

### **3.6.1 Pre start-up checks**

- ☐ Make sure an electric line supply correctly comply with the external supply power.
- ☐ Make sure an electrical cord and wall outlet electrical connections are tight closely.
- ☐ Make sure caster feet are lowered and have locked DLH in place.
- ☐ Make sure there are other materials on the work surface in DLH.
- ☐ Make sure there are no flammable or explosive materials in DLH.

### 3.6.2 Electrical connections

Connect the electrical cord of DLH to wall outlet electrical connections..

	<p>If it's connected to the electrical power, DLH will be running.</p>
	<p>Then, there will be start-up display on the screen Filters can be exchangeable according to the filter type</p>




### 3.6.3 Lighting on fluorescent lamp

Lighting on fluorescent lamp in Working Zone

	<p>Press the button " FL Lamp "</p>
	<p>Coming on "LED" and lighting on the fluorescent lamp spontaneously. (Press the button "FL Lamp " once again, then the power will be off.)</p>

### 3.6.4 Fan operation

Fan operation.

	<p>Press “ FAN “ button.</p>
	<p>When LED light on, Fan will be automatically operated (If press “ FAN” button again, Fan will be stopped)</p>
	<p>Velocity meter will display the present velocity on the front panel, when Fan starts operation.</p>

## 4.0 Operation

## **\* Usage instruction of Ductless Fume Hood \***

**- Make it sure that hazardous material could be applied in hood so use must be instructed by usage instruction.**

1. . Recommend that instrument would be better put 150mm(6inch) back from front door and make a work line on the table.
2. Do not push in your head in case of any kind of contamination inside hood.
3. When you eliminate volatile material please use small amount application with ductless hood. Recommend that use hood with duct when you eliminate large quantity of volatile material.
4. Please, do not store chemicals inside hood. Bio hazardous chemicals should be stored in safety cabinet or other enclosure.
5. Recommend that front door should be closed during no use.
6. Recommend that door of laboratory should be closed. (Exception : there are laboratories which should be open.)
7. Do not detach front door(sash).
8. When you experiment explosive or volatile gas inside hood, do not place any ignitable instrument which can cause flame, electric spark, and etc.
9. Use proper obstacles if explosive or emission is anticipated.
10. Recommend that exhaust part of hood or ventilation system of laboratory maintains clean.
11. Close correctly when sash (front door) is closed.

## 4.1 Controller

### 4.1.1 Control

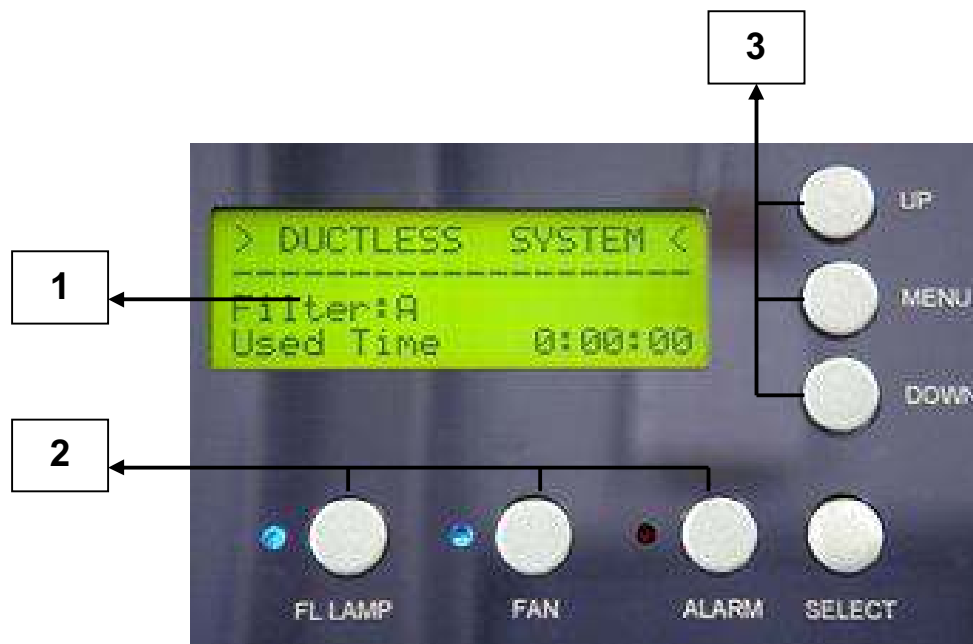
Fan Speed Control (Face Velocity)

Filter type

LCD Monitor Screen

Timer

Control button and function



### 4.1.2 Control button description

1. Display
2. Operation button
3. Menu

#### 4.1.3 F.L Lamp Display



⇒ To light fluorescent inside hood.

1. Press FL LAMP button.
2. LED of FL LAMP is ON.
3. Lamp inside hood is ON.

#### 4.1.4 Fan Display



⇒ To rotate Fan.

1. Press FAN button.
2. LED of FAN is ON.
3. Fan works. ( check out anemometer on front whether fan works or not.)

### 4.1.5 Menu Function Display



⇒ To use Menu function.

1. Press MENU button
2. Choose parameter by using UP and DOWN button.
3. Press and hold SELECT button when you choose a parameter.

#### 4.1.5.1 FILTER USED TIME



⇒ To verify Filter type.

1. Press MENU button 1 time.
2. <FILTER USED TIME> parameter shows on display.
3. Filter using time can be verified.

#### 4.1.5.2 FILTER TYPE SET



⇒ To check filter using time.

1. Press MENU button 2 times.
2. <FILTER TYPE SET> parameter shows on display.
3. Filter Type can be verified

#### 4.1.5.3 FILTER TIME CLR



⇒ To change filter type on display after changing filter.

1. Press MENU button 3 times.
2. <FILTER TIME CLR> parameter shows on display.
3. Value of filter used time can be reset to "0" .

#### 4.1.5.4 FILTER ALARM SET



- ⇒ To reset Filter used time
1. Press MENU button 4 times.
  2. <FILTER ALARM SET> parameter shows on display.
  3. After user set time has reached, The user can be known filter exchange time by alarm.

(The warning alarm is not related filter performance, The alarm is showing approximately filter exchange time by user setting.)

#### 4.1.5.5 FILTER FAN SPEED CHANGE



- ⇒ How to set frequency of backlight of LCD.
1. Press MENU button 5 times.
  2. After 5 Seconds <FAN SPEED CHANGE> parameter shows on display.
  3. Change Fan Speed

#### 4.1.5.6 LCD LIGHT SET



- ⇒ To recognize Manufacture.
1. Press MENU button 6 times.
  2. < LCD LIGHT SET > parameter shows on display.
  3. Choose frequency of backlight of LC

##### Light Type

- AUTO: Backlight of LCD is off after 5 seconds once pressing button.
- ON: Backlight of LCD is always on.
- OFF: Backlight of LCD is always off.

## **5.0 Maintenance**

## 5.1 Inspection Cycle

Classification	Inspection Time Frame				
	Daily	Weekly	Monthly	Quarterly	Yearly
General					
Power cord					
Inspect power cord connection at unit and receptacle.	•				
Inspect power cord for wear, cracks or cuts.	•				
Visible window and Surface cleaning		•			
Working surface cleaning		•			
F.L Lamp					•
Filter					
Face Velocity		•			
Check Chemical Filter				•	
Pre-Filter Contamination				•	

## 5.2 Cleaning

- (1) To clean the unit, plug out from the(wall)socket and wipe the unit with soft and dry cloth. Use alcohol (methanol or ethanol)to wipe out remains.
- (2) Please do not use acid solution, benzene, something sharp, soapy water, a detergent, hot water, and etc. these cause color change or damage to the unit especially for rubber part and plastic. And never use volatile solvent. If you use natural detergent, the body should be cleaned with a piece of dry cloth and the body must be dried completely.



**DANGER**



Electric shock attention.

Do not pour water inside or outer body. And do not use acid solution, paraffin oil powder for grinding, and something similar. These could cause electric shock or damage of the unit.

- (3) Do not pour water to the unit directly during cleaning (especially at the controller) it can cause short-circuit and other serious problem.
- (5) If you want to clean the unit by a way which does not mention in this operation manual. Please contact to manufacturer or your purchasing agent.
- (6) please contact manufacturer or authorized personnel if you treat electric parts.
- (7) please use genuine parts for replacement.
- (8) if the unit is out of order very badly, technical assistant cannot be supported.
- (9) Please plug out and cover the unit if you don't use the unit for a long time. And store a dry location.

## 5.3 Replacing fluorescent lamp

Fluorescent lamps and ballasts are consumable parts need to replace regularly.

Tools Required:



3Pt or 4mm  
Phillips Screwdriver



**DANGER**

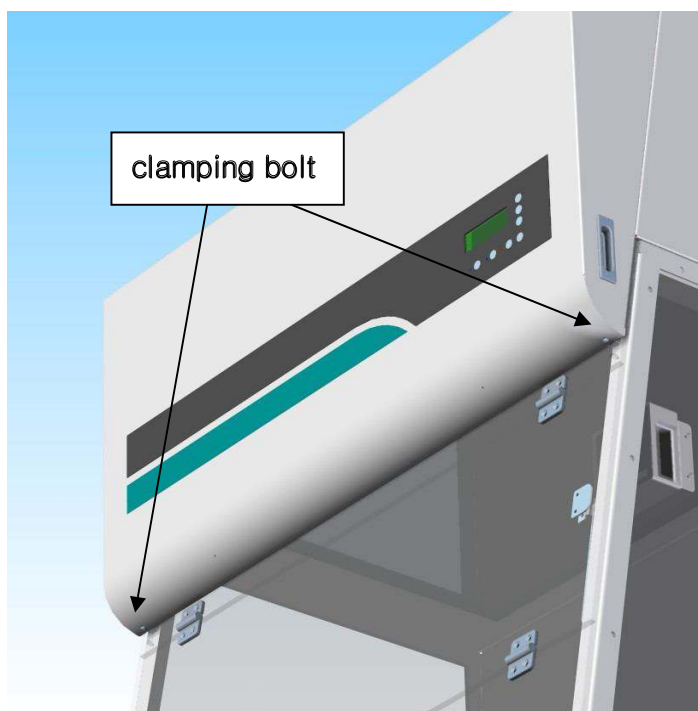


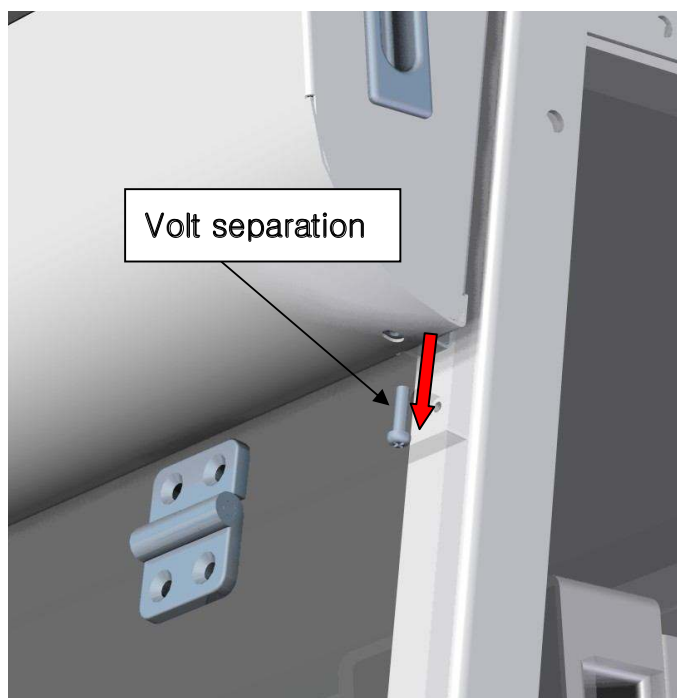
Electric shock attention.

Please check if appliances are unplugged and in the state of power off before starting work for the protection of your health and for prevention of accidents..

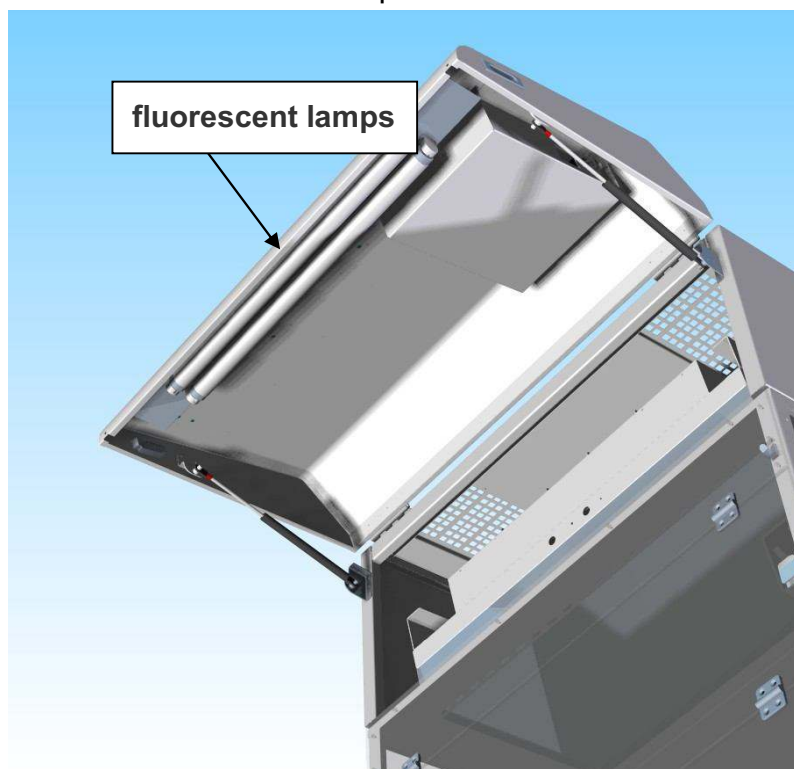
Step 1 : Unplug the unit from the main power.

Step 2 : unfasten clamping bolt at the front cover.

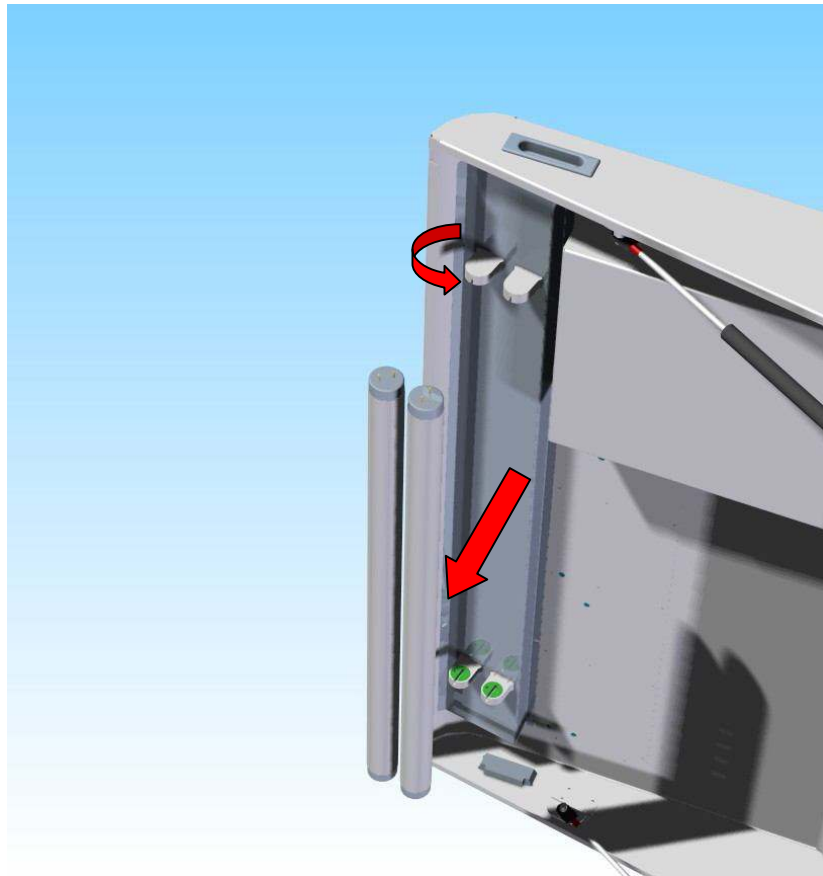




Step 3 : Pull the front cover forward to open.



Step 4 : Remove the fluorescent lamp.



Step 5 : Replace the lamp with new one and reassemble the lamp to its frame in reverse order.

## 5.4 Filter replacement

Filters are consumable, need to replace after life time.

Used filter can potentially be contaminated with biological material, chemicals or radioisotopes.

Check with your institution or laboratory for individual policies and procedures for disposal of filters.

Tools Required:



3Pt or 4mm  
Phillips Screwdriver



**DANGER**

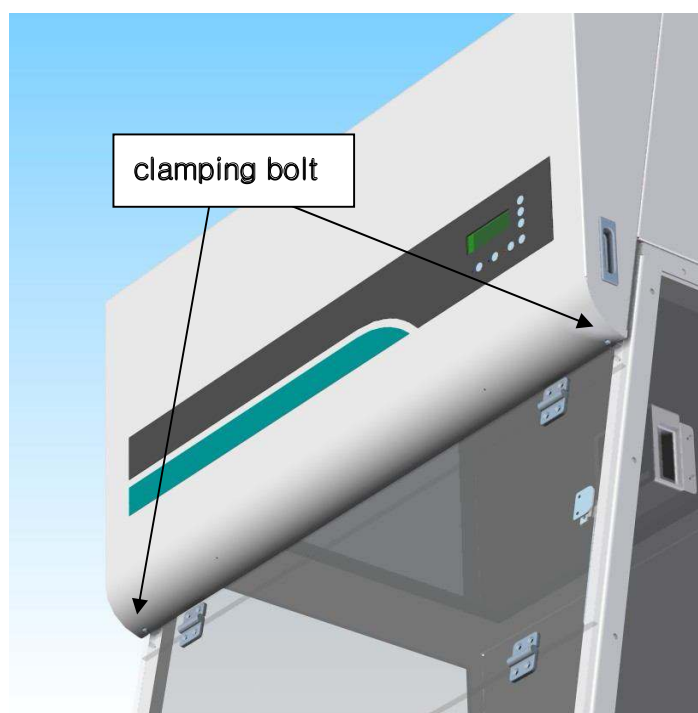


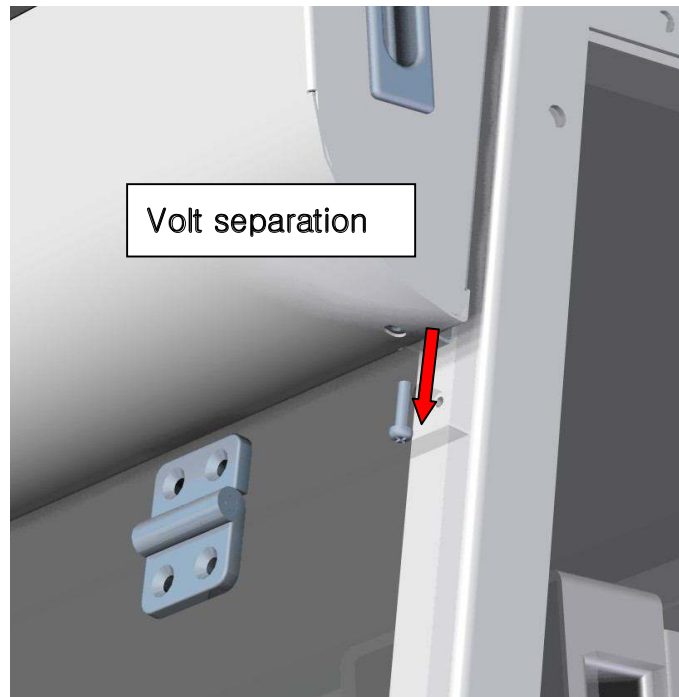
Electric shock attention.

Please check if appliances are unplugged and in the state of power off before starting work for the protection of your health and for prevention of accidents.

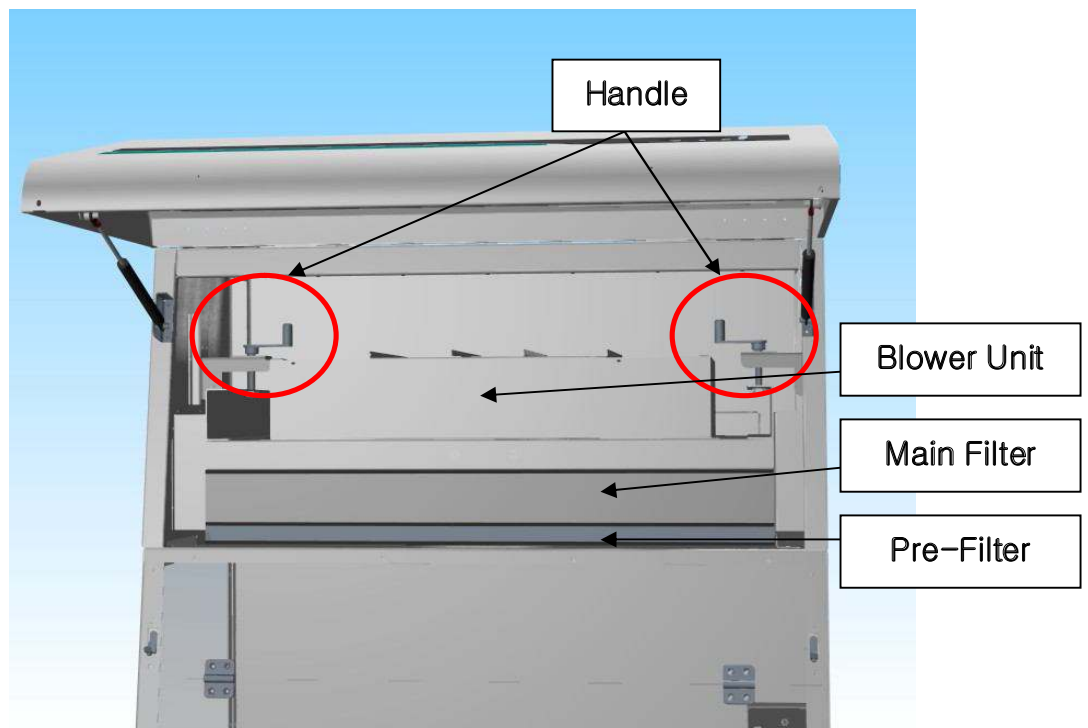
Step 1 : Unplug the unit from the main power.

Step 2 : unfasten clamping bolt at the front cover.

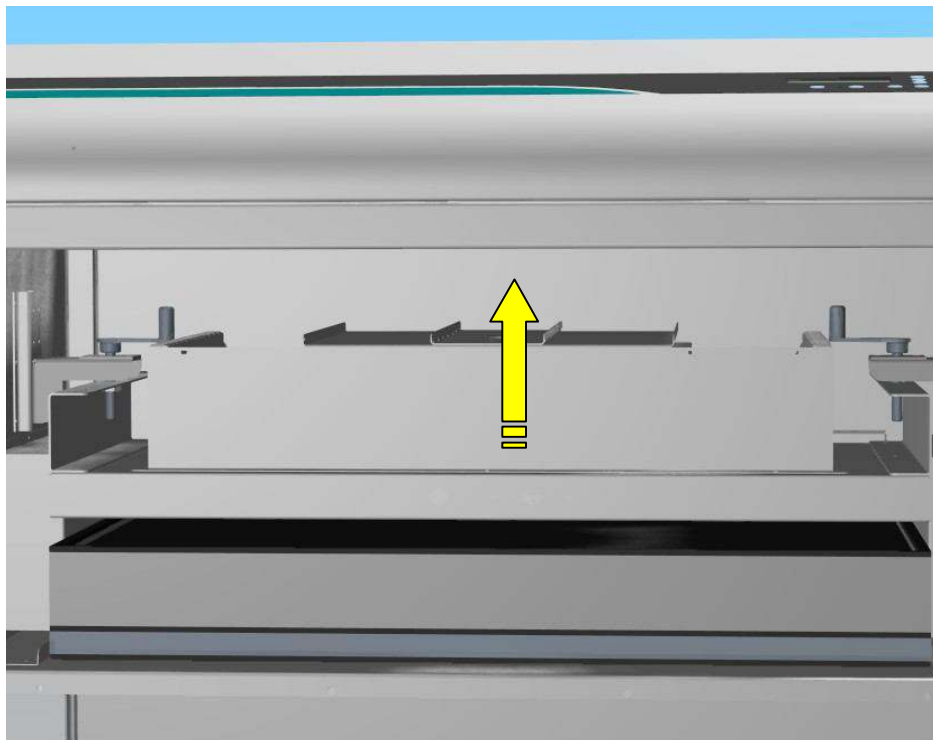
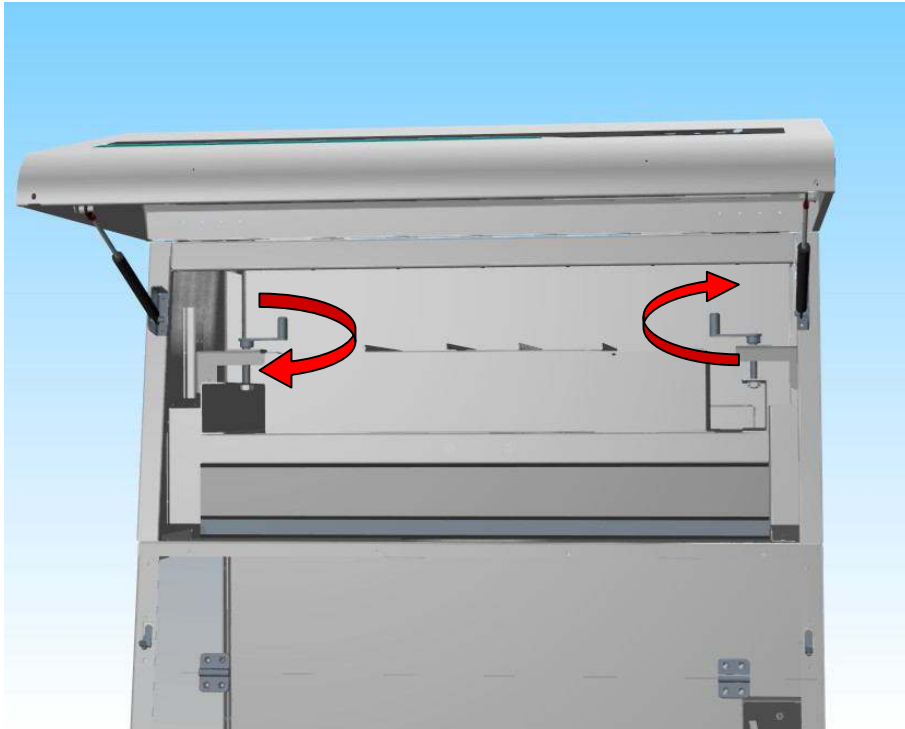




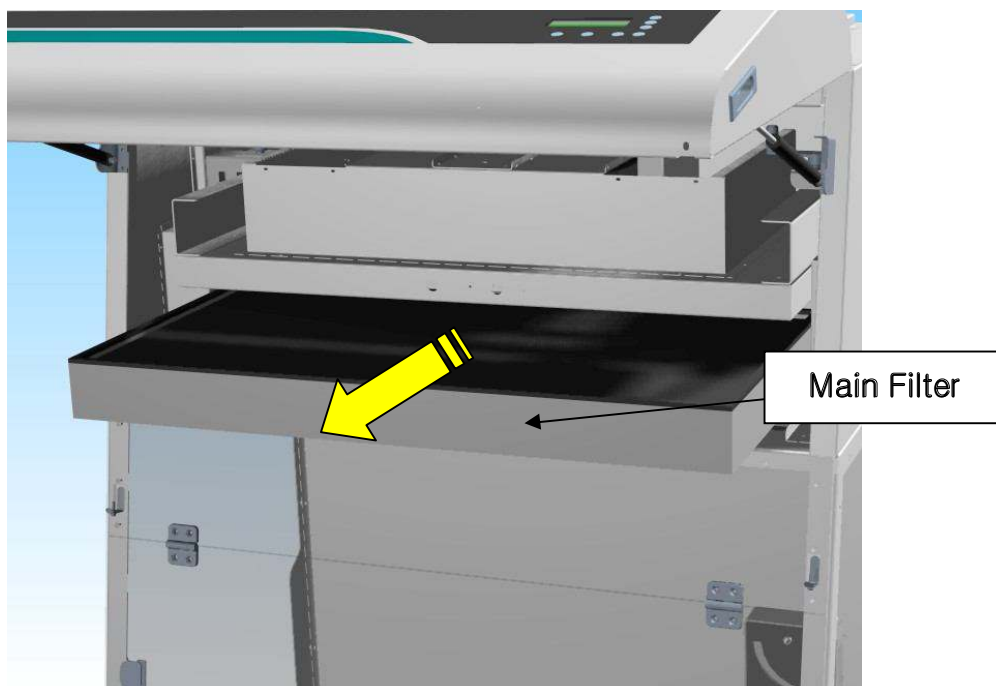
Step 3 : Pull the front cover forward to open. And you can see the parts inside.



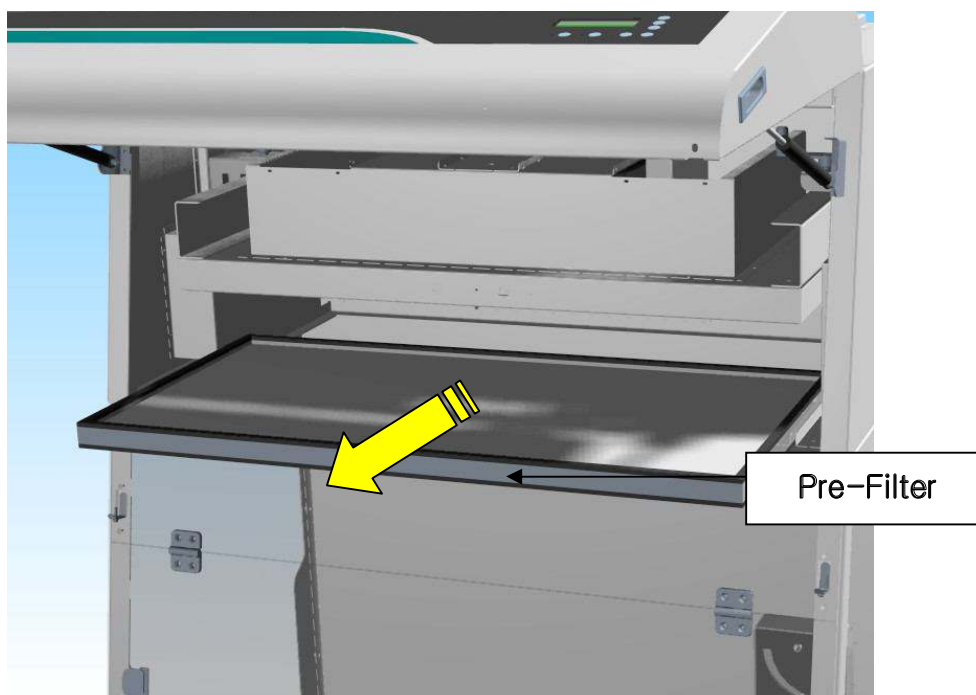
Step 4 : Rotate the handle to clockwise. Blower unit will uprised.



Step 5 : Pull out Main Filter.



Step 6 : Pull out Pre-Filter.



Step 7 : Replace the filter with new one and reassemble the lamp to its frame in reverse order.

## 6.0 Troubleshooting

## 6.1 Troubleshooting

Trouble	Solution
No power	<ul style="list-style-type: none"> <li>① Check the plug.</li> <li>② Check the electrical circuit breaker..</li> <li>③ Check power failure.</li> <li>④ Request service..</li> </ul>
Blower does not rotate	<ul style="list-style-type: none"> <li>① Check blower switch is ON.</li> <li>② Check blower lamp is ON.</li> <li>③ Request service.</li> </ul>
Florescent lamp does not ON.	<ul style="list-style-type: none"> <li>① Check the life of lamp..</li> <li>② Replace new one..</li> <li>③ Request service.</li> </ul>
Excessive vibration	<ul style="list-style-type: none"> <li>① Request Service.</li> </ul>

## **7 Accessories**

## 7.1 Accessories

ITEM		Cat No.
Activated carbon filter	DLH-01G	EDA9191
	DLH-11G	EDA9192
Acid filter	DLH-01G	EDA9199
	DLH-11G	EDA9200
Halogen compounds filter	DLH-01G	EDA9201
	DLH-11G	EDA9202
Formaldehyde filter	DLH-01G	EDA9203
	DLH-11G	EDA9204
Ammonia/Amines filter	DLH-01G	EDA9205
	DLH-11G	EDA9206
HEPA filter	DLH-01G	EDA9193
	DLH-11G	EDA9194
Prefilter	DLH-01G	EDA9196
	DLH-11G	EDA9198

Work Surface	Cat. No.	
	DLH-01G	DLH-11G
Stainless steel #304	AAAB2501	AAA B2502
Stainless steel #316	AAAB2503	AAAB2504
Cermite	AAAB2505	AAAB2506
Polypropylene	AAAB2507	AAAB2508
Bakelite	AAAB2509	AAAB2510
PVC	AAAB2511	AAAB2512

ITEM	Cat. No.	
	DLH-01G	DLH-11G
Stand with casters	AAAB2521	AAA B2522

ITEM	Cat. No.
Gas Detector,KITAGAWA AP-20	AAAB2531
<b>Gas Detecting tube</b>	
Benzene, GASTEC-121SP(0.5~10ppm)	EAA1550
Toluene, GASTEC-122SP(1~100ppm)	EAA1551
Acetic acid, GASTEC-81L(0.125~25ppm)	EAA1552
Chloroform, GASTEC-137P(0.5~1ppm)	EAA1553
Formaldehyde, GASTEC-91LL(0.05~10ppm)	EAA1554
Ammonia, GASTEC-3L(0.5~60ppm)	EAA1555

## 8. Appendix

## 8.1 Technical specification

Model		DLH-01G	DLH-11G
Air	AirFlow velocity(m/s)	0.4(Initial set point)	
	Main filter	Chemical filter (Optional)	
	Prefilter	Washable high efficiency nylon filter	
Fluorescent lamp intensity(Lux)		>600	
Noise level(dB)		Less than 55 (at normal operation)	
Dimensions	External(with stand, W X D X H,mm)	900 X 660 X 1985	1200 X 660 X 1985
	External(W X D X H,mm)	900 X 660 X 1250	1200 X 660 X 1250
	Interior(W X D X H,mm)	800 X 640 X 800	1180 X 640 X 800
	Working table	Optional 6different tables	
Net weight (kg)		120	140
Electric requirement(230V/60Hz,A)		0.7	
Electric requirement(230V/50Hz,A)		0.6	
Electric requirement(120V/60Hz,A)		1.3	
Electric requirement(100V/50Hz,A)		1.5	

## 8.2 Disposing of unit

Disposing of this equipment must be done in an environmentally responsible way if it has been potentially exposed to bio-agents or radioactive samples. Failure to follow stringent requirements for equipment disposal may lead to actions against you and your organization.

- (1) First, check with your laboratory or organization to ensure that you are following all the policies and procedures for disposal of laboratory equipments.
- (2) If not possible, contact your local governing body for regulations regarding disposal of laboratory equipments. Jeio Tech highly recommends you to find a local service provider that can properly dispose of your instrument.

## 8.3 Warranty and Disclaimer

Jeio Tech warrants to the original consumer that the products it manufactures will be free of defects and perform as specified for a period of two year from the purchase date if the equipment was used according to the instructions in this operation manual and only with accessories or consumable parts approved by Jeio Tech.

Any of Jeio Tech's products which, under normal operating conditions, proves defective in material or in workmanship, within two year from the purchase date will be repaired or replaced free of charge.

Our warranty excludes accessories or consumable parts and does not apply to faults resulting from abuse, misuse, alteration, insufficient care, maintenance contrary to the instructions in this operation manual.

Warranty claims can be processed faster if the instrument's serial number, detailed description of the problem, and its operating conditions are provided. Consumers will be required to submit the original receipt as proof of purchase date to support a warranty claim.

JEIO TECH HEREBY DISCLAIMS ALL OTHER WARRANTIES, WHETHER WRITTEN OR ORAL, EXPRESS OR IMPLIED BY LAW OR OTHERWISE, INCLUDING WITHOUT LIMITATION, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

CUSTOMER'S SOLE REMEDY FOR ANY DEFECTIVE PRODUCT WILL BE AS STATED ABOVE, AND IN NO EVENT WILL JEIO TECH BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, SPECIAL OR INDIRECT DAMAGES IN CONNECTION WITH THE PRODUCT.

## 8.4 After-sales Service and Customer Assistance

Our after-sales service responds to your questions concerning maintenance and repair of this equipment as well as spare parts. In case of a warranty claim, repair or purchase of replacement parts or in case of queries or other problems, please contact your local dealer or Jeio Tech representative.

➤ **International Sales Head Office (Korea)**

#1005, Byucksan Digital Valley 6-Cha, 481-4 Gasan-Dong, Geumcheon-Gu, Seoul 153-704, Korea

**Tel:** +82 2 2627 3816    **E-mail:** [overseas@jeiotech.com](mailto:overseas@jeiotech.com)

**FAX:** +82 2 3143 1824

➤ **The Americas (U.S.A. Branch)**

1-A Gill St. Woburn, MA 01801, U.S.A.

**Tel:** +1 781 376 0700    **E-mail:** [info@jeiotech.com](mailto:info@jeiotech.com)

**FAX:** +1 781 376 0704

➤ **Europe (U.K. Branch)**

Unit 3, Tower Industrial Park, Chalgrove, Oxfordshire, OX44 7XZ, United Kingdom

**Tel:** +44 1865 400321    **E-mail:** [labcompanion@medlinescientific.com](mailto:labcompanion@medlinescientific.com)

**FAX:** +44 1865 400736

➤ **China (Shanghai Branch)**

A-2113 Oriental International Plaza, 85 LouShanGuan Rd, Changning District, Shanghai, China 200336

**Tel:** +86-21-5108-9161 +86 21 3251 1086    **E-mail:** [longjuncao@jeiotech.com](mailto:longjuncao@jeiotech.com)

**FAX:** +86 21 3251 1083

➤ **South East Asia (Malaysia Branch)**

No 57-59, Jalan Adenium 2G/6, Pusat Perniagaan Adenium, 48300 Bandar Bukit Beruntung, Selangor Darul Ehsan, Malaysia

**Tel:** +60 3 6028 5833 +60 3 6028 5825    **E-mail:** [labcomp@streamyx.com](mailto:labcomp@streamyx.com)

**FAX:** +60 3 6028 5822

