



## Tunnel Powder Coating Booth Operating Instructions

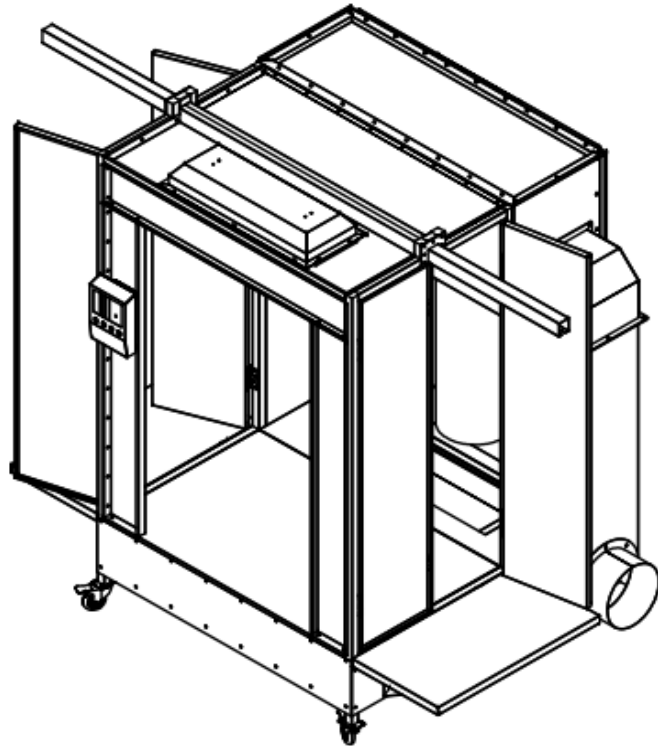


**DANGER!**



Electrical Shock  
Hazard!

Disconnect  
electric before  
service.



**Attention:**

These safety regulations must be read and understood before the powder coating booth is used.

Catalog	页号
<b>1.</b> Introduction .....	<b>1</b>
1.1 Safety Regulations .....	3
<b>2.</b> Filter Recovery Booth System .....	<b>5</b>
2.1 Application .....	5
2.2 Complete Installation Graphic and Technical Data .....	5
2.3 Spare Part list .....	6
2.4 Circuit Diagram of Spray booth .....	7
2.5 Replacing The Filter Cartridge .....	8
2.6 Electrical Wiring Diagram .....	9
2.6.1 Air Tank Connection.....	9
2.6.2 Cylinder Wiring Diagram.....	9
2.7 Instruction and Working Principle.....	10
2.7.1 Main Spare Parts.....	10
2.7.2 Working Principle and Drawing.....	11
<b>3.</b> Operation.....	<b>12</b>
3.1 PLC Controller Instruction .....	12
3.2 Color Change.....	15
<b>4.</b> Maintenance and Cleaning .....	<b>16</b>
4.1 Booth Cleaning.....	16
4.2 Troubleshooting Guide.....	17

## 1. Introduction

This technical manual includes the illustration and clues of how to use, repair and maintain the device. Follow the illustration of this manual is the key point to make the agreement comes into effect.

COLO powder coating machine can meet the most stringent safety requirements, users can operate it based on general safety rules and applicable national security laws and regulations.

This manual includes the information that must be read and understand before using. For example, when you read the part that with marks, please pay more attention and stick to the safety rules.



### DANGER!

Danger due to live electricity or moving parts. Possible consequences: Death or serious injury



### WARNING!

Improper use of the equipment could damage the machine or cause it to malfunction. Possible consequences: minor injuries or damage to equipment



### INFORMATION!

Useful tips and other information.



### WARNING

Danger		Precautions
Static charges can have the following consequences: Charges to people, electric shocks, sparking. Charging of objects must be avoided. Powder/air mixtures can be ignited by sparks, cause property loss and injuries.	⌘	Operator must be grounded, be sure to use the ground wire while wear the rubber shoes.
	⌘	Operators must keep touch with the gun handle; should use the gloves which have a open place between palm and trigger finger.
	⌘	Operator should remove all the ungrounded metal objects from them.
	⌘	Parts must grounded
	⌘	all the metal objects in the workshop must be grounded (including Spray booth、hanger、 fire extinguisher etc)
	⌘	Configure ground conductive plate in workshop.
	⌘	Turn the power off and pull out the power plug before cleaning the gun, cleaning or replacing the gun parts(such as, spray nozzle) .
	⌘	Equipped with exhaust device and fresh air reference device to make sure no combustible gas gathered in spray area.
Danger of explosion or fire. powder mix with air might explode or strike fire, and cause property loss and severe human injury.	⌘	No smoking in spray area.
		Equipped with fire extinguishers and place them in order.
		Prevent the formation of static arc.(view the static arc)
	⌘	Only use the material form powder manufacturer when cleaning the machine .Be sure to turn the power off and pull out the power plug.
	⌘	Avoid all the ignition sources, like electrostatic ignition, oil lamp or other open fire, cigarette butt or other hot objects, the fire when connect or disconnect the power and working light.
	⌘	Only can start spraying in a well-ventilated powder booth to prevent the combustible gas gathered. Do not use the spry gun while ventilation fan doesn't work.
Poison material: swallow smoke or something harmful substances stick on the skin.		Check and follow all the counties', Stats' and local's standard of relevant exhaust velocity requirements.
	⌘	fan must be ensured when doing cleaning.
	⌘	Follow the material safety date sheet that supplied by powder manufacturer.
	⌘	Equipped with exhaust device and fresh air reference device in spray area to avoid a large amount of powder gathered.
	⌘	Put on mask or respirator, read carefully the instruction of mask, to make sure it can protect you from powder inhalations.

## 1.1 Safety regulations



### Warning

If you operate the machine disobey the operation instructions, it might cause danger. Beside, you need to follow the other rules that made by counties、stats、other official institutions or local fire department.

In order to ensure the safe and effective use of the equipment, the following requirements must be observed:

In particular, the user shall comply with the Vds (Vds2093) safety procedures and safety regulations of the relevant industry associations.

According to the provisions of section 4.4.2 of the 1/144 ZH (effective in 1993), the user shall ensure that the intermediate value of the powder / air concentration is not more than  $UEG * (50\%)$  of the low explosion limit. If you do not know the value of UEG, users should assume it is 20 g/m.

If the powder concentration is higher than the allowable standard value, the user should consult with the powder manufacture. In most cases, the low detonations limit(UGE) can be measured accurately, allowing a higher maximum powder/gas concentration.

If the UGE value is higher than  $40\text{g/m}^3$ , then the largest number of spray gun can be increase accordingly.\* ) UEG :low explosion limit, for example, the maximum permissible concentration of powder in the air.

When doing spraying, the power cord of the device must lock with the exhaust system of the spray booth.

Very single spraying parts of the spray booth must be grounded well as standard.

When machine out of work or not work very well, the user should repair them according to their judgement.

The maintenance man should receive corresponding special and professional trained. 7)

Do not doing repair in the explosion danger area . 7)

The work area must be equipped with an electrostatic conductive floor(measured by DIN 51953). 3) 6) 17)

All conductive parts in the work area must be grounded in static electricity(Working area=2.5 meters in front of the opening of the powder room,two sides 1.5 meters. 3)

All the staff in the work area must wear electrostatic conductive shoes(e.g leather shoes) 17)

If you use gloves, the gloves must be made of anti-static material or leave a open Place in the palm. 3) 17)

When removing the powder deposits, only use a protective grade 1 removable vacuum Cleaner(see the C zh 1/487)18). 18)

In the area that might happen fire ,should equipped with appropriate fire fighting system and make sure it can put into use at any time. 16)

## General safety principles

Keep your workplace clean and organized

☞ Disorder workplace prone to accidents .Put away your tool carefully.

☞ Useless tool should be put away in the dry、 locked room and keep the unauthorized person from using it.

Wear suitable work cloth,use the respiratory protective device.

☞ When working in the dust,use the respiratory protective device.

Stay alert.

☞ Concentrate on working.Operate in a right way.Do not use the tools when you are not focusing.

Protect the system

☞ Keep system clean to make sure it's good working. Check plug and electric cable regularly, if there is any damage, let the customer service department replace them. Check extension electric ,if any damage, replace them.

Check the device condition

☞ Before using the system,check carefully a little defective parts still can run correctly.Check the active parts whether can work smoothly,whether they are blocked or damaged.

To make sure the safety machine running,the user must install every parts correctly.

The damaged parts,COLO customer service department will responsible for the maintenance and replacing.



Warning To make sure your personal safety,please only use the accessories and devices which listed in the operation instructions.If you use some other parts that not listed in the operation instructions,it might cause accidents.

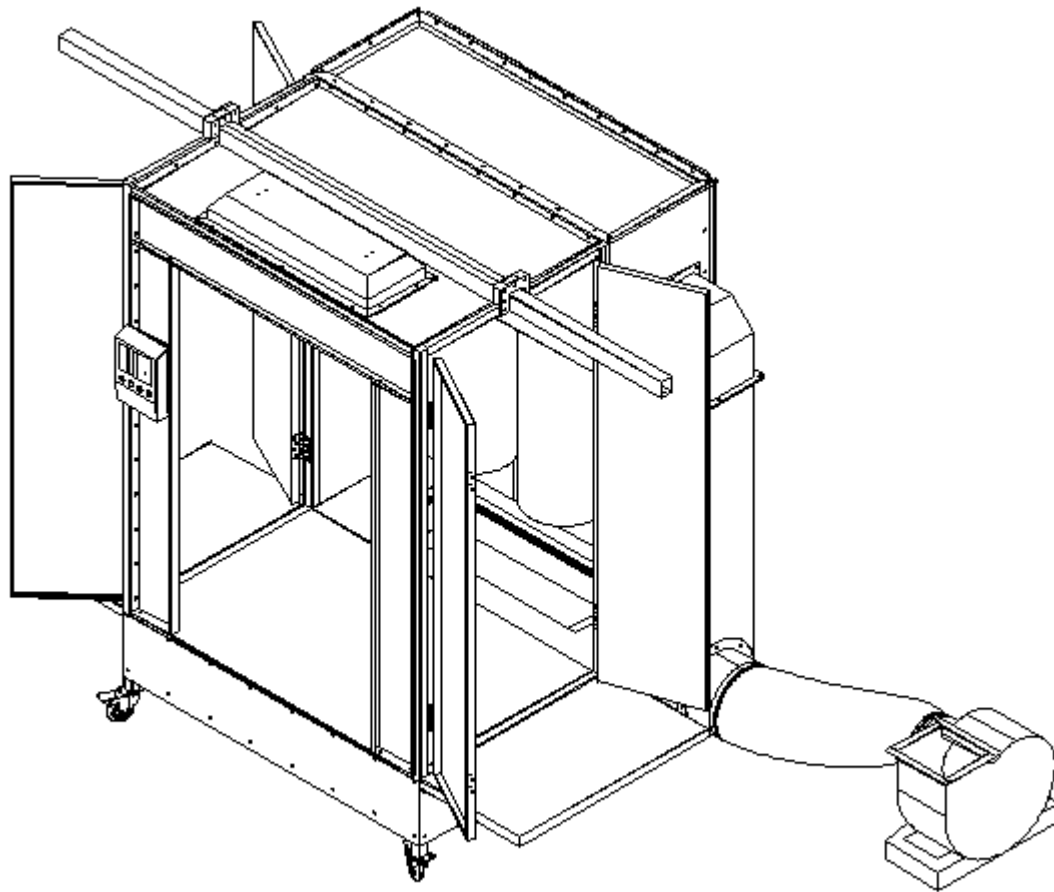
☞ Only use the original parts.

## 2. Filter recovery booth system

### 2.1 Application

Filter recovery of powder spray room, powder can be collected in the process of electrostatic spraying , suitable for manual spraying, equipped with filter, easy to change color, but also can recover the excess powder, spray again.

### 2.2 Complete unite (picture 1)

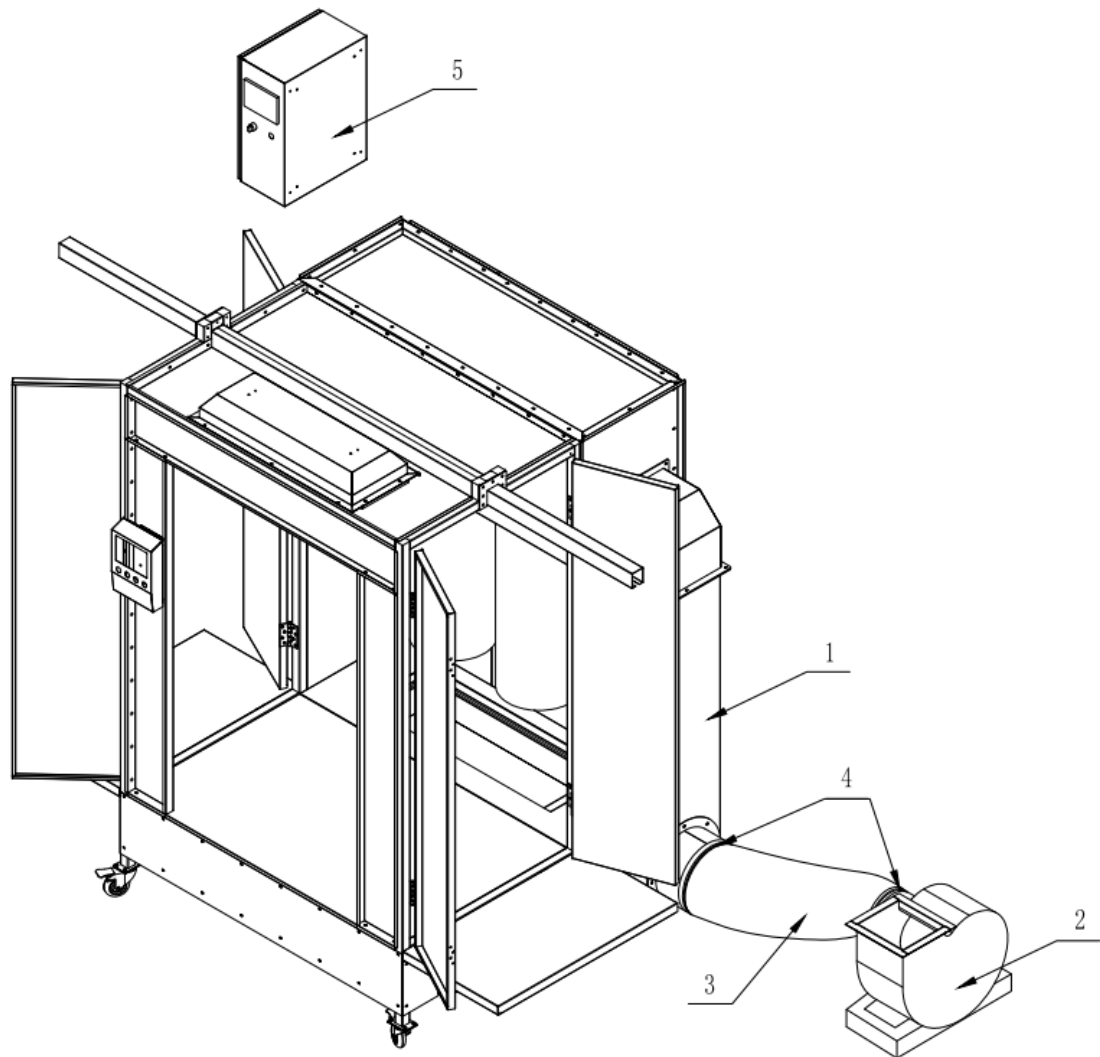


Picture 1

Spray booth Technical Data  
Inside size: 1400W\*1800H\*1400L  
Voltage: 380v, 3 Phases  
Frequency: 50Hz  
Fan motor Power: 3kw  
Powder density limit: 20 g/m<sup>3</sup>  
Exhaust air Capacity: 2000 m<sup>3</sup>/h

## 2.3 Spare Part list

Filter recovery booth system (icture two)

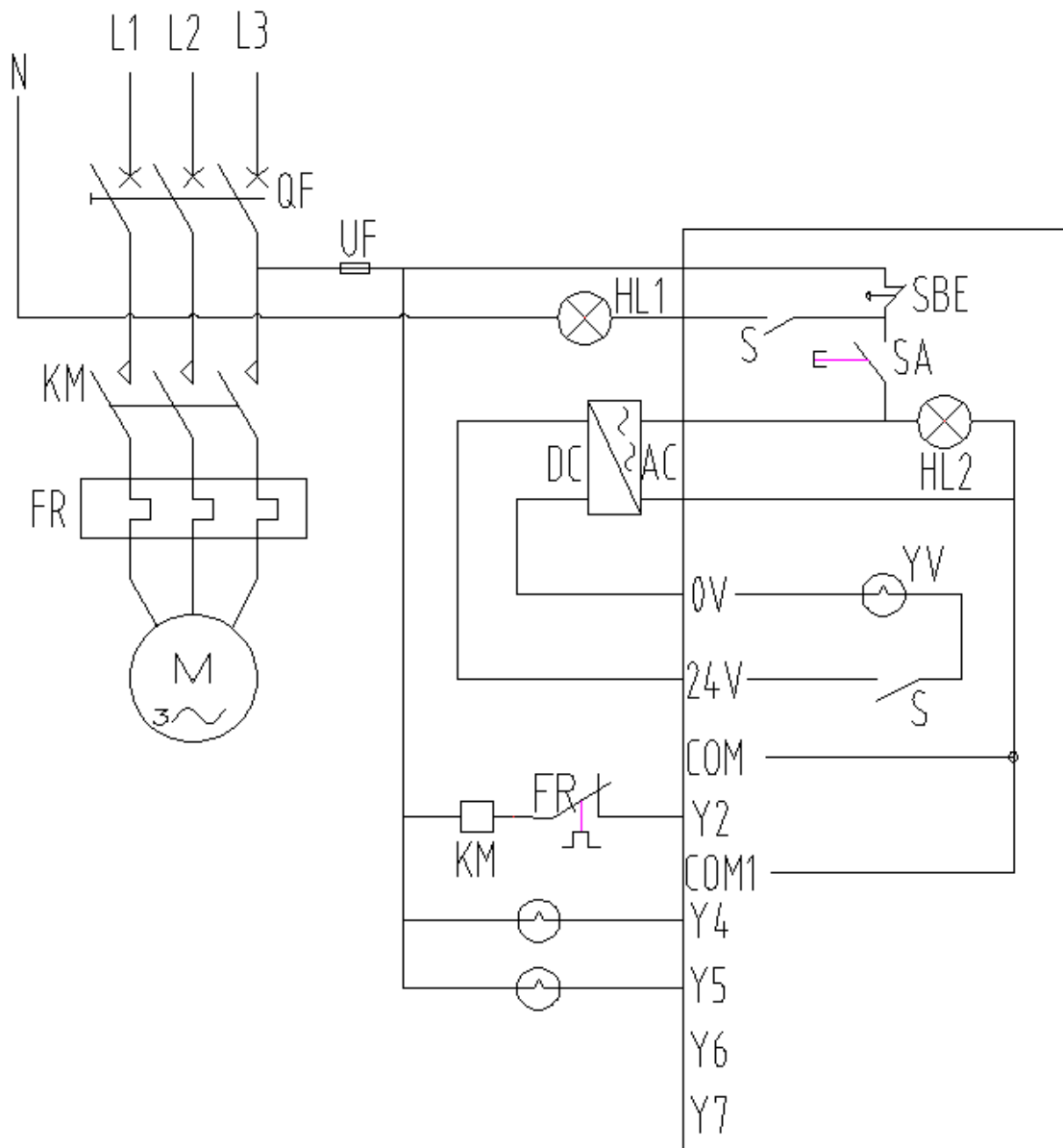


Picture 2

Spray booth parts details

- 1-- Spray booth
- 2-- Fan motor
- 3-- Spiral air pipe
- 4-- Hoop
- 5-- Electric control box

## 2.4 Circuit Diagram of spray booth (Picture 3)



Picture 3

## 2.5 Procedure for replacing the filter cartridges

If a filter cartridge is damaged, but the damage can not be found, then the complete filter cartridges set must be replaced. The access to the filter cartridges takes place from the rear of the booth

### Dismantling:



Picture 4

1. fix the scrow on the top





Picture 5

2. Hold the cartridge with both hands, so that the filter's six ears for quick release cover six corresponding gap



Picture 6

3. His hands up top, while the rubber ring as a fulcrum to sixty degrees clockwise



Picture 7

4. Check the filter is fully embedded in the quick release cover, hand gently pulled the filter is securely

## 2.6 Electric wiring

### 2.6.1 Air tank connection (Picture 8)



Picture 8

### 2.6.2 Cylinder wiring diagram (Picture 9)



Picture 9

进气口  
Air in

## 2.7 Operation

### 2.7.1 Structure 1: Main parts

#### 1. Spray Booth Body

Spry booth is made of Sheet metal which is lightweight, high strength, and installing at the bottom place.

Filter room is installed at the back of spray booth in order to reach the maximum powder recovery.

#### 2. Base plate frame

Base plate is made of squire tube structure, spray floor is installed on it.

Wheels can be installed on base plate frame, then the whole spray can be moved by people or by electric motor.

#### 3. Filter Room

Filter room includes the filters, air tank which connecting with the fan motor to doing the powder recovery.

Filter cleaning device is installed above filters, consist of compressed air tank、 and each filters' air nozzle and impulse vale.

#### 4. Spray Booth Air Pipe.

Fan tube is used for connecting the filter room and fan motor.

Whole fan tube is fixed on the filter room with screws, use the circle fan tube and hoop to fix it.

#### 5. Hopper

Hopper is a device that used for saving and delivering the powder, you can remove them from the filter cone easily.

Hopper has four wheels, can move, and it is made by the weld squire tube.

### 2.7.2 Operation principles and diagram (picture 10)

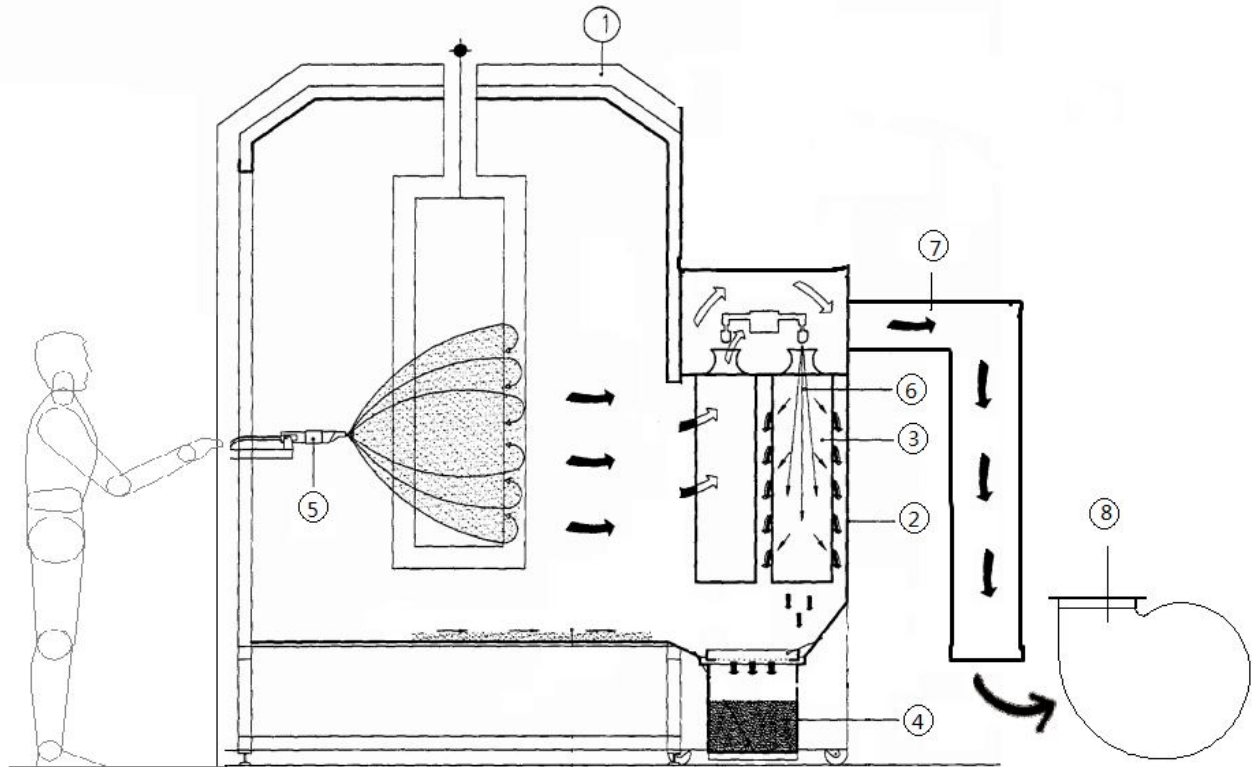
In the filter recovery spray booth, the gas with powder will adhere to the filters after spraying in order to facilitate recycling.

The powder that not adhere to the work piece will be collected by hopper through the exhaust system, after that ,the gas is clean, and the exhaust is leading-in through the suction gate of the suction system. The gas is separated by exhaust system through two filters

Powder spray booth has the powder recovery system, suitable for continuous working. Filters need to automatic cleaning regularly.

Compress air flow will blowing towards the filters through electric vale, and then filters was cleaned. Due to clean the filters regularly, so the suck ability will not ne decreased.

The compressed air is opposite to the direction of air flow from inside to outside through the filter and filter media, can remove the deposited powder form the filter house. Those powder directly falling down on the sieve ,after filtering ,return to the powder container. Compressed air blow about 80-100 seconds, the electric vale will close and the cleaned filters is ready to re-work.



Picture 10

- 1—Spray booth body    2—Filter room    3—Filter  
4—Hopper    5—Spray gun    6—Cleaning gas  
7—spray booth air pipe    8—fan motor

### 3. Operation

#### 3.1 PLController

PLC control box



## Bottom:

1. power on/off
2. hopper go up/go down
3. emergency stop

## Operation:



1. Turn on the power switch

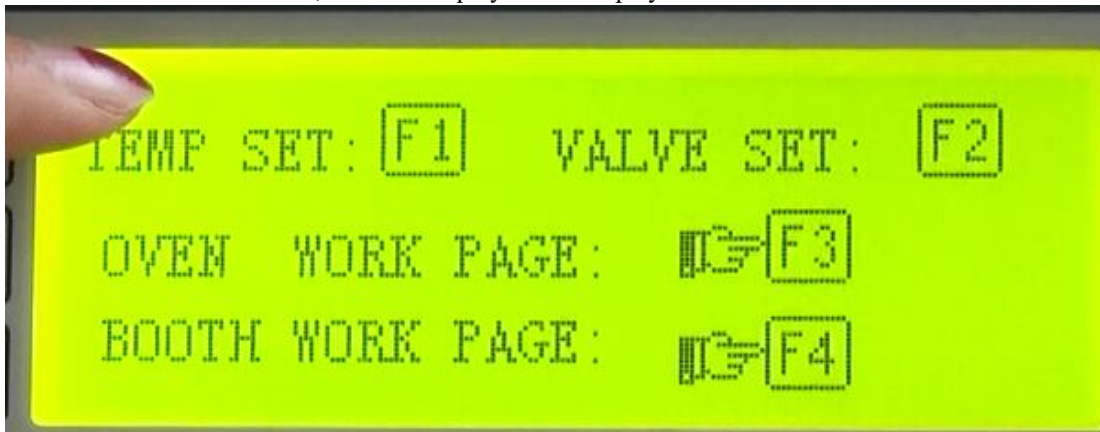


2. Then the PLC will display (Picture below)





3. Press  or , make the display screen display (如下图)



4. Press F4, then into the booth control interface (see below)



5. Press F6, then the fan will on (see below)



6. When you want to stop the work, please press F6, make the fan off (see below)



7. Working on night, could turn on the light (see below)



### 3.2 Color change



Warning, Every time doing Color change, close the mobile Base plate and clean the deposited powder.

Operating procedure

- 1, Close the mobile base plate
- 2, Clean the spray booth
- 3, Delivery the deposited powder to cyclone device.
- 4, Start up the mobile base plate.
- 5, See the following steps at the behind page for “color change” instructions



Hint Use following cleaning tool

Tool:

- z duster cloth
- z mop

Powder color change procedure please refer: color change operating procedure: spray Booth with mobile base plate. Cleaning intensity is decide by quality and color standard.

Procedure of color change

1. Take out filters, use air nozzle to blow the filter room.
2. Clean and blow the out place of filter room.
3. Remove the extra powder in the spray booth, wipe and clean it.
4. Take out hopper, remove the extra powder in the hopper and wipe it by duster cloth.
5. Clean up the spray booth entirely (vacuum cleaner+ duster cloth)
6. Install the new filters

7, Finally, Cleaning spray both and check it

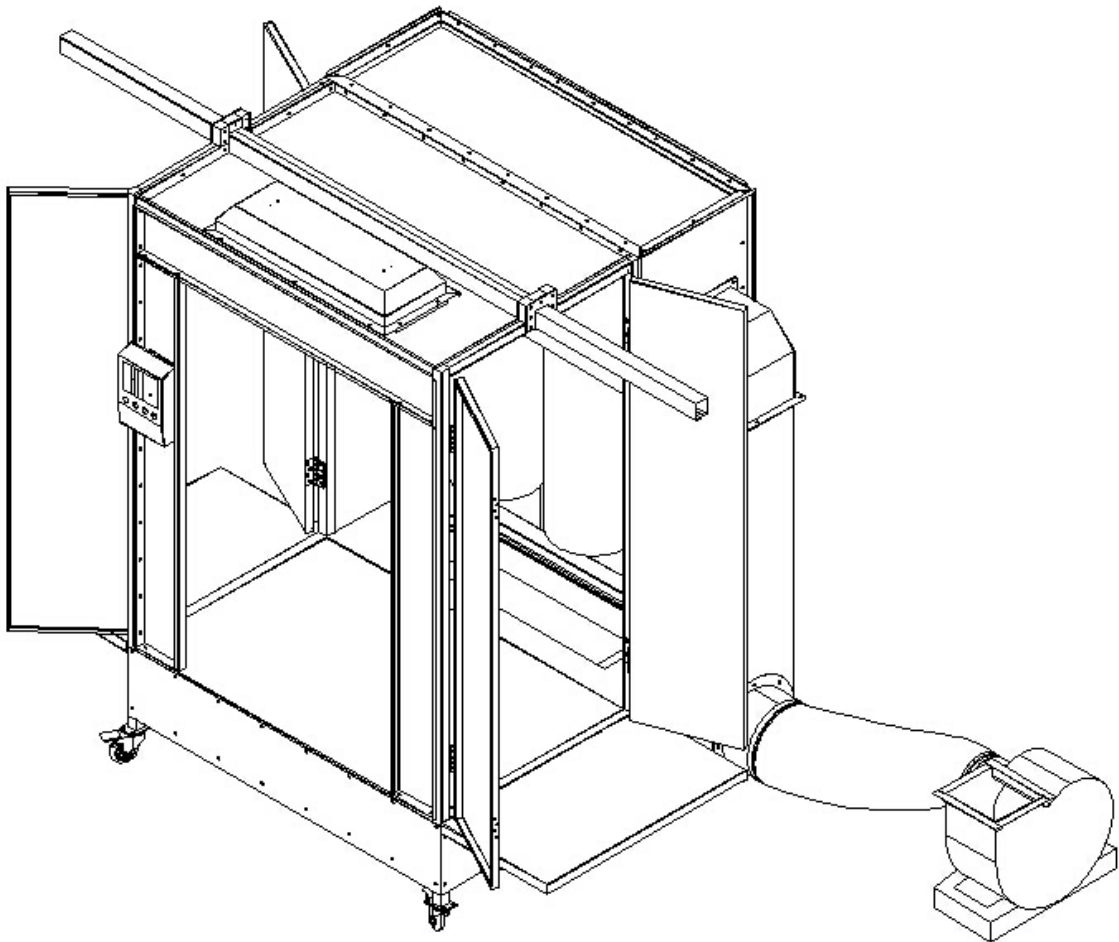
8, Keep ventilation and clean during color changing.

Above cleaning steps is only for your reference. The actual steps should according To system configuration.

## 4. Maintenance and cleaning

### 4.1 spray booth cleaning

Powder spray booth actually don't need to maintain, but should follow the below Requirements:



Spray booth Main

Item No	Description	Inspection Period	Remarks
1	inside of powder spray booth	every day	A large amount of deposited powder should clean in time
2	spray booth ceiling, exhaust pipe	every month	Use the vacuum cleaner suck the powder from outer space, prevent and duster gathered.
3	Hopper	every week	A large amount of deposited powder should clean in time
4	Filter	Auto cleaning, manual clean when troubles appear.	If seal parts or filter material damaged, please change it immediately.

## 4.2 Troubleshooting Guide



Warning

Any maintenance work must be performed by COLO professional man.  
Users should make sure the system was grounded very well all the time.

Trouble	Reason	Solutions
(automatic emergency stop setting)	Fuse damaged	Replace the fuse
	Filter cleaning system is not open	open. if necessary, short cleaning interval(programming time is in the control box)
	Back filter's electric vale damaged	If necessary ,replace the electric vale.
Powder escape form exhaust gate	False filter installing	Install the filter correctly
	Filter parts damaged	Replace the foam rubber gasket
	Filtering material	Change filter
no powder delivery	Cycle powder is not enough	Add powder
	Fluidized board is dirty or damaged	If air in enough,then cleaning the fluidized board or change it.
	Injector is blocked or damaged	Cleaing,if necessary,replace the damaged parts.
	Powder tube is dirty or have knots.	Cleaning,make sure powder tube do not knot. Cleaning the spray gun
	Spray gun is blocked	Clean the spray gun
	Conveying air is not enough	Check the air conveying

If any questions, welcome to contact us as follow:

Hangzhou Color Powder Coating Equipment co.,ltd  
address:No 57 You che qiao xiang cang Road ,san dun town, West lake district, Hangzhou city ,china  
Tel:0086-571-86015003  
Fax : 0086-571-86015003  
Email: [export@colourspray.com](mailto:export@colourspray.com)  
<http://www.colourspray.com>