

COLO-S-1517 Spray Booth with Single-stage Filter Recover



Electrical
Shock
Hazard!

Disconnect
electric
before
service.



Attention:

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

ADDRESSES



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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.



Warn

The important information of might cause severe injury or personal injury.



Notice

The important information of prevent the device from damage or general damage.



Hint

Indicate that you may pay more attention .



Warning

Danger	Precautions
	Operator must be grounded, be sure to use the ground wire while wear the rubber shoes.
Static arc might cause explosion or fire. Powder mix with air might explosion or fire, cause property loss and severe human injury.	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.
	The workpiece must be grounded.
	Grounding all the metal objects in the spray area (including Spray booth, hanger, fire extinguisher etc)
	Configure ground conductive floor in spray area.
	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.
	No smoking in spray area.
	Equipped with fire extinguishers and place them in order.
	Prevent the formation of static arc. (view the static arc)
Danger of explosion or fire. powder mix with air might explode or strike fire, and cause property loss and severe human injury.	Only use the material from 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 spray gun while ventilation fan doesn't work.
	Check and follow all the counties', states' and local's standard of relevant exhaust velocity requirements.
	Ventilation must be ensured when doing cleaning.
	Follow the material safety data 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.
	Poison material: swallow smoke or something harmful substances stick on the skin.
	Put on mask or respirator, read carefully the instruction of mask, to make sure it can protect you from powder inhalations.



Warning

Danger	Precautions
General Introduction	Before operating, read all instructions and safety precautions.
	Comply with all local, state and national standards of applicable involving ventilation, fire protection and electrical equipment operation.
	The device applies to US government safety standards of occupational safety and health regulations. You should refer to these accurate standard , in particular the General Standard in Part 1910 and building standards in Part 1926.
	Spraying area should be established to comply with No 33 of Standard NFPA. More detailed description, please consult the National Fire Protection Association in the City of Quincy, Massachusetts Batterymarch Park 02269.
	Please check other requirements with insurance companies.
	Only use the same replacement part.
	Must train the operators based on the requirement in Chapter 15 of No 33 of NFPA Standard.
	All personnel responsible of operation and maintenance are responsible for reading and understanding safety instructions together provided with this equipment .

1.1 Safety regulations



Warning

This equipment can be dangerous if it is not operated in accordance with this operating manual! There might be additional regulations to be observed, put into effect by governmental, state or other official agencies or local security (fire) departments!

The following rules must be observed in order to ensure a safe and efficient use of the equipment:

In particular, the user shall comply with the Vds (Vds2093) safety procedures and safety regulations of the relevant industry associations. (ZH 1/206, ZH/1/444) 。 3) 6) 15)16) 。 3) 6) 15)16) 。

- 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 $UEG \cdot (50\%)$ 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 40g/m^3 , then the largest number of spray gun can be increased 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.
- Every single spraying part 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 training.
- Do not do repair in the explosion danger area.
- The work area must be equipped with an electrostatic conductive floor.
- 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).
- All the staff in the work area must wear electrostatic conductive shoes (e.g. leather shoes).
- If you use gloves, the gloves must be made of anti-static material or leave an open place in the palm.
- When removing the powder deposits, only use a protective grade 1 removable vacuum cleaner.
- In the area that might happen fire, should be equipped with appropriate fire fighting system and make sure it can be put into use at any time.

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. Introduction

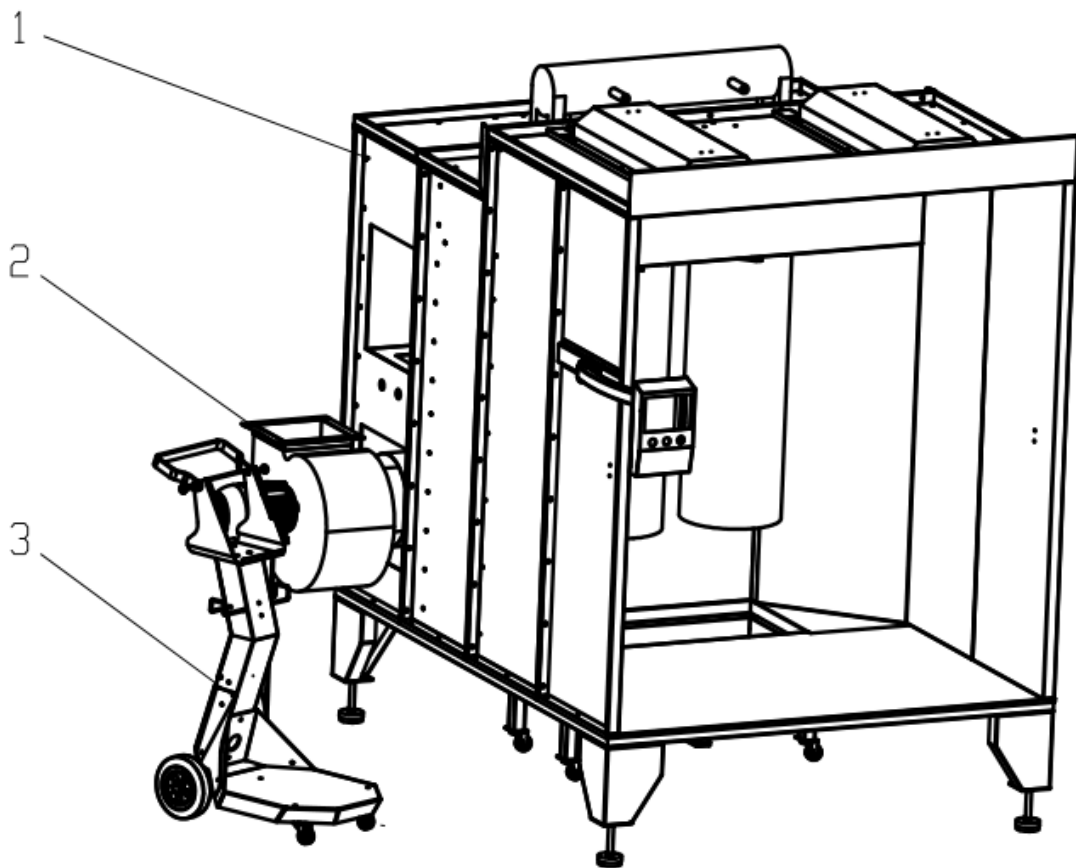
2.1 Application

1517 powder coating spray booth is used for collecting powder during the electrostatic powder coating. Since the airflow in spray booth is horizontal, the system is an ideal integration solution for powder coating .

1517 powder coating spray booth is suitable for manual spraying.

Combined with powder recovery system, the powder coating spray booth meets the requirement of the electrostatic powder coating and recovery's safety rules. The exhausted air can return to the working area.

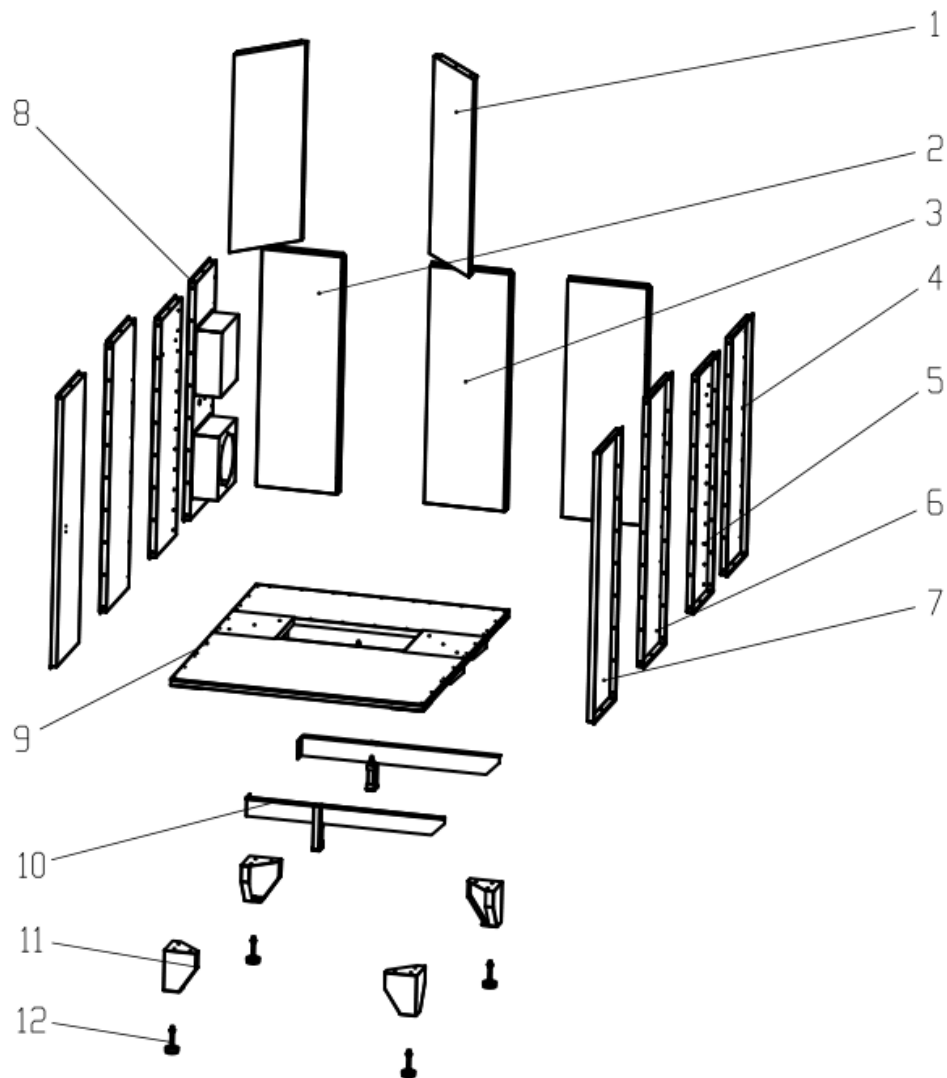
2.2 Complete Equipment Legend



1.Spray booth 2.fan motor 3.powder coating machine

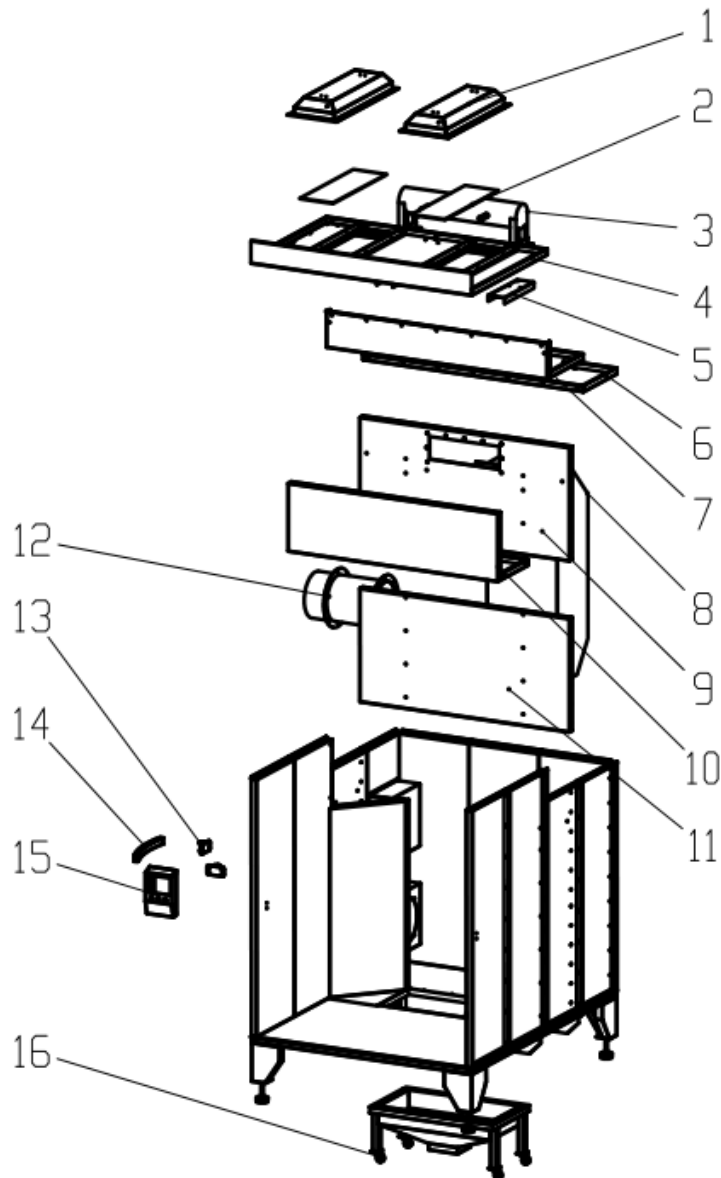
2.3 Accessory Number/Accessory List

2.3.1 Plate Equipment of Spray Booth



- 1- 8.plate
- 9.Base Welding
- 10.Powder Track Welding
- 11.Foot Welding
- 12.Foot Cup

2.3.2 Overall Equipment of Spray Booth



1.Lampshade 2.Perspex Plate 3.Air Tank 4.Front Welding of Roof 5.Mounting Plate of Air Tank 6.Middle Plate 7.Back Plate 8.Air Pipe Welding 9.Clapboard1, 10.Mounting Plate of Filter 11. Clapboard2, 12.Connector Welding of Fan Motor 13.PLC Control Base 14.PLC Cantilever 15.PLC Chassis 16.Hopper Welding

2.4 Power

Electric:

Three-phase Current: 110V~400V, 50~60Hz

(the specification of export goods based on the country of destination)

System Ground: Adopting low resistance based on the VDE 0141 standard,
NYAF> 16 mm²

Compressed Air:

Input Pressure: 6 - 10 bar

Compressed air quality based on the **ISO 8573.1** standard:

Water content of compressed air: Max 1.3 g H₂O/Nm³ as the dew point of 7°C


Oil content of compressed air: Max 0.01 mg oil/Nm³

Dust content of compressed air: Max 1 mg dust/Nm³

2.5 Specification

Aspirating Capacity	4000 m ³ /h
	Gas Capacity
Size: Filter Bucket+Bellows+Exhaust Chamber (Width*Length*Height)	1880 x 800 x 2650*
Filter Count	2
Filter Surface Area	6m ²
Separation Capacity	< 0.5 %
Air Tank Capacity (for cleaning filter)	44.5 L
Max Air Pressure in Cleaning	6 bar
Compressed Air Consumption in Cleaning	18 Nm ³ /h
Input Air Pressure	8 bar
Voltage (fan)	220 / 380 V
Frequency (fan)	50 Hz
Suction Motor	2.2 kW
Illumination	140 W per lamp **
Cleaning (Spray Booth)	40 W
Control Cabinet	-- kW ***
Total Power	-- kW ***

3. Commissioning

 Suggestion: Before Installation and first use, please refer to the matched operation manual.



Warn

Please read the operation instruction of control cabinet which is used for controlling and commissioning system(like cleaning filter).

3.1 Ground

In need for high-quality coating and safe operation(refer to 1.1-security rules), the spray booth must be grounded well. It is suggested to adopt the copper of the smallest diameter(16mm²) and sufficient mechanical strength to connect the system. Please refer to the matched operation instructions.

High-quality coating requires good grounding. Poor grounding will leads to the following results:

- Poor electrostatic surround effect
- Uneven coating
- Powder rebounds to the spray gun and operators
- Dangerous workpiece discharging



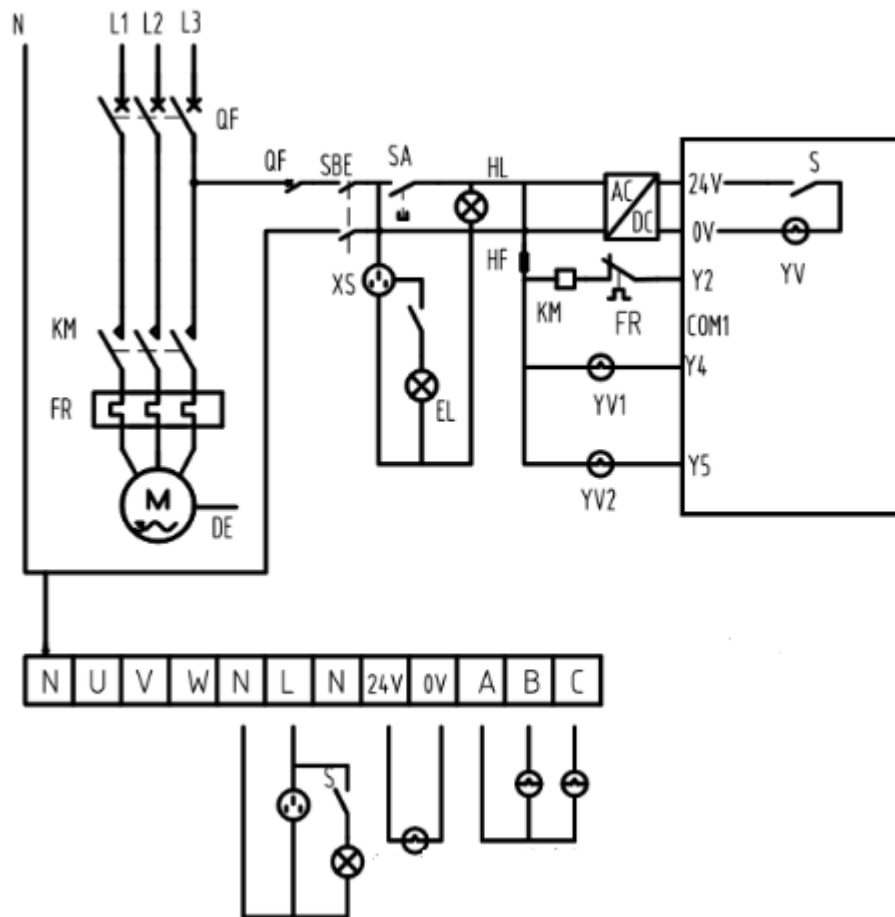
Warn

When hoisting chain hanging point and spreader are not completely cleaned, there will be sparking generated between workpiece and spreader, which will cause serious electromagnetic frequency interference.

The preconditions of high-quality electrostatic coating:

- The workpiece, hoisting chain and spreader are well grounded.
- Adopting 16mm-diameter copper wire to connect the spray booth, delivery and installation equipment for grounding.
- Periodically clear the powder ion spreader.
- Grounding resistance of the workpiece can not exceed 1 ohm.
- Connecting the control module or ground wire of control cabinet.

3.2 Circuit Diagram



4. Operation

4.1 Backplane of Control and Display



Bottom:

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



4.2 Power On

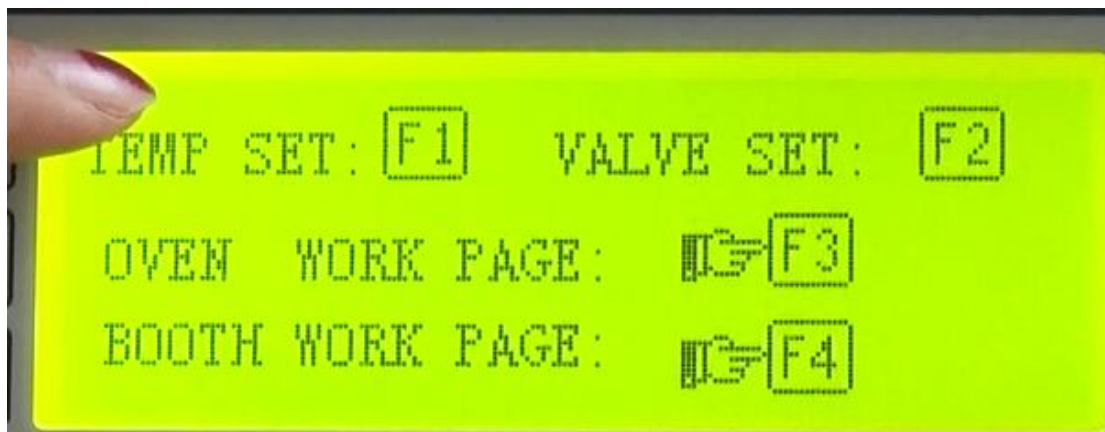
- 1. Press the start button.
- 2. Move spray gun to the spray booth
- 3. Open gun power on the powder coating machine.
- 4. Turn on the High-Pressure of Spray Gun (for corona gun only).

PLC control cabinet as following picture:



4.3 Operating steps

1. Press  or , make the display screen display like this



2. Press F4 ,then into the booth control interface like this



3, Press F6, then the fan will on, like this



When you want to stop the work, please press F6, make the fan off, like this



4.4 Connecting corona spraying gun



Tips

- z When you checking device, please open all the high-voltage modules in control cabinet. All lights of high-voltage should be light. After that, please close all the high-voltage modules again.
- z Under normal circumstances, when control system has been set to this operating process, atomization can be adjusted under the situation of no high pressure.
- z Adjusting atomization of every spraying gun and electrostatic high pressure

Operation process: please consult relevant operation manual of corona powder spray gun

4.5 work interruption

Tips: please using clean compressed air gun clean the inside and powder feeding parts of spray gun at every work interruption.

operating steps:

1. Close spray gun(powder feeding, high-pressure)
2. Scrubbing inside parts of booth
3. Pull out the whole movable baseboard and clean it comprehensive.
4. Close power switch.

4.6 Powder Change



warning

Every time you change powder, you should close the movable baseboard and clean powder deposition.

Operation steps

1. Close the movable baseboard
2. Clean spray booth
3. Delivery powder deposition to cyclone suction system
4. Next steps please refer to the instruction of “change powder” in the following pages.

5. Maintenance and cleaning

Powder coating booth almost doesn't need maintenance, but you should pay attention to the following requests

item	Name	Examination Period	Comment
1	Booth Interior	Each Day	A mass of powder deposition
			Should be cleaned in time
2	Booth ceiling and exhaust duct and so on	Each month	Using vacuum cleaner cleaning from outside. Avoiding gathering dust and powder
3	Filter pad	Each week	Change it if blocking
4	Filter	Itself automatic clean,	Change it quickly if sealing
		manual cleaning if it failures	Elements or filter material breaks

6. Installation Notes

A) Installation

1. Install the ground should be flat, smooth landing foot machine, ventilator machine feet should be firmly fixed to the ground
2. spray booth enclosure must be grounded. Grounding Methods: $\Phi 10$ mm round long 1.5-2mm into the ground, exposed 10 mm, the solder terminals, with 4 mm 2 wire connection to the spray booth and the electrostatic generator grounding stud
3. Fitted with filters, elastic fit.
4. Intake pipe connected to the air supply, close the drain valve
5. switch box connected to the power supply, connect the power electrostatic generator
6. Start the exhaust fan button to check the motor rotation is correct
7. Compressed air must pass through an air purifier to remove oil and water, the water content of less than 1 g/m³

(B) Operation

1. Switching on the system



- 1) Press blower button (green), dusting chamber filter out exhaust
 - 2) Open the powder coating machine ,begin to do the powder coating
 - 3)and a half hours of continuous spray by a pulse-jet cleaning, maintaining good ventilation filters.
- In the production process should always observe the instructions for each instrument cases, abnormal timely adjustments to ensure spray quality. Spray should be required before the workpiece surface state inspection, so as not to affect the plastic film adhesion

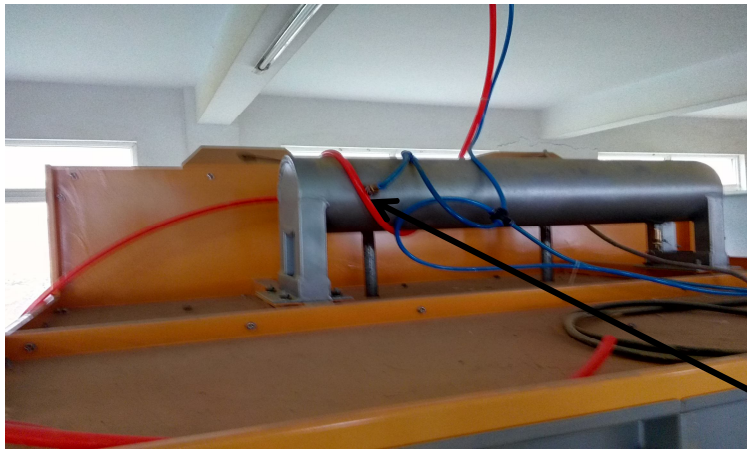
2. Switching off the system

- 1)Turn off the exhaust fan, cleaning interior plastic powder dusting, site preparation, tooling, cleaning
- 2) Turn off the total power

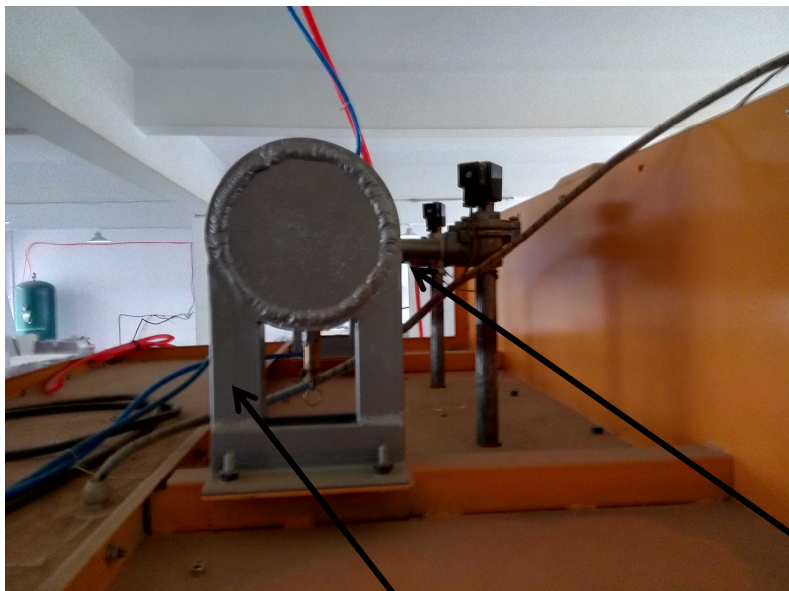
7. Installation and commissioning

7.1 Pneumatic Description:

(1) air circuit of air tank:



air in



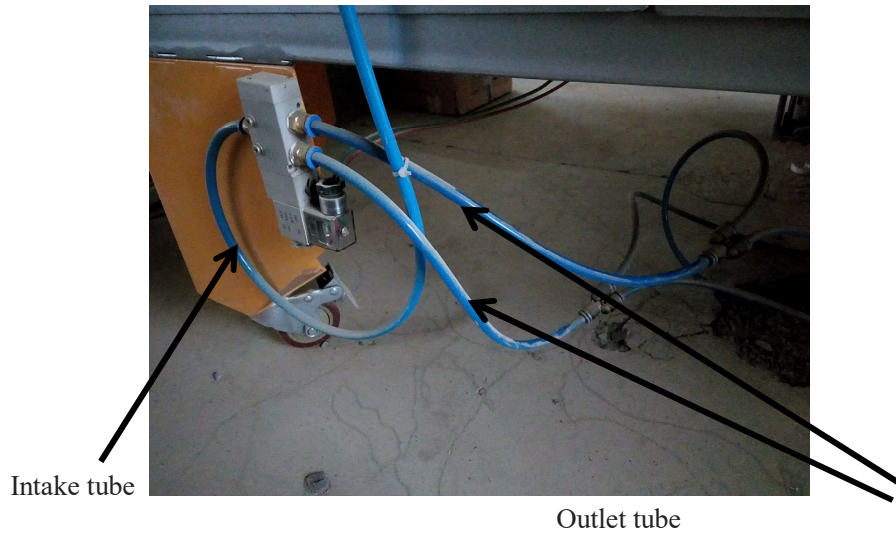
pulse solenoid

valve

air outlet

Air goes to air tank and goes through pulse solenoid valve, then sprays air to filter Intermittently, letting powder drop into powder hopper.

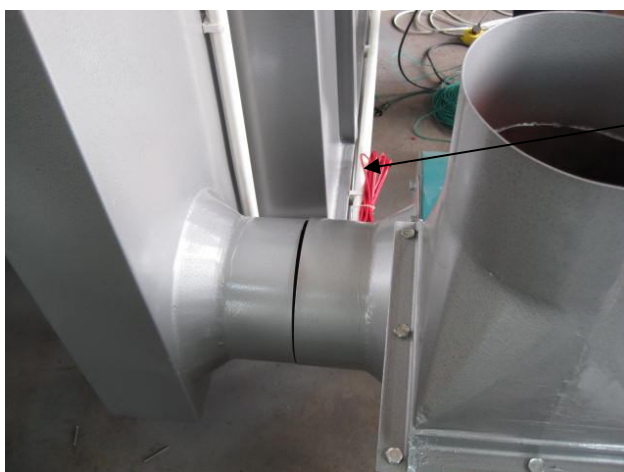
(2) Air tubes of cylinder:



The air outlet pipe is divided into two parts connected cylinders.

It sends the gas into the solenoid valve through the intake pipe, and solenoid valve sends the air out outlet pipe in two air tubes, and then each of the two tubes are divided into two air tubes to connect the cylinder for controlling the up and down movements of powder barrels.

7.2 Installation of Fan Motor:



connect fan motor with booth



connect the cable to booth ,

Note: check whether the direction of rotation of the fan blade direction is same with the arrow shown

7.3 The instruction of Powder Change:

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:



fix the screw on the top



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



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



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

Color change

Procedure

Clean the booth

Clean the powder trolley thoroughly

Clean the injector separately, blow off the powder hose and clean the gun according to the corresponding operating manual

Replace the filter

8. Troubleshooting



Warn

- z Any repair work must be performed by qualified personnel.
- z Users should always ensure good grounding system.

Malfunction	Reason	Method of exclusion
Weak Suction (automatic emergency stop setting)	Fuse Damage	- Change Fuse.
	Filter cleaning system does not open.	- Open it. If necessary, shorten the cleanup interval
		(Program clock is in control cabinet)
	Magnetic valve damage of the post-filter	- If necessary, change the valve.
Powder escapes from the exhaust port	Wrong Installation of Filters.	- Install filters in a proper way.
	Damaged cartridge seals.	- Replace foam rubber gasket.
	Filter material damage.	- Replace Filters.
	dust on the fan blades.	- Clean dust.
Excessive noise of fan device Or Excessive vibration	Bearing Wearing	- Change Bearing.
No powder feed	Insufficient amount of circulating powder.	- Add powder.
	Fluidizing bed is dirty or damaged.	- If gas amount is enough, please clean or change the fluidizing bed.
	Powder pump is blocked or damaged.	- Clean it or change the damaged part.
	Powder tube is dirty or knotted.	- Clean it, and make sure whether it is knotted.
	Spray gun is blocked.	- Clean the spray gun.
	Gas shortage for powder feed and powder distribution.	- Check the gas supply.