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Operation Manual

Operating Instructions

- Please read the safety precautions carefully before using this equipment.
- Understand all the instructions in this manual.
- Keep this maintenance manual for future reference.

1. System introduction

1. Safety precautions

● The user must read and be familiar with the safety chapters in this manual and the safety documents identified therein.

● This equipment is for use by trained personnel only.

● All personnel who operate, clean or maintain this equipment must read and fully understand this manual! Special care should be taken to ensure compliance with warnings and safety requirements for operating and servicing equipment. Before installing, operating and/or servicing this equipment, the user should understand and comply with all local building and fire protection codes and regulations as well as applicable national safety standards.

1-1. Fire risk

● Fire extinguishing equipment must be present in the spray area and tested regularly.

● The spraying area must be kept clean to prevent the accumulation of combustible residues.

● Smoking is never allowed in the spray area.

● Before cleaning, rinsing or maintenance, the high-voltage power supply of the atomizer must be turned off.

● The ventilation of the spray booth must be kept within the range required by national and local regulations. In addition, ventilation must be maintained when using flammable or combustible solvents for cleaning operations.

● It is necessary to prevent electrostatic arcing. A safe spark distance must be maintained between the coated part and the applicator. At any time, the output voltage requires a safety distance of 3 cm for every 10 kV.

● Only conduct tests in areas where there are no combustible materials. The test may need to be connected to high voltage, but it must be carried out in accordance with the instructions.

● Non-factory replacement parts or unauthorized equipment modification may cause fire or personal injury. If used, the key switch bypass is only used during the setting operation. Prohibit production with the safety interlock device disabled.

● The painting process and equipment should be set up and operated in accordance with local, national and local health and safety regulations.

1-2 Discharge risk

● The operators of the spraying area and spraying area must be properly grounded.

● The sprayed parts must be supported on a properly grounded conveyor or hanger. The resistance between the part and the ground must not exceed 1 megohm.

● The operator must be grounded. Insulating shoes with rubber soles should not be worn. A grounding strap on the wrist or leg can be used to ensure adequate ground contact.

● Operators are not allowed to wear or carry any ungrounded metal objects.

● Note: For proper operator grounding, please refer to the national/regional safety regulations.

● All conductive objects in the spray area, except those that require high-voltage treatment, must be grounded. A grounded conductive floor must be provided in the spray area.

● Before flushing, cleaning or spraying system equipment, be sure to turn off the power.

● Unless specifically approved for use in hazardous locations, all electrical equipment must be located outside of Class I or Class II Class 1 or Class 2 hazardous areas.

● Avoid installing spray equipment in fluid systems where the solvent supply is not grounded.

● Do not touch the atomization structure and electrodes when the power is on.

1-3 Chemical risk

● Follow the requirements of the safety data sheet provided by the paint manufacturer.

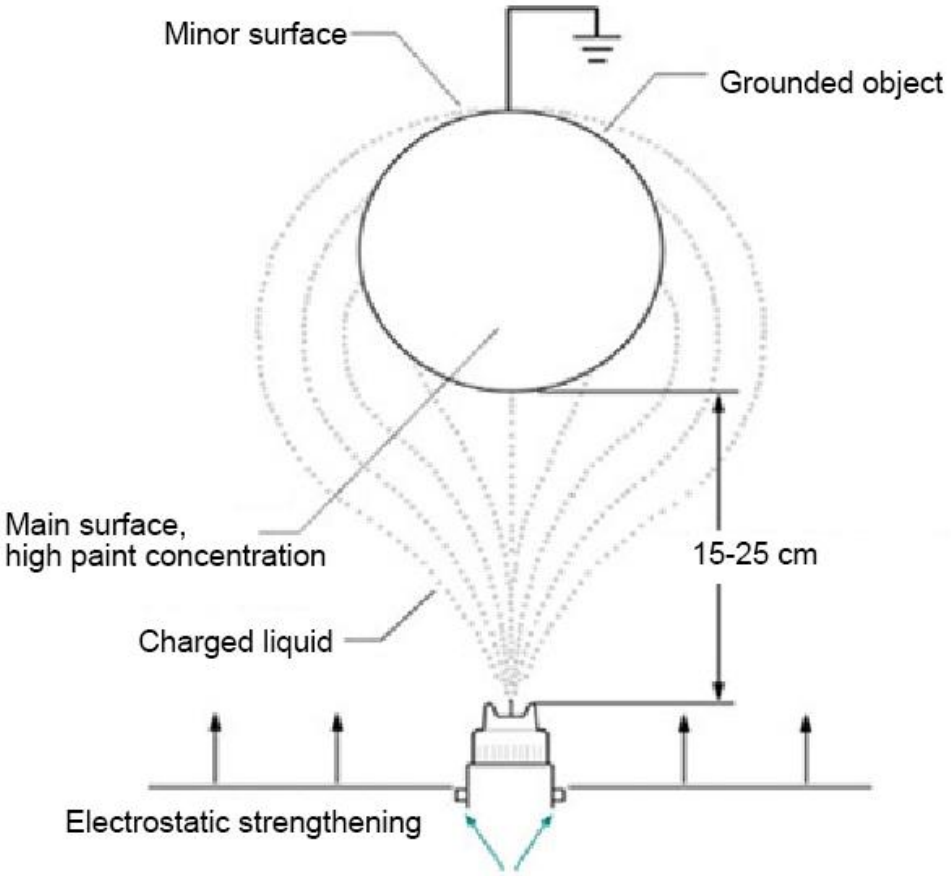
● Sufficient exhaust must be provided to prevent the accumulation of toxic substances in the air.

● Please use a mask or respirator when you have the opportunity to inhale spray materials. The mask must be compatible with the sprayed

material and its concentration. The equipment must comply with industrial hygiene or safety regulations.

The working principle of static electricity

Electrostatic spraying is a spraying method that uses the physical phenomenon of "electrostatic surrounding".



There is an electrostatic field between the electrode needle of the spray gun with high-voltage static electricity and the grounded object. When the paint is sprayed through the electrostatic spray gun, the paint is atomized while being electrostatically charged. This kind of charged paint particles, under the action of the electrostatic field force, it will reach the grounded workpiece in a larger proportion, and will not deviate from the target body or be carried away by the surrounding

airflow.

As a result, the transfer efficiency of electrostatic spraying is improved, helping you to improve spraying quality to a greater extent, saving costs and materials, and meeting your changing production needs.

COLO-3026 built-in high-voltage automatic electrostatic spray gun is produced in accordance with international standards. It adopts self-developed high-voltage electrostatic technology and precise production technology, stable operation and long continuous working life.

The self-developed electrostatic spraying system and the high-pressure surrouded the nozzle can effectively solve the problem of static electricity loss. There is no special requirement for the paints, and the operation is stable, reliable and safe.

The built-in electrostatic spray gun has strong static electricity, the paint can be fully charged, the paint utilization rate is high, the painting effect is good, the paint is saved, and the environmental pollution is reduced.

The paint can be quickly and evenly adsorbed to every corner of the surface of the workpiece, and there is basically no phenomenon of uneven thickness, unevenness, corners and arcs that cannot be sprayed. The spraying effect and uniformity are very good.

3. Main parameters

Controller:

Power supply voltage: AC220 (50-60HZ)

Air pressure: 0.6-0.8MPa

Output voltage: 12-24V

Output current: 10UA-25UA

Protection power off: 60uA

Host weight: 2KG

Host size: 250*200*150

Electrostatic adjustment: stepless adjustment

Electrostatic display: LED digital display

Electrostatic spray gun:

Spray gun length: 200mm

Spraying distance: 150mm-500mm

Cable length: 8000mm

Nozzle diameter: 1.8mm

Supply mode: gear pump

Length of trachea: 8000mm

Air pressure: 0.4-0.6MPa

Air consumption: 75-230L/min

Paint tube length: 8000mm

Flow rate: 20-720ml/min

Spray size: 90-230mm

Output static electricity: 10-100KV

Paint supply system:

Drive mode: electric

Working voltage: AC220 (50Hz)

Power: 120W

Gear pump: 5ml/rpm

Reduction ratio: 10:1

Maximum oil supply: 720ml/min

Maximum viscosity of paint: 5000CPM

Maximum noise: ≤30 dBa

Oil volume adjustment: digital display stepless adjustment





Model No: CL-3026

Application: waterborne and solvent-based paints

Overview

COLO-3026 automatic liquid electrostatic spray gun, a complete set of liquid electrostatic spraying equipment including the controller, electrostatic spray gun and nozzle. (Customers can choose steel nozzle or fan-shaped nozzle), paint delivery pump, paint regulator to put the paint into the paint hopper. You can start spraying work.

Spray gun features





1. the high-voltage electrostatic technology will be moved to the front of the high-pressure generator front, discharge needle close to the nozzle to reduce electrostatic consumption, improve safety

performance, gun weight is only 420 grams

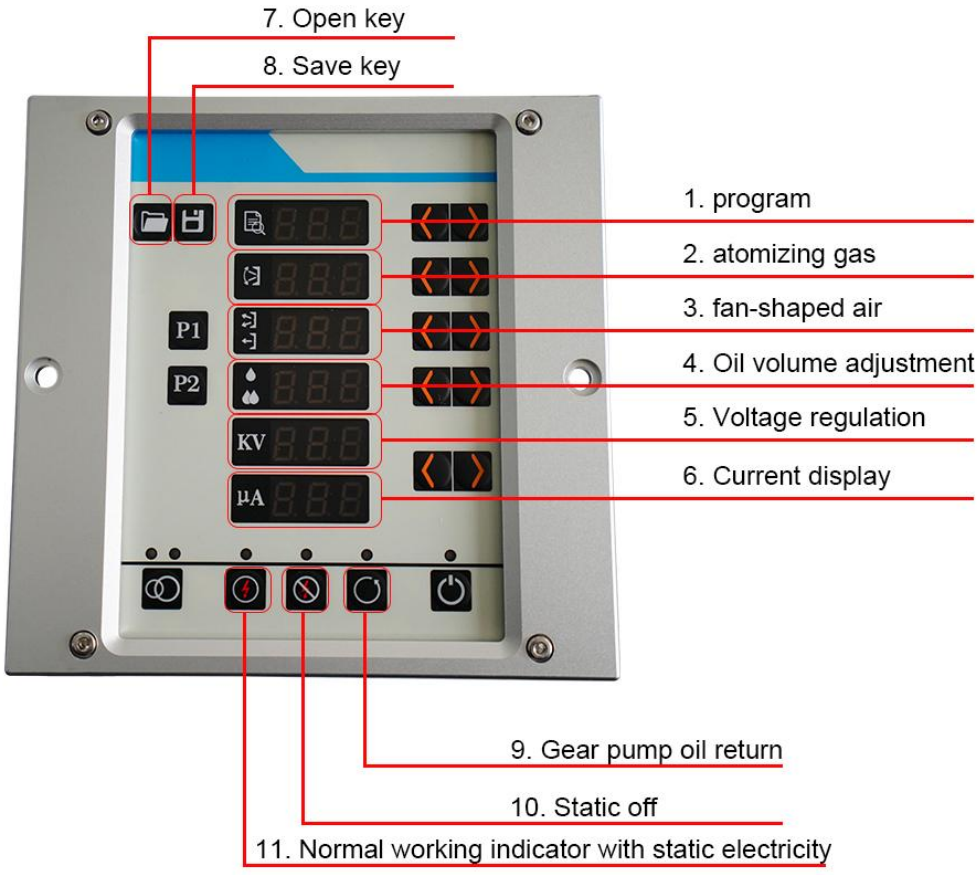
2. According to the design of artificial, light weight, good grip, smooth operation. Long time work, not easy to feel tired.

3. (Photo No.2) The red marks 1-2-3 means:

No.1 for black tube -- atomizing gas; No. 2 for Blue tube - fan-shaped gas ; No.3 for Transparent tube - working gas.

D is the paints flow adjustment, adjust the paint air volume, user-friendly operation.

Controller features



1. program

2. atomizing gas

3. fan-shaped air

4. Oil volume adjustment

5. Voltage regulation

6. Current display

7. Open key： When you start save a new program. First, turn on the “OPEN KEY”, all the value turns to 0, next according to your requirements setting different values, the press the “SAVE KEY” for saving a new program

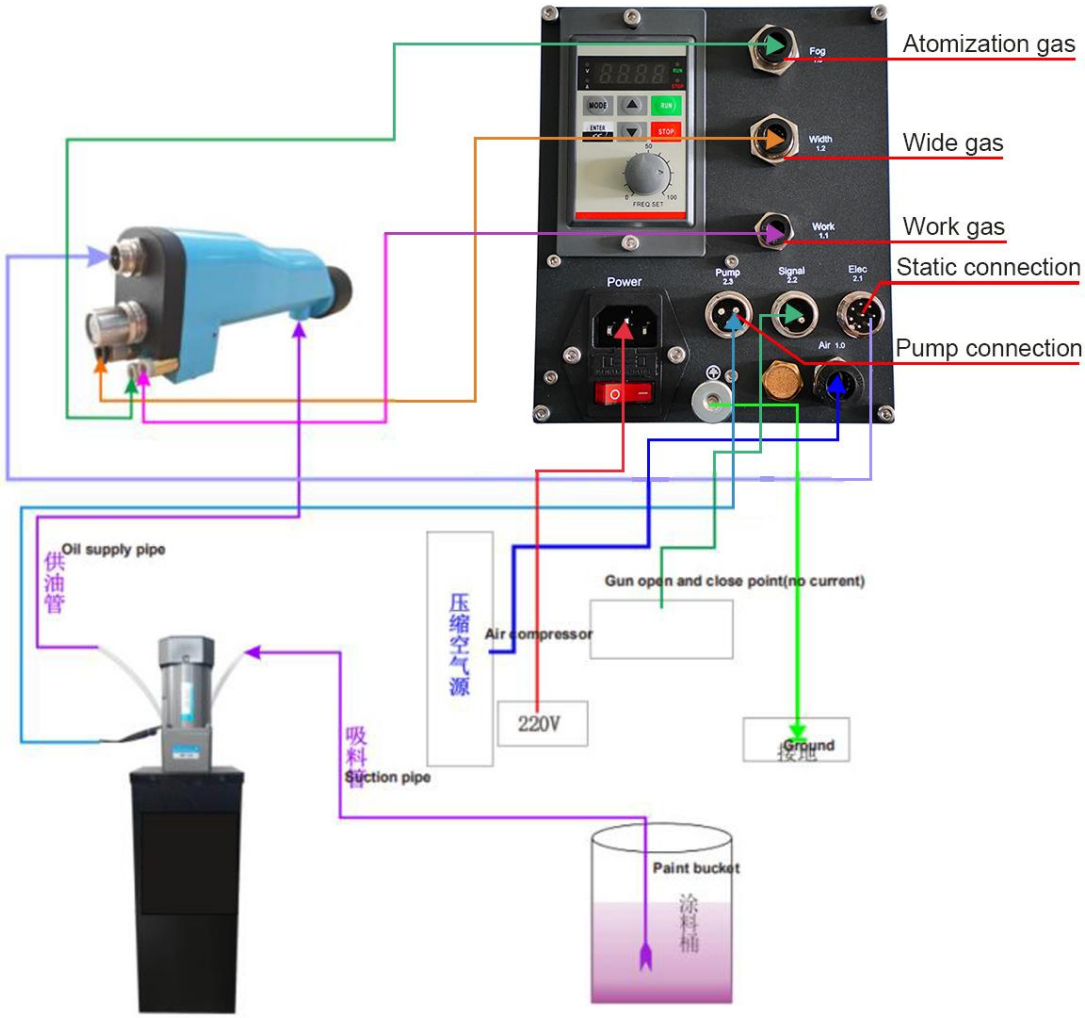
8. Save key: Save the setting value as a new program

9. Gear pump oil return: The return mode is that the gear pump reverses to return the oil in the tubing to the barrel. (Use before cleaning)

10. Static off: When the button light is on, it can still be sprayed, but the sprayed paint has no static electricity.

11. Normal working indicator with static electricity: When this indicator is on, the device is working normally, and the sprayed paint contains static electricity.

Connection Diagram



3. Maintenance

Daily operation and maintenance

1-1 Turn on

1-2 Add paint

a. Start the control cabinet and enter the operation interface

b. Turn on the paint pump, use paint thinner to clean the pipeline

c. Adjust the height of the reciprocator, or call the original stored program.

d. Change to the paint to be sprayed and turn on the paints supply until the paint supply is normal.

e. Turn on the assembly line and produce normally according to the method described above.

a. Close the assembly line, close the paints supply system, and close the static electricity

b. Use a ground wire to connect the paint in the paint bucket to release residual static electricity

c. Add paint

d. Continue to work

1-3 Shutdown

Note: If you need to stop for more than 2 hours, you need to strictly follow the following steps:

a. Close the assembly line, turn off the static electricity, turn on the atomization, and turn on the exhaust

b. Turn on the oil return function of the oil pump until the paint in the pipe is emptied

c. Use a grounding wire to remove the static electricity remaining in the barrel

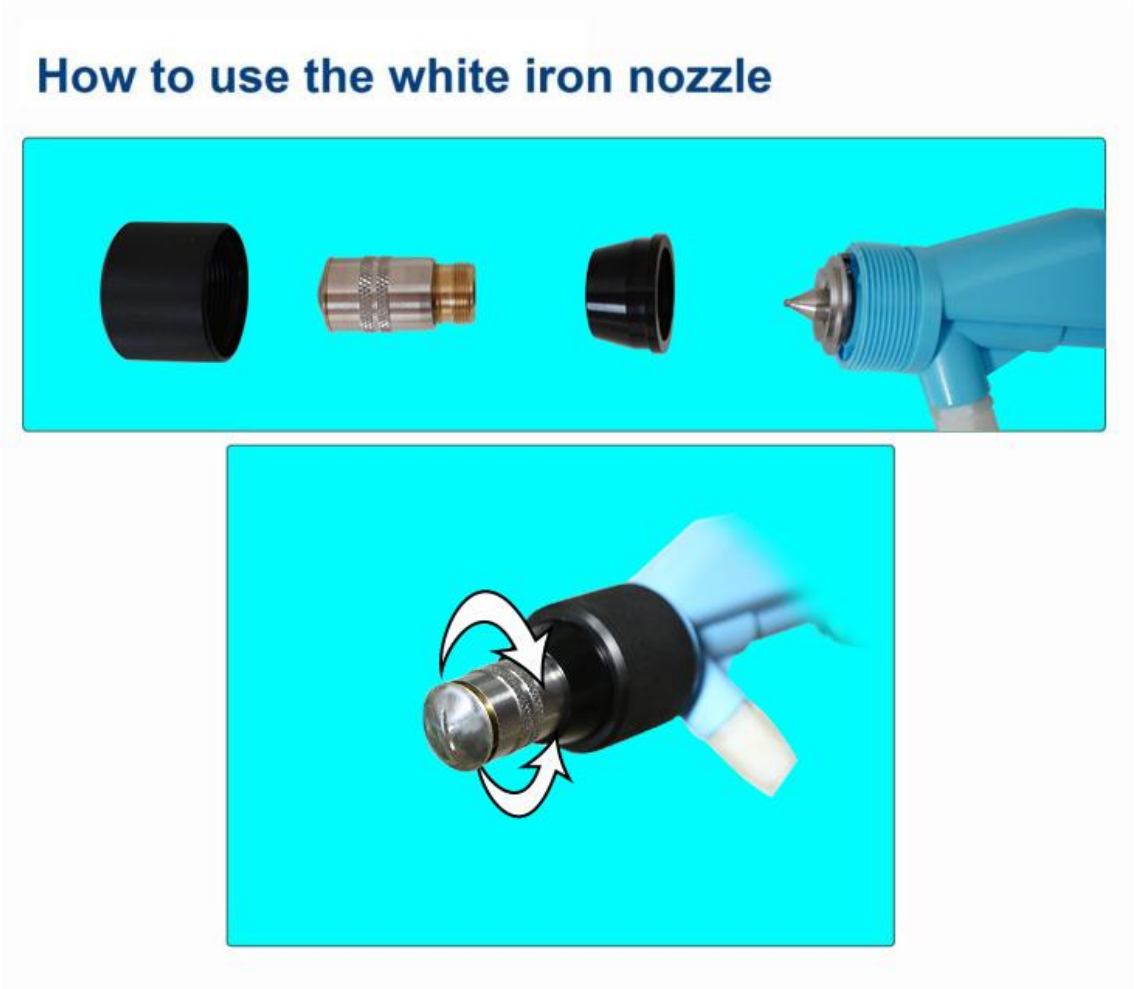
d. Change to thinner for cleaning, turn on the oil supply, and clean the residual paint in the paint pipe

e. Turn off the oil pump, turn off the atomization, and turn off the power supply. Remove the round nozzle.

f. Soak the round nozzle in the solvent, use a soft cloth to remove the paint on the surface, and use a soft brush to remove the paint on the well area. After cleaning, reinstall it back.

2. Common problems

Phenomenon	problem analysis	Handling method
Poor electrostatic effect (Low painting rate)	Large amount of paint spraying	Reduce paint output
	Poor atomization	Increase atomization air pressure
	The hook is not clean	Clean up hook
	Low electrostatic voltage	Increase electrostatic output
	High paint resistance	Change paint or add conductive liquid
	Water-based paint	Insulate paint buckets
High current reading	The spray gun is too close to the workpiece	Check distance >15cm
	Oil-based paint resistance is too low	Change paint
	High paint adsorption on the spray gun shell	Clean the gun shell
	Leakage of paint bucket (water-based)	Paint bucket insulation treatment
Poor atomization	The iron nozzle is damaged	Replace nozzle
	The air port is not well adjusted	Readjust
	Paint curing at the nozzle	Clean the nozzle
Abnormal paint supply	High paint viscosity	Thinning paint
	Blocked paint pipe	Clean or replace paint tube
	Clogged injectors	Clean or replace the injector
	Gear pump is damaged	Replace the gear pump
	Insufficient working air pressure	Strengthen the input air pressure (above 0.5MPa)



Nozzle adjustment method

6. Nozzle adjustment method

1. Fan-shaped nozzle: The fluid is atomized to form a fan-shaped spray pattern. The air ejected from the nozzle further atomizes the fluid and completely atomizes the fluid tail, thereby forming a uniform spray pattern.

When the fluid passes through the electrodes, it is electrostatically charged. The charged fluid is attracted to the grounded workpiece, envelops and evenly coats all surfaces.

Adjust the atomization air control valve of the host to adjust the air entering the nozzle, and this control valve can adjust the degree of atomization of the paint. The fan-shaped air regulating valve can

change the spray pattern width.

2. White iron nozzle: atomize the fluid to form a circular spray pattern, and the efficient atomization effect brings better electrostatic adsorption effect.

Both the atomizing air regulating valve and the fan-shaped air regulating valve of the main unit can be adjusted to change the size of the atomizing air.

As shown in the picture, tighten the adjustment knob of the iron nozzle umbrella cap of the nozzle, and turn the adjustment knob of the iron nozzle amplitude 1/2 turn counterclockwise to start adjusting to the proper spray pattern.

Note: When cleaning the spray gun after operation, be sure to turn off the power supply of the control box and ground the spray gun to remove the residual current before cleaning.

Safety management

In order to improve the safety of the operation and ensure that the liquid electrostatic spray gun can be used for a long time, please strictly observe the following matters.

1. Ground the static main box before use

The grounding of the electrostatic host is a basic matter for safe operation. There are high-voltage generator circuit components inside the electrostatic host. The high-voltage generator draws electrons from the earth to the host via the ground wire, and then from the host to the spray gun and the object to be coated, and then returns to the ground to form a loop.

Poor grounding will result in poor electrostatic coating effect or damage to the electrostatic mainframe cabinet due to false high voltage potential inside the mainframe, so make sure to properly connect the ground wire before operation.

2. Regularly clean the fixed paint on the hanger hook

The painted object is generally grounded by the conveyor, but when the painting is fixed on the contact part of the painted object and the hanger hooks, the painted object will be electrically charged due to poor conductivity, resulting in poor electrostatic coating effect or sparks. Therefore, the paint on the hanger hook must be cleaned regularly.

3. Wear soled shoes or static shoes during work

The air around the painting room is ionized by high-voltage electricity. If you wear rubber-soled or synthetic resin shoes, your body will be electrified. When you touch the washing cabinet or other grounded objects, you will be electrocuted. Therefore, it is best to wear static shoes when working, and make sure that the agglomeration of the paint will not adhere to the sole.

4. When cleaning the nozzle, the power of the high-voltage generator must be turned off

Please turn off the power when cleaning the nozzle or when the operation is interrupted to avoid electric shock caused by accidentally pressing the trigger.

5. It is forbidden to use any metal brush to clean the nozzle

The nozzle is the most important part of an electrostatic spray gun. If a metal brush is used or the nozzle is damaged due to collision,

a balanced spray shape cannot be obtained during spraying, which has a great impact on production.

6. The body of the electrostatic spray gun, electrostatic cables and hoses are strictly prohibited to be immersed in solvents

7. Do not drag static cables and hoses on the ground

8. The painting room and exhaust device should be cleaned regularly and regularly

If there is paint residue in the painting room and exhaust device, in the event of a fire, the residue will become flammable.

9. The air compressor should be fully drained.