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# HIGH SPEED ROTATING ATOMIZATION ELECTROSTATIC AUTOMATIC SPRAY GUN

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**HDA – 50H**

## **Operation manual**

Important warnings and precautions are marked in this manual. Please use this machine before using this machine Be sure to read it carefully.

To keep this specification properly until the machine is scrapped, if lost or damaged, please contact this The company reapplied.

# PREFACE

Thank you from the bottom of your heart for buying our HDA-50H model of high speed rotating atomization electrostatic automatic spray gun.

In order to use this machine for a long time and always be able to use it under the best conditions, be sure to read this manual carefully before using this machine. In particular, it is necessary to fully understand the items, warnings, prohibitions and matters needing attention specified in the specifications and use them in accordance with the correct methods of use.

The device involved in this instruction manual is used for painting business. If you do not have the correct operation guidance and the mechanical operation method has not understood for its operation method and the scope of use, please do not use it.

If there is any ambiguity about the contents of this instruction manual, please make a clear record of the "model" and "manufacturing number" on the basis of a clear record of the "model" and "manufacturing number" Consult with the company recorded in the back seal.

## DIRECTORY



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Please understand the contents of this manual carefully and be sure to abide by the prescribed operating methods. If it is not used in accordance with the requirements of this instructions, it may lead to injury to the human body or damage to machine objects.

The security response shown in this item is only a necessary minimum response, not that other countermeasures are not required. Of course, matters prescribed by laws and regulations, matters that should be observed as rules and regulations of enterprises and undertakings, and so on, must also be complied with.

The safety considerations described below should be regarded as a minimum basic safety response when using our products.

● **Considerations are represented at the following three levels.**

	<b>WARNING</b>	Draw attention to situations that may cause human injury and suggest ways to avoid it.
	<b>BE CAREFUL</b>	Alert to situations that may lead to machine operation or destruction, and suggest ways to avoid them.
	<b>ANNOTATION</b>	Suggest important methods or useful information, etc.

※ In addition, even the items recorded in the attention column, depending on the situation, can lead to significant results. Any record is an important part of ensuring safety and preventing machine failure, please be sure to comply with it.



**WARNING**

**"suitable for the scope of use of the product?"**

The object products of this instruction manual are:

High speed rotating atomization electrostatic automatic spray gun HDA-50H.

This product refers to the automatic painting production line equipped with exhaust equipment, which is mainly used for rotating atomization electrostatic coating operation, which can be used to solve the problem of automatic painting with exhaust equipment Adjust the coating to carry on the rotating tomization coating spray gun.

If you have any questions about the purpose of use of the product and the materials used, please contact us.

In the absence of special permission from the Company, if it is used in accordance with conditions other than the above, it is all inappropriate to use, It may lead to the occurrence of accidents, please pay full attention to them.



## WARNING

### General considerations in the use of this product

1. Please do not use this product towards the human body or animals. Otherwise, due to the existence of harmful substances may lead to inflammation or poisoning symptoms and other serious occurrence.
2. If the pacemaker is used in the range of use of this product, the pacemaker may misoperate or stop due to the influence of high voltage.
3. If entering the use environment of this product (painting room, etc.), please wear appropriate protective equipment (working clothes, electrostatic shoes, protective glasses, gas masks, gloves, etc.). If you do not wear protective equipment, there may be spark discharge due to the electrification of the human body, resulting in fire or electric shock. In addition, harmful substances may also attach to the eyes or skin, causing inflammation or poisoning symptoms, and there is the possibility of scratching by the protrusions of the product.
4. In the environment of using this product, please often use the ventilation device to carry out appropriate exhaust treatment, so that volatile organic solvents will not be stranded.
5. If you use this product in poor physical condition, the correct risk judgment will be slow, and there may be a risk of leading to a major accident.
6. In the process of using this product, if abnormal sound, abnormal vibration, high voltage leakage and other abnormal phenomena are found, please stop running immediately. If the product continues to operate in an abnormal state, it may lead to fire or damage to the product.
7. Please do not use halogenated hydrocarbon solvents. Otherwise, the aluminum alloy contained in the components of this product will undergo chemical reaction, which may cause explosion.
8. In the environment of using this product, please do not bring matches or lighters and other spark generating devices, tools and so on. Otherwise, it may cause flammable substances to catch fire, resulting in explosions and fires.
9. If this product is used outside the specified specifications, it may cause fire or damage to the product. Therefore, please be sure to use it within the specifications of this product.
10. Before running and starting this product, please confirm the assembly status of each machine to ensure that it runs without damage and lack of parts.
11. The coating should always be grounding. Do not use painting hangers with poor conduction. The grounding condition of the conveyor must also be confirmed before operation. If the conduction state of grounding is not complete, the static electricity on the coating or coating crane may cause spark discharge, resulting in fire.
12. Please ground all conductive and diluent containers in the painting room. The whole ground should be protected from electrified structures below 1MQ and kept clean. If the grounding conduction state is not complete, the static electricity on the conductor or diluent container may cause spark discharge, resulting in fire.
13. When cleaning or checking the spray gun and parts, be sure to reduce the paint pressure and air pressure to zero and cut off the power switch on the control panel before implementing it. Otherwise, Serious injuries may be caused by residual pressure in the path.
14. When cleaning the body and components of this product, please never use a metal brush. Otherwise, the metal brush may cause damage to the body and components of the product. 15. Please do not immerse this product, auxiliary hose and auxiliary cable in diluent.

Otherwise, diluents may cause damage to constituent components, ancillary hoses, ancillary cables, etc.

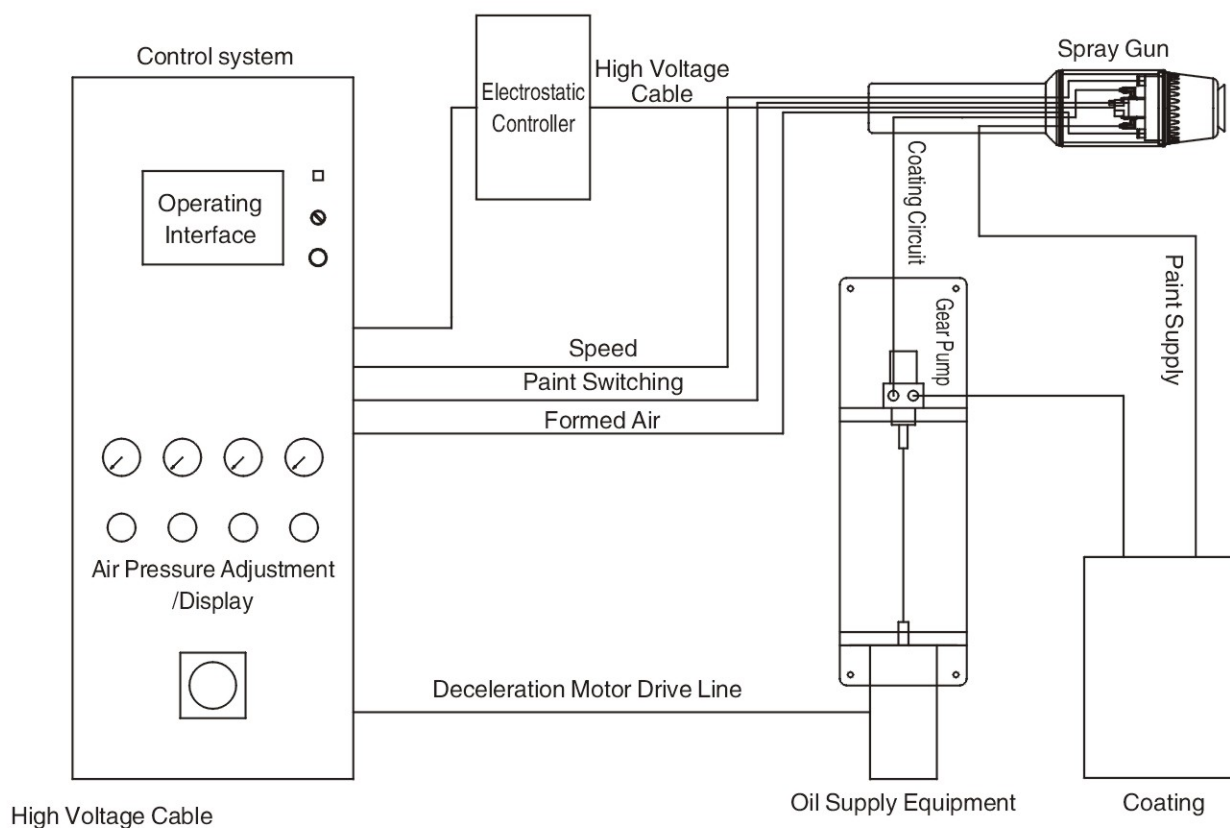




## WARNING

16. The connecting hose and connecting electricity of this product should not be placed on the ground, but should be hung on the ceiling or side wall. Otherwise, the connecting hoses of this product and Connecting cables, etc., may friction with the ground, causing damage.
17. The air supply and exhaust devices (ventilation pipes, fans) configured in the use environment of this product should be kept clean from time to time. Please clean them regularly. If the exhaust device is unable to operate normally, due to the influence of harmful substances, it may lead to severe symptoms such as inflammation or poisoning.
18. The distance between the front end of this product and the coated object, please be sure to leave the 150mm above for configuration. If there is no distance from the specified distance, due to a high voltage leakage, It may cause the machine to fail to function properly.
19. In case of prevention, please prepare fire extinguishers who have been regularly inspected and have sufficient fire extinguishing capacity.
20. If you have not received training in the safe operation of the painting machine and device corresponding to the system containing this product, please do not operate the coating machine. If operated by personnel who have not received training in safe operation, it may cause explosion, fire, electric shock, machine damage and other phenomena, as well as injury to people such as death and major accidents, as well as significant damage to factory equipment or around the factory. The Company shall not be responsible for the above developments arising from the operation of personnel who have not received training in safe operation.
21. Please do not use air spray guns and so on to blow the diluent. Magic, diluent may permeate the interior of this product, resulting in the damage of this product.
22. In the use environment of this product, if you need to carry out work, please apply safety measures so that you can give notice that the surrounding machines and devices that will cause danger to the human body are in a stopped state, and configure an emergency stop button to avoid sudden danger.  
  
If the above safety measures are not implemented, it may lead to major death and serious accidents or cause fire, machine damage and other phenomena.
23. When building this product as a system, set up a security chain. When the linkage mechanism is set up, it is necessary to ensure that the high voltage, paint supply, cleaning solvent supply, air supply and so on can be automatically stopped. Otherwise, it may lead to death and serious injury accidents, or cause fire and machine damage and other phenomena.  
  
Detection of Control anomalies in recommended Safety chain  
Detection of abnormal Air pressure drop  
Detection of abnormal rotation of rotating Cup  
Abnormal Detection of feeding and exhaust device  
Fire detection  
Detection of abnormal invasion of Human body  
Abnormal Detection of moving device
24. It has nothing to do with the running state of the machine. Please carry out maintenance and inspection during the prescribed period.
25. The grounding resistance value of the coating should be below 1k $\Omega$  when the coating is metal, and below 1M $\Omega$  when the coating is resin.

- Please prepare and connect the electrostatic controller, the rotation controller signal input / output, air, paint and other paths according to the system composition diagram shown in the following figure.
- For details of the connection operation of each power, air and paint path, please confirm the detailed specifications of each device before connecting it.

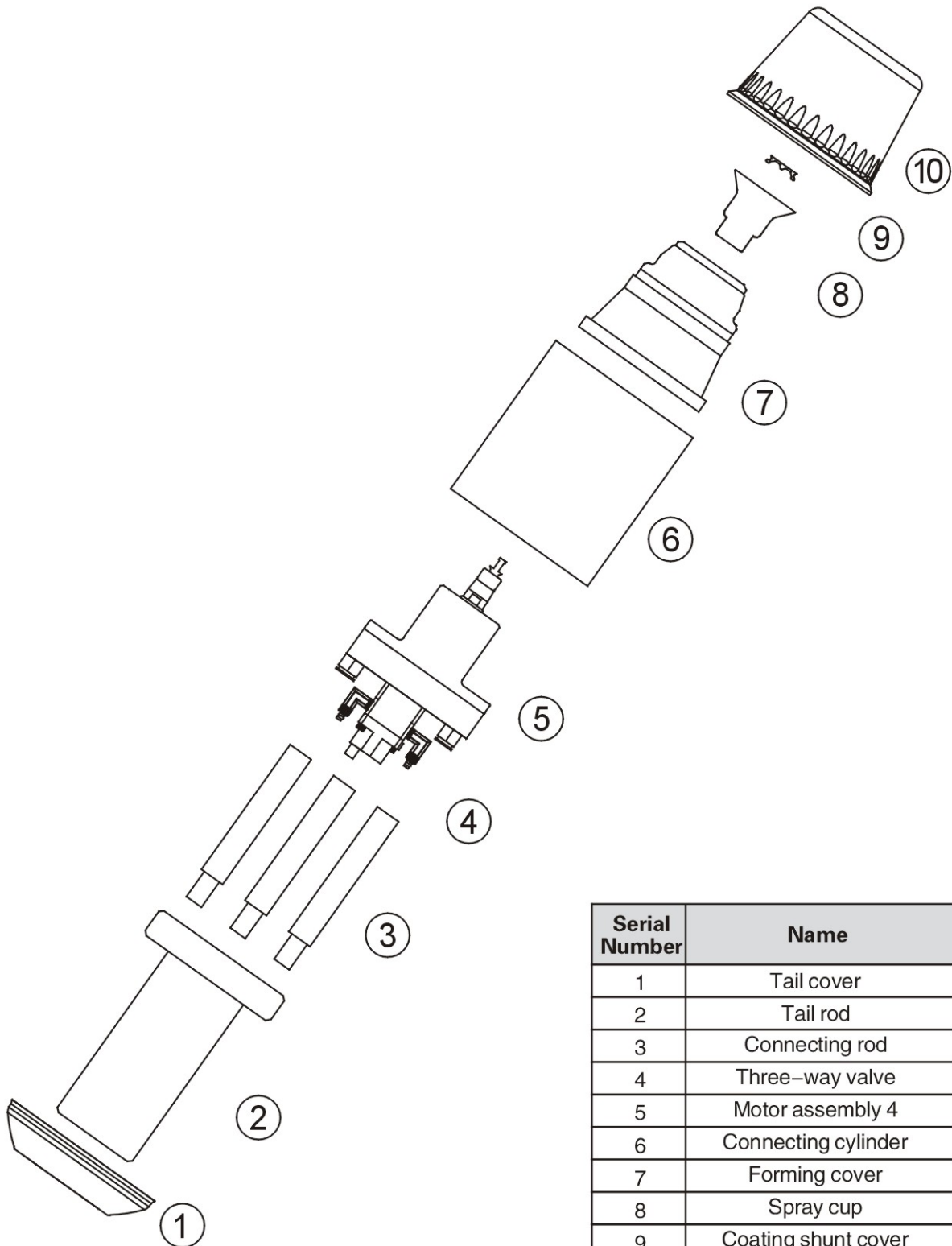


Name	Spray Gun		Electrostatic Controller			Gear Pump
Type	HDA-50H		DA120	HDA-201	HDA-203	
Specifications	φ 109*615mm	φ 109*520mm	100KVDC	80KVDC	60KVDC	1.5CC / 3CC / 5CC

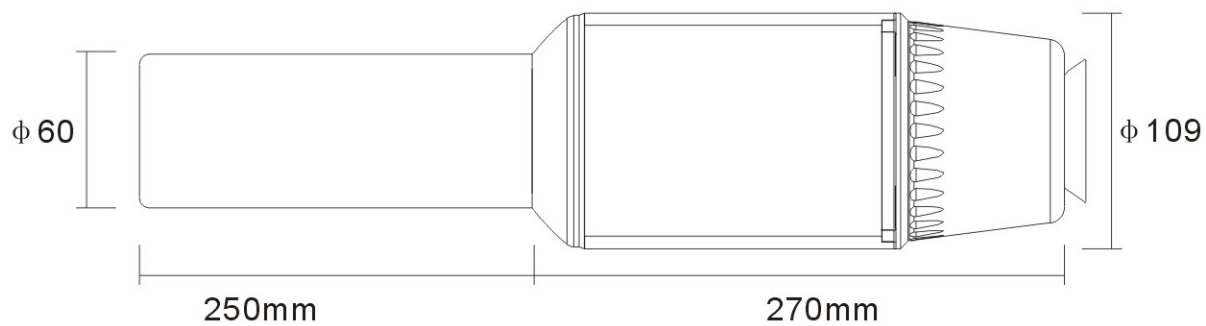
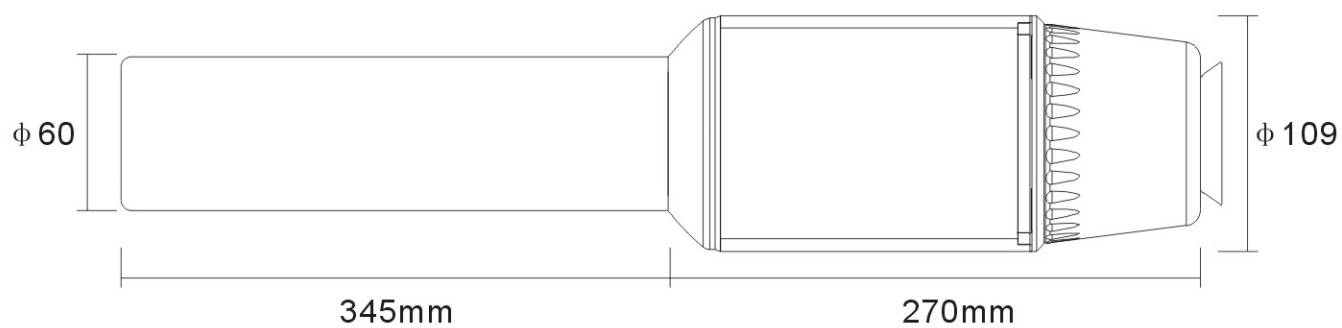
#### (1) Transmission Cable

- Between the spray gun and the electrostatic controller, the "transmission cable" can be combined and connected to a maximum of 15m.

Name	High voltage cable	Specifications	Withstand voltage 150KVDC Working temperature-24 °C ≤ 70 °C
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Serial Number	Name
1	Tail cover
2	Tail rod
3	Connecting rod
4	Three-way valve
5	Motor assembly 4
6	Connecting cylinder
7	Forming cover
8	Spray cup
9	Coating shunt cover
10	Molding cover





NO.	Project		Specifications
1	Summary Of Product Name	Product Name	High speed rotating atomization electrostatic automatic spray gun
		Type	HDA-50H
		Use	Used for coating of reciprocating machine and robot support
2	Appearance	Size	$\phi$ 109*615mm $\phi$ 109*520mm
		Weight	2.95kg 2.7kg
3	Adaptive Coating	Adaptive coating	Solvent or water coating
4	Cleaning Solvent	Adaptive cleaning solvent	Cleaning solvent with resistance value of solvent type or water type coating above 20 $\Omega$ cm
5	Use Environment	Temperature	5°C~40°C
		Temperature	40%~80%
		Wind speed of coating chamber	0.3m/s~0.4m/s
6	Air condition	Turbine air	Below 0.4MPa
		Molding air	Below 0.5MPa
		Maximum pressure	Air path: 0.7Mpa paint path: 1.0Mpa
		Supply air quality	Solid particle size: below 0.1 $\mu$ m Dew point under pressure: -20 °C Residual oil: 0.01mg/m <sup>3</sup>
7	Number of rotations commonly used by turbines		When installing 70 rotating cups: below 35000rpm When installing 50 rotating cups: below 45000rpm When installing 30 rotating cups: below 50000rpm
8	Electrostatic application	Applied voltage	Max. -100KV
		Constant current control	Max. 200 $\mu$ A (Da120) * Please use it when the monitor current value is below 60 $\leq \mu$ A.
9	Spit out	Coating	500mL/min (viscosity within 20sec/FC#4) * This value is only a rough standard, if the conditions exceed this range, we need to pass the coating test to confirm the quality of the coating.

① Configuration of device ontology

- (1) Please fix the body to the manipulator or bracket of the reciprocating mechanism and the robot.
- (2) the joint plate must be connected with automata by ground wire and ground (GND).

Grounding resistance should be below  $1k\Omega$  )



**WARNING**

Please make sure the bracket is installed. In order to apply high voltage electrostatic phenomenon in electrostatic coating. Will actively cause static electricity to occur. If proper grounding treatment is not carried out, there may be a risk of explosion or fire due to electrostatic discharge and sparks.

- (3) Please configure the metal part of the front end of the spray gun above the 600mm of the grounding object such as the sink and conveyor track of the painting chamber.
- (4) when multiple spray guns are equipped, the interval between the high voltage application part and the high voltage application part of the adjacent coating machine should be maintained above 400mm.
- (5) Please use the spray gun between the horizontal and the lower installation angle.



**BE CAREFUL**

If the installation angle is changed from horizontal to upper, the paint will overflow from the rotating cup and immerse into the air spindle, which may cause damage to the air spindle.

- (6) set the speed of the spray gun below 54m/min (900mm/s).



**BE CAREFUL**

If the speed of the spray gun is too fast, it will not only affect the coating efficiency, but also cause the failure of the spray gun and automaton.

- (7) set the acceleration of the automaton to less than 0.3G when it moves and flips.



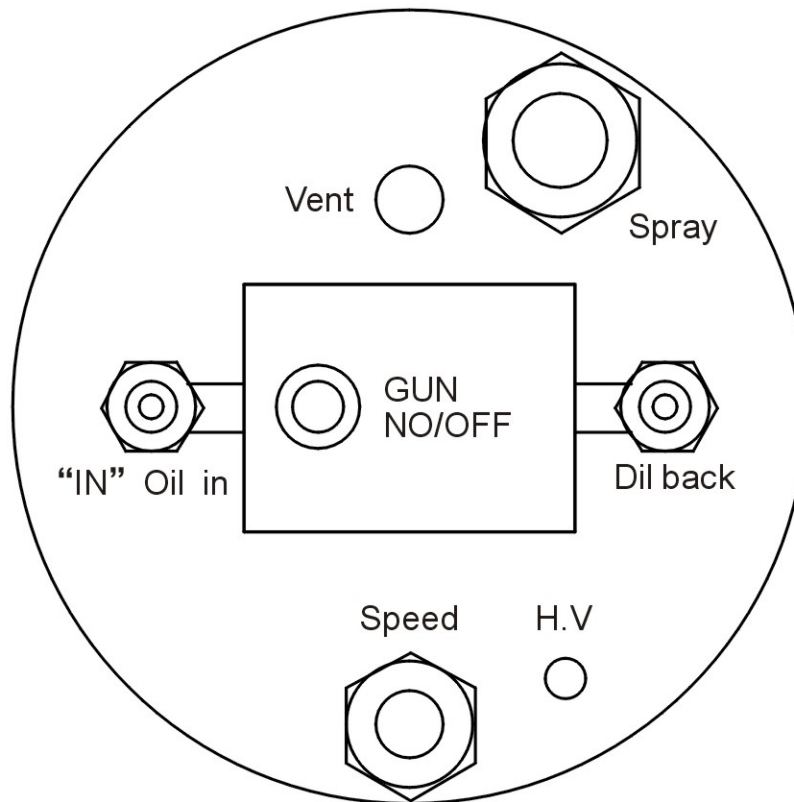
**BE CAREFUL**

If the impact of more than 0.3G is usually applied, it may cause the failure of the spray gun.

(2) other air paths

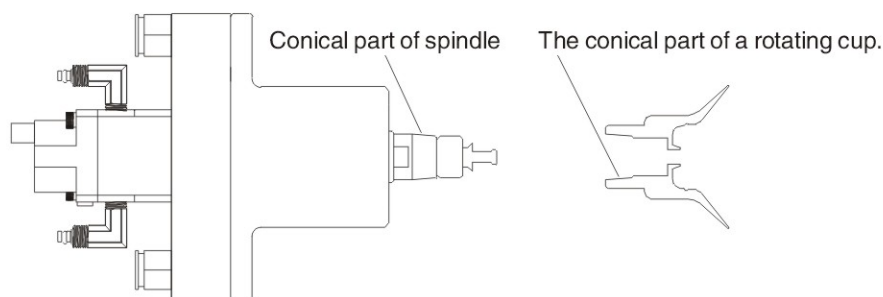
Refer to the table below to configure the air path on the supply gun to ensure adequate air volume and pressure.

Name	Function	Supply condition	Specifications
Switch gun	Paint switch control	$\approx 0.6\text{MPa}$	4*6mm
Oil intake	Paint supply	$< 1\text{MPa}$	4*6+6.5*10mm
Return oil	Coating circuit		4*6+6.5*10mm
Speed	Motor speed control	$< 0.4\text{MPa}$	5*8mm
high pressure	Electrostatic high voltage transmission	$< 150\text{KVDC}$	10mm
Spray amplitude	Fog size control	$< 0.6\text{MPa}$	6.5*10mm
Exhaust gas	Rotating speed air excretion		



**! BE CAREFUL**

If the conical part is attached to the paint dirt, when the rotating cup is installed and used, the rotation will lose balance, and if it is rotated at a high speed through the air spindle, it may cause damage to the air spindle.



Make sure there is no dirt attached

- 3) when removing the rotating cup, please use a rag, etc., to wipe the paint attached to the coating nozzle.  
Please also be careful not to attach paint to the conical part of the spindle at this time.
- 4) The working time of the rotating cup is generally 8 hours. At the end of the operation, please be sure to clean with the diluent with good solubility, and blow the inside and outside, and then check whether the cone and paint holes are clean and undamaged.
- 5) when flooding the rotating cup into the diluent, do not overlap to make it come into contact with each other.  
In addition, please face the edge of the rotating cup downward and place it carefully.

**! BE CAREFUL**

When the rotating cup falls or collides with other items, be sure to replace it with a new product.  
If the rotating cup deforms, the rotation will lose its balance, and if it is rotated at a high speed through the air spindle, it may cause damage to the air spindle.

- 6) Please be careful not to damage the edge of the rotating cup (groove).  
Damage such as scratches on the edge of the rotating cup may affect the microparticle properties.  
If damage is found, please replace it with a new product.



**! BE CAREFUL**

When the rotating cup falls or collides with other items, be sure to replace it with a new product.  
If the rotating cup deforms, the rotation will lose its balance, and if it is rotated at a high speed through the air spindle, it may cause damage to the air spindle.



## ① Cleaning operation at the end of painting

## (1) cleaning of spray gun body

- 1) when the rotating cup is assembled with the air cap kit, please use the rag containing the release agent to carefully wipe the cover of the spray gun body.
- 2) when the dirt is difficult to erase, please remove the shield, spread into the diluent for a few minutes, and then wipe with a rag (please do not soak in the diluent for a long time).

**BE CAREFUL**

Please do not rub the surface of the spray gun with tools such as brushes or peeling machines. If the surface is damaged, the dirt will be easily attached in the future. In this way, along the surface of the paint dirt, the gun front of the static electricity is easy to encounter waves to the grounding part, may cause electrostatic anomalies.

**WARNING**

If inhaled or exposed to a substance containing paints and solvents, it will be harmful to the human body. Therefore, please work in a well-ventilated place to prevent the savings of harmful substances.

**Split and clean molding cover**

Remove the screws from figure ① with hexagonal wrenches, separate figure ②, figure ③, use soft brushes, etc., diluents, and clean the air blowing holes. Finally, the blowing treatment is carried out to accumulate the paint residue inside. , diluent, etc., clean up.