



Operating instruction

Reciprocator



MODEL : COLO-2000D

Technical safety regulations for stationary electrostatic powder spraying equipment

1. The powder spraying equipment should only started up and used once the operating instructions have been carefully studied , improper use of the controlling device can lead to accidents ,malfunction or damage to the control itself
2. Before every start-up check the equipment for operational safety(regular serving is essential)!
3. The plug must be disconnected before the machine is opened for repair
4. The plug and socket connection between the powder spraying equipment and the mains network should only be taken out when the power is switched off
5. Caution must be exercised when working with a powder/air mixture! A powder/air mixture in the right concentration is flammable! Smoking is forbidden in the entire plant area!
6. As a general rule for all powder spraying installations ,persons with pacemakers should never enter high voltage areas or areas with electromanagnetic fields ,persons with pacemakers should not enter areas with powder spraying installations

Technical Data

General information

Maximum available programs	80
Max stoke height	2.0m
Maximum speed	0.8m/s
Minimum speed	0.08m/s
acceleration	0.1m/s ²

Electrical data

Nominal input voltage	170-264VAC single phase
Tolerance	+10%/-10%
frequency	50/60hz
Fuse	10.0AT
Power consumption	2.5kw

Dimensions

width	0.7M
Depth	0.7M
Height(1.5M/2M/2.5M)	2.4/2.9/3.4M
weight	150kgs

Installation Instructions

1) Wire connecting guiding:

1. Make sure it is grounded well before using ,the resistor < 100 Ohm.
2. Reciprocator must controlled by the single phase power ,and it can be cut off at any time.

2)Machinery install:

Temperature: $-10^{\circ}\text{C} \sim +50^{\circ}\text{C}$

Altitude: < 1500m

Attack :avoid attack on the control unit

Shaking :do not put the control unit on the shaking place.

electromagnetic interference :do not put the control unit on the place that is around the electromagnetic source.

Air pollution: do not put the control unit on the place that is full with dust or corrosive air ,prevent the dust come into the control unit.

Moisture: do not put the control unit on the moisture place.

Level: the track on the ground need on the standard level ,tight it with expansion bolt.

Performance:

Dynamic parts are made from top brand worm reduction gear ,with the precision type sensor , the machine can be moving stably under the high speed.

Speed adjust department use the Mitsubishi brand inverter, this inverter is reliable and flexible with the microprocessor control and IGBT technology .The inverter and electric machinery are protected well by the perfect protect system.

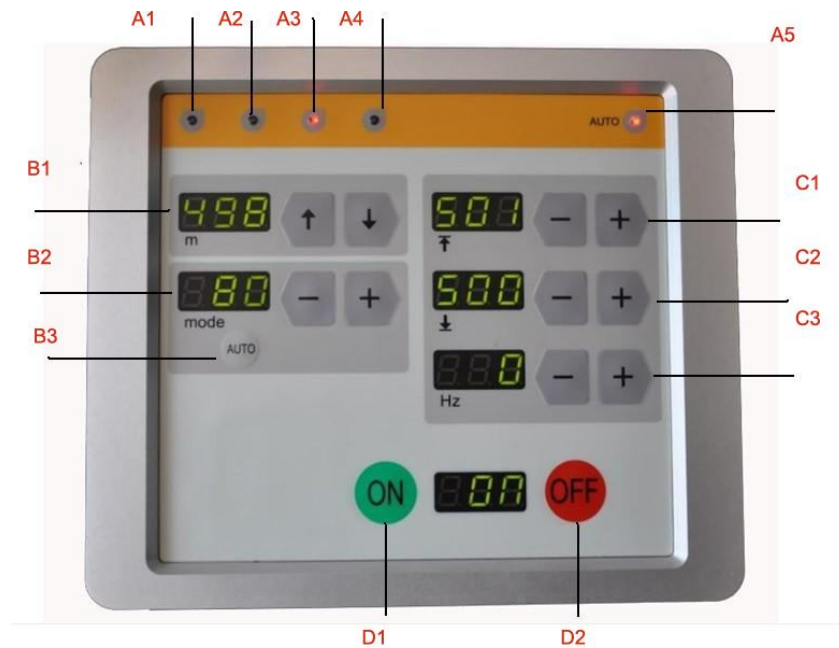
Control units use the new digital controller ,the user can set the spraying data very easily on the digital display .The controller can be reset coating process ,problem checking ,data set, remote control and so on more than 80 processes.

Mechanical parts use 8 wheels , the wheels embrace the metal tube tightly from the 4 direction and move by the function of the chains. The chains are make of special material, moving stable, little noise, lower wear and so on .


Gun rod and gripper are made of aluminum, it is light, moving stably and beautiful.

The reciprocator moving speed is 0.08m/second ~0.8m/second can be adjusted .The stroke is 1.5m,1.8m,2.m,2.5m,it also can be ordered according to the customers request.

Display and input buttons




Display	Description
A1	Light NO1
A2	Light NO2
A3	Upward moving-----see PIC 01
A4	Downward moving---See PIC 02
A5	Auto model
B1	Actual value
B2	Program mode
B3	Manual/auto switch key
C1	Top stroke setting
C2	Bottom stroke setting
C3	Speed setting
D1	Manual model switch
D2	Power switch OFF


Note: D1  it is not only for star, and it is key for save program setting

Press B3  till the A5 is not flash any more (red)—auto working model



Press B3  till the A5 is turn off--- manual working model

When in auto working model, it is controller by power, in other words when you connect the power, it will work automatic without press any key

When in manual model, after connected the power, you should press D1 

Operation :

1. Please make sure the reciprocator is set on the manual process ,turn off the power. If it is set on the auto process and the user need push the OFF key to turn off the power ,otherwise the machine will work automaticly ,please take care.

2. First, on the “program” display ,make it “1”,then push the key \uparrow ,and make the spray gun move to the workpiece top place ,at this time please check the data on the “m” display ,make the m data minus 80 ($m-80=A$) ,make A as the upper limit value. Push the key \downarrow , and make the spray gun move to the workpiece bottom place ,at this time please check the data on the “m” display ,make the data plus 80 ($m+80=B$) ,make B as the lower limit set value .Make the speed data(Hz) as about 10,push the key ”ON” to start the reciprocator ,push the key “OFF” to stop it .You can change the “HZ” data to find the best moving speed .In this case ,if the upper limit is not high or not low enough ,you can increase or reduce the data .Now the setting for the mode 1 is finished ,all the data will be in the mode 1 memory.

3. If the user have some other different workpieces ,they can set the data in mode 2 ,process is same with above. This reciprocator can store 80 modes .You only need choose the suitable mode when you spray the workpiece. .

4. In order to avoid the collision caused by too much data ,this machine has the data limited function. For example ,in the mode 1,you push the key for 5 seconds ,and

then it appears 0, this comes into the data setting mode. The data indicates the limited data, then push (+) to come out of the setting. All the working data will not exceed the limited data.

5. The machine has the function that it can start automatically once the power is on. In order to make it convenient, the user can use the farther control, so the machine can start itself. Push the key "AUTO", and then the auto light (on the corner) will glitter, when the glitter is finished and it lights all the time and then the start automatic setting is finished. The user only needs to turn on the power and the machine will start itself, please take care!

If you want to come out of the auto function, please push the key "AUTO" the auto light will glitter, when the glitter is finished and the auto function is closed.

6. Please note, when you change the machine moving speed HZ, the upper and lower spot is a little different due to the inertia. So in order to avoid collision the user needs to check it carefully.

Operation example



PIC-01



PIC-02

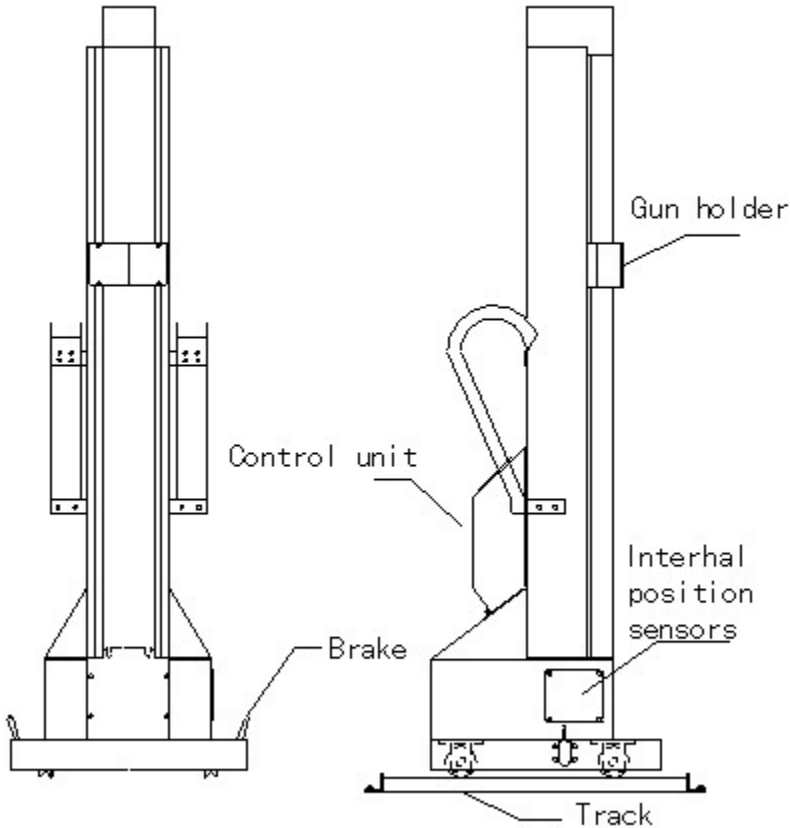


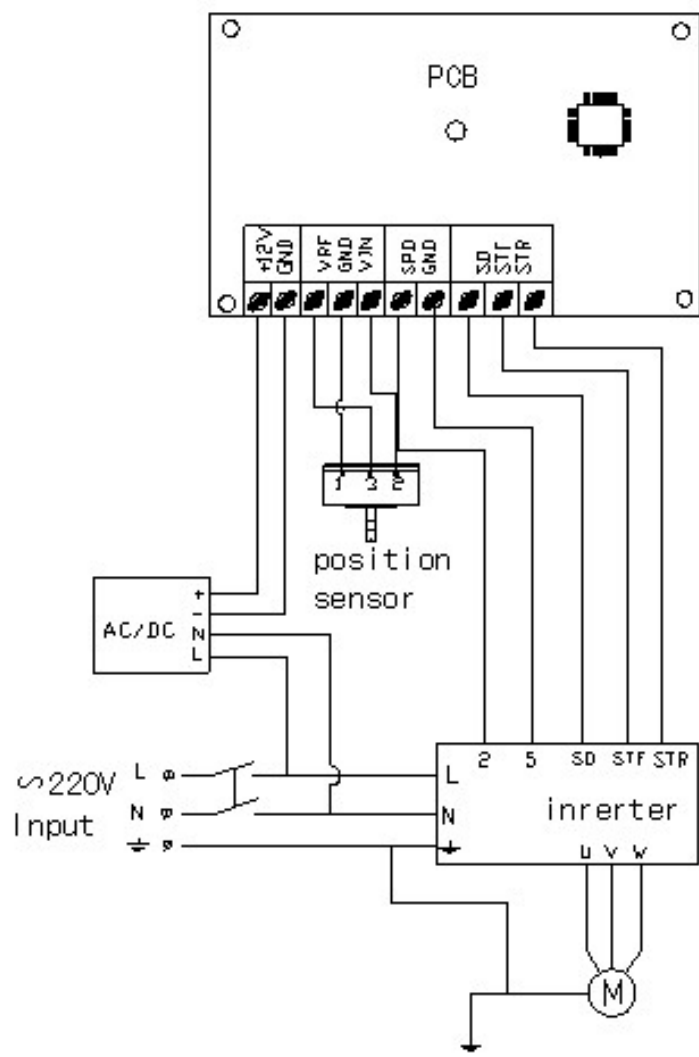
- PIC-03
- | | |
|----------------------------|---------------------------|
| 1) automatic working | 2) upward moving |
| 3) actual position: 538 | 4) program model: 5 |
| 5) upper stroke limit: 657 | 6) down stroke limit: 480 |
| 7) speed: 11 HZ | |

Attention:

Always pay attention to the gun positions the maximum height of the gun slots in the booth ,if an incorrect (too high) stoke limit is set , this can lead to the damage of the reciprocator or the booth

Configuration





Problem and solution

Problem	Reason	Solution
Connect the power supply, but the indicator does not light	PCB problem Indicator problem	Change or repair pcb Change inductor
Light NO1 flash	Connection of sensors Sensors damaged	Check connection Change new sensors
Light NO 2 flash	Sensor wiring short circuit Sensors damaged	Check connection Sensors damaged
Control unit is work ,and in on status, but no moving	Voltage problem Inverter problem Mechanical parts jammed (above 3 problem ,inverter will show error flash	Check mechanical Change inverter
Unable to change setting numbers and NO2 light flash	Limited by the model 0	Change in model 0 and resetting
Upper and down stroke change too big or out of control	Mechanical place changed	Re-adjust the sensor place
During move there are strange sounds and sometime the gun move unstable	Too loose of chain	Tight it and change new chain

Maintenance

1. The chains need be checked and adding machine oil on time .Need tight the chain if the chain is too long1,chain need changed each year ,the chain type is 10A. Please note ,when you change the chain please make sure the chain mechanical position is not change.
2. Clean the wheel and metal tube on time ,if there are too much dust ,please clean it use the knife .Make the working condition clean it the best way.
3. Check if the controller is sealed ,if the seal is broken and please change the new one .Clean all the accessories in the controller with air ,after cleaning and please close it on time .Or the dust will come into the controller.
4. Clean and check the base on time ,clean the motor with air.
5. If the mechanical situation is changed ,please readjust the stand point ,or the moving will out of control .The method is :push the key ↑ or ↓,let the spray gun move to the middle of the working stroke ,then adjust the sensor on the bottom of the base ,when the data on the “m” indicated 500 and then the setting is finished.

Warning:

- Before start the reciprocator ,please make sure the locator rod is already put in the base locator hole .Or if it is out of control ,the machine maybe turned off ,this point is very important.
- Do not closed to the moving gun rod ,if need repairing ,please turn off the power at first to avoiding the harm to the people.
- Do not add oil on the gun rod moving wheel and the square track ,because too much powder will stick on the oil and the track will stuck by the powder.
- Press the key lightly with finger ,no need excessive force. Do not use sharp objects ,or the key will be damaged.
- High speed ,shot stroke will shorten the reciprocator's life.
- If above actions caused the big accidents ,the reciprocator manufacture is irresponsible.