



# Operating instruction

## Manual Coating equipment

**COLO-161S**



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## FUNCTIONS

.The fluidized powder in the powder hopper is sucked up in the injector by the conveying air. Through the powder hose the powder air mixture reached the gun

.The powder is electrostatically charged immediately it reaches the gun nozzle. An intense field also exists between the gun nozzle and the grounded workpiece. The electrostatically charged powder sprayed onto the workpiece adheres to the latter's surface.

.This line voltage is converted in the control module to high-frequency current this current stepped up by the high-voltage transformer and the HV-cascade in the gun to 100KV and applied to the electrodes.

.The conveying air and the dosing air is to be regulated on the control module, the fluidizing air on the pneumatic unit.

.The powder is fluidized by forcing air from blow through a porous plastic plate.

.The fluidized powder gets liquid-like properties..

## → Technical Data

### Electrical data

Power range	220V/110V
Frequency	50HZ /60HZ
Temperature range in use	-10 °C+50 °C

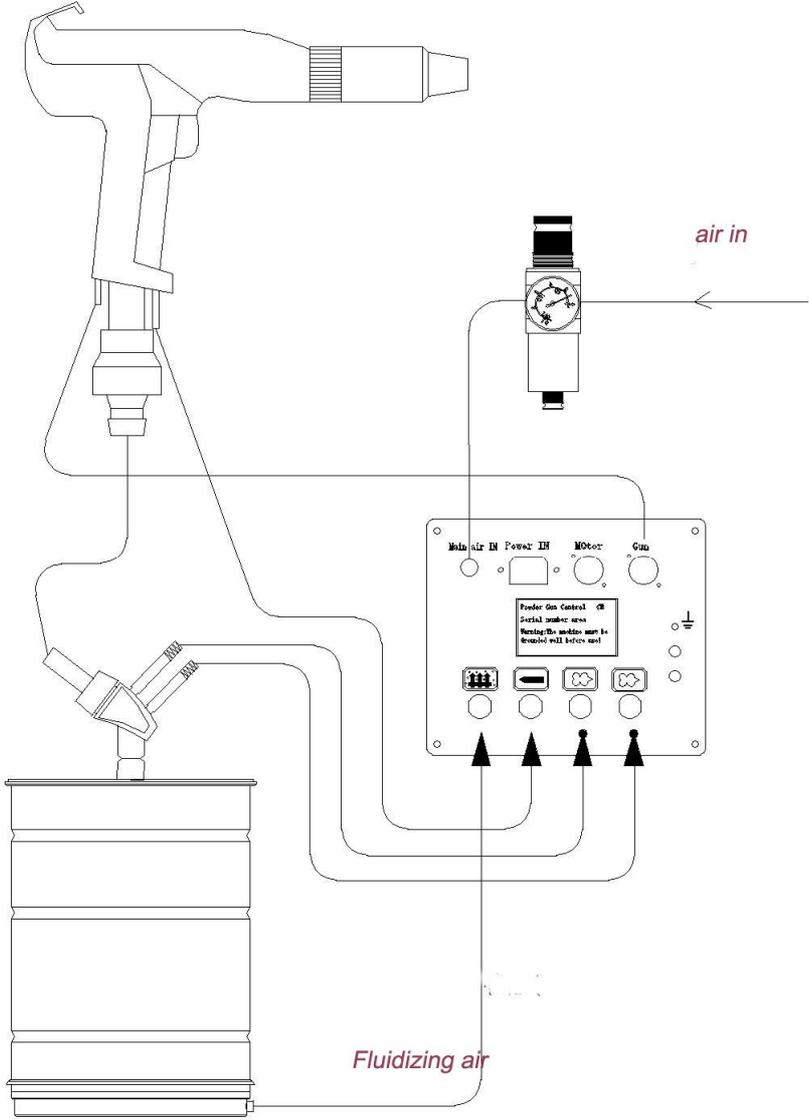
### Powder Gun

Gun weight: .....	500G
Rated output voltage .....	24VDC
Input voltage .....	- 200kv
Maximum output current .....	180Ua(max)
Maximum output voltage.....	0-100KV ( adjustable)
Maximum powder injection :.....	600g/min
Polarity .....	negative (-)

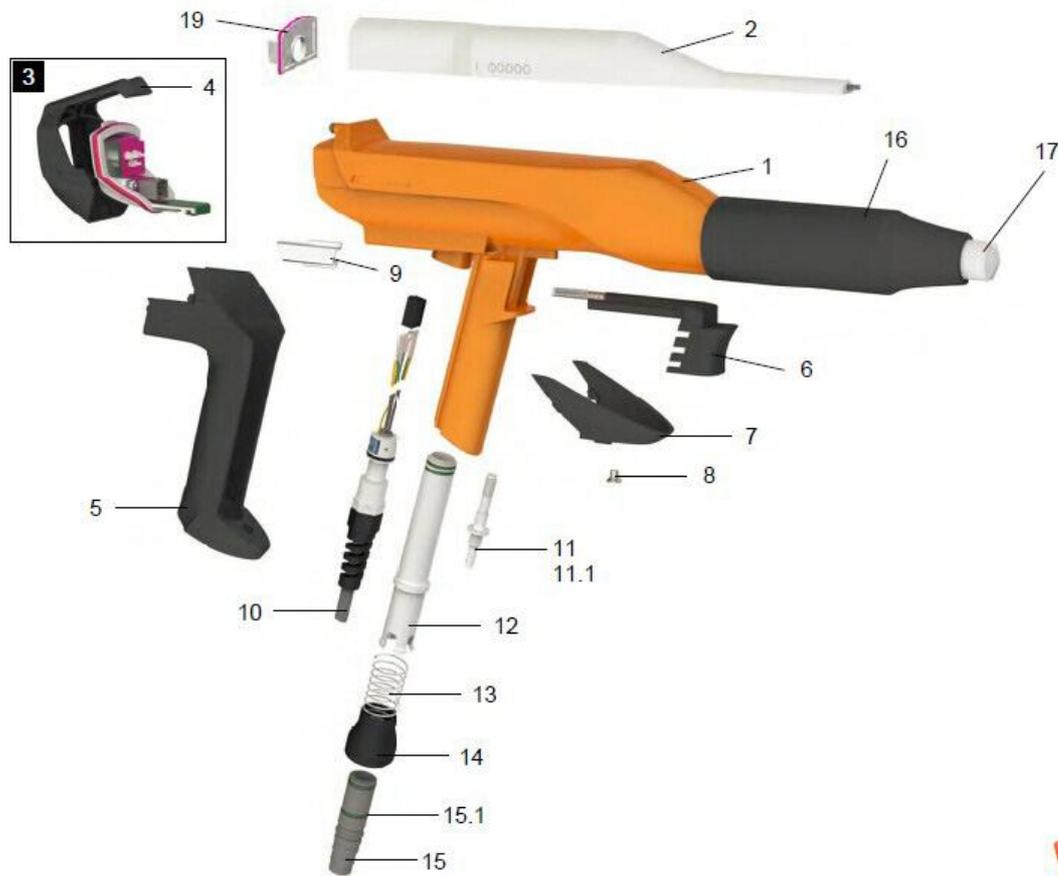
### Pneumatic data

Maximum input-air pressure .....	10kg/cm
Optimum input-air pressure.....	6kg/cm
Minimum input-air pressure .....	4kg/cm
Maximum water vapor content or compressed air .....	1.4g/N m <sup>3</sup>
Maximum oil vapor content of compressed air .....	0.1ppm
Maximum compressed-air consumption.....	13.2 m <sup>3</sup> /h

# Connecting guide



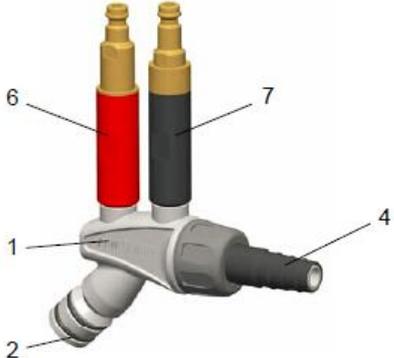
## Colo-07 manual powder gun - spare parts list



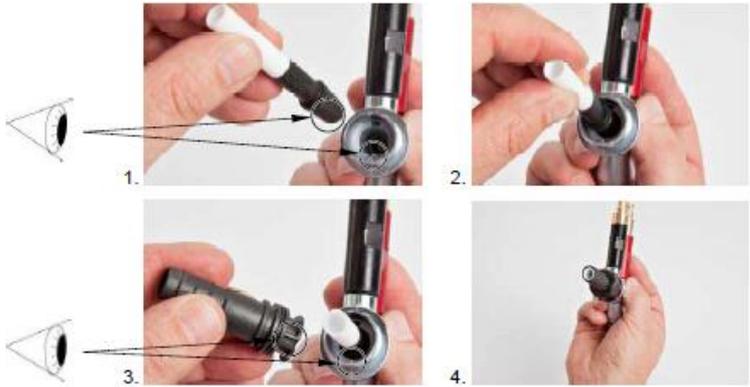
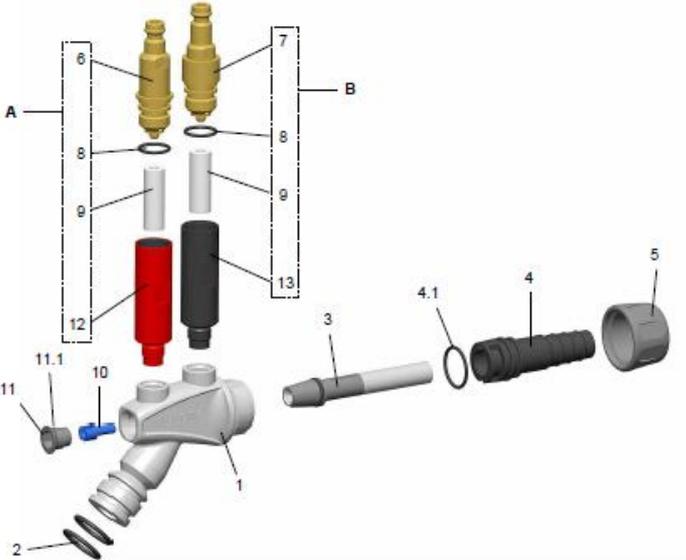
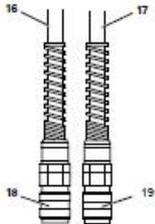
When you need the spare parts please give the item number !

- 1 Gun body 700102    2 Cascade - negative polarity 700101
- 3 Print holder - complete 700 105    5 Grip end plate - complete 700115
- 6 Trigger – complete 700108    8 Countersunk-head screw - M4x6 mm 700 106
- 10 Gun cable 6 m - complete 700 107    11 Rinsing air connection 700 109
- 12 Powder tube -700110    13 Compression spring 700111
- 14 Clip ring 700112    15 Hose connection Ø 11-12 mm - 700104
- 16 Threaded sleeve 700103    17 Nozzle 700107

# Powder injector G42 type



- 1 Injector housing
- 2 Powder hopper connection
- 4 Powder hose connection
- 6 Check valve unit (conveying air)
- 7 Check valve unit (supplementary air)



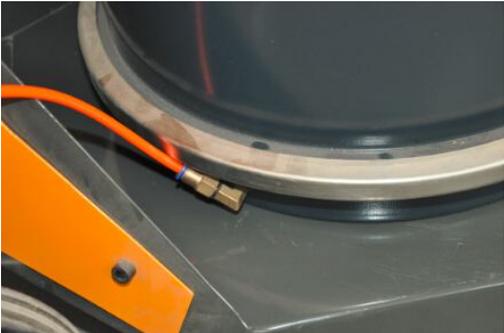
Replacing the insert sleeve

# Connection instructions



**Note:**  
Use clamp to connect grounding cable to the cabin or the

suspension arrangement. Check ground connections with Ohm meter and ensure 1 MOhm or less!

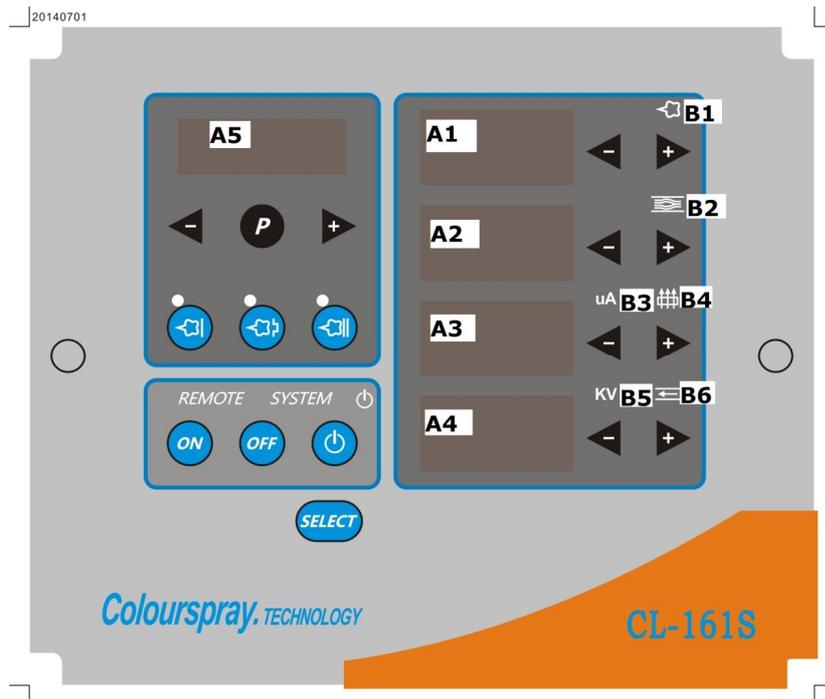


Note:

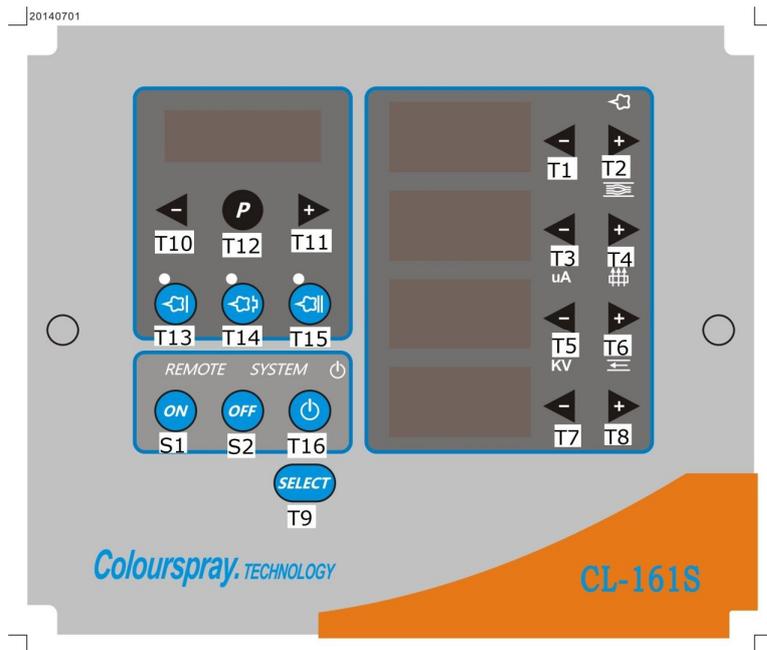
The compressed air must be free of oil and water!



## CL-161S control unit function



Designation	Function
A1-A4	Display of actual / preset values and system parameters
A5	Display of program numbers, error diagnosis codes and status information
B1	Powder output display (in %)
B2	Total air volume display (in Nm <sup>3</sup> /h)
B3	Spray current display (in $\mu$ A)
B4	Fluidizing display (in Nm <sup>3</sup> /h)
B5	High voltage display (in kV)
B6	Electrode rinsing air display (in Nm <sup>3</sup> /h)



Designation	Function
T1-T8	Input keys for preset values and system parameters
T9(Select)	Switch between display
T10-T11	Program change
T12(P)	Program selection for user-defined programs(max.20)
T13	Application mode for flat parts (fixed values)
T14	Application mode for complicated parts with depressions (fixed values)
T15	Application mode for overcoating parts already coated (fixed values)
T16	Switching on and off the fluidization
S1/S2	Power switch On/Off

## > WARNING

### --INSTALLATION

- Properly ground all equipment in the spray area to an earth ground and maintain this ground
- Remove all containers of volatiles from the spray area
- Establish and maintain a grounded area for the spray operator
- The gun of x series must be connect to x control unit

### →OPERATION

- The operator should hold the gun in his bare hand
- If gloves are worn, the palm should be out to assure skin to metal contact
- The operator should wear shoes with conductive soles e.g leather  
Rubber shoes are not conductive .
- Ground the tip of the gun before cleaning or changing nozzles.
- When the gun is not in use, it should be hung so that the nozzle is within four inches of a grounded conductor
- The operator should wear a filter-type respirator anytime he is exposed to dusty conditions
- High pressure powder may cause injury, Keep the rear switch "off" position in no-use condition

### →MAINTENANCE

- Make a periodic confirmation of grounding to earth of all equipment in the spray area .
- Exercise good housekeeping practices, do not allow dirt or powder to accumulate on the feeder /powder unit, cable or gun.
- Keep the cabinet door

### PERSONNEL

- Use soap and water to remove powder from the skin washing with solvents can cause reactions resulting in allergies and disorders.
- Wash hands before eating and smoking.
- Do not use compressed air to blow powder off the hands and clothing.  
This practice may result in damage to the ear drums or eyes.

## 2. INSTALLATION

- Connects the control units MAIN AIR to MAIN AIR(REGULATOR) output unit with air hose
- Connects the control unit DOSING AIR to INJECTOR with air hose
- Connects the FLUIDIZING AIR (REGULATOR )output unit to HOPPER with air hose
- Connects the control unit AUXILIARY AIR to GUN with air hose
- Connects the POWDER HOSE to INJECTOR
- Connects the GUN CABLE to CONTROL UNIT with air hose
- Connects ground connection cable from ground nut to the booth and trolley
- Connect main powder cable

## 3. OPERATION

### →PREPARATION FOR TEST OPERATION

#### 1. Adjustment for for voltage selection

All the shipped equipments are fixed at REQUEST

#### 2. Connection of air supply

.Compressed air must not contain any oil or moisture

.It should be noticed that the oil and moisture container in the compressed air must be filtered out.

.The fluidified air must be locked in until all connections are completed.

#### 3. Connection outlet hose

.Connect the hose by pressing it into the hoppers outlet –hose coupling hole.

.Place the opposite end of the hose within booth.

Caution:Atmospheric pressure should be present in the hopper during operation of the equipment

#### 4. Connect ground line

The ground line should be connected to booth or conveyor with a clip

#### 5. Safety regulations:

- 1) Operator should always take precaution to get grounded to the powder electroatic machine s GUN handle by marking hole in his gloves , He should also make it a rule to put on a pair of grounded shoes.
- 2) The floor of workplace should be conducted
- 3) All conduction material with 5 meters around powder booth are completely grounded
- 4) Fact the GUN to dircetion of BOOTH and not to the human body
- 5) In case of powder such as spaying paint ,dust density of 10g/ m3  
Or more could cause explosion ,and the internal booth should be maintained in good and clean condition .

## CHECK FUNCTION OPERATION

## 1. Functions

- 1) cuts off the powder supply from pressure-decrease valve.
- 2) Lowers the control box high –voltage adjustment handle down to bottom –lef position .
- 3) See what happens when the high-voltage adjustment handle is turned from to right to slowly increase the voltage level.
- 4) Approach the ground up to the distance of 20cm holding GUN and see the high-voltage display drop.
- 5) Pull the GUN' trigger.

The high-voltage indicator begins to operate

Check if the voltage level changes when the high-voltage adjustment handle is turned .

- 6) open MAIN AIR and supply air
- 7) pull the GUN' trigger and open the CONVEYING AIR

The pressure gauge hand moves

Pull the gun s trigger close the CONVEYING AIR and open the DOSING AIR

The gauge shand moves .

If all factors suggeted above is alright , every is O K

Remove powder from the nozzle of gun by AUXILIARY AIR

Power supply and fluidizing air supply.

## 2. LOADING

open the lid

fill powder up to the hoper s handle level

colse the ld and assemble hose

If everything checks alrigh, the quipment is ready

Slightest abnormality requires preferring to the emergency –measure guide.

## →TEST OPERATION

### 1. PAINTING

- \* CAUTION: Check if all the conducting material within 5 meters around powder booth are completely grounded
- 1) Check if the powder is fluidified
  - 2) Turn on the powder switch
  - 3) Face the gun to direction of BOOTH
  - 4) Pull the trigger
  - 5) Adjust the high voltage to the required level-the level can be monitored by a meter
  - 6) Wait untl the first-spayed powder comes out completely dried.
  - 7) Proceed with spraying object to be powder coated ..

### 2 Taking stop spraying measure

- 1) release the GUN S trigger
- 2) turn off the power switch  
as the powder is still fluid , you shouldnot adjust the amount of high voltage . Cleaning air and powder output.
- 3) Be sure to turn off the power switch and cut off air valve during lunch time or after sinishing work

### 3 Cleaning the powder hose

+ **CAUTION:** In case of prolonged unsue of equipment , the powder remaining in hose should be eliminate as follows:

- 1) take our injector s hose coupling part from the hopper
- 2) Turn the GUN to the direction of BOOTH
- 3) Attach the AIR GUN tightly to the hose entrance and blow into it
- 4) Reassemble it

## FLUIDIZING POWDER

### A .Fluidizing powder

The fluid state of powder is closely related to powder type , water content of compressed air and outler temperature

The fluidizing proceds independtly of control functions

- 1 .Keep the hopper s lid open
- 2 Slowly increase the fluidizing AIR –the powder begins the boil mildly, AIR in the hopper and adjust to the minimum amount of AIR for uniform boiling
- 3 close the lid

### B . The amount of powder output and control

The amount powder output is determined by powder type , the length and diameter of hose , and the amount of CONVERYING AIR and DOSING AIR.

1. check the powder is normally fluidized
2. turn on the power switch
3. pull the trigger with the GUN facing to the direction to BOOTH
4. Open the CONVERYING AIR
5. Adjust the DOSING AIR

Turn slowly regulator of dosing air to clock wise from maximum counter clock wise pulling trigger until powder puffing is getting to normal injection

## **COLOR CHANGE**

### **A. Changing powder color**

- 1) Clean the outlet hose hopper completely
- 2) blow into the powder hose with compressed air
- 3) clean the GUN
- 4) put the powder to be used into hopper and finish all the preparation jobs
- 5) turn and spray the GUN toward BOOTH momentarily before the work begins

### **B. How to manage**

Routine maintenance of equipment prolongs product life and keeps its performance uniform

1. Daily check -----INJECTOR cleaning and INSERT SLEEVE worn-down
  - .....POWDER HOSE cleaning
  - .....GUN cleaning
2. weekly check ....cleans the hopper , injector and GUN
  - ..powder should not be put in the hopper just before work
  - .....check the ground line between CONTROL UNIT , BOOTH and CONVEYOR
  - .....After checking air dehydrator , any water in it should be removed , the air ,but for checking the presence of moisture in it

### **C. Checking for shutdown lasting 2-3 days**

- 1) Turn off the power switch
- 2) Clean the CONTROL UNIT
- 3) Remove the input air and put it away
- 4) check above -1 .Daily check
- 5) Remove powder from HOPPER

## **Comprehensive regulation**

Workpieces type	Output voltage	1 <sup>ST</sup> air	2sec air	Painting distance
Big size new	80-100kv	4-6kg/cm2	2-3kg/cm2	15-20cm
Corner,sides	40-60kv	2-3kg/cm2	0.5-1 kg/cm2	10-15cm
repaint	30-40kv	2-3kg/cm2	0.5-1kg/cm2	15-20cm

## CLEANING

### A. Hopper

1. Remove fluidizing AIR LINE
2. Remove injector
3. take our suction pipe
4. wipe the electric line , AIR HOSE .and powder hose cleanly with cloth
5. wipe the suction pipe clean
6. empty the remaining powder from hopper
7. clean the hopper s inner wall ,especially the bottom part , with vacuum cleaner
8. wipe the hoppers inner surface with clean cloth
9. replace the hopper to the original postion

**CAUTION:** the hopper must not be filled with powder unit work begins , Above all , the hopper s inner surface must not be cleaned with thinner or water

### B. Manual powder Electrostatic GUN

Rountine cleaning of GUN ensures trouble –free operation and normal function at all times.

Daily clearning

1. Remove the powder hose from gun
2. remove nozzle from GUN and clean it
3. Clean the gun s powder outlet with AIR along the direction of its flow
4. clean the gun s body with AIR
5. Assemble it

### C. Spray Nozzle

Dairly cleaning

----clean the outer surface of nozzle with compressed air (Do not use thinner or other liquild for clleaning)

...Clean the nozzle s inside with compressed air after removing it . The powder accumulated in the GUN must be removed.

....check if the nozzle is worn down

Check if the compressed air s oil and moisture are completely removed

## D .Injector

1. Disconnecting powder hose
2. Remove sleeve holder
3. Clean sleeve and inside of injector body.

# Troubleshooting

## General information

Fault	Causes	Fault elimination
---	Power pack defective	Replace the power pack
---	Main valve defective	Replace main valve coil
---	Gun not connected Gun plug, gun cable or gun cable connection defective Remote control on pow- der gun defective	Connect the gun Replace corresponding part or send in for repair Replace remote control (gun cap)
---	Rinsing air solenoid valve of flat jet nozzle defective	Replace valve coil
---	Rinsing air solenoid valve of round jet nozzle defective	Replace valve coil
---	Gun plug, gun cable or gun cable connection defective	Replace corresponding part or send in for repair
Gun LED remains dark, although the gun trigger is operated	Gun plug, gun cable or gun cable connection defective Remote control on pow- der gun defective	Replace corresponding part or send in for repair Replace remote control (gun cap)
Powder does not ad- here to object, al- though the gun trigger is operated and the gun sprays powder	High-voltage and current deactivated High voltage cascade defective Objects are not properly grounded	Press the selection key (application key) Send in the gun for re- pair Check the grounding

Fault	Causes	Fault elimination
Control unit displays remain dark, although the control unit is switched on	Control unit is not connected to the mains Power pack fuse defective Power pack defective	Connect the equipment with the mains cable Replace the fuse Replace the power pack
The powder is not fluidized	Compressed air not present Fluidizing air is set too low on the control unit Motor throttle defective	Connect the equipment to the compressed air Set the fluidizing air correctly Replace motor throttle
The gun does not spray powder, although the control unit is switched on and the gun trigger is operated	Compressed air not present Injector, motor throttle or nozzle on injector, powder hose or powder gun are clogged Nozzle in the injector is clogged Nozzle is not inserted Fluidizing not running No conveying air Motor throttle defective Solenoid valve defective Front plate defective	Connect the equipment to the compressed air Clean corresponding part Replace Insert the insert sleeve (see above) Replace the motor throttle Replace the solenoid valve Send in for repair

## Ordering spare parts

When ordering spare parts for powder coating equipment, please indicate the following specifications:

- Type and serial number of your powder coating equipment
- Order number, quantity and description of each spare Part

Thanks for your choose COLO!

More information please visit [www.colourspray.com](http://www.colourspray.com) for support.