

Operating instruction

Manual Coating equipment



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 below through a porous plastic plate.

.The fluidized powder gets liquid-like properties..

→ Technical Data

Electrical data

OptiFlex F manual coating equipment	
Nominal input voltage	230-240 VAC (110-120 VAC)
Frequency	50/60 Hz
Input value	150 VA
Nominal output voltage (to the gun)	max. 12 V
Nominal output current (to the gun)	max. 1 A
Protection type	IP 54
Temperature range	0 to 40°C (+32 °F to +104 °F)
Approval	

Pneumatical data

OptiFlex F manual coating equipment	
Compressed air main connection	G1/4" - internal thread
Max. input pressure	10 bar
Min. input pressure	6 bar
Max. water vapor content of the compressed air	1,3 g/m ³
Max. oil vapor content of the compressed air	0,1 mg/m ³
Max. compressed air consumption	11 m ³ /h

Connectable guns

OptiFlex F manual coating equipment	connectable
OptiSelect GM02	yes
OptiGun GA02	yes
PG1/PG2-A	yes (without remote control)
TriboJet	yes, with adapter*

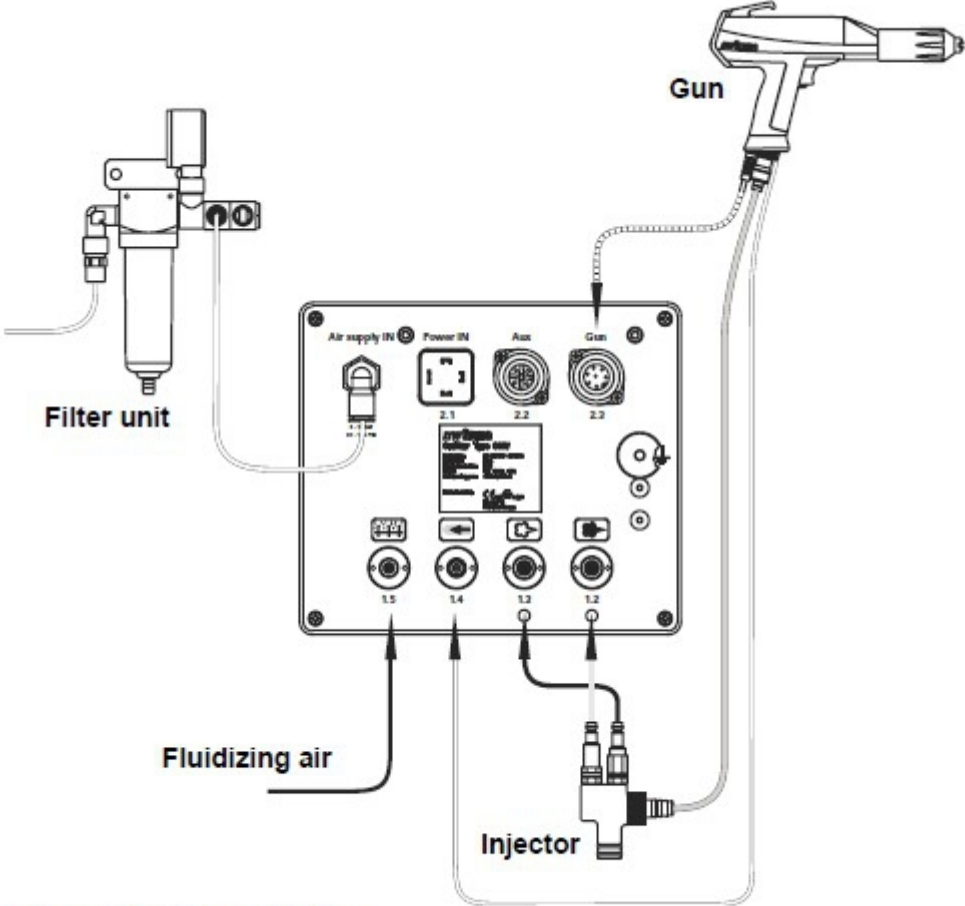
Structure



OptiFlex F manual coating equipment - structure

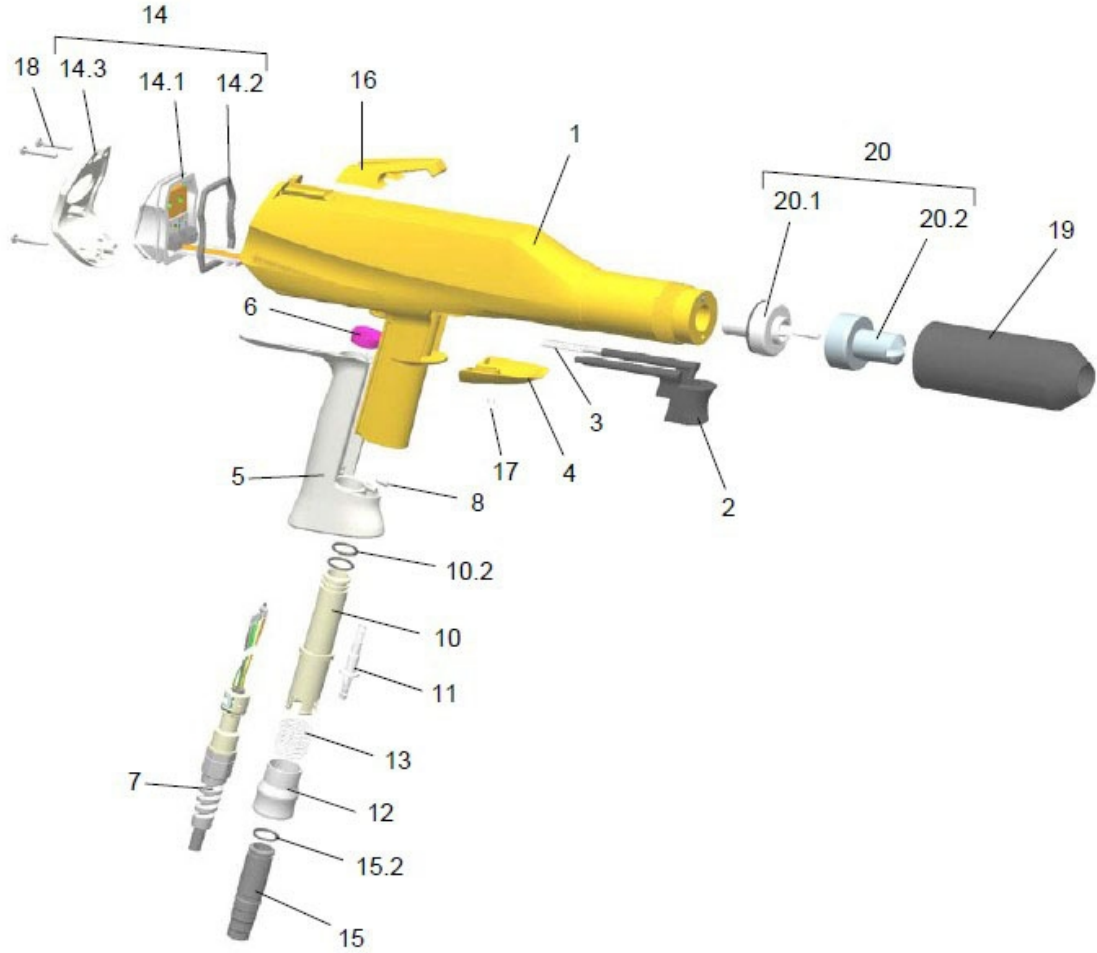
- | | | | |
|---|------------------------------|----|--------------------|
| 1 | OptiStar control unit | 8 | Filter unit |
| 2 | OptiSelect manual powder gun | 9 | Gun holder |
| 3 | OptiFlow injector | 10 | Hose holder |
| 4 | Mobile frame with hand rail | 11 | Powder filler flap |
| 5 | Fluidized powder hopper | 12 | Shelf |
| 6 | Hose connections | 13 | Rubber wheel |
| 7 | Swivel wheel | 14 | Airmover |

Connecting guide



Connecting guide - overview

OptiSelect manual powder gun - spare parts list



OptiSelect manual powder gun - spare parts list

Remarks

1. If a part of the gun body should be broken, or the high voltage cascade in the gun body should be defective, then the whole gun body is to be sent in for repair and check!
2. If the powder gun cable is defective, it is to be completely sent in for repair!

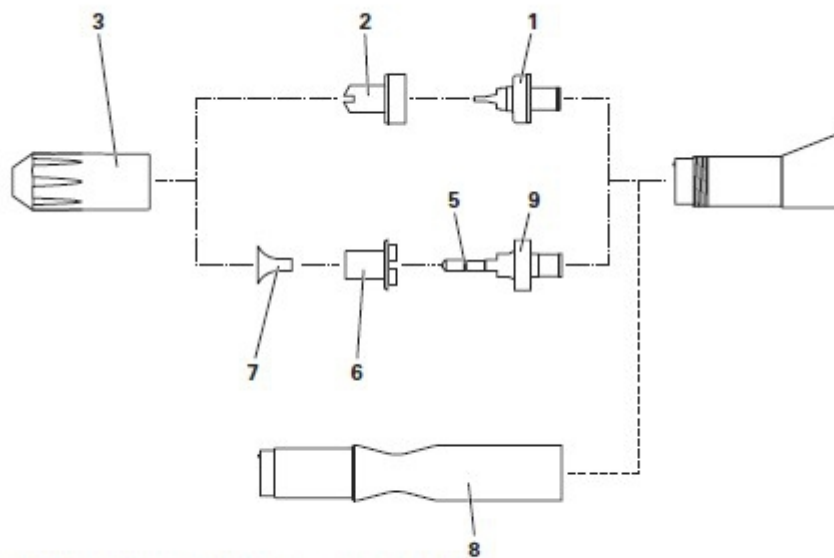
A	OptiSelect manual powder gun - complete negative polarity , incl. gun cable - 6 m, rinsing air hose - 6 m, flat jet nozzle, brush and parts kit, without powder hose	1002 100
	OptiSelect manual powder gun - complete positive polarity , incl. gun cable - 6 m, rinsing air hose - 6 m, flat jet nozzle, brush and parts kit, without powder hose	1002 101
B	OptiSelect manual powder gun shaft (incl. cascade)	
	Negative polarity (-)	1001 891
	Positive polarity (+)	1001 892
C	Cascade (negative polarity) - complete	1000 809
	Cascade (positive polarity) - complete	1002 031
1	Gun body	1001 155
	Handle - complete set (pos. 5, 6, 7 and 8)	1000 807
2	Trigger - complete (incl. pos. 2 and 3)	1001 341
3	Compression spring - 0.36x4.2x49.4 mm	1001 487
4	Trigger cover	1000 801
5	Grasp termination	1000 806
6	Radial gasket	1000 803
7	Gun cable - L=6 m, complete	1001 528
	Extension cable for gun cable - L=6m, incl. safety clamp	1002 161
	Extension cable for gun cable - L=14m, incl. safety clamp	1002 162
	Safety clamp for extension cable	1002 064
8	Grub screw - M3x8 mm	1000 844
10	Powder tube - complete	1001 339
10.2	O-ring - Ø 12x1.5 mm	1000 822
11	Rinsing air connection	1000 804
12	Clip ring	1000 898
13	Compression spring	1001 488

14	Back cover - complete	1000 617
14.1	Printed circuit board holder - complete (incl. pos. 14.2)	1002 029
14.2	Radial gasket	1000 795
14.3	Shield - complete	1002 028
14.4	Cap screw - M3x8 mm (not shown)	202 363
15	Hose connection - complete, for internal hose Ø 11-12 mm	1001 340
	Hose connection - complete, for internal hose Ø 9-10 mm	1002 030
15.2	O-ring - Ø 12x1.5 mm	1000 822
16	Hook (replaceable)	1000 877
17	Countersunk head screw - M4x8 mm, plastic	263 516
18	PT-screw	1000 843
19	Threaded sleeve - complete	1000 948
20	Flat jet nozzle - complete	1000 047
20.1	Electrode holder - complete	1000 055
20.2	Flat jet nozzle	1000 049
	OptiSelect adaptor for PGC control unit (not shown)	1001 952
	Cleaning brush - Ø 12mm	389 765
	Parts set (not shown), consisting of:	1002 359
	Round jet nozzle - NS02, complete	382 922
	Cable clamp	303 070
	Deflector plate - Ø 16 mm	331 341
	Deflector plate - Ø 24 mm	331 333
	Deflector plate - Ø 32 mm	331 325
	Hose connection - complete, for internal hose Ø 11-12 mm	1001 340
	O-ring - Ø 12x1.5 mm	1000 822
	Countersunk head screw - M4x8 mm, plastic	263 516
	Powder hose - Ø 10 mm (not shown)	1001 673
	Powder hose - Ø 11 mm (not shown)	105 139

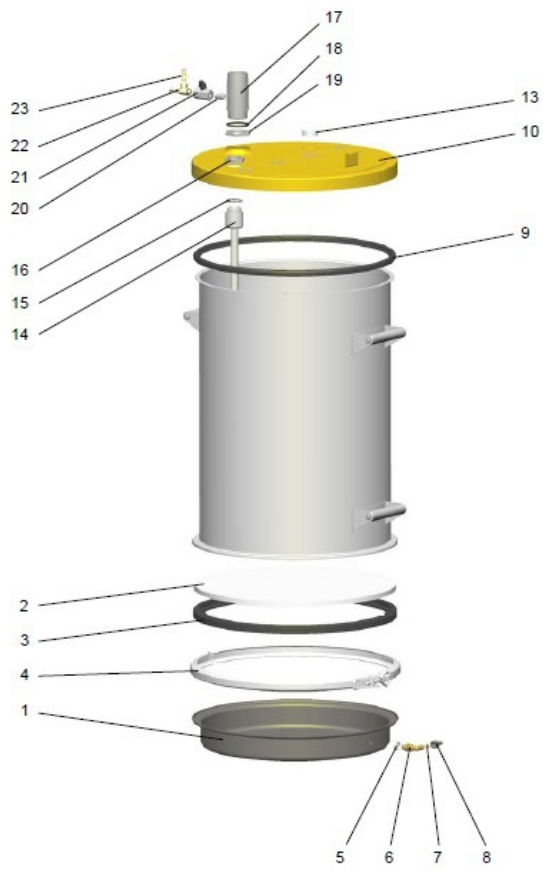
OptiSelect manual powder gun - nozzle combinations

	Nozzle set - flat jet, NF08, pos. 1, 2	1000 047#
	Nozzle set - round jet, pos. 5, 6, 9	382 922
1	Electrode holder (flat jet nozzle)	1000 055#
2	Flat jet nozzle	1000 049#
3	Threaded sleeve	1000 948
5	O-ring - Ø 5x1 mm	231 606#
6	Round jet nozzle	378 518#
7	Deflector - Ø 16 mm	331 341#
7.1	Deflector - Ø 24 mm	331 333#
7.2	Deflector - Ø 32 mm	331 325#
8	Extension - 150 mm	378 852#
8.1	Extension - 300 mm	378 860#
9	Electrode holder, incl. pos. 5 (round jet nozzle-central electrode)	382 914#

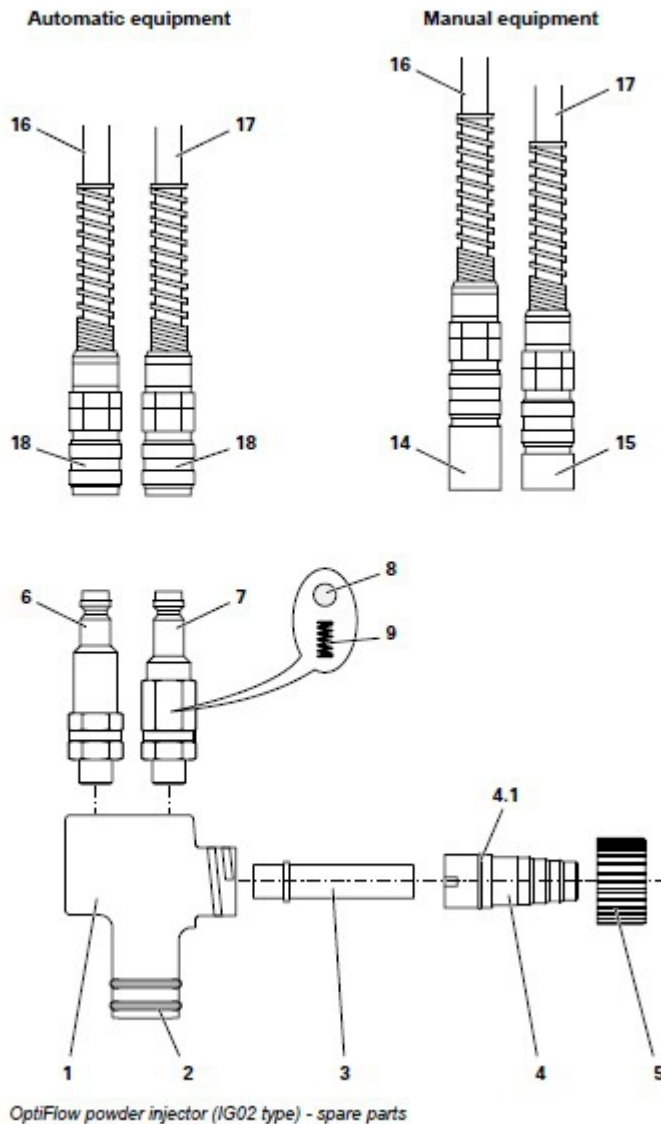
Wearing part



OptiSelect manual powder gun - nozzle combinations



Powder hopper



> 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 shoes 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 condusction 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 suply 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 until the first-sprayed 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 independently 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 CONVEYING 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 CONVEYING 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 prolong product life and keeps its performance uniform

1. Daily check -----INJECTOR cleaning and INSERT SLEEVE worn-down
.....POWDER HOSE cleaning

-GUN cleaning
- 2.weekly checkcleans 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 CONVERYOR
 -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

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

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 cleaning)

...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 powder 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 powder gun defective	Replace corresponding part or send in for repair Replace remote control (gun cap)
Powder does not adhere to object, although 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 repair 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