POWDER GENIE

P. I. MARKETING SOUTH AFRICA

OPERATIONAL MANUAL

2024

PI MARKETING

South Africa

Est. 1988

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INTRODUCTION

With the history of the original unit we once again designed a powder coating unit being able to cope with the harsh and demanding production environment in Southern Africa.

With extensive design and improvements to our New **Powder Genie GL2020** we now offer you updated technology, improved with 40 years of experience and testing to give you the latest powder spray unit able to coat most anything and would surpass the requirements of a perfectionist.

The **Powder Genie GL2020** has the inbuilt ability to adjust the output current automatically to the coating environment in proportion to the set voltage.

The resultant of our excellent **Powder Genie GL2020** unit is that not only do you save on powder usage, but also have the ability to coat nearly any substrate, as well as recoating. Faraday caging is also reduced to make your life easier..

SAFETY NOTES

It must be noted that These safety regulations as well as those of the county of use must be observed to avoid danger to personnel as well as damage to environment.

P. I. Marketing is not responsible for any injury or damage caused from the miss use of this equipment.

1) It must be noted that any powder mixed with the correct air mixture is highly explosive so the earthing is very important at all times.
2) The equipment is not to be used by anybody not trained to use the equipment as well as the full extent of the safety requirements.
3) Untrained operation or handling of this equipment could result in damage and injury.
4) Always ensure that the parts being sprayed, the equipment as well as the operator is perfectly earthed.
5) All ways switch off unit as well as un-plug it from the mains supply before working or opening the unit.

6) Please note that the unit generates static which is detrimental to persons with pacemakers, and mental imbalance.
7) Unit to be maintained at 100% efficiency with regular maintenance to prevent damage or injury or loss of warranty.
8) The operator must at all times be earthed and my not wear gloves as a contact between bear hands and spray gun must be maintained at all times when in use. The area as well as floor of the spray area is to be earthed and the operator must be in contact with the floor only by leather soled shoes and not rubber or other types of souls.
9) The unit is not to be used in a badly ventilated area and should a level of dust be concentrated within this area, use of this appliance should be stopped immediately.

When not in use for longer than a hour, the air, electrical supply and powder within the hopper should be removed from unit. Unit to be blown clean with Air Gun, and unused powder stored in storage box other than the one it came out of, this will avoid contamination..

POWDER GENIE GL2020

INITIAL SET UP

This appliance must be earthed and connected as follows;-
Green & Yellow = Earth, Blue = Neutral, Brown = Live

A. CONNECTIONS:

1) Connect air supply to air control unit on stand of unit.
2) Fit Spray Gun control cable plug to back of control panel.
3) Plug in air pipes of the injector block into back of control unit.
4) 6mm Air pipe fit to back of unit marked "Diffuser" and the other end to connect to the top of ejector (powder pump)
5) 8mm Air pipe fit to back of unit marked "Powder" and the other end is connected onto the needle injector on the powder pump opposite the large powder pipe.
6) Fix earth wire to spray booth body.
7) Plug unit into electrical supply, **ensure earthed**.
8) Fit injector to suction pipe on top of hopper, with a pushing and twisting motion.
9) Fit powder hose of spray gun over powder hose connector of injector block – Stepped Plastic End.
10) Fill hopper to no more than HALF FULL to allow for increase of volume when fluidised.

B. INJECTOR (POWDER PUMP) SETTINGS:

1) Switch on unit – Power light will glow.
2) Close all air valves and turn static down.
3) Start with opening the speed valve on the rear of the unit slowly to the hopper until the powder becomes liquid when moving the hopper. Don't over air-rate.
4) Open the powder supply regulator, simultaneously push trigger of gun, until sufficient powder is discharged.
5) Open the diffuser (dilution) air slowly until you notice the powder cloud is soft and without heavy discharge.
6) Open aux air to the gun tip, and adjust till soft and uniform cloud
7) Turn your static up to suit substrate, approx. 60 to 70 Kv for 1st time coating and approx. 40 Kv for recoats. Set static for good adhesion but do not over set to cause Faraday caging. Never run unit at full blast for extended periods.

WHEN WORK IS FINISHED, DO NOT FORGET TO CLOSE supply AIR, switch off power supply and remove powder form hoppers. Blow out unit and gun

A. EARTHING OF THE PARTS

The part to be powder coated must be connected to the earth terminal of the electrostatic generator. It is advisable therefore, to regularly clean the suspension of the hooks to ensure that a good contact is made.

B. COLOR CHANGING

Unit and gun to be fully cleaned with clean air after each colour.

TECHNICAL SPECIFICATION

A. ELECTRICAL DATA

INPUT VOLTAGE; - 220-250 volt 50/60Hz single phase
POWER CONSUMPTION; - 50 Watt
INPUT CURRENT; - (max.) 300mA at 230v
ELECTROSTATIC VOLTAGE AT GUN TIP; - 95kv (neg.)
ELECTROSTATIC CURRENT AT TIP OF GUN; - 80uA

B. PNEUMATIC DATA

MAXIMUM INPUT AIR PRESSURE; - 7.0 bar (100 p.s.i.)

MAXIMUM contaminations OF COMPRESSED AIR: - 1,5G/M
INPUT AIR CONDITION; - oil free to 0.1p.p.m and dry to 1.3g/cubic Nm
AIR CONSUMPTION NOMINAL; - 5 cubic m/h. (3.0 c.f.m.) (Max. 8.0 cfm.)
AIR CONNECTION; - 8.0 mm quick connector for air hose

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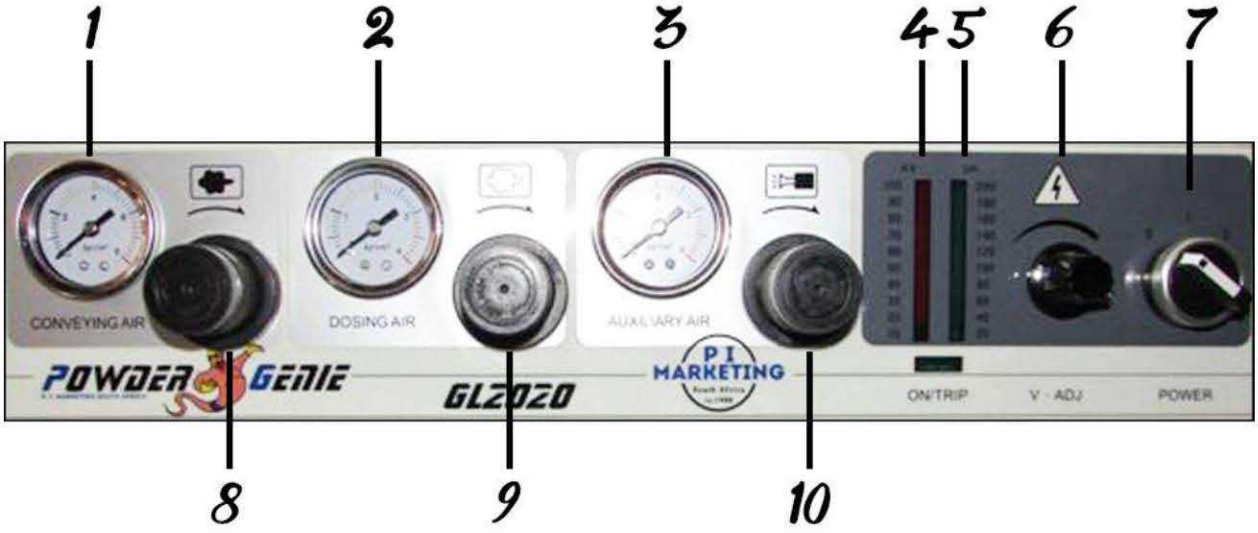
CONTROL CLARIFICATION

A. FRONT OF CONTROL UNIT



1) Conveying Air Gauge showing setting of Airflow knob 8

2) Dosing Air Gauge showing setting of Airflow Knob 9

3) Auxiliary Air Gauge showing setting of airflow Knob 10

4) K volt static set level as set by Knob 6

5) Current output of static as auto-set by control unit in conjunction with knob 6

6) Kilo Volt setting knob to set amount of static needed per application needs

7) On / Off / Auto power switch to turn on units supply power.

8) Conveying Air adjustment knob to set amount of powder needed per application.

9) Dosing Air adjustment knob to smooth-out powder delivery to a fine even dust cloud.

10) Auxiliary Air adjustment knob to set nozzle air to keep nozzle clean and assist in cloud formation.

B. REAR OF CONTROL UNIT

1) Gun Trigger input plug
2) Power supply main fuse 3 amp max.
3) PC board control fuse 3 amp max.
4) Power supply entry plug
5) Auxiliary air out to gun connection
6) Dosing air to Powder Injector Block
7) Conveying air to Powder injector block
8) Earth Connection for earth plant & Clamp
9) Air supply to unit from air service unit on side of stand upright

C. HAND HELD POWDER COATING GUN

1) Slot nozzle combination
2) Black Nozzle extension 110 mm long
3) Powder mixer unit
4) Gun Body assembly
5) Round nozzle directional tube
6) Static electrode shaft with mount
7) Powder pipe connection
8) Round Deflector 18 mm
9) Round Deflector 20 mm
10) Round Deflector 24 mm
11) Round Deflector 27 mm
12) Powder Hose guide
13) Gun trigger control plug to control box
14) Gun hanging hook
15) Gun operating trigger
16) Auxiliary air in to gun connection

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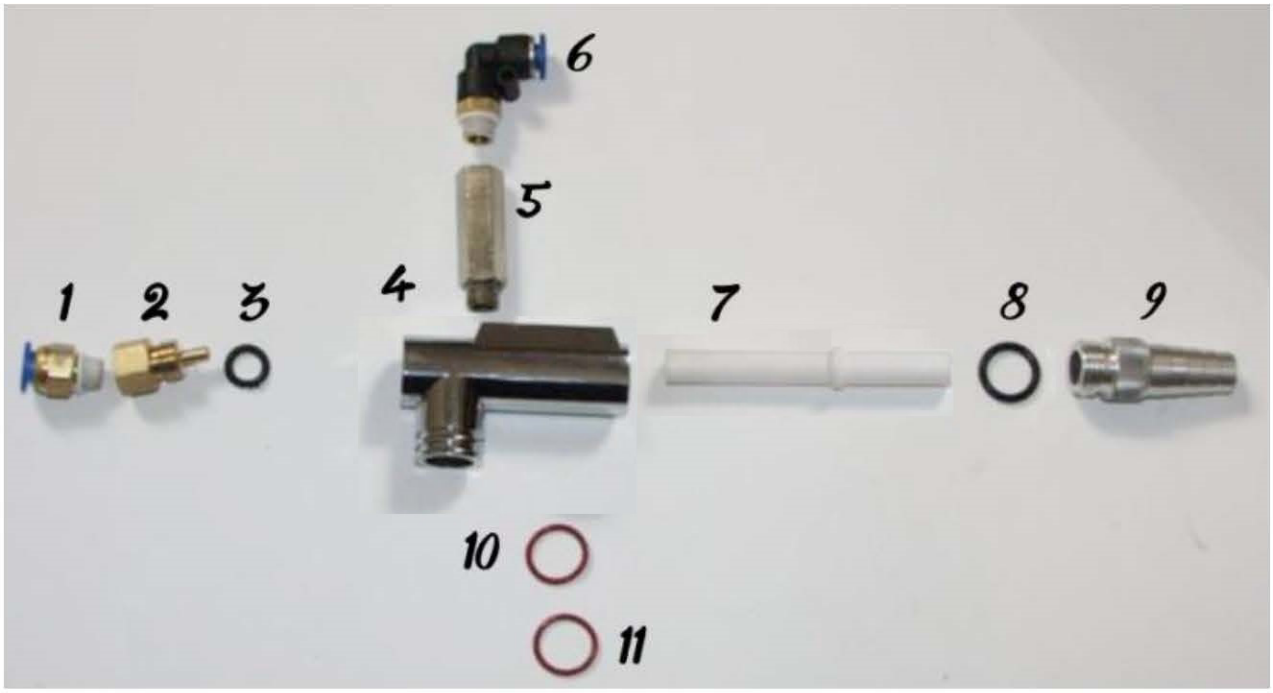
A. POWDER INJECTOR BLOCK (PLUGS INTO HOPPERS)



1) Conveying air inlet to injector connector
2) Air injector
3) Air Injector "O" ring
4) Powder injector block main body
5) Non-return valve
6) Dosing air inlet connector
7) Injector wear sleeve
8) Injector sleeve "O" ring
9) Injector sleeve lock-in powder hole connector
10) Injector to hopper "O" rings

PROBLEMS AND REMEDIES

PROBLEM EXPERIENCED	REASON	REMEDIES
Unit not working	*Not plug in* *Fuse burnt out* *Unit not switched on*	*Plug unit in* *Replace fuse* *Switch unit on/Replace switch*
Gun Trigger not Starting Unit	*Gun control plugged out* *Gun control wire broken* *Gun micro switch faulty*	• *Plug gun in* • *Repair wire* • *Replace micro*
No Static at Gun *(High Voltage)*	*High voltage generator faulty*	• *Loose wire* • *Dirt/ Gun not cleaned on regular basis*
Unit works but Powder will not come out	*Injector block dirty/ worn* *Air pipes not fitted* *Powder air to low*	• *Remove and clean/replace* • *Refit air* • *Increase air supply*
Air Blowing into Hopper when pulling the Trigger	*Diffuser air set too high* *Injector sleeve dirty/worn*	• *Reduce dose air* • *Clean sleeve with 6mm drill* • *Replace sleeve*
Powder Blowing out of Hopper	*Hopper fluidising air set too high*	• *Reduce hopper air*
Low Powder output from Gun	*Gun or Injector block dirty* *Powder air low/ diffuser air high*	• *Clean gun or block* • *Reset unit air settings*
Poor Powder attraction to Work piece	*Incorrect voltage at gun* *Poor Earthing* *Dirty jigs* *Powder diffuser air too high* *Gun distance from work piece incorrect* *Poor jig design*	• *Clean & replace gun - Check voltage* • *Clean earth & jig* • *Clean / replace jig* • *Reduce powder air* • *Reset gun distance* • *Re-design jigs*
Low film Thickness on Work piece	*Powder delivery too low* *Coating duration too short* *Faraday cage effect* *Jigs too big for work piece*	• *Set powder air up* • *Injector block too small or not clean* • *Increase spray speed or reduce line speed* • *Adjust voltage & powder*

	Low static setting *Damp powder*	*air-reset gun* • *Re-design jigs & make smaller* • *Replace powder & store in dry place* • *Increase voltage setting*
Film Thickness too High	*Excessive powder* *Gun voltage too high* *Spray movement too slow* ***Coating too slow*** *Work piece too hot*	• *Reduce powder air* • *Increase distance between gun & work* • *Increase voltage* • *Increase speed of line or spray action* • *Reduce pre-heat time* • *Speed up coating speed*
Surging of Gun	*Damp air supply* *Dose air too low.*	• *Clean water traps* • *Set up dose air* • *Fit air dryer*
	Variable air supply *Damp powder*	• *Compressor too small* • *Remove powder & replace with sealed bag of powder.* • *Do not store powder in hopper overnight* • *Check ratio between virgin & recovered powder*
	Powder too fine	• *Have supplier check powder specification*
Powder does not come out	*Equipment badly installed*	• *Check that the flow connections are made correctly.*
	Faulty Fuse	• *Check 2 fuses*
	Powder Injector not in place	• *Put the Injector back in place.*
	Lack of air in the compressed air network	• *Feed the equipment under minimum 5 bars.*
Solenoid does not work		*While pressing on trigger, check electric supply on solenoid coil. If it is 220V, change the coil. If not, repair the Electronic card.*
	Lack of injection air	• *Adjust the air Regulator* • *Clean the Injector and the*

		Injector air circuit.
	Too much dilution air	• *Reduce or close the dilution air and then increase injector air.*
	Plunger tube sucks only air	• *Add powder.*
Powder comes out in spurts or beats dilution air	*Lack of, or too much air*	• *Adjust the dilution air* • *Clean the porous ring*
	Lack of powder in Injector	• *Add powder to the reservoir.* • *Adjust the Fluidized air Regulator*
Powder comes out in spurts	*Lack of Injection air*	• *Adjust the Injection regulator* • *Clean the injector and the injection air circuit.*
Powder does not stick to object	*Objects badly earthen*	*Check the earth connection between equipment (terminal bottom unit), pieces to be powder coated, the booth and the work's general earth in particular.* • *Check that the supports are clean.*
	Contact between Nozzle and Barrel not secure	• *Tighten the Nozzle nut*
	High voltage too low	• *Check the potentiometer*
	Electronic card	• *Replace card*
	Gun cable	• *Check for continuity*
Too little powder	*Lack of injection air*	• *Adjust the injector air, regulator* • *Clean the injector and the injector circuit.*
Too much dilution air		• *Decrease or close the dilution air regulator and then increase injection air.*
	Worn injector sleeve	• *Change injector sleeve*
Too great a load in powder hose		• *Powder hose too long or the diameter is too small.* • *Clogged hose: clean it or change it.*

MAINTENANCE

GUN PREVENTATIVE MAINTENANCE

Breakdowns cause production delays. Regular inspection and preventative maintenance can totally eliminate problems associated with powder guns. This policy has been responsible for some guns lasting longer than 20 years without any loss of performance.

A. DAILY MAINTENANCE:

1. The gun should be kept clean at all times. At the end of the production day:
2. Blow air through the powder line.
3. Dismantle the pistol and clean components with compressed air.
4. Check the water trap for signs of moisture.
5. Carefully remove any caked powder on the electrode tip.
6. Check gun settings.
7. Check earthing strap or wire.
8. Check gun cable for any sign of twisting.

Note: Remove red and blue pipe from injector block before cleaning with compressed air.

B. WEEKLY MAINTENANCE:

1. As for daily maintenance.
2. Check for air leaks.
3. Inspect the injector sleeve. Replace, if necessary.
4. Examine the deflector plate for wear. Replace, if necessary.
5. Pass a bottle brush through the handle and barrel of the pistol.
6. Check the powder hose for cracks or leaks and for excessive accumulation of powder. Replace, if necessary.

NECESSARY SPARES

Most production delays caused by gun faults can be prevented by keeping a small range of spares. These should include:

1. Deflectors (cone shape)
2. Injector sleeves
3. A powder hose
4. An injector gasket or O-ring (depending on gun type)
5. Deflector rod rear seal (if gun is fitted with a deflector rod)
6. A complete set of fuses

ADDITIONAL PREVENTATIVE MAINTENANCE

A. POWDER BOOTH

1. Every colour change:
2. Check lighting.
3. Check booth structure.
4. If fitted, check filter cartridge sealing.
5. If fitted, check the operation of the reverse-pulse solenoid.

B. CYCLONE

1. At every colour change:
2. Check ducting for cracks, leaks and cleanliness.
3. Inspect cyclone body and cone for contamination.
4. Inspect the gasket between the cyclone -body and the cone.
5. Check lugs which tighten the cyclone cone to the body.
6. Check cyclone for any undue vibration.
7. Check on/off switch for positive action.
8. Inspect the collar between the cyclone cone and the powder receiver for adequate sealing.
9. Check powder receiver for leaks.

C. FILTER CARTRIDGES

1. At every colour change:
2. Inspect filters for cleanliness.
3. Inspect cartridge for holes and tearing, particularly between the folds of the paper.
4. Check the cartridge rubber seal.

D. CONVEYOR DAILY

1. Inspect the conveyor for smoothness of operation. Check conveyor speed.
2. Inspect conveyor hangers for accumulated dirt. Inspect conveyor for adequate lubrication. Check conveyor earthing.