Operating Instructions and Spare Parts List

Fluidizing Cup for the PG 1-Cup Gun
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Directions for use

Electrostatic Manual Spraying equipment for Powder Coating

The electrostatic manual coating system consists of:

PG 1-Cup Gun with a 0.7 l Powder funnel or a Fluidizing Cup (Option)
PGC 1 Powder Gun Control unit with CB 1 electronics control board - (Option)

This equipment is matched and should only be operated in this configuration.

This equipment combination was tested by PTB: PTB No Ex-91.C.9102, PTB, year 1991

Safety rules for the electrostatic powder coating

1. This equipment can be dangerous when it is not operated according to the following standards:
   EN 50 050 (or VDE 0745 Part 100), EN 50 053 Part 2 (or VDE 0745 Part 102).

2. All electrostatic conductive parts which are within 5 metres of the coating area and especially the workpieces must be grounded.

3. The floor in the coating area must be electrostatic conductive.
   Normal concrete is generally conductive.

4. The operating personnel must wear electrostatic conductive footwear, i.e. leather soles.

5. The operating personnel should hold the gun in the bare hand. If gloves are worn they must be electrostatically conductive.

6. Connect the grounding cable (green/yellow) supplied to the grounding terminal on the control module. The grounding cable must have a good metal to metal contact with the coating booth, recovery unit, and the workpiece conveyor system, especially with the workpiece suspension.

7. The electrical cables and powder feed hoses to the gun must be laid out so that they are protected from possible mechanical damage.

8. The powder coating equipment should only be switched on after the coating booth is in operation. If the booth breaks down then the powder coating equipment must also be switched off.

9. Check the grounding of all electrostatic conductive parts at least once a week.

10. When cleaning the gun or changing nozzles the control module must be switched off.
Technical data for the PGC 1 Powder Gun Control and the PG 1-Cup Gun / Fluidizing Cup (Option)

Type

**PGC 1**

Electrical data

Single-phase AC

**Selectable voltage:** 100 V, 110 V, 120 V, 200 V, 230 V or 240 V

Voltage selection is made on the inside of the electrical unit by resoldering the tag of the transformer. The value of the fuse for 100, 110, and 120 V is 0.5 AT and for the higher voltages is 0.25 AT.

*The equipment is delivered for operation at 230 V from the factory.*

- **Tolerance:** +10% / -15%
- **Frequency:** 50/60 Hz
- **Connected load:** 70 VA
- **Rated output voltage (to gun):** 10 V
- **Rated output current (to gun):** 1.2 A
- **Type of protection:** IP 54
- **Environmental temperature range:** +5°C to +40°C (+41°F to +104°F)
- **Approval:** EN 50050 and PTB No. Ex-91.C.9102. Date PTB tested 10/1991

FM No. J.I. OW 7 A 6.AE (7264). Date tested 10/1993

Pneumatic data

- **Main compressed air input connection thread:** 1/4" B.S.P (male)
- **Maximum input pressure:** 10 bar
- **Minimum input pressure:** 5 bar
- **Maximum water vapour content of compressed air:** 1.3 g/m³
- **Maximum oil vapour content of compressed air:** 0.1 mg/kg (Oil/Air)
- **Maximum compressed air consumption:** Powder hose - Ø 11 mm: 7 m³/h

Dimensions

- **Width:** 530 mm
- **Depth:** 310 mm
- **Height:** 100 mm
- **Weight:** ~11 kg

Powder Gun (with integrated High-Voltage generator)

**PG 1-Cup Gun/Fluidizing Cup (Option)**

- **Powder capacity:** 0.7 l (~350 g/~12 oz.)
- **- option:** 0.35 l (~180 g/~6 oz.)
- **Rated input voltage:** 10 V eff.
- **Frequency:** 17 kHz
- **Rated output voltage:** 98 kV
- **Polarity:** negative (Option - positive)
- **Maximum output current:** 100 μA
- **Flash protection:** EEx 5 mj
- **Approval:** EN 50050 and PTB No. Ex-91.C.9102. Date PTB tested 10/1991

FM No. J.I. OW 7 A 6.AE (7264). Date tested 10/1993

*The PG 1-Cup Gun should only be connected to the PGC 1 Powder Gun Control unit (or to PGC 2, PGC 3 or RGC-HV only after consultation with GEMA)*
Fluidizing Cup for the PG 1-Cup Gun

Scope of these assembly and operating instructions

These assembly and operating instructions contain important information which is required to operate the Fluidizing Cup with the PG 1-Cup Gun.

In order to be able to exploit all the advantages of the Fluidizing Cup with the PG 1-Cup Gun, the user should already be familiar with the working techniques, and functioning of the powder coating equipment.

It is not the function of this manual to give instruction on how to use powder coating equipment. If, however, problems arise which are connected with the PGC 1 Powder Gun Control or the PG 1-Cup Gun then the corresponding operating instruction manual should be consulted.

1. Fields of application

The Fluidizing Cup (with the PG 1-Cup Gun) is especially suited for coating very small series, test coatings at powder manufacturers, and in test laboratories which use types of powder that do not ‘flow’ freely and tend to form ‘bridges’ in the container.

⚠️ CAUTION

The Fluidizing Cup must not be used with the Metallic Conversion set. Danger of high energy discharge!!

2. Scope of delivery of the Fluidizing Cup:

- A Fluidizing Cup (1) with a cover (5), fluidizing air hose (4), to fit on a PG 1-Cup Gun, a fluidizing air connection (3), and a plug screw (not shown) to seal the fluidizing air hole in the intermediate block (2) when the PG 1-Cup Gun is used with a powder funnel.

Figure 1.
Fluidizing Cup - Start-up

If the intermediate block of the standard PG 1-Cup Gun does not have the tapped hole for the elbow socket, so it must be exchanged for the modified version from Gema, see the PG 1-Cup Gun Operating Instructions, page 15 how to dismantle the gun.

1. Screw the elbow socket (9) into the hole in the intermediate block (2 - Fig.1, page 1). The thread must be airtight.
2. Screw the fluidizing cup (4) into the injector housing (5) of the PG 1-Cup Gun.
3. The connection plate (2) should be turned so that the fluidizing air adjustment screw (3) is in line with the injector housing (5) facing the rear of the gun.
4. Connect one end of the fluidizing air hose (12) to the fluidizing air nipple (13) on the connection plate (2) with the elbow connection (10) and fit the other elbow connection (9) to the intermediate block.
5. Make sure all necessary air, and electrical connections are made between the PG 1-Cup Gun, and the PGC 1 Powder Control, according to Fig. 5, page 5.
6. Close the fluidizing air adjustment (3) - clockwise.
7. Turn the powder feed adjustment (6) to the 'Minimum' position - counter-clockwise.
8. Set the conveying air to approximately 2 bar while pulling the gun trigger (see the PGC 1 Powder Gun Control Operating Instructions), and the rinsing air to 0.5 m³/h for flat jet nozzles or maximum 1.5 m³/h for round jet nozzles. Close the supplementary air valve. (These values are only given as a guide, they can vary depending on various factors, such as the type of powder, relative humidity etc).
9. Fill the powder cup (1) with powder - Not more than 2/3 full (~230 g/~8 oz).
10. Pull the gun trigger while slowly opening the fluidizing air adjustment (3) until the powder in the cup "boils".
11. Pull the gun trigger while turning the powder feed adjustment (6) slowly, clockwise towards the 'Maximum' position, until the desired powder cloud is obtained.
12. Point the gun at the workpiece and spray normally.

PG 1-Cup Gun with the Fluidizing Cup seen from the rear.

Figure 2.
Cleaning and repairs

Fluidizing Cup

Regular and frequent cleaning of the gun is recommended to assure a long working life of the equipment and a constantly high coating quality.

a) Daily cleaning
   1a Clean the gun, see below

b) Weekly cleaning :
   1b Check the grounding connection of the PGC 1 control unit with the booth, workpiece suspension or the chain conveyor

c) When the powder coating equipment has not been used for a few days:
   1c Disconnect the Mains plug.
   2c Clean the coating equipment, see point 1a.
   3c Disconnect the main air line.

**Figure 3.**

- 1 Powder cup.
- 2 Fluidizing air adjustment.
- 3 Elbow connection.
- 4 Injector housing.
- 5 Injector sleeve (white - detachable).
- 6 Powder feed adjustment.
- 7 Elbow connection.
- 8 End plate with hook.
- 9 Fluidizing air hose.

**d) Cleaning :**

1. Empty any powder out of the powder cup (1).
2. Clean the outside of the gun with compressed air or wipe with a soft clean cloth, according to the PG 1-Cup Gun Operating Instructions.
3. Remove the fluidizing air hose from the elbow socket (7) (see also PG 1 Cup Gun Operating Instructions, page 22, Fig. 22), then unscrew the fluidizing cup from the injector housing (4).

(Continued)
d) Cleaning (Cont.)

4. The fluidizing plate (6) can be cleaned by blowing clean compressed air (free from oil, and water) through the nipple (13 - Fig. 2, page 2).

⚠️ NOTICE

Do not use solvents or liquids to clean the fluidizing plate

Weekly:

5. Pull the powder feed adjustment (6 - Fig. 3, page 3) on the gun lightly to the rear and turn to the left in the counter-clockwise direction (approximately 30° over the minimum) until it can be pulled out.

6. Blow compressed air through the conveying air connection (6 - Fig. 5, page 5) of the gun.

7. Clean the powder tube in the gun with the spiral brush supplied.

8. Clean all parts with compressed air.

9. The white injector sleeve (5 - Fig. 3, page 3) can be removed from the powder feed adjustment (6 - Fig. 3, page 3) to check if the injector is contaminated or worn.

10. Reassemble in the reverse order.

Normally the gun does not have to be fully dismantled.

Replacing the Fluidizing plate/Air deflector/Special screw

1. Empty any powder out of the powder cup (1).

2. Clean the outside of the gun with compressed air or wipe with a soft clean cloth, according to the PG 1-Cup Gun Operating Instructions.

3. Remove the elbow socket from the nipple (13 - Fig. 2, page 2) in the connection plate (2 - Fig. 2, page 2, see also PG 1 Cup Gun Operating Instructions, page 22, Fig. 22), then unscrew the fluidizing cup (4 - Fig. 2, page 2) from the injector housing (5 - Fig. 2, page 2).

4. Unscrew the powder cup (1) from the floor plate (3).

5. Carefully unscrew the powder tube screw (7) holding the fluidizing plate (6). Use a coin or a thick bladed screwdriver.

6. Check that the air deflector O-Ring (2) is not damaged. Replace if necessary.

7. Check the special grubscrew (4) for contaminated and/or wear. Replace if necessary.

8. Push the powder tube screw (7) into the hole in the fluidizing plate (6) and fit the air deflector (5) and O-Ring (2) onto the powder tube screw (7) and screw the powder tube screw (7) into the floor plate (3).

9. Screw the powder cup (1) onto the floor plate (3).

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**Figure 4.**

1. Powder cup
2. O-Ring
3. Floor plate
4. Special grubscrew
5. Air deflector
6. Fluidizing plate
7. Powder tube screw
Cable and hose connections - PG 1-Cup Gun with Fluidizing Cup to the PGC 1 Powder Gun Control

Figure 5.

1 Gun cable – (A Gun)
2 Mains cable – (C)
3 External air input hose – (1.1)
4 Rinsing air hose – (1.4)
5 Conveying air hose – (1.2)
6 Conveying air connection
## Spare Parts

### Fluidizing Cup

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluidizing Cup - complete</td>
<td>358 606</td>
</tr>
<tr>
<td>1 Cover - Type D 100</td>
<td>357 588</td>
</tr>
<tr>
<td>2 Powder cup</td>
<td>358 452</td>
</tr>
<tr>
<td>3 Powder tube screw</td>
<td>358 517</td>
</tr>
<tr>
<td>4 Fluidizing plate</td>
<td>358 460#</td>
</tr>
<tr>
<td>5 Air deflector</td>
<td>358 525</td>
</tr>
<tr>
<td>6 O-Ring - ø 8.0 x 1.5 mm - Nitril</td>
<td>248 878#</td>
</tr>
<tr>
<td>7 Fluidizing air adjustment</td>
<td>358 509</td>
</tr>
<tr>
<td>8 O-Ring - ø 5.0 x 1.0 mm - Nitril</td>
<td>231 606#</td>
</tr>
<tr>
<td>9 O-Ring (2x) - ø 26 x 2.0 mm - Nitril</td>
<td>246 549#</td>
</tr>
<tr>
<td>10 Plastic hose - ø 6 / 4 mm (black)</td>
<td>103 144*</td>
</tr>
<tr>
<td>11 Elbow socket - ø 6 x 6 mm</td>
<td>248 860</td>
</tr>
<tr>
<td>12 Elbow socket - ø 6 x 6 mm</td>
<td>251 631</td>
</tr>
<tr>
<td>14 Nipple</td>
<td>358 533</td>
</tr>
<tr>
<td>15 Powder container floor plate</td>
<td>358 479</td>
</tr>
<tr>
<td>16 Special grubscrew</td>
<td>358 568</td>
</tr>
</tbody>
</table>

* Indicate length required.

#Wear parts.
Fluidizing Cup

Figure 6

Gun seen from the rear