Operating Instructions and
Spare Parts List

MPS 1-C Cup System with
the PG 1 Powder Gun
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Directions for use

The electrostatic manual coating system consists of:

PG 1-C Electrostatic manual powder coating gun with a
1 l Fluidizing powder cup and vacuum valve
PGC 1 Control module with CB 1 electronics control board

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

This equipment combination was tested by PTB: PTB No 90.Y.1903, PTB year 1990

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 MPS 1-C Cup electrostatic coating equipment and the PG 1 Powder gun

**Type**

**MPS 1-C**

**Electrical data**

Single-phase AC
Selectable voltage : 100 V, 110 V, 120 V, 200 V, 220 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 120V is 0.5 AT and for the higher voltages is 0.25 AT.

The equipment is delivered for operation at 220V 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
Temperature range: +10° C to +40° C (+50° F to +104° F)
Approval: EN 50 050 and FM applied for.
PTB test No 90.Y.1903
Date tested 1990.

**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 ppm
Maximum compressed air consumption:
Powder hose - ø 11mm:

7 m³/h

**Dimensions**

Width:
530 mm
Depth:
310 mm
Height:
100 mm
Weight:
12.5 kg
Capacity:
1 l (~0.5 kg/~1 lb)

**Powder gun (with integrated high-voltage generator)**

**PG 1-C**

Rated input voltage:
10 V eff.
Frequency:
17000 Hz
Rated output voltage:
98 kV
Maximum output current:
130 µA
HV indication:
LED
Polarity:
negative
Flash protection:
EEx 5 mj
Approval:
EN 50 050 and FM
PTB test No 90.Y.1903
Date tested 1990.
MPS 1-C (Cup) Manual powder system for electrostatic coating with the PG 1-C Powder gun

1. Fields of application

The MPS 1-C (Cup) electrostatic manual powder coating system with the PG 1-C powder gun is especially suited for very small series, test coatings at powder manufacturers and in test laboratories.

2. Scope of delivery for MPS 1-C:

![Diagram of MPS 1-C system]

- **1.** PG 1-C Powder gun.
- **1.1** Vacuum nozzle valve
- **1.2** Powder cup.
- **2.** PGC 1 control module.
- **3.** Conveying air hose.

Figure 1.

A PGC 1 control module (2), installed in a metal housing, complete with carrying handle and power cable.

A PG 1-C manual powder gun (1) with electric cable, powder hose, rinsing air hose, and a standard PG 1 nozzle set (see Figure 3), powder cup (1.2) with a vacuum nozzle valve (1.1) for conveying air mounted on the container screw cap.

Pneumatic hose (3) with quick-release coupling and connector for the conveying air (red) from the control module. A grounding cable for the gun is fitted inside the hose.
3. PG 1-C Powder gun

1. Atomizing system
2. Threaded sleeve
3. Shaft
4. HV cascade
5. End plate with hook
6. LED window
7. Plastic screw
8. Grip
9. Grounding plate
10. Locking screw
11. Gun cable connection
12. Gun cable
13. Powder cup connection
14. Rinsing air connection
15. Trigger

Figure 2.
The PG 1 powder gun can be equipped with the following nozzles:

40 mm nozzles

Flat jet nozzle with vented centre electrode.

Round nozzle with vented deflector and vented centre electrode.

150 mm nozzles

Flat jet nozzle with vented centre electrode.

Round nozzle with vented deflector and vented centre electrode.

300 or 500 mm nozzles (*not part of the standard nozzle set - see spare parts list*)

Extended flat jet nozzle with vented centre electrode - 300 or 500 mm long.

Extended round nozzle with vented deflector and vented centre electrode.

Figure 3.
Functional description

The fluidized powder in the powder container is sucked up into the suction tube by the vacuum caused by the conveying air venting from the vacuum nozzle valve up into the gun connection. The powder is electrostatically charged shortly before it leaves the gun nozzle. An electrostatic field also exists between the gun nozzle and the grounded workpiece. The electrostatically charged powder sprayed onto the workpiece adheres to the latter’s surfaces. The powder is fluidized in the container by air being sucked through the porous plastic plate in the bottom of the container and is carried up into the gun. The fluidized powder thereby acquires liquid-like properties. The conveying air volume is set on the control module pressure gauge, according to the amount of powder required to be deposited. The vacuum is regulated (on/off) with the vacuum nozzle valve, which, when turned approximately 30° (either side) no longer maintains the vacuum. The arrows in Figure 4 show the direction of the flow of air, and powder.

![Diagram of a powder application system](image-url)

**Figure 4.**
1. High-Voltage generation

The voltage generator module (control module) supplies high-frequency low-voltage. This voltage is fed through the gun cable (12) and the gun connector (11) in the grip to the high-voltage cascade (4).

In the cascade (4) this low voltage is stepped up (c). This primary high-voltage is subsequently rectified and multiplied in several stages in the cascade (d) until the required high-voltage is attained. The high-voltage is then fed from the spray nozzle to the electrode (e). See also Figures 7 & 8. When the high-voltage is adjusted on the control module (see page 10) the intensity of the LED (6) also changes. The user has the assurance that high-voltage is present and can control this function.

![Diagram of the high-voltage generation system]

Figure 5.

2. Circuitry

In addition to the low-voltage a switching voltage is fed to the gun. When the gun trigger (17) is actuated, a reed switch closes the circuit. The control module switches the low-voltage and the gun air on. This reed switch satisfies safety regulations of most major standards.
3. Powder flow and rinsing air

Figure 6.

Additional air, functioning as rinsing air, is connected to the connection point 1.4 (2 - Fig. 11), at the rear of the control module.

The air pressure control is described in the applicable section (see page 10).

The function of the nozzles are described in the applicable sections (see page 7).
4. Flat jet nozzle with vented centre electrode

![Diagram of flat jet nozzle](image)

Figure 7.

The air-cleaned flat jet nozzle atomizes and electrically charges the powder. The slotted opening shapes the powder cloud to form an oval spray pattern. The powder is charged by the central electrode. The high-voltage, generated inside the gun, is fed via the black contact ring of the nozzle holder to the centre electrode. In order to prevent powder from sintering (building up) on the electrode, the latter is cleaned by compressed air during the spraying process. For this purpose the rinsing air is fed, via the small hole in the black contact ring in the nozzle holder, into the hole in the electrode holder. The rinsing air control on the control module is described in the applicable section (see page 10).

5. Round nozzle with vented deflector and vented centre electrode

![Diagram of round nozzle](image)

Figure 8.

The deflector plate is used for shaping the powder jet emerging from the gun to form a powder cloud. The powder is charged by the centre electrode. The high-voltage generated inside the gun is conducted via the black contact ring of the nozzle holder to the centre electrode.

Powder can build up on the deflector plate, which has to be rinsed with air. For this purpose the rinsing air is fed via the small hole in the black contact ring in the nozzle holder, then into the hole in the electrode holder and deflected in such a way that it blows across the inside cone of the deflector plate. The intensity of the rinsing air is dependent on the powder and its sintering ability.

The rinsing air control on the control module is described in the applicable section (see page 10).

When air flows through a nozzle into a cavity, a vacuum is created in the cavity, (see figure below). This vacuum causes powder to be drawn up into the suction tube and into the cavity. A powder/air mixture is created. The forward air velocity at the nozzle conveys the powder/air mixture through to the gun.

The concentration of the powder/air mixture, and the powder output depends on the conveying air pressure, the quality of the powder, and the type of nozzle.

To increase/decrease the powder output the pressure of the conveying air must be increased/reduced (See "7. Setting the conveying air on the PGC 1 control module"). The pressure gauge for conveying air is graduated in 1/10th bar and indicates the powder output accordingly.
7. Setting the conveying air on the PGC 1 control module.

In order to set the conveying air correctly on the PGC 1 and therefore the powder output, the control knob (1 - Fig. 11) should be turned until the needle of the pressure gauge (2 - Fig. 11) is set to the rate of flow of powder required. Because the pressure gauge (2 - Fig. 11) for conveying air is graduated in 1/10th bar the powder output can be very finely adjusted.

Turning the control knob (1 - Fig. 11) clockwise increases the flow of air and thereby, the flow of powder. As supplementary air is not required the supplementary air control knob (3 - Fig. 11) should be turned completely to the left-hand stop (counter-clockwise). The "floating" ball will still float because of the conveying air passing through the flow-meter. (See also "6. Principle of the vacuum nozzle valve").
8. Description of PGC 1 control module.

The green main ON/OFF switch (9) is located on the right-hand side. When the control module is switched off the switch centre grip is pointing to the zero (upwards). Next to it on the left, is the high-voltage/corona current regulating knob (8), when this is turned fully counter-clockwise to the stop no voltage/current is measured at the gun. This knob serves two functions, when it is in the depressed mode (pushed in) the kV setting/reading (7a - output voltage) of the gun can be made using the LED (Light Emitting Diode) high-voltage scale (7) to the left of this knob. When the knob is pulled out the μA (7b - output current) setting/reading can also be made on the LED high-voltage meter (7).

The rinsing air flow-meter, and adjusting knob (6 and 5) to the left of the LED high-voltage meter is for regulating the rinsing air at the gun nozzle by turning the knob (5) clockwise or counter-clockwise until the ball in the flow-meter “floats” within the corresponding green sector on the scale (depending on whether a nozzle or a deflector is being used). The correct setting will keep the electrode in the nozzle free of powder build-up.

The supplementary air flow-meter (4) and knobs for the conveying air (1), and supplementary air (3) are found in the left-hand half of the front panel of the control module. The ball in the flow-meter must “float” within the green sector on the supplementary air flow-meter (4).*

The regulator at the extreme left of the control unit panel is the conveying air pressure gauge (2, graduated in 1/10th bar) and the pressure regulating knob (1) for adjusting the “working” pressure. The powder output is adjusted here (see page 9).

![Front panel diagram](image)

1. Control knob for conveying air gauge.
2. Conveying air gauge.
3. Control knob for supplementary air.*
4. Flow-meter for conveying air plus supplementary air.*
5. Control knob for rinsing air.
7. High-voltage/corona current meter.
7a. Gun ON and kV setting/reading.
7b. Gun ON and μA setting/reading.

* Not used for MPS 1-C

Figure 11.
Installation of powder coating equipment.

**MPS 1-C**

The powder coating equipment is preassembled in the factory to a point where only the gun connections and air hoses must be connected. Refer to the assembly drawing (page 30, Figure 25).

- The gun support can be mounted on either side of the control module housing.
- Connect the hose for the external compressed air input to the inlet **1.1 IN** (8) at the rear of the control module.
- Fit the red hose to the conveying air outlet **1.2 (7)** at the rear of the control module and the other end to the fitting of the vacuum nozzle valve body.
- Connect the rinsing air hose (small diameter transparent hose) to the connection on the gun and the other end to the outlet **1.4 (5)** at the rear of the control module.

![Rear panel diagram]

1. Gun socket (**A Gun**).
2. Fluidizing air solenoid valve socket (**B**)*.
3. Module ground connection.
4. Mains connection (**C**).
5. Rinsing air connection (**1.4**).
6. Supplementary air connection (**1.3**)*.
7. Conveying air connection (**1.2**).
8. External compressed air input (**1.1 IN**).

* Not used with MPS 1-C

Figure 12.
Preparatory steps for initial start-up

a) Setting the correct line voltage.

The factory always sets the voltage to 220 V. If the local line voltage is not 220 V, the voltage setting of the transformer must be changed by an electrician.

**ATTENTION:** If the incoming voltage is 10% or higher than the voltage selected damage may be done to internal components. If the incoming voltage is 15% or more below the selected setting then the unit may operate erratically or not at all.

1. Unfasten all connections (pneumatic and electrical) at the rear of the control module.
2. Unscrew the retaining screw at the rear of the control module.
3. Slide the module out carefully and place on a clean, flat surface. **When removing the unit do not pull on the control knobs, push the unit from the back if necessary.**
4. Unscrew the two Phillips screws holding the cover of the electrical section. Carefully remove the coverplate.
5. Unsolder the connecting wire from the 220 V terminal post on the transformer and re-solder onto the desired voltage terminal post. **Do not unsolder the other wire (0) on the transformer.**
6. Replace the cover and tighten the two Phillips screws. **When replacing the cover care should be taken that the gasket is not displaced.**
7. Reinsert the module into the housing and slide back into place. Tighten the retaining screw.
8. Refasten all pneumatic and electrical connections.

b) Connection to the compressed air supply.

External compressed air is fed into the connection **1.1 IN (8 - Fig. 12)** on the rear of the control module. Thread connection 1/4" B.S.P. (Male) **The compressed air must be free of oil and water.**

c) Establishing the ground connection.

Connect the ground connection cable clip to the booth or the workpiece suspension device and the other end to the ground connection (3 - Fig. 12) on the control module. The gun is grounded through the cable **inside** the conveying air hose (red).
d) Connecting the PG 1-C powder gun.

1. Connect the cable (1) with the 7-pin connector to the socket labelled "A Gun" at the rear of the control module.

2. Connect the hose for rinsing air (6) to rinsing air outlet "1.4" and to the gun.

3. Connect the quick-release connector of hose to the vacuum nozzle valve body and the other end to the conveying air output "1.2" (4).

4. Connect the power cable (2) to the socket "Mains connection - C" at the rear of the control module.

5. Fit the gun connection (5) in the gun connection holder (2 - Fig. 19) of the powder container.

---

1. Gun cable.
2. Mains power input cable.
3. External air input hose.
4. Conveying air hose.
5. Gun connection
6. Rinsing air hose.

(The connections - B and 1.3 are not used with the MPS 1-C)

Figure 14.
e) Functional check

See trouble shooting guide on pages 28 and 29 for malfunctions.

1. Switch on the main switch (9) of the control module. The MPS 1-C is under power when the lamp inside the green main switch illuminates.

2. Depress the high-voltage control knob (8) on the control module, if not already in this position, and turn to the left-hand stop.

3. Pick up the gun and point it towards a grounded workpiece approximately 20 cm away.

4. Squeeze the gun trigger. The lowest left-hand LED on the high-voltage corona current meter (7) should illuminate. The equipment is active.

5. Set the pressure for the desired rate of powder deposit on the conveying air pressure gauge (2). The maximum output is 3.5 bar.

6. Set the rinsing air by turning the rinsing air control knob (5) until the ball in the rinsing air flow-meter (6) "floats" within the respective green sector of the scale depending on the type of jet nozzle being used (flat jet nozzle or round jet nozzle).

f) Filling the powder container.

The powder container can be filled in two ways.

**Method 1:**

1. Unscrew the screw cap of the powder container.

2. Carefully pour the desired amount of powder to the required level, see the markings on the side of the container \(\text{max. 1000 ccm powder}\).

3. Carefully replace the screw cap.

![Figure 15](image)

**Method 2:**

1. Turn the container upside down and pull off the fluidizing plate holder.

2. Pour the required amount of powder into the container, see the markings on the side of the container \(\text{max. 1000 ccm powder}\).

3. Carefully relpace the fluidizing plate holder.

When all the above checks have been successfully completed, the gun is ready for use. If it fails to function correctly, consult the trouble shooting guide on pages 28 and 29.
Start-up

*a) Powder fluidization*

The fluidizing of the powder is dependent on the type of powder, the air humidity, and the ambient temperature. Fluidization functions after the conveying air is regulated and the gun trigger is pressed.

*The marking on the vacuum nozzle valve knob must be aligned with the the mark on the vacuum nozzle valve housing.*

*b) Adjusting the powder output and powder cloud*

The powder output is dependent on the type of powder, and the conveying air pressure. The operating principle of the vacuum nozzle valve is explained on page 8.

1. Switch the control module on.
2. Direct the gun into the booth and press the gun trigger.
3. Set the conveying air (see page 8).
4. Check powder fluidization (The marking on the vacuum nozzle valve knob must be aligned with the the mark on the vacuum nozzle valve housing).
5. Adjust the rinsing air (see page 8).
   *Using a flat jet nozzle*
   - Adjust the rinsing air on the flow-meter (6 - Fig. 15) so that the ball "floats" in the lower green sector on the scale.
   *Using a round nozzle with vented deflector*
   - Adjust the rinsing air on the flow-meter (6 - Fig. 15) so that the ball "floats" in the upper green sector on the scale.
6. Adjust the powder cloud.
   *Using a flat jet nozzle*
   - Loosen the threaded nut with the special box key (see page 22, paragraph 4) by turning it approximately 45° so that the flat jet nozzle (or the extension) can barely be turned.
   - Turn the flat jet nozzle in the desired axial direction.
   - Tighten the threaded nut.
   *Using a round nozzle with vented deflector*
   - Change the deflector (Ø16, 24, and 32 mm are supplied with the gun).

*Caution: Never turn the deflectors, these are pushed on an O-ring fitting!*
c) **Powder coating - Start-up**

*Important: First check that all electrostatically conductive parts within 5 m of the coating booth are grounded.*

1. Switch on the control module.

2. Pick up the gun and point it into the coating booth, but not at the workpiece to be coated. Press the gun trigger (17 - Fig. 16).

3. Check powder fluidization.

4. Adjust the high-voltage:
   - Check by observing the LED (6 - Fig. 16)

5. The workpiece(s) can now be coated.

*d) Shut-down*

1. Release the gun switch.

2. Switch off the control module.

*The adjustment for high-voltage, rinsing air, and powder output should not be changed.*

3. For work interruptions such as lunchbreaks, over-night, etc. it is necessary to disconnect the compressed air supply.

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**Colour change.**

1. Empty and clean the powder container, refer to page 17 - Powder container - section a.

2. Disassemble and clean the gun, refer to page 17, PG 1-C Powder gun - section a.

3. Prepare control module for operation with new powder, refer to page 15.
Cleaning and repairs.

Powder container

a) Cleaning

1. Disconnect the quick-release coupling from the connector of the vacuum nozzle body.
2. Remove the screw cap from the container.
3. Pull off the rubber fluidizing plate holder.
4. Wipe the inside of the container with a clean, dry brush and a clean cloth.
5. Blow out the fluidizing plate and the holder with compressed air.
6. Carefully replace the fluidizing plate and the container in the holder.
7. Screw on the cap of the powder container.

Only refill the cup shortly before reusing.
Do not use water or solvents to clean the fluidizing plate !!!

PG 1-C Powder gun

a) Cleaning

Frequent cleaning of the gun is recommended for assuring the coating quality.

Important: - Before cleaning the gun, switch off the control module and detach the gun connector (13 - Fig. 16) at the gun socket (A Gun).
- The compressed air used for cleaning should be free of oil and water.

Daily:

1. Clean the outside of the gun.

Weekly:

2. Detach the cup from the connection.
3. Remove the nozzle from the gun and clean it (see page 21).
4. Blow out the gun in the direction of flow with compressed air.
5. Clean the gun tube with the spiral brush supplied (19 - Fig. 16).
6. Clean the gun with compressed air again.
7. Clean the powder cup.
8. Reassemble and reconnect the gun.
b) Gun disassembly

**Important:** - The gun should only be disassembled if this becomes necessary due to a defect or contamination.
- Disassemble only to the point where access to the corresponding part is achieved.
- Before cleaning the gun, switch off the control module and detach the gun connector (13).
- The cascade (4) must not be removed because it has been installed according to a special process. If the cascade is defective, send the entire shaft (3) to an authorized Gema-Volstatic service centre.
Gun disassembly (continued):

1. Detach the gun from the gun connection holder (2 - Fig. 19) by loosening the wing nut on the gun connection clamp (1 - Fig. 19).

2. Detach the rinsing air hose at connector (16 - Fig. 16).

3. Remove the nozzle.

4. Unscrew the lock screw (10 - Fig. 16).

5. **Give the cable connector (11 - Fig. 16) a 1/4 turn counterclockwise (align the marks) and pull out of the grip in a straight line.**

6. Screw the lock screw back provisionally so that it will not get lost.

7. Unfasten the plastic bolt (7 - Fig. 16) and remove the connecting plate (5 - Fig. 16).

8. Separate the grip (8 - Fig. 16) from the shaft (3 - Fig. 16).

9. Pull the powder tube (19 - Fig. 16) out of the grip (8 - Fig. 16).

The connections for the gun holder, and the rinsing air should not be unscrewed if they are not defective.

c) Gun assembly

- The gun is reassembled by performing the previously described disassembling steps in the reverse order.

- Careful handling is recommended.

- If the gun cable connector (11 - Fig. 16) cannot be inserted properly without applying force, disassemble the gun again and reassemble it.

After the gun has been reassembled check that:

- the gun cable connector (11 - Fig. 16) is properly seated. It should be possible to turn the lock screw (10 - Fig. 16) all the way into the countersink.

- there are no gaps between the joints.

- the gun trigger can be smoothly actuated and that it returns to the neutral position on its own.
d) Gun repair

Except for the replacement of possibly defective parts, virtually no repairs should be required. The replacement of the cascade (4 - Fig. 16) and the repair of the gun cable connector (11 - Fig. 16) should only be performed by an authorized Gema-Volstatic service centre – please consult a Gema-Volstatic dealer.

Replacing the trigger (17 - Fig. 16) or the spring (18 - Fig. 16):
1. Disassemble the gun.
2. Remove the spring (Pulling the yoke with forefinger).
4. Insert the (new) trigger into the grip (8 - Fig. 16).
5. Fit the (new) spring on the guide ribs of the trigger and push to the stop.
6. Reassemble the gun.

Replacing the gun connector (13 - Fig. 16):
A soldering iron is required.

![View of soldering pins](image)

Figure 17.

1. Opening the connector:
   - Unfasten the sealing gland (1)
   - Unscrew the sleeve (2)

In case the sleeve cannot be unscrewed, put the gun plug into the gun connection at the socket (A - Gun - Fig. 12) and try again!

2. Unfasten the two screws of the cable clamp.
3. Unsolder the wires of the connector (3).
4. Pull the cable out of the connector and the sleeve (2).
5. Introduce the cable into the new sleeve and connector.
6. Solder on the wires:
   - Pin assignment:
     1 - black wire
     2 - vacant
     3 - blue wire
     centre - screening (ground)
     4 - white wire
     5 - vacant
     6 - brown wire

7. Tighten the two screws of the cable clamp.
8. Screw on the sleeve (2) and tighten.
9. Tighten the sealing gland (1).
Spray nozzles

When removing and cleaning the nozzles please use the special box key supplied to unscrew the nozzle ring (see page 22 and the spare parts list).

e) Cleaning

Daily or after each shift:

- Clean the outside of the spray nozzles with compressed air, solvents or any other liquids. **Never immerse them in solvents for any length of time.**

- Check the seating of the spray nozzle.

  Make sure that the threaded sleeve is always tightened correctly. If the flat jet nozzle is loosely mounted, the high-voltage from the gun can “flash-over” and damage the gun!

Weekly:

- Remove the spray nozzles and clean the inside with compressed air.

  *Sintered powder should be removed.*

Monthly:

- Check the spray nozzles for wear.

  Replace the flat jet nozzle if:

  - the spray pattern is no longer a perfect oval.
  - deep grooves are present in the nozzle slot, or if the wall thickness has decreased.
  - the wedge at the rear of the electrode holder is worn.

By nozzles with deflectors

- if the wedge at the rear of the electrode holder is worn, change the electrode holder.

*Assembly - see next page*
Important on assembly:

1. Nozzle holder.

2. Fitting the electrode holder. Both guides on the electrode holders are different thicknesses (indicated by arrows in the sketch opposite). The thicker guide must be fitted into the widest slot in the nozzle.

   If the electrode resistor must be replaced, it must be done as shown in the sketch with dotted lines. It is important to fit the electrode resistor with the spacing piece pointing towards the tip of the electrode holder.

3. Fitting the nozzle. When fitting the electrode holder into the nozzle, turn the electrode holder slightly until the key fits into the slot.

4. Screwing on the nozzle ring with the box key. The electrode holder and the nozzle are correctly seated when the nozzle ring is completely screwed in. **Important:** Screw the nozzle ring tight, otherwise a leak in the rinsing air line can occur.

5. Fix the deflector plates – do not turn (so far a round spray nozzle is fitted).

Figure 18.
Vacuum nozzle valve

a) Cleaning

2. Gun connection housing.  7. Container screw cap
5. Vacuum nozzle valve.  10. Suction nozzle.

Figure 19.

1. Unscrew the clamp ring (3) and remove the gun.
2. Remove the insert sleeve (4) from the gun connection housing (2).
3. Unscrew the container screw cap (7) from the powder cup.
4. Pull out the suction tube (9) and remove the suction nozzle (10).
5. Pull the vacuum nozzle valve knob (5) out of the vacuum nozzle valve body (6).

All the components can now be cleaned with compressed air.

Make sure that the compressed air is free from oil and water.

Do not scrape the parts. Do not use acetone!

6. Carefully reassemble the parts.

b) Replacing the insert sleeve (4).

1. Unscrew the clamp ring (3) and remove with the gun connection housing (2).
2. Remove the insert sleeve (4).
3. Place the new insert sleeve (4) in the gun connection housing (2) and replace the clamp ring.
Repairing electrical parts

The following repairs may be carried out by the user:

a) Replacing the bulb in the main switch.
   1. Turn the main switch off and disconnect the mains cable of the control module.
   2. Unscrew the black retaining ring (1 - Fig. 20) of the main switch on the front of the control module and remove the green switch grip.
   3. Push the special rubber bulb extractor (supplied) against the defect bulb and turn counter-clockwise to the stop (Bayonet connection). The bulb can now be removed easily.
   4. Replace the new bulb (24V / 2 W) so that the pins on the bulb fit into the slots of the bulb holder. Push the bulb carefully down with the rubber pad as far as it will go and turn clockwise.
   5. Check that the bulb is seated correctly.
   6. Replace the green switch grip and screw on the retaining ring. Make sure the white stripe on the switch grip is pointing upwards.
   7. Reconnect the mains cable of the control module.

b) Replacing the fuse - F1.
   1. Unscrew the fuse holder cap to the left, remove the defective fuse and replace with a new one. Screw the fuse holder cap onto the fuse holder.

c) Replacing a potentiometer.
   1. Remove all electrical and pneumatic connections from the rear of the control module.
   2. Unscrew the retaining screw at the lower rear of the control module.
   3. Slide out the module from the housing and place on a clean flat surface. ATTENTION! Do not pull out by the control knobs. Push the module out from behind.
   4. Unscrew the two Philips screws from the electronics part and carefully remove the cover.
   5. Unscrew the grub screw of the potentiometer knob with an Allen key and pull the knob off the spindle.
   6. Remove the locking nut (with a spanner) and washer, pull the potentiometer out (to the inside of the housing).
   7. ATTENTION! The contacts are not numbered, therefore, the potentiometer should only be replaced by a specialist! Reassemble in the reverse order. When replacing the cover care should be taken that the gasket is not displaced.

Setting the Potentiometer stop (See Figure 20 on next page):

1. Push in the potentiometer spindle (High-Voltage position).
2. Turn the spindle in the clock-wise direction to the stop (Max. Voltage)
3. Tighten the stop ring grub screw when it is pushed against the thread of the potentiometer and the stop pin is touching the stop on the potentiometer holder.
4. Check if the stop pin also touches the stop in the zero position when turned back.
5. Check if the pull switch can be operated.
6. Check if the High-Voltage is adjustable over the whole range of the potentiometer.

d) Replacing the electronics board (PCB).

1. Remove all electrical and pneumatic connections on the rear of the control module (see c) Replacing a potentiometer, points 1-4).
2. Loosen the two screws (2) and unscrew. Take care that the screws do not get lost.
3. Lift the board out carefully, making sure that the LED scale is not damaged in the process.
4. Carefully remove plugs A and B (Never pull on the cables). **The plugs should not be connected to the wrong socket on assembly.**
   Reassemble in the reverse order. **When replacing the cover care should be taken that the gasket is not displaced.**

Figure 20.
Making repairs to the pneumatic unit.

1. Quick-release connection.
3. Pressure reducing valve.
4. Pressure gauge.
5. Pressure reducing valve.
6. Supplementary air flow-meter.
7. Pressure reducing valve.
8. Rinsing air flowmeter.
10. Threaded connection.
11. Pressure reducing valve.

Figure 21.

The following repairs may be carried out by the user:

a) Removing the pneumatic tubes.

Before exchanging pneumatic parts all tube connections should be removed. This is done by pushing the pressure ring back, with the thumb nail, on the quick-release fitting of the hose connector. The tubing can now be withdrawn.

b) Refitting the pneumatic tubes.

This is done by pushing the plastic tubing as far as it will go into the quick-release fitting of the hose connector. The hose is now fixed securely.

Figure 22.

Figure 23.
c) Replacing a pneumatic part.
1. Remove all electrical and pneumatic connections on the rear of the control module.
2. Unscrew the retaining screw at the lower rear of the control module.
3. Slide out the module from the housing and place on a clean flat surface.

**ATTENTION ! Do not pull out by the control knobs. Push the module out from behind.**
4. Release all the pneumatic tubes from the part to be replaced (see “Removing the pneumatic tubes”).
5. Disassemble the part to be exchanged from the pneumatic module housing and replace.
6. The pneumatic tubes can be refitted (see “Refitting the pneumatic tubes”).
7. Reassemble in the reverse order.

d) Cleaning/Replacing a flowmeter.
1. Remove all electrical and pneumatic connections on the rear of the control module.
2. Unscrew the retaining screw at the lower rear of the control module.
3. Slide out the module from the housing and place on a clean flat surface.

**ATTENTION !
Do not pull out by the control knobs. Push the module out from behind.**
4. Release all the pneumatic tubes from the part to be replaced (see “Removing the pneumatic tubes”, page 26, Fig. 22).
5. Remove the two countersunk screws holding the flowmeter to the bottom of the pneumatic housing frame.
6. Remove the cover screw (1) with O-ring (2) from the flowmeter tube (4) with a small screwdriver.
7. Tilt the flowmeter until the "floating" ball (3) rolls out of the flowmeter tube (4).
8. Clean the "floating" ball (3).

**ATTENTION !
Do not clean parts in solvents!!**
9. Replace the "floating" ball (3) into the flowmeter tube (4).
10. Carefully replace the cover screw (1) until it sits tightly on the flowmeter tube (4). The "floating" ball (3) must roll freely in the flowmeter tube (4).
11. Refit the flowmeter in the pneumatic unit housing with the two countersunk screws.
12. Fit the pneumatic tubing back into the quick-release couplings inside the pneumatic unit (as described on page 26, section b) and reassemble the pneumatic unit in the PGC 1 housing in the reverse order it was dismantled.
## Trouble shooting guide

(Bold numbers in the text refer to Figure 16)

<table>
<thead>
<tr>
<th>Faults</th>
<th>Causes</th>
<th>Remedies</th>
</tr>
</thead>
</table>
| Green lamp does not illuminate although control module has been switched on. | No power:  
- Control unit is not connected to Mains  
- Fuse F1 defective  
- External power line fuse defective  
In equipment:  
- Lamp defective | Connect the gun with the power cord to the Mains  
Replace  
Replace or reset  
Replace |
| Powder does not fluidize                                                | No conveying air  
- Pressure reducing valve closed  
- Solenoid valve defective  
- Pressure reducing valve defective | Open the valve  
Replace  
Replace |
| Needle of pressure gauge for conveying air stays at zero when making adjustments | Operating error:  
No conveying air  
- Module is not switched on  
- Gun trigger is not pressed  
In the equipment:  
- Solenoid valve defective  
- Electronics board (PCB) defective | Connect the gun to the control module  
Switch on the control module  
Press gun trigger while regulating  
Replace  
Mail in for repair |
| The "floating" ball in the flow-meter does not move, even when the pressure gauge show that pressure is in the system. |  
- Too little air flow  
- Conveying air is not connected to the gun  
- The "floating" ball sticks because of contaminated compressed air | Switch the gun on an off once (or twice)  
Connect the air hose  
The flow-meter must dismantled and cleaned by a specialist |
<table>
<thead>
<tr>
<th>Faults</th>
<th>Causes</th>
<th>Remedies</th>
</tr>
</thead>
<tbody>
<tr>
<td>During spraying process air escapes from the gun shaft</td>
<td>- O-ring (21) defective or missing</td>
<td>Replace or insert</td>
</tr>
<tr>
<td>Gun does not spray powder although the control module is switched on</td>
<td>- No conveying air</td>
<td>Open the valve</td>
</tr>
<tr>
<td>and the gun trigger (17) is pressed</td>
<td>- The pressure reducing valve is closed</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>- Solenoid valve defect</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>- Pressure reduction valve defect</td>
<td>Increase the high-voltage on the control module</td>
</tr>
<tr>
<td></td>
<td>- High-voltage too low</td>
<td>Replace defective item or mail it in for repair</td>
</tr>
<tr>
<td></td>
<td>- Gun connector, gun cable or gun cable connector is defective</td>
<td>Mail in the shaft of the gun for repair</td>
</tr>
<tr>
<td></td>
<td>- High-voltage cascade is defective</td>
<td>Mail in for repair</td>
</tr>
<tr>
<td></td>
<td>- Electronics board (PCB) defective</td>
<td></td>
</tr>
<tr>
<td>Gun sprays powder, LED at the rear of the cascade (4) is dark, powder does not adhere to the workpiece</td>
<td>- Workpiece not properly grounded</td>
<td>Check the ground connection, also refer to &quot;Safety rules&quot;</td>
</tr>
<tr>
<td>Conveying air cannot be adjusted.</td>
<td>Control knob turns freely on the shaft or the grub-screw is loose.</td>
<td>Tighten the grub-screw.</td>
</tr>
</tbody>
</table>
Pneumatic diagram

* Not used with MPS 1-C equipment  

Figure 26
Spare Parts List

MPS 1-C Cup Powder System
with the PG 1 Powder Gun
# Table of Contents

<table>
<thead>
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<th>Section</th>
<th>Page</th>
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</tr>
<tr>
<td>PG 1-C Powder gun</td>
<td>2</td>
</tr>
<tr>
<td>Nozzle combinations for the PG 1</td>
<td>4</td>
</tr>
<tr>
<td>PGC 1 Control module</td>
<td>6</td>
</tr>
<tr>
<td>- Electrical parts</td>
<td></td>
</tr>
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<td>PGC 1 Control module</td>
<td>8</td>
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<tr>
<td>- Pneumatic parts</td>
<td></td>
</tr>
<tr>
<td>Powder cup</td>
<td>10</td>
</tr>
<tr>
<td>Connecting hose</td>
<td>12</td>
</tr>
<tr>
<td>Notes</td>
<td>13</td>
</tr>
</tbody>
</table>
Ordering Spare Parts

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

1. Type and serial number of your powder coating equipment.
2. Order number, quantity, and description of each spare part.

Example:

1. **Type** MPS 1-C, **Serial no:** 8001 1496
2. **Order no:** 201 073, 5 pieces, fine wire fuse.

When ordering cable or hose material the length required must also be given. The spare part number of yard ware always begins with 1... The dimensions of the plastic hoses are given with the outside diameter (o.d) first and then the inside diameter (i.d).

Example:

\[\odot6/4 \text{ mm} = 6 \text{ mm o.d / 4mm i.d}\]
PG 1-C Powder gun

Notes:

1. Only those parts have been included in the spare parts list that can be replaced by the user without difficulty.

2. If one of the following parts:
   
   3 Shaft
   4 High-voltage cascade
   8 Grip

   is defective or broken, the complete gun should be returned for repair and inspection. The shaft assembly (complete with items 4, 20, and 21), however, can be replaced as a spare part. See ** next page.

3. If the gun cable (12) is defective, the complete gun connector assembly (11) should be returned for repair.

Figure 1.
PG 1-C Powder gun

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td>Cover with hook</td>
<td>330 043</td>
</tr>
<tr>
<td>7.</td>
<td>Plastic bolt</td>
<td>328 847</td>
</tr>
<tr>
<td>9.</td>
<td>Grounding plate</td>
<td>328 863</td>
</tr>
<tr>
<td>10.</td>
<td>Lock screw</td>
<td>232 637</td>
</tr>
<tr>
<td>11.</td>
<td>Gun connector, complete with cable and item 13</td>
<td>328 740</td>
</tr>
<tr>
<td>13.</td>
<td>7-pin plug</td>
<td>200 085</td>
</tr>
<tr>
<td>15.</td>
<td>Gun connector</td>
<td>337 595</td>
</tr>
<tr>
<td>16.</td>
<td>Rinsing air connector</td>
<td>328 820</td>
</tr>
<tr>
<td>17.</td>
<td>Trigger with switching magnet</td>
<td>333 662</td>
</tr>
<tr>
<td>18.</td>
<td>Spring</td>
<td>331 651</td>
</tr>
<tr>
<td>19.</td>
<td>Powder tube</td>
<td>333 700</td>
</tr>
<tr>
<td>20.</td>
<td>O-ring gasket $13.1 \times 1.6$ Nitril</td>
<td>232 670</td>
</tr>
<tr>
<td>21.</td>
<td>O-ring gasket $6.1 \times 1.6$ Nitril</td>
<td>233 099</td>
</tr>
<tr>
<td>22.</td>
<td>O-ring gasket $7.65 \times 1.78$ Nitril</td>
<td>232 564</td>
</tr>
<tr>
<td>23.</td>
<td>O-ring gasket $10.82 \times 1.78$ Nitril</td>
<td>232 556</td>
</tr>
<tr>
<td></td>
<td>Spiral brush for PG 1-C</td>
<td>333 514</td>
</tr>
<tr>
<td></td>
<td>Rinsing air hose - $\phi 4 / 2$ mm (indicate length)</td>
<td>100 854</td>
</tr>
</tbody>
</table>

*For spare parts for the powder cup see page 10.*
## Nozzle combinations for PG 1

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Nozzle holder - 40 mm</td>
<td>334 200</td>
</tr>
<tr>
<td>2.</td>
<td>Nozzle holder - 150 mm</td>
<td>333 484</td>
</tr>
<tr>
<td>3.</td>
<td>Nozzle holder - 300 mm</td>
<td>332 534</td>
</tr>
<tr>
<td>3.1</td>
<td>Nozzle holder - 500 mm</td>
<td>332 542</td>
</tr>
<tr>
<td>4.</td>
<td>Electrode holder (Flat Jet Nozzle)</td>
<td>332 690</td>
</tr>
<tr>
<td>5.</td>
<td>Flat jet nozzle</td>
<td>332 550</td>
</tr>
<tr>
<td>6.</td>
<td>Electrode holder (Round Jet Nozzle)</td>
<td>332 712</td>
</tr>
<tr>
<td>6.1</td>
<td>Radial air nozzle (incl. item 6.2)</td>
<td>331 350</td>
</tr>
<tr>
<td>6.2</td>
<td>O-ring</td>
<td>231 606</td>
</tr>
<tr>
<td>6.3</td>
<td>Electrode holder (without item 6.4)</td>
<td>335 045</td>
</tr>
<tr>
<td>6.4</td>
<td>Electrode with resistor for item 6.3</td>
<td>334 952</td>
</tr>
<tr>
<td>7.</td>
<td>Round jet nozzle</td>
<td>332 569</td>
</tr>
<tr>
<td>8.</td>
<td>Nozzle screw</td>
<td>331 740</td>
</tr>
<tr>
<td>9.</td>
<td>Deflector - ø 16 mm</td>
<td>331 341</td>
</tr>
<tr>
<td>9.1</td>
<td>Deflector - ø 24 mm</td>
<td>331 333</td>
</tr>
<tr>
<td>9.2</td>
<td>Deflector - ø 32 mm</td>
<td>331 325</td>
</tr>
<tr>
<td>10.</td>
<td>Threaded sleeve (Short version - 40 mm)</td>
<td>334 219</td>
</tr>
<tr>
<td>11.</td>
<td>Threaded sleeve (Extended version -150 mm)</td>
<td>332 887</td>
</tr>
<tr>
<td>12.</td>
<td>Threaded sleeve (Extended version - 300mm and 500mm)</td>
<td>334 227</td>
</tr>
<tr>
<td></td>
<td>Special box key for item 8</td>
<td>335 363</td>
</tr>
</tbody>
</table>
### PGC 1 Control module - Spare Parts

#### Electrical Parts

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>PGC 1 Control module (complete)</td>
<td>340 057</td>
</tr>
<tr>
<td>1 Fixed plug, with gasket (for Mains connection)</td>
<td>200 409</td>
</tr>
<tr>
<td>2 Knurled grounding nut - M 6</td>
<td>200 433</td>
</tr>
<tr>
<td>3 Socket - 4 pin</td>
<td>205 249</td>
</tr>
<tr>
<td>4 Socket - 7 pin</td>
<td>200 093</td>
</tr>
<tr>
<td>5 Plug - 12 pin B1 - B12</td>
<td>338 770</td>
</tr>
<tr>
<td>6 Plug - 12 pin A1 - A12</td>
<td>338 761</td>
</tr>
<tr>
<td>7 Printed circuit board - CB1</td>
<td>327 190</td>
</tr>
<tr>
<td>8 Potentiometer - complete</td>
<td>349 585</td>
</tr>
<tr>
<td>8.1 Potentiometer</td>
<td>235 792</td>
</tr>
<tr>
<td>8.2 Clamp nut - M 10x0.75</td>
<td>235 881</td>
</tr>
<tr>
<td>8.3 Stop ring</td>
<td>349 518</td>
</tr>
<tr>
<td>8.4 Potentiometer holder</td>
<td>342 327</td>
</tr>
<tr>
<td>8.5 O-Ring - ø 6x1 mm</td>
<td>217 115</td>
</tr>
<tr>
<td>9 Washer</td>
<td>200 271</td>
</tr>
<tr>
<td>10 Clamp nut - M 12x1</td>
<td>200 700</td>
</tr>
<tr>
<td>11 Regulating knob</td>
<td>200 069</td>
</tr>
<tr>
<td>12 Transformer</td>
<td>235 555</td>
</tr>
<tr>
<td>13 Fuse holder - F1</td>
<td>200 131</td>
</tr>
<tr>
<td>Fine wire fuse (slow blow) 0.5A T for 200-240V</td>
<td>201 073#</td>
</tr>
<tr>
<td>Fine wire fuse (slow blow) 1.0A T for 100-120V</td>
<td>210 242#</td>
</tr>
<tr>
<td>13.1 Fuse holder - F2 (without neutral conductor)</td>
<td>200 131</td>
</tr>
<tr>
<td>14 Lamp unit</td>
<td>235 946</td>
</tr>
<tr>
<td>15 Contact unit</td>
<td>235 938</td>
</tr>
<tr>
<td>16 Adapter fixture</td>
<td>235 920</td>
</tr>
<tr>
<td>17 Bulb - 24V /2W</td>
<td>235 954#</td>
</tr>
<tr>
<td>18 Switch</td>
<td>235 911</td>
</tr>
<tr>
<td>19 Mains cable connection (single plug)</td>
<td>303 607</td>
</tr>
<tr>
<td>23 Clamp nut - PG 7</td>
<td>230 537</td>
</tr>
<tr>
<td>24 Lead-through - PG 7</td>
<td>235 989</td>
</tr>
<tr>
<td>25 Cover plate</td>
<td>340 022</td>
</tr>
<tr>
<td>26 Quick-release screw</td>
<td>210 625</td>
</tr>
<tr>
<td>27 Sealing strip - 9x6 mm</td>
<td>100 269*</td>
</tr>
<tr>
<td>28 Socket cap</td>
<td>206 474</td>
</tr>
<tr>
<td>29 Gasket</td>
<td>336 300</td>
</tr>
</tbody>
</table>

* Indicate length required.
# Wear parts.
Electrical parts

Figure 3.
# PGC 1 Control module

## Pneumatic parts

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air input unit complete</td>
<td>336 610</td>
</tr>
<tr>
<td>Quick-release coupling - ø 8 / 6 mm</td>
<td>203 181</td>
</tr>
<tr>
<td>Screw coupling for ø 8 / 6 mm hose</td>
<td>201 316</td>
</tr>
<tr>
<td>Screw connector for ø 6 / 4 mm hose</td>
<td>241 792</td>
</tr>
<tr>
<td>Quick-release coupling for ø 6 / 4 mm hose</td>
<td>200 840</td>
</tr>
<tr>
<td>Quick-release connector</td>
<td>241 784</td>
</tr>
<tr>
<td>Pressure reducing valve</td>
<td>235 830</td>
</tr>
<tr>
<td>Solenoid valve (24 V - 3/8&quot; B.S.P. thread)</td>
<td>235 865</td>
</tr>
<tr>
<td>Pressure reducing valve</td>
<td>235 822</td>
</tr>
<tr>
<td>Control knob</td>
<td>200 069</td>
</tr>
<tr>
<td>Clamp nut - M 14x1</td>
<td>302 163</td>
</tr>
<tr>
<td>Pressure gauge (0 - 4 bar)</td>
<td>235 814</td>
</tr>
<tr>
<td>Throttle valve</td>
<td>238 244</td>
</tr>
<tr>
<td>Supplementary air flowmeter (2 - 8 m³/h)</td>
<td>347 280</td>
</tr>
<tr>
<td>Rinsing air flowmeter (0.5 - 3.5 m³/h)</td>
<td>347 299</td>
</tr>
<tr>
<td>Hose (black) - ø 8 / 6 mm</td>
<td>103 152*</td>
</tr>
<tr>
<td>Hose (red) - ø 8 / 6 mm</td>
<td>103 500*</td>
</tr>
<tr>
<td>Hose (black) - ø 8 / 6 mm</td>
<td>103 756*</td>
</tr>
<tr>
<td>Hose (transparent) - ø 6 / 4 mm</td>
<td>100 854*</td>
</tr>
<tr>
<td>Lead-through fitting - ø 8 mm</td>
<td>242 374</td>
</tr>
<tr>
<td>Adaptor (1/4&quot; - 3/8&quot;)</td>
<td>223 239</td>
</tr>
<tr>
<td>Elbow connector (3/8&quot; - 3/8&quot;)</td>
<td>223 158</td>
</tr>
<tr>
<td>Y connector (3/8&quot; - ø 8 mm)</td>
<td>235 873</td>
</tr>
<tr>
<td>Hose (black) - ø 6 / 4 mm</td>
<td>103 144*</td>
</tr>
<tr>
<td>T connector - ø 6 mm</td>
<td>237 310</td>
</tr>
<tr>
<td>Quick-release connector (1/8&quot; - ø 6 mm)</td>
<td>233 412</td>
</tr>
<tr>
<td>Quick-release connector (1/8&quot; - ø 6 mm)</td>
<td>240 087</td>
</tr>
<tr>
<td>Quick-release connector (1/8&quot; - ø 8 mm)</td>
<td>240 095</td>
</tr>
<tr>
<td>Solenoid cable</td>
<td>336 602</td>
</tr>
</tbody>
</table>

* Indicate length required
## Powder cup

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>O-ring gasket</td>
<td>232 670</td>
</tr>
<tr>
<td>2</td>
<td>Gun connection</td>
<td>341 444</td>
</tr>
<tr>
<td>3</td>
<td>O-ring gasket</td>
<td>242 489</td>
</tr>
<tr>
<td>4</td>
<td>Clamp ring</td>
<td>242 608</td>
</tr>
<tr>
<td>5</td>
<td>Gun connection clamp</td>
<td>242 594</td>
</tr>
<tr>
<td>6</td>
<td>Insert sleeve holder</td>
<td>242 586</td>
</tr>
<tr>
<td>7</td>
<td>Insert sleeve</td>
<td>242 578</td>
</tr>
<tr>
<td>8</td>
<td>Quick-release connector</td>
<td>237 272</td>
</tr>
<tr>
<td>9</td>
<td>O-ring gasket</td>
<td>242 470</td>
</tr>
<tr>
<td>10</td>
<td>Vacuum nozzle valve (incl. item 9)</td>
<td>242 551</td>
</tr>
<tr>
<td>11</td>
<td>Vacuum nozzle valve body</td>
<td>242 560</td>
</tr>
<tr>
<td>12</td>
<td>Powder container screw cap</td>
<td>242 543</td>
</tr>
<tr>
<td>13</td>
<td>Washer</td>
<td>337 757</td>
</tr>
<tr>
<td>14</td>
<td>Seger ring</td>
<td>237 094</td>
</tr>
<tr>
<td>15</td>
<td>Suction tube</td>
<td>242 535</td>
</tr>
<tr>
<td>16</td>
<td>O-ring gasket</td>
<td>242 616</td>
</tr>
<tr>
<td>17</td>
<td>Suction nozzle</td>
<td>242 527</td>
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<tr>
<td>18</td>
<td>Powder container (incl. items 19 and 20)</td>
<td>242 519</td>
</tr>
<tr>
<td>19</td>
<td>Fluidizing plate holder</td>
<td>242 500</td>
</tr>
<tr>
<td>20</td>
<td>Fluidizing plate</td>
<td>242 497</td>
</tr>
</tbody>
</table>

**Total for items 1 + 2:** 337 595

**Total for items 3 - 20:** 339 466
Powder cup

Figure 5.
Connecting hose

1. Plastic hose 100 030
2. Screw cap 201 308
3. Screw adapter 201 324
4. Quick-release coupling 237 272
5. Quick-release connector 103 373
6. Elbow connection 235 733
7. Grounding cable 232 424

Figure 6