Translation of the original operating instructions

Application funnel set for manual gun OptiSelect
Documentation Application funnel set

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</tbody>
</table>
General safety regulations

This chapter sets out the fundamental safety regulations that must be followed by the user and third parties using the Application funnel.

These safety regulations must be read and understood before the spraying paint equipment is used.

Safety symbols (pictograms)

The following warnings with their meanings can be found in the Gema Switzerland operating instructions. The general safety precautions must also be followed as well as the regulations in the operating instructions.

**DANGER!**
Danger due to electrically live or moving parts. Possible consequences: death or serious injury

**WARNING!**
Improper use of the equipment could damage the machine or cause it to malfunction. Possible consequences: minor injuries or damage to equipment

**INFORMATION!**
Useful tips and other information

Proper use

1. The Application funnel is built to the latest specification and conforms to the recognized technical safety regulations and is designed for the normal application of powder coating.

2. Any other use is considered non-compliant. The manufacturer shall not be liable for damage resulting from such use; the user bears sole responsibility for such actions. Gema Switzerland GmbH must be consulted prior to any use of the Application funnel set for any purposes or substances other than those indicated in our guidelines.

3. Observance of the operating, service and maintenance instructions specified by the manufacturer is also part of conformity of use. The Application funnel should only be used,
maintained and started up by trained personnel, who are informed about and are familiar with the possible hazards involved.

4. Start-up (i.e. the execution of a particular operation) is forbidden until it has been established that the Application funnel set has been set up and wired according to the guidelines for machinery (2006/42 EG). EN 60204-1 (machine safety) must also be observed.

5. Unauthorized modifications to the Application funnel set exempt the manufacturer from any liability from resulting damage.

6. The relevant accident prevention regulations, as well as other generally recognized safety regulations, occupational health and structural regulations are to be observed.

7. Furthermore, the country-specific safety regulations also must be observed.

Product-specific safety measures

- Installation work performed by the customer must be carried out according to local regulations.
- All components must be grounded according to the local regulations before start-up.

Application funnel set for manual gun OptiSelect GM03

The Application funnel set is a constituent part of the system and is thus integrated into the safety system of the plant.

If it is to be used in a manner outside the scope of the safety concept, then corresponding measures must be taken.

NOTE:
For further security information, see the more detailed Gema safety regulations!
About this manual

General information

These operating manual contains all important information which you require for the working with the Application funnel. It will safely guide you through the start-up process and give you references and tips for the optimal use of your new powder coating system.

In order to be able to exploit all the advantages of the application funnel, the user should already be familiar with the working techniques and functioning of the powder coating equipment. If problems arise during working with the Application funnel, which are ascribed to the OptiSelect GM03 powder gun or the powder gun control unit, then the corresponding operating instruction manual should be consulted.

Information about the functional mode of the individual system components - booth, gun control or manual gun - should be referenced in the respective enclosed documents.

DANGER:
Working without operating instructions

Working without operating instructions or with individual pages from the operating instructions may result in damage to property and personal injury if relevant safety information is not observed.

► Before working with the device, organize the required documents and read the section "Safety regulations".
► Work should only be carried out in accordance with the instructions of the relevant documents.
► Always work with the complete original document.
Function description

Field of application

The Application funnel is built exclusively for electrostatic coating with organic powders. Any other use is considered non-compliant. The manufacturer shall not be liable for damage resulting from such use; the user bears sole responsibility for such actions.

The Application funnel is ideally suited for manual coating of objects in very small series for test coatings at powder manufacturers, and for laboratory tests.

Typical characteristics

- The Application funnel is especially suited for working with minimum quantity of powder
- Precise application parameters lead to repeatable application performances
- The Application funnel enables a very quick color change
- The Application funnel can be connected to an OptiSelect GM03 gun by quick release connection - no extra device necessary

Scope of delivery

Application funnel set

- Application funnel set (250 ml)
- Pneumatic connection to the control unit
Application funnel set

Structure

1 Application funnel
2 Control knob with dosing shaft
3 Rinsing air connection
4 Conveying air connection
5 Body
6 Gun connection
**Technical data**

Application funnel set OptiSelect GM03

<table>
<thead>
<tr>
<th>General information</th>
<th>250 ml</th>
<th>600 ml</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Application funnel set</strong></td>
<td>250 ml</td>
<td>600 ml</td>
</tr>
<tr>
<td>Powder output</td>
<td>0 - 220 g/min</td>
<td>0 - 220 g/min</td>
</tr>
<tr>
<td>Useful capacity</td>
<td>250 ml (approx. 150 g powder)</td>
<td>600 ml (approx. 360 g powder)</td>
</tr>
<tr>
<td>Air consumption (application range)</td>
<td>1.8 – 6.5 Nm³/h</td>
<td>1.8 – 6.5 Nm³/h</td>
</tr>
<tr>
<td>Air consumption (rinsing mode)</td>
<td>20 Nm³/h (for a short time)</td>
<td>20 Nm³/h (for a short time)</td>
</tr>
<tr>
<td>Weight without connections</td>
<td>240 g</td>
<td>250 g</td>
</tr>
<tr>
<td>Weight with pneumatic connections</td>
<td>500 g</td>
<td>510 g</td>
</tr>
<tr>
<td>Diameter</td>
<td>80 mm</td>
<td>100 mm</td>
</tr>
<tr>
<td>Length below the gun (without pneumatic hoses)</td>
<td>45 mm</td>
<td>45 mm</td>
</tr>
<tr>
<td>Conveying air connection</td>
<td>coded red / connection 1.2 to control unit OptiStar CG13</td>
<td>coded red / connection 1.2 to control unit OptiStar CG13</td>
</tr>
<tr>
<td>Rinsing air connection</td>
<td>black / PowerClean air valve connection</td>
<td>black / PowerClean air valve connection</td>
</tr>
</tbody>
</table>
Connection instructions

NOTE:
The remainder of the start-up procedure for the OptiSelect GM03 manual powder gun is explicitly described in the operating instructions for the OptiStar CG13 manual powder gun control unit (chapter "Initial start-up" and "Daily start-up")!

Connection to devices WITHOUT PowerClean rinsing module installed (Connection Set 2)

Connection instructions (without PowerClean rinsing module) - overview
Connection to devices WITH PowerClean rinsing module installed (Connection Set 1)

NOTE:
The compressed air must be free of oil and water!
Functional check

1. Switch on the gun control unit
2. Press the desired application key (Preset or Program mode) on the control unit (see gun control unit operating instructions)
3. Pick up the gun and point it to a grounded object, from a distance of approx. 20 cm
4. Press the powder gun trigger
   - The display for current and high voltage on the control unit shows the actual value. The high voltage in the OptiSelect Manual gun is present and the LED illuminates.
   - The high voltage can be set with the corresponding keys (see also the control unit operating instructions)
5. Select the powder output and total air volume
   - The display indicates the powder output in % and total air volume in m³/h
6. Press the corresponding key for the rinsing air on the control unit (according to the nozzle used)
7. Check the remote control by pressing the + or - key on the rear side of the powder gun, and the modified powder output value is displayed on the control unit. By simultaneous pressing of the + and - key, the application modes can be changed on the control unit

If all tests have been completed successfully, the gun is ready for use in combination with the application funnel.

NOTE:
If a malfunction occurs, see the troubleshooting guide, as well as the gun control unit operating manual!
Commissioning

Fill in powder

1. Fill in the desired powder quantity in the application funnel

Switch on the control unit

1. Press the ON power switch. The displays illuminate and the control unit is ready for operation
2. Select the powder output volume
3. Point the gun to the workpiece and coat normally.

Color change

General information

When a color change takes place, the automatic cleaning process is started from the gun by pressing the P key on the gun directly.

NOTE:
The rinsing function can be stopped as required using the P key.

All components that contain powder (Application funnel, gun and spray nozzle) are automatically and comprehensively cleaned with pulses of compressed air. Powder particles of the former color are removed during this process.

Procedure:

1. Fully apply or empty the contents of the application funnel
2. Point the application funnel into the booth

WARNING:
If the manual application funnel is not being pointed into a sufficiently powerful suction unit, then the stirred-up dust from the coating powder can cause respiratory issues.

► The application funnel may only be cleaned in conjunction with a sufficiently powerful suction unit (such as Gema Classic Open booth).

3. Turn the control knob into position
4. Activate the rinsing function
- The LCD segments begin to move on the display
- Pulsating compressed air rinses and cleans the route for the powder to the application funnel

5. The application funnel can also be cleaned internally and externally with the help of a compressed air gun for additional assistance.

6. Turn the control knob into position
   - Pulsating compressed air rinses and cleans the route for the powder through the gun to the spray nozzle

7. After completion of the PowerClean procedure, the controller switches back to coating mode.

8. In cases of radical change of color, the whole application funnel can be dismantled and cleaned using compressed air (see the operating instructions of the application funnel to learn more about this)

9. Dismantle and clean the powder gun (see therefore the user manual of the Manual powder gun)

10. Prepare the Application funnel with new powder for start-up
Maintenance and cleaning

NOTE:
Regular and conscientious maintenance increases the service life of the unit and ensures a longer, more constant coating quality!

Daily maintenance

1. Clean the Application funnel set, see chapter "Cleaning"

Weekly maintenance

1. Clean the Application funnel set, see chapter "Cleaning"
2. Check the O-rings

Cleaning

Cleaning the des Application funnel set

Frequent cleaning of the Application funnel set helps to guarantee the coating quality.

NOTE:
The compressed air used for cleaning must be free of oil and water!

WARNING:
It is not permitted to clean the Application funnel set with solvents!
Do not use any hard objects!

1. Empty any powder out of the application funnel
2. Clean the gun and the outside of the application funnel by blowing off, wiping etc.
3. Clean the application funnel with compressed air
Replacing the insert sleeve

1.

2.

3.
# Fault remedying

## General information

<table>
<thead>
<tr>
<th>Fault</th>
<th>Causes</th>
<th>Fault remedying</th>
</tr>
</thead>
<tbody>
<tr>
<td>The gun does not spray powder, although the control unit is switched on and the gun trigger is pressed</td>
<td>Compressed air not present</td>
<td>Connect the equipment to the compressed air</td>
</tr>
<tr>
<td></td>
<td>Throttle motor or powder gun are clogged</td>
<td>Clean the corresponding part</td>
</tr>
<tr>
<td></td>
<td>The Application funnel set is not correctly or not connected at all to the control unit</td>
<td>Check the pneumatic connections and if necessary, connect them (see connecting guide)</td>
</tr>
<tr>
<td></td>
<td>Insert sleeve in the Application funnel set clogged or worn</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Total air incorrectly configured</td>
<td>Set total air correctly (Default value 4 Nm³/h)</td>
</tr>
<tr>
<td></td>
<td>Main valve defective</td>
<td>Replace main valve</td>
</tr>
<tr>
<td>Irregular powder output</td>
<td>Poor closure</td>
<td>Dismantle the Application funnel set completely, check the O-rings and replace them, if necessary</td>
</tr>
<tr>
<td></td>
<td>Pneumatic hoses not correctly connected</td>
<td>Check the connections and connect correctly, if necessary.</td>
</tr>
<tr>
<td></td>
<td>Sintering on the dosing shaft</td>
<td>Remove any sintering mechanically by means of a brush or solvent</td>
</tr>
<tr>
<td></td>
<td>Nozzle in the Application funnel set clogged or worn</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Inadequate follow-up powder trickle in the application funnel or pinholing</td>
<td>Lightly shake or swing the gun</td>
</tr>
</tbody>
</table>
Spare parts list

Ordering spare parts

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

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

Example:

- **Type** Application funnel set
  **Serial number** 1234 5678
- Order no. 203 386, 1 piece, Clamp - Ø 18/15 mm

When ordering cable or hose material, the required length must also be given. The spare part numbers of this bulk stock is always marked with an *. Wearing parts are always marked with a #.

All dimensions of plastic hoses are specified with the external and internal diameter:

**Example:**

Ø 8/6 mm, 8 mm outside diameter (o/d) / 6 mm inside diameter (i/d)

**WARNING!**
The use of spare parts from other manufacturers will invalidate the Gema guarantee conditions!

▶ Only original Gema spare parts should be used, because the explosion protection will also be preserved that way.
## Application funnel set – spare parts list

<table>
<thead>
<tr>
<th>Application funnel set – 250 ml, complete (pos. 1-11, without pos. 1.1)</th>
<th>1011 426</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Funnel – 250 ml, complete (incl. pos. 2, 3)</td>
<td>1011 421</td>
</tr>
<tr>
<td>1.1 Funnel – 600 ml, complete (incl. pos. 2, 3, 12)</td>
<td>1011 444</td>
</tr>
<tr>
<td>2 Intake cone – for pos. 1 or 1.1</td>
<td>1011 466</td>
</tr>
<tr>
<td>3 O-ring – Ø 8x1 mm</td>
<td>1007 793#</td>
</tr>
<tr>
<td>4 Body – complete (incl. pos. 6)</td>
<td>1011 474</td>
</tr>
<tr>
<td>5 Dosing shaft – complete</td>
<td>1011 433</td>
</tr>
<tr>
<td>6 Pressure piece – complete</td>
<td>1011 440</td>
</tr>
<tr>
<td>7 Pin</td>
<td>1011 438</td>
</tr>
<tr>
<td>8 Nozzle holder – complete (incl. pos. 9)</td>
<td>1011 443</td>
</tr>
<tr>
<td>9 O-ring – Ø 12x1.5 mm</td>
<td>1000 822#</td>
</tr>
<tr>
<td>10 O-ring – Ø 10x1 mm</td>
<td>1010 099#</td>
</tr>
<tr>
<td>11 Nozzle</td>
<td>1011 437#</td>
</tr>
<tr>
<td>12 Cover – Ø 100 mm for 600 ml funnel (not shown)</td>
<td>357 588</td>
</tr>
</tbody>
</table>

# Wearing part
Application funnel set – spare parts
## Connection set 1 (for devices with PowerClean rinsing module installed)

<table>
<thead>
<tr>
<th>Connection set 1</th>
<th>1011 445</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong> Pneumatic connection for conveying air - Application funnel set – complete (incl. pos. 1-5)</td>
<td></td>
</tr>
<tr>
<td>1 Conveying air connection – complete</td>
<td>1005 589</td>
</tr>
<tr>
<td>2 Adapter – 1/8&quot;i-1/8&quot;i</td>
<td>259 551</td>
</tr>
<tr>
<td>3 Screw-in nipple – 1/8&quot;a-Ø 6 mm</td>
<td>248 118</td>
</tr>
<tr>
<td>4 Nut with kink protection – M10x1 mm, Ø 6 mm</td>
<td>201 308</td>
</tr>
<tr>
<td>5 Plastic tube – Ø 6/4 mm, red</td>
<td>600 741*</td>
</tr>
<tr>
<td><strong>B</strong> Pneumatic connection for PowerClean air - Application funnel set – complete (incl. pos. 6-9)</td>
<td></td>
</tr>
<tr>
<td>6 Plastic tube – Ø 8/6 mm, black</td>
<td>103 152*</td>
</tr>
<tr>
<td>7 Nut with kink protection – M12x1 mm, Ø 8 mm</td>
<td>201 316</td>
</tr>
<tr>
<td>8 Connection sleeve</td>
<td>237 663</td>
</tr>
<tr>
<td>9 Connector – NW5-1/8&quot;a</td>
<td>1008 026</td>
</tr>
</tbody>
</table>

* Please indicate length

# Wearing part
### Connection set 2 (for devices without PowerClean rinsing module installed)

<table>
<thead>
<tr>
<th>Connection set 2</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong> Pneumatic connection for conveying air - Application funnel set – complete (incl. pos. 1-5)</td>
<td>1011 446</td>
</tr>
<tr>
<td>1 Conveying air connection – complete</td>
<td>1005 589</td>
</tr>
<tr>
<td>2 Adapter – 1/8&quot;i-1/8&quot;i</td>
<td>259 551</td>
</tr>
<tr>
<td>3 Screw-in nipple – 1/8&quot;a-Ø 6 mm</td>
<td>248 118</td>
</tr>
<tr>
<td>4 Nut with kink protection – M10x1 mm, Ø 6 mm</td>
<td>201 308</td>
</tr>
<tr>
<td>5 Plastic tube – Ø 6/4 mm, red</td>
<td>600 741*</td>
</tr>
<tr>
<td>6 Plastic tube – Ø 8/6 mm, black</td>
<td>103 152*</td>
</tr>
<tr>
<td>7 Nut – M12x1-Ø 8 mm</td>
<td>263 079</td>
</tr>
<tr>
<td>8 Screw cap – Ø 8 mm</td>
<td>263 060</td>
</tr>
<tr>
<td>9 Solenoid valve – complete (incl. pos. 10), 24 VDC, 3 W, Ex</td>
<td>1008 240</td>
</tr>
<tr>
<td>10 Valve coil – for pos. 9</td>
<td>1008 241</td>
</tr>
<tr>
<td>11 PowerClean valve cable – complete, 1 m</td>
<td>1009 879</td>
</tr>
</tbody>
</table>

* Please indicate length

# Wearing part