Automatic Powder Spray Gun

Version 05 / 2012
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1 GENERAL INFORMATION

1.1 PREFACE

The operating manual contains information about safely operating, maintaining, cleaning and repairing the device.
The operating manual is part of the device and must be available to operating and service staff.
The operating and service staff should be instructed according to the safety instructions.
The device may only be operated in compliance with this operating manual.
This equipment can be dangerous if it is not operated according to the definitions in this operating manual.

1.2 WARNINGS, NOTES AND SYMBOLS IN THESE INSTRUCTIONS

Warning instructions in this operating manual highlight particular dangers to users and device and state measures for avoiding the hazard. These warning instructions fall into the following categories:

Danger - immediate risk of danger.
Non-observance will result in death or serious injury.

Warning - possible imminent danger.
Non-observance may result in death or serious injury.

Caution - a possibly hazardous situation.
Non-observance may result in minor injury.

Notice - a possibly hazardous situation.
Non-observance may result in damage to property.

Note - provides information about particular characteristics and how to proceed.
1.3 COPYRIGHT

The copyright for this operating manual belongs to J. Wagner AG. The information contained in this operating manual may only be used by the operator for his own use, e.g. to produce operating instructions.

1.4 CONTACT DETAILS

J. Wagner AG                    Tel +41 (0)71 757 2211
Industriestrasse 22            Fax +41 (0)71 757 2222
Postfach 663                   www.wagner-group.com
CH-9450 Altstätten             rep-ch@wagner-group.ch

1.5 LANGUAGES

The operating manual is available in the following languages:

<table>
<thead>
<tr>
<th>Language</th>
<th>Order No.</th>
<th>Language</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>German</td>
<td>390822</td>
<td>English</td>
<td>390829</td>
</tr>
<tr>
<td>French</td>
<td>390836</td>
<td>Dutch</td>
<td>390876</td>
</tr>
<tr>
<td>Italian</td>
<td>390840</td>
<td>Spanish</td>
<td>390851</td>
</tr>
<tr>
<td>Danish</td>
<td>390870</td>
<td>Portuguese</td>
<td>2315719</td>
</tr>
<tr>
<td>Norwegian</td>
<td>390880</td>
<td>Polish</td>
<td>2320221</td>
</tr>
<tr>
<td>Czech</td>
<td>390896</td>
<td>Slovenian</td>
<td>390863</td>
</tr>
<tr>
<td>Serbian</td>
<td>390871</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2 CORRECT USE

2.1 DEVICE TYPE
Automatic spray gun for automatic coating

2.2 TYPE OF USE
The spray gun PEA-C4-HiCoat serves as stationary equipment for industrial electrostatic coating with flammable powder in automatic systems. It can be operated either with single control units or switch cabinet modules.

2.3 USE IN POTENTIALLY EXPLOSIVE AREAS
This type A-P electrostatic powder spray gun is suitable for processing industrial powder paints for coating electrically conductive objects and can be used in potentially explosive atmospheres (zone 22). (See explosion protection identification Chap 3.1).

2.4 SAFETY PARAMETERS
The powder spray gun is only suited to the application of powder paint.
J. Wagner AG forbids any other use!
The powder spray gun may only be operated under the following conditions if:

- the operating staff have previously been trained on the basis of this operating manual,
- the safety regulations listed in this operating manual are observed,
- the operating, maintenance and repair information in this operating manual is observed,
- and the statutory requirements and accident prevention regulations standard in the country of use are observed.

The spray gun may only be used if all parameters are set and all measurements/safety checks are carried out correctly.
2.6 PROCESSING MATERIALS

- Types of powder which can be charged electrostatically
  - Metallic powder

2.6 REASONABLY FORESEEABLE MISUSE

The following is prohibited:

- coating work pieces which are not grounded
- unauthorized conversions and modifications to the spray gun
- processing liquid or similar coating materials
- using defective components, spare parts or accessories other than those described in chapter 12 of this operating manual

The forms of misuse listed below may result in health issues and/or damage to property:

- use of damp powder paint
- incorrectly set values for powder discharge
- incorrectly set electrostatic values

2.7 RESIDUAL RISKS

Residual risks are risks which cannot be excluded even in the event of correct use. If necessary, warning and prohibition signs at the relevant points of risk indicate residual risks.

<table>
<thead>
<tr>
<th>Residual Risk</th>
<th>Source</th>
<th>Consequences</th>
<th>Specific Measures</th>
<th>Lifecycle Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin contact with powder paints and cleaning agents</td>
<td>Handling powder paints and cleaning agents</td>
<td>Skin irritation, allergies</td>
<td>Wear protective clothing</td>
<td>Operation, maintenance, disassembly</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Note safety data sheets</td>
<td></td>
</tr>
<tr>
<td>Powder paint in air outside the defined working area</td>
<td>Painting outside the defined working area</td>
<td>Inhalation of substances hazardous to health</td>
<td>Observe working instructions and operating procedures</td>
<td>Operation, maintenance</td>
</tr>
<tr>
<td>Falling down of spray guns</td>
<td>Loosening of the securing nuts</td>
<td>Injuries</td>
<td>Regular check of fixations</td>
<td>Operation, maintenance</td>
</tr>
<tr>
<td>Residual voltage on live parts</td>
<td>Deficient grounding</td>
<td>Electrical shock</td>
<td>Danger instruction, instruction by trainer</td>
<td>Operation, maintenance</td>
</tr>
</tbody>
</table>
3 IDENTIFICATION

3.1 EXPLOSION PROTECTION IDENTIFICATION

Gun type: PEA-C4-HiCoat
Manufacturer: J. Wagner AG

CH - 9450 Altstätten

II 2 D Ex 2mJ 85 °C

CE: Communautés Européennes
0102: Number of appointed body which is involved in the production monitoring phase
E: according to European standard
Ex: Symbol for explosion protection
II: Device class II
2: Category 2
D: Ex-atmosphere dust
2mJ: Max. firing power 2 mJ
85 °C: Max. surface temperature

The EC type examination certificate PTB 05 ATEX 5008 can be found in chapter 14.4.

3.2 PERMISSIBLE DEVICE COMBINATIONS

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorrect use of the spray gun! Risk of injury and damage to the device.</td>
<td></td>
</tr>
<tr>
<td>→ Only connect original Wagner devices to the PEA-C4-HiCoat spray gun.</td>
<td></td>
</tr>
</tbody>
</table>

The PEA-C4-HiCoat powder spray gun may only be connected to the control devices listed below:

<table>
<thead>
<tr>
<th>Control Device</th>
<th>PEA-C4-HiCoat Powder Spray Gun</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPG-Sprint</td>
<td>HVM-D 1</td>
</tr>
<tr>
<td>Bravo</td>
<td>HVM-DP</td>
</tr>
<tr>
<td>EPG-D1</td>
<td>EPG-DP 5</td>
</tr>
<tr>
<td>EPG Prima</td>
<td>EPG-SL 5</td>
</tr>
<tr>
<td>EPG 2008</td>
<td>EPG 2025 Digifi.</td>
</tr>
<tr>
<td>EPG 2007</td>
<td></td>
</tr>
</tbody>
</table>
3.3 SAFETY IDENTIFICATIONS

Plates bearing information for the user have been attached to the work openings of the powder coating booth.
The plate size corresponds to the standard category Ø 100 mm; 3.94 inches.
The label plates, which must be attached, are shown below:

Explosive atmosphere!

Forbidden for unauthorized persons!

Close to the spray area a warning sign (included in the delivery of the installation) has to be placed with the following indications:

- The equipment may only be operated by trained staff.
- Before starting cleaning the spray gun or carrying out any other work in the spray area, the high-voltage must be shut down in such a way that it cannot be activated again by actuating the trigger of the spray gun.
- Use only metallic containers for cleaning fluids.
- Preferably use solvents with the highest possible flash point, higher than the ambient temperature if possible.
- The electrostatic spraying unit must be maintained regularly according to the manufacturer’s instructions. Repairs may only be performed according to the manufacturer’s instructions.
4 GENERAL SAFETY INSTRUCTIONS

4.1 SAFETY INSTRUCTIONS FOR THE OPERATOR

→ Keep this operating manual at hand near the device at all times.
→ Always follow local regulations concerning occupational safety and accident prevention.

4.1.1 ELECTRICAL DEVICES AND OPERATING EQUIPMENT

→ To be provided in accordance with the local safety requirements with regard to the operating mode and ambient influences.
→ May only be maintained by skilled electricians.
→ Must be operated in accordance with the safety regulations and electrotechnical regulations.
→ Must be repaired immediately in the event of problems.
→ Must be put out of operation if they pose a hazard.
→ Must be de-energized before work is commenced on active parts.
→ Secure the device against being switched back on without authorization. Inform staff about planned work.
→ Observe electrical safety regulations.

4.1.2 PERSONNEL QUALIFICATIONS

→ Ensure that the device is operated and repaired only by trained persons.

4.1.3 A SAFE WORK ENVIRONMENT

→ The floor in the working area must be electrostatically conductive (measurements according to EN 1081 and EN 61340-4-1).
→ The footwear worn by the operators must comply with the requirements of EN ISO 20344. The measured insulation resistance must not exceed 100 megaohms.
→ The protective clothing, including gloves, must comply with the requirements of EN ISO 1149-5. The measured insulation resistance must not exceed 100 megaohms.
→ The powder release must be electrically interlocked with the powder spray system’s exhaust air equipment.
→ Excess coating material (overspray) must be collected up safely.
→ Ensure that there are no ignition sources such as naked flames, sparks, glowing wires or hot surfaces in the vicinity. Do not smoke.
→ Provide sufficient numbers of suitable fire extinguishers and ensure that they are serviceable.
→ The operating company must ensure that the average concentration of powder paint in the air does not exceed 50% of the lower explosion limit (LEL = max. permitted concentration of powder to air). If no reliable LEL value is available, the average concentration must not exceed 10 g/m³.
4.2 SAFETY INSTRUCTIONS FOR STAFF

→ Always follow the information in these instructions, particularly the general safety instructions and the warning instructions.
→ Always follow local regulations concerning occupational safety and accident prevention.
→ Under no circumstances may people with pacemakers enter the area where the high-voltage field between the spray gun and the work piece to be coated builds up!

4.2.1 SAFE HANDLING OF WAGNER POWDER SPRAY DEVICES

→ Do not point spray guns at people.
→ Before all work on the device, in the event of work interruptions and functional faults:
  - Switch off the energy/compressed air supply.
  - Lock spray guns to prevent them actuating.
  - Relieve pressure on spray guns and device.
  - In the event of functional faults: Identify and correct the problem, proceed as described in chapter "Elimination of Faults".

4.2.2 GROUNDING THE DEVICE

The electrostatic charge may, in certain cases, give rise to electrostatic charges on the device. In the event of discharge, this may result in the formation of sparks or flames.
→ Ensure that the device is grounded before each coating process.
→ Ground the work pieces to be coated.
→ Ensure that all persons inside the working area are grounded, e.g. by wearing electrostatically conductive shoes.
→ The function of grounding cables must be checked regularly (see EN 60204).

4.2.3 ACCESSORIES AND SPARE PARTS

→ Only use original Wagner powder hose.
4.2.4 CLEANING AND MAINTENANCE

→ Before starting cleaning or any other manual work, the high-voltage in the spray area must be shut down and locked to prevent it from being switched back on.
→ Lock the supply of compressed air and decompress the system.
→ Secure the device against being switched back on without authorization.
→ Use only electrically conducting and grounded containers for cleaning fluids.
→ Preference should be given to non-flammable cleaning fluids.
→ Flammable cleaning fluids may only be used if, once the high-voltage has been switched off and all parts carrying high-voltage are discharged to a discharge energy of less than 0.24 mJ before they can be reached. Most flammable solvents have a firing power of around 24 mJ or 60 nC.
→ The cleaning agent’s flash point must be at least 15 K above the ambient temperature.
→ Only mobile industrial vacuum cleaners of design 1 (see EN 60335-2) may be used to remove dust deposits.

4.2.5 HANDLING POWDER PAINTS

→ Take note of the processing regulations laid down by the manufacturer of the powder paint being used, when preparing or processing the powder.
→ Take note of the manufacturer’s advice and the relevant environmental protection regulations when disposing of powder paints.
→ Take the prescribed safety measures, in particular wear of safety glasses and safety clothing and use protective hand cream if required.
→ Use a mask or breathing apparatus if necessary.
→ To ensure sufficient protection of health and the environment, only operate the device in a powder booth or at a spray wall with activated ventilation (exhaust air).
4.3 NOTE ON HARMLESS DISCHARGES

With the high-voltage switched on, a luminous or corona discharge occurs at the electrode tip; this can only be seen in the dark. This physical effect can be seen when the electrode is brought near the grounded work piece. This luminous discharge does not involve any firing power and has no effect on system handling. When the electrode approaches the work piece, the control unit automatically reduces the high-voltage to a safe value. If you touch plastic parts of the spray gun with your finger, harmless discharges may occur due to the high-voltage field around the spray gun (so-called brush discharges). However, these do not contain any firing power.
4.4 PROTECTIVE AND MONITORING EQUIPMENT

**WARNING**

Incorrect use!
Risk of injury and damage to the device.

- Protective and monitoring equipment must not be removed, modified or rendered unusable.
- Regularly check that they are working perfectly.
- If defects are detected on protective and monitoring equipment, the system must not be operated until these defects are remedied.

4.4.1 RELEASE GUNS (HIGH-VOLTAGE/PNEUMATIC SYSTEM)

Enabling high-voltage depends on:

- Exhaust air is OK
- Fire extinguishing system/fire detection system is OK (external signal)
- No EMERGENCY STOP
- Control voltage ON

As soon as one of these conditions is not fulfilled, the high-voltage is switched off immediately. After the fault has been eliminated and acknowledged, the enabling mechanism can be selected again. An automatic switch on is prevented by the hardware locking.
5 DESCRIPTION

5.1 DESIGN OF SPRAY GUN

<table>
<thead>
<tr>
<th>Description</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Flat spray nozzle (deflector cone)</td>
</tr>
<tr>
<td>B</td>
<td>Electrode</td>
</tr>
<tr>
<td>C</td>
<td>Cap nut</td>
</tr>
<tr>
<td>D</td>
<td>Gun body</td>
</tr>
<tr>
<td>E</td>
<td>Electrical connection</td>
</tr>
<tr>
<td>F</td>
<td>Atomizing air connection</td>
</tr>
<tr>
<td>G</td>
<td>Powder hose connection</td>
</tr>
<tr>
<td>H</td>
<td>Type plate</td>
</tr>
</tbody>
</table>

5.2 FUNCTIONING OF THE SPRAY GUN

The spray gun is switched on and off via the superordinated control unit. At the same time the air supply and high-voltage are activated. The distance of the installed spray guns to each other must be at least 300 mm; 11.81 inches for functional reasons. The gun control cabinet must be switched off in order to lock the spray gun! If changing from the flat spray nozzle to the deflector cone, the depth control must be adjusted.
5.3 TECHNICAL DATA

<table>
<thead>
<tr>
<th>Dimensions:</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Length/width/height</td>
<td>see chapter 5.3.1</td>
</tr>
<tr>
<td>Weight</td>
<td>555 g; 1.22 lbs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electrical:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage</td>
<td>max. 22 Vpp</td>
</tr>
<tr>
<td>Input current</td>
<td>max. 0.9 A</td>
</tr>
<tr>
<td>Frequency</td>
<td>19 - 30 kHz</td>
</tr>
<tr>
<td>Output voltage</td>
<td>max. 100 kV DC</td>
</tr>
<tr>
<td>Polarity</td>
<td>negative</td>
</tr>
<tr>
<td>Construction type</td>
<td>in accordance with DIN EN 50177 type A-P</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP 54</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pneumatic:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Input air pressure (atomizing air volume)</td>
<td>max. 3 bar; 0.3 MPa, 43.51 psi</td>
</tr>
<tr>
<td>Powder output quantity</td>
<td>max. 450 g/min; max. 0.99 lbs/min.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ambient conditions:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature range</td>
<td>5 - 45 ºC; 41 - 113 ºF</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>&lt; 75 %</td>
</tr>
</tbody>
</table>

⚠️ WARNING

Outgoing air containing oil!
Risk of poisoning if inhaled.

→ Provide compressed air free from oil and water (quality standard 3.5.2 according to ISO 8573.1) 3.5.2 = 5 μm / +7 ºC; 44.6 ºF / 0.1 mg/m³.

Ambient conditions:
If low-melting powders are used, the ambient temperature may have to be lower than 30 ºC; 86 ºF.

Volume measures:
for volumes specified in Nm³ (standard cubic meters). One cubic meter of a gas at 0 ºC; 32 ºF and 1.013 bar is called norm cubic meter.
5.3.1 DIMENSIONS

<table>
<thead>
<tr>
<th>Measurement</th>
<th>mm</th>
<th>inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>395</td>
<td>133.66</td>
</tr>
<tr>
<td>B*</td>
<td>30</td>
<td>1.18</td>
</tr>
<tr>
<td>C</td>
<td>310</td>
<td>12.20</td>
</tr>
<tr>
<td>D</td>
<td>76</td>
<td>2.99</td>
</tr>
<tr>
<td>E</td>
<td>82</td>
<td>3.23</td>
</tr>
</tbody>
</table>

* Measurement for installation dimension C calculation when utilizing a deflector cone
5.4 PERMITTED ACCESSORIES

Only the accessories listed in this operating manual may be connected to the PEA-C4-HiCoat powder spray gun. The accessories listed in chapter 12 were included in the EC type examination and are approved for use with the gun.

5.5 SCOPE OF DELIVERY

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>390004</td>
<td>PEA-C4-HiCoat automatic gun</td>
</tr>
<tr>
<td>1</td>
<td>---</td>
<td>Nozzle set</td>
</tr>
</tbody>
</table>

The standard equipment includes:

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>390893</td>
<td>Declaration of conformity</td>
</tr>
<tr>
<td>1</td>
<td>390822</td>
<td>Operating manual German</td>
</tr>
<tr>
<td>1</td>
<td>see chap. 1.1</td>
<td>Operating manual in local language</td>
</tr>
</tbody>
</table>
6 ASSEMBLY AND COMMISSIONING

6.1 TRAINING ASSEMBLY/COMMISSIONING STAFF

**WARNING**

Incorrect installation/operation!
Risk of injury and damage to the device.

→ The commissioning staff must have the technical skills to safely undertake commissioning.
→ The commissioning staff must be familiar with the provisions of European standard DIN EN 50177.
→ When putting into operation and for all work, read and follow the operating manual and safety regulations for the additionally required system components.

6.2 STORAGE CONDITIONS

Until the point of installation, the powder spray gun must be stored in a dry location, free from vibrations and with a minimum of dust. The powder spray gun must be stored in closed rooms.
The air temperature at the storage location must be between 5 - 45 °C; 41 - 113 °F.
The relative air humidity at the storage location must not exceed 75%.

6.3 INSTALLATION CONDITIONS

The air temperature at the installation site must be between 5 - 45 °C; 41 - 113 °F.
Depending on the powder paint used, the maximum permissible ambient temperature for reliable operation can be significantly below +40 °C; 104 °F.
The relative air humidity at the storage location must not exceed 75%.
## 6.4 PREPARING THE SPRAY GUN
### 6.4.1 SELECTION OF THE SUITABLE NOZZLE SYSTEM

The process of changing from the flat spray nozzle to the deflector cone is described in chapter 8.5 “Fitting the Round Spray Nozzle”. You will find the article numbers of the different nozzles in chapter 12 "Accessories".

### Nozzle Application Overview

<table>
<thead>
<tr>
<th>Nozzle</th>
<th>Application Overview</th>
<th>Powder Cloud</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat spray nozzle</td>
<td>Difficult work pieces • Undercuts • Profiles • Flat work pieces (reduced picture frame)</td>
<td>Widely spread flat powder cloud</td>
</tr>
<tr>
<td>Deflector cone</td>
<td>• Wire goods • Grid designs</td>
<td>Oval powder cloud Size of the powder cloud is dependent on the deflector plate diameter</td>
</tr>
</tbody>
</table>

### Nozzle Application for Various Uses

<table>
<thead>
<tr>
<th>Nozzle</th>
<th>Application</th>
<th>Distance to Work Piece (mm)</th>
<th>Powder Discharge (g/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1¹</td>
<td>Universal application (slow powder cloud) • deep and complex shapes • extensive work pieces</td>
<td>120 … 300</td>
<td>50 … 250</td>
</tr>
<tr>
<td>F2¹</td>
<td>Targeted application (dense powder cloud) • high penetration • high penetration</td>
<td>120 … 400</td>
<td>30 … 200</td>
</tr>
<tr>
<td>F3¹</td>
<td>for small total air volume and small jet width (fastest powder cloud) • high penetration capability for profile parts • high stability</td>
<td>120 … 300</td>
<td>≤ 180</td>
</tr>
<tr>
<td>F4¹</td>
<td>Wide flat spray nozzle for high powder application (slow powder cloud) • good atomization • specially for extensive work pieces (Total air &gt; 4.5 Nm³/h)</td>
<td>&gt; 200</td>
<td>150 … 400</td>
</tr>
</tbody>
</table>
Nozzle | Application | Distance to Work Piece (mm) | Powder Discharge (g/min)
---|---|---|---
HPO-1¹ | Wide flat spray nozzle for high powder application (slow powder cloud)  
- good atomization  
- specially for extensive work pieces | > 200  
(Total air > 4.5 Nm³/h) | 150…400

1.) Nozzles are labeled on the back.

Deflector Cone | Application | Distance to Work Piece (mm) | Powder Discharge (g/min)
---|---|---|---
R20 | ø 20 mm  
- Smaller flat parts | 100 … 300 | 30 … 250

R28 | ø 28 mm  
- Medium sized flat parts  
- Coating of lateral surfaces with Z-axes | 100 … 300 | 50 … 250
6.5 MOUNTING THE SPRAY GUN

**WARNING**

Unintentional putting into operation!
Risk of injury.

Before any work on the device, in the event of work interruptions and malfunctions:
- → Switch off the energy/compressed air supply.
- → Decompress spray gun and device pressure.
- → Secure the spray gun against actuation.
- → In the event of malfunctions, remedy the fault as described in chapter “Troubleshooting”.

**Procedure:**

1. Switch off the high-voltage generation on the control unit.
2. Mount the spray gun on the mounting bracket and attach both for example to the gun support of the reciprocator.
   **Note:**
   For connecting and attaching the spray gun use the parts listed in chapter "Accessories".
   The distance of the installed spray guns to each other must be at least 300 mm; 11.81 inches for functional reasons.
3. Connect the spray gun with the electrical cable to the control unit.
4. Connect the powder feed hose to the spray gun and to the powder injector.
5. Connect the atomizing air hose to the spray gun and to the control unit.
6.6 GROUNDING

![WARNING]

**Defective grounding will result in high levels of powder mist!**
Danger of poisoning.
Insufficient paint application quality.

→ Ground all device components.
→ Ground the work pieces to be coated.

For safety reasons, the spray gun and the work piece must be properly grounded. For the spray gun this done through the gun support.

Perfect grounding of the work piece is also necessary to achieve an optimum powder coating.

**A poorly grounded work piece causes:**
- dangerous electric charging of the work piece
- very bad wrap around
- uneven coating
- back-spray to the spray gun, i.e. contamination

**Prerequisites for perfect grounding and coating are:**
- Clean suspension of the work piece to be coated.
- Grounding of spraying booth, conveyor system and suspension by the customer in accordance with the operating manual or the manufacturer’s information.
- Grounding of all conductive parts of the system.
- The resistance to ground of every work piece’s locating point must not exceed 1 MΩ (megohm) (measurement voltage must be 500 or 1000 V).

Sparks between conveyor, conveyor hooks (hangers) and work piece can occur if electric contact points between conveyor, conveyor hooks (hangers) and work piece are not sufficiently cleaned and therefore the work pieces are not sufficiently grounded!

These sparks can cause severe radio frequency interference (electro-magnetic compatibility = EMC).
6.6.1 GROUNDING THE POWDER COATING SYSTEM

1. Only use mains cables with grounding strand!
2. Connect grounding cable with booth and system ground!
3. Connect grounding cable to an uncoated metal part of the booth!
4. Remove all paint from hooks and other hanger parts!
5. Do not wear non-conducting gloves!
6. Wear electrostatically conductive shoes!
7. The floor must be electrostatically conductive!
7 OPERATION

7.1 TRAINING THE OPERATING STAFF

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorrect operation! Risk of injury and damage to the device.</td>
</tr>
</tbody>
</table>

- The operating staff must be qualified to operate the entire system.
- Before work commences, the operating staff must receive appropriate training.
- The operating staff must be familiar with the provisions of European standard DIN EN 50177.

7.2 SAFETY INSTRUCTIONS

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorrect operation! Risk of injury and damage to the device.</td>
</tr>
</tbody>
</table>

- If contact with powder materials or cleaning agents causes skin irritation, appropriate precautionary measures must be taken, e.g. wearing protective clothing.
- The footwear worn by operating staff must comply with EN ISO 20344. The measured insulation resistance must not exceed 100 megaohms.
- The protective clothing, including gloves, must comply with EN ISO 1149-5. The measured insulation resistance must not exceed 100 megaohms.
7.3 SWITCHING ON THE SPRAY GUN

The spray gun is switched on via the superordinated control unit of the system. At the same time the high-voltage and the coating material supply are activated.

7.4 SWITCHING OFF THE SPRAY GUN

The spray gun is switched off differently depending on the type of powder injector. In most cases this process is performed by the control of the coating system.

Note:

On each interruption to work, the spray gun should be blown through (purged) and powder residue removed. In this way powder deposits and a surge the next time the spray gun is switched on can be largely avoided.

If a manual switch-off is required and provided that the powder injector is not suitable for the automatic purging mode, please proceed as follows:

Procedure:

1. The atomization air has to remain open to prevent powder from penetrating into the atomization air channel and the cascade compartment during the purging process. Switch off the powder feed and the high-voltage generation.
2. If you do not want to modify the settings of the feed and dosage air to continue coating with the same powder cloud, remove the powder injector from the injector connection of the powder container. When switching on again no more powder will be delivered.
3. Switch on again the powder feed to blow out any powder remaining in the spray gun.
4. The powder feed can now be switched off.

7.5 SWITCHING OFF THE SPRAY GUN IN THE EVENT OF FAULTS OR EMERGENCIES

In the event of faults or emergencies the spray gun together with the system can be switched off by means of the emergency stop equipment. At the same time the high-voltage and the coating material supply are switched off.
7.6 OPTIMIZING THE POWDER CLOUD FOR YOUR COATING

Procedure:

1. Switch on the high-voltage generation and the powder feed.

Note:

To minimize the wear on the wearing parts, the total feed air and dosage air should be under 5 Nm³/h!

The atomizing air should be adjusted for the

- flat spray nozzle to 0.1 Nm³/h
- round spray nozzle to 0.2 Nm³/h

2. Adjust the powder quantity and the powder speed on a test piece.
7.7 PERFORMING A COLOR CHANGE

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
</table>
| Dust formation!  
Danger of poisoning.  
Danger due to escaping dust, contamination of device and device components. |

→ Before starting cleaning or other manual work, the high-voltage must be shut down and locked to prevent it from being switched back on!  
→ During every color change, the suction system of the booth and the filter cleaning system must remain activated!  

In the case of a color change, powder residues must be thoroughly removed from all parts carrying powder. In the following only the procedure for the powder spray gun is described.

Note:  
During a color change, the nozzle system does not necessarily have to be disassembled.

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color carry-over!</td>
</tr>
</tbody>
</table>

→ If the cap nut is not screwed on tightly up to the stop position, the colors may smear.

Procedure:

1. Switch off the powder coating system after an automatic flushing and secure it against being switched back on.  
2. In case no automatic flushing is used, purge the gun manually and remove any powder residues from it before switching off the system.  
   - Disconnect the powder hose from the spray gun.  
   - Blow through the spray gun using the air gun and thus remove any powder residues.  
   - Switch off the system and secure against unauthorized reactivation.  
3. Before starting to connect the powder hose again, all parts carrying powder must be thoroughly cleaned.  
4. The spray gun is ready for use again.
7.8 Reproducible Setting of the Nozzle Position

- For a horizontal powder cloud, the flat spray nozzle is set where the protective wedge is in the 0° position.
- When attaching a round spray nozzle, we recommend turning the protective wedge in the 90° position to achieve a smoother coating (the protective wedge is now in the vertical position).

It is possible to change this position as needed for special applications. On the nozzle body and electrode holders there are X markings. In 15° steps, the position can be changed if necessary and reproducibly. The cap nut has to be removed for exact positioning.

An adjustment tool is provided for the flat spray nozzle. This allows all flat spray nozzles to be turned without damaging the electrodes and without removing the cap nut. The cap nut only has to be slackened.
8 CLEANING AND MAINTENANCE

8.1 CLEANING

8.1.1 CLEANING STAFF

Cleaning work should be regularly and carefully undertaken by qualified and trained staff. The staff must be familiar with the DIN EN 50177 provisions. They should be informed of specific hazards during their training.

The following hazards may arise during cleaning work:

- Health hazard from cleaning agents
- Health hazard from inhaling powder paint
- Use of unsuitable cleaning tools and aids

8.1.2 SAFETY INSTRUCTIONS

DANGER

Explosive powder/air mixes!
Danger to life and equipment damage.

- Before starting cleaning or other manual work, the high-voltage must be shut down and locked to prevent it from being switched back on!
- Use only electrically conductive containers for cleaning fluids! Ground the containers!
- Preference should be given to non-flammable cleaning fluids.
- Flammable cleaning fluids may only be used if, once the high-voltage has been switched off and all parts carrying high-voltage are discharged to a discharge energy of less than 0.24 mJ before they can be reached.
  Most flammable solvents have a firing power of around 24 mJ or 60 nC.
- The cleaning agent's flash point must be at least 15 K above the ambient temperature.
- Only mobile industrial vacuum cleaners of design 1 (see EN 60335-2) may be used to remove dust deposits.
The cleaning intervals should be adapted by the operator depending on the level of use and if necessary the level of soiling. In doubt, we recommend contacting J. Wagner AG's specialist personnel.

The valid health and safety specifications and the safety instructions provided in chapter 4 must be adhered to for all cleaning work.

8.1.3 CLEANING PROCEDURES

Incorrect maintenance!
Risk of injury and damage to the device.

- If contact with powder materials or cleaning agents causes skin irritation, appropriate precautionary measures must be taken, e.g. wearing protective clothing.
- The footwear worn by operating staff must comply with EN ISO 20344. The measured insulation resistance must not exceed 100 megaohms.
- The protective clothing, including gloves, must comply with EN ISO 1149-5. The measured insulation resistance must not exceed 100 megaohms.

---

**WARNING**
8.2 MAINTENANCE

8.2.1 MAINTENANCE STAFF

Maintenance work should be regularly and carefully undertaken by qualified and trained staff. They should be informed of specific hazards during their training.

The following hazards may arise during maintenance work:

- Health hazard from inhaling powder paint
- Use of unsuitable tools and aids

Once the maintenance work is complete, the device must be checked by a qualified person to ensure a reliable condition.

8.2.2 SAFETY INSTRUCTIONS

⚠️ DANGER

Incorrect maintenance/repair!
Danger to life and equipment damage.

- Repair or replacement of devices or parts of devices may only be performed outside the hazard area by specialist personnel.

⚠️ DANGER

Incorrect maintenance/repair!
Risk of injury and damage to the device.

- Have repairs and part replacements be carried out by specially trained staff or a WAGNER service center.
- Before all work on the unit and in the event of work interruptions:
  - Switch off the energy/compressed air supply.
  - Decompress spray gun and device pressure.
  - Secure the spray gun against actuation.
  - Observe the operating and service instructions when carrying out all work.
8.2.3 MAINTENANCE PROCEDURES

The maintenance intervals should be adapted by the operator depending on the level of use and if necessary the level of soiling.
In doubt, we recommend contacting J. Wagner AG’s specialist personnel.
The valid health and safety specifications and safety instructions provided in chapter 3 must be adhered to for all maintenance work.
8.2.4 REPLACING THE SPRAY GUN

Before replacing the spray gun any powder residue must be thoroughly removed.

The wearing parts in the spray gun, marked in the spare parts list with "◆", must be regularly checked and, if necessary replaced.

**Procedure:**

1. Switch off the system or the high-voltage generation.
2. Disconnect the electrical cable 1 from the gun 2.
3. Disconnect the hoses for powder feed 3 and atomizing air 4 from the spray gun 2.
4. Undo the locking nuts 5 and disconnect the spray gun 2 from the support 6.
5. Insert the new gun 2 into the support 6 and attach it with locking nuts 5.
6. Connect the hoses for powder feed 3 and atomizing air 4 to the new spray gun 2.
7. Connect the electrical cable 1 to the gun 2.
8. The spray gun is ready for use again.
8.3 CLEANING THE SPRAY GUN AND DISMANTLING THE FLAT SPRAY NOZZLE

Procedure:

1. Unscrew cap nut 1 from spray gun housing 5.
2. Pull flat spray nozzle 2 off the electrode holder 3.
3. Carefully remove electrode holder 3 from gun housing 5.

Note:
Do not damage the electrode holder, when pulling out and inserting.

4. Remove powder residues from the parts removed and from the spray gun.

Note:
Never place the spray gun or parts of the spray gun in cleaning agent.

As a rule the protective wedge needs to be checked for wear and replaced if necessary.

In the next section it is described how the protective wedge is to be dismantled and inserted.
8.4 REPLACING THE PROTECTIVE WEDGE

Note:
A wedge tool is available to prevent the protective wedge from being damaged when dismantling and inserting.
You will find the necessary wearing parts and spare parts in chapter 13 "Spare Parts" of this operating manual.

1 Wedge tool
2 Protective wedge (when positioned)
3 Electrode holder (cut open view)

Procedure:
1. Guide wedge tool 1 into electrode holder 3 up to stop.
2. Pull the protective wedge 2 out of the electrode holder 3 using the wedge tool 1.
3. Press manually without tool the protective wedge 2 sideways out of wedge tool 1.
Note:
The same wedge tool is used to insert the protective wedge.

2. Insert both parts into opening on electrode holder until they stop.
3. If it is not possible to push the wedge tool in as far as the mark X, rotate the wedge tool a little until it can be pushed up to the mark. The mark X must be flush with the end Y of the electrode holder.
4. The protective wedge is now correctly assembled and the wedge tool can be pulled out of the electrode holder. The protective wedge remains inserted in the electrode holder.
5. After long periods of operation or having replaced the protective wedge repeatedly, it is recommended to check also the powder tube for wear and replace if necessary. You will find the necessary wearing parts and spare parts in chapter 13 "Spare Parts" of this operating manual.

6. Prior to re-fitting, check whether the contact points on electrode holder 3 and in gun housing 5 have been thoroughly cleaned so that the electrode tip is electrically connected to the high-voltage generator.

7. Carefully fit the electrode holder 3 in the spray gun housing 5.

8. Slide the flat spray nozzle 2 over the electrode holder 3 and fasten in place with cap nut 1.

---

**8.5 FITTING THE ROUND SPRAY NOZZLE**

The standard Corona spray gun is delivered with a flat spray nozzle. The nozzle can be changed easily, as described below.

*Note:* If changing from the flat spray nozzle to the deflector cone, the depth control must be adjusted.

The electrode holder C4 R is necessary to perform the change.

**Procedure:**

1. Unscrew cap nut 1 from spray gun housing 5.
2. Pull flat spray nozzle 2 off the electrode holder 3.
3. Carefully remove electrode holder 3 from gun housing 5.

*Note:* Do not damage the electrode holder, when pulling out and inserting.

4. Remove powder residues from the parts removed and from the spray gun.
5. Carefully fit the new C4 R electrode holder 6 into the spray gun housing 5.

6. Slide the deflector cone sleeve 7 onto the electrode holder 6.

7. Align the marks X and Y.

8. Fasten cap nut 1.

9. Slide the deflector cone 8 over the deflector cone sleeve 7.

10. The spray gun is ready for use again.

→ Take care when fitting the C4 R electrode holder.
8.6 FITTING THE ANGLE ADAPTER

8.6.1 REMOVING THE NOZZLE AND ELECTRODE HOLDER

The standard Corona spray gun is delivered with a flat spray nozzle. The nozzle can be changed easily, as described below.

**Note:**
If changing from the flat spray nozzle to the deflector cone, the depth control must be adjusted.

An angle adapter WA90 C4, WA 60 C4 or WA30 C4 is necessary to perform the change, as listed in chapter 12 “Accessories”.

**Note:**
A flat spray nozzle as well as a round spray nozzle can be fitted to the angle adapter.

**Procedure:**

1. Unscrew cap nut 1 from spray gun housing 5.
2. Pull flat spray nozzle 2 off the electrode holder 3.
3. Carefully remove electrode holder 3 from gun housing 5.

**Note:**
Do not damage the electrode holder, when pulling out and inserting.

4. Remove powder residues from the parts removed and from the spray gun.
### 8.6.2 FITTING THE ANGLE ADAPTER

#### Procedure:
1. Install electrode holder 1 together with nozzle 2 in the nozzle insert 3 and tighten cap nut 4.
2. Push angle adapter 5 onto the gun body and screw slightly threaded sleeve 6.
3. Swivel angle adapter 5 in the desired position and then tighten well threaded sleeve 6.

### 8.6.3 REPLACEMENT OF THE WEARING PARTS

#### Procedure:
1. Loosen threaded sleeve 1 and separate angle adapter 2 from gun body 3.
2. Loosen cap nut 4.
3. Pull out electrode holder 5 together with nozzle 6 of the nozzle insert 7.

#### Note:
Do not damage the electrode holder, when pulling out and inserting.
4. Unscrew threaded sleeve 8 and locking sleeve 9 with mounting tool 10.
5. Pull out connecting element 11 of angle adapter 12.
6. Insert screwdriver into open area X and turn it until the nozzle insert 7 becomes loose.
7. Pull out nozzle insert 7.
8. Replace the wearing parts with new components.
9. Clean all components thoroughly and remove any powder residues.
10. Install nozzle insert 7 as shown in loupe Y1 and Y2 in such a way that the pin B1 is guided into the hole A1.
11. Install connecting element 11 within the angle piece 12 as shown in loupe Z in such a way that the pin B2 is guided into the hole A2.
12. Screw threaded sleeve 8 and locking sleeve 9 with mounting tool 10 and tighten them well. Take care that it is still possible to turn easily the threaded sleeve 8.
13. Install electrode holder 5 together with nozzle 6 in the nozzle insert 7.
14. Place cap nut 4 and tighten it well.
15. Mount again the angle adapter to the gun.
8.7 MOUNTING THE CORONA-STAR

The Corona-Star is a Retrofit-Set for the spray gun, which helps to achieve a better surface quality (reduction of “orange peel”).

**WARNING**

Danger from electric current!
Risk of injury and damage to the device.

→ Only trained personnel may modify the Corona-Star.
→ Prior to mounting the Corona-Star, the high-voltage and the powder feed must be switched off and secure against inadvertent switch on.

**Procedure:**

1. Switch off the high-voltage and the powder feed and secure against inadvertent switch on.
2. Unscrew the standard nut A from the spray gun housing B.
3. Screw the new nut C for the Corona-Star D onto the spray gun housing and fasten in place.
4. Fasten the cable guide onto the cover plate F by using the screw E.
5. Slide the Corona-Star G onto the spray gun housing B.

**Note:**
Check whether the grounding is assured.

6. The spray gun is ready for use again.
8.8 CORONA-STAR FOR ANGLE ADAPTER

8.8.1 MOUNTING THE CORONA-STAR

**WARNING**

Danger from electric current!
Risk of injury and damage to the device.

→ Only trained personnel may modify the Corona-Star.
→ Prior to mounting the Corona-Star, the high-voltage and the powder feed must be switched off and secure against inadvertent switch on.

**Procedure:**

1. Switch off the high-voltage and the powder feed and secure against inadvertent switch on.
2. Remove stopper from gun housing.
3. Fit Corona Star for angle adapter 2 on angle adapter (direction of fitting shown is example only).
4. Fix the connection cable 3 on the spray gun housing.

**Note:**
Check whether the grounding is assured.

5. The spray gun is ready for use again.

**Note:**
Put stopper back into hole in gun housing when converting the gun in the normal version without angle adapter.
9 INSPECTIONS IN ACCORDANCE WITH DIN EN 50177: 2010-04

If the system is used for electrostatic coating with flammable coating powders, testing should be undertaken in accordance with DIN EN 50177: 2010-04 as per Table 3 and Table 4. The inspection types and intervals are described in the following chapters.
<table>
<thead>
<tr>
<th>Section</th>
<th>Type of Inspection</th>
<th>Requirements</th>
<th>Inspection by</th>
<th>Type of Inspection</th>
<th>Inspection Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Effectiveness of technical ventilation check</td>
<td>Effectiveness of technical ventilation check</td>
<td>TP/CP</td>
<td>ME</td>
<td>continuously according to the cabin manufacturer’s instructions</td>
</tr>
<tr>
<td></td>
<td>E.g. measurements of air flow speed / air quantities, checking of the differential pressure indicator according to the cabin manufacturer’s instructions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Interlock between technical ventilation and high-voltage, compressed air and coating material supply</td>
<td>The technical ventilation should be interlocked such that the high-voltage cannot be switched on while the technical ventilation is not working effectively</td>
<td>CP</td>
<td>FI</td>
<td>annually</td>
</tr>
<tr>
<td></td>
<td>Test whether the system is safely stopped and the material supply, supply air and high-voltage are switched off when the ventilation is shut down</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Protection against ignition of flammable cleaning agents</td>
<td>If flammable cleaning fluids are used, all parts carrying high-voltage must be discharged to a discharge energy of less than 0.24 mJ, once the high-voltage has been switched off, before they can be reached</td>
<td>CP</td>
<td>ME/FI</td>
<td>according to the manufacturer’s instructions</td>
</tr>
<tr>
<td></td>
<td>Function test of the residual energy monitoring equipment according to the manufacturer’s instructions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Key:**

- MA = Manufacturer
- EM = Employer
- CP = Capable person
- FSE = Fire safety engineer
- ELC = Electrician
- TP = Trained person
- FI = Function inspection
- ME = Measurement
- SI = Standard inspection
- VI = Visual inspection
- CI = Continuous inspection
- TI = Technical inspection
<table>
<thead>
<tr>
<th>Section</th>
<th>Type of Inspection</th>
<th>Requirements</th>
<th>Inspection by</th>
<th>Type of Inspection</th>
<th>Inspection Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Effectiveness of grounding measures</td>
<td>All the system's conductive elements, such as floors, walls, ceilings, protective grating, transport equipment, work pieces, powder containers, machines or construction parts etc. in the spray area, with the exception of parts which carry high-voltage during operation, must be connected to the grounding system. The resistance of the floor may not exceed 108 Ohm.</td>
<td>CP</td>
<td>VI/ME/CI</td>
<td>weekly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Visual check of ground connections, perform function test on grounding switch, measurement of grounding resistors.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Resistance to ground of work piece's locating point</td>
<td>The resistance to ground of every work piece's locating point must not exceed 1 megaohm (measurement voltage must be 500 or 1000 V). The design of the work piece receiver must ensure that the adapters remain grounded during coating.</td>
<td>CP</td>
<td>ME/CI</td>
<td>weekly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Measure resistance to ground (work piece receiver - ground potential) max. 1 MOhm @ 1000 V.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Further inspections</td>
<td>Depending on the design and functions of the cabin, further inspections may be necessary (see EN 12981).</td>
<td>according to the cabin manufacturer's instructions</td>
<td>according to the cabin manufacturer's instructions</td>
<td>according to the cabin manufacturer's instructions</td>
</tr>
</tbody>
</table>

Key:
- MA = Manufacturer
- EM = Employer
- CP = Capable person
- FSE = Fire safety engineer
- ELC = Electrician
- TP = Trained person
- FI = Function inspection
- ME = Measurement
- SI = Standard inspection
- VI = Visual inspection
- CI = Continuous inspection
- TI = Technical inspection
10 DISASSEMBLY AND DISPOSAL

10.1 DISASSEMBLY

**WARNING**

Incorrect disassembly!
Risk of injury and damage to the device.

- Before starting disassembly:
  - Switch off the energy/compressed air supply.
  - Ensure that all system components are grounded.
  - Secure system against being switched back on without authorization.
- Observe the operating manual when carrying out all work.

Procedure:

1. Switch off the system.
2. Lock the supply of compressed air and decompress system.
5. Disconnect the powder feed hose to the spray gun and to the powder injector.
6. Disassemble atomizing air hose to the spray gun and to the control unit.
7. Loosen the securing nuts to the gun support and remove the spray gun from the gun support.

10.2 DISPOSAL

**NOTICE**

Do not dispose of used electrical equipment with household refuse!

In accordance with European Directive 2002/96/EC on the disposal of used electrical equipment and its implementation in national law, this product may not be disposed of with the household refuse, but must be recycled in an environmentally correct manner. Wagner, or one of our dealers, will take back your used Wagner equipment and will dispose of it for you in an environmentally friendly way. Please contact one of our service points, one of our representatives or us directly to arrange this.
11 TROUBLESHOOTING AND RECTIFICATION

DANGER
Incorrect maintenance/repair!
Risk of injury and damage to the device.

→ Have repairs and part replacements be carried out by specially
trained staff or a WAGNER service center.
→ Before all work on the unit and in the event of work interruptions:
  - Switch off the energy/compressed air supply.
  - Ensure that all system components are grounded.
  - Secure the unit against being switched back on without
    authorization.
→ Observe the operating and service instructions when carrying
  out all work.

DANGER
Incorrect maintenance/repair!
Danger to life and equipment damage.

→ Wagner devices, protective systems and safety, monitoring
  and control equipment may only be repaired as defined in
  Directive 94/9/EC (ATEX) by trained Wagner service personnel
  or capable persons in accordance with TRBS 1203! Note national
  regulations!
→ Repair or replacement of devices or parts of devices may only be
  performed outside the hazard area!
## Malfunction

<table>
<thead>
<tr>
<th>Malfunction</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>No electrostatics (e.g. no wrap around or powder adhesion)</td>
<td>Fault in the high-voltage generator</td>
<td>Contact Wagner Service center</td>
</tr>
<tr>
<td></td>
<td>Electrical cable from spray gun to control unit faulty</td>
<td>Replace the electric cable</td>
</tr>
<tr>
<td></td>
<td>Cascade in spray gun faulty</td>
<td>Contact Wagner Service center</td>
</tr>
<tr>
<td>Poor wrap around</td>
<td>Insufficient or no grounding</td>
<td>See chapter 6.7 &quot;Grounding&quot;</td>
</tr>
<tr>
<td>Back-spray</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Powder outlet uneven or inadequate</td>
<td>Contamination</td>
<td>Blow through parts carrying powder</td>
</tr>
<tr>
<td></td>
<td>Powder sintering</td>
<td>Clean parts carrying powder</td>
</tr>
<tr>
<td></td>
<td>Feed device contaminated</td>
<td>See operating instructions for the related devices connected</td>
</tr>
<tr>
<td></td>
<td>Feed air / metering air ratio incorrect</td>
<td>Adjust at control module resp. control unit</td>
</tr>
<tr>
<td></td>
<td>Wear on powder injector nozzle</td>
<td>Replace¹) worn parts on powder injector</td>
</tr>
<tr>
<td>Spray pattern is uneven</td>
<td>Parts of nozzle system worn</td>
<td>Replace worn parts</td>
</tr>
</tbody>
</table>

1.) You will find the wearing and spare parts in the operating manual for the powder injector.
## 12 ACCESSORIES

### 12.1 FLAT SPRAY NOZZLES

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>390324</td>
<td>F1 flat spray nozzle</td>
</tr>
<tr>
<td>390325</td>
<td>F2 flat spray nozzle</td>
</tr>
<tr>
<td>390326</td>
<td>F3 flat spray nozzle</td>
</tr>
<tr>
<td>2311889</td>
<td>F4 flat spray nozzle</td>
</tr>
<tr>
<td>390331</td>
<td>HPO-1 wide flat spray nozzle</td>
</tr>
</tbody>
</table>

### 12.2 DEFLECTOR CONE

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>390207</td>
<td>Deflector cone Ø 20 mm</td>
</tr>
<tr>
<td>390208</td>
<td>Deflector cone Ø 28 mm</td>
</tr>
</tbody>
</table>
12.3 RETROFIT SET CORONA-STAR

<table>
<thead>
<tr>
<th>No.</th>
<th>K</th>
<th>Qty</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>390918</td>
<td>Corona-Star compl.</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>1</td>
<td>260296</td>
<td>Corona-Star electrode</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>1</td>
<td>390319</td>
<td>Cap nut</td>
</tr>
</tbody>
</table>

◆ Wearing part

12.4 CORONA-STARWA C4

<table>
<thead>
<tr>
<th>No.</th>
<th>K</th>
<th>Qty</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2306335</td>
<td>WA C4 Corona-Star</td>
</tr>
</tbody>
</table>
12.5 WEDGE TOOL

<table>
<thead>
<tr>
<th>No.</th>
<th>K</th>
<th>Qty</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>★</td>
<td>1</td>
<td>390900</td>
<td>Wedge tool including 20 protective wedges</td>
<td></td>
</tr>
</tbody>
</table>

★ only available as a set

12.6 GUN SUPPORT AND FIXATION

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>351347</td>
<td>Bracket for fixing the spray gun</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>260215</td>
<td>Gun support for fixation on mounting on the reciprocator</td>
</tr>
</tbody>
</table>

12.7 ELECTRIC CABLES AND HOSES

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Description</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>351216</td>
<td>Electrical cable 5 m</td>
<td>for connecting the spray gun to the high-voltage generator</td>
</tr>
<tr>
<td>351217</td>
<td>Electrical cable 10 m</td>
<td></td>
</tr>
<tr>
<td>351215</td>
<td>Electrical cable 20 m</td>
<td></td>
</tr>
<tr>
<td>2307502</td>
<td>Hose special (interior 11 mm)</td>
<td>for powder feed</td>
</tr>
<tr>
<td>2310700</td>
<td>Hose special (interior 12 mm)</td>
<td></td>
</tr>
<tr>
<td>9982079</td>
<td>Hose 6x1</td>
<td>Atomizing air connection</td>
</tr>
</tbody>
</table>
12.8 ANGLE ADAPTER

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>390927</td>
<td>WA30 C4 angle adapter</td>
</tr>
<tr>
<td>390930</td>
<td>WA60 C4 angle adapter</td>
</tr>
<tr>
<td>390931</td>
<td>WA90 C4 angle adapter</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>390939</td>
<td>WA C4 mounting tool</td>
</tr>
</tbody>
</table>
12.9 POWDER MEASURING BAG

**DANGER**

Risk of explosion due to electrostatic charging!
Danger to life and equipment damage.

→ Only use powder measurement bag when high-voltage is switched off!

For measuring powder quantities for the C4 gun generation.

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>390940</td>
<td>Powder measuring bag compl.</td>
</tr>
</tbody>
</table>

The powder measuring bag is slid onto the nozzle.
13 SPARE PARTS

13.1 HOW CAN SPARE PARTS BE ORDERED?

To ensure proper spare parts delivery, the following information is necessary:

Order number, designation and quantity

The quantity does not have to be identical to the numbers in the "Quantity" columns of the lists. This number merely indicates how many of the respective parts are used in each module.

The following information is also required to ensure smooth processing of your order:
- Address for the invoice
- Address for delivery
- Name of the person to be contacted in the event of any queries
- Type of delivery (normal mail, express delivery, air freight, courier etc.)

Identification in spare parts lists

Explanation of column "K" in the following spare parts lists.

◆ = Wearing parts

Note: No liability is assumed for wearing parts.

● = Not part of standard equipment, available, however, as additional extra.

WARNING

Incorrect maintenance/repair!
Risk of injury and damage to the device.

→ Have repairs and part replacements be carried out by specially trained staff or a WAGNER service center.

→ Before all work on the unit and in the event of work interruptions:
  - Switch off the energy/compressed air supply.
  - Ensure that all system components are grounded.
  - Secure the unit against being switched back on without authorization.

→ Observe the operating and service instructions when carrying out all work.
### 13.2 PEA-C4-HiCoat Corona Automatic Gun

![Diagram of PEA-C4-HiCoat Corona Automatic Gun]

#### Automatic gun PEA-C4-HiCoat

<table>
<thead>
<tr>
<th>No.</th>
<th>K</th>
<th>Quantity</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>1</td>
<td>390004</td>
<td>PEA-C4-HiCoat Corona automatic gun</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>1</td>
<td>390311</td>
<td>Cap nut</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>1</td>
<td>390324</td>
<td>Flat spray nozzle F1</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>1</td>
<td>390915</td>
<td>Electrode holder</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>1</td>
<td>390310</td>
<td>Wedge</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>1</td>
<td>390911</td>
<td>Powder tube C4 ET</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>1</td>
<td>390342</td>
<td>Adjustment tool for flat spray nozzles</td>
</tr>
</tbody>
</table>

- ◆ Wearing part
- ● Not part of the standard equipment but available as a special accessory
- ★ only available as a set
13.3 **ELECTRODE HOLDER C4 R WITH NOZZLES**

![Diagram of electrode holder C4 R with nozzles]

<table>
<thead>
<tr>
<th>No.</th>
<th>K</th>
<th>Quantity</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>★</td>
<td>1</td>
<td>390917</td>
<td>Electrode holder C4 R compl.</td>
</tr>
<tr>
<td>2</td>
<td>★</td>
<td>1</td>
<td>390916</td>
<td>Electrode holder C4 R</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>1</td>
<td>390310</td>
<td>Wedge</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>1</td>
<td>390313</td>
<td>Deflector cone sleeve</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>1</td>
<td>390207</td>
<td>Deflector cone R20 (Ø 20 mm; 0.79 inch)</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>1</td>
<td>390208</td>
<td>Deflector cone R28 (Ø 28 mm; 1.10 inches)</td>
</tr>
</tbody>
</table>

- Wearing part
- Not part of the standard equipment but available as a special accessory
- only available as a set
13.4 ANGLE ADAPTER WA90 C4

<table>
<thead>
<tr>
<th>No.</th>
<th>K</th>
<th>Quantity</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>1</td>
<td>390931</td>
<td>Angle adapter WA90 C4</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>1</td>
<td>390947</td>
<td>Cap nut WA C4 ET</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>1</td>
<td>390933</td>
<td>Nozzle insert WA90 C4 ET</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>1</td>
<td>390942</td>
<td>Angle adapter WA90 C4 ET</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>1</td>
<td>390932</td>
<td>Connecting element WA C4 ET</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>1</td>
<td>390946</td>
<td>Locking sleeve WA C4 ET</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>1</td>
<td>390945</td>
<td>Threaded sleeve WA C4 ET</td>
</tr>
</tbody>
</table>

◆ Wearing part
● Not part of the standard equipment but available as a special accessory
★ only available as a set
13.5 ANGLE ADAPTER WA60 C4

<table>
<thead>
<tr>
<th>No.</th>
<th>K</th>
<th>Quantity</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>1</td>
<td>390930</td>
<td>Angle adapter WA60 C4</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>1</td>
<td>390947</td>
<td>Cap nut WA C4 ET</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>1</td>
<td>390934</td>
<td>Nozzle insert WA60 C4 ET</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>1</td>
<td>390943</td>
<td>Angle adapter WA60 C4 ET</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>1</td>
<td>390932</td>
<td>Connecting element WA C4 ET</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>1</td>
<td>390946</td>
<td>Locking sleeve WA C4 ET</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>1</td>
<td>390945</td>
<td>Threaded sleeve WA C4 ET</td>
</tr>
</tbody>
</table>

- Wearing part
- Not part of the standard equipment but available as a special accessory
- only available as a set
13.6 ANGLE ADAPTER WA30 C4

<table>
<thead>
<tr>
<th>No.</th>
<th>K</th>
<th>Quantity</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>1</td>
<td>390927</td>
<td>Angle adapter WA30 C4</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>1</td>
<td>390947</td>
<td>Cap nut WA C4 ET</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>1</td>
<td>390935</td>
<td>Nozzle insert WA30 C4 ET</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>1</td>
<td>390944</td>
<td>Angle adapter WA30 C4 ET</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>1</td>
<td>390932</td>
<td>Connecting element WA C4 ET</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>1</td>
<td>390946</td>
<td>Locking sleeve WA C4 ET</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>1</td>
<td>390945</td>
<td>Threaded sleeve WA C4 ET</td>
</tr>
</tbody>
</table>

◆ Wearing part
● Not part of the standard equipment but available as a special accessory
★ only available as a set
14 DECLARATION OF WARRANTY AND CONFORMITY

14.1 IMPORTANT NOTES ON PRODUCT LIABILITY

As a result of an EC regulation effective from January 1, 1990, the manufacturer shall only be liable for his product if all parts originate from him or are approved by him, and if the devices are properly mounted, operated and maintained. The manufacturer will not be held liable or will only be held partially liable if third-party accessories or spare parts have been used.

With genuine WAGNER accessories and spare parts, you have the guarantee that all safety regulations are complied with.

14.2 WARRANTY CLAIM

Full warranty is provided for this device:

We will at our discretion repair or replace free of charge all parts which within 24 months in single-shift, 12 months in 2-shift or 6 months in 3-shift operation from date of receipt by the Purchaser are found to be wholly or substantially unusable due to causes prior to the sale, in particular faulty design, defective materials or poor workmanship. The type of warranty provided is such that the device or individual components of the device are either replaced or repaired as we see fit. The resulting costs, in particular shipping charges, road tolls, labour and material costs will be borne by us except where these costs are increased due to the subsequent shipment of the unit to a location other than the address of the purchaser.

We do not provide warranty for damage that has been caused or contributed to for the following reasons:

- Unsuitable or improper use, faulty installation or commissioning by the purchaser or a third party, normal wear, negligent handling, defective maintenance, unsuitable coating products, substitute materials and the action of chemical, electrochemical or electrical agents, except when the damage is attributable to us.
- Components that have not been manufactured by WAGNER are subject to the original warranty of the manufacturer.
- Replacement of a component does not extend the period of warranty of the device.

The unit should be inspected immediately upon receipt. To avoid losing the warranty, we or the supplier company are to be informed in writing about obvious faults within 14 days upon receipt of the device.

We reserve the right to have the warranty compliance met by a contracting company. The services provided by this warranty are dependent on evidence being provided in the form of an invoice or delivery note. If the examination discovers that no warranty claim exists, the costs of repairs are charged to the purchaser.

It is clearly stipulated that this warranty claim does not represent any constraint on statutory regulations or regulations agreed to contractually in our general terms and conditions.

J. Wagner AG
14.3 DECLARATION OF CONFORMITY

Herewith we declare in accordance with Directive 94/9/EC that the supplied version of
- PEA-C4-HiCoat automatic gun, order no. 390004

complies with the following provisions applying to it:

- 94/9/EC (ATEX Directive)
- 2006/42/EC (Machinery Directive)
- 2004/108/EC (EMC Directive)
- 2002/95/EC (RoHs Directive)
- 2002/96/EC (WEEE Directive)

Applied standards, in particular:

- DIN EN 50177: 2010
- DIN EN 50050: 2007
- DIN EN 60079-0: 2010
- DIN EN 1127: 2008
- DIN EN 1953: 2010
- DIN EN ISO 12100: 2011
- DIN EN 60529: 2000
- DIN EN 61000-6-2: 2006
- DIN EN 61000-6-4: 2011
- DIN EN 14462: 2010
- DIN EN 60204-1: 2007

Identification:

EC Certificate of Conformity

The CE certificate of conformity is enclosed with this product. If needed, further copies can be ordered through your WAGNER dealer by specifying the product name and serial number.

Order number:
PEA-C4-HiCoat automatic gun 390893
14.4 EC TYPE EXAMINATION CERTIFICATE

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

EG-Baumusterprüfbescheinigung

1. Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen - Richtlinie 94/9/EG

2. EG-Baumusterprüfbescheinigungsnummer

PTB 05 ATEX 5008

3. Gerät:
Elektrostatische Pulversprüheinrichtungen vom Typ PEA-C4, PEA-C4XL, PEM-C4, PEM-C4R und PEM-CG4 mit Zubehör

4. Hersteller:
J. Wagner AG

5. Anschrift:
Industriestrasse 22, 9450 Altstätten, Schweiz


Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht PTB Ex 06-55198 festgehalten.

8. Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit


11. Die Kennzeichnung des Gerätes muß die folgenden Angaben enthalten:

II 2 D EEx 2 mJ 85°C

Zertifizierungsstelle Explosionsschutz
Braunschweig, 15. Februar 2007

Im Auftrag

Dr.-Ing. M. Beyer
Oberregierungsrat

EG-Baumusterprüfbescheinigungen ohne Unterschrift und ohne Siegel haben keine Gültigkeit.
Diese EG-Baumusterprüfbescheinigung darf nur unverändert weiterverbreitet werden.
Auszüge oder Änderungen bedürfen der Genehmigung der Physikalisch-Technischen Bundesanstalt.

Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig
Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

A n l a g e

EG-Baumusterprüfbescheinigung PTB 05 ATEX 5008

Beschreibung des Gerätes
Die Pulversprühneinrichtungen sind zur Verwendung mit Steuergeräten der EG-Baumusterprüfbescheinigungen PTB 03 ATEX 5005 mit 1. Ergänzung und PTB 06 ATEX 5003 bestimmt.
Die Handsprühneinrichtungen vom Typ PEM-C4, PEM-C4R und PEM-CG4 sind zur Verwendung mit den Verlängerungskabeln 5 m #0351216 Korona, #0351297 Korona/Tribo, 10 m #0351217 Korona, #0351286 Korona/Tribo und 20 m #0351215 Korona, #0351295 Korona/Tribo bis zu einer Gesamtlänge von 27,5 m vorgesehen.

Prüfbericht PTB Ex 06-55198
Bei den Pulversprühneinrichtungen besteht keine Zündgefahr durch heiße Oberflächen. Die Anforderungen der Temperaturklasse T6 entsprechend 85°C und der Schutzart IP54 werden erfüllt.

Besondere Bedingungen
keine
Hinweise für Herstellung und Betrieb:
Durch Stückprüfung ist sicherzustellen, dass die im Prüfbericht PTB Ex 06-55198 genannten Werte des Ausgangstromes und der Ausgangsspannung nicht überschritten werden.
Die elektrostatischen Pulversprühneinrichtungen der Typen PEA-C4, PEA-C4XL, PEM-C4, PEM-C4R und PEM-CG4 dürfen nur entsprechend den Anforderungen gemäß EN 50177, EN 50050 und anderen einschlägigen Bestimmungen betrieben werden.
Die elektrostatischen Pulversprühneinrichtungen der Typen PEA-C4, PEA-C4XL, PEM-C4, PEM-C4R und PEM-CG4 dürfen nicht in Bereichen betrieben werden, die aus anderen Gründen als dem Betrieb der elektrostatischen Pulversprühneinrichtungen explosionsgefährdet sind.

Grundlegende Sicherheits- und Gesundheitsanforderungen
Erfüllt durch Übereinstimmung mit den oben genannten Normen.

Zertifizierungsstelle Explosionsschutz
Im Auftrag
Dr.-Ing. M. Beyer
Oberregierungsrat

Braunschweig, 15. Februar 2007
<table>
<thead>
<tr>
<th>Country</th>
<th>Address</th>
<th>Phone Numbers</th>
<th>E-mails</th>
</tr>
</thead>
</table>
| Germany     | J. WAGNER GmbH  
Otto-Lilienthal-Str. 18  
Postfach 1120  
D- 88677 Markdorf  
Phone: +49/7544/505-0  
Fax: +49/7544/505-200  
E-mail: service.standard@wagner-group.com | +49/7544/505-0  
+49/7544/505-200 | service.standard@wagner-group.com |
| Switzerland | J. WAGNER AG  
Industriestrasse 22  
Postfach 663  
CH- 9450 Altsättten  
Phone: +41/71/7572211  
Fax: +41/71/7572222  
E-mail: rep-ch@wagner-group.ch | +41/71/7572211  
+41/71/7572222 | rep-ch@wagner-group.ch |
| Belgium     | Estee Industries  
Leenbeekstraat 9  
B- 9770 Kruishoutem  
Phone: +32/9/3885410  
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